

2004

Sun and Planets

Date	SUN					Mercury					Venus					Date									
	GHA	d	Dec	d		GHA	d	dd	Dec	d	dd	GHA	d	Dec	d										
	o	'	o	'	vis mag	o	'	'	o	'	'	o	'	o	'										
Jan 1	179	14.3	-7.1	-23	4.3	4.8	Sr	1.6	191	16.0	113.0	5.4	-20	17.8	3.2	1.0	SS	-4.0	143	46.2	-15.0	-18	36.1	21.7	Jan 1
2	179	7.2	-7.0	-22	59.5	5.2	Sr	1.4	193	8.9	102.2	5.4	-20	14.6	1.2	1.0	SS	-4.0	143	31.1	-14.7	-18	14.4	22.3	2
3	179	0.2	-6.9	-22	54.3	5.7	Sr	1.2	194	51.1	91.2	5.5	-20	13.4	-0.7	0.9	SS	-4.0	143	16.5	-14.3	-17	52.1	22.8	3
4	178	53.3	-6.8	-22	48.6	6.1	Sr	1.0	196	22.3	80.3	5.4	-20	14.1	-2.5	0.9	SS	-4.0	143	2.1	-13.9	-17	29.3	23.2	4
5	178	46.5	-6.7	-22	42.5	6.6	Sr	0.8	197	42.6	69.9	5.2	-20	16.6	-4.2	0.8	SS	-4.0	142	48.2	-13.6	-17	6.1	23.6	5
6	178	39.7	-6.6	-22	35.9	7.1	Sr	0.6	198	52.5	60.0	4.9	-20	20.8	-5.6	0.7	SS	-4.0	142	34.6	-13.2	-16	42.5	24.1	6
7	178	33.1	-6.5	-22	28.8	7.4	Sr	0.4	199	52.5	50.8	4.6	-20	26.4	-6.8	0.6	SS	-4.0	142	21.4	-12.9	-16	18.4	24.6	7
8	178	26.6	-6.4	-22	21.4	8.0	Sr	0.3	200	43.3	42.3	4.3	-20	33.2	-7.7	0.5	SS	-4.0	142	8.5	-12.5	-15	53.8	24.9	8
9	178	20.2	-6.2	-22	13.4	8.3	Sr	0.2	201	25.6	34.5	3.9	-20	40.9	-8.6	0.4	SS	-4.0	141	56.0	-12.2	-15	28.9	25.4	9
10	178	14.0	-6.1	-22	5.1	8.8	Sr	0.1	202	0.1	27.4	3.6	-20	49.5	-9.1	0.3	SS	-4.0	141	43.9	-11.8	-15	3.5	25.8	10
11	178	7.9	-6.0	-21	56.3	9.2	Sr	0.0	202	27.5	20.9	3.2	-20	58.6	-9.5	0.2	SS	-4.0	141	32.1	-11.5	-14	37.7	26.1	11
12	178	1.9	-5.8	-21	47.1	9.6	Sr	-0.1	202	48.3	15.0	2.9	-21	8.1	-9.6	0.1	SS	-4.0	141	20.6	-11.1	-14	11.6	26.5	12
13	177	56.1	-5.7	-21	37.5	10.1	Sr	-0.1	203	3.4	9.8	2.6	-21	17.7	-9.6	0.0	SS	-4.0	141	9.5	-10.8	-13	45.1	26.8	13
14	177	50.4	-5.5	-21	27.4	10.5	Sr	-0.1	203	13.2	5.0	2.4	-21	27.3	-9.5	0.0	SS	-4.0	140	58.7	-10.5	-13	18.3	27.2	14
15	177	44.9	-5.4	-21	16.9	10.8	Sr	-0.1	203	18.1	0.7	2.2	-21	36.8	-9.2	-0.1	SS	-4.0	140	48.2	-10.1	-12	51.1	27.5	15
16	177	39.5	-5.2	-21	6.1	11.3	Sr	-0.2	203	18.8	-3.2	1.9	-21	46.0	-8.9	-0.2	SS	-4.0	140	38.1	-9.8	-12	23.6	27.8	16
17	177	34.3	-5.0	-20	54.8	11.7	Sr	-0.2	203	15.6	-6.7	1.8	-21	54.9	-8.3	-0.3	SS	-4.0	140	28.3	-9.5	-11	55.8	28.2	17
18	177	29.3	-4.9	-20	43.1	12.1	Sr	-0.2	203	8.9	-9.9	1.6	-22	3.2	-7.7	-0.3	SS	-4.0	140	18.7	-9.2	-11	27.6	28.4	18
19	177	24.4	-4.7	-20	31.0	12.5	Sr	-0.2	202	59.1	-12.7	1.4	-22	10.9	-7.0	-0.3	SS	-4.0	140	9.5	-8.9	-10	59.2	28.6	19
20	177	19.7	-4.5	-20	18.5	12.8	Sr	-0.2	202	46.3	-15.3	1.3	-22	17.9	-6.2	-0.4	SS	-4.0	140	0.6	-8.6	-10	30.6	29.0	20
21	177	15.2	-4.3	-20	5.7	13.3	Sr	-0.2	202	31.0	-17.7	1.2	-22	24.1	-5.4	-0.4	SS	-4.0	139	52.0	-8.4	-10	1.6	29.2	21
22	177	10.9	-4.1	-19	52.4	13.6	Sr	-0.2	202	13.3	-19.8	1.1	-22	29.5	-4.6	-0.4	SS	-4.1	139	43.6	-8.1	-9	32.4	29.4	22
23	177	6.8	-3.9	-19	38.8	13.9	Sr	-0.2	201	53.5	-21.8	1.0	-22	34.1	-3.5	-0.5	SS	-4.1	139	35.5	-7.8	-9	3.0	29.7	23
24	177	2.8	-3.7	-19	24.9	14.3	Sr	-0.2	201	31.7	-23.5	0.9	-22	37.6	-2.6	-0.4	SS	-4.1	139	27.7	-7.5	-8	33.3	29.8	24
25	176	59.1	-3.5	-19	10.6	14.7	Sr	-0.2	201	8.2	-25.1	0.8	-22	40.2	-1.5	-0.5	SS	-4.1	139	20.2	-7.3	-8	3.5	30.1	25
26	176	55.6	-3.3	-18	55.9	15.0	Sr	-0.2	200	43.1	-26.6	0.7	-22	41.7	-0.5	-0.5	SS	-4.1	139	12.9	-7.0	-7	33.4	30.2	26
27	176	52.2	-3.1	-18	40.9	15.4	Sr	-0.2	200	16.5	-27.9	0.7	-22	42.2	0.6	-0.5	SS	-4.1	139	5.8	-6.8	-7	3.2	30.4	27
28	176	49.1	-2.9	-18	25.5	15.7	Sr	-0.2	199	48.6	-29.1	0.6	-22	41.6	1.8	-0.6	SS	-4.1	138	59.0	-6.6	-6	32.8	30.6	28
29	176	46.2	-2.7	-18	9.8	16.0	Sr	-0.2	199	19.4	-30.3	0.6	-22	39.8	3.0	-0.6	SS	-4.1	138	52.5	-6.3	-6	2.2	30.7	29
30	176	43.5	-2.5	-17	53.8	16.4	Sr	-0.2	198	49.2	-31.3	0.5	-22	36.8	4.1	-0.5	SS	-4.1	138	46.1	-6.1	-5	31.5	30.8	30
Jan 31	176	41.0	-2.3	-17	37.4	16.6	Sr	-0.2	198	17.9	-32.2	0.5	-22	32.7	5.3	-0.6	SS	-4.1	138	40.0	-5.9	-5	0.7	31.0	Jan 31
Feb 1	176	38.7	-2.1	-17	20.8	17.0	Sr	-0.2	197	45.6	-33.1	0.4	-22	27.4	6.6	-0.7	SS	-4.1	138	34.1	-5.7	-4	29.7	31.0	Feb 1
2	176	36.6	-1.9	-17	3.8	17.2	Sr	-0.2	197	12.6	-33.9	0.4	-22	20.8	7.8	-0.6	SS	-4.1	138	28.4	-5.5	-3	58.7	31.2	2
3	176	34.7	-1.7	-16	46.6	17.6	Sr	-0.2	196	38.7	-34.6	0.4	-22	13.0	9.1	-0.7	SS	-4.1	138	22.9	-5.3	-3	27.5	31.2	3
4	176	33.0	-1.5	-16	29.0	17.8	Sr	-0.3	196	4.1	-35.3	0.3	-22	3.9	10.3	-0.6	SS	-4.1	138	17.5	-5.2	-2	56.3	31.3	4
5	176	31.6	-1.3	-16	11.2	18.1	Sr	-0.3	195	28.8	-35.9	0.3	-21	53.6	11.6	-0.6	SS	-4.1	138	12.4	-5.0	-2	25.0	31.4	5
6	176	30.3	-1.1	-15	53.1	18.4	Sr	-0.3	194	53.0	-36.4	0.3	-21	42.0	13.0	-0.7	SS	-4.1	138	7.4	-4.8	-1	53.6	31.4	6
7	176	29.2	-0.9	-15	34.7	18.6	Sr	-0.3	194	16.5	-37.0	0.3	-21	29.0	14.2	-0.6	SS	-4.1	138	2.6	-4.7	-1	22.2	31.4	7
8	176	28.4	-0.7	-15	16.1	18.9	Sr	-0.3	193	39.6	-37.4	0.2	-21	14.8	15.5	-0.6	SS	-4.1	137	57.9	-4.5	-0	50.8	31.5	8
9	176	27.7	-0.5	-14	57.2	19.2	Sr	-0.3	193	2.1	-37.9	0.2	-20	59.3	16.9	-0.7	SS	-4.1	137	53.4	-4.4	-0	19.3	31.4	9
10	176	27.3	-0.3	-14	38.0	19.4	Sr	-0.4	192	24.3	-38.3	0.2	-20	42.4	18.2	-0.7	SS	-4.1	137	49.0	-4.3	0	12.1	31.5	10
11	176	27.0	-0.1	-14	18.6	19.6	Sr	-0.4	191	46.0	-38.7	0.2	-20	24.2	19.5	-0.6	SS	-4.1	137	44.7	-4.1	0	43.6	31.5	11
12	176	26.9	0.1	-13	59.0	19.9	Sr	-0.4	191	7.3	-39.0	0.2	-20	4.7	20.9	-0.7	SS	-4.1	137	40.6	-4.0	1	15.1	31.4	12
13	176	27.0	0.3	-13	39.1	20.1	Sr	-0.4	190	28.3	-39.4	0.2	-19	43.8	22.3	-0.7	SS	-4.1	137	36.6	-3.9	1	46.5	31.4	13
14	176	27.3	0.5	-13	19.0	20.4	Sr	-0.5	189	48.9	-39.7	0.2	-19	21.5	23.6	-0.7	SS	-4.1	137	32.6	-3.8	2	17.9	31.3	14
15	176	27.7	0.6	-12	58.6	20.5	Sr	-0.5	189	9.2	-40.0	0.2	-18	57.9	24.9	-0.7	SS	-4.1	137	28.8	-3.8	2	49.2	31.3	15
16	176	28.4	0.8	-12	38.1	20.7	Sr	-0.5	188	29.2	-40.3	0.1	-18	33.0	26.3	-0.7	SS	-4.1	137	25.0	-3.7	3	20.5	31.2	16
17	176	29.2	1.0	-12	17.4	21.0	Sr	-0.6	187	48.9	-40.6	0.1	-18	6.7	27.7	-0.7	SS	-4.1	137	21.4	-3.6	3	51.7	31.2	17
18	176	30.2	1.2	-11	56.4	21.1	Sr	-0.6	187	8.3	-40.9	0.1	-17	39.0	29.1	-0.7	SS	-4.2	137	17.7	-3.5	4	22.9	31.0	18
19	176	31.3	1.3	-11	35.3	21.3	Sr	-0.7	186	27.4	-41.1	0.1	-17	9.9	30.4	-0.7	SS	-4.2	137	14.2	-3.5	4	53.9	31.0	19
20	176	3																							

