
The Nautical Almanac 2025



TheNauticalAlmanac.com

The Nautical Almanac

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fair winds, clear skies & following seas
TheNauticalAlmanac.com

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Acknowledgment and Credits

Dr. Enno Rodegerdts

The Nautical Almanac *Daily Pages* and Sun Almanacs found herein and on our site were created or derived from PyAlmanac written by the great Norwegian sailor Enno Rodegerdts. PyAlmanac uses PyEphem to generate the almanacs and LaTeX provides the final formatting. Visit Dr. Rodegerdts site and learn of his voyages at <https://sv-inua.net/>

Without his work TheNauticalAlmanac.com wouldn't exist.

Andrew Bauer

Mr. Bauer has taken the initial work of Dr. Rodegerdts and improved it to the excellence now found in the following Daily Pages. Attending foremost to the accuracy of data and then formatting Mr. Bauer modified PyAlmanac to provide a clear arrangement of figures needed for celestial navigation. To that end his work was determined, tireless and efficient. In our mutual writing across many lines of longitude he has always been pleasant, friendly and most affable.

As he has said, *"The art of celestial navigation should be promoted, not discouraged, even in the modern day"*.

To both of these men we all owe a large debt of gratitude and thanks

Disclaimer and Warning

Prior to use verify the accuracy of The Nautical Almanac or data you download from our site. They SHOULD NOT and MUST NOT be relied upon for celestial navigation work of any sorts or any purpose whatsoever. You use them at your own risk or peril.

Errors & Corrections

Contact us if you find any significant errors and describe the correction that should be made.



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2025

January

M	Tu	W	Th	F	Sa	Su
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

February

M	Tu	W	Th	F	Sa	Su
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

March

M	Tu	W	Th	F	Sa	Su
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

April

M	Tu	W	Th	F	Sa	Su
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

May

M	Tu	W	Th	F	Sa	Su
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

June

M	Tu	W	Th	F	Sa	Su
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

July

M	Tu	W	Th	F	Sa	Su
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

August

M	Tu	W	Th	F	Sa	Su
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September

M	Tu	W	Th	F	Sa	Su
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October

M	Tu	W	Th	F	Sa	Su
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

November

M	Tu	W	Th	F	Sa	Su
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December

M	Tu	W	Th	F	Sa	Su
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

2025

Day of Week, Week Number, Day of Year, Remaining Days of Year

Day of Month	1		Days remaining	Week number
	January			
	Day of Week	Day of Year		
1	Wed	1	365	1
2	Thu	2	364	
3	Fri	3	363	
4	Sat	4	362	
5	Sun	5	361	2
6	Mon	6	360	
7	Tue	7	359	
8	Wed	8	358	
9	Thu	9	357	
10	Fri	10	356	
11	Sat	11	355	
12	Sun	12	354	3
13	Mon	13	353	
14	Tue	14	352	
15	Wed	15	351	
16	Thu	16	350	
17	Fri	17	349	
18	Sat	18	348	
19	Sun	19	347	4
20	Mon	20	346	
21	Tue	21	345	
22	Wed	22	344	
23	Thu	23	343	
24	Fri	24	342	
25	Sat	25	341	
26	Sun	26	340	5
27	Mon	27	339	
28	Tue	28	338	
29	Wed	29	337	
30	Thu	30	336	
31	Fri	31	335	

Day of Month	2		Days remaining	Week number
	February			
	Day of Week	Day of Year		
1	Sat	32	334	5
2	Sun	33	333	6
3	Mon	34	332	
4	Tue	35	331	
5	Wed	36	330	
6	Thu	37	329	
7	Fri	38	328	
8	Sat	39	327	
9	Sun	40	326	7
10	Mon	41	325	
11	Tue	42	324	
12	Wed	43	323	
13	Thu	44	322	
14	Fri	45	321	
15	Sat	46	320	
16	Sun	47	319	8
17	Mon	48	318	
18	Tue	49	317	
19	Wed	50	316	
20	Thu	51	315	
21	Fri	52	314	
22	Sat	53	313	
23	Sun	54	312	9
24	Mon	55	311	
25	Tue	56	310	
26	Wed	57	309	
27	Thu	58	308	
28	Fri	59	307	

Day of Month	3		Days remaining	Week number
	March			
	Day of Week	Day of Year		
1	Sat	60	306	9
2	Sun	61	305	10
3	Mon	62	304	
4	Tue	63	303	
5	Wed	64	302	
6	Thu	65	301	
7	Fri	66	300	
8	Sat	67	299	
9	Sun	68	298	11
10	Mon	69	297	
11	Tue	70	296	
12	Wed	71	295	
13	Thu	72	294	
14	Fri	73	293	
15	Sat	74	292	
16	Sun	75	291	12
17	Mon	76	290	
18	Tue	77	289	
19	Wed	78	288	
20	Thu	79	287	
21	Fri	80	286	
22	Sat	81	285	
23	Sun	82	284	13
24	Mon	83	283	
25	Tue	84	282	
26	Wed	85	281	
27	Thu	86	280	
28	Fri	87	279	
29	Sat	88	278	
30	Sun	89	277	14
31	Mon	90	276	

Day of Month	4		Days remaining	Week number
	April			
	Day of Week	Day of Year		
1	Tue	91	275	14
2	Wed	92	274	
3	Thu	93	273	
4	Fri	94	272	
5	Sat	95	271	
6	Sun	96	270	15
7	Mon	97	269	
8	Tue	98	268	
9	Wed	99	267	
10	Thu	100	266	
11	Fri	101	265	
12	Sat	102	264	
13	Sun	103	263	16
14	Mon	104	262	
15	Tue	105	261	
16	Wed	106	260	
17	Thu	107	259	
18	Fri	108	258	
19	Sat	109	257	
20	Sun	110	256	17
21	Mon	111	255	
22	Tue	112	254	
23	Wed	113	253	
24	Thu	114	252	
25	Fri	115	251	
26	Sat	116	250	
27	Sun	117	249	18
28	Mon	118	248	
29	Tue	119	247	
30	Wed	120	246	

Day of Month	5		Days remaining	Week number
	May			
	Day of Week	Day of Year		
1	Thu	121	245	18
2	Fri	122	244	
3	Sat	123	243	
4	Sun	124	242	19
5	Mon	125	241	
6	Tue	126	240	
7	Wed	127	239	
8	Thu	128	238	
9	Fri	129	237	
10	Sat	130	236	
11	Sun	131	235	20
12	Mon	132	234	
13	Tue	133	233	
14	Wed	134	232	
15	Thu	135	231	
16	Fri	136	230	
17	Sat	137	229	
18	Sun	138	228	21
19	Mon	139	227	
20	Tue	140	226	
21	Wed	141	225	
22	Thu	142	224	
23	Fri	143	223	
24	Sat	144	222	
25	Sun	145	221	22
26	Mon	146	220	
27	Tue	147	219	
28	Wed	148	218	
29	Thu	149	217	
30	Fri	150	216	
31	Sat	151	215	

Day of Month	6		Days remaining	Week number
	June			
	Day of Week	Day of Year		
1	Sun	152	214	23
2	Mon	153	213	
3	Tue	154	212	
4	Wed	155	211	
5	Thu	156	210	
6	Fri	157	209	
7	Sat	158	208	
8	Sun	159	207	24
9	Mon	160	206	
10	Tue	161	205	
11	Wed	162	204	
12	Thu	163	203	
13	Fri	164	202	
14	Sat	165	201	
15	Sun	166	200	25
16	Mon	167	199	
17	Tue	168	198	
18	Wed	169	197	
19	Thu	170	196	
20	Fri	171	195	
21	Sat	172	194	
22	Sun	173	193	26
23	Mon	174	192	
24	Tue	175	191	
25	Wed	176	190	
26	Thu	177	189	
27	Fri	178	188	
28	Sat	179	187	
29	Sun	180	186	27
30	Mon	181	185	

Day of Week, Week Number, Day of Year, Remaining Days of Year

Day of Month	7		Days remaining	Week number
	July			
	Day of Week	Day of Year		
1	Tue	182	184	27
2	Wed	183	183	
3	Thu	184	182	
4	Fri	185	181	
5	Sat	186	180	
6	Sun	187	179	28
7	Mon	188	178	
8	Tue	189	177	
9	Wed	190	176	
10	Thu	191	175	
11	Fri	192	174	
12	Sat	193	173	
13	Sun	194	172	29
14	Mon	195	171	
15	Tue	196	170	
16	Wed	197	169	
17	Thu	198	168	
18	Fri	199	167	
19	Sat	200	166	
20	Sun	201	165	30
21	Mon	202	164	
22	Tue	203	163	
23	Wed	204	162	
24	Thu	205	161	
25	Fri	206	160	
26	Sat	207	159	
27	Sun	208	158	31
28	Mon	209	157	
29	Tue	210	156	
30	Wed	211	155	
31	Thu	212	154	

Day of Month	8		Days remaining	Week number
	August			
	Day of Week	Day of Year		
1	Fri	213	153	31
2	Sat	214	152	
3	Sun	215	151	32
4	Mon	216	150	
5	Tue	217	149	
6	Wed	218	148	
7	Thu	219	147	
8	Fri	220	146	
9	Sat	221	145	
10	Sun	222	144	33
11	Mon	223	143	
12	Tue	224	142	
13	Wed	225	141	
14	Thu	226	140	
15	Fri	227	139	
16	Sat	228	138	
17	Sun	229	137	34
18	Mon	230	136	
19	Tue	231	135	
20	Wed	232	134	
21	Thu	233	133	
22	Fri	234	132	
23	Sat	235	131	
24	Sun	236	130	35
25	Mon	237	129	
26	Tue	238	128	
27	Wed	239	127	
28	Thu	240	126	
29	Fri	241	125	
30	Sat	242	124	
31	Sun	243	123	36

Day of Month	9		Days remaining	Week number
	September			
	Day of Week	Day of Year		
1	Mon	244	122	36
2	Tue	245	121	
3	Wed	246	120	
4	Thu	247	119	
5	Fri	248	118	
6	Sat	249	117	
7	Sun	250	116	37
8	Mon	251	115	
9	Tue	252	114	
10	Wed	253	113	
11	Thu	254	112	
12	Fri	255	111	
13	Sat	256	110	
14	Sun	257	109	38
15	Mon	258	108	
16	Tue	259	107	
17	Wed	260	106	
18	Thu	261	105	
19	Fri	262	104	
20	Sat	263	103	
21	Sun	264	102	39
22	Mon	265	101	
23	Tue	266	100	
24	Wed	267	99	
25	Thu	268	98	
26	Fri	269	97	
27	Sat	270	96	
28	Sun	271	95	40
29	Mon	272	94	
30	Tue	273	93	

Day of Month	10		Days remaining	Week number
	October			
	Day of Week	Day of Year		
1	Wed	274	92	40
2	Thu	275	91	
3	Fri	276	90	
4	Sat	277	89	
5	Sun	278	88	41
6	Mon	279	87	
7	Tue	280	86	
8	Wed	281	85	
9	Thu	282	84	
10	Fri	283	83	
11	Sat	284	82	
12	Sun	285	81	42
13	Mon	286	80	
14	Tue	287	79	
15	Wed	288	78	
16	Thu	289	77	
17	Fri	290	76	
18	Sat	291	75	
19	Sun	292	74	43
20	Mon	293	73	
21	Tue	294	72	
22	Wed	295	71	
23	Thu	296	70	
24	Fri	297	69	
25	Sat	298	68	
26	Sun	299	67	44
27	Mon	300	66	
28	Tue	301	65	
29	Wed	302	64	
30	Thu	303	63	
31	Fri	304	62	

Day of Month	11		Days remaining	Week number
	November			
	Day of Week	Day of Year		
1	Sat	305	61	44
2	Sun	306	60	45
3	Mon	307	59	
4	Tue	308	58	
5	Wed	309	57	
6	Thu	310	56	
7	Fri	311	55	
8	Sat	312	54	
9	Sun	313	53	46
10	Mon	314	52	
11	Tue	315	51	
12	Wed	316	50	
13	Thu	317	49	
14	Fri	318	48	
15	Sat	319	47	
16	Sun	320	46	47
17	Mon	321	45	
18	Tue	322	44	
19	Wed	323	43	
20	Thu	324	42	
21	Fri	325	41	
22	Sat	326	40	
23	Sun	327	39	48
24	Mon	328	38	
25	Tue	329	37	
26	Wed	330	36	
27	Thu	331	35	
28	Fri	332	34	
29	Sat	333	33	
30	Sun	334	32	49

Day of Month	12		Days remaining	Week number
	December			
	Day of Week	Day of Year		
1	Mon	335	31	49
2	Tue	336	30	
3	Wed	337	29	
4	Thu	338	28	
5	Fri	339	27	
6	Sat	340	26	
7	Sun	341	25	50
8	Mon	342	24	
9	Tue	343	23	
10	Wed	344	22	
11	Thu	345	21	
12	Fri	346	20	
13	Sat	347	19	
14	Sun	348	18	51
15	Mon	349	17	
16	Tue	350	16	
17	Wed	351	15	
18	Thu	352	14	
19	Fri	353	13	
20	Sat	354	12	
21	Sun	355	11	52
22	Mon	356	10	
23	Tue	357	9	
24	Wed	358	8	
25	Thu	359	7	
26	Fri	360	6	
27	Sat	361	5	
28	Sun	362	4	1
29	Mon	363	3	
30	Tue	364	2	
31	Wed	365	1	

Useful Information

Time Signals- by telephone

WWV 303-499-7111 **WWVH** 808-335-4363

CHU English: 613-745-1576 (CHU provides only Eastern time announcements)

French: 613-745-9426

Time signals- by Radio

WWV (Fort Collins, Colorado) 2.5, 5, 10, 15, 20 MHz (male voice)

WWVH (Kauai, Hawaii) 2.5, 5, 10, 15 MHz (female voice)

CHU (Ottawa, Canada) 3330, 7850, and 14,670 kHz (USB)

Bowditch 2017- *The American Practical Navigator*

https://TheNauticalAlmanac.com/2017_Bowditch-_American_Practical_Navigator.html

Organized in a convenient and useful manner. Download the Chapters, Parts or Tables you want or the entire work.

The Terrestrial Almanac Annual calendar and day planner for the entire year.

<https://TheNauticalAlmanac.com/TerrestrialAlmanac.html>

Pub. No. 249 Download individual Latitudes or Volumes

[https://TheNauticalAlmanac.com/Pub. No. 249.html](https://TheNauticalAlmanac.com/Pub.No.249.html)

Pub. No. 229 Download individual Volumes covering a range of Latitudes

[https://TheNauticalAlmanac.com/Pub. No. 229.html](https://TheNauticalAlmanac.com/Pub.No.229.html)

Sight Reduction Forms & Methods

<https://www.TheNauticalAlmanac.com/Methods.html>

Celestial Navigation *useful Formulas*

About Calculators

The Casio *fx-300ES Plus* is an inexpensive calculator at about 11 USD. It features *natural input* so you enter a formula just as it would be written on paper. Entering degrees, minutes and seconds is very simple. The Casio *fx-300ES Plus* has 9 memory locations and you can review many of the previous entries you make using a special key on the calculator.

Determine Hc using a calculator

The formula

$$Hc = \text{asin}[\sin(\text{Declination}) * \sin(\text{Latitude}) + \cos(\text{Latitude}) * \cos(\text{Declination}) * \cos(\text{LHA})]$$

As it would be entered into the Casio calculator Note- Sin^{-1} is the arc-sin key

$$\text{Sin}^{-1}(\text{Sin}(\text{Ap Latitude}) \times \text{Sin}(\text{Declination}) + \text{Cos}(\text{Ap Latitude}) \times \text{Cos}(\text{Declination}) \times \text{Cos}(\text{LHA}))$$

Declination is the declination of the Celestial body you're observing. When the heavenly body's declination is *Contrary name* to your Ap Latitude enter a negative sign before it.

Latitude is the Latitude where you are, think you are or where you would like to determine Hc for. Typically, you'll be using an *Assumed position Latitude* or *Ap Latitude* as it's called.

In Western Longitudes

LHA is the Local Hour Angle which is derived from subtracting your whole number value of Longitude (Assumed or otherwise) from the whole number value of **GHA** (Greenwich Hour Angle).

In Eastern Longitudes

LHA, in **Eastern Longitudes**, is determined by rounding up the GHA figure to the next highest whole degree figure then adding the DR. Longitude to GHA to obtain LHA. Only add the whole degree DR. Longitude figure to the rounded up whole degree GHA figure. If the resulting LHA figure is greater than 360° then subtract 360° from the figure to obtain the LHA.

Why would you want to determine Hc using a calculator?

It's faster than looking up in Pub. No. 249 and Pub. No. 229, highly accurate and you don't need a lot of printed out pages of Latitudes from Pub. No. 249 and Pub. No. 229. Pub. No. 249 Vol. 2 & 3 don't cover any declination greater than 29 degrees so you'd have to use Pub. No. 229 which is extremely large.

Celestial Navigation

Determine Z

$$Z = \arccos[(\sin(\text{Declination}) - \sin(\text{AP Latitude}) \times \sin(\text{Hc})) \div (\cos(\text{AP Latitude}) \times \cos(\text{Hc}))]$$

As it would be entered into the Casio calculator... Note- $\cos^{-1}$ is the arc-cosine key

$$\cos^{-1}((\sin(\text{Declination}) - \sin(\text{AP Latitude}) \times \sin(\text{Hc})) \div (\cos(\text{AP Latitude}) \times \cos(\text{Hc})))$$

If the heavenly body's declination is *Contrary name* to the Ap Latitude enter a negative sign before it.

To obtain Zn see the rules below for Northern and Southern latitudes.

Determine Z independent of Hc

$$Z = \tan^{-1} \left(\frac{\sin \text{LHA}}{(\cos L \tan d) - (\sin L \cos \text{LHA})} \right)$$

"L" is latitude and "d" is declination. When the heavenly body's declination is *Contrary name* to your Ap Latitude enter a negative sign before it.

As it would be entered into the Casio calculator... Note- $\tan^{-1}$ is the arc-tangent key

$$Z = \tan^{-1} ((\sin(\text{LHA}) \div (\cos(\text{AP latitude}) \times \tan(\text{declination}) - (\sin(\text{AP latitude}) \times \cos(\text{LHA}))))$$

The sign convention used in the calculation of this azimuth formula is as follows:

from Bowditch Chapter 22 CALCULATIONS AND CONVERSIONS, page 331

- 1) If latitude and declination are of contrary name, declination is treated as a negative quantity;
- 2) If the local hour angle is greater than 180° , it is treated as a negative quantity. If the azimuth angle as calculated is negative, add 180° to obtain the desired value.

To obtain Zn apply the following rules

<u>In Northern Latitudes</u>	<u>In Southern Latitudes</u>
LHA greater than 180° Zn=Z	LHA greater than 180° Zn= $180^\circ - Z$
LHA less than 180° Zn= $360^\circ - Z$	LHA less than 180° Zn= $180^\circ + Z$

Determine Refraction $0.96 \div \tan \text{ of } (H_a)$

Gives good results down to about 8° from the horizon but not less.

Refraction (good overall formula from 90° to below 8° from the horizon)

$$R_0 = \cot \left(H_a + \frac{7.31}{H_a + 4.4} \right)$$

As it would be entered into the Casio calculator...

$$1 \div \tan((H_a + (7.31 \div (H_a + 4.4)))$$

Both refraction formulas use the standard pressure and temperature of;

1010 mb 10° C
29.83 in 53° F

Determine Dip using feet

0.97 x (Square Root of *He* (Height of Eye) in feet)

Determine Dip using meters

1.76 x (Square Root of *He* (Height of eye) in meters)

Rules to Calculate Latitude using the Sun- Noon-Sight

1- Latitude and declination *Same name* but latitude is greater than declination:

$$\text{Latitude} = (90^\circ - H_o) + \text{declination}$$

2- Latitude and declination *Same name* but declination greater than latitude:

$$\text{Latitude} = \text{Declination} - (90^\circ - H_o)$$

3- Latitude and declination *Contrary name*:

$$\text{Latitude} = (90^\circ - H_o) - \text{Declination}$$

To get AP longitude (needed for plotting the LOP)

In Western longitudes

Combine the DR Longitude figure with only the minutes (of arc) of the total GHA figure. The Ap λ figure will be used when plotting the LOP on the UPS.

In Eastern longitudes

In Eastern longitudes the Ap λ is determined as follows;

DR longitude + (0°60' *minus* GHA minutes of arc)

Example- E 075° + (0°60' – 0° 02')= 75° 58' Ap longitude



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Explanation of The Nautical Almanac Daily Pages

1	Date and Time based on GMT/UT							
2	Mer. pass- meridian passage of Aries at the Prime Meridian- Greenwich- 0°. Time figure is GMT/UT.							
3	Planet or Moon GHA v value and planet or Moon declination d value. v- "The change in hour angle arising from v of the body at the time of the sight observation is accounted for with the <i>v correction</i> ." <i>Source- Bowditch 2017, Chapter 19- Sight Reduction p. 313.</i> The planet's v is positive unless preceded by a minus sign which is sometimes the case with Venus. The sign of the Moon's v is positive. d- "The change in declination of the body at the time of the sight observation is accounted for with the <i>d correction</i> ." <i>Source- Bowditch 2017, Chapter 19- Sight Reduction p. 313.</i> The sign of the Moon or planet's d correction is determined by the declination trend- positive if successive declination values increase and negative if they decrease. Corrections for both v and d are found in the Increments and Corrections pages of The Nautical Almanac. To find the correction for either v or d enter the Increments and Corrections pages for the minutes in time of the observation and find the value in the v and d corr. columns Find the v , or d , value in the left side of one of the three columns. To the right of that value is the v , or d , correction. Be sure to add or subtract the values depending upon the <i>sign</i> of the value as mentioned above.							
	Example for v & d correction- June 10, 2020 GMT- 21:19:10 Body- Moon							
	<table><tr><td>GHA= 247° 20.4' v = 12.1'</td><td>Dec= S 17° 43.8' d= 8.9'</td></tr><tr><td>GHA increment 4° 34.4'</td><td>d- correction for 8.9' - 0° 02.9'</td></tr><tr><td>v- correction for 12.1' + 0° 03.9'</td><td>dec= S 17° 40.9'</td></tr><tr><td>GHA= 251° 58.7'</td><td></td></tr></table> <i>declination trend is decreasing so the sign of d correction is negative</i>	GHA= 247° 20.4' v = 12.1'	Dec= S 17° 43.8' d = 8.9'	GHA increment 4° 34.4'	d- correction for 8.9' - 0° 02.9'	v- correction for 12.1' + 0° 03.9'	dec= S 17° 40.9'	GHA= 251° 58.7'
GHA= 247° 20.4' v = 12.1'	Dec= S 17° 43.8' d = 8.9'							
GHA increment 4° 34.4'	d- correction for 8.9' - 0° 02.9'							
v- correction for 12.1' + 0° 03.9'	dec= S 17° 40.9'							
GHA= 251° 58.7'								
4	m- is the <i>magnitude</i> or brightness of the planet. A bright planet will have a <i>minus</i> sign beside the figure. A fainter planet will have no sign beside its magnitude figure.							
5	Stars- SHA, Sidereal Hour Angle, and Declination. 59 stars are listed. Typically, only 57 stars are used for navigational purposes in both Northern and Southern Hemispheres. Here you'll also find Polaris and Scheat. In the Northern Hemisphere Polaris is often used for determination of latitude.							
6	Mer. pass- planet meridian passage time at the Prime Meridian- Greenwich- 0°. Time figure is GMT/UT.							
7	SHA- planet SHA. Planet SHA is calculated by subtracting Aries GHA from planet GHA. If planet GHA figure is less than Aries GHA, add 360° to planet GHA and then subtract Aries GHA.							
8	Horizontal parallax- for Venus and Mars. Horizontal parallax is the angle subtended by half the Earth's diameter as viewed from the planet in minutes of arc.							
9	SD- Semi-diameter of the Sun in minutes of arc. One half of the angular width of the Sun as observed on earth.							

10	d- the daily average change, per hour, in the Sun's declination in minutes of arc.
11	SD- Semi-diameter of the Moon in minutes of arc. Semi-diameter is one half of the angular width of the Moon, as observed on earth.
12	HP- the angle between two lines, one from the center of the Moon to the center of the Earth, the other from the center of the Moon to the edge of the Earth. This angle is about 56', but it changes slightly from day to day as the distance to the Moon changes along its elliptical path around the Earth. <i>Source- starpath.com</i>
13	Sun- Eqn. of Time- Basically the Equation of Time (EoT) is the difference between clock time and time seen on a sundial. This is comparing "clock time", as a mechanical measurement of time, and the sundial being time determined by the position of the Sun at any given moment. The figures listed are for 00 ^h and 12 ^h . Using the EoT you can get fairly accurate determination of when Meridian Passage (Local Apparent Noon) occurs at your position. Unshaded EoT values are subtracted from 12:00 to get Meridian Passage. Shaded EoT values are added to 12:00 to get Meridian Passage. An Equation of Time chart (as a curve) is provided in each almanac on TheNauticalAlmanac.com Example- Meridian Passage on May 30, 2020 equals 12:00 – EoT of 2 minutes 21 seconds MP= 11:57:39 <i>Local Apparent Noon</i> Example- Meridian Passage on August 25, 2020 equals 12:00 + EoT of 1 minute 59 seconds MP= 12:01:59 <i>Local Apparent Noon</i>
14	Sun- Mer. Pass just to the right of the Eqn. of Time is the approximate GMT/UT when the Sun crosses The Prime Meridian (at Greenwich) for that specific date.
15	Moon- Mer. Pass- is the approximate GMT/UT when the Moon crosses The Prime Meridian (at Greenwich) or the 180° line of longitude. Upper means the GMT/UT when the Moon crosses The Prime Meridian (Greenwich). Lower means the GMT/UT when the Moon crosses the 180° line of longitude.
16	Moon- Age- this is the number of days past a new Moon. Typically, there are 29 days in a lunar month. Moon- %- the amount of the Moon's illumination. 100% would be a full moon. 49% would be about ½ of the Moon is illuminated. A 3 day range percentage is provided but only one graphic for the phase.
17* see notes at bottom	(morning) Twilight- Naut.- the approximate GMT/UT when morning Nautical Twilight begins. Nautical twilight is the time when the center of the sun is 12° below the horizon and the horizon is visible enough to be used for marine sextant observations. First locate your approximate Latitude in the Lat. column and then follow across horizontally to the right to find the time.
17* see notes at bottom	(morning) Twilight- Civil- the approximate GMT/UT of morning civil twilight starts when the geometric center of the sun is 6° below the horizon. First locate your approximate Latitude in the Lat. column and then follow across horizontally to the right to find the time.
17* see notes at bottom	Sunrise- the approximate GMT/UT when the Sun is 0° 50' (semi-diameter plus refraction) below the horizon. First locate your approximate Latitude in the Lat. column and then follow across horizontally to the right to find the time.

17* see notes at bottom	Sunset- the approximate GMT/UT when the Sun is 0° 50' (semi-diameter plus refraction) below the horizon. First locate your approximate Latitude in the Lat. column and then follow across horizontally to the right to find the time.
17* see notes at bottom	(evening) Twilight- Civil- the approximate GMT/UT of evening civil twilight that ends when the geometric center of the sun is 6° below the horizon. First locate your approximate Latitude in the Lat. column and then follow across horizontally to the right to find the time.
17* see notes at bottom	(evening) Twilight- Naut.- the approximate GMT/UT of when evening Nautical Twilight ends. Nautical twilight is the time when the center of the sun is 12° below the horizon and the horizon is no longer visible enough to be used for sextant observations. First locate your approximate Latitude in the Lat. column and then follow across horizontally to the right to find the time.
18* see notes at bottom	Moonrise- the approximate GMT/UT when the Moon is about 0° 05' to 0° 10' below the horizon. First locate your approximate Latitude in the Lat. column and then follow across horizontally to the right to find the time under the specific day.
18* see notes at bottom	Moonset- the approximate GMT/UT when the Moon is about 0° 05' to 0° 10' below the horizon. First locate your approximate Latitude in the Lat. column and then follow across horizontally to the right to find the time under the specific day.

* Note-

☐ means the Sun or Moon remains continuously above the horizon on that day.

—:— can also mean twilight lasts all night

■ means the Sun or Moon remains continuously below the horizon on that day.

—:— means Moon does not rise or set on that day but may have risen or set the previous day or following day.

* **Note-** Time of Sunrise, Sunset, Moonrise, Moonset and twilight is based on GMT/UT of the event at 0° (Greenwich) and can be considered as approximate LMT (Local Mean Time) with a tolerance of +/- 30 minutes depending on where you are within a time zone.

June 16, 2020

Explanation of The Nautical Almanac Daily Pages updated.odt

January 01, 02 ,03 (Fri., Sat., Sun.)

Aries			Venus			Mars			Jupiter			Saturn			Stars		
Fri	GHA	Dec	GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec		SHA	Dec	
0	100°32.5	181°58.1	S23°38.5	318°04.0	N18°45.1	131°37.2	S13°36.5	275°29.9	N00°18.5						Alpheratz	357°46.2	29°09.0
1	115°35.0	196°57.1	38.4	333°06.8	45.4	146°39.2	36.4	290°32.3	18.5						Ankaa	353°18.1	-42°15.2
2	130°37.4	211°56.1	38.3	348°09.6	45.6	161°41.2	36.2	305°34.7	18.5						Schedar	349°43.6	56°35.9
3	145°39.9	226°55.1	· · 38.2	3°12.4	· · 45.8	176°43.2	· · 36.0	320°37.1	· · 18.5						Diphda	348°58.3	-17°55.9
4	160°42.4	241°54.2	38.1	18°15.2	46.0	191°45.1	35.8	335°39.5	18.5						Achernar	335°28.3	-57°11.3
5	175°44.8	256°53.2	38.0	33°18.1	46.2	206°47.1	35.7	350°41.9	18.5						Hamal	328°03.5	23°30.8
6	190°47.3	271°52.2	S23°37.9	48°20.9	N18°46.5	221°49.1	S13°35.5	5°44.3	N00°18.5						Polaris	318°47.1	89°18.8
7	205°49.8	286°51.3	37.8	63°23.7	46.7	236°51.1	35.3	20°46.7	18.5						Akamar	315°19.9	-40°16.0
8	220°52.2	301°50.3	37.7	78°26.5	46.9	251°53.0	35.1	35°49.2	18.5						Menkar	314°17.5	4°07.8
9	235°54.7	316°49.3	· · 37.6	93°29.4	· · 47.1	266°55.0	· · 35.0	50°51.6	· · 18.4						Mirfak	308°43.7	49°54.0
10	250°57.2	331°48.4	37.5	108°32.2	47.3	281°57.0	34.8	65°54.0	18.4						Aldebaran	290°52.0	16°31.9
11	265°59.6	346°47.4	37.4	123°35.0	47.6	296°59.0	34.6	80°56.4	18.4						Rigel	281°14.1	-8°11.4
12	281°02.1	1°46.4	S23°37.3	138°37.9	N18°47.8	312°00.9	S13°34.4	95°58.8	N00°18.4						Capella	280°37.8	46°00.6
13	296°04.5	16°45.5	37.2	153°40.7	48.0	327°02.9	34.3	111°01.2	18.4						Bellatrix	278°34.4	6°21.5
14	311°07.0	31°44.5	37.1	168°43.5	48.2	342°04.9	34.1	126°03.6	18.4						Elnath	278°15.5	28°37.0
15	326°09.5	46°43.5	· · 37.0	183°46.4	· · 48.5	357°06.8	· · 33.9	141°06.0	· · 18.4						Alnilam	275°48.6	-1°11.7
16	341°11.9	61°42.6	36.9	198°49.2	48.7	12°08.8	33.7	156°08.4	18.4						Betelgeuse	271°03.7	7°24.5
17	356°14.4	76°41.6	36.8	213°52.0	48.9	27°10.8	33.6	171°10.8	18.4						Canopus	263°56.7	-52°42.1
18	11°16.9	91°40.6	S23°36.7	228°54.9	N18°49.1	42°12.8	S13°33.4	186°13.2	N00°18.3						Sirius	258°35.5	-16°43.6
19	26°19.3	106°39.6	36.5	243°57.7	49.4	57°14.7	33.2	201°15.7	18.3						Adara	255°14.1	-28°59.2
20	41°21.8	121°38.7	36.4	259°00.6	49.6	72°16.7	33.0	216°18.1	18.3						Procyon	245°01.9	5°12.0
21	56°24.3	136°37.7	· · 36.3	274°03.4	· · 49.8	87°18.7	· · 32.9	231°20.5	· · 18.3						Pollux	243°30.3	28°00.0
22	71°26.7	151°36.7	36.2	289°06.3	50.0	102°20.7	32.7	246°22.9	18.3						Avior	234°18.6	-59°32.4
23	86°29.2	166°35.8	36.1	304°09.1	50.3	117°22.6	32.5	261°25.3	18.3						Suhail	222°54.0	-43°28.3
Mer.pass.:17:14			v-1.0 d0.1 m-3.8			v2.8 d0.2 m-0.7			v2.0 d0.2 m-2.0			v2.4 d-0.0 m0.9					

Sat	GHA	Dec	GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec	
0	101°31.7	181°34.8	S23°36.0	319°12.0	N18°50.5	132°24.6	S13°32.3	276°27.7	N00°18.3					
1	116°34.1	196°33.8	35.8	334°14.8	50.7	147°26.6	32.2	291°30.1	18.3					
2	131°36.6	211°32.9	35.7	349°17.7	51.0	162°28.6	32.0	306°32.5	18.3					
3	146°39.0	226°31.9	· · 35.6	4°20.5	· · 51.2	177°30.5	· · 31.8	321°34.9	· · 18.3					
4	161°41.5	241°30.9	35.5	19°23.4	51.4	192°32.5	31.6	336°37.3	18.2					
5	176°44.0	256°30.0	35.3	34°26.2	51.6	207°34.5	31.5	351°39.8	18.2					
6	191°46.4	271°29.0	S23°35.2	49°29.1	N18°51.9	222°36.4	S13°31.3	6°42.2	N00°18.2					
7	206°48.9	286°28.0	35.1	64°31.9	52.1	237°38.4	31.1	21°44.6	18.2					
8	221°51.4	301°27.1	34.9	79°34.8	52.3	252°40.4	30.9	36°47.0	18.2					
9	236°53.8	316°26.1	· · 34.8	94°37.7	· · 52.6	267°42.4	· · 30.8	51°49.4	· · 18.2					
10	251°56.3	331°25.1	34.7	109°40.5	52.8	282°44.3	30.6	66°51.8	18.2					
11	266°58.8	346°24.2	34.5	124°43.4	53.0	297°46.3	30.4	81°54.2	18.2					
12	282°01.2	1°23.2	S23°34.4	139°46.3	N18°53.3	312°48.3	S13°30.2	96°56.6	N00°18.2					
13	297°03.7	16°22.2	34.3	154°49.1	53.5	327°50.2	30.1	111°59.1	18.2					
14	312°06.1	31°21.3	34.1	169°52.0	53.7	342°52.2	29.9	127°01.5	18.2					
15	327°08.6	46°20.3	· · 34.0	184°54.9	· · 54.0	357°54.2	· · 29.7	142°03.9	· · 18.1					
16	342°11.1	61°19.3	33.8	199°57.7	54.2	12°56.2	29.5	157°06.3	18.1					
17	357°13.5	76°18.4	33.7	215°00.6	54.4	27°58.1	29.3	172°08.7	18.1					
18	12°16.0	91°17.4	S23°33.6	230°03.5	N18°54.7	43°00.1	S13°29.2	187°11.1	N00°18.1					
19	27°18.5	106°16.5	33.4	245°06.4	54.9	58°02.1	29.0	202°13.5	18.1					
20	42°20.9	121°15.5	33.3	260°09.3	55.1	73°04.0	28.8	217°16.0	18.1					
21	57°23.4	136°14.5	· · 33.1	275°12.1	· · 55.4	88°06.0	· · 28.6	232°18.4	· · 18.1					
22	72°25.9	151°13.6	33.0	290°15.0	55.6	103°08.0	28.5	247°20.8	18.1					
23	87°28.3	166°12.6	32.8	305°17.9	55.9	118°09.9	28.3	262°23.2	18.1					
Mer.pass.:17:11			v-1.0 d0.1 m-3.8			v2.9 d0.2 m-0.8			v2.0 d0.2 m-1.9			v2.4 d-0.0 m0.9		

Sun	GHA	Dec	GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec	
0	102°30.8	181°11.6	S23°32.7	320°20.8	N18°56.1	133°11.9	S13°28.1	277°25.6	N00°18.1					
1	117°33.3	196°10.7	32.5	335°23.7	56.3	148°13.9	27.9	292°28.0	18.1					
2	132°35.7	211°09.7	32.4	350°26.6	56.6	163°15.9	27.8	307°30.4	18.1					
3	147°38.2	226°08.7	· · 32.2	5°29.4	· · 56.8	178°17.8	· · 27.6	322°32.9	· · 18.0					
4	162°40.6	241°07.8	32.0	20°32.3	57.0	193°19.8	27.4	337°35.3	18.0					
5	177°43.1	256°06.8	31.9	35°35.2	57.3	208°21.8	27.2	352°37.7	18.0					
6	192°45.6	271°05.8	S23°31.7	50°38.1	N18°57.5	223°23.7	S13°27.0	7°40.1	N00°18.0					
7	207°48.0	286°04.9	31.6	65°41.0	57.8	238°25.7	26.9	22°42.5	18.0					
8	222°50.5	301°03.9	31.4	80°43.9	58.0	253°27.7	26.7	37°44.9	18.0					
9	237°53.0	316°03.0	· · 31.2	95°46.8	· · 58.2	268°29.6	· · 26.5	52°47.4	· · 18.0					
10	252°55.4	331°02.0	31.1	110°49.7	58.5	283°31.6	26.3	67°49.8	18.0					
11	267°57.9	346°01.0	30.9	125°52.6	58.7	298°33.6	26.2	82°52.2	18.0					
12	283°00.4	1°00.1	S23°30.7	140°55.5	N18°59.0	313°35.5	S13°26.0	97°54.6	N00°18.0					
13	298°02.8	15°59.1	30.6	155°58.4	59.2	328°37.5	25.8	112°57.0	18.0					
14	313°05.3	30°58.1	30.4	171°01.3	59.5	343°39.5	25.6	127°59.4	18.0					
15	328°07.8	45°57.2	· · 30.2	186°04.2	· · 59.7	358°41.4	· · 25.4	143°01.9	· · 18.0					
16	343°10.2	60°56.2	30.1	201°07.1	18°59.9	13°43.4	25.3	158°04.3	17.9					
17	358°12.7	75°55.3	29.9	216°10.0	19°00.2	28°45.4	25.1	173°06.7	17.9					
18	13°15.1	90°54.3	S23°29.7	231°13.0	N19°00.4	43°47.3	S13°24.9	188°09.3	N00°17.9					
19	28°17.6	105°53.3	29.5	246°15.9	00.7	58°49.3	24.7	203°11.5	17.9					
20	43°20.1	120°52.4	29.4	261°18.8	00.9	73°51.3	24.6	218°13.9	17.9					
21	58°22.5	135°51.4	· · 29.2	276°21.7	· · 01.2	88°53.3	· · 24.4	233°16.4	· · 17.9					
22	73°25.0	150°50.4	29.0	291°24.6	01.4	103°55.2	24.2	248°18.8	17.9					
23	88°27.5	165°49.5	28.8	306°27.5	01.7	118°57.2	24.0	263°21.2	17.9					
Mer.pass.:17:07			v-1.0 d0.2 m-3.8			v2.9 d0.2 m-0.8			v2.0 d0.2 m-1.9			v2.4 d-0.0 m0.9		

Jan 01 Fri	SHA	Mer.pass
Venus	81°25.5	11:53
Mars	217°31.4	02:47
Jupiter	31°04.7	15:12
Saturn	174°57.4	05:37

Jan 02 Sat	SHA	Mer.pass
Venus	80°03.2	11:54
Mars	217°40.3	02:43
Jupiter	30°53.0	15:08
Saturn	174°56.1	05:33

Jan 03 Sun	SHA	Mer.pass
Venus	78°40.8	11:56
Mars	217°50.0	02:38
Jupiter	30°41.1	15:05
Saturn	174°54.8	05:29

Horizontal parallax	
Venus:	0.1
Mars:	0.2

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2020 January 01 to Jan. 03

Sun				Moon			
Wed	GHA	Dec		GHA	v	Dec	HP
0	179° 13.7	S23° 03.5		110° 56.9	15.3'	S09° 58.5	10.7' 54.3'
1	194° 13.4	03.3		125° 31.3	15.4'	09° 47.8	10.7' 54.3'
2	209° 13.1	03.1		140° 05.7	15.4'	09° 37.1	10.7' 54.3'
3	224° 12.8	03.0		154° 40.1	15.5'	09° 26.3	10.8' 54.3'
4	239° 12.5	02.8		169° 14.6	15.5'	09° 15.5	10.8' 54.3'
5	254° 12.2	02.6		183° 49.1	15.5'	09° 04.7	10.8' 54.2'
6	269° 11.9	S23° 02.4		198° 23.6	15.6'	S08° 53.8	10.9' 54.2'
7	284° 11.6	02.2		212° 58.2	15.6'	08° 42.9	10.9' 54.2'
8	299° 11.3	02.0		227° 32.8	15.6'	08° 32.0	10.9' 54.2'
9	314° 11.0	01.8		242° 07.5	15.7'	08° 21.0	11.0' 54.2'
10	329° 10.7	01.6		256° 42.2	15.7'	08° 10.0	11.0' 54.2'
11	344° 10.4	01.4		271° 16.9	15.7'	07° 59.0	11.0' 54.2'
12	359° 10.1	S23° 01.2		285° 51.7	15.8'	S07° 48.0	11.1' 54.2'
13	14° 09.8	01.0		300° 26.4	15.8'	07° 36.9	11.1' 54.2'
14	29° 09.5	00.8		315° 01.2	15.8'	07° 25.8	11.1' 54.2'
15	44° 09.2	00.6		329° 36.1	15.9'	07° 14.7	11.1' 54.2'
16	59° 08.9	00.4		344° 10.9	15.9'	07° 03.5	11.2' 54.2'
17	74° 08.6	00.2		358° 45.8	15.9'	06° 52.3	11.2' 54.2'
18	89° 08.3	S23° 00.0		13° 20.7	15.9'	S06° 41.1	11.2' 54.2'
19	104° 08.0	22° 59.7		27° 55.7	16.0'	06° 29.9	11.2' 54.2'
20	119° 07.7	59.5		42° 30.7	16.0'	06° 18.7	11.3' 54.2'
21	134° 07.5	59.3		57° 05.6	16.0'	06° 07.4	11.3' 54.2'
22	149° 07.2	59.1		71° 40.6	16.0'	05° 56.1	11.3' 54.2'
23	164° 06.9	58.9		86° 15.7	16.0'	05° 44.8	11.3' 54.2'
SD.=16.3 d=0.2				S.D.=14.8			

Thu				Moon			
Thu	GHA	Dec		GHA	v	Dec	HP
0	179° 06.6	S22° 58.7		100° 50.7	16.1'	S05° 33.4	11.3' 54.2'
1	194° 06.3	58.5		115° 25.8	16.1'	05° 22.1	11.4' 54.2'
2	209° 06.0	58.3		130° 00.9	16.1'	05° 10.7	11.4' 54.2'
3	224° 05.7	58.1		144° 36.0	16.1'	04° 59.3	11.4' 54.2'
4	239° 05.4	57.9		159° 11.1	16.1'	04° 47.9	11.4' 54.2'
5	254° 05.1	57.6		173° 46.3	16.1'	04° 36.5	11.4' 54.2'
6	269° 04.8	S22° 57.4		188° 21.4	16.2'	S04° 25.0	11.5' 54.2'
7	284° 04.5	57.2		202° 56.6	16.2'	04° 13.5	11.5' 54.2'
8	299° 04.2	57.0		217° 31.7	16.2'	04° 02.1	11.5' 54.2'
9	314° 03.9	56.8		232° 06.9	16.2'	03° 50.6	11.5' 54.2'
10	329° 03.6	56.6		246° 42.1	16.2'	03° 39.0	11.5' 54.2'
11	344° 03.3	56.3		261° 17.3	16.2'	03° 27.5	11.5' 54.2'
12	359° 03.0	S22° 56.1		275° 52.6	16.2'	S03° 16.0	11.5' 54.2'
13	14° 02.8	55.9		290° 27.8	16.2'	03° 04.4	11.6' 54.2'
14	29° 02.5	55.7		305° 03.0	16.2'	02° 52.8	11.6' 54.2'
15	44° 02.2	55.5		319° 38.3	16.2'	02° 41.3	11.6' 54.2'
16	59° 01.9	55.2		334° 13.5	16.2'	02° 29.7	11.6' 54.2'
17	74° 01.6	55.0		348° 48.8	16.3'	02° 18.1	11.6' 54.2'
18	89° 01.3	S22° 54.8		3° 24.0	16.3'	S02° 06.5	11.6' 54.2'
19	104° 01.0	54.6		17° 59.3	16.3'	01° 54.8	11.6' 54.2'
20	119° 00.7	54.3		32° 34.5	16.3'	01° 43.2	11.6' 54.2'
21	134° 00.4	54.1		47° 09.8	16.3'	01° 31.6	11.6' 54.2'
22	149° 00.1	53.9		61° 45.0	16.3'	01° 19.9	11.7' 54.2'
23	163° 59.8	53.7		76° 20.3	16.3'	01° 08.2	11.7' 54.3'
SD.=16.3 d=0.2				S.D.=14.8			

Fri				Moon			
Fri	GHA	Dec		GHA	v	Dec	HP
0	178° 59.5	S22° 53.4		90° 55.5	16.2'	S00° 56.6	11.7' 54.3'
1	193° 59.3	53.2		105° 30.8	16.2'	00° 44.9	11.7' 54.3'
2	208° 59.0	53.0		120° 06.0	16.2'	00° 33.2	11.7' 54.3'
3	223° 58.7	52.7		134° 41.3	16.2'	00° 21.5	11.7' 54.3'
4	238° 58.4	52.5		149° 16.5	16.2'	S00° 09.9	11.7' 54.3'
5	253° 58.1	52.3		163° 51.7	16.2'	N00° 01.8	11.7' 54.3'
6	268° 57.8	S22° 52.0		178° 26.9	16.2'	N00° 13.5	11.7' 54.3'
7	283° 57.5	51.8		193° 02.1	16.2'	00° 25.2	11.7' 54.3'
8	298° 57.2	51.6		207° 37.3	16.2'	00° 36.9	11.7' 54.3'
9	313° 56.9	51.3		222° 12.5	16.2'	00° 48.6	11.7' 54.3'
10	328° 56.6	51.1		236° 47.7	16.2'	01° 00.3	11.7' 54.3'
11	343° 56.4	50.8		251° 22.8	16.1'	01° 12.0	11.7' 54.4'
12	358° 56.1	S22° 50.6		265° 58.0	16.1'	N01° 23.7	11.7' 54.4'
13	13° 55.8	50.4		280° 33.1	16.1'	01° 35.4	11.7' 54.4'
14	28° 55.5	50.1		295° 08.2	16.1'	01° 47.1	11.7' 54.4'
15	43° 55.2	49.9		309° 43.3	16.1'	01° 58.8	11.7' 54.4'
16	58° 54.9	49.6		324° 18.4	16.1'	02° 10.5	11.7' 54.4'
17	73° 54.6	49.4		338° 53.4	16.0'	02° 22.2	11.7' 54.4'
18	88° 54.3	S22° 49.2		353° 28.4	16.0'	N02° 33.9	11.7' 54.4'
19	103° 54.0	48.9		8° 03.5	16.0'	02° 45.6	11.7' 54.4'
20	118° 53.8	48.7		22° 38.4	16.0'	02° 57.3	11.7' 54.4'
21	133° 53.5	48.4		37° 13.4	16.0'	03° 09.0	11.7' 54.5'
22	148° 53.2	48.2		51° 48.4	15.9'	03° 20.6	11.7' 54.5'
23	163° 52.9	47.9		66° 23.3	15.9'	03° 32.3	11.7' 54.5'
SD.=16.3 d=0.2				S.D.=14.8			

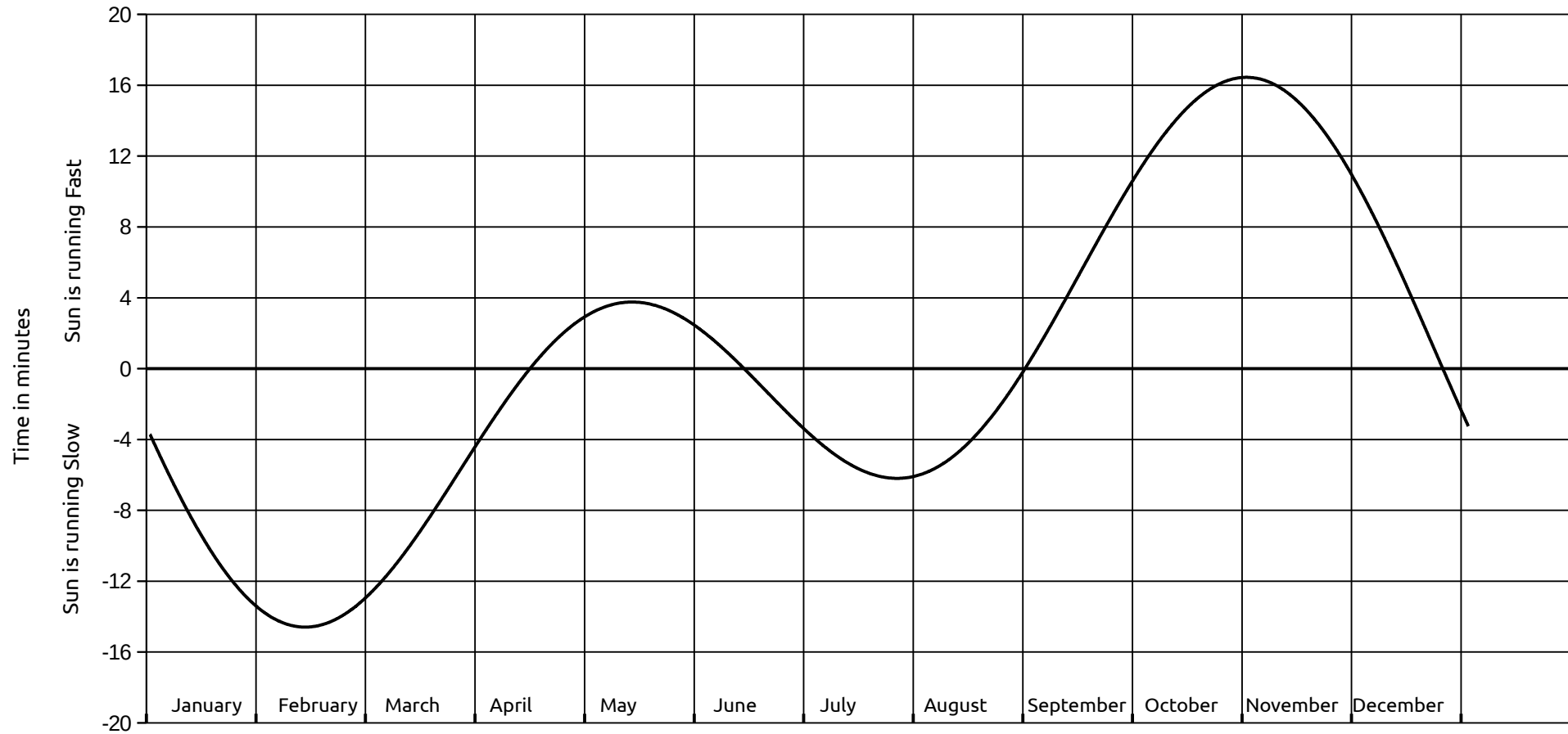
Lat.	Twilight		Sunrise	Sunset	Twilight	
	Naut.	Civil			Civil	Naut.
N 72°	08:23	10:41	■	■	13:27	15:45
N 70°	08:05	09:49	■	■	14:19	16:03
68°	07:50	09:16	■	■	14:52	16:18
66°	07:37	08:53	■	■	15:15	16:31
64°	07:26	08:34	■	■	14:19	15:34
62°	07:17	08:18	■	■	14:45	15:49
60°	07:09	08:05	■	■	15:06	16:02
N 58°	07:02	07:54	■	■	16:14	17:06
56°	06:56	07:44	■	■	15:37	16:24
54°	06:50	07:35	■	■	15:49	16:32
52°	06:44	07:28	■	■	16:00	16:40
50°	06:39	07:20	■	■	16:09	16:47
45°	06:28	07:05	■	■	16:29	17:03
N 40°	06:18	06:52	■	■	16:46	17:16
35°	06:08	06:40	■	■	17:00	17:28
30°	06:00	06:30	■	■	17:12	17:38
20°	05:44	06:11	■	■	17:32	17:56
N 10°	05:28	05:54	■	■	17:50	18:13
0°	05:11	05:38	■	■	18:08	18:30
S 10°	04:53	05:20	■	■	18:25	18:48
20°	04:31	05:00	■	■	18:43	19:08
30°	04:02	04:35	■	■	19:05	19:32
35°	03:44	04:20	■	■	19:17	19:47
40°	03:21	04:03	■	■	19:32	20:05
45°	02:52	03:41	■	■	19:50	20:27
S 50°	02:08	03:12	■	■	20:11	20:55
52°	01:42	02:57	■	■	20:22	21:10
54°	01:02	02:40	■	■	20:34	21:27
56°	□	02:19	■	■	20:47	21:48
58°	□	01:51	■	■	21:04	22:15
S 60°	□	01:08	■	■	21:23	22:58

Lat.	Moonrise			Moonset		
	Wed	Thu	Fri	Wed	Thu	Fri
N 72°	12:37	12:18	12:00	21:58	23:43	--
N 70°	12:26	12:13	12:02	22:06	23:44	--
68°	12:17	12:10	12:03	22:14	23:45	--
66°	12:09	12:07	12:04	22:20	23:46	--
64°	12:02	12:04	12:05	22:25	23:47	--
62°	11:57	12:02	12:06	22:29	23:48	--
60°	11:52	12:00	12:07	22:33	23:49	--
N 58°	11:48	11:58	12:08	22:36	23:49	--
56°	11:44	11:56	12:08	22:39	23:50	--
54°	11:40	11:55	12:09	22:42	23:50	--
52°	11:37	11:54	12:10	22:44	23:51	--
50°	11:34	11:52	12:10	22:46	23:51	--
45°	11:28	11:50	12:11	22:51	23:52	--
N 40°	11:23	11:48	12:12	22:55	23:52	--
35°	11:18	11:46	12:13	22:58	23:53	--
30°	11:14	11:44	12:14	23:01	23:54	--
20°	11:07	11:41	12:15	23:06	23:54	--
N 10°	11:01	11:39	12:16	23:11	23:55	--
0°	10:55	11:36	12:17	23:15	23:56	--
S 10°	10:49	11:34	12:18	23:19	23:57	--
20°	10:43	11:31	12:19	23:24	23:57	--
30°	10:36	11:28	12:20	23:29	23:58	--
35°	10:32	11:26	12:21	23:31	23:59	--
40°	10:27	11:25	12:22	23:35	23:59	--
45°	10:21	11:22	12:23	23:38	--	00:00
S 50°	10:15	11:20	12:24	23:43	--	00:00
52°	10:12	11:18	12:25	23:45	--	00:01
54°	10:08	11:17	12:25	23:47	--	00:01
56°	10:05	11:15	12:26	23:49	--	00:01
58°	10:01	11:14	12:27	23:52	--	00:02
S 60°	09:56	11:12	12:28	23:55	--	00:02

Day	Sun		Mer. Pass	Moon		Age 6-8 34-53%
	Eqn. of Time 00 ^h mm:ss	12 ^h mm:ss		Upper Mer. Pass. hh:mm	Lower Mer. Pass. hh:mm	
01	03:05	03:20	12:03	17:05	04:44	
02	03:34	03:48	12:04	17:46	05:26	
03	04:02	04:16	12:04	18:27	06:06	

9

Equation of Time *for the Sun*

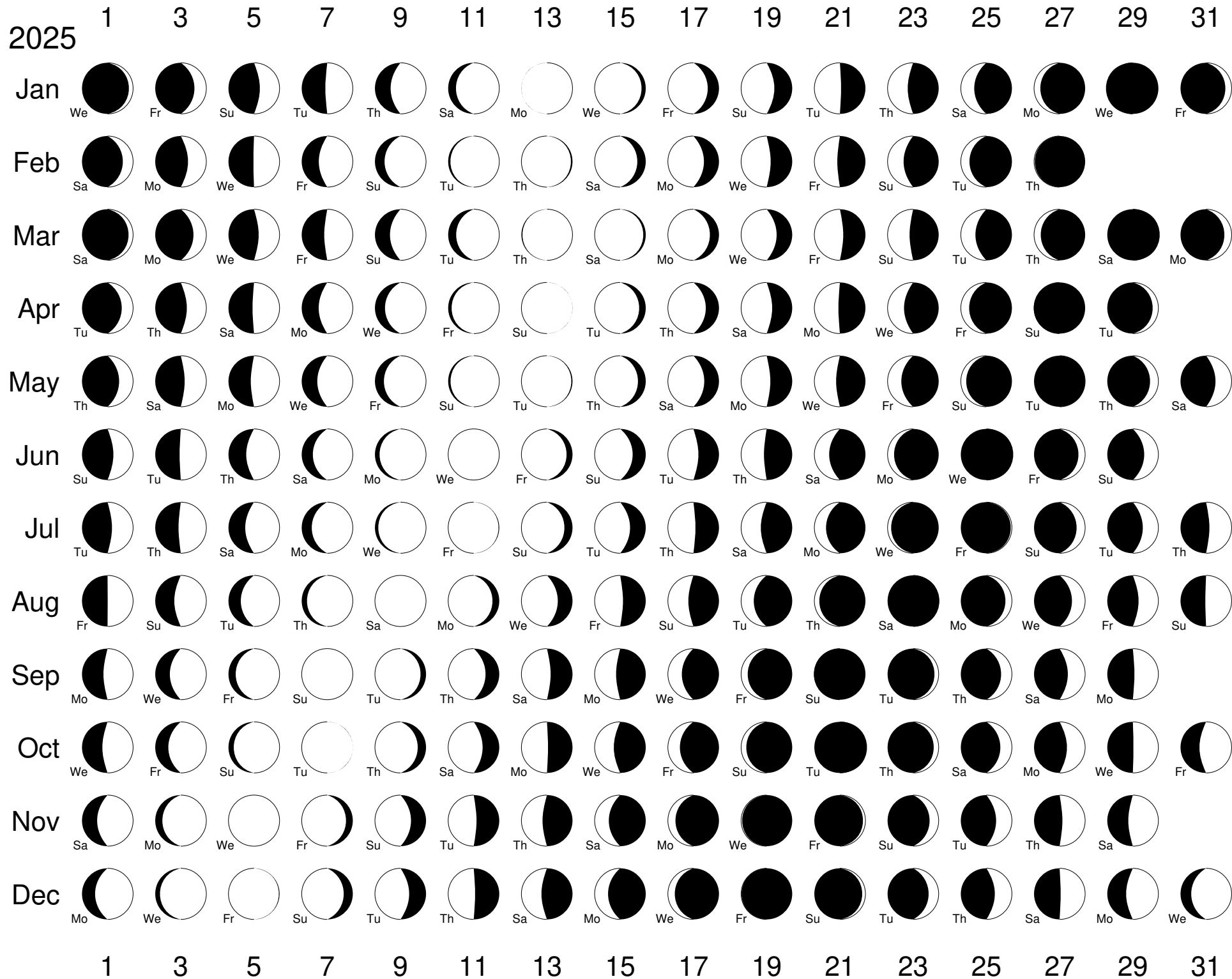


2025 Moon Phases

Date and Time (GMT/Universal Time)

New Moon	First Quarter	Full Moon	Last Quarter
--	January 06 23:56	January 13 22:27	January 21 20:31
January 29 12:36	February 05 08:02	February 12 13:53	February 20 17:32
February 28 00:45	March 06 16:31	March 14 06:55	March 22 11:29
March 29 10:58	April 05 02:15	April 13 00:22	April 21 01:35
April 27 19:31	May 04 13:52	May 12 16:56	May 20 11:59
May 27 03:02	June 03 03:41	June 11 07:44	June 18 19:19
June 25 10:31	July 02 19:30	July 10 20:37	July 18 00:38
July 24 19:11	August 01 12:41	August 09 07:55	August 16 05:12
August 23 06:06	August 31 06:25	September 07 18:09	September 14 10:33
September 21 19:54	September 29 23:54	October 07 03:47	October 13 18:13
October 21 12:25	October 29 16:21	November 05 13:19	November 12 05:28
November 20 06:47	November 28 06:59	December 04 23:14	December 11 20:52
December 20 01:43	December 27 19:10	--	--

Add or subtract your time difference from Greenwich to determine local time and date of Moon phase.



