KG
11366
v.557

stacephotos_proj_1501.

Polaris

Observations and Reductions

By

From Mar. 1 1880 to July 26 1880

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Provisional values for the reductions of the separate series of Polaris to the means of the series.

For the reductions of the observations for longitude between Cambridge and Chew Magna.

May 23		May 24	May 27	May 31	June 2	June 3	Means	
24	+5	54.6	55.2	55.4	57.8	57.1	55.6	+5 56.0
27	+5	24.9	25.4	25.5	27.8	27.0	26.6	5 26.1
31	+4	55.3	57.8	55.3	57.3	56.3	55.9	4 56.3
	+4	27.2	24.1	26.3	27.4	26.9	26.7	4 26.4
June 2	+3	58.3	55.8	56.1	55.2	58.0	56.3	3 57.0
	+3	26.8	24.7	27.2	22.7	27.4	27.7	3 26.4
3	+2	57.6	57.1	57.5	57.6	58.5	57.0	3 57.6
	+2	28.9	29.2	28.3	29.0	30.1	29.8	2 29.2
	+1	58.2	58.0	58.5	57.6	57.9	58.5	2 58.3
	+1	28.5	30.7	28.7	28.7	30.2	29.5	1 29.1
	+0	58.7	57.6	59.7	61.1	58.0	57.0	1 58.9
	+0	30.7	28.8	29.8	29.0	30.0	28.8	0 29.5
		−0.3	−0.3	−0.7	−1.5	−0.5	+2.0	+0 0.2
	−0	28.4	30.5	28.9	30.3	30.3	30.4	−0 29.7
	−0	57.4	58.0	57.0	59.7	58.2	59.1	−0 58.6
	−1	28.6	26.7	28.7	28.6	27.1	27.7	−1 28.1
	−1	58.6	58.8	57.8	58.9	58.0	58.2	−1 58.1
	−2	29.2	27.8	30.6	28.8	28.2	27.0	−2 28.6
	−2	56.9	57.5	55.2	56.5	57.1	57.4	−2 57.5
	−3	26.4	26.0	28.2	26.3	27.2	27.0	−3 26.8
	−3	57.0	56.1	56.8	56.3	57.0	58.0	−3 56.9
	−4	26.6	26.1	25.7	25.9	26.1	27.0	−3.4 26.2
	−4	55.8	56.4	55.6	56.8	25.5	56.4	−4 56.1
	−5	26.3	25.7	24.7	26.8	25.4	27.2	−5 25.9
	−5	55.8	57.0	54.7	54.1	55.3	56.3	−5 55.2

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1880 Mar 1 U.T.

h	m	s																				
1		—	0	55	0.3	19	560		0.16056		6.73660											
		—					11960	3.07773	8.36396	6.15546	8.36396											
		—	8 58.0	57	12.0	17	443	1.60225	8.52452	1.25602	5.10056	R	49	3478	50		50					
	9	23.5					10641.3	3.02706		6.05413				4002		1480		32.83				
		29.2	9 29.9	58	42.6	16	13.7	1.55158		1.15468		R	49	4252	+	1803						
		37.0					973.7	2.98843		5.97686				3561		1813		32.41				
		54.4	/	0	11.8	14	445	1.51295		1.07742		R	49	4858	+	1428						
9 58.68		58.7	9 59.4				8845	2.94670		5.89340				3258		2.116		33.11				
9 58.88	10	5.0		1	39.0	13	173	1.47122		0.99396		R	49	5262	+	11.95						
		22.2					797.3	2.90162		5.80324				2960		2222						
		28.1	10 28.2	3	21.0	11	353	1.42614		0.90380		R	50	5795	+	986		32.08				
		33.7					69.53	2.84217		5.68434				26.68		2463						
		53.4		4	54.4	10	1.9	1.36669		0.78490		R	50	122	+	801		32.64				
		58.8	10 58.9				601.9	2.77952		5.55904				2326		2448						
	11	4.6		7	11.4	7	449	1.30404		0.65960		R	50	808	+	609		30.57				
		23.6	29.5				4649	2.66736		5.33472				2014		28.22						
		30.7	11 31.5	21	22.8	-6	26.5	1.19188		0.43528		R	50	1395	+	457		32.79				
		34.1					386.5	2.58715		5.17436				1556		29.51						
		—		24	12.8	-9	165	1.11167		0.27486		R	50	5462	+	272		32.23				
		—	12 0.0				556.5	2.74547		5.49094				— 1233		41.69						
		—		25	36.3	-10	40.0	1.26999		0.59150		R	50	4572	+	188		3357				
		—					6400	2.80618		5.61236				— 1862		2650						
12 26.94		—	12 29.0	26	50.3	-11	54.0	1.33070		0.71292		R	50	4628	+	390		3040				
12 28.54		—					7140	2.85370		5.70740				— 2141		2487						
		—		28	30.5	-13	342	1.37822		0.80796		R	50	4740	+	516		3003				
		—	12 58.0				8142	2.91073		5.82146				— 2389		2351						
		—		36	21.0	-21	247	1.43525		0.92202		R	50	4938	+	643		2994				
	13	18.8					12647	3.10880		6.21760				— 2724		2214						
		27.1	13 26.2	37	52.3	-22	560	1.63332		1.31816		R	50	5750	+	836		3050				
		32.7					13760	3.13862		6.27724				— 4289		851						
		50.2		39	25.0	-24	287	1.66314		1.37780		R	50	3722	+	2480		2931				
		54.1	13 55.6				14687	3.16693		6.33386				— 4604		518						
	14	2.6						1.69145		1.73442		R	50	5022	+	2387		29.05				
		18.6												— 4983		119						
		25.8	14 25.2													+2719		28.38				
		31.3																				
		51.5																				
14 55.17		55.4	14 55.8																			
14 55.14	15	0.6																				
		18.1																				
		23.9	15 24.1																			
		30.2																				
		48.6	55.0																			
		54.8	15 54.9																			
	16	1.5																				
		19.8																				
		26.2	16 26.7																			
		34.2																				
		50.3		1	14	6.90				88 40 31.12												
		57.3	16 56.3																			
	17	1.3																				
		17.5																				
17 25.42		26.3	17 24.8																			
17 25.48		30.7																				
		47.0																				
		54.8	17 54.3																			
	18	1.1																				
		19.4																				
		25.6	18 25.3																			
		30.8																				
		47.0																				
		55.6	18 55.0																			
	19	2.4																				
		18.5																				
		25.0	19 24.0																			
		28.5																				
		46.9																				
19 53.24		52.0	19 52.2																			
19 53.24		54.7																				
	20	16.8																				
		23.4	20 23.2																			
		29.5																				
		45.0																				
		52.4	20 51.8																			
		58.0																				
14 56.320			14 56.320																			

3.42566 33 3.35360

25 6 1 40 29 2 7 4 8 8 5 2 9 6 8 4 6 6 4 40 2

1 6 1 9 0 4 0 1 9 1 5 3 6 9 5 6 9 1 9 9 6 5 0 6 4 40 48

2 9 1 1 8 8 9 5 2 9 0 9 4 6 7 8 1 9 0 4 8 0 4 0 4 36 10

4 35 0

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2

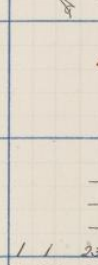
1880 Mar 1 LC

h	m s		m s									
13	10 16.4		23 27.0	+52 11.9 / −10 48.2			0.16056 / 8.36896 / 8.52452	R	′ ″ 11 2612 / + 2169	6.73660 / 8.36396 / 5.10056 / 11 47.81		
+2 28.8	17.7 / 18.7 / 35.3	10 17.6 / − 28.9 / +2 28.4	25 25.4	47 13.5 / 12 46.6	(46.5)	(46.0)		R	11 2240 / + 25.65	48.05	10 17.6 / 2 28.8	12 46.4
1 58.9	42.0 / 48.3	10 41.9 / − 57.4	27 50.4	44 48.5 / 15 11.6	39.3	40.5		R	11 2152 / +30.50	52.02	10 41.9 / 1 59.0	40.9
	11 5.0	+1 58.6	29 22.0	43 16.9 / 16 48.2				R	11 1990 / +33.57	53.47		
1 29.1	10.9 / 18.7	11 11.5 / − 28.6	31 1.3	41 37.6	40.1	40.3		R	11 1968	56.57	11 11.5 / 1 29.1	40.6
	37.0	1 28.8 (2)		18 2.25					+36.89			
0 59.4	40.2 / 43.3	11 40.2 / − 58.2	32 30.0	40 8.0 / 19 57.2	38.4	39.4		R	11 1898 / +39.86	58.84	11 40.1 / 0 59.4	39.5
	12 1.9	0 59.2	34 4.5	38 44.0 / 21 25.7				R	11 1792 / +43.02	60.94		
0 29.6	9.0 / 17.2 / 33.4	12 9.4 / − 27.4 / 0 29.5	35 0.5	37 38.1 / 22 21.7	36.8	38.9			+44.89		12 9.4 / 0 29.6	39.0
−0 0.0	× 38.2 / 45.1	12 38.9 / + 0.1	−10 48.2 / 648.2	2.81171n	39.0	38.9	5.62342	11 47.81		11 42.51	12 38.9 / −0 0.0	38.9
	13 2.0	−0 0.0										
−0 29.7	7.6 / 15.1	13 8.2 / −0 29.3	−12 46.6 / 766.6	1.33623 / 2.88457n	~~38.7~~ stet	38.6	0.72398n / 5.76914	−5.30 / 48.05		40.64	13 8.2 / −0 29.7	38.5
	35.0	−0 29.6	−15 11.6 / 911.6	1.40909 / 2.95980n			0.86970n / 5.91960	−7.41 / 52.02		41.55		
−0 59.4	39.7 / 44.3	13 39.7 / −0 0.6	−16 43.2 / 1003.2	1.48432 / 3.00139n	39.1	40.4	1.02016n / 6.00278	−10.47 / 53.47		40.78	13 39.7 / −0 59.5	40.2
	14 1.6	−0 59.3	−18 22.5 / 1102.5	1.52591 / 3.04238n			1.10334n / 6.08476	−12.69 / 56.57		41.25		
−1 29.3	6.3 / 12.5	14 6.8 / −1 29.1			37.7	37.7					14 6.8 / −0 29.3	37.5
	33.0	−1 29.6	−19 57.2 / 1191.2	1.56690 / 3.07598n			1.18532n / 6.15196	−15.32 / 58.84		40.95		
−1 58.7	38.2 / 47.5	14 39.57 / −1 58.0	−21 25.7 / 1285.7	1.60050 / 3.10914n	41.6	41.2	1.25252n / 6.21828	−17.89 / 60.94		40.10	14 39.6 / −0 58.8	40.8
	15 1.3	1 58.4										
−2 28.7	7.4 / 14.1 / 31.4	15 7.6 / −2 29.3 / −2 28.3	−22 21.7 / 1341.7	1.63366 / 3.12765n / 1.65217	38.3	39.3	1.31884n / 6.25520 / 1.35576n	−20.84 / −22.69			15 7.6 / −1 28.7	38.9
−2 58.5	36.8 / 43.2	15 37.1 / −2 58.2			~~39.8~~ 8.9	39.1					15 37.1 / −1 58.6	38.5
	16 1.5	2 58.0										
−3 28.2	7.2 / 12.5	16 7.1 / −3 28.5			38.6	39.4					16 7.1 / −3 28.3	38.8
−3 57.9		−3 27.7		12) 466.7 / 12 38.89	~~504.1~~ / ~~38.78~~	~~465.3~~ 473.7 / ~~37.94~~ 39.47						206.4 / 195.9 / 116.2 / 578.5
−4 27.5											13 12	39.88
				1 14	6.68						88 40	31.00

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1880 Mar 2



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1880 Mar 4 U.C.

	h	m	s
	0	56	24.2
		59	0.0

R 49′ 37.72″

R 49′ 45.33″

No. 4. R

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1880 March No obs.

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1880 Mar 8 L.C.

0.16056
8.36416m
8.52471m

6.73660
8.36415
5.10075m

h	m	s		m	s										
	1	12	0.4	18	14.5	+54 18.5			R	11	5392				
+29.6			4.0 12 3.9									12 3.9	12	33.5	
			7.2 +0 27.4	20	19.5	52 13.5	31.3	33.4	R	11	2835	+0 29.6			
+29.8			+0 29.5												
-0.0			34.0 12 34.0	21	44.6	50 48.4	34.1	34.0	R	11	2665	12 37.0		34.6	
			38.2 + 0.1						R	11	2348	- 0 0.0			
	13	0.3	+ 0.0	23	34.5	48 58.5									
-0 29.7			7.5 13 6.3						R	11	2432	13 6.3		34.6	
			11.0 - 29.3	24	58.4	47 34.6	(37.0)	(36.7)				- 0 29.7			
			— -0 29.6						R	11	2368				
			—	27	42.8	44 50.2									
			—						R	11	2185				
			54.4	30	5.8	42 27.2									
-1 29.3		14	2.0 14 7.8									14 1.8		32.5	
			9.0 - 29.1	32	26.2	40 6.8	32.7	32.7	R	11	2122	- 1 29.3			
			31.3 +1 29.1			m									
-1 58.7			34.0 14 34.1			-5 41.5			R	11	2045	14 34.1		35.3	
			37.1 - 58.0				36.1	35.7				- 1 58.8			
			56.0 -1 58.4						R	11	2022				
-2 28.7		15	1.0 15 0.6			7 46.5						15 0.6		31.9	
			4.8 -2 29.3				31.3	32.3				- 2 28.7			
			23.2 -2 28.3			9 11.6					33.44				
-2 58.5			30.4 15 29.6								31.97	15 29.6		31.0	
			35.3 - 58.2			11 1.5	31.4	31.6			65.41	- 2 58.6			
			56.0 -2 58.0												
-3 28.2		16	1.7 16 1.6			12 25.4			1	12	32.70	16 1.6		33.3	
			7.2 -2 28.5				33.1	33.9				- 3 28.3			
			23.8 -2 27.7			15 9.8					35.90				
-3 57.9			32.3 16 3.14						1	12	32.64	16 31.4		33.4	
			38.0 - 56.4			17 32.8	34.7	34.1				- 3 58.0			
			51.5 -3 57.3												
-4 27.5		17	0.1 -16 58.9			-19 53.2						16 58.9		31.3	
			5.3 -4 27.2				31.7	32.0				- 4 27.6			
			24.6 -4 26.9												
-4 57.5			28.8 17 29.4									17 29.2		31.5	
			34.2 - 56.0				33.2	32.4				- 4 57.7			
			33.5 -4 56.8												
-5 27.3			38.6 17 58.7									17 58.7		31.3	
		18	4.0 - 25.6				33.2	32.2				- 5 27.4			
			-5 26.5												

~~11~~ 1 ~~41~~ 39.87 36.28 36.43
12 ~~33.20~~ 32.898 33.12

1 14 3.28

88 40 29.34

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1880 Mar 10 U-C

h	m	s		m	s			
1	.	—		6	32.0	R	49′	17.95
		—						
		—		20	27.8	R	50	46.22
		—						
		—		22	2.2	R	50	49.05
		—						
8	56.8	9		22	56.2			—
	4.4	8 3.5	14 1.0					
	9.3	4 57.5		24	40.0	R	50	51.75
		14 1.0						
		—		26	3.4	R	50	52.82
		—						
		—						
		—						
		—						
		—						
		—						
		—						
		—						
		—						
		—						
11	31.3							
	33.5	11 33.4		14	2.1			
	35.5	+2 28.7						
	55.8							
12	1.5	12 1.9		14	0.6			
	8.4	1 58.7						
	22.3							
	26.7	12 28.1		13	57.4			
	35.3	+1 29.3						
	54.5							
	59.5	12 50.7		13	59.2			
13	5.0	+0 59.5						
	28.0							
	31.0	13 31.3		14	1.0			
	35.0	+0 29.7						
		—						
		—						
		—						
		—						
		—						
		—						
14	48.9							
	57.6	14 56.3		13	56.9			
15	2.5	−0 59.4						
	22.5							
	28.7	15 27.7		13	58.6			
	32.0	−1 29.1						
	53.6							
	57.3	15 58.4		14	0.0			
16	3.7	−1 58.9						
	22.9							
	27.8	16 27.6		13	58.8			
	32.1	−0 29.8						
				534.6				
			13	59.40				
				0.06				
				58.58				
			2)	118.64				
			13	59.32				

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1880 Mar 10

D.C.

0.16056
8.36415m
8.52471m

6.73660
8.36415m
5.10675m

		h	m	s		h	m	s															
		13	7	41.0		12	59	59.0	+12 45.5						R	12	1413						
+	57.5			44.1	7 462				+765.5								−2362	7	46.2	12	43.6			
				53.5	+4 56.7	13	1	32.7	11 11.8	12	42.9	43.0			R	12	1126	4	57.4				
			8	9.2	+4 56.8				+671.8								−2249						
+	27.8			17.3	8 16.7		2	41.5	10 3.0						R	12	780	8	16.2		43.9		
				22.1	+4 26.8				+603.0		43.0	43.4					−2018	4	27.7				
				—	4 27.2		3	40.9	9 3.6						R	12	528						
				—					+543.6								−1820						
				—			4	39.2	8 5.3						R	12	138						
				—					+485.3								−1624						
				—			5	46.2	6 58.3						R	11	5862						
				—					+418.3								−1400						
			9	41.2			6	43.3	6 1.2						R	11	5548						
2	58.3			45.8	9 465				+361.2								−1209	9	46.5		44.7		
				52.5	−2 57.9		20	30.8	−8 6.3		44.4	44.3			R	11	2860	2	58.2				
			10	7.0	2 57.8				−486.3								+1628						
2	28.8			11.0	10 13.0		22	9.2	9 24.7						R	11	2730	10	13.0		41.7		
				21.0	+2 28.9				−864.7		41.9	41.4					+1890	2	28.7				
				38.4	2 28.4		23	12.0	10 27.5						R	11	625						
1	58.9			45.6	10 454				−627.5								+2100	10	45.4		44.3		
				52.2	+1 57.4						42.8	44.0						1	58.9				
			11	10.0	1 58.6																		
1	29.1			18.4	11 17.2													11	17.2		46.8		
				25.2	+1 28.6				2.88394 5.76788		45.8	46.0	11 4893	11 41.54				1	29.0				
				40.5	1 28.8				1.40865 0.86863m				−7.39										
0	59.4			46.7	11 46.4				2.82724 5.65448				4876	43.07				11	46.4		43.7		
				52.0	+0 58.2				1.35195 0.75523m		44.6	45.6	−5.69					0	57.3				
			12	9.3	0 59.2				2.78032 5.56064				4762	43.04									
0	29.6			15.2	12 15.8				1.30303 0.66139m				−4.58					12	15.8		45.4		
				22.0	+0 27.4				2.73528 5.47056		43.2	45.3	4708	43.35				0	29.6				
				38.5	0 29.5				1.25799 0.57131m				−3.73										
−0	0.0	X		45.7	12 45.6				2.68601 5.37202				4531	42.34				12	45.6		45.6		
				52.7	+4 0.1				1.21072 0.47277m	12	45.7	45.6	−2.97					0	0.0				
			18	8.6	−− 0.0				2.62149 5.24298				4462	42.41									
−0	29.7			15.7	13 15.4				1.14620 0.34373m				−2.21					13	15.4		45.8		
				22.0	−0 29.3				2.55775 5.11550		46.1	45.8	4359	41.94				0	29.6				
				38.0	−0 29.6				1.08246 0.21625m				−1.65										
−0	59.4			44.0	18 44.3				2.68690 5.37380				4488	41.90				13	44.3		44.9		
				51.0	−0 0.6				1.21161 0.42455m		43.7	45.0	−2.98					0	59.4				
			14	8.1	−0 59.3				2.75182 5.50364				4620	42.18									
−1	29.8			13.5	14 14.3				1.27653 0.60449m				−4.02					14	14.3		45.0		
				21.2	−0 29.1				2.79761 5.59522		45.2	45.2	2425					1	29.8				
−1	58.7			39.7	−1 29.1				1.32232 0.69597m				−4.96										
				45.5	14 45.9													14	45.9		47.2		
				52.6	−0 58.0						47.9	47.5						1	58.7				
			15	8.0	−1 14.4								43.75										
−2	28.7			13.9	15 13.9								4452					15	14.0		43.4		
				20.0	−2 29.3						44.7	42.3	4534					3	28.6				
				37.3	−2 28.3								4512										
−2	58.5			42.5	15 42.7								4) 178.73					15	42.7		44.3		
				48.3	−2 58.2						44.5	44.4	13 12 44.68					2	58.4				
			16	7.5	−2 58.0																		
−3	28.2			12.2	16 12.6													16	12.6		44.4		
				18.2	−3 28.5						44.1	44.9						3	28.2				
				36.8	−3 27.7																		
−3	57.9			42.5	16 42.1													16	42.1		44.3		
				47.0	−3 56.7					12	45.4	44.8						3	57.8				
					−3 57.3																7 62.4		
−4	27.5									17)	7559	7588								13	12 44.85		
										12	42.11	44.46	44.64										
−4	57.5																						
										1	14	2.24								88	40 28.75		
−5	27.3																						
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1880 Mar 17 ucc

0.11846
8.36433
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h	m	s						
1	3	53.5			R	39	50.28	
	6	12.8			R	39	57.30	
	21	41.4			R	40	24.35	
	24	54.6			R	40	28.82	
	26	21.9			R	40	30.82	
	27	38.8			R	40	30.48	
	30	2.8			R	40	32.25	
	31	41.0			R	40	31.58	
	32	55.5			R	40	32.25	
	34	1.2			R	40	32.80	
	35	5.0			R	40	32.20	
	36	3.7			R	40	32.18	

	m	s			
	25	19.4			
		20.6	25 20.7		
		26.2	-10 23.9	14 56.8	
	26	44.5			
		51.2	26 50.8		
		56.8	-11 53.2	14 57.6	
	28	17.0	1		
		21.0	28 22.5		
		26.6	-13 22.4	14 59.1	
	29	43.0	49.0		
		48.8	29 ~~56.9~~		
		53.1	-14 52.2	14 56.8	
				230.3	
			1	14 57.58	

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			h m s			m s									s										
			1 8 40.2			58 35.9	+14 9.9					R	2	5060	2 24.76										
+1	58.1		44.0	8 44.4			+849.9							−2584											
			49.0	3 56.6		0 8.0	12 37.8	12	(41.0)	(41.9)		W	2	4915	2611		8	44.4	12	~~42.3~~					
			54.0	43 57.5			+757.8							−2304			+3	57.9							
		9	14.0																						
+1	28.2		17.8	9 18.9		1 58.1	10 47.7					R	2	4858	2389		9	18.9		47.1					
			25.0	3 27.2			+647.7		46.1	46.6				−1969			3	28.2							
			43.0	3 27.2								W	2	3960	2201										
+2	58.3		47.7	9 48.4		3 7.3	9 38.5							−1759			9	48.2		46.4					
			53.8	2 57.9			+578.5																		
						3 57.1	8 48.7		46.1	46.0		R	2	3958	23.51		2	58.2							
		10	14.0	2 57.8			+528.7							−1607											
+2	28.8		16.7	10 17.8		4 52.2	7 53.6					W	2	3545	21.05		10	17.8		46.5					
			22.6	2 28.9			+473.6		46.7	46.2				−1440			2	28.1							
			41.5	2 28.4		5 43.3	7 22.5					R	2	3365	20.84										
+1	58.9		46.9	10 47.4			+422.5							−1284			10	47.4		46.3					
			53.7	1 57.4		6 36.7	6 9.1		44.8	46.0		W	2	2903	17.81		1	58.9							
		11	11.5	1 58.6			+369.1							−1122											
+1	19.1		15.6	11 15.3		7 27.2	5 18.6					W	2	2778	18.09		11	15.3		44.3					
			18.7	1 28.6			+318.6		43.9	44.1				−969			1	29.0							
			42.6	1 28.8		21 6.2	−8 20.4					W	1	722	22.43										
+0	59.4		48.2	11 48.6			−500.4							+ 1521			11	48.6		47.9					
			54.9	0 58.2		22 39.3	9 53.5					R	1	398	22.02		0	59.3							
		12	9.0	0 59.2			−593.5		46.8	47.8				+ 1804											
+0	29.6		12.5	12 12.5		23 33.0	10 47.2					W	1	052	20.20		12	12.5		~~42.1~~					
			16.0	0 27.4			−647.2		(39.9)	(42.0)				+ 19.68			0	29.6							
			41.5	0 29.5																					
−0	0.0	X	46.8	12 46.7													12	46.7		46.7					
			51.7	0 0.1					46.8	46.7							−0	0.0							
		13	9.5	0.0																					
−0	29.7		13.0	13 14.3		2.92937	5.85874						2	24.76	2 15.64		13	14.3		44.7					
			20.5	0 29.3		1.41223	0.95976		45.0	44.7				−9.12			−0	27.6							
			39.9	0 29.6		2.87955	5.75910							2611	18.86										
−0	57.4		44.0	13 45.1		1.36243	0.86012							−7.25			13	45.1		45.1					
			51.4	0 0.6		2.81137	5.62274		44.5	45.8				2389	18.60		−0	57.4							
		14	9.3	0 59.3		1.29425	0.72376							−52.9											
−1	29.3		13.0	14 13.0		2.76230	5.52460							2201	17.79		14	13.0		43.7					
			16.6	0 29.1		1.24518	0.62562							−422			−1	29.3							
			40.0	1 29.8		2.72321	5.44642		43.9	43.9				2351	19.98										
−1	58.7		44.4	14 44.8		1.20609	0.54744							−353			14	44.8		46.1					
			50.1	0 58.0		2.67541	5.35083		46.8	46.4				2105	18.22		−1	58.7							
		15	9.3	1 58.4		1.15829	0.45184							−283											
−2	28.7		12.6	15 14.4		2.62583	5.25166							20814	18.59		15	14.4		45.8					
			21.3	0 29.3		1.10871	0.35268		45.1	46.1				−2.25			−2	28.6							
			43.4	2 28.3		2.56714	5.13428							1787	16.09										
−2	58.5		47.8	15 48.1		1.05002	0.23530							−1.72			15			~~49.7~~					
			53.0	2 58.2		2.50325	5.00650		(49.9)	(50.1)				1809	16.81		−2	58.4							
		16	7.0	2 58.0		0.98613	0.10752							−1.28											
−3	28.2		12.9	16 13.1		2.69932	5.39864							2243	19.27		16	13.1		47.9					
			19.5	2 28.5		1.18220	0.49966		44.6	45.4				−3.16			−3	29.2							
			36.0	3 27.7		2.77342	5.54684							2202	17.58										
−3	57.9		41.0	16 42.4		1.25630	0.64786							−4.44			16			44.6					
			50.2	3 56.7		2.81104	5.62208		45.7	45.1				2020	14.91		−3	57.8							
		17	10.0	3 57.3		1.29392	0.72310							−5.29											
−4	27.5		15.0	17 15.3													17	15.3		47.9					
			21.0	3 27.2					48.1	48.4							−4	27.4							
			39.7	4 26.9																					
−4	57.5		45.0	17 44.1													17	44.1		46.7					
			47.6	4 56.0					12 48.1	47.3							−4	57.4							
				4 56.8					~~48.58~~	~~47.6~~										735.3					
−5	27.3								16) 45.46	46.25								1		12 45.96					
									12 7330	7365										4612					
									45.81	46.03										45.74					
				1 14		0.13									88		40	26.60		46.00					
																				137.86					
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48° 40' 26.4

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h	m	s	h	m	s										
1	8	51.3	1	6	1.2	8	548			R	39	5702	40 1336	40 16.86	
		56.9	6 56.3				534.2	2.72440				1624	+860		5.45540
	9	0.6		19	44.2	-4	492	1.21058		R	40	2578	1497	18.04	0.55642
	9	24.3					289.2	2.46120				-889	+105		4.92240
		28.4	9 29.3	21	16.4	-6	214	0.94408		R	40	2580	1420	16.03	0.02342
		35.3					381.4	2.58138				-1160	+183		5.16276
		52.7		22	23.3	-7	283	1.06428		R	40	3005	1642	18.96	0.26378
9	57.98	10 0.6	9 59.0				448.3	2.65157				-13.63	+254		5.30314
9	57.98	3.7		24	4.4	-9	94	1.13445		R	40	3015	1345	17.26	0.40416
		19.9					549.4	2.73989				-1670	+381		5.47378
		29.4	10 27.2	25	37.7	-10	427	1.22277		R	40	3092	1138	16.59	0.58080
		32.4					642.7	2.80801				-1954	+521		5.61602
		47.6		26	43.5	-11	485	1.29089		R	40	3258	1104	17.37	0.71704
	11	1.2	10 58.1				708.5	2.85034				-2154	+633		5.70068
		5.4		28	39.5	-13	445	1.33322		R	40	3365	858	17.16	0.80170
		—					824.5	2.91619				-2507	+858		5.83238
		—	11 27.0	30	50.5	-15	555	1.39907		R	40	3400	495	16.47	0.97340
		—					955.5	2.98023				-2905	+1152		5.96046
		33.0		32	5.1	-17	101	1.46311		R	40	3410	278	16.17	1.06148
		36.5	11 57.3				1030.1	3.01288				-3132	+1339		6.02376
	12	2.5						1.49576							1.12678
		20.0													
12	28.84	28.4	12 26.5												
12	28.84	31.0													
		49.2													
		55.7	12 55.4												
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		57.3	13 57.2												
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14	55.30 ~~53.90~~	52.6	14 57.2												
14	58.30	56.9													
	15	19.2													
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17	24.58	30.2													
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9.54043	1564.3	39.08	
	+534.3	39 57.02	
	-955.5	40 34.00	
	1485.7	36.98	
	+534.2	39 57.02	
	-824.5	40 33.65	
	1358.9	36.63	
3.18432	3.17310	3.13312	
2.93495	2.91357	2.69358	
1.78937	1.75953	1.56384	
8.83435	8.85540	8.89025	
		4° 26' 28"	

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1880 Mar 22 UC

	1	22 31.0	R	39	43.12
+ 58.		25 35.9	R	39	40.55
+3 28.		27 10.0	R	39	56.15
		28 53.8	R	40	26.88
+2 58.		33 3.5	R	40	29.72
+2 28		34 13.0	R	40	30.60
		35 21.4	R	40	30.80
+1 58			R	40	32.68
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+0 59					
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	25	12.8		
		17.6	25 17.9	
−0 0.		23.2	−10 23.9	14 54.0
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	26	43.3		
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−0 59.		52.7	−11 53.2	14 55.2
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1 13 58.79   88 40 25.35

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+5 57.7

+14 39.2
+8792
13 5.4
+7854

+14 56.5

+700.3

+6 01.1

+5 18.2

7 29.3
+449.3

+391.7

-6 11.6
-371.6

-6 22.5

-684.6

-745.7

13 23.8
-803.8

+14 21.7
861.7

+14 53.7

2.944409 5.88818

1.42706 0.98929
2.89509 5.79018
1.37806 0.89129
2.84528 5.69056
1.32825 0.79167

2.78611 5.57222
1.26908 0.67333
2.71450 5.42900
1.19747 0.53011
2.65254 5.30508

1.13551 0.40619
2.59295 5.18590
1.07592 0.28701
2.57008 5.14016
1.05305 0.24127

2.79414 5.58828
1.27711 0.68939
2.83544 5.67088
1.31841 0.77199
2.87256 5.74572

1.35553 0.84623
2.90515 5.81030
1.38812 0.91141
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1 32.3 +13 28.4

2 54.2 +11 59.6

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5 58.9 +8 56.8

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9 51.2 | 53 14.8 | 21 41.1 | R 39 1800

+4 57.5 | 58.8 | 9 57.8 | 9 57.8 | 14 55.2
10 3.5 | +4 56.4 | 54 33.5 | 20 22.4 | 14 54.2 | 54.6 | R 39 2358 | 4 57.4 | 54.6

+4 27.5 | 24.9 | +4 56.8
29.5 | 10 29.8 | 55 39.2 | 19 16.7 | R 39 2605 | 10 29.8 | 57.2
34.9 | −4 27.9 | 57.7 | 56.7 | 4 27.4 | 55.8
53.2 | 4 26.9 | 56 37.4 | 18 18.5 | R 39 2812
3 57.9 | 58.6 | 10 58.8 | 10 58.8 | 56.6

11 4.5 | −3 57.1 | 0 25.3 | 14 30.6 | 55.9 | 56.1 | R 39 4180 | 3 57.8 | 53.3
22.2 | 3 57.3
3 28.2 | 26.5 | 11 26.7 | 1 47.0 | 13 8.9 | R 39 4572 | 11 26.7 | 54.9
31.3 | −3 27.4 | 54.1 | 54.4 | 3 28.2
55.4 | 27.7 59.2 | 1 46.9 | 13 9.0

2 58.5 | 59.1 | 11 ~~58.6~~ | 11 59.2 | 57.6
12 3.2 | −2 57.0 | 56.2 | 56.2 | 2 58.4
22.6 | 2 58.0
2 28.7 | 27.0 | 12 27.8 | 12 27.8 | 55.4
— | 33.8 | −2 27.9 | 55.7 | 56.1 | 2 28.6

— | 52.0 | 2 28.3
1 58.7 | — | 56.5 | 12 57.0 | 12 57.0 | 55.7
27.6 | 13 2.4 | −1 58.9 | 14 55.9 | 55.4 | 1 58.7
2.57 29. | 33.1 | 18.6 | 1 58.4
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5 54.6 | 28.5 | −0 31.4 | 14 57.9 | 56.1 | .0 29.6
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+ 4.3 | 8) 44.76 | 44.56
14 55.95 | 55.70 | 1 14 55.67

53.45
53.94
2) 111.39
1 14 55.69

1 13 58.20 | 88 40 24.73

a + 1
1 32.6 | +13 23.3 | +13 22.0 | 14 54.6
3 2.3 | 11 53.6 | 11 53.5 | 14 55.8
5 59.5 | 8 56.4 | 8 54.8 | 14 53.3

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1880 Mar 25 UC

	9.11846 / 8.36460 / 8.48306		6.73660 / 8.36460 / 5.10120
m s			
20 58.7	+53 51.6	40	2990
22 11.4	52 38.9	40	3120
22 58.0	51 52.3	40	3300
24 0.9	50 49.4	40	3288
25 29.5	49 20.8	40	3490
26 55.2	47 55.1	40	3638
29 6.7	45 43.6	40	3860
30 12.9	44 37.4	40	3712
31 22.4	43 27.9	40	3705
32 18.4	42 31.9	40	4482

46.40 — A 123-5 — 23 39.8, 46.4, 53.0; 25 11.0, 16.7, 22.3

16.67

43.67 — 26 39.2, 43.5, 48.3

46.93 — 29 41.8, 47.3, 51.7

	16 s 12.7						
-1 29.1	17.0 16 18.1; 24.6 -1 30.4; 44.2 -1 28.8		14 47.7	49.3		16 18.1 / -1 28.9	14 49.2 / 51.7
-1 58.9	48.9 16 49.3; 54.7 -1 59.6; 17 14.6 -1 58.6		14 49.7	50.7		16 49.3 / -1 58.8	50.5 / 52.9
-2 28.8	20.2 17 19.9; 25.0 -2 27.9; 42.7 -2 28.4		14 52.0	51.5		17 19.9 / -2 28.6	51.3
-2 58.3	50.2 17 49.7; 54.3 -2 49.1	1 13 58.97	14 51.0	51.3		88 / 17 49.1 / -2 58.0	40 24.38 / 51.1
-3 28.2	18 12.6 -2 58.1 -2 57.8; 18.5 18 17.8; 22.2 -3 30.1; 42.0 -3 27.7		14 47.7	50.1		18 17.8 / -3 27.9	49.9 / 50.6
-3 58.1	47.5 18 47.5; 52.9 -3 58.1; 19 12.0 -3 57.5		14 49.4	50.0		18 47.5 / -3 57.8	49.7 / 54.9
-4 27.8	18.5 19 18.3; 24.5 -4 27.0; 38.7 -4 27.2		14 51.3 / 50.4	51.1	a - 1	19 18.3 / -4 27.5	50.8
-4 57.5	48.5 19 47.5; 55.2 -4 55.5; 20 9.7 -4 56.8		14 52.0 / 47.9	50.7	23 46.4 -8 56.1; 25 16.7 10 26.4	19 47.5 / -4 57.1	50.4
-5 27.5	16.7 20 16.5; 23.2 -5 26.0; 42.2 -5 26.6		14 50.5 / 46.1	49.9	26 43.7 11 53.4	20 16.5 / -5 27.0	49.5
-5 57.3	47.7 20 47.7; 53.2 -5 55.6; -5 56.4		14 52.1 / 49.0 / 50.00	40.62 51.3	29 46.9 -14 56.6	20 47.7 / -5 56.8	50.9 / (14) 713.4
		10)	50.00 50.77 / 34 / 66	50.59	-8 54.7	14 51.7	14 50.96
			14 50.34	50.59	10 23.8	14 52.9	51.12
					11 53.1	14 50.6	51.24 / 50.40
							3) 152.76
					14 52.0	14 54.9	14 50.92

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1880 Mar 25 SC.