Mars							Jupiter							Saturn									
vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d				
y	0.2	91	36.2	26.1	3	41.3	15.6	y	-2.2	289	44.3	58.6	5	30.5	0.1	y	0.4	359	26.6	64.5	22	24.8	0.4
y	0.2	92	2.3	26.0	3	56.9	15.6	y	-2.2	290	42.9	58.8	5	30.6	0.1	y	0.4	0	31.1	64.5	22	25.2	0.5
y	0.3	92	28.3	25.9	4	12.5	15.6	y	-2.2	291	41.7	58.9	5	30.7	0.2	y	0.4	1	35.6	64.5	22	25.7	0.5
y	0.3	92	54.2	25.8	4	28.1	15.6	y	-2.2	292	40.6	59.1	5	30.9	0.3	y	0.5	2	40.0	64.5	22	26.2	0.4
y	0.3	93	20.0	25.7	4	43.7	15.6	y	-2.2	293	39.7	59.3	5	31.2	0.4	y	0.5	3	44.5	64.4	22	26.6	0.5
y	0.3	93	45.7	25.6	4	59.3	15.5	y	-2.2	294	39.0	59.5	5	31.6	0.5	y	0.5	4	48.9	64.4	22	27.1	0.4
y	0.3	94	11.3	25.5	5	14.8	15.5	y	-2.2	295	38.5	59.7	5	32.1	0.5	y	0.5	5	53.3	64.4	22	27.5	0.5
y	0.4	94	36.8	25.4	5	30.3	15.5	y	-2.3	296	38.2	59.8	5	32.6	0.6	y	0.5	6	57.7	64.4	22	28.0	0.5
y	0.4	95	2.2	25.3	5	45.8	15.5	y	-2.3	297	38.0	60.0	5	33.2	0.6	y	0.5	8	2.1	64.4	22	28.5	0.4
y	0.4	95	27.5	25.2	6	1.3	15.4	y	-2.3	298	38.0	60.2	5	33.8	0.8	y	0.5	9	6.5	64.3	22	28.9	0.4
y	0.4	95	52.8	25.1	6	16.7	15.4	y	-2.3	299	38.2	60.4	5	34.6	0.8	y	0.5	10	10.8	64.3	22	29.3	0.5
y	0.4	96	17.9	25.0	6	32.1	15.4	y	-2.3	300	38.6	60.5	5	35.4	0.9	y	0.5	11	15.1	64.3	22	29.8	0.4
y	0.4	96	42.9	24.9	6	47.5	15.3	y	-2.3	301	39.1	60.7	5	36.3	1.0	y	0.5	12	19.4	64.2	22	30.2	0.5
y	0.5	97	7.9	24.8	7	2.8	15.3	y	-2.3	302	39.8	60.9	5	37.3	1.0	y	0.5	13	23.6	64.2	22	30.7	0.4
y	0.5	97	32.7	24.7	7	18.1	15.3	y	-2.3	303	40.7	61.1	5	38.3	1.1	y	0.5	14	27.8	64.2	22	31.1	0.4
y	0.5	97	57.4	24.6	7	33.4	15.2	y	-2.3	304	41.8	61.3	5	39.4	1.2	y	0.5	15	32.0	64.1	22	31.5	0.4
y	0.5	98	22.1	24.6	7	48.6	15.2	y	-2.3	305	43.1	61.4	5	40.6	1.3	y	0.5	16	36.1	64.1	22	31.9	0.5
y	0.5	98	46.6	24.4	8	3.8	15.2	y	-2.3	306	44.5	61.6	5	41.9	1.3	y	0.5	17	40.2	64.0	22	32.4	0.4
y	0.5	99	11.1	24.4	8	19.0	15.1	y	-2.3	307	46.1	61.8	5	43.2	1.4	y	0.5	18	44.2	64.0	22	32.8	0.4
y	0.6	99	35.4	24.3	8	34.1	15.0	y	-2.3	308	47.9	61.9	5	44.6	1.5	y	0.5	19	48.1	63.9	22	33.2	0.4
y	0.6	99	59.7	24.2	8	49.1	15.0	y	-2.3	309	49.8	62.1	5	46.1	1.5	y	0.6	20	52.0	63.8	22	33.6	0.4
y	0.6	100	23.9	24.1	9	4.1	15.0	y	-2.3	310	51.9	62.3	5	47.6	1.6	y	0.6	21	55.9	63.8	22	34.0	0.4
y	0.6	100	47.9	24.0	9	19.1	14.9	y	-2.4	311	54.2	62.5	5	49.2	1.7	y	0.6	22	59.7	63.7	22	34.4	0.4
y	0.6	101	11.9	23.9	9	34.0	14.8	y	-2.4	312	56.7	62.6	5	50.9	1.8	y	0.6	24	3.4	63.6	22	34.8	0.4
y	0.6	101	35.8	23.8	9	48.8	14.8	y	-2.4	313	59.3	62.8	5	52.7	1.8	y	0.6	25	7.0	63.6	22	35.2	0.3
y	0.6	101	59.5	23.7	10	3.6	14.7	y	-2.4	315	2.1	62.9	5	54.5	1.9	y	0.6	26	10.6	63.5	22	35.5	0.4
y	0.7	102	23.2	23.6	10	18.3	14.7	y	-2.4	316	5.0	63.1	5	56.4	1.9	y	0.6	27	14.1	63.4	22	35.9	0.4
y	0.7	102	46.8	23.5	10	33.0	14.6	y	-2.4	317	8.1	63.3	5	58.3	2.0	y	0.6	28	17.5	63.4	22	36.3	0.4
y	0.7	103	10.3	23.4	10	47.6	14.6	y	-2.4	318	11.4	63.4	6	0.3	2.1	y	0.6	29	20.9	63.3	22	36.7	0.3
y	0.7	103	33.7	23.3	11	2.2	14.4	y	-2.4	319	14.8	63.6	6	2.4	2.1	y	0.6	30	24.2	63.2	22	37.0	0.4
y	0.7	103	57.0	23.2	11	16.6	14.4	y	-2.4	320	18.4	63.7	6	4.5	2.2	y	0.6	31	27.3	63.1	22	37.4	0.3
y	0.7	104	20.3	23.1	11	31.0	14.4	y	-2.4	321	22.1	63.8	6	6.7	2.2	y	0.6	32	30.4	63.0	22	37.7	0.4
y	0.7	104	43.4	23.0	11	45.4	14.2	y	-2.4	322	25.9	64.0	6	8.9	2.3	y	0.6	33	33.5	62.9	22	38.1	0.3
y	0.8	105	6.4	23.0	11	59.6	14.2	y	-2.4	323	29.9	64.1	6	11.2	2.3	y	0.6	34	36.4	62.8	22	38.4	0.3
y	0.8	105	29.4	22.9	12	13.8	14.1	y	-2.4	324	34.0	64.3	6	13.5	2.4	y	0.6	35	39.2	62.7	22	38.7	0.4
y	0.8	105	52.3	22.8	12	27.9	14.0	y	-2.4	325	38.3	64.4	6	15.9	2.5	y	0.7	36	42.0	62.7	22	39.1	0.3
y	0.8	106	15.0	22.7	12	41.9	13.9	y	-2.4	326	42.7	64.5	6	18.4	2.5	y	0.7	37	44.6	62.6	22	39.4	0.3
y	0.8	106	37.7	22.6	12	55.8	13.8	y	-2.4	327	47.2	64.7	6	20.9	2.5	y	0.7	38	47.2	62.5	22	39.7	0.3
y	0.8	107	0.3	22.5	13	9.6	13.8	y	-2.4	328	51.9	64.8	6	23.4	2.6	y	0.7	39	49.7	62.4	22	40.0	0.3
y	0.8	107	22.9	22.4	13	23.4	13.6	y	-2.4	329	56.7	64.9	6	26.0	2.7	y	0.7	40	52.0	62.3	22	40.3	0.3
y	0.9	107	45.3	22.3	13	37.0	13.6	y	-2.4	331	1.6	65.0	6	28.7	2.6	y	0.7	41	54.3	62.2	22	40.6	0.3
y	0.9	108	7.6	22.2	13	50.6	13.5	y	-2.4	332	6.6	65.1	6	31.3	2.8	y	0.7	42	56.5	62.1	22	40.9	0.3
y	0.9	108	29.9	22.2	14	4.1	13.4	y	-2.5	333	11.7	65.2	6	34.1	2.7	y	0.7	43	58.5	62.0	22	41.2	0.3
y	0.9	108	52.0	22.1	14	17.5	13.3	y	-2.5	334	17.0	65.3	6	36.8	2.8	y	0.7	45	0.5	61.8	22	41.5	0.3
y	0.9	109	14.1	22.0	14	30.8	13.2	y	-2.5	335	22.3	65.4	6	39.6	2.8	y	0.7	46	2.3	61.7	22	41.8	0.3
y	0.9	109	36.1	21.9	14	44.0	13.1	y	-2.5	336	27.7	65.5	6	42.4	2.9	y	0.7	47	4.1	61.6	22	42.1	0.2
y	0.9	109	57.9	21.8	14	57.1	12.9	y	-2.5	337	33.3	65.6	6	45.3	2.9	y	0.7	48	5.7	61.5	22	42.3	0.3
y	1.0	110	19.7	21.7	15	10.0	12.9	y	-2.5	338	38.9	65.7	6	48.2	2.9	y	0.7	49	7.2	61.4	22	42.6	0.3
y	1.0	110	41.4	21.6	15	22.9	12.8	y	-2.5	339	44.6	65.8	6	51.1	3.0	y	0.7	50	8.6	61.3	22	42.9	0.2
y	1.0	111	3.0	21.5	15	35.7	12.7	y	-2.5	340	50.4	65.9	6	54.1	2.9	y	0.7	51	9.9	61.2	22	43.1	0.3
y	1.0	111	24.5	21.4	15	48.4	12.6	y	-2.5	341	56.3	65.9	6	57.0	3.0	y	0.8	52	11.1	61.1	22	43.4	0.2
y	1.0	111	45.9	21.3	16	1.0	12.4	y	-2.5	343	2.2	66.0	7	0.0	3.1	y	0.8	53	12.2	61.0	22	43.6	0.3
y	1.0	112	7.3	21.2	16	13.4	12.4	y	-2.5	344	8.3	66.1	7	3.1	3.0	y	0.8	54	13.1	60.8	22	43.9	0.2
y	1.0	112	28.5	21.1	16	25.8	12.2	y	-2.5	345	14.3	66.1	7	6.1	3.0	y	0.8	55	14.0	60.7	22	44.1	0.2
y	1.0	112	49.6	21.0	16	38.0	12.1	y	-2.5	346	20.5	66.2	7	9.1	3.1	y	0.8	56	14.7	60.6	22	44.3	0.2
y	1.1	113	10.7	21.0	16	50.1	12.0	y	-2.5	347	26.7	66.2	7	12.2	3.1	y	0.8	57	15.3	60.5	22	44.5	0.2
y	1.1	113	31.6	20.9	17	2.1	11.9	y	-2.5	348	32.9	66.3	7	15.3	3.1	y	0.8	58	15.8	60.4	22	44.7	0.3
y	1.1	113	52.5	20.8	17	14.0	11.8	y	-2.5	349	39.2	66.3	7	18.4	3.1	y	0.8	59	16.1	60.2	22	45.0	0.2
y	1.1	114	13.3	20.7	17	25.8	11.6	y	-2.5	350	45.5	66.3	7	21.5	3.0	y	0.8	60	16.4	60.1	22	45.2	0.2
y	1.1	114	34.0	20.6	17	37.4	11.5	y	-2.5	351	51.8	66.4	7	24.5	3.1	y	0.8	61	16.5	60.0	22	45.4	0.2
y	1.1	114	54.6	20.5	17	48.9	11.4	y	-2.5	352	58.2	66.4	7	27.6	3.1	y	0.8	62	16.5	59.9	22	45.6	0.1
y	1.1	115	15.1	20.4	18	0.3	11.2	y	-2.5	354	4.6	66.4	7	30.7	3.1	y	0.8	63	16.4	59.8	22	45.7	0.2
y	1.1	115	35.6	20.4	18	11.5	11.2	y	-2.5	355	11.0	66.4	7	33.8	3.1	y	0.8	64	16.1	59.6	22	45.9	0.2
y	1.1																						

2004

Sun and Planets

Date	SUN					Mercury					Venus					Date									
	GHA O	d	Dec O	d		vis mag	GHA O	d	dd	Dec O	d	dd	vis mag	GHA O	d		Dec O	d							
Mar 6	177	10.8	3.6	-5	37.1	23.3	-1.7	174	56.8	-45.4	0.1	-6	22.8	51.1	-0.6	ss	-4.2	136	22.8	-3.0	12	48.9	27.7	Mar 6	
7	177	14.4	3.7	-5	13.8	23.4	-1.7	174	11.4	-45.6	0.1	-5	31.7	52.0	-0.4	ss	-4.2	136	19.8	-3.0	13	16.6	27.5	7	
8	177	18.0	3.8	-4	50.4	23.4	-1.7	173	25.8	-45.6	0.0	-4	39.7	53.0	-0.5	ss	-4.2	136	16.7	-3.0	13	44.1	27.1	8	
9	177	21.8	3.8	-4	27.0	23.5	-1.6	172	40.2	-45.7	0.0	-3	46.7	53.9	-0.4	ss	-4.2	136	13.7	-3.0	14	11.2	26.8	9	
10	177	25.6	3.9	-4	3.5	23.6	-1.6	171	54.5	-45.6	0.0	-2	52.8	54.5	-0.3	ss	-4.3	136	10.7	-3.0	14	38.0	26.5	10	
11	177	29.6	4.0	-3	39.9	23.6	-1.6	171	8.9	-45.4	-0.1	-1	58.3	55.2	-0.3	ss	-4.3	136	7.7	-3.0	15	4.5	26.2	11	
12	177	33.5	4.1	-3	16.3	23.6	ss	-1.5	170	23.6	-45.0	-0.2	-1	3.1	55.6	-0.2	ss	-4.3	136	4.8	-3.0	15	30.7	25.9	12
13	177	37.6	4.1	-2	52.7	23.6	ss	-1.5	169	38.6	-44.4	-0.3	-0	7.5	55.9	-0.1	ss	-4.3	136	1.8	-2.9	15	56.6	25.5	13
14	177	41.7	4.2	-2	29.1	23.7	ss	-1.4	168	54.2	-43.7	-0.4	0	48.4	56.0	-0.1	ss	-4.3	135	58.8	-2.9	16	22.1	25.1	14
15	177	45.9	4.2	-2	5.4	23.7	ss	-1.4	168	10.5	-42.7	-0.5	1	44.4	56.0	0.0	ss	-4.3	135	55.9	-2.9	16	47.2	24.8	15
16	177	50.1	4.3	-1	41.7	23.8	ss	-1.3	167	27.8	-41.4	-0.6	2	40.4	55.6	0.2	ss	-4.3	135	53.0	-2.9	17	12.0	24.3	16
17	177	54.4	4.3	-1	17.9	23.7	ss	-1.3	166	46.4	-39.9	-0.8	3	36.0	55.0	0.3	ss	-4.3	135	50.2	-2.8	17	36.3	24.0	17
18	177	58.7	4.4	-0	54.2	23.7	ss	-1.2	166	6.5	-38.0	-1.0	4	31.0	54.3	0.4	ss	-4.3	135	47.3	-2.8	18	0.3	23.7	18
19	178	3.1	4.4	-0	30.5	23.8	ss	-1.2	165	28.6	-35.7	-1.1	5	25.3	53.2	0.6	ss	-4.3	135	44.5	-2.7	18	24.0	23.2	19
20	178	7.5	4.4	-0	6.7	23.7	ss	-1.1	164	52.9	-33.1	-1.3	6	18.5	51.9	0.6	ss	-4.3	135	41.8	-2.7	18	47.2	22.8	20
21	178	12.0	4.5	0	17.0	23.7	ss	-1.0	164	19.8	-30.1	-1.5	7	10.4	50.3	0.8	ss	-4.3	135	39.2	-2.6	19	10.0	22.3	21
22	178	16.4	4.5	0	40.7	23.7	ss	-1.0	163	49.7	-26.7	-1.7	8	0.7	48.4	0.9	ss	-4.3	135	36.6	-2.5	19	32.3	22.0	22
23	178	20.9	4.5	1	4.4	23.6	ss	-0.9	163	23.0	-22.9	-1.9	8	49.1	46.4	1.0	ss	-4.3	135	34.1	-2.4	19	54.3	21.5	23
24	178	25.4	4.5	1	28.0	23.6	ss	-0.8	163	0.1	-18.8	-2.1	9	35.5	44.1	1.1	ss	-4.3	135	31.7	-2.3	20	15.8	21.1	24
25	178	29.9	4.5	1	51.6	23.6	ss	-0.7	162	41.3	-14.3	-2.3	10	19.6	41.6	1.3	ss	-4.3	135	29.4	-2.2	20	36.9	20.6	25
26	178	34.5	4.5	2	15.2	23.5	ss	-0.5	162	27.0	-9.4	-2.4	11	1.2	38.8	1.4	ss	-4.3	135	27.2	-2.0	20	57.5	20.1	26
27	178	39.0	4.5	2	38.7	23.5	ss	-0.4	162	17.6	-4.2	-2.6	11	40.0	35.9	1.5	ss	-4.3	135	25.2	-1.9	21	17.6	19.7	27
28	178	43.5	4.5	3	2.2	23.4	ss	-0.3	162	13.4	1.2	-2.7	12	15.9	32.9	1.5	ss	-4.4	135	23.3	-1.7	21	37.3	19.2	28
29	178	48.0	4.5	3	25.6	23.3	ss	-0.1	162	14.6	6.9	-2.9	12	48.8	29.7	1.6	ss	-4.4	135	21.6	-1.5	21	56.5	18.8	29
30	178	52.6	4.5	3	48.9	23.3	ss	0.0	162	21.6	12.9	-3.0	13	18.5	26.4	1.7	ss	-4.4	135	20.1	-1.3	22	15.3	18.2	30
Mar 31	178	57.1	4.5	4	12.2	23.2	ss	0.2	162	34.4	19.0	-3.1	13	44.9	23.0	1.7	ss	-4.4	135	18.9	-1.0	22	33.5	17.8	Mar 31
Apr 1	179	1.6	4.5	4	35.4	23.1	ss	0.4	162	53.4	25.3	-3.1	14	7.9	19.4	1.8	ss	-4.4	135	17.9	-0.8	22	51.3	17.2	Apr 1
2	179	6.0	4.4	4	58.5	23.0	ss	0.6	163	18.7	31.6	-3.2	14	27.3	15.8	1.8	ss	-4.4	135	17.1	-0.5	23	8.5	16.8	2
3	179	10.5	4.4	5	21.5	22.9	ss	0.8	163	50.3	38.0	-3.2	14	43.1	12.2	1.8	ss	-4.4	135	16.6	-0.2	23	25.3	16.2	3
4	179	14.9	4.4	5	44.4	22.8	ss	1.0	164	28.3	44.4	-3.2	14	55.3	8.4	1.9	ss	-4.4	135	16.5	0.2	23	41.5	15.8	4
5	179	19.2	4.3	6	7.2	22.7	ss	1.3	165	12.7	50.7	-3.2	15	3.7	4.7	1.9	ss	-4.4	135	16.6	0.5	23	57.3	15.2	5
6	179	23.5	4.3	6	29.9	22.6	ss	1.5	166	3.4	56.9	-3.1	15	8.4	0.9	1.9	ss	-4.4	135	17.2	0.9	24	12.5	14.7	6
7	179	27.8	4.2	6	52.5	22.5	ss	1.7	167	0.3	62.8	-3.0	15	9.3	-2.7	1.8	ss	-4.4	135	18.1	1.3	24	27.2	14.2	7
8	179	32.0	4.1	7	15.0	22.3	ss	1.9	168	3.1	68.5	-2.8	15	6.6	-6.5	1.9	ss	-4.4	135	19.4	1.8	24	41.4	13.7	8
9	179	36.1	4.1	7	37.3	22.3	ss	2.1	169	11.5	73.7	-2.6	15	0.1	-10.0	1.8	ss	-4.4	135	21.2	2.2	24	55.1	13.1	9
10	179	40.2	4.0	7	59.6	22.0	ss	2.4	170	25.3	78.6	-2.4	14	50.1	-13.4	1.7	ss	-4.4	135	23.4	2.8	25	8.2	12.6	10
11	179	44.2	3.9	8	21.6	22.0	ss	2.6	171	43.9	82.9	-2.2	14	36.7	-16.7	1.7	ss	-4.4	135	26.2	3.3	25	20.8	12.1	11
12	179	48.1	3.8	8	43.6	21.8		2.8	173	6.8	86.6	-1.9	14	20.0	-19.7	1.5	ss	-4.4	135	29.5	3.9	25	32.9	11.6	12
13	179	52.0	3.8	9	5.4	21.7		3.0	174	33.4	89.7	-1.5	14	0.3	-22.5	1.4	ss	-4.4	135	33.3	4.5	25	44.5	11.1	13
14	179	55.7	3.7	9	27.1	21.5		3.2	176	3.0	92.1	-1.2	13	37.8	-24.8	1.1	ss	-4.4	135	37.8	5.1	25	55.6	10.5	14
15	179	59.4	3.6	9	48.6	21.4		3.3	177	35.1	93.7	-0.8	13	13.0	-26.9	1.0	ss	-4.5	135	42.9	5.8	26	6.1	10.0	15
16	180	3.0	3.5	10	10.0	21.1		3.2	179	8.8	94.6	-0.5	12	46.1	-28.4	0.8	ss	-4.5	135	48.7	6.5	26	16.1	9.5	16
17	180	6.5	3.4	10	31.1	21.1		3.1	180	43.4	94.8	-0.1	12	17.7	-29.7	0.7	ss	-4.5	135	55.2	7.3	26	25.6	8.9	17
18	180	9.8	3.3	10	52.2	20.8		3.0	182	18.3	94.3	0.3	11	48.0	-30.3	0.3	ss	-4.5	136	2.5	8.1	26	34.5	8.5	18
19	180	13.1	3.2	11	13.0	20.6		2.9	183	52.6	93.1	0.6	11	17.7	-30.7	0.2	ss	-4.5	136	10.6	9.0	26	43.0	7.9	19
20	180	16.3	3.1	11	33.6	20.5		2.8	185	25.7	91.3	0.9	10	47.0	-30.4	-0.2	ss	-4.5	136	19.6	9.9	26	50.9	7.4	20
21	180	19.4	3.0	11	54.1	20.3		2.7	186	57.0	88.9	1.2	10	16.6	-29.9	-0.3	ss	-4.5	136	29.5	10.8	26	58.3	6.8	21
22	180	22.3	2.9	12	14.4	20.0	sr	2.6	188	25.9	86.1	1.4	9	46.7	-28.8	-0.5	ss	-4.5	136	40.3	11.9	27	5.1	6.4	22
23	180	25.2	2.7	12	34.4	19.9	sr	2.5	189	52.0	82.9	1.6	9	17.9	-27.5	-0.6	ss	-4.5	136	52.2	12.9	27	11.5	5.9	23
24	180	27.9	2.6	12	54.3	19.6	sr	2.4	191	14.9	79.3	1.8	8	50.4	-25.8	-0.9	ss	-4.5	137	5.1	14.1	27	17.4	5.3	24
25	180	30.6	2.5	13	13.9	19.4	sr	2.3	192	34.1	75.4	1.9	8	24.6	-24.0	-0.9	ss	-4.5	137	19.1	15.2	27	22.7	4.8	25
26	180	33.1	2.4	13	33.3	19.2	sr	2.2	193	49.6	71.4	2.0	8	0.6	-21.8	-1.1	ss	-4.5	137	34.4	16.5	27	27.5	4.4	26
27	180	35.5	2.3	13	52.5	19.0	sr	2.1	195	1.0	67.2	2.1	7	38.8	-19.4	-1.2	ss	-4.5	137	50.9	17.8	27	31.9	3.8	27
28	180	37.7	2.1	14	11.5	18.7	sr	2.0	196	8.2	63.0	2.1	7	19.4	-17.1	-1.2	ss	-4.5	138	8.6	19.2	27	35.7	3.3	28
29	180	39.9	2.0	14	30.2	18.5	sr	1.9	197	11.2	58.8	2.1	7	2.3	-14.6	-1.2	ss	-4.5	138	27.8	20.6	27	39.0	2.9	29
Apr 30	180	41.9	1.9	14	48.7	18.2	sr	1.8	198	10.0	54.5	2.1	6	47.7	-12.0	-1.3	ss	-4.5	138	48.4	22.1	27	41.9	2.3	Apr 30
May 1	180	43.8	1.8	15	6.9	18.0	sr	1.7	199	4.5	50.3	2.1	6	35.7	-9.4	-1.3	ss	-4.5	139	10.5	23.7	27	44.2	1.9	May 1
2	180	45.5	1.6	15	24.9	17.8	sr																		