Conversion of Arc to Time

0° - 59°			60° - 119°			120° - 179°			180° - 239°			240° - 299°			300° - 360°			0' - 59'			0" - 59"	
°	h	m	°	h	m	°	h	m	°	h	m	°	h	m	°	h	m	'	m	s	"	s
0	0	00	60	4	00	120	8	00	180	12	00	240	16	00	300	20	00	0	0	00	0	0.00
1	0	04	61	4	04	121	8	04	181	12	04	241	16	04	301	20	04	1	0	04	1	0.07
2	0	08	62	4	08	122	8	08	182	12	08	242	16	08	302	20	08	2	0	08	2	0.13
3	0	12	63	4	12	123	8	12	183	12	12	243	16	12	303	20	12	3	0	12	3	0.20
4	0	16	64	4	16	124	8	16	184	12	16	244	16	16	304	20	16	4	0	16	4	0.27
5	0	20	65	4	20	125	8	20	185	12	20	245	16	20	305	20	20	5	0	20	5	0.33
6	0	24	66	4	24	126	8	24	186	12	24	246	16	24	306	20	24	6	0	24	6	0.40
7	0	28	67	4	28	127	8	28	187	12	28	247	16	28	307	20	28	7	0	28	7	0.47
8	0	32	68	4	32	128	8	32	188	12	32	248	16	32	308	20	32	8	0	32	8	0.53
9	0	36	69	4	36	129	8	36	189	12	36	249	16	36	309	20	36	9	0	36	9	0.60
10	0	40	70	4	40	130	8	40	190	12	40	250	16	40	310	20	40	10	0	40	10	0.67
11	0	44	71	4	44	131	8	44	191	12	44	251	16	44	311	20	44	11	0	44	11	0.73
12	0	48	72	4	48	132	8	48	192	12	48	252	16	48	312	20	48	12	0	48	12	0.80
13	0	52	73	4	52	133	8	52	193	12	52	253	16	52	313	20	52	13	0	52	13	0.87
14	0	56	74	4	56	134	8	56	194	12	56	254	16	56	314	20	56	14	0	56	14	0.93
15	1	00	75	5	00	135	9	00	195	13	00	255	17	00	315	21	00	15	1	00	15	1.00
16	1	04	76	5	04	136	9	04	196	13	04	256	17	04	316	21	04	16	1	04	16	1.07
17	1	08	77	5	08	137	9	08	197	13	08	257	17	08	317	21	08	17	1	08	17	1.13
18	1	12	78	5	12	138	9	12	198	13	12	258	17	12	318	21	12	18	1	12	18	1.20
19	1	16	79	5	16	139	9	16	199	13	16	259	17	16	319	21	16	19	1	16	19	1.27
20	1	20	80	5	20	140	9	20	200	13	20	260	17	20	320	21	20	20	1	20	20	1.33
21	1	24	81	5	24	141	9	24	201	13	24	261	17	24	321	21	24	21	1	24	21	1.40
22	1	28	82	5	28	142	9	28	202	13	28	262	17	28	322	21	28	22	1	28	22	1.47
23	1	32	83	5	32	143	9	32	203	13	32	263	17	32	323	21	32	23	1	32	23	1.53
24	1	36	84	5	36	144	9	36	204	13	36	264	17	36	324	21	36	24	1	36	24	1.60
25	1	40	85	5	40	145	9	40	205	13	40	265	17	40	325	21	40	25	1	40	25	1.67
26	1	44	86	5	44	146	9	44	206	13	44	266	17	44	326	21	44	26	1	44	26	1.73
27	1	48	87	5	48	147	9	48	207	13	48	267	17	48	327	21	48	27	1	48	27	1.80
28	1	52	88	5	52	148	9	52	208	13	52	268	17	52	328	21	52	28	1	52	28	1.87
29	1	56	89	5	56	149	9	56	209	13	56	269	17	56	329	21	56	29	1	56	29	1.93
30	2	00	90	6	00	150	10	00	210	14	00	270	18	00	330	22	00	30	2	00	30	2.00
31	2	04	91	6	04	151	10	04	211	14	04	271	18	04	331	22	04	31	2	04	31	2.07
32	2	08	92	6	08	152	10	08	212	14	08	272	18	08	332	22	08	32	2	08	32	2.13
33	2	12	93	6	12	153	10	12	213	14	12	273	18	12	333	22	12	33	2	12	33	2.20
34	2	16	94	6	16	154	10	16	214	14	16	274	18	16	334	22	16	34	2	16	34	2.27
35	2	20	95	6	20	155	10	20	215	14	20	275	18	20	335	22	20	35	2	20	35	2.33
36	2	24	96	6	24	156	10	24	216	14	24	276	18	24	336	22	24	36	2	24	36	2.40
37	2	28	97	6	28	157	10	28	217	14	28	277	18	28	337	22	28	37	2	28	37	2.47
38	2	32	98	6	32	158	10	32	218	14	32	278	18	32	338	22	32	38	2	32	38	2.53
39	2	36	99	6	36	159	10	36	219	14	36	279	18	36	339	22	36	39	2	36	39	2.60
40	2	40	100	6	40	160	10	40	220	14	40	280	18	40	340	22	40	40	2	40	40	2.67
41	2	44	101	6	44	161	10	44	221	14	44	281	18	44	341	22	44	41	2	44	41	2.73
42	2	48	102	6	48	162	10	48	222	14	48	282	18	48	342	22	48	42	2	48	42	2.80
43	2	52	103	6	52	163	10	52	223	14	52	283	18	52	343	22	52	43	2	52	43	2.87
44	2	56	104	6	56	164	10	56	224	14	56	284	18	56	344	22	56	44	2	56	44	2.93
45	3	00	105	7	00	165	11	00	225	15	00	285	19	00	345	23	00	45	3	00	45	3.00
46	3	04	106	7	04	166	11	04	226	15	04	286	19	04	346	23	04	46	3	04	46	3.07
47	3	08	107	7	08	167	11	08	227	15	08	287	19	08	347	23	08	47	3	08	47	3.13
48	3	12	108	7	12	168	11	12	228	15	12	288	19	12	348	23	12	48	3	12	48	3.20
49	3	16	109	7	16	169	11	16	229	15	16	289	19	16	349	23	16	49	3	16	49	3.27
50	3	20	110	7	20	170	11	20	230	15	20	290	19	20	350	23	20	50	3	20	50	3.33
51	3	24	111	7	24	171	11	24	231	15	24	291	19	24	351	23	24	51	3	24	51	3.40
52	3	28	112	7	28	172	11	28	232	15	28	292	19	28	352	23	28	52	3	28	52	3.47
53	3	32	113	7	32	173	11	32	233	15	32	293	19	32	353	23	32	53	3	32	53	3.53
54	3	36	114	7	36	174	11	36	234	15	36	294	19	36	354	23	36	54	3	36	54	3.60
55	3	40	115	7	40	175	11	40	235	15	40	295	19	40	355	23	40	55	3	40	55	3.67
56	3	44	116	7	44	176	11	44	236	15	44	296	19	44	356	23	44	56	3	44	56	3.73
57	3	48	117	7	48	177	11	48	237	15	48	297	19	48	357	23	48	57	3	48	57	3.80
58	3	52	118	7	52	178	11	52	238	15	52	298	19	52	358	23	52	58	3	52	58	3.87
59	3	56	119	7	56	179	11	56	239	15	56	299	19	56	359	23	56	59	3	56	59	3.93
60	4	00	120	8	00	180	12	00	240	16	00	300	20	00	360	24	00	60	4	00	60	4.00

h= hours of time m= minutes of time s = seconds of time ' = minutes of arc " = seconds of arc

	Aries			Venus			Mars			Jupiter			Saturn		
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	100°53.2	130°29.5	S13°35.2	335°45.6	N23°32.7	29°00.2	N21°47.2	114°22.2	S07°55.0						
1	115°55.6	145°29.4	34.1	350°48.9	33.0	44°03.0	47.2	129°24.5	54.9						
2	130°58.1	160°29.4	33.0	5°52.3	33.3	59°05.7	47.2	144°26.8	54.8						
3	146°00.6	175°29.3	•• 31.9	20°55.6	•• 33.5	74°08.5	•• 47.2	159°29.1	•• 54.8						
4	161°03.0	190°29.2	30.8	35°58.9	33.8	89°11.2	47.1	174°31.4	54.7						
5	176°05.5	205°29.2	29.7	51°02.2	34.1	104°14.0	47.1	189°33.6	54.6						
6	191°08.0	220°29.1	S13°28.6	66°05.5	N23°34.4	119°16.7	N21°47.1	204°35.9	S07°54.5						
7	206°10.4	235°29.1	27.5	81°08.8	34.6	134°19.5	47.1	219°38.2	54.5						
8	221°12.9	250°29.0	26.4	96°12.2	34.9	149°22.2	47.0	234°40.5	54.4						
9	236°15.4	265°28.9	•• 25.4	111°15.5	•• 35.2	164°25.0	•• 47.0	249°42.8	•• 54.3						
10	251°17.8	280°28.9	24.3	126°18.8	35.5	179°27.7	47.0	264°45.1	54.2						
11	266°20.3	295°28.8	23.2	141°22.1	35.7	194°30.5	47.0	279°47.4	54.1						
12	281°22.8	310°28.8	S13°22.1	156°25.4	N23°36.0	209°33.2	N21°46.9	294°49.7	S07°54.1						
13	296°25.2	325°28.7	21.0	171°28.8	36.3	224°36.0	46.9	309°52.0	54.0						
14	311°27.7	340°28.7	19.9	186°32.1	36.6	239°38.7	46.9	324°54.2	53.9						
15	326°30.1	355°28.6	•• 18.8	201°35.4	•• 36.8	254°41.5	•• 46.9	339°56.5	•• 53.8						
16	341°32.6	10°28.6	17.7	216°38.8	37.1	269°44.2	46.9	354°58.8	53.7						
17	356°35.1	25°28.5	16.6	231°42.1	37.4	284°47.0	46.8	10°01.1	53.7						
18	11°37.5	40°28.5	S13°15.5	246°45.4	N23°37.9	299°49.7	N21°46.8	25°03.4	S07°53.6						
19	26°40.0	55°28.4	14.4	261°48.7	37.7	314°52.4	46.8	40°05.7	53.5						
20	41°42.5	70°28.4	13.3	276°52.1	38.2	329°55.2	46.8	55°08.0	53.4						
21	56°44.9	85°28.3	•• 12.2	291°55.4	•• 38.5	344°57.9	•• 46.7	70°10.3	•• 53.4						
22	71°47.4	100°28.3	11.1	306°58.7	37.7	362°58.7	46.7	85°12.6	53.3						
23	86°49.9	115°28.3	10.0	322°02.1	39.0	15°03.4	46.7	100°14.8	53.2						
Mer.pass.:17:14			v-0.1 d1.1 m-4.2	v3.3 d0.3 m-1.1			v2.7 d-0.0 m-2.6			v2.3 d0.1 m1.1					

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	101°52.3	130°28.2	S13°08.9	337°05.4	N23°39.3	30°06.2	N21°46.7	115°17.1	S07°53.1						
1	116°54.8	145°28.2	07.8	352°08.8	39.6	45°08.9	46.6	126°19.4	53.0						
2	131°57.2	160°28.1	06.7	7°12.1	39.9	60°11.6	46.6	145°21.7	53.0						
3	146°59.7	175°28.1	•• 05.6	22°15.4	•• 40.1	75°14.4	•• 46.6	166°13.0	•• 52.9						
4	162°02.2	190°28.1	04.5	37°18.8	40.7	90°17.1	46.6	175°26.3	52.8						
5	177°04.6	205°28.0	03.4	52°22.1	40.4	105°19.9	46.5	190°28.6	52.7						
6	192°07.1	220°28.0	S13°02.3	67°25.5	N23°41.0	120°22.6	N21°46.5	205°30.9	S07°52.6						
7	207°09.6	235°27.9	01.2	82°28.8	41.3	135°25.4	46.5	220°33.1	52.6						
8	222°12.0	250°27.9	13°00.1	97°32.2	41.5	150°28.1	46.5	235°35.4	52.5						
9	237°14.5	265°27.9	12°59.0	112°35.5	•• 41.8	165°30.8	•• 46.4	250°37.7	•• 52.4						
10	252°17.0	280°27.8	57.9	127°38.9	42.1	180°33.6	46.4	265°40.6	52.3						
11	267°19.4	295°27.8	56.8	142°42.2	42.4	195°36.3	46.4	280°42.3	52.2						
12	282°21.9	310°27.8	S12°55.7	157°45.6	N23°42.6	210°39.1	N21°46.4	295°44.6	S07°52.2						
13	297°24.4	325°27.8	54.5	172°48.9	42.9	225°41.8	46.3	310°46.9	52.1						
14	312°26.8	340°27.7	53.4	187°52.3	43.2	240°44.5	46.3	325°49.1	52.0						
15	327°29.3	355°27.7	•• 52.3	202°55.6	•• 43.5	255°47.3	•• 46.3	340°51.4	•• 51.9						
16	342°31.7	10°27.7	51.2	217°59.0	43.7	270°50.0	46.3	355°53.7	51.8						
17	357°34.2	25°27.6	50.1	233°02.3	44.0	285°52.8	46.3	10°56.0	51.8						
18	12°36.7	40°27.6	S12°49.0	248°05.7	N23°44.6	300°55.5	N21°46.2	25°58.3	S07°51.7						
19	27°39.1	55°27.6	47.9	263°09.0	44.3	315°58.2	46.2	41°00.3	51.6						
20	42°41.6	70°27.6	46.8	278°12.4	44.8	331°01.0	46.2	56°02.9	51.5						
21	57°44.1	85°27.6	•• 45.7	293°15.8	•• 45.1	346°03.7	•• 46.2	71°05.1	•• 51.4						
22	72°46.5	100°27.5	44.6	308°19.1	45.4	1°06.5	46.1	86°07.4	51.4						
23	87°49.0	115°27.4	43.5	323°22.5	45.7	16°09.2	46.1	101°09.7	51.3						
Mer.pass.:17:10			v-0.0 d1.1 m-4.2	v3.3 d0.3 m-1.1			v2.7 d-0.0 m-2.6			v2.3 d0.1 m1.1					

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	102°51.5	130°27.5	S12°42.4	338°25.8	N23°45.9	31°11.9	N21°46.1	116°12.0	S07°51.2						
1	117°53.9	145°27.5	41.2	353°29.2	46.2	46°14.7	46.1	131°14.3	51.1						
2	132°56.4	160°27.4	40.1	8°32.6	46.5	61°17.4	46.0	146°16.6	51.0						
3	147°58.9	175°27.4	•• 39.0	23°35.9	•• 46.6	76°20.1	•• 46.0	161°18.8	•• 50.9						
4	163°01.3	190°27.4	37.9	38°39.3	47.1	91°22.9	46.0	176°21.1	50.9						
5	178°03.8	205°27.4	36.8	53°42.7	47.3	106°25.6	46.0	191°23.4	50.8						
6	193°06.2	220°27.4	S12°35.7	68°46.1	N23°47.6	121°28.3	N21°45.9	206°25.7	S07°50.7						
7	208°08.7	235°27.4	34.5	83°49.4	47.9	136°31.1	45.9	221°28.0	50.6						
8	223°11.2	250°27.4	33.6	98°52.8	48.2	151°33.8	45.9	236°30.3	50.5						
9	238°13.6	265°27.4	•• 32.3	113°56.2	•• 48.4	166°36.5	•• 45.9	251°32.5	•• 50.5						
10	253°16.1	280°27.4	31.2	128°59.5	48.7	181°39.3	45.9	266°34.8	50.4						
11	268°18.6	295°27.3	30.1	144°02.9	49.0	196°42.0	45.8	281°37.1	50.3						
12	283°21.0	310°27.3	S12°30.9	159°06.3	N23°49.3	211°44.7	N21°45.8	296°39.4	S07°50.2						
13	298°23.5	325°27.3	27.9	174°09.7	49.5	226°47.5	45.8	311°41.7	50.1						
14	313°26.0	340°27.3	26.8	189°13.0	49.8	241°50.2	45.8	326°44.0	50.1						
15	328°28.4	355°27.3	•• 25.7	204°16.4	•• 50.1	256°52.9	•• 45.7	341°46.2	•• 50.0						
16	343°30.9	10°27.3	24.5	219°19.8	50.4	271°55.7	45.7	356°48.5	49.9						
17	358°33.3	25°27.3	23.4	234°23.2	50.6	286°58.4	45.7	11°50.8	49.8						
18	13°35.8	40°27.3	S12°22.3	249°26.6	N23°50.9	302°01.1	N21°45.7	26°53.1	S07°49.7						
19	28°38.3	55°27.3	21.2	264°30.0	51.2	317°03.9	45.6	41°55.4	49.6						
20	43°40.7	70°27.3	20.1	279°33.3	51.5	332°06.6	45.6	56°57.6	49.6						
21	58°43.2	85°27.3	•• 19.0	294°36.7	•• 51.7	347°09.3	•• 45.6	71°59.9	•• 49.5						
22	73°45.7	100°27.3	17.8	309°40.1	52.0	2°12.1	45.6	87°02.2	49.4						
23	88°48.1	115°27.3	16.7	324°43.5	52.3	17°14.8	45.6	102°04.5	49.3						
Mer.pass.:17:06			v-0.0 d1.1 m-4.2	v3.4 d0.3 m-1.2			v2.7 d-0.0 m-2.6			v2.3 d0.1 m1.1					

	SHA	Dec
Alpheratz	357°34.9	29°13.9
Ankaa	353°07.2	-42°10.4
Schedar	349°31.1	56°40.7
Diphda	348°47.3	-17°51.1
Achernar	335°20.0	-57°06.9
Hamal	327°51.1	23°34.9
Polaris	313°44.2	89°22.4
Acamar	315°11.5	-40°12.4
Menkar	314°06.0	4°11.3
Mirfak	308°27.9	49°57.2
Aldebaran	290°39.3	16°33.6
Rigel	281°03.6	-8°10.4
Capella	280°21.4	46°01.4
Bellatrix	278°22.6	6°22.3
Elnath	278°01.5	28°37.7
Anilam	275°37.4	-1°11.2
Betelgeuse	270°51.8	7°24.7
Canopus	263°51.8	-52°42.5
Sirius	258°25.9	-16°45.0
Adhara	255°05.5	-29°00.3
Procyon	244°50.5	5°09.6
Pollux	243°16.9	27°57.9
Avior	234°14.1	-59°35.2
Suhail	222°46.0	-43°31.9

	Aries			Venus			Mars			Jupiter			Saturn		
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	103°50.6	130°27.3	S12°15.6	339°46.9	N23°52.6	32°17.5	N21°45.5	117°06.8	S07°49.2						
1	118°53.1	145°27.3	14.5	354°50.3	52.8	47°20.3	45.5	132°09.1	49.2						
2	133°55.5	160°27.3	13.4	9°53.7	53.1	62°23.0	45.5	147°11.3	49.1						
3	148°58.0	175°27.3	.. 12.2	24°57.1	.. 53.4	77°25.7	.. 45.5	162°13.6	.. 49.0						
4	164°00.5	190°27.3	11.1	40°00.4	53.7	92°28.4	45.4	177°15.9	48.9						
5	179°02.9	205°27.4	10.0	55°03.8	53.9	107°31.2	45.4	192°18.2	48.8						
6	194°05.4	220°27.4	S12°08.9	70°07.2	N23°54.2	122°33.9	N21°45.4	207°20.5	S07°48.7						
7	209°07.8	235°27.4	07.8	85°10.6	54.5	137°36.6	45.4	222°22.7	48.7						
8	224°10.3	250°27.4	06.6	100°14.0	54.8	152°39.4	45.3	237°25.0	48.6						
9	239°12.8	265°27.4	.. 05.5	115°17.4	.. 55.1	167°42.1	.. 45.3	252°27.3	.. 48.5						
10	254°15.2	280°27.4	04.4	130°20.8	55.3	182°44.8	45.3	267°29.6	48.4						
11	269°17.7	295°27.4	03.3	145°24.2	55.6	197°47.5	45.3	282°31.9	48.3						
12	284°20.2	310°27.4	S12°02.1	160°27.6	N23°55.9	212°50.3	N21°45.3	297°34.1	S07°48.3						
13	299°22.6	325°27.5	12°01.0	175°31.0	56.2	227°53.0	45.2	312°36.4	48.2						
14	314°25.1	340°27.5	11°59.9	190°34.4	56.4	242°55.7	45.2	327°38.7	48.1						
15	329°27.6	355°27.5	.. 58.8	205°37.8	.. 56.7	257°58.4	.. 45.2	342°41.0	.. 48.0						
16	344°30.0	10°27.5	57.6	220°41.2	57.0	273°01.2	45.2	357°43.3	47.9						
17	359°32.5	25°27.5	56.5	235°44.6	57.3	288°03.9	45.1	12°45.5	47.8						
18	14°35.0	40°27.6	S11°55.4	250°48.0	N23°57.5	303°06.6	N21°45.1	27°47.8	S07°47.8						
19	29°37.4	55°27.6	54.3	265°51.4	57.8	318°09.3	45.1	42°50.1	47.7						
20	44°39.9	70°27.6	53.1	280°54.9	58.1	333°12.1	45.1	57°52.4	47.6						
21	59°42.3	85°27.6	.. 52.0	295°58.3	.. 58.4	348°14.8	.. 45.1	72°54.7	.. 47.5						
22	74°44.8	100°27.6	50.9	311°01.7	58.6	3°17.5	45.0	87°56.9	47.4						
23	89°47.3	115°27.7	49.8	326°05.1	58.9	18°20.2	45.0	102°59.2	47.3						
Mer.pass.:17:02			v0.0 d1.1 m-4.2			v3.4 d0.3 m-1.2			v2.7 d-0.0 m-2.6			v2.3 d0.1 m1.1			

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	104°49.7	130°27.7	S11°48.6	341°08.5	N23°59.2	33°23.0	N21°45.0	118°01.5	S07°47.3					
1	119°52.2	145°27.7	47.5	356°11.9	59.5	48°25.7	45.0	133°03.8	47.2					
2	134°54.7	160°27.8	46.4	11°15.3	23°59.7	63°28.4	44.9	148°06.0	47.1					
3	149°57.1	175°27.8	· · 45.2	26°18.7	24°00.0	78°31.1	· · 44.9	163°08.3	· · 47.0					
4	164°59.6	190°27.8	44.1	41°22.1	00.3	93°33.9	44.9	178°10.6	46.9					
5	180°02.1	205°27.8	43.0	56°25.6	00.5	108°36.6	44.9	193°12.9	46.8					
6	195°04.5	220°27.9	S11°41.9	71°29.0	N24°00.8	123°39.3	N21°44.9	208°15.2	S07°46.8					
7	210°07.0	235°27.9	40.7	86°32.4	01.1	138°42.0	44.8	223°17.4	46.7					
8	225°09.4	250°28.0	39.6	101°35.8	01.4	153°44.7	44.8	238°19.7	46.6					
9	240°11.9	265°28.0	· · 38.5	116°39.2	· · 01.6	168°47.5	· · 44.8	253°22.0	· · 46.5					
10	255°14.4	280°28.0	37.3	131°42.7	01.9	183°50.2	44.8	268°24.3	46.4					
11	270°16.8	295°28.1	36.2	146°46.1	02.2	198°52.9	44.8	283°26.5	46.3					
12	285°19.3	310°28.1	S11°35.1	161°49.5	N24°02.5	213°55.6	N21°44.7	298°28.8	S07°46.3					
13	300°21.8	325°28.1	33.9	176°52.9	02.7	228°58.3	44.7	313°31.1	46.2					
14	315°24.2	340°28.2	32.8	191°56.3	03.0	244°01.1	44.7	328°33.4	46.1					
15	330°26.7	355°28.2	· · 31.7	206°59.8	· · 03.3	259°03.8	· · 44.7	343°35.6	· · 46.0					
16	345°29.2	10°28.3	30.5	222°03.2	03.6	274°06.5	44.6	358°37.9	45.9					
17	0°31.6	25°28.3	29.4	237°06.6	03.8	289°09.2	44.6	13°40.2	45.8					
18	15°34.1	40°28.4	S11°28.3	252°10.0	N24°04.1	304°11.9	N21°44.6	28°42.5	S07°45.8					
19	30°36.6	55°28.4	27.1	267°13.5	04.4	319°14.7	44.6	43°44.8	45.7					
20	45°39.0	70°28.4	26.0	282°16.9	04.7	334°17.4	44.6	58°47.0	45.6					
21	60°41.5	85°28.5	· · 24.9	297°20.3	· · 04.9	349°20.1	· · 44.5	73°49.3	· · 45.5					
22	75°43.9	100°28.5	23.7	312°23.8	05.2	4°22.8	44.5	88°51.6	45.4					
23	90°46.4	115°28.6	22.6	327°27.2	05.5	19°25.5	44.5	103°53.9	45.3					
Mer.pass.:16:58			v0.0 d1.1 m-4.2			v3.4 d0.3 m-1.2			v2.7 d-0.0 m-2.6			v2.3 d0.1 m1.1		

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	105°48.9	130°28.6	S11°21.5	342°30.6	N24°05.8	34°28.2	N21°44.5	118°56.1	S07°45.2	
1	120°51.3	145°28.7	20.3	357°34.1	06.0	49°31.0	44.4	133°58.4	45.2	
2	135°53.8	160°28.7	19.2	12°37.5	06.3	64°33.7	44.4	149°00.7	45.1	
3	150°56.3	175°28.8	.. 18.1	27°40.9	.. 06.6	79°36.4	.. 44.4	164°03.0	.. 45.0	
4	165°58.7	190°28.9	16.9	42°44.4	06.8	94°39.1	44.4	179°05.2	44.9	
5	181°01.2	205°28.9	15.8	57°47.8	07.1	109°41.8	44.4	194°07.5	44.8	
6	196°03.7	220°29.0	S11°14.6	72°51.2	N24°07.4	124°44.5	N21°44.3	209°09.8	S07°44.7	
7	211°06.1	235°29.0	13.5	87°54.7	07.7	139°47.2	44.3	224°12.1	44.7	
8	226°08.6	250°29.1	12.4	102°58.1	07.9	154°50.0	44.3	239°14.3	44.6	
9	241°11.1	265°29.1	.. 11.2	118°01.6	.. 08.2	169°52.7	.. 44.3	254°16.6	.. 44.5	
10	256°13.5	280°29.2	10.1	133°05.0	08.5	184°55.4	44.3	269°18.9	44.4	
11	271°16.0	295°29.3	08.9	148°08.4	08.7	199°58.1	44.2	284°21.2	44.3	
12	286°18.4	310°29.3	S11°07.8	163°11.9	N24°09.0	215°00.8	N21°44.2	299°23.4	S07°44.2	
13	301°20.9	325°29.4	06.7	178°15.3	09.3	230°03.5	44.2	314°25.7	44.1	
14	316°23.4	340°29.5	05.5	193°18.8	09.6	245°06.2	44.2	329°28.0	44.1	
15	331°25.8	355°29.5	.. 04.4	208°22.2	.. 09.8	260°08.9	.. 44.2	344°30.2	.. 44.0	
16	346°28.3	10°29.6	03.2	223°25.7	10.1	275°11.7	44.1	359°32.5	43.9	
17	1°30.8	25°29.7	02.1	238°29.1	10.4	290°14.4	44.1	14°34.8	43.8	
18	16°33.2	40°29.7	S11°01.0	253°32.6	N24°10.6	305°17.1	N21°44.1	29°37.1	S07°43.7	
19	31°35.7	55°29.8	10°59.8	268°36.0	10.9	320°19.8	44.1	44°39.3	43.6	
20	46°38.2	70°29.9	58.7	283°39.4	11.2	335°22.5	44.0	59°41.6	43.6	
21	61°40.6	85°29.9	.. 57.5	298°42.9	.. 11.5	350°25.2	.. 44.0	74°43.9	.. 43.5	
22	76°43.1	100°30.0	56.4	313°46.3	11.7	5°27.9	44.0	89°46.2	43.4	
23	91°45.5	115°30.1	55.3	328°49.8	12.0	20°30.6	44.0	104°48.4	43.3	
Mer.pass.:16:54			v0.1 d1.1 m-4.2		v3.4 d0.3 m-1.2		v2.7 d-0.0 m-2.5		v2.3 d0.1 m1.1	

Stars		
SHA	Dec	
Alpheratz	357°34.9	29°13.8
Ankaa	353°07.2	-42°10.4
Schedar	349°31.1	56°40.7
Diphda	348°47.3	-17°51.1
Achernar	335°20.0	-57°06.9
Hamal	327°51.1	23°34.9
Polaris	313°45.5	89°22.5
Acamar	315°11.5	-40°12.4
Menkar	314°06.0	4°11.3
Mirfak	308°27.9	49°57.2
Aldebaran	290°39.3	16°33.6
Rigel	281°03.6	-8°10.4
Capella	280°21.4	46°01.5
Bellatrix	278°22.6	6°22.3
Elath	278°01.5	28°37.7
Anilam	275°37.4	-1°11.2
Betelgeuse	270°51.8	7°24.7
Canopus	263°51.8	-52°42.5
Sirius	258°25.9	-16°45.0
Adhara	255°05.5	-29°00.3
Procyon	244°50.5	5°09.6
Pollux	243°16.9	27°57.9
Avior	234°14.1	-59°35.2
Suhail	222°45.9	-43°31.9
Miaplacidus	221°37.5	-69°49.0
Alphard	217°47.5	-8°46.0
Regulus	207°34.2	11°50.6
Dubhe	193°40.6	61°36.7
Denebola	182°24.8	14°25.8
Genah	175°43.5	-17°40.8
Acrux	173°00.1	-63°14.0
Gacrux	171°51.6	-57°14.9
Alioth	166°12.9	55°49.1
Spica	158°22.4	-11°17.5
Alkaid	152°52.1	49°11.0
Hadar	148°36.2	-60°29.3
Menkent	147°57.8	-36°29.4
Arcturus	145°48.0	19°03.0
Rigil Kent.	139°40.6	-60°56.1
Kochab	137°20.3	74°02.8
Zuben'ubi	136°56.2	-16°08.7
Alphecca	126°04.0	26°37.6
Antares	112°16.1	-26°29.2
Atria	107°10.9	-69°04.2
Sabik	102°03.1	-15°45.4
Shaula	96°10.8	37°07.3
Rasalhague	95°58.9	12°32.4
Eltanin	90°42.7	51°29.0
Kaus Aust.	83°32.9	-34°22.4
Vega	80°33.7	38°48.3
Nunki	75°48.1	-26°16.0
Altair	62°00.3	8°56.0
Peacock	53°06.3	-56°39.4
Deneb	49°26.3	45°22.2
Enif	33°39.1	9°59.4
Al Na'ir	27°33.2	-46°50.6
Fomalhaut	15°14.7	-29°29.6
Scheat	13°45.4	28°13.2
Markab	13°30.1	15°20.4

Dubhe	193°40.6	61°36.7
Denebola	182°24.8	14°25.8
Gienah	175°43.5	-17°40.8
Acrux	173°00.1	-63°14.0
Gacrux	171°51.6	-57°14.9
Altheta	166°12.9	-55°49.1
Spica	158°22.4	-11°17.5
Alkaid	152°52.1	49°11.0
Hadar	148°36.2	-60°29.3
Menkent	147°57.8	-36°29.4
Arcturus	145°48.0	19°03.0
Rigil Kent	139°40.6	-60°56.1
Kochab	137°20.3	74°02.8
Zuben el	136°56.2	-16°08.7
Alphecca	126°04.0	26°37.6
Antares	112°16.1	-26°29.2
Atria	107°10.9	-69°04.2
Sabik	102°03.1	-15°45.4
Shaula	96°10.8	-37°07.3
Rasalhague	95°58.9	12°32.4
Eltanin	90°42.7	51°29.0
Kaus Aust	83°32.9	-34°22.4
Vega	80°33.7	38°48.3
Nunki	75°48.1	-26°16.0
Altair	62°00.3	8°56.0
Peacock	53°06.3	-56°39.4
Deneb	49°26.3	45°22.2
Enif	33°39.1	9°59.4
Al Na'ir	27°33.2	-46°50.6
Fomalhaut	15°14.7	-29°29.6
Scheat	13°45.4	-28°13.2
Makrab	13°30.1	15°20.4

	Aries	Venus	Mars	Jupiter	Saturn				
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	106°48.0	130°30.2	S10°54.1	343°53.3	N24°12.3	35°33.3	N21°44.0	119°50.7	S07°43.2
1	121°50.5	145°30.2	53.0	358°56.7	12.5	50°36.0	43.9	134°53.0	43.1
2	136°52.9	160°30.3	51.8	14°00.2	13.8	65°38.8	43.9	149°55.2	43.0
3	151°55.4	175°30.4	•• 50.7	29°03.6	•• 12.1	80°41.5	•• 43.9	164°57.5	•• 43.0
4	166°57.9	190°30.5	49.5	44°07.1	13.4	95°44.2	43.9	179°59.8	42.9
5	182°00.3	205°30.5	48.4	59°10.5	13.6	110°46.9	43.9	195°02.1	42.8
6	197°02.8	220°30.6	S10°47.3	74°14.0	N24°13.9	125°49.6	N21°43.8	210°04.3	S07°42.7
7	212°05.3	235°30.7	46.1	89°17.4	14.2	140°52.3	43.8	225°06.6	42.6
8	227°07.7	250°30.8	45.0	104°20.9	14.4	155°55.0	43.8	240°08.9	42.5
9	242°10.2	265°30.9	•• 43.8	119°24.4	•• 14.7	170°57.7	•• 43.8	255°11.2	•• 42.4
10	257°12.7	280°30.9	42.7	134°27.8	15.0	186°00.4	43.8	270°13.4	42.4
11	272°15.1	295°31.0	41.5	149°31.3	15.2	201°03.1	43.7	285°15.7	42.3
12	287°17.6	310°31.1	S10°40.4	164°34.7	N24°15.5	216°05.8	N21°43.7	300°18.0	S07°42.2
13	302°20.0	325°31.2	39.2	179°38.2	15.8	231°08.5	43.7	315°20.2	42.1
14	317°22.5	340°31.3	38.1	194°41.7	16.1	246°11.2	43.7	330°22.5	42.0
15	332°25.0	355°31.4	•• 36.9	209°45.1	•• 16.3	261°13.9	•• 43.7	345°24.8	•• 41.9
16	347°27.4	10°31.5	35.8	224°48.6	16.6	276°16.6	43.6	0°27.0	41.8
17	2°29.9	25°31.6	34.6	239°52.0	16.9	291°19.3	43.6	15°29.3	41.8
18	17°32.4	40°31.7	S10°33.5	254°55.5	N24°17.1	306°22.0	N21°43.6	30°31.6	S07°41.7
19	32°34.8	55°31.8	32.3	269°59.0	17.4	321°24.7	43.6	45°33.9	41.6
20	47°37.3	70°31.8	31.2	285°02.4	17.7	336°27.5	43.6	60°36.1	41.5
21	62°39.8	85°31.9	•• 30.0	300°05.9	•• 17.9	351°30.2	•• 43.5	75°38.4	•• 41.4
22	77°42.2	100°32.0	28.9	315°09.4	18.2	6°32.9	43.5	90°40.7	41.3
23	92°44.7	115°32.1	27.7	330°12.8	18.5	21°35.6	43.5	105°42.9	41.2
Mer.pass.:16:50		v0.1 d1.1 m-4.2		v3.5 d0.3 m-1.2		v2.7 d-0.0 m-2.5		v2.3 d0.1 m1.1	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	107°47.1	130°32.2	S10°26.6	345°16.3	N24°18.7	36°38.3	N21°43.5	120°45.2	S07°41.1					
1	122°49.6	145°32.3	25.4	0°19.8	19.0	51°41.0	43.5	135°47.5	41.1					
2	137°52.1	160°32.4	24.3	15°23.3	19.3	66°43.7	43.4	150°49.7	41.0					
3	152°54.5	175°32.5	•• 23.1	30°26.7	•• 19.5	81°46.4	•• 43.4	165°52.0	•• 40.9					
4	167°57.0	190°32.6	22.0	45°30.2	19.8	96°49.1	43.4	180°54.3	40.8					
5	182°59.5	205°32.7	20.8	60°33.7	20.1	111°51.8	43.4	195°56.6	40.7					
6	198°01.9	220°32.8	S10°19.7	75°37.1	N24°20.3	126°54.5	N21°43.4	210°58.8	S07°40.6					
7	213°04.4	235°32.9	18.5	90°40.6	20.6	141°57.2	43.3	226°01.1	40.5					
8	228°06.9	250°33.1	17.4	105°44.1	20.9	156°59.9	43.3	241°03.4	40.5					
9	243°09.3	265°33.2	•• 16.2	120°47.6	•• 21.1	172°02.6	•• 43.3	256°05.6	•• 40.4					
10	258°11.8	280°33.5	15.1	135°51.0	21.4	187°05.3	43.3	271°07.9	40.3					
11	273°14.3	295°33.4	13.9	150°54.5	21.7	202°08.0	43.3	286°10.2	40.2					
12	288°16.7	310°33.5	S10°12.8	165°58.0	N24°21.9	217°10.7	N21°43.2	301°12.4	S07°40.1					
13	303°19.2	325°33.6	11.6	181°01.5	22.2	232°13.4	43.2	316°14.7	40.0					
14	318°21.6	340°33.7	10.5	196°05.0	22.5	247°16.0	43.2	331°17.0	39.9					
15	333°24.1	355°33.8	•• 09.3	211°08.4	•• 22.7	262°18.7	•• 43.2	346°19.2	•• 39.8					
16	348°26.6	10°33.9	08.2	226°11.9	23.0	277°21.4	43.2	1°21.5	39.8					
17	3°29.0	25°34.1	07.0	241°15.4	23.3	292°24.1	43.1	16°23.8	39.7					
18	18°31.5	40°34.2	S10°05.9	256°18.9	N24°23.5	307°26.8	N21°43.1	31°26.0	S07°39.6					
19	33°34.0	55°34.3	04.7	271°22.4	23.8	322°29.5	43.1	46°28.3	39.5					
20	48°36.4	70°34.4	03.6	286°25.8	24.1	337°32.2	43.1	61°30.6	39.4					
21	63°38.9	85°34.5	•• 02.4	301°29.3	•• 24.3	352°34.9	•• 43.1	76°32.8	•• 39.3					
22	78°41.4	100°34.6	01.2	316°32.8	24.6	7°37.6	43.1	91°35.1	39.2					
23	93°43.8	115°34.8	00.1	331°36.3	24.9	22°40.3	43.0	106°37.4	39.1					
Mer.pass.:16:46			v0.1 d1.1 m-4.2			v3.5 d0.3 m-1.2			v2.7 d-0.0 m-2.5			v2.3 d0.1 m1.1		

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	108°46.3	130°34.9	S09°58.9	346°39.8	N24°25.1	37°43.0	N21°43.0	121°39.6	S07°39.1					
1	123°48.8	145°35.0	57.8	1°43.3	25.4	52°45.7	43.0	136°41.9	39.0					
2	138°51.2	160°35.1	56.6	16°46.7	25.6	67°48.4	43.0	151°44.2	38.9					
3	153°53.7	175°35.3	•• 55.5	31°50.2	•• 25.9	82°51.1	•• 43.0	166°46.4	•• 38.8					
4	168°56.1	190°35.4	54.3	46°53.7	26.2	97°53.8	42.9	181°48.7	38.7					
5	183°58.6	205°35.5	53.2	61°57.2	26.4	112°56.5	42.9	196°51.0	38.6					
6	199°01.1	220°35.6	S09°52.0	77°00.7	N24°26.7	127°59.2	N21°42.9	211°53.2	S07°38.5					
7	214°03.5	235°35.8	50.8	92°04.2	27.0	143°01.9	42.9	226°55.5	38.4					
8	229°06.0	250°35.9	49.7	107°07.7	27.2	158°04.5	42.9	241°57.8	38.4					
9	244°08.5	265°36.0	•• 48.5	122°11.2	•• 27.5	173°07.2	•• 42.8	257°00.0	•• 38.3					
10	259°10.9	280°36.2	47.4	137°14.7	27.7	188°09.9	42.8	272°02.3	38.2					
11	274°13.4	295°36.3	46.2	152°18.1	28.0	203°12.6	42.8	287°04.6	38.1					
12	289°15.9	310°36.4	S09°45.0	167°21.6	N24°28.3	218°15.3	N21°42.8	302°06.8	S07°38.0					
13	304°18.3	325°36.6	43.9	182°25.1	28.5	233°18.0	42.8	317°09.1	37.9					
14	319°20.8	340°36.7	42.7	197°28.6	28.8	248°20.7	42.7	332°11.4	37.8					
15	334°23.3	355°36.9	•• 41.6	212°32.1	•• 29.1	263°23.4	•• 42.7	347°13.6	•• 37.7					
16	349°25.7	10°37.0	40.4	227°35.6	29.3	278°26.1	42.7	2°15.9	37.6					
17	4°28.2	25°37.1	39.3	242°39.1	29.6	293°28.8	42.7	17°18.2	37.6					
18	19°30.6	40°37.3	S09°38.1	257°42.6	N24°29.8	308°31.4	N21°42.7	32°20.4	S07°37.5					
19	34°33.1	55°37.4	36.9	272°46.1	30.1	323°34.1	42.7	47°22.7	37.4					
20	49°35.6	70°37.6	35.8	287°49.6	30.4	338°36.8	42.6	62°25.0	37.3					
21	64°38.0	85°37.7	•• 34.6	302°53.1	•• 30.6	353°39.5	•• 42.6	77°27.2	•• 37.2					
22	79°40.5	100°37.8	33.5	317°56.6	30.9	8°42.2	42.6	92°29.5	37.1					
23	94°43.0	115°38.0	32.3	333°00.1	31.1	23°44.9	42.6	107°31.7	37.0					
Mer.pass.:16:42			v0.1 d1.2 m-4.2			v3.5 d0.3 m-1.2			v2.7 d-0.0 m-2.5			v2.3 d0.1 m1.1		

Stars		
SHA	Dec	
Alpheratz	357°34.9	29°13.8
Ankaa	353°07.2	-42°10.4
Schedar	349°31.1	56°40.7
Diphda	348°47.3	-17°51.1
Achernar	335°20.1	-57°06.9
Hamal	327°51.1	23°34.9
Polaris	313°46.7	89°22.5
Acamar	315°11.6	-40°12.5
Menkar	314°06.0	4°11.3
Mirfak	308°28.0	49°57.2
Aldebaran	290°39.3	16°33.6
Rigel	281°03.6	-8°10.4
Capella	280°21.5	46°01.5
Bellatrix	278°22.6	6°22.3
Elath	278°01.5	28°37.7
Anilam	275°37.4	-1°12.2
Betelgeuse	270°51.8	7°24.7
Canopus	263°51.8	-52°42.5
Sirius	258°25.9	-16°45.0
Adhara	255°05.5	-29°00.4
Procyon	244°50.5	5°09.6
Pollux	243°16.9	27°57.9
Avior	234°14.1	-59°35.2
Suhail	222°45.9	-43°31.9
Miaplacidus	221°37.5	-69°49.0
Alphard	217°47.5	-8°46.0
Regulus	207°34.2	11°50.6
Dubhe	193°40.6	61°36.7
Denebola	182°24.8	14°25.8
Gienah	175°43.5	-17°40.8
Acrux	173°00.0	-63°14.0
Gacrux	171°51.6	-57°14.9
Alioth	166°12.9	55°49.1
Spica	158°22.3	-11°17.5
Alkaid	152°52.1	49°11.0
Hadar	148°36.2	-60°29.4
Menkent	147°57.7	-36°29.4
Arcturus	145°48.4	19°03.0
Rigel Kent.	139°40.6	-60°56.1
Kochab	137°20.3	74°02.8
Zuben'ubi	136°56.2	-16°08.7
Alphecca	126°04.0	26°37.6
Antares	112°16.1	-26°29.2
Atria	107°10.9	-69°04.2
Sabik	102°03.1	-15°45.4
Shaula	96°10.8	-37°07.3
Rasalhague	95°58.9	12°32.4
Eltanin	90°42.7	51°29.0
Kaus Aust.	83°32.9	34°22.4
Vega	80°33.7	38°48.3
Nunki	75°48.1	-26°16.0
Altair	82°00.3	8°56.0
Peacock	53°06.3	-56°39.4
Deneb	49°26.3	45°22.2
Enif	33°39.1	9°59.4
Al Na'ir	27°33.2	-46°50.6
Fomalhaut	15°14.7	-29°29.6
Scheat	13°45.4	28°13.2
Markab	13°30.1	15°20.4

Dubhe	193°40.6	61°36.7
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Gacrux	171°51.6	-57°14.9
Alioth	166°12.9	55°49.1
Spica	158°22.3	-11°17.5
Alkaid	152°52.1	49°11.0
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Menkent	147°57.7	-36°29.4
Arcturus	145°48.0	19°03.0
Rigel Kent	139°40.0	-60°56.1
Kochab	137°20.3	74°02.8
Zuben'ubi	136°56.2	-16°08.7
Alphecca	126°04.0	26°37.6
Antares	112°16.1	-26°29.2
Atria	107°10.9	-69°04.2
Sabik	102°03.1	-15°45.4
Shaula	96°10.8	-37°07.3
Rasalhague	95°58.9	12°32.4
Eltanin	90°42.7	51°29.0
Kaus Aust.	83°32.9	-34°22.4
Vega	80°33.7	38°48.3
Nunki	75°48.1	-26°16.0
Altair	62°00.3	8°56.0
Peacock	53°06.3	-56°39.4
Deneb	49°26.3	45°22.2
Enif	33°39.1	9°59.4
Al Na'ir	27°33.2	-46°50.6
Fomalhaut	15°14.7	-29°29.6
Scheat	13°45.4	28°13.2
Markab	13°40.1	15°20.4

Aries				Venus				Mars				Jupiter				Saturn			
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	109°45.4	130°38.1	S09°31.1	348°03.6	N24°31.4	38°47.6	N21°42.6	122°34.0	S07°36.9										
1	124°47.9	145°38.3	30.0	3°07.1	31.7	53°50.3	42.5	137°36.3	36.8										
2	139°50.4	160°38.4	28.8	18°10.6	31.9	68°52.9	42.5	152°38.5	36.8										
3	154°52.8	175°38.6	•• 27.6	33°14.1	•• 32.2	83°55.6	•• 42.5	167°40.8	•• 36.7										
4	169°55.3	190°38.7	26.5	48°17.6	32.4	98°58.3	42.5	182°43.1	36.6										
5	184°57.7	205°38.9	25.3	63°21.1	32.7	114°01.0	42.5	197°45.3	36.5										
6	200°00.2	220°39.0	S09°24.2	78°24.6	N24°33.0	129°03.7	N21°42.5	212°47.6	S07°36.4										
7	215°02.7	235°39.2	23.0	93°28.1	33.2	144°06.4	42.4	227°49.9	36.3										
8	230°05.1	250°39.3	21.8	108°31.6	33.5	159°09.0	42.4	242°52.1	36.2										
9	245°07.6	265°39.5	•• 20.7	123°35.1	•• 33.7	174°11.7	•• 42.4	257°54.4	•• 36.1										
10	260°10.1	280°39.7	19.5	138°38.6	34.0	189°14.4	42.4	272°56.6	36.0										
11	275°12.5	295°39.8	18.3	153°42.1	34.2	204°17.1	42.4	287°58.9	36.0										
12	290°15.0	310°40.0	S09°17.2	168°45.6	N24°34.5	219°19.8	N21°42.3	303°01.2	S07°35.9										
13	305°17.5	325°40.1	16.0	183°49.1	34.8	234°22.5	42.3	318°03.4	35.8										
14	320°19.9	340°40.3	14.9	198°52.6	35.0	249°25.1	42.3	333°05.7	35.7										
15	335°22.4	355°40.5	•• 13.7	213°56.1	•• 35.3	264°27.8	•• 42.3	348°08.0	•• 35.6										
16	350°24.9	10°40.6	10.5	228°59.6	35.5	279°30.5	42.3	3°10.2	35.5										
17	5°27.3	25°40.8	11.4	244°03.1	35.8	294°33.2	42.3	18°12.5	35.4										
18	20°29.8	40°41.0	S09°10.2	259°06.6	N24°36.0	309°35.9	N21°42.2	33°14.7	S07°35.3										
19	35°32.2	55°41.1	09.0	274°10.2	36.3	324°38.5	42.2	48°17.0	35.2										
20	50°34.7	70°41.3	07.9	289°13.7	36.6	339°41.2	•• 42.2	63°19.3	35.2										
21	65°37.2	85°41.5	•• 06.7	304°17.2	•• 36.8	354°43.9	•• 42.2	78°21.5	•• 35.1										
22	80°39.6	100°41.6	05.4	319°20.7	37.1	9°46.6	42.2	93°23.8	35.0										
23	95°42.1	115°41.8	04.0	334°24.2	37.3	24°49.3	42.2	108°26.1	34.9										
Mer.pass.:16:38				v0.1 d1.2 m-4.3				v3.5 d0.3 m-1.2				v2.7 d-0.0 m-2.5				v2.3 d0.1 m1.1			