+

0·11846
8·36460 m
8·48306 n

6·73660
8·36460 m
5·10120 n

				h	m	s																	
58.1				13	8	42.1	8	47.4	59	38.3	+13	7.4					R	1	5268	8	47.4	12	45.2
+5 57.3						47.5	+3	56.6					12	44.0	44.9					+3	57.8		
28.2						52.7	+3	57.5	0	56.4	11	49.3					R	1	4635				
27.5					9	13.2																	
						17.2	9	17.8	1	57.2	10	48.5					R	1	4385	9	17.8		45.7
						23.0	+3	27.2						45.0	45.5					3	27.9		
						43.2	3	27.7	3	2.5	9	43.2					R	1	4035				
2 58.3						48.4	9	49.0												9	47.0		47.0
						55.5	+2	57.9	4	23.1	8	22.6		46.9	46.8		R	1	4162	2	58.0		
						—	2	57.8															
						—			5	25.7	7	20.0					R	1	3426				
						—																	
					10	39.7			6	28.9	6	16.8					R	1	3102				
+1 58.9						46.7	10	46.8												10	46.8		45.6
						53.9	-1	57.4	7	32.2	5	13.5		44.2	45.4		W	1	2842	1	58.8		
					11	14.2		(18.0)	58.6														
1 29.1						17.5	11	17.9												11	18.0		46.9
						22.2	-1	28.6						46.6	46.8					1	28.9		
						41.0	1	28.8															
0 59.4						45.8	11	46.1												11	46.1		45.4
						51.5	-0	58.2						44.3	45.3					0	57.3		
					12	10.7	0	59.2															
+0 29.6						15.5	12	16.2												12	16.2		45.7
						22.3	-0	27.4						43.6	45.7					0	29.5		
						43.0	0	29.5															
-0 0.0					X	46.4	12	46.7												12	46.7		46.7
						50.6	—	+ 0.1						12 46.8	46.7					-0	0.0		
					13	10.5	0	0.0															
-0 29.7						16.9	13	16.6												13	16.6		47.0
						22.4	—	2.3						47.3	47.0					-0	29.6		
						42.0	-0	29.6															
-0 59.4						45.2	13	46.3												13	46.3		46.9
						51.8	—	0.6						45.7	47.0					-0	59.4		
					14	10.2	-0	59.3															
-1 29.3						14.5	14	16.0												14	16.0		46.9
						23.4	—	2.9						46.9	46.9					-1	29.1		
						40.0	-1	29.1															
-1 58.4						43.0	14	45.5												14	45.5		46.9
						51.6	—	5.8						47.5	47.1					-1	58.6		
					15	8.5	-1	58.4															
-2 28.4						13.5	15	13.5												15	13.5		45.0
						18.5	—	2.3						44.2	45.2					-2	28.5		
						39.4	-2	28.3															
+2 58.5						45.0	15	45.1												15	45.1		46.9
						50.8	—	5.8						46.9	47.1					-2	58.2		
					16	8.0	-2	58.0															
-3 28.2						14.8	16	14.0												16	14.0		46.1
						19.2	—	2.8						45.5	46.3					-3	27.9		
						38.3	-3	27.7															
-3 57.9						42.2	16	42.9												16	42.9		45.3
						48.3	—	5.6						46.2	45.6					-3	57.6		
					17	8.2	-3	57.3															
-4 27.5						12.7	17	12.6												17	12.6		45.4
						17.0	—	2.2						45.4	45.7					-4	27.2		
						36.5	-4	26.9															
-4 57.5						40.3	17	41.2												17	41.2		44.1
						46.7	—	5.6						12 45.2	44.4					-4	57.1		828.9
							4	56.8					18)	12 8222	8294								
														45.68	46.08						13	12	46.04
				1	13	57.89														88	40	24.21	
																							45.97
																							46.06
																							46.54
																							45.56
																							4)184.13
																							13 12 46.03

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1880 Mar 26 UC

0.11846
8.36460
8.48306

6.73660
8.36460
5.10120

R	39	36.15	
R	39	42.13	
R	39	45.95	
R	39	48.80	
R	39	53.05	
R	39	58.08	
R	40	2.53	
R	40	30.75	
R	40	31.50	
R	40	33.65	
R	40	33.98	
R	40	34.85	
R	40	35.42	
R	40	35.98	
R	40	36.92	
R	40	36.92	
R	40	38.40	
R	40	39.02	

1 13 57.80

. 88 40 24.03

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1880 Mar 30 UC

0.11846
8.36469
8.48315

6.73660
8.36469
5.10129

h	m	s		m	s											
	7?	54.0		52	22.4	+22	31.6				R	39	2148			
		58.1	7? 58.2					54.7	56.7	55.0				>	58.2	13 55.4
	8	2.5	+7 58.5	54	0.5	20	53.5	54.2			R	39	2738	5	57.2	
		19.6	+5 56.8													
		25.8	8 26.1	55	22.1	19	31.9	52.1	52.1	52.6	R	39	3148	8	26.1	53.9
		32.8	-5 26.0					52.5						5	26.8	
		50.0	5 26.5	56	51.9	18	2.1				R	39	3872			
		54.8	8 55.1											8	55.1	52.2
	9	0.4	+4 56.4	58	26.3	16	27.7	23.0	51.5	51.9	R	39	4255	4	57.1	
		23.1	4 56.8													
		27.3	9 27.3	0	31.4	14	22.6				R	39	4823	9	27.3	54.5
		31.5	-4 27.9					24.4	55.2	54.2				4	27.2	
		50.8	4 26.9	1	33.9	13	20.0				R	39	5208			
		55.5	9 54.9											9	54.9	52.5
		58.3	-3 57.1	2	42.0	12	12.0	22.3	52.0	52.2	R	39	5555	3	57.6	
	10	19.0	3 57.3													
		25.8	10 25.6	3	48.8	11	5.2				R	40	388	10	25.6	53.5
		31.9	-3 27.4					22.6	53.0	53.3				3	27.9	
		51.2	3 27.7	6	11.0	8	43.0				R	40	070			
		2.5		22	7.0	-7	13.0				R	40	450			
				23	31.3	8	37.3				R	40	3210			
				24	30.7	9	36.7				R	40	3392			
				25	30.3	10	36.3				R	40	3420			
				26	35.3	11	41.3				R	40	3470			
											R	40	3600			

5367
5437
5418
3) 16222
1 13 5407

	15	45.9														
		52.8	15 52.6					14 54.9	53.9	53.4				15	52.6	53.3
		59.0	-0 58.7					56.6						-0	57.3	
	16	17.5	-0 59.2													
		24.0	16 23.8											16	23.8	54.9
		30.0	-1 30.4					28.3	53.4	53.0				-1	28.9	
		47.0	1 28.8													
		52.5	16 53.0											16	53.0	54.2
		59.4	-1 59.6					26.0	53.4	54.4				-1	58.8	
	17	16.5	-1 58.6	1	13	57.73								88	40 22.75	
		22.1	17 22.7											17	22.7	54.1
		29.6	-2 27.9					24.6	54.8	54.3				-2	28.6	
		49.0	2 28.4													
		52.7	17 53.2											17	53.2	53.2
		58.0	-2 58.1					23.1	55.1	53.4				-2	58.0	
	18	17.0	2 57.8													
		21.4	18 22.4											18	22.4	54.5
		28.7	-3 30.1					24.3	52.3	54.7				-3	27.9	
		46.6	3 27.7													
		52.0	18 51.9											18	51.9	54.1
		57.2	-3 58.1					24.0	53.8	54.4				-3	57.8	
	19	15.7	3 57.8													
		21.7	19 21.8											19	21.8	54.3
		28.0	-4 27.5					22.2	54.8	54.6				-4	27.5	
		46.0	4 27.2													
		49.6	19 50.7											19	50.7	53.6
		56.6	-4 55.6					20.3	55.2	53.9				-4	57.1	
	20	15.7	4 56.8													
		21.8	20 21.6											20	21.6	54.6
		27.2	-5 26.0					22.9	55.6	55.0				-5	27.0	
		46.3	5 26.6													
		51.1	20 51.1											20	51.1	54.3
		56.0	-5 55.6					23.3	55.5	54.7				-5	56.8	
			5 56.4					4046 3560								919.1
								17) 23.807 9183		9160				1	13 54.06	
								14 54.02		53.88						

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1880 Mar 31 LC

Examine

0.11846
8.36478
8.48324

6.73660
8.36478
5.10138

h	m	s		m	s				
	8	1.2		59	23.2		R	1	46.80
		7.3	8 7.3						
		13.3		0	38.0		W	1	41.80
	9	43.9							
		47.0		1	35.0		R	1	40.18
		52.2							
		58.2		2	37.2		W	1	36.38
	10	17.2							
		21.1	10 22.1	3	20.9		R	1	4.78
		29.1							
		44.0		4	33.5		W		30.78
		50.6	10 50.3						
		56.4		5	21.5		R		29.
	11	16.7							
		19.8	11 20.6	23	8.5		W		25.88
		25.2							
		42.3		24	19.5		W	0	57.20
		50.2	11 49.7						
		56.5		25	29.1		R	0	53.22
	12	12.8							
		20.4		26	44.5		W	0	53.20
		24.0							
		25.9		28	0.4		R	0	54.30
		42.3							
		45.2		28	50.0		W	0	53.38
		48.6							
		54.7					W	0	52.02
	13	15.2							
		18.6	13 19.6						
		25.1							
		41.5							
		43.4							
		48.5							
		55.3							
	14	14.2							
		18.0	14 19.2						
		25.4							
		44.6							
		48.8	14 49.7						
		55.7							
	15	13.9							
		19.2	15 19.4						
		25.0							
		44.3							
		48.5	15 48.7						
		53.3							
	16	13.3							
		17.4	16 17.9						
		23.0				1 13 57.77			.88 40 22.36
		40.0							
		46.0	16 46.6						
		53.7							
	17	12.6							
		17.0	17 17.7						
		23.4							
		34.7	37.0						
		37.0	17 ~~36.9~~						
		39.2							
		45.8							
		50.0	17 49.6						
		53.0							

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1880 Apr 1 UC

0.11846
8.36478
8.48324

6.73660
8.36478
5.10138

Identical

h	m	s		m	s					R	′	″
1				54	11.9					R	39	24.70
				55	45.0					R	39	31.12
				56	55.3					R	39	36.12
				58	6.3					R	39	39.00
				59	17.3					R	39	42.38
	9	10.3										
		15.0	9 14.6	21	16.0					R	40	30.62
		18.4	+4 27.9				13	42,5	41.5			
			+4 26.9	22	52.8					R	40	30.88
	15	49.4										
		56.2	15 55.4				14	56.7	56.2			
	16	0.5	-0 58.7					29.4				
		25.0	-0 58.2									
		26.2	16 26.2								55.46	
		27.3	-1 30.4					30.7	57.4			
		45.1	-1 28.8	1	13	57.76		55.8		1	14 55.46	88 40 22.18
		52.0	16 51.0									
		56.0	-1 59.6					24.0	52.4			
			-1 58.6					51.4			54.78	
											56.14	
										3)	110.92	
										1	14 55.46	
	18	3.4										
		4.3	18 4.2									
		5.0	-2 58.1					34.1				
			-2 57.8				15	6.1	6.4			
	18	56.0										
		56.7	18 56.6									
		57.1	-3 58.1					28.7				
	19	18.0	-3 57.5					58.5	59.1			
		22.8	19 23.6									
		30.0	-4 27.0					24.0				
		44.0	-4 27.2					56.6	56.4			
		48.2	19 47.8					52.3				
		51.1	-4 55.5					17.4	51.0			
	20	16.2	-4 56.8									
		21.4	20 22.0						55.4			
		28.4	-5 26.0					23.3	58.8			
		50.5	-5 26.6					56.0	23.90	1875	55.46	
		54.4	20 55.2					59.6	26.56	79	55.46	
	21	0.6	-5 55.6					27.4	10) 55.55			
			-5 56.4						55.55			

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– 1880 Apr 2 UC

U. 11846
8.36478
848324

6.73660
8.36478
5.10138

m	s		W	′	″
24	45.9	+49 39.8	W	40	43.40
27	43.5	46 42.2	W	40	33.45
29	31.7	44 57.0	W	40	37.88
31	26.8	42 58.9	W	40	37.50
33	45.5	40 40.2	W	40	38.82

55.16
55.70
56.08

3) 167.14
14 55.71

	m	s						
	11	21.2						
		26.6	11 26.6					14 54.3
		32.1	–3 27.4		23.8			
		51.5	+3 27.7					57.0
		59.9	11 59.0					
	12	5.6	–2 57.2		26.7			
		16.2	2 58.0					
		26.6	12 25.9					54.2
		34.9	+2 27.7		23.6			
		48.2	2 28.3					
1 58.4		59.5	12 57.6					56.0
	13	5.0	+1 57.7		26.7			
		18.5	1 58.4					
+1 29.1		25.8	13 25.2					54.3
		31.2	+1 29.1		24.2			
		46.9	1 29.1					
+0 59.3		56.4	13 55.8					55.1
	14	4.0	–0 59.0		26.1			
0 0.0			0 59.3					
–0 29.5								
	15	47.5						
–0 59.2		57.4	15 57.0					57.8
	16	6.2	–0 59.2		27.9			
		14.6	–0 59.2					
–1 28.8		22.0	16 22.4					53.6
		30.5	–1 29.1	1 13	57.74	23.5	58 40	21.91
–1 58.6		48.1	–1 28.8					
–2 28.4		56.6	16 56.2					57.6
	17	4.0	–1 58.0		27.8			
		18.8	–5 58.6					
		32.7						
–2 57.8		48.6						
		54.5						
	18	14.9						
–3 27.7		24.5	18 23.2					55.5
		30.3	–3 27.1		25.4			
		48.6	–3 27.7					
–3 57.5		54.3	18 57.0					56.5
		59.2	–3 57.8		26.9			
	19	14.0	–3 57.5					
–4 27.2		21.5	19 22.3					55.1
		31.5	–4 27.1		25.3			
		46.4	–4 27.2					
–4 56.8		57.4	19 55.9					59.1
	20	3.8	–4 57.0		(30.5)			
		14.0	–4 56.8					
–5 26.6					~~33.84~~ 30.79			
					~~26.03~~ 25.66			
		43.3	5 26.6					2
–5 56.4		49.4	20 50.6					54.2
		59.0	–5 56.2					
			–5 56.4					779.8
								14 55.70

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12

1880 Apr 4 UC

0.11846
8.36487
8.48333

6.73660
8.36487
5.10147

	h	m	s		m	s			′	″
	1	9	55.2		4	54.7	R	39		43.83
			59.1	9 59.2						
		10	3.4	4 27.1	9	51.9	W	39		55.28

14 26.3

$A_1 - 3_2$

12	57.3		
13	2.0	13 2.2	
	7.2	29.1	

14 31.3

2) 57.6
1 14 28.8

4 36.1
39.20 39.5
42.0

$A_1 - 4_4$

1 13 57.62

88 40 21.36

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1880 Apr 5 LC

0.11846
8.3648 m
8.48333 n

6.73660
8.36487 m
5.10147 n

∫ 88 40 21.0

h	m	s		m	s										
13	6	40.6		59	8.3	13	34.7			W	1	4325	1 1846	~	
		43.8	6 44.9				814.7	2.91100				− 3479	− 8.38	1 10.08	5.82200
		50.2	–	0	26.6	12	16.4	1.39433		R	1	3990	1749		0.92347 n
	7	9.5					736.4	2.86711				− 2241	− 685	10.64	5.73422
		14.0	7 14.2	1	44.0	10	59.0	1.35044		W	1	3473	14.68		0.83569 n
		19.0	–				659.0	2.81859				− 2005	− 549	9.19	5.63778
		41.0		2	50.9	9	52.1	1.30222		R	1	3253	1451		0.73925 n
7 45.36		46.5	7 46.5				592.1	2.74240				− 1802	− 443	10.08	5.54480
7 45.36		52.0	–	4	0.5	8	42.5	1.25573		W	1	2915	1325		0.64627 n
	8	10.5					522.5	2.71809				− 1570	− 345	9.80	5.43618
		14.4	8 15.0	5	3.5	7	39.5	1.20142		W	1	2525	1127		0.53765 n
		20.2	–				459.5	2.66229				− 1398	− 267	8.60	5.32458
		39.4		5	50.3	6	62.7	1.14562		W	1	2400	1144		0.42605 n
		46.4	8 46.2				412.7	2.61563				− 1256	− 215	9.29	5.23126
		52.6	–	6	28.4	6	1.46	1.09896		W	1	2380	1240		0.33273 n
	9	11.0					374.6	2.57357				− 1140	− 177	10.63	5.14714
		15.0	9 15.7	24	14.4	-11	31.4	1.05690		W	0	5453	1587		0.24861 n
		21.0	–				691.4	2.83973				+ 2104	− 604	9.53	5.67946
		40.3		25	26.2	-12	43.2	1.32306 n		R	0	5343	1666		0.78093 n
		44.0	9 44.6				763.4	2.88275				+ 2323	− 736	9.30	5.76550
		49.5	–	26	3.0	-13	2.0	1.36608 n		W	0	5223	1658		0.86697 n
	10	7.6					800.0	2.90309				+ 2495	− 808	8.50	5.80618
10 14.32		12.3	10 13.2	26	48.3	-14	5.3	1.38642 n		W	0	5140	1712		0.90765 n
10 14.32		19.7	–				845.3	2.92701 n				+ 2572	− 903	8.09	5.85402
		35.9						1.41034 n		R	0	5050			0.95549 n
		42.8	10 43.3												
		51.2	–												
	11	8.9													
		15.5	11 14.8						8.36487				+814.7	1 4325	
		20.0	–						1.17609				−845.3	0 5050	
		35.7							9.54096				1660.0	2.75	
		45.0	11 44.3											52.45	
		52.3	–												
	12	7.4													
		13.0	12 13.4										+1364	1 38.80	
		19.7	–										−800	0 5140	
		37.4											1536.4	48.50	
12 43.14		48.2	12 43.9												
12 43.14		54.0	–												
	13	5.6											6580	1 34.73	
		10.4	13 10.7										7654	0 5223	
		16.0	–										14224	42.50	
		38.0													
		43.5	13 43.4												
		48.6	–												
	14	6.0	7												
		12.2	14 12.6									3.22010	3.18650	3.15302	
		19.8	–									2.96107	2.92946	2.89358	
		36.2										1.71974	1.68574	1.62839	
		40.9	14 41.6									8.55869	8.95828	8.93441	
		47.7	–												
15 11.62	15	7.2										5.1144	5.1125	4.5452	
15 11.62		12.2	15 12.4												
15 17.62		17.7	–										55	47	
		340													
		39.4	15 39.8												
		46.0	–												
	16	7.5													
		11.0	16 11.6	1 13		1 13		57.50					88 40 20.89		
		16.5	–												
		37.9													
		41.8	16 42.3												
		47.2	–												
	17	6.7	10.0												
		9.6	17 7.7												
		13.6	–												
17 40.26			17 40.0												
17 40.36															
			18 10.5												
			18 39.0												
12 42.952			12 42.952												

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1880 Apr 7 LC

0.11846
8.36496m
8.48342m

6.73660
8.36496m
5.10156m

h	m	s		m	s										
			6 42.0								'	"			
	13	7		38	52.0	13	48.1			W	1	47.10	21.89	1 13.23	
			7 12.0				828.1	2.91808				−25.21	−8.66		5.83616
		34.7		59	55.0	12	45.1	1.40150m		R	1	44.78	21.49	14.09	0.93772m
7 42.22		43.3	7 42.2				965.1	2.88342				−23.29	−7.40		8.76744
7 42.22		48.6		1	12.0	11	28.1	13.67714m		W	1	40.90	19.96	13.99	0.86900m
	8	6.4					686.1	2.83765				−20.94	−5.97		5.67430
		13.5	8 12.9	1	58.8	10	41.3	1.32107m		R	1	38.28	18.76	13.56	0.77586m
		18.7					641.3	2.80706				−19.52	−5.20		5.61412
		34.9		3	4.3	9	35.8	1.29048m		W	1	34.90	17.37	13.18	0.71568m
		42.8	8 42.0				575.8	2.76027				−17.53	−4.19		5.52054
		48.4		3	51.6	8	48.5	1.24369m		W	1	33.28	17.19	13.66	0.62210m
	9	5.4					528.5	2.72304				−16.09	−3.53		5.44608
		11.6	9 11.4	4	30.0	8	10.1	1.20646m		R	1	32.08	17.16	14.13	0.54764m
		17.2					490.1	2.69028				−14.92	−3.03		5.38056
		37.5		5	31.0	7	9.1	1.17370m		W	1	29.53	16.47	14.14	0.48212m
		42.5	9 42.9				429.1	2.63256				−13.04	−2.33		5.26512
		48.7		18	51.3	−6	11.2	1.11598+m		W	1	3.30	14.60	12.86	0.36668m
	10	6.7					371.2	2.56961m				+11.30	−1.74		5.13922
10 11.76		10.8	10 12.4	19	45.4	−7	8.3	1.05303+m		R	1	2.08	15.03	12.74	0.24078m
10 11.76		19.6					425.3	2.62870m				+12.95	−2.29		5.25740
		38.0		20	50.5	−8	10.4	1.11212+m		W	1	0.43	15.36	12.32	0.35896m
		42.6	10 43.4				490.4	2.69055				+14.93	−3.04		5.38110
		49.5		21	52.0	−9	11.9	1.17397+m		R	1	0.08	16.88	13.03	0.48266m
	11	3.6					551.9	2.74186m				+16.80	−3.85		5.48372
		8.4	11 8.7	22	56.4	−10	16.3	1.22528+m		W	0	57.78	16.54	11.74	0.58528m
		14.1					616.3	2.78979m				+18.76	−4.80		5.57958
		35.1						1.27321+							0.68114m
		41.0	11 41.4												
		48.2													
	12	4.7													
		11.4	12 11.4												
		18.2													
12 41.54		36.3													
		42.2	12 42.0												
12 41.56		47.5													
	13	5.3													
		10.4	13 10.8												
		16.8													
		36.0													
		41.4	13 42.1?												
		49.0													
	14	1.0													
		10.5	14 11.3												
		16.5													
		34.3													
		39.1	14 39.6												
		45.4													
	15	3.2													
15 9.40		6.7	15 8.2			1	13	57.45						88	40 20.22
15 9.40		14.7													
		34.8													
		38.3	15 39.5												
		45.5													
	16	4.0													
		8.3	16 8.4												
		12.8													
		31.2													
		35.4	16 36.3												
		42.2													
	17	2.1													
		8.0	17 7.2												
		13.4													
		31.4													
17 35.60		35.2	17 36.0												
17 35.60		41.5													
		58.7													
	18	4.0	18 4.8												
		11.7													
		28.7													
		32.3	18 32.7												
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12 40.104			12 40.104												

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h m s m s m s h s

0.11846
8.36496
8.48342

6.73660
8.36496
5.10156

Identical

				1	14	51.2			20	40.4	−6	10.5				W	40	36.33	
						57.4	14 576												
				15	4.3	−0 29.3			21	48.0	7	18.1	14	28.3	28.1	R	40	35.80	
					23.0	−0 29.5									29.6				
					27.1	15 27.6			22	38.8	8	8.9				W	40	37.43	
					32.9	−0 59.2	−0 59.2						14	28.5	28.5				
					53.4	58.0			23	45.0	9	15.1			29.7	W	40	37.20	
					57.8	15 57.0													
				16	2.7	−1 29.1			24	25.3	9	55.4	14	28.9	29.2	W	40	38.15	
					23.3	−1 28.8									33.7				
					28.5	16 29.6			25	6.8	10	36.9	14	30.7		R	40	40.05	
					36.9	−1 58.9								31.5	31.0				
					54.1	−1 58.6			26	7.1	11	37.2			32.3	W	40	41.65	
					59.0	16 59.8													
		23	20.7	17	5.7	−2 28.4			27	3.8	12	33.9	14	31.4	31.4	W	40	40.63	
23.87			23.4		24.2	2 28.4									33.4				
			27.5		27.8	17 28.3			28	18.8	13	46.9				W	40	41.63	
		24	48.4		33.0	−2 57.7							14	30.6	30.5				
53.00			52.3		52.5	−2 57.8			29	37.0	15	7.1				R	40	42.53	
			56.3		57.6	17 58.3													
		26	19.4	18	4.7	−3 27.1			31	31.0	17	1.1	14	31.2	30.6	W	40	41.53	
25.17			25.6		21.1	3 27.7													
			30.5		24.4	18 26.0			32	14.0	17	44.1				R	40	41.50	
		27	48.3		32.6	−3 57.8							14	28.2	28.5				
53.80	A−1		54.1		52.0	−3 57.5													
			59.0		56.5	18 56.8											29.02		
		29	20.2	19	2.0	−4 27.1							14	29.7	29.6		32.07		
24.70			24.0		21.2	−4 27.2											29.82		
			29.9		26.2	19 26.9											90.91		
					33.3	−4 57.0							14	29.9	30.1				
26	24.108				49.6	−4 56.8										14	30.30		
					57.5	19 56.6													
				20	2.6	−5 25.4							14	31.2	30.0		5163		
					18.8	−5 26.6										14	30.37		
					27.0	20 26.5													
					33.8	−5 56.2							14	30.3	30.1				
						−5 56.4								5					
														3897	35.89		3573		
													12)	36.81					
													14		29.91		29.77		

1 13 57.48

88 40 20.66

	a − 1				
23	23.9	−8 54.0	−8 54.3	14	29.6
24	53.0	10 23.1	10 23.3	14	29.7
26	25.2	11 55.3	11 52.5	14	33.7
27	53.8	13 23.9	13 21.5	14	32.8
29	24.7	14 54.8	14 51.3	14	33.4

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0.11846
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8.48351

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8.36505
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Identical

h	m	s		m	s									
1	8	21.3		55	34.8	+18 49.8				W	39	2683		
		27.9	8 276											
		33.5	+5 56.3	56	23.0	18 1.6	14	23.9	24.4	W	39	3625		
		38.2	+5 56.8											
		56.6	8 570	57	24.6	17 0.0								
	9	2.2	5 26.4					23.4	23.5	R	39	3785		
		18.6	5 26.5	58	24.2	16 0.4				R	39	4203		
		29.2	9 276											
		35.0	4 56.5	0	12.0	14 12.6		24.1	24.4	R	39	4345		
		55.0	4 56.8											
	10	0.2	10 0.0	1	6.9	13 17.7				W	39	5145		
		4.9	4 26.7					26.7	26.9					
		24.2	4 26.9	2	56.8	11 27.8				R	39	5435		
		28.7	10 29.2											
		34.6	3 57.7	4	15.8	10 8.8		26.9	26.5	W	39	5828		
		48.3	3 57.3											
		53.7	10 5.44	5	49.3	8 35.3				R	40	190		
	11	1.2	3 27.4					21.8	22.1					
		—	3 27.7	6	50.6	7 34.0				W	40	643		
		—												
		—		20	39.9	−6 15.3				W	40	1023		
		—												
		—		27	0.2	12 35.6				W	40	5700		

m	s
2	29.1
	33.6
	37.2
3	59.7
4	3.9
	9.0
5	24.5
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	16	19.7												
		22.7	16 23.1											
		27.0	−1 58.9											
		49.0	−1 58.6	113	57.70		14	24.2	24.5					19.62
									24.0				88	40 20.06
		52.0	16 52.3											
		56.0	−2 28.4					23.9	23.9					
	17	15.5	−2 28.4						25.3					
		21.5	17 21.2											
		26.5	−2 57.7					23.5	23.4					
		46.6	−2 57.8						25.1					
		50.3	17 50.9											
		53.9	−3 27.1					23.8	23.2					
	18	15.0	−3 27.7											
		21.7	18 21.5							at 1				
		47.7	−3 57.8					23.7	24.0	2	33.3	+11 51.9	+14 50.7	17 24.0
		43.1	3 57.5											
		52.0	18 51.0							4	41.2	10 20.4	13 21.1	25.3
		58.0	−4 27.1					23.9	23.8					
	19	18.2	4 27.2							5	32.3	8 52.3	11 52.8	25.1
		22.8	19 23.0											
		25.1	−4 57.0					26.0	26.2					
		47.3	4 56.8											
		52.1	19 52.2											24.63
		57.3	−5 23.4					26.8	25.6					24.20
	20	15.8	5 26.6											25.04
		22.0	20 22.0											
		28.2	−5 56.2				14	25.8	25.6			442.4		3)73.87
			5 56.4											
							15)	368.4	368.0	+ 14		2458	/ 14	24.62
								14 24.66	24.53					

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			Sub 1 mm at noon					0.11846					6.73660	
								8.36505					8.36505	
1880	Apr 9-10		uc					8.48351		·88	40	20	5.10165	
h	m	s		m	s						′	″		
1		—		5	46.8	9	38.2			W	39?	0.00	39 17.60	? 21.82
		—	9 27.0				578.2	2.76208	5.52416			17.60	+ 4.22	
		—		6	0.1	9	24.9	1.24559	0.62581	W	39?	5.83	23.03	27.06
	9	47.9					564.9	2.75197	5.50394			17.20	+ 4.03	
		58.6	9 57.2	8	22.0	-7	3.0	1.23548	0.60559	W	40	33.60	40 20.72	40 22.98
	10	5.0					423.0	2.62634	5.25268			-12.88	+ 2.26	
		20.9		23	45.5	-8	20.5	1.10985	0.35433	W	40	35.65	20.41	23.58
10 27.62		27.5	10 27.6				500.5	2.69940	5.39880			-15.24	+ 3.17	
10 27.62		34.3		26	9.5	-10	44.5	1.18291	0.50045	W	40	37.13	17.51	22.76
		51.3					644.5	2.80922	5.61844			-19.62	+ 5.25	
		58.6	10 59.0	27	58.5	-12	33.5	1.29273	0.72009	W	40	37.13	14.19	21.36
	11	7.1					753.5	2.87708	5.75416			-22.94	+ 7.17	
		19.4		29	27.5	-14	2.5	1.36059	0.85581	W	40	38.75	13.10	22.07
		26.2	11 27.3				842.5	2.92557	5.85114			-23.65	+ 8.97	
		36.3		33	24.5	-17	59.5	1.40908	0.95279	W	40	39.20	6.34	21.07
		51.0					1079.5	3.03322	6.06644			-32.86	+ 14.73	
		59.7	11 58.3	35	27.8	-20	2.8	1.51673	1.16809	W	40	39.43	2.81	21.09
	12	4.3					1202.8	3.08020	6.16040			-36.62	+ 18.28	
		20.5		37	25.1	-22	0.1	1.56371	1.26205	W	40	39.48	39 59.29	21.31
		30.0	12 28.8				1320.1	3.12060	6.24120			-40.19	+ 22.02	
		36.0		41	35.3	-26	10.3	1.60411	1.34285	W	40	36.75	48.94	20.10
		52.5					1570.3	3.19598	6.39196			-47.81	+ 31.16	
12 58.12	13	0.4	12 59.5	44	29.6	-29	4.6	1.67949	1.49361	W	40	34.53	41.42	19.88
12 58.12		5.5					1744.6	3.24170	6.48340			-53.11	+ 38.46	
		21.8		47	14.7	-31	49.7	1.72521	1.58505	W	40	31.70	33.70	19.79
		27.2	13 28.5				1909.7	3.28096	6.56192			-58.00	+ 46.09	
		36.4						1.76447	1.66357					
		49.0												
		55.5	13 55.5											
	14	1.9									578.2			39 0.00
		18.4							8.36496		1909.7			40 31.70
		27.5	14 26.7						1.17609		2487.9			1 31.70
		34.1							9.54105					
		44.5	54.1											
		53.9	14 ~~50.8~~								564.9			39 5.83
	15	4.0									1744.6			40 34.53
		17.9									2309.5			38.70
~~15 23.90~~		26.4	15 25.4											
15 24.56		31.9												
		46.0									423.0			40
		53.6	15 53.4								1570.3			
	16	0.6									3			
		16.8												
		23.2	16 23.2											
		29.5									3.39583		3.36352	
		47.9	~~54.4~~ 3								2.93688		2.90457	
		53.0	16 ~~56.6~~								1.96237		1.94752	
	17	2.3	54.4											
		18.7				1	13	57.70			9.02549		9.01335	88 40 19.62
		25.4	17 25.8											
		33.4									6 3 10		6 18 20	
		43.0												
~~17 52.72~~		54.4	17 53.2											
~~17 53.28~~	18	2.1												
17 53 48		14.0												
		21.1	18 20.9											
		27.7												
		47.3												
		52.8	18 53.1											
		59.2												
	19	15.2												
		21.8	19 21.9											
		28.6												
		46.4												
		53.8	19 54.0											
	20	1.8												
		17.3												
~~20 22.64~~		24.0	20 23.7											
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		48.5	53.0											
		54.5	20 ~~52.9~~											
	21	0.9												
		11.8												
		20.0	21 20.7											
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h	m	s		m	s							
13	7	9.7	~~7 15.5~~	58	34.9	+14	7.0			W	1	4380
		15.5	7 15.5									
		21.2	-5 26.9	59	40.7	13	1.2	12	42.4	R	1	4085
			+5 26.6									
				1	18.1	11	23.8			W	1	3583
	8	8.8		2	9.4	10	32.5			R	1	3313
		15.5	8 15.0									
		20.7	-4 26.8	3	15.6	9	26.3	12	41.8	42.2	W	1	3008
		40.0	4 27.2									
		45.2	8 45.5	3	54.0	8	47.9				R	1	2838
		51.2	-3 56.6					12	42.1	43.0			
	9	8.1	3 57.5	4	59.8	7	42.1				W	1	2523
		13.0	9 13.8									
		20.3	-3 27.2	5	37.5	4	4.4	12	41.0	41.5	W	1	2300
		39.8	3 27.7									
		43.8	9 44.4	22	35.5	-9	53.6				W	0	5403
		49.5	-2 57.9					12	42.3	42.2			
	10	7.0	2 57.8	23	37.5	10	55.6				R	0	5290
		14.5	10 13.8										
		20.0	-2 28.9	24	37.7	11	55.8	12	42.7	42.2	W	0	5768
		39.2	2 44.0 28.4										
		42.8	10 ~~43.9~~	25	17.1	12	35.2				R	0	5718
		49.9	-1 57.4					12	41.4	42.6			
	11	7.2	-1 58.6	26	22.2	13	40.3				W	0	5075
		12.7	11 12.9										
		18.7	-1 28.6	27	7.2	14	25.3	12	41.5	41.7	R	0	5013
		38.0	1 28.8										
		43.3	11 43.3	28	11.5	15	29.6				W	0	4938
		48.7	-0 58.2					12	41.5	42.5			
	12	5.9	0 59.2	28	56.8	16	14.9				W	0	4885
		11.3	12 11.5										
		17.4	-0 27.4										
		36.8	0 29.5					12	(38.9)	(41.0)			
													42.20
		40.3	12 40.9										42.00
		45.7	-+ 0.1					12	41.0	4.09			42.00
	13	6.6	-0 6.0										42.44
		10.8	13 11.7										
		17.7	-0 29.3					12	42.4	42.1			4)16864
		37.0	-0 29.6										
		40.1	13 40.6										13 12 42.16
		44.6	-1 0.6					12	40.0	41.3			
	14	5.5	-0 59.3										
		12.0	14 11.8										
		17.8	-0 29.1					12	42.7	42.7			
		35.9	-1 29.1										
		41.0	14 41.4										
		47.3	-0 58.0					12	43.4	43.0			
	15	8.0	-1 58.4	1	13	-							
		9.4	15 10.5										
		14.0	-0 29.3					12	41.2	42.2			
		35.0	-2 28.3										
		39.2	15 39.9										
		45.4	-0 58.2					12	41.7	41.9			
	16	5.2	-2 58.0										
		8.9	16 9.8										
		15.4	-2 28.5					12	41.3	42.1			
		34.2	-3 27.7										
		39.5	16 40.2										
		46.9	-0 56.7					12	43.5	42.9			
	17	5.4	-3 57.3										84.32
		8.7	17 10.0										
		16.0	-0 27.2					12	42.8	43.1	12	4216	
			-4 26.9										

19) ~~83.44~~ 796.20 (84.32

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h	m	s		m	s									
1	8	25.5	8	49	20.4	+25	4.8				W	39	15.00	
		31.7	8 31.5											
		37.2	5 56.3	33	7.4	21	17.8	14 27.8	28.3		W	39	26.65	
		54.7	5 56.8											
		59.6	8 59.2	53	42.8	20	42.4				W	39	26.98	
9		3.2	5 26.4					25.6	25.7					
		22.2	5 26.5	39	4.0	15	21.2				W	39	46.50	
		27.4	9 27.8											
		33.8	4 56.5	0	1.4	14	23.8	24.3	24.6		W	39	48.05	
		54.0	4 56.8											
		58.8	9 59.0	0	28.3	13	56.9				R	39	57.83	
10		5.1	4 26.7					25.9	25.9					
		19.8	4 26.9	4	18.6	10	6.6				R	40	2.10	
		25.5	10 25.9											
		32.5	3 57.7	5	42.8	8	42.4	23.6	23.2		W	40	3.85	
		52.8	3 57.3											
		59.1	10 59.2	6	53.1	7	32.1				W	40	7.75	
11		5.6	3 27.4					26.6	26.9					
		20.5	3 27.7	7	31.7	6	52.5				W	40	9.20	
		26.8	11 26.4											
		32.7	2 57.2	23	59.0	-9	33.8	23.9	24.7		W	40	35.43	
		50.4	2 58.0											
	m s	56.3	11 56.2	28	1.0	13	35.8				R	40	38.98	
	59 29.3	12	1.9	2	33.7			23.9	24.5					
30.63	30.7		21.4	2 28.3	28	59.1	14	33.9	21.2		W	40	40.50	
	31.9		26.5	12 26.5										
A+1	2 29.5		31.6	1 57.7	29	47.2	15	22.0	24.2	24.9	R	40	40.60	
	36.2		51.6	1 58.4						25.5				
			56.2	12 56.3	31	20.3	16	55.1			W	40	40.35	
		13	1.2	1 29.1					25.4	25.4				
			20.4	1 29.1										
			24.5	13 25.3										
			31.0	0 59.0					24.3	24.6				
			48.8	0 59.3										
			55.0	13 54.8										
		14	0.7	0 30.3					25.1	24.4				
			18.1	0 29.6										
			24.7	14 24.2										
			29.7	1 0.2					14 24.4	24.2				
			49.3	-0 0.0						26.9				
			55.2	14 54.5										
			59.0	0 29.3					25.2	25.0				
	4	15	19.0	-0 29.5						25.0				
	27 42.9		23.7	15 24.6										
18.30	48.0		31.0	0 59.2					25.4	25.4				
A-1 4.5	54.0		48.8	-0 29.2										
29	11.7		53.5	15 53.5										
16.13	16.0		58.2	1 29.1					24.4	24.7				
	20.7	16	18.0	-1 28.8						1 13	58.21		88 88 40	18.72
			22.3	16 23.3										
			29.5	1 58.9					24.4	24.7				
			49.2	-1 58.6										
			55.0	16 54.9										
		17	0.5	2 28.4					26.5	26.5				
			17.3	-2 28.4										
			23.5	17 23.3										
			29.0	2 57.7					25.6	25.5				
			49.2	2 57.8										
			54.5	17 54.2										
			58.9	3 27.1										
				-3 27.7					14 27.1	26.5				
									5036	5056		6042	5	126.00
								14	25.18	25.28	1 14	25.18	1 14	25.20

														25.54
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														24.82
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								a +1				a –1		
								59 30.6	+ 14 54.6	+14 50.6	14 21.2	27 48.3	– 13 23.1	-13 21.4	14 26.9
								2 32.8	11 52.4	11 52.7	14 25.5	29 16.1	14 50.9	14 51.1	14 25.0

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h	m	s		m	s										
	1	8	22.1								W	39	19.38	40 3.22	40 29.42
			29.6	8 29.8	50	24.1	23	59.8					43.84	+26.20	
			35.5					1439.8	3.15830	6.31660					
			49.0		51	32.0	22	51.9	1.64190	1.41834	R	39	24.72	6.50	30.29
								1371.9	3.13732	6.27464			41.78	+23.79	
			67.0	8 56.4	52	32.8	21	51.1	1.62092	1.37638	W	39	27.30	7.22	28.95
								1311.1	3.11763	6.23526			39.92	+21.73	
		9	3.3												
			22.9		53	28.3	20	55.6	1.60123	1.33700	R	39	30.60	8.83	28.76
								1255.6	3.09885	6.19770			38.23	+19.93	
	9 28.14		30.0	9 29.4											
	~~9 28.14~~		35.3		54	17.0	20	6.9	1.58245	1.29944	W	39	33.40	10.15	28.56
			52.7					1206.9	3.08167	6.16334			36.75	+18.41	
			59.5	9 58.6	55	1.3	19	22.6	1.56527	1.26508	R	39	35.68	11.08	28.16
		10	3.6					1162.6	3.06543	6.13086			35.40	+17.08	
			22.4		55	36.4	18	27.5	1.54903	1.23260	W	39	38.00	11.72	27.22
			27.1	10 27.2				1075	3.01435	6.08870			33.72	+15.50	
			32.2		56	37.6	17	46.3	1.52795	1.19044	R	39	41.35	13.82	28.19
			51.5					1066.3	3.02788	6.05576			32.47	+14.37	
			55.1	10 56.2	57	38.8	16	45.1	1.51148	1.15750	W	39	43.88	14.49	27.26
		11	2.0					1005.1	3.00221	6.00442			30.61	+12.77	
			18.7		58	18.3	16	5.6	1.48581	1.10616	R	39	47.30	16.90	28.69
			26.1	11 25.1				965.6	2.98480	5.96960			29.40	+11.79	
			30.1		59	43.9	14	40.0	1.46840	1.07134	R	39	30.70	17.50	27.29
			49.9					880.0	2.94448	5.88896			26.80	+ 9.79	
	11 55.06		55.2	11 55.2	0	36.5	13	47.4	1.42808	0.99070	W	39	33.63	18.82	27.47
	~~11 55.06~~	12	0.5					827.4	2.91772	5.83544			25.79	+ 8.66	
			21.8		1	30.3	12	53.6	1.40132	0.93718	R	39	57.35	20.91	28.47
			47.3	12 27.2				773.6	2.88852	5.77704			23.56	+ 7.56	
			52.5		2	19.7	12	4.2	1.37212	0.87878	W	39	59.78	21.18	27.81
			(49.5					724.2	2.85986	5.71972			22.00	+ 6.63	
			53.7)	~~12 51.6~~	3	3.2	11	20.7	1.34346	0.82146	R	40	1.25	21.98	27.84
								680.7	2.83296	5.66592			20.73	+ 5.86	
		13	19.2												
			24.3	13 24.5	29	31.0	-15	21	1.31656	0.76766	W	40	46.25	18.63	29.03
			30.0					907.1	2.95766	5.91532			−27.62	+ 10.40	
			48.5		30	19.4	-15	55.5	1.44126	1.01706	R	40	45.83	16.73	28.27
			54.9	13 54.8				955.5	2.98023	5.96046			− 29.10	+11.54	
		14	1.1		31	24.0	-17	0.1	1.46383	1.06220	W	40	44.38	15.32	28.47
			18.8					1020.1	3.00864	6.01728			−31.06	+13.15	
	14 24.38		24.2	14 24.8	32	10.2	-17	46.3	1.49224	1.11902	R	40	45.00	12.63	26.90
	~~14 24.34~~		31.5					1066.3	3.02788	6.05576			−32.47	+14.37	
			47.0	~~14 5.0~~	33	11.3	-18	47.4	1.51148	1.15750	W	40	46.30	11.97	28.04
			54.0	14 ~~5.0~~				1127.4	3.05208	6.10416			−34.33	+16.07	
		15	0.9	5.0					1.53568	1.20590					
			20.1												
			24.3	15 23.8											
			27.1												
			47.3												
			54.3	15 53.6											
			57.3												
		16	16.0												
			21.0	16 21.7			1	13	58.98					88 40 18.~~73~~ 41	
			28.0												
			46.0												
	16 51.84		54.5	16 53.1											
	~~16 51.84~~		59.7												
		17	16.3												
			22.4	17 21.7											
			26.5												
			42.8												
			49.7	17 49.1											
			54.7												
		18	13.0												
			20.9	18 20.3											
			27.1												
			43.4												
			50.1	18 50.1											
			56.8												
		19	17.6												
	19 20.04		21.1	19 21.0											
	~~19 20.04~~		24.4												
			43.5												
			48.3	19 49.1											
			55.5												
		20	12.4												
			17.6	20 19.7											
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	14 23.892			14 23.892											

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h	m	s		m	s								
13	6	36.1	6	58	54.1	13	45.2			W	1 46.8	1 21.05	1 1.244
		40.8	6 41.4				825.2	2.91656	5.83312		− 25.13	− 8.61	
		47.3		59	44.3	12	55.0	1.40016	0.93486R	1	43.83	20.23	12.64
	7	8.0					775.0	2.88930	5.77860		− 23.60	− 7.59	
		13.3	7 13.4	0	52.4	11	46.9	1.37290	0.88034W	1	40.03	18.50	12.18
		19.0					706.9	2.84936	5.69872		− 21.53	− 6.32	
		35.9		1	33.7	11	5.6	1.33296	0.80046R	1	38.10	17.83	12.23
7 42.54		43.3	7 42.9				663.6	2.82321	5.64642		− 20.27	− 5.60	
7 42.54		49.4		2	45.5	9	53.8	1.30681	0.74816W	1	34.13	16.05	11.59
	8	8.0					593.8	2.77364	5.54728		− 18.08	− 4.46	
		13.5	8 13.6	3	30.8	9	8.5	1.25724	0.64902R	1	32.73	16.03	12.23
		19.4					548.5	2.73918	5.47836		− 16.70	− 3.80	
		35.2		4	38.0	8	1.3	1.22278	0.58010W	1	29.45	14.79	11.86
		41.7	8 41.4				481.3	2.68242	5.36484		− 14.66	− 2.93	
		47.3		5	29.2	7	10.1	1.16602	0.46658W	1	27.40	14.30	11.96
	9	5.5					430.1	2.63357	5.26714		− 13.10	− 2.34	
		10.1	9 10.4	6	29.5	6	9.8	1.11717	0.36888W	1	09.95	49.69	
		15.5					369.8	2.56797	5.13594		− 11.26	− 1.73	
		35.0		18	52.0	−6	12.7	1.05157	0.23768R	1	03.33	11.68	9.92
		39.7	9 41.0				372.7	2.57136	5.14272		+ 11.35	− 1.76	
		46.3		19	48.0	−7	8.7	1.05496	0.24446W	0	58.13	11.18	8.76
	10	6.2					428.7	2.63215	5.26430		+ 13.05	− 2.32	
10 10.86		11.3	10 11.9	20	52.0	−8	12.7	1.11575	0.36604R	0	57.98	12.98	9.91
10 10.86		18.2					492.7	2.69258	5.38516		+ 15.00	3.07	
		35.0		21	37.1	−8	57.8	1.17618	0.48690W	0	56.63	13.01	9.35
		40.8	10 40.6				537.8	2.73062	5.46124		+ 16.38	3.66	
		46.0		22	32.8	−9	53.5	1.21422	0.56298m				
	11	4.3					593.5	2.77342	5.54684				
		10.2	11 10.4					1.25702	0.64858m				
		16.6											
		34.2							8.36575		8252	1 4618	
		38.3	11 39.4						1.17609		5585	0 5663	
		45.7									1418.7	49.55	
	12	6.2							9.54124				
		9.3	12 10.2								9952	1 4343	
		15.0									5398	0 5558	
		32.0									13128	49.85	
12 39.30		36.6	12 37.6										
12 39.30		44.2											
	13	5.0											
		9.0	13 9.3								9069	1 4003	
		14.0									4527	0 5813	
		33.2									11556	41.50	
		40.3	13 40.0										
		46.5											
	14	3.0									3.15189	3.11820	3.09904
		7.8	14 7.9								2.65313	2.65544	2.62028
		12.8									1.69504	1.66134	1.62221
		(34.4)	14 36.4										
		38.4									9.00151	9.00190	9.00193
	15	2.7											
15 7.60		8.0	15 8.5								5.4410	5.4410	5.4410
15 7.60		14.7											
		31.0											
		37.3	15 37.5										
		44.2											
	16	2.5											
		6.7	16 7.7										
		13.9				1	13	58.61				88 40 18.27	
		31.0											
		36.6	16 37.2										
		44.0											
	17	2.5											
		7.6	17 7.7										
		13.1											
		31.5											
17 36.04		36.4	17 37.3										
17 36.04		44.0											
	18	0.9											
		2.3	18 2.4										
		4.0											
		31.0											
		34.5	18 35.6										
		41.2											
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8.48360