Mars							Jupiter							Saturn									
vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d				
		o	'	o	'				o	'	o	'				o	'	o	'				
y	1.2	116	36.4	20.1	18	44.5	10.7	y	-2.5	358	30.2	66.4	7	43.1	3.0	y	0.8	67	14.7	59.3	22	46.5	0.1
y	1.2	116	56.5	20.0	18	55.2	10.6	y	-2.5	359	36.6	66.4	7	46.1	3.1	y	0.9	68	14.0	59.2	22	46.6	0.2
y	1.2	117	16.5	20.0	19	5.8	10.4	y	-2.5	0	43.1	66.4	7	49.2	3.0	y	0.9	69	13.1	59.0	22	46.8	0.1
y	1.2	117	36.5	19.9	19	16.2	10.3	y	-2.5	1	49.4	66.4	7	52.2	3.0	y	0.9	70	12.2	58.9	22	46.9	0.2
y	1.2	117	56.4	19.8	19	26.5	10.2	y	-2.5	2	55.8	66.3	7	55.2	3.0	y	0.9	71	11.1	58.8	22	47.1	0.1
y	1.2	118	16.2	19.7	19	36.7	10.0	y	-2.5	4	2.1	66.3	7	58.2	3.0	y	0.9	72	9.9	58.7	22	47.2	0.1
y	1.2	118	35.9	19.6	19	46.7	9.8	y	-2.5	5	8.5	66.3	8	1.2	2.9	y	0.9	73	8.5	58.5	22	47.3	0.2
y	1.2	118	55.5	19.5	19	56.5	9.7	y	-2.5	6	14.7	66.2	8	4.1	3.0	y	0.9	74	7.1	58.4	22	47.5	0.1
y	1.2	119	15.0	19.5	20	6.2	9.6	y	-2.5	7	21.0	66.2	8	7.1	2.9	y	0.9	75	5.5	58.3	22	47.6	0.1
y	1.3	119	34.5	19.4	20	15.8	9.4	y	-2.5	8	27.2	66.1	8	10.0	2.8	y	0.9	76	3.8	58.2	22	47.7	0.1
y	1.3	119	53.9	19.3	20	25.2	9.3	y	-2.5	9	33.3	66.1	8	12.8	2.9	y	0.9	77	2.0	58.1	22	47.8	0.1
y	1.3	120	13.2	19.2	20	34.5	9.1	y	-2.5	10	39.4	66.0	8	15.7	2.8	y	0.9	78	0.0	57.9	22	47.9	0.1
y	1.3	120	32.4	19.1	20	43.6	9.0	y	-2.5	11	45.4	66.0	8	18.5	2.7	y	0.9	78	58.0	57.8	22	48.0	0.1
y	1.3	120	51.6	19.1	20	52.6	8.8	y	-2.5	12	51.4	65.9	8	21.2	2.7	y	0.9	79	55.8	57.7	22	48.1	0.1
y	1.3	121	10.7	19.0	21	1.4	8.6	y	-2.5	13	57.2	65.8	8	23.9	2.7	y	0.9	80	53.5	57.6	22	48.2	0.1
y	1.3	121	29.7	18.9	21	10.0	8.5	y	-2.5	15	3.0	65.7	8	26.6	2.7	y	0.9	81	51.1	57.5	22	48.3	0.1
y	1.3	121	48.6	18.8	21	18.5	8.4	y	-2.5	16	8.8	65.6	8	29.3	2.6	y	0.9	82	48.6	57.3	22	48.4	0.0
y	1.3	122	7.4	18.8	21	26.9	8.2	y	-2.5	17	14.4	65.6	8	31.9	2.6	y	0.9	83	45.9	57.2	22	48.4	0.1
y	1.3	122	26.2	18.7	21	35.1	8.0	y	-2.5	18	20.0	65.5	8	34.5	2.5	y	0.9	84	43.2	57.1	22	48.5	0.0
y	1.4	122	44.9	18.6	21	43.1	7.8	y	-2.5	19	25.4	65.4	8	37.0	2.4	y	0.9	85	40.3	57.0	22	48.5	0.1
y	1.4	123	3.5	18.6	21	50.9	7.7	y	-2.4	20	30.8	65.3	8	39.4	2.5	y	0.9	86	37.3	56.9	22	48.6	0.0
y	1.4	123	22.1	18.5	21	58.6	7.5	y	-2.4	21	36.1	65.1	8	41.9	2.3	y	1.0	87	34.1	56.8	22	48.6	0.1
y	1.4	123	40.6	18.4	22	6.1	7.4	y	-2.4	22	41.2	65.0	8	44.2	2.3	y	1.0	88	30.9	56.7	22	48.7	0.0
y	1.4	123	59.1	18.4	22	13.5	7.2	y	-2.4	23	46.2	64.9	8	46.5	2.3	y	1.0	89	27.6	56.5	22	48.7	0.0
y	1.4	124	17.4	18.3	22	20.7	7.0	y	-2.4	24	51.2	64.8	8	48.8	2.2	y	1.0	90	24.1	56.4	22	48.7	0.1
y	1.4	124	35.8	18.3	22	27.7	6.8	y	-2.4	25	56.0	64.7	8	51.0	2.1	y	1.0	91	20.5	56.3	22	48.8	0.0
y	1.4	124	54.0	18.2	22	34.5	6.7	y	-2.4	27	0.7	64.6	8	53.1	2.1	y	1.0	92	16.8	56.2	22	48.8	0.0
y	1.4	125	12.2	18.2	22	41.2	6.5	y	-2.4	28	5.2	64.4	8	55.2	2.1	y	1.0	93	13.0	56.1	22	48.8	0.0
y	1.4	125	30.4	18.1	22	47.7	6.3	y	-2.4	29	9.7	64.3	8	57.3	1.9	y	1.0	94	9.1	56.0	22	48.8	0.0
y	1.4	125	48.5	18.1	22	54.0	6.2	y	-2.4	30	14.0	64.2	8	59.2	2.0	y	1.0	95	5.1	55.9	22	48.8	-0.1
y	1.4	126	6.6	18.0	23	0.2	5.9	y	-2.4	31	18.1	64.0	9	1.2	1.8	y	1.0	96	1.0	55.8	22	48.7	0.0
y	1.5	126	24.6	18.0	23	6.1	5.8	y	-2.4	32	22.2	63.9	9	3.0	1.8	y	1.0	96	56.8	55.7	22	48.7	0.0
y	1.5	126	42.5	17.9	23	11.9	5.6	y	-2.4	33	26.1	63.8	9	4.8	1.7	y	1.0	97	52.5	55.6	22	48.7	0.0
y	1.5	127	0.4	17.9	23	17.5	5.5	y	-2.4	34	29.8	63.6	9	6.5	1.7	y	1.0	98	48.0	55.5	22	48.7	-0.1
y	1.5	127	18.3	17.8	23	23.0	5.2	y	-2.4	35	33.5	63.5	9	8.2	1.6	y	1.0	99	43.5	55.4	22	48.6	0.0
y	1.5	127	36.1	17.8	23	28.2	5.1	y	-2.4	36	36.9	63.3	9	9.8	1.5	y	1.0	100	38.8	55.3	22	48.6	-0.1
y	1.5	127	53.8	17.7	23	33.3	4.9	y	-2.4	37	40.2	63.2	9	11.3	1.5	y	1.0	101	34.1	55.2	22	48.5	-0.1
y	1.5	128	11.6	17.7	23	38.2	4.7	y	-2.4	38	43.4	63.0	9	12.8	1.4	y	1.0	102	29.2	55.1	22	48.4	0.0
y	1.5	128	29.2	17.6	23	42.9	4.6	y	-2.4	39	46.4	62.9	9	14.2	1.4	y	1.0	103	24.3	55.0	22	48.4	-0.1
y	1.5	128	46.9	17.6	23	47.5	4.3	y	-2.4	40	49.3	62.7	9	15.6	1.2	y	1.0	104	19.2	54.9	22	48.3	-0.1
y	1.5	129	4.5	17.6	23	51.8	4.2	y	-2.3	41	52.0	62.5	9	16.8	1.3	y	1.0	105	14.1	54.8	22	48.2	-0.1
y	1.5	129	22.0	17.5	23	56.0	4.0	y	-2.3	42	54.5	62.4	9	18.1	1.1	y	1.0	106	8.8	54.7	22	48.1	-0.1
y	1.5	129	39.6	17.5	24	0.0	3.8	y	-2.3	43	56.9	62.2	9	19.2	1.1	y	1.0	107	3.5	54.6	22	48.0	-0.1
y	1.5	129	57.1	17.5	24	3.8	3.6	y	-2.3	44	59.1	62.1	9	20.3	1.0	y	1.0	107	58.1	54.5	22	47.9	-0.1
y	1.6	130	14.5	17.4	24	7.4	3.5	y	-2.3	46	1.2	61.9	9	21.3	0.9	y	1.0	108	52.6	54.4	22	47.8	-0.2
y	1.6	130	32.0	17.4	24	10.9	3.2	y	-2.3	47	3.1	61.7	9	22.2	0.8	y	1.0	109	46.9	54.3	22	47.6	-0.1
y	1.6	130	49.4	17.4	24	14.1	3.1	y	-2.3	48	4.8	61.6	9	23.0	0.8	y	1.0	110	41.2	54.2	22	47.5	-0.2
y	1.6	131	6.7	17.4	24	17.2	2.9	y	-2.3	49	6.3	61.4	9	23.8	0.8	y	1.0	111	35.4	54.1	22	47.3	-0.1
y	1.6	131	24.1	17.3	24	20.1	2.6	y	-2.3	50	7.7	61.2	9	24.6	0.6	y	1.0	112	29.5	54.0	22	47.2	-0.2
y	1.6	131	41.4	17.3	24	22.7	2.5	y	-2.3	51	8.9	61.0	9	25.2	0.6	y	1.0	113	23.5	53.9	22	47.0	-0.1
y	1.6	131	58.7	17.3	24	25.2	2.4	y	-2.3	52	10.0	60.9	9	25.8	0.5	y	1.0	114	17.4	53.8	22	46.9	-0.2
y	1.6	132	16.0	17.3	24	27.6	2.1	y	-2.3	53	10.9	60.7	9	26.3	0.4	y	1.0	115	11.3	53.8	22	46.7	-0.2
y	1.6	132	33.3	17.3	24	29.7	1.9	y	-2.3	54	11.5	60.5	9	26.7	0.4	y	1.0	116	5.0	53.7	22	46.5	-0.2
y	1.6	132	50.6	17.3	24	31.6	1.8	y	-2.3	55	12.1	60.4	9	27.1	0.3	y	1.0	116	58.7	53.6	22	46.3	-0.2
y	1.6	133	7.8	17.3	24	33.4	1.5	y	-2.3	56	12.4	60.2	9	27.4	0.2	y	1.0	117	52.3	53.5	22	46.1	-0.2
y	1.6	133	25.1	17.3	24	34.9	1.4	y	-2.2	57	12.6	60.0	9	27.6	0.1	y	1.0	118	45.8	53.4	22	45.9	-0.2
y	1.6	133	42.4	17.3	24	36.3	1.2	y	-2.2	58	12.6	59.8	9	27.7	0.1	y	1.0	119	39.3	53.4	22	45.7	-0.3
y	1.6	133	59.6	17.3	24	37.5	1.0	y	-2.2	59	12.5	59.7	9	27.8	0.0	y	1.0	120	32.6	53.3	22	45.4	-0.2
y	1.6	134	16.9	17.3	24	38.5	0.8	y	-2.2	60	12.1	59.5	9	27.8	0.0	y	1.0	121	25.9	53.2	22	45.2	-0.3
y	1.6	134	34.1	17.3	24	39.3	0.6	y	-2.2	61	11.6	59.3	9	27.8	-0.2	y	1.0	122	19.1	53.1	22	44.9	-0.2
y	1.7	134	51.4	17.3	24	39.9	0.4	y	-2.2	62	10.9	59.1	9	27.6	-0.2	y	1.0	123	12.2	53.1	22	44.7	-0.3
y	1.7	135	8.7	17.3	24	40.3	0.2	y	-2.2	63	10.1	59.0	9	27.4	-0.2	y	1.0	124	5.3	53.0	22	44.4	-0.3
y	1.7	135	25.9	17.3	24	40.5	0.1	y	-2.2	64	9.1	58.8	9	27.2	-0.4	y							