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec				
0	110°44.6	130°42.0	S09°03.2	349°27.7	N24°37.6	39°51.9	N21°42.1	123°28.3	S07°34.8				
1	125°47.0	145°42.1	02.0	4°31.2	37.8	54°54.6	42.1	138°30.6	34.7				
2	140°49.5	160°42.3	09°00.9	19°34.7	38.1	69°57.3	42.1	153°32.8	34.6				
3	155°52.0	175°42.5	08°59.7	34°38.2	•• 38.3	85°00.0	•• 42.1	168°35.1	•• 34.5				
4	170°54.4	190°42.7	58.5	49°41.7	38.6	100°02.7	42.1	183°37.4	34.4				
5	185°56.9	205°42.8	57.4	64°45.3	38.9	115°05.3	42.1	198°39.6	34.3				
6	200°59.4	220°43.0	S08°56.2	79°48.8	N24°39.1	130°08.0	N21°42.0	213°41.9	S07°34.3				
7	216°01.8	235°43.2	55.0	94°52.3	39.4	145°10.7	42.0	228°44.1	34.2				
8	231°04.3	250°43.4	53.9	109°55.8	39.6	160°13.4	42.0	243°46.4	34.1				
9	246°06.7	265°43.6	•• 52.7	124°59.3	•• 39.9	175°16.0	•• 42.0	258°48.7	•• 34.0				
10	261°09.2	280°43.7	51.5	140°02.8	40.1	190°18.7	42.0	273°50.9	33.9				
11	276°11.7	295°43.9	50.4	155°06.3	40.4	205°21.4	42.0	288°53.2	33.8				
12	291°14.1	310°44.1	S08°49.2	170°09.9	N24°40.6	220°24.1	N21°41.9	303°55.4	S07°33.7				
13	306°16.6	325°44.3	48.0	185°13.4	40.9	235°26.7	41.9	318°57.7	33.6				
14	321°19.1	340°44.5	46.9	200°16.9	41.1	250°29.4	41.9	334°00.0	33.5				
15	336°21.5	355°44.7	•• 45.7	215°20.4	•• 41.4	265°32.1	•• 41.9	349°02.2	•• 33.4				
16	351°24.0	10°44.8	44.5	230°23.9	41.6	280°34.8	41.9	4°04.5	33.3				
17	6°26.5	25°45.0	43.4	245°27.4	41.9	295°37.4	41.9	19°06.7	33.3				
18	21°28.9	40°45.2	S08°42.2	260°31.0	N24°42.1	310°40.1	N21°41.8	34°09.0	S07°33.2				
19	36°31.4	55°45.4	41.0	275°34.5	42.4	325°42.8	41.8	49°11.3	33.1				
20	51°33.9	70°45.6	39.8	290°38.0	42.6	340°45.4	41.8	64°13.5	33.0				
21	66°36.3	85°45.8	•• 38.7	305°41.5	•• 42.9	355°48.1	•• 41.8	79°15.8	•• 32.9				
22	81°38.8	100°46.0	37.5	320°45.0	43.1	10°50.8	41.8	94°18.0	32.8				
23	96°41.2	115°46.2	36.3	335°48.5	43.4	25°53.5	41.8	109°20.3	32.7				
Mer.pass.:16:34		v0.2 d1.2 m-4.3			v3.5 d0.3 m-1.2			v2.7 d-0.0 m-2.5			v2.3 d0.1 m1.1		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec				
0	111°43.7	130°46.4	S08°35.2	350°52.1	N24°43.6	40°56.1	N21°41.7	124°22.6	S07°32.6				
1	126°46.2	145°46.6	34.0	5°55.6	43.9	55°58.8	41.7	139°24.8	32.5				
2	141°48.6	160°46.8	32.8	20°59.1	44.1	71°01.5	41.7	154°27.1	32.4				
3	156°51.1	175°47.0	•• 31.7	36°02.6	•• 44.4	86°04.1	•• 41.7	169°29.3	•• 32.3				
4	171°53.6	190°47.2	30.5	51°06.1	44.6	101°06.8	41.7	184°31.6	32.3				
5	186°56.0	205°47.4	29.3	66°09.7	44.9	116°09.5	41.7	199°33.8	32.2				
6	201°58.5	220°47.6	S08°28.1	81°13.2	N24°45.1	131°12.1	N21°41.6	214°36.1	S07°32.1				
7	217°01.0	235°47.8	27.0	96°16.7	45.4	146°14.8	41.6	229°38.4	32.0				
8	232°03.4	250°48.0	25.8	111°20.2	45.6	161°17.5	41.6	244°40.6	31.9				
9	247°05.9	265°48.2	•• 24.6	126°23.8	•• 45.9	176°20.2	•• 41.6	259°42.9	•• 31.8				
10	262°08.4	280°48.4	23.5	141°27.3	46.1	191°22.8	41.6	274°45.1	31.7				
11	277°10.8	295°48.6	22.3	156°30.8	46.4	206°25.5	41.6	289°47.4	31.6				
12	292°13.3	310°48.8	S08°21.1	171°34.3	N24°46.6	221°28.2	N21°41.5	304°49.6	S07°31.5				
13	307°15.7	325°49.0	19.9	186°37.9	46.9	236°30.8	41.5	319°51.9	31.4				
14	322°18.2	340°49.2	18.8	201°41.4	47.1	251°33.5	41.5	334°54.2	31.3				
15	337°20.7	355°49.5	•• 17.6	216°44.9	•• 47.4	266°36.2	•• 41.5	349°56.4	•• 31.3				
16	352°23.1	10°49.7	16.4	231°48.4	47.6	281°38.8	41.5	4°58.7	31.2				
17	7°25.6	25°49.9	15.3	246°52.0	47.8	296°41.5	41.5	20°00.9	31.1				
18	22°28.1	40°50.1	S08°14.1	261°55.5	N24°48.1	311°44.1	N21°41.4	35°03.2	S07°31.0				
19	37°30.5	55°50.3	12.9	276°59.0	48.3	326°46.8	41.4	50°05.4	30.9				
20	52°33.0	70°50.5	11.7	292°02.5	48.6	341°49.5	41.4	65°07.7	30.8				
21	67°35.5	85°50.8	•• 10.6	307°06.1	•• 48.8	356°52.1	•• 41.4	80°10.0	•• 30.7				
22	82°37.9	100°51.0	09.4	322°09.6	49.1	11°54.8	41.4	95°12.2	30.6				
23	97°40.4	115°51.2	08.2	337°13.1	49.3	26°57.5	41.4	110°14.5	30.5				
Mer.pass.:16:30		v0.2 d1.2 m-4.3			v3.5 d0.2 m-1.2			v2.7 d-0.0 m-2.5			v2.3 d0.1 m1.1		

SHA	Dec
Alpheratz	357°34.9 29°13.8
Ankaa	353°07.2 -42°10.4
Schedar	349°31.1 56°40.7
Diphda	348°47.3 -17°51.1
Achernar	335°20.1 -57°06.9
Hamal	327°61.1 23°34.9
Polaris	313°47.6 89°22.5
Acamar	315°11.6 -40°12.5
Menkar	314°06.0 4°11.3
Mirfak	308°20.0 49°57.2
Aldebaran	290°39.3 16°33.6
Rigel	281°03.6 -8°10.4
Capella	280°21.4 46°01.5
Bellatrix	278°22.6 6°22.3
Elnath	278°01.5 28°37.7
Alnilam	275°37.4 -1°12.2
Betelgeuse	270°51.8 7°24.7
Canopus	263°51.8 -52°42.6
Sirius	258°25.9 -16°45.1
Adhara	255°05.5 -29°00.4
Procyon	244°50.5 5°09.6
Pollux	243°16.9 27°57.9
Avior	234°14.1 -59°35.3
Suhail	222°45.9 -43°31.9
Miaplacidus	221°37.4 -69°49.0
Alphard	217°47.5 -8°46.0
Regulus	207°34.2 11°50.6
Dubhe	193°40.6 61°36.7
Denebola	182°24.8 14°25.8
Gienah	175°43.5 -17°40.8
Acrux	173°00.0 -63°14.0
Gacrux	171°61.5 -57°15.0
Alioth	166°12.9 55°49.1
Spica	158°22.3 -11°17.5
Alkaid	152°52.0 49°11.0
Hadar	148°36.1 -60°29.4
Menkent	147°57.7 -36°29.4
Arcturus	145°48.0 19°02.9
Rigel Kent.	139°40.5 -60°56.1
Kochab	137°20.2 74°02.8
Zuben'ubi	136°56.1 -16°08.7
Alphecca	126°03.9 26°37.6
Antares	112°16.1 -26°29.2
Atria	107°10.8 -69°04.2
Sabik	102°03.1 -15°45.4
Shaula	96°10.4 -37°07.3
Rasalhague	95°58.8 12°32.4
Eltanin	90°42.7 51°28.9
Kaus Aust.	83°32.9 34°22.4
Vega	80°33.6 38°48.3
Nunki	75°48.1 -26°16.0
Altair	62°00.3 8°56.0
Peacock	53°06.3 -56°39.4
Deneb	49°26.3 45°22.2
Enif	33°3

	Aries			Venus			Mars			Jupiter			Saturn		
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	112°42.9	130°51.4	S08°07.0	352°16.6	N24°49.6	42°00.1	N21°41.4	125°16.7	S07°30.4						
1	127°45.3	145°51.6	05.9	7°20.2	49.8	57°02.8	41.3	140°19.0	30.3						
2	142°47.8	160°51.9	04.7	22°23.7	50.0	72°05.5	41.3	155°21.2	30.2						
3	157°50.2	175°52.1	•• 03.5	37°27.2	•• 50.3	87°08.1	•• 41.3	170°23.5	•• 30.1						
4	172°52.7	190°52.3	02.3	52°30.7	50.5	102°10.8	41.3	185°25.7	30.1						
5	187°55.2	205°52.5	01.2	67°34.3	50.8	117°13.4	41.3	200°28.0	30.0						
6	202°57.6	220°52.8	S08°00.0	82°37.8	N24°51.0	132°16.1	N21°41.3	215°30.3	S07°29.9						
7	218°00.1	235°53.0	07°58.8	97°41.3	51.3	147°18.8	41.2	230°32.5	29.8						
8	233°02.6	250°53.2	57.7	112°44.9	51.5	162°21.4	41.2	245°34.8	29.7						
9	248°05.0	265°53.5	•• 56.5	127°48.4	•• 51.7	177°24.1	•• 41.2	260°37.0	•• 29.6						
10	263°07.5	280°53.7	55.3	142°51.9	52.0	192°26.7	41.2	275°39.3	29.5						
11	278°10.0	295°53.9	54.1	157°55.5	52.2	207°29.4	41.2	290°41.5	29.4						
12	293°12.4	310°54.2	S07°53.0	172°59.0	N24°52.5	222°32.1	N21°41.2	305°43.8	S07°29.3						
13	308°14.9	325°54.4	51.8	188°02.5	52.7	237°34.7	41.2	320°46.0	29.2						
14	323°17.4	340°54.6	50.6	203°06.0	52.9	252°37.4	41.1	335°48.3	29.1						
15	338°19.8	355°54.9	•• 49.4	218°09.6	•• 53.2	267°40.0	•• 41.1	350°50.6	•• 29.0						
16	353°22.3	10°55.1	48.2	233°13.1	53.4	282°42.7	41.1	5°52.8	28.9						
17	8°24.7	25°55.3	47.1	248°16.6	53.7	297°45.3	41.1	20°55.1	28.9						
18	23°27.2	40°55.6	S07°45.9	263°20.2	N24°53.9	312°48.0	N21°41.1	35°57.3	S07°28.8						
19	38°29.7	55°55.8	44.7	278°23.7	54.1	327°50.7	41.1	50°59.6	28.7						
20	53°32.1	70°56.1	43.5	293°27.2	54.4	342°53.3	41.0	66°01.8	28.6						
21	68°34.6	85°56.3	•• 42.4	308°30.8	•• 54.6	357°56.0	•• 41.0	81°04.1	•• 28.5						
22	83°37.1	100°56.6	41.2	323°34.3	54.9	12°58.6	41.0	96°06.3	28.4						
23	98°39.5	115°56.8	40.0	338°37.8	55.1	28°01.3	41.0	111°08.6	28.3						
Mer.pass.:16:26			v0.2 d1.2 m-4.3			v3.5 d0.2 m-1.3			v2.7 d-0.0 m-2.5			v2.3 d0.1 m1.1			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	113°42.0	130°57.0	S07°38.8	353°41.4	N24°55.3	43°03.9	N21°41.0	126°10.8	S07°28.2
1	128°44.5	145°57.3	37.7	8°44.9	55.6	58°06.6	41.0	141°13.1	28.1
2	143°46.9	160°57.5	36.5	23°48.4	55.8	73°09.2	41.0	156°15.3	28.0
3	158°49.4	175°57.8	•• 35.3	38°52.0	•• 56.0	88°11.9	•• 40.9	171°17.6	•• 27.9
4	173°51.8	190°58.0	34.1	53°55.5	56.3	103°14.6	40.9	186°19.9	27.8
5	188°54.3	205°58.3	33.0	68°59.0	56.5	118°17.2	40.9	201°22.1	27.7
6	203°56.8	220°58.5	S07°31.8	84°02.6	N24°56.8	133°19.9	N21°40.9	216°24.4	S07°27.6
7	218°59.2	235°58.8	30.6	99°06.1	57.0	148°22.5	40.9	231°26.6	27.6
8	234°01.7	250°59.1	29.4	114°09.6	57.2	163°25.2	40.9	246°28.9	27.5
9	249°04.2	265°59.3	•• 28.2	129°13.2	•• 57.5	178°27.8	•• 40.9	261°31.1	•• 27.4
10	264°06.6	280°59.6	27.1	144°16.7	57.7	193°30.5	40.8	276°33.4	27.3
11	279°09.1	295°59.8	25.9	159°20.2	57.9	208°33.1	40.8	291°35.6	27.2
12	294°11.6	311°00.1	S07°24.7	174°23.8	N24°58.2	223°35.8	N21°40.9	306°37.9	S07°27.1
13	309°14.0	326°00.4	23.5	189°27.3	58.4	238°38.4	40.8	321°40.1	27.0
14	324°16.5	341°00.6	22.4	204°30.8	58.6	253°41.1	40.8	336°42.4	26.9
15	339°19.0	356°00.9	•• 21.2	219°34.4	•• 58.9	268°43.7	•• 40.8	351°44.6	•• 26.8
16	354°21.4	11°01.1	20.0	234°37.9	59.1	283°46.4	40.8	6°46.9	26.7
17	9°23.9	26°01.4	18.8	249°41.4	59.3	298°49.0	40.7	21°49.1	26.6
18	24°26.3	41°01.7	S07°17.6	264°45.0	N24°59.6	313°51.7	N21°40.7	36°51.4	S07°26.5
19	39°28.8	56°01.9	16.5	279°48.5	24°58.9	328°54.3	40.7	51°53.6	26.4
20	54°31.3	71°02.2	15.3	294°52.1	25°00.0	343°57.0	40.7	66°55.9	26.3
21	69°33.7	86°02.5	•• 14.1	309°55.6	•• 00.3	358°59.6	•• 40.7	81°58.1	•• 26.2
22	84°36.2	101°02.7	12.9	324°59.1	00.5	14°02.3	40.7	97°00.4	26.1
23	99°38.7	116°03.0	11.8	340°02.7	00.7	29°04.9	40.7	112°02.6	26.1
Mer.pass.:16:23 v0.2 d1.2 m-4.3 v3.5 d0.2 m-1.3 v2.7 d-0.0 m-2.5 v2.3 d0.1 m1.1									

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	114°43.1	131°03.3	S07°10.6	355°06.2	N25°01.0	44°07.5	N21°40.7	127°04.9	S07°26.0
1	129°41.6	146°03.6	09.4	10°09.7	01.2	59°10.2	40.6	142°07.1	25.9
2	144°46.1	161°03.8	08.2	25°13.3	01.6	74°12.8	40.6	157°09.4	25.8
3	159°48.5	176°04.1	•• 07.0	40°16.8	•• 01.4	89°15.5	•• 40.6	172°11.6	•• 25.7
4	174°51.0	191°04.4	05.9	55°20.3	01.9	104°18.1	40.6	187°13.9	25.6
5	189°53.5	206°04.7	04.7	70°23.9	02.1	119°20.8	40.6	202°16.1	25.5
6	204°55.9	221°04.9	S07°03.5	85°27.4	N25°02.3	134°23.4	N21°40.6	217°18.4	S07°25.4
7	219°58.4	236°05.2	02.3	100°31.0	02.6	149°26.1	40.6	232°20.6	25.3
8	235°00.8	251°05.5	01.1	115°34.5	02.8	164°28.7	40.5	247°22.9	25.2
9	250°03.8	266°05.8	07°00.0	130°38.0	•• 03.0	179°31.4	•• 40.5	262°25.1	•• 25.1
10	265°05.3	281°06.1	06°58.8	145°41.6	03.2	194°34.0	40.5	277°27.4	25.0
11	280°08.2	296°06.4	57.6	160°45.1	03.5	209°36.6	40.5	292°29.6	24.9
12	295°10.7	311°06.6	S06°56.4	175°48.6	N25°03.7	224°39.3	N21°40.5	307°31.9	S07°24.8
13	310°13.2	326°06.9	55.2	190°52.2	03.9	239°41.9	40.5	322°34.1	24.7
14	325°15.6	341°07.2	54.1	205°55.7	04.2	254°44.6	40.5	337°36.4	24.6
15	340°18.1	356°05.5	•• 52.9	220°59.3	•• 04.6	269°47.2	•• 40.5	352°38.6	•• 24.5
16	355°20.6	11°07.8	51.7	236°02.8	04.6	284°49.8	40.4	7°40.9	24.5
17	10°23.0	26°08.1	50.5	251°06.3	04.8	299°52.5	40.4	22°43.1	24.4
18	25°25.5	41°08.4	S06°49.3	266°09.9	N25°05.1	314°55.1	N21°40.4	37°45.4	S07°24.3
19	40°28.0	56°08.7	48.2	281°13.4	05.3	329°57.8	40.4	52°47.6	24.2
20	55°30.4	71°09.0	47.0	296°16.9	05.5	345°00.4	40.4	67°49.9	24.1
21	70°32.9	86°09.3	•• 45.8	311°20.5	•• 05.7	0°03.0	•• 40.4	82°52.1	•• 24.0
22	85°35.3	101°09.6	44.6	326°24.0	06.0	15°05.7	40.4	97°54.4	23.9
23	100°37.8	116°09.9	43.4	341°27.6	06.2	30°08.3	40.4	112°56.6	23.8
Mer.pass:16.19		v0.3 d1.2 m-4.3		v3.5 d0.2 m-1.3		v2.6 d-0.0 m-2.5		v2.3 d0.1 m1.1	

Aries			Venus			Mars			Jupiter			Saturn		
Thu	GHA		GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec	
0	115°40.3	131°10.2	S06°42.3	356°31.1	N25°06.4	45°11.0	N21°40.3	127°58.9	S07°23.7					
1	130°42.7	146°10.5	41.1	11°34.6	06.6	60°13.6	40.3	143°01.1	23.6					
2	145°45.2	161°18.8	39.9	26°38.2	06.8	75°16.2	40.3	158°03.4	23.5					
3	160°47.7	176°11.1	•• 38.7	41°41.7	•• 07.1	90°18.9	•• 40.3	173°05.6	•• 23.4					
4	175°50.1	191°11.4	37.5	56°45.2	07.3	105°21.5	40.3	188°07.9	23.3					
5	190°52.6	206°11.7	36.3	71°48.8	07.5	120°24.1	40.3	203°10.1	23.2					
6	205°55.1	221°12.0	S06°35.2	86°52.3	N25°07.7	135°26.8	N21°40.3	218°12.4	S07°23.1					
7	220°57.5	236°12.3	34.0	101°55.9	08.0	150°29.4	40.3	233°14.6	23.0					
8	236°00.0	251°12.6	32.8	116°59.4	08.2	165°32.1	40.2	248°19.9	22.9					
9	251°02.4	266°12.9	•• 31.6	132°02.5	•• 08.6	180°34.7	•• 40.2	263°19.1	•• 22.8					
10	266°04.9	281°13.2	30.4	147°06.5	•• 08.4	195°37.3	40.2	278°21.4	22.7					
11	281°07.4	296°13.5	29.3	162°10.0	08.8	210°40.0	40.2	293°23.6	22.6					
12	296°09.8	311°13.8	S06°28.1	177°13.5	N25°09.1	225°42.6	N21°40.2	308°25.8	S07°22.5					
13	311°12.3	326°14.1	26.9	192°17.1	09.3	240°45.2	40.2	323°28.1	22.5					
14	326°14.8	341°14.5	25.7	207°20.6	09.5	255°47.9	40.2	338°30.3	22.4					
15	341°17.2	356°14.8	•• 24.5	222°24.2	•• 09.7	270°50.5	•• 40.2	353°32.6	•• 22.3					
16	356°19.7	11°15.1	23.4	237°27.7	09.9	285°53.1	40.1	8°34.8	22.2					
17	11°22.2	26°15.4	22.2	252°31.2	10.2	300°55.8	40.1	23°37.1	22.1					
18	26°24.6	41°15.7	S06°21.0	267°34.8	N25°10.4	315°58.4	N21°40.1	38°39.3	S07°22.0					
19	41°27.1	56°16.0	19.8	282°38.3	10.6	331°01.0	40.1	53°41.6	21.9					
20	56°29.6	71°16.4	18.6	297°41.8	10.8	346°03.7	•• 40.1	68°43.8	21.8					
21	71°32.0	86°16.7	•• 17.4	312°45.4	•• 11.0	1°06.3	•• 40.1	83°46.1	•• 21.7					
22	86°34.5	101°17.0	16.3	327°48.9	11.2	16°08.9	40.1	98°48.3	21.6					
23	101°36.9	116°17.3	15.1	342°52.5	11.5	31°11.5	40.1	113°50.6	21.5					
Mer.pass.:16:15			v0.3 d1.2 m-4.3			v3.5 d0.2 m-1.2			v2.6 d-0.0 m-2.5			v2.2 d0.1 m1.1		

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	116°39.4	131°17.7	S06°13.9	357°56.0	N25°11.7	46°14.2	N21°40.0	128°52.8	S07°21.4
1	131°41.9	146°18.0	12.7	12°59.5	11.9	61°16.8	40.0	143°55.1	21.3
2	146°44.3	161°18.3	11.5	28°03.1	12.1	76°19.4	40.0	158°57.3	21.2
3	161°46.8	176°18.6	•• 10.4	43°06.6	•• 12.3	91°22.1	•• 40.0	173°59.5	•• 21.1
4	176°49.3	191°19.0	09.2	58°10.1	12.5	106°24.7	40.0	189°01.8	21.0
5	191°51.7	206°19.3	08.0	73°13.7	12.7	121°27.3	40.0	204°04.0	20.9
6	206°54.2	221°19.6	S06°06.8	88°17.2	N25°13.0	136°29.9	N21°40.0	219°06.3	S07°20.8
7	221°56.7	236°20.0	05.6	103°20.7	13.2	151°32.6	40.0	234°08.5	20.7
8	236°59.1	251°20.3	04.4	118°24.3	13.4	166°35.2	40.0	249°10.8	20.6
9	252°01.6	266°20.6	•• 03.3	133°27.8	•• 13.6	181°37.8	•• 39.9	264°13.0	•• 20.5
10	267°04.1	281°21.0	02.1	148°31.4	13.8	196°40.5	39.9	279°15.3	20.4
11	282°06.5	296°21.3	06°00.9	163°34.9	14.0	211°43.1	39.9	294°17.5	20.3
12	297°09.0	311°21.6	S05°59.7	178°38.4	N25°14.2	226°45.7	N21°39.9	309°19.7	S07°20.2
13	312°11.4	326°22.0	58.5	193°42.0	14.5	241°48.3	39.9	324°22.0	20.2
14	327°13.9	341°22.3	57.3	208°45.5	14.7	256°51.0	39.9	339°24.2	20.1
15	342°16.4	356°22.7	•• 56.2	223°49.0	•• 14.9	271°53.6	•• 39.9	354°26.5	•• 20.0
16	357°18.8	11°23.0	55.0	238°52.6	15.1	286°56.2	39.9	9°28.7	19.9
17	12°21.3	26°23.3	53.8	253°56.1	15.3	301°58.8	39.9	24°31.0	19.8
18	27°23.8	41°23.7	S05°52.6	268°59.6	N25°15.5	317°01.5	N21°39.8	39°33.2	S07°19.7
19	42°26.2	56°24.4	51.4	284°03.2	15.7	332°04.1	39.8	54°35.5	19.6
20	57°28.7	71°24.4	50.2	299°06.7	15.9	347°06.7	39.8	69°37.7	•• 19.5
21	72°31.2	86°24.7	•• 49.1	314°10.2	•• 16.1	2°09.3	•• 39.8	84°39.9	•• 19.4
22	87°33.6	101°25.1	47.9	329°13.8	16.3	17°11.9	39.8	99°42.2	19.3
23	102°36.1	116°25.4	46.7	344°17.3	16.5	32°14.6	39.8	114°44.4	19.2
Mer.pass.:16:11		v0.3 d1.2 m-4.3		v3.5 d0.2 m-1.2		v2.6 d-0.0 m-2.5		v2.2 d0.1 m1.1	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	117°38.5	131°25.8	S05°45.5	359°20.8	N25°16.8	47°17.2	N21°39.8	129°46.7	S07°19.1					
1	132°41.0	146°26.1	44.3	14°24.4	17.0	62°19.8	39.8	144°48.9	19.0					
2	147°43.5	161°26.5	43.2	29°27.9	17.2	77°22.4	39.8	159°51.2	18.9					
3	162°45.9	176°26.8	•• 42.0	44°31.4	•• 17.4	92°25.0	•• 39.7	174°53.4	•• 18.8					
4	177°48.4	191°27.2	40.8	59°35.0	17.6	107°27.7	39.7	189°55.7	18.7					
5	192°50.9	206°27.6	39.6	74°38.5	17.8	122°30.3	39.7	204°57.9	18.6					
6	207°53.3	221°27.9	S05°38.4	89°42.0	N25°18.0	137°32.9	N21°39.7	220°00.1	S07°18.5					
7	222°55.8	236°28.3	37.2	104°45.6	18.2	152°35.5	39.7	235°02.4	18.4					
8	237°58.3	251°28.6	36.1	119°49.1	18.4	167°38.1	39.7	250°04.6	18.3					
9	253°00.7	266°29.0	•• 34.9	134°52.6	•• 18.6	182°40.8	•• 39.7	265°06.9	•• 18.2					
10	268°03.2	281°29.4	33.7	149°56.2	18.8	197°43.4	39.7	280°09.1	18.1					
11	283°05.7	296°29.7	32.5	164°59.7	19.0	212°46.0	39.7	295°11.3	18.0					
12	298°08.1	311°30.1	S05°31.3	180°03.2	N25°19.2	227°48.6	N21°39.7	310°13.6	S07°17.9					
13	313°10.6	326°30.5	30.1	195°06.8	19.4	242°51.2	39.6	325°15.8	17.8					
14	328°13.0	341°30.8	29.0	210°10.3	19.6	257°53.9	39.6	340°18.1	17.7					
15	343°15.5	356°31.2	•• 27.8	225°13.8	•• 19.8	272°56.5	•• 39.6	355°20.3	•• 17.6					
16	358°18.0	11°31.6	26.6	240°17.4	20.0	287°59.1	39.6	10°22.6	17.5					
17	13°20.4	26°31.9	25.4	255°20.9	20.2	303°01.7	39.6	25°24.8	17.4					
18	28°22.9	41°32.3	S05°24.2	270°24.4	N25°20.4	318°04.3	N21°39.6	40°27.0	S07°17.3					
19	43°25.4	56°32.7	23.0	285°27.9	20.6	333°06.9	39.6	55°29.3	17.2					
20	58°27.8	71°33.0	21.9	300°31.5	20.8	348°09.5	39.6	70°31.5	17.1					
21	73°30.3	86°33.4	•• 20.7	315°35.0	•• 21.0	3°12.2	•• 39.6	85°33.8	•• 17.0					
22	88°32.8	101°33.8	19.5	330°38.5	21.2	18°14.8	39.6	100°36.0	16.9					
23	103°35.2	116°34.2	18.3	345°42.1	21.4	33°17.4	39.5	115°38.2	16.8					
Mer.pass.:16:07			v0.4 d1.2 m-4.3			v3.5 d0.2 m-1.2			v2.6 d-0.0 m-2.5			v2.2 d0.1 m1.1		

Stars		
SHA	Dec	
Alpheratz	357°34.9	29°13.8
Ankaa	353°07.2	-42°10.4
Schedar	349°31.2	56°40.7
Diphda	348°47.3	-17°51.1
Achernar	335°20.1	-57°06.9
Hamal	327°51.1	23°34.9
Polaris	313°50.2	89°22.5
Acamar	315°11.6	-40°12.5
Menkar	314°06.0	4°11.3
Mirfak	308°28.0	49°57.2
Aldebaran	290°39.3	16°33.6
Rigel	281°03.6	-8°10.4
Capella	280°21.4	46°01.5
Bellatrix	278°22.6	6°22.3
Elmath	278°01.5	28°37.8
Alnilam	275°37.4	-1°11.2
Betelgeuse	270°51.7	7°24.7
Canopus	263°51.9	-52°42.6
Sirius	258°25.9	-16°45.1
Adhara	255°05.5	-29°00.4
Procyon	244°50.5	5°09.6
Pollux	243°16.9	27°57.9
Avior	234°14.1	-59°35.3
Suhail	222°45.9	-43°31.9
Miaplacidus	221°37.4	-69°49.0
Alphard	217°47.4	-8°46.1
Regulus	207°34.1	11°50.6
Dubhe	193°40.5	61°36.7
Denebola	182°24.7	14°25.8
Gienah	175°43.4	-17°40.8
Acrux	172°59.9	-63°14.0
Gacrux	171°51.5	-57°15.0
Alloth	166°12.8	55°49.1
Spica	158°22.2	-11°17.5
Alkaid	152°52.0	49°11.4
Hadar	148°36.1	-60°29.0
Menkent	147°57.6	-36°29.5
Arcturus	145°47.9	19°02.9
Rigel Kent	139°40.5	-60°56.1
Kochab	137°20.1	74°02.7
Zuben'ubi	136°06.1	-16°08.7
Alphecca	126°03.9	26°37.6
Antares	112°16.1	-26°29.2
Atria	107°10.7	-69°04.1
Sabik	102°03.0	-15°45.4
Shaula	96°10.7	-37°07.3
Rasalhague	95°58.8	12°32.4
Eltanin	90°42.7	51°28.9
Kaus Aug.	83°32.9	-34°22.4
Vega	80°33.6	38°48.2
Nunki	75°48.1	-26°16.0
Altair	62°00.3	8°56.0
Peacock	53°06.3	-56°39.4
Deneb	49°26.3	45°22.2
Enif	33°39.1	9°59.3
Al Na'ir	27°33.2	-46°50.6
Fomalhaut	15°14.7	-29°29.6
Scheat	13°45.4	28°13.2
Markab	13°30.1	15°20.4

Dubhe	193° 40.5	61° 36.7
Denebola	182° 24.7	14° 25.8
Gienah	175° 43.4	-17° 40.8
Acrux	172° 59.9	-63° 14.0
Gacrux	171° 51.5	-57° 15.0
Alioth	166° 12.8	55° 49.1
Spica	158° 22.2	-11° 17.5
Alkaid	152° 52.0	49° 11.0
Hadar	148° 36.1	-60° 29.4
Menkent	147° 56.7	-36° 29.5
Arcturus	145° 47.9	19° 02.9
Rigel Kent.	139° 40.5	-60° 56.1
Kochab	137° 20.1	74° 02.7
Zuben'ubi	136° 56.1	-16° 08.7
Alphecca	126° 03.9	26° 37.6
Antares	112° 16.1	-26° 29.2
Atria	107° 10.7	-69° 04.1
Sabik	102° 03.0	-15° 45.4
Shaula	96° 10.7	-37° 07.3
Rasalhage	95° 58.8	12° 32.4
Eltanin	90° 42.7	51° 28.9
Kaus Aust.	83° 32.9	-34° 22.4
Vega	80° 33.6	38° 48.2
Nunki	75° 48.1	-26° 16.0
Altair	62° 00.3	8° 56.0
Peacock	53° 06.3	-56° 59.4
Deneb	49° 26.3	45° 22.2
Enif	33° 39.1	9° 59.3
Al Nair'	27° 33.2	-46° 50.6
Fomalhaut	15° 14.7	-29° 29.6
Scheat	13° 45.4	-28° 13.2
Markab	13° 30.1	15° 20.4

Aries		Venus		Mars		Jupiter		Saturn	
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	118°37.7	131°34.6	S05°17.1	0°45.6	N25°21.6	48°20.0	N21°39.5	130°40.5	S07°16.7
1	133°40.1	146°34.9	16.0	15°49.1	21.8	63°22.6	39.5	145°42.7	16.7
2	148°42.6	161°35.3	14.8	30°52.6	22.0	78°25.2	39.5	160°45.0	16.6
3	163°45.1	176°35.7	•• 13.6	45°56.2	•• 22.2	93°27.8	•• 39.5	175°47.2	•• 16.5
4	178°47.5	191°36.1	12.4	60°59.7	22.4	108°30.4	39.5	190°49.5	16.4
5	193°50.0	206°36.5	11.2	76°03.2	22.6	123°33.1	39.5	205°51.7	16.3
6	208°52.5	221°36.9	S05°10.0	91°06.8	N25°22.8	138°35.7	N21°39.5	220°53.9	S07°16.2
7	223°54.9	236°37.2	08.9	106°10.3	23.0	153°38.3	39.5	235°56.2	16.1
8	238°57.4	251°37.6	07.7	121°13.8	23.2	168°40.9	39.5	250°58.4	•• 16.0
9	253°59.9	266°38.0	•• 06.5	136°17.3	•• 23.4	183°43.5	•• 39.5	266°00.7	•• 15.9
10	269°02.3	281°38.4	05.3	151°20.9	23.6	198°46.1	39.4	281°02.9	15.8
11	284°04.8	296°38.8	04.1	166°24.4	23.8	213°48.7	39.4	296°05.1	15.7
12	299°07.3	311°39.2	S05°02.9	181°27.9	N25°24.0	228°51.3	N21°39.4	311°07.4	S07°15.6
13	314°09.7	326°39.6	01.8	196°31.4	24.2	243°53.9	39.4	326°09.6	15.5
14	329°12.2	341°40.0	05°00.6	211°35.0	24.4	258°56.5	39.4	341°11.9	15.4
15	344°14.6	356°40.4	04°59.4	226°38.0	•• 24.6	273°59.1	•• 39.4	356°14.1	•• 15.3
16	359°17.1	11°40.8	58.2	241°42.0	24.8	289°01.8	39.4	11°16.3	15.2
17	14°19.6	26°41.2	57.0	256°45.5	25.0	304°04.4	39.4	26°18.6	15.1
18	29°22.0	41°41.6	S04°55.8	271°49.1	N25°25.2	319°07.0	N21°39.4	41°20.8	S07°15.0
19	44°24.5	56°42.0	54.7	286°52.6	25.4	334°09.6	39.4	56°23.1	14.9
20	59°27.0	71°42.4	53.5	301°56.1	25.6	349°12.2	39.4	71°25.3	14.8
21	74°29.4	86°42.8	•• 52.3	316°59.6	•• 25.8	4°14.8	•• 39.3	86°27.5	•• 14.7
22	89°31.9	101°43.2	51.1	332°03.1	25.9	19°17.4	39.3	101°29.8	14.6
23	104°34.4	116°43.6	49.9	347°06.7	26.1	34°20.0	39.3	116°32.0	14.5
Mer.pass.:16:03		v0.4 d1.2 m-4.3		v3.5 d0.2 m-1.2		v2.6 d-0.0 m-2.5		v2.2 d0.1 m1.1	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	119°36.8	131°44.0	S04°48.8	2°10.2	N25°26.3	49°22.6	N21°39.3	131°34.2	S07°14.4
1	134°39.3	146°44.4	47.6	17°13.7	26.5	64°25.2	39.3	146°36.5	14.3
2	149°41.8	161°44.8	46.4	32°17.2	26.7	79°27.8	39.3	161°38.7	14.2
3	164°44.2	176°45.2	•• 45.2	47°20.8	•• 26.9	94°30.4	•• 39.3	176°41.0	•• 14.1
4	179°46.7	191°45.6	44.0	62°24.3	27.1	109°33.0	39.3	191°43.2	14.0
5	194°49.1	206°46.0	42.8	77°27.8	27.3	124°35.6	39.3	206°45.4	13.9
6	209°51.6	221°46.5	S04°41.7	92°31.3	N25°27.5	139°38.2	N21°39.3	221°47.7	S07°13.8
7	224°54.1	236°46.9	40.5	107°34.8	27.7	154°40.8	39.3	236°49.9	13.7
8	239°56.5	251°47.3	39.3	122°38.3	27.8	169°43.4	39.2	251°52.2	13.6
9	254°59.0	266°47.7	•• 38.1	137°41.9	•• 28.0	184°46.0	•• 39.2	266°54.4	•• 13.4
10	270°01.5	281°48.1	36.9	152°45.4	28.2	199°48.6	39.2	281°56.6	13.5
11	285°03.9	296°48.5	35.8	167°48.9	28.4	214°51.2	39.2	296°58.9	13.4
12	300°06.4	311°49.0	S04°34.6	182°52.4	N25°28.6	229°53.8	N21°39.2	312°01.1	S07°13.2
13	315°08.9	326°49.4	33.4	197°55.9	28.8	244°56.4	39.2	327°03.3	13.1
14	330°11.3	341°49.8	32.2	212°59.4	29.0	259°59.0	39.2	342°05.6	13.0
15	345°13.8	356°50.2	•• 31.0	228°03.0	•• 29.1	275°01.6	•• 39.2	357°07.8	•• 12.9
16	0°16.2	11°50.6	29.8	243°06.5	29.3	290°04.2	39.2	12°10.1	12.8
17	15°18.7	26°51.1	28.7	258°10.0	29.5	305°06.8	39.2	27°12.3	12.7
18	30°21.2	41°51.5	S04°27.5	273°13.5	N25°29.7	320°09.4	N21°39.2	42°14.5	S07°12.6
19	45°23.6	56°51.9	26.8	288°17.0	29.9	335°12.0	39.2	57°16.8	12.5
20	60°26.1	71°52.4	25.1	303°20.5	30.1	350°14.6	39.2	72°19.0	12.4
21	75°28.6	86°52.8	•• 23.9	318°24.1	•• 30.3	5°17.2	•• 39.1	87°21.2	•• 12.3
22	90°31.0	101°53.2	22.8	333°27.6	30.4	20°19.8	39.1	102°23.5	12.2
23	105°33.5	116°53.7	21.6	348°31.1	30.6	35°22.4	39.1	117°25.7	12.1
Mer.pass.:15:59		v0.4 d1.2 m-4.3		v3.5 d0.2 m-1.2		v2.6 d-0.0 m-2.5		v2.2 d0.1 m1.1	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	120°36.0	131°54.1	S04°20.4	3°34.6	N25°30.8	50°25.0	N21°39.1	132°27.9	S07°12.0
1	135°38.4	146°54.5	19.2	18°38.1	31.0	65°27.6	39.1	147°30.2	11.9
2	150°40.9	161°55.0	18.0	33°41.6	31.2	80°30.2	39.1	162°32.4	11.8
3	165°43.4	176°55.4	•• 16.9	48°45.1	•• 31.3	95°32.8	•• 39.1	177°34.7	•• 11.7
4	180°45.8	191°55.8	15.7	63°48.6	31.5	110°35.4	39.1	192°36.9	11.6
5	195°48.3	206°56.3	14.5	78°52.1	31.7	125°38.0	39.1	207°39.1	11.5
6	210°50.7	221°56.7	S04°13.3	93°55.6	N25°31.9	140°40.6	N21°39.1	222°41.4	S07°11.4
7	225°53.2	236°57.2	12.1	108°59.2	32.1	155°43.2	39.1	237°43.6	11.3
8	240°55.7	251°57.6	10.9	124°02.7	32.2	170°45.7	39.1	252°45.8	11.2
9	255°58.1	266°58.0	•• 09.8	139°06.2	•• 32.4	185°48.3	•• 39.1	267°48.1	•• 11.1
10	271°00.6	281°58.5	08.6	154°09.7	32.6	200°50.9	39.0	282°50.3	11.0
11	286°03.1	296°58.9	07.4	169°13.2	32.8	215°53.5	39.0	297°52.5	10.9
12	301°05.5	311°59.4	S04°06.2	184°16.7	N25°33.0	230°56.1	N21°39.0	312°54.8	S07°10.8
13	316°08.0	326°59.8	05.0	199°20.2	33.1	245°58.7	39.0	327°57.0	10.7
14	331°10.5	342°00.3	03.9	214°23.7	33.3	261°01.3	39.0	342°59.2	10.6
15	346°12.9	357°00.7	•• 02.7	229°27.2	•• 33.5	276°03.9	•• 39.0	358°01.5	•• 10.5
16	1°15.4	12°01.2	01.5	244°30.7	33.7	291°06.5	39.0	13°03.7	10.4
17	16°17.8	27°01.7	04°00.3	259°34.2	33.8	306°09.1	39.0	28°06.0	10.3
18	31°20.3	42°02.1	S03°59.1	274°37.7	N25°34.0	321°11.7	N21°39.0	43°08.2	S07°10.2
19	46°22.8	57°02.6	58.0	289°41.2	34.2	336°14.2	39.0	58°10.4	10.1
20	61°25.2	72°03.0	56.8	304°44.7	34.4	351°16.8	39.0	73°12.7	10.0
21	76°27.7	87°03.5	•• 55.6	319°48.2	•• 34.5	6°19.4	•• 39.0	88°14.9	•• 09.9
22	91°30.2	102°03.9	54.4	334°51.7	34.7	21°22.0	39.0	103°17.1	09.8
23	106°32.6	117°04.4	53.3	349°55.2	34.9	36°24.6	39.0	118°19.4	09.7
Mer.pass.:15:55		v0.4 d1.2 m-4.3		v3.5 d0.2 m-1.2		v2.6 d-0.0 m-2.5		v2.2 d0.1 m1.1	

SHA	Dec
Alpheratz	357°34.9
Ankaa	353°07.3
Schedar	349°31.2
Diphda	348°47.4
Achernar	335°20.2
Hamal	327°51.1
Polaris	313°51.7
Acamar	315°11.6
Menkar	314°06.0
Mirfak	308°28.0
Aldebaran	290°39.3
Rigel	281°03.6
Capella	280°21.5
Bellatrix	278°22.6
Elnath	278°01.5
Anilam	275°37.4
Betelgeuse	270°51.7
Canopus	263°51.9
Sirius	258°25.9
Adhara	255°05.5
Procyon	244°50.5
Pollux	234°16.9
Avior	243°14.1
Suhail	222°45.9
Miaplacidus	221°37.4
Alphard	217°47.4
Regulus	207°34.1
Dubhe	193°40.5
Denebola	182°24.7
Gienah	175°43.4
Acrux	172°59.8
Gacrux	171°51.4
Alloth	166°12.8
Spica	158°22.2
Alkaid	152°51.9
Hadar	148°36.0
Menkent	147°57.6
Arcturus	145°47.9
Rigil Kent	139°40.4
Kochab	137°20.0
Zuben'ubi	136°56.1
Alphecca	126°03.9
Antares	112°16.0
Atria	107°10.7
Sabik	102°03.0
Shaula	96°10.7
Rasalhague	95°58.8
Eltanin	90°42.6
Kaus Augusta	83°32.8
Vega	80°33.6
Nunki	75°48.1
Altair	62°00.3
Peacock	53°06.3
Deneb	49°26.3
Enif	33°39.1
Al Na'ir	27°33.3
Fomalhaut	15°14.7
Scheat	13°45.4
Makab	13°30.1

SHA	Mer.pass
Jan 19 Sun	
Venus	12°56.9
Mars	242°07.9
Jupiter	289°42.8
Saturn	12°02.8
Jan 20 Mon	
Venus	12°07.2
Mars	242°33.4
Jupiter	289°45.8
Saturn	11°57.4
Jan 21 Tue	
Venus	11°18.1
Mars	242°58.6
Jupiter	289°49.0
Saturn	11°52.0
Horizontal parallax	
Venus:	0.2
Mars:	0.2

Sun			Moon				
Sun	GHA	Dec	GHA	ν	Dec	d	HP
0	177°19.9	S20°19.6	300°13.3	17.0'	N00°46.7	-14.4'	54.6'
1	192°19.7	19.1	314°49.3	17.0'	00°32.3	-14.4'	54.6'
2	207°19.5	18.6	329°25.4	17.0'	00°18.0	-14.4'	54.6'
3	222°19.3	•• 18.1	344°01.4	17.1'	N00°03.6	-14.4'	54.6'
4	237°19.1	17.5	358°37.5	17.1'	S00°10.8	-14.4'	54.6'
5	252°18.9	17.0	13°13.6	17.1'	00°25.1	-14.3'	54.6'
6	267°18.7	S20°16.5	27°49.7	17.1'	S00°39.4	-14.3'	54.6'
7	282°18.5	15.9	42°25.8	17.1'	00°53.8	-14.3'	54.5'
8	297°18.3	15.4	57°01.9	17.1'	01°08.1	-14.3'	54.5'
9	312°18.2	•• 14.9	71°38.1	17.1'	01°22.4	-14.3'	54.5'
10	327°18.0	14.3	86°14.2	17.1'	01°36.7	-14.3'	54.5'
11	342°17.8	13.8	100°50.3	17.2'	01°51.0	-14.3'	54.5'
12	357°17.6	S20°13.3	115°26.5	17.2'	S02°05.2	-14.3'	54.5'
13	12°17.4	12.7	130°02.7	17.2'	02°19.5	-14.2'	54.5'
14	27°17.2	12.2	144°38.8	17.2'	02°33.7	-14.2'	54.5'
15	42°17.0	•• 11.7	159°15.0	17.2'	02°47.9	-14.2'	54.4'
16	57°16.8	11.1	173°51.2	17.2'	03°02.1	-14.2'	54.4'
17	72°16.7	10.6	188°27.4	17.2'	03°16.3	-14.2'	54.4'
18	87°16.5	S20°10.1	203°03.5	17.2'	S03°30.5	-14.2'	54.4'
19	102°16.3	09.5	217°39.7	17.2'	03°44.6	-14.1'	54.4'
20	117°16.1	09.0	232°15.9	17.2'	03°58.8	-14.1'	54.4'
21	132°15.9	•• 08.4	246°52.0	17.2'	04°12.9	-14.1'	54.4'
22	147°15.7	07.9	261°28.2	17.2'	04°27.0	-14.1'	54.4'
23	162°15.6	07.4	276°04.3	17.1'	04°41.1	-14.1'	54.4'

Aries				Venus				Mars				Jupiter				Saturn			
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	121°35.1	132°04.9	S03°52.1	4°58.7	N25°35.1	51°27.2	N21°39.0	133°21.6	S07°09.6										
1	136°37.6	147°05.3	50.9	20°02.2	35.2	66°29.8	38.9	148°23.8	09.5										
2	151°40.0	162°05.8	49.7	35°05.7	35.4	81°32.4	38.9	163°26.1	09.4										
3	166°42.5	177°06.3	•• 48.5	50°09.2	•• 35.6	96°34.9	•• 38.9	178°28.3	•• 09.3										
4	181°45.0	192°06.7	47.4	65°12.7	35.7	111°37.5	38.9	193°30.5	09.2										
5	196°47.4	207°07.2	46.2	80°16.2	35.9	126°40.1	38.9	208°32.8	09.1										
6	211°49.9	222°07.7	S03°45.0	95°19.7	N25°36.1	141°42.7	N21°38.9	223°35.0	S07°09.0										
7	226°52.3	237°08.1	43.8	110°23.2	36.3	156°45.3	38.9	238°37.2	08.9										
8	241°54.8	252°08.6	42.6	125°26.7	36.4	171°47.9	38.9	253°39.5	08.8										
9	256°57.3	267°09.1	•• 41.5	140°30.2	•• 36.6	186°50.4	•• 38.9	268°41.7	•• 08.7										
10	271°59.7	282°09.6	40.3	155°33.7	36.8	201°53.0	38.9	283°43.9	08.6										
11	287°02.2	297°10.0	39.1	170°37.2	36.9	216°55.6	38.9	298°46.2	08.5										
12	302°04.7	312°11.5	S03°37.9	185°40.7	N25°37.1	231°58.2	N21°38.9	313°48.4	S07°08.4										
13	317°07.1	327°11.0	36.7	200°44.2	37.3	247°00.8	38.9	328°50.6	08.3										
14	332°09.6	342°11.5	35.6	215°47.7	37.4	262°03.4	38.9	343°52.9	08.2										
15	347°12.1	357°12.0	•• 34.4	230°51.2	•• 37.6	277°05.9	•• 38.9	358°55.1	•• 08.1										
16	2°14.5	12°12.4	33.2	245°54.7	37.8	292°08.5	38.9	13°57.3	08.0										
17	17°17.0	27°12.9	32.0	260°58.2	37.9	307°11.1	38.9	28°59.6	07.9										
18	32°19.5	42°13.4	S03°30.9	276°01.6	N25°38.1	322°13.7	N21°38.8	44°01.8	S07°07.8										
19	47°21.9	57°13.9	29.7	291°05.1	38.3	337°16.3	38.8	59°04.0	07.7										
20	62°24.4	72°14.4	28.5	306°08.6	38.4	352°18.8	38.8	74°06.3	07.6										
21	77°26.8	87°14.9	•• 27.3	321°12.1	•• 38.6	7°21.4	•• 38.8	89°08.5	•• 07.5										
22	92°29.3	102°15.4	26.2	336°15.6	38.8	22°24.0	38.8	104°10.7	07.4										
23	107°31.8	117°15.8	25.0	351°19.1	38.9	37°26.6	38.8	119°13.0	07.3										
Mer.pass.:15:51				v0.5 d1.2 m-4.3				v3.5 d0.2 m-1.2				v2.6 d-0.0 m-2.5				v2.2 d0.1 m1.1			

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	122°34.2	132°16.3	S03°23.8	6°22.6	N25°39.1	52°29.2	N21°38.8	134°15.2	S07°07.2										
1	137°36.7	147°16.8	22.6	21°26.1	39.3	67°31.7	38.8	149°17.4	07.1										
2	152°39.2	162°17.3	21.4	36°29.6	39.4	82°34.3	38.8	164°19.6	07.0										
3	167°41.6	177°17.8	•• 20.3	51°33.0	•• 39.6	97°36.9	•• 38.8	179°21.9	•• 06.9										
4	182°44.1	192°18.3	19.1	66°36.5	39.8	112°39.5	38.8	194°24.1	06.8										
5	197°46.6	207°18.8	17.9	81°40.0	39.9	127°42.0	38.8	209°26.3	06.7										
6	212°49.0	222°19.3	S03°16.7	96°43.5	N25°40.1	142°44.6	N21°38.8	224°28.6	S07°06.6										
7	227°51.5	237°19.8	15.6	111°47.0	40.2	157°47.2	38.8	239°30.8	06.5										
8	242°53.9	252°20.3	14.4	126°50.5	40.4	172°49.8	38.8	254°33.0	06.4										
9	257°56.4	267°20.8	•• 13.2	141°53.9	•• 40.6	187°52.3	•• 38.8	269°35.3	•• 06.3										
10	272°58.9	282°21.3	12.0	156°57.4	40.7	202°54.9	38.8	284°37.5	06.2										
11	288°01.3	297°21.8	10.9	172°00.9	40.9	217°57.5	38.8	299°39.7	06.1										
12	303°03.8	312°22.2	S03°09.7	187°04.4	N25°41.0	233°00.1	N21°38.8	314°42.0	S07°06.0										
13	318°06.3	327°22.8	08.5	202°07.9	41.2	248°02.6	38.7	329°44.2	05.9										
14	333°08.7	342°23.3	07.3	217°11.3	41.4	263°05.2	38.7	344°46.4	05.8										
15	348°11.2	357°23.9	•• 06.2	232°14.8	•• 41.5	278°07.8	•• 38.7	359°48.7	•• 05.7										
16	3°13.7	12°24.4	05.0	247°18.3	41.7	293°10.4	38.7	14°50.9	05.5										
17	18°16.1	27°24.9	03.8	262°21.8	41.8	308°12.9	38.7	29°53.1	05.4										
18	33°18.6	42°25.4	S03°02.6	277°25.2	N25°42.0	323°15.5	N21°38.7	44°55.3	S07°05.3										
19	48°21.1	57°25.9	01.5	292°28.7	42.1	338°18.1	38.7	59°57.6	05.2										
20	63°23.5	72°26.4	03°00.3	307°32.2	42.3	353°20.6	38.7	74°59.8	05.1										
21	78°26.0	87°26.9	02°59.1	322°35.7	•• 42.5	8°23.2	•• 38.7	90°02.0	•• 05.0										
22	93°28.4	102°27.5	57.9	337°39.1	42.6	23°25.8	38.7	105°04.3	04.9										
23	108°30.9	117°28.0	56.8	352°42.6	42.8	38°28.3	38.7	120°06.5	04.8										
Mer.pass.:15:47				v0.5 d1.2 m-4.3				v3.5 d0.2 m-1.2				v2.6 d-0.0 m-2.4				v2.2 d0.1 m1.1			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	123°33.4	132°28.5	S02°55.6	7°46.1	N25°42.9	53°30.9	N21°38.7	135°08.7	S07°04.7										
1	138°35.8	147°29.0	54.4	22°49.5	43.1	68°33.5	38.7	150°11.0	04.6										
2	153°38.3	162°29.6	53.2	37°53.0	43.2	83°36.1	38.7	165°13.2	04.5										
3	168°40.8	177°30.1	•• 52.1	52°56.5	•• 43.4	98°38.6	•• 38.7	180°15.4	•• 04.4										
4	183°43.2	192°30.6	50.9	68°00.0	43.5	113°41.2	38.7	195°17.6	04.3										
5	198°45.7	207°31.1	49.7	83°03.4	43.7	128°43.8	38.7	210°19.9	04.2										
6	213°48.2	222°31.7	S02°48.5	98°06.9	N25°43.8	143°46.3	N21°38.7	225°22.1	S07°04.1										
7	228°50.6	237°32.2	47.4	113°10.4	44.0	158°48.9	38.7	240°24.3	04.0										
8	243°53.1	252°32.7	46.2	128°13.8	44.1	173°51.5	38.7	255°26.6	03.9										
9	258°55.6	267°33.3	•• 45.0	143°17.3	•• 44.3	188°54.0	•• 38.7	270°28.8	•• 03.8										
10	273°58.0	282°33.8	43.9	158°20.7	44.4	203°56.6	38.7	285°31.0	03.7										
11	289°00.5	297°34.3	42.7	173°24.2	44.6	218°59.2	38.7	300°33.2	03.6										
12	304°02.9	312°34.9	S02°41.5	188°27.7	N25°44.7	234°01.7	N21°38.6	315°35.5	S07°03.5										
13	319°05.4	327°35.4	40.3	203°31.1	44.9	249°04.3	38.6	330°37.7	03.4										
14	334°07.9	342°35.9	39.2	218°34.6	45.0	264°06.8	38.6	345°39.9	03.3										
15	349°10.3	357°36.5	•• 38.0	233°38.1	•• 45.2	279°09.4	•• 38.6	0°42.2	•• 03.2										
16	4°12.8	12°37.0	36.8	248°41.5	45.3	294°12.0	38.6	15°44.4	03.1										
17	19°15.3	27°37.6	35.7	263°45.0	45.5	309°14.5	38.6	30°46.6	03.0										
18	34°17.7	42°38.1	S02°34.5	278°48.4	N25°45.6	324°17.1	N21°38.6	45°48.8	S07°02.9										
19	49°20.2	57°38.7	33.3	293°51.9	45.8	339°19.7	38.6	60°51.1	02.8										
20	64°22.7	72°39.2	32.1	308°55.3	45.9	354°22.2	38.6	75°53.3	02.7										
21	79°25.1	87°39.8	•• 31.0	323°58.8	•• 46.1	9°24.8	•• 38.6	90°55.5	•• 02.6										
22	94°27.6	102°40.3	29.8	339°02.3	46.2	24°27.3	38.6	105°57.8	02.5										
23	109°30.1	117°40.9	28.6	354°05.7	46.4	39°29.9	38.6	121°00.0	02.4										
Mer.pass.:15:43				v0.5 d1.2 m-4.4				v3.5 d0.2 m-1.2				v2.6 d-0.0 m-2.4				v2.2 d0.1 m1.1			