6.73660
8.36514
5.10174

h	m	s		m	s											
1	8	23.8		57	20.4	17	3.1				R	39	40'20"	40	11'35"	2458
		27.0	8 26.9				1023.1	3.00492	6.01984				31.15		13.23	
		29.8		0	15.5	14	8.0	1.49352	1.12158		R	39	52'58"		18'40"	27.49
		—					848.0	2.92840	5.85680				25.82		9.09	
		—	8 57.0	1	55.6	12	27.9	1.41200	0.95854		R	39	57'03"		19'80"	26.87
		—					747.9	2.87384	5.74768				22.77		7.07	
	9	21.8		4	58.0	9	26.5	1.35744	0.84942		R	40	5'30"		22'72	26.76
~~9 26.56~~		28.6	9 27.6			565	~~773.6~~	2.75243	5.50486				17.22		4.04	
9 26.48		32.4		6	44.3	7	39.2	1.23603	0.60660		R	40	1'88"		25.86	28.52
		50.3					459.2	2.66200	5.32400				13.98		2.66	
		56.0	9 56.0					1.14560	0.42574							
	10	1.8														
		20.1	24.9													
		24.6	10 25.2													
		30.1														
		52.6														
	11	0.0	10 59.1 *													
		4.6														
		23.0														
		27.7	11 27.8													
		33.6														
		50.2														
11 56.52		54.8	11 54.8													
11 56.52		59.5														
	12	20.2														
		25.3	12 25.4													
		30.7														
		50.2														
		56.2	12 55.5													
	13	0.0														
		18.3														
		24.0	13 23.8													
		29.2														
		44.5														
		52.1	13 52.0													
		59.5														
	14	16.7														
14 22.90		21.0	14 21.4													
14 22.90		26.6														
		51.7														
		55.1	14 54.8													
		57.6														
	15	15.2														
		23.1	15 22.5													
		29.1														
		45.4														
		52.3	15 51.9													
		58.0														
	16	16.0				1	13	58.48						88	40	18.41
		23.3	16 22.8													
		27.0														
		50.5														
16 52.12		51.3	16 51.5													
16 52.12		52.7														
	17	16.5														
		22.0	17 21.3													
		25.5														
		46.3														
		53.8	17 53.1													
		57.2														
		—														
		—	18 20.0													
		—														
	18	44.3														
		49.6	18 49.7													
		55.2														
	19	13.6														
19 19.30		19.7	19 19.3													
19 19.30		24.6														
		—														
		—	19 48.0													
		—														
	20	14.4														
		19.0	20 19.5													
		25.0														
14 23.480			14 23.480													

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1880 Apr 13

	h	m	s		m	s
					m	s
1	15	50.2			22	8.3
		55.5		15	38.1	
		59.6				
	16	20.0				
		25.3		16	26.2	
		33.4				
		—				
		—				
		—				
	17	27.2				
		34.6		17	34.7	
		42.4				

R 40′ 37″.2

48° 6′ −7°

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1880 Apr 20 GC

0.11846
8.36533
8.48379

6.73660
8.36533
5.10193

h	m	s		m	s										
13	6	23.2										′	″		
		29.8				12	19.4				W	1	36.38	1 13.86	1 6.98
		36.2	6 32.5				739.4	2.86888	5.73776				−22.52	− 6.91	
		42.7		1	30.3	11	3.1	1.35267	0.83969	m	R	1	33.15	12.95	7.39
	7	1.0					663.1	2.82158	5.64316				−20.20	−5.56	
		5.6	7 7.8	2	35.9	9	57.5	1.30537	0.74509	m	W	1	30.18	11.98	7.47
		16.8					597.5	2.77634	5.55268				−18.20	− 4.51	
		31.7		3	23.5	9	9.9	1.26013	0.65461		R	1	27.48	10.73	6.91
		37.1	7 37.6				574.9	2.74028	5.48056	m			−16.75	− 3.82	
7 36.44		44.0		4	26.3	8	7.1	1.22407	0.58249	m	W	1	25.18	10.34	7.34
7 36.44	8	0.2					481.1	2.68762	5.37524				−14.84	− 3.00	
		7.8	8 6.9	5	7.3	7	26.1	1.17141	0.47717	m	W	1	22.83	9.24	6.72
		12.7					446.1	2.64943	5.29886				−13.59	− 2.52	
		32.4		6	7.4	6	26.0	1.13322	0.40079	m	W	1	21.23	9.47	7.59
		37.4	8 37.4				386.0	2.58659	5.17318				− 11.76	− 1.88	
		42.5		19	51.0	−7	17.6	1.07038	0.27511	m	W	0	34.25	7.58	5.16
	9	2.2					437.6	2.64108	5.28216				+ 13.33	− 2.42	
		6.2	9 7.1	21	20.6	−8	47.2	1.12487	0.38409	m	R	0	52.88	8.94	5.43
		13.0					527.2	2.72198	5.44396				+ 16.06	− 3.37	
		31.1		22	27.0	−9	53.6	1.20577	0.54589	m	W	0	57.03	9.11	4.65
		34.2	9 35.3				593.6	2.77340	5.54698				+ 18.08	− 4.46	
		40.6		23	17.1	−10	43.7	1.25728	0.64891	m	R	0	59.85	10.46	5.22
		57.2					643.7	2.80868	5.61736				+ 19.61	8.24	
10 5.00	10	3.2	10 3.4	24	20.0	−11	46.6	1.29247	0.71929	m	W	0	57.48	12.01	5.70
10 5.00		9.9					706.6	2.84917	5.69834				+ 21.33	6.31	
		29.3						1.33296	0.80027	m					
		33.0	10 33.7												
		38.7													
		59.9													
	11	4.8	11 5.5												
		11.8													
		28.0													
		32.5	11 33.8												
		40.8													
		59.5													
	12	5.5	12 5.6												
		11.7													
		28.2													
12 33.92		33.0	12 32.8												
12 33.92		37.2													
		57.5													
	13	2.9	13 3.5												
		10.2													
		29.0													
		33.9	13 33.9												
		38.8													
		58.7													
	14	1.0	14 1.7												
		5.3				1	12	0.17						88 40 15.92	
		24.0													
		29.4	14 30.3												
		37.6													
15 2.42	15	3.0	15 3.5												
15 2.20		8.4													
		27.9													
		34.7	15 33.3												
		37.4													
		55.6													
	16	2.0	16 2.2												
		9.0													
		26.0													
		28.7	16 29.6												
		34.0													
		54.7													
		59.2	16 59.5												
	17	4.5													
17 29.42			17 29.0												
17 29.42															
			17 59.0												
			18 30.0												
32 33.40			12 33.396												

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h	m	s		m	s											
	1	8	25.5		53	52.5	20	345								
6.18300			30.0	8 30.5				12345	3.09150							
1.28493			35.9		55	44.5	18	425	1.57529		R	39	3750	40 1511	40 3438	
6.10068			51.9					11225	2.05034				3761	1927		
1.20261			9 1.4	9 2.1	57	11.7	17	1.53	1.53413		R	39	3908	13.29	29.23	
6.03014			8.0					10353	3.01507				3421	1594		
1.13207			23.5		58	26.0	16	1.0	1.49886		R	39	4452	1606	29.61	
5.96544	9	29.78	29.4	9 29.1				961.0	2.98272				3157	1355		
1.06737	9	29.78	34.3		59	35.7	14	51.3	1.46651		R	39	4908	18.36	30.04	
5.90004			54.6					891.3	2.95002				2728	1168		
1.00197			58.6	9 59.0	1	9.9	13	17.1	1.43381		R	39	5305	2026	30.24	
5.80302			10 3.8					797.1	2.90151				2715	1004		
0.90495			23.0		2	30.2	11	66.8	1.38530		R	39	5488	2216	30.19	
5.71080			27.6	10 28.2				716.8	2.85540				2428	803		
0.81273			34.0		3	36.0	10	51.0	1.33919		R	40	020	2204	28.54	
5.62716			52.5					651.0	2.81358				2184	650		
0.72909			59.0	10 58.5	7	58.3	9	28.7	1.29737		R	40	442	2425	29.61	
5.30976			11 4.0					568.7	2.75488				1983	536		
0.61169			25.8		7	22.0	7	5.0	1.23867		R	40	632	2364	27.73	
5.25678			28.9	11 29.8				425.0	2.62839				1732	409		
0.35871			34.7		20	41.8	-6	148	1.11218		R	40	1285	2430	26.58	
5.14760			55.6					374.8	2.57380				1295	228		
0.24953	11	58.94	59.9	11 59.9	22	31.9	-8	4.9	1.05759	a	R	40	3948	2806	29.84	
5.37130	11	58.94	12 4.3					484.5	2.68565				-1142	178		
0.47323			23.3		23	38.1	-9	11.1	1.16944	a	R	40	3840	2363	26.60	
5.48246			27.5	12 28.1				551.1	2.74123				-1477	297		
0.58439			33.4		24	50.1	-10	23.1	1.22502	a	R	40	4182	2503	28.87	
5.58712			54.5					623.1	2.79456	a			-1679	284		
0.69105			58.2	12 58.4	25	52.5	-11	25.5	1.27835	a	R	40	4228	2330	28.21	
5.67202			13 2.5					685.5	2.83601	a			-1898	491		
0.77395			22.0		26	55.7	-12	28.7	1.31980	a	R	40	4215	2127	27.21	
5.74862			28.1	13 28.4				748.7	2.87431	a			-2088	594		
0.85055			35.0		28	9.3	-13	42.3	1.35810	a	R	40	4210	1929	26.38	
5.83006			52.0					822.3	2.91503	a			-2281	709		
0.93199			55.4	13 56.6	29	16.9	-14	49.9	1.39882	a	R	40	4412	1907	27.62	
5.89868			14 2.4					889.9	2.94934	a			-2305	855		
1.00061			21.5		30	40.0	-16	13.0	1.43313	a	R	40	4428	1717	27.18	
5.97622	14	26.82	25.7	14 26.7				973.0	2.98811	a			-2711	1001		
1.07815	14	26.62	32.8		31	49.0	-17	22.0	1.47190	a	R	40	4502	1538	27.35	
6.03874			49.5					1042.0	3.01787	a			-2964	1197		
1.13767			55.0	14 55.5					1.50166				4495	1321	26.94	
			15 2.0										-3174	1373		
			20.0													
			27.2	15 26.9												
			33.6													
			52.0													
			57.6	15 57.5												
			16 2.8													
1 16 0.03			20.4		88	40 16.08										
			26.5	16 26.0												
			31.2													
			50.4													
	16	55.58	55.7	16 55.7												
	16	55.42	17 1.0													
			19.0													
			24.4	17 24.7												
			30.8													
			48.4													
			54.1	17 54.0												
			59.5													
			18 17.5													
			24.3	18 24.5												
			31.8													
			50.3													
			54.8	18 55.5												
			19 1.5													
			18.5													
	14	24.14	23.7	19 23.8												
	14	23.50	29.3													
			46.6	50.7												
			51.0	19 54.0												
			54.5													
			20 15.4	23.0												
			22.5	20 22.9												
			31.0													
	14	27.040		14 27.040												

6.73660					
8.36533					
5.10193	38 40 16				
40 1511	40 3438				
1927					
1329	29.23				
1594					
1606	29.61				
1355					
1836	30.04				
1168					
2026	30.24				
1004					
2216	30.19				
803					
2204	28.54				
650					
2425	29.61				
536					
2364	27.73				
409					
2430	26.58				
228					
2806	29.84				
178					
2363	26.60				
297					
2503	28.87				
284					
2330	28.21				
491					
2127	27.21				
594					
1929	26.38				
709					
1907	27.62				
855					
1717	27.18				
1001					
1538	27.35				
1197					
1321	26.94				
1373					
12345	38 395				
10420	40 449				
22765	1 7.4				
11225	39 351				
8930	40 450				
29955	1 5.9				
10853	39 445				
8899	40 463				
19252	0 59.8				
8610	38 451				
8223	40 441				
17833	0 55.0				
8913	38 531				
7487	40 421				
18460	0 49.0				
16					
8.36533	8.36533	8.36533	8.36533	8.36533	8.36533
1.17609	1.17609	1.17609	1.17609	1.17609	1.17609
9.54142	9.53885	9.53922	9.54018	9.53885	9.53942
4 52.0	5 25.30	5 6.10	5 4.10	3.21484	275608
	3.32129				69020
	286253				89341
	1.87888	(5 1.25)			4 5440
	895635				
	5.10.5				

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1880 Apr 21 UC

0.11846
8.36533
8.48379

6.73660
8.36533
5.10193

h	m	s	h	m	s	m	s									
	1	8	29.1			1	55.5	12	347			R	39	5805	40 21.04	
			33.0	8	33.9				754.7	2.87777				2299		
			39.6			4	4.7	10	255	1.36146		R	40	318	22.24	
		1	57.6						625.5	2.79623				1906		
		9	5.7	9	4.4	5	17.0	9	13.2	1.28002		R	40	765	23.50	
			9.8						553.2	2.74288				1685		
			27.2			6	43.4	7	468	1.22667		R	40	1110	25.32	
9	33.58		32.1	9	33.2				466.8	2.66913				1422		
9	33.58		40.4			7	55.0	6	352	1.15292		R	40	1108	23.12	
			59.0						395.2	2.50682				1204		
		10	4.7	10	4.4	20	41.9	-6	11.7	1.08061		R	40	3522	23.90	
			9.4						371.7	2.57019				-1132		
			24.1			23	18.5	-8	483	1.05398		R	40	4070	23.91	
			33.5	10	32.0				528.3	2.72288				-1609		
			38.4			24	40.4	-10	10.2	1.20667		R	40	3968	21.09	
			56.7						610.2	2.78547				-1859		
		11	0.7	11	1.2	25	44.5	-11	14.3	1.26926		R	40	4150	20.96	
			6.1						674.3	2.82885				-2054		
			26.0			33	48.6	-19	15.4	1.31264		R	40	4380	.860	
			31.2	11	31.7				1155.4	3.06273				-3520		
			38.0			35	1.6	-20	31.4	1.57652		R	40	4435		
			57.5						1231.4	3.09044				-3732		
12	~~2.42~~	12	4.3	12	3.4	36	14.7	-21	44.5	1.57423		R	40	4422		
12	2.44		8.3						1301.5	3.11544				-3974		
			26.2			37	49.2	-23	19.0	1.59923		R	40	4252		
			30.2	12	31.2				1399.0	3.14582				-4262		
			37.2							1.62961						
			53.7													
		13	3.2	13	4.7											
			17.2													
			25.3													
			29.3	13	30.5											
			36.8													
			52.8													
		14	0.4	13	59.9											
			6.5													
			25.3													
14	29.86		31.6	14	30.9											
14	29.86		35.7													
			52.0													
		15	0.2	14	59.7											
			7.0													
			21.8													
			28.0	15	28.3											
			35.0													
			52.3													
			58.4	15	58.5											
		16	4.7													
			22.8					1	14	0.33					88 40 15.76	
			29.9	16	28.8											
			33.9													
			52.8													
16	58.02		57.2	16	58.0											
16	58.02	17	4.3													
			20.8													
			29.0	17	2.4											
			35.4													
			46.8													
			55.3	17	56.4											
		18	5.0													
			23.6		30.0											
			30.7	18	~~29.9~~											
			35.6													
			50.4													
			55.4	18	55.7											
		19	1.3													
			22.7													
	~~19~~	~~27.31~~	25.6	19	28.0											
19	27.42		32.7													
			50.2													
			54.8	19	55.1											
		20	2.0													
			22.6													
			28.1	20	27.7											
			32.5													
14	30.2414			14	30.2414											

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1880 Eph. Minute Apr 22 M C

0.11846
8.36542
8.48388

6.73660
8.36542
5.10202

h	m	s	m	s	m	s		′	″
	1	9	35.0		58	22.8	R	39	48.5
			41.4	9 38.2					
			—		0	26.9	R	39	55.5
		10	4.1						
			5.1	10 5.1	1	50.4	R	39	57.15
			6.1						
			30.7		3	6.0	R	40	2.28
10	35.54		35.1	10 36.5					
10	35.54		40.6		4	14.3	R	40	4.25
		11	3.0						
			4.8	11 5.1	5	28.2	R	40	8.08
			7.5						
			26.3		7	6.0	R	40	13.45
			33.5	11 32.8					
			38.5		8	23.6	R	40	17.95
			57.1						
		12	4.5	12 3.7	20	46.3	R	40	40.53
			9.6						
			30.0		23	33.2	R	40	42.35
			37.6	12 36.3					
			41.2		24	58.1	R	40	44.08
			56.9						
13	2.88	13	1.5	13 2.4	26	21.6	R	40	44.30
13	2.88		8.9						
			24.0		27	49.5	R	40	45.20
			31.5	13 31.7					
			39.5		28	55.0	R	40	49.18
			54.4						
		14	0.6	14 0.3	30	29.5	R	40	48.28
			6.0						
			28.5		32	6.0	R	40	47.25
			33.7	14 ~~32.6~~					
			38.5	33.6					
			54.7						
		15	2.0	15 1.2					
			6.8						
			25.5	4					
~~15~~	~~32.66~~		34.3	15 33.3					
15	32.90		40.8						
			55.0						
		16	2.4	16 1.7					
			7.7						
			26.3						
			35.8	16 34.6					
			41.8						
		17	5.7						
			8.3	17 ~~8.8~~					
			12.5						
			28.9						
			34.0	17 34.2					
			39.8						
			52.4						
18	1.78	18	1.2	17 ~~59.7~~					
18	1.78		6.5	59.7					
			23.3						
			28.7	18 28.2					
			32.5						
				18 58.0					
		19	29.9						
			30.7	18 30.8	?				
			31.7						
			52.9						
			56.5	18 57.5	?				
		19-20	3.9						
			21.8	20					
20	~~27.86~~		28.5	~~19~~ 28.4	?				
20	28.40		34.8						
			50.2	20 56.9					
			55.8	~~19~~ ~~54.2~~	?				
		20	4.6						
		21-20	22.2	21					
			28.3	~~20~~ 28.4					
			34.8						
~~14~~ 15	32.786			16 15.388					

1 14 0.69

.88 40 15.44

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1880phae.proj.1561.

38

Ex. a number of extra wires among deltas

0.11846
8.36537
8.48397

6.73.660
8 36 757
5 10.2 Equatorials

- 1880 Apr 24 RC

h	m	s		m	s							
13	6	27.5		48	50.4	+23 43.1			W	2	1983	
		38.4	6 37.1									
		45.3	+5 58.1	49	59.2	22 34.3	12 35.2	33.5	R	2	1443	
		59.3	+5 56.4									
	7	5.7	7 5.8	51	52.0	20 40.5			W	2	1098	
		12.4	-5 26.0				32.7	32.4				
		31.3	5 26.6	52	40.0	19 53.5			R	2	510	
		35.5	7 35.9									
		40.8	-4 56.7	54	3.0	18 30.5	32.6	32.7	W	1	5983	
	8	2.4	4 56.8									
		7.0	8 7.0	55	16.0	17 17.5			R	1	5415	
		11.7	-4 26.8				33.8	34.2				
		33.1	4 27.2	56	23.3	16 10.2			W	1	5268	
		38.2	8 37.8									
		42.1	-3 56.6	57	2.0	15 31.5	34.4	35.3	W	1	4993	
		59.0	3 57.5									
	9	6.0	9 5.1	0	8.1	12 25.4			W	1	4335	
		10.4	-3 27.2				32.3	32.8				
		30.2	3 27.7	1	30.1	11 3.4			W	1	8840	
		36.4	9 36.3									
		42.3	-2 57.9	2	36.1	9 57.4	34.2	34.1	W	1	3438	
		59.5	2 57.8									
	10	5.0	10 5.9	3	39.8	8 53.7			R	1	3058	
		18.2	-2 28.0				34.8	34.3				
		27.0	2 28.4	4	9.6	8 23.9			W	1	2728	
		33.9	10 34.1									
		41.3	-1 57.4	5	40.3	6 53.2	31.5	32.7	W	1	2373	
		59.0	1 58.6									
	11	3.5	11 4.0	22	20.0	9 46.5			W	(8)	5263	
		9.5	-1 28.6				32.6	32.8				
		30.7	1 28.8									
		36.9	11 36.2								3362	
		41.1	-0 58.2				34.4	35.4			3334	
	12	1.3	0 59.2								3446	
		8.2	12 7.0							3	101.42	
		11.5	-0 27.4				34.4	36.5				
		29.8	-0 29.5						13	12	33.81	
X		35.2	12 34.8									
		39.5	+ 0.1				12 34.9	34.8				
		56.7	-0 0.0									
	13	2.0	13 2.5									
		8.7	-0 29.3				12 33.2	32.9				
		27.0	-0 29.6									
		32.5	13 32.0									
		36.5	-1 0.6				12 31.4	32.7				
			0 59.3									
							15) 50 24	50 78			5071	
							12 33.49	33.81	13	12	33.81	

1 14 1.83

88 40 14.68

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- 1880 Aqr 24 UC.

U. 1 18446
8.36542
8.48388

6.73660
8.36542
5.10202

Identical

h	m	s		m	s							
1	8	31.0		56	51.0	+17	39.3			R	39	4698
		36.4	8 346									
		42.5	+ 5 56.3	58	17.9	16	12.4	14 32.9	33.4	R	39	5708
	9	2.4	+ 5 56.8						31.5			
		8.6	9 5.9	0	20.4	14	9.9			R	39	5960
		9.6	- 5 26.4					14 32.3	32.4			
		28.7	5 26.5	1	50.9	12	39.4		33.3	R	40	353
		32.3	9 32.9									
		37.8	+ 4 56.5	2	39.2	11	31.1	29.4	29.7	R	40	830
		59.6	4 56.8									
	10	5.3	10 4.7	4	17.0	10	13.3			R	40	798
		9.2	- 4 26.7					31.4	31.6			
		25.5	4 26.9	5	18.7	9	11.6		31.5	R	40	1185
		33.0	10 31.6									
		37.4	- 3 57.7	6	43.2	7	47.1	29.3	28.9	R	40	1638
		55.1	3 57.3						31.7			
	11	1.8	11 2.6	8	13.7	6	16.6			W	40	3993
		10.0	- 3 27.4					30.0	30.3			
		26.5	3 27.7	10	45.9	-6	15.6			R	40	4223
		31.2	11 31.6									
		37.0	- 2 57.2	21	47.3	7	17.0	28.8	29.6	W	40	4288
		55.8	2 58.0						31.9			
m	s	12	1.0	12 1.8	22	40.7	8	10.4		W	40	4428
23	19.1		8.6	- 2 27.7				29.5	30.1			
	25.4		26.7	2 28.3	23	54.4	9	24.1		W	40	4578
	31.1		31.0	12 31.6								
24	50.0		37.1	- 1 57.7	25	21.3	10	51.0	29.3	30.0	W	40	4625
	56.6		57.3	1 58.4								
25	1.0	13	5.0	13 4.2	26	35.8	12	4.9		W	40	4695
26	17.4		8.4	- 1 29.1				33.3	33.3			
	22.3		25.6	1 29.1	28	4.5	13	34.2		W	40	4605
	30.0		30.6	13 30.4								
27	48.1		34.9	- 0 59.0	29	49.3	15	19.0	29.4	29.7	R	40	4685
	52.8	14	1.0	0 59.3								
	55.4		6.0	14 5.7	30	32.8	16	2.5			R	40	4735
29	17.1		10.1	- 0 30.3				(36.0)	(35.3)			
	22.4		23.5	0 29.6	31	38.5	17	8.2				
	27.0		28.3	14 28.0								
			32.3	+ 0.2				14 28.2	28.0			
			52.0	- 0.0								
			59.5	14 59.5								
		15	7.0	- 0 29.3								
				- 0 29.5				14 30.2	30.0			
							13) 14 4300	39.40	3970		5569	
							30.31		3054	14	30.94	
							3					

1 14 1.58

3206 .88 40 14.82
30.80
30.98
2923
4 123.07
1 14 3077

a - 1

23	25.2	-8 54.9	-8 53.7	14	31.5
24	55.9	10 25.6	10 22.6	14	33.3
26	23.2	11 52.9	11 51.7	14	31.5
27	52.4	13 22.1	13 20.7	14	31.7
29	2.2	14 51.9	14 50.3	14	31.9

20	21.0		
	25.3		
	31.4	20 25.9	

26 23.780

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1880 Apr 27 UC

0.10908
8.36331
8.47459

6.73660
8.36551
5.10211

h	m	s		m	s							
	1	8	33.5			16	27.3			R	39	50.0
			38.6	8 38.5			987.3	2.99445				
			43.4		0	59.0	13	353			R	39	58.2
		9	3.0				815.3	2.91132				
			7.2									
			15.6	9 8.6	2	9.0	12	25.3			R	40	28.2
			34.0				745.3	2.87233				
			38.5		3	22.0	11	12.3			R	40	78.5
9	38.00						672.3	2.82756				
9	38.00		41.9	9 38.1	4	33.0	10	13			R	40	87.2
		10	0.8				601.3	2.77909				
			7.3	10 6.9	5	40.6	8	53.7			R	40	105.3
			12.6				533.7	2.72730				
			32.5		6	51.0	7	43.3			R	40	154.0
			38.0	10 37.9			463.3	2.66586				
			43.2		8	27.5	6	6.8			R	40	404.0
		11	2.0				366.8	2.56443				
			6.0	11 6.3	20	52.0	-6	177			R	40	408.5
			11.0				377.7	2.57715				
			32.2		22	6.9	-7	32.6			R	40	437.2
			37.2	11 37.2			452.6	2.65571				
			42.1		23	45.6	-9	11.3			R	40	440.2
			59.0				551.3	2.74139				
12	5.78	12	5.5	12 5.0	24	55.0	-10	20.7			R	40	441.8
12	5.78		10.5				620.7	2.79288				
			32.0		26	9.1	-11	34.8			R	40	462.2
			36.7	12 37.0			694.8	2.84186				
			42.3		27	26.4	-12	52.1			R	40	469.2
			58.0				772.1	2.88767				
		13	3.0	13 3.4	29	26.8	-14	52.5					
			9.2				892.5	2.95061				
			31.8									
			35.8	13 36.1&								
			41.5									
			58.0									
		14	4.8	14 4.9								
			12.0									
			28.0									
14	34.38		33.7	14 33.7								
14	34.38		39.5									
			55.7									
		15	2.2	15 2.6								
			9.8									
			27.8									
			34.5	15 34.6								
			41.6									
			56.7									
		16	2.3	16 2.8								
			9.3									
			28.2				1 14	3.06					88 40 14.05
			32.4	16 32.3								
			36.3									
			57.9									
17	2.38	17	2.0	17 3.1								
17	2.38		9.5									
			27.3									
			32.9	17 32.9								
			38.5									
			55.9									
		18	0.5	18 0.8								
			6.9									
			28.7									
			33.8	18 34.0								
			39.5									
			56.7									
		19	1.0	19 1.8								
			7.7									
			25.2									
~~19~~	~~30.72~~		30.2	19 30.1								
19	30.74		34.9									
			51.0	57.0								
			55.0	19 ~~56.9~~								
		20	4.9									
			26.0									
			31.0	20 30.8								
			35.5									
14	34.252			14 34.252								

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1880 Apr 30 LC

U. 10908
8.86560 m
8.47468 m

6.73660
8.36560 m
5.10220 m

h	m	s	m	s	m	s						
										′	″	
	13	6	36.4	~~7~~		46	27.8	26 108		W	2	2722
			43.2	6 43.2				1570.8	3.19612			
			50.0			48	50.3	23 48.3		W	2	1732
		7	6.4					1428.3	3.15482			
			12.0	7 12.2		50	54.2	21 44.4		W	2	8.00
			18.2					1304.4	3.11541			
			34.5			56	46.8	15 51.8		W	2?	4935
			41.9	7 41.7				951.8	2.97855			
			48.7			2	52.6	9 46.0		W	2?	2828
		8	6.5					586.0	2.76790			
			10.7	8 11.8		21	42.0	-9 3.4		W	1	5335
			18.2					543.4	2.73512 m			
			34.3			23	53.3	-11 14.7		W	1	5222
			46.3	8 44.2				674.7	2.82911 m			
			52.0			25	41.5	-13 2.9		W	1	5762
		9	8.0					782.9	2.89371 m			
			13.0	9 13.5		27	26.4	-14 47.8		W	1	4972
			19.4					887.8	2.94832 m			
			33.8			29	14.7	-16 36.1		W	1	4965
m	s	m	s		41.0	9 40.9			1026.1	3.01119 m		
	—				48.0			31 7.0	-18 28.4	W	1	4958
	—			10	1.4				1106.4	3.04470 m		
	—	~~10 12.38~~			7.8	10 9.1		33 7.6	-20 29.0	W	1	4752
59	55	10 12.36			18.2				1229.0	3.08955 m		
13.00	13.0	13.0			41.0			35 5.6	-22 27.0	W	1	4752
	20.5	20.5			45.0	10 46.3			1347.0	3.12937 m		
0	34.0	0 34.0			53.0			37 31.6	-24 53.0	W	1	4742
40.73	40.4	40.4		11	6.3				1493.0	3.17406 m		
	47.8	47.8			10.8	11 12.0		39 26.6	-26 48.0	W	1	4933
2	7.0	2 7.0			18.8				1608.0	3.20.629 m		
13.93	14.0	14.0			38.1			41 34.3	-28 55.7	W	1	5040
	20.8	20.8			44.1	11 44.4			1735.7	3.23948 m		
	—				51.0							
	—			12	10.8							
	—				18.0	12 16.6						
					21.5							
					30.7							
		12 41.64 ?			37.7	12 37.5						
		12 41.64			44.2							
				13	0.6							
					6.0	13 6.4						
					12.7							
					36.0							
					43.7	13 43.3						
					53.3							
					59.9							
				14	6.4	14 6.1						
					12.0							
					33.5					1 14 4.32		88 40 13.22
					38.4	14 40.1						
					48.5							
				15	2.4							
		15 6.14			8.5	15 8.5						
		15 6.14			14.7							
					27.4							
					34.2	15 35.1						
					43.6							
					55.6							
				16	1.0	16 0.9			a + 1			
					6.0				+			
					26.8							
					31.9	16 32.4			59 13.0	13 25.6	+13 19.8	12 32.8
					38.4							
					49.8				0 40.7	11 57.9	11 51.6	12 32.3
					59.6	16 55.2						
				17	1.2				2 13.9	10 24.7	10 22.6	12 36.5
					25.2							1016
		17 30.40			32.3	17 32.0						12 33.87
		17 30.40			38.4							
					57.0							
				18	2.0	18 2.7						
					9.0							
					23.5							
					30.2	18 29.7						
					35.4							
		12 38.636				12 38.632						

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1880phae.proj.1561.

- 1880 May 2 LC

0.10908
8.36560 m
8.47468 n

6.73660
8.36560 m
5.10220 n

Identical

h	m	s	m	s					
13	6	28.2	58	3.2	+14 30.9			W / 4292	
		32.8	6 33.8						
		40.5	+5 53.8	59	14.7	13 19.4	12(29.6) (29.7)	W / 3770	
	7	1.8	+5 55.9						
		5.2	7 6.1	59	59.8	12 34.3		W / 3618	
		11.4	5 26.5				32.6 32.3		
		38.0	526.2	1	0.4	11 33.7		W / 3428	
		36.0	7 37.5						
		43.5	4 56.7	1	44.9	10 49.2	34.2 33.8	W / 3118	
	8	1.8	4 56.3						
		7.4	8 7.2	2	25.9	10 8.2		W / 2853	
		12.5	4 27.5				34.7 34.0		
		50.2	4 26.8	3	11.0	9 23.1		W / 2652	
		36.2	8 36.9						
		44.3	3 57.7	3	53.3	8 40.8	34.6 34.1	W / 2542	
	9	0.5	3 57.4			7 57.4			
		7.2	9 6.8	4	36.7		34.0	W / 2310	
		11.4	3 27.6		5		(28.0) 33.8		
		32.4	3 27.4	5	19.8	7 14.3		W / 2128	
		38.2	9 38.6						
		45.3	2 57.5				36.1 36.2		
		39.3	2 57.6						
	10	4.4	10 5.9						
		14.1	2 28.0				33.9 34.1		
		30.0	2 28.2						
		34.2	10 34.9						
		40.5	1 58.8				33.7 33.4		
	11	1.0	1 58.5						
		6.7	11 6.7						
		12.4	1 29.2				35.9 35.4		
		28.7	1 28.7						
		33.4	11 34.1						
		40.3	0 58.9				33.0 33.2		
		58.8	0 59.1						
	12	3.8	12 3.5						
		8.0	0 29.5				33.0 33.0		
		27.0	0 29.5						
		31.7	12 32.4	+					
		38.5	- 0.4				12 32.0 32.4		
		56.9	-0 0.0						
	13	3.2	13 3.8						33.66
		11.4	0 26.7				34.1 34.3		34.46
		27.2	-0 29.5						33.95
		33.5	13 33.0						
		39.3	0 59.5				33.5 33.8		3 / 102.01
		58.6	-0 59.2						12 12 34.00
	14	4.9	14 4.2						
		9.2	1 28.8				35.4 35.3		
		28.5	-1 28.9						
		32.7	14 33.2						
		38.4	1 59.0				12 34.2 34.9		
			1 58.3						

16) ~~568~~ 5449 | 5440
12 ~~33.46~~ 3406 | 34.00

5440
13 12 3400

1 14 5.28

88 40 12,73

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1880phae.proj.1561.

1880 May 3 LC

0.10908
8.36569
8.47477m

6.79660
8.36569m
5.10229m

h	m	s		m	s						
	13	7	30.4	58	9.0	15	21.1		W	1	4192
			34.3	7 34.7			921.1	2.96431			
			39.5		59	20.2	14	9.9	W	1	3742
			57.5				849.9	2.92937			
		8	2.5	8 3.1	0	3.8	13	26.3	W	1	3552
			9.2				806.3	2.90650			
			26.1		0	44.3	12	46.8	W	1	3402
8 32.80			31.2	8 31.7			765.8	2.88412			
8 32.80			37.9		1	28.4	12	1.7	W	1	3128
			57.9				721.7	2.85836			
		9	1.5	9 2.5	2	5.1	11	25.0	W	1	2965
			8.2				685.0	2.83569			
			26.3		2	40.9	10	49.2	W	1	2762
			31.3	9 32.0			649.2	2.81238			
			38.3		3	18.5	10	11.6	W	1	2595
			58.3				611.6	2.78617			
		10	3.0	10 3.1	3	57.0	9	33.1	W	1	2438
			8.1				573.1	2.75823			
			26.5		4	31.0	8	59.1	W	1	2340
			31.3	10 31.8			539.1	2.73167			
			37.5		5	2.0	8	28.1	W	1	2190
			55.4				508.1	2.70595			
~~4 1.34~~		11	0.2	11 0.7	5	44.7	7	45.4	W	1	2018
11 1.36			6.4				465.1	2.66755			
			27.0		6	23.0	7	7.1	W	1	1785
			30.1	11 31.2			427.1	2.63053			
			36.4								
			55.5	12 0.0							
			59.4	~~4 59.9~~							
		12	5.0								
			24.0								
			29.9	12 29.5							
			34.7								
			55.6								
			59.5	12 59.7							
		13	4.0								
29.06			23.4								
13 ~~28.86~~			28.6	13 28.7							
13 29.06			34.2								
			53.1	8							
			58.7	13 57.4							
		14	3.4								
			24.2								
			28.2	14 29.0							
			34.6								
			56.0								
			58.8	15 0.3							
		15	6.0								
			23.7				1 14	5.70			
			28.8	15 29.2							
			35.0								
			54.4								
15 59.18			59.0	15 59.8							
15 ~~59.18~~		16	6.0								
			23.7								
			28.3	16 28.8							
			34.4								
			53.0								
			57.0	16 57.8							
		17	3.3								
			23.6								
			27.5	17 28.4							
			34.2								
			53.5								
			56.7	17 57.8							
		18	3.2								
			24.5								
18 28.22			29.2	18 29.8							
18 28.22			35.7								
			53.2								
			57.6	18 58.2							
		19	3.8								
			20.8								
			26.0	19 26.9							
120			33.9	30.120							
13 ~~30.080~~				13 29.630							

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1880phae.proj.1561.