2004

Sun and Planets

Date	SUN					Mercury					Venus					Date	
	GHA	d	Dec	d		GHA	d	dd	Dec	d	dd	GHA	d	Dec	d		
	o	'	o	'	vis mag	o	'	'	o	'	'	o	'	o	'		
May 10	180 54.6	0.5	17 39.2	15.6	sr 0.9 204	17.5	17.1	1.6	6 39.4	11.6	-1.0	ss -4.5 143	48.1	40.8	27 43.7	-2.5	May 10
11	180 55.1	0.3	17 54.8	15.2	sr 0.8 204	34.6	14.0	1.6	6 51.0	13.7	-1.0	ss -4.5 144	29.0	43.1	27 41.2	-2.9	11
12	180 55.4	0.2	18 10.0	14.9	sr 0.7 204	48.6	10.9	1.5	7 4.7	15.5	-0.9	ss -4.5 145	12.1	45.4	27 38.3	-3.5	12
13	180 55.6	0.0	18 24.9	14.6	sr 0.7 204	59.5	8.0	1.5	7 20.2	17.2	-0.8	ss -4.5 145	57.5	47.8	27 34.8	-3.9	13
14	180 55.6	-0.1	18 39.5	14.3	sr 0.6 205	7.5	5.1	1.4	7 37.4	19.0	-0.9	ss -4.5 146	45.2	50.2	27 30.9	-4.5	14
15	180 55.5	-0.2	18 53.8	13.9	sr 0.5 205	12.6	2.3	1.4	7 56.4	20.5	-0.8	ss -4.5 147	35.4	52.7	27 26.4	-5.0	15
16	180 55.3	-0.4	19 7.7	13.7	sr 0.5 205	14.9	-0.4	1.4	8 16.9	22.1	-0.8	ss -4.4 148	28.1	55.2	27 21.4	-5.4	16
17	180 54.9	-0.5	19 21.4	13.3	sr 0.4 205	14.5	-3.1	1.3	8 39.0	23.5	-0.7	ss -4.4 149	23.3	57.8	27 16.0	-6.1	17
18	180 54.4	-0.7	19 34.7	13.0	sr 0.4 205	11.5	-5.7	1.3	9 2.5	24.9	-0.7	ss -4.4 150	21.1	60.4	27 9.9	-6.5	18
19	180 53.7	-0.8	19 47.7	12.6	sr 0.3 205	5.8	-8.3	1.3	9 27.4	26.1	-0.6	ss -4.4 151	21.5	63.1	27 3.4	-7.1	19
20	180 52.9	-0.9	20 0.3	12.4	sr 0.3 204	57.4	-10.9	1.3	9 53.5	27.4	-0.6	ss -4.4 152	24.6	65.7	26 56.3	-7.7	20
21	180 51.9	-1.1	20 12.7	11.9	sr 0.2 204	46.5	-13.5	1.3	10 20.9	28.4	-0.5	ss -4.4 153	30.3	68.4	26 48.6	-8.3	21
22	180 50.8	-1.2	20 24.6	11.6	sr 0.1 204	33.1	-16.1	1.3	10 49.3	29.5	-0.5	ss -4.3 154	38.7	71.1	26 40.3	-8.9	22
23	180 49.6	-1.3	20 36.2	11.3	sr 0.1 204	17.0	-18.6	1.3	11 18.8	30.4	-0.5	ss -4.3 155	49.7	73.7	26 31.4	-9.5	23
24	180 48.3	-1.5	20 47.5	10.9	sr 0.0 203	58.3	-21.2	1.3	11 49.2	31.3	-0.4	ss -4.3 157	3.4	76.3	26 21.9	-10.1	24
25	180 46.8	-1.6	20 58.4	10.5	sr 0.0 203	37.1	-23.9	1.3	12 20.5	32.1	-0.4	ss -4.3 158	19.8	78.9	26 11.8	-10.7	25
26	180 45.3	-1.7	21 8.9	10.2	sr -0.1 203	13.2	-26.5	1.3	12 52.6	32.8	-0.4	ss -4.2 159	38.7	81.4	26 1.1	-11.3	26
27	180 43.6	-1.8	21 19.1	9.8	sr -0.2 202	46.7	-29.2	1.3	13 25.4	33.5	-0.4	ss -4.2 161	0.0	83.8	25 49.8	-12.0	27
28	180 41.8	-1.9	21 28.9	9.4	sr -0.2 202	17.5	-32.0	1.4	13 58.9	33.9	-0.2	ss -4.2 162	23.8	86.1	25 37.8	-12.6	28
29	180 39.9	-2.0	21 38.3	9.0	sr -0.3 201	45.5	-34.6	1.4	14 32.8	34.4	-0.3	ss -4.2 163	49.9	88.2	25 25.2	-13.3	29
30	180 37.9	-2.1	21 47.3	8.7	sr -0.4 201	10.7	-37.6	1.4	15 7.2	34.7	-0.1	ss -4.1 165	18.1	90.2	25 11.9	-13.8	30
May 31	180 35.7	-2.2	21 56.0	8.3	sr -0.4 200	33.1	-40.5	1.5	15 41.9	34.9	-0.1	ss -4.1 166	48.4	92.1	24 58.1	-14.5	May 31
Jun 1	180 33.5	-2.3	22 4.3	7.9	sr -0.5 199	52.6	-43.5	1.5	16 16.8	35.0	0.0	ss -4.0 168	20.4	93.7	24 43.6	-15.0	Jun 1
2	180 31.2	-2.4	22 12.2	7.5	sr -0.6 199	9.1	-46.5	1.5	16 51.8	35.0	0.0	ss -4.0 169	54.1	95.1	24 28.6	-15.6	2
3	180 28.8	-2.5	22 19.7	7.1	sr -0.7 198	22.6	-49.6	1.5	17 26.8	34.9	0.0	ss -3.9 171	29.3	96.3	24 13.0	-16.0	3
4	180 26.3	-2.6	22 26.8	6.8	sr -0.7 197	33.0	-52.7	1.6	18 1.7	34.5	0.2	-3.9 173	5.6	97.2	23 57.0	-16.4	4
5	180 23.7	-2.7	22 33.6	6.3	sr -0.8 196	40.4	-55.8	1.6	18 36.2	34.1	0.2	-3.9 174	42.8	97.9	23 40.6	-16.9	5
6	180 21.0	-2.7	22 39.9	6.0	sr -0.9 195	44.5	-58.9	1.6	19 10.3	33.5	0.3	-3.8 176	20.7	98.4	23 23.7	-17.1	6
7	180 18.3	-2.8	22 45.9	5.5	sr -1.0 194	45.6	-62.1	1.6	19 43.8	32.7	0.4	-3.8 177	59.1	98.5	23 6.6	-17.4	7
8	180 15.5	-2.9	22 51.4	5.1	sr -1.1 193	43.5	-65.2	1.5	20 16.5	31.7	0.5	-3.7 179	37.6	98.4	22 49.2	-17.6	8
9	180 12.6	-3.0	22 56.5	4.8	sr -1.2 192	38.4	-68.2	1.5	20 48.2	30.5	0.6	-3.8 181	16.0	98.1	22 31.6	-17.6	9
10	180 9.6	-3.0	23 1.3	4.3	sr -1.3 191	30.2	-71.1	1.5	21 18.7	29.2	0.6	-3.8 182	54.1	97.5	22 14.0	-17.7	10
11	180 6.6	-3.1	23 5.6	4.0	sr -1.4 190	19.1	-73.8	1.4	21 47.9	27.6	0.8	-3.8 184	31.6	96.6	21 56.3	-17.5	11
12	180 3.5	-3.1	23 9.6	3.5	sr -1.5 189	5.3	-76.4	1.3	22 15.5	25.9	0.8	-3.9 186	8.2	95.5	21 38.8	-17.4	12
13	180 0.4	-3.2	23 13.1	3.1	sr -1.6 187	48.9	-78.7	1.2	22 41.4	23.8	1.1	sr -3.9 187	43.7	94.3	21 21.4	-17.2	13
14	179 57.2	-3.2	23 16.2	2.7	-1.7 186	30.2	-80.7	1.0	23 5.2	21.7	1.0	sr -4.0 189	18.0	92.8	21 4.2	-16.8	14
15	179 54.0	-3.2	23 18.9	2.3	-1.8 185	9.5	-82.5	0.9	23 26.9	19.4	1.2	sr -4.0 190	50.7	91.1	20 47.4	-16.3	15
16	179 50.8	-3.3	23 21.2	1.9	-2.0 183	47.1	-83.8	0.7	23 46.3	16.9	1.2	sr -4.0 192	21.9	89.3	20 31.1	-15.9	16
17	179 47.5	-3.3	23 23.1	1.4	-2.1 182	23.2	-84.8	0.5	24 3.2	14.3	1.3	sr -4.1 193	51.2	87.4	20 15.2	-15.4	17
18	179 44.2	-3.3	23 24.5	1.1	-2.2 180	58.5	-85.3	0.3	24 17.5	11.6	1.3	sr -4.1 195	18.5	85.3	19 59.8	-14.7	18
19	179 41.0	-3.3	23 25.6	0.6	-2.2 179	33.1	-85.5	0.1	24 29.1	8.8	1.4	sr -4.2 196	43.8	83.1	19 45.1	-14.1	19
20	179 37.7	-3.3	23 26.2	0.2	-2.1 178	7.6	-85.3	-0.1	24 37.9	6.0	1.4	sr -4.2 198	6.9	80.9	19 31.0	-13.3	20
21	179 34.4	-3.3	23 26.4	-0.1	-2.0 176	42.4	-84.6	-0.3	24 43.9	3.1	1.5	sr -4.2 199	27.8	78.5	19 17.7	-12.7	21
22	179 31.1	-3.3	23 26.3	-0.7	-1.9 175	17.8	-83.6	-0.5	24 47.0	0.4	1.3	sr -4.2 200	46.3	76.2	19 5.0	-11.8	22
23	179 27.8	-3.2	23 25.6	-1.0	-1.7 173	54.2	-82.2	-0.7	24 47.4	-2.5	1.5	sr -4.3 202	2.5	73.8	18 53.2	-11.0	23
24	179 24.6	-3.2	23 24.6	-1.4	-1.6 172	31.9	-80.5	-0.8	24 44.9	-5.1	1.3	sr -4.3 203	16.3	71.4	18 42.2	-10.2	24
25	179 21.4	-3.2	23 23.2	-1.8	ss -1.5 171	11.4	-78.6	-1.0	24 39.8	-7.7	1.3	sr -4.3 204	27.7	68.9	18 32.0	-9.3	25
26	179 18.2	-3.1	23 21.4	-2.3	ss -1.4 169	52.8	-76.4	-1.1	24 32.1	-10.2	1.3	sr -4.3 205	36.6	66.5	18 22.7	-8.6	26
27	179 15.1	-3.1	23 19.1	-2.7	ss -1.3 168	36.4	-74.0	-1.2	24 21.9	-12.6	1.2	sr -4.4 206	43.2	64.1	18 14.1	-7.7	27
28	179 12.0	-3.0	23 16.4	-3.0	ss -1.2 167	22.4	-71.5	-1.3	24 9.3	-14.8	1.1	sr -4.4 207	47.3	61.7	18 6.4	-6.8	28
29	179 9.0	-3.0	23 13.4	-3.5	ss -1.1 166	11.0	-68.8	-1.3	23 54.5	-17.0	1.1	sr -4.4 208	49.0	59.4	17 59.6	-6.0	29
Jun 30	179 6.0	-2.9	23 9.9	-3.9	ss -1.0 165	2.2	-66.0	-1.4	23 37.5	-18.9	1.0	sr -4.4 209	48.4	57.0	17 53.6	-5.3	Jun 30
Jul 1	179 3.1	-2.8	23 6.0	-4.3	ss -0.9 163	56.2	-63.1	-1.4	23 18.6	-20.7	0.9	sr -4.4 210	45.4	54.7	17 48.3	-4.4	Jul 1
2	179 0.3	-2.8	23 1.7	-4.7	ss -0.8 162	53.1	-60.2	-1.4	22 57.9	-22.5	0.9	sr -4.4 211	40.1	52.5	17 43.9	-3.7	2
3	178 57.5	-2.7	22 57.0	-5.0	ss -0.7 161	52.8	-57.3	-1.5	22 35.4	-24.0	0.8	sr -4.4 212	32.6	50.3	17 40.2	-3.0	3
4	178 54.8	-2.6	22 52.0	-5.5	ss -0.7 160	55.5	-54.4	-1.5	22 11.4	-25.4	0.7	sr -4.4 213	22.9	48.1	17 37.2	-2.2	4
5	178 52.2	-2.5	22 46.5	-5.9	ss -0.6 160	1.2	-51.4	-1.5	21 46.0	-26.8	0.7	sr -4.5 214	11.1	46.1	17 35.0	-1.6	5
6	178 49.7	-2.4	22 40.6	-6.3	ss -0.5 159	9.7	-48.5	-1.5	21 19.2	-28.0	0.6	sr -4.5 214	57.1	44.0	17 33.4	-0.9	6
7	178 47.2	-2.4	22 34.3	-6.6	ss -0.5 158	21.3	-45.6	-1.5	20 51.2	-29.0	0.5	sr -4.5 215	41.2	42.0	17 32.5	-0.3	7
8	178 44.9	-2.3	22 27.7	-7.1	ss -0.4 157	35.7	-42.7	-1.4	20 22.2	-30.0	0.5	sr -4.5 216	23.2	40.1	17 32.2	0.3	8
9																	

Mars							Jupiter							Saturn									
vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d				
		o	'	o	'				o	'	o	'				o	'	o	'				
y	1.7	136	17.8	17.3	24	40.1	-0.5	y	-2.2	67	5.0	58.3	9	25.9	-0.5	y	1.0	127	36.7	52.7	22	43.2	-0.3
y	1.7	136	35.1	17.3	24	39.6	-0.7	y	-2.2	68	3.3	58.1	9	25.4	-0.6	y	1.0	128	29.4	52.6	22	42.9	-0.3
y	1.7	136	52.5	17.3	24	38.9	-0.9	y	-2.2	69	1.4	58.0	9	24.8	-0.7	y	1.0	129	22.1	52.6	22	42.6	-0.4
y	1.7	137	9.8	17.4	24	38.0	-1.1	y	-2.2	69	59.3	57.8	9	24.1	-0.7	y	1.0	130	14.6	52.5	22	42.2	-0.3
y	1.7	137	27.2	17.4	24	36.9	-1.2	y	-2.2	70	57.1	57.6	9	23.4	-0.8	y	1.0	131	7.1	52.4	22	41.9	-0.4
y	1.7	137	44.6	17.4	24	35.7	-1.5	y	-2.1	71	54.8	57.5	9	22.6	-0.9	y	1.0	131	59.6	52.4	22	41.5	-0.3
y	1.7	138	2.0	17.4	24	34.2	-1.6	y	-2.1	72	52.2	57.3	9	21.7	-1.0	y	1.0	132	52.0	52.3	22	41.2	-0.4
y	1.7	138	19.4	17.5	24	32.6	-1.8	y	-2.1	73	49.5	57.1	9	20.7	-1.0	y	1.0	133	44.3	52.3	22	40.8	-0.4
y	1.7	138	36.9	17.5	24	30.8	-2.0	y	-2.1	74	46.6	57.0	9	19.7	-1.1	y	1.0	134	36.5	52.2	22	40.4	-0.4
y	1.7	138	54.4	17.5	24	28.8	-2.2	y	-2.1	75	43.6	56.8	9	18.6	-1.1	y	1.0	135	28.7	52.1	22	40.0	-0.4
y	1.7	139	11.9	17.5	24	26.6	-2.4	y	-2.1	76	40.4	56.6	9	17.5	-1.2	y	1.0	136	20.9	52.1	22	39.6	-0.4
y	1.7	139	29.4	17.6	24	24.2	-2.6	y	-2.1	77	37.0	56.5	9	16.3	-1.3	y	1.0	137	12.9	52.0	22	39.2	-0.4
y	1.7	139	47.0	17.6	24	21.6	-2.7	y	-2.1	78	33.5	56.3	9	15.0	-1.4	y	1.0	138	5.0	52.0	22	38.8	-0.5
y	1.7	140	4.6	17.7	24	18.9	-2.9	y	-2.1	79	29.8	56.2	9	13.6	-1.4	y	1.0	138	56.9	51.9	22	38.3	-0.4
y	1.7	140	22.3	17.7	24	16.0	-3.1	y	-2.1	80	26.0	56.0	9	12.2	-1.4	y	1.0	139	48.8	51.9	22	37.9	-0.5
y	1.7	140	39.9	17.7	24	12.9	-3.3	y	-2.1	81	21.9	55.8	9	10.8	-1.6	y	1.0	140	40.7	51.8	22	37.4	-0.4
y	1.7	140	57.7	17.8	24	9.6	-3.5	y	-2.1	82	17.8	55.7	9	9.2	-1.5	y	1.0	141	32.5	51.8	22	37.0	-0.5
y	1.8	141	15.5	17.8	24	6.1	-3.6	y	-2.1	83	13.5	55.5	9	7.7	-1.7	y	1.0	142	24.3	51.7	22	36.5	-0.5
y	1.8	141	33.3	17.9	24	2.5	-3.8	y	-2.1	84	9.0	55.4	9	6.0	-1.7	y	1.0	143	16.0	51.7	22	36.0	-0.5
y	1.8	141	51.2	17.9	23	58.7	-4.0	y	-2.1	85	4.4	55.2	9	4.3	-1.8	y	1.0	144	7.7	51.6	22	35.5	-0.5
y	1.8	142	9.1	18.0	23	54.7	-4.2	y	-2.0	85	59.6	55.1	9	2.5	-1.8	y	1.0	144	59.3	51.6	22	35.0	-0.5
y	1.8	142	27.1	18.0	23	50.5	-4.4	y	-2.0	86	54.7	54.9	9	0.7	-1.9	y	1.0	145	50.9	51.5	22	34.5	-0.5
y	1.8	142	45.1	18.1	23	46.1	-4.5	y	-2.0	87	49.6	54.8	8	58.8	-2.0	y	1.0	146	42.5	51.5	22	34.0	-0.6
y	1.8	143	3.2	18.1	23	41.6	-4.7	y	-2.0	88	44.4	54.6	8	56.8	-2.0	y	1.0	147	34.0	51.5	22	33.4	-0.5
y	1.8	143	21.3	18.2	23	36.9	-4.9	y	-2.0	89	39.1	54.5	8	54.8	-2.1	y	1.0	148	25.4	51.4	22	32.9	-0.6
y	1.8	143	39.5	18.3	23	32.0	-5.0	y	-2.0	90	33.6	54.4	8	52.7	-2.1	y	1.0	149	16.9	51.4	22	32.3	-0.5
y	1.8	143	57.8	18.3	23	27.0	-5.2	y	-2.0	91	27.9	54.2	8	50.6	-2.2	y	1.0	150	8.3	51.3	22	31.8	-0.6
y	1.8	144	16.1	18.4	23	21.8	-5.4	y	-2.0	92	22.2	54.1	8	48.4	-2.2	y	1.0	150	59.6	51.3	22	31.2	-0.6
y	1.8	144	34.5	18.4	23	16.4	-5.6	y	-2.0	93	16.2	53.9	8	46.2	-2.3	y	1.0	151	50.9	51.3	22	30.6	-0.6
y	1.8	144	52.9	18.5	23	10.8	-5.7	y	-2.0	94	10.2	53.8	8	43.9	-2.3	y	1.0	152	42.2	51.2	22	30.0	-0.6
y	1.8	145	11.4	18.6	23	5.1	-5.9	y	-2.0	95	4.0	53.7	8	41.6	-2.4	y	1.0	153	33.4	51.2	22	29.4	-0.6
y	1.8	145	29.9	18.6	22	59.2	-6.0	y	-2.0	95	57.7	53.5	8	39.2	-2.5	y	1.0	154	24.7	51.2	22	28.8	-0.7
y	1.8	145	48.5	18.7	22	53.2	-6.2	y	-2.0	96	51.2	53.4	8	36.7	-2.5	y	1.0	155	15.8	51.2	22	28.1	-0.6
y	1.8	146	7.2	18.7	22	47.0	-6.4	y	-2.0	97	44.6	53.3	8	34.2	-2.6	y	1.0	156	7.0	51.1	22	27.5	-0.6
y	1.8	146	26.0	18.8	22	40.6	-6.5	y	-2.0	98	37.9	53.2	8	31.6	-2.6	y	1.0	156	58.1	51.1	22	26.9	-0.7
y	1.8	146	44.7	18.9	22	34.1	-6.8	y	-2.0	99	31.1	53.0	8	29.0	-2.7	y	1.0	157	49.2	51.1	22	26.2	-0.7
y	1.8	147	3.6	18.9	22	27.3	-6.8	y	-1.9	100	24.1	52.9	8	26.3	-2.7	y	1.0	158	40.3	51.0	22	25.5	-0.7
y	1.8	147	22.5	19.0	22	20.5	-7.0	y	-1.9	101	17.0	52.8	8	23.6	-2.7	y	1.0	159	31.3	51.0	22	24.8	-0.6
y	1.8	147	41.5	19.1	22	13.5	-7.2	y	-1.9	102	9.8	52.7	8	20.9	-2.9	y	1.0	160	22.4	51.0	22	24.2	-0.7
y	1.8	148	0.6	19.1	22	6.3	-7.4	y	-1.9	103	2.4	52.5	8	18.0	-2.8	y	1.0	161	13.3	51.0	22	23.5	-0.7
y	1.8	148	19.7	19.2	21	58.9	-7.4	y	-1.9	103	55.0	52.4	8	15.2	-3.0	y	1.0	162	4.3	51.0	22	22.8	-0.8
y	1.8	148	38.9	19.3	21	51.5	-7.7	y	-1.9	104	47.4	52.3	8	12.2	-2.9	y	1.0	162	55.3	50.9	22	22.0	-0.7
y	1.8	148	58.2	19.3	21	43.8	-7.8	y	-1.9	105	39.7	52.2	8	9.3	-3.1	y	1.0	163	46.2	50.9	22	21.3	-0.7
y	1.8	149	17.6	19.4	21	36.0	-7.9	y	-1.9	106	31.9	52.1	8	6.2	-3.0	y	1.0	164	37.1	50.9	22	20.6	-0.8
y	1.8	149	37.0	19.5	21	28.1	-8.1	y	-1.9	107	23.9	52.0	8	3.2	-3.1	y	1.0	165	28.0	50.9	22	19.8	-0.7
y	1.8	149	56.5	19.6	21	20.0	-8.3	y	-1.9	108	15.9	51.8	8	0.1	-3.2	y	1.0	166	18.9	50.9	22	19.1	-0.8
y	1.8	150	16.0	19.6	21	11.7	-8.4	y	-1.9	109	7.7	51.7	7	56.9	-3.2	y	1.0	167	9.8	50.9	22	18.3	-0.8
y	1.8	150	35.7	19.7	21	3.3	-8.5	y	-1.9	109	59.5	51.6	7	53.7	-3.2	y	1.0	168	0.6	50.8	22	17.5	-0.7
y	1.8	150	55.4	19.8	20	54.8	-8.7	y	-1.9	110	51.1	51.5	7	50.5	-3.3	y	1.0	168	51.5	50.8	22	16.8	-0.8
y	1.8	151	15.2	19.9	20	46.1	-8.8	y	-1.9	111	42.6	51.4	7	47.2	-3.4	y	1.0	169	42.3	50.8	22	16.0	-0.8
y	1.8	151	35.1	20.0	20	37.3	-9.0	y	-1.9	112	34.0	51.3	7	43.8	-3.4	y	1.0	170	33.1	50.8	22	15.2	-0.8
y	1.8	151	55.0	20.0	20	28.3	-9.1	y	-1.9	113	25.3	51.2	7	40.4	-3.4	y	1.0	171	24.0	50.8	22	14.4	-0.9
y	1.8	152	15.1	20.1	20	19.2	-9.2	y	-1.9	114	16.5	51.1	7	37.0	-3.4	y	0.9	172	14.8	50.8	22	13.5	-0.8
y	1.8	152	35.2	20.2	20	10.0	-9.4	y	-1.9	115	7.7	51.0	7	33.6	-3.5	y	0.9	173	5.6	50.8	22	12.7	-0.8
y	1.8	152	55.3	20.3	20	0.6	-9.5	y	-1.9	115	58.7	50.9	7	30.1	-3.6	y	0.9	173	56.4	50.8	22	11.9	-0.9
y	1.8	153	15.6	20.3	19	51.1	-9.7	y	-1.8	116	49.6	50.8	7	26.5	-3.6	y	0.9	174	47.1	50.8	22	11.0	-0.8
y	1.8	153	35.9	20.4	19	41.4	-9.8	y	-1.8	117	40.4	50.7	7	22.9	-3.6	y	0.9	175	37.9	50.8	22	10.2	-0.9
y	1.8	153	56.3	20.5	19	31.6	-9.9	y	-1.8	118	31.1	50.6	7	19.3	-3.7	y	0.9	176	28.7	50.8	22	9.3	-0.8
y	1.8	154	16.8	20.6	19	21.7	-10.0	y	-1.8	119	21.8	50.5	7	15.6	-3.7	y	0.9	177	19.5	50.8	22	8.5	-0.9
y	1.8	154	37.4	20.6	19	11.7	-10.2	y	-1.8	120	12.3	50.5	7	11.9	-3.7	y	0.9	178	10.3	50.8	22	7.6	-0.9
y	1.8	154	58.0	20.7	19	1.5	-10.3	y	-1.8	121	2.8	50.4	7	8.2	-3.8	y	0.9	179	1.1	50.8	22	6.7	-0.9
y	1.8	155	18.7	20.8	18	51.2	-10.4	y	-1.8	121	53.1	50.3	7	4.4	-3.8	y	0.9	179	51.9	50.8	22	5.8	-0.9
y	1.8	155	39.5	20.8	18	40.8	-10.6																