SHA	Dec
Alpheratz	357°34.9
Ankaa	353°07.3
Schedar	349°31.2
Diphda	348°47.4
Achernar	335°20.2
Hamal	327°51.1
Polaris	313°53.0
Acamar	315°11.6
Menkar	314°06.0
Mirfak	308°28.0
Aldebaran	290°39.4
Rigel	281°03.6
Capella	280°21.5
Bellatrix	278°22.6
Elmath	278°01.5
Anilam	275°37.4
Betelgeuse	270°51.8
Canopus	263°51.9
Sirius	258°25.9
Adhara	255°05.5
Procyon	244°50.5
Pollux	243°16.9
Avior	234°14.1
Suhail	222°45.9
Miaplacidus	221°37.4
Alphard	217°47.4
Regulus	207°34.1
Dubhe	193°40.4
Denebola	182°24.7
Gienah	175°43.4
Acrux	172°59.8
Gacrux	171°51.4
Alioth	166°12.7
Spica	158°22.2
Alkaid	152°51.9
Hadar	148°36.0
Merktar	147°57.6
Antares	145°47.9
Rigil Kent.	139°40.4
Kochab	137°20.0
Zuben'ubi	136°56.0
Alphecca	126°03.8
Antares	112°16.0
Atria	107°10.6
Sabik	102°03.0
Shaula	96°10.6
Rasalhague	95°58.8
Eltanin	90°42.6
Kaus Aug.	83°32.8
Vega	80°33.6
Nunki	75°48.1
Altair	62°00.3
Peacock	53°06.2
Deneb	49°26.3
Enif	33°39.1
Al Na'ir	27°33.3
Fomalhaut	15°14.7
Scheat	13°45.4
Markab	13°30.1

SHA	Dec
Venus	10°29.8
Mars	243°23.6
Jupiter	289°52.1
Saturn	11°46.5
Mer.pass	
15:11	
23:35	
20:31	
15:04	

Aries				Venus				Mars				Jupiter				Saturn			
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	124°32.5	132°41.4	S02°27.5		9°09.2	N25°46.5	54°32.5	N21°38.6	136°02.2	S07°02.3									
1	139°35.0	147°42.0	26.3	24°12.6	46.6	69°35.0	38.6	151°04.4	02.2										
2	154°37.4	162°42.5	25.1	39°16.1	46.8	84°37.6	38.6	166°06.7	02.1										
3	169°39.9	177°43.1	•• 23.9	54°19.5	•• 46.9	99°40.1	•• 38.6	181°08.9	•• 02.0										
4	184°42.4	192°43.6	22.8	69°23.0	47.1	114°42.7	38.6	196°11.1	01.9										
5	199°44.8	207°44.2	21.6	84°26.4	47.2	129°45.3	38.6	211°13.3	01.7										
6	214°47.3	222°44.7	S02°20.4		99°29.9	N25°47.4	144°47.8	N21°38.6	226°15.6	S07°01.6									
7	229°49.8	237°45.3	19.3	114°33.3	47.5	159°50.4	38.6	241°17.8	01.5										
8	244°52.2	252°45.9	18.1	129°36.8	47.6	174°52.9	38.6	256°20.0	01.4										
9	259°54.7	267°46.4	•• 16.9	144°40.2	•• 47.8	189°55.5	•• 38.6	271°22.3	•• 01.3										
10	274°57.2	282°47.0	15.8	159°43.7	47.9	204°58.0	38.6	286°24.5	01.2										
11	289°59.6	297°47.6	14.6	174°47.1	48.1	220°00.6	38.6	301°26.7	01.1										
12	305°02.1	312°48.1	S02°13.4		189°50.6	N25°48.2	235°03.2	N21°38.6	316°28.9	S07°01.0									
13	320°04.5	327°48.7	12.3	204°54.0	48.4	250°05.7	38.6	331°31.2	00.9										
14	335°07.0	342°49.3	11.1	219°57.4	48.5	265°08.3	38.6	346°33.4	00.8										
15	350°09.5	357°49.8	•• 09.9	235°00.9	•• 48.6	280°10.8	•• 38.6	1°35.6	•• 00.7										
16	5°11.9	12°50.4	08.8	250°04.3	48.8	295°13.4	38.6	16°37.8	00.6										
17	20°14.4	27°51.0	07.6	265°07.8	48.9	310°15.9	38.6	31°40.1	00.5										
18	35°16.9	42°51.6	S02°06.4		280°11.2	N25°49.0	325°18.5	N21°38.6	46°42.3	S07°00.4									
19	50°19.3	57°52.1	05.3	295°14.6	49.2	340°21.0	38.6	61°44.5	00.3										
20	65°21.8	72°52.7	04.1	310°18.1	49.3	355°23.6	38.6	76°46.7	00.2										
21	80°24.3	87°53.3	•• 02.9	325°21.5	•• 49.5	10°26.1	•• 38.6	91°49.0	•• 00.1										
22	95°26.7	102°53.9	01.8	340°24.9	49.6	25°28.7	38.5	106°51.2	07°00.0										
23	110°29.2	117°54.5	00.6	355°28.4	49.7	40°31.2	38.5	121°53.4	06°59.9										
Mer.pass.:15:39				v0.6 d1.2 m-4.4				v3.5 d0.1 m-1.2				v2.6 d-0.0 m-2.4				v2.2 d0.1 m1.1			

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	125°31.7	132°55.0	S01°59.4	10°31.8	N25°49.9	55°33.8	N21°38.5	136°55.6	S06°59.8										
1	140°34.1	147°55.6	58.3	25°35.3	50.0	70°36.4	38.5	151°57.9	59.7										
2	155°36.6	162°56.2	57.1	40°38.7	50.1	85°38.9	38.5	167°00.1	59.6										
3	170°39.0	177°56.8	•• 55.9	55°42.1	•• 50.3	100°41.5	•• 38.5	182°02.3	•• 59.5										
4	185°41.5	192°57.4	54.8	70°45.5	50.4	115°44.0	38.5	197°04.5	59.4										
5	200°44.0	207°58.0	53.6	85°49.0	50.5	130°46.6	38.5	212°06.8	59.3										
6	215°46.4	222°58.6	S01°52.4	100°52.4	N25°50.7	145°49.1	N21°38.5	227°09.0	S06°59.2										
7	230°48.9	237°59.2	51.3	115°55.8	50.8	160°51.6	38.5	242°11.2	59.0										
8	245°51.4	252°59.8	50.1	130°59.3	50.9	175°54.2	38.5	257°13.4	58.9										
9	260°53.8	268°00.3	•• 48.9	146°02.7	•• 51.1	190°56.7	•• 38.5	272°15.7	•• 58.8										
10	275°56.3	283°00.9	47.8	161°06.1	51.2	205°59.3	38.5	287°17.9	58.7										
11	290°58.8	298°01.5	46.6	176°09.5	51.3	221°01.8	38.5	302°20.1	58.6										
12	306°01.2	313°02.1	S01°45.4	191°13.0	N25°51.5	236°04.4	N21°38.5	317°22.3	S06°58.5										
13	321°03.7	328°02.7	44.3	206°16.4	51.6	251°06.9	38.5	332°24.6	58.4										
14	336°06.2	343°03.3	43.1	221°19.8	51.7	266°09.5	38.5	347°26.8	58.3										
15	351°08.6	358°03.9	•• 42.0	236°23.2	•• 51.9	281°12.0	•• 38.5	2°29.0	•• 58.2										
16	6°11.1	13°04.5	40.8	251°26.6	52.0	296°14.6	38.5	17°31.2	58.1										
17	21°13.5	28°05.2	39.6	266°30.1	52.1	311°17.1	38.5	32°33.5	58.0										
18	36°16.0	43°05.8	S01°38.5	281°33.5	N25°52.2	326°19.7	N21°38.5	47°35.7	S06°57.9										
19	51°18.5	58°06.4	37.3	296°36.9	52.4	341°22.2	38.5	62°37.9	57.8										
20	66°20.9	73°07.0	36.1	311°40.3	52.5	356°24.7	38.5	77°40.1	57.7										
21	81°23.4	88°07.6	•• 35.0	326°43.7	•• 52.6	11°27.3	•• 38.5	92°42.4	•• 57.6										
22	96°25.9	103°08.2	33.8	341°47.2	52.7	26°29.8	38.5	107°44.6	57.5										
23	111°28.3	118°08.8	32.7	356°50.6	52.9	41°32.4	38.5	122°46.8	57.4										
Mer.pass.:15:35				v0.6 d1.2 m-4.4				v3.4 d0.1 m-1.1				v2.6 d-0.0 m-2.4				v2.2 d0.1 m1.1			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	126°30.8	133°09.4	S01°31.5	11°54.0	N25°53.0	56°34.9	N21°38.5	137°49.0	S06°57.3										
1	141°33.3	148°10.0	30.3	26°57.4	53.1	71°37.5	38.5	152°51.3	57.2										
2	156°35.7	163°10.7	29.2	42°00.8	53.2	86°40.0	38.5	167°53.5	57.1										
3	171°38.2	178°11.3	•• 28.0	57°04.2	•• 53.4	101°42.5	•• 38.5	182°55.7	•• 57.0										
4	186°40.7	193°11.9	26.9	72°07.6	53.5	116°45.1	38.5	197°57.9	56.9										
5	201°43.1	208°12.5	25.7	87°11.0	53.6	131°47.6	38.5	213°00.1	56.7										
6	216°45.6	223°13.1	S01°24.5	102°14.4	N25°53.7	146°50.2	N21°38.5	228°02.4	S06°56.6										
7	231°48.0	238°13.8	23.4	117°17.8	53.9	161°52.7	38.5	243°04.6	56.5										
8	246°50.5	253°14.4	22.2	132°21.2	54.0	176°55.2	38.5	258°06.8	56.4										
9	261°53.0	268°15.0	•• 21.1	147°24.7	•• 54.1	191°57.8	•• 38.5	273°09.0	•• 56.3										
10	276°55.4	283°15.7	19.9	162°28.1	54.2	207°00.3	38.5	288°11.3	56.2										
11	291°57.9	298°16.3	18.7	177°31.5	54.4	222°02.9	38.5	303°13.5	56.1										
12	307°00.4	313°16.9	S01°17.6	192°34.9	N25°54.5	237°05.4	N21°38.5	318°15.7	S06°56.0										
13	322°02.8	328°17.5	16.4	207°38.3	54.6	252°07.9	38.5	333°17.9	55.9										
14	337°05.3	343°18.2	15.3	222°41.7	54.7	267°10.5	38.5	348°20.2	55.8										
15	352°07.8	358°18.8	•• 14.1	237°45.1	•• 54.8	282°13.0	•• 38.5	3°22.4	•• 55.7										
16	7°10.2	13°19.5	13.0	252°48.5	55.0	297°15.5	38.5	18°24.6	55.6										
17	22°12.7	28°20.1	11.8	267°51.9	55.1	312°18.1	38.5	33°26.8	55.5										
18	37°15.2	43°20.7	S01°10.6	282°55.3	N25°55.2	327°20.6	N21°38.5	48°29.0	S06°55.4										
19	52°17.6	58°21.4	09.5	297°58.6	55.3	342°23.1	38.5	63°31.3	55.3										
20	67°20.1	73°22.0	08.3	313°02.0	55.4	357°25.7	38.5	78°33.5	55.2										
21	82°22.5	88°22.7	•• 07.2	328°05.4	•• 55.6	12°28.2	•• 38.5	93°35.7	•• 55.1										
22	97°25.0	103°23.3	06.0	343°08.8	55.7	27°30.8	38.5	108°37.9	55.0										
23	112°27.5	118°23.9	04.9	358°12.2	55.8	42°33.3	38.5	123°40.1	54.9										
Mer.pass.:15:31				v0.6 d1.2 m-4.4				v3.4 d0.1 m-1.1				v2.5 d-0.0 m-2.4				v2.2 d0.1 m1.1			

	Stars	
	SHA	Dec
Alpheratz	357°34.9	29°13.8
Ankaa	353°07.3	-42°10.4
Schedar	349°31.3	56°40.7
Diphda	348°47.4	-17°51.1
Achernar	335°20.2	-57°06.9
Hamal	327°51.2	23°34.9
Polaris	313°54.2	89°22.5
Acamar	315°11.6	-40°12.5
Menkar	314°06.0	4°11.2
Mirfak	308°28.0	49°57.2
Aldebaran	290°39.4	16°33.6
Rigel	281°03.6	-8°10.4
Capella	280°21.5	46°01.5
Bellatrix	278°22.6	6°22.3
Elnath	278°01.5	28°37.8
Anilam	275°37.4	-1°11.2
Betelgeuse	270°51.8	7°24.7
Canopus	263°51.9	-52°42.6
Sirius	258°25.9	-16°45.1
Adhara	255°05.5	-29°00.4
Procyon	244°50.4	5°09.6
Pollux	243°16.9	27°57.9
Avior	234°14.1	-59°35.4
Suhail	222°45.8	-43°32.0
Miaplacidus	221°37.4	-69°49.1
Alphard	217°47.4	-8°46.1

	Aries			Venus			Mars			Jupiter			Saturn		
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	127°29.9	133°24.6	S01°03.7	13°15.6	N25°55.9	57°35.8	N21°38.5	138°42.4	S06°54.7						
1	142°32.4	148°25.2	02.6	28°19.0	56.0	72°38.4	38.5	153°44.6	54.6						
2	157°34.9	163°25.9	01.4	43°22.4	56.1	87°40.9	38.5	168°46.8	54.5						
3	172°37.3	178°25.6	01°00.2	58°25.8	•• 56.2	102°43.4	•• 38.5	183°49.0	•• 54.4						
4	187°39.8	193°27.2	00°59.1	73°29.2	56.4	117°45.9	38.5	198°51.3	54.3						
5	202°42.3	208°27.9	57.9	88°32.5	56.5	132°48.5	38.5	213°53.5	54.2						
6	217°44.7	223°28.5	S00°56.8	103°35.9	N25°56.6	147°51.0	N21°38.5	228°55.7	S06°54.1						
7	232°47.2	238°29.2	55.6	118°39.3	56.7	162°53.5	38.5	243°57.9	54.0						
8	247°49.7	253°29.8	54.5	133°42.7	56.8	177°56.1	38.5	259°00.1	53.9						
9	262°52.1	268°30.5	•• 53.3	148°46.1	•• 56.9	192°58.6	•• 38.5	274°02.4	•• 53.8						
10	277°54.6	283°31.1	52.2	163°49.4	57.0	208°01.1	38.5	289°04.6	53.7						
11	292°57.0	298°31.8	51.0	178°52.8	57.2	223°03.7	38.5	304°06.8	53.6						
12	307°59.5	313°32.5	S00°49.9	193°56.2	N25°57.3	238°06.2	N21°38.5	319°09.0	S06°53.5						
13	323°02.0	328°33.1	48.7	208°59.6	57.4	253°08.7	38.5	334°11.2	53.4						
14	338°04.4	343°33.8	47.6	224°03.0	57.5	268°11.2	38.5	349°13.5	53.3						
15	353°06.9	358°34.5	•• 46.4	239°06.3	•• 57.6	283°13.8	•• 38.5	4°15.7	•• 53.2						
16	8°09.4	13°35.1	45.3	254°09.7	57.7	298°16.3	38.5	19°17.9	53.1						
17	23°11.8	28°35.8	44.1	269°13.1	57.8	313°18.8	38.5	34°20.1	52.9						
18	38°14.3	43°36.5	S00°43.0	284°16.5	N25°57.9	328°21.4	N21°38.5	49°22.3	S06°52.8						
19	53°16.8	58°37.2	41.8	299°19.8	58.0	343°23.9	38.5	64°24.6	52.7						
20	68°19.2	73°37.8	40.7	314°23.2	58.1	358°26.4	38.5	79°26.8	52.6						
21	83°21.7	88°38.5	•• 39.5	329°26.6	•• 58.3	13°28.9	•• 38.5	94°29.0	•• 52.5						
22	98°24.1	103°39.2	38.4	344°29.9	58.4	28°31.5	38.5	109°31.2	52.4						
23	113°26.6	118°39.9	37.2	359°33.3	58.5	43°34.0	38.5	124°33.4	52.3						
Mer.pass.:15:27			v0.6 d1.2 m-4.4			v3.4 d0.1 m-1.1			v2.5 d0.0 m-2.4			v2.2 d0.1 m1.1			

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	128°29.1	133°40.6	S00°36.1	14°36.7	N25°58.6	58°36.5	N21°38.5	139°35.7	S06°52.2	
1	143°31.5	148°41.2	34.9	29°40.0	58.7	73°39.0	38.5	154°37.9	52.1	
2	158°34.0	163°41.9	33.8	44°43.4	58.8	88°41.5	38.5	169°40.1	52.0	
3	173°36.5	178°42.6	•• 32.6	59°46.7	•• 58.9	103°44.1	•• 38.5	184°42.3	•• 51.9	
4	188°38.9	193°43.3	31.5	74°50.1	59.0	118°46.6	38.5	199°44.5	51.8	
5	203°41.4	208°44.0	30.3	89°53.5	59.1	133°49.1	38.5	214°46.8	51.7	
6	218°43.9	223°44.7	S00°29.2	104°56.8	N25°59.2	148°51.6	N21°38.5	229°49.0	S06°51.6	
7	233°46.3	238°45.4	28.0	120°00.2	59.3	163°54.2	38.5	244°51.2	51.5	
8	248°48.8	253°46.1	26.9	135°03.5	59.4	178°56.7	38.5	259°53.4	51.3	
9	263°51.3	268°46.8	•• 25.7	150°06.9	•• 59.5	193°59.2	•• 38.5	274°55.6	•• 51.2	
10	278°53.7	283°47.5	24.6	165°10.3	59.6	209°01.7	38.5	289°57.9	51.1	
11	293°56.2	298°48.2	23.4	180°13.6	59.7	224°04.2	38.5	305°00.1	51.0	
12	308°58.6	313°48.8	S00°22.3	195°17.0	N25°59.8	239°06.8	N21°38.5	320°02.3	S06°50.9	
13	324°01.1	328°49.5	21.1	210°20.3	25°59.9	254°09.3	38.6	335°04.5	50.8	
14	339°03.6	343°50.3	20.0	225°23.7	26°00.0	269°11.8	38.6	350°06.0	50.7	
15	354°06.0	358°51.0	•• 18.9	240°27.0	•• 00.1	284°14.3	•• 38.6	5°08.9	•• 50.6	
16	9°08.5	13°51.7	17.7	255°30.4	00.2	299°16.8	38.6	20°11.2	50.5	
17	24°11.0	28°52.4	16.6	270°33.7	00.3	314°19.4	38.6	35°13.4	50.4	
18	39°13.4	43°53.1	S00°15.4	285°37.0	N26°00.4	329°21.9	N21°38.6	50°15.6	S06°50.3	
19	54°15.9	58°53.8	14.3	300°40.4	00.5	344°24.4	38.6	65°17.8	50.2	
20	69°18.4	73°54.5	13.1	315°43.7	00.6	359°26.9	38.6	80°20.0	50.1	
21	84°20.8	88°55.2	•• 12.0	330°47.1	•• 00.7	14°29.4	•• 38.6	95°22.3	•• 50.0	
22	99°23.3	103°55.9	10.9	345°50.4	00.8	29°31.9	38.6	110°24.5	49.9	
23	114°25.8	118°56.6	09.7	0°53.8	00.9	44°34.5	38.6	125°26.7	49.7	
Mer.pass.:15:24			v0.7 d1.1 m-4.4		v3.4 d0.1 m-1.1		v2.5 d0.0 m-2.4		v2.2 d0.1 m1.1	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	129°28.2	133°57.3	S00°08.6	15°57.1	N26°01.0	59°37.0	N21°38.6	140°28.9	S06°49.6					
1	144°30.7	148°58.1	07.4	31°00.4	01.1	74°39.5	38.6	155°31.1	49.5					
2	159°33.1	163°58.8	06.3	46°03.8	01.2	89°42.0	38.6	170°33.3	49.4					
3	174°35.6	178°59.5	•• 05.1	61°07.1	•• 01.3	104°44.5	•• 38.6	185°35.6	•• 49.3					
4	189°38.1	194°00.2	04.0	76°10.4	01.4	119°47.0	38.6	200°37.8	49.2					
5	204°40.5	209°00.9	02.9	91°13.8	01.5	134°49.5	38.6	215°40.0	49.1					
6	219°43.0	224°01.7	S00°01.7	106°17.1	N26°01.6	149°52.0	N21°38.6	230°42.2	S06°49.0					
7	234°45.5	239°02.4	S00°00.6	121°20.4	01.7	164°54.6	38.6	245°44.4	48.9					
8	249°47.9	254°03.1	N00°00.5	136°23.8	01.8	179°57.1	38.6	260°46.6	48.8					
9	264°50.4	269°03.9	•• 01.7	151°27.1	•• 01.9	194°59.6	•• 38.6	275°48.9	•• 48.7					
10	279°52.9	284°04.6	02.8	166°30.4	02.0	210°02.1	38.6	290°51.1	48.6					
11	294°55.3	299°05.3	04.0	181°33.8	02.1	225°04.6	38.6	305°53.3	48.5					
12	309°57.8	314°06.1	N00°05.1	196°37.1	N26°02.2	240°07.1	N21°38.6	320°55.5	S06°48.4					
13	325°00.3	329°06.8	06.2	211°40.4	02.3	255°09.6	38.6	335°57.7	48.2					
14	340°02.7	344°07.5	07.4	226°43.7	02.3	270°12.1	38.6	350°59.9	48.1					
15	355°05.2	359°03.8	•• 08.5	241°47.0	•• 02.4	285°14.6	•• 38.6	6°02.2	•• 48.0					
16	10°07.6	14°09.0	09.7	256°50.4	02.5	300°17.2	38.6	21°04.4	47.9					
17	25°10.1	29°09.7	10.8	271°53.7	02.6	315°19.7	38.6	36°06.6	47.8					
18	40°12.6	44°10.5	N00°11.9	286°57.0	N26°02.7	330°22.2	N21°38.6	51°08.8	S06°47.7					
19	55°15.0	59°11.2	13.1	302°00.3	02.8	345°24.7	38.6	66°11.0	47.6					
20	70°17.5	74°12.0	14.2	317°03.6	02.9	0°27.2	38.6	81°13.2	47.5					
21	85°20.0	89°12.7	•• 15.3	332°07.0	•• 03.0	15°29.7	•• 38.6	96°15.5	•• 47.4					
22	100°22.4	104°13.5	16.5	347°10.3	03.1	30°32.2	38.6	111°17.7	47.3					
23	115°24.9	119°14.2	17.6	2°13.6	03.2	45°34.7	38.7	126°19.9	47.2					
Mer.pass.:15:20			v0.7 d1.1 m-4.4			v3.3 d0.1 m-1.1			v2.5 d0.0 m-2.4			v2.2 d0.1 m1.1		

Stars		
SHA	Dec	
Alpheratz	357°34.9	29°13.8
Ankaa	353°07.3	-42°10.4
Schedar	349°31.3	56°40.7
Diphda	348°47.4	-17°51.1
Achernar	335°20.2	-57°06.9
Hamal	327°51.2	23°34.9
Polaris	313°55.6	89°22.5
Acamar	315°11.7	-40°12.5
Menkar	314°06.0	4°11.2
Mirfak	308°28.0	49°57.2
Aldebaran	290°39.4	16°33.6
Rigel	281°03.6	-8°10.4
Capella	280°21.5	46°01.5
Bellatrix	278°22.6	6°22.3
Elath	278°01.5	28°37.8
Anilam	275°37.4	-1°11.2
Betelgeuse	270°51.8	7°24.7
Canopus	263°51.9	-52°42.7
Sirius	258°25.9	-16°45.1
Adhara	255°05.5	-29°00.5
Procyon	244°50.4	5°09.6
Pollux	243°16.9	27°57.9
Avior	234°14.1	-59°35.4
Suhail	222°45.8	-43°32.0
Miaplacidus	221°37.4	-69°49.1
Alphard	217°47.4	-8°46.1
Regulus	207°34.1	11°50.6
Dubhe	193°40.4	61°36.7
Denebola	182°24.7	14°25.8
Gienah	175°43.3	-17°40.9
Acrux	172°59.7	-63°14.1
Gacrux	171°51.3	-57°15.0
Alto	166°12.6	55°49.1
Spica	158°22.1	-11°17.6
Alkaid	152°51.8	49°10.4
Hadar	148°35.9	-60°29.9
Merktar	147°57.5	-36°29.5
Antecurus	145°47.8	19°02.9
Rigel Kent.	139°40.3	-60°56.1
Kochab	137°19.9	74°02.7
Zuben'ubi	136°56.0	-16°08.8
Alphecca	126°03.8	26°37.5
Antares	112°15.9	-26°29.2
Atria	107°10.5	-69°04.1
Sabik	102°02.9	-15°45.4
Shaula	96°10.6	-37°07.3
Rasalhague	95°58.7	12°32.3
Eltanin	90°42.6	51°28.8
Kaus Aust.	83°32.8	-34°22.3
Vega	80°36.6	38°48.2
Nunki	75°48.0	-26°16.0
Altair	62°00.2	8°56.0
Peacock	53°06.2	-56°39.3
Deneb	49°26.2	45°22.1
Enif	33°39.1	9°59.3
Al Na'ir	27°33.3	-46°50.5
Fomalhaut	15°14.7	-29°29.5
Scheat	13°45.4	28°13.2
Markab	13°30.1	15°20.4

Dubhe	193°40.4	61°36.7
Denebola	182°24.7	14°25.8
Gienah	175°43.3	-17°40.9
Acrux	172°59.7	-63°14.1
Gacrux	171°51.3	-57°15.0
Alioth	166°12.6	55°49.1
Spica	158°22.1	-11°17.6
Alkaid	152°51.8	49°10.9
Hadar	148°35.9	-60°29.4
Menkent	147°57.5	-36°29.5
Arcturus	145°47.8	19°02.9
Rigil Kent.	139°40.3	-60°56.1
Kochab	137°19.9	74°02.7
Zuben'ubi	136°56.0	-16°08.8
Alphecca	126°03.8	26°37.5
Antares	112°15.9	-26°29.2
Atria	107°10.5	-69°04.1
Sabik	102°02.9	-15°45.4
Shaula	96°10.6	-37°07.3
Rasalhague	95°58.7	12°32.3
Eltanin	90°42.6	51°28.8
Kaus Aus.	83°32.8	-34°22.3
Vega	80°33.6	38°48.2
Nunki	75°48.0	-26°16.0
Altair	62°00.2	8°56.0
Peacock	53°06.2	-56°39.3
Deneb	49°26.2	45°22.1
Enif	33°39.1	9°50.3

Aries				Venus				Mars				Jupiter				Saturn			
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	130°27.4	134°15.0	N00°18.7	17°16.9	N26°03.2	60°37.2	N21°38.7	141°22.1	S06°47.1										
1	145°29.8	149°15.7	19.9	32°20.2	03.4	75°39.7	38.7	156°24.3	47.0										
2	160°32.3	164°16.5	21.0	47°23.5	05.2	90°42.2	38.7	171°26.5	46.8										
3	175°34.7	179°17.2	•• 22.1	62°26.8	•• 03.5	105°44.7	•• 38.7	186°28.8	•• 46.7										
4	190°37.2	194°18.0	23.3	77°30.1	03.6	120°47.2	38.7	201°31.0	46.6										
5	205°39.7	209°18.8	24.4	92°33.4	03.7	135°49.7	38.7	216°33.2	46.5										
6	220°42.1	224°19.5	N00°25.5	107°36.7	N26°03.8	150°52.2	N21°38.7	231°35.4	S06°46.4										
7	235°44.6	239°20.3	26.7	122°40.0	03.9	165°54.7	38.7	246°37.6	46.3										
8	250°47.1	254°21.0	27.8	137°43.3	03.9	180°57.2	38.7	261°39.8	46.2										
9	265°49.5	269°21.8	•• 28.9	152°46.6	•• 04.0	195°59.7	•• 38.7	276°42.0	•• 46.1										
10	280°52.0	284°22.6	30.1	167°49.0	04.1	211°02.3	38.7	291°44.3	46.0										
11	295°54.5	299°23.3	31.2	182°53.2	04.2	226°04.8	38.7	306°46.5	45.9										
12	310°56.9	314°24.1	N00°32.3	197°56.5	N26°04.3	241°07.3	N21°38.7	321°48.7	S06°45.8										
13	325°59.4	329°24.9	33.4	212°59.8	04.4	256°09.8	38.7	336°50.9	45.7										
14	341°01.9	344°25.7	34.6	228°03.1	04.4	271°12.3	38.7	351°53.1	45.5										
15	356°04.3	359°26.4	•• 35.7	243°06.4	•• 04.5	286°14.8	•• 38.7	6°55.3	•• 45.4										
16	11°06.8	14°27.2	36.6	258°09.7	04.6	301°17.3	38.7	21°57.5	45.3										
17	26°09.2	29°28.0	38.0	273°13.0	04.7	316°19.8	38.7	36°59.8	45.2										
18	41°11.7	44°28.8	N00°39.1	288°16.3	N26°04.8	331°22.3	N21°38.7	52°02.0	S06°45.1										
19	56°14.2	59°29.6	40.2	303°19.6	04.9	346°24.8	38.7	67°04.2	45.0										
20	71°16.6	74°30.3	41.3	318°22.9	04.9	1°27.3	38.7	82°06.4	•• 44.9										
21	86°19.1	89°31.1	•• 42.5	333°26.1	•• 05.0	16°29.7	•• 38.7	97°08.6	•• 44.8										
22	101°21.6	104°31.9	43.6	348°29.4	05.1	31°32.2	38.7	112°10.8	44.7										
23	116°24.0	119°32.7	44.7	3°32.7	05.2	46°34.7	38.7	127°13.0	44.6										
Mer.pass.:15:16				v0.8 d1.1 m-4.4				v3.3 d0.1 m-1.0				v2.5 d0.0 m-2.4				v2.2 d0.1 m1.1			

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	131°26.5	134°33.5	N00°45.8	18°36.0	N26°05.2	61°37.2	N21°38.8	142°15.3	S06°44.5
1	146°29.0	149°34.3	47.0	33°39.3	05.3	76°39.7	38.8	157°17.5	44.4
2	161°31.4	164°35.1	48.1	48°42.6	05.4	91°42.2	38.8	172°19.7	44.2
3	176°33.9	179°35.9	•• 49.2	63°45.8	•• 05.5	106°44.7	•• 38.8	187°21.9	•• 44.1
4	191°36.3	194°36.7	50.3	78°49.1	05.6	121°47.2	38.8	202°24.1	44.0
5	206°38.8	209°37.4	51.5	93°52.4	05.6	136°49.7	38.8	217°26.3	43.9
6	221°41.3	224°38.2	N00°52.6	108°55.7	N26°05.7	151°52.2	N21°38.8	232°28.5	S06°43.8
7	236°43.7	239°39.0	53.7	123°58.9	05.8	166°54.7	38.8	247°30.8	43.7
8	251°46.2	254°39.8	54.8	139°02.2	05.9	181°57.2	38.8	262°33.0	43.6
9	266°48.7	269°40.7	•• 55.9	154°05.5	•• 05.9	196°59.7	•• 38.8	277°35.2	•• 43.5
10	281°51.1	284°41.5	57.1	169°08.7	06.0	212°02.2	38.8	292°37.4	43.4
11	296°53.6	299°42.3	58.2	184°12.0	06.1	227°04.7	38.8	307°39.6	43.3
12	311°56.1	314°43.1	N00°59.3	199°15.3	N26°06.2	242°07.2	N21°38.8	322°41.8	S06°43.2
13	326°58.5	329°43.9	01°00.4	214°18.5	06.2	257°09.7	38.8	337°44.0	43.1
14	342°01.0	344°44.7	01.6	229°21.8	06.3	272°12.2	38.8	352°46.2	42.9
15	357°03.5	359°45.5	•• 02.7	244°25.1	•• 06.4	287°14.6	•• 38.8	7°48.5	•• 42.8
16	12°05.9	14°46.3	03.8	259°28.3	06.5	302°17.1	38.8	22°50.7	42.7
17	27°08.4	29°47.1	04.9	274°31.6	06.5	317°19.6	38.8	37°52.9	42.6
18	42°10.8	44°48.0	N01°06.0	289°34.9	N26°06.6	332°22.1	N21°38.9	52°55.1	S06°42.5
19	57°13.3	59°48.8	07.1	304°38.1	06.7	347°24.6	38.9	67°57.3	42.4
20	72°15.8	74°49.6	08.3	319°41.4	06.7	2°27.1	38.9	82°59.5	42.3
21	87°18.2	89°50.4	•• 09.4	334°44.6	•• 06.8	17°29.6	•• 38.9	98°01.7	•• 42.2
22	102°20.7	104°51.2	10.5	349°47.9	06.9	32°32.1	38.9	113°03.9	42.1
23	117°23.2	119°52.1	11.6	4°51.1	07.0	47°34.6	38.9	128°06.2	42.0

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	132°25.6	134°52.9	N01°12.7	19°54.4	N26°07.0	62°37.0	N21°38.9	143°08.4	S06°41.9										
1	147°28.1	149°53.7	13.8	34°57.6	07.1	77°39.5	38.9	158°10.6	41.7										
2	162°30.6	164°54.5	15.0	50°00.9	07.2	92°42.0	38.9	173°12.8	41.6										
3	177°33.0	179°55.4	•• 16.1	65°04.1	•• 07.2	107°44.5	•• 38.9	188°15.0	•• 41.5										
4	192°35.5	194°56.2	17.2	80°07.4	07.3	122°47.0	38.9	203°17.2	41.4										
5	207°37.9	209°57.0	18.3	95°10.6	07.4	137°49.5	38.9	218°19.4	41.3										
6	222°40.4	224°57.9	N01°19.4	110°13.9	N26°07.4	152°52.0	N21°38.9	233°21.6	S06°41.2										
7	237°42.9	239°58.7	20.5	125°17.1	07.5	167°54.4	38.9	248°23.9	41.1										
8	252°45.3	254°59.6	21.6	140°20.4	07.6	182°56.9	38.9	263°26.1	41.0										
9	267°47.8	270°00.4	•• 22.8	155°23.6	•• 07.6	197°59.4	•• 38.9	278°28.3	•• 40.9										
10	282°50.3	285°01.2	23.9	170°26.8	07.7	213°01.9	39.0	293°30.5	40.8										
11	297°52.7	300°02.1	25.0	185°30.1	07.8	228°04.4	39.0	308°32.7	40.6										
12	312°55.2	315°02.9	N01°26.1	200°33.3	N26°07.8	243°06.9	N21°38.9	323°34.9	S06°40.5										
13	327°57.7	330°03.8	27.2	215°36.5	07.9	258°09.3	39.0	338°37.1	40.4										
14	343°00.1	345°04.6	28.3	230°39.8	08.0	273°11.8	39.0	353°39.3	40.3										
15	358°02.6	0°05.5	•• 29.4	245°43.0	•• 08.0	288°14.3	•• 39.0	8°41.5	•• 40.2										
16	13°05.1	15°06.3	30.5	260°46.2	08.1	303°16.8	39.0	23°43.8	40.1										
17	28°07.5	30°07.2	31.6	275°49.5	08.2	318°19.3	39.0	38°46.0	40.0										
18	43°10.0	45°08.1	N01°32.7	290°52.7	N26°08.2	333°21.8	N21°39.0	53°48.2	S06°39.9										
19	58°12.4	60°08.9	33.8	305°55.9	08.3	348°24.2	39.0	68°50.4	39.8										
20	73°14.9	75°09.8	35.0	320°59.1	08.3	3°26.7	39.0	83°52.6	39.7										
21	88°17.4	90°10.6	•• 36.1	336°02.4	•• 08.4	18°29.2	•• 39.0	98°54.8	•• 39.6										
22	103°19.8	105°11.5	37.2	351°05.6	08.5	33°31.7	39.0	113°57.0	39.4										
23	118°22.3	120°12.4	38.3	6°08.8	08.5	48°34.2	39.0	128°59.2	39.3										
Mer.pass.:15:08				v0.8 d1.1 m-4.4				v3.3 d0.1 m-1.0				v2.5 d0.0 m-2.4				v2.2 d0.1 m1.1			

SHA	Dec
Alpheratz	357°34.9 29°13.8
Ankaa	353°07.3 -42°10.4
Schedar	349°31.3 56°40.7
Diphda	348°47.4 -17°51.1
Achernar	335°20.3 -57°06.8
Hamal	327°51.2 23°34.9
Polaris	313°57.2 89°22.5
Acamar	315°11.7 -40°12.5
Menkar	314°06.0 4°11.2
Mirfak	308°28.1 49°57.2
Aldebaran	290°39.4 16°33.6
Rigel	281°03.6 -8°10.4
Capella	280°21.5 46°01.5
Bellatrix	278°22.6 6°22.3
Elnath	278°01.5 28°37.8
Alnilam	275°37.4 -1°11.2
Betelgeuse	270°51.8 7°24.7
Canopus	263°51.9 -52°42.7
Sirius	258°25.9 -16°45.1
Adhara	255°05.5 -29°00.5
Procyon	244°50.4 5°09.6
Pollux	243°16.9 27°57.9
Avior	234°14.1 -59°35.4
Suhail	222°45.8 -43°32.0
Miaplacidus	221°37.4 -69°49.1
Alphard	217°47.4 -8°46.1
Regulus	207°34.1 11°50.6
Dubhe	193°40.3 61°36.7
Denebola	182°24.6 14°25.8
Genah	175°43.3 -17°40.9
Acrux	172°59.7 -63°14.1
Gacrux	171°51.3 -57°15.0
Alioth	166°12.6 55°49.1
Spica	158°22.1 -11°17.6
Alkaid	152°51.8 49°10.9
Hadar	148°35.8 -60°29.4
Menkent	147°57.5 -36°29.5
Arcturus	145°47.8 19°02.9
Rigel Kent	139°40.2 -60°56.1
Kochab	137°19.8 74°02.7
Zuben'ubi	136°56.0 -16°08.8
Alphecca	126°03.8 26°37.5
Antares	112°15.9 -26°29.2
Atria	107°10.4 -69°04.1
Sabik	102°02.9 -15°45.4
Shaula	96°10.6 -37°07.3
Rasalhague	95°58.7 12°32.3
Eltanin	90°42.5 51°28.8
Kaus Aest	83°32.8 -34°22.3
Vega	80°33.5 38°48.2
Nunki	75°48.0 -26°16.0
Altair	62°00.2 8°55.9
Peacock	53°06.2 -56°39.3
Deneb	49°26.2 45°22.1
Enif	33°39.1

	Aries			Venus			Mars			Jupiter			Saturn		
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	133°24.8	135°13.2	N01°39.4	21°12.0	N26°08.6	63°36.6	N21°39.1	144°01.4	S06°39.2	150°07.3	39.1	159°03.7	39.1		
1	148°27.2	150°14.1	40.5	36°15.3	08.7	78°39.1	39.1	174°05.9	39.0	174°05.9	39.1	174°05.9	39.0		
2	163°29.7	165°15.0	41.6	51°18.5	08.7	93°41.6	39.1	189°08.1	39.1	189°08.1	39.1	189°08.1	39.1		
3	178°32.2	180°15.8	42.7	66°21.7	08.8	108°44.1	39.1	204°10.3	38.8	204°10.3	39.1	204°10.3	38.8		
4	193°34.6	195°16.7	43.8	81°24.9	08.8	123°46.5	39.1	219°12.5	38.7	219°12.5	39.1	219°12.5	38.7		
5	208°37.1	210°17.6	44.9	96°28.1	08.9	138°49.0	39.1	234°14.7	S06°38.6	234°14.7	39.1	234°14.7	S06°38.6		
6	223°39.6	225°18.5	N01°46.0	111°31.3	N26°09.0	153°51.5	N21°39.1	249°16.9	38.5	249°16.9	39.1	249°16.9	38.5		
7	238°42.0	240°19.3	47.1	126°34.5	09.0	168°54.0	39.1	264°19.1	38.3	264°19.1	39.1	264°19.1	38.3		
8	253°44.5	255°20.2	48.2	141°37.7	09.1	183°56.4	39.1	279°21.3	38.2	279°21.3	39.1	279°21.3	38.2		
9	268°46.9	270°21.1	49.3	156°41.0	09.1	198°58.9	39.1	294°23.5	38.1	294°23.5	39.1	294°23.5	38.1		
10	283°49.4	285°22.0	50.4	171°44.2	09.2	214°01.4	39.1	309°25.8	38.0	309°25.8	39.1	309°25.8	38.0		
11	298°51.9	300°22.9	51.5	186°47.4	09.2	229°03.9	39.1	324°28.0	S06°37.9	324°28.0	39.1	324°28.0	S06°37.9		
12	313°54.3	315°23.8	N01°52.6	201°50.6	N26°09.3	244°06.3	N21°39.1	339°30.2	37.8	339°30.2	39.1	339°30.2	37.8		
13	328°56.8	330°24.6	53.7	216°53.8	09.4	259°08.8	39.1	354°32.4	37.7	354°32.4	39.2	354°32.4	37.7		
14	343°59.3	345°25.5	54.8	231°57.0	09.4	274°11.3	39.2	369°34.6	37.6	369°34.6	39.2	369°34.6	37.6		
15	359°01.7	0°26.4	55.9	247°00.2	09.5	289°13.8	39.2	384°36.8	37.5	384°36.8	39.2	384°36.8	37.5		
16	14°04.2	15°27.3	57.0	262°03.4	09.5	304°16.2	39.2	399°39.0	37.4	399°39.0	39.2	399°39.0	37.4		
17	29°06.7	30°28.2	58.1	277°06.6	09.6	319°18.7	39.2	414°41.2	S06°37.2	414°41.2	39.2	414°41.2	S06°37.2		
18	44°09.1	45°29.1	N01°59.2	292°09.8	N26°09.6	334°21.2	N21°39.2	429°43.4	37.1	429°43.4	39.2	429°43.4	37.1		
19	59°11.6	60°30.0	02°00.3	307°13.0	09.7	349°23.7	39.2	444°45.6	37.0	444°45.6	39.2	444°45.6	37.0		
20	74°14.0	75°30.9	01.4	322°16.2	09.7	4°26.1	39.2	459°47.8	36.9	459°47.8	39.2	459°47.8	36.9		
21	89°16.5	90°31.8	02.5	337°19.3	09.8	19°28.6	39.2	474°50.1	36.8	474°50.1	39.2	474°50.1	36.8		
22	104°19.0	105°32.7	03.6	352°22.5	09.8	34°31.1	39.2	489°52.3	36.7	489°52.3	39.2	489°52.3	36.7		
23	119°21.4	120°33.6	04.7	7°25.7	09.9	49°33.5	39.2								
Mer.pass.:15:04			v0.9 d1.1 m-4.4			v3.2 d0.1 m-1.0			v2.5 d0.0 m-2.4			v2.2 d0.1 m1.1			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	134°23.9	135°34.5	N02°05.8	22°28.9	N26°09.9	64°36.0	N21°39.2	144°54.5	S06°36.6
1	150°26.4	150°35.4	06.9	37°32.1	10.0	79°38.5	39.2	159°56.7	36.5
2	164°28.8	165°36.4	08.0	52°35.3	10.1	94°40.9	39.3	174°58.9	36.4
3	179°31.3	180°37.3	09.1	67°38.5	10.1	109°43.4	39.3	190°01.1	36.2
4	194°33.8	195°38.2	10.1	82°41.6	10.2	124°45.9	39.3	205°03.3	36.1
5	209°36.2	210°39.1	11.2	97°44.8	10.2	139°48.3	39.3	220°05.5	36.0
6	224°38.7	225°40.0	N02°12.3	112°48.0	N26°10.3	154°50.8	N21°39.3	235°07.7	S06°35.9
7	239°41.2	240°40.9	13.4	127°51.2	10.3	169°53.3	39.3	250°09.9	35.8
8	254°43.6	255°41.9	14.5	142°54.4	10.4	184°55.7	39.3	265°12.1	35.7
9	269°46.1	270°42.8	15.6	157°57.5	10.4	199°58.2	39.3	280°14.4	35.6
10	284°48.5	285°43.7	16.7	173°00.7	10.4	215°00.7	39.3	295°16.6	35.5
11	299°51.0	300°44.6	17.8	188°03.9	10.5	230°03.1	39.3	310°18.8	35.4
12	314°53.5	315°45.6	N02°18.9	203°07.1	N26°10.5	245°05.6	N21°39.3	325°21.0	S06°35.3
13	329°55.9	330°46.5	20.0	218°10.2	10.6	260°08.1	39.3	340°23.2	35.1
14	344°58.4	345°47.4	21.0	233°13.4	10.6	275°10.5	39.4	355°25.4	35.0
15	0°00.9	0°48.4	22.1	248°16.6	10.7	290°13.0	39.4	10°27.6	34.9
16	15°03.3	15°49.3	23.2	263°19.7	10.7	305°15.5	39.4	25°29.8	34.8
17	30°05.8	30°50.2	24.3	278°22.9	10.8	320°17.9	39.4	40°32.0	34.7
18	45°08.3	45°51.2	N02°25.4	293°26.1	N26°10.8	335°20.4	N21°39.4	55°34.2	S06°34.6
19	60°10.7	60°52.1	26.5	308°29.2	10.9	350°22.8	39.4	70°36.4	34.5
20	75°13.2	75°53.1	27.6	323°32.4	10.9	5°25.3	39.4	85°38.6	34.4
21	90°15.6	90°54.0	28.6	338°35.5	11.0	20°27.8	39.4	100°40.8	34.3
22	105°18.1	105°54.9	29.7	353°38.7	11.0	35°30.2	39.4	115°43.1	34.1
23	120°20.6	120°55.9	30.8	8°41.8	11.0	50°32.7	39.4	130°45.3	34.0
Mer.pass.:15:00 v0.9 d1.1 m-4.4 v3.2 d0.1 m-0.9 v2.5 d0.0 m-2.4 v2.2 d0.1 m1.1									

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	135°23.0	135°56.8	N02°31.9	23°45.0	N26°11.1	65°35.1	N21°39.5	145°47.5	S06°33.9
1	150°25.5	150°57.8	33.0	38°48.2	11.1	80°37.6	39.5	160°49.7	33.8
2	165°28.0	165°58.8	34.0	53°51.3	11.2	95°40.1	39.5	175°51.9	33.7
3	180°30.4	180°59.7	35.1	68°54.5	11.2	110°42.5	39.5	190°54.1	33.6
4	195°32.9	196°00.7	36.2	83°57.6	11.3	125°45.0	39.5	205°56.3	33.5
5	210°35.4	211°01.6	37.3	99°00.8	11.3	140°47.4	39.5	220°58.5	33.4
6	225°37.8	226°02.6	N02°38.4	114°03.9	N26°11.3	155°49.9	N21°39.5	236°00.7	S06°33.3
7	240°40.3	241°03.5	39.4	129°07.0	11.4	170°52.4	39.5	251°02.9	33.1
8	255°42.8	256°04.5	40.5	144°10.2	11.4	185°54.8	39.5	266°05.1	33.0
9	270°45.2	271°05.5	41.6	159°13.3	11.5	200°57.3	39.5	281°07.3	32.9
10	285°47.7	286°06.4	42.7	174°16.5	11.5	215°59.7	39.5	296°09.5	32.8
11	300°50.1	301°07.4	43.8	189°19.6	11.6	231°02.2	39.6	311°11.7	32.7
12	315°52.6	316°08.4	N02°44.8	204°22.7	N26°11.6	246°04.6	N21°39.6	326°14.0	S06°32.6
13	330°55.1	331°09.4	45.9	219°25.9	11.6	261°07.1	39.6	341°16.2	32.5
14	345°57.5	346°10.3	47.0	234°29.0	11.7	276°09.6	39.6	356°18.4	32.4
15	1°00.0	1°11.3	48.1	249°32.1	11.7	291°12.0	39.6	371°20.6	32.3
16	16°02.5	16°12.3	49.1	264°35.3	11.7	306°14.5	39.6	386°22.8	32.1
17	31°04.9	31°13.3	50.2	279°38.4	11.8	321°16.9	39.6	401°25.0	32.0
18	46°07.4	46°14.3	N02°51.3	294°41.5	N26°11.8	336°19.4	N21°39.6	56°27.2	S06°31.9
19	61°09.9	61°15.2	52.3	309°44.7	11.9	351°21.8	39.6	71°29.4	31.8
20	76°12.3	76°16.2	53.4	324°47.8	11.9	6°24.3	39.7	86°31.6	31.7
21	91°14.8	91°17.2	54.5	339°50.9	11.9	21°26.7	39.7	101°33.8	31.6
22	106°17.3	106°18.5	55.6	354°54.0	12.0	36°29.2	39.7	116°36.0	31.5
23	121°19.7	121°19.2	56.6	9°57.2	12.0	51°31.6	39.7	131°38.2	31.4
Mer.pass:14:56		v1.0 d1.1 m-4.4		v3.2 d0.0 m-0.9		v2.5 d0.0 m-2.4		v2.2 d0.1 m1.2	

	Aries			Venus			Mars			Jupiter			Saturn		
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	136°22.2	136°20.2	N02°57.7	25°00.3	N26°12.0	66°34.1	N21°39.7	146°40.4	S06°31.2						
1	151°24.6	151°21.2	58.8	40°03.4	12.1	81°36.5	39.7	161°42.6	31.1						
2	166°27.1	166°22.2	02°59.8	55°06.5	12.1	96°39.0	39.7	176°44.8	31.0						
3	181°29.6	181°23.2	03°00.9	70°09.6	.. 12.1	111°41.4	.. 39.7	191°47.0	.. 30.9						
4	196°32.0	196°24.2	02.0	85°12.7	12.2	126°43.9	39.7	206°49.2	30.8						
5	211°34.5	211°25.2	03.0	100°15.9	12.2	141°46.3	39.7	221°51.5	30.7						
6	226°37.0	226°26.2	N03°04.1	115°19.0	N26°12.2	156°48.8	N21°39.8	236°53.7	S06°30.6						
7	241°39.4	241°27.2	05.2	130°22.1	12.3	171°51.2	39.8	251°55.9	30.5						
8	256°41.9	256°28.2	06.2	145°25.2	12.3	186°53.7	39.8	266°58.1	30.4						
9	271°44.4	271°29.2	.. 07.3	160°28.3	.. 12.3	201°56.1	.. 39.8	282°00.3	.. 30.2						
10	286°46.8	286°30.2	08.4	175°31.4	12.4	216°58.6	39.8	297°02.5	30.1						
11	301°49.3	301°31.3	09.4	190°34.5	12.4	232°01.0	39.8	312°04.7	30.0						
12	316°51.8	316°32.3	N03°10.5	205°37.6	N26°12.4	247°03.5	N21°39.8	327°06.9	S06°29.9						
13	331°54.2	331°33.3	11.5	220°40.7	12.5	262°05.9	39.8	342°09.1	29.8						
14	346°56.7	346°34.3	12.6	235°43.8	12.5	277°08.4	39.8	357°11.3	29.7						
15	1°59.1	1°35.3	.. 13.7	250°46.9	.. 12.5	292°10.8	.. 39.9	12°13.5	.. 29.6						
16	17°01.6	16°36.4	14.7	265°50.0	12.6	307°13.2	39.9	27°15.7	29.5						
17	32°04.1	31°37.4	15.8	280°53.1	12.6	322°15.7	39.9	42°17.9	29.3						
18	47°06.5	46°38.4	N03°16.8	295°56.2	N26°12.6	337°18.1	N21°39.9	57°20.1	S06°29.2						
19	62°09.0	61°39.4	17.9	310°59.3	12.6	352°20.6	39.9	72°22.3	29.1						
20	77°11.5	76°40.5	19.0	326°02.4	12.7	7°23.0	39.9	87°24.5	29.0						
21	92°13.9	91°41.5	.. 20.0	341°05.5	.. 12.7	22°25.5	.. 39.9	102°26.7	.. 28.9						
22	107°16.4	106°42.5	21.1	356°08.6	12.7	37°27.9	39.9	117°28.9	28.8						
23	122°18.9	121°43.6	22.1	11°11.6	12.8	52°30.3	40.0	132°31.1	28.7						
Mer.pass.:14:52			v1.0 d1.1 m-4.4			v3.1 d0.0 m-0.9			v2.5 d0.0 m-2.3			v2.2 d0.1 m1.2			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	137°21.3	136°44.6	N03°23.2	26°14.7	N26°12.8	67°32.8	N21°40.0	147°33.3	S06°28.6	
1	152°23.8	151°45.7	24.2	41°17.8	12.8	82°35.2	40.0	162°35.5	28.4	
2	167°26.2	166°46.7	25.3	56°20.9	12.8	97°37.7	40.0	177°37.7	28.3	
3	182°28.7	181°47.7	26.3	71°24.0	12.9	112°40.1	40.0	192°40.0	28.2	
4	197°31.2	196°48.8	27.4	86°27.1	12.9	127°42.6	40.0	207°42.2	28.1	
5	212°33.6	211°49.8	28.5	101°30.1	12.9	142°45.0	40.0	222°44.4	28.0	
6	227°36.1	226°50.9	N03°29.5	116°33.2	N26°12.9	157°47.4	N21°40.0	237°46.6	S06°27.9	
7	242°38.6	241°51.9	30.6	131°36.3	13.0	172°49.9	40.0	252°48.8	27.8	
8	257°41.0	256°53.0	31.6	146°39.4	13.0	187°52.3	40.1	267°51.0	27.7	
9	272°43.5	271°54.1	32.7	161°42.4	13.0	202°54.8	40.1	282°53.2	27.5	
10	287°46.0	286°55.1	33.7	176°45.5	13.0	217°57.2	40.1	297°55.4	27.4	
11	302°48.4	301°56.2	34.8	191°48.6	13.1	232°59.6	40.1	312°57.6	27.3	
12	317°50.9	316°57.2	N03°35.8	206°51.6	N26°13.1	248°02.1	N21°40.1	327°59.8	S06°27.2	
13	332°53.4	331°58.3	36.8	221°54.7	13.1	263°04.5	40.1	343°02.0	27.1	
14	347°55.8	346°59.4	37.9	236°57.8	13.1	278°06.9	40.1	358°04.2	27.0	
15	2°58.3	2°00.4	38.9	252°00.8	13.2	293°09.4	40.1	13°06.4	26.9	
16	18°00.7	17°01.5	40.0	267°03.9	13.2	308°11.8	40.2	28°08.6	26.8	
17	33°03.2	32°02.6	41.0	282°07.0	13.2	323°14.2	40.2	43°10.8	26.6	
18	48°05.7	47°03.7	N03°42.1	297°10.0	N26°13.2	338°16.7	N21°40.2	58°13.0	S06°26.5	
19	63°08.1	62°04.7	43.1	312°13.1	13.2	353°19.1	40.2	73°15.2	26.4	
20	78°10.6	77°05.8	44.2	327°16.1	13.3	8°21.6	40.2	88°17.4	26.3	
21	93°13.1	92°06.9	45.2	342°19.2	13.3	23°24.0	40.2	103°19.6	26.2	
22	108°15.5	107°08.0	46.2	357°22.2	13.3	38°26.4	40.2	118°21.8	26.1	
23	123°18.0	122°09.1	47.3	12°25.3	13.3	53°28.9	40.2	133°24.0	26.0	
Mer.pass.:14:48			v1.0 d1.1 m-4.4		v3.1 d0.0 m-0.9		v2.4 d0.0 m-2.3		v2.2 d0.1 m1.2	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	138°20.5	137°10.2	N03°48.3	27°28.4	N26°13.3	68°31.3	N21°40.3	148°26.2	S06°25.9					
1	153°22.9	152°11.2	49.4	42°31.4	13.4	83°33.7	40.3	163°28.4	25.7					
2	168°25.4	167°12.3	50.4	57°34.4	13.4	98°36.2	40.3	178°30.6	25.6					
3	183°27.9	182°13.4	.. 51.4	72°37.5	.. 13.4	113°38.6	.. 40.3	193°32.8	.. 25.5					
4	198°30.3	197°14.5	52.5	87°40.5	13.4	128°41.0	40.3	208°35.0	25.4					
5	213°32.8	212°15.6	53.5	102°43.6	13.4	143°43.4	40.3	223°37.2	25.3					
6	228°35.2	227°16.7	N03°54.6	117°46.6	N26°13.5	158°45.9	N21°40.3	238°39.4	S06°25.2					
7	243°37.7	242°17.8	55.6	132°49.7	13.5	173°48.3	40.4	253°41.6	25.1					
8	258°40.2	257°18.9	56.6	147°52.7	13.5	188°50.7	40.4	268°43.8	25.0					
9	273°42.6	272°20.0	.. 57.7	162°55.7	.. 13.5	203°53.2	.. 40.4	283°46.0	.. 24.8					
10	288°45.1	287°21.1	58.7	177°58.8	13.5	218°55.6	40.4	298°48.2	24.7					
11	303°47.6	302°22.2	03°59.7	193°01.8	13.5	233°58.0	40.4	313°50.4	24.6					
12	318°50.0	317°23.4	N04°00.8	208°04.8	N26°13.6	249°00.5	N21°40.4	328°52.7	S06°24.5					
13	333°52.5	332°24.5	01.8	223°07.9	13.6	264°02.9	40.4	343°54.9	24.4					
14	348°55.0	347°25.6	02.8	238°10.9	13.6	279°05.3	40.4	358°57.1	24.3					
15	3°57.4	2°26.7	.. 03.9	253°13.9	.. 13.6	294°07.7	.. 40.5	13°59.3	.. 24.2					
16	18°59.9	17°27.8	04.9	268°17.0	13.6	309°10.2	40.5	29°01.5	24.0					
17	34°02.4	32°28.9	05.9	283°20.0	13.6	324°12.6	40.5	44°03.7	23.9					
18	49°04.8	47°30.1	N04°06.9	298°23.0	N26°13.6	339°15.0	N21°40.5	59°05.9	S06°23.8					
19	64°07.3	62°31.2	08.0	313°26.0	13.7	354°17.4	40.5	74°08.1	23.7					
20	79°09.7	77°32.3	09.0	328°29.1	13.7	9°19.9	40.5	89°10.3	23.6					
21	94°12.2	92°33.4	.. 10.0	343°32.1	.. 13.7	24°22.3	.. 40.5	104°12.5	.. 23.5					
22	109°14.7	107°34.6	11.0	358°35.1	13.7	39°24.7	40.6	119°14.7	23.4					
23	124°17.1	122°35.7	12.1	13°38.1	13.7	54°27.1	40.6	134°16.9	23.3					
Mer.pass.:14:44			v1.1 d1.0 m-4.4			v3.0 d0.0 m-0.8			v2.4 d0.0 m-2.3			v2.2 d0.1 m1.2		