1880 May 4 18 C

0.10908
8.36569
8.47477

6.79660
8.36569
5.10229

h	m	s		m	s							
1	8	39.2	C	58	5.4	16	358		R	39	5062	
		42.3	8 44.2			995.8	2.99817					
		51.0		0	20.7	14	205		R	39	5853	
	9	9.3				860.3	2.93475					
		16.2	9 15.3	1	44.7	12	565		R	40	242	
		20.5				776.5	2.89014					
		40.9		2	57.0	11	44.2		R	40	515	
9 44.10		45.2	9 45.8			704.2	2.84770					
9 42.10		51.3		4	9.4	10	31.8		R	40	795	
	10	6.0					631.8	2.80058				
		9.5	10 13.1	5	0.3	9	409		R	40	1042	
		23.7				580.9	2.76410					
		37.7		6	45.8	7	55.4		R	40	1668	
		40.5	10 42.1			475.4	2.67706					
		48.0		20	58.2	-6	17.0		R	40	4165	
	11	9.8				377.0	2.57634					
		14.6	11 14.7	22	37.5	-7	56.3		R	40	4300	
		19.8				476.3	2.67788					
		38.8		23	50.2	-9	9.0		R	40	4345	
		43.0	11 44.8			549.0	2.73957					
		52.6		25	20.7	-10	39.5		R	40	4505	
	12	7.0				639.5	2.80584					
12 13.80		15.2	12 13.7	26	30.5	-11	58.3		R	40	4645	
12 13.80		19.0				718.3	2.85631					
		37.5										
		44.1	12 43.4									
		48.6										
	13	6.0										
		11.4	13 12.4									
		19.9										
		36.0										
		39.8	13 39.9									
		44.0										
	14	4.3										
		9.2	14 10.0									
		16.5										
		39.6										
14 40.38		43.4	14 43.1									
14 40.38		46.3										
	15	4.8										
		10.5	15 11.4									
		18.8										
		33.2										
		37.2	15 37.5									
		42.0										
	16	9.7										
		14.3	16 14.6									
		19.8										
		36.8				1 14	5.94				88 40 12.28	
		40.8	16 40.9									
		45.0										
	17	1.5										
17 9.60		6.6	17 8.3									
17 9.60		16.9										
		32.6										
		38.1	17 37.7									
		42.3										
	18	0.7										
		6.5	18 6.5									
		12.3										
		31.9										
		37.6	18 37.1									
		41.8										
	19	2.5										
		9.0	19 8.1									
		13.6										
		32.6										
19 38.18		41.0	19 39.6									
19 38.18		45.1										
	20	3.5										
		9.7	20 8.9									
		13.3										
		32.0	37.0									
		36.0	20 36.9									
		42.9										
14 41.212			14 41.212									

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0.10908
8.36569
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8,36569
5.10229

– 1880 May 5 UC X.

h	m	s			m	s								
1	8	42.5	6		50	13.0	+24 31.3			R	39	2.37		
		47.4	8 47.8											
		52.9	+5 56.7		53	25.7	21 18.6	14 44.3	45.9	R	39	31.88		
	9	14.0	+5 56.3						42.8					
		18.0	9 18.7		53	43.6	21 0.7			R	39	35.78		
		24.2	–5 26.5					45.2	44.7					
		43.0	5 26.0		54	52.8	19 51.5		44.2	R	39	40.02		
		46.4	9 47.1											
		52.0	–4 56.5		56	22.0	18 22.3	43.6	43.5	R	39	44.25		
	10	12.7	4 56.4											
		17.2	10 17.7		57	45.0	16 59.3			R	39	49.68		
		23.2	–4 26.8					44.5	44.2					
		40.8	4 26.5		6	7.2	8 37.1		42.2	R	39	43.45		
		47.0	10 46.7											
		52.2	–3 57.2		7	37.5	7 6.8	43.9	43.6	R	39	43.32		
	11	12.0	3 56.9						44.7					
		16.5	11 16.9		22	8.7	–7 24.4			R	39	44.28		
		22.2	–3 27.0					43.9	44.3					
		39.5	3 27.4		23	50.0	9 5.7			R	39	45.40		
		47.3	11 46.0						44.3					
		57.3	–2 57.5		25	23.4	10 39.1	43.5	43.8	R	39	47.05		
	12	12.2	2 57.8						41.2					
		16.0	12 16.0		26	53.7	12 9.4			R	39	47.50		
59	46.3		19.8	–2 28.1				44.1	44.1					
53.63	53.3		40.0	2 28.1	28	32.0	13 17.7		444					
0	1.3		46.0	12 46.0								4422		
1	18.2		52.1	–1 58.2				44.2	44.3			4380		
24.40	26.3	13	10.2	1 58.3					458			4356		
	28.7		15.4	13 14.8										
2	45.8		18.9	–1 29.0				43.8	43.7			4464		
50.63	50.7		41.3	1 28.9					44.7			4480		
	53.4		45.3	13 45.5							5	221.02		
4	17.4		49.8	–0 59.6				45.1	44.7		14	44.20		
22.07	21.8	14	6.9	0 59.2					446					
	27.0		15.8	14 14.6										
5	45.7		21.2	–0 30.0				44.6	44.1					
51.00	51.3		41.0	+0 29.5										
	56.0		44.2	14 14.8										
			49.2	– 0.6				14 44.2	44.8					
2 52.346		15	13.7	– 0.0										
			15.0	15 15.2										
23	28.2		16.9	–0 29.3				1445.9	45.7					
34.57	34.7			– 0 29.5										
	40.8							6208	6194			10603		
25	1.4							14 44.34	44.24		14	44.18		
6.60	6.6													
	11.8													
26	32.0			5										
32.07	37.2													
	42.0													
27	39.7													
4.70	28 4.0													
	11.0													
29	27.6													
34.43	35.0													
	40.7													
26 34.474														

1 14 6.46

a+1				a–1							
59	53.6	+14 50.7	+14 49.2	14	42.8	23	34.6	–8 50.3	–8 53.4	14	41.2
1	24.4	13 19.9	13 19.8	14	44.2	25	6.6	10 22.3	10 22.2	14	44.4
2	50.6	+11 53.7	11 51.6	14	42.2	26	37.1	11 52.8	11 51.3	14	45.8
4	22.1	10 22.2	10 22.6	14	44.7	28	4.9	13 20.6	13 20.2	14	44.7
5	51.0	8 53.3	8 53.3	14	44.3	29	34.4	14 50.1	14 49.8	14	44.6

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1880 May 6 cc

0.10908
8.36578m
8.47486m

6.73660
8.36578m
5.10238m

h	m	s		m	s							
	13	6	28.8	56	18.5	+16	11.6			M	1	4705
			35.7				971.6	2.98749				
			42.4	58	15.5	14	14.6			M	1	4220
			56.9				854.6	2.93176				
		7	3.9	59	53.2	12	36.9			M	1	3642
			11.4				756.9	2.87904				
			27.5	1	18.9	11	14.2			M	1	3350
7	32.72		38.8				674.2	2.82879				
7	32.72		39.5	2	40.2	9	49.9			W	1	2732
			52.9				589.9	2.77078				
		8	0.7	19	10.5	-6	40.4			W	0	5402
			6.8				400.4	2.60249	w			
			22.3	25	15.0	-12	44.9			W	0	4762
			30.0				764.9	2.88360	w			
			38.4	27	4.8	-14	34.7			W	0	4642
			57.8				874.7	2.94186	w			
		9	3.6	28	39.0	-16	8.9			W	0	4618
			9.0				968.9	2.98628	w			
			27.2	30	20.1	-17	50.0			W	0	4592
			32.9				1070.0	3.02938	w			
			38.3	31	30.2	-19	20.1			W	0	4602
			56.4				1160.1	3.06450	w			
10	1.54	10	1.5	34	26.8	-21	56.7			W	0	4592
10	1.54		7.2				1316.7	3.11949	w			
			23.8	36	48.8	-24	18.7			W	0	4512
			31.3				1458.7	3.16397	w			
			37.2	39	3.9	-26	33.8			W	0	4565
			53.0				1593.8	3.20244	w			
			58.9	41	5.8	-28	35.7			W	0	4728
		11	4.9				1715.7	3.23444	w			
			24.0									
			28.6									
			34.6									
			50.7									
		12	1.3									
			7.9									
			24.4									
12	29.64		31.0									
12	29.64		37.7									
			51.0									
			56.4									
		13	4.0									
			23.8									
			30.4									
			36.9									
			57.2									
		14	2.4									
			8.3									
			22.9			1	14	7.35				88 40 11.55
			28.5									
			35.4									
			53.0									
15	0.70		59.8									
15	0.70	15	5.5									
			25.5									
			31.5									
			37.9									
			54.5									
		16	0.5									
			8.0									
			23.0									
			28.7									
			35.4									
			47.0									
			54.5									
		17	0.6									
			20.4									
17	26.42		28.0									
17	26.42		34.2									
			50.8									
			56.0									
		18	4.7									
			16.5									
			25.2									
			30.4									
12	30.492											

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1880 May 6 UC

0.10908
8.36569
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6.73660
8.36569
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Ex. minute

h	m	s	m	s							
					58	18.0	16	26.7	2.99405		
1	8	42.6			59	29.4	15	15.8		R	39 45.58
		45.0	8 46.9					915.0	2.96142		
		53.0			0	31.4	14	13.8		R	39 45.85
	9	11.8						853.0	2.93095		
		15.6	9 16.7		1	38.9	13	5.8		R	39 53.98
		22.7						785.3	2.89515		
		42.0			2	41.3	12	3.4		R	39 67.82
9 47.54		45.9	9 47.1					723.1	2.85920		
9 47.54		53.4			4	8.0	10	36.7		R	185
	10	13.0						686.4	2.80373		
		18.2	10 18.4		7	13.6	7	30.1		R	575
		24.0						450.8	2.65398		
		44.2			21	28.3	-6	43.8		R	910
		47.7	10 48.6					403.9	2.60627		
		54.0			25	32.2	-10	47.5		R	2340
	11	11.4						647.8	2.81144		
		15.3	11 16.6		31	29.2	-16	44.5		R	2152
		23.0						1004.8	3.00208		
		38.3			35	44.3	-20	59.6		R	4500
		46.0	11 46.5					1259.9	3.10034		
		55.3			36	47.5	-22	2.8		R	4862
	12	12.0						1323.1	3.12159		
12 16.66		17.7	12 17.5		(36	51.2	-22	6.8		R	5192
12 16.66		28.7						1326.8	3.12280		
		39.9	470		(37	6.0	-22	21.9		R	52.05
		47.5	12 46.8					1341.6	3.12762		
		53.5								R	5262
	13	8.9									
		15.9	13 15.7								
		23.3									
		38.7									
		44.9	13 44.9								
		51.0									
	14	9.9									
		13.2	14 13.4								
		17.2									
		39.0									
14 44.08		44.4	14 44.7								
14 44.08		50.7									
	15	6.7									
		13.7	15 13.4								
		19.7									
		38.1									
		43.4	15 44.0								
		50.5									
	16	6.9									
		13.6	16 14.2								
		22.2									
		39.5					1 14	7.04			.88 40 11.70
		45.7	16 45.1								
		50.0									
	17	9.1									
17 14.30		12.6	17 13.2								
17 14.30		17.0									
		—									
		—	17 46.0								
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		—	18 13.0								
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		—	18 42.0								
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	19	3.0									
		12.0	19 11.0								
		18.0									
		33.8									
19 40.82		41.0	19 40.1								
19 40.82		45.5									
	20	3.6									
		10.4	20 10.3								
		16.9									
		33.0									
		41.2	20 40.7								
		47.9	680								
14 44.421			14 41.424								

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18

1880 May S & C

0.10908
8.36578m
8.47486r

6.73660
8.36578m
5.10238m

Identical

h	m	s		m	s						
13	6	37.7		58	53.5	+13 44.8				W	1 5348
		41.2	6 42.1			824.8					
		47.3	+5 55.8	0	15.7	12 22.6	12 37.9	38.0		R	1 4860
	7	5.5	+5 55.9			742.6					
		13.3	7 12.7	1	40.0	10 58.3				W	1 4570
		19.2	5 26.5			658.3	39.2	38.9			
		37.5	5 26.2	2	28.3	10 10.0				R	1 4162
		43.5	7 43.3			6100					
		49.0	4 56.7	3	44.2	8 54.1	40.0	39.6		W	1 3912
	8	7.2	4 56.3			8 534.1					
		12.9	8 12.7	4	38.4	8 2.9				W	1 3725
		18.0	4 27.5				40.2	39.5			
		36.5	4 26.8	5	27.7	7 10.6				W	1 3465
		41.2	8 41.8								
		47.6	3 57.7	6	16.2	6 22.1	39.5	39.0		W	1 3170
	9	6.0	3 57.2								
		12.5	9 12.2	21	59.8	89 21.5				W	0 558
		18.1	3 27.6				39.8	39.6			
		33.2	3 27.4	22	52.2	10 13.9				R	0 385
		38.0	9 39.1								
		46.1	2 57.5	24	3.9	11 25.6	36.6	36.7		W	0 365
	10	6.2	2 57.6								
		9.5	10 10.8	25	2.8	12 24.5				R	0 250
		16.7	2 28.0				38.8	39.0			
		31.7	2 28.2	26	4.4	13 26.1				W	0 305
		40.7	10 39.8								
		46.9	1 58.8				38.6	38.3			
	11	2.0	1 58.5								39.00
		8.0	11 8.6						3		38.18
		15.7	1 29.2				37.8	37.5			38.06
		32.7	12 8.7								38.00
		39.7	11 39.6								
		46.4	0 58.9				38.5	38.7		4)	153.24
	12	2.0	0 59.1								38.31
		10.8	12 9.2								
		14.7	0 29.5				38.7	38.7			
		33.4	0 29.5								
	X	38.0	12 38.9				12 38.5				
		45.4	0.4				38.3	38.9			
	13	1.3	0 0.0								
		5.0	13 6.1				12 38.4				
		11.9	0 29.7				35.8	36.6			
		29.5	0 29.5								
		37.0	13 36.6				37.1				
		43.4	0 56.5				36.1	37.4			
	14	0.6	0 59.2								
		8.0	14 7.6				38.8				
		14.2	1 28.8				36.4	38.7			
		30.4	1 28.9								
		34.6	14 35.1				36.1				
		40.3	1 59.0				34.1	36.8			
	15	0.4	1 58.3								
		5.1	15 5.9				37.5				
		12.3	2 28.4				34.3	37.8			
		31.7	2 28.1								
		35.4	15 36.5				38.7				
		42.3	2 57.8				12 34.3	38.7			
			2 57.8					72.87			
						19)	715.9	6557	7284	7287	
							37.66	38.385	38.34	12 38.33	

1 14 8.69

88 40 11.04

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0.10908
8.36578n
8.47486n

6.73660
8.36578n
5.10238n

1880 May 9 SC

h	m	s	m	s	m	s						
13	6	36.6	6 ~~42.3~~		50	49.3	12	49.6				
	41	41.9	6 42.3					769.1	2.88598			
		48.4			2	45.9	9	58.5		W	1	4825
	7	5.3						592.5	2.77269	W	1	3820
		10.4	7 10.6		18	45.5	-6	6.6		W	1	~~452~~
		16.0						362.1	2.56478n			
4		36.4			19	41.2	-7	2.8		W	1	168
7 41.68		43.2	7 42.6					422.8	2.62613n			
7 41.64		48.2			22	9.7	-10	30.8		W	0	5940
	8	6.0						631.3	2.80024n			
		12.1	8 12.0		23	39.0	-11	0.1		W	0	5842
		18.0						660.6	2.81994n			
		34.5			25	48	-12	25.9		W	0	5688
		41.2	8 40.7					746.4	2.87297n			
		46.3			27	6.6	-14	27.7		W	0	5625
	9	5.7						868.2	2.93862n			
		10.2	9 10.3		28	38.2	-15	59.8		W	0	5625
		15.0						959.8	2.98218n			
		33.0			30	23.8	-17	4~~6~~9		W	0	5520
		39.6	9 ~~39~~ 38.3					1065.4	3.02751n			
		45.4			32	6.4	-19	27.5		W	0	5370
10.66	10	5.4						1168.0	3.06744n			
10 ~~8.46~~		12.0	10 11.7		33	52.8	-21	13.9		W	0	5615
10 10.66		17.6						1274.4	3.10531n			
		35.4			36	27.9	-23	49.0		W	0	5610
		41.0	10 41.1					1429.5	3.15519n			
		47.0			38	25.8	-25	4~~6~~9		W	0	5795
	11	4.9						1547.4	3.18960n			
		10.5	11 10.9		40	32.4	-27	59~~6~~		W	0	5938
		17.2						1674.0	3.22376n			
		34.4			42	12.0	-29	33.1				
		42.0	11 41.4					1773.6	3.24885n			
		47.9										
	12	2.7										
		8.6	12 8.7									
		14.7										
		33.5										
12 39.00		38.4	12 38.6									
12 39.00		44.8										
	13	2.6										
		8.4	13 8.2									
		13.7										
		32.1										
		38.8	13 38.1									
		43.3										
	14	1.6										
		8.2	14 7.6									
		13.0										
		32.1						1 14 9.39				.88 40 10.81
		37.9	14 38.0									
		44.0										
	15	1.4										
15 7.42		8.0	15 7.8									
15 7.42		14.0										
		31.8										
		37.6	15 37.4									
		42.8										
	16	0.7										
		7.1	16 6.3									
		11.2										
		32.2										
		37.6	16 37.4									
		42.4										
		39.7										
	17	4.4	17 4.8									
		10.2										
		30.1										
17 35.68		35.8	17 35.3									
17 35.68		40.0										
	18	0.4										
		6.0	18 6.3									
		12.4										
		28.2										
		34.5	18 34.6									
		41.0										

880 880
12 38.~~137~~ 12 38.~~437~~

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1880phae.proj:1561.

50

1880 May 9 UC

D. 10908
8.36578
8.47486

6.73660
8.36578
5.10238

h	m	s		m	s					R	′	″
	1	—		53	6.0	21	443					
		—	8 50.0				1304.3	3.11538				
		—		54	33.4	20	169			R	39	57.28
	9	18.0					1216.9	3.08525				
		21.4	9 21.9	55	50.7	18	59.6					
		26.4					1139.6	3.05681		R	39	57.02
		47.0		56	56.8	17	535			R	39	59.52
	9 57.86	54.0	9 53.2				1073.5	3.03080				
	9 57.86	58.6		0	23.8	14	26.5			R	40	5.08
		10 16.4					866.5	2.93777				
		22.6	10 22.0	6	22.1	8	282			R	40	16.05
		27.0					508.2	2.70603				
		46.4		22	35.7	-7	454			R	40	13.65
		52.6	10 52.2				465.4	2.66783				
		57.5		24	15.0	-9	24.7			R	40	33.92
		11 16.4					564.7	2.75182				
		22.6	11 22.9	25	30.7	-10	40.4			R		1.53
		29.7					640.4	2.80645		R		2.52
		45.0										
		52.5	11 52.7									
	12 22.16	12 0.7								R		2.65
	12 22.16	20.7										
	m s	22.7	12 22.8									
	59 58.8	25.0										
58.97	58.5	50.0										
	0 4.6	51.9	12 51.8									
	1 24.5	53.5										
29.10	28.0	13 16.0										
	34.8	21.4	13 20.6									
	2 53.1	24.4										
57.10	56.4	44.4										
	3 1.8	50.5	13 50.2									
	4 24.1	55.7										
	33.5	14 16.0										
		21.2	14 20.9									
		25.5										
		44.6										
	14 49.64	49.0	14 49.2									
	14 49.64	54.0										
		15 14.5										
		19.0	15 19.1									
		23.7										
		44.0										
		48.8	15 48.8									
		53.6										
		16 12.6										
		16.0	16 16.9									
		22.2										
		46.0						1 14 9.04				88 40 10.3
		50.6	16 49.8									
		54.9										
		17 13.4										
	~~17 18.64~~	19.0	17 19.1									
	17 18.66	25.0										
		41.2										
		51.5	17 50.4									
		58.6										
		18 12.4										
		17.2	18 17.2			a	+1					
		21.6				39	58.8	+14 51.5	+14 49.1	14	47.9	
		40.5										
		47.6	18 46.8			1	29.1	13 21.2	13 19.6	14	48.7	
		52.2										
		19 11.2				2	57.1	11 53.2	11 57.5	14	48.6	
		18.6	19 18.3									
		25.0				4	28.8	10 21.5	10 22.5	14	51.3	
		39.3									19.5	
	19 49.10	48.1	19 47.5							14	49.12	
	19 49.10	55.0										
		20 15.1										
		22.6	20 21.9									
		28.0										
			20 51.0									
	14 50.280		14 50.280									

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1000phae.proj:1561:

1880 May 10 SC

0.10908
8.36587
8.47495

6.73660
8.36587
5.10247

h	m	s	m	s	m	s						
	13	6	35.0		59	13.5	13	23.7		W	1	49.75
			40.2	6 40.4				803.7	2.90509			
			46.0		0	12.5	12	24.7		W	1	46.68
		7	3.7					744.7	2.87198			
			9.0	7 9.8	1	1.7	11	35.5		W	1	44.18
			16.6					695.5	2.84230			
			35.3		1	49.7	10	47.5		W	1	42.12
7 39.70			40.2	7 40.8				647.5	2.81124			
7 39.70			47.0		3	3.2	9	34.0		W	1	40.90
		8	3.4					574.0	2.75891			
			8.7	8 8.8	3	56.9	8	40.3		W	1	35.72
			14.3					520.3	2.71625			
			32.9		4	49.8	7	47.4		W	1	33.42
			38.0	8 38.7				480.4	2.66969			
			45.1		5	45.3	6	51.7		W	1	30.70
		9	3.7					411.7	2.61458			
			7.8	9 8.7	18	50.0	-6	12.8		W	0	24.5
			14.7					372.8	2.57148			
			32.5		19	47.5	-7	10.3		W	0	50.5
			37.8	9 38.3				430.3	2.63377			
			44.5		20	34.0	-7	56.8		W	0	39.5
	46	10	3.0					476.8	2.67834			
10 8.46			6.6	10 7.8	21	23.4	-8	46.2		W	0	29.8
10 8.46			13.7					526.2	2.72115			
			32.0		22	13.0	-9	35.8		W	0	24.2
			37.4	10 38.0				575.8	2.76027			
			44.6									
		11	4.0									
			9.2	11 9.5								
			15.3									
			33.5									
			38.3	11 38.6								
			44.0									
		12	1.9									
			8.8	12 8.3								
			14.2									
			31.4									
12 37.98			37.0	12 37.1								
12 38.00			42.9									
		13	3.7									
			7.7	13 8.0								
			12.7									
			31.5	38.0								
			36.7	13 37.9								
			45.7									
		14	1.4									
			6.4	14 7.1								
			13.4									
			31.3				1	14	10.05			88 40 10.60
			36.4	14 36.5								
			41.8									
			59.1									
15 6.18		15	6.5	15 5.9								
15 6.18			12.1									
			31.0									
			35.4	15 35.9								
			41.3									
		16	0.8									
			4.5	16 5.5								
			11.1									
			28.6									
			34.1	16 34.8								
			40.0									
			57.5									
		17	2.2	17 3.6								
			11.0									
			28.8									
17 33.46			33.4	17 34.5								
17 33.74			41.4									
			57.7									
		18	2.5	18 3.6								
			10.5									
			27.4									
			31.7	18 32.8								
			39.3									
12 37.216				12 37.216								

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1880phae.proj:1561:

512

– 1880 May 11 SC

0.10908
8.36587m
8.47495m

6.73660
8.36587m
5.10247m

Vertical

h	m	s		m	s						
13	6	31.7		58	31.5	+14 2.87			W	1	8492
		36.2	6 37.0								
		43.2	+ 555.8	59	29.9	13 4.4	12 32.8	32.9	W	1	5048
	7	1.0	+ 555.9								
		8.4	7 7.2	0	17.0	12 17.8					
		12.1	– 526.5				33.7	33.4	W	1	4895
		31.5	5 26.2	1	8.0	11 26.3			W	1	4568
		38.0	7 36.3								
		42.5	– 456.7	2	4.7	10 29.6	33.0	32.6	W	1	4298
		57.0	4 56.3								
	8	4.3	8 4.5	3	2.5	9 31.8			W	1	4085
		12.3	– 437.5				32.0	31.8			
		31.1	426.8	3	46.2	8 48.6			W	1	3892
		35.3	8 35.9								
		41.3	– 357.7	4	37.2	7 57.0	33.6	33.1	W	1	3618
	9	1.4	357.2								
		7.0	9 7.4	5	33.4	7 0.9			W	1	3395
		13.7	– 327.6				35.0	34.8			
		32.6	327.4	23	18.8	4 44.5			W	1	350
		37.2	9 37.8								
		43.5	– 257.5	25	56.0	13 21.7	35.3	34.4	W	1	0.35
	10	1.0	257.6								
		6.0	106.6	27	38.4	15 4.7			W	1	0.18
		12.7	– 228.0				34.6	34.8			
		28.7	228.2	29	39.2	17 24.9			W	1	0.18
		35.9	10 35.2								
		40.9	– 1 58.8	31	30.0	18 55.7	34.0	33.7	W	0	5915
	11	2.7	1 58.5								
		7.9	11 7.5	33	54.5	21 20.2			W	0	5802
		11.9	– 1 29.2				36.7	36.2			
		28.0	128.7	35	14.7	22 40.4			W	0	5928
		34.0	11 34.6			6867					
		41.8	– 0 59.9	36	41.0	24 7.2	33.5	33.7	W	0	5922
		47.3	0 59.1								
	12	4.6	12 5.2	38	38.5	26 4.2			W	0	5932
		11.6	– 0 29.5				34.7	34.7			
		29.4	0 29.5	39	58.7	27 24.4			W	1	0.28
		34.0	12 35.4								
		42.8	– 6.4				12 35.0	35.4			
		57.4	0.0								32.66
	13	4.6	13 0.8								34.78
		9.5	– 0 29.7				34.1	34.3			34.76
		30.3	– 0 29.5								34.60
		35.5	13 34.9								
		38.8	– 0 59.5				35.4	35.7		4	136.80
		57.1	0 59.2							12	34.20
	14	3.4	14 3.3								
		9.0	– 1 28.8				34.4	34.3			
		28.4	1 28.9								64.94
		34.4	14 33.4								
		37.4	– 1 59.0				34.4	35.1	13	12	342.0
		58.4	1 58.3								
	15	2.6	15 3.9								
		10.6	– 2 28.2				35.5	35.8			
		24.4	2 28.1								
		29.4	15 31.0								
		39.3	– 2 57.8				12 33.2	33.2			
			2 57.8				19) 6509	6484			
							12 34.26	34.13			

1 14 10.71

88 40 10.41

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Examine

− 1880 May 11 UC

Identical

0.10908
8.36587
8.47495

6.73660
8.36587
5.10247

h	m	s	m	s									
			56	33.4	+18 20.0			R	40	33.2			
			58	3.8	16 49.6			R	40	7.8			
			59	16.2	15 37.2			R	40	12.0			
			4	13.6	10 37.8			R	40	27.12			
			6	11.8	8 41.6			R	40	31.70			
			22	9.5	−7 16.1			R	41	1.40			
			23	17.4	8 24.0			R	41	2.05			
	m	s											
	3	54.1											
		0.3											
0.33		6.6											
	6	55.2											
	7	1.2											
0.77		5.9											
	9	52.2											
		37.5											
57.07	10	1.5											
			26	28.0	11 34.6			R	41	5.55			
			27	15.5	12 22.1			R	41	5.32			
			30	53.9	16 0.5			R	41	6.75			
			32	10.3	17 16.8			R	41	6.90			

			1	19	16.4	18							
					21.6	19	2.14						
					26.2	−3	2.67						
					44.9	−3	27.4						
	m	s	x		51.0	14	5.08						
	24	42.1			56.4	−3	5.67						
46.60		46.1		20	13.5	3	57.2						
		51.6			18.9	20	19.9						
	26	11.0			27.3	−4	26.6						
16.20		15.8			45.0	4	26.8						
		21.8			49.1	22	49.4						
	27	48.3			54.0	−4	56.5						
48.90		48.9		21	14.0	4	56.3						
		49.5			18.2	21	18.7						
	29	8.8			24.0	−5	26.1						
13.90		14.0			43.0	5	26.2						
		18.9			47.3	21	4.76						
	30	38.4			52.6	−5	55.0						
43.87		43.2				−5	55.9						
		50.0											
27	415.894												

							14 54.47	54.0					
								53.5					
							14 54.1						
							53.3	53.6					
								54.2					
							143.33						
							56.0	53.1					
								57.9					
							14 52.9						
							54.2	53.1					
								57.5					
							143.26						
							50.5	52.5					
								54.5					
							145.26						
							49.3	51.7			58.96		
							3090	2597			14 53.60		
							51.50	54					
							6) 320.2	3180					
							14 53.37	53.00					

1 14 10.39

							a +1.								a −1.				88.40	10.50
4	0.3	+10	58.1	+11	51.3	15	37.6	24	46.6	−9	63.2	−8	53.1	15	53.5					
7	0.8	+8	58.6	10	22.3	16	23.1	26	16.8	−11	22.8	10	22.0	15	54.2					
9	57.1	+4	56.3	8	53.1	18	40.7	27	48.8	−12	56.5	11	51.0	15	57.9					
				10	22.3	14	22.6	29	12.6	−14	17.2	13	19.9	15	51.5					
				8	53.1	14	53.6	30	43.8	−15	50.5	14	44.4	15	54.6					

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74

1880 May 15 CC

0.10908
8.36596 m
8.47504 m

6.73660
8.36596 m
5.10256 m

h	m	s		m	s					
13	6	41.0		59	8.0	13	329		W	40
		44.9	6 45.4				812.9	2.91004		
		50.3		0	26.7	12	14.2		W	40
	7	10.2					734.2	2.86581		
		15.4	7 15.1	1	21.1	11	19.8		W	40
		19.7					679.8	2.83238		
		39.6		2	6.2	10	34.7		W	40
7 44.32		44.6	7 44.6				634.7	2.80257		
7 44.32		49.7		3	3.8	9	37.1		W	40
	8	7.0					577.1	2.76125		
		12.5	8 12.6	3	09.3	8	41.6		W	1
		18.2					521.6	2.71734		
		38.8		5	11.5	7	29.4		W	1
		43.7	8 43.9				449.4	2.65263		
		49.2		6	15.2	6	25.7		W	1
	9	7.4					385.7	2.58625		
		13.4	9 13.1	21	37.8	-8	569		W	1
		18.5					536.9	2.72989 m		
		38.4		22	38.3	-9	574		W	1
		42.7	9 43.0				507.4	2.77627 m		
		48.0		23	30.4	-10	49.5		W	1
	10	5.8					649.5	2.81258 m		
10 12.36		12.6	10 11.8	24	23.2	-11	423		W	1
10 12.36		17.0					702.3	2.84652 m		
		36.1		25	8.3	-12	274		W	1
		41.8	10 42.2				747.4	2.87355 m		
		48.7								
	11	5.3								
		12.5	11 11.7							
		17.4								
		36.5								
		41.0	11 41.5							
		47.0								
	12	7.3								
		10.5	12 11.7							
		17.4								
		37.7								
12 41.46		41.5	12 41.9							
12 41.46		46.4								
	13	9.0								
		12.0	13 12.3							
		15.9								
		35.0								
		38.8	13 39.9							
		45.8								
	14	5.1								
		9.5	14 10.0							
		15.5								
		35.2				1	14	13.01		
		39.3	14 39.8							
		45.0								
	15	4.0								
15 ~~9.20~~		9.5	15 9.9							
15 9.20		16.0								
		32.6								
		39.0	15 38.6							
		44.1								
	16	2.4								
		7.3	16 7.8							
		13.7								
		33.5								
		37.2	16 38.4							
		44.6								
	17	0.7								
		6.7	17 6.3							
		12.6								
17 37.14			17 37.0							
17 37.14										
			18 7.0							
			18 37.0							
12 40.900			12 40.900							

88 40 9.60

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1880 May 16 DC

0.10908
8.36396 m
847504 n

6.73660
8.36596 m
5.10256 n
Identical

h	m	s		m	s							
13	6	36.6		58	51.2	+13 49.X				W	1	5208
		44.7	6 43.5			829.7						
		49.3	+ 5 55.8	59	49.9	12 50.8	12 39.3	39.4		W	1	48.98
	7	9.0	+5 55.9			7710						
		13.4	7 13.9	0	42.6	11 58.5				W	1	4648
		19.4	5 26.5			7183	40.4	40.1				
		39.0	5 26.2	1	29.9	11 10.8				W	1	4390
		45.0	7 45.2			671.0						
		51.5	4 56.7	2	22.6	10 18.3	41.9	41.5		W	1	4128
	8	7.8	4 56.3			618.3						
		14.6	8 14.3	3	18.9	9 21.8				W	1	3845
		20.5	4 27.5			562.0	41.8	41.1				
		37.1	4 26.8	4	18.0	8 22.7				W	1	3640
		42.9	8 43.1			502.9						
		49.2	3 57.7	5	10.5	7 30.X	40.8	40.3		W	1	3378
	9	7.4	3 57.2			450.4		—				
		43.4	9 13.6	5	59.1	6 41.8				W	1	3202
		20.0	3 27.6			401.8	41.2	41.1				
		38.8	3 27.4	20	34.5	7 53.X				W	1	460
		44.0	9 42.7			473.6						
		48.3	2 57.5	21	33.3	8 52.X	40.2	40.3		W	1	360
	10	7.2	2 57.6			532.4						
		12.3	10 12.5	22	16.5	9 35.X				W	1	312
		18.0	7 22.0			575.6	40.5	40.7				
		35.5	2 28.2	23	5.7	10 25.0				W	1	238
		43.3	10 42.7			624.8						
		49.2	1 58.5	23	53.0	11 12.X	41.5	41.2		W	1	180
	11	7.0	1 58.5			671.2						
		13.3	11 12.6	24	45.9	12 5.X				W	1	088
		17.4	1 29.2			725.0	41.8	41.3				
		36.0	1 28.7	25	30.4	12 49.X		—		W	1	080
		41.3	11 41.5			769.5						
		47.2	0 59.9	26	11.3	13 30.X	40.4	40.6		W	1	018
	12	5.0	59.1 18.60			810.4						
		11.0	12 9.9	26	50.7	14 9.6	100			W	0	5950
		18.8	0 29.5			849.8	41.1	41.1				
		38.0	0 29.5									
		42.3	12 42.7									
		47.7	— 0.4				12 42.3	42.7				
	13	4.0	-0 0.0									
		10.3	13 9.8									
		15.0	0 29.7				40.1	40.3				
		32.5	0 29.5									
		38.4	13 39.5									
		46.7	0 59.5				40.0	38.3				
	14	4.2	-0 59.2									
		9.4	14 9.6									
		15.2	1 28.8				12 40.8	40.7				
			-1 28.9									

40.48
40.92
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3) 122.02
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1 14 13.59

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1880 May 17 LC

0.10908
8.86596m
8.47504m

6.73640
8.36596m
5.10256m

h	m	s	⊙	m	s					
13	6	36.0		32	55.2	+19	43.0		W	2' 12.68
		42.4	6 42.3				1183.0	3.07298		
		48.6		55	6.9	17	31.3		W	2 4.75
	7	5.0					1051.3	3.02173		
		10.5	7 11.6	57	55.7	14	42.5		W	1 55.85
		19.2					882.5	2.94571		
		34.8		39	37.5	13	0.7		W	1 51.10
7 41.20		40.0	7 39.8				780.7	2.89248		
7 41.20		44.5		1	13.3	11	24.9		W	1 44.98
	8	5.9					684.9	2.83563		
		12.7	8 12.0	4	42.7	+ 7	55.5		W	1 36.25
		17.5					475.5	2.67715		
		33.1		19	7.0	- 6	28.8		W	1 7.62
		39.7	8 40.3				388.8	2.58973m		
		45.2		21	44.0	- 9	5.8		W	1 6.28
	9	2.3					545.8	2.73703m		
		9.8	9 8.8	23	39.0	- 11	0.8		W	1 3.78
		14.2					660.8	2.82007m		
		37.6		25	19.5	- 12	41.3		W	1 1.92
		42.4	9 42.6				761.3	2.88156m		
		47.9		27	2.5	- 14	24.3		W	1 0.48
	10	5.8					864.3	2.93666m		
10 12.06		13.1	10 12.5	28	23.5	- 15	45.3		W	1 0.02
10 12.06		18.5					945.3	2.97557m		
		35.0		30	0.8	- 17	22.6		W	1 0.20
		42.0	10 41.5				1042.6	3.01812m		
		47.4		31	37.4	- 18	59.2		W	0 58.72
	11	9.5					1139.2	3.05660m		
		14.8	11 14.9	33	9.4	- 20	31.2		W	0 58.82
		20.5					1231.2	3.09033m		
		35.6		34	26.8	- 21	48.6		W	0 59.18
		44.2	11 43.1				1308.6	3.11681m		
		49.4								
	12	7.2								
		13.9	12 13.5							
		19.5								
		35.2	40							
12 ~~44.30~~		39.4	12 ~~43.0~~							
12 40.70		45.5								
	13	1.0								
		10.2	13 9.1							
		16.0								
		32.8								
		37.7	13 37.8							
		43.0								
		38.4								
	14	5.6	14 5.3							
		12.0								
		31.5				1	14	14.21		88 40 9.16
		36.4	14 36.5							
		41.7								
		57.8								
15 4.50	15	5.2	15 4.3							
15 4.50		10.0								
		25.7								
		33.6	15 32.6							
		38.4								
		58.0								
	16	4.0	16 3.8							
		9.4								
		27.5								
		34.0	16 33.5							
		39.0								
		55.0								
	17	0.5	17 0.9							
		7.3								
		26.8								
17 31.80		32.5	17 32.0							
17 31.80		36.7								
		55.0								
	18	0.8	18 1.1							
		7.5								
		22.3								
		33.2	18 31.5							
		39.0								
12 38.172			12 38.172							

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1880 May 20 U.C.

0.10908
8.36605
8.47513

6.73660
8.36605
5.10265

h	m	s		m	s						
1	9	2.4		38	0.0	+ X 7 2.7		R	40	9	72
		6.6	9 6.8			1022.7	3.00975				
		11.5		59	26.0	15 36.7		R	40	15	88
		34.8				936.7	2.97160				
		39.5	9 39.7	0	47.9	14 14.8		R	40	18	62
		44.7				874.8	2.941191				
	10	1.5		2	0.7	13 2.0		R	40	21	72
10 6.90		5.0	10 6.0			782.0	2.89321				
10 6.90		11.6		3	41.7	11 21.0		R	40	27	20
		30.6				701.0	2.84572				
		36.2	10 36.0	4	54.7	10 8.0		R	40	30	75
		41.3				608.0	2.78390				
	11	1.4		6	30.3	8 32.4		R	40	33	38
		6.1	11 6.0			512.4	2.70961				
		10.6		7	37.8	+ 7 24.9		R	40	36	85
		30.3				444.9	2.64826				
		35.2	11 35.0	21	19.3	− 6 16.6		R	41	09	5
		39.6				376.6	2.57588 m				
		59.4		23	28.5	− 8 25.8		R	41	31	8
	12	4.6	12 5.0			505.8	2.70398 m				
		11.0		24	41.5	− 9 38.8		R	41	32	0
		29.2				578.8	2.76253 m				
12 34.68		35.2	12 34.8	25	43.0	− 10 40.3		R	41	39	2
12 34.68		39.9				640.3	2.80638 m				
		58.3		27	20.0	− 12 17.3		R	41	59	0
	13	4.2	13 4.1			737.3	2.86764 m				
		9.7									
		27.5									
		35.8	13 34.5								
		40.1									
		56.7									
	14	2.1	14 2.2								
		7.7									
		27.0									
		34.0	14 32.5								
		36.6									
	15	0.2									
15 2.14		8.7	15 4.0								
15 2.14		8.2									
		25.5									
		31.5	15 31.2								
		36.5									
		54.2									
	N	1.2	16 0.8								
		7.1									
		23.3									
		29.0	16 30.2								
		38.2									
		55.7				1 14	16.03				
	17	3.0	17 2.7								
		9.3									
		25.4									
17 31.26		33.7	17 32.9								
17 31.26		39.6									
		55.8									
	18	1.5	18 1.3								
		6.5									
		22.7									
		29.4	18 29.2								
		35.6									
		52.4									
	19	0.4	19 0.1								
		7.5									
		25.0									
		29.7	19 29.7								
		34.3									
		51.2									
19 58.72		58.5	19 58.7								
19 58.72	20	6.4									
		23.2									
		29.2	20 28.6								
		33.5									
		51.6									
15 2.14		56.0	20 56.5								
	21	2.0									
			15.2.740								

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58

8.36605

1880 May 21 SC

h	m	s	m	s	m	s				′	″
	13	6	38.7		3	1.5	+ 9	39.7		W	1	37.75
			45.4	6 44.9				579.7	2.76320			
			50.6		5	5.0	+ 7	36.2		W	1	32.05
		7	11.5					456.2	2.65916			
			17.2	7 17.2	18	59.0	− 6	17.8		W	1	4.75
			23.0					377.8	2.57726 m			
			41.0		22	59.0	− 10	17.8		W	0	59.75
7	46.08		45.5	7 46.9				617.8	2.79085 m			
7	46.08		54.2		24	42.7	− 12	1.5		W	0	58.98
		8	8.7					721.5	2.85824 m			
			15.4	8 15.5	27	13.9	− 14	32.7		W	0	56.95
			22.4					872.7	2.94086 m			
			39.7		28	56.2	− 16	15.0		W	0	56.72
			45.5	8 45.9				975.0	2.98900 m			
			52.6		30	33.4	− 17	52.2		W	0	56.88
		9	11.0					1072.2	3.03027 m			
			16.0	9 16.1	32	23.5	− 19	42.3		W	0	54.95
			21.2					1182.3	3.07273 m			
			38.0		33	57.3	− 21	16.1		W	0	54.85
			48.0	9 44.5				1276.1	3.10588 m			
			50.5		35	42.2	− 23	1.0		W	0	55.52
		10	8.4					1381.0	3.14019 m			
10	13.60		15.0	10 14.4	37	15.8	− 24	34.6		W	0	55.12
10	13.60		19.7					1474.6	3.16867 m			
			36.0		39	5.4	− 26	24.2		W	0	56.48
			41.7	10 41.3				1584.2	3.19981 m			
			46.3		41	28.3	− 28	47.1		W	0	57.62
		11	5.7					1727.1	3.23741 m			
			11.5	11 11.7	43	10.2	− 30	29.0		W	0	59.30
			17.8					1829.0	3.26221 m			
			35.5		44	30.5	− 31	49.3		W	1	0.72
			39.8	11 40.8				1909.3	3.28088 m			
			47.0									
		12	6.0									
			10.0	12 11.0								
			17.0									
			34.0									
12	40.64		41.2	12 40.5								
12	40.64		46.2									
		13	6.7									
			13.1	13 12.1								
			16.4									
			33.3									
			38.7	13 38.8								
			44.4									
		14	3.6									
			10.0	14 9.7								
			15.4									
			33.6					1 14				
			40.0	14 39.5								
			44.9									
		15	3.8									
15	8.74		8.3	15 8.5								
15	8.74		13.4									
			33.5									
			38.6	15 38.9								
			44.5									
		16	0.2									
			8.0	16 7.1								
			13.0									
			31.0									
			37.4	16 37.3								
			43.4									
		17	2.3									
			8.9	17 8.2								
			13.4									
			31.8									
17	37.04		38.0	17 37.7								
17	37.04		43.4									
		18	1.0									
			6.7	18 6.5								
			11.7									
			29.0									
			35.5	18 35.5								
			42.0									
12	41.220			12. 41.220								

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- 1880 May 22 SC

0.10908
f.36605 m
8.47513 m

6.73660
8.36605 m
5.10265 m

Identical

h	m	s	m	s								
13	6	42.2	38	11.2	+14 30.9 3			W	1	52.15		
		46.0 6 466			870.9 1							
		51.7 + 5 55.8	39	51.0	12 51.5	12 42.4	42.5	W	1	4845		
7	13.7	+ 5 55.9			7711 3							
	17.6	7 17.4	1	3.8	11 38.3		40.9	W	1	4288		
	21.7	- 5 26.5			6983 2	44.2	43.5					
	40.6	5 26.2	1	59.5	10 43.0		42.2	W	1	4098		
	47.4	7 46.9			6426 2							
	52.7	- 4 56.7	2	54.9	9 47.6	43.6	43.2	W	1	3810		
8	9.0	4 56.3			5872		41.4					
	15.4	8 15.5	3	47.5	8 55.0			W	1	3598		
	22.2	- 2 27.5			5346 4	43.0	42.3					
	41.6	4 26.8	4	31.7	8 10.8		39.6	W	1	3428		
	45.5	8 46.4			4904 4							
	52.0	- 3 57.7	5	22.7	7 19.8	44.1	43.6	W	1	3208		
9	12.6	3 57.2			4394 1		40.1					
	16.2	9 17.7	6	12.0	6 30.5			W	1	2992		
	24.2	- 3 27.6			8901 7	45.3	45.1					
	41.2	3 27.4	21	13.8	-8 31.8			W	1	218		
	44.6	9 45.6			511.7							
	51.0	- 2 57.5	22	23.2	9 40.7	43.1	43.2	W	1	0865		
10	8.9	~~2 57.8~~ 2 57.6			5841 3							
m	s	10 13.1	23	26.4	10 43.9			W	1	028		
21	30.7	2 28.0			6443	40.8	41.0					
	33.4	2 28.2	24	4.7	11 22.8			W	0	59.98		
	37.4	10 42.6			6826							
22	58.8	- 1 58.8	25	1.1	12 18.6	41.4	41.1	W	0	58.08		
4.0	11	9.0 1 58.5			12789.0 6							
8.9		11 13.8	25	38.7	56.2			W	0	5772		
24	25.5	- 1 29.2			7766	43.0	42.5					
	31.5	1 28.7	26	34.4	13 ~~57.0~~ 523			W	0	5838		
	34.3	11 43.6			8823 9							
25	—	- 0 58.9	27	43.0	15 0.5	42.5	42.7	W	0	5765		
	36.0	12 6.7 0 59.1			900.5 6 2							
26	2.3	12 13.2	28	38.3	15 55.6			W	0	5622		
27	24.6	- 0 28.5			956.2	42.7	42.7					
	28.4	0 29.5								42.43		
	34.3	12 42.4								42.27		
		- 0 [illegible]				12 42.3	42.7			41.83		
13	6.0	0.0								42.80		
	10.2	13 10.9								41.53		
	16.4	- 0 29.7				41.2	41.4			42.70		
	35.2	- 0 29.5								40.90		
	40.6	13 40.4										
	45.5	- 0 59.5				40.9	41.2			29 44.6		
14	4.6	- 0 59.2								12 42.06		
	9.0	14 9.0				12 40.2	40.1					
	13.5	- 1 28.5										
		- 1 28.9				16) 6807	6792					8834
						12 425.4	42.45				13 12 42.07	

1 14 18.15

88 40 8.13

a = 1					
21 33.8	+51 8.7	-8 51.3	-8 52.9	12 40.9	
22 3.9	50 38.6	-9 21.4	10 21.7	11 42.2	
24 30.4	48 12.1	-11 47.9	11 51.0	12 41.4	
25 59.1	46 43.4	-13 16.6	13 19.5	12 39.6	
27 29.1	45 13.4	-14 46.6	14 49.0	12 40.1	

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1880 May 23 LC

0.10908
8.36605m
8.47513m

6.93660
8.36605m
5.10265m

h	m	s	m	s	m	s							
	13	6	41.8			38	58.8	13 43.3		W	1	4880	
			45.0	6	46.4			823.3	2.91556				
			32.4			0	5.1	12 37.0		W	1	4422	
		7	9.0					757.0	2.87910				
			15.5	7	15.5	0	54.5	11 47.6		W	1	4355	
			22.1					707.6	2.84979				
			40.0			1	36.3	11 5.8		W	1	4078	
			44.6	7	44.9			665.8	2.82334				
			50.1			2	24.3	10 17.8		W	1	3800	
		8	8.9		5			617.8	2.79085				
			15.6	8	15.2	3	21.4	9 20.7		W	1	3530	
			21.9					560.7	2.74873				
			38.5			4	7.7	8 34.4		W	1	3402	
			45.8	8	45.2			514.1	2.71130				
			51.4			4	50.0	7 52.1		W	1	3185	
		9	10.3					472.1	2.67403				
			14.0	9	14.8	5	39.1	+ 7 3.0		W	1	2960	
			20.0					423.0	2.62634				
			40.2			19	1.9	- 6 19.8		W	1	182	
			45.9	9	46.3			379.8	2.57955 m				
			52.7			19	55.0	- 7 12.9		W	1	130	
		10	7.9					432.9	2.63639 m				
10	14.22		13.7	10	13.9	20	44.0	- 8 1.9		W	1	138	
10	14.22		20.0					481.9	2.68296 m				
			36.6			21	33.5	- 8 51.4		W	1	075	
			41.6	10	42.5			531.4	2.72542 m				
			49.4			22	19.5	- 9 37.4		W	0	5952	
		11	7.6					577.4	2.76148 m				
			12.2	11	13.6	23	16.0	- 10 33.9		W	0	5830	
			21.0					633.9	2.80202 m				
			38.5			24	8.8	- 11 26.7		W	0	5735	
			42.5	11	43.4			686.7	2.83677 m				
			49.2			25	3.4	- 12 21.3		W	0	5645	
		12	7.0					741.3	2.86999 m				
			13.7	12	13.9	25	56.2	- 13 14.1		W	0	5815	
			21.0					794.1	2.89988 m				
			38.0										
12	42.90		45.0	12	43.9								
12	42.90		48.6										
		13	2.8										
			11.3	13	10.1								
			16.2										
			38.0										
			42.1	13	43.2								
			49.4										
		14	4.7										
			10.9	14	10.4								
			15.5										
			36.6					1 14	19.01				88 40 7.98
			42.8	14	42.2								
			47.3										
		15	5.0										
15	10.22		10.2	15	10.4								
15	10.22		16.0										
			34.9										
			41.2	15	40.8								
			46.3										
		16	1.4										
			6.3	16	7.3								
			14.1										
			33.3										
			37.3	16	37.8								
			42.7										
		17	0.9										
			7.6	17	7.8								
			15.0										
			33.0										
17	37.80		39.5	17	39.2								
17	37.80		48.0										
		18	1.7										
			7.2	18	7.5								
			13.6										
			30.0										
			36.6	18	36.7								
			43.6										
12	42.116			12	42.116								

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1880phae.proj.1561.