2004

Sun and Planets

Date	SUN					Mercury						Venus					Date
	GHA	d	Dec	d		GHA	d	dd	Dec	d	dd	GHA	d	Dec	d		
	o	'	o	'	vis mag	o	'	'	o	'	'	o	'	o	'		
Jul 14	178 32.9	-1.6	21 39.6	-9.3	ss -0.1	154 2.3	-25.8	-1.4	17 11.4	-33.6	0.2	sr -4.5	219 57.1	29.8	17 41.4	3.0	Jul 14
15	178 31.3	-1.5	21 30.3	-9.7	ss 0.0	153 36.4	-23.1	-1.4	16 37.8	-33.9	0.1	sr -4.5	220 26.9	28.3	17 44.4	3.4	15
16	178 29.8	-1.4	21 20.6	-10.0	ss 0.0	153 13.3	-20.4	-1.4	16 3.9	-34.2	0.1	sr -4.5	220 55.2	26.6	17 47.8	3.7	16
17	178 28.5	-1.2	21 10.6	-10.4	ss 0.1	152 52.9	-17.7	-1.4	15 29.7	-34.2	0.0	sr -4.5	221 22.0	25.4	17 51.5	3.9	17
18	178 27.2	-1.1	21 0.2	-10.8	ss 0.1	152 35.2	-15.0	-1.4	14 55.5	-34.3	0.0	sr -4.5	221 47.4	24.0	17 55.4	4.3	18
19	178 26.2	-0.9	20 49.4	-11.1	ss 0.1	152 20.2	-12.3	-1.4	14 21.2	-34.2	0.0	sr -4.5	222 11.4	22.7	17 59.7	4.4	19
20	178 25.2	-0.8	20 38.3	-11.5	ss 0.2	152 7.9	-9.6	-1.4	13 47.0	-34.2	0.0	sr -4.5	222 34.0	21.4	18 4.1	4.6	20
21	178 24.4	-0.7	20 26.8	-11.8	ss 0.2	151 58.3	-6.8	-1.4	13 12.8	-33.9	-0.2	sr -4.5	222 55.4	20.1	18 8.7	4.7	21
22	178 23.8	-0.5	20 15.0	-12.1	ss 0.3	151 51.4	-4.1	-1.4	12 38.9	-33.6	-0.1	sr -4.5	223 15.6	18.9	18 13.4	4.9	22
23	178 23.2	-0.4	20 2.9	-12.5	ss 0.3	151 47.4	-1.3	-1.4	12 5.3	-33.2	-0.2	sr -4.5	223 34.5	17.8	18 18.3	5.0	23
24	178 22.9	-0.2	19 50.4	-12.8	ss 0.3	151 46.1	1.6	-1.4	11 32.1	-32.8	-0.2	sr -4.5	223 52.3	16.6	18 23.3	5.1	24
25	178 22.7	-0.1	19 37.6	-13.1	ss 0.4	151 47.7	4.5	-1.5	10 59.3	-32.3	-0.3	sr -4.5	224 8.9	15.5	18 28.4	5.1	25
26	178 22.6	0.1	19 24.5	-13.5	ss 0.4	151 52.2	7.5	-1.5	10 27.0	-31.6	-0.3	sr -4.4	224 24.5	14.5	18 33.5	5.1	26
27	178 22.7	0.3	19 11.0	-13.7	ss 0.4	151 59.7	10.5	-1.5	9 55.4	-30.8	-0.4	sr -4.4	224 38.9	13.5	18 38.6	5.2	27
28	178 23.0	0.4	18 57.3	-14.1	ss 0.5	152 10.2	13.6	-1.6	9 24.6	-30.1	-0.4	sr -4.4	224 52.4	12.5	18 43.8	5.1	28
29	178 23.4	0.6	18 43.2	-14.4	ss 0.5	152 23.8	16.9	-1.6	8 54.5	-29.1	-0.5	sr -4.4	225 4.9	11.5	18 48.9	5.0	29
30	178 23.9	0.7	18 28.8	-14.7	ss 0.6	152 40.7	20.2	-1.7	8 25.4	-28.1	-0.5	sr -4.4	225 16.3	10.5	18 53.9	5.0	30
Jul 31	178 24.7	0.9	18 14.1	-15.0	ss 0.6	153 0.9	23.6	-1.7	7 57.3	-27.0	-0.6	sr -4.4	225 26.9	9.6	18 58.9	4.9	Jul 31
Aug 1	178 25.5	1.0	17 59.1	-15.2	ss 0.7	153 24.5	27.2	-1.8	7 30.3	-25.6	-0.7	sr -4.4	225 36.5	8.8	19 3.8	4.8	Aug 1
2	178 26.6	1.2	17 43.9	-15.6	ss 0.7	153 51.7	30.9	-1.8	7 4.7	-24.3	-0.7	sr -4.4	225 45.3	7.9	19 8.6	4.6	2
3	178 27.7	1.3	17 28.3	-15.8	ss 0.8	154 22.5	34.7	-1.9	6 40.4	-22.8	-0.8	sr -4.4	225 53.2	7.1	19 13.2	4.5	3
4	178 29.0	1.5	17 12.5	-16.2	ss 0.9	154 57.2	38.6	-2.0	6 17.6	-21.2	-0.8	sr -4.4	226 0.2	6.3	19 17.7	4.3	4
5	178 30.5	1.6	16 56.3	-16.4	ss 0.9	155 35.8	42.7	-2.0	5 56.4	-19.3	-1.0	sr -4.4	226 6.5	5.5	19 22.0	4.1	5
6	178 32.1	1.8	16 39.9	-16.6	ss 1.0	156 18.6	47.0	-2.1	5 37.1	-17.5	-0.9	sr -4.4	226 12.0	4.7	19 26.1	3.9	6
7	178 33.9	1.9	16 23.3	-17.0	ss 1.1	157 5.5	51.4	-2.2	5 19.6	-15.3	-1.1	sr -4.4	226 16.7	4.0	19 30.0	3.7	7
8	178 35.8	2.0	16 6.3	-17.2	ss 1.2	157 56.9	55.9	-2.3	5 4.3	-13.1	-1.1	sr -4.4	226 20.7	3.3	19 33.7	3.4	8
9	178 37.8	2.2	15 49.1	-17.4	ss 1.3	158 52.8	60.5	-2.3	4 51.2	-10.7	-1.2	sr -4.4	226 24.0	2.6	19 37.1	3.2	9
10	178 40.0	2.3	15 31.7	-17.7	ss 1.4	159 53.2	65.2	-2.4	4 40.5	-8.2	-1.3	sr -4.4	226 26.6	2.0	19 40.3	2.8	10
11	178 42.3	2.5	15 14.0	-18.0	ss 1.5	160 58.4	69.9	-2.4	4 32.3	-5.5	-1.3	sr -4.4	226 28.6	1.3	19 43.1	2.6	11
12	178 44.8	2.6	14 56.0	-18.2	ss 1.6	162 8.4	74.7	-2.4	4 26.8	-2.7	-1.4	sr -4.3	226 29.9	0.7	19 45.7	2.3	12
13	178 47.4	2.7	14 37.8	-18.4	ss 1.8	163 23.1	79.5	-2.4	4 24.1	0.2	-1.4	sr -4.3	226 30.7	0.2	19 48.0	1.9	13
14	178 50.1	2.9	14 19.4	-18.6	ss 1.9	164 42.6	84.1	-2.3	4 24.3	3.3	-1.6	sr -4.3	226 30.8	-0.4	19 49.9	1.6	14
15	178 53.0	3.0	14 0.8	-18.9	ss 2.0	166 6.6	88.5	-2.2	4 27.6	6.4	-1.5	sr -4.3	226 30.4	-0.9	19 51.5	1.2	15
16	178 56.0	3.1	13 41.9	-19.1	ss 2.1	167 35.2	92.7	-2.1	4 34.0	9.4	-1.5	sr -4.3	226 29.5	-1.5	19 52.7	0.9	16
17	178 59.1	3.3	13 22.8	-19.3	ss 2.2	169 7.9	96.6	-1.9	4 43.4	12.6	-1.6	sr -4.3	226 28.0	-2.0	19 53.6	0.5	17
18	179 2.4	3.4	13 3.5	-19.5	ss 2.3	170 44.5	99.9	-1.7	4 56.0	15.5	-1.4	sr -4.3	226 26.1	-2.4	19 54.1	0.2	18
19	179 5.7	3.5	12 44.0	-19.7	2.4	172 24.4	102.7	-1.4	5 11.5	18.5	-1.5	sr -4.3	226 23.6	-2.9	19 54.3	-0.3	19
20	179 9.3	3.6	12 24.3	-19.9	2.5	174 7.1	104.8	-1.0	5 30.0	21.0	-1.3	sr -4.3	226 20.8	-3.3	19 54.0	-0.7	20
21	179 12.9	3.7	12 4.4	-20.1	2.6	175 51.8	106.1	-0.7	5 51.0	23.5	-1.3	sr -4.3	226 17.4	-3.7	19 53.3	-1.1	21
22	179 16.6	3.9	11 44.3	-20.3	2.7	177 37.9	106.5	-0.2	6 14.5	25.5	-1.0	sr -4.3	226 13.7	-4.1	19 52.2	-1.5	22
23	179 20.5	4.0	11 24.0	-20.4	2.9	179 24.5	106.0	0.2	6 40.0	27.1	-0.8	sr -4.3	226 9.6	-4.5	19 50.7	-2.0	23
24	179 24.5	4.1	11 3.6	-20.7	3.0	181 10.5	104.6	0.7	7 7.1	28.4	-0.6	sr -4.3	226 5.1	-4.9	19 48.7	-2.4	24
25	179 28.6	4.2	10 42.9	-20.8	3.1	182 55.1	102.1	1.2	7 35.5	29.1	-0.4	sr -4.3	226 0.2	-5.2	19 46.3	-2.8	25
26	179 32.8	4.3	10 22.1	-20.9	3.2	184 37.1	98.6	1.7	8 4.6	29.3	-0.1	sr -4.3	225 55.0	-5.6	19 43.5	-3.3	26
27	179 37.1	4.4	10 1.2	-21.1	2.9	186 15.8	94.2	2.2	8 33.9	29.0	0.1	sr -4.3	225 49.4	-5.9	19 40.2	-3.8	27
28	179 41.4	4.5	9 40.1	-21.3	sr 2.7	187 50.0	88.9	2.6	9 2.9	28.3	0.4	sr -4.3	225 43.5	-6.2	19 36.4	-4.2	28
29	179 45.9	4.6	9 18.8	-21.4	sr 2.4	189 18.9	82.9	3.0	9 31.2	27.0	0.7	sr -4.2	225 37.4	-6.5	19 32.2	-4.7	29
30	179 50.5	4.7	8 57.4	-21.6	sr 2.2	190 41.8	76.1	3.4	9 58.2	25.3	0.9	sr -4.2	225 30.9	-6.7	19 27.5	-5.2	30
Aug 31	179 55.2	4.7	8 35.8	-21.7	sr 1.9	191 57.9	68.8	3.7	10 23.5	23.2	1.0	sr -4.2	225 24.2	-7.0	19 22.3	-5.6	Aug 31
Sep 1	179 59.9	4.8	8 14.1	-21.8	sr 1.7	193 6.7	61.1	3.9	10 46.7	20.7	1.3	sr -4.2	225 17.2	-7.2	19 16.7	-6.1	Sep 1
2	180 4.7	4.9	7 52.3	-22.0	sr 1.4	194 7.8	53.1	4.0	11 7.4	18.0	1.4	sr -4.2	225 10.0	-7.4	19 10.6	-6.7	2
3	180 9.6	4.9	7 30.3	-22.0	sr 1.2	195 0.9	44.9	4.1	11 25.4	14.8	1.6	sr -4.2	225 2.6	-7.6	19 3.9	-7.1	3
4	180 14.5	5.0	7 8.3	-22.2	sr 0.9	195 45.7	36.6	4.1	11 40.2	11.6	1.6	sr -4.2	224 54.9	-7.8	18 56.8	-7.6	4
5	180 19.5	5.0	6 46.1	-22.3	sr 0.7	196 22.4	28.5	4.1	11 51.8	8.2	1.7	sr -4.2	224 47.1	-8.0	18 49.2	-8.1	5
6	180 24.6	5.1	6 23.8	-22.5	sr 0.4	196 50.8	20.5	4.0	12 0.0	4.5	1.9	sr -4.2	224 39.1	-8.2	18 41.1	-8.6	6
7	180 29.7	5.1	6 1.3	-22.5	sr 0.2	197 11.3	12.8	3.9	12 4.5	0.8	1.9	sr -4.2	224 30.9	-8.3	18 32.5	-9.1	7
8	180 34.8	5.2	5 38.8	-22.6	sr 0.0	197 24.1	5.4	3.7	12 5.3	-2.8	1.8	sr -4.2	224 22.6	-8.5	18 23.4	-9.6	8
9	180 40.0	5.2	5 16.2	-22.7	sr -0.2	197 29.5	-1.5	3.5	12 2.5	-6.7	2.0	sr -4.2	224 14.1	-8.6	18 13.8	-10.1	9
10	180 45.2	5.2	4 53.5	-22.8	sr -0.3	197 28.0	-7.9	3.2	11 55.8	-10.4	1.8	sr -4.2	224 5.5	-8.7	18 3.7	-10.6	10
11	180 50.4	5.3	4 30.7	-22.9	sr -0.5	197 20.1	-13.7	2.9	11 45.4	-14.0	1.8	sr -4.2	223 56.8	-8.8	17 53.1	-11.1	11
12	180 55.7	5.3	4 7.8	-22.9	sr -0.6</												