Stars		
SHA	Dec	
Alpheratz	357°35.0	29°13.8
Ankaa	353°07.3	-42°10.4
Schedar	349°31.3	56°40.7
Diphda	348°47.4	-17°51.1
Achernar	335°20.3	-57°06.8
Hamal	327°51.2	23°34.9
Polaris	314°00.0	89°22.5
Acamar	315°11.7	-40°12.5
Menkar	314°06.1	4°11.2
Mirfak	308°28.1	49°57.2
Aldebaran	290°39.4	16°33.6
Rigel	281°03.6	-8°10.5
Capella	280°21.5	46°01.5
Bellatrix	278°22.6	6°22.3
Elnath	278°01.5	28°37.8
Anilam	275°37.4	-1°11.2
Betelgeuse	270°51.8	7°24.7
Canopus	263°51.9	-52°42.7
Sirius	258°25.9	-16°45.1
Adhara	255°05.5	-29°00.5
Procyon	244°50.4	5°09.6
Pollux	243°16.9	27°57.9
Avior	234°14.1	-59°35.4
Suhail	222°45.8	-43°32.1
Miaplacidus	221°37.4	-69°49.2
Alphard	217°47.4	-8°46.1
Regulus	207°34.0	11°50.6
Dubhe	193°40.3	61°36.7
Denebola	182°24.6	14°25.7
Gienah	175°43.3	-17°40.9
Acrux	162°59.6	-63°14.1
Gacrux	171°51.2	-57°15.1
Alioth	166°12.6	55°49.1
Spica	158°22.1	-11°17.6
Alkaid	152°51.8	49°10.9
Hadar	148°35.8	-60°29.4
Menkent	147°57.4	-36°29.5
Arcturus	145°47.8	19°02.9
Rigel Kent.	139°40.1	-60°56.1
Kochab	137°19.7	74°02.7
Zuben'ubi	136°55.9	-16°08.8
Alphecca	126°03.7	26°37.5
Antares	112°15.9	-26°29.2
Atria	107°10.3	-69°04.1
Sabik	102°02.9	-15°45.4
Shaula	96°10.5	-37°07.3
Rasalhague	95°58.7	12°32.3
Eltanin	90°42.5	51°28.8
Kaus Aust.	83°32.7	-34°22.3
Vega	80°33.5	38°48.2
Nunki	75°48.0	-26°16.0
Altair	62°00.2	8°55.9
Peacock	53°06.2	-56°39.3
Deneb	49°26.2	45°22.1
Enif	33°39.0	9°59.3
Al Na'ir	27°33.2	-46°50.5
Fomalhaut	15°14.7	-29°29.5
Scheat	13°45.5	28°13.1
Markab	13°30.1	15°20.4

Feb 06 Thu		
SHA	Mer.pass	
Venus	359°58.0	14:54
Mars	248°38.1	22:15
Jupiter	290°11.9	19:31
Saturn	10°18.2	14:11
Feb 07 Fri		
SHA	Mer.pass	
Venus	359°23.3	14:52
Mars	248°53.4	22:10
Jupiter	290°11.5	19:27
Saturn	10°12.0	

Aries		Venus		Mars		Jupiter		Saturn	
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	139°19.6	137°36.8	N04°13.1	28°41.1	N26°13.7	69°29.6	N21°40.6	149°19.1	S06°23.1
1	154°22.1	152°38.0	14.1	43°44.1	13.7	84°32.0	40.6	164°21.3	23.0
2	169°24.5	167°39.1	15.1	58°47.1	13.7	99°34.4	40.6	179°23.5	22.9
3	184°27.0	182°40.3	•• 16.2	73°50.2	•• 13.8	114°36.8	•• 40.6	194°25.7	•• 22.8
4	199°29.5	197°41.4	17.2	88°53.2	13.8	129°39.3	40.6	209°27.9	22.7
5	214°31.9	212°42.6	18.2	103°56.2	13.8	144°41.7	40.7	224°30.1	22.6
6	229°34.4	227°43.7	N04°19.2	118°59.2	N26°13.8	159°44.1	N21°40.7	239°32.3	S06°22.5
7	244°36.9	242°44.9	20.3	134°02.2	13.8	174°46.5	40.7	254°34.5	22.3
8	259°39.3	257°46.0	21.3	149°05.2	13.8	189°48.9	40.7	269°36.7	22.2
9	274°41.8	272°47.2	•• 22.3	164°08.2	•• 13.8	204°51.4	•• 40.7	284°38.9	•• 22.1
10	289°44.2	287°48.3	23.3	179°11.2	13.8	219°53.8	40.7	299°41.1	22.0
11	304°46.7	302°49.5	24.3	194°14.2	13.8	234°56.2	40.7	314°43.3	21.9
12	319°49.2	317°50.6	N04°25.3	209°17.2	N26°13.8	249°58.6	N21°40.8	329°45.5	S06°21.8
13	334°51.6	332°51.8	26.4	224°20.2	13.9	265°01.0	40.8	344°47.7	21.7
14	349°54.1	347°53.0	27.4	239°23.2	13.9	280°03.5	40.8	359°49.9	21.6
15	4°56.6	2°54.1	•• 28.4	254°26.2	•• 13.9	295°05.9	•• 40.8	1°45.21	•• 21.4
16	19°59.0	17°50.5	29.4	269°29.2	13.9	301°08.3	40.8	29°54.3	21.3
17	35°01.5	32°56.5	30.4	284°32.1	13.9	325°10.7	40.8	44°56.5	21.2
18	50°04.0	47°57.6	N04°31.4	299°35.1	N26°13.9	340°13.1	N21°40.8	59°58.7	S06°21.1
19	65°06.4	62°58.8	32.4	314°38.1	13.9	355°15.6	40.9	75°00.9	21.0
20	80°08.9	78°00.0	33.4	329°41.1	13.9	10°18.0	40.9	90°03.1	20.9
21	95°11.4	93°01.2	•• 34.5	344°44.1	•• 13.9	25°20.4	•• 40.9	105°05.3	•• 20.8
22	110°13.8	108°02.4	35.5	359°47.1	13.9	40°22.8	40.9	120°07.5	20.6
23	125°16.3	123°03.5	36.5	14°50.1	13.9	55°25.2	40.9	135°09.7	20.5
Mer.pass.:14:40		v1.1 d1.0 m-4.4		v3.0 d0.0 m-0.8		v2.4 d0.0 m-2.3		v2.2 d0.1 m1.2	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	140°18.7	138°04.7	N04°37.5	29°53.0	N26°13.9	70°27.6	N21°40.9	150°11.9	S06°20.4
1	155°21.2	153°05.9	38.5	44°56.0	13.9	85°30.0	40.9	165°14.1	20.3
2	170°23.7	168°07.1	39.5	59°59.0	13.9	100°32.5	41.0	180°16.3	20.2
3	185°26.1	183°08.3	•• 40.5	75°02.0	•• 13.9	115°34.9	•• 41.0	195°18.5	•• 20.1
4	200°28.6	198°09.5	41.5	90°04.9	13.9	130°37.3	41.0	210°20.7	20.0
5	215°31.1	213°10.7	42.5	105°07.9	13.9	145°39.7	41.0	225°22.9	19.8
6	230°33.5	228°11.9	N04°43.5	120°10.9	N26°13.9	160°42.1	N21°41.0	240°25.1	S06°19.7
7	245°36.0	243°13.1	44.5	135°13.8	14.0	175°44.5	41.0	255°27.3	19.6
8	260°38.5	258°14.3	45.5	150°16.8	14.0	190°46.9	41.1	270°29.5	19.5
9	275°40.9	273°15.5	•• 46.5	165°19.8	•• 14.0	205°49.4	•• 41.1	285°31.7	•• 19.4
10	290°43.4	288°16.7	47.5	180°22.7	14.0	220°51.8	41.1	300°33.9	19.3
11	305°45.8	303°17.9	48.5	195°25.7	14.0	235°54.2	41.1	315°36.1	19.2
12	320°48.3	318°19.1	N04°49.5	210°28.7	N26°14.0	250°56.6	N21°41.1	330°38.3	S06°19.0
13	335°50.8	333°20.4	50.5	225°31.6	14.0	265°59.0	41.1	345°40.5	18.9
14	350°53.2	348°21.6	51.5	240°34.6	14.0	281°01.4	41.2	0°42.7	18.8
15	5°55.7	3°22.8	•• 52.5	255°37.5	•• 14.0	296°03.8	•• 41.2	15°44.9	•• 18.7
16	20°58.2	18°24.0	53.5	270°40.5	14.0	311°06.2	41.2	30°47.1	18.6
17	36°00.6	33°25.2	54.5	285°43.4	14.0	326°08.6	41.2	45°49.3	18.5
18	51°03.1	48°26.5	N04°55.5	300°46.4	N26°14.0	341°11.0	N21°41.2	60°51.5	S06°18.4
19	66°05.6	63°27.7	56.5	315°49.3	14.0	356°13.4	41.2	75°53.7	18.2
20	81°08.0	78°28.9	57.5	330°52.3	14.0	1°15°19.9	41.2	90°55.9	18.1
21	96°10.5	93°30.1	•• 58.5	345°55.2	•• 14.0	16°18.3	•• 41.3	105°58.1	•• 18.0
22	111°13.0	108°31.4	04°59.5	0°58.2	14.0	41°20.7	41.3	121°00.3	17.9
23	126°15.4	123°32.6	05°00.4	16°01.1	14.0	56°23.1	41.3	136°02.5	17.8
Mer.pass.:14:36		v1.2 d1.0 m-4.4		v3.0 d0.0 m-0.8		v2.4 d0.0 m-2.3		v2.2 d0.1 m1.2	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	141°17.9	138°33.9	N05°01.4	31°04.1	N26°14.0	71°25.5	N21°41.3	151°04.7	S06°17.7
1	156°20.3	153°35.1	02.4	46°07.0	14.0	86°27.9	41.3	166°06.9	17.6
2	171°22.8	168°36.3	03.4	61°10.0	14.0	101°30.3	41.3	181°09.1	17.4
3	186°25.3	183°37.6	•• 04.4	76°12.9	•• 13.9	116°32.7	•• 41.4	196°11.3	•• 17.3
4	201°27.7	198°38.8	05.4	91°15.8	13.9	131°35.1	41.4	211°13.5	•• 17.2
5	216°30.2	213°40.1	06.4	106°18.8	13.9	146°37.5	41.4	226°15.7	17.1
6	231°32.7	228°41.3	N05°07.4	121°21.7	N26°13.9	161°39.9	N21°41.4	241°17.9	S06°17.0
7	246°35.1	243°42.6	08.3	136°24.6	13.9	176°42.3	41.4	256°20.1	16.9
8	261°37.6	258°43.9	09.3	151°27.6	13.9	191°44.7	41.4	271°22.3	16.8
9	276°40.1	273°45.1	•• 10.3	166°30.5	•• 13.9	206°47.1	•• 41.5	286°24.5	•• 16.6
10	291°42.5	288°46.4	11.3	181°33.4	13.9	221°49.5	41.5	301°26.6	16.5
11	306°45.0	303°47.6	12.3	196°36.4	13.9	236°51.9	41.5	316°28.8	16.4
12	321°47.5	318°48.9	N05°13.3	211°39.3	N26°13.9	251°54.3	N21°41.5	331°31.0	S06°16.3
13	336°49.9	333°50.2	14.2	226°42.2	13.9	266°56.7	41.5	346°33.2	16.2
14	351°52.4	348°51.4	15.2	241°45.1	13.9	281°59.1	41.5	1°35.4	16.1
15	6°54.8	3°52.7	•• 16.2	256°48.0	•• 13.9	297°01.5	•• 41.6	16°37.6	•• 16.0
16	21°57.3	18°54.0	17.2	271°51.0	13.9	312°03.9	41.6	31°39.8	15.8
17	36°59.8	33°55.3	18.1	286°53.9	13.9	327°06.3	41.6	46°42.0	15.7
18	52°02.2	48°56.5	N05°19.1	301°56.8	N26°13.9	342°08.7	N21°41.6	61°44.2	S06°15.6
19	67°04.7	63°57.0	20.1	316°59.7	13.9	357°11.1	41.6	76°46.4	15.5
20	82°07.2	78°59.1	21.1	332°02.6	13.9	12°13.5	41.6	91°48.6	15.4
21	97°09.6	94°00.4	•• 22.0	347°05.5	•• 13.8	27°15.9	•• 41.7	106°50.8	•• 15.3
22	112°12.1	109°01.7	23.0	2°08.4	13.8	42°18.3	41.7	121°53.0	15.2
23	127°14.6	124°03.0	24.0	17°11.4	13.8	57°20.7	41.7	136°55.2	15.0
Mer.pass.:14:32		v1.2 d1.0 m-4.4		v2.9 d-0.0 m-0.8		v2.4 d0.0 m-2.3		v2.2 d0.1 m1.2	

SHA	Dec
Alpheratz	357°35.0 29°13.8
Ankaa	353°07.3 -42°10.4
Schedar	349°31.3 56°40.7
Diphda	348°47.4 -17°51.1
Achernar	335°20.3 -57°06.8
Hamal	327°51.2 37°34.9
Polaris	314°01.3 89°22.5
Acamar	315°11.7 -40°12.5
Menkar	314°06.1 4°11.2
Mirfak	308°28.1 49°57.2
Aldebaran	290°39.4 16°33.6
Rigel	281°03.6 -8°10.5
Capella	280°21.5 46°01.5
Bellatrix	278°22.6 6°22.3
Elath	278°01.5 28°37.8
Anilam	275°37.4 -1°11.2
Betelgeuse	270°51.8 7°24.7
Canopus	263°52.0 -52°42.7
Sirius	258°25.9 -16°45.2
Adhara	255°05.5 -29°00.5
Procyon	244°50.4 5°09.6
Pollux	243°16.8 27°57.9
Avior	234°14.1 -59°35.5
Suhail	222°45.8 -43°32.1
Miaplacidus	221°37.4 -69°49.2
Alphard	217°47.3 -8°46.1
Regulus	207°34.0 11°50.6
Dubhe	193°24.2 61°36.7
Denebola	180°24.6 14°25.7
Gienah	175°43.3 -17°40.9
Acrux	172°59.6 63°14.1
Gacrux	171°51.2 -57°15.1
Alioth	166°12.5 55°49.1
Spica	158°22.1 -11°17.6
Alkaid	152°51.7 49°10.9
Hadar	148°35.7 -60°29.4
Menkent	147°57.4 -36°29.5
Arcturus	145°47.7 19°02.9
Rigel Kent	139°40.1 -60°56.1
Kochab	137°19.6 74°02.7
Zuben'ubi	136°55.9 -16°08.8
Alphecca	126°03.7 26°37.5
Antares	112°15.8 -26°29.2
Atria	107°10.2 -69°04.1
Sabik	102°02.8 -15°45.4
Shaula	96°10.5 -37°07.3
Rasalhague	95°58.7 12°32.3
Eltanin	90°42.5 51°28.8
Kaus Aust.	83°32.7 -34°22.3
Vega	80°33.5 38°48.1
Nunki	75°47.9 -26°16.0
Altair	62°00.2 8°55.9
Peacock	53°06.1 -56°39.3
Deneb	49°26.2 45°22.0
Enif	33°39.0 9°59.3
Al Na'ir	27°33.2 -46°50.5
Fomalhaut	15°14.7 -29°29.5
Scheat	13°45.5 28°13.1
Markab	13°30.1 15°20.4

Mon	GHA	Dec
0	176°26.5	S14°20.3
1	191°26.4	19.5
2	206°26.4	18.7
3	221°26.4	•• 17.9
4	236°26.4	17.1
5	251°26.4	16.2
6	266°26.4	S14°15.4
7	281°26.4	14.6
8	296°26.4	13.8
9	311°26.4	•• 13.0
10	326°26.4	12.2
11	341°26.4	11.3
12	356°26.4	S14°10.5
13	11°26.4	09.7
14	26°26.4	08.9
15	41°26.4	•• 08.1
16	56°26.4	07.3
17	71°26.4	06.4
18	86°26.4	S14°05.6
19	101°26.4	04.8
20	116°26.4	04.0
21	131°26.4	•• 03.1
22	146°26.4	02.3
23	161°26.4	01.5
SD.=16.2 d=0.8		S.D.=15.5

Menkent	147°57.4	-36°29.5
Arcturus	145°47.7	19°02.9
Rigel Kent.	139°40.1	-60°56.1
Kochab	137°19.6	74°02.7
Zuben'ubi	136°55.9	-16°08.8
Alphecca	126°03.7	-26°37.5
Antares	112°15.8	-26°29.2
Atoria	107°10.2	-69°04.1
Saturn	100°00.0	15°45.4

	Aries			Venus			Mars			Jupiter			Saturn		
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	142°17.0	139°04.3	N05°25.0	32°14.3	N26°13.8	72°23.1	N21°41.7	151°57.4	S06°14.9						
1	157°19.5	154°05.6	25.9	47°17.2	13.8	87°25.5	41.7	166°59.6	14.8						
2	172°21.9	169°06.9	26.9	62°20.1	13.8	102°27.9	41.8	182°01.8	14.7						
3	187°24.4	184°08.2	•• 27.9	77°23.0	•• 13.8	117°30.3	•• 41.8	197°04.0	•• 14.6						
4	202°26.9	199°09.5	28.8	92°25.9	13.8	132°32.7	41.8	212°06.2	14.5						
5	217°29.3	214°10.8	29.8	107°28.8	13.8	147°35.1	41.8	227°08.4	14.3						
6	232°31.8	229°12.1	N05°30.8	122°31.7	N26°13.8	162°37.5	N21°41.8	242°10.6	S06°14.2						
7	247°34.3	244°13.4	31.7	137°34.6	13.8	177°39.9	41.8	257°12.8	14.1						
8	262°36.7	259°14.7	32.7	152°37.5	13.7	192°42.3	41.9	272°15.0	14.0						
9	277°39.2	274°16.0	•• 33.7	167°40.4	•• 13.7	207°44.7	•• 41.9	287°17.2	•• 13.9						
10	292°41.7	289°17.3	34.6	182°43.2	13.6	222°47.1	41.9	302°19.4	13.8						
11	307°44.1	304°18.7	35.6	197°46.1	13.7	237°49.5	41.9	317°21.6	13.7						
12	322°46.6	319°20.0	N05°36.5	212°49.0	N26°13.7	252°51.9	N21°41.9	332°23.8	S06°13.5						
13	337°49.1	334°21.3	37.5	227°51.9	13.7	267°54.3	41.9	347°26.0	13.4						
14	352°51.5	349°22.6	38.5	242°54.8	13.7	282°56.6	42.0	2°28.2	13.3						
15	7°54.0	4°24.0	•• 39.4	257°57.7	•• 13.7	297°59.0	•• 42.0	17°30.4	•• 13.2						
16	22°56.4	19°25.3	40.4	273°00.6	13.6	313°01.4	42.0	32°32.6	13.1						
17	37°58.9	34°26.6	41.3	288°03.4	13.6	328°03.8	42.0	47°34.8	13.0						
18	53°01.4	49°28.0	N05°42.3	303°06.3	N26°13.6	343°06.2	N21°42.0	62°37.0	S06°12.9						
19	68°03.8	64°29.3	43.2	318°09.2	13.6	358°08.6	42.1	77°39.2	12.7						
20	83°06.3	79°30.6	44.2	333°12.1	13.6	3°11.0	42.1	92°41.4	12.6						
21	98°08.8	94°32.0	•• 45.1	348°15.0	•• 13.6	28°13.4	•• 42.1	107°43.5	•• 12.5						
22	113°11.2	109°33.3	46.1	3°17.8	13.5	43°15.8	42.1	122°45.7	12.4						
23	128°13.7	124°34.7	47.0	18°20.7	13.5	58°18.2	42.1	137°47.9	12.3						
Mer.pass.:14:28			v1.3 d1.0 m-4.4			v2.9 d-0.0 m-0.7			v2.4 d0.0 m-2.3			v2.2 d0.1 m1.2			

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	143°16.2	139°36.0	N05°48.0	33°23.6	N26°13.5	73°20.5	N21°42.1	152°50.1	S06°12.2	
1	158°18.6	154°37.4	48.9	48°26.4	13.5	88°22.9	42.2	167°52.3	12.0	
2	173°21.1	169°38.7	49.9	63°29.3	13.5	103°25.3	42.2	182°54.5	11.9	
3	188°23.6	184°40.1	•• 50.8	78°32.2	•• 13.5	118°27.7	•• 42.2	197°56.7	•• 11.8	
4	203°26.0	199°41.4	51.8	93°35.0	13.5	133°30.1	42.2	212°58.9	11.7	
5	218°28.5	214°42.8	52.7	108°37.9	13.4	148°32.5	42.2	228°01.1	11.6	
6	233°30.9	229°44.2	N05°53.7	123°40.8	N26°13.4	163°34.9	N21°42.3	243°03.3	S06°11.5	
7	248°33.4	244°45.5	54.6	138°43.6	13.4	178°37.3	42.3	258°05.5	11.4	
8	263°35.9	259°46.9	55.6	153°46.5	13.4	193°39.6	42.3	273°07.7	11.2	
9	278°38.3	274°48.3	•• 56.5	168°49.3	•• 13.4	208°42.0	•• 42.3	288°09.9	•• 11.1	
10	293°40.8	289°49.6	57.5	183°52.2	13.4	223°44.2	42.3	303°12.1	11.0	
11	308°43.3	304°51.0	58.4	198°55.0	13.3	238°46.8	42.4	318°14.3	10.9	
12	323°45.7	319°52.4	N05°59.3	213°57.9	N26°13.3	253°49.2	N21°42.4	333°16.5	S06°10.8	
13	338°48.2	334°53.8	06°00.3	229°00.7	13.3	268°51.6	42.4	348°18.7	10.7	
14	353°50.7	349°55.2	01.2	244°03.6	13.3	283°53.9	42.4	3°20.9	10.5	
15	8°53.1	4°56.6	•• 02.2	259°06.4	•• 13.3	298°56.3	•• 42.4	18°23.1	•• 10.4	
16	23°55.6	19°57.9	03.1	274°09.3	13.2	313°58.7	42.4	33°25.3	10.3	
17	38°58.0	34°59.3	04.0	289°12.1	13.2	329°01.1	42.5	48°27.5	10.2	
18	54°00.5	50°00.7	N06°05.0	304°15.0	N26°13.2	344°03.5	N21°42.5	63°29.7	S06°10.1	
19	69°03.0	65°02.1	05.9	319°17.8	13.2	359°05.9	42.5	78°31.9	10.0	
20	84°05.4	80°03.5	06.8	334°20.7	13.2	14°08.2	42.5	93°34.0	09.9	
21	99°07.9	95°04.9	•• 07.8	349°23.5	•• 13.1	29°10.6	•• 42.5	108°36.2	•• 09.7	
22	114°10.4	110°06.3	08.7	4°26.3	13.1	44°13.0	42.6	123°38.4	09.6	
23	129°12.8	125°07.7	09.6	19°29.2	13.1	59°15.4	42.6	138°40.6	09.5	
Mer.pass.:14:25			v1.4 d0.9 m-4.5		v2.9 d-0.0 m-0.7		v2.4 d0.0 m-2.3		v2.2 d0.1 m1.2	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	144°15.3	140°09.1	N06°10.5	34°32.0	N26°13.1	74°17.8	N21°42.6	153°42.8	S06°09.4					
1	159°17.8	155°10.5	11.5	49°34.8	13.1	89°20.1	42.6	168°45.0	09.3					
2	174°20.2	170°12.0	12.4	64°37.7	13.0	104°22.5	42.6	183°47.2	09.2					
3	189°22.7	185°13.4	•• 13.3	79°40.5	•• 13.0	119°24.9	•• 42.7	198°49.4	•• 09.0					
4	204°25.2	200°14.8	14.3	94°43.3	13.0	134°27.3	42.7	213°51.6	08.9					
5	219°27.6	215°16.2	15.2	109°46.2	13.0	149°29.7	42.7	228°53.8	08.8					
6	234°30.1	230°17.6	N06°16.1	124°49.0	N26°12.9	164°32.0	N21°42.7	243°56.0	S06°08.7					
7	249°32.5	245°19.1	17.0	139°51.8	12.9	179°34.4	42.7	258°58.2	08.6					
8	264°35.0	260°20.5	17.9	154°54.6	12.9	194°36.8	42.8	274°00.4	08.5					
9	279°37.5	275°21.9	•• 18.9	169°57.4	•• 12.9	209°39.2	•• 42.8	289°02.6	•• 08.3					
10	294°39.9	290°23.4	19.8	185°00.3	12.8	224°41.5	42.8	304°04.8	08.2					
11	309°42.4	305°24.8	20.7	200°03.1	12.8	239°43.9	42.8	319°07.0	08.1					
12	324°44.9	320°26.2	N06°21.6	215°05.9	N26°12.8	254°46.3	N21°42.8	334°09.2	S06°08.0					
13	339°47.3	335°27.7	22.5	230°08.7	12.8	269°48.7	42.9	349°11.4	07.9					
14	354°49.8	350°29.1	23.5	245°11.5	12.7	284°51.0	42.9	4°13.5	07.8					
15	9°52.3	5°30.6	•• 24.4	260°14.3	•• 12.7	299°53.4	•• 42.9	19°15.7	•• 07.7					
16	24°54.7	20°32.0	25.3	275°17.1	12.7	314°55.8	42.9	34°17.9	07.5					
17	39°57.2	35°33.5	26.2	290°20.0	12.7	329°58.2	42.9	49°20.1	07.4					
18	54°59.6	50°34.9	N06°27.1	305°22.8	N26°12.6	345°00.5	N21°43.0	64°22.3	S06°07.3					
19	70°02.1	65°36.4	28.0	320°25.6	12.6	0°02.9	43.0	79°24.5	07.2					
20	85°04.6	80°37.8	28.9	335°28.4	12.6	15°05.3	43.0	94°26.7	07.1					
21	100°07.0	95°39.3	•• 29.8	350°31.2	•• 12.6	30°07.7	•• 43.0	109°28.9	•• 07.0					
22	115°09.5	110°40.7	30.8	5°34.0	12.5	45°10.0	43.0	124°31.1	06.8					
23	130°12.0	125°42.2	31.7	20°36.8	12.5	60°12.4	43.1	139°33.3	06.7					
Mer.pass.:14:21			v1.4 d0.9 m-4.5			v2.8 d-0.0 m-0.7			v2.4 d0.0 m-2.3			v2.2 d0.1 m1.2		

Stars		
SHA	Dec	
Alpheratz	357°35.0	29°13.8
Ankaa	353°07.3	-42°10.4
Schedar	349°31.4	56°40.7
Diphda	348°47.4	-17°51.1
Achernar	335°20.3	-57°06.8
Hamal	327°51.2	23°34.9
Polaris	314°02.9	89°22.5
Acamar	315°11.7	-40°12.5
Menkar	314°06.1	4°11.2
Mirfak	308°28.1	49°57.2
Aldebaran	290°39.4	16°33.6
Rigel	281°03.6	-8°10.5
Capella	280°21.5	46°01.5
Bellatrix	278°22.6	6°22.3
Elmath	278°01.6	28°37.8
Anilam	275°37.5	-1°11.2
Betelgeuse	270°51.8	7°24.7
Canopus	263°52.0	-52°42.7
Sirius	258°25.9	-16°45.2
Adhara	255°05.5	-29°00.5
Procyon	244°50.4	5°09.6
Pollux	243°16.9	27°57.9
Avior	234°14.1	-59°35.5
Suhail	222°45.8	-43°32.1
Miaplacidus	221°37.4	-69°49.2
Alphard	217°47.3	-8°46.1
Regulus	207°34.0	11°50.5
Dubhe	193°40.2	61°36.8
Denebola	182°24.6	14°25.7
Gienah	175°43.2	-17°40.9
Acrux	172°59.5	-63°14.2
Gacrux	171°51.2	-57°15.1
Alioth	166°12.5	55°49.1
Spica	158°22.0	-11°17.6
Alkaid	152°51.7	49°10.9
Hadar	148°35.7	-60°29.5
Menkent	147°57.4	-36°29.5
Arcturus	145°47.7	19°02.9
Rigel Kent.	139°40.1	-60°56.1
Kochab	137°19.5	74°02.7
Zuben'ubi	136°55.9	-16°08.8
Alphecca	126°03.7	26°37.5
Antares	112°15.8	-26°29.2
Atria	107°10.2	-69°04.1
Sabik	102°02.8	-15°45.4
Shaula	96°10.4	-37°07.3
Rasalhague	95°58.6	12°32.3
Eltanin	90°42.4	51°28.8
Kaus Augusta	83°32.7	-34°22.3
Vega	80°33.5	38°48.1
Nunki	75°47.9	-26°16.0
Altair	62°00.2	8°55.9
Peacock	53°06.1	-56°39.2
Deneb	49°26.2	45°22.0
Enif	33°39.0	9°59.3
Al Na'ir	27°33.2	-46°50.5
Fomalhaut	15°14.7	-29°29.5
Scheat	13°45.5	28°13.1
Markab	13°30.1	15°20.4

Febr 12 Wed			Febr 13 Thu			Febr 14 Fri		
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	Aries			Venus			Mars			Jupiter			Saturn		
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	145°14.4	140°43.7	N06°32.6	35°39.6	N26°12.5	75°14.8	N21°43.1	154°35.5	S06°06.6						
1	160°16.9	155°45.2	33.5	50°42.4	12.5	90°17.1	43.1	169°37.7	06.5						
2	175°19.4	170°46.6	34.4	65°45.2	12.4	105°19.5	43.1	184°39.9	06.4						
3	190°21.8	185°48.1	•• 35.3	80°48.0	•• 12.4	120°21.9	•• 43.1	199°42.1	•• 06.3						
4	205°24.3	200°49.6	36.2	95°50.7	12.4	135°24.3	43.2	214°44.3	06.1						
5	220°26.8	215°51.1	37.1	110°53.5	12.3	150°26.6	43.2	229°46.5	06.0						
6	235°29.2	230°52.5	N06°38.0	125°56.3	N26°12.3	165°29.0	N21°43.2	244°48.6	S06°05.9						
7	250°31.7	245°54.0	38.9	140°59.1	12.3	180°31.4	43.2	259°50.8	05.8						
8	265°34.1	260°55.5	39.8	156°01.9	12.2	195°33.7	43.2	274°53.0	05.7						
9	280°36.6	275°57.0	•• 40.7	171°04.7	•• 12.2	210°36.1	•• 43.3	289°55.2	•• 05.6						
10	295°39.1	290°58.5	41.6	186°07.5	12.2	225°38.5	43.3	304°57.4	05.4						
11	310°41.5	306°00.0	42.5	201°10.2	12.2	240°40.8	43.3	319°59.6	05.3						
12	325°44.0	321°01.5	N06°43.4	216°13.0	N26°12.1	255°43.2	N21°43.3	335°01.8	S06°05.2						
13	340°46.5	336°03.0	44.3	231°15.8	12.1	270°45.6	43.4	350°04.0	05.1						
14	355°48.9	351°04.5	45.2	246°18.6	12.1	285°47.9	43.4	5°06.2	05.0						
15	10°51.4	6°06.0	•• 46.1	261°21.4	•• 12.0	300°50.3	•• 43.4	20°08.4	•• 04.9						
16	25°53.9	21°07.5	46.9	276°24.1	12.0	315°52.7	43.4	35°10.6	04.7						
17	40°56.3	36°09.0	47.8	291°26.9	12.0	330°55.0	43.4	50°12.8	04.6						
18	55°58.8	51°10.6	N06°48.7	306°29.7	N26°11.9	345°57.4	N21°43.5	65°15.0	S06°04.5						
19	71°01.2	66°12.1	49.6	321°32.4	11.9	0°59.8	43.5	80°17.2	04.4						
20	86°03.7	81°13.6	50.5	336°35.2	11.9	16°02.1	43.5	95°19.4	04.3						
21	101°06.2	96°15.1	•• 51.4	351°38.0	•• 11.8	31°04.5	•• 43.5	110°21.4	•• 04.2						
22	116°08.6	111°16.6	52.3	6°40.7	11.8	46°06.8	43.5	125°23.7	04.0						
23	131°11.1	126°18.2	53.2	21°43.5	11.8	61°09.2	43.6	140°25.9	03.9						
Mer.pass.:14:17			v1.5 d0.9 m-4.5			v2.8 d-0.0 m-0.7			v2.4 d0.0 m-2.3			v2.2 d0.1 m1.2			

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	146°13.6	141°19.7	N06°54.0	36°46.3	N26°11.7	76°11.6	N21°43.6	155°28.1	S06°03.8
1	161°16.0	156°21.2	54.9	51°49.0	11.7	91°13.9	43.6	170°30.3	03.7
2	176°18.5	171°22.8	55.8	66°51.8	11.7	106°16.3	43.6	185°32.5	03.6
3	191°21.0	186°24.3	•• 56.7	81°54.5	•• 11.6	121°18.7	•• 43.7	200°34.7	•• 03.5
4	206°23.4	201°25.9	57.6	96°57.3	11.6	136°21.0	43.7	215°36.9	03.3
5	221°25.9	216°27.4	58.4	112°00.1	11.6	151°23.4	43.7	230°39.1	03.2
6	236°28.4	231°28.9	N06°59.3	127°02.8	N26°11.5	166°25.7	N21°43.7	245°41.3	S06°03.1
7	251°30.8	246°30.5	07°00.2	142°05.6	11.5	181°28.1	43.7	260°43.5	03.0
8	266°33.3	261°32.0	01.1	157°08.3	11.5	196°30.5	43.8	275°45.7	02.9
9	281°35.7	276°33.6	•• 01.9	172°11.1	•• 11.4	211°32.8	•• 43.8	290°47.9	•• 02.8
10	296°38.2	291°35.2	02.8	187°13.8	11.4	226°35.2	43.8	305°50.0	02.6
11	311°40.7	306°36.7	03.7	202°16.5	11.4	241°37.5	43.8	320°52.2	02.5
12	326°43.1	321°38.3	N07°04.6	217°19.3	N26°11.3	256°39.9	N21°43.8	335°54.4	S06°02.4
13	341°45.6	336°39.8	05.4	232°22.0	11.3	271°42.2	43.9	350°56.6	02.3
14	356°48.1	351°41.4	06.3	247°24.8	11.2	286°44.6	43.9	5°58.8	02.2
15	11°50.5	6°43.0	•• 07.2	262°27.5	•• 11.2	301°47.0	•• 43.9	21°01.0	•• 02.1
16	26°53.0	21°44.6	08.0	277°30.2	11.2	316°49.3	43.9	36°03.2	01.9
17	41°55.5	36°46.1	08.9	292°33.0	11.1	331°51.7	44.0	51°05.4	01.8
18	56°57.9	51°47.7	N07°09.8	307°35.7	N26°11.1	346°54.0	N21°44.0	66°07.6	S06°01.7
19	72°00.4	66°49.3	10.6	322°38.4	11.1	1°56.4	44.0	81°09.8	01.6
20	87°02.9	81°50.9	11.5	337°41.2	11.0	16°58.7	44.0	96°12.0	01.5
21	102°05.3	96°52.5	•• 12.3	352°43.9	•• 11.0	32°01.1	•• 44.0	111°14.2	•• 01.4
22	117°07.8	111°54.1	13.2	7°46.6	10.9	47°03.5	44.1	126°16.3	01.2
23	132°10.2	126°55.7	14.1	22°49.4	10.9	62°05.8	44.1	141°18.5	01.1

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	147°12.7	141°57.3	N07°14.9	37°52.1	N26°10.9	77°08.2	N21°44.1	156°20.7	S06°01.0					
1	162°15.2	156°58.9	15.8	52°54.8	10.8	92°10.5	44.1	171°22.9	00.9					
2	177°17.6	172°00.5	16.6	67°57.5	10.8	107°12.9	44.2	186°25.1	00.8					
3	192°20.1	187°02.1	•• 17.5	83°00.3	•• 10.7	122°15.2	•• 44.2	201°27.3	•• 00.7					
4	207°22.6	202°03.7	18.3	98°03.0	10.7	137°17.6	44.2	216°29.5	00.5					
5	222°25.0	217°05.3	19.2	113°05.7	10.7	152°19.9	44.2	231°31.7	00.4					
6	237°27.5	232°06.9	N07°20.0	128°08.4	N26°10.6	167°22.3	N21°44.3	246°33.9	S06°00.3					
7	252°30.0	247°08.5	20.9	143°11.1	10.6	182°24.6	44.3	261°36.1	00.2					
8	267°32.4	262°10.1	21.7	158°13.8	10.5	197°27.0	44.3	276°38.3	00.1					
9	282°34.9	277°11.7	•• 22.6	173°16.6	•• 10.5	212°29.3	•• 44.3	291°40.5	06°00.0					
10	297°37.3	292°13.4	23.4	188°19.3	10.5	227°31.7	44.3	306°42.6	05°59.8					
11	312°39.8	307°15.0	24.3	203°22.0	10.4	242°34.0	44.4	321°44.8	59.7					
12	327°42.3	322°16.6	N07°25.1	218°24.7	N26°10.4	257°36.4	N21°44.4	336°47.0	S05°59.6					
13	342°44.7	337°18.2	26.0	233°27.4	10.3	272°38.7	44.4	351°49.2	59.5					
14	357°47.2	352°19.9	26.8	248°30.1	10.3	287°41.1	44.4	6°51.4	59.4					
15	12°49.7	7°21.5	•• 27.7	263°32.8	•• 10.2	302°43.4	•• 44.5	21°53.6	•• 59.3					
16	27°52.1	22°23.2	28.5	278°35.5	10.2	317°45.8	44.5	36°55.8	59.1					
17	42°54.6	37°24.8	29.3	293°38.2	10.2	332°48.1	44.5	51°58.0	59.0					
18	57°57.1	52°26.4	N07°30.2	308°40.9	N26°10.1	347°50.5	N21°44.5	67°00.2	S05°58.9					
19	72°59.5	67°28.1	31.0	323°43.6	10.1	2°52.8	44.6	82°02.4	58.8					
20	88°02.0	82°29.7	31.8	338°46.3	10.0	17°55.2	44.6	97°04.6	58.7					
21	103°04.5	97°31.4	•• 32.7	353°49.0	•• 10.0	32°57.5	•• 44.6	112°06.7	•• 58.6					
22	118°06.9	112°33.1	33.5	8°51.7	09.9	47°59.9	44.6	127°08.9	58.4					
23	133°09.4	127°34.7	34.3	23°54.4	09.9	63°02.2	44.6	142°11.1	58.3					
Mer.pass.:14:09			v1.6 d0.9 m-4.5			v2.7 d-0.0 m-0.6			v2.4 d0.0 m-2.3			v2.2 d0.1 m1.2		

Stars		
SHA	Dec	
Alpheratz	357°35.0	29°13.8
Ankaa	353°07.3	-42°10.4
Schedar	349°31.4	56°40.7
Diphda	348°47.4	-17°51.1
Achernar	335°20.4	-57°06.8
Hamal	327°51.2	23°34.9
Polaris	314°04.5	89°22.5
Acamar	315°11.8	-40°12.5
Menkar	314°06.1	4°11.2
Mirfak	308°28.2	49°57.2
Aldebaran	290°39.4	16°33.6
Rigel	281°03.6	-8°10.5
Capella	280°21.6	46°01.5
Bellatrix	278°22.6	6°22.3
Elath	278°01.6	28°37.8
Anilam	275°37.5	-1°12.4
Betelgeuse	270°51.8	7°24.7
Canopus	263°52.0	-52°42.7
Sirius	258°25.9	-16°45.2
Adhara	255°05.5	-29°00.5
Procyon	244°50.5	5°09.6
Pollux	243°16.9	27°57.9
Avior	234°14.1	-59°35.5
Suhail	222°45.8	-43°32.1
Miaplacidus	221°37.4	-69°49.2
Alphard	217°47.3	-8°46.1
Regulus	207°34.0	11°50.5
Dubhe	193°40.2	61°36.8
Denebola	182°24.6	14°25.7
Gienah	175°43.2	-17°40.9
Acrux	172°59.5	-63°14.2
Gacrux	171°51.1	-57°15.1
Alioth	166°12.5	55°49.1
Spica	158°22.0	-11°17.6
Alkaid	152°51.7	49°10.9
Hadar	148°35.6	-60°29.5
Menkent	147°57.4	-36°29.5
Arcturus	145°47.0	19°02.8
Rigel Kent	139°40.0	-60°56.1
Kochab	137°19.5	74°02.7
Zuben'ubi	136°55.8	-16°08.8
Alphecca	126°03.6	26°37.5
Antares	112°15.8	-26°29.2
Atria	107°10.1	-69°04.1
Sabik	102°02.8	-15°45.4
Shaula	96°10.4	-37°07.3
Rasalhague	95°58.6	12°32.3
Eltanin	90°42.4	51°28.8
Kaus Aust.	83°32.6	-34°22.3
Vega	80°33.4	38°48.1
Nunki	75°47.9	-26°16.0
Altair	62°00.2	8°55.9
Peacock	53°06.1	-56°39.2
Deneb	49°26.2	45°22.0
Enif	37°39.0	9°59.3
Al Na'ir	27°33.2	-46°50.5
Fomalhaut	15°14.7	-29°29.5
Scheat	13°45.5	28°13.1
Markab	13°30.1	15°20.3

Alphard	217°47.3	-8°46.1
Regulus	207°34.0	11°50.5

Aries		Venus		Mars		Jupiter		Saturn	
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	148°11.8	142°36.4	N07°35.2	38°57.0	N26°09.9	78°04.5	N21°44.7	157°13.3	S05°58.2
1	163°14.3	157°38.0	36.0	53°59.7	09.8	93°06.9	44.7	172°15.5	58.1
2	178°16.8	172°39.7	36.8	69°02.4	09.8	108°09.2	44.7	187°17.7	57.8
3	193°19.2	187°41.4	•• 37.7	84°05.1	•• 09.7	123°11.6	•• 44.7	202°19.9	•• 58.0
4	208°21.7	202°43.1	38.5	97°07.8	09.7	138°13.9	44.8	217°22.1	57.7
5	223°24.2	212°44.7	39.3	114°10.5	09.6	153°16.3	44.8	232°24.3	57.6
6	238°26.6	232°46.4	N07°40.1	129°13.2	N26°09.6	168°18.6	N21°44.8	247°26.5	S05°57.5
7	253°29.1	247°48.1	41.0	144°15.8	09.5	183°20.9	44.8	262°28.6	57.4
8	268°31.6	262°49.8	41.8	159°18.5	09.5	198°23.3	44.9	277°30.8	57.3
9	283°34.0	277°51.5	•• 42.6	174°21.2	•• 09.4	213°25.6	•• 44.9	292°33.0	•• 57.1
10	298°36.5	292°53.2	43.4	189°23.9	09.4	228°28.0	44.9	307°35.2	57.0
11	313°38.9	307°54.9	44.3	204°26.5	09.3	243°30.3	44.9	322°37.4	56.9
12	328°41.4	322°56.6	N07°45.1	219°29.2	N26°09.3	258°32.7	N21°45.0	337°39.6	S05°56.8
13	343°43.9	337°58.3	45.9	234°31.9	09.2	273°35.0	45.0	352°41.8	56.7
14	358°46.3	353°00.0	46.7	249°34.5	09.2	288°37.3	45.0	7°44.0	56.6
15	13°48.8	8°01.7	•• 47.5	264°37.2	•• 09.2	303°39.7	•• 45.0	22°46.2	•• 56.4
16	28°51.3	23°03.4	48.3	279°39.9	09.1	318°42.0	45.1	37°48.4	56.3
17	43°53.7	38°05.1	49.1	294°42.5	09.1	333°44.4	45.1	52°50.5	56.2
18	58°56.2	53°06.8	N07°50.0	309°45.2	N26°09.0	348°46.7	N21°45.1	67°52.7	S05°56.1
19	73°58.7	68°08.5	50.8	324°47.9	09.0	3°49.0	45.1	82°54.9	56.0
20	89°01.1	83°10.2	51.6	339°50.5	08.9	18°51.4	45.2	97°57.1	55.9
21	104°03.6	98°12.0	•• 52.4	354°53.2	•• 08.9	33°53.7	•• 45.2	112°59.3	•• 55.7
22	119°06.1	113°13.7	53.2	9°55.8	08.8	48°56.0	45.2	128°01.5	55.6
23	134°08.5	128°15.4	54.0	24°58.5	08.8	63°58.4	45.2	143°03.7	55.5
Mer.pass.:14:05		v1.7 d0.8 m-4.4		v2.7 d-0.0 m-0.6		v2.3 d0.0 m-2.2		v2.2 d0.1 m1.2	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	149°11.0	143°17.1	N07°54.8	40°01.1	N26°08.7	79°00.7	N21°45.2	158°05.9	S05°55.4
1	164°13.4	158°18.9	55.6	55°03.8	08.7	94°03.1	45.3	173°05.1	55.3
2	179°15.9	173°20.6	56.4	70°06.4	08.6	109°05.4	45.3	188°10.3	55.1
3	194°18.4	188°22.4	•• 57.2	85°09.1	•• 08.6	124°07.7	•• 45.3	203°12.4	•• 55.0
4	209°20.8	203°24.1	58.0	100°11.7	08.5	139°10.1	45.3	218°14.6	54.9
5	224°23.3	218°25.8	58.8	115°14.4	08.5	154°12.4	45.4	233°16.8	54.8
6	239°25.8	233°27.6	N07°59.6	130°17.0	N26°08.4	169°14.7	N21°45.4	248°19.0	S05°54.7
7	254°28.2	248°29.3	08°00.4	145°19.7	08.4	184°17.1	45.4	263°21.2	54.6
8	269°30.7	263°31.1	01.2	160°22.3	08.3	199°19.4	45.4	278°23.4	54.4
9	284°33.2	278°32.9	•• 02.0	175°25.0	•• 08.3	214°21.7	•• 45.5	293°25.6	•• 54.3
10	299°35.6	293°34.6	02.8	190°27.6	08.2	229°24.1	45.5	308°27.8	54.2
11	314°38.1	308°36.4	03.6	205°30.2	08.1	244°26.4	45.5	323°30.0	54.1
12	329°40.5	323°38.1	N08°04.3	220°32.9	N26°08.1	259°28.7	N21°45.5	338°32.1	S05°54.0
13	344°43.0	338°39.9	05.1	235°35.5	08.0	274°31.1	45.6	353°34.3	53.8
14	359°45.5	353°41.7	05.9	250°38.1	08.0	289°33.4	45.6	8°36.5	53.7
15	14°47.9	8°43.5	•• 06.7	265°40.8	•• 07.9	304°35.7	•• 45.6	23°38.7	•• 53.6
16	29°50.4	23°45.2	07.5	280°43.4	07.5	319°38.1	45.6	38°40.9	53.5
17	44°52.9	38°47.0	08.3	295°46.0	07.8	334°40.4	45.7	53°43.1	53.4
18	59°55.3	53°48.8	N08°09.1	310°48.7	N26°07.8	349°42.7	N21°45.7	68°45.3	S05°53.3
19	74°57.8	68°50.6	09.8	325°51.3	07.7	4°45.0	45.7	83°47.5	53.1
20	90°00.3	83°52.4	10.6	340°53.9	07.6	19°47.4	45.7	98°49.7	53.0
21	105°02.7	98°54.2	•• 11.4	355°56.5	•• 07.3	34°49.7	•• 45.8	113°51.8	•• 52.9
22	120°05.2	113°56.0	12.2	10°59.1	07.6	49°52.0	45.8	128°54.0	52.8
23	135°07.7	128°57.8	12.9	26°01.8	07.5	64°54.8	45.8	143°56.2	52.7
Mer.pass.:14:01		v1.7 d0.8 m-4.4		v2.7 d-0.1 m-0.5		v2.3 d0.0 m-2.2		v2.2 d0.1 m1.2	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	150°10.1	143°59.6	N08°13.7	41°04.4	N26°07.4	79°56.7	N21°45.9	158°58.4	S05°52.6
1	165°12.6	159°01.4	14.5	56°07.0	07.4	94°59.0	45.9	174°00.6	52.4
2	180°15.0	174°03.2	15.3	71°09.6	07.3	110°01.3	45.9	189°02.8	52.3
3	195°17.5	189°05.0	•• 16.0	86°12.2	•• 07.3	125°03.7	•• 45.9	204°05.0	•• 52.2
4	210°20.0	204°06.8	16.8	101°14.8	07.2	140°06.0	46.0	219°07.2	52.1
5	225°22.4	219°08.6	17.6	116°17.5	07.2	155°08.3	46.0	234°09.4	52.0
6	240°24.9	234°10.5	N08°18.3	131°20.1	N26°07.1	170°10.7	N21°46.0	249°11.5	S05°51.8
7	255°27.4	249°12.3	19.1	146°22.7	07.1	185°13.0	46.0	264°13.7	51.7
8	270°29.8	264°14.1	19.9	161°25.3	07.0	200°15.3	46.1	279°15.9	51.6
9	285°32.3	279°15.9	•• 20.6	176°27.9	•• 06.9	215°17.6	•• 46.1	294°18.1	•• 51.5
10	300°34.8	294°17.8	21.4	191°30.5	06.8	230°20.0	46.1	309°20.3	51.4
11	315°37.2	309°19.6	22.2	206°33.1	06.8	245°22.3	46.1	324°22.5	51.3
12	330°39.7	324°21.5	N08°22.9	221°35.7	N26°06.8	260°24.6	N21°46.2	339°24.7	S05°51.1
13	345°42.2	339°23.3	23.7	236°38.3	06.7	275°26.9	46.2	354°26.9	51.0
14	0°44.6	354°25.1	24.4	251°40.9	06.7	290°29.3	46.2	9°29.0	50.9
15	15°47.1	9°27.0	•• 25.2	266°43.5	•• 06.6	305°31.6	•• 46.2	24°31.2	•• 50.8
16	30°49.5	24°28.8	25.9	281°46.1	06.5	320°33.9	46.3	39°33.4	50.7
17	45°52.0	39°30.7	26.7	296°48.7	06.5	335°36.2	46.3	54°35.6	50.5
18	60°54.5	54°32.6	N08°27.4	311°51.3	N26°06.4	350°38.5	N21°46.3	69°37.8	S05°50.4
19	75°56.9	69°34.8	28.2	326°53.8	06.4	5°40.9	46.3	84°40.0	50.3
20	90°59.4	84°36.3	28.9	341°56.4	06.3	20°43.2	46.4	99°42.2	50.2
21	106°01.9	99°38.1	•• 29.7	356°59.0	•• 06.2	35°45.5	•• 46.4	114°44.4	•• 50.1
22	121°04.3	114°40.0	30.4	12°01.6	06.2	50°47.8	46.4	129°46.5	50.0
23	136°06.8	129°41.9	31.2	27°04.2	06.1	65°50.1	46.5	144°48.7	49.8
Mer.pass.:13:57		v1.8 d0.8 m-4.4		v2.6 d-0.1 m-0.5		v2.3 d0.0 m-2.2		v2.2 d0.1 m1.2	

Stars		SHA	Dec
Alpheratz	357°35.0	29°13.7	
Ankaa	353°07.4	-42°10.4	
Schedar	349°31.4	56°40.6	
Diphda	348°47.4	-17°51.1	
Achernar	335°20.4	-57°06.8	
Hamal	327°51.2	23°34.9	
Polaris	314°05.9	89°22.5	
Acamar	315°11.8	-40°12.5	
Menkar	314°06.1	4°11.2	
Mirfak	308°28.2	49°57.2	
Aldebaran	290°39.4	16°33.6	
Rigel	281°03.7	-8°10.5	
Capella	280°21.6	46°01.5	
Bellatrix	278°22.6	6°22.3	
Elmath	278°11.6	28°37.8	
Anilam	275°37.5	-1°11.2	
Betelgeuse	270°51.8	7°24.7	
Canopus	263°52.0	-52°42.7	
Sirius	258°25.9	-16°45.2	
Adhara	255°05.5	-29°00.5	
Procyon	244°50.5	5°09.6	
Pollux	243°16.9	27°57.9	
Avior	234°14.1	-59°35.5	
Suhail	222°45.8	-43°32.1	
Miaplacidus	221°37.4	-69°49.3	
Alphard	217°47.3	-8°46.2	
Regulus	207°34.0	11°50.5	
Dubhe	193°24.5	61°36.8	
Denebola	208°20.2	14°25.7	
Gienah	175°43.2	-17°41.0	
Acrux	172°59.5	-63°14.2	
Gacrux	171°51.1	-57°15.1	
Alioth	166°12.4	55°49.1	
Spica	158°22.0	-11°17.6	
Alkaid	152°51.6	49°10.9	
Hadar	148°35.6	-60°29.5	
Menkent	147°57.3	-36°29.6	
Arcturus	145°47.7	19°02.8	
Rigil Kent	139°40.0	-60°56.2	
Kochab	137°19.4	74°02.7	
Zuben'ubi	136°55.8	-16°08.8	
Alphecca	126°03.4	26°37.5	
Antares	112°15.8	-26°29.2	
Atria	107°10.1	-69°04.1	
Sabik	102°02.8	-15°45.4	
Shaula	96°10.4	-37°07.3	
Rasalhague	95°58.6	12°32.3	
Eltanin	90°42.4	51°28.8	
Kaus Aust.	83°32.6	-34°22.3	
Vega	80°33.4	38°48.1	
Nunki	75°47.9	-26°15.9	
Altair	62°00.1	8°55.9	
Peacock	53°06.1	-56°39.2	
Deneb	49°26.2	45°22.0	
Enif	33°39.0	9°59.3	
Al Na'ir	27°33.2	-46°50.5	
Fomalhaut	15°14.7	-29°29.5	
Scheat	13°45.5	28°13.1	
Markab	13°30.1	15°20.3	