0.10908
8.36605
8.47513

6.73660
8.36605
5.10265

1880 May 23 UC

h	m	s		m	s						
1	9	4.4		54	54.6	20 8.8			R	39	58.25
		8.1	9 88			1208.8	3.08236				
		14.0		57	12.4	17 51.0			R	40	6.40
		38.2	~~9 86~~			1074.0	3.02979				
		39.2	~~9 260~~	58	52.0	16 11.4			R	40	12.95
		44.5	9 39.0			971.4	2.98740				
	10	4.4		0	39.4	14 24.0			R	40	18.38
10 7.34		7.7	10 8.1			864.0	2.93651				
~~10 7.26~~		12.8		3	18.2	11 45.2			R	40	25.38
		30.8				705.2	2.84819				
		35.4	10 35.1	5	1.3	10 2.1			R	40	30.90
		41.0				602.1	2.77967				
	11	0.8		6	21.2	8 42.2			R	40	32.82
		4.8	11 5.1			522.2	2.71784				
		~~9.5~~		7	22.7	7 40.7			R	40	37.02
		30.6				460.7	2.66342				
		36.0	11 36.6	8	58.0	+ 6 5.4			R	41	1.50
		43.2				365.4	2.56277				
		57.0		22	4.2	- 7 0.8			R	41	2.68
	12	7.4	12 5.8			420.8	2.62408				
		11.0		23	39.8	- 8 36.4					
		28.6				516.4	2.71299				
12 35.40		34.4	12 34.5								
~~12 35.40~~		40.5									
	13	1.0									
		6.2	13 5.7								
		8.5									
		29.5									
		34.3	13 34.9								
		40.8									
	14	1.2									
		7.0	14 6.7								
		12.0									
		25.3		10	7.34						
		34.3	14 32.7	12	35.40						
		38.6		15	3.14						
		57.5		17	31.34						
15 3.14	15	3.9	15 3.7	19	59.70						
~~15 3.14~~		9.7									
		27.6		15	3.38						
		30.6	15 31.8								
		37.1									
		55.0									
	16	1.4	16 0.8								
		5.9									
		27.5									
		32.2	16 32.0								
		36.4									
		55.5				1 14	18.58				88 40 8.06
	17	1.8	17 2.0								
		8.7									
		27.6									
~~17 31.34~~		31.0	17 32.6								
17 31.32		39.0									
		54.5									
	18	1.0	18 0.3								
		5.5									
		23.8									
		29.8	18 29.8								
		35.7									
		54.8									
	19	1.0	19 0.4								
		5.6									
		25.0	29.6								
		28.9	19 ~~30.0~~								
		35.0									
		52.7									
~~16 59.70~~		59.8	19 59.2								
19 59.62	20	5.0									
		23.0									
		30.0	20 29.7								
		36.0									
		53.4									
		58.7	20 59.2								
	21	5.4									
15 3.384			15 3.384								

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1880 May 24 UC

0.10908
8.36605
8.47513

6.73660
8.36605
5.10265

h	m	s		m	s							
	1	9	7.2	(21	20.2	)+ 6	12.6		R	42'	19.8"	
			12.4				373.0	2.57171 m				
			16.5	23	9.0	− 8	1.4		R	42	55.5	
			41.0				481.8	2.68287 m				
			42.0	24	17.0	− 9	9.4		R	42	37.8	
			43.5				549.8	2.74020 m				
		10	4.8	25	29.5	− 10	33.9		R	42	54.5	
			10.1				632.3	2.80092 m				
10	11.86		14.6	26	50.9	− 11	43.8		R		—	
10	11.86		39.5				703.7	2.84739 m				
			43.2	27	38.5	− 12	30.9		R	42	64.8	
			47.8				751.3	2.87581 m				
		11	6.8	28	58.5	− 13	50.9		R	42	73.8	
			16.3				831.3	2.91976 m				
			17.2	30	12.5	− 15	4.9		R	42	68.8	
			36.4				905.3	2.95679 m				
			39.8	31	34.6	− 16	27.0		R	42	85.0	
			46.6				1017.4	3.00749 m				
		12	5.6	32	48.5	− 17	40.9		R	42	81.8	
			10.5				1061.3	3.02584 m				
			15.4	34	26.4	− 19	18.8		R	42	77.2	
			32.6				1159.2	3.06416 m				
12	39.26		39.0									
12	39.26		43.7									
		13	3.7									
			10.3									
			14.7									
			30.0									
			37.9									
			42.9									
		14	4.3									
			10.3									
			15.5									
			32.2									
			40.0									
			44.3									
8.08		15	2.6									
15	6.44		7.5									
15	8.08		13.7	10	11.86							
			34.0	12	39.26							
			37.4	15	8.14							
			43.7	17	35.24							
			59.2	20	3.32							
		16	5.4									
			11.2	15	7.56							
			29.5	c = +	.43							
			36.2	15	7.99							
			41.5		7.66							
		17	1.2		7.33			1 14 19.44				88 40 7.91
			6.1									
			12.0									
			28.6									
17	35.24		35.6									
17	35.24		42.0									
			59.7									
		18	5.0									
			10.6									
			29.0									
			33.6									
			38.1									
			39.0									
		19	4.0									
			8.0									
			27.9									
			33.7									
			39.6									
			58.3									
20	3.32	20	4.5									
20	3.32		9.2									
			25.6									
			33.4									
			39.0									
			57.5									
		21	1.5									
			8.4									
15	7.552											

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43.03

0.10908
8.36614
8.47522m

6.73660
8.36614m
5.10274m

Identical

1880 May 25 LC

h	m	s		m	s							
13	6	36.7		0	29.8	+12 9.2				W	1	42.48
		41.9	6 417	+		7295	12 36.9	37.5	37.6			
		46.4	75 55.8	1	56.5	10 ~~42.8~~ 42.80			37.2	W	1	37.80
	7	10.0	75 55.9			6428						
		14.0	142	3	8.0	9 31.8	40	40.9	40.4	W	1	35.70
		18.7	5 26.5			571.3						
		35.7	5 26.2	4	7.0	8 32.2			37.1	W	1	32.40
		39.4	~~37.6~~			572.3	38	36.8	36.4			
		45.3	401	5	44.5	6 ~~55.7~~				W	1	27.82
	8	6.6	4 56.7			4148			39.3			
		12.6	4 127	4 56.3	21	14.5	-8 ~~34.9~~	38.9	40.2	39.5	W	0	59.30
		19.0	4 27.5			575.2						
		37.6	4 26.8		22	28.0	9 48.4			39.7	W	0	58.00
		41.7	427			588.7	38	40.4	39.9			
		48.7	3 57.7		23	22.3	10 ~~42.9~~				W	0	57.25
	9	5.4	3 57.2			643.0						
		10.6	117		24	5.0	11 25.7	38.5	39.3	39.1	W	0	56.02
		19.0	3 27.6			655.7	182					
		35.5	3 27.4		24	57.5	12 ~~45.5~~				W	0	53.32
		41.0	420			738.2	9	39.5	39.5	39.6			
		49.5	2 57.5		25	51.2	13 11.8				W	0	53.02
	10	6.0	2 57.6			791.9						
m s		12.4	118		26	48.7	14 9.4	40.4	39.8	40.0	W	0	54.58
21 23.9		17.1	2 28.0			849.4						
30.00 29.6		37.6	228.2		27	36.6	14 57.8						
36.5		41.8	425			897.3		40.6	41.3	41.0			
—		48.0	1 58.8		28	25.3	15 ~~46.0~~				W	0	53.38
—	11	5.1	1 58.50			946.0							
—		10.0	112		29	8.9	16 29.6	39.3	40.2	39.7	W	0	53.05
24 24.1		18.0	1 20.2			989.6							
28.00 27.4		34.4	1 28.7										
32.5		39.4	397					38.3	38.6	38.8			37.74
25 53.8		45.2	0 58.9										39.50
58.27 58.3	12	4.7	0 59.1										39.82
2.7		9.4	100					39.7	39.5	39.5			39.94
27 25.6		16.0	0 29.5										
28.00 27.5		30.3	0 29.5										
30.9		39.2	384				12	38.6	38.0	38.4			157.00
		45.6	— 0.41										
	13	4.2	0 0.0								13	12	39.25
		9.5	99					40.4	40.2	40.4			
		16.1	0 29.7										
		35.0	0 29.5						39.7				
		38.5	392					40.3	~~46.5~~ 40.0				7850
		44.0	0 59.5								13	12	39.25
	14	4.3	0 59.23						1241.5				
		10.4	10.6					41.5	~~46.5~~	41.4			
		16.1	1 28.8										
			1 28.9				17	3930	6441				
								+66	40.26				
								3996					
									6334	6317			
							12		39.59	39.48			
	1	14	20.65										88 40 7.71

a = 1

21	30.0	+51 9.6	- 8 50.4	-8 52.8	12	37.2	
24	28.0	48 11.6	11 48.4	11 50.9	12	37.1	
25	58.3	46 41.3	13 18.7	13 19.0	12	34.3	
27	28.0	46 11.6	14 48.4	14 48.3	12	39.7	

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64

- 1880 May 25 uc

+

0.10908
8.36614
8.47522

6.73660
8.26614
5.10274 Identical

h	m	s			m	s								
1	9	7.7			0	8.8	+14	59.2				R	40	1538
		12.8	9	12.8										
		18.0	+5	56.7	3	41.4	11	26.8	15	9.5	9.1	R	40	2588
		36.4	5	56.3										
		40.0	9	40.9	5	28.0	9	40.2	7.0	7.4		R	40	2980
		46.3	5	26.5						7.4	6.9			
	10	5.6	5	26.0	6	38.5	8	29.6				R	40	3348
		12.4	10	11.8					8.1					
		17.3	4	56.5	7	46.9	+7	21.8		8.3	8.2	R	40	3530
		35.0	4	56.4										
		40.8	10	41.0	22	17.5	-7	9.8	7.4			R	41	068
		47.2	4	26.8						7.8	7.5			
	11	7.0	4	26.5	25	0.7	9	52.8				R	41	228
		12.3	11	12.4					9.4					
		18.0	3	57.2	26	1.4	10	53.2		9.7	9.3	R	41	850
		32.3	3	56.9										
		39.3	11	38.5	27	4.4	11	56.8	5.2			R	41	368
		44.7	3	27.0						5.8	6.2			
	12	4.0	3	27.4	28	8.5	13	0.8				R	41	460
		8.8	12	10.0					7.2					
		17.2	2	57.5						7.5	7.8			
		35.4	2	57.8										
		40.4	12	40.6					9.8				7.86	
		46.0	2	28.1						8.7	8.7		8.31	
													1617	
	13	3.4	2	28.1										
		9.0	13	39.6					6.8					
		16.3	1	58.2						7.8	7.9	15	8.08	
		33.9	1	58.3										
		38.5	13	39.1					8.2					
		45.0	1	29.0						8.7	8.0			
	14	4.0	1	28.9										
		9.7	14	9.6					8.5					
		15.1	0	59.6						9.2	8.8			
		31.4	0	59.2										
		39.0	14	38.7					7.7		7.7			
		44.3	0	30.0						8.2	8.2			
	15	3.3	0	29.5					7.9					
		7.6	15	8.1										
		13.5	-	0.6					15	7.5	8.1			
		32.2	-	0 0.0										113.2
		38.4	15	38.5					8.8	9		1	15	8.09
		44.8	-	5 29.3						8.2	9.0			
			-	0 29.5										

15 15
14) 7.92 1153 1137
7.26 8.09 8.23 8.12

1 14 20.26

88 40 7.77

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- 1880 May 26 UC

0.10908
8.36614
8.47522

6.73660
8.36614
5.10974

identical

h	m	s		m	s							
1	9	9.7		2	59.5	+12	10.8				R 41	2485
		15.0	9 152				15					
		21.0	+5 56.7	4	38.7	10	31.8	11.2	11.9	11.5	R 41	2835
		39.8	+5 56.3									
		44.4	9 448	5	50.5	9	19.8	10.9			R 41	3180
		50.1	- 5 26.5						11.3	10.8		
	10	10.2	5 26.0	7	4.0	8	6.3				R 41	3530
		14.3	10 148					11.1				
		20.0	- 4 56.5	8	14.0	+6	56.8		11.4	11.2	R 41	3802
		39.4	4 56.4									
		46.9	10 462	21	47.5	-6	37.2	12.6	13.0		R 42	0.28
		52.3	- 4 26.8						11.7	12.7		
	11	8.3	4 26.5	24	0.3	8	50.2				R 42	0.18
		13.2	11 135					10.8				
		20.0	- 3 57.2	25	39.9	10	29.6		11.0	10.7	R 42	2.25
		37.2	3 56.9									
		42.4	11 430	27	3.7	11	53.4	9.4			R 42	1.02
		49.4	- 3 27.0						10.0	10.4	R 42	428
	12	5.4	3 27.4									
		12.8	12 128					9.2				
		18.9	- 2 57.5						9.9	10.2		
		36.5	2 57.8									
		42.0	12 417					10.9				
		46.6	- 2 28.1						9.8	9.8		11.38
	13	6.0	2 28.1									1004
		11.5	13 114					9.9				902
		17.4	- 1 58.2						9.8	9.9		30.44
		33.3	1 58.3									
		41.0	13 410					10.1				
		46.7	- 1 29.0						10.0	9.9	15	10.15
	14	5.1	1 28.9									
		11.0	14 107					9.6				
		16.1	- 0 59.6						10.3	9.9		
		33.3	0 59.2									
		39.3	14 396					9.1				
		45.2	- 0 30.0						9.3	8.8		
	15	3.3	0 29.5									
		7.5	15 84					8.2				
		14.3	- 0.6					15	7.8	8.4		
		32.7	0 0.0									
		39.0	15 386					8.9				
		44.0	- 0 29.3						9.3	9.1		
	16	2.3	0 29.5									
		8.0	16 150					9.4				1522
		13.7	- 0 58.3						9.7	8.9	1 15	10.15
			- 0 59.1					15	1008			
								15)	1532	44/1522		
									102.9	/ 10.15		

1 14 21.03

88 40 7.65

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56

1880 May 27 UC Examine

0.10908
8.36614
8.47522

6.73660
8.36614
5.10274

h	m	s		m	s							
	1	9	17.4			59	27.0	15 51.9		R	40	1408
			23.5	9 23.5				9 51.9	2.97859			
			29.6			1	33.5	13 45.4		R	40	2125
			48.1					875.4	2.91666			
			53.2	9 53.4		2	42.5	12 36.4		R	40	2380
			59.0					756.4	2.87875			
		10	19.0			5	9.1	10 9.8		R	40	2962
	10	22.78	23.0	10 23.6				609.8	2.78519			
	10	22.78	28.7			6	38.2	8 40.7		R	40	3365
			47.2					520.7	2.71659			
			53.0	10 52.6		7	50.5	7 28.4		R	40	3615
			57.6					448.1	2.65167			
		11	15.7			21	28.1	- 6 9.2		R	40	5962
			21.0	11 20.8				369.2	2.56726			
			25.7			22	53.5	- 7 34.6		R	41	106
			46.7					454.6	2.65753			
			51.0	11 51.7		24	39.9	- 9 21.0		R	41	285
m	s		57.3					561.0	2.74896			
3	22.3	12	15.8			25	54.5	-10 35.6		R	41	320
	28.5		21.5	12 21.3				635.6	2.80318			
	34.0		26.7			26	57.5	-11 38.6		R	41	492
4	50.5		45.1					698.6	2.84423			
	55.8		~~12 50.6~~ 49.7	12 50.6		29	25.6	-14 6.7				
5	2.1		12 50.84 56.9					846.4	2.92773			
6	20.0	13	16.2									
	24.6		19.7	13 20.4								
	30.5		25.3									
			43.8									
			50.4	13 50.2								
			56.5									
		14	13.1									
			19.2	14 19.2								
			25.4									
			43.5									
			48.9	14 49.1								
			54.8									
		15	14.4									
~~15 18.72~~			19.4	15 19.6								
15 18.74			24.9									
			42.7									
			47.2	15 47.8								
			53.5									
		16	12.0	18.0								
			17.6	16 17.9								
			24.3									
			42.4									
			47.0	16 47.6								
			53.5									
		17	12.0									
			15.9	17 14.7								
			22.1									
			48.9									
17 47.80			49.5	17 49.5								
17 47.80			50.1									
		18	11.3									
			19.0	18 18.1								
			23.9									
			41.7									
			47.9	18 47.1								
			51.8									
		19	9.5									
			16.0	19 15.7								
			21.6									
			39.0									
			44.7	19 44.8								
			50.2									
		20	9.0									
~~20 17.40~~			15.4	20 14.5								
20 14.48			20.1									
			38.1									
			43.1	20 ~~43.6~~ 44.0								
			50.7									
		21	7.6									
			12.3	21 13.6								
			20.0									
15 18.912				15 18.912								

C = -2.5

10	22.78
12	50.86
15	18.72
17	47.80
20	14.40

~~15 18.71~~
c = ~~- 9.80~~
15 ~~10.30~~
9.01
- 1.66
8.35

1 14 21.77

88 40 7.52

		a+1			
3	28.3	+11 50.6	+11 30.9	15	19.2
4	56.1	10 22.8	10 22.0	15	18.1
6	25.0	8 53.9	8 52.8	15	17.8

30 55.1
1 15 18.37

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1880 May 31 UC

D. 10 908
8.36614
8.47522

6.73660
8.36614
5.10 274

h.	m	s		m	s							
1	9	10.2	15.0	21	19.0	− 6	6.7			R	42	3296
		14.3	9 746				366.7	2.56431				
		20.4		24	18.7	− 9	6.4			R	42	3915
		39.4					546.4	2.73751				
		44.0	9 446	25	36.7	− 10	24.4			R	42	3945
		50.3					624.4	2.79516				
	10	10.3		26	47.3	− 11	35.0			R	42	3915
~~4 15.22~~		14.4	10 151				695.0	2.84198				
10 15.30		20.6		27	52.6	− 12	40.3			R	42	4140
		40.0					760.3	2.88098				
		44.4	10 45.0	29	19.3	− 14	7.0			R	42	4278
		50.6					847.0	2.92788				
	11	11.0		30	36.7	− 15	24.4			R	42	4275
		16.8	11 168				924.4	2.96586				
		22.6		31	42.5	− 16	30.2			R	42	4360
		41.5	46.4				990.2	2.99572				
		46.9	11 497									4360
		50.8										
	12	9.6										
		14.2	12 148									
		20.7										
		38.6	7									
~~12 45.10~~		43.5	12 439									
12 44.44		49.1										
	13	8.5										
		13.5	13 138									
		19.3										
		38.3	5									
		42.8	13 438									
		49.3										
	14	6.7										
		10.9	14 113									
		16.2										
		38.8		10	15.2							
		43.4	14 434	12	45.1							
		48.0		15	12.08							
	15	8.4		17	40.22							
~~15 12.68~~		13.6	15 139	~~20~~	~~8.38~~							
15 12.70		19.7										
		37.3		15	12.40							
		42.6	15 427	C − 1.72								
		48.2		~~15~~	14.12							
	16	7.2										
		12.6	16 127 2									
		17.2										
		35.5										
		41.5	16 410									
		46.0										
	17	5.2					1 14	24.66				88 40 6.95
		12.0	17 11.3									
		16.6										
		37.7										
17 40.22		40.9	17 41.2									
17 40.22		44.9										
	18	3.9										
		8.5	18 89									
		14.3										
		32.7										
		38.6	18 387									
		44.7										
	19	2.3										
		9.1	19 87									
		14.8										
		32.3										
		38.2	19 38.3									
		44.5										
8.38	20	4.5										
20 ~~6.78~~		8.4	20 92									
20 8.38		14.6										
		34.0										
		39.2	20 392									
		44.3										
	21	1.7										
		6.4	21 65									
		11.5										
15 12.320			15 12.320									

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1880 June 2 LuH 1m UC

0.10908
8.36623
8.47531

6.73660
8.36623
5.10283

h	m	s		m	s				′	″
1	10	7.6		55	37.5	+20 33.7		W	41	34.10
		14.6	10 14.7			1233.7	3.09121			
		21.8		58	3.5	18 7.7		W	41	43.30
		38.7				1087.7	3.03651			
		45.0	10 44.8	59	32.2	16 39.0		W	41	47.35
		50.8				999.0	2.99957			
	11	9.0		1	3.0	15 8.2		W	41	51.95
11 14.74		16.0	11 15.5			908.2	2.95818			
11 14.74		21.5		2	45.9	13 25.3		W	41	57.48
		38.0				805.3	2.90596			
		45.4	11 44.9	3	59.8	12 11.4		W	42	1.20
		51.3				731.1	2.86415			
	12	8.5		5	51.4	+10 19.8		W	42	6.40
		13.6	12 13.8			619.8	2.79225			
		19.3		7	15.5	+ 8 55.7		W	42	9.30
		38.2				535.7	2.72892			
		45.4	12 44.4	22	37.4	− 6 26.9		W	42	38.75
		49.7				388.6	2.58726 m			
	13	7.5		24	36.6	− 8 25.4		W	42	47.60
		13.3	13 10.3			505.4	2.70364 m			
		19.1		26	19.6	−10 8.4		W	42	41.62
		35.5				608.4	2.78419 m			
13 42.70		41.0	13 41.7	27	41.7	−11 30.5		W	42	42.05
13 42.70		48.7				690.5	2.83916 m			
	14	7.0		28	55.5	−12 44.3		W	42	42.68
		13.3	14 12.9			764.3	2.88326 m			
		18.4		30	41.0	−14 29.8		W	42	43.25
		35.5				869.8	2.93942 m			
		40.7	14 41.2	31	59.0	−15 47.8		W	42	44.18
		47.4				947.8	2.97672 m			
	15	6.9		33	19.8	−17 8.6		W	42	44.38
		13.6	15 12.8			1028.6	3.01225 m			
		18.0								
		35.7								
		42.2	15 41.8							
		47.5								
	16	7.0								
16 11.88		12.2	16 12.3							
16 11.88		17.7				10 14.74				
		36.4				132 42.70				
		41.9	16 42.1			165 11.88				
		48.0				197 38.92				
	17	5.2				20 7.68				
		10.8	17 10.7							
		15.3				15 11.84				
		33.3				c −.56				
		39.0	17 38.9			15 10.98				
		44.5				−.66				
		59.4				−10.32	1 14	26.32		
	18	9.0	18 7.8							
		15.1								
		34.8								
18 38.92		40.3	18 40.0							
18 38.92		45.0								
	19	2.6								
		9.5	19 8.9							
		14.5								
		31.6								
		39.9	19 39.0							
		45.4								
	20	3.4								
		9.4	20 8.9							
		14.0								
		32.7								
		38.0	20 37.9							
		43.1								
	21	2.6								
21 7.68		6.4	21 7.3							
21 7.76		13.0								
		31.7								
		37.7	21 37.2							
		43.3								
	22	1.4								
		7.3	22 7.1							
		12.5								
16 11.184			16 11.184							

88 40 6.60

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U-10908
8.36623
8.47531

6.73660
8.36623
5.10283

1880	June 3 h m	s	U.C.			
	1 9	14.4				
		20.3	9 19.9			
		25.0				
		44.5				
		48.3	9 48.9			
		53.9				
	10	14.0				
10 19.28		19.1	10 19.6			
10 19.28		25.6				
		42.8				
		48.5	10 48.8			
		55.2				
	11	14.5				
		19.0	11 19.2			
		24.0				
		41.9				
		47.7	11 47.8			
		53.9				
	12	13.3				
		18.5	12 18.5			
		23.7				
		38.3				
12 47.40		45.5	12 45.7			
12 47.40		53.3				
	13	9.0				
		18.1	13 17.0			
		23.8				
		42.6				
		47.5	13 48.0			
		54.0				
	14	10.5				
		16.5	14 16.5			
		22.4				
		40.0		10 19.28		
		48.0	14 46.7	12 47.40		
		52.0		15 15.44		
	15	7.6		17 42.96		
15 15.44		13.2	15 13.5	20 12.48		
~~15 15.44~~		19.7				
		40.8		15 15.51		
		45.5	15 45.9	c_2 -2 15		
		51.5		15 13.36		
	16	8.9		-66		
		15.0	16 14.6	12.67		
		19.9				
		36.8				
		43.2	16 43.2			
		49.5				
	17	7.5			1 14 27.23	88 40 6.45
		13.0	17 13.7			
		20.5				
		34.3				
17 42.96		43.4	17 42.5			
17 42.96		49.8				
	18	7.5				
		13.3	18 12.9			
		18.0				
		36.9				
		42.1	18 42.5			
		48.6				
	19	7.5				
		13.3	19 13.5			
		19.7				
		37.4				
		42.5	19 42.5			
		47.7				
	20	6.0				
~~20 12.48~~		12.4	20 11.9			
20 12.52		17.4				
		36.0				
		43.0	20 42.7			
		49.0				
	21	4.8				
		12.3	21 ~~11.8~~ 12.0			
		18.8				
15 15.512			15 15.512			

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1880 June 4 LC

0.10908
8.36623 n
8.47531 n

6.73660
8.36623 n
5.10283 n

h	m	s	m	s	m	s						
13	6	50.4			(52	35.7	)+20	9.6		W	3′	36.0
		54.0	6	53.8				1209.6	3.08265			
		57.0			55	52.6	26	52.7		W	3	28.0
	7	13.6						1612.7	3.20755			
		19.9	7	19.5	58	7.4	14	37.0		W	3	20.92
		25.0						877.9	2.943415			
		42.8			59	59.0	12	46.3		W	3	16.28
7	49.26	49.2	7	49.4				766.3	2.884440			
7	49.26	56.3			1	40.4	11	4.9		W	3	13.12
	8	11.5						664.9	2.82276			
		16.6	8	16.8	3	9.5	9	33.8		W	3	6.22
		22.4						575.8	2.76027			
		40.3			4	58.0	7	47.3		W	2	35.25
		47.2	8	46.8				446.3	2.66960			
		52.9			21	47.8	− 9	2.5		W	2	27.72
	9	12.6						542.5	2.734440 n			
		18.9	9	18.7	32	54.8	−20	9.5		W	2	29.25
		24.5						1269.4	3.08257 n			
		41.7			35	41.7	− 22	56.4		W	2	29.02
		46.9	9	46.5				1376.4	3.13874 n			
		51.0			37	37.2	− 24	51.9		W	2	29.32
	10	7.1						1491.9	3.17374 n			
10	16.40	12.9	10	14.6	39	9.3	− 26	21.0				
10	16.40	23.8						1581.0	3.19976 n			
		41.5										
		46.2	10	46.7								
		52.3										
	11	9.8										
		16.2	11	15.5								
		20.6										
		40.0										
		45.7	11	45.6								
		51.0										
	12	8.7										
		14.9	12	14.5								
		20.0										
		41.4										
12	45.10	47.0	12	47.1								
12	46.76	54.8										
	13	9.2										
		13.5	13	14.6								
		21.0										
		38.2		42.0								
		44.0	13	43.7								
		48.8		43.7								
	14	7.7										
		13.6	14	13.3								
		18.5										
		36.8		42.6			1	14	28.66		88	40 6.24
		42.3	14	43.3								
		48.8										
	15	8.0										
15	12.84	13.3	15	13.2								
15	12.70	18.2										
		36.2										
		42.0	15	41.8								
		47.3										
	16	6.3										
		12.8	16	12.6								
		18.8										
		36.5										
		43.0	16	43.0								
		49.5										
	17	8.0										
		14.0	17	13.6								
		18.9										
17	42.92											
17	42.92		17	44.0								
			18	12.0								
			18	42.0								
12	45.304		12	45.304								

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– 1880 June 9 &c

Identical

h	m	s	m	s												
		13	0	16.7	+12	2 ~~46.5~~ 3.98						W	3	17.78		
			1	33.9	11	760.5 226 ~~23.3~~ 683.3 138						W	3	13.98		
			2	42.7	10	~~44.5~~ 614.5 115						W	3	10.20		
			3	35.0	9	~~22.2~~ 562.2						W	3	8.28		
			4	17.3	8	509 ~~39.2~~ 469.7 47.8						W	3	5.32		
			5	8.7	7	~~14.5~~ 455 ~~6.7~~ 426.4 29						W	3	3.52		
			5	55.8								W	3	1.60		
			19	19.0	6	~~27.8~~ 381.8 165						W	2	36.20		
			21	13.0	8	~~15.8~~ 495.8 163						W	2	33.85		
			22	12.8	9	~~15.6~~ 535.6 39						W	2	32.40		
			23	34.4	10	37.8 637.2 32.5						W	2	30.60		
			24	29.0	11	~~31.8~~ 691.8 40.5						W	2	30.28		
	m	s	25	37.0	12	~~39.8~~ 759.8						W	2	29.30		
48.03	21	44.0														
		47.6	26	41.3	13	44.8 824.1						W	2	28.48		
		52.5														
	23	10.0														
16.23		14.2												55.70		
		24.5												55.95		
	24	40.0												57.57		
45.33		44.6												56.86		
A + 1		51.4												226.08		
	26	12.8														
14.97		14.3	12	51.2								12		56.52		
		16.8		55.5	12	55.7	×									
	27	39.1	13	0.5		– 0.5			12	55.2	55.7					
44.37		43.8		21.7		0.0					55.3					
		50.21		26.2	13	2.69										
2445.786				32.9		– 0 29.5				57.4	57.4					
				50.6		– 0 29.5					54.4					
				56.5	13	5.65										
			14	2.5		– 0 58.8				57.7	57.4					
				20.0		– 0 59.1					54.6			961.2		
				24.0	14	2.48						12		56.54		
				30.5		– 1 28.2				56.6	56.0					
				57.0		– 15 00.0					53.8					
				59.4	14	~~59.4~~										
			15	8.5		– 1 57.7	1	14	33.25	(13	(2.3)	(54.9)			8840	6
				21.8		– 1 58.1										
				27.2	15	2.74										
				33.3		– 2 28.1				57.3	57.5					
				50.2		– 2 27.9					56.3					
				54.4	15	5.49										
			16	0.2		– 2 57.2				57.7	57.3					
				20.2		– 2 57.6										
				24.0	16	2.44										
				29.0		– 3 26.9				57.5	57.2					
				50.0		– 3 27.2										
				54.2	16	5.41						a + 1				
				58.0		– 3 57.8				57.3	57.4	21	48.0	+51 9.2	– 8 51.8	– 8 52.7	12 55.3
			17	16.3		– 3 56.7						23	16.2	49 41.0	10 19.0	10 21.8	12 54.4
				24.3	17	2.32				57.2	57.0	24	45.3	48 11.9	11 48.1	11 50.7	12 54.6
				29.1		– 4 2.60											
				48.8		– 4 26.2						26	14.6	46 42.6	13 17.4	13 18.8	12 55.8
				52.8	17	5.36				57.6	57.5						
				59.2		– 4 57.0						27	44.4	45 12.8	14 47.2	14 48.1	12 56.3
			18	16.6		– 4 56.1											
				21.6	18	2.22											
				28.5		– 5 2.5.9				56.3	56.5						
				46.5		– 5 25.7											
				51.5	18	5.18											
				57.4		– 5 ~~5.5~~				12 56.3	55.9						
						– 5 55.9											
										12) ~~7484~~ 12 57.37	6861	~~7467~~ 6848 57.07					

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- 1880 June 9 UC

Identical

h	m	s		m	s							
1	9	19.4		52	35.4	+22 46.2			W	41	26.48	
		26.0	9 257									
		31.6	+5 55.7	53	29.0	21 52.6	15 21.4	21.6	W	41	29.65	
		49.8	+5 55.9									
		57.3	9 562	54	20.7	21 0.9			W	41	31.78	
	10	1.5	5 25.9				22.1	21.9				
		22.4	5 25.74	55	11.3	20 10.3			W	41	35.78	
		27.4	10 27.X									
		32.4	4 56.1	55	58.3	19 28.3	23.5	23.5	W	41	38.22	
		49.6	4 56.1									
		56.0	10 555	56	44.1	18 37.5			W	41	40.92	
	11	1.0	4 26.5				22.0	21.7				
		19.0	4 26.2	57	37.5	17 44.1			W	41	43.92	
		25.3	11 253									
		31.6	3 57.0	58	23.0	16 58.6	22.3	22.0	W	41	47.25	
		50.0	3 56.7									
		55.0	11 55.0	59	14.0	16 7.6			W	41	49.45	
	12	0.0	3 27.0				22.0	22.2				
		17.3	3 27.2	59	36.8	15 24.8			W	41	57.82	
		23.4	12 234					21.0				
		29.5	2 57.5	0	58.4	14 29.2	20.9	~~20.5~~	W	41	54.72	
		44.8	2 57.63									
		50.8	12 51.8	1	34.3	13 ~~45.7~~ 47.3			W	41	56.60	
		58.2	2 28.4				19.7	19.~~5~~ 2				
	13	18.0	2 27.9	2	19.5	13 2.1			W	41	59.10	
		22.6	13 23.0									
		28.5	1 58.4	3	16.9	12 4.7	21.4	21.1	W	42	1.15	
		48.0	~~1 58.3~~ 158.1									
		52.5	13 583	4	16.5	11 6.1			W	42	3.75	
		59.5	1 28.7				22.0	22.1				
	14	18.2	1 28.8	5	3.6	10 18.0			W	42	5.48	
		23.0	14 23.1									
		28.0	0 59.3	6	52.0	9 29.6	22.4	22.2	W	42	8.32	
		45.0	0 59.1									
		50.0	14 508	6	42.5	8 39.1			W	42	10.42	
		57.3	0 29.4				20.2	20.3				
	15	18.0	0 29.5	7	30.6	7 51.0			W	42	12.82	
		20.4	15 208									
		27.0	- 0.1	8	22.7	6 58.9	15 20.7	20.8	W	42	14.40	
		47.2	0 0.0									
		51.2	15 514									21.99
		55.7	-0 29.4				22.0	22.0				2.10
			0 29.4									43.09
							15					
							14) 3026	3011				15 21.53
							21.61	21.51				

1 14 32.83

301.6

15 21.54

88 40 6

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1880 June 10 LC

h	m	s	m	d	m	s						
13	6	59.7		3.9	57	45.7	+ 15	12.5				
	7	4.3	7	~~27~~				912.5	2.96023			
		7.7			59	7.3	13	30.9		W	3	2628
		28.3						830.9	2.91955	W	3	2100
		31.4	7	31.8	59	52.0	13	6.2				
		35.6						786.2	2.89553	W	3	2082
		55.0			1	19.7	11	38.5				
~~8~~	~~2.32~~	8	2.8	8	3.0			698.5	2.84417	W	3	1418
8	2.66		11.2			2	10.6	10	47.6	W	3	1145
		26.0						647.6	2.81131			
		32.8	8	32.3	2	53.0	10	5.2		W	3	922
		38.0						605.2	2.78190			
		57.4			3	30.8	9	27.4		W	3	825
	9	2.0	9	2.3				567.4	2.75389			
		7.5			4	23.0	8	35.2		W	3	705
		26.0						515.2	2.71198			
		30.0	9	31.4	5	8.0	7	50.2		W	3	325
		38.2						470.2	2.67228			
		53.5			5	57.8	7	0.7		W	3	135
	10	1.9	10	0.8				420.7	2.62397			
		7.0			19	15.2	~~2~~	~~42.0~~ 6	1.70	W	2	3382
		24.2						223.0	2.34830			
10	30.92	29.3	10	29.8	20	42.5	- 7	44.3		W	2	3235
10	30.92	35.8						464.3	2.66680			
		57.0			21	37.0	- 8	38.8		W	2	3130
	11	1.5	11	1.3				518.8	2.71500			
		5.5			22	31.0	- 9	32.8		W	2	3028
		26.0						572.8	2.75800			
		30.8	11	31.3	23	28.0	- 10	29.8		W	2	2948
		37.0						629.8	2.79920			
		54.3			24	21.4	- 11	23.2		W	2	2812
		58.5	11	59.2				683.2	2.83455			
	12	4.7			25	24.0	- 12	25.8		W	2	2725
		22.5						745.8	2.87262			
		27.6	12	27.4	26	27.2	- 13	29.0		W	2	2633
		31.7						809.0	2.90795			
		52.5		7.7	27	19.0	- 14	20.8		W	2	2632
~~12~~	~~57.98~~	57.5	12	5~~8.6~~				860.8	2.93490			
12	57.92	13	3.0		28	9.3	- 15	11.1		W	2	2600
		24.0						911.0	2.95952			
		27.8	13	28.7								
		34.3										
		51.3										
		55.4	13	56.6								
	14	3.2										
		—										
		—	14	26.0								
		—										
		50.5					1	14	—		88	40 6
		55.8	14	56.4								
	15	3.0										
		21.6										
15	26.10	25.6	15	26.6								
15	26.10	32.5										
		50.3										
		55.5	15	56.0								
	16	2.2										
		20.2										
		25.0	16	26.5								
		31.3										
		49.0										
		54.0	16	55.0								
	17	2.0										
		16.0										
		23.5	17	23.1								
		29.7										
		45.8										
~~17~~	~~53.71~~	51.5	17	52.5								
17	53.78	18	0.3									
		18.5										
		22.6	18	23.3								
		28.7										
		49.5										
		54.4	18	~~54.9~~ 55.0								
	19	1.0										
12	58.216		12	58.216								

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7

1880 June 10 16 C.

h	m	s	m v	m	s			W	′	″
	1	9 24.1		50	(49.9	1473.6				
		29.0	9 28.9		55.6)	+24 33.6	3.16838	W	41	1868
		33.6				27.7	4679			
		38.8		52	1.6	23 21.9	3.16670	W	41	2215
		58.5	9 58.6			1401.9	3.14672			
				52	43.7	22 39.8		W	41	2565
	10	4.5				1359.8	3.13348			
		23.2		53	25.8	21 57.7		W	41	2832
10 27.78		27.2	10 27.8			1317.7	3.11982			
10 27.78		33.1		54	9.0	21 14.5		W	41	3068
		52.5				1274.5	3.10534			
		58.2	10 58.3	54	51.2	20 32.3		W	41	3315
	11	4.2				1232.3	3.09071			
		20.5		55	45.8	19 37.7		W	41	3650
		25.5	11 25.3			1174.7	3.07104			
		30.0		56	8.4	19 15.1		W	41	3802
		51.0	6.5			1155.1	3.06262			
		55.7	11 55.8	56	53.8	18 29.7		W	41	4038
	12	2.7				1109.7	3.04520			
		19.6		57	40.5	17 43.0		W	41	4312
		24.1	12 24.7			1063.0	3.02653			
		30.3		58	59.6	16 23.9		W	41	4820
		49.4				983.9	2.99295			
12 55.26		54.8	12 55.1	0	9.9	15 13.6		W	41	5112
12 55.40	13	1.0				903.6	2.96076			
		19.0		1	16.4	14 7.1		W	41	5478
		25.4	13 25.1			847.1	2.92793			
		31.0		2	11.0	13 12.5		W	41	5700
		50.0				792.5	2.89900			
		56.4	13 55.6	3	5.8	12 17.7		W	42	012
	14	0.4				737.7	2.86788			
		19.5		4	5.0	11 18.5		W	42	302
		24.7	14 24.8			678.5	2.83155			
		30.3		4	57.0	10 26.5		W	42	508
		49.0				626.5	2.79692			
		54.0	14 54.5	5	32.5	9 51.0		W	42	658
	15	0.6				591.0	2.77159			
		18.6		6	8.7	9 14.8		W	42	800
15 23.76		23.1	15 23.1			554.8	2.74414			
15 23.76		27.6		6	57.0	+ 8 26.5		W	42	1005
		48.6				506.5	2.70458			
		53.3	15 53.6							
		58.9								
	16	17.4								
		22.6	16 22.8							
		28.5								
		50.0								
		51.8	16 52.1							
		57.5								
	17	15.6				1 14	33.66			
		20.6	17 20.8							
		26.3								
		44.9								
17 51.00		50.0	17 50.1							
17 51.00		55.3								
	18	17.8								
		22.4	18 22.2							
		26.3								
		44.0								
		49.7	18 49.8							
		55.6								
	19	14.5								
		20.5	19 20.3							
		26.0								
		45.0								
		50.5	19 50.2							
		55.0								
	20	15.8								
20 19.54		20.3	20 20.8							
20 19.54		26.4								
		42.8								
		49.8	20 49.0							
		54.4								
	21	11.0								
		17.2	21 17.4							
		24.0								
1523.4168			1523.4168							

88 40 6

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- 1880 June 11 LC

h	m	s	m	s							
13			56	38.9	+16	19.6		W	3	2785	
			58	54.0	14	4.5		W	3	2042	
			0	18.8	12	39.7		W	3	1628	
			1	43.8	11	14.7		W	3	1102	
			3	30.2	9	28.3		W	3	722	

0.12060
8.36623
8.48683m

6.73660
8.36623m
5.10283m

13	53.0													
	58.0	13 57.9								13 57.9	12 58.8			
14	2.8	-0 58.8			12 59.1	58.8				-0 59.1				
	21.4	-0 59.1												
	27.4	14 27.4								14 27.4	58.6			
	33.4	-1 28.2			59.2	58.8				-1 28.8				
	48.7	-1 28.6					1 14	34.85		.88	40 5.70			
	56.3	14 56.1												
15	3.4	-1 57.7			58.4	57.8				14 56.1	58.0			
	20.3	-1 58.3								-1 58.1				
	26.0	15 25.9								15 25.9	58.0			
	31.3	-2 28.1			57.8	57.9				-2 27.9				
	50.5	-2 28.0												
	55.6	15 55.8								15 55.8	58.2			
16	1.3	-2 57.2			58.6	58.4				-2 57.6				
	17.4	-2 57.4												
	26.7	16 25.2								16 25.2	58.0			
	31.4	-3 28.0			58.3	58.0				-3 27.2				
	48.8	3 27.2												
	55.0	16 54.6								16 54.6	57.9			
	59.9	-3 56.8			57.8	57.7				-3 56.7				
		-3 56.9												
					12	409.2		40.74			7) 40.75			
					7)	58.46		58.20			12 58.21			

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1880 June 12 UC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292 Vertical

h	m	s			m	s					
	1	4	23.8	a	52	12.6	+23	18.4			W 41 22.25
			29.3	9 29.7							
			36.0	+5 55.7	54	8.9	21	19.8	25.4	25.6	W 41 29.42
			55.0	+5 55.9						23.4	
		10	0.7	10 0.4	55	5.4	20	20.3			W 41 33.15
			5.5	5 25.9					26.3	26.1	
			24.4	5 25.7	55	43.3	19	42.4		24.3	W 41 35.02
			30.2	10 30.2							
			36.0	4 56.1	56	23.4	19	2[illegible]	26.3	26.3	W 41 37.20
			54.2	4 56.1						25.4	
			59.7	10 0.1	57	1.0	18	25.2	26.6	26.3	W 41 40.32
		11	6.5	4 26.5							
			23.8	4 26.2	57	50.9	17	35.3		24.7	W 41 42.48
			28.8	11 29.3							
			35.2	3 57.0	58	40.2	16	46.0	26.3	26.0	W 41 45.25
			53.5	3 56.7						25.2	
			58.7	11 59.1	59	34.4	15	57.8	26.1	26.3	W 41 48.38
		12	5.2	3 27.0							
			22.3	3 27.2	0	22.0	15	4.2			W 41 51.28
			28.4	12 28.1							
			33.7	2 57.5	1	8.5	14	17.7	25.6	25.7	W 41 53.62
			52.0	2 57.6							
m	s		59.0	12 58.3	1	54.9	13	31.3	26.7	26.2	W 41 55.42
0	29.3	13	4.0	2 28.4							
35.33	35.3		21.3	2 27.9	2	50.0	12	36.2			W 41 58.05
	41.4		27.1	13 27.2					25.6	25.3	
2	1.0		33.1	1 58.4	3	10.7	12	15.5			W 41 59.38
5.50	6.3		—	1 58.1							
	9.2		55.4	12 58.7	3	49.5	11	36.2			W 42 0.92
3	28.8	14	2.1	1 28.7					27.4	27.5	
34.73	35.0		21.3	1 28.8	5	2.7	10	23.1			W 42 4.62
	40.4		27.0	14 26.9				52.7			
4	57.5		32.3	0 59.8	5	33.0	9	53.2	26.2	26.0	W 42 6.18
2.87 5	1.7		50.5	0 59.1				17.5			
	9.4		55.8	14 56.0	6	8.2	9	16.3			W 42 7.62
6	27.0	15	1.7	0 29.4					25.4	25.5	
32.50	32.6		20.6	0 29.5	6	57.5	+8	28.2			W 42 9.42
	37.9		26.0	15 26.0							
			31.5	- 0.1					25.9	26.0	W 42 11.22
3 34.186			51.8	- 0 0.0							
			56.0	15 56.8							25.03
		16	2.6	- 0 29.4							25.33
				- 0 29.4					27.4	27.4	25.67
											25.73
									14) 367.2	366.2	26.33
									15 26.23	26.16	26.22
											6) 154.31
											15 25.72

~~+15 3.75~~
1 14 35.25

88 40 5.66

19) 489.2
1 15 25.75

a	+1					
0	35.3	+14 50.9	+14 48.1	15 23.4		
2	5.5	13 20.7	13 18.8	15 24.3		
3	34.7	11 51.5	11 50.7	15 25.4		
5	2.9	10 23.3	10 21.8	15 24.7		
6	32.5	8 53.7	8 52.7	15 25.2		

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— 1880 June 13 S.C.