Mars							Jupiter							Saturn									
vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d				
y	1.8	156	42.3	21.1	18	8.7	-10.9	y	-1.8	125	13.7	49.9	6	48.9	-4.0	0.9	183	15.0	50.8	22	2.2	-0.9	
y	1.8	157	3.3	21.1	17	57.8	-11.0	y	-1.8	126	3.7	49.9	6	44.9	-4.0	0.9	184	5.8	50.8	22	1.3	-1.0	
y	1.8	157	24.5	21.2	17	46.8	-11.2	y	-1.8	126	53.5	49.8	6	40.9	-4.0	0.9	184	56.7	50.8	22	0.3	-0.9	
y	1.8	157	45.7	21.3	17	35.6	-11.3	y	-1.8	127	43.3	49.7	6	36.9	-4.1	1.0	185	47.5	50.8	21	59.4	-0.9	
y	1.8	158	6.9	21.4	17	24.3	-11.4	y	-1.8	128	33.0	49.6	6	32.8	-4.1	y	1.0	186	38.3	50.9	21	58.5	-1.0
y	1.8	158	28.3	21.4	17	12.9	-11.5	y	-1.8	129	22.6	49.5	6	28.7	-4.1	y	1.0	187	29.2	50.9	21	57.5	-0.9
y	1.8	158	49.7	21.5	17	1.4	-11.6	y	-1.8	130	12.2	49.5	6	24.6	-4.2	y	1.0	188	20.0	50.9	21	56.6	-1.0
y	1.8	159	11.2	21.6	16	49.8	-11.7	y	-1.8	131	1.6	49.4	6	20.4	-4.2	y	1.0	189	10.9	50.9	21	55.6	-1.0
y	1.8	159	32.8	21.6	16	38.1	-11.8	y	-1.8	131	51.0	49.3	6	16.2	-4.2	y	1.0	190	1.8	50.9	21	54.6	-0.9
y	1.8	159	54.4	21.7	16	26.3	-12.0	y	-1.8	132	40.4	49.3	6	12.0	-4.3	y	1.0	190	52.7	50.9	21	53.7	-1.0
y	1.8	160	16.1	21.8	16	14.3	-12.0	y	-1.8	133	29.6	49.2	6	7.7	-4.3	y	1.0	191	43.7	51.0	21	52.7	-1.0
y	1.8	160	37.9	21.8	16	2.3	-12.2	y	-1.8	134	18.8	49.1	6	3.4	-4.3	y	1.0	192	34.6	51.0	21	51.7	-1.0
y	1.8	160	59.7	21.9	15	50.1	-12.2	y	-1.8	135	7.9	49.1	5	59.1	-4.4	y	1.0	193	25.6	51.0	21	50.7	-1.0
y	1.8	161	21.6	22.0	15	37.9	-12.4	y	-1.8	135	57.0	49.0	5	54.7	-4.4	y	1.0	194	16.6	51.0	21	49.7	-1.0
y	1.8	161	43.6	22.0	15	25.5	-12.4	y	-1.7	136	46.0	48.9	5	50.3	-4.4	y	1.0	195	7.6	51.0	21	48.7	-1.0
y	1.8	162	5.7	22.1	15	13.1	-12.6	y	-1.7	137	34.9	48.9	5	45.9	-4.4	y	1.0	195	58.6	51.1	21	47.7	-1.0
y	1.8	162	27.8	22.2	15	0.5	-12.6	y	-1.7	138	23.8	48.8	5	41.5	-4.5	y	1.0	196	49.7	51.1	21	46.7	-1.0
y	1.8	162	49.9	22.2	14	47.9	-12.7	y	-1.7	139	12.6	48.8	5	37.0	-4.5	y	1.0	197	40.8	51.1	21	45.7	-1.0
y	1.8	163	12.2	22.3	14	35.2	-12.9	y	-1.7	140	1.4	48.7	5	32.5	-4.5	y	1.0	198	31.9	51.1	21	44.7	-1.0
y	1.8	163	34.5	22.4	14	22.3	-12.9	y	-1.7	140	50.1	48.6	5	28.0	-4.5	y	1.0	199	23.0	51.2	21	43.7	-1.0
y	1.8	163	56.8	22.4	14	9.4	-13.0	y	-1.7	141	38.7	48.6	5	23.5	-4.6	y	1.0	200	14.2	51.2	21	42.7	-1.0
y	1.8	164	19.3	22.5	13	56.4	-13.1	y	-1.7	142	27.3	48.5	5	18.9	-4.5	y	1.0	201	5.4	51.2	21	41.7	-1.0
y	1.8	164	41.8	22.5	13	43.3	-13.2	y	-1.7	143	15.9	48.5	5	14.4	-4.7	y	1.0	201	56.7	51.3	21	40.7	-1.1
y	1.8	165	4.3	22.6	13	30.1	-13.2	y	-1.7	144	4.3	48.4	5	9.7	-4.6	y	1.0	202	47.9	51.3	21	39.6	-1.0
y	1.8	165	26.9	22.6	13	16.9	-13.4	y	-1.7	144	52.8	48.4	5	5.1	-4.6	y	1.0	203	39.2	51.3	21	38.6	-1.0
y	1.8	165	49.5	22.7	13	3.5	-13.5	y	-1.7	145	41.1	48.3	5	0.5	-4.7	y	1.0	204	30.6	51.4	21	37.6	-1.1
y	1.8	166	12.2	22.7	12	50.0	-13.5	y	-1.7	146	29.5	48.3	4	55.8	-4.7	y	1.0	205	21.9	51.4	21	36.5	-1.0
y	1.8	166	35.0	22.8	12	36.5	-13.6	y	-1.7	147	17.7	48.2	4	51.1	-4.8	y	1.0	206	13.3	51.4	21	35.5	-1.0
y	1.8	166	57.8	22.8	12	22.9	-13.7	y	-1.7	148	6.0	48.2	4	46.3	-4.7	y	1.0	207	4.8	51.5	21	34.5	-1.0
y	1.8	167	20.6	22.9	12	9.2	-13.7	y	-1.7	148	54.2	48.1	4	41.6	-4.8	y	1.0	207	56.3	51.5	21	33.5	-1.1
y	1.8	167	43.5	22.9	11	55.5	-13.9	y	-1.7	149	42.3	48.1	4	36.8	-4.8	y	1.0	208	47.8	51.6	21	32.4	-1.0
y	1.8	168	6.5	23.0	11	41.6	-13.9	y	-1.7	150	30.4	48.0	4	32.0	-4.8	y	1.0	209	39.3	51.6	21	31.4	-1.0
y	1.8	168	29.5	23.0	11	27.7	-14.0	y	-1.7	151	18.4	48.0	4	27.2	-4.8	y	1.0	210	30.9	51.6	21	30.4	-1.1
y	1.8	168	52.5	23.1	11	13.7	-14.0	y	-1.7	152	6.4	48.0	4	22.4	-4.8	y	1.0	211	22.6	51.7	21	29.3	-1.0
y	1.8	169	15.6	23.1	10	59.7	-14.2	y	-1.7	152	54.4	47.9	4	17.6	-4.9	y	1.0	212	14.3	51.7	21	28.3	-1.0
y	1.8	169	38.7	23.2	10	45.5	-14.2	y	-1.7	153	42.3	47.9	4	12.7	-4.9	y	1.0	213	6.0	51.8	21	27.3	-1.1
y	1.8	170	1.9	23.2	10	31.3	-14.2	y	-1.7	154	30.2	47.9	4	7.8	-4.8	y	1.0	213	57.8	51.8	21	26.2	-1.0
y	1.8	170	25.1	23.3	10	17.1	-14.3	y	-1.7	155	18.1	47.8	4	3.0	-5.0	y	1.0	214	49.6	51.9	21	25.2	-1.0
y	1.8	170	48.3	23.3	10	2.8	-14.4	y	-1.7	156	5.9	47.8	3	58.0	-4.9	y	1.0	215	41.5	51.9	21	24.2	-1.0
y	1.8	171	11.6	23.3	9	48.4	-14.5	y	-1.7	156	53.7	47.7	3	53.1	-4.9	y	1.0	216	33.5	52.0	21	23.2	-1.1
y	1.8	171	35.0	23.4	9	33.9	-14.5	y	-1.7	157	41.4	47.7	3	48.2	-5.0	y	1.0	217	25.5	52.0	21	22.1	-1.0
y	1.8	171	58.3	23.4	9	19.4	-14.6	y	-1.7	158	29.1	47.7	3	43.2	-4.9	y	1.0	218	17.5	52.1	21	21.1	-1.0
y	1.8	172	21.7	23.4	9	4.8	-14.6	y	-1.7	159	16.8	47.7	3	38.3	-5.0	y	1.0	219	9.6	52.1	21	20.1	-1.0
y	1.8	172	45.2	23.5	8	50.2	-14.7	y	-1.7	160	4.5	47.6	3	33.3	-5.0	y	1.0	220	1.7	52.2	21	19.1	-1.0
y	1.8	173	8.7	23.5	8	35.5	-14.7	y	-1.7	160	52.1	47.6	3	28.3	-5.0	y	1.0	220	54.0	52.3	21	18.1	-1.0
y	1.8	173	32.2	23.5	8	20.8	-14.8	y	-1.7	161	39.7	47.6	3	23.3	-5.0	y	1.0	221	46.2	52.3	21	17.1	-1.0
y	1.8	173	55.7	23.6	8	6.0	-14.9	y	-1.7	162	27.3	47.5	3	18.3	-5.1	y	1.0	222	38.5	52.4	21	16.1	-1.0
y	1.8	174	19.3	23.6	7	51.1	-14.9	y	-1.7	163	14.8	47.5	3	13.2	-5.0	y	1.0	223	30.9	52.4	21	15.1	-1.0
y	1.8	174	42.9	23.7	7	36.2	-14.9	y	-1.7	164	2.3	47.5	3	8.2	-5.1	y	1.0	224	23.4	52.5	21	14.1	-1.0
y	1.8	175	6.5	23.6	7	21.3	-15.0	y	-1.7	164	49.8	47.5	3	3.1	-5.0	y	1.0	225	15.9	52.6	21	13.1	-1.0
y	1.8	175	30.1	23.7	7	6.3	-15.0	y	-1.7	165	37.3	47.5	2	58.1	-5.1	y	1.0	226	8.4	52.6	21	12.1	-0.9
y	1.8	175	53.8	23.7	6	51.3	-15.1	y	-1.7	166	24.7	47.4	2	53.0	-5.1	y	1.0	227	1.1	52.7	21	11.2	-1.0
y	1.8	176	17.5	23.7	6	36.2	-15.2	y	-1.7	167	12.2	47.4	2	47.9	-5.0	y	1.0	227	53.8	52.8	21	10.2	-1.0
y	1.8	176	41.2	23.7	6	21.0	-15.1	y	-1.7	167	59.6	47.4	2	42.9	-5.1	y	1.0	228	46.5	52.8	21	9.2	-0.9
y	1.8	177	4.9	23.7	6	5.9	-15.2	y	-1.7	168	47.0	47.4	2	37.8	-5.1	y	1.0	229	39.3	52.9	21	8.3	-1.0
y	1.7	177	28.6	23.7	5	50.7	-15.3	y	-1.7	169	34.3	47.4	2	32.7	-5.1	y	1.0	230	32.2	53.0	21	7.3	-0.9
y	1.7	177	52.4	23.8	5	35.4	-15.3	y	-1.7	170	21.7	47.3	2	27.6	-5.2	y	1.0	231	25.2	53.0	21	6.4	-0.9
y	1.7	178	16.1	23.8	5	20.1	-15.3	y	-1.7	171	9.0	47.3	2	22.4	-5.1	y	1.0	232	18.2	53.1	21	5.5	-1.0
y	1.7	178	39.9	23.8	5	4.8	-15.4	y	-1.7	171	56.4	47.3	2	17.3	-5.1	y	1.0	233	11.3	53.2	21	4.5	-0.9
y	1.7	179	3.6	23.8	4	49.4	-15.4	y	-1.7	172	43.7	47.3	2	12.2	-5.1	y	1.0	234	4.5	53.3	21	3.6	-0.9
y	1.7	179	27.4	23.8	4	34.0	-15.4	y	-1.7	173	31.0	47.3	2	7.1	-5.2	y	1.0	234	57.8	53.3	21	2.7	-0.9
y	1.7	179	51.2	23.8	4	18.6	-15.4	y	-1.7	174	18.2	47.3	2	1.9	-5.1	y	1.0	235	51.1	53.4	21	1.8	-0.9
y	1.7	180	15.0	23.8	4	3.2	-15.5	y	-1.7	175	5.5	47.3	1	56.8	-5.1	y	1.0	236	44.5	5			

2004

Sun and Planets

Date	SUN					Mercury					Venus					Date									
	GHA	d	Dec	d		GHA	d	dd	Dec	d	dd	GHA	d	Dec	d										
	o	'	o	'		vis mag	o	'	o	'	'	vis mag	o	'	o		'								
Sep 17	181	22.3	5.3	2	12.5	-23.2	Sr	-1.0	194	50.5	-36.5	1.2	9	31.4	-32.6	1.3	Sr	-4.2	223	3.2	-9.1	16	39.3	-14.0	Sep 17
18	181	27.6	5.3	1	49.3	-23.3	Sr	-1.1	194	14.0	-38.4	0.9	8	58.8	-35.0	1.2	Sr	-4.2	222	54.1	-9.1	16	25.3	-14.5	18
19	181	32.9	5.3	1	26.0	-23.3	Sr	-1.1	193	35.7	-39.8	0.7	8	23.8	-37.0	1.0	Sr	-4.2	222	45.0	-9.1	16	10.8	-15.0	19
20	181	38.2	5.3	1	2.7	-23.3	Sr	-1.1	192	55.9	-40.8	0.5	7	46.8	-39.0	1.0	Sr	-4.1	222	35.9	-9.1	15	55.8	-15.4	20
21	181	43.5	5.3	0	39.4	-23.4	Sr	-1.2	192	15.1	-41.5	0.3	7	7.8	-40.5	0.8	Sr	-4.1	222	26.7	-9.1	15	40.4	-15.8	21
22	181	48.8	5.3	0	16.0	-23.3	Sr	-1.2	191	33.6	-41.8	0.2	6	27.3	-41.9	0.7	Sr	-4.1	222	17.6	-9.1	15	24.6	-16.3	22
23	181	54.1	5.2	-0	7.3	-23.4	Sr	-1.2	190	51.8	-41.9	0.1	5	45.4	-43.1	0.6	Sr	-4.1	222	8.5	-9.1	15	8.3	-16.8	23
24	181	59.4	5.2	-0	30.7	-23.3	Sr	-1.3	190	9.9	-41.8	0.0	5	2.3	-44.1	0.5	Sr	-4.1	221	59.4	-9.1	14	51.5	-17.2	24
25	182	4.6	5.2	-0	54.0	-23.4		-1.3	189	28.0	-41.6	-0.1	4	18.2	-44.8	0.3	Sr	-4.1	221	50.4	-9.0	14	34.3	-17.7	25
26	182	9.7	5.1	-1	17.4	-23.4		-1.3	188	46.5	-41.2	-0.2	3	33.4	-45.5	0.3	Sr	-4.1	221	41.3	-9.0	14	16.6	-18.0	26
27	182	14.9	5.1	-1	40.8	-23.3		-1.4	188	5.3	-40.7	-0.2	2	47.9	-46.0	0.3	Sr	-4.1	221	32.3	-9.0	13	58.6	-18.5	27
28	182	19.9	5.0	-2	4.1	-23.3		-1.4	187	24.6	-40.1	-0.3	2	1.9	-46.4	0.2	Sr	-4.1	221	23.3	-8.9	13	40.1	-18.9	28
29	182	25.0	5.0	-2	27.4	-23.3		-1.4	186	44.4	-39.5	-0.3	1	15.5	-46.5	0.0	Sr	-4.1	221	14.4	-8.9	13	21.2	-19.4	29
Sep 30	182	29.9	4.9	-2	50.7	-23.3		-1.4	186	4.9	-38.9	-0.3	0	29.0	-46.7	0.1	Sr	-4.1	221	5.5	-8.9	13	1.8	-19.7	Sep 30
Oct 1	182	34.8	4.8	-3	14.0	-23.3		-1.5	185	26.0	-38.2	-0.3	-0	17.7	-46.7	0.0	Sr	-4.1	220	56.6	-8.8	12	42.1	-20.1	Oct 1
2	182	39.6	4.7	-3	37.3	-23.2		-1.5	184	47.7	-37.6	-0.3	-1	4.4	-46.7	0.0	Sr	-4.1	220	47.8	-8.8	12	22.0	-20.5	2
3	182	44.4	4.6	-4	0.5	-23.1		-1.5	184	10.2	-36.9	-0.3	-1	51.1	-46.5	-0.1	Sr	-4.1	220	39.0	-8.7	12	1.5	-20.9	3
4	182	49.0	4.6	-4	23.6	-23.1		-1.5	183	33.2	-36.3	-0.3	-2	37.6	-46.2	-0.2	Sr	-4.1	220	30.3	-8.7	11	40.6	-21.3	4
5	182	53.6	4.5	-4	46.7	-23.1		-1.5	182	56.9	-35.7	-0.3	-3	23.8	-46.0	-0.1	Sr	-4.1	220	21.6	-8.6	11	19.3	-21.6	5
6	182	58.0	4.4	-5	9.8	-23.0		0.0	182	21.2	-35.1	-0.3	-4	9.8	-45.7	-0.2	Sr	-4.1	220	13.0	-8.6	10	57.7	-22.0	6
7	183	2.4	4.3	-5	32.8	-22.9		-1.5	181	46.1	-34.6	-0.3	-4	55.5	-45.3	-0.2	Sr	-4.1	220	4.5	-8.5	10	35.7	-22.3	7
8	183	6.6	4.1	-5	55.7	-22.8		-1.4	181	11.6	-34.0	-0.3	-5	40.8	-44.8	-0.3	Sr	-4.1	219	55.9	-8.5	10	13.4	-22.6	8
9	183	10.8	4.0	-6	18.5	-22.8		-1.3	180	37.5	-33.6	-0.2	-6	25.6	-44.4	-0.2	Sr	-4.1	219	47.5	-8.4	9	50.8	-23.0	9
10	183	14.8	3.9	-6	41.3	-22.7		-1.2	180	4.0	-33.1	-0.2	-7	10.0	-43.9	-0.3	Sr	-4.1	219	39.1	-8.4	9	27.8	-23.3	10
11	183	18.7	3.8	-7	4.0	-22.6		-1.2	179	30.8	-32.7	-0.2	-7	53.9	-43.3	-0.3	Sr	-4.1	219	30.7	-8.3	9	4.5	-23.6	11
12	183	22.5	3.7	-7	26.6	-22.4		-1.1	178	58.1	-32.4	-0.2	-8	37.2	-42.8	-0.3	Sr	-4.1	219	22.4	-8.3	8	40.9	-23.9	12
13	183	26.2	3.5	-7	49.0	-22.4		-1.0	178	25.7	-32.0	-0.2	-9	20.0	-42.2	-0.3	Sr	-4.1	219	14.1	-8.2	8	17.0	-24.1	13
14	183	29.7	3.4	-8	11.4	-22.3		-1.0	177	53.7	-31.8	-0.1	-10	2.2	-41.5	-0.4	Sr	-4.1	219	5.9	-8.2	7	52.9	-24.5	14
15	183	33.1	3.2	-8	33.7	-22.1		-0.9	177	22.0	-31.5	-0.1	-10	43.7	-40.9	-0.3	Sr	-4.1	218	57.8	-8.1	7	28.4	-24.7	15
16	183	36.3	3.1	-8	55.8	-22.0		-0.9	176	50.5	-31.3	-0.1	-11	24.6	-40.3	-0.3	Sr	-4.1	218	49.6	-8.1	7	3.7	-24.9	16
17	183	39.4	3.0	-9	17.8	-21.9		-0.8	176	19.2	-31.1	-0.1	-12	4.9	-39.5	-0.4	Sr	-4.1	218	41.5	-8.1	6	38.8	-25.2	17
18	183	42.4	2.8	-9	39.7	-21.7	ss	-0.8	175	48.1	-30.9	-0.1	-12	44.4	-38.8	-0.4	Sr	-4.1	218	33.5	-8.0	6	13.6	-25.5	18
19	183	45.2	2.7	-10	1.4	-21.6	ss	-0.7	175	17.1	-30.8	-0.1	-13	23.2	-38.1	-0.4	Sr	-4.1	218	25.5	-8.0	5	48.1	-25.6	19
20	183	47.8	2.5	-10	23.0	-21.4	ss	-0.7	174	46.3	-30.7	-0.1	-14	1.3	-37.3	-0.4	Sr	-4.1	218	17.5	-8.0	5	22.5	-25.9	20
21	183	50.3	2.3	-10	44.4	-21.3	ss	-0.6	174	15.6	-30.6	0.0	-14	38.6	-36.6	-0.4	Sr	-4.1	218	9.5	-8.0	4	56.6	-26.0	21
22	183	52.6	2.2	-11	5.7	-21.1	ss	-0.6	173	45.0	-30.6	0.0	-15	15.2	-35.7	-0.5	Sr	-4.1	218	1.6	-7.9	4	30.6	-26.3	22
23	183	54.8	2.0	-11	26.8	-20.9	ss	-0.6	173	14.4	-30.6	0.0	-15	50.9	-35.0	-0.4	Sr	-4.0	217	53.6	-7.9	4	4.3	-26.4	23
24	183	56.8	1.8	-11	47.7	-20.7	ss	-0.5	172	43.8	-30.6	0.0	-16	25.9	-34.0	-0.5	Sr	-4.0	217	45.7	-7.9	3	37.9	-26.6	24
25	183	58.7	1.7	-12	8.4	-20.6	ss	-0.5	172	13.2	-30.6	0.0	-16	59.9	-33.3	-0.4	Sr	-4.0	217	37.8	-7.9	3	11.3	-26.7	25
26	184	0.3	1.5	-12	29.0	-20.4	ss	-0.5	171	42.7	-30.6	0.0	-17	33.2	-32.3	-0.5	Sr	-4.0	217	29.8	-8.0	2	44.6	-26.9	26
27	184	1.8	1.3	-12	49.4	-20.1	ss	-0.5	171	12.1	-30.6	0.0	-18	5.5	-31.5	-0.4	Sr	-4.0	217	21.9	-8.0	2	17.7	-27.0	27
28	184	3.1	1.1	-13	9.5	-20.0	ss	-0.4	170	41.6	-30.6	0.0	-18	37.0	-30.5	-0.5	Sr	-4.0	217	13.9	-8.0	1	50.7	-27.1	28
29	184	4.2	0.9	-13	29.5	-19.7	ss	-0.4	170	10.9	-30.6	0.0	-19	7.5	-29.6	-0.5	Sr	-4.0	217	5.9	-8.0	1	23.6	-27.3	29
30	184	5.1	0.7	-13	49.2	-19.6	ss	-0.4	169	40.3	-30.6	0.0	-19	37.1	-28.6	-0.5	Sr	-4.0	216	57.8	-8.1	0	56.3	-27.3	30
Oct 31	184	5.8	0.5	-14	8.8	-19.3	ss	-0.4	169	9.7	-30.6	0.0	-20	5.7	-27.6	-0.5	Sr	-4.0	216	49.7	-8.1	0	29.0	-27.5	Oct 31
Nov 1	184	6.3	0.3	-14	28.1	-19.0	ss	-0.4	168	39.1	-30.6	0.0	-20	33.3	-26.7	-0.5	Sr	-4.0	216	41.6	-8.2	0	1.5	-27.5	Nov 1
2	184	6.6	0.1	-14	47.1	-18.9	ss	-0.4	168	8.5	-30.6	0.0	-21	0.0	-25.6	-0.6	Sr	-4.0	216	33.4	-8.3	-0	26.0	-27.6	2
3	184	6.7	-0.1	-15	6.0	-18.5	ss	-0.3	167	37.9	-30.5	0.0	-21	25.6	-24.5	-0.5	Sr	-4.0	216	25.1	-8.3	-0	53.6	-27.6	3
4	184	6.6	-0.3	-15	24.5	-18.4	ss	-0.3	167	7.4	-30.4	-0.1	-21	50.1	-23.5	-0.5	Sr	-4.0	216	16.8	-8.4	-1	21.2	-27.6	4
5	184	6.3	-0.5	-15	42.9	-18.1	ss	-0.3	166	37.0	-30.2	-0.1	-22	13.6	-22.3	-0.6	Sr	-4.0	216	8.3	-8.5	-1	48.8	-27.7	5
6	184	5.7	-0.7	-16	1.0	-17.8	ss	-0.3	166																