Feb 18 Tue		SHA	Mer.pass.
Venus	354°24.5	14:28	
Mars	250°45.2	21:20	
Jupiter	289°52.7	18:45	
Saturn	9°01.5	13:29	
Feb 19 Wed		SHA	Mer.pass.
Venus	354°06.2	14:25	
Mars	250°50.2	21:16	
Jupiter	289°49.7	18:41	
Saturn	8°54.9	13:26	
Feb 20 Thu		SHA	Mer.pass.
Venus	353°49.5	14:22	
Mars	250°54.3	21:12	
Jupiter	289°46.6	18:37	
Saturn	8°48.3	13:22	

Horizontal parallax		
Venus:	0.4	
Mars:	0.2	

Aries				Venus				Mars				Jupiter				Saturn			
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	151°09.3	144°43.8	N08°31.9	42°06.8	N26°06.1	80°52.5	N21°46.5	159°50.9	S05°49.7	0		159°50.9	S05°49.7	0		159°50.9	S05°49.7	0	
1	166°11.7	159°45.6	32.7	57°09.4	06.0	95°54.8	46.5	174°07.4	49.6	1		174°07.4	49.6	1		174°07.4	49.6	1	
2	181°14.2	174°47.5	33.4	72°11.9	05.9	110°57.1	46.5	189°55.3	49.5	2		189°55.3	49.5	2		189°55.3	49.5	2	
3	196°16.7	189°49.4	•• 34.2	87°14.5	•• 05.9	125°59.4	•• 46.6	204°57.5	•• 49.4	3		204°57.5	•• 49.4	3		204°57.5	•• 49.4	3	
4	211°19.1	204°51.3	34.9	102°17.1	05.8	141°01.7	46.6	219°59.7	49.2	4		219°59.7	49.2	4		219°59.7	49.2	4	
5	226°21.6	219°53.2	35.6	117°19.7	05.8	156°04.1	46.6	235°01.9	49.1	5		235°01.9	49.1	5		235°01.9	49.1	5	
6	241°24.0	234°55.1	N08°36.4	132°22.2	N26°05.7	171°06.4	N21°46.6	250°04.0	S05°49.0	6		250°04.0	S05°49.0	6		250°04.0	S05°49.0	6	
7	256°26.5	249°57.0	37.1	147°24.8	05.6	186°08.7	46.7	265°06.2	48.9	7		265°06.2	48.9	7		265°06.2	48.9	7	
8	271°29.0	264°58.9	•• 37.8	162°27.4	05.6	201°11.0	46.7	280°08.4	48.8	8		280°08.4	48.8	8		280°08.4	48.8	8	
9	286°31.4	280°00.8	•• 38.6	177°29.9	•• 05.5	216°13.3	•• 46.7	295°10.6	•• 48.6	9		295°10.6	•• 48.6	9		295°10.6	•• 48.6	9	
10	301°33.9	295°02.7	39.3	192°32.5	05.5	231°15.6	46.7	310°12.8	48.5	10		310°12.8	48.5	10		310°12.8	48.5	10	
11	316°36.4	310°04.6	40.0	207°35.1	05.4	246°18.0	46.8	325°15.0	48.4	11		325°15.0	48.4	11		325°15.0	48.4	11	
12	331°38.8	325°06.5	N08°40.8	222°37.6	N26°05.3	261°20.3	N21°46.8	340°17.2	S05°48.3	12		340°17.2	S05°48.3	12		340°17.2	S05°48.3	12	
13	346°41.3	340°08.4	41.5	237°40.2	05.3	276°22.6	46.8	355°19.4	48.2	13		355°19.4	48.2	13		355°19.4	48.2	13	
14	1°43.8	355°10.4	42.2	252°42.8	05.2	291°24.9	46.9	10°21.5	48.1	14		10°21.5	48.1	14		10°21.5	48.1	14	
15	16°46.2	10°12.3	•• 42.9	267°45.3	•• 05.1	306°27.2	•• 46.9	25°23.7	•• 47.9	15		25°23.7	•• 47.9	15		25°23.7	•• 47.9	15	
16	31°48.7	25°14.2	43.6	282°47.9	05.1	321°29.5	46.9	40°25.9	47.8	16		40°25.9	47.8	16		40°25.9	47.8	16	
17	46°51.1	40°16.1	44.4	297°50.5	05.0	336°31.8	46.9	55°28.1	47.7	17		55°28.1	47.7	17		55°28.1	47.7	17	
18	61°53.6	55°18.1	N08°45.1	312°53.0	N26°05.0	351°34.2	N21°47.0	70°30.3	S05°47.6	18		70°30.3	S05°47.6	18		70°30.3	S05°47.6	18	
19	76°56.1	70°20.0	45.8	327°55.6	04.9	36°36.5	47.0	85°32.5	47.5	19		85°32.5	47.5	19		85°32.5	47.5	19	
20	91°58.5	85°22.0	46.5	342°58.1	04.8	21°38.8	•• 47.0	100°34.7	•• 47.3	20		100°34.7	•• 47.3	20		100°34.7	•• 47.3	20	
21	107°10.1	100°23.9	•• 47.2	358°00.7	•• 04.8	36°41.1	•• 47.0	115°36.9	•• 47.2	21		115°36.9	•• 47.2	21		115°36.9	•• 47.2	21	
22	122°03.5	115°25.8	48.0	13°03.2	04.7	51°43.4	47.1	130°39.0	47.1	22		130°39.0	47.1	22		130°39.0	47.1	22	
23	137°05.9	130°27.8	48.7	28°05.8	04.6	66°45.7	47.1	145°41.2	47.0	23		145°41.2	47.0	23		145°41.2	47.0	23	
Mer.pass.:13:53				v1.9 d0.7 m-4.4				v2.6 d-0.1 m-0.5				v2.3 d0.0 m-2.2				v2.2 d0.1 m1.2			

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	152°08.4	145°29.7	N08°49.4	43°08.3	N26°04.6	81°48.0	N21°47.1	160°43.4	S05°46.9		
1	167°10.9	160°31.7	50.1	58°10.9	04.5	96°50.3	47.2	175°45.6	46.7		
2	182°13.3	175°33.7	50.8	73°13.4	04.4	111°52.7	47.2	190°47.8	46.6		
3	197°15.8	190°35.6	•• 51.5	88°15.9	•• 04.4	126°55.0	•• 47.2	205°50.0	•• 46.5		
4	212°18.3	205°37.6	52.2	103°18.5	04.3	141°57.3	47.2	220°52.2	46.4		
5	227°20.7	220°39.5	52.9	118°21.0	04.2	156°59.6	47.3	235°54.3	46.3		
6	242°23.2	235°41.5	N08°53.6	133°23.6	N26°04.2	172°01.9	N21°47.3	250°56.5	S05°46.2		
7	257°25.6	250°43.5	54.3	148°26.1	04.1	187°04.2	47.3	265°58.7	46.0		
8	272°28.1	265°45.5	55.0	163°28.6	04.0	202°06.5	47.3	281°00.9	45.9		
9	287°30.6	280°47.5	•• 55.7	178°31.2	•• 04.0	217°08.8	•• 47.4	296°03.1	•• 45.8		
10	302°33.0	295°49.4	56.4	193°33.7	03.9	232°11.1	47.4	311°05.3	45.7		
11	317°35.5	310°51.4	57.1	208°36.2	03.8	247°13.4	47.4	326°07.5	45.6		
12	332°38.0	325°53.4	N08°57.8	223°38.8	N26°03.8	262°15.7	N21°47.5	341°09.7	S05°45.4		
13	347°40.4	340°55.4	58.5	238°41.3	03.7	277°18.0	47.5	356°11.8	45.3		
14	2°42.9	355°57.4	59.2	253°43.8	03.6	292°20.4	47.5	11°14.0	45.2		
15	17°45.4	10°59.4	08°59.9	268°46.4	•• 03.6	307°22.7	•• 47.5	26°16.2	•• 45.1		
16	32°47.8	26°01.4	09°00.6	283°48.9	03.5	322°25.0	47.6	41°18.4	45.0		
17	47°50.3	41°03.4	01.3	298°51.4	03.4	337°27.3	47.6	56°20.6	44.8		
18	62°52.8	56°05.4	N09°01.9	313°53.9	N26°03.4	352°29.6	N21°47.6	71°22.8	S05°44.7		
19	77°55.2	71°07.4	02.6	328°56.4	03.3	7°31.9	47.7	86°25.5	44.6		
20	92°57.7	86°09.5	03.3	343°59.0	03.2	22°34.2	•• 47.7	101°27.1	44.5		
21	108°00.1	101°11.5	•• 04.0	359°01.5	•• 03.2	37°36.5	•• 47.7	116°29.3	•• 44.4		
22	123°02.6	116°13.5	04.7	14°00.4	03.1	52°38.8	47.7	131°31.5	44.3		
23	138°05.1	131°15.5	05.3	29°06.5	03.0	67°41.1	47.8	146°33.7	44.1		
Mer.pass.:13:49				v2.0 d0.7 m-4.4		v2.5 d-0.1 m-0.5		v2.3 d0.0 m-2.2		v2.2 d0.1 m1.2	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	153°07.5	146°17.6	N09°06.0	44°09.0	N26°03.0	82°43.4	N21°47.8	161°35.9	S05°44.0										
1	168°10.0	161°19.6	06.7	59°11.5	02.9	97°45.7	47.8	176°38.1	43.9										
2	183°12.5	176°21.6	07.4	74°14.0	02.8	112°48.0	47.9	191°40.3	43.8										
3	198°14.9	191°23.7	•• 08.0	89°16.6	•• 02.8	127°50.3	•• 47.9	206°42.4	•• 43.7										
4	213°17.4	206°25.7	08.7	104°19.1	02.7	142°52.6	47.9	221°44.6	43.5										
5	228°19.9	221°27.8	09.4	119°21.6	02.6	157°54.9	47.9	236°46.8	43.4										
6	243°22.3	236°29.8	N09°10.1	134°24.1	N26°02.5	172°57.2	N21°48.0	251°49.0	S05°43.3										
7	258°24.8	251°31.9	10.7	149°26.6	02.5	187°59.5	48.0	266°51.2	43.2										
8	273°27.3	266°33.9	11.4	164°29.1	02.4	203°01.8	48.0	281°53.4	43.1										
9	288°29.7	281°36.0	•• 12.1	179°31.6	•• 02.3	218°04.1	•• 48.1	296°55.6	•• 42.9										
10	303°32.2	296°38.0	12.7	194°34.1	02.3	233°06.4	48.1	311°57.7	42.8										
11	318°34.6	311°40.1	13.4	209°36.6	02.2	248°08.7	48.1	326°59.9	42.7										
12	333°37.1	326°42.2	N09°14.0	224°39.1	N26°02.1	263°11.0	N21°48.1	342°02.1	S05°42.6										
13	348°39.6	341°44.2	14.7	239°41.6	02.0	278°13.3	48.2	357°04.3	42.5										
14	3°42.0	356°46.3	15.3	254°44.1	02.0	293°15.6	48.2	1°06.5	42.3										
15	18°44.5	11°48.4	•• 16.0	269°46.5	•• 01.9	308°17.9	•• 48.2	27°08.7	•• 42.2										
16	33°47.0	26°50.5	16.7	284°49.0	01.8	323°20.2	48.3	42°10.9	42.1										
17	48°49.4	41°52.6	17.3	299°51.5	01.8	338°22.5	48.3	57°13.0	42.0										
18	63°51.9	56°54.7	N09°18.0	314°54.0	N26°01.7	353°24.8	N21°48.3	72°15.2	S05°41.9										
19	78°54.4	71°56.8	18.6	329°56.5	01.6	8°27.1	48.3	87°17.4	41.8										
20	93°56.8	86°58.9	19.3	344°59.0	01.5	23°29.4	48.4	102°19.6	41.6										
21	108°59.3	102°01.0	•• 19.9	0°01.5	•• 01.5	38°31.7	•• 48.4	117°21.8	•• 41.5										
22	124°01.7	117°03.1	20.5	15°03.9	01.4	53°34.0	48.4	132°24.0	41.4										
23	139°04.2	132°05.2	21.2	30°06.4	01.3	68°36.3	48.5	147°26.2	41.3										
Mer.pass.:13:45				v2.0 d0.7 m-4.4				v2.5 d-0.1 m-0.4				v2.3 d0.0 m-2.2				v2.2 d0.1 m1.2			

SHA	Dec
Alpheratz	357°35.0 29°13.7
Ankaa	353°07.4 -42°10.4
Schedar	349°31.4 56°40.6
Diphda	348°47.4 -17°51.1
Achernar	335°20.4 -57°06.8
Hamal	327°51.3 23°34.9
Polaris	314°07.2 89°22.5
Acamar	315°11.8 -40°12.5
Menkar	314°06.1 4°11.2
Mirfak	308°28.2 49°57.2
Aldebaran	290°39.4 16°33.6
Rigel	281°03.7 -8°10.5
Capella	280°21.6 46°01.5
Bellatrix	278°22.6 6°22.3
Elnath	278°01.6 28°37.8
Alnilam	275°37.5 -1°12.4
Betelgeuse	270°51.8 7°24.7
Canopus	263°52.1 -52°42.7
Sirius	258°25.9 -16°45.2
Adhara	255°05.5 -29°00.5
Procyon	244°50.5 5°09.6
Pollux	243°16.9 27°57.9
Avior	234°14.2 -59°35.5
Suhail	222°45.8 -43°32.1
Miaplacidus	221°37.4 -69°49.3
Alphard	217°47.3 -

	Aries			Venus			Mars			Jupiter			Saturn		
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	154°06.7	147°07.3	N09°21.8	45°08.9	N26°01.2	83°38.6	N21°48.5	162°28.3	S05°41.2						
1	169°09.1	162°09.4	22.5	60°11.4	01.2	98°40.9	48.5	177°30.5	41.0						
2	184°11.6	177°11.5	23.1	75°13.9	01.1	113°43.2	48.6	192°32.7	40.9						
3	199°14.1	192°13.6	•• 23.7	90°16.3	•• 01.0	128°45.5	•• 48.6	207°34.9	•• 40.8						
4	214°16.5	207°15.7	24.4	105°18.8	00.9	143°47.7	48.6	222°37.1	40.7						
5	229°19.0	222°17.9	25.0	120°21.3	00.9	158°50.0	48.6	237°39.3	40.6						
6	244°21.5	237°20.0	N09°25.6	135°23.7	N26°00.8	173°52.3	N21°48.7	252°41.4	S05°40.4						
7	259°23.9	252°22.1	26.3	150°26.2	00.7	188°54.6	48.7	267°43.6	40.3						
8	274°26.4	267°24.3	26.9	165°28.7	00.6	203°56.9	48.7	282°45.8	40.2						
9	289°28.9	282°26.4	•• 27.5	180°31.1	•• 00.6	218°59.2	•• 48.8	297°48.0	•• 40.1						
10	304°31.3	297°28.6	28.2	195°33.6	00.5	234°01.5	48.8	312°50.2	40.0						
11	319°33.8	312°30.7	28.8	210°36.1	00.4	249°03.8	48.8	327°52.4	39.8						
12	334°36.2	327°32.9	N09°29.4	225°38.5	N26°00.3	264°06.1	N21°48.8	342°54.6	S05°39.7						
13	349°38.7	342°35.0	30.0	240°41.0	00.3	279°08.4	48.9	357°56.7	39.6						
14	4°41.2	357°37.2	30.6	255°43.4	00.2	294°10.7	48.9	12°58.9	39.5						
15	19°43.6	12°39.3	•• 31.3	270°45.9	•• 00.1	309°12.9	•• 48.9	28°01.1	•• 39.4						
16	34°46.1	27°41.5	31.9	285°48.4	00.0	324°15.2	49.0	43°03.3	39.2						
17	49°48.6	42°43.7	32.5	300°50.8	26°00.0	339°17.5	49.0	58°05.5	39.1						
18	64°51.0	57°45.8	N09°33.1	315°53.3	N25°59.9	354°19.8	N21°49.0	73°07.7	S05°39.0						
19	79°53.5	72°48.0	33.7	330°55.7	59.8	9°22.1	49.1	88°09.9	38.9						
20	94°56.0	87°50.2	34.3	345°58.2	59.7	24°24.4	49.1	103°12.0	38.8						
21	109°58.4	102°52.4	•• 34.9	1°00.6	•• 59.7	39°26.7	•• 49.1	118°14.2	•• 38.7						
22	125°00.9	117°54.6	35.5	16°03.1	59.6	54°29.0	49.2	133°16.4	38.5						
23	140°03.4	132°56.7	36.1	31°05.5	59.5	69°31.3	49.2	148°18.6	38.4						
Mer.pass.:13:41			v2.1 d0.6 m-4.4			v2.5 d-0.1 m-0.4			v2.3 d0.0 m-2.2			v2.2 d0.1 m1.2			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	155°05.8	147°58.9	N09°36.8	46°08.0	N25°59.4	84°33.5	N21°49.2	163°20.8	S05°38.3	
1	170°08.3	163°01.1	37.4	61°10.4	59.3	99°35.8	49.2	178°23.0	38.2	
2	185°10.7	178°03.3	38.0	76°12.8	59.3	114°38.1	49.3	193°25.1	38.1	
3	200°13.2	193°05.5	•• 38.6	91°15.3	•• 59.2	129°40.4	•• 49.3	208°27.3	•• 37.9	
4	215°15.7	208°07.7	39.1	106°17.7	59.1	144°42.7	49.3	223°29.5	37.8	
5	230°18.1	223°09.9	39.7	121°20.2	59.0	159°45.0	49.4	238°31.7	37.7	
6	245°20.6	238°12.2	N09°40.3	136°22.6	N25°58.9	174°47.3	N21°49.4	253°33.9	S05°37.6	
7	260°23.1	253°14.4	40.9	151°25.0	58.9	189°49.5	49.4	268°36.1	37.5	
8	275°25.5	268°16.6	41.5	166°27.5	58.8	204°51.8	49.5	283°38.2	37.3	
9	290°28.0	283°18.8	•• 42.1	181°29.9	•• 58.7	219°54.1	•• 49.5	298°40.4	•• 37.2	
10	305°30.5	298°21.0	42.7	196°32.3	58.6	234°56.4	49.5	313°42.6	37.1	
11	320°32.9	313°23.3	43.3	211°34.8	58.6	249°58.7	49.6	328°44.8	37.0	
12	335°35.4	328°25.5	N09°43.9	226°37.2	N25°58.5	265°01.0	N21°49.6	343°47.0	S05°36.9	
13	350°37.9	343°27.7	44.4	241°39.6	58.4	280°03.2	49.6	358°49.2	36.7	
14	5°40.3	358°30.0	45.0	256°42.0	58.3	295°05.5	49.6	13°51.4	36.6	
15	20°42.8	13°32.2	•• 45.6	271°44.5	•• 58.2	310°07.8	•• 49.7	28°53.5	•• 36.5	
16	35°45.2	28°34.5	46.2	286°46.9	58.1	325°10.1	49.7	43°55.7	36.4	
17	50°47.7	43°36.7	46.8	301°49.3	58.1	340°12.4	49.7	58°57.9	36.3	
18	65°50.2	58°39.0	N09°47.3	316°51.7	N25°58.0	355°14.6	N21°49.8	74°00.1	S05°36.1	
19	80°52.6	73°41.2	47.9	331°54.1	57.9	10°16.9	49.8	89°02.3	36.0	
20	95°55.1	88°43.5	48.5	346°56.6	57.8	25°19.2	49.8	104°04.5	35.9	
21	110°57.6	103°45.8	•• 49.0	1°59.0	•• 57.7	40°21.5	•• 49.9	119°06.6	•• 35.8	
22	126°00.0	118°48.0	49.6	17°01.4	57.7	55°23.8	49.9	134°08.8	35.7	
23	141°02.5	133°50.3	50.2	32°03.8	57.6	70°26.0	49.9	149°11.0	35.5	
Mer.pass.:13:37			v2.2 d0.6 m-4.4		v2.4 d-0.1 m-0.4		v2.3 d0.0 m-2.2		v2.2 d0.1 m1.2	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	156°05.0	148°52.6	N09°50.7	47°06.2	N25°57.5	85°28.3	N21°50.0	164°13.2	S05°35.4					
1	171°07.4	163°54.9	51.3	62°08.6	57.4	100°30.6	50.0	179°15.4	35.3					
2	186°09.9	178°57.2	51.9	77°11.0	57.3	115°32.9	50.0	194°17.6	35.2					
3	201°12.3	193°59.4	.. 52.4	92°13.4	.. 57.2	130°35.1	.. 50.0	209°19.7	.. 35.1					
4	216°14.8	209°01.7	53.0	107°15.8	57.2	145°37.4	50.1	224°21.9	34.9					
5	231°17.3	224°04.0	53.5	122°18.2	57.1	160°39.7	50.1	239°24.1	34.8					
6	246°19.7	239°06.3	N09°54.1	137°20.6	N25°57.0	175°42.0	N21°50.1	254°26.3	S05°34.7					
7	261°22.2	254°08.6	54.6	152°23.0	56.9	190°44.3	50.2	269°28.5	34.6					
8	276°24.7	269°10.9	55.2	167°25.4	56.8	205°46.5	50.2	284°30.7	34.5					
9	291°27.1	284°13.2	.. 55.7	182°27.8	.. 56.7	220°48.8	.. 50.2	299°32.8	.. 34.3					
10	306°29.6	299°15.5	56.3	197°30.2	56.7	235°51.1	50.3	314°35.0	34.2					
11	321°32.1	314°17.9	56.8	212°32.6	56.6	250°53.4	50.3	329°37.2	34.1					
12	336°34.5	329°20.2	N09°57.4	227°35.0	N25°56.5	265°55.6	N21°50.3	344°39.4	S05°34.0					
13	351°37.0	344°22.5	57.9	242°37.4	56.4	280°57.9	50.4	359°41.6	33.9					
14	6°39.5	359°24.8	58.5	257°39.8	56.3	296°00.2	50.4	14°43.8	33.7					
15	21°41.9	14°27.2	.. 59.0	272°42.2	.. 56.2	311°02.4	.. 50.4	29°45.9	.. 33.6					
16	36°44.4	29°29.5	09°59.5	287°44.6	56.2	326°04.7	50.5	44°48.1	33.5					
17	51°46.8	44°31.8	10°00.1	302°47.0	56.1	341°07.0	50.5	59°50.3	33.4					
18	66°49.3	59°34.2	N10°00.6	317°49.4	N25°56.0	356°09.3	N21°50.5	74°52.5	S05°33.3					
19	81°51.8	74°36.5	01.1	332°51.7	55.9	11°11.5	50.6	89°54.7	33.1					
20	96°54.2	89°38.9	01.7	347°54.1	55.8	26°13.8	50.6	104°56.9	33.0					
21	111°56.7	104°41.2	.. 02.2	2°56.5	.. 55.7	41°16.1	.. 50.6	119°59.0	.. 32.9					
22	126°59.2	119°43.6	02.7	17°58.9	55.6	56°18.4	50.6	135°01.2	32.8					
23	142°01.6	134°45.9	03.2	33°01.3	55.6	71°20.6	50.7	150°03.4	32.7					
Mer.pass.:13:33			v2.3 d0.6 m-4.4			v2.4 d-0.1 m-0.3			v2.3 d0.0 m-2.2			v2.2 d0.1 m1.2		

SHA	Dec
Alpheratz	357°35.0 29°13.7
Ankaa	353°07.4 -42°10.3
Schedar	349°31.4 56°40.6
Diphda	348°47.4 -17°51.1
Achernar	335°20.4 -57°06.8
Hamal	327°51.3 23°34.9
Polaris	314°08.5 89°22.5
Acamar	315°11.8 -40°12.5
Menkar	314°06.1 4°11.2
Mirfak	308°28.2 49°57.2
Aldebaran	290°39.5 16°33.6
Rigel	281°03.7 -8°10.5
Capella	280°21.6 46°01.5
Bellatrix	278°22.7 6°22.3
Elmath	278°01.6 28°37.8
Anilam	275°37.5 -1°12.2
Betelgeuse	270°51.8 7°24.7
Canopus	263°52.1 -52°42.8
Sirius	258°25.9 -16°45.2
Adhara	255°05.5 -29°00.5
Procyon	244°50.5 5°09.5
Pollux	243°16.9 27°57.9
Avior	234°14.2 -59°35.5
Suhail	222°45.8 -43°32.2
Miaplacidus	221°37.4 -69°49.3
Alphard	217°47.3 -8°46.2
Regulus	207°34.0 11°50.5
Dubhe	193°40.2 61°38.6
Denebola	182°24.5 14°25.7
Gienah	175°43.2 -17°41.0
Acrux	178°29.4 -63°14.2
Gacrux	171°51.1 -57°15.2
Alioth	166°12.4 55°49.1
Spica	158°22.0 -11°17.7
Alkaid	152°51.6 49°10.9
Hadar	148°35.5 -60°29.5
Menkent	147°57.3 -36°29.6
Arcturus	145°47.6 19°02.8
Rigel Kent.	139°39.9 -60°56.2
Kochab	137°19.3 74°02.7
Zuben'ubi	136°55.8 -16°08.8
Alphecca	126°03.6 26°37.5
Antares	112°15.2 -26°29.3
Atria	107°09.9 -69°04.1
Sabik	102°02.7 -15°45.4
Shaula	96°10.3 -37°07.3
Rasalhague	95°58.5 12°32.3
Eltanin	90°42.3 51°28.7
Kaus Aust.	83°32.6 -34°22.3
Vega	80°33.4 38°48.1
Nunki	75°47.8 -26°15.9
Altair	62°00.1 8°55.9
Peacock	53°06.0 -56°39.2
Deneb	49°26.2 45°22.0
Enif	37°39.0 9°59.3
Al Na'ir	27°33.2 -46°50.4
Fomalhaut	15°14.7 -29°29.5
Scheat	13°45.5 28°13.1
Markab	13°30.1 15°20.3

Dubhe	193°40.2	61°36.8
Denebola	182°24.5	14°25.7
Gienah	175°43.2	-17°41.0
Acrux	172°59.4	-63°14.2
Gacrux	171°51.1	-57°15.2
Alioth	166°12.4	55°49.1
Spica	158°22.0	-11°17.7
Alkaid	152°51.6	49°10.9
Hadar	148°35.5	-60°29.5
Menkent	147°57.3	-36°29.6
Arcturus	145°47.6	19°02.8
Rigel Kent	139°39.9	-60°56.2
Kochab	137°19.3	74°02.7
Zuben 'ubi	126°55.8	-16°08.8
Alphecca	126°03.6	26°37.5
Antares	112°15.7	-26°29.3
Atria	107°09.9	-69°04.1
Sabik	102°02.7	-15°45.4
Shaula	96°10.3	-37°07.3
Rasalhague	95°58.5	12°32.3
Eltanin	90°42.3	51°28.7
Kaus Aust	83°32.6	-34°22.3
Vega	80°33.4	38°48.1
Nunki	75°47.8	-26°15.9
Altair	62°00.1	8°55.9
Peacock	53°06.0	-56°39.2
Deneb	49°26.2	45°22.0
Enif	33°39.0	9°59.3
Al Na'ir	27°33.2	-46°50.4
Fomalhaut	15°14.7	-29°29.5
Scheat	13°45.5	28°13.1
Makrab	13°30.1	15°20.3

	Aries			Venus			Mars			Jupiter			Saturn									
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec									
0	157°04.1	149°48.3	N10°03.8	48°03.7	N25°55.5	86°22.9	N21°50.7	165°05.6	S05°32.5	172°06.6	164°50.6	04.3	63°06.0	55.4	101°25.2	50.7	180°07.8	32.4				
1	172°06.6	164°50.6	04.3	63°06.0	55.4	101°25.2	50.7	180°07.8	32.4	187°09.0	179°53.0	04.8	78°08.4	55.3	116°27.4	50.8	195°10.0	32.3				
2	187°09.0	179°53.0	04.8	78°08.4	55.3	116°27.4	50.8	195°10.0	32.3	202°11.5	194°55.4	.. 05.3	93°10.8	.. 55.2	131°29.7	.. 50.8	210°12.1	.. 32.2				
3	202°11.5	194°55.4	.. 05.3	93°10.8	.. 55.2	131°29.7	.. 50.8	210°12.1	.. 32.2	217°14.0	209°57.8	05.8	108°13.1	55.1	146°32.0	50.8	225°14.3	32.1				
4	217°14.0	209°57.8	05.8	108°13.1	55.1	146°32.0	50.8	225°14.3	32.1	232°16.4	225°00.1	06.3	123°15.5	55.0	161°34.2	50.9	240°16.5	31.9				
5	232°16.4	225°00.1	06.3	123°15.5	55.0	161°34.2	50.9	240°16.5	31.9	247°18.9	240°02.5	N10°06.9	138°17.9	N25°55.0	176°36.5	N21°50.9	255°18.7	S05°31.8				
6	247°18.9	240°02.5	N10°06.9	138°17.9	N25°55.0	176°36.5	N21°50.9	255°18.7	S05°31.8	262°21.3	255°04.9	07.4	153°20.3	54.9	191°38.8	50.9	270°20.9	31.7				
7	262°21.3	255°04.9	07.4	153°20.3	54.9	191°38.8	50.9	270°20.9	31.7	277°23.8	270°07.3	07.9	168°22.6	54.8	206°41.0	51.0	285°23.1	31.6				
8	277°23.8	270°07.3	07.9	168°22.6	54.8	206°41.0	51.0	285°23.1	31.6	292°26.3	285°09.7	.. 08.4	183°25.0	.. 54.7	221°43.3	.. 51.0	300°25.2	.. 31.5				
9	292°26.3	285°09.7	.. 08.4	183°25.0	.. 54.7	221°43.3	.. 51.0	300°25.2	.. 31.5	307°28.7	300°12.1	08.9	198°27.4	54.6	236°45.6	51.0	315°27.4	31.3				
10	307°28.7	300°12.1	08.9	198°27.4	54.6	236°45.6	51.0	315°27.4	31.3	322°31.2	315°14.5	09.4	213°29.7	54.5	251°47.8	51.1	330°29.6	31.2				
11	322°31.2	315°14.5	09.4	213°29.7	54.5	251°47.8	51.1	330°29.6	31.2	337°33.7	330°16.9	N10°09.9	228°32.1	N25°54.4	266°50.1	N21°51.1	345°31.8	S05°31.1				
12	337°33.7	330°16.9	N10°09.9	228°32.1	N25°54.4	266°50.1	N21°51.1	345°31.8	S05°31.1	352°36.1	345°19.3	10.4	243°34.4	54.3	281°52.4	51.1	0°34.0	31.0				
13	352°36.1	345°19.3	10.4	243°34.4	54.3	281°52.4	51.1	0°34.0	31.0	7°38.6	0°21.7	10.9	258°36.8	54.2	296°54.6	51.2	15°36.2	30.9				
14	7°38.6	0°21.7	10.9	258°36.8	54.2	296°54.6	51.2	15°36.2	30.9	22°41.1	15°24.1	.. 11.4	273°39.2	.. 54.2	311°56.9	.. 51.2	30°38.3	.. 30.7				
15	22°41.1	15°24.1	.. 11.4	273°39.2	.. 54.2	311°56.9	.. 51.2	30°38.3	.. 30.7	37°43.5	30°26.6	11.9	288°41.5	54.1	326°59.2	51.2	45°40.5	30.6				
16	37°43.5	30°26.6	11.9	288°41.5	54.1	326°59.2	51.2	45°40.5	30.6	52°46.0	45°29.0	12.4	303°43.9	54.0	342°01.4	51.3	60°42.7	30.5				
17	52°46.0	45°29.0	12.4	303°43.9	54.0	342°01.4	51.3	60°42.7	30.5	67°48.4	60°31.4	N10°12.9	318°46.2	N25°53.9	357°03.7	N21°51.3	75°44.9	S05°30.4				
18	67°48.4	60°31.4	N10°12.9	318°46.2	N25°53.9	357°03.7	N21°51.3	75°44.9	S05°30.4	82°50.9	75°33.9	13.3	333°48.6	53.8	12°06.0	51.3	90°47.1	30.3				
19	82°50.9	75°33.9	13.3	333°48.6	53.8	12°06.0	51.3	90°47.1	30.3	97°53.4	90°36.3	13.8	348°50.9	53.7	27°08.2	51.4	105°49.2	30.1				
20	97°53.4	90°36.3	13.8	348°50.9	53.7	27°08.2	51.4	105°49.2	30.1	112°55.8	105°38.7	.. 14.3	3°53.3	.. 53.6	42°10.5	.. 51.4	120°51.4	.. 30.0				
21	112°55.8	105°38.7	.. 14.3	3°53.3	.. 53.6	42°10.5	.. 51.4	120°51.4	.. 30.0	127°58.3	120°41.2	14.8	18°55.6	53.5	57°12.8	51.4	135°53.6	29.9				
22	127°58.3	120°41.2	14.8	18°55.6	53.5	57°12.8	51.4	135°53.6	29.9	143°00.8	135°43.6	15.3	33°58.0	53.4	72°15.0	51.5	150°55.8	29.8				
23	143°00.8	135°43.6	15.3	33°58.0	53.4	72°15.0	51.5	150°55.8	29.8	Mer.pass.:13:30									v2.4 d0.5 m-4.4			
				v2.4 d0.5 m-4.4				v2.4 d-0.1 m-0.3				v2.3 d0.0 m-2.2				v2.2 d0.1 m1.2						

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec						
0	158°03.2	150°46.1	N10°15.8	49°00.3	N25°53.3	87°17.3	N21°51.5	165°58.0	S05°29.7						
1	173°05.7	165°48.5	16.2	64°02.7	53.3	102°19.5	51.5	181°00.2	29.5						
2	188°08.2	180°51.0	16.7	79°05.0	53.2	117°21.8	51.6	196°02.3	29.4						
3	203°10.6	195°53.4	.. 17.2	94°07.3	.. 53.1	132°24.1	.. 51.6	211°04.5	.. 29.3						
4	218°13.1	210°55.9	17.7	109°09.7	53.0	147°26.3	51.6	226°06.7	29.2						
5	233°15.6	225°58.4	18.1	124°12.0	52.9	162°28.6	51.7	241°08.9	29.1						
6	248°18.0	241°00.8	N10°18.6	139°14.3	N25°52.8	177°30.8	N21°51.7	256°11.1	S05°28.9						
7	263°20.5	256°03.3	19.1	154°16.7	52.7	192°33.1	51.7	271°13.3	28.8						
8	278°22.9	271°05.8	19.5	169°19.0	52.6	207°35.4	51.8	286°15.4	28.7						
9	293°25.4	286°08.3	.. 20.0	184°21.4	.. 52.5	222°37.6	.. 51.8	301°17.6	.. 28.6						
10	308°27.9	301°10.8	20.4	199°23.7	52.4	237°39.9	51.8	316°19.8	28.5						
11	323°30.3	316°13.2	20.9	214°26.0	52.3	252°42.1	51.9	331°22.0	28.3						
12	338°32.8	331°15.7	N10°21.4	229°28.3	N25°52.3	267°44.4	N21°51.9	346°24.2	S05°28.2						
13	353°35.3	346°18.2	21.8	244°30.7	52.2	282°46.7	51.9	1°26.3	28.1						
14	8°37.7	1°20.7	22.3	259°33.0	52.1	297°48.9	52.0	16°28.5	28.0						
15	23°40.2	16°23.2	.. 22.7	274°35.3	.. 52.0	312°51.2	.. 52.0	31°30.7	.. 27.9						
16	38°42.7	31°25.8	23.2	289°37.6	51.9	327°53.4	52.0	46°32.9	27.7						
17	53°45.1	46°28.3	23.6	304°40.0	51.8	342°55.7	52.1	61°35.1	27.6						
18	68°47.6	61°30.8	N10°24.1	319°42.3	N25°51.7	357°57.9	N21°52.1	76°37.3	S05°27.5						
19	83°50.0	76°33.3	24.5	334°44.6	51.6	13°00.2	52.1	91°39.4	27.4						
20	98°52.5	91°35.8	24.9	349°46.9	51.5	28°02.5	52.2	106°41.6	27.3						
21	113°55.0	106°38.4	.. 25.4	4°49.2	.. 51.4	43°04.7	.. 52.2	121°43.8	.. 27.1						
22	128°57.4	121°40.9	25.8	19°51.6	51.3	58°07.0	52.2	136°46.0	27.0						
23	143°59.9	136°43.4	26.3	34°53.9	51.2	73°09.2	52.3	151°48.2	26.9						
Mer.pass.:13:26															
v2.5 d0.5 m-4.4				v2.3 d-0.1 m-0.3				v2.3 d0.0 m-2.2				v2.2 d0.1 m1.2			

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	159°02.4	151°46.0	N10°26.7	49°56.2	N25°51.1	88°11.5	N21°52.3	166°50.4	S05°26.8		
1	174°04.8	166°48.5	27.1	64°58.5	51.0	103°13.7	52.3	181°52.5	26.7		
2	189°07.3	181°51.0	27.5	80°00.8	50.9	118°16.0	52.4	196°54.7	26.5		
3	204°09.8	196°53.6	.. 28.0	95°03.1	.. 50.8	133°18.2	.. 52.4	211°56.9	.. 26.4		
4	219°12.2	211°56.1	28.4	110°05.4	50.8	148°20.5	52.4	226°59.1	26.3		
5	234°14.7	226°58.7	28.8	125°07.7	50.7	163°22.7	52.5	242°01.3	26.2		
6	249°17.2	242°01.3	N10°29.2	140°10.0	N25°50.6	178°25.0	N21°52.5	257°03.4	S05°26.1		
7	264°19.6	257°03.8	29.7	155°12.3	50.5	193°27.2	52.5	272°05.6	25.9		
8	279°22.1	272°06.4	30.1	170°14.6	50.4	208°29.5	52.6	287°07.8	25.8		
9	294°24.5	287°09.0	.. 30.5	185°16.9	.. 50.3	223°31.7	.. 52.6	302°10.0	.. 25.7		
10	309°27.0	302°11.5	30.9	200°19.2	50.0	238°34.0	52.6	317°12.2	25.6		
11	324°29.5	317°14.1	31.3	215°21.5	50.1	253°36.2	52.7	332°14.4	25.5		
12	339°31.9	332°16.7	N10°31.7	230°23.8	N25°50.0	268°38.5	N21°52.7	347°16.5	S05°25.3		
13	354°34.4	347°19.3	32.1	245°26.1	49.9	283°40.7	52.7	2°18.7	25.2		
14	9°36.9	2°21.9	32.5	260°28.4	49.8	298°43.0	52.8	17°20.9	25.1		
15	24°39.3	17°24.5	.. 32.9	275°30.7	.. 49.7	313°45.2	.. 52.8	32°23.1	.. 25.0		
16	39°41.8	32°27.1	33.2	290°33.0	49.6	328°47.5	52.8	47°25.3	24.9		
17	54°44.3	47°29.7	33.7	305°35.3	49.5	343°49.7	52.9	62°27.4	24.7		
18	69°46.7	62°32.3	N10°34.1	320°37.6	N25°49.4	358°52.0	N21°52.9	77°29.6	S05°24.6		
19	84°49.2	77°34.9	34.5	335°39.9	49.3	13°54.2	52.9	92°31.8	24.5		
20	99°51.6	92°37.5	34.9	350°42.2	49.2	28°56.5	53.0	107°34.0	24.4		
21	114°54.1	107°40.1	.. 35.3	5°44.4	.. 49.1	43°58.7	.. 53.0	122°36.2	.. 24.3		
22	129°56.6	122°42.8	35.7	20°46.7	49.0	59°01.0	53.0	137°38.3	24.1		
23	144°59.0	137°45.4	36.1	35°49.0	48.9	74°03.2	53.1	152°40.5	24.0		
Mer.pass.:13:22											
v2.5 d0.4 m-4.4				v2.3 d-0.1 m-0.3			v2.3 d0.0 m-2.2			v2.2 d0.1 m1.2	

Stars			
SHA	Dec		</

	Aries			Venus			Mars			Jupiter			Saturn		
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	160°01.5	152°48.0	N10°36.5	50°51.3	N25°48.8	89°05.5	N21°53.1	167°42.7	S05°23.9						
1	175°04.0	167°50.6	36.9	65°53.6	48.7	104°07.7	53.1	182°44.9	23.8						
2	190°06.4	182°53.3	37.3	80°55.9		119°10.0	53.2	197°47.1	23.7						
3	205°08.9	197°55.9	•• 37.6	95°58.1	•• 48.6	134°12.2	•• 53.2	212°49.3	•• 23.5						
4	220°11.4	212°58.6	38.0	111°00.4	48.4	149°14.5	53.2	227°51.4	23.4						
5	235°13.8	228°01.2	38.4	126°02.7	48.3	164°16.7	53.3	242°53.6	23.3						
6	250°16.3	243°03.9	N10°38.8	141°05.0	N25°48.2	179°18.9	N21°53.3	257°55.8	S05°23.2						
7	265°18.8	258°06.5	39.1	156°07.2	48.1	194°21.2	53.3	272°58.0	23.1						
8	280°21.2	273°09.2	39.5	171°09.5	48.0	209°23.4	53.4	288°00.2	22.9						
9	295°23.7	288°11.8	•• 39.9	186°11.8	•• 47.9	224°25.7	•• 53.4	303°02.3	•• 22.8						
10	310°26.1	303°14.5	40.2	201°14.0	47.8	239°27.9	53.5	318°04.5	22.7						
11	325°28.6	318°17.2	40.6	216°16.3	47.7	254°30.2	53.5	333°06.7	22.6						
12	340°31.1	333°19.8	N10°41.0	231°18.6	N25°47.6	269°32.4	N21°53.5	348°08.9	S05°22.5						
13	355°33.5	348°22.5	41.3	246°20.8	47.5	284°34.7	53.6	3°11.1	22.3						
14	10°36.0	3°25.2	41.7	261°23.1	47.4	299°36.9	53.6	18°13.3	22.2						
15	25°38.5	18°27.9	•• 42.0	276°25.4	•• 47.3	314°39.1	•• 53.6	33°15.4	•• 22.1						
16	40°39.0	33°30.6	42.4	291°27.6	47.2	329°41.4	53.7	48°17.6	22.0						
17	55°43.4	48°33.3	42.7	306°29.9	47.1	344°43.6	53.7	63°19.8	21.9						
18	70°45.9	63°36.0	N10°43.1	321°32.1	N25°47.0	359°45.9	N21°53.7	78°22.0	S05°21.7						
19	85°48.3	78°38.7	43.4	336°34.4	46.9	14°48.1	53.8	93°24.1	21.6						
20	100°50.8	93°41.4	43.8	351°36.6	46.8	29°50.3	53.8	108°26.3	21.5						
21	115°53.2	108°44.1	•• 44.1	6°38.9	•• 46.7	44°52.6	•• 53.8	123°28.5	•• 21.4						
22	130°55.7	123°46.8	44.5	21°41.1	46.6	59°54.8	53.9	138°30.7	21.3						
23	145°58.2	138°49.5	44.8	36°43.4	46.5	74°57.1	53.9	153°32.9	21.1						
Mer.pass.:13:18			v2.6 d0.4 m-4.3			v2.3 d-0.1 m-0.2			v2.2 d0.0 m-2.2			v2.2 d0.1 m1.2			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	161°00.6	153°52.2	N10°45.1	51°45.6	N25°46.4	89°59.3	N21°53.9	168°35.1	S05°21.0					
1	176°03.1	168°55.0	45.5	66°47.9	46.3	105°01.5	54.0	183°37.2	20.9					
2	191°05.6	183°57.7	45.8	81°50.1	46.2	120°03.8	54.0	198°39.4	20.8					
3	206°08.0	199°00.4	•• 46.1	96°52.4	•• 46.1	135°06.0	•• 54.0	213°41.6	•• 20.6					
4	221°10.5	214°03.2	46.4	111°54.6	46.0	150°08.2	54.1	228°43.8	20.5					
5	236°13.0	229°05.9	46.8	126°56.9	45.9	165°10.5	54.1	243°46.0	20.4					
6	251°15.4	244°08.6	N10°47.1	141°59.1	N25°45.8	180°12.7	N21°54.2	258°48.1	S05°20.3					
7	266°17.9	259°11.4	47.4	157°01.4	45.7	195°15.0	54.2	273°50.3	20.2					
8	281°20.4	274°14.1	47.7	172°03.6	45.6	210°17.2	54.2	288°52.5	20.0					
9	296°22.8	289°16.9	•• 48.1	187°05.8	•• 45.5	225°19.4	•• 54.3	303°54.7	•• 19.9					
10	311°25.3	304°19.6	48.4	202°08.1	45.4	240°21.7	54.3	318°56.9	19.8					
11	326°27.7	319°22.4	48.7	217°10.3	45.3	255°23.9	54.3	333°59.1	19.7					
12	341°30.2	334°25.2	N10°49.0	232°12.5	N25°45.2	270°26.1	N21°54.4	349°01.2	S05°19.6					
13	356°32.7	349°27.9	49.3	247°14.8	45.1	285°28.4	54.4	4°03.4	19.4					
14	11°35.1	4°30.7	49.6	262°17.0	45.0	300°30.6	54.4	19°05.6	19.3					
15	26°37.6	19°33.5	•• 49.9	277°19.2	•• 44.9	315°32.8	•• 54.5	34°07.8	•• 19.2					
16	41°40.1	34°36.3	50.2	292°21.5	44.8	330°35.1	54.5	49°10.0	19.1					
17	56°42.5	49°39.1	50.5	307°23.7	44.7	345°37.3	54.5	64°12.1	19.0					
18	71°45.0	64°41.8	N10°50.8	322°25.9	N25°44.6	0°39.5	N21°54.6	79°14.3	S05°18.8					
19	86°47.5	79°44.6	51.1	337°28.1	44.4	15°41.8	54.6	94°16.5	18.7					
20	101°49.9	94°47.4	51.4	352°30.4	44.3	30°44.0	54.7	109°18.7	18.6					
21	116°52.4	109°50.2	•• 51.7	7°32.6	•• 44.2	45°46.2	•• 54.7	124°20.9	•• 18.5					
22	131°54.9	124°53.0	52.0	22°34.8	44.1	60°48.5	54.7	139°23.0	18.4					
23	146°57.3	139°55.8	52.3	37°37.0	44.0	75°50.7	54.8	154°25.2	18.2					
Mer.pass.:13:14			v2.7 d0.3 m-4.3			v2.2 d-0.1 m-0.2			v2.2 d0.0 m-2.2			v2.2 d0.1 m1.2		

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	161°59.8	154°58.7	N10°52.5	52°39.3	N25°43.9	90°52.9	N21°54.8	169°27.4	S05°18.1					
1	177°02.2	170°51.5	52.8	67°41.5	43.8	105°55.2	54.8	184°29.6	18.0					
2	192°04.7	185°04.3	53.1	82°43.7	43.7	120°57.4	54.9	199°31.8	17.9					
3	207°07.2	200°07.1	•• 53.4	97°45.9	•• 43.6	135°59.6	•• 54.9	214°33.9	•• 17.9					
4	222°09.6	215°09.9	53.7	112°48.1	43.5	151°01.8	54.9	229°36.1	17.6					
5	237°12.1	230°12.8	53.9	127°50.3	43.4	166°04.1	55.0	244°38.3	17.5					
6	252°14.6	245°15.6	N10°54.2	142°52.5	N25°43.3	181°06.3	N21°55.0	259°40.5	S05°17.4					
7	267°17.0	260°18.4	54.5	157°54.8	43.2	196°08.5	55.1	274°42.7	17.3					
8	282°19.5	275°21.3	54.7	172°57.0	43.1	211°10.8	55.1	289°44.8	17.2					
9	297°22.0	290°24.1	•• 55.0	187°59.2	•• 43.0	226°13.0	•• 55.1	304°47.0	•• 17.0					
10	312°24.4	305°27.0	55.3	203°01.4	42.9	241°15.2	55.2	319°49.2	16.9					
11	327°26.9	320°29.8	55.5	218°03.6	42.7	256°17.4	55.2	334°51.4	16.8					
12	342°29.3	335°32.7	N10°55.8	233°05.8	N25°42.6	271°19.7	N21°55.2	349°53.6	S05°16.7					
13	357°31.8	350°35.6	56.0	248°08.0	42.5	286°21.9	55.3	4°55.7	16.6					
14	12°34.3	5°38.4	56.3	263°10.2	42.4	301°24.1	55.3	19°57.9	16.4					
15	27°36.7	20°41.3	•• 56.5	278°12.4	•• 42.3	316°26.3	•• 55.3	35°00.1	•• 16.3					
16	42°39.2	35°44.2	56.8	293°14.6	42.2	331°28.6	55.4	50°02.3	16.2					
17	57°41.7	50°47.0	57.0	308°16.8	42.1	346°30.8	55.4	65°04.5	16.1					
18	72°44.1	65°49.9	N10°57.3	323°19.0	N25°42.0	1°33.0	N21°55.5	80°06.7	S05°15.9					
19	87°46.6	80°52.8	57.5	338°21.2	41.9	16°35.2	55.5	95°08.8	15.8					
20	102°49.1	95°55.7	57.7	353°23.4	41.8	31°37.5	55.5	110°11.0	15.7					
21	117°51.5	110°58.6	•• 58.0	8°25.6	•• 41.7	46°39.7	•• 55.6	125°13.2	•• 15.6					
22	132°54.0	126°01.5	58.2	23°27.8	41.6	61°41.9	55.6	140°15.4	15.5					
23	147°56.5	141°04.4	58.5	38°30.0	41.4	76°44.1	55.6	155°17.6	15.3					
Mer.pass.:13:10			v2.8 d0.3 m-4.3			v2.2 d-0.1 m-0.2			v2.2 d0.0 m-2.1			v2.2 d0.1 m1.2		

SHA	Dec
Alpheratz	357°35.0 29°13.7
Ankaa	353°07.4 -42°10.3
Schedar	349°31.4 56°40.6
Diphda	348°47.4 -17°51.1
Achernar	335°20.5 -57°06.8
Hamal	327°51.3 23°34.9
Polaris	314°11.5 89°22.5
Acamar	315°11.8 -40°12.5
Menkar	314°06.2 4°11.2
Mirfak	308°28.3 49°57.2
Aldebaran	290°39.5 16°33.6
Rigel	281°03.7 -8°10.5
Capella	280°21.6 46°01.5
Bellatrix	278°22.7 6°22.3
Elnath	278°01.6 28°37.8
Anilnail	275°37.5 -1°11.2
Betelgeuse	270°51.9 7°24.7
Canopus	263°52.1 -52°42.8
Sirius	258°26.0 -16°45.2
Adhara	255°05.6 -29°00.6
Procyon	244°50.5 5°09.5
Pollux	234°16.9 27°57.9
Avior	234°14.2 -59°35.6
Suhail	222°45.8 -43°32.2
Miaplacidus	221°37.5 -69°49.3
Alphard	217°47.3 -8°46.2
Regulus	207°34.0 11°50.5
Dubhe	193°40.1 61°36.8
Denebola	182°24.4 14°25.7
Gienah	175°43.2 -17°41.0
Acrux	172°59.4 -63°14.3
Gacrux	171°51.0 -57°15.2
Alioth	166°12.3 55°49.7
Spica	158°21.9 -11°17.2
Alkaid	152°51.5 49°11.0
Hadar	148°35.5 -60°29.5
Menkent	147°57.2 -36°29.6
Arcturus	145°47.6 19°02.8
Rigil Kent	139°39.8 -60°56.2
Kochab	137°19.2 74°02.7
Zuben'ubi	136°55.7 -16°08.9
Alphecca	126°03.5 26°37.5
Antares	112°15.7 -26°29.3
Atria	107°09.8 -69°04.1
Sabik	102°02.7 -15°45.4
Shaula	96°10.3 -37°07.3
Rasalhague	95°58.5 12°32.3
Eltanin	90°42.3 51°28.7
Kaus Augusta	83°32.5 34°22.3
Vega	80°33.3 -38°48.1
Nunki	75°47.8 -26°15.9
Altair	62°00.1 8°55.9
Peacock	53°06.0 -56°39.2
Deneb	49°26.1 45°22.0
Enif	33°39.0 9°59.3
Al Na'ir	27°33.2 -46°50.4
Fomalhaut	15°14.7 -29°29.5
Scheat	13°45.5 28°13.1
Markab	13°30.1 15°20.3

SHA	Dec
Mar 02 Sun	
Venus	352°46.5 13.46
Mars	250°49.8 20.33
Jupiter	289°04.0 18.01
Saturn	7°41.2 12.47
Mar 03 Mon	
Venus	352°51.6 13.42
Mars	250°45.0 20.30
Jupiter	288°58.7 17.57
Saturn	7°34.4 12.44
Mar 04 Tue	
Venus	352°58.9 13.38
Mars	250°39.5 20.26</

Aries			Venus			Mars			Jupiter			Saturn		
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	162°58.9	156°07.3	N10°58.7	53°32.1	N25°41.3	91°46.4	N21°55.7	170°19.7	S05°15.2					
1	178°01.4	171°10.2	58.9	68°34.3	41.2	106°48.6	55.7	185°21.9	15.1					
2	193°03.8	186°13.1	59.1	83°36.5	41.1	121°50.8	55.7	200°24.1	15.0					
3	208°06.3	201°16.0	59.4	98°38.7	41.0	136°53.0	55.8	215°26.3	14.9					
4	223°08.8	216°18.9	59.6	113°40.9	40.9	151°55.3	55.8	230°28.5	14.7					
5	238°11.2	231°21.9	59.8	128°43.1	40.8	166°57.5	55.9	245°30.6	14.6					
6	253°13.7	246°24.8	N11°00.0	143°45.3	N25°40.7	181°59.7	N21°55.9	260°32.8	S05°14.5					
7	268°16.2	261°27.7	00.2	158°47.4	40.6	197°01.9	55.9	275°35.0	14.4					
8	283°18.6	276°30.2	00.4	173°49.6	40.5	212°04.1	56.0	290°37.2	14.3					
9	298°21.1	291°33.6	00.6	188°51.8	40.3	227°06.4	56.0	305°39.4	14.1					
10	313°23.6	306°36.5	00.9	203°54.0	40.2	242°08.6	56.0	320°41.5	14.0					
11	328°26.0	321°39.5	01.1	218°56.1	40.1	257°10.8	56.1	335°43.7	13.9					
12	343°28.5	336°42.4	N11°01.3	233°58.3	N25°40.0	272°13.0	N21°56.1	350°45.9	S05°13.8					
13	358°31.0	351°45.4	01.5	249°00.5	39.9	287°15.2	56.2	5°48.1	13.7					
14	13°33.4	6°48.3	01.7	264°02.7	39.8	302°17.5	56.2	20°50.3	13.5					
15	28°35.9	21°51.3	01.9	279°04.8	39.7	317°19.7	56.2	35°52.4	13.4					
16	43°38.3	36°54.3	02.0	294°07.0	39.6	332°21.9	56.3	50°54.6	13.3					
17	58°40.8	51°57.2	02.2	309°09.2	39.5	347°24.1	56.3	65°56.8	13.2					
18	73°43.3	67°00.2	N11°02.4	324°11.3	N25°39.3	2°26.3	N21°56.3	80°59.0	S05°13.1					
19	88°45.7	82°03.2	02.6	339°13.5	39.2	17°28.5	56.4	96°01.2	12.9					
20	103°48.2	97°06.2	02.8	354°15.7	39.1	32°30.8	56.4	111°03.3	12.8					
21	118°50.7	112°09.1	03.0	9°17.8	39.0	47°33.0	56.4	126°05.5	12.7					
22	133°53.1	127°12.1	03.2	24°20.0	38.9	62°35.2	56.5	141°07.7	12.6					
23	148°55.6	142°15.1	03.3	39°22.2	38.8	77°37.4	56.5	156°09.9	12.4					
Mer.pass.:13:06 v2.9 d0.2 m-4.3 v2.2 d+0.1 m-0.2 v2.2 d0.0 m-2.1 v2.2 d0.1 m1.2														