0.12060
8.38632m
8.48692m

6.73660
8.36632m
5.10292m Identical

h	m	s		m	s									
13	6	38.2		54	39.7	+18	1.4				R	3	32.3	
	7	2.0	7 32.7											
		8.0	+554.7	57	9.8	15	51.3	12	(57.4)	(58.2)	R	3	24.3	
		28.2	+555.5											
		32.3	7 33.2	58	38.5	14	22.6				R	3	17.3	
		39.0	-525.7						58.9	59.0				
	8	4.0	5 25.2	59	58.3	13	2.8				W	3	13.45	
		5.0	8 5.X											
		6.5	-455.9	(0	42.5	)12	18.6	13	1.1	1.2	W	3	9.02	
		28.8	4 56.0											
		32.4	8 33.X	1	37.2	11	23.9				W	3	7.92	
		40.0	-426.2					12	59.9	0.2				
		59.7	4.7 426.5	2	18.2	10	42.9				W	3	4.65	
	9	4.6	9 ~~6.4.4~~											
		9.7	-356.6	3	3.0	9	58.1	13	1.3	1.6	W	3	4.52	?
		28.3	3 56.9											
		32.7	9 33.5	3	40.0	9	21.1				W	3	1.20	
		39.5	-327.2						0.7	0.7				
		58.7	3 27.2	4	22.3	8	38.8				W	?	58.98	
	10	4.0	10 4.7											
		11.3	-257.7	5	41.0	7	20.1		2.4	2.1	W		29.40	
		28.4	2 57.4											
		33.1	10 33.6	20	45.0	-7	43.9				W		28.12	
		39.4	-328.5						2.1	1.6				
		56.5	2 28.0	22	17.5	9	16.4				W		27.50	
	11	1.4	11 1.5											
		6.5	-158.0	22	56.3	9	55.2	12	59.5	59.8	W		26.42	
		26.4	1 58.3											
		31.7	11 31.9	23	53.2	10	52.1				W		25.75	
		37.5	-128.7					13	0.6	0.5				
		55.3	1 28.6	24	35.8	11	34.7				W		24.50	
	12	1.3	12 1.8											
		8.9	-058.0	25	24.0	12	22.9		0.8	0.9	W		24.35	
		27.3	0 59.1											
		32.0	12 31.9	26	4.5	13	3.4				W		24.18	
		36.5	-029.3						1.2	1.3				
		57.0	-029.4	26	50.0	13	48.9				W		22.68	
	13	1.3	13 1.8											
		7.2	-0.5	27	46.4	14	45.3	13	1.3	1.8			0.54	
		28.2	-0 0.0										0.98	
		32.0	13 32.6										174	
		37.7	-029.5						3.1	3.1			3)3.26	A) 9163
		55.1	14 -029.5										B 1.087	13 13 1.087
		59.2	~~13~~ 0.2											
	14	6.2	-058.8						1.4	1.1				
		24.9	-059.1											
		29.5	14 30.2											
		36.2	-128.2						2.0	1.4				
			-1 28.8											

15) 13 ~~4437~~ 9163 / ~~0.85~~ 1.09 / 5 .163 1.087

1 14 36.49

88 40 5.52

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- 1880 June 13 UC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292 Vertical

Chron.	s	m	s	m	s					R	′	″
1	9	25.5		55	5.8	+20	21.1					
		30.8	9 309									
		36.4	+5 55.7	57	12.2	18	14.7	15 26.6	26.8	R	41	33.15
		57.0	+5 55.9									
	10	22.	10 21	58	33.6	16	53.3			R	41	45.80
		7.0	5 25.9					28.0	27.8			
		24.4	5 25.7	59	55.0	15	31.9			R	41	49.00
		30.4	10 305									
		36.6	4 56.1	1	16.0	14	10.9	26.6	26.6	R	41	53.75
		54.6	4 56.1									
		59.8	10 0.0	2	35.5	12	57.4			R	41	57.92
	11	5.7	4 26.5	4	26.2			26.7	26.2			
		24.1	30.0 ~~29.9~~	3	53.0	11	31.9			R	42	1.55
		28.5	11 30.0									
		37.3	3 57.0	5	9.6	10	17.3	27.0	26.7	R	42	4.60
		54.6	3 56.7									
		58.2	11 58.7	6	21.7	9	5.2			R	42	8.12
	12	8.4	3 27.0					25.7	25.9			
		23.6	3 27.2	7	37.0	7	49.9			R	42	11.30
		29.0	12 29.0									
		34.3	2 57.5					26.5	26.6			
		54.0	2 57.6									
		58.3	12 58.6									
	13	3.5	2 28.4					27.0	26.5			
		24.0	2 27.9									
		27.7	13 28.9									
		35.0	1 58.4					27.3	27.0			
		51.7	1 58.1									
		59.7	13 59.0									
	14	5.6	1 28.7					27.7	27.8			
		21.8	1 28.8									
		28.4	14 28.6									
		35.5	0 59.3					27.9	27.7			
		52.0	0 59.1									
		58.3	14 5.87									
	15	5.7	0 29.4					28.1	28.2			
		19.3	0 29.5									
		26.5	15 26.2									
		32.8	- 0.1					15 26.8	26.2			
		50.5	0 0.0									
		55.0	15 55.5									
	16	1.0	0 29.4					15 ~~25.9~~ 26.1	26.1			
			0 29.4									

14) 376.1
26.8694

376.1
26.86

1 14 36.07

88 40 5.56

R 41 33.15
R 41 41.53
R 41 45.80
R 41 49.00
R 41 53.75
R 41 57.92
R 42 1.55
R 42 4.60
R 42 8.12
R 42 11.30

26.6.6
27.07

2) 53.73
26.86

14) 376.1
15 26.86

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Sp. minute

1880 June 14 L.C.

b.12060
8.36632
8.48692

6.73660
8.36632
5.10292

h	m	s	m	s									
13			58	34.2	+14	22.2			R	3	22.90		
			0	21.8	12	34.6			R	3	17.30		
			19	8.3	6	11.9			R	3	36.08		

	9	46.8											
		51.3	9	51.3			12	49.0	48.9		9	51.3	12 48.1
		55.7	+2	57.7				50.6			+2	57.4	
			+2	57.6									
	12	51.7											
		56.0	12	57.0							12	57.0	57.0
	13	3.3	-0	0.3			12	56.5	57.0		-0	0.0	
			-0	0.0									
					1	14	37.37					88	40 5.42
	15	22.2											
		26.5	15	27.3							15	27.3	59.4
		33.3	-2	28.1				57.2	56.3		-2	27.9	
		51.0	-2	28.0									
		54.7	15	55.7							15	55.7	58.1
	16	1.3	-2	57.2				58.5	58.3		-2	57.6	
		20.5	-2	57.4									
		25.3	16	25.2							16	25.2	58.0
		29.7	-3	26.9				58.3	58.0		-3	27.2	
		30.6	-3	27.2									
		53.4	16	54.3							16	54.3	57.6
		59.0	-3	56.8				57.5	57.4		-3	56.7	
	17	19.0	-3	56.9									
		23.6	17	23.7							17	23.7	57.5
		28.4	-4	26.0				57.7	57.2	57.80	-4	26.2	
		51.0	-4	26.5						56.80			
		54.7								2)11260			
	16	1.3								12 56 30			
	18	45.2											
		49.2	18	50.0							18	50.0	54.1
		55.5	-5	55.5			12	54.5	54.5		-5	55.9	
			-5	55.5									8)45047
							8)	4512	4506				12 56.30
								56.40	56.32				

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1880 June 15 UC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

h	m	s		m	s				′	″
	1	9	27.5							
			31.5	9	32.3			W	41	38.85
			38.0							
			58.5	55	52.0	19 37.0		W	41	44.98
						1170.0	3.07078			
		10	3.4					W	41	46.53
			8.9	56	21.5	19 7.5				
			26.6			1147.5	3.05975	W	41	48.25
10	33.66		34.0	10	33.8					
10	33.66		40.8			1121.1	3.04965	W	41	51.28
				57	51.7	17 37.3				
		11	2.3			1057.3	3.02420			
			7.2	58	43.4	16 45.6		W	41	54.85
			10.4			1005.6	3.00243			
			25.7	59	26.7	16 2.3		W	41	57.75
			34.0	11	32.7	962.3	2.98331			
			38.3					W	41	59.65
			56.3	0	41.9	14 47.1				
		12	1.3	12	1.7	887.1	2.94797	W	42	3.08
			7.6			14 4.1				
			26.7	1	24.9	844.1	2.92639	W	42	5.78
				2	4.2	13 24.8				
			32.5	12	32.3	804.8	2.90569			
			37.6			12 44.4		W	42	7.70
			55.6	2	44.6	764.4	2.88332			
13	1.22	13	3.0	13	1.9	11 55.7		W	42	9.10
13	1.22		7.0			715.7	2.85473			
			25.6	3	33.3					
			30.0	13	30.3	11 3.2		W	42	11.00
			35.4			663.2	2.82164			
			54.7	5	5.7	10 23.3		W	42	13.30
			59.0	13	59.9	623.3	2.79470			
				5	45.3	9 43.7		W	42	15.15
		14	6.0			583.7	2.76619			
			20.4	6	29.7	8 59.3		W	42	16.92
			29.8	14	28.7	539.3	2.73183			
			35.8			8 5.0		W	42	18.08
			54.2	7	24.0	485.0	2.68574			
		15	0.0	14	59.9	7 24.7		W	42	20.40
			5.5	8	4.3	441.7	2.64807			
			23.6			+ 6 45.0		W	42	22.80
15	28.22		27.4	15	27.3	405.0	2.60746			
15	28.22		30.8			(24 21.0) − 8 52.0				
			52.9			592.0	2.72591 n			
			56.4	15	57.2					
		16	2.3							
			21.3							
			28.5	16	28.0					
			34.2							
			52.8							
			59.0	16	58.9					
		17	5.0							
			22.0			1 14	37.84			
			27.3	17	27.3					
			32.7							
			50.4		6.9					
17	56.94		57.4	17	57.5					
17	56.82	18	2.8							
			20.4							
			25.4	18	25.6					
			31.0							
			49.5							
			65.8	18	55.4					
		19	1.0							
			21.0							
			25.7	19	26.2					
			32.0							
			49.7							
			65.3	19	55.3					
		20	0.9							
			19.2							
20	25.16		24.6	20	24.5					
20	25.16		29.7							
			49.7							
			54.3	20	54.8					
		21	0.5							
				21	25.0					
15	29.040			15	29.040					

88 40 5.38

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- 1880 June 16 UC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

Identical

h	m	s	m	s	m	s						
	1	9	31.3	9 37.1	53	15.0	+22 17.8				W	2990
			36.3	+5 55.7				15 32.8	33.0			
			43.7	+5 55.9	54	0.5	21 32.5		31.2		W	3308
		10	2.0									
			6.4	10 7.0	54	35.0	20 58.8		31.2		W	3550
			12.7	5 25.9				32.9	32.7			
			29.3	+5 25.7	55	10.0	20 23.8				W	3722
			35.2	10 35.2					32.6			
			41.0	4 56.1	55	49.5	19 43.2	31.3	31.3		W	3962
		11	0.3	4 56.1								
			6.4	11 6.7	56	21.5	19 11.2		34.5		W	4168
			13.4	4 26.5				33.2	32.9			
			30.2	4 26.2	57	3.0	18 30.0				W	4458
			36.4	11 36.4					31.9			
			42.6	3 57.0	57	38.7	17 54.3	33.4	33.1		W	4610
		12	1.4	3 56.7								
			7.2	12 7.3	58	12.7	17 19.3	34.3	34.5		W	4805
			13.2	3 27.0								
			31.4	3 27.2	58	52.2	16 40.8				W	5042
			35.6	12 36.4								
			42.2	2 57.5	59	25.8	16 7.2	33.9	34.0		W	5238
			59.2	2 57.6								
	m	s										
	0	38.4	13	6.5	13	5.9	0	4.2	15 28.8	34.3	33.9		W	5378
				12.9	2 28.4									
43.27		43.0		29.7	2 28.0	0	50.7	15 14 36.3				W	5620
		48.4		34.5	13 35.1								
	2	7.0		41.2	1 58.4	1	28.0	14 5.0	33.5	33.2		W	5818
12.57		12.7		58.4	1 58.1								
		18.0	14	2.2	14 3.2	2	28.6	13 4.2				W	090
	3	36.8		9.1	1 28.7				31.9	32.8			
42.00		42.2		27.0	1 28.8	3	21.7	12 11.2				W	358
		47.0		34.6	14 3 42								
	5	9.0		41.0	0 59.3	3	59.9	11 32.9 33.1	33.5	33.3		W	518
12.80		13.0		57.2	0 59.1								
		16.4	15	2.6	15 3.1	4	37.7	10 55.2				W	702
	6	34.4		9.5	0 29.4				32.5	32.6			
39.33		38.6		27.7	0 29.5	5	29.9	10 29 31				W	942
		45.0		32.7	15 33.2								
				39.2	- 0.1	6	16.0	9 168 170	15 33.1	33.2		W	1170
3 41.994				55.7	0 0.0								
			16	0.6	16 1.4								
				7.9	-0 29.4								
					-0 29.4								

	32.0	32.0
	4626	4619
	33.04	32.99

	3236
	3338
	3272
3	9846
16	32.82

1 14 38.80

88 40 5.29

621.3

1 16 5 32.80

a	+	l					
0	43.3	+14	49.7	+14	47.9	15	31.2
2	12.6	13	20.4	13	18.6	15	31.2
3	42.0	11	57.0	11	50.6	15	32.6
5	12.8	10	20.2	10	21.7	15	34.5
6	39.3	8	53.7	8	52.6	15	31.9

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1880 June 17 LC

0.12060
8.36632 m
8.47692 W

6.73660
8.36632 m
5.10292 m

h	m	s		m	s						
	13	7	1.3	52	33.2	+20 29.1		R	3	4482	
			8.4			1229.1	3.08959				
			12.4	54	16.7	18 45.6		R	3	3800	
			30.4			1125.6	3.05138				
			35.9	55	42.4	17 19.9		R	3	3312	
			41.4			1039.9	3.01699				
		8	1.0	57	14.7	15 47.6		R	3	2795	
	8	6.24	3.5			947.6	2.97663				
	8	6.24	11.7	58	47.0	14 15.3		R	3	2315	
			32.3			855.3	2.93212				
			36.3	1	25.5	11 36.8		R	3	1430	
			40.2			696.8	2.84311				
			39.0	2	54.7	10 7.6		W	3	1042	
		9	5.5			607.6	2.78362				
			12.0	3	41.0	9 21.3		W	3	845	
			29.9			561.3	2.74920				
			35.0	4	18.2	8 44.1		W	3	668	
			40.4			524.1	2.71941				
		10	0.0	5	0.0	8 2.3		W	3	412	
			5.3			482.3	2.68332				
			10.2	5	53.7	7 8.6		W	3	165	
			30.4			428.6	2.63205				
	10	35.12	34.5	19	29.9	− 6 27.6		W	2	3540	
	10	35.12	42.2			387.6	2.58838 W				
			57.8	21	22.7	− 8 20.4		W	2	3272	
		11	4.0			500.4	2.69932 W				
			11.4	22	13.9	− 9 11.6		W	2	3218	
			28.9			551.6	2.74162 W				
			35.0	23	1.6	− 9 59.3		W	2	3140	
			41.8			599.3	2.77764 W				
			38.8	23	45.2	− 10 42.9		W	2	2980	
		12	5.3			642.9	2.80814 W				
			12.0	24	28.2	− 11 25.6		W	2	2898	
			29.3			685.9	2.83626 W				
			33.5	25	15.0	− 12 12.7		W	2	2868	
			41.2			732.7	2.86493 W				
			57.4	26	0.3	− 12 58.0		W	2	2762	
	13	3.12	13 3.2			778.0	2.89098 W				
	13	3.42	9.8	26	46.7	− 13 44.4		W	2	2768	
			26.5			824.4	2.91614 W				
			30.3								
			38.5								
			56.5								
		14	0.7								
			8.0								
			25.5								
			30.2								
			35.2								
						1 14 40.34					88 40 5.20
				15	0.0						
	15	29.46		15	30.0						
	15	29.46									
				15	59.0						
				16	28.0						
				16	58.0						
				17	28.0						
		17	55.6								
	17	57.18	57.8	17	58.2						
	17	57.48	18 1.2								
			22.4								
			26.0	18	26.7						
			31.8								
			52.0								
			56.3	18	56.5						
		19	1.2								
	13	2.344		13	2.344						

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0.62060
8.36632
8.48692

6.73660
8.36632
5.10292

1880 June 17 UC

h	m	s		m	s				′	″
	1	9	29.7	1	43.6	+ 13 47.7		W	41	58.12
			35.7			827.7	2.91787			
			43.5	2	39.2	12 52.1		W	42	0.80
			59.2			772.1	2.88767			
		10	6.0	3	21.5	12 9.8		W	42	3.22
			11.9			729.8	2.86320			
			28.4	4	1.0	11 30.3		W	42	4.18
10	34.30		33.5			690.3	2.83904			
10	34.30		38.6	4	46.9	10 44.4		W	42	6.30
			58.0			1644.4	2.80916			
		11	2.6	5	39.4	9 51.9		W	42	8.70
			9.4			591.9	2.77225			
			26.6	6	25.9	9 5.4		W	42	10.60
			31.6			545.4	2.73672			
			39.8	7	3.2	8 28.1		W	42	11.52
		12	1.4			508.1	2.70595			
			5.0	7	39.7	7 51.6		W	42	13.12
			10.8			471.6	2.67357			
			31.2	8	27.2	7 4.1		W	42	14.82
			35.0			424.1	2.62747			
			39.4	9	5.7	+ 6 25.6		W	42	17.38
			57.3			385.6	2.58614			
13	4.14	13	3.2	21	45.7	− 6 14.1		W	42	38.38
13	4.14		9.0			371.4	2.57334	W		
			28.0	22	34.6	− 7 3.3		W	42	40.10
			33.4			423.3	2.62665	W		
			37.7	23	15.0	− 7 43.7		W	42	40.92
			57.6			463.7	2.66624	W		
		14	3.5	24	0.0	− 8 28.7		W	42	41.70
			9.6			508.7	2.70646	W		
			25.4	24	36.2	− 9 4.9		W	42	42.02
			30.3			541.9	2.73632	W		
			35.7							
			57.0							
		15	1.6							
			7.2							
			27.3							
15	31.74		33.2							
15	31.74		36.7							
			57.2							
		16	1.5							
			7.0							
			27.0							
			31.8							
			37.3							
			53.4							
			58.5							
		17	6.0							
			22.5			1 14	39.82			
			28.4							
			33.2							
			54.0							
17	58.86		58.3							
17	58.86	18	4.3							
			22.4							
			27.7							
			35.0							
			54.3							
			59.0							
		19	5.7							
			20.7							
			29.0							
			35.3							
			53.5							
			59.0							
		20	3.8							
			21.8							
20	27.60		27.4							
20	27.60		33.5							
			51.3							
			56.9							
		21	1.7							
			22.0							
			26.0							
			32.2							
15	31.328									

88 40 5.22

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64

1880 June 18 SC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

h	m	s		m	s				′	″
13	7	2.3		58	35.5	+ 14 28.4		W 3	22	78
		7.9	7 8.2			868.4	2.93872			
		14.4		0	19.7	12 44.2		W 3	18	02
		33.7				764.2	2.88321			
		38.5	7 39.0	1	36.9	11 27.0		W 3	13	70
		44.8				687.0	2.83696			
	8	2.5		3	1.5	10 2.4		W 3	10	80
~~5 8.48~~		8.0	8 8.0			602.4	2.77988			
8 8.46		13.4		4	31.9	8 32.0		W 3	5	35
		33.3				512.0	2.70927			
		38.7	8 38.8	5	54.0	7 9.9		W 3	1	70
		44.5				429.9	2.63337			
	9	1.5		19	17.7	6 13.8		W 2	35	75
		9.3	9 8.3			373.8	2.57264			
		14.0		21	1.6	7 57.7		W 2	32	38
		28.7				477.1	2.67916			
		35.4	9 35.5	22	23.5	9 19.6		W 2	30	98
		42.4				559.6	2.74788			
		58.6		23	45.7	10 41.8		W 2	31	02
	10	7.2	10 6.3			641.8	2.80740			
		13.0		25	5.2	12 1.3		W 2	29	75
		29.4				721.3	2.85812			
10 35.58		34.8	10 35.1	26	30.0	13 26.1		W 2	28	32
10 35.58		41.0				806.1	2.90639			
	11	1.1		27	53.5	14 49.6		W 2	27	32
		6.0	11 6.0			889.6	2.94919			
		11.0		29	28.5	16 24.6		W 2	26	45
		30.2				984.6	2.99326			
		35.2	11 35.0	31	20.0	18 16.1		W 2	25	28
		39.7				1096.1	3.03985			
		58.0		32	58.4	19 54.5		W 2	25	12
	12	4.0	12 4.0			1194.5	3.07718			
		10.0								
		30.4								
		36.2	12 35.8							
		40.9								
	13	0.0								
13 4.44		5.3	13 5.8							
13 4.44		12.0								
		29.0								
		38.3	13 33.9							
		39.5								
		57.3								
	14	2.9	14 2.7							
		7.8								
		26.0								
		31.2	14 31.6							
		37.7								
		56.3				1 14 41.39			88 40 5.16	
	15	1.2	15 1.0							
		6.5								
		25.4								
15 31.44		31.5	15 31.3							
15 31.44		37.1								
		36.8								
	16	1.9	16 1.8							
		6.6								
		25.4								
		31.5	16 31.5							
		37.6								
		55.5								
	17	2.0	17 1.6							
		7.3								
		25.6								
		29.7	17 30.2							
		35.3								
		53.5								
17 59.68		59.3	17 59.6							
17 59.68	18	5.9								
		23.5								
		28.7	18 29.1							
		35.0								
		51.5								
		57.3	18 57.9							
		5.0								
13 3.924			13 3.924							

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- - 1880 June 18 UC

0.12060
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6.73660
8.36632
5.10292

Identical

h	m	s	m	s			′	″
1	17		26	13.9	+49 18.3	W	42	3885
			27	39.4	47 52.8	W	42	4345
			29	7.4	46 24.8	W	42	4440
			30	42.0	44 ~~59~~ 2	W	42	4582
			33	55.4	41 36.8	W	42	4658
			35	23.0	40 9.2	W	42	4702
			36	36.4	38 55.8	W	42	4668
			37	56.5	37 35.7	W	42	4602
			39	42.0	35 50.2	W	42	4518
			41	19.0	34 13.2	W	42	4350
			42	44.7	32 47.5	W	42	4288

m	s
25	—
	—
	51.5
	56.5
26	3.2
27	18.7
	23.2
	30.4
28	46.5
	51.5
	57.7
30	15.4
	19.9
	26.4

57.07
24.10
51.90
20.60

a - 1

1 14 40.86

88 40 5.18

17	54.9						
18	0.1	18 0.1					
	5.4	~~5 27.9~~	5	32.2	1532.1		
	24.2	2 28.0			35.8		
	29.8	18 27.0	5	29.7	29.6		
	—	2 57.3			33.8		
	54.6	2 57.4				a - 1	
19	0.3	19 0.5	5	33.2	33.3	~~25 57.1~~	—
	6.5	~~3 27.3~~			329		
	22.8	3 27.2				2557.1	10 24.9
	—	19 28.6	5	31.4	31.7		
	34.4	~~3 57.2~~			321	2724.1	11 51.9
	53.6	3 56.9					
	59.8	19 59.5	5	32.8	33.0	2851.9	13 19.7
20	5.0	4 26.7					
	23.5	4 26.5				3020.6	14 48.4
	29.5	20 29.1					
	34.4	4 56.2	5	32.9	33.1		
	53.0	4 56.0					
	58.7	20 59.0					
21	5.4	5 26.2	5	32.8	33.2		
	22.4	5 25.8					
	28.4	21 28.3					
	34.2	5 55.4					
		5 56.5	5	32.9	32.8		
				2579	2588		
			8)	32.24	32.35		

et munde

10 21.3	15 35.8		
11 50.3	15 33.8		
13 19.0	15 32.9		
14 48.5	15 32.1		

32.92
3265
2) 65.57
32.785

12) 393.4
32.78

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1880phae.proj:1561.

6

1880 June 19 SC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

h	m	s	m	s	m	s								
13	7	2.5			3	28.9	+	9 36.7	9.196	W	3	7.60		
		12.0	7	11.3		46.0		5 26.7	2.76095					
		19.5			19	50.0	−	6 44.4		W	2	3400		
		36.5						4001.4	2.60681					
		40.5	7	4.0	22	19.6	−	9 14.0		W	2	8080		
		46.0						5541.0	2.74351					
	8	2.8			23	54.6	−	10 49.0		W	2	2942		
8	9.48	9.4	8	8.9				6490	2.81224					
8	9.48	14.5			25	34.5	−	12 28.9		W	2	2722		
		32.4						7489	2.87442					
		37.4	8	37.6	27	4.4	−	13 58.8		W	2	2708		
		43.0						8288	2.91845					
	9	1.3			28	47.1	−	15 41.5		W	2	2630		
		9.1	9	8.6				9415	2.97382					
		15.3			30	24.7	−	17 19.1		W	2	2505		
		32.2						10391	3.01666					
		37.6	9	37.1	32	28.9	−	19 23.3		W	2	2502		
		41.6						11633	3.06569					
	10	1.0			34	2.4	−	20 56.8		W	2	2400		
		7.0	10	6.8				12568	3.09927					
		12.4			35	57.7	−	22 52.1		W	2	2380		
		31.4						13721	3.13738					
10	36.90	36.4	10	36.4										
10	36.90	41.5												
	11	1.1												
		8.2	11	7.3										
		12.5												
		31.4												
		36.4	11	36.9										
		42.8												
	12	0.7												
		6.4	12	6.3										
		11.8												
		33.4												
		38.4	12	37.9										
		42.0												
	13	1.0												
13	6.24	5.5	13	6.0										
13	6.24	11.4												
		30.4												
		34.5	13	35.3										
		41.0												
		59.8												
	14	6.4	14	5.7										
		11.0												
		25.5												
		33.7	14	33.0										
		39.9												
		56.5						1 14	42.45				88 40	5.15
	15	3.0	15	3.2										
		10.0												
		28.5												
15	33.36	36.0	15	35.3										
15	33.36	41.4												
		56.4												
	16	4.0	16	2.6										
		7.5												
		27.8												
		32.5	16	32.7										
		37.9												
		56.9												
	17	3.9	17	3.1										
		8.6												
		24.3												
		29.0	17	30.4										
		37.8												
		54.0												
18	1.90	18	18	1.5										
18	1.90	8.0												
		25.5												
		30.0	18	30.7										
		36.5												
		38.6												
	19	4.0	19	3.8										
		8.7												
13	5.576		13	5.576										

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1880phae.proj.1561.

- 1880 June 19 UC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

Identical

h	m	s	m	s			R	42	′	″
1			21	45.8	+6	10.5	R	42		3910
			32	6.3	−16	31.0	R	42		4600
			33	39.1	18	3.8	R	42		4595
			34	54.4	19	19.1	R	42		4662
			36	5.0	20	29.7	R	42		4638
			37	21.5	21	46.2	R	42		4605
			38	34.7	22	59.4	R	42		4532
			40	2.3	24	27.0	R	42		4502
			41	15.0	25	39.7	R	42		4378
			42	42.2	27	6.9	R	42		4282

15 39.7
16 5.8 16 54
10.8 −0 29.4
30.5 −0 29.4
34.7 16 34.9
39.5 −0 59.4
58.5 −0 59.1
17 3.6 17 3.7
9.1 −1 28.4
26.7 −1 28.6
32.0 17 32.1
37.7 −1 57.7
57.6 −1 58.3
18 2.3 18 2.8
8.6 −2 27.9
27.4 −2 28.0
32.2 18 32.2
37.0 −2 57.3
56.3 −2 57.4
19 3.3 19 2.7
8.4 −3 27.3
26.3 −3 27.2
32.6 19 32.4
38.3 −3 57.2
57.0 −3 56.9
20 2.4 20 2.5
8.2 −4 26.7
28.0 −4 26.5
32.2 20 32.5
37.3 −4 56.2
55.5 −4 56.0
59.4 21 0.5
21 6.7 −5 26.2
25.7 −5 25.8
30.9 21 31.3
37.3 −5 55.4
−5 55.5

1 14 41.92

5.3 10.0 15 36.0 36.0
5.5 8.7 35.5 35.8
4.3 7.5 353 35.1
3.7 7.4 344 33.8
5.1 5.6 349 34.8
4.3 4.9 349 34.8
5.4 5.4 354 35.5
5.1 4.5 352 35.5
5.3 4.8 358 36.0
5.8 4.1 363 36.5
4.3 4.1 343 34.7
5.1 4.9 15 359 35.8

12) 59.2 52.9 4239 4243
4.9 5.8 35.32 35.36

88 40 5.15

35.75
35.15
35.18
106.08
15 35.36

424.3
15 35.36

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1880phae.proj.1561.

8

– 1880 June 20 UC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

Identical

h	m	s	m	s	m	s					′	″
1	9	05.6	4		58	4.7	+19	32.8			R 41	385
		40.5	9	31.7								
		49.0	+5	55.7	58	12.4	17	25.1	15 37.4	37.6	R 41	4632
	10	5.9	+5	55.9								
		9.5	10	10.7	59	24.5	16	13.0			R 41	5708
		16.8	5	25.9					36.6	36.4		
		35.5	5	25.7	6	21.0	9	16.5			R 41	1018
		40.0	10	40.6								
		46.3	4	56.1	8	4.2	7	33.3	36.7	36.7	R 41	1380
	11	3.0	4	56.1								
		12.0	11	11.3								
		19.0	4	26.5					37.8	37.5		
		36.6	4	26.2								
		41.7	11	42.1								37.05
		47.9	3	57.0					36.1	38.8		37.80
	12	5.8	3	56.7							2	74.85
		10.0	12	10.2								
		14.7	3	27.0					37.2	37.4	15	37.42
		34.5	3	27.2								
		39.4	12	39.8								
		45.5	2	57.5					37.3	37.4		
	13	4.5	2	57.6							8	299.4
		9.7	13	9.7								
		15.0	2	28.1					15 38.1	37.6	15	37.42
			2	27.9								

8) 30.02 2994
15 37.52 ✓ 37.42

1 14 42.97

88 40 5.14

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0.12060
8.36632n
8.48692n

6.73660
8.36632n
5.10292n

1880 June 21 SC

h	m	s	m s	m	s					
	13	7	8.4		4	57.2	+ 8 11.0		W 3	3.02
			13.4	7 13.9			491.0	2.69108		
			19.8		5	53.8	7 14.4		W 3	0.72
			37.8				434.4	2.63789		
			41.8	7 42.2	6	48.4	6 19.8		W 2	57.80
			47.0				379.8	2.57955		
		8	5.6		29	5.5	− 15 57.3		W 2	24.98
8	12.56		11.7	8 11.8			957.3	2.98105n		
8	12.56		18.0		39	36.0	− 26 27.8		W 2	22.98
			38.0				1587.8	3.20080n		
			43.3	8 43.2						
			48.4							
		9	5.3							
			12.0	9 11.7						
			17.7							
			36.5							
			42.3	9 41.9						
			47.0							
		10	8.9							
			11.3	10 10.8						
			17.3							
			—							
10	40.60		—	10 40.0						
10	40.60		—							
		11	7.8							
			12.0	11 11.9						
			16.0							
			32.2							
			38.5	11 38.4						
			44.6							
		12	3.2							
			8.6	12 9.1						
			15.5							
			33.5							
			38.3	12 38.7						
			44.4							
		13	2.3							
13	7.86		8.0	13 8.2						
13	7.86		14.3							
			32.2							
			37.6	13 38.3						
			45.0							
		14	0.4							
			5.0	14 5.0						
			9.5							
			34.0							
			37.1	14 37.5						
			41.5							
			—				1 14	42.48		88 40 5.16
			—	15 6.0						
			—							
			—							
15	36.24		—	15 36.0						
15	36.24		—							
		16	3.4							
			5.3	16 5.3						
			7.3							
			30.9							
			36.3	16 36.4						
			42.0							
			59.6							
		17	5.0	17 5.2						
			10.9							
			27.5							
			33.0	17 33.2						
			39.0							
			59.0							
18	4.02	18	5.4	18 4.7						
18	4.02		9.7							
				18 34.0						
				19 3.0						
13	8.256			13 8.256						

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1880 June 21 UC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

h	m	s		m	s						
	1	9 38.8		52	41.7	+22 58.3		W	41	28.25	
		44.4	9 44.2			1378.3	3.13934				
		49.5		53	44.0	21 56.0		W	41	31.92	
	10	9.0				1316.0	3.11926				
		14.8	10 14.1	54	24.8	21 15.2		W	41	34.78	
		18.8				1275.6	3.10571				
		37.9		55	8.4	20 31.6		W	41	37.30	
10 43.58		43.0	10 43.4			1231.6	3.08047				
10 43.58		49.3		55	55.0	19 45.0		W	41	39.95	
	11	8.7				1185.0	3.07372				
		12.8	11 13.1	56	36.4	19 3.6		W	41	42.45	
		17.8				1143.6	3.05828				
		36.7		57	23.2	18 16.8		W	41	45.78	
		44.0	11 43.1			1096.8	3.04013				
		48.6		58	13.0	17 27.0		W	41	47.85	
	12	6.7				1047.0	3.01995				
		13.5	12 12.9	58	57.7	16 42.3		W	41	50.20	
		18.5				1002.3	3.00100				
		36.8		59	47.7	15 52.3		W	41	52.40	
		44.0	12 42.6			952.3	2.97877				
		47.0		0	33.0	15 7.0		W	41	53.20	
	13	6.5				907.0	2.95761				
13 11.70	m	s	13 11.9	1	5.0	14 35.0		W	41	57.42	
13 11.70	0	44.7				875.0	2.94201				
50.10		50.0		1	57.7	13 42.3		W	41	59.02	
		55.6				822.3	2.91503				
		41.0	13 41.1								
	2	15.4		2	45.2	12 54.8		W	42	2.40	
20.13		19.7				774.8	2.88919				
	14	4.5									
		25.3									
		9.5	14 10.0	4	9.2	11 30.8		W	42	7.78	
	3	43.5				690.8	2.83935				
		16.0									
48.73		49.2		4	50.2	10 49.8		W	42	7.95	
		33.7									
		53.5				649.8	2.81278				
		39.9	14 40.1								
	5	10.8		5	35.3	10 4.7		W	42	9.35	
17.77		46.8				604.7	2.78154				
		18.0									
	15	5.0									
		24.5									
		9.8	15 10.1	6	30.7	9. 9.3		W	42	12.35	
	6	42.6				549.3	2.73981				
47.63		15.6									
		48.0		7	15.5	8 24.5		W	42	12.50	
		35.4									
		42.3	15 41.5			504.5	2.70286				
		46.9		7	53.8	+7 46.2		W	42	15.60	
15 40.06											
3 48.872	15	39.94				466.2	2.66857				
	16	4.7									
		8.8	16 8.8								
		12.9									
		33.9									
		39.3	16 39.8 2								
		44.3									
	17	3.0									
		8.5	17 8.7								
		14.5									
		33.0		1	14	43.99					88 40 5.15
		38.0	17 38.3								
		44.0									
	18	2.3									
18 8.04		8.4	18 8.7								
18 8.04		15.3									
		31.4									
		36.7	18 36.9								
		42.5									
	19	1.9					a+1				
		7.6	19 7.6								
		13.2									
		31.8					0 50.1	+14 50.9	+14 47.9	15 38.0	
		36.8	19 37.0								
		42.5					2 18.8	13 20.2	13 16.6	15 38.4	
	20	1.0									
		7.0	20 6.7				3 48.7	11 67.3	11 50.6	15 39.3	
		12.0									
		34.1					5 17.8	10 22.2	10 21.7	15 38.5	
20 36.40		36.9	20 37.3								
20 36.40		41.0					6 47.6	8 52.8	8 52.6	15 40.2	
										1944	
	21	1.5								15 38.88	
		6.8	21 6.8								
		12.0									
		28.2									
		35.0	21 34.2								
		39.5									
15 39.956			15 39.956								