Sun and Planets

Mars							Jupiter							Saturn									
vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d				
		o	'	o	'				o	'	o	'				o	'	o	'				
	1.7	181	26.4	23.8	3	16.6	-15.5		-1.7	177	27.3	47.2	1	41.4	-5.2	y	1.0	239	25.2	53.7	20	58.3	-0.8
	1.7	181	50.2	23.8	3	1.1	-15.6		-1.7	178	14.5	47.2	1	36.2	-5.1	y	1.0	240	18.9	53.8	20	57.5	-0.9
	1.7	182	14.0	23.8	2	45.5	-15.6		-1.7	179	1.7	47.2	1	31.1	-5.2	y	1.0	241	12.7	53.9	20	56.6	-0.8
	1.7	182	37.8	23.8	2	29.9	-15.6		-1.7	179	49.0	47.2	1	25.9	-5.1	y	1.0	242	6.6	54.0	20	55.8	-0.8
	1.7	183	1.6	23.8	2	14.3	-15.7		-1.7	180	36.2	47.2	1	20.8	-5.1	y	1.0	243	0.6	54.1	20	55.0	-0.8
	1.7	183	25.4	23.8	1	58.6	-15.6		-1.7	181	23.4	47.2	1	15.7	-5.2	y	1.0	243	54.6	54.1	20	54.2	-0.8
	1.7	183	49.1	23.8	1	43.0	-15.7		-1.7	182	10.7	47.2	1	10.5	-5.1	y	1.0	244	48.8	54.2	20	53.4	-0.8
	1.7	184	12.9	23.8	1	27.3	-15.7		-1.7	182	57.9	47.2	1	5.4	-5.2	y	1.0	245	43.0	54.3	20	52.6	-0.7
	1.7	184	36.7	23.7	1	11.6	-15.7		-1.7	183	45.1	47.2	1	0.2	-5.1	y	1.0	246	37.3	54.4	20	51.9	-0.8
	1.7	185	0.4	23.7	0	55.9	-15.7		-1.7	184	32.3	47.2	0	55.1	-5.1	y	1.0	247	31.7	54.5	20	51.1	-0.7
	1.7	185	24.1	23.7	0	40.2	-15.7		-1.7	185	19.6	47.2	0	50.0	-5.2	y	1.0	248	26.2	54.6	20	50.4	-0.7
	1.7	185	47.8	23.7	0	24.5	-15.7		-1.7	186	6.8	47.2	0	44.8	-5.1	y	1.0	249	20.8	54.7	20	49.7	-0.8
	1.7	186	11.5	23.7	0	8.8	-15.7		-1.7	186	54.1	47.3	0	39.7	-5.1	y	1.0	250	15.5	54.8	20	48.9	-0.6
	1.7	186	35.2	23.7	-0	6.9	-15.7		-1.7	187	41.3	47.3	0	34.6	-5.1	y	1.0	251	10.3	54.9	20	48.3	-0.7
	1.7	186	58.9	23.6	-0	22.6	-15.8		-1.7	188	28.6	47.3	0	29.5	-5.1	y	1.0	252	5.1	55.0	20	47.6	-0.7
	1.7	187	22.5	23.6	-0	38.4	-15.7		-1.7	189	15.8	47.3	0	24.4	-5.1	y	1.0	253	0.1	55.1	20	46.9	-0.6
	1.7	187	46.1	23.6	-0	54.1	-15.7		-1.7	190	3.1	47.3	0	19.3	-5.1	y	1.0	253	55.2	55.2	20	46.3	-0.7
	1.7	188	9.7	23.5	-1	9.8	-15.8	y	-1.7	190	50.4	47.3	0	14.2	-5.1	y	1.0	254	50.3	55.3	20	45.6	-0.6
	1.7	188	33.2	23.5	-1	25.6	-15.7	y	-1.7	191	37.7	47.3	0	9.1	-5.0	y	1.0	255	45.6	55.3	20	45.0	-0.6
	1.7	188	56.7	23.5	-1	41.3	-15.7	y	-1.7	192	25.0	47.3	0	4.1	-5.1	y	1.0	256	40.9	55.4	20	44.4	-0.6
	1.7	189	20.2	23.4	-1	57.0	-15.7	y	-1.7	193	12.3	47.3	-0	1.0	-5.1	y	1.0	257	36.4	55.6	20	43.8	-0.5
	1.7	189	43.6	23.4	-2	12.7	-15.7	y	-1.7	193	59.7	47.4	-0	6.1	-5.0	y	1.0	258	31.9	55.7	20	43.3	-0.6
	1.7	190	7.0	23.4	-2	28.4	-15.7	y	-1.7	194	47.0	47.4	-0	11.1	-5.0	y	1.0	259	27.6	55.8	20	42.7	-0.5
	1.7	190	30.4	23.3	-2	44.1	-15.7	y	-1.7	195	34.4	47.4	-0	16.1	-5.1	y	1.0	260	23.3	55.9	20	42.2	-0.5
y	1.7	190	53.7	23.3	-2	59.8	-15.7	y	-1.7	196	21.8	47.4	-0	21.2	-5.0	y	1.0	261	19.2	56.0	20	41.7	-0.5
y	1.7	191	17.0	23.2	-3	15.5	-15.6	y	-1.7	197	9.2	47.4	-0	26.2	-5.0	y	1.0	262	15.1	56.1	20	41.2	-0.5
y	1.7	191	40.2	23.2	-3	31.1	-15.7	y	-1.7	197	56.6	47.5	-0	31.2	-5.0	y	1.0	263	11.2	56.2	20	40.7	-0.5
y	1.7	192	3.4	23.2	-3	46.8	-15.6	y	-1.7	198	44.1	47.5	-0	36.2	-4.9	y	1.0	264	7.4	56.3	20	40.2	-0.4
y	1.7	192	26.6	23.1	-4	2.4	-15.6	y	-1.7	199	31.6	47.5	-0	41.1	-5.0	y	1.0	265	3.7	56.4	20	39.8	-0.4
y	1.7	192	49.7	23.1	-4	18.0	-15.6	y	-1.7	200	19.1	47.5	-0	46.1	-4.9	y	1.0	266	0.1	56.5	20	39.4	-0.4
y	1.7	193	12.7	23.0	-4	33.6	-15.5	y	-1.7	201	6.6	47.6	-0	51.0	-4.9	y	1.0	266	56.6	56.6	20	39.0	-0.4
y	1.7	193	35.8	23.0	-4	49.1	-15.6	y	-1.7	201	54.1	47.6	-0	55.9	-4.9	y	1.0	267	53.2	56.7	20	38.6	-0.4
y	1.7	193	58.7	22.9	-5	4.7	-15.5	y	-1.7	202	41.7	47.6	-1	0.8	-4.9	y	1.0	268	49.9	56.8	20	38.2	-0.3
y	1.7	194	21.6	22.9	-5	20.2	-15.4	y	-1.7	203	29.3	47.6	-1	5.7	-4.9	y	1.0	269	46.7	56.9	20	37.9	-0.3
y	1.7	194	44.5	22.8	-5	35.6	-15.5	y	-1.7	204	17.0	47.7	-1	10.6	-4.9	y	1.0	270	43.7	57.1	20	37.6	-0.3
y	1.7	195	7.3	22.7	-5	51.1	-15.4	y	-1.7	205	4.6	47.7	-1	15.5	-4.8	y	0.9	271	40.7	57.2	20	37.3	-0.3
y	1.7	195	30.0	22.7	-6	6.5	-15.4	y	-1.7	205	52.3	47.7	-1	20.3	-4.8	y	0.9	272	37.9	57.3	20	37.0	-0.2
y	1.7	195	52.7	22.6	-6	21.9	-15.3	y	-1.7	206	40.1	47.8	-1	25.1	-4.8	y	0.9	273	35.2	57.4	20	36.8	-0.3
y	1.7	196	15.3	22.6	-6	37.2	-15.3	y	-1.7	207	27.9	47.8	-1	29.9	-4.8	y	0.9	274	32.6	57.5	20	36.5	-0.2
y	1.7	196	37.9	22.5	-6	52.5	-15.2	y	-1.7	208	15.7	47.9	-1	34.7	-4.7	y	0.9	275	30.1	57.6	20	36.3	-0.2
y	1.7	197	0.4	22.4	-7	7.7	-15.3	y	-1.7	209	3.6	47.9	-1	39.4	-4.8	y	0.9	276	27.7	57.7	20	36.1	-0.2
y	1.7	197	22.9	22.4	-7	23.0	-15.1	y	-1.7	209	51.5	47.9	-1	44.2	-4.7	y	0.9	277	25.5	57.9	20	35.9	-0.1
y	1.7	197	45.2	22.3	-7	38.1	-15.2	y	-1.7	210	39.4	48.0	-1	48.9	-4.7	y	0.9	278	23.3	58.0	20	35.8	-0.2
y	1.7	198	7.5	22.2	-7	53.3	-15.0	y	-1.7	211	27.4	48.0	-1	53.6	-4.6	y	0.9	279	21.3	58.1	20	35.6	-0.1
y	1.7	198	29.8	22.2	-8	8.3	-15.1	y	-1.7	212	15.4	48.1	-1	58.2	-4.7	y	0.9	280	19.4	58.2	20	35.5	0.0
y	1.7	198	51.9	22.1	-8	23.4	-15.0	y	-1.7	213	3.4	48.1	-2	2.9	-4.6	y	0.9	281	17.6	58.3	20	35.5	-0.1
y	1.7	199	14.0	22.0	-8	38.4	-14.9	y	-1.7	213	51.6	48.2	-2	7.5	-4.6	y	0.9	282	15.9	58.4	20	35.4	-0.1
y	1.7	199	36.0	21.9	-8	53.3	-14.9	y	-1.7	214	39.7	48.2	-2	12.1	-4.5	y	0.9	283	14.3	58.6	20	35.3	0.0
y	1.7	199	57.9	21.8	-9	8.2	-14.8	y	-1.7	215	27.9	48.3	-2	16.6	-4.6	y	0.9	284	12.9	58.7	20	35.3	0.0
y	1.7	200	19.8	21.8	-9	23.0	-14.8	y	-1.7	216	16.2	48.3	-2	21.2	-4.5	y	0.9	285	11.6	58.8	20	35.3	0.1
y	1.7	200	41.5	21.7	-9	37.8	-14.7	y	-1.7	217	4.5	48.4	-2	25.7	-4.5	y	0.9	286	10.3	58.9	20	35.4	0.0
y	1.7	201	3.2	21.6	-9	52.5	-14.7	y	-1.7	217	52.8	48.4	-2	30.2	-4.4	y	0.9	287	9.3	59.0	20	35.4	0.1
y	1.7	201	24.8	21.5	-10	7.2	-14.5	y	-1.7	218	41.2	48.5	-2	34.6	-4.5	y	0.9	288	8.3	59.1	20	35.5	0.1
y	1.7	201	46.3	21.4	-10	21.7	-14.6	y	-1.7	219	29.7	48.5	-2	39.1	-4.4	y	0.9	289	7.4	59.3	20	35.6	0.1
y	1.7	202	7.8	21.3	-10	36.3	-14.4	y	-1.7	220	18.2	48.6	-2	43.5	-4.3	y	0.9	290	6.7	59.4	20	35.7	0.1
y	1.7	202	29.1	21.3	-10	50.7	-14.4	y	-1.7	221	6.8	48.6	-2	47.8	-4.4	y	0.8	291	6.1	59.5	20	35.8	0.2
y	1.7	202	50.4	21.2	-11	5.1	-14.3	y	-1.7	221	55.4	48.7	-2	52.2	-4.3	y	0.8	292	5.6	59.6	20	36.0	0.2
y	1.7	203	11.5	21.1	-11	19.4	-14.3	y	-1.7	222	44.1	48.8	-2	56.5	-4.2	y	0.8	293	5.2	59.7	20	36.2	0.2
y	1.7	203	32.6	21.0	-11	33.7	-14.1	y	-1.7	223	32.9	48.8	-3	0.7	-4.3	y	0.8	294	4.9	59.9	20	36.4	0.2
y	1.7	203	53.6	20.9	-11	47.8	-14.1	y	-1.7	224	21.7	48.9	-3	5.0	-4.2	y	0.8	295	4.8	60.0	20	36.6	0.2
y	1.7	204	14.5	20.8	-12	1.9	-14.0	y	-1.8	225	10.6	49.0	-3	9.2	-4.2	y	0.8	296	4.7	60.1	20	36.8	0.3
y	1.7	204	35.3	20.7	-12	15.9	-14.0	y	-1.8	225	59.6	49.0	-3	13.4	-4.1	y	0.8	297	4.8	60.2	20	37.1	0.3
y	1.7	204	56.0	20.6	-12	29.9	-13.8	y	-1														