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	163°58.1	157°18.1	N11°03.5	54°24.3	N25°38.7	92°39.6	N21°56.6	171°12.1	S05°12.3		
1	179°00.5	172°21.1	03.7	69°26.5	38.6	107°41.8	56.6	186°14.2	12.2		
2	194°03.0	187°24.1	03.8	84°28.6	38.4	122°44.1	56.6	201°16.4	12.1		
3	209°05.4	202°27.1	04.0	99°30.8	38.3	137°46.3	56.7	216°18.6	12.0		
4	224°07.9	217°30.1	04.2	114°32.9	38.2	152°48.5	56.7	231°20.8	11.8		
5	239°10.4	232°33.1	04.3	129°35.1	38.1	167°50.7	56.7	246°23.0	11.7		
6	254°12.8	247°36.2	N11°04.5	144°37.2	N25°38.0	182°52.9	N21°56.8	261°25.1	S05°11.6		
7	269°15.3	262°39.2	04.7	159°39.4	37.9	197°55.1	56.8	276°27.3	11.5		
8	284°17.8	277°42.2	04.8	174°41.6	37.8	212°57.3	56.9	291°29.5	11.4		
9	299°20.2	292°45.2	05.0	189°43.7	37.6	227°59.6	56.9	306°31.7	11.2		
10	314°22.7	307°48.3	05.1	204°45.8	37.5	243°01.8	56.9	321°33.9	11.1		
11	329°25.2	322°51.3	05.3	219°48.0	37.4	258°04.0	57.0	336°36.0	11.0		
12	344°27.6	337°54.3	N11°05.4	234°50.1	N25°37.3	273°06.2	N21°57.0	351°38.2	S05°10.9		
13	359°30.1	352°57.4	05.6	249°52.3	37.2	288°08.4	57.0	6°40.4	10.8		
14	14°32.6	8°00.4	05.7	264°54.4	37.1	303°10.6	57.1	21°42.6	10.6		
15	29°35.0	23°03.5	05.8	279°56.6	37.0	318°12.8	57.1	36°44.8	10.5		
16	44°37.5	38°06.5	06.0	294°58.7	36.8	333°15.0	57.2	51°46.9	10.4		
17	59°39.9	53°09.6	06.1	310°00.8	36.7	348°17.2	57.2	66°49.1	10.3		
18	74°42.4	68°12.7	N11°06.2	325°03.0	N25°36.6	3°19.5	N21°57.2	81°51.3	S05°10.2		
19	89°44.9	83°15.7	06.4	340°05.1	36.6	18°21.7	57.3	96°53.5	10.0		
20	104°47.8	98°18.8	06.5	355°07.3	36.4	33°23.9	57.3	111°55.7	09.9		
21	119°49.8	113°21.9	06.6	10°09.4	36.3	48°26.1	57.4	126°57.8	09.8		
22	134°52.3	128°25.0	06.7	25°11.5	36.1	63°28.3	57.4	142°00.0	09.7		
23	149°54.7	143°28.0	06.9	40°13.7	36.0	78°30.5	57.4	157°02.2	09.6		
Mer.pass.:13:02			v3.0 d0.2 m-4.3			v2.2 d0.0 m-2.1			v2.2 d0.1 m1.2		

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	164°57.2	158°31.1	N11°07.0	55°15.8	N25°35.9	93°32.7	N21°57.5	172°04.4	S05°09.4					
1	179°59.7	173°34.2	07.1	70°17.9	35.8	108°34.9	57.5	187°06.6	09.3					
2	195°02.1	188°37.3	07.2	85°20.1	35.7	123°37.1	57.5	202°08.7	09.2					
3	210°04.6	203°40.4	07.3	100°22.2	35.6	138°39.3	57.6	217°10.9	09.1					
4	225°07.1	218°43.5	07.4	115°24.3	35.4	153°41.5	57.6	232°13.1	08.9					
5	240°09.5	233°46.7	07.5	130°26.4	35.3	168°43.7	57.7	247°15.3	08.8					
6	255°12.0	248°49.7	N11°07.6	145°28.6	N25°35.2	183°46.0	N21°57.7	262°17.5	S05°08.7					
7	270°14.4	263°52.8	07.7	160°30.7	35.1	198°48.2	57.7	277°19.6	08.6					
8	285°16.9	278°55.9	07.8	175°32.8	35.0	213°50.4	57.8	292°21.8	08.5					
9	300°19.4	293°59.1	07.9	190°34.9	34.9	228°52.6	57.8	307°24.0	08.3					
10	315°21.8	309°02.2	08.0	205°37.0	34.8	243°54.8	57.8	322°26.2	08.2					
11	330°24.3	324°05.3	08.1	220°39.2	34.6	258°57.0	57.9	337°28.3	08.1					
12	345°26.8	339°08.4	N11°08.2	235°41.3	N25°34.5	273°59.2	N21°57.9	352°30.5	S05°08.0					
13	0°29.2	354°11.6	08.3	250°43.4	34.4	289°01.4	58.0	7°32.7	07.9					
14	15°31.7	9°14.7	08.3	265°45.5	34.3	304°03.6	58.0	22°34.9	07.7					
15	30°34.2	24°17.8	08.4	280°47.6	34.1	319°05.8	58.0	37°37.1	07.6					
16	45°36.6	39°21.0	08.5	295°49.7	34.0	334°08.0	58.1	52°39.2	07.5					
17	60°39.1	54°24.1	08.6	310°51.8	33.9	349°10.2	58.1	67°41.4	07.4					
18	75°41.6	69°27.3	N11°08.7	325°54.0	N25°33.8	4°12.4	N21°58.2	82°43.6	S05°07.3					
19	90°44.0	84°30.4	08.7	340°56.1	33.7	19°14.6	58.2	97°45.8	07.1					
20	105°46.5	99°33.6	08.8	355°58.2	33.5	34°16.8	58.2	112°48.0	07.0					
21	120°48.9	114°36.8	08.9	1°00.3	33.4	49°19.0	58.3	127°50.1	06.9					
22	135°51.4	129°39.9	08.9	26°02.4	33.3	64°21.2	58.3	142°52.3	06.8					
23	150°53.9	144°43.1	09.0	41°04.5	33.2	79°23.4	58.3	157°54.5	06.7					
Mer.pass.:12:58			v3.1 d0.1 m-4.2			v2.1 d-0.1 m-0.1			v2.2 d0.0 m-2.1			v2.2 d0.1 m1.2		

Stars			h			Sun			Moon		
	SHA	Dec	Wed	GHA	Dec	GHA	ν	Dec	d	HP	
Alpheratz	357°35.0	29°13.7	0	177°06.5	S06°02.4	113°59.6	6.7'	N22°36.5	11.2'	59.5'	
Ankaa	353°07.4	-42°10.3	1	192°06.6	01.4	128°25.3	6.6'	22°47.6	11.0'	59.5'	
Schedar	349°31.4	56°40.6	2	207°06.8	06°00.5	142°50.9	6.6'	22°58.5	10.9'	59.5'	
Diphda	348°47.4	-17°51.1	3	222°06.9	05°59.5	157°16.4	6.5'	23°09.3	10.7'	59.4'	
Achernar	335°20.5	-57°06.7	4	237°07.0	58.5	171°41.8	6.4'	23°19.9	10.5'	59.4'	
Hamal	327°51.3	23°34.9	5	252°07.2	57.6	186°07.2	6.4'	23°30.4	10.4'	59.4'	
Polaris	314°12.6	89°22.5	6	267°07.3	S05°56.6	200°32.6	6.3'	N23°40.7	10.2'	59.4'	
Acamar	315°11.9	-40°12.5	7	282°07.5	55.6	214°57.8	6.2'	23°50.9	10.1'	59.3'	
Menkar	314°06.2	4°11.2	8	297°07.6	54.7	229°23.1	6.2'	24°00.9	9.9'	59.3'	
Mirfak	308°28.3	49°57.2	9	312°07.8	53.7	243°48.2	6.1'	24°10.7	9.8'	59.3'	
Aldebaran	290°39.5	16°33.6	10	327°07.9	52.7	258°13.3	6.1'	24°20.4	9.6'	59.3'	
Rigel	281°03.7	-8°10.5	11	342°08.0	51.8	272°38.3	6.0'	24°29.9	9.4'	59.2'	
Capella	280°21.7	46°01.5	12	357°08.2	S05°50.8	287°03.3	5.9'	N24°39.3	9.3'	59.2'	
Bellatrix	278°22.7	6°22.3	13	12°08.3	49.8	301°28.2	5.9'	24°48.5	9.1'	59.2'	
Elmath	278°01.7	28°37.8	14	27°08.5	48.8	315°53.0	5.8'	24°57.5	8.9'	59.2'	
Alnilam	275°37.5	-1°11.2	15	42°08.6	47.9	330°17.8	5.8'	25°06.3	8.8'	59.1'	
Betelgeuse	270°51.9	7°24.6	16	57°08.8	46.9	344°42.5	5.7'	25°15.0	8.6'	59.1'	
Canopus	263°52.1	-52°42.8	17	72°08.9	45.9	359°07.2	5.7'	25°23.6	8.4'	59.1'	
Sirius	258°26.0	-16°45.2	18	87°09.0	S05°45.0	13°31.8	5.6'	N25°31.9	8.3'	59.1'	
Adhara	255°05.6	-29°00.6	19	102°09.2	44.0	27°56.4	5.5'	25°40.1	8.1'	59.0'	
Procyon	244°50.5	5°09.5	20	117°09.3	43.0	42°20.9	5.5'	25°48.1	7.9'	59.0'	
Pollux	243°16.9	27°57.9	21	132°09.5	42.1	56°45.4	5.4'	25°56.0	7.8'	59.0'	
Avior	234°14.2	-59°35.6	22	147°09.6	41.1	71°09.8	5.4'	26°03.6	7.6'	59.0'	
Suhail	222°45.9	-43°32.2	23	162°09.8	40.1	85°34.2	5.4'	26°11.1	7.4'	58.9'	
Miaplacidus	221°37.5	-69°49.3		SD.=16.1	d=1.0			S.D.=16.1			
Alphard	217°47.3	-8°46.2	Thur	GHA	Dec	GHA	ν	Dec	d	HP	
Regulus	207°34.0	11°50.5	0	177°09.9	S05°39.2	99°58.5	5.3'	N26°18.5	7.2'	58.9'	
Dubhe	193°40.1	61°36.8	1	192°10.0	38.2	114°22.8	5.3'	26°25.6	7.1'	58.9'	
Denebola	182°24.5	14°25.7	2	207°10.2	37.2	128°47.1	5.2'	26°32.6	6.9'	58.9'	
Gienah	175°43.1	-17°41.0	3	222°10.3	36.2	143°11.3	5.2'	26°39.4	6.7'	58.8'	
Acrux	172°59.4	-63°14.3	4	237°10.5	35.3	157°35.4	5.1'	26°46.0	6.5'	58.8'	
Gacrux	171°51.0	-57°15.2	5	252°10.6	34.3	171°59.6	5.1'	26°52.4	6.4'	58.8'	
Alioth	166°12.3	55°49.2	6	267°10.8	S05°33.3	186°23.7	5.1'	N26°58.7	6.2'	58.7'	
Spica	158°21.9	-11°17.7	7	282°10.9	32.4	200°47.7	5.0'	27°04.8	6.0'	58.7'	
Alkaid	152°51.5	49°11.0	8	297°11.1	31.4	215°11.8	5.0'	27°10.7	5.8'	58.7'	
Hadar	148°35.4	-60°29.5	9	312°11.2	30.4	229°35.7	5.0'	27°16.4	5.6'	58.7'	
Menkent	147°57.2	-36°29.6	10	327°11.4	29.5	243°59.7	5.0'	27°22.0	5.5'	58.6'	
Arcturus	145°49.8	19°02.8	11	342°11.5	28.5	258°23.7	4.9'	27°27.3	5.3'	58.6'	
Rigel Kent.	139°37.6	-60°56.2	12	357°11.7	S05°27.5	272°47.6	4.9'	N27°32.5	5.1'	58.6'	
Kochab	137°19.1	74°02.7	13	12°11.8	26.5	287°11.5	4.9'	27°37.5	4.9'	58.6'	
Zuben'ubi	136°55.7	-16°08.9	14	27°11.9	25.6	301°35.3	4.9'	27°42.3	4.7'	58.5'	
Alphecca	126°03.5	26°37.5	15	42°12.1	24.6	315°59.2	4.8'	27°47.0	4.5'	58.5'	
Antares	112°15.6	-26°29.3	16	57°12.2	23.6	330°23.0	4.8'	27°51.4	4.4'	58.5'	
Atria	107°09.8	-69°04.4	17	72°12.4	22.7	344°46.8	4.8'	27°55.7	4.2'	58.4'	
Sabik	102°02.0	-15°45.1	18	87°12.5	S05°21.7	359°10.6	4.8'	N27°59.8	4.0'	58.4'	
Shaula	96°10.3	-37°07.3	19	102°12.7	20.7	13°34.4	4.8'	28°03.7	3.8'	58.4'	
Rasalhague	95°58.5	12°32.3	20	117°12.8	19.7	27°58.2	4.8'	28°07.4	3.6'	58.4'	
Eltanin	90°42.2	51°28.7	21	132°13.0	18.8	42°22.0	4.8'	28°10.9	3.4'	58.3'	
Kaus Aust.	83°32.5	-34°22.3	22	147°13.1	17.8	56°45.7	4.8'	28°14.3	3.3'	58.3'	
Vega	80°33.3	38°48.1	23	162°13.3	16.8	71°09.5	4.8'	28°17.4	3.1'	58.3'	
Nunki	75°47.8	-26°15.9		SD.=16.1	d=1.0			S.D.=16.0			
Altair	62°00.0	8°55.9	Fri	GHA	Dec	GHA	ν	Dec	d	HP	
Peacock	53°05.9	-56°39.2	0	177°13.4	S05°15.9	85°33.3	4.8'	N28°20.4	2.9'	58.3'	
Deneb	49°26.1	45°21.9	1	192°13.6	14.9	99°57.0	4.8'	28°23.2	2.7'	58.2'	
Enif	33°39.0	9°59.3	2	207°13.7	13.9	114°20.8	4.8'	28°25.8	2.5'	58.2'	
Al Na'ir	27°33.2	-46°50.4	3	222°13.9	12.9	128°44.6	4.8'	28°28.2	2.3'	58.2'	
Fomalhaut	15°14.7	-29°29.4	4	237°14.0	12.0	143°08.4	4.8'	28°30.5	2.1'	58.1'	
Scheat	13°45.4	28°13.0	5	252°14.2	11.0	157°32.1	4.8'	28°32.5	2.0'	58.1'	
Markab	13°30.1	15°20.3	6	267°14.3	S05°10.0	171°55.9	4.8'	N28°34.4	1.8'	58.1'	
			7	282°14.5	09.0	186°19.8	4.8'	28°36.1	1.6'	58.1'	
Mar 05 Wed	SHA	Mer.pass	8	297°14.6	08.1	200°43.6	4.8'	28°37.6	1.4'	58.0'	
Venus	353°08.4	13.33	9	312°14.8	07.1	215°07.4	4.9'	28°38.9	1.2'	58.0'	
Mars	250°33.2	20.23	10	327°14.9	06.1	229°31.3	4.9'	28°40.0	1.0'	58.0'	
Jupiter	288°47.5	17.50	11	342°15.1	05.1	243°55.2	4.9'	28°41.0	0.9'	58.0'	
Saturn	7°20.8	12.33	12	357°15.2	S05°04.2	258°19.1	4.9'	N28°41.7	0.7'	57.9'	
Mar 06 Thu	SHA	Mer.pass	13	12°15.4	03.2	272°43.1	5.0'	28°42.3	0.5'	57.9'	
Venus	353°20.1	13.28	14	27°15.5	02.2	287°07.0	5.0'	28°42.7	0.3'	57.9'	
Mars	250°26.3	20.19	15	42°15.7	01.2	301°31.0	5.0'	28°43.0	0.1'	57.8'	
Jupiter	288°41.6	17.47	16	57°15.8	05°00.3	315°55.1	5.1'	28°43.0	-0.1'	57.8'	
Saturn	7°14.0	12.33	17	72°16.0	04°59.3	330°19.1	5.1'	28°42.9	-0.2'	57.8'	
Mar 07 Fri	SHA	Mer.pass	18	87°16.1	S04°58.3	344°43.2	5.1'	N28°42.5	-0.4'	57.8'	
Venus	353°33.9	13.23	19	102°16.3	57.4	359°07.4	5.2'	28°42.0	-0.6'	57.7'	
Mars	250°18.6	20.16	20	117°16.4	56.4	13°31.6	5.2'	28°41.4	-0.8'	57.7'	
Jupiter	288°35.5	17.43	21	132°16.6	55.4	27°55.8	5.3'	28°40.5	-0.9'	57.7'	
Saturn	7°07.2	12.30	22	147°16.7	54.4	42°20.1	5.3'	28°39.5	-1.1'	57.7'	
Horizontal parallax			23	162°16.9	53.5	56°44.4	5.3'	28°38.2	-1.3'	57.6'	
Venus:	0.5			SD.=16.1	d=1.0			S.D.=15.8			
Mars:	0.2										

Aries				Venus				Mars				Jupiter				Saturn			
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	165°56.3	159°46.3	N11°09.0	56°06.6	N25°33.1	94°25.6	N21°58.4	172°56.7	S05°06.5										
1	180°58.8	174°49.5	09.1	71°08.7	32.9	109°27.8	58.4	187°58.9	06.4										
2	196°01.3	189°52.6	09.1	86°10.8	32.8	124°30.0	58.5	203°01.0	06.3										
3	211°03.7	204°55.8	•• 09.2	101°12.9	•• 32.7	139°32.2	•• 58.5	218°03.2	•• 06.2										
4	226°06.2	219°59.0	09.2	116°15.0	32.6	154°34.4	58.5	233°05.4	06.1										
5	241°08.7	235°02.2	09.3	131°17.1	32.5	169°36.6	58.6	248°07.6	05.9										
6	256°11.1	250°05.4	N11°09.3	146°19.2	N25°32.3	184°38.8	N21°58.6	263°09.8	S05°05.8										
7	271°13.6	265°08.6	09.4	161°21.3	32.2	199°41.0	58.7	278°11.9	05.7										
8	286°16.0	280°11.8	09.4	176°23.4	32.1	214°43.2	58.7	293°14.1	05.6										
9	301°18.5	295°15.0	•• 09.4	191°25.5	•• 32.0	229°45.4	•• 58.7	308°16.3	•• 05.4										
10	316°21.0	310°18.2	09.5	206°27.6	31.9	244°47.6	58.8	323°18.5	05.3										
11	331°23.4	325°21.4	09.5	221°29.6	31.7	259°49.8	58.8	338°20.7	05.2										
12	346°25.9	340°24.6	N11°09.5	236°31.7	N25°31.6	274°52.0	N21°58.9	353°22.8	S05°05.1										
13	1°28.4	355°27.9	09.6	251°33.8	31.5	289°54.2	58.9	8°25.0	05.0										
14	16°30.8	10°31.1	09.6	266°35.9	31.4	304°56.4	58.9	23°27.2	04.8										
15	31°33.3	25°34.3	•• 09.6	281°38.0	•• 31.3	319°58.6	•• 59.0	38°29.4	•• 04.7										
16	46°35.8	40°37.6	09.6	296°40.1	•• 31.3	335°00.8	59.0	53°31.6	04.6										
17	61°38.2	55°40.8	09.6	311°42.2	31.0	350°03.0	59.1	68°33.7	04.5										
18	76°40.7	70°44.0	N11°09.6	326°44.2	N25°30.9	5°05.2	N21°59.1	83°35.9	S05°04.4										
19	91°43.2	85°47.3	09.6	341°46.3	30.8	20°07.4	59.1	98°38.1	04.2										
20	106°45.6	100°50.5	09.7	356°48.4	30.9	35°09.6	59.2	113°40.3	04.1										
21	121°48.1	115°53.8	•• 09.7	11°50.5	•• 30.5	50°11.8	•• 59.2	128°42.5	•• 04.0										
22	136°50.5	130°57.0	09.7	26°52.6	30.4	65°14.0	59.2	143°44.6	03.9										
23	151°53.0	146°03.0	09.7	41°54.6	30.3	80°16.2	59.3	158°46.8	03.8										
Mer.pass.:12:54				v3.2 d0.1 m-4.2				v2.1 d-0.1 m-0.1				v2.2 d0.0 m-2.1				v2.2 d0.1 m1.2			

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	166°55.5	161°03.5	N11°09.7	56°56.7	N25°30.1	95°18.3	N21°59.3	173°49.0	S05°03.6										
1	181°57.9	176°06.8	09.7	71°58.8	30.0	110°20.5	59.4	188°51.2	03.5										
2	197°00.4	191°10.1	09.6	87°00.9	29.9	125°22.7	59.4	203°53.3	03.4										
3	212°02.9	206°13.3	•• 09.6	102°02.9	•• 29.8	140°24.9	•• 59.4	218°55.5	•• 03.3										
4	227°05.3	221°16.6	09.6	117°05.0	29.7	155°27.1	59.5	233°57.7	03.2										
5	242°07.8	236°19.9	09.6	132°07.1	29.5	170°29.3	59.5	248°59.9	03.0										
6	257°10.3	251°23.2	N11°09.6	147°09.1	N25°29.4	185°31.5	N21°59.6	264°02.1	S05°02.9										
7	272°12.7	266°26.5	09.6	162°11.2	29.3	200°33.7	59.6	279°04.2	02.8										
8	287°15.2	281°29.7	09.5	177°13.3	29.2	215°35.9	59.6	294°06.4	02.7										
9	302°17.7	296°33.0	•• 09.5	192°15.3	•• 29.0	230°38.1	•• 59.7	309°08.6	•• 02.6										
10	317°20.1	311°36.3	09.5	207°17.4	28.9	245°40.3	59.7	324°10.8	02.4										
11	332°22.6	326°39.6	09.5	222°19.5	28.8	260°42.5	59.8	339°13.0	02.3										
12	347°25.0	341°42.9	N11°09.4	237°21.5	N25°28.7	275°44.6	N21°59.8	354°15.1	S05°02.2										
13	2°27.5	356°46.2	09.4	252°23.6	28.5	290°46.8	59.8	9°17.3	02.1										
14	17°30.0	11°49.5	09.3	267°25.7	28.4	305°49.0	59.9	24°19.5	01.9										
15	32°32.4	26°52.9	•• 09.3	282°27.7	•• 28.3	320°51.2	21°59.9	39°21.7	•• 01.8										
16	47°34.9	41°56.2	09.3	297°29.8	28.2	335°53.4	22°00.0	54°23.9	01.7										
17	62°37.4	56°59.5	09.2	312°31.8	28.0	350°55.6	00.0	69°26.0	01.6										
18	77°39.8	72°02.8	N11°09.2	327°33.9	N25°27.9	5°57.8	N22°00.0	84°28.2	S05°01.5										
19	92°42.3	87°06.1	09.1	342°35.9	27.8	21°00.0	00.1	99°30.4	01.3										
20	107°44.8	102°09.5	09.1	357°38.0	27.6	36°02.2	00.1	114°32.6	01.2										
21	122°47.2	117°12.8	•• 09.0	12°40.0	•• 27.5	51°04.3	•• 00.2	129°34.8	•• 01.1										
22	137°49.7	132°16.1	08.9	27°42.1	27.4	66°06.5	00.2	144°36.9	01.0										
23	152°52.2	147°19.5	08.9	42°44.1	27.3	81°08.7	00.2	159°39.1	00.9										
Mer.pass.:12:50				v3.3 d-0.0 m-4.2				v2.1 d-0.1 m-0.1				v2.2 d0.0 m-2.1				v2.2 d0.1 m1.2			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	167°54.6	162°22.8	N11°08.8	57°46.2	N25°27.1	96°10.9	N22°00.3	174°41.3	S05°00.7										
1	182°57.1	177°26.2	08.7	72°48.2	27.0	111°13.1	00.3	189°43.5	00.6										
2	197°59.5	192°29.5	08.7	87°50.3	26.9	126°15.3	00.4	204°45.7	00.5										
3	213°02.0	207°32.9	•• 08.6	102°52.3	•• 26.8	141°17.5	•• 00.4	219°47.8	•• 00.4										
4	228°04.5	222°36.2	08.5	117°54.4	26.6	156°19.6	00.4	234°50.0	00.3										
5	243°06.9	237°39.6	08.4	132°56.4	26.5	171°21.8	00.5	249°52.2	00.1										
6	258°09.4	252°43.0	N11°08.4	147°58.5	N25°26.4	186°24.0	N22°00.5	264°54.4	S05°00.0										
7	273°11.9	267°46.3	08.3	163°00.5	26.2	201°26.2	00.6	279°56.5	04°59.9										
8	288°14.3	282°49.7	08.2	178°02.5	26.1	216°28.4	00.6	294°58.7	04°59.8										
9	303°16.8	297°53.1	•• 08.1	193°04.6	•• 26.0	231°30.6	•• 00.6	310°00.9	•• 59.7										
10	318°19.3	312°56.4	08.0	208°06.6	25.9	246°32.8	00.7	325°03.1	59.5										
11	333°21.7	327°59.8	07.9	223°08.7	25.7	261°34.9	00.7	340°05.3	59.4										
12	348°24.2	343°03.2	N11°07.8	238°10.7	N25°25.6	276°37.1	N22°00.8	355°07.4	S04°59.3										
13	3°26.6	358°06.6	07.7	253°12.7	25.5	291°39.3	00.8	10°09.6	59.2										
14	18°29.1	13°10.0	07.6	268°14.8	25.3	306°41.5	00.8	25°11.8	59.1										
15	33°31.6	28°13.4	•• 07.5	283°16.8	•• 25.2	321°43.7	•• 00.9	40°14.0	•• 58.9										
16	48°34.0	43°16.8	07.4	298°18.8	25.1	336°45.8	00.9	55°16.2	58.8										
17	63°36.5	58°20.2	07.3	313°20.9	25.0	351°48.0	01.0	70°18.3	58.7										
18	78°39.0	73°23.6	N11°07.2	328°22.9	N25°24.8	6°50.2	N22°01.0	85°20.5	S04°58.6										
19	93°41.4	88°27.0	07.1	343°24.9	24.7	21°52.4	01.0	100°22.7	58.4										
20	108°43.9	103°30.4	07.0	358°26.9	24.6	36°54.6	01.1	115°24.9	58.3										
21	123°46.4	118°33.8	•• 06.8	13°29.0	•• 24.4	51°56.7	•• 01.1	130°27.1	•• 58.2										
22	138°48.8	133°37.2	06.7	28°31.0	24.3	66°58.9	01.2	145°29.2	58.1										
23	153°51.3	148°40.6	06.6	43°33.0	24.2	82°01.1	01.2	160°31.4	58.0										
Mer.pass.:12:46				v3.3 d-0.1 m-4.2				v2.0 d-0.1 m-0.0				v2.2 d0.0 m-2.1				v2.2 d0.1 m1.2			

Stars		
	SHA	Dec
Alpheratz	357°35.0	29°13.7
Ankaa	353°07.4	-42°10.3
Schedar	349°31.4	56°40.6
Diphda	348°47.4	-17°51.1
Achernar	335°20.5	-57°06.7
Hamal	327°51.3	23°34.9
Polaris	314°13.7	89°22.5
Acamar	315°11.9	-40°12.4
Menkar	314°06.2	4°11.2
Mirfak	308°28.3	49°57.2
Aldebaran	290°39.5	16°33.6
Rigel	281°03.7	-8°10.5
Capella	280°21.7	46°01.5
Bellatrix	278°22.7	6°22.3
Elnath	278°01.7	28°37.8
Anilam	275°37.5	-1°11.2
Betelgeuse	270°51.9	7°24.6
Canopus	263°52.2	-52°42.8
Sirius	258°26.0	-16°45.2
Adhara	255°05.6	-29°00.6
Procyon	244°50.5	5°09.5
Pollux	243°16.9	27°57.9
Avior	234°14.3	-59°35.6
Suhail	222°45.9	-43°32.2
Miaplacidus	221°37.5	-69°49.4
Alphard	217°47.3	-8°46.2

Aries		Venus		Mars		Jupiter		Saturn	
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	168°53.8	163°44.1	N11°06.5	58°35.0	N25°24.1	97°03.3	N22°01.2	175°33.6	S04°57.8
1	183°56.2	178°47.5	06.3	73°37.1	23.9	112°05.5	01.3	190°35.8	57.7
2	198°58.7	193°50.9	06.2	88°39.1	23.8	127°07.6	01.3	205°38.0	57.6
3	214°01.1	208°54.4	•• 06.1	103°41.1	•• 23.7	142°09.8	•• 01.4	220°40.1	•• 57.5
4	229°03.6	223°57.8	05.9	118°43.1	23.5	157°12.0	01.4	235°42.3	57.4
5	244°06.1	239°01.2	05.8	133°45.1	23.4	172°14.2	01.4	250°44.5	57.2
6	259°08.5	254°04.7	N11°05.6	148°47.2	N25°23.3	187°16.4	N22°01.5	265°46.7	S04°57.1
7	274°11.0	269°08.1	05.5	163°49.2	23.1	202°18.5	01.5	280°48.8	57.0
8	289°13.5	284°11.6	05.4	178°51.2	23.0	217°20.7	01.6	295°51.0	56.9
9	304°15.9	299°15.0	•• 05.2	193°53.2	•• 22.9	232°22.9	•• 01.6	310°53.2	•• 56.8
10	319°18.4	314°18.5	05.0	208°55.2	22.7	247°25.1	01.7	325°55.4	56.6
11	334°20.9	329°21.9	04.9	223°57.2	22.6	262°27.2	01.7	340°57.6	56.5
12	349°23.3	344°25.4	N11°04.7	238°59.2	N25°22.5	277°29.4	N22°01.7	355°59.7	S04°56.4
13	4°25.8	359°28.9	04.6	254°01.2	22.3	292°31.6	01.8	1°01.9	56.3
14	19°28.3	14°32.3	04.4	269°03.2	22.2	307°33.8	01.8	26°04.1	56.2
15	34°30.7	29°35.8	•• 04.2	284°05.2	•• 22.1	322°35.9	•• 01.9	41°06.3	•• 56.0
16	49°33.2	44°39.3	04.1	299°07.3	21.9	337°38.1	01.9	56°08.5	55.9
17	64°35.6	59°42.7	03.9	314°09.3	21.8	352°40.3	01.9	71°10.6	55.8
18	79°38.1	74°46.2	N11°03.7	329°11.3	N25°21.7	7°42.5	N22°02.0	86°12.8	S04°55.7
19	94°40.6	89°49.7	03.5	344°13.3	21.5	22°44.6	02.0	101°15.0	55.6
20	109°43.0	104°53.2	03.4	359°15.3	21.4	37°46.8	02.1	116°17.2	55.4
21	124°45.5	119°56.7	•• 03.2	14°17.3	•• 21.3	52°49.0	•• 02.1	131°19.4	•• 55.3
22	139°48.0	135°00.2	03.0	29°19.3	21.1	67°51.2	02.2	146°21.5	55.2
23	154°50.4	150°03.7	02.8	44°21.3	21.0	82°53.2	02.1	161°23.7	55.1
Mer.pass.:12:42		v3.4 d-0.1 m-4.1		v2.0 d-0.1 m-0.0		v2.2 d0.0 m-2.1		v2.2 d0.1 m1.2	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	169°52.9	165°07.2	N11°02.6	59°23.3	N25°20.9	97°55.5	N22°02.2	176°25.9	S04°55.0
1	184°55.4	180°10.7	02.4	74°25.3	20.7	112°57.7	02.3	191°28.1	54.8
2	199°57.8	195°14.2	02.2	89°27.3	20.6	127°59.8	02.3	206°30.3	54.7
3	215°00.3	210°17.7	•• 02.0	104°29.2	•• 20.5	143°02.0	•• 02.3	221°32.4	•• 54.6
4	230°02.7	225°21.2	01.8	119°31.2	20.3	158°04.2	02.4	236°34.6	54.5
5	245°05.2	240°24.7	01.6	134°33.2	20.2	173°06.4	02.4	251°36.8	54.4
6	260°07.7	255°28.2	N11°01.4	149°35.2	N25°20.1	188°08.5	N22°02.5	266°39.0	S04°54.2
7	275°10.1	270°31.7	01.2	164°37.2	19.9	203°10.7	02.5	281°41.1	54.1
8	290°12.6	285°35.3	01.0	179°39.2	19.8	218°12.9	02.6	296°43.3	54.0
9	305°15.1	300°38.8	•• 00.8	194°41.2	•• 19.7	233°15.0	•• 02.6	311°45.5	•• 53.9
10	320°17.5	315°42.3	00.6	209°43.2	19.0	248°17.2	02.6	326°47.7	53.7
11	335°20.0	330°45.8	00.3	224°45.2	19.4	263°19.4	02.7	341°49.9	53.6
12	350°22.5	345°49.4	N11°00.1	239°47.1	N25°19.3	278°21.5	N22°02.7	356°52.0	S04°53.5
13	5°24.9	0°52.9	10°59.9	254°49.1	19.1	293°23.7	02.8	1°54.2	53.4
14	20°27.4	15°56.9	59.7	269°51.1	19.0	308°25.9	02.8	26°56.4	53.3
15	35°29.9	31°00.0	•• 59.4	284°55.1	•• 18.9	323°28.1	•• 02.8	41°58.6	•• 53.1
16	50°32.3	46°03.5	59.2	299°53.1	18.7	338°30.2	02.9	57°00.8	53.0
17	65°34.8	61°07.1	59.0	314°57.1	18.6	353°32.4	02.9	72°02.9	52.9
18	80°37.2	76°10.6	N10°58.7	329°59.0	N25°18.4	8°34.6	N22°03.0	87°05.1	S04°52.8
19	95°39.7	91°14.2	58.5	345°01.0	18.3	23°36.7	03.0	102°07.3	52.7
20	110°42.2	106°17.7	58.3	0°03.0	18.2	38°38.9	03.0	117°09.5	52.5
21	125°44.6	121°21.3	•• 58.0	15°05.0	•• 18.0	53°41.1	•• 03.1	132°11.7	•• 52.4
22	140°47.1	136°24.9	57.8	30°06.9	17.9	68°43.2	03.1	147°13.8	52.3
23	155°49.6	151°28.4	57.5	45°08.9	17.8	83°45.4	03.2	162°16.0	52.2
Mer.pass.:12:38		v3.5 d-0.2 m-4.1		v2.0 d-0.1 m0.0		v2.2 d0.0 m-2.1		v2.2 d0.1 m1.2	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	170°52.0	166°32.0	N10°57.3	60°10.9	N25°17.6	98°47.6	N22°03.2	177°18.2	S04°52.1
1	185°54.5	181°35.6	57.0	75°12.9	17.5	113°49.7	03.3	192°20.4	51.9
2	200°57.0	196°39.1	56.7	90°14.8	17.4	128°51.9	03.3	207°22.6	51.8
3	215°59.4	211°42.7	•• 56.5	105°16.8	•• 17.2	143°54.0	•• 03.3	222°24.7	•• 51.7
4	231°01.9	226°46.3	56.2	120°18.8	17.1	158°56.2	03.4	237°26.9	51.6
5	246°04.3	241°49.9	55.9	135°20.7	16.9	173°58.4	03.4	252°29.1	51.5
6	261°06.8	256°53.5	N10°55.7	150°22.7	N25°16.8	189°00.5	N22°03.5	267°31.3	S04°51.3
7	276°09.3	271°57.1	55.4	165°24.7	16.7	204°02.7	03.5	282°33.4	51.2
8	291°11.7	287°00.5	55.1	180°26.6	16.5	219°04.9	03.5	297°35.6	51.1
9	306°14.2	302°04.2	•• 54.9	195°28.6	•• 16.4	234°07.0	•• 03.6	312°37.8	•• 51.0
10	321°16.7	317°07.8	54.6	210°30.5	16.6	249°09.2	03.6	327°40.0	50.9
11	336°19.1	332°11.4	54.3	225°32.5	16.1	264°11.4	03.7	342°42.2	50.7
12	351°21.6	347°15.0	N10°54.0	240°34.5	N25°16.0	279°13.5	N22°03.7	357°44.3	S04°50.6
13	6°24.1	2°18.6	53.7	255°36.4	15.8	294°15.7	03.8	1°24.6	50.5
14	21°26.5	17°22.2	53.4	270°38.4	15.7	309°17.8	03.8	27°48.7	50.4
15	36°29.0	32°25.8	•• 53.1	285°40.3	•• 15.6	324°20.0	•• 03.8	42°50.9	•• 50.3
16	51°31.5	47°29.5	52.8	300°42.3	15.4	339°22.2	03.9	57°53.1	50.1
17	66°33.9	62°33.1	52.5	315°44.3	15.3	354°24.3	03.9	72°55.2	50.0
18	81°36.4	77°36.7	N10°52.2	330°46.2	N25°15.1	9°26.5	N22°04.0	87°57.4	S04°49.9
19	96°38.8	92°40.3	51.9	345°48.2	15.0	24°28.6	04.0	102°59.6	49.8
20	111°41.3	107°43.9	51.6	0°50.1	14.9	39°30.8	04.1	118°01.8	49.7
21	126°43.8	122°47.5	•• 51.3	15°52.1	•• 14.7	54°33.0	•• 04.1	133°04.0	•• 49.5
22	141°46.2	137°51.2	51.0	30°54.0	14.6	69°35.1	04.1	148°06.1	49.4
23	156°48.7	152°54.8	50.7	45°56.0	14.4	84°37.3	04.2	163°08.3	49.3
Mer.pass.:12:34		v3.6 d-0.3 m-4.1		v2.0 d-0.1 m0.0		v2.2 d0.0 m-2.1		v2.2 d0.1 m1.2	

SHA	Dec
Alperatz	357°35.0 29°13.7
Ankaa	353°07.4 -42°10.3
Schedar	349°31.5 56°40.6
Diphda	348°47.4 -17°51.0
Achernar	335°20.5 -57°06.7
Hamal	327°51.3 23°34.9
Polaris	314°15.0 89°22.5
Acamar	315°11.9 -40°12.4
Menkar	314°06.2 4°11.2
Mirfak	308°28.3 49°57.2
Aldebaran	290°39.5 16°33.6
Rigel	281°03.7 -8°10.5
Capella	280°21.7 46°01.5
Bellatrix	278°22.7 6°22.3
Elnath	278°01.7 28°37.8
Anilam	275°37.6 -1°11.2
Betelgeuse	270°51.9 7°24.6
Canopus	263°52.2 -52°42.8
Sirius	258°26.0 -16°45.2
Adhara	255°05.6 -29°00.6
Procyon	244°50.5 5°09.5
Pollux	243°16.9 27°57.9
Avior	234°14.3 -59°35.6
Shuhail	222°45.9 -43°32.2
Miaplacidus	221°37.6 -69°49.4
Alphard	217°47.3 -8°46.2
Regulus	207°34.0 11°50.5
Dubhe	193°40.1 61°36.9
Denebola	182°24.5 14°25.7
Gienah	175°43.1 -17°41.0
Acrux	172°59.3 -63°14.3
Gacrux	171°51.0 -57°15.3
Alioth	166°12.3 55°49.2
Spiica	158°21.9 -11°17.7
Alkaid	152°51.5 49°11.0
Hadar	148°35.4 -60°29.6
Menkent	147°57.2 -36°29.6
Arcturus	145°47.5 19°02.8
Rigel Kent.	139°39.7 -60°56.2
Kochab	137°19.0 74°02.8
Zuben'ubi	136°55.7 -16°08.9
Alphecca	126°03.4 26°37.5
Antares	112°15.6 -26°29.3
Atria	107°09.6 -69°04.1
Sabik	102°02.6 -15°45.4
Shaula	96°10.2 -37°07.3
Rasalhague	95°58.4 12°32.2
Eltanin	90°42.2 51°28.7
Kaus Aust.	83°32.4 -34°22.3
Vega	80°33.3 38°48.1
Nunki	75°47.7 -26°15.9
Altair	62°00.7 8°55.9
Peacock	53°05.9 -56°39.1
Deneb	49°26.1 45°21.9
Enif	33°38.9 9°59.3
Al Na'ir	27°33.1 -46°50.4
Fomalhaut	15°14.7 -29°29.4
Scheat	13°45.4 28°13.0
Markab	13°30.1 15°20.3

SHA	Mer.pass.
Venus	354°50.3 13:02
Mars	249°41.3 20:03
Jupiter	288°09.5 17:29
Saturn	6°39.8 12:16
SHA	Mer.pass.
Venus	355°14.3 12:56
Mars	249°30.4 20:00
Jupiter	288°02.6 17:26
Saturn	6°33.0 12:13
SHA	Mer.pass.
Venus	355°40.0 12:51
Mars	249°18.9 19:57
Jupiter	287°55.5 17:22
Saturn	6°26.2 12:09

Horizontal parallax	
Venus:	0.5
Mars:	0.2

Sun			Moon				
Tue	GHA	Dec	GHA	ν	Dec	d	HP
0	177°28.5	S03°42.0	31°58.8	11.9'	N20°20.7	-11.2'	55.9'
1	192°28.7	41.0	46°29.7	12.0'	20°09.4	-11.3'	55.9'
2	207°28.8	40.0	61°00.7	12.1'	19°58.1	-11.4'	55.9'
3	222°29.0	•• 39.1	75°31.8	12.2'	19°46.6	-11.5'	55.9'
4	237°29.2	38.1	90°03.0	12.2'	19°35.1	-11.5'	55.8'
5	252°29.3	37.1	104°34.3	12.3'	19°23.6	-11.6'	55.8'
6	267°29.5	S03°36.1	119°05.7	12.4'	N19°11.9	-11.7'	55.8'
7	282°29.6	35.1	133°37.2	12.5'	19°00.1	-11.8'	55.8'
8	297°29.8	34.2	148°08.8	12.6'	18°48.3	-11.9'	55.8'
9	312°30.0	•• 33.2	162°40.4	12.7'	18°36.4	-11.9'	55.7'
10	327°30.1	32.2	177°12.2	12.8'	18°24.4	-12.0'	55.7'
11	342°30.3	31.2	191°44.0	12.9'	18°12.4	-12.1'	55.7'
12	357°30.5	S03°30.2	206°16.0	13.0'	N18°00.3	-12.2'	55.7'
13	12°30.6	29.2	220°48.0	13.1'	17°48.1	-12.2'	55.7'
14	27°30.8	28.3	235°20.1	13.2'	17°35.8	-12.3'	55.6'
15	42°31.0	•• 27.3	249°52.3	13.2'	17°23.4	-12.4'	55.6'
16	57°31.1	26.3	264°24.6	13.3'	17°11.0	-12.4'	55.6'
17	72°31.3	25.3	278°57.0	13.4'	16°58.6	-12.5'	55.6'
18	87°31.5	S03°24.3	293°29.4	13.5'	N16°46.0	-12.6'	55.6'
19	102°31.6	23.3	308°02.0	13.6'	16°33.4	-12.6'	55.5'
20	117°31.8	22.4	322°34.6	13.7'	16°20.8	-12.7'	55.5'
21	132°32.0	•• 21.4	337°07.3	13.7'	16°08.0	-12.8'	55.5'
22	147°32.1	20.4	351°40.1	13.8'	15°55.2	-12.8'	55.5'
23	162°32.3	19.4	6°12.9	13.9'	15°42.4	-12.9'	55.5'
SD = -16.1			d = 1.0		S.D. = -15.2		

	Aries			Venus			Mars			Jupiter			Saturn		
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	171°51.2	167°58.4	N10°50.4	60°57.9	N25°14.3	99°39.4	N22°04.2	178°10.5	S04°49.2						
1	186°53.6	183°02.1	50.1	75°59.9	14.2	114°41.6	04.3	193°12.7	49.1						
2	201°56.1	198°05.7	49.7	91°01.8	14.0	129°43.8	04.3	208°14.9	48.9						
3	216°58.6	213°09.3	•• 49.4	106°03.7	•• 13.9	144°45.9	•• 04.3	223°17.0	•• 48.8						
4	232°01.0	228°13.0	49.1	121°05.7	13.7	159°48.1	04.4	238°19.2	48.7						
5	247°03.5	243°16.6	48.8	136°07.6	13.6	174°50.2	04.4	253°21.4	48.6						
6	262°05.9	258°20.3	N10°48.4	151°09.6	N25°13.5	189°52.4	N22°04.5	268°23.6	S04°48.4						
7	277°08.4	273°23.9	48.1	166°11.5	13.3	204°54.5	04.5	283°25.7	48.3						
8	292°10.9	288°27.6	47.8	181°13.5	13.2	219°56.7	04.6	298°27.9	48.2						
9	307°13.3	303°31.2	•• 47.4	196°15.4	•• 13.0	234°58.9	•• 04.6	313°30.1	•• 48.1						
10	322°15.8	318°34.9	47.1	211°17.3	12.9	250°01.0	04.6	328°32.3	48.0						
11	337°18.3	333°38.5	46.7	226°19.3	12.6	265°03.2	04.7	343°34.5	47.8						
12	352°20.7	348°42.2	N10°46.4	241°21.2	N25°12.7	280°05.3	N22°04.7	358°36.6	S04°47.7						
13	7°23.2	3°45.9	46.0	256°23.1	12.5	295°07.5	04.8	13°38.8	47.6						
14	22°25.7	18°49.5	45.7	271°25.1	12.3	310°09.6	04.8	28°41.0	47.5						
15	37°28.1	33°53.2	•• 45.3	286°27.0	•• 12.2	325°11.8	•• 04.9	43°43.2	•• 47.4						
16	52°30.6	48°56.9	45.0	301°28.9	12.0	340°13.9	04.9	58°45.4	47.2						
17	67°33.1	64°00.5	44.6	316°30.9	11.9	355°16.1	04.9	73°47.5	47.1						
18	82°35.5	79°04.2	N10°44.2	331°32.8	N25°11.7	10°18.2	N22°05.0	88°49.7	S04°47.0						
19	97°38.0	94°07.9	43.9	346°34.7	11.6	25°20.4	05.0	103°51.9	46.9						
20	112°40.4	109°11.6	43.5	1°36.7	11.5	40°22.5	05.1	118°54.1	46.8						
21	127°42.9	124°15.3	•• 43.1	16°38.6	•• 11.3	55°24.7	•• 05.1	133°56.3	•• 46.6						
22	142°45.4	139°18.9	42.8	31°40.5	11.2	70°26.9	05.2	148°58.4	46.5						
23	157°47.8	154°22.6	42.4	46°42.4	11.0	85°29.0	05.2	164°00.6	46.4						
Mer.pass.:12:31			v3.6 d-0.3 m-4.0			v1.9 d-0.1 m0.1			v2.2 d0.0 m-2.1			v2.2 d0.1 m1.2			

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	172°50.3	169°26.3	N10°42.0	61°44.4	N25°10.9	100°31.2	N22°05.2	179°02.8	S04°46.3	
1	187°52.8	184°30.0	41.6	76°46.3	10.7	115°33.3	05.3	194°05.0	46.2	
2	202°55.2	199°33.7	41.2	91°48.2	10.6	130°35.5	05.3	209°07.2	46.0	
3	217°57.7	214°37.4	•• 40.9	106°50.1	•• 10.4	145°37.6	•• 05.4	224°09.3	•• 45.9	
4	233°00.2	229°41.1	40.5	121°52.1	10.3	160°39.8	05.4	239°11.5	45.8	
5	248°02.6	244°44.8	40.1	136°54.0	10.2	175°41.9	05.4	254°13.7	45.7	
6	263°05.1	259°48.5	N10°39.7	151°55.9	N25°10.0	190°44.1	N22°05.5	269°15.9	S04°45.6	
7	278°07.5	274°52.2	39.3	166°57.8	09.9	205°46.2	05.5	284°18.0	45.4	
8	293°10.0	289°55.9	38.9	181°59.7	09.7	220°48.4	05.6	299°20.2	45.3	
9	308°12.5	304°59.6	•• 38.5	197°01.6	•• 09.6	235°50.5	•• 05.6	314°22.4	•• 45.2	
10	323°14.9	320°03.3	38.1	212°03.6	09.4	250°52.7	05.7	329°24.6	45.1	
11	338°17.4	335°07.0	37.7	227°05.5	09.3	265°54.8	05.7	344°26.8	45.0	
12	353°19.9	350°10.7	N10°37.3	242°07.4	N25°09.1	280°57.0	N22°05.7	359°28.9	S04°44.8	
13	8°22.3	5°14.5	36.9	257°09.3	09.0	295°59.1	05.8	14°31.1	44.7	
14	23°24.8	20°18.2	36.4	272°11.2	08.9	311°01.3	05.8	29°33.3	44.6	
15	38°27.3	35°21.9	•• 36.0	287°13.1	•• 08.7	326°03.4	•• 05.9	44°35.5	•• 44.5	
16	53°29.7	50°25.6	35.6	302°15.0	08.6	341°05.5	05.9	59°37.7	44.4	
17	68°32.2	65°29.3	35.2	317°16.9	08.4	356°07.7	06.0	74°39.8	44.2	
18	83°34.7	80°33.1	N10°34.8	332°18.8	N25°08.3	11°09.8	N22°06.0	89°42.0	S04°44.1	
19	98°37.1	95°36.8	34.3	347°20.7	08.3	26°12.0	06.0	104°44.2	44.0	
20	113°39.6	110°40.5	33.9	2°22.6	08.0	41°14.1	06.1	119°46.4	43.9	
21	128°42.0	125°44.3	•• 33.5	17°24.5	•• 07.8	56°16.3	•• 06.1	134°48.6	•• 43.8	
22	143°44.5	140°48.0	33.0	32°26.5	07.7	71°18.4	06.2	149°50.7	43.6	
23	158°47.0	155°51.7	32.6	47°28.4	07.5	86°20.6	06.2	164°52.9	43.5	
Mer.pass.:12:27			v3.7 d-0.4 m-4.0		v1.9 d-0.1 m0.1		v2.2 d0.0 m-2.1		v2.2 d0.1 m1.2	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	173°49.4	170°55.5	N10°32.2	62°30.3	N25°07.4	101°22.7	N22°06.3	179°55.1	S04°43.4					
1	188°51.9	185°59.2	31.7	77°32.2	07.2	116°24.9	06.3	194°57.3	43.3					
2	203°54.4	201°02.9	31.3	92°34.1	07.1	131°27.0	06.3	209°59.5	43.2					
3	218°56.8	216°06.7	•• 30.8	107°36.0	•• 06.9	146°29.1	•• 06.4	225°01.6	•• 43.0					
4	233°59.3	231°10.4	30.4	122°37.8	06.8	161°31.3	06.4	240°03.8	42.9					
5	249°01.8	246°14.2	29.9	137°39.7	06.6	176°33.4	06.5	255°06.0	42.8					
6	264°04.2	261°17.9	N10°29.5	152°41.6	N25°06.5	191°35.6	N22°06.5	270°08.2	S04°42.7					
7	279°06.7	276°21.7	29.0	167°43.5	06.4	206°37.7	06.6	285°10.3	42.6					
8	294°09.1	291°25.4	28.6	182°45.4	06.2	221°39.9	06.6	300°12.5	42.4					
9	309°11.6	306°29.2	•• 28.1	197°47.3	•• 06.1	236°42.0	•• 06.6	315°14.7	•• 42.3					
10	324°14.1	321°32.9	27.6	212°49.2	05.9	251°44.2	06.7	330°16.9	42.2					
11	339°16.5	336°36.7	27.2	227°51.1	05.8	266°46.3	06.7	345°19.1	42.1					
12	354°19.0	351°40.5	N10°27.6	242°53.0	N25°05.6	281°48.4	N22°06.8	0°21.2	S04°42.0					
13	9°21.5	6°44.2	26.2	257°54.9	05.5	296°50.6	06.8	15°23.4	41.8					
14	24°23.9	21°48.0	25.8	272°56.8	05.3	311°52.7	06.9	30°25.6	41.7					
15	39°26.4	36°51.7	•• 25.3	287°58.7	•• 05.2	326°54.9	•• 06.9	45°27.8	•• 41.6					
16	54°28.9	51°55.5	24.8	303°00.5	05.0	341°57.0	07.0	60°30.0	41.5					
17	69°31.3	66°59.3	24.3	318°02.4	04.9	356°59.1	07.0	75°32.1	41.4					
18	84°33.8	82°03.0	N10°23.8	333°04.3	N25°04.7	12°01.3	N22°07.0	90°34.3	S04°41.2					
19	99°36.3	97°06.8	23.4	348°06.2	04.6	27°03.4	07.1	105°36.5	41.1					
20	114°38.7	112°10.6	22.9	3°08.1	04.4	42°05.6	07.1	120°38.7	41.0					
21	129°41.2	127°14.4	•• 22.4	18°10.0	•• 04.3	57°07.7	•• 07.2	135°40.9	•• 40.9					
22	144°43.6	142°18.1	21.9	33°11.8	04.1	72°09.8	07.2	150°43.0	40.8					
23	159°46.1	157°21.9	21.4	48°13.7	04.0	87°12.0	07.3	165°45.2	40.6					
Mer.pass.:12:23			v3.7 d-0.4 m-4.0			v1.9 d-0.1 m0.1			v2.1 d0.0 m-2.1			v2.2 d0.1 m1.2		

Stars		
	SHA	Dec
Alpheratz	357° 35.0	29° 13.7
Ankaa	353° 07.4	-42° 10.3
Schedar	349° 31.5	56° 40.5
Diphda	348° 47.5	-17° 51.0
Achernar	335° 20.5	-57° 06.7
Hamal	327° 51.3	23° 34.9
Polaris	314° 16.3	89° 22.5
Acamar	315° 11.9	-40° 12.4
Menkar	314° 06.2	4° 11.2
Mirfak	308° 28.3	49° 57.2
Aldebaran	290° 39.5	16° 33.6
Rigel	281° 03.8	-8° 10.5
Capella	280° 21.7	46° 01.5
Bellatrix	278° 22.7	6° 22.3
Elath	278° 01.7	28° 37.8
Anilam	275° 37.6	-1° 11.2
Betelgeuse	270° 51.9	7° 24.6
Canopus	263° 52.2	-52° 42.8
Sirius	258° 26.0	-16° 45.2
Adhara	255° 05.6	-29° 00.6
Procyon	244° 50.5	5° 09.5
Pollux	243° 16.9	27° 57.9
Avior	234° 14.3	-59° 35.6
Suhail	222° 45.9	-43° 32.2
Miaplacidus	221° 37.6	-69° 49.4
Alphard	217° 47.3	-8° 46.2