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1850 June 22 LC

D. 12060
δ. 36632
8.48692m

6.73660
8.36632m
5.10292m

h	m	s	m s	m	s					
13	7	7.5		57	18.8	+ 15 48.4		R	3	26.72
		12.6	7 12.6			948.4	2.97699			
		17.8		58	46.2	14 21.0		R	3	22.68
		36.2				861.0	2.93500			
		40.9	7 41.2	0	23.6	12 43.6		R	3	17.65
		46.6				763.6	2.88287			
	8	6.0		1	39.4	11 27.8		R	3	13.75
8	11.56	10.6	8 11.3			687.8	2.83746			
8	11.56	17.4		3	56.8	9 10.4		R	3	4.80
		36.8				550.4	2.74068			
		42.0	8 41.8	5	16.6	+ 7 50.6		R	3	3.60
		46.5				470.6	2.67265			
	9	5.7		19	23.0	− 6 15.8		R	2	33.75
		10.7	9 10.9			375.8	2.57496m			
		16.3		20	45.4	− 7 38.2		R	2	33.20
		35.0				458.2	2.66106m			
		40.4	9 40.7	22	0.0	− 8 52.8		R	2	31.25
		46.6				532.8	2.72656m			
	10	3.8		23	13.2	− 10 6.0		R	2	30.35
		9.0	10 9.1			606.0	2.78247m			
		14.4		24	6.4	− 10 59.2		R	2	29.53
		33.7				659.2	2.81902m			
10	38.94	38.0	10 38.7	25	28.0	− 12 20.8		R	2	27.90
10	38.94	44.4				740.8	2.86970m			
	11	3.0								
		8.0	11 8.7							
		15.2								
		32.2								
		37.3	11 37.5							
		43.0								
	12	2.7								
		7.0	12 8.0							
		14.3								
		31.8								
		37.3	12 37.2							
		42.4								
	13	0.6								
13	6.64	6.8	13 6.6							
13	6.64	12.3								
		30.7								
		35.0	13 35.5							
		40.9								
	14	0.1								
		5.4	14 5.9							
		12.2								
		30.5								
		36.3	14 35.9							
		41.0								
	15	1.3				1 14	45.42			
		5.7	15 5.8							
		10.3								
		29.6								
15	34.86	34.7	15 35.2							
15	34.86	41.3								
	16	1.7	16 3.1							
		4.6								
		28.5								
		34.0	16 34.3							
		40.3								
		59.0								
	17	4.7	17 4.7							
		10.3								
		29.1								
		34.4	17 34.3							
		39.5								
		58.7								
18	3.84	18 4.8	18 4.3							
18	3.84	9.5								
		27.5								
		32.6	18 33.0							
		39.0								
		57.0								
	19	2.8	19 2.9							
		9.0								
13	7.168		13 7.168							

88 40 5.17

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92

1880 June 22 U.C.

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

Identical

h	m	s		m	s					′	″			
1				54	33.0	+21	9.3			W 41	34.60			
				55	26.8	20	15.5			W 41	38.10			
				56	6.3	19	36.0			W 41	38.80			
				56	50.9	18	51.4			W 41	43.22			
				57	30.0	18	12.3			W 41	43.48			
				58	18.0	17	24.3			W 41	47.88			
				59	2.2	16	40.1			W 41	50.40			
				59	49.5	15	52.8			W 41	52.62			
				0	37.7	15	4.6			W 41	53.48			
				1	25.4	14	16.9			W 41	57.32			
				2	5.6	13	36.7			W 41	59.70			
				2	51.1	12	51.2			W 42	1.95			
				3	32.5	12	9.8			W 42	3.78			
				4	29.5	11	12.8			W 42	5.80			
14	7.6													
	12.0	14	12.7	5	25.3	10	17.0			W 42	9.02			
	18.4	1	28.7					15	41.4	41.5				
	37.4	1	28.8	6	8.0	9	34.3			W 42	11.42			
	43.1	14	43.6						42.5					
	50.4	0	59.3	6	53.5	8	48.8		42.9	42.7	W 42	12.92		
15	7.8	0	59.1											
	12.2	15	12.5	22	52.0	-7	9.7				W 42	40.98		
	17.5	0	29.4						41.9	42.0				
	37.0	0	29.5	25	4.7	9	22.4				W 42	42.92		
	42.3	15	42.9						43.0					
	49.4	-	0.1	26	24.4	10	42.1	15	42.8	42.9	W 42	44.15		
16	8.4	-0	0.0											
	11.0	16	12.3	28	6.7	12	24.4				W 42	44.88		
	17.6	0	29.4						42.9	42.9				
	37.0	-0	29.4	29	45.5	14	3.2				W 42	47.12		
	43.1	16	42.4											
	47.2	0	59.4						43.0	43.3				
17	5.5	-0	59.1											
	10.5	17	10.7											
	16.0	1	28.4						42.3	42.1	1 14	44.95		88 40 5.17
	34.7	0	28.6	028.6										
	40.0	17	40.4											
	46.6		40.4						42.7	42.1		4228		
18	4.7	1	58.3	158.3								4260		
	10.0	18	8.2									4215		
	16.0	2	27.9						42.0	41.9		4225		
	32.4	2	28.0									4 169.28		
	39.4	18	39.2											
	45.4	2	57.3						41.9	41.8		15 42.32		
19	4.8	2	57.4											
	10.4	19	9.9											
	14.5	3	27.3						42.6	42.7				
	34.0	3	27.2											
	39.3	19	39.1											
	43.9	3	57.2						41.9	42.2				
20	2.8	3	56.9									16 6771		
	9.0	20	8.6											
	14.1	4	26.7						41.9	42.1		15 4232		
	32.5	4	26.5											
	38.8	20	38.4											
	43.9	4	56.2						42.2	42.4				
21	2.5	4	56.0											
	7.6	21	7.9											
	13.5	5	26.2						41.7	42.1				
	32.8	5	25.8											
	37.6	21	37.9											
	43.4	5	55.4					15	42.5	42.4				
		5	55.5						64					
								15	42.429					

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1880 June 23 UC

0.12060
8.36632
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6.73660
8.36632
5.10292 Identical

h	m	s	m	s	m	s						
1	9	41.9		7.0	56	31.9	+19	11.1			W 41	4095
		46.2	9	46.9								
		52.8	+5	55.7	57	39.0	18	4.0	15 42.7	42.9	W 41	4435
	10	12.0	+5	55.9								
		18.4	10	17.7	58	21.0	17	22.0			W 41	4722
		22.6	5	25.9					43.6	44.4		
		40.7	5	26.7	59	14.4	16	28.6			W 41	5053
		46.5	10	46.6								
		52.5	4	56.1	0	0.3	15	42.7	42.7	42.7	W 41	5238
	11	11.3	4	56.1								
		15.3	11	16.1	1	6.6	14	36.4			W 41	5630
		21.8	4	26.5					42.6	42.3		
		39.5	4	26.2	2	2.8	13	40.2		—	W 41	3845
		45.6	11	45.9								
		52.7	3	57.0	2	38.0	12	45.0	42.9	42.6	W 42	088
	12	10.2	3	56.7								
		16.2	12	16.3	3	47.8	11	55.2			W 42	360
		22.5	3	27.0					43.3	43.5		
		39.3	3	27.2	7	13.0	8	30.0			W 42	1302
		45.5	12	45.4								
		51.5	2	57.5	8	6.7	7	36.3	42.9	43.0	W 42	1495
	13	9.0	2	57.6								
		14.4	13	14.4	8	56.5	6	46.5			W 42	1778
		19.9	2	28.4					42.8	42.3		
		38.6	2	27.9						—		
		44.7	13	44.8								4308
		51.0	1	58.4					43.2	42.9		4285
	14	8.5	~~+5~~	14.0	1.58.1							4310
		13.3	14	~~13.9~~								
		20.1	1	28.7					42.7	42.8		3)12903
		38.6	1	28.8								15 43.01
		44.4	14	43.8								
		48.5	0	59.3					43.1	42.9		
	15	9.6	0	59.1								
		13.4	15	14.0								13)5592
		19.0	0	29.4					43.4	43.5		1 15 43.02
		~~42~~	0	29.5								
		—										
		—		-0.1								
	16	7.6										
		13.0	16	12.8								
		17.7	-0	29.4					15 43.4	43.4		
			-0	29.4					13)5593	5592		
									15 43.27 02	43.02		

1 14 45.87

88 40 5.18

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- 1880 June 24 LC

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h	m	s		m	s											
	13	7	9.2	4	56.4	+ 8	12.0				R	2	3.28			
+5	55.5		13.2	7 14.4										14.4	13	9.9
			20.8	+ 5 54.7	6	7.5	7	0.9	13	9.1	10.3	R	2	1.08	5 55.5	
			37.4	+ 5 55.9												
5	25.8		43.1	7 43.6	20	49.7	-7	41.3				R	1	38.80	7 43.6	9.4
			50.3	- 5 25.7						9.3	9.3				5 25.8	
		8	8.3	5 25.7	22	8.8	9	0.4				R	1	30.02		
4	56.0		13.4	8 13.3											8 13.3	9.3
			18.8	- 4 55.9	23	51.5	10	43.1		9.2	9.4	R	1	28.62	4 56.0	
			36.0	4 56.1												
4	26.5		44.5	8 43.3	24	57.4	11	49.0				R	1	27.98	8 43.3	9.8
			49.3	- 4 26.2						9	9.5				4 26.5	
		9	7.5	4 26.2	27	39.6	14	31.2		8.5		R	1	25.30		
3	56.9		13.2	9 13.2											9 13.2	10.1
			19.0	- 3 56.6	29	7.0	15	58.6		9.8	9.9	R	1	24.35	3 56.7	—
			26.3	3 56.7												
3	27.2		42.5	9 41.9	30	16.7	17	8.3				R	1	23.30	9 41.9	9.1
		10	47.0	- 3 27.2						9.1	9.1				3 27.2	
		11	5.5	3 27.2	31	25.7	18	17.3				R	1	22.62		
2	57.4		11.6	10 1.5											10 11.5	8.9
			17.5	- 2 57.7						9.2	9.1				2 57.4	
			35.7	2 57.6												
2	28.0		41.3	10 40.8											10 40.8	8.8
		11	45.4	- 2 28.5						9.3	8.7				2 28.0	
		13	4.8	17 27.9												
1	58.3		9.0	11 ~~13~~ 9.6											11 9.6	7.9
			15.0	- 1 58.0						7.6	7.7				1 58.3	
			33.4	1 58.1												
1	28.6		36.7	11 ~~13~~ 37.7											11 37.7	6.0
		12	42.0	- 1 28.6						6.1	6.2				1 28.6	—
		14	2.0	1 28.8												
0	59.1		9.4	12 ~~14~~ 8.9											12 8.4	7.9
			15.1	- 0 59.0						7.8	7.9				0 59.1	
			38.4	0 59.1												
+0	29.4		38.2	12 ~~14~~ 38.7											12 38.7	8.1
			44.4	- 6 28.8						8.0	8.2				0 29.4	
		13 15	2.7	0 29.5												
-0	0.0		9.0	13 ~~15~~ 8.5											13 8.5	8.5
			13.8	- 1 0.5						13 8.0	8.5				- 0 0.0	
-0	29.5		32.2	- 0 0.0												
			36.7	13 ~~15~~ 3.70											13 37.6	7.5
			42.0	- 6 29.5						7.5	7.4				- 0 29.5	
		14 16	0.3	14 0 29.4												
-0	59.1		6.7	14 ~~16~~ 5.6											14 5.6	6.5
			9.8	- 0 58.8						6.8	6.5				- 0 57.1	—
			30.0	14 59.1												
-1	28.8		36.4	14 ~~16~~ 36.0											14 36.0	7.2
		15	41.7	- 1 28.2						7.8	7.4	1	14	47.19	- 1 28.8	
		17	0.2	1 28.6								88	40	5.21		
-1	58.1		7.2	15 ~~17~~ 6.6											15 6.6	8.5
			12.5	- 1 57.7						8.9	8.3				- 1 58.1	
			28.2	15 58.3												
-2	27.9		35.2	15 ~~17~~ 31.7											15 31.7	14 3.7
			—	- 2 28.1						(3.6)	(3.7)				- 1 28.0	
		16	59.4	16 28.0												
-2	57.6	18	6.6	15 ~~17~~ 5.5											16 5.5	7.9
			11.5	- 2 57.2						8.3	8.1				- 2 57.6	
			28.8	16 57.4												
-3	27.2		34.8	15 ~~18~~ 34.6											16 34.6	7.4
			40.2	- 3 26.9						13 7.7	7.4				- 3 27.2	—
-3	56.7			- 3 27.2						9						

19) 1416 15.80 1589
8.08 34
37
8.36

19) 158.7
13 8.35

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1880 June 24 UC

0.12060
8.36632
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		h	m	s	m	s	m	s							
9.9		1	9	43.6	(5	53.6	)+9	50.9				R	42	"	"
				48.2	9	48.8		590.7	2.77151				42	1085	
				54.6	6	48.0	8	56.5				R	42	1085	
			10	13.7				536.5	2.72957				42	1488	
9.4				19.2	10	18.8	8	17.0	7	27.5		R	42	1488	
				23.4					447.5	2.65079			42	3822	
				45.2			21	55.0	- 6	10.5		R	42	3832	
9.3		10 48.56		49.5	10	49.9			370.5	2.56879	m				
		10 48.56		55.0			28	5.7	- 12	21.2		R	42	4352	
			11	12.5					741.2	2.86994	m				
9.8				17.6	11	17.6	29	16.4	- 13	31.9		R	42	4410	
				22.6					811.9	2.90950	m				
				42.2			31	18.3	- 15	33.8		R	42	4450	
10.1				47.4	11	47.7			933.8	2.97025	m				
				53.5			32	20.0	- 16	35.5		R	42	4508	
			12	12.0					1095.5	2.99804	m				
9.1				18.0	12	17.8	33	29.2	- 17	44.7		R	42	4258	
				23.3					1064.7	3.02623	m				
				40.7			35	13.2	- 19	28.7		R	42	4592	
8.9				45.7	12	46.7			1168.7	3.06770	m				
				53.6			36	19.4	- 20	34.9		R	42	4548	
			13	10.7					1234.9	3.09164	m				
8.8		13 16.80		16.3	13	16.6									
		13 16.80		22.7											
				40.0											
7.9				47.2	13	46.7									
				52.8											
			14	10.9											
6.0				15.4	14	16.2									
				22.2											
				40.3											
7.9				45.8	14	45.5									
				50.5											
			15	8.4											
8.1				14.4	15	14.4									
				20.5											
				40.0											
8.5		15 44.52		44.6	15	45.0									
		15 44.52		50.3											
			16	5.7											
7.5				13.0	16	12.7									
				19.4											
				39.2											
6.3				46.3	16	45.0									
				49.4											
7.2				—											
				—	17	12.0									
				—											
				—					1 14	46.76					88 40 5.20
8.5				—	17	42.0									
				—											
			18	6.5											
8.2		18 11.90		13.0	18	12.7									
		18 11.90		18.7											
				34.4											
7.9				40.4	18	40.6									
				47.0											
			19	7.0											
7.4				12.2	19	12.2									
				17.4											
8.7				36.2											
8.35				42.2	19	41.6									
				46.4											
			20	5.6											
				10.5	20	10.9									
				16.6											
				34.3											
		20 40.64		38.7	20	40.1									
		20 40.64		47.2											
			21	5.6											
				9.2	21	10.3									
				16.0											
				34.7											
				40.0	21	40.3									
				46.3											
		15 44.484			15	44.484									

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1880 June 26 UC

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h	m	s	m	s	h	m	s						
1	18	49.3			0	3.3	+24 46.1			R	41	1892	
		54.3	18	54.8			1486.1	3.17205					
	19	0.7			1	48.5	23 09			R	41	2630	
		18.2					1380.9	3.14016					
		23.7	19	23.8	3	11.1	21 38.3			R	41	3053	
		29.6					1298.3	3.11337					
		49.7			4	25.0	20 24.4			R	41	3522	
~~19 54.26~~		57.7	19	53.2			1224.4	3.08792					
19 53.60		58.1			5	49.5	18 59.9			R	41	4038	
	20	17.6					1130.9	3.05686					
		23.1	20	23.0	7	19.9	17 20.5			R	41	4485	
		28.3					1049.5	3.02098					
		47.7		53.2	9	46.4	15 3.0			R	41	5328	
		53.7	20	~~56.5~~			903.0	2.95569					
		58.2			11	9.7	13 39.7			R	41	5742	
	21	17.3					819.4	2.91365					
		22.6	21	22.7	12	27.5	12 21.9			R	42	122	
		28.2					741.9	2.87035					
		46.8			13	46.5	11 2.9			R	42	572	
		51.7	21	51.9			662.9	2.82145					
		57.2			15	17.6	9 31.8			R	42	858	
	22	15.3					571.8	2.75724					
22 21.54		20.1	22	21.0	16	41.5	8 7.9			R	42	1225	
22 21.54		27.7					487.9	2.68833					
		46.3			31	5.4	− 6 16.0			R	42	3772	
		51.3	22	51.3			376.0	2.57519	~				
		56.3			32	42.7	− 7 53.3			R	42	3978	
	23	15.3					473.3	2.67514	~				
		20.5	23	20.8	34	0.8	− 9 11.4			R	42	4030	
		26.7					551.4	2.74147	~				
		44.2			35	8.3	−10 18.9			R	42	4202	
		50.2	23	50.1			618.9	2.79162	~				
		55.8			36	25.5	−11 36.1			R	42	4248	
	24	4.2					696.1	2.84264	~				
		19.4	24	19.7									
		25.4											
		44.7											
24 49.16		49.4	24	49.4									
24 49.16		54.0											
	25	13.5											
		17.4	25	18.1									
		23.3											
		43.2											
		48.1	25	48.5									
		54.2											
	26	12.6											
		17.6	26	17.7									
		23.0											
		41.3					1 14	48.46				88 40	5.22
		47.2	26	47.0									
		52.6											
	27	11.2											
27 16.56		15.6	27	15.9									
~~27 16.56~~		21.0											
		40.3											
		46.6	27	46.1									
		51.4											
	28	11.1											
		16.7	28	16.1									
		20.6											
		40.5											
		46.7	28	48.2									
		51.8											
	29	10.2											
		15.5	29	15.4									
		20.5											
		39.2											
~~29 45.32~~		45.3	29	45.2									
29 45.52		51.0											
	30	10.2											
		16.6	30	16.2									
		21.7											
		39.5											
		41.3	30	43.6									
		50.1											
24 49.368			24	49.368									

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1880 June 27 LC

0,12060
8.36682 m
8.48692 m

6.73660
8.36632 m
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h	m	s		m	s							
13		—		19	20.0	− 6 14.1						
		—	7 10.0			374.1	2.57299 m					
		—		20	32.7	− 7 26.8				W	2	3340
	7	34.2				446.5	2.65011 m			W	2	3178
		40.7	7 40.5	21	48.0	− 8 42.1						
		46.6				522.1	2.71775 m			W	2	3015
	8	5.9		22	46.0	− 9 40.1				W	2	2912
8 10.04		9.5	8 10.3			580.1	2.76350 m					
8 10.04		15.5		23	38.5	− 10 32.6				W	2	2880
		33.8				632.6	2.80113 m					
		39.4	8 39.8	24	42.4	− 11 36.5				W	2	2722
		46.2				696.5	2.84292 m					
	9	4.6		25	33.1	− 12 27.2				W	2	2635
		9.0	9 9.6			767.2	2.87344 m					
		15.3		26	53.4	− 13 47.5				W	2	2542
		32.2				827.4	2.91772 m					
		38.1	9 38.0	27	44.2	− 14 38.3				W	2	2438
		43.7				878.3	2.94364 m					
	10	3.0		28	44.3	− 15 38.4				W	2	2452
		8.7	10 8.7			938.4	2.97239 m					
		14.3		29	39.0	− 16 33.1				W	2	2350
		31.4				993.1	2.99699 m					
10 37.38		37.3	10 37.0	30	23.8	− 17 17.6				W	2	2337
10 37.38		42.2				1034.9	3.01616 m					
	11	1.0		31	16.8	− 18 10.9				W	2	2353
		6.0	11 6.6			1090.1	3.03747 m					
		12.9		31	58.3	− 18 52.4				W	2	2335
		31.3				1132.4	3.05400 m					
		36.1	11 36.6	32	45.5	− 19 39.6				W	2	2328
		42.3				1179.6	3.07173 m					
	12	0.7		33	33.3	− 20 27.4				W	2	2310
		8.2	12 7.3			1227.4	3.08898 m					
		13.0		34	16.4	− 21 10.5				W	2	2290
		31.8				1270.5	3.10398 m					
		37.5	12 37.3	35	10.4	− 22 4.5				W	2	2280
		42.6				1324.5	3.12205 m					
	13	1.3		35	58.2	− 22 52.3				W	2	2270
13 5.96		6.6	13 6.3			1372.3	3.13745 m					
13 5.96		11.0		36	42.4	− 23 36.5				W	2	2290
		30.4				1416.5	3.15121 m					
		35.4	13 35.6									
		41.1										
		57.6										
	14	3.0	14 3.3									
		9.2										
		27.8										
		34.0	14 33.4									
		38.5										
		56.9				1 14 49.79						88 40 5.20
	15	3.1	15 3.3									
		9.9										
		28.6										
15 ~~37.17~~		33.3	15 33.9									
15 33.46		39.8										
		~~39.2~~										
	16	4.7	16 4.8									
	16	10.6										
		27.3	31.9									
		31.2	16 ~~35.3~~									
		37.3										
		55.2										
	17	1.5	17 1.6									
		8.2										
		27.5										
		32.5	17 32.6									
		37.8										
		55.3										
~~16 1.62~~	18	1.3	18 1.5									
18 1.70		8.0										
		26.3	0									
		32.3	18 32.8									
		37.3										
		55.2										
	19	1.0	19 0.8									
		6.1										
13 5.868			13 5.868									

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8

1880 June 27 UC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

h	m	s	m	s						
1		—	54	53.9	+20 56.3			R	41	2670
		—			1256.3	3.09919				
		9 540	56	27.7	19 22.5			R	41	3238
		—			1162.5	3.06539				
	10	19.3								
		24.2	10	24.2	58 9.6	17 40.6		R	41	3862
		29.0				1060.6	3.02556			
		49.2			59 27.0	16 23.2		R	41	4382
	10 54.16	53.4	10	54.0		983.2	2.99264			
	10 54.16	59.3			1 13.3	14 36.9		R	41	4810
						846.9	2.94295			
		11 18.7								
		25.3	11	24.8	4 22.6	11 27.6		R	41	5353
		30.4				687.6	2.83734			
		47.5			5 44.6	10 5.6		R	42	270
		53.7	11	53.8		605.6	2.78219			
		12 0.3		—	8 20.4	7 29.8		R	42	682
		17.6				449.8	2.65302			
		23.5	12	23.3	9 28.9	+ 6 21.3		N	42	1288
		28.9				381.3	2.58127			
		46.7			22 11.9	− 6 21.7		W	42	1562
		53.0	12	52.5		381.7	2.58172			
		57.8			(23 13.9	7 23.7		W	42	3725
		13 17.0				443.7	2.64709			
13 22.24	m s	22.7	13	22.4	23 18.0)	7 27.8		W	42	3935
13 22.24	1 0.3	27.6				449.8	2.65108			
2.37	2.4	47.4			23 58.7	− 8 8.5		W	42	3898
	4.4	52.3	13	52.2		488.5	2.68886			
	2 23.8	57.0			26 25.6	− 10 35.4		W	42	4092
29.97	29.9	14 15.3				635.4	2.80305			
	36.2	21.0	14	28.8	27 22.5	− 11 32.3		W	42	4148
	3 53.7	26.0		—		692.3	2.84029			
5963	4 0.3	45.3								
a+1	4.9	51.4	14	51.0						
	5 23.3	56.4								
27.90	27.5	15 14.8								
	32.9	20.4	15	20.6						
	6 50.3	26.5								
56.87	57.6	47.0								
	7 2.7	50.7	15	51.4		1 14				
	15 50.08	56.4								
3 59.348	15 50.08	16 13.8								
		18.5	16	18.9						
		24.4								
		43.2								
		48.4	16	48.5						
		54.0		—						
		17 13.6								
		18.5	17	18.7						
		24.0								
		42.4				1 14 49.34			88 40 5.20	
		48.0	17	48.1						
		54.0								
		18 12.7								
	~~18 18.02~~	17.8	18	18.0						
	18 17.96	23.4								
		42.0								
		47.5	18	47.X 4						
		53.6								
		19 12.0								
		17.3	19	17.6	a+1					
		23.6			1 2.4	+14 47.8	+ 14 47.4	15 50.3		
		41.5								
		46.6	19	46.9	2 30.0	13 20.2	13 18.6	15 48.6		
		52.5								
		20 11.1			3 59.6	11 50.6	11 50.6	15 50.2		
		17.2	20	17.0						
		22.7			5 27.9	10 22.3	10 21.7	15 49.6		
		37.5								
	20 46.46	46.2	20	45.6	6 56.9	8 53.3	8 52.6	15 49.5		
	20 46.46	51.0								
								2482		
		21 10.8								
		16.3	21	16.3						
		21.9					15	49.64		
		41.8								
		46.5	21	46.5						
		51.3								
	15 50.192		15	50.192						

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1000phae.proj.1501.

1880 June 28 SC

0.12060
8.36632$_m$
8.48692$_r$

6.73660
8.36632$_r$
5.10292$_m$

Identical

h	m	s	m	s								
13			18	45.2	−5	364			W	2	′	″ 3208
			21	2.4	7	53.6			W	2		2938
			21	46.2	8	37.4			W	2		2830
			22	34.2	9	25.4			W	2		2800
			23	35.4	10	46.6			W	2		2700
			24	37.1	11	28.3			W	2		2538
			25	22.4	12	13.6			W	2		2480
			26	5.9	12	57.1			W	2		2415
			26	49.8	13	41.0			W	2		2382
			27	30.8	14	21.5			W	2		2315
			28	27.0	15	18.2			W	2		2298
			29	16.2	16	7.4			W	2		2252
			30	50.0	17	41.2			W	2		2195
			31	(29.7 31.7 34.8) 32.7	18	23.4			W	2		2202
			32	(5.9 15.6) 10.7	19	1.9			W	2		2135
			33	11.5	20	2.7			W	2		2145

m s
21 57.3
22 1.5
7.7
23 26.4
28.0
30.6
26 30.0
31.4
32.5
27 52.5
38.7
28 5.4

2.17
28.33
31.30
58.87
a+1, 5, 4 − 2, 1

9.41
8.49
2)17.90
13 8.95

14 32.0
38.0 14 37.8
43.5 −1 28.2
15 2.0 −1 28.8
7.7 15 7.7
13.3 −1 15 7.7
32.5 −1 58.1
37.5 15 37.7
43.0 −2 28.1
39.8 −2 27.9
16 6.8 16 6.2
12.0 −2 57.2
29.3 −2 57.6
34.8 16 34.4
40.0 −3 26.9
59.6 −3 27.0
17 5.5 17 4.7
10.0 −3 56.8
28.0 −3 56.7
34.3 17 33.8
39.0 −4 26.0
57.0 −4 26.2
18 4.5 18 4.2
11.0 −4 56.0
28.8 −4 56.1
35.1 18 34.9
40.7 −7 25.9
58.2 −5 25.7
19 4.6 19.4.2
9.7 −5 55.5
−5 55.9

1 14 50.73

13 39.0 9.6 c 9.0 9.6
39.5 10.0 9.6 7.0
40.0 9.6 9.8 12.3
38.1 9.0 8.6 10.4
37.5 7.8 7.5
38.1 8.2 8.3
37.0 7.8 7.6
38.2 8.2 8.1
38.9 9.0 9.2 8.7 8.3
38.3

13 3746 879 860
10) 37.46 8.79 8.60

14) 125.3
13 13 8.95

88 40 5.18

a+1

22	2.2	15 1	6.6	8 53.4	−8 52.6	13	9.6	
23	28.3	49	40.5	10 19.5	10 21.3	13	7.0	
26	31.3	46	37.5	13 23.5	13 19.0	13	12.3	
27	58.9	45	9.9	14 52.1	14 48.5	13	10.4	

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1880 June 28 UC

0.12060
8.36682
8.48692

6.73660
8.36632
5.10292

h	m	s		m	s					′	″			
	1	9	47.7											
			51.5	9	52.8									
			57.3			55	56.4	+16	52.8					
									1192.8	3.07657				
						58	44.4	17	4.8					
		10	17.0						1024.8	3.01064				
			23.2	10	22.9									
			28.5			0	22.2	15	27.0					
									927.0	2.96708				
			46.5			1	47.5	14	1.7					
10	52.54		52.3	10	52.4				841.7	2.92516				
10	52.54		58.4			3	15.7	12	33.5					
		11	17.5						753.5	2.87708				
			22.7	11	22.7	4	44.5	11	4.7					
			27.9						664.7	2.82263				
			46.2			6	7.7	9	41.5					
			52.0	11	51.9				581.8	2.76455				
			57.6			7	34.3	+8	14.6					
		12	15.7						484.9	2.68565				
			21.4	12	21.4	22	1.0	− 6	11.8					
			27.0						371.8	2.57031				
			46.0			23	4.3	− 4	15.1					
			50.7	12	51.3				435.1	2.63859				
			57.3			23	50.7	− 8	1.5					
		13	13.6						481.5	2.68260				
13	20.96		21.0	13	20.7	24	30.4	− 8	41.2					
13	20.96		27.4						521.2	2.71700				
			44.6			25	15.0	− 9	25.8					
			50.0	13	50.3				565.8	2.75266				
			56.2			25	57.9	− 10	8.7					
		14	15.6						608.7	2.78440				
			21.3	14	21.1	26	43.9	− 10	51.7					
			26.4						654.7	2.81604				
			45.2			27	38.4	− 11	49.2					
			50.3	14	50.6				709.2	2.85077				
			56.4			29	4.0	− 13	14.8					
		15	14.3						794.8	2.90026				
			20.4	15	19.8	30	15.8	− 14	26.6					
			24.7						866.6	2.93782				
			43.6			31	22.7	− 15	33.5					
15	49.42		49.0	15	49.1				933.5	2.97011				
15	49.42		54.6			32	38.6	− 16	49.4					
		16	12.5						1009.4	3.00406				
			19.3	16	18.9	34	44.0	− 18	54.8					
			24.9						1134.8	3.05492				
			43.5			36	50.5	− 21	1.3					
			49.0	16	48.7				1261.3	3.10082				
			53.5			38	53.0	− 23	3.8					
		17	12.2						1383.8	3.14108				
			19.2	17	18.3	41	50.6	− 26	1.4					
			23.5						1561.4	3.19351				
			42.0			44	43.0	− 28	53.8					
			46.6	17	47.4				1733.8	3.23900				
			53.6											
		18	13.3											
18	17.68		18.5	18	18.3									
18	17.68		23.2					1	14	50.26			88	40 5.19
			41.7											
			48.0	18	47.7									
			53.4											
		19	11.0											
			17.0	19	16.7									
			22.2											
			41.7											
			45.6	19	45.8									
			50.2											
		20	10.9											
			16.9	20	16.6									
			22.8											
			40.3											
20	45.54		48.2	20	45.5									
~~20~~	~~45.42~~		51.0											
		21	8.5											
			15.7	21	15.1									
			21.2											
			39.2											
			45.0	21	44.7									
			50.0											
15	49.228			15	49.228									

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1880 June 29 LC

0.12060
8.36632m
8.48692m

6.73660
8.36632m
5.10292m

h	m	S	m	s	m	S	g						
	13	7	5.5		3	29.5	+X 36.7			W	2	′	″ 5.48
			10.8	7 10.5			576.7	2.76095					
			15.2		5	14.6	7 51.6			W	2	0	0.10
			33.7				471.6	2.67357					
			39.2	7 39.4	19	34.3	− 6 28.1						—
			45.2				388.1	2.58894m					
		8	3.2		20	25.6	− 7 19.4			W	1	30.90	
8 9.98			11.6	8 10.3			139.4	2.64286m					
8 9.98			16.1		21	34.4	− 8 28.2			W	1	28.78	
			34.5				508.2	2.70603m					
			39.8	8 40.0	22	50.2	− 9 44.0			W	1	26.78	
			45.7				584.0	2.76641m					
		9	3.8		23	39.7	− 10 33.5			W	1	26.20	
			9.7	9 9.7			633.5	2.80175m					
			15.5		24	27.9	− 11 21.7			W	1	25.48	
			34.1				681.7	2.83359m					
			40.0	9 39.9	25	13.0	− 12 6.8			W	1	24.82	
			45.6				666.8	2.82400m					
		10	3.4		25	49.7	− 12 43.5			W	1	24.68	
			8.7	10 9.0			763.5	2.88281m					
			14.8		26	46.4	− 13 40.2			W	1	23.78	
			32.6				820.2	2.91392m					
10 38.90	hr	s	37.4	10 38.3	28	5.5	− 14 59.3			W	1	23.72	
10 38.90			44.8				899.3	2.95390m					
			3.3		31	19.2	− 18 13.0			W	1	21.88	
			8.9	11 8.9			1093.0	3.03862m					
	23	22.0	14.6		34	55.8	− 21 49.6			W	1	21.35	
27.33		27.0	32.6				1309.6	3.11714m					
		33.0	38.3	11 38.4	36	26.6	− 23 20.4			W	1	21.65	
	24	51.0	44.4				1400u	3.14625m					
56.60		56.6	12 1.7		37	55.0	− 24 48.8			W	1	21.95	
a+1	25	2.2	5.7	12 6.5			1488.0	3.17260m					
	26	19.0	12.0		39	15.5	− 26 9.3			W	1	21.95	
24.90		24.7	31.3				1569.3	3.19570m					
		31.0	36.4	12 36.7									
	27	49.3	42.3										
55.50		56.0	13 1.4										
	28	1.2	6.4	13 6.5									
	13	6.18	11.7				1 14	51.71					88 40 5.16
	13	6.18	30.5										
			35.7	13 35.6									
			40.6										
		14	1.0										
			5.2	14 56									
			10.5										
			30.0										
			36.1	14 35.9									
			41.6										
			58.3										
		15	3.7	15 3.8									
			9.3										
			27.0										
	15	33.80	34.0	15 33.4									
	15	33.80	39.2										
			57.3										
		16	3.5	16 3.2									
			8.8										
			26.9										
			33.0	16 32.7			a+1						
			38.3				2327.3 +						
			56.6										
		17	2.2	17 2.2			2327.3	49 38.9	10 21.1	− 10 21.3	13	6.0	
			7.9				24 56.6	48 9.6	11 50.4	11 50.3	13	6.3	
			26.0										
			31.9	17 32.2									
			38.8				26 24.9	46 41.3	13 18.7	13 19.0	13	5.9	
			56.0										
	18	2.38	18 1.7	18 1.41			27 55.5	45 10.7	14 49.3	14 48.5	13	7.0	
	18	2.38	6.5										
													2.52
			32.5	18 35.1							13	6.30	
			37.7										
			55.4										
		19	0.6	19 1.0									
			7.0										
12 3 6.2418				12 3 6.248									

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1880 June 30 SC

h	m	s		m	s						
	13	7	4.4	19	18.0	− 6	12.4		W	2	3242
			9.4 7 9.9				372.4	2.57101 m			
			16.0	20	17.4	− 7	11.8		W	2	3160
			35.3				431.8	2.63528 m			
			41.3 7 40.9	21	5.5	− 7	59.9		W	2	2965
			46.0				479.9	2.68115 m			
		8	4.7	21	53.6	− 8	48.0		W	2	2953
8 9.98			9.1 8 10.0				528.0	2.72263 m			
8 9.98			16.2	22	38.4	− 9	32.8		W	2	2865
			34.8				572.8	2.75800 m			
			40.3 8 40.2	23	19.0	− 10	13.4		W	2	2735
			45.5				613.4	2.78774 m			
		9	4.0	23	55.8	− 10	50.2		W	2	2725
			8.3 9 8.9				650.2	2.81305 m			
			14.3	24	33.0	− 11	27.4		W	2	2618
			33.4				687.4	2.83721 m			
			38.0 9 38.4	25	16.4	− 12	10.8		W	2	2630
			43.9				730.8	2.86380 m			
		10	3.4	26	9.1	− 13	3.5		W	2	2548
			8.6 10 8.4				783.5	2.89404 m			
			13.1	26	59.0	− 13	53.4		W	2	2422
			32.7				833.4	2.92085 m			
10 37.68			38.3 10 38.2	27	40.5	− 14	34.9		W	2	2412
10 37.68			43.5				874.9	2.94196 m			
		11	1.4	28	23.2	− 15	17.6		W	2	2325
			6.2 11 6.7				917.6	2.96265 m			
			12.4	29	1.5	− 15	55.9		W	2	2320
			31.3				955.9	2.98041 m			
			36.7 11 36.7	29	47.7	− 16	42.1		W	2	2230
			42.0				1002.1	3.00091 m			
			59.7	30	24.4	− 17	18.8		W	2	2245
		12	8.0 12 7.0				1038.8	3.01653 m			
			13.2	31	37.4	− 18	31.8		W	2	2170
			26.8				1111.8	3.04602 m			
			35.6 12 35.7	32	49.5	− 19	43.9		W	2	2180
			41.6				1183.9	3.07331 m			
			59.6	34	5.7	− 21	0.1		W	2	2185
13 5.46		13	6.8 13 6.2				1260.1	3.10041 m			
13 5.46			12.2	35	16.3	− 22	10.7				
			28.8				1330.7	3.12408 m			
			33.9 13 34.1								
			38.7								
			57.6								
		14	4.2 14 4.3								
			11.1								
			29.4								
			33.6 14 33.7								
			38.0								
			57.3				1 14	52.74			
		15	4.1 15 3.8								
			10.0								
			29.4								
15 33.58			35.0 15 34.5								
15 33.58			38.1								
			58.0								
		16	3.2 16 3.4								
			9.0								
			27.3								
			32.5 16 32.5								
			37.7								
			55.7								
		17	3.0 17 2.1								
			7.7								
			26.4								
			31.3 17 31.3								
			36.3								
			56.0								
18 1.48		18	1.5 18 1.5								
18 1.48			7.0								
			26.2								
			31.6 18 31.8								
			37.7								
			54.5								
			0.3 19 0.7								
			7.2								
13 5.636			16 35.636								

88 40 5

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1880 June 30 UC

0.120 60
8.366 32
8.486 92

6.736 60
8.366 32
5.102 92

h	m	s	m	s				
1			23	34.0	R	42	41.22	
			33	9.3	R	42	45.82	
			34	38.3	R	42	46.38	
			35	49.3	R	42	46.45	
			37	18.3	R	42	43.15	
			38	33.0	R	42	43.42	
			39	58.7	R	42	44.50	
			41	10.7	R	42	43.78	

h	m	s		
1	24	40.8		
44.90		44.9		
		49.0		
	26	8.0		
13.77		13.6		
		19.7		
	27	35.5		
41.37		41.3		
		47.3		
	29	7.4		
12.67		18.4		
		18.2		
	30	34.0		
39.27		39.6		
		44.2		
27 42.396				

1 14 52.22

88 40 5.15

a

a	−1				
24	44.9	−8	52.6	15	52.3
26	13.8	10	21.3	15	52.5
27	41.4	11	50.3	15	51.1
29	12.7	13	19.0	15	53.7
30	39.3	14	48.5	15	50.8

2604
15 52.08

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1880 July 1 LC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

h	m	s		m	s					
13	7	3.6		49	38.6	+23 7.0		W	3	5430
		11.0	7 10.3			1287.0	3.14208			
		16.4		53	35.5	19 30.1		W	3	4048
		33.6				1170.1	3.06823			
		39.7	7 39.5	55	5.5	18 0.1		W	3	3440
		45.3				1080.1	3.03346			
	8	4.4		56	48.2	16 17.4		W	3	2852
8 9.80		11.2	8 10.7			977.4	2.99007			
8 9.80		16.4		58	36.7	14 28.9		W	3	2240
		33.9				868.9	2.93897			
		39.2	8 39.2	59	37.7	13 27.9		W	3	1970
		44.5				807.9	2.90736			
	9	3.0		0	48.3	12 17.3		W	3	1550
		10.0	9 9.3			737.3	2.86764			
		15.0		1	35.5	11 30.1		W	3	1280
		33.7				690.1	2.83891			
		39.0	9 39.2	2	8.5	10 57.1		W	3	1230
		45.0				657.1	2.81763			
	10	3.0		2	47.0	10 18.6		W	3	1260
		9.0	10 9.1			618.6	2.79141			
		15.4		3	35.0	9 30.6		W	3	748
		33.3				570.6	2.75633			
10 38.52		40.7	10 39.3	4	56.1	8 9.5		W	3	378
10 38.52		44.0				489.5	2.68975			
	11	2.4		5	44.5	7 21.1		W	3	145
		8.0	11 7.7			441.1	2.64454			
		12.7		6	28.7	6 36.9		W	2	5965
		32.0				396.9	2.59868			
		37.4	11 37.3	19	14.6	6 9.0		W	2	3453
		42.5				369.0	2.56703			
	12	0.5		20	35.0	7 29.4		W	2	3288
		5.7	12 5.1			449.4	2.65263			
		9.0		21	29.0	8 23.4		W	2	3170
		29.1				503.4	2.70191			
		35.4	12 35.2	22	47.0	9 41.4		W	2	3015
		41.0				541.4	2.73352			
		59.4		23	37.8	10 32.2		W	2	2878
13 5.24	13	5.7	13 5.9			632.2	2.80085			
13 5.24		12.7		24	17.2	11 11.6		W	2	2830
		29.0				671.6	2.82711			
		35.2	13 35.1	24	58.5	11 52.9		W	2	2798
		41.2				712.9	2.85303			
		57.7								
	14	4.6	14 4.9							
		10.5								
		27.0	14 34.1							
		34.8								
		40.5								
		57.0				1 14 53.81				
	15	4.5	15 3.8							
		10.0								
		28.0								
15 33.28		33.4	15 33.5							
15 33.28		38.3								
	16	4.9	16 3.3							
		8.4								
		26.0								
		31.7	16 31.7							
		37.4								
		56.4								
	17	2.0	17 1.8							
		7.0								
		26.9								
		30.9	17 31.3							
		36.0								
		53.2								
18 0.94	18	0.0	18 0.4							
18 0.94		6.0								
		26.3								
		30.8	18 31.2							
		36.6								
		54.6								
	19	0.1	19 0.0							
		5.3								
13 5.556			13 5.556							

88 40 5.16

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848692

6.73660
8.36632
5.10292"