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Date	SUN					Mercury							Venus					Date							
	GHA o	d	Dec o	d		vis mag	GHA o	d	dd	Dec o	d	dd	vis mag	GHA o	d	Dec o	d								
Nov 21	183	32.4	-3.9	-19	56.4	-13.0	ss	-0.3	160	15.0	-6.6	-1.9	-25	40.4	-1.1	-0.8	sr	-4.0	213	36.8	-10.9	-9	6.6	-26.4	Nov 21
22	183	28.5	-4.1	-20	9.4	-12.7	ss	-0.3	160	8.4	-2.3	-2.1	-25	41.5	0.5	-0.8	sr	-4.0	213	25.9	-11.1	-9	33.0	-26.2	22
23	183	24.4	-4.2	-20	22.1	-12.3	ss	-0.3	160	6.1	2.6	-2.5	-25	41.0	2.0	-0.8	sr	-4.0	213	14.8	-11.3	-9	59.2	-26.0	23
24	183	20.2	-4.4	-20	34.4	-11.8	ss	-0.2	160	8.7	8.2	-2.8	-25	39.0	3.5	-0.8	sr	-4.0	213	3.5	-11.6	-10	25.2	-25.8	24
25	183	15.8	-4.6	-20	46.2	-11.5	ss	-0.2	160	16.9	14.5	-3.2	-25	35.5	5.1	-0.8	sr	-4.0	212	51.9	-11.8	-10	51.0	-25.6	25
26	183	11.1	-4.8	-20	57.7	-11.1	ss	-0.1	160	31.4	21.6	-3.6	-25	30.4	6.7	-0.8	sr	-4.0	212	40.1	-12.0	-11	16.6	-25.3	26
27	183	6.3	-5.0	-21	8.8	-10.7	ss	0.0	160	53.0	29.6	-4.0	-25	23.7	8.4	-0.9	sr	-4.0	212	28.1	-12.3	-11	41.9	-25.1	27
28	183	1.3	-5.2	-21	19.5	-10.4	ss	0.1	161	22.6	38.4	-4.4	-25	15.3	9.9	-0.7	sr	-4.0	212	15.8	-12.5	-12	7.0	-24.8	28
29	182	56.2	-5.3	-21	29.9	-9.9	ss	0.2	162	1.0	48.1	-4.9	-25	5.4	11.6	-0.9	sr	-4.0	212	3.2	-12.8	-12	31.8	-24.5	29
Nov 30	182	50.8	-5.5	-21	39.8	-9.4	ss	0.3	162	49.1	58.7	-5.3	-24	53.8	13.3	-0.8	sr	-4.0	211	50.4	-13.1	-12	56.3	-24.2	Nov 30
Dec 1	182	45.3	-5.7	-21	49.2	-9.1	ss	0.5	163	47.8	69.9	-5.6	-24	40.5	15.1	-0.9	sr	-4.0	211	37.4	-13.3	-13	20.5	-24.0	Dec 1
2	182	39.7	-5.8	-21	58.3	-8.7	ss	0.8	164	57.8	81.7	-5.9	-24	25.4	16.7	-0.8	sr	-4.0	211	24.0	-13.6	-13	44.5	-23.6	2
3	182	33.8	-6.0	-22	7.0	-8.2	ss	1.0	166	19.5	93.8	-6.0	-24	8.7	18.5	-0.9	sr	-4.0	211	10.4	-13.9	-14	8.1	-23.3	3
4	182	27.9	-6.1	-22	15.2	-7.8	ss	1.3	167	53.3	105.8	-6.0	-23	50.2	20.2	-0.9	sr	-4.0	210	56.5	-14.2	-14	31.4	-22.9	4
5	182	21.7	-6.3	-22	23.0	-7.3	ss	1.5	169	39.1	117.1	-5.7	-23	30.0	21.8	-0.8	sr	-4.0	210	42.3	-14.5	-14	54.3	-22.5	5
6	182	15.5	-6.4	-22	30.3	-7.0	ss	1.7	171	36.2	127.3	-5.1	-23	8.2	23.2	-0.7	sr	-4.0	210	27.8	-14.8	-15	16.8	-22.2	6
7	182	9.0	-6.5	-22	37.3	-6.4	ss	2.0	173	43.5	135.8	-4.2	-22	45.0	24.4	-0.6	sr	-4.0	210	13.1	-15.1	-15	39.0	-21.8	7
8	182	2.5	-6.7	-22	43.7	-6.1		2.2	175	59.3	142.0	-3.1	-22	20.6	25.2	-0.4	sr	-4.0	209	58.0	-15.4	-16	0.8	-21.4	8
9	181	55.8	-6.8	-22	49.8	-5.6		2.5	178	21.3	145.6	-1.8	-21	55.4	25.4	-0.1	sr	-4.0	209	42.6	-15.6	-16	22.2	-21.0	9
10	181	49.1	-6.9	-22	55.4	-5.1		2.6	180	46.9	146.2	-0.3	-21	30.0	25.0	0.2	sr	-4.0	209	27.0	-15.9	-16	43.2	-20.6	10
11	181	42.2	-7.0	-23	0.5	-4.7		2.4	183	13.1	143.9	1.1	-21	5.0	23.9	0.5	sr	-4.0	209	11.0	-16.2	-17	3.8	-20.1	11
12	181	35.2	-7.1	-23	5.2	-4.2		2.2	185	37.0	138.9	2.5	-20	41.1	22.1	0.9	sr	-4.0	208	54.8	-16.5	-17	23.9	-19.7	12
13	181	28.1	-7.1	-23	9.4	-3.7		2.0	187	55.9	131.5	3.7	-20	19.0	19.8	1.2	sr	-4.0	208	38.3	-16.8	-17	43.6	-19.2	13
14	181	21.0	-7.2	-23	13.1	-3.3	sr	1.8	190	7.4	122.4	4.6	-19	59.2	16.9	1.5	sr	-4.0	208	21.4	-17.1	-18	2.8	-18.7	14
15	181	13.8	-7.3	-23	16.4	-2.9	sr	1.5	192	9.8	111.9	5.2	-19	42.3	13.7	1.6	sr	-4.0	208	4.3	-17.4	-18	21.5	-18.2	15
16	181	6.5	-7.3	-23	19.3	-2.3	sr	1.3	194	1.7	100.8	5.6	-19	28.6	10.3	1.7	sr	-4.0	207	46.9	-17.7	-18	39.7	-17.7	16
17	180	59.2	-7.4	-23	21.6	-1.9	sr	1.1	195	42.6	89.4	5.7	-19	18.3	6.9	1.7	sr	-4.0	207	29.2	-18.0	-18	57.4	-17.3	17
18	180	51.8	-7.4	-23	23.5	-1.4	sr	0.9	197	12.0	78.2	5.6	-19	11.4	3.5	1.7	sr	-4.0	207	11.2	-18.3	-19	14.7	-16.6	18
19	180	44.4	-7.4	-23	24.9	-1.0	sr	0.7	198	30.2	67.4	5.4	-19	7.9	0.4	1.5	sr	-4.0	206	52.9	-18.5	-19	31.3	-16.2	19
20	180	37.0	-7.4	-23	25.9	-0.5	sr	0.4	199	37.6	57.2	5.1	-19	7.5	-2.4	1.4	sr	-4.0	206	34.4	-18.8	-19	47.5	-15.6	20
21	180	29.5	-7.4	-23	26.4	0.0	sr	0.3	200	34.7	47.6	4.8	-19	9.9	-5.0	1.3	sr	-4.0	206	15.6	-19.1	-20	3.1	-15.0	21
22	180	22.1	-7.5	-23	26.4	0.5	sr	0.1	201	22.4	38.9	4.4	-19	14.9	-7.2	1.1	sr	-4.0	205	56.5	-19.4	-20	18.1	-14.5	22
23	180	14.6	-7.4	-23	25.9	0.9	sr	0.0	202	1.3	30.9	4.0	-19	22.1	-9.1	1.0	sr	-4.0	205	37.1	-19.6	-20	32.6	-13.9	23
24	180	7.2	-7.4	-23	25.0	1.4	sr	-0.1	202	32.2	23.7	3.6	-19	31.2	-10.6	0.7	sr	-4.0	205	17.5	-19.9	-20	46.5	-13.2	24
25	179	59.8	-7.4	-23	23.6	1.9	sr	-0.1	202	55.9	17.2	3.3	-19	41.8	-11.9	0.7	sr	-4.0	204	57.6	-20.1	-20	59.7	-12.7	25
26	179	52.4	-7.4	-23	21.7	2.3	sr	-0.2	203	13.1	11.3	2.9	-19	53.7	-12.9	0.5	sr	-3.9	204	37.5	-20.4	-21	12.4	-12.1	26
27	179	45.0	-7.3	-23	19.4	2.8	sr	-0.2	203	24.4	6.1	2.6	-20	6.6	-13.6	0.4	sr	-3.9	204	17.2	-20.6	-21	24.5	-11.5	27
28	179	37.6	-7.3	-23	16.6	3.3	sr	-0.3	203	30.5	1.4	2.4	-20	20.2	-14.0	0.2	sr	-3.9	203	56.6	-20.8	-21	36.0	-10.8	28
29	179	30.3	-7.2	-23	13.3	3.7	sr	-0.3	203	31.9	-2.9	2.1	-20	34.2	-14.4	0.2	sr	-3.9	203	35.8	-21.0	-21	46.8	-10.2	29
30	179	23.1	-7.2	-23	9.6	4.2	sr	-0.3	203	29.0	-6.7	1.9	-20	48.6	-14.4	0.0	sr	-3.9	203	14.8	-21.2	-21	57.0	-9.5	30
Dec 31	179	15.9	-7.2	-23	5.4	4.7	sr	-0.3	203	22.3	-6.7	1.9	-21	3.0	-14.4	0.0	sr	-3.9	202	53.6	-21.2	-22	6.5	-8.8	Dec 31

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Mars							Jupiter							Saturn									
vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d		vis	mag	GHA	d	Dec	d				
y	1.7	205	57.5	20.3	-13	11.2	-13.5	y	-1.8	229	16.2	49.3	-3	29.7	-4.0	y	0.8	301	6.3	60.7	20	38.4	0.4
y	1.7	206	17.9	20.2	-13	24.7	-13.5	y	-1.8	230	5.5	49.4	-3	33.7	-3.9	y	0.8	302	7.0	60.8	20	38.8	0.4
y	1.7	206	38.1	20.1	-13	38.2	-13.4	y	-1.8	230	54.9	49.5	-3	37.6	-3.9	y	0.8	303	7.8	60.9	20	39.2	0.4
y	1.7	206	58.2	20.0	-13	51.6	-13.3	y	-1.8	231	44.4	49.6	-3	41.5	-3.9	y	0.8	304	8.7	61.0	20	39.6	0.5
y	1.7	207	18.2	19.9	-14	4.9	-13.2	y	-1.8	232	33.9	49.6	-3	45.4	-3.8	y	0.8	305	9.7	61.1	20	40.1	0.4
y	1.7	207	38.2	19.8	-14	18.1	-13.1	y	-1.8	233	23.6	49.7	-3	49.2	-3.8	y	0.8	306	10.8	61.2	20	40.5	0.5
y	1.7	207	58.0	19.7	-14	31.2	-13.1	y	-1.8	234	13.3	49.8	-3	53.0	-3.8	y	0.8	307	12.0	61.3	20	41.0	0.5
y	1.7	208	17.7	19.6	-14	44.3	-12.9	y	-1.8	235	3.1	49.9	-3	56.8	-3.7	y	0.7	308	13.3	61.4	20	41.5	0.5
y	1.7	208	37.3	19.5	-14	57.2	-12.8	y	-1.8	235	53.0	50.0	-4	0.5	-3.7	y	0.7	309	14.8	61.5	20	42.0	0.6
y	1.7	208	56.8	19.4	-15	10.0	-12.7	y	-1.8	236	43.0	50.1	-4	4.2	-3.6	y	0.7	310	16.3	61.6	20	42.6	0.5
y	1.7	209	16.1	19.3	-15	22.7	-12.5	y	-1.8	237	33.0	50.2	-4	7.8	-3.6	y	0.7	311	18.0	61.8	20	43.1	0.6
y	1.7	209	35.4	19.2	-15	35.2	-12.5	y	-1.8	238	23.2	50.3	-4	11.4	-3.5	y	0.7	312	19.7	61.9	20	43.7	0.6
y	1.7	209	54.6	19.1	-15	47.7	-12.4	y	-1.8	239	13.5	50.4	-4	14.9	-3.5	y	0.7	313	21.6	62.0	20	44.3	0.6
y	1.7	210	13.6	18.9	-16	0.1	-12.2	y	-1.8	240	3.8	50.4	-4	18.4	-3.5	y	0.7	314	23.5	62.1	20	44.9	0.6
y	1.7	210	32.6	18.8	-16	12.3	-12.2	y	-1.8	240	54.3	50.5	-4	21.9	-3.4	y	0.7	315	25.6	62.2	20	45.5	0.7
y	1.7	210	51.4	18.7	-16	24.5	-12.0	y	-1.8	241	44.8	50.6	-4	25.3	-3.3	y	0.7	316	27.8	62.3	20	46.2	0.7
y	1.7	211	10.1	18.6	-16	36.5	-11.9	y	-1.8	242	35.4	50.7	-4	28.6	-3.3	y	0.7	317	30.0	62.4	20	46.9	0.7
y	1.7	211	28.7	18.5	-16	48.4	-11.7	y	-1.8	243	26.2	50.8	-4	31.9	-3.3	y	0.7	318	32.4	62.5	20	47.6	0.7
y	1.7	211	47.1	18.4	-17	0.1	-11.7	y	-1.8	244	17.0	50.9	-4	35.2	-3.2	y	0.7	319	34.9	62.5	20	48.3	0.7
y	1.7	212	5.5	18.2	-17	11.8	-11.5	y	-1.9	245	8.0	51.1	-4	38.4	-3.2	y	0.7	320	37.4	62.6	20	49.0	0.7
y	1.7	212	23.8	18.1	-17	23.3	-11.4	y	-1.9	245	59.0	51.2	-4	41.6	-3.1	y	0.7	321	40.0	62.7	20	49.7	0.8
y	1.7	212	41.9	18.0	-17	34.7	-11.2	y	-1.9	246	50.2	51.3	-4	44.7	-3.1	y	0.7	322	42.8	62.8	20	50.5	0.7
y	1.7	212	59.9	17.9	-17	45.9	-11.1	y	-1.9	247	41.4	51.4	-4	47.8	-3.0	y	0.6	323	45.6	62.9	20	51.2	0.8
y	1.6	213	17.8	17.8	-17	57.0	-11.0	y	-1.9	248	32.8	51.5	-4	50.8	-2.9	y	0.6	324	48.5	63.0	20	52.0	0.8
y	1.6	213	35.6	17.7	-18	8.0	-10.8	y	-1.9	249	24.3	51.6	-4	53.7	-2.9	y	0.6	325	51.5	63.1	20	52.8	0.8
y	1.6	213	53.3	17.6	-18	18.8	-10.7	y	-1.9	250	15.9	51.7	-4	56.6	-2.9	y	0.6	326	54.5	63.1	20	53.6	0.8
y	1.6	214	10.8	17.5	-18	29.5	-10.6	y	-1.9	251	7.7	51.9	-4	59.5	-2.8	y	0.6	327	57.7	63.2	20	54.4	0.9
y	1.6	214	28.3	17.3	-18	40.1	-10.4	y	-1.9	251	59.5	52.0	-5	2.3	-2.7	y	0.6	329	0.9	63.3	20	55.3	0.8
y	1.6	214	45.6	17.2	-18	50.5	-10.2	y	-1.9	252	51.5	52.1	-5	5.0	-2.7	y	0.6	330	4.2	63.4	20	56.1	0.9
y	1.6	215	2.8	17.1	-19	0.7	-10.1	y	-1.9	253	43.6	52.2	-5	7.7	-2.7	y	0.6	331	7.6	63.4	20	57.0	0.8
y	1.6	215	20.0	17.0	-19	10.8	-10.0	y	-1.9	254	35.8	52.3	-5	10.4	-2.5	y	0.6	332	11.1	63.5	20	57.8	0.9
y	1.6	215	37.0	16.9	-19	20.8	-9.8	y	-1.9	255	28.2	52.5	-5	12.9	-2.6	y	0.6	333	14.6	63.6	20	58.7	0.9
y	1.6	215	53.8	16.8	-19	30.6	-9.6	y	-1.9	256	20.6	52.6	-5	15.5	-2.4	y	0.6	334	18.1	63.6	20	59.6	0.9
y	1.6	216	10.6	16.7	-19	40.2	-9.5	y	-1.9	257	13.2	52.7	-5	17.9	-2.4	y	0.6	335	21.8	63.7	21	0.5	0.9
y	1.6	216	27.3	16.5	-19	49.7	-9.3	y	-1.9	258	5.9	52.9	-5	20.3	-2.4	y	0.6	336	25.5	63.8	21	1.4	0.9
y	1.6	216	43.8	16.4	-19	59.0	-9.2	y	-1.9	258	58.8	53.0	-5	22.7	-2.3	y	0.6	337	29.2	63.8	21	2.3	0.9
y	1.6	217	0.2	16.3	-20	8.2	-9.0	y	-1.9	259	51.8	53.1	-5	25.0	-2.2	y	0.6	338	33.1	63.9	21	3.2	0.9
y	1.6	217	16.5	16.2	-20	17.2	-8.8	y	-2.0	260	44.9	53.3	-5	27.2	-2.2	y	0.5	339	36.9	63.9	21	4.1	1.0
y	1.6	217	32.7	16.1	-20	26.0	-8.7	y	-2.0	261	38.2	53.4	-5	29.4	-2.1	y	0.5	340	40.8	64.0	21	5.1	0.9
y	1.6	217	48.8	16.0	-20	34.7	-8.5	y	-2.0	262	31.6	53.5	-5	31.5	-2.1	y	0.5	341	44.8	64.0	21	6.0	0.9
y	1.6	218	4.8	16.0	-20	43.2	-8.3	y	-2.0	263	25.1	53.5	-5	33.6	-2.1	y	0.5	342	48.8	64.0	21	6.9	0.9