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h	m	s								
1			(19	14.3)	+		W	42	39.58	
			22	3.0	53 42.6		W	42	21.60	
					−6 17.4					
			31	7.0	75 21.4		W	42	45.20	
			32	47.3	17 1.7		W	42	45.62	
			34	10.6	18 25.0		W	42	46.32	
			35	32.5	19 46.9		W	42	46.02	
			37	39.9	21 54.3		W	42	45.70	
			39	16.4	23 30.8		W	42	45.02	
			41	6.1	25 20.5		W	42	44.10	
			42	45.1	26 59.5		W	42	43.42	

	m	s
	24	35.4
41.00		40.9
		46.7
	26	2.5
8.23		7.5
		14.7
		—
		—
		—
	28	59.0
5.07	29	4.7
		11.5
	30	29.2
35.90		36.7
		41.8

a+1

							24	41.0	+51 4.6	−8 65.4 −8 52.6 15 48.4
							26	8.2	49 37.4	−10 22.6 10 21.3 15 46.9
							29	5.1		+8 19.5
1	19	37.0								
		43.3	19	43.2						
		49.2	−3	57.0						
	20	6.4	−3	57.0						
		12.0	20	12.6						
		19.3	−4	26.9	15	46.2	46.2			
		34.6	−4	26.6			48.4			
		42.0	20	41.9						
		49.0	−4	55.9	45.7		46.0	29	5.1	46 48.5 13 19.6 13 19.0 15 46.1
	21	5.3	−4	56.1			46.9	30	35.9	45 5.7 14 50.3 14 48.5 15 47.4
		10.8	21	10.8	46.0		45.8			
		16.3	−5	26.4			46.1			
		34.0	−5	25.9	44.4		44.9			
		41.2	21	40.7			47.4			
		46.9	−5	53.2						9)416.8
			−5	55.6	45.5		45.1			15 46.31
					4) 2278		2280			
					15 45.56		45.60			

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1880 July 4 LC

0.12060
8.36632
8.48692 m

6.73660
8.36632 m
5.10292 m

Identical

h	m	s		m	s						
13				19	18.6	- 6 14.0			R	2	34.45
				21	16.4	8 11.8			R	2	31.78
				22	23.8	9 19.2			R	2	30.20
				23	41.2	10 36.6			R	2	29.05
				25	45.0	12 40.4			R	2	27.22

13 12 36.3
37.1 | 12 37.1
37.8 - 0 29.2 | 13 6.3 | 6.5
57.0 - 0 29.54
13 2.6 | 13 2.3
7.3 - 0.2 | 13 2.1 | 2.3
25.9 - 0 ~~59.2~~ 0.0
30.7 | 13 31.3
37.3 - 0 29.0 | 2.3 | 1.8
59.4 | 5.4 0 29.5
14 5.4 | 14 ~~8.8~~
11.5 - 0 59.2 | 6.2 | 6.2
29.3 - ~~0 29.4~~ 0 59.2
34.1 | 14 34.6
40.4 | 1 28.8 | 5.8 | 5.7 | 14 56.98 | 88 40 5.33
56.7 - ~~0 59.1~~ 1 28.9
15 2.3 | 15 2.0
7.0 - 1 58.2 | 3.8 | 3.8
25.9 - 1 58.2
31.5 | 15 32.3
39.6 - 2 28.0 | 4.3 | 4.3
58.0 - 2 28.0
16 3.7 | 16 3.0
7.3 - 2 57.1 | 5.9 | 5.4
26.3 - 2 57.6
30.8 | 16 31.5
37.3 - 3 27.2 | 4.3 | 4.3
57.3 - 3 27.2
17 1.6 | 17 1.6
6.0 - 3 57.0 | 4.6 | 4.9
25.3 - 3 56.7
32.1 | 17 3.13
36.6 - 4 26.4 | 4.9 | 5.0
54.7 - 4 26.3
59.9 | 17 59.7
18 4.6 - 4 56.2 | 3.5 | 3.6
25.1 - 4 56.1
31.8 | 18 31.0
36.0 - 5 25.7 | 5.3 | 5.3
55.9 - 5 25.7
19 1.4 | 19 1.6
7.5 - 5 56.2
- 5 56.0

4.37
4.87
2) 9.24
13 4.62

14) 64.7
13 13 4.62

13 5.4 | 5.6
14) 64.7 | 64.7
13 4.62 | 4.62

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1880 July 4 UC

h	m	s		m	s				′	″
	1	9	48.3					W	41	2625
			55.1	9 54.9	52	46.7	+23 3.7			
							1383.7	3.14104		
		10	1.3		54	2.7	21 47.7	W	41	3090
			19.6				1367.7	3.11638		
			25.0	10 25.5	54	53.7	20 56.7	W	41	3448
			31.8				1256.7	3.09923		
			48.7		55	37.7	20 12.7	W	41	3678
10 5420			54.2	10 54.8			1212.7	3.08375		
~~10 54.00~~		11	0.6		56	20.2	19 30.2	W	41	3868
			15.5				1170.2	3.06826		
			21.9	11 24.7	57	2.7	18 47.7	W	41	4140
			27.6				1127.7	3.05219		
			46.8		57	51.2	17 54.2	W	41	4478
			53.9	11 ~~54.1~~ 54.1			1074.2	3.03108		
			59.5		58	48.1	17 2.3	W	41	4708
		12	17.6				1022.3	3.00958		
			22.3	12 22.1	59	38.3	16 12.1	W	41	4988
			26.4				972.1	2.98771		
			47.3		0	26.0	15 24.4	W	41	5205
			52.7	12 52.9			924.4	2.96586		
			58.6		1	28.0	14 22.4	W	41	5532
		13	17.5				862.4	2.93571		
13 22.24			23.0	13 22.9	2	22.4	13 28.0	W	41	5862
13 22.24			28.2				808.0	2.90741		
			47.6		3	10.0	12 40.4	W	42	055
			51.8	13 52.1			760.4	2.88104		
			57.0		3	54.5	11 55.9	W	42	278
		14	15.3				715.9	2.85485		
			21.0	14 21.2	4	37.1	11 13.3	W	42	622
			27.4				1 673.3	2.82821		
			46.2		6	19.2	9 31.2	W	42	912
			51.7	14 51.6			571.2	2.75679		
			57.0		7	17.8	8 32.6	W	42	1212
		15	16.4				512.6	2.70978		
			21.5	15 21.4	8	8.7	7 41.7	W	42	1365
			25.8				461.7	2.66436		
			43.7		8	52.5	6 57.6	W	42	1515
15 50.44			50.4	15 49.9			417.9	2.62104		
15 50.44			55.6		9	34.0	+6 16.4	W	42	1628
		16	14.0				376.4	2.57565		
			20.0	16 19.7						
			25.0							
			44.0							
			49.4	16 49.6						
			55.4							
		17	12.6							
			20.1	17 19.3						
			25.3							
			44.7				1 14 56.47		88	40 5.29
			50.4	17 50.1						
			55.1							
		18	14.0							
18 18.74			19.7	18 18.7						
18 18.74			22.5							
			41.5							
			48.1	18 47.3						
			52.3							
		19	12.7							
			18.4	19 18.3						
			23.8							
			41.5							
			47.5	19 47.0						
			52.0							
		20	10.9							
			19.0	20 17.6						
			22.8							
			40.3							
20 46.22			46.3	20 46.1						
20 46.22			51.6							
		21	10.6							
			15.2	21 15.4						
			20.3							
			—							
			—	21 45.0						
			—							
15 50.368				15 50368						

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1880 July 6 LC

0.12060
8.36632
8.48692n

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8.36632n
5.10292n

Identical

h	m	s		m	s						
13				3	8.2	+10 ~~30.7~~ 9 53.7			W 3	9.08	
				20	1.0	−6 ~~22.1~~ −6 57.1			W 2	3370	
				28	35.7	~~+4 56.8~~ 15 3.8			W 2	2480	
				29	46.5	16 ~~7.6~~ 4.26			W 2	2533	
				31	5.7	~~+7 26.8~~ 18 1.8			W 2	2415	
				32	21.0	~~+8 42.1~~ 19 17.1			W 2	2418	
Q 7,	9	32.1		33	31.0	~~+9 52.1~~ 20 24.1			W 2	2410	
		38.2	9 37.6								
		42.7	+3 27.1	34	46.7	21 ~~7.8~~ 4.28	34.2 ~~5.2~~		W 2	2365	
			+3 27.2	36	2.8	22 ~~23.9~~ 58.9	13 4.8	4.9	W 2	2405	
				37	25.4	~~23 46.5~~ 24 24.5			W 2	2388	
				39	35.5	~~25 56.6~~ 26 3.6			W 2	2475	
	12	29.5									
		35.7	12 35.2								
Q 5,		40.3	+0 29.2				13 ~~32.9~~ 4.4	4.6			
			+0 29.4								
			13								
			14								
			15								
	15	27.0									
		31.6	15 32.0								
		37.3	−2 28.0				13 32.8	4.0	4.0		
		55.9	−2 28.8								
	16	2.0	16 1.9								
		7.9	−2 57.1				13 33.1	4.8	4.3		
		23.3	−2 57.6	1	14	58.89				88 40	5.49
		31.7	16 30.8								
Q 3−1,		37.3	−3 27.2				13 32.6	3.6	3.6		
		55.5	−3 27.8 2								
	17	2.8	17 1.8								
		7.0	−3 57.0				13 33.8	4.8	5.1		
		23.1	−3 56.7								
		27.8	17 28.4								
		34.3	−4 26.4				13 31.3	2.0	2.1		
		54.8	−4 26.3								
	18	0.6	18 0.6								
		6.5	−4 56.2				13 33.4	4.4	4.5		
		23.2	−4 56.1								
		28.7	18 27.9								
		31.8	−5 25.7				13 30.9	2.2	2.2		
			−5 25.7							9) 35.3	
							9) 29.50 ~~2.58~~ 35.0		352	13 13 3.92	
							13 32.78 ~~3.69~~ 3.89		3.91		

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1880 July 6 UC

0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

identical

h	m	s	m s	m	s						
1	9	46.4		1	59.5	+13 49.6			R	41	57.18
		57.6	9 52.2			829.6					
		58.5	+5 56.4	4	37.0	11 12.1	15 48.6	48.2	R	42	412
	10	10.3	5 56.0			672.1					
		22.6	10 22.1	5	58.4	9 50.7			R	42	750
		28.3	-5 26.3			590.7	48.4	47.8			
		46.7	5 25.7	6	51.6	8 57.5			R	42	1065
		53.0	10 52.9			537.5					
		59.0	-4 57.2	8	13.7	7 35.4	50.1	49.0	R	42	1138
	11	16.5	4 56.1			4554					
		23.2	11 22.5	9	34.0	6 18.1			W	42	4542
		27.7	-4 26.9			375.7	49.4	48.8			
		44.9	4 26.3	36	39.4	-20 50.3		—	W	42	4595
		52.6	11 51.4			1250.3					
		56.7	-3 57.3	37	27.3	21 38.2	48.7	48.1	W	42	4545
	12	15.8	3 56.7			1298.2					
		22.0	12 21.7	38	16.2	22 27.1			W	42	4538
		27.4	-3 27.0			13471	48.7	48.9			
		48.1	3 27.2	38	55.4	23 9.3			W	42	4572
		52.0	12 51.5			13893					
		57.4	-2 57.9	40	12.8	24 23.4	49.4	49.1	W	42	4470
	13	14.8	2 57.6			14637					
		21.3	13 21.2	41	20.6	25 31.5			W	42	4382
		27.4	-2 28.3			15315	49.5	49.2			
		46.6	2 28.0	42	33.5	26 44.4		—	W	42	4285
		51.4	13 51.7			16044					
		57.0	-1 57.7	43	40.2	27 51.1	49.4	49.9	W	42	4170
	14	14.4	1 58.2			16711					
		20.5	14 20.2								
		25.7	-1 28.8				49.0	49.1			
		45.7	1 28.9								48.45
		51.5	14 51.2								48.82
		56.5	-0 59.0				50.2	50.4			49.78
	15	14.7	0 59.2								49.34
		20.5	15 20.2								196.39
		25.5	-0 29.7				49.9	49.7			
		43.3	0 29.5					—			15 49.10
		49.3	15 49.0								
		54.3	- 0.6				15 48.4	49.0			
	16	14.7	-0 0.0								
		18.7	16 18.9								
		23.2	-0 30.2				48.7	49.5			17) 834.9
		42.8	-0 29.4								1 15 49.11
		48.3	16 48.2								
		53.4	-0 59.0				49.2	49.1			
	17	13.9	-0 59.1								
		17.6	17 18.6								
		24.2	-1 29.4				49.2	50.0			
		41.1	-1 28.6								
		48.0	17 47.5								
		63.5	-1 58.8				48.7	49.1			
			-1 58.4				5				
						17)	8345	8349			
						15	49.09	15 49.11			
				1	14	58.43					

88 40 5.45

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0.12060
8.36632
8.48692m

6.73660
8.36632m
5.10292m

h	m	s	m	s	m	s					
13		—			1	8.5	+ 11 52.6			W 3	15.20
		—	7	3.0			712.6	2,85285			
		—			19	27.8	− 6 26.7			W 2	33.48
	7	28.7					386.7	2,58737m			
		32.4	7	33.9	21	52.0	− 8 50.9			W 2	30.98
		40.7					530.9	2,72501m			
		57.7			23	18.8	− 10 17.7			W 2	27.52
8 3.88	8	4.3	8	4.5			617.7	2,79078m			
8 3.88		11.5			24	55.4	− 11 54.3			W 2	27.95
		27.4					714.3	2,85388m			
		33.1	8	33.6	26	31.6	− 13 30.5			W 2	26.46
		40.3					810.5	2,90875m			
		58.0			28	5.9	− 15 4.8			W 2	26.98
	9	5.1	9	4.4			904.8	2,95655m			
		10.0			29	41.5	− 16 40.4			W 2	24.40
		29.8					1000.4	3,00017m			
		34.9	9	34.6	31	19.7	− 18 18.6			W 2	23.92
		39.2					1098.6	3,04084m			
		59.0			32	53.4	− 19 52.3			W 2	23.46
	10	4.7	10	4.6			1192.3	3,07639m			
		10.2			36	33.0	− 23 31.9			W 2	23.08
		24.9					1411.9	3,14980m			
10 33.82		31.5	10	31.1	38	20.5	− 25 19.4			W 2	23.58
10 33.82		37.0					1510.4	3,18167m			
		57.6			39	57.5	− 26 56.4			W 2	24.40
	11	5.2	11	4.2			1616.4	3,20855m			
		9.8									
		28.2									
		36.0	11	34.6							
		39.7									
		55.1									
	12	1.5	12	1.5							
		8.0									
		26.0									
		32.9	12	32.8							
		39.4									
		55.4									
13 1.46	13	1.4	13	1.6							
13 1.46		8.0									
		24.4									
		31.0	13	32.0							
		37.5									
		53.5									
		59.8	14	0.4							
	14	8.0									
		23.0									
		31.6	14	30.7							
		37.5									
		58.2					1 14	59.77			88 40 5.57
	15	0.4	15	0.4							
		7.6									
		23.2									
15 28.70		30.4	15	29.7							
15 29.38		35.5									
		52.7		58.4							
		57.8	15	55.1							
	16	4.8									
		22.4									
		27.3	16	27.7							
		33.4									
		52.7									
		58.0	16	58.3							
	17	4.2									
		22.5									
		29.6	17	29.0							
		34.9									
		49.2									
17 57.54		57.5	17	57.0							
17 57.54	18	4.4									
		18.6									
		26.0	18	25.8							
		32.7									
		50.3									
		57.0	18	57.6							
	19	5.4									
18 1.084			13	1.084							

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0.12060
8.36632
8.48692

6.73660
8.36632
5.10292

1880 July 7 UC

h	m	s	m s	m	s					
	1	9	49.2	4	44.0	+ 11 7.7		W	42	66.8
			55.4 9 55.6			667.7	2.82458			
		10	2.1 –	6	14.3	9 37.4		W	42	10.32
			20.2			577.4	2.76148			
			26.6 10 25.8	6	38.4	8 53.3		W	42	12.32
			30.5 –			533.3	2.72697			
			50.4	7	49.2	8 2.5		W	42	13.88
10	54.54		55.2 10 55.3			482.5	2.68350			
10	54.54	11	0.4 –	8	35.0	7 16.7		W	42	15.45
			20.8			436.7	2.64018			
			24.8 11 24.7	9	25.7	6 26.0		W	42	18.05
			28.4 –			386.0	2.58659			
			42.5	22	0.7	– 6 9.0		W	42	22.60
			50.2 11 51.3			369.0	2.56703			
		12	1.3 –	23	2.5	– 7 10.8		W	42	41.08
			21.7			430.8	2.63428			
			28.3 12 27.6	23	52.9	– 8 1.2		W	42	41.35
			32.8 –			481.2	2.68233			
			49.5	24	36.7	– 8 45.0		W	42	42.32
			53.6 12 53.8			525.0	2.72016			
			58.4 –	25	14.5	– 9 22.8		W	42	42.98
		13	18.1			562.8	2.75035			
13	24.48		23.3 13 23.8	25	51.9	– 10 0.2		W	42	43.68
13	24.48		28.9 –			600.2	2.77830			
			48.9	26	42.1	– 10 50.4		W	42	44.08
			52.6 13 53.4			650.4	2.81318			
			59.5 –	27	28.3	– 11 36.6		W	42	44.28
		14	19.0			– 696.6	2.84298			
			23.3 14 23.5	28	10.6	– 12 18.9		W	42	45.60
			28.2 –			738.9	2.86859			
			46.0	28	57.3	– 13 5.6		W	42	45.78
			53.0 14 52.2			785.6	2.89520			
			57.7 –	29	41.2	– 13 49.5		W	42	45.85
		15	17.5			819.5	2.91882			
			21.5 15 22.5	30	21.0	– 14 29.3		W	42	46.33
			28.5 –			869.3	2.93917			
			49.2	31	9.3	– 15 17.6		W	42	46.30
15	51.88		54.3 15 54.3			917.6	2.96265			
15	51.88		59.4 –	31	51.3	– 15 59.6		W	42	47.02
		16	14.8			959.6	2.98209			
			19.6 16 20.3							
			26.4 –							
			43.7							
			50.3 16 50.1							
			56.3 –							
		17	15.2							
			20.5 17 20.6							
			26.2 –							
			43.9			1 14	59.34			
			48.4 17 49.1							
			55.0 –							
		18	13.0							
18	19.68		16.3 18 17.3							
18	19.68		22.6 –							
			44.5							
			48.5 18 49.4							
			55.1 –							
		19	18.4							
			21.7 19 22.0							
			26.0 –							
			42.5							
			50.2 19 49.7							
			56.4 –							
		20	14.8							
			20.1 20 20.1							
			25.5 –							
			40.9							
20	47.98		49.8 20 48.4							
20	48.38		54.4 –							
		21	13.0							
			18.7 21 18.8							
			24.7 –							
			40.0 4							
			43.7 21 42.9							
			51.0 –							
15	51.712		15 51.712							

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8.36632
8.48692

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1880 July 8 SC

h	m	s	m	s	m	s					
	13	1	3.4		58	37.4	+ 14 25.8		W	3	23.25
			8.2	7 8.5			865.8	2.93742			
			14.0		59	54.0	13 9.2		W	3	1980
			30.8				789.2	2.89719			
			38.7	7 38.0	0	42.4	12 20.8		W	3	1768
			44.4				792.8	2.89916			
		8	2.1		1	47.0	11 16.2		W	3	1440
8 7.64			7.8	8 7.5			676.2	2.83008			
8 7.64			12.6		2	37.7	10 35.5		W	3	1180
			31.6				635.5	2.80312			
			37.3	8 36.8	3	4.3	9 58.0		W	3	1052
			41.4				598.0	2.77735			
		9	1.4		3	48.0	9 15.2		W	3	825
			7.8	9 7.4			555.2	2.744415			
			13.1		4	28.6	8 34.6		W	3	678
			30.0				514.6	2.711417			
			36.6	9 36.7	5	11.3	7 51.9		W	3	695
			43.5				471.9	2.67385			
		10	0.1		5	38.7	7 4.5		W	3	185
			6.4	10 6.5			424.5	2.62788			
			13.0		19	12.4	6 9.2		W	2	3592
			30.4				369.2	2.56726			
~~14 35.26~~			35.6	10 35.5	19	58.0	6 54.8		W	2	3462
10 35.18			40.4				414.8	2.61784			
		11	1.1		20	34.3	7 31.1		W	2	3350
			6.5	11 5.8			451.1	2.65427			
			9.8		21	21.0	8 17.8		W	2	3272
			27.7				497.8	2.69705			
			36.0	11 31.8 4	22	5.4	9 2.2		W	2	3172
			—				542.2	2.73416			
			59.0								
		12	5.5	12 4.9							
			10.3								
			28.6								
			34.7	12 34.4							
			40.0								
			58.6								
13 3.40		13	3.3	13 3.3							
13 3.40			7.9								
			26.0								
			32.1	13 31.7							
			37.1								
			57.8								
		14	2.7	14 2.7							
			7.5								
			26.3								
			32.2	14 31.8							
			37.0								
			55.2				1 15	0.65			
		15	1.5	15 1.2							
			7.0								
			26.0								
15 31.06			32.0	15 31.8							
15 31.06			37.5								
			54.3								
		16	0.6	16 0.3							
			6.1								
			23.8								
			30.9	16 30.2							
			35.8								
			54.4								
		17	0.0	16 59.9							
			5.4								
			23.5								
			29.4	17 29.3							
			36.0								
			53.4								
17 58.50			59.0	17 59.4							
17 58.50		18	5.8								
			22.0								
			28.0	18 28.0							
			34.0								
			48.5								
			57.0	18 55.9							
		19	2.2								
13 3.172				13 3.172							

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- 1880 July 9 UC

0.12060
8.36623
8.48683

6.73660
8.36623
5.10283 Identical

h	m	s	m	s					
1			22	1.4	-6	16.1		W 42	37.88
			24	53.5	9	8.2		W 42	40.65
			26	18.5	10	33.2		W 42	42.58
			27	51.4	12	6.1		W 42	42.40
			29	17.9	13	25.6		W 42	43.52
			31	1.0	15	15.7		W 42	43.95
			33	29.4	17	44.1		W 42	43.92
			34	57.5	19	12.2		W 42	43.98
			36	21.0	20	35.7		W 42	44.52
			37	31.4	21	46.1		W 42	44.45
			39	11.4	23	26.1		W 42	43.75
			40	45.0	24	59.7		W 42	42.58
			42	21.8	26	36.5		W 42	42.10

m	s
24	31.5
	37.2
	43.7
26	2.0
	6.9
	13.4
27	31.0
	36.1
	41.5
28	57.4
29	2.4
	9.3
30	26.4
	32.5
	39.4

37.47
7.43
36.20
3.03
32.77
27 35.380

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1 15 1.08

88 40 5.70

18	38.4					
	41.5	18 42.1				
	46.5	2 57.7	15 44.4	44.7		
19	7.3	2 57.4		44.9		
	12.1	19 12.3			a - 1	a - 1
	17.5	3 28.4	43.9	45.1	24 37.5 - 8 52.2	-8 52.6 15 44.9
	87.8	3 27.2		46.1		
	44.0	19434	46.4	46.4	26 7.4 10 22.1	10 21.3 15 46.1
	48.5	3 55.0		45.9	27 36.2 11 50.9	11 50.3 15 45.9
20	6.0	3 57.0				
	12.5	20 12.3	45.4	45.7	29 3.0 13 17.7	13 19.0 15 44.0
	18.5	4 26.9		44.0	30 32.8 14 47.5	14 48.5 15 44.3
	35.5	4 26.6	46.1	45.9		
	42.5	20 420				
	48.0	4 55.9		44.3		
21	6.3	4 56.1	45.4	45.9		
	11.5	21 17.8			45.20	
	17.5	5 26.4			45.50	
	33.3	5 25.9			45.38	
	42.0	21 410				12) 544.3
	47.7	5 55.2	15 45.8	45.4	136.08	15 45.36
		5 55.6	7) 319.4	319	45.36	
			45.63	34 / 45.59		

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154

1880 July 13 LC

0.12060
8.36623
8H8683m

6,73660
8,36623m
5.10283m

h	m	s		m	s						
	13	6	57.2								
		7	2.6	7 3.0	58	0.2	+ 14 59.4		R	3	2530
			9.3				899.4	2.95395			
			28.0		0	5.0	12 54.6		R	3	1882
							774.6	2,88908			
			34.3	7 34.0	1	25.2	11 34.4		R	3	1492
			39.7				694.4	2,84161			
			57.0		3	12.8	9 46.8		R	3	1050
8	2.72	8	2.1	8 2.1			586.8	2,76849			
8	2.72		7.3		4	21.0	8 38.6		R	3	655
			27.7				518.6	2,71483			
			32.6	8 32.5	19	17.2	- 6 17.6		R	2	3520
			37.2				377.6	2,57703m			
			—		20	37.1	- 7 37.5		R	2	3345
			—	9 2.0			457.5	2,66039m			
			—		21	57.6	8 58.0		R	2	3188
		9	24.8				538.0	2,73078m			
			31.2	9 31.1	23	6.5	10 6.9		R	2	3050
			37.4				606.9	2,78312m			
			55.8		24	11.7	- 11 12.1		R	2	2978
		10	1.4	10 1.3			672.1	2,82743m			
			6.8								
			26.2								
10	31.22		31.7	10 31.3							
10	31.22		36.0								
			55.8								
		11	1.5	11 1.6							
			7.6								
			26.0								
			31.4	11 30.8							
			35.1	—							
			55.2								
		12	0.3	12 0.6							
			6.4								
			24.5								
			30.6	12 30.9							
			37.6								
			54.1								
13	0.14	13	0.0	12 59.9							
13	0.14		5.7								
			24.4								
			29.0	13 29.3							
			34.5								
			55.1								
			59.4	14 0.0							
		14	5.6								
			24.5								
			28.7	14 28.9							
			33.4								
			52.0				1 15 5.23				88 40 5.98
			56.7	14 57.4							
		15	3.5								
			22.9								
15	27.84		27.7	15 28.1							
15	27.84		33.8								
			52.5								
			57.5	15 57.3							
		16	1.8								
			22.5								
			26.5	16 27.5							
			33.5	—							
			51.9								
			57.2	16 56.9							
		17	1.7								
			—								
			—	17 27.0							
			—								
			49.5								
17	55.84		55.2	17 55.3							
17	55.84	18	1.1								
			—								
			—	18 25.0							
			—								
			49.8								
			54.9	18 55.0							
		19	0.2	—							
12	59.552			12 59.552							

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1880 July 14 UC (LC) ex.

h m s

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8.36623 m
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8.36623 n
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m	s		'	"
19	38.7	R	2	36.92
21	16.5	R	2	34.58
25	9.4	R	2	29.62
28	5.0	R	2	28.30
29	30.0	R	2	27.58
30	39.8	R	2	27.25
31	45.9	R	2	26.88
32	50.8	R	2	26.68
34	0.4	R	2	26.35
35	9.1	R	2	26.35

	m	s
~~57.1~~	21	50.2
57.10		56.2
	22	4.9
	23	19.3
25.10		25.0
		31.0
	24	50.6
54.80		54.2
		57.6
	26	19.1
23.97 a+1		23.0
		29.8
	27	48.0
53.27		53.4
		58.4

24 51.848

1 15 5.75 . 88 40 6.02

a+1			
21 57.1	+14	47.9	36 45.0
23 25.1	13	18.6	36 43.7
24 54.8	11	50.6	36 45.4
26 24.0	10	21.7	36 45.7
27 53.3	8	52.6	36 45.9

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16

- 1880 July 16 SC

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h	m	s	m	s								
	13		20	5.5	−6	58.8		R	2	31.12		
			22	15.3	9	8.6		R	2	2880		
			25	15.5	12	8.8		R	2	2592		
			28	18.0	15	11.3		R	2	2412		
			29	33.4	16	26.7		R	2	2325		
			30	42.8	17	36.1		R	2	22.78		
			32	12.1	19	5.4		R	2	2235		
			33	21.5	20	14.8		R	2	2230		
			34	32.9	21	26.2		R	2	2248		

	m	s													
	21	59.8													
0.83	22	0.7													
		2.0													
	23	25.7													
30.63		30.6													
		35.6													
	24	52.2													
57.97		58.6													
	25	3.1													
a+1	26	21.3													
27.93		28.0	1	15	8.41								88	40	6.27
		34.5													
	27	49.6													
55.37		55.1													
	28	1.45	13	32.2											
				37.4	13	37.1									
24 58.5146				41.7	−0	29.0									
					−0	29.5									
							13	8.1	7.6						
									8.2						
									9.3						
									7.3						
									8.9						
			15	29.2											
				33.7	15	33.9									
				38.7	−1	28.0									
					−2	28.0									
							13	5.9	6.9						
									5.9						

											a+1							
											22	0.8	+57	5.9	8	54.1	−8 52.6	13 8.2
											23	30.6	49	26.1	10	23.7	10 21.3	13 9.3
											24	58.0	48	8.4	11	51.3	11 50.3	13 7.3
			18	1.7														
				3.2	18	3.4					26	27.9	46	38.8	13	21.2	13 19.0	13 8.4
				5.2	−4	56.7	13	7.2	7.3		27	55.4	45	11.3	14	48.7	14 48.5	13 6.9
					−4	56.1		37.0										
				57.3														
			19	1.0	19	18												
				7.0	−5	56.7												
					−5	56.0												
							13	5.6										
								36.1	5.8									
													8.26					
													6.48					
													2)1474					
							4)	1457	24.8	266			13 737					
								3642	13 6.70	6.65								

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Identical

h	m	s	m	s						
			23	13.4	− 7 22.3			R	42	38.95
			26	22.6	10 31.5			R	42	42.72
			28	3.0	12 11.9			R	42	43.80
			29	26.7	13 35.6			R	42	44.40
			30	44.8	14 53.4			R	42	45.00
			32	33.6	16 42.5			R	42	45.92
			33	57.9	18 6.8			R	42	46.05
			35	24.3	19 33.2			R	42	47.15
			37	2.4	21 11.3			R	42	45.78
			38	40.4	22 49.3			R	42	44.88

13	17.4													
	22.3	13 22.3												
	27.2	+ 2 28.3				15	50.6	50.3						
	48.7	+ 2 28.0												
	54.2	13 54.4												
14	0.2	− 1 57.7					52.1	52.6						
	21.0	1 58.2												
	22.5	14 22.4												
	23.7	− 1 28.8					51.2	51.3						
	48.4	1 28.9												
	53.0	14 52.8												
	57.1	− 0 58.0					51.8	52.0						
15	17.0	0 59.2												
	24.4	15 23.9												
	30.2	− 0 29.7					53.6	53.4						
	46.0	0 29.5												
	51.7	15 51.5												
	56.7	− 0.6				15	50.9	51.5						
16	15.4	−0 0.0												
	21.0	16 20.5												
	25.2	− 0 30.2					50.3	51.1						
	45.0	− 0 29.4												
	48.8	16 49.3												
	54.0	− 0 59.0					50.3	50.2						
17	14.4	− 0 59.1												
	18.6	17 19.5												
	25.5	− 1 29.4					50.1	50.9	1	15	8.94			88 40 6.34
	41.7	− 1 28.6												
	49.2	17 48.6												
	54.8	− 1 58.8					49.8	50.2						
18	11.5	− 1 58.4												
	18.5	18 18.4												
	25.3	− 2 27.6					50.8	50.3					57.55	
	43.7	− 2 28.1											57.55	
	51.2	18 50.3											57.08	
	56.0	− 2 57.7					52.6	52.9					50.82	
19	10.2	− 2 57.4												
	15.6	19 15.8											205.00	
	21.6	− 3 28.4					(47.4)	(48.6)		16			51.25	
	42.0	− 3 27.2												
	49.0	19 48.9												
	55.7	− 3 57.0					51.9	51.9						
20	9.5	− 3 57.0								17			870.8	
	15.6	20 15.7							1	16.5			51.22	
	22.0	− 4 26.9					48.8	49.1						
	43.6	− 4 26.6												
	47.5	20 43.8												
	53.2	− 4 55.9					51.9	51.7						
21	10.3	− 4 56.1												
	16.0	21 16.5												
	23.2	− 5 26.4					50.1	50.6						
	39.2	− 5 25.9												
	46.4	21 46.4												
	53.7	− 5 55.2				15	51.2	50.8						
		− 5 55.6				17	7154	8680	8708					
							50.86	51.06	51.22					

8.2
9.3
7.3
8.9
6.9

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16 118

0.12060
8.36623
8.48683m

6.73660
8.36623m
5.10283m

1880 July 18 SC

h	m	s	m	s	m	s				′	″
13	7	7.0			59	29.2	+ 13 38.7				
		12.4	7 12.1				818.7	2,91312			
		17.0			1	16.3	11 51.6		R	3	16.12
		35.3					711.6	2,85224			
		41.4	7 41.3		2	30.3	10 37.6		R	3	12.12
		47.2					637.6	2,80455			
	8	7.5			3	40.9	9 27.0		R	3	7.82
8 11.86		13.2	8 12.7				567.0	2,75358			
8 11.86		17.5			4	56.7	8 11.2		R	3	4.72
		37.0					491.2	2,69126			
		41.7	8 41.6		19	23.1	− 6 15.2		R	2	33.20
		46.0					375.2	2,57426m			
	9	6.3			21	16.0	− 8 8.1		R	2	31.82
		11.7	9 11.6				488.1	2,68851m			
		16.8			22	33.5	− 9 25.6		R	2	30.95
		34.2					565.6	2,75251m			
		41.5	9 40.7		23	43.0	− 10 35.1		R	2	29.25
		46.5					635.1	2,80284m			
	10	5.7			24	56.8	− 11 48.9		R	2	28.15
		11.2	10 11.3				708.9	2,85058m			
		17.0									
		36.0									
10 40.44		38.6	10 39.8								
10 40.44		44.9									
0.83	11	2.5									
		12.0	11 10.6								
		17.2									
30.63		35.3									
		39.9	11 39.8								
		44.1									
57.97	12	6.5									
		10.4	12 10.7								
27.93		15.3									
		34.4									
		39.0	12 39.6								
		45.3									
55.37	13	3.6									
13 7.92		7.1	13 7.8								
13 7.92		12.6									
24 58.		28.2									
		36.7	13 35.9								
		42.7									
		59.3									
	14	5.6	14 5.6								
		11.8									
		30.4									
		34.3	14 35.1								
		40.5									
	15	0.8					1 15	10.52			
		4.4	15 5.9								
		13.0									
		30.5									
15 35.10		35.8	15 35.9								
15 35.10		41.5									
		56.7									
	16	4.4	16 3.2								
		8.5									
		28.6									
		35.4	16 35.4								
		42.3									
		58.5									
	17	4.9	17 4.8								
		11.0									
		28.4									
		32.5	17 32.4								
		36.4									
		58.2									
18 4.08	18	4.6	18 4.0								
18 4.08		9.2									
		30.2									
		35.3	18 35.5								
		41.0									
		58.5									
	19	3.2	19 3.7								
		9.5									
13 7.880			13 7.880								

88 40 6.58

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- 1880 July 18 UC

0.12060
δ 36623
8.48683

6.73660
8.36623
5.10283

Interstitial

h	m	s		m	s					
1	9	49.6		0	35.0	+15 17.6			R 41	32.53
		57.0	9 560							
	10	1.5	+5 56.4	3	21.2	12 31.4	15 52.4	52.0	R 42	120
		20.3	+5 56.0							
		24.5	10 25.4	4	58.0	10 54.6			R 42	595
		31.3	-5 26.3				51.7	51.1		
		50.7	5 25.7	6	48.6	9 6.0			R 42	1102
		56.0	10 56.1							
	11	1.7	-4 57.2	8	5.6	7 47.0	53.3	52.2	R 42	1308
		20.0	4 56.1							
		26.7	11 26.1						R 42	4615
		31.7	-4 26.9				53.0	52.4		
		50.6	4 26.3						R 42	3362
		57.0	11 56.6							
	12	2.2	-3 57.8				53.9	53.3	R 42	4610
		17.3	3 56.7							
		25.4	12 24.6						R 42	4620
		31.0	-3 27.0				51.6	51.8		
			327.2						R 42	4906
							15 3159	3128		3128
							6) 52.65	52.13		52.13

Cl 8

1 15 9.97

.88 40 6.50

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220

1880 July 26 SC

h	m	s	m s	m	s					
							0.12060	0.12060	6.73660	6.73660
							8.36605 m	8.36605 m	8.36605 m	8.36605 m
							8.48665 m	8.48665 m	5.10265 m	5.10265 m
13	7	13.3		4	51.9	+ 8 22.0			W 3 5.05	
		18.4	7 18.3			502.0	2.70070			
		23.3		19	43.4	- 6 29.5			W 2 3442	
		40.2				380.5	2.59051 m			
		47.3	7 47.3	22	34.0	- 9 20.1			W 2 3075	
		54.3				560.1	2.74827 m			
	8	13.5		24	5.4	- 10 51.5			W 2 2925	
		17.6	8 18.0			651.5	2.81391 m			
8 17.60		22.8		25	19.5	- 12 5.6			W 2 2888	
		40.4				725.6	2.86070 m			
		46.8	8 46.9	26	34.3	- 13 20.4			W 2 2702	
		53.6				800.4	2.90331 m			
	9	12.0	17.5	28	7.2	- 14 53.3			W 2 2582	
		17.6	9 17.2			893.3	2.95100 m			
		23.0		29	26.7	- 16 12.8			W 2 2590	
		40.4				972.8	2.98802 m			
		45.9	9 46.1	30	47.8	- 17 33.0			W 2 2478	
		52.0				1053.9	3.02280 m			
	10	13.7		32	10.8	- 18 56.9			W 2 2450	
		18.5	10 18.7			1136.9	3.05572 m			
		23.9		33	44.5	- 20 30.6			W 2 2412	
		41.8				1230.6	3.09012 m			
10 46.62		46.7	10 47.2							
10 46.62		53.0								
	11	9.4								
		15.9	11 15.6							
		21.5								
		39.0								
		46.0	11 45.5							
		51.5								
	12	6.3								
		13.7	12 13.2							
		19.7								
		38.0								
		42.5	12 43.2							
		49.0								
	13	7.3								
13 13.12		13.4	13 13.4							
13 13.12		19.4								
		36.3								
		42.2	13 41.8							
		47.0								
	14	6.6								
		15.2	14 14.0							
		20.2								
		37.5								
		43.0	14 43.2							
		49.2								
	15	6.2				1 15 17.47			88 40 7.76	
		12.7	15 12.6							
		19.0								
		36.0								
15 42.38		41.8	15 41.8							
15 42.38		47.6								
	16	6.3								
		12.5	16 12.4							
		18.3								
		34.0								
		43.5	16 41.9							
		48.3								
	17	5.0								
		10.9	17 11.1							
		17.4								
		35.0								
		40.4	17 40.6							
		46.4								
	18	3.3								
18 10.44		11.0	18 10.9							
18 10.44		18.5								
		31.2								
		39.8	18 39.5							
		47.4								
	19	4.5								
		9.5	19 10.1							
		16.4								
13 13.900			13 13.900							

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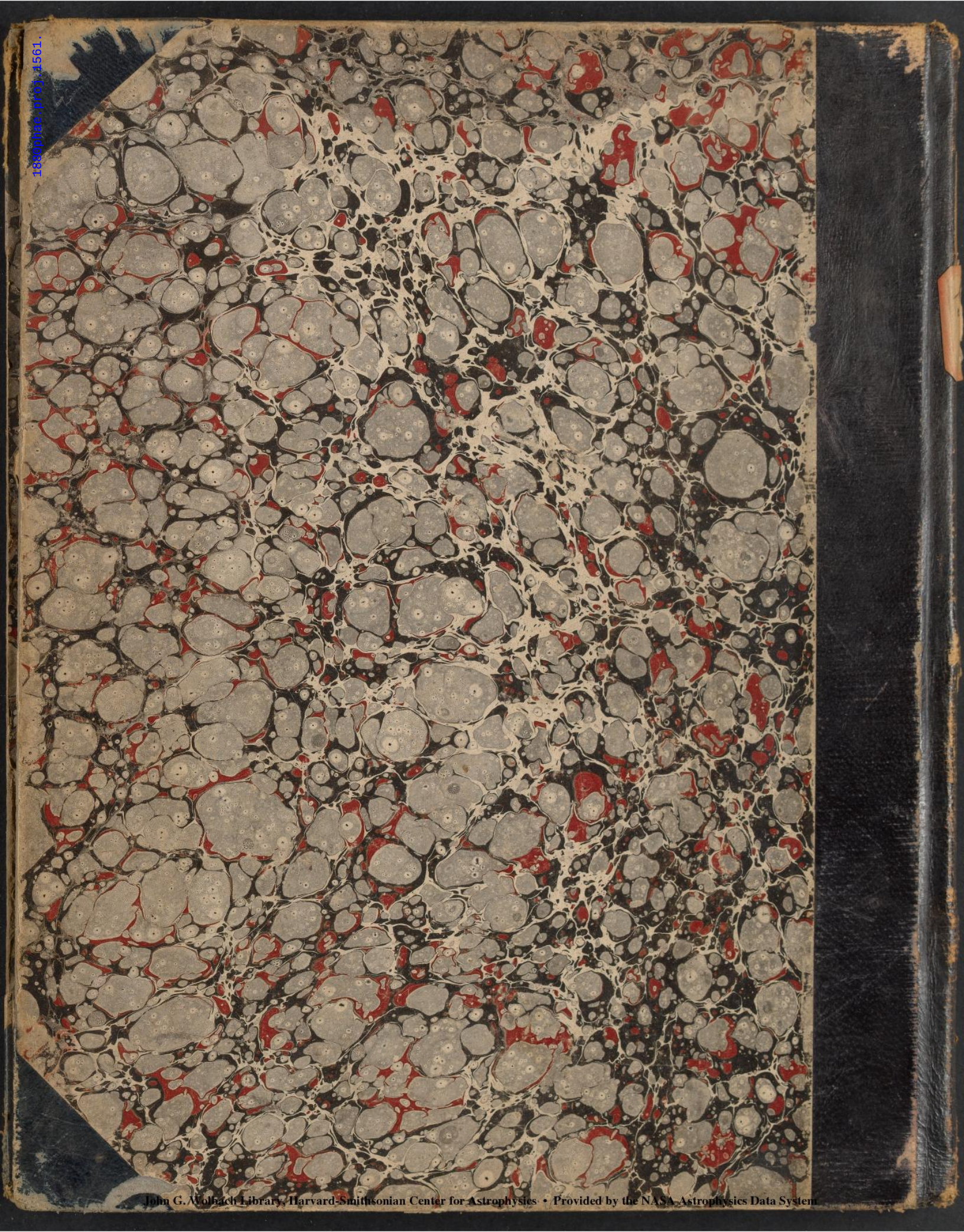
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