	Aries			Venus			Mars			Jupiter			Saturn		
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	174°48.6	172°25.7	N10°20.9	63°15.6	N25°03.8	102°14.1	N22°07.3	180°47.4	S04°40.5						
1	189°51.0	187°29.5	20.4	78°17.5	03.7	117°16.3	07.3	195°49.6	40.4						
2	204°53.5	202°33.3	19.9	93°19.4	03.5	132°18.4	07.4	210°51.8	40.3						
3	219°56.0	217°37.0	•• 19.4	108°21.2	•• 03.4	147°20.5	•• 07.4	225°53.9	•• 40.2						
4	234°58.4	232°40.8	18.9	123°23.1	03.2	162°22.7	07.5	240°56.1	40.0						
5	250°00.9	247°44.6	18.4	138°25.0	03.1	177°24.8	07.5	255°58.3	39.9						
6	265°03.4	262°48.4	N10°17.9	153°26.8	N25°02.9	192°26.9	N22°07.6	271°00.5	S04°39.8						
7	280°05.8	277°52.2	17.3	168°28.7	02.8	207°29.1	07.6	286°02.7	39.7						
8	295°08.3	292°56.0	16.8	183°30.6	02.6	222°31.2	07.6	301°04.8	39.6						
9	310°10.7	307°59.8	•• 16.3	198°32.5	•• 02.4	237°33.3	•• 07.7	316°07.0	•• 39.4						
10	325°13.2	323°03.6	15.8	213°34.3	02.3	252°35.5	07.7	331°09.2	39.3						
11	340°15.7	338°07.4	15.3	228°36.2	02.1	267°37.6	07.8	346°11.4	39.2						
12	355°18.1	353°11.2	N10°14.7	243°38.1	N25°02.0	282°39.8	N22°07.8	1°13.6	S04°39.1						
13	10°20.6	8°15.0	14.2	258°39.9	01.8	297°41.9	07.9	16°15.7	39.0						
14	25°23.1	23°18.8	13.7	273°41.8	01.7	312°44.0	07.9	31°17.9	38.8						
15	40°25.5	38°22.6	•• 13.1	288°43.7	•• 01.5	327°46.2	•• 07.9	46°20.1	•• 38.7						
16	55°28.0	53°26.4	12.6	303°45.5	01.4	342°48.3	08.0	61°22.3	38.6						
17	70°30.5	68°30.2	12.1	318°47.4	01.2	357°50.4	08.0	76°24.5	38.5						
18	85°32.9	83°34.0	N10°11.5	333°49.2	N25°01.1	12°52.6	N22°08.1	91°26.6	S04°38.4						
19	100°35.4	98°37.8	11.0	348°51.1	00.9	27°54.7	08.1	106°28.8	38.2						
20	115°37.9	113°41.6	10.4	3°53.0	00.8	42°56.8	08.2	121°31.0	38.1						
21	130°40.3	128°45.4	•• 09.9	18°54.8	•• 00.6	57°59.0	•• 08.2	136°33.2	•• 38.0						
22	145°42.8	143°49.2	09.3	33°56.7	00.5	73°01.1	08.3	151°35.3	37.9						
23	160°45.2	158°53.0	08.8	48°58.5	00.3	88°03.2	08.3	166°37.5	37.8						
Mer.pass.:12:19			v3.8 d-0.5 m-3.9			v1.9 d-0.2 m0.1			v2.1 d0.0 m-2.1			v2.2 d0.1 m1.2			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	175°47.7	173°56.8	N10°08.2	64°00.4	N25°00.2	103°05.4	N22°08.3	181°39.7	S04°37.6					
1	190°50.2	189°06.0	07.7	79°02.3	25°00.0	118°07.5	08.4	196°41.9	37.5					
2	205°52.6	204°04.5	07.1	94°04.1	24°59.8	133°09.6	08.4	211°44.1	37.4					
3	220°55.1	219°08.3	•• 06.6	109°06.0	•• 59.7	148°11.7	•• 08.5	226°46.2	•• 37.3					
4	235°57.6	234°12.1	06.0	124°07.8	59.5	163°13.9	08.5	241°48.4	37.2					
5	251°00.0	249°15.9	05.4	139°09.7	59.4	178°16.0	08.6	256°50.6	37.0					
6	266°02.5	264°19.7	N10°04.9	154°11.5	N24°59.2	193°18.1	N22°08.6	271°52.8	S04°36.9					
7	281°05.0	279°23.5	04.3	169°13.4	59.1	208°20.3	08.6	286°55.0	36.8					
8	296°07.4	294°27.4	03.7	184°15.2	58.9	223°22.4	08.7	301°57.1	36.7					
9	311°09.9	309°31.2	•• 03.1	199°17.1	•• 58.8	238°24.5	•• 08.7	316°59.3	•• 36.6					
10	326°12.4	324°35.0	02.6	214°18.9	58.6	253°26.7	08.8	332°01.5	36.4					
11	341°14.8	339°38.8	02.0	229°20.8	58.4	268°28.8	08.8	347°03.7	36.3					
12	356°17.3	354°42.7	N10°01.4	244°22.6	N24°58.3	283°30.9	N22°08.9	2°05.9	S04°36.2					
13	11°19.7	9°46.5	00.8	259°24.5	58.1	298°33.0	08.9	17°08.0	36.1					
14	26°22.2	24°50.3	10°00.2	274°26.3	58.0	313°35.2	09.0	32°10.2	36.0					
15	41°24.7	39°54.1	09°59.7	289°28.1	•• 57.8	328°37.3	•• 09.0	47°12.4	•• 35.8					
16	56°27.1	54°58.0	59.1	304°30.0	57.7	343°39.4	09.0	62°14.6	35.7					
17	71°29.6	70°01.8	58.5	319°31.8	57.5	358°41.6	09.1	77°16.8	35.6					
18	86°32.1	85°05.6	N09°57.9	334°33.7	N24°57.4	13°43.7	N22°09.1	92°18.9	S04°35.5					
19	101°34.5	100°09.5	57.3	349°35.5	57.2	28°45.8	09.2	107°21.1	35.4					
20	116°37.0	115°13.3	56.7	4°37.3	57.0	43°47.9	09.2	122°23.3	35.2					
21	131°39.5	130°17.1	•• 56.1	19°39.2	•• 56.9	58°50.1	•• 09.3	137°25.5	•• 35.1					
22	146°41.9	145°21.0	55.5	34°41.0	56.7	73°52.2	09.3	152°27.7	35.0					
23	161°44.4	160°24.8	54.9	49°42.8	56.6	88°54.3	09.4	167°29.8	34.9					
Mer.pass.:12:15			v3.8 d-0.6 m-3.9			v1.9 d-0.2 m0.1			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2		

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	176°46.8	175°28.6	N09°54.3	64°44.7	N24°56.4	103°56.4	N22°09.4	182°32.0	S04°34.8					
1	191°49.3	190°32.5	53.7	79°46.5	56.3	118°58.6	09.4	197°34.2	34.6					
2	206°51.8	205°36.3	53.0	94°48.4	56.1	134°00.7	09.5	212°36.4	34.5					
3	221°54.2	220°40.1	•• 52.4	109°50.2	•• 55.9	149°02.8	•• 09.5	227°38.6	•• 34.4					
4	236°56.7	235°44.0	51.8	124°52.0	55.8	164°04.9	09.6	242°40.7	34.3					
5	251°59.2	250°47.8	51.2	139°53.8	55.6	179°07.1	09.6	257°42.9	34.2					
6	267°01.6	265°51.7	N09°50.6	154°55.7	N24°55.5	194°09.2	N22°09.7	272°45.1	S04°34.0					
7	282°04.1	280°55.5	50.0	169°57.5	55.3	209°11.3	09.7	287°47.3	33.9					
8	297°06.6	295°59.3	49.3	184°59.3	55.1	224°13.4	09.8	302°49.5	33.8					
9	312°09.0	311°03.2	•• 48.7	200°01.2	•• 55.0	239°15.6	•• 09.8	317°51.6	•• 33.7					
10	327°11.5	326°07.0	48.1	215°03.0	54.8	254°17.7	09.8	332°53.8	33.6					
11	342°14.0	341°10.9	47.4	230°04.8	54.7	269°19.8	09.9	347°56.0	33.4					
12	357°16.4	356°14.7	N09°46.8	245°06.6	N24°54.5	284°21.9	N22°09.9	2°58.2	S04°33.3					
13	12°18.9	11°18.6	46.2	260°08.5	54.4	299°24.0	10.0	18°00.4	33.2					
14	27°21.3	26°22.4	45.5	275°10.3	54.2	314°26.2	10.0	33°02.5	33.1					
15	42°23.8	41°26.3	•• 44.9	290°12.1	•• 54.0	329°28.3	•• 10.1	48°04.7	•• 33.0					
16	57°26.3	56°30.1	44.3	305°13.9	53.9	344°30.4	10.1	63°06.9	32.8					
17	72°28.7	71°33.9	43.6	320°15.7	53.7	359°32.5	10.2	78°09.1	32.7					
18	87°31.2	86°37.8	N09°43.0	335°17.6	N24°53.6	14°34.7	N22°10.2	93°11.3	S04°32.6					
19	102°33.7	101°41.6	42.3	350°19.4	53.4	29°36.8	10.2	108°13.4	32.5					
20	117°36.1	116°45.5	41.7	5°21.2	53.2	44°38.9	10.3	123°15.6	32.4					
21	132°38.6	131°49.3	•• 41.0	20°23.0	•• 53.1	59°41.0	•• 10.3	138°17.8	•• 32.3					
22	147°41.1	146°53.2	40.4	35°24.8	52.9	74°43.1	10.4	153°20.0	32.1					
23	162°43.5	161°57.0	39.7	50°26.6	52.8	89°45.3	10.4	168°22.2	32.0					
Mer.pass.:12:11			v3.8 d-0.6 m-3.9			v1.8 d-0.2 m0.2			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2		

SHA	Dec
Alpheratz	357°35.0 29°13.7
Ankaa	353°07.4 -42°10.3
Schedar	349°31.5 56°40.5
Diphda	348°47.5 -17°51.0
Achernar	335°20.5 -57°06.7
Hamal	327°51.3 23°34.9
Polaris	314°17.4 89°22.5
Acamar	315°11.9 -40°12.4
Menkar	314°06.2 4°11.2
Mirfak	308°28.3 49°57.2
Aldebaran	290°39.6 16°33.6
Rigel	281°03.8 -8°10.5
Capella	280°21.7 46°01.5
Bellatrix	278°22.8 6°22.3
Elnath	278°01.7 28°37.8
Anilam	275°37.6 -1°11.2
Betelgeuse	270°51.9 7°24.6
Canopus	263°52.3 -52°42.8
Sirius	258°26.0 -16°45.2
Adhara	255°05.6 -29°00.6
Procyon	244°50.5 5°09.5
Pollux	243°16.9 27°57.9
Avior	234°14.3 -59°35.6
Shuhail	222°45.9 -43°32.3
Miaplacidus	221°37.6 -69°49.4
Alphard	217°47.4 -8°46.2
Regulus	207°34.0 11°50.5
Dubhe	193°40.1 61°36.9
Denebola	182°24.1 14°25.7
Gienah	175°43.1 -17°41.0
Acrux	172°59.3 -63°14.3
Gacrux	171°51.0 -57°15.3
Alloth	166°12.3 55°49.2
Spica	158°21.9 -11°17.7
Alkaid	152°51.4 49°11.0
Hadar	148°35.3 -60°29.6
Menkent	147°57.1 -36°29.7
Arcturus	145°47.2 19°02.8
Rigel Cent	139°39.7 -60°56.3
Kochab	137°18.9 74°02.8
Zuben'ubi	136°55.6 -16°08.9
Alphecca	126°03.4 26°37.5
Antares	112°15.5 -26°29.3
Atria	107°09.5 -69°04.1
Sabik	102°02.6 -15°45.4
Shaula	96°10.1 -37°07.3
Rasalhague	95°58.4 12°32.2
Eltanin	90°42.1 51°28.7
Kaus Aust.	83°32.4 -34°22.3
Vega	80°33.2 38°48.1
Nunki	75°47.7 -26°15.9
Altair	62°00.0 8°55.9
Peacock	53°05.8 -56°39.1
Deneb	49°26.0 45°21.9
Enif	33°38.9 9°59.3
Al Nair	27°33.1 -46°50.3
Fomalhaut	15°14.7 -29°29.4
Scheat	13°45.4 28°13.0
Markab	13°30.1 15°20.3

Alphard	217°47.4	-8°46.2
Regulus	207°34.0	11°50.5
Dubhe	193°40.1	61°36.9
Denebola	182°24.5	14°25.7
Gienah	175°43.1	-17°40.1
Acrux	172°59.3	-63°14.3
Gacrux	171°51.0	-57°15.3
Alioth	166°12.3	55°49.2
Spica	158°21.9	-11°17.7
Alkaid	152°51.4	49°11.0
Hadar	148°35.3	-60°29.6
Menkent	147°57.1	-36°29.7
Arcturus	145°47.5	19°02.8
Rigil Kent	139°39.7	-60°56.3
Kochab	137°18.9	74°02.8
Zuben'ubi	136°55.6	-16°08.9
Alphecca	126°03.4	26°37.5
Antares	112°15.5	-26°29.3
Atria	107°09.5	-69°04.1
Sabik	102°02.6	-15°45.4
Shaula	96°10.1	-37°07.3
Rasalhague	95°58.4	12°32.2
Eltanin	90°42.1	51°28.7
Kaus Aust.	83°32.4	-34°22.3
Vega	80°33.2	38°48.1
Nunki	75°47.7	-26°15.9
Altair	62°00.0	8°55.9
Peacock	53°05.8	-56°39.1
Deneb	49°26.0	45°21.9
Enif	33°38.9	9°59.9

	Aries			Venus			Mars			Jupiter			Saturn		
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	177°46.0	177°00.9	N09°39.1	65°28.5	N24°52.6	104°47.4	N22°10.5	183°24.3	S04°31.9						
1	192°48.5	192°04.7	38.4	80°30.3	52.4	119°49.5	10.5	198°26.5	31.8						
2	207°50.9	207°08.6	37.7	95°32.1	52.3	134°51.6	10.6	213°28.7	31.7						
3	222°53.4	222°12.4	•• 37.1	110°33.9	52.1	149°53.7	•• 10.6	228°30.9	•• 31.5						
4	237°55.8	237°16.3	36.4	125°35.7	51.9	164°55.8	10.6	243°33.1	31.4						
5	252°58.3	252°20.2	35.7	140°37.5	51.8	179°58.0	10.7	258°35.2	31.3						
6	268°00.8	267°24.0	N09°35.1	155°39.3	N24°51.6	195°00.1	N22°10.7	273°37.4	S04°31.2						
7	283°03.2	282°27.9	34.4	170°41.1	51.5	210°02.2	10.8	288°39.6	31.1						
8	298°05.7	297°31.7	33.7	185°42.9	51.3	225°04.3	10.8	303°41.8	30.9						
9	313°08.2	312°35.6	•• 33.0	200°44.7	•• 51.1	240°06.4	•• 10.9	318°44.0	•• 30.8						
10	328°10.6	327°39.4	32.4	215°46.5	51.0	255°08.5	10.9	333°46.1	30.7						
11	343°13.1	342°43.3	31.7	230°48.3	50.8	270°10.7	11.0	348°48.3	30.6						
12	358°15.6	357°47.1	N09°31.0	245°50.2	N24°50.7	285°12.8	N22°11.0	3°50.5	S04°30.5						
13	13°18.0	12°51.0	30.3	260°52.0	50.5	300°14.9	11.0	18°52.7	30.3						
14	28°20.5	27°54.8	29.6	275°53.8	50.3	315°17.0	11.1	33°54.9	30.2						
15	43°22.9	42°58.7	•• 29.0	290°55.6	•• 50.2	330°19.1	•• 11.1	48°57.0	•• 30.1						
16	58°25.4	58°02.5	28.3	305°57.4	50.0	345°21.2	11.2	63°59.2	30.0						
17	73°27.9	73°06.4	27.6	320°59.2	49.8	0°23.4	11.2	79°01.4	29.9						
18	88°30.3	88°10.3	N09°26.9	336°01.0	N24°49.7	15°25.5	N22°11.3	94°03.6	S04°29.7						
19	103°32.8	103°14.1	26.2	351°02.8	49.5	30°27.6	11.3	109°05.8	29.6						
20	118°35.3	118°18.0	25.5	6°04.5	49.3	45°29.7	11.4	124°07.9	29.5						
21	133°37.7	133°21.8	•• 24.8	21°06.3	•• 49.2	60°31.8	•• 11.4	139°10.1	•• 29.4						
22	148°40.2	148°25.7	24.1	36°08.1	49.0	75°33.9	11.4	154°12.3	29.3						
23	163°42.7	163°29.5	23.4	51°09.9	48.9	90°36.0	11.5	169°14.5	29.1						
Mer.pass.:12:07			v3.9 d-0.7 m-3.8			v1.8 d-0.2 m0.2			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	178°45.1	178°33.4	N09°22.7	66°11.7	N24°48.7	105°38.1	N22°11.5	184°16.7	S04°29.0					
1	193°47.6	193°37.3	22.0	81°13.5	48.5	120°40.3	11.6	199°18.8	28.9					
2	208°50.1	208°41.1	21.3	96°15.3	48.4	135°42.4	11.6	214°21.0	28.8					
3	223°52.5	223°45.0	•• 20.6	111°17.1	•• 48.2	150°44.5	•• 11.7	229°23.2	•• 28.7					
4	238°55.0	238°48.8	19.9	126°18.9	48.0	165°46.6	11.7	244°25.4	28.6					
5	253°57.4	253°52.7	19.1	141°20.7	47.9	180°48.7	11.8	259°27.6	28.4					
6	268°59.9	268°56.5	N09°18.4	156°22.5	N24°47.7	195°50.8	N22°11.8	274°29.8	S04°28.3					
7	284°02.4	284°00.4	17.7	171°24.3	47.5	210°52.9	11.8	289°31.9	28.2					
8	299°04.8	299°04.2	17.0	186°26.0	47.4	225°55.0	11.9	304°34.1	28.1					
9	314°07.3	314°08.1	•• 16.3	201°27.8	•• 47.2	240°57.2	•• 11.9	319°36.3	•• 28.0					
10	329°09.8	329°12.0	15.5	216°29.6	47.0	255°59.3	12.0	334°38.5	27.8					
11	344°12.2	344°15.8	14.8	231°31.4	46.9	271°01.4	12.0	349°40.7	27.7					
12	359°14.7	359°19.7	N09°14.1	246°33.2	N24°46.7	286°03.5	N22°12.1	4°42.8	S04°27.6					
13	14°17.2	14°23.5	13.4	261°35.0	46.5	301°05.6	12.1	19°45.0	27.5					
14	29°19.6	29°27.4	12.6	276°36.7	46.4	316°07.7	12.2	34°47.2	27.4					
15	44°22.1	44°31.2	•• 11.9	291°38.5	•• 46.2	331°09.8	•• 12.2	49°49.4	•• 27.2					
16	59°24.6	59°35.1	11.2	306°40.3	46.0	346°11.9	12.3	64°51.6	27.1					
17	74°27.0	74°38.9	10.4	321°42.1	45.9	1°14.0	12.3	79°53.7	27.0					
18	89°29.5	89°42.8	N09°09.7	336°43.9	N24°45.7	16°16.1	N22°12.3	94°55.9	S04°26.9					
19	104°31.9	104°46.6	09.0	351°45.6	45.5	31°18.2	12.4	109°58.1	26.8					
20	119°34.4	119°50.5	08.2	6°47.4	45.4	46°20.3	12.4	125°00.3	26.6					
21	134°36.9	134°54.3	•• 07.5	21°49.2	•• 45.2	61°22.5	•• 12.5	140°02.5	•• 26.5					
22	149°39.3	149°58.2	06.8	36°51.0	45.0	76°24.6	12.5	155°04.6	26.4					
23	164°41.8	165°02.1	06.0	51°52.7	44.9	91°26.7	12.6	170°06.8	26.3					
Mer.pass.:12:03			v3.9 d-0.7 m-3.8			v1.8 d-0.2 m0.2			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2		

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	179°44.3	180°05.9	N09°05.3	66°54.5	N24°44.7	106°28.8	N22°12.6	185°09.0	S04°26.2					
1	194°46.7	195°09.8		04.5	81°56.3	44.5	121°30.9	12.7	200°11.2	26.1				
2	209°49.2	210°13.6		03.8	96°58.1	44.4	136°33.0	12.7	215°13.4	25.9				
3	224°51.7	225°17.5	•• 03.0	111°59.8	•• 44.2	151°35.1	•• 12.7	230°15.5	•• 25.8					
4	239°54.1	240°21.3		02.3	127°01.6	44.0	166°37.2	12.8	245°17.7	25.7				
5	254°56.6	255°25.2		01.5	142°03.4	43.9	181°39.3	12.8	260°19.9	25.6				
6	269°59.0	270°29.0	N09°00.8	157°05.1	N24°43.7	196°41.4	N22°12.9	275°22.1	S04°25.5					
7	285°01.5	285°32.9		09.0	172°06.9	43.5	211°43.5	12.9	290°24.3	25.3				
8	300°04.0	300°36.7		08°59.2	187°08.7	43.4	226°45.6	13.0	305°26.5	25.2				
9	315°06.4	315°40.5	•• 58.5	202°10.4	•• 43.2	241°47.7	•• 13.0	320°28.6	•• 25.1					
10	330°08.9	330°44.4		57.7	217°12.2	43.0	256°49.8	13.1	335°30.8	25.0				
11	345°11.4	345°48.2		57.0	232°14.0	42.8	271°51.9	13.1	350°33.0	24.9				
12	0°13.8	0°52.1	N08°56.2	247°15.7	N24°42.7	286°54.0	N22°13.2	5°35.2	S04°24.7					
13	15°16.3	15°55.9		55.4	262°17.5	42.5	301°56.1	13.2	20°37.4	24.6				
14	30°18.8	30°59.8		54.7	277°19.2	42.3	316°58.2	13.2	35°39.5	24.5				
15	45°21.2	46°03.6	•• 53.9	292°21.0	•• 42.2	332°00.3	•• 13.3	50°41.7	•• 24.4					
16	60°23.7	61°07.5		53.1	307°22.8	42.0	347°02.4	13.3	65°43.9	24.3				
17	75°26.2	76°11.3		52.3	322°24.5	41.8	2°04.5	13.4	80°46.1	24.1				
18	90°28.6	91°15.1	N08°51.6	337°26.3	N24°41.7	17°06.7	N22°13.4	95°48.3	S04°20.4					
19	105°31.1	106°19.0		50.8	352°28.0	41.5	32°08.8	13.5	110°50.4	23.9				
20	120°33.5	121°22.8		50.0	7°29.8	41.3	47°10.9	13.5	125°52.6	23.8				
21	135°36.0	136°26.7	•• 49.2	22°31.6	•• 41.1	62°13.0	•• 13.6	140°54.8	•• 23.7					
22	150°38.5	151°30.5		48.5	37°33.3	41.0	77°15.1	13.6	155°57.0	23.6				
23	165°40.9	166°34.3		47.7	52°35.1	40.8	92°17.2	13.7	170°59.2	23.4				
Mer.pass.:11:59			v3.9 d-0.7 m-3.8			v1.8 d-0.2 m0.2			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2		

SHA	Dec
Alpheratz	357°35.0 29°13.7
Ankaa	353°07.4 -42°10.2
Schedar	349°31.5 56°40.5
Diphda	348°47.5 -17°51.0
Achernar	335°20.6 -57°06.7
Hamal	327°51.3 23°34.9
Polaris	314°18.3 89°22.4
Acamar	315°11.9 -40°12.4
Menkar	314°06.2 4°11.2
Mirfak	308°28.4 49°57.2
Aldebaran	290°39.6 16°33.6
Rigel	281°03.8 -8°10.5
Capella	280°21.7 46°01.5
Bellatrix	278°22.8 6°22.3
Elmath	278°01.7 28°37.8
Anilam	275°37.6 -1°11.3
Betelgeuse	270°51.9 7°24.6
Canopus	263°52.3 -52°42.8
Sirius	258°26.0 -16°45.2
Adhara	255°05.7 -29°00.6
Procyon	244°50.5 5°09.5
Pollux	243°17.0 27°57.9
Avior	234°14.4 -59°35.6
Suhail	222°45.9 -43°32.3
Miaplacidus	221°37.6 -69°49.4
Alphard	217°47.4 -8°46.2
Regulus	207°34.0 11°50.5
Dubhe	193°40.1 61°36.9
Denebola	182°24.5 14°25.7
Gienah	175°43.1 -17°41.0
Acrux	172°59.3 -63°14.4
Gacrux	171°50.9 -57°15.3
Alioth	166°12.2 55°49.2
Spica	158°21.8 -11°17.7
Alkaid	152°51.4 49°11.0
Hadar	148°35.3 -60°29.6
Menkent	147°57.1 -36°29.7
Arcturus	145°47.5 19°02.8
Rigel Kent	139°39.6 -60°56.3
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Sabik	102°02.5 -15°45.4
Shaula	96°10.1 -37°07.3
Rasalhague	95°58.4 12°32.3
Eltanin	90°42.1 51°28.7
Kaus Aust.	83°32.3 -34°22.3
Vega	80°33.2 38°48.1
Nunki	75°47.6 -26°15.9
Altair	62°00.0 8°55.9
Peacock	53°05.8 -56°39.1
Deneb	49°26.0 45°21.9
Enif	33°38.9 9°59.3
Al Na'ir	27°33.1 -46°50.3
Fomalhaut	15°14.7 -29°29.4
Scheat	13°45.4 28°13.0
Markab	13°30.1 15°20.3

	Aries			Venus			Mars			Jupiter			Saturn		
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	180°43.4	181°38.2	N08°46.9	67°36.8	N24°40.6	107°19.3	N22°13.7	186°01.3	S04°23.3						
1	195°45.9	196°42.0	46.1	82°38.6	40.5	122°21.4	13.7	201°03.5	23.2						
2	210°48.3	211°45.9	45.3	97°40.3	40.3	137°23.5	13.8	216°05.7	23.1						
3	225°50.8	226°49.7	•• 44.5	112°42.1	•• 40.1	152°25.6	•• 13.8	231°07.9	•• 23.0						
4	240°53.3	241°53.5	43.7	127°43.8	39.9	167°27.7	13.9	246°10.1	22.8						
5	255°55.7	256°57.4	43.0	142°45.6	39.8	182°29.8	13.9	261°12.3	22.7						
6	270°58.2	272°01.2	N08°42.2	157°47.3	N24°39.6	197°31.9	N22°14.0	276°14.4	S04°22.6						
7	286°00.7	287°05.0	41.4	172°49.1	39.4	212°34.0	14.0	291°16.6	22.5						
8	301°03.1	302°08.9	40.6	187°50.8	39.3	227°36.1	14.1	306°18.8	22.4						
9	316°05.6	317°12.7	•• 39.8	202°52.6	•• 39.1	242°38.1	•• 14.1	321°21.0	•• 22.2						
10	331°08.0	332°16.5	39.0	217°54.3	38.9	257°40.2	14.2	336°23.2	22.1						
11	346°10.5	347°20.3	38.2	232°56.1	38.7	272°42.3	14.2	351°25.3	22.0						
12	1°13.0	2°24.2	N08°37.4	247°57.8	N24°38.6	287°44.4	N22°14.2	6°27.5	S04°21.9						
13	16°15.4	17°28.0	36.6	262°59.5	38.4	302°46.5	14.3	21°29.7	21.8						
14	31°17.9	32°31.8	35.8	278°01.3	38.2	317°48.6	14.3	36°31.9	21.7						
15	46°20.4	47°35.7	•• 35.0	293°03.0	•• 38.0	332°50.7	•• 14.4	51°34.1	•• 21.5						
16	61°22.8	62°39.5	34.2	308°04.8	37.9	347°52.8	14.4	66°36.2	21.4						
17	76°25.3	77°43.3	33.4	323°06.5	37.7	2°54.9	14.5	81°38.4	21.3						
18	91°27.8	92°47.1	N08°32.6	338°08.2	N24°37.5	17°57.0	N22°14.5	96°40.6	S04°21.2						
19	106°30.7	107°50.9	31.7	353°10.0	37.3	32°59.1	14.6	111°42.8	21.1						
20	121°32.7	122°54.8	30.9	8°11.7	37.2	48°01.2	14.6	126°45.0	20.9						
21	136°35.2	137°58.6	•• 30.1	23°13.5	•• 37.0	63°03.3	•• 14.7	141°47.2	•• 20.8						
22	151°37.6	153°02.4	29.3	38°15.2	36.8	78°05.4	14.7	156°49.3	20.7						
23	166°40.1	168°06.2	28.5	53°16.9	36.7	93°07.5	14.7	171°51.5	20.6						
Mer.pass.:11:55			v3.8 d-0.8 m-3.8			v1.8 d-0.2 m0.3			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	181°42.5	183°10.0	N08°27.7	68°18.7	N24°36.5	108°09.6	N22°14.8	186°53.7	S04°20.5					
1	196°45.0	198°13.8	26.9	83°20.4	36.3	123°11.7	14.8	201°55.9	20.3					
2	211°47.5	213°17.6	26.0	98°22.1	36.1	138°13.8	14.9	216°58.1	20.2					
3	226°49.9	228°21.5	•• 25.2	113°23.9	•• 36.0	153°15.9	•• 14.9	232°00.2	•• 20.1					
4	241°52.4	243°25.3	24.4	128°25.6	35.8	168°18.0	15.0	247°02.4	20.0					
5	256°54.9	258°29.1	23.6	143°27.3	35.6	183°20.1	15.0	262°04.6	19.9					
6	271°57.3	273°32.9	N08°22.8	158°29.0	N24°35.4	198°22.1	N22°15.1	277°06.8	S04°19.8					
7	286°59.8	288°36.7	21.9	173°30.8	35.2	213°24.2	15.1	292°09.0	19.6					
8	302°02.3	303°40.5	21.1	188°32.5	35.1	228°26.3	15.2	307°11.2	19.5					
9	317°04.7	318°44.3	•• 20.3	203°34.2	•• 34.9	243°28.4	•• 15.2	322°13.3	•• 19.4					
10	332°07.2	333°48.1	19.5	218°36.0	34.7	258°30.5	15.3	337°15.5	19.3					
11	347°09.6	348°51.9	18.6	233°37.7	34.5	273°32.6	15.3	352°17.7	19.2					
12	2°12.1	3°55.7	N08°17.8	248°39.4	N24°34.4	288°34.7	N22°15.3	7°19.9	S04°19.0					
13	17°14.6	18°59.5	17.0	263°41.1	34.2	303°36.8	15.4	22°22.1	18.9					
14	32°17.0	34°03.3	16.1	278°42.9	34.0	318°38.9	15.4	37°24.2	18.8					
15	47°19.5	49°07.1	•• 15.3	293°44.6	•• 33.8	333°41.0	•• 15.5	52°26.4	•• 18.7					
16	62°22.0	64°10.7	14.5	308°46.3	33.7	348°43.1	15.5	67°28.6	18.6					
17	77°24.4	79°14.7	13.6	323°48.0	33.5	3°45.2	15.6	82°30.8	18.5					
18	92°26.9	94°18.5	N08°12.8	338°49.7	N24°33.3	18°47.2	N22°15.6	97°33.0	S04°18.3					
19	107°29.4	109°22.3	12.0	353°51.5	33.1	33°49.3	15.7	112°35.2	18.2					
20	122°31.8	124°26.1	11.1	8°53.2	32.9	48°51.4	15.7	127°37.3	18.1					
21	137°34.3	139°29.8	•• 10.3	23°54.9	•• 32.8	63°53.5	•• 15.8	142°39.5	•• 18.0					
22	152°36.8	154°33.6	09.4	38°56.6	32.6	78°55.6	15.8	157°41.7	17.9					
23	167°39.2	169°37.4	08.6	53°58.3	32.4	93°57.7	15.8	172°43.9	17.7					
Mer.pass.:11:51			v3.8 d-0.8 m-3.8			v1.7 d-0.2 m0.3			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2		

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	182°41.7	184°41.2	N08°07.8	69°00.0	N24°32.2	108°59.8	N22°15.9	187°46.1	S04°17.6					
1	197°44.1	199°45.0	06.9	84°01.8	32.1	124°01.9	15.9	202°48.2	17.5					
2	212°46.6	214°48.8	06.1	99°03.5	31.9	139°04.0	16.0	217°50.4	17.4					
3	227°49.1	229°52.5	•• 05.2	114°05.2	•• 31.7	154°06.0	•• 16.0	232°52.6	•• 17.3					
4	242°51.4	244°56.3	04.4	129°06.9	31.5	169°08.1	16.1	247°54.8	17.2					
5	257°54.0	260°00.1	03.5	144°08.6	31.3	184°10.2	16.1	262°57.0	17.0					
6	272°56.5	275°03.9	N08°02.7	159°10.3	N24°31.2	199°12.3	N22°16.2	277°59.2	S04°16.9					
7	287°58.9	290°07.6	01.8	174°12.0	31.0	214°14.4	16.2	293°01.3	16.8					
8	303°01.4	305°11.4	01.0	189°13.7	30.8	229°16.5	16.3	308°03.5	16.7					
9	318°03.3	320°15.2	08°00.1	204°15.5	•• 30.6	244°18.6	•• 16.3	323°05.7	•• 16.6					
10	333°06.3	335°18.9	07°59.3	219°17.2	30.4	259°20.6	16.4	338°07.9	16.4					
11	348°08.8	350°22.7	58.4	234°18.9	30.3	274°22.7	16.4	353°10.1	16.3					
12	3°11.3	5°26.5	N07°57.6	249°20.6	N24°30.1	289°24.8	N22°16.4	8°12.3	S04°16.2					
13	18°13.7	20°30.2	56.7	264°22.3	29.9	304°26.9	16.5	23°14.4	16.1					
14	33°16.2	35°34.0	55.9	279°24.0	29.7	319°29.0	16.5	38°16.6	16.0					
15	48°18.6	50°37.7	•• 55.0	294°25.7	•• 29.5	334°31.1	•• 16.6	53°18.8	•• 15.9					
16	63°21.1	65°41.5	54.2	309°27.4	29.4	349°33.2	16.6	68°21.0	15.7					
17	78°23.6	80°45.3	53.3	324°29.1	29.2	4°35.2	16.7	83°23.2	15.6					
18	93°26.0	95°49.0	N07°52.4	339°30.8	N24°29.9	19°37.3	N22°16.7	98°25.3	S04°15.5					
19	108°28.5	110°52.8	51.6	354°32.5	28.8	34°39.4	16.8	113°27.5	15.4					
20	123°31.0	125°56.5	50.7	9°34.2	28.6	49°41.5	16.8	128°29.7	15.3					
21	138°33.4	141°00.3	•• 49.9	24°35.9	•• 28.5	64°43.6	•• 16.9	143°31.9	•• 15.1					
22	153°35.9	156°04.0	49.0	39°37.6	28.3	79°45.7	16.9	158°34.1	15.0					
23	168°38.4	171°07.7	48.1	54°39.3	28.1	94°47.7	17.0	173°36.3	14.9					
Mer.pass.:11:47			v3.8 d-0.8 m-3.8			v1.7 d-0.2 m0.3			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2		

SHA	Dec
Alperatz	357°35.0 29°13.7
Ankaa	353°07.4 -42°10.2
Schedar	349°31.5 56°40.5
Diphda	348°47.4 -17°51.0
Achernar	335°20.6 -57°06.7
Hamal	327°51.3 23°34.9
Polaris	314°19.1 89°22.4
Acamar	315°11.9 -40°12.4
Menkar	314°06.2 4°11.2
Mirfak	308°28.4 49°57.1
Aldebaran	290°39.6 16°33.6
Rigel	281°03.8 -8°10.5
Capella	280°21.8 46°01.5
Bellatrix	278°22.8 6°22.3
Elnath	278°01.7 28°37.8
Anilam	275°37.6 -1°11.2
Betelgeuse	270°51.9 7°24.6
Canopus	263°52.3 -52°42.8
Sirius	258°26.1 -16°45.2
Adhara	255°05.7 -29°00.6
Procyon	244°50.5 5°09.5
Pollux	243°17.0 27°57.9
Avior	234°14.4 -59°35.6
Shuhail	222°45.9 -43°32.3
Miaplacidus	221°37.7 -69°49.4
Alphard	217°47.4 -8°46.2
Regulus	207°34.0 11°50.5
Dubhe	193°40.1 61°36.9
Denebola	182°24.5 14°25.7
Gienah	175°43.1 -17°41.1
Acrux	172°59.3 66°14.4
Gacrux	171°50.9 -57°15.3
Alioth	166°12.2 55°49.2
Spica	158°21.8 -11°17.7
Alkaid	152°51.4 49°11.0
Hadar	148°35.3 -60°29.6
Menkent	147°57.1 -36°29.7
Arcturus	145°47.5 19°02.8
Rigel Kent	139°39.6 -60°56.3
Kochab	137°18.8 74°02.8
Zuben'ubi	136°55.6 -16°08.9
Alphecca	126°03.4 26°37.5
Antares	112°15.5 -26°29.3
Atria	107°09.4 -69°04.1
Sabik	102°02.5 -15°45.4
Shaula	96°10.1 -37°07.3
Rasalhague	95°58.3 12°32.3
Eltanin	90°42.1 51°28.7
Kaus Aug.	83°32.3 34°22.3
Vega	80°33.2 38°48.1
Nunki	75°47.6 -26°15.9
Altair	61°59.8 8°55.9
Peacock	53°05.7 -56°39.1
Deneb	49°26.0 45°21.9
Enif	33°38.9 9°59.3
Al Nair	27°33.1 -46°50.3
Fomalhaut	15°14.7 -29°29.4
Scheat	13°45.4 28°13.0
Markab	13°30.1 15°20.3

SHA	Mer.pass
Venus	0°54.8 11:50
Mars	246°53.4 19:27
Jupiter	286°35.9 16:48
Saturn	5°17.9 11:34
SHA	Mer.pass
Venus	1°27.5 11:44
Mars	246°36.1 19:25
Jupiter	286°27.1 16:45
Saturn	5°11.2 11:31
SHA	Mer.pass
Venus	1°59.5 11:38
Mars	246°18.4 19:22
Jupiter	286°18.1 16:42
Saturn	5°04.4 11:27

	Aries			Venus			Mars			Jupiter			Saturn		
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	183°40.8	186°11.5	N07°47.3	69°41.0	N24°27.9	109°49.8	N22°17.0	188°38.4	S04°14.8						
1	198°43.3	201°15.2	46.4	84°42.7	27.7	124°51.9	17.0	203°40.6	14.7						
2	213°45.7	216°19.0	45.5	99°44.4	27.5	139°54.0	17.1	218°42.8	14.6						
3	228°48.2	231°22.7	•• 44.7	114°46.1	•• 27.4	154°56.1	•• 17.1	233°45.0	•• 14.4						
4	243°50.7	246°26.4	43.8	129°47.8	27.2	169°58.1	17.2	248°47.2	14.3						
5	258°53.1	261°30.2	42.9	144°49.5	27.0	185°00.2	17.2	263°49.4	14.2						
6	273°55.6	276°33.9	N07°42.1	159°51.2	N24°26.8	200°02.3	N22°17.3	278°51.5	S04°14.1						
7	288°58.1	291°37.6	41.2	174°52.9	26.6	215°04.4	17.3	293°53.7	14.0						
8	304°00.5	306°41.3	40.3	189°54.5	26.4	230°06.5	17.4	308°55.9	13.9						
9	319°03.0	321°45.1	•• 39.4	204°56.2	•• 26.3	245°08.5	•• 17.4	323°58.1	•• 13.7						
10	334°05.5	336°48.8	38.6	219°57.9	26.1	260°10.6	17.5	339°00.3	13.6						
11	349°07.9	351°52.5	37.7	234°59.6	25.9	275°12.7	17.5	354°02.5	13.5						
12	4°10.4	6°56.2	N07°36.8	250°01.3	N24°25.7	290°14.8	N22°17.6	9°04.6	S04°13.4						
13	19°12.9	22°00.0	36.0	265°03.0	25.5	305°16.9	17.6	24°06.8	13.3						
14	34°15.3	37°03.7	35.1	280°04.7	25.3	320°18.9	17.6	39°09.0	13.1						
15	49°17.8	52°07.4	•• 34.2	295°06.4	•• 25.2	335°21.0	•• 17.7	54°11.2	•• 13.0						
16	64°20.2	67°11.1	33.3	310°08.0	25.0	350°23.1	17.7	69°13.4	12.9						
17	79°22.7	82°14.8	32.5	325°09.7	24.8	5°25.2	17.8	84°15.5	12.8						
18	94°25.2	97°18.5	N07°31.6	340°11.4	N24°24.6	20°27.3	N22°17.8	99°17.7	S04°12.7						
19	109°27.6	112°22.2	30.7	355°13.1	24.4	35°29.3	17.9	114°19.9	12.6						
20	124°30.1	127°25.9	29.8	10°14.8	24.2	50°31.4	17.9	129°22.1	12.4						
21	139°32.6	142°29.6	•• 28.9	25°16.5	•• 24.1	65°33.5	•• 18.0	144°24.3	•• 12.3						
22	154°35.0	157°33.3	28.1	40°18.1	23.9	80°35.6	18.0	159°26.5	12.2						
23	169°37.5	172°37.0	27.2	55°19.8	23.7	95°37.6	18.1	174°28.6	12.1						
Mer.pass.:11:43			v3.7 d-0.9 m-3.9			v1.7 d-0.2 m0.3			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2			

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	184°40.0	187°40.7	N07°26.3	70°21.5	N24°23.5	110°39.7	N22°18.1	189°30.8	S04°12.0
1	199°42.4	202°44.4	25.4	85°23.2	23.3	125°41.8	18.2	204°33.0	11.9
2	214°44.9	217°48.1	24.5	100°24.9	23.1	140°43.9	18.2	219°35.2	11.7
3	229°47.4	232°51.8	•• 23.7	115°26.5	•• 22.9	155°45.9	•• 18.2	234°37.4	•• 11.6
4	244°49.8	247°55.4	22.8	130°28.2	22.8	170°48.0	18.3	249°39.6	11.5
5	259°52.3	262°59.1	21.9	145°29.9	22.6	185°50.1	18.3	264°41.7	11.4
6	274°54.7	278°02.8	N07°21.0	160°31.6	N24°22.4	200°52.2	N22°18.4	279°43.9	S04°11.3
7	289°57.2	293°06.5	20.1	175°33.2	22.2	215°54.2	18.4	294°46.1	11.1
8	304°59.7	308°10.2	19.2	190°34.9	22.0	230°56.3	18.5	309°48.3	11.0
9	320°02.1	323°13.8	•• 18.3	205°36.6	•• 21.8	245°58.4	•• 18.5	324°50.5	•• 10.9
10	335°04.6	338°17.5	17.5	220°38.3	21.6	261°00.5	18.6	339°52.7	10.8
11	350°07.1	353°21.2	16.6	235°39.9	21.4	276°02.5	18.6	354°54.8	10.7
12	5°09.5	8°24.8	N07°15.7	250°41.6	N24°21.3	291°04.6	N22°18.7	9°57.0	S04°10.6
13	20°12.0	23°28.5	14.8	265°43.3	21.1	306°06.7	18.7	24°59.2	10.4
14	35°14.5	38°32.2	13.9	280°44.9	20.9	321°08.8	18.8	40°01.4	10.3
15	50°16.9	53°35.8	•• 13.0	295°46.6	•• 20.7	336°10.8	•• 18.8	55°03.6	•• 10.2
16	65°19.4	68°39.5	12.1	310°48.3	20.5	351°12.9	18.9	70°05.8	10.1
17	80°21.8	83°43.1	11.2	325°49.9	20.3	6°15.0	18.9	85°07.9	10.0
18	95°24.3	98°46.8	N07°10.4	340°51.6	N24°20.1	21°17.1	N22°18.9	100°10.1	S04°09.9
19	110°26.8	113°50.4	09.5	355°53.3	19.9	36°19.1	19.0	115°12.3	09.7
20	125°29.2	128°54.1	08.6	10°54.9	19.8	51°21.2	19.0	130°14.5	09.6
21	140°31.7	143°57.7	•• 07.7	25°56.6	•• 19.6	66°23.3	•• 19.1	145°16.7	•• 09.5
22	155°34.2	159°01.4	06.8	40°58.3	19.4	81°25.3	19.1	160°18.9	09.4
23	170°36.6	174°05.0	05.9	55°59.9	19.2	96°27.4	19.2	175°21.0	09.3

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	185°39.1	189°08.6	N07°05.0	71°01.6	N24°19.0	111°29.5	N22°19.2	190°23.2	S04°09.2					
1	200°41.6	204°12.3	04.1	86°03.3	18.8	126°31.6	19.3	205°25.4	09.0					
2	215°44.0	219°15.9	03.2	101°04.9	18.6	141°33.6	19.3	220°27.6	08.9					
3	230°46.5	234°19.5	•• 02.3	116°06.6	•• 18.4	156°35.7	•• 19.4	235°29.8	•• 08.8					
4	245°49.0	249°23.2	01.4	131°08.2	18.2	171°37.8	19.4	250°32.0	08.7					
5	260°51.4	264°26.8	07°00.5	146°09.9	18.0	186°39.8	19.5	265°34.2	08.6					
6	275°53.9	279°30.4	N06°59.7	161°11.5	N24°17.9	201°41.9	N22°19.5	280°36.3	S04°08.5					
7	290°56.3	294°34.0	58.8	176°13.2	17.7	216°44.0	19.5	295°38.5	08.3					
8	305°58.8	309°37.6	57.9	191°14.9	17.5	231°46.0	19.6	310°40.7	08.2					
9	321°01.3	324°41.3	•• 57.0	206°16.5	•• 17.3	246°48.1	•• 19.6	325°42.9	•• 08.1					
10	336°03.7	339°44.9	56.1	221°18.2	17.1	261°50.2	19.7	340°45.1	08.0					
11	351°06.2	354°48.5	55.2	236°18.9	16.9	276°52.2	19.7	355°47.3	07.9					
12	6°08.7	9°52.1	N06°54.3	251°21.5	N24°16.7	291°54.3	N22°19.8	10°49.4	S04°07.7					
13	21°11.1	24°55.7	53.4	266°23.1	16.5	306°56.4	19.8	25°51.6	07.6					
14	36°13.6	39°59.3	52.5	281°24.8	16.3	321°58.4	19.9	40°53.8	07.5					
15	51°16.1	55°02.9	•• 51.6	296°26.4	•• 16.1	337°00.5	•• 19.9	55°56.0	•• 07.4					
16	66°18.5	70°06.5	50.7	311°28.1	15.9	352°02.6	20.0	70°58.2	07.3					
17	81°21.0	85°10.1	49.8	326°29.7	15.8	7°04.6	20.0	86°00.4	07.2					
18	96°23.4	100°13.7	N06°48.9	341°31.4	N24°15.6	22°06.7	N22°20.1	101°02.5	S04°07.0					
19	111°25.9	115°17.3	48.0	356°33.0	15.4	37°08.8	20.1	116°04.7	06.9					
20	126°28.4	130°20.8	47.1	1°34.7	15.2	52°10.8	20.2	131°06.9	06.8					
21	141°30.8	145°24.4	•• 46.2	26°36.3	•• 15.0	67°12.9	•• 20.2	146°09.1	•• 06.7					
22	156°33.3	160°28.0	45.3	41°38.0	14.8	82°15.0	20.2	161°11.3	06.6					
23	171°35.8	175°31.6	44.4	56°39.6	14.6	97°17.0	20.3	176°13.5	06.5					
Mer.pass.:11:35			v3.6 d-0.9 m-4.0			v1.7 d-0.2 m0.4			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2		

Stars		
SHA	Dec	
Alphertz	357°35.0	29°13.7
Ankaa	353°07.4	-42°10.2
Schedar	349°31.5	56°40.5
Diphda	348°47.4	-17°51.0
Achernar	335°20.6	-57°06.6
Hamal	327°51.3	23°34.9
Polaris	314°20.2	89°22.4
Acamar	315°11.9	-40°12.4
Menkar	314°06.2	4°11.2
Mirfak	308°28.4	49°57.1
Aldebaran	290°39.6	16°33.6
Rigel	281°03.8	-8°10.5
Capella	280°21.8	46°01.5
Bellatrix	278°22.8	6°22.3
Elnath	278°01.7	28°37.8
Anilam	275°37.6	-1°11.2
Betelgeuse	270°51.9	7°24.6
Canopus	263°52.3	-52°42.8
Sirius	258°26.1	-16°45.2
Adhara	255°05.7	-29°00.6
Procyon	244°50.6	5°09.5
Pollux	243°17.0	27°58.0
Avior	234°14.4	-59°35.7
Suhail	222°45.9	-43°32.3
Miaplacidus	221°37.7	-69°49.4
Alphard	217°47.4	-8°46.2
Regulus	207°34.0	11°50.5
Dubhe	193°40.1	61°36.9
Denebola	182°24.4	14°25.7
Gienah	175°43.1	-17°41.1
Acrux	172°59.3	-63°14.4
Gacrux	171°50.9	-57°15.3
Alioth	166°12.2	55°49.2
Spica	158°21.8	-11°17.7
Alkaid	152°51.4	49°11.0
Hadar	148°35.2	-60°29.6
Menkent	147°57.1	-36°29.7
Arcturus	145°47.5	19°02.8
Rigel Kent.	139°39.6	-60°56.3
Kochab	137°18.8	74°02.8
Zuben'ubi	136°55.6	-16°08.9
Alphecca	126°03.3	26°37.5
Antares	112°15.5	-26°29.3
Atria	107°09.4	-69°04.1
Sabik	102°02.5	-15°45.4
Shaula	96°10.0	-37°07.3
Rasalhague	95°58.3	12°32.2
Eltanin	90°42.0	51°28.7
Kaus Aug.	83°32.3	-34°22.3
Vega	80°33.1	38°48.0
Nunki	75°47.6	-26°15.9
Altair	61°59.9	8°55.9
Peacock	53°05.7	-56°39.1
Deneb	49°26.0	45°21.9
Enif	33°38.9	9°59.3
Al Na'ir	27°33.0	-46°50.3
Fomalhaut	15°14.6	-29°29.4
Scheat	13°45.4	28°13.0
Markab	13°30.0	15°20.3

Mar 26 Wed		
SHA	Mer.pass	
Venus	2°30.7	11:32
Mars	246°00.2	19:

Aries			Venus			Mars			Jupiter			Saturn		
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	186°38.2	190°35.1	N06°43.5	71°41.3	N24°14.4	112°19.1	N22°20.3	191°15.7	S04°06.3					
1	201°40.7	205°38.7	42.6	86°42.9	14.2	127°21.2	20.4	206°17.8	06.2					
2	216°43.2	220°42.3	41.7	101°44.6	14.0	142°23.2	20.4	221°20.0	06.1					
3	231°45.6	235°45.9	•• 40.8	116°46.2	•• 13.8	157°25.3	•• 20.5	236°22.2	•• 06.0					
4	246°48.1	250°49.4	39.9	131°47.8	13.6	172°27.4	20.5	251°24.4	05.9					
5	261°50.6	265°53.0	39.0	146°49.5	13.4	187°29.4	20.6	266°26.6	05.8					
6	276°53.0	280°56.5	N06°38.1	161°51.1	N24°13.2	202°31.5	N22°20.6	281°28.8	S04°05.6					
7	291°55.5	296°00.1	37.2	176°52.8	13.0	217°33.6	20.7	296°30.9	05.5					
8	306°57.9	311°03.6	36.3	191°54.4	12.9	232°35.6	20.7	311°33.1	05.4					
9	322°00.4	326°07.2	•• 35.4	206°56.0	•• 12.7	247°37.7	•• 20.8	326°35.3	•• 05.3					
10	337°02.9	341°10.7	34.5	221°57.7	12.5	262°39.7	20.8	341°37.5	05.2					
11	352°05.3	356°14.3	33.6	236°59.3	12.3	277°41.8	20.9	356°39.7	05.1					
12	7°07.8	11°17.8	N06°32.8	252°00.9	N24°12.1	292°43.9	N22°20.9	11°41.9	S04°04.9					
13	22°10.3	26°21.4	31.9	267°02.6	11.9	307°45.9	20.9	26°44.1	04.8					
14	37°12.7	41°24.9	31.0	282°04.2	11.7	322°48.0	21.0	41°46.2	04.7					
15	52°15.2	56°28.4	•• 30.1	297°05.9	•• 11.5	337°50.1	•• 21.0	56°48.4	•• 04.6					
16	67°17.7	71°31.9	29.2	312°07.5	11.3	352°52.1	21.1	71°50.6	04.5					
17	82°20.1	86°35.5	28.3	327°09.1	11.1	7°54.2	21.1	86°52.8	04.4					
18	97°22.6	101°39.0	N06°27.4	342°10.8	N24°10.9	22°56.2	N22°21.2	101°55.0	S04°04.2					
19	112°25.0	116°42.5	26.5	357°12.4	10.7	37°58.3	21.2	116°57.2	04.1					
20	127°27.5	131°46.0	25.6	12°14.0	0.5	53°00.4	21.3	131°59.3	04.0					
21	142°30.0	146°49.5	•• 24.7	27°15.6	•• 10.3	68°02.4	•• 21.3	147°01.5	•• 03.9					
22	157°32.4	161°53.1	23.8	42°17.3	10.1	83°04.5	21.4	162°03.7	03.8					
23	172°34.9	176°56.6	22.9	57°18.9	09.9	98°06.5	21.4	177°05.9	03.7					
Mer.pass.:11:32			v3.6 d-0.9 m-4.0			v1.6 d-0.2 m0.4			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	187°37.4	192°00.1	N06°22.0	72°20.5	N24°09.7	113°08.6	N22°21.5	192°08.1	S04°03.5					
1	202°39.8	207°03.6	21.1	87°22.2	09.5	128°10.7	21.5	207°10.3	03.4					
2	217°42.3	222°07.1	20.2	102°23.8	09.3	143°12.7	21.6	222°12.5	03.3					
3	232°44.8	237°10.6	•• 19.3	117°25.4	•• 09.1	158°14.8	•• 21.6	237°14.6	•• 03.2					
4	247°47.2	252°14.1	18.4	132°27.0	08.9	173°16.8	21.6	252°16.8	03.1					
5	262°49.7	267°17.5	17.5	147°28.7	08.7	188°18.9	21.7	267°19.0	03.0					
6	277°52.2	282°21.0	N06°16.6	162°30.3	N24°08.5	203°20.9	N22°21.7	282°21.2	S04°02.9					
7	292°54.6	297°24.5	15.7	177°31.9	08.3	218°23.0	21.8	297°23.4	02.7					
8	307°57.1	312°28.0	14.8	192°33.5	08.1	233°25.1	21.8	312°25.6	02.6					
9	322°59.5	327°31.5	•• 13.9	207°35.2	•• 07.9	248°27.1	•• 21.9	327°27.8	•• 02.5					
10	338°02.0	342°34.9	13.0	222°36.8	07.7	263°29.2	21.9	342°29.9	02.4					
11	353°04.5	357°38.4	12.1	237°38.4	07.5	278°31.2	22.0	357°32.1	02.3					
12	8°06.9	12°41.9	N06°11.2	252°40.0	N24°07.3	293°33.3	N22°22.0	12°34.3	S04°02.2					
13	23°09.4	27°45.3	10.3	267°41.6	07.1	308°35.3	22.1	27°36.5	02.0					
14	38°11.9	42°48.8	09.4	282°43.3	06.9	323°37.4	22.1	42°38.7	01.9					
15	53°14.3	57°52.3	•• 08.5	297°44.9	•• 06.7	338°39.5	•• 22.2	57°40.9	•• 01.8					
16	68°16.8	72°55.7	07.6	312°46.5	06.5	353°41.5	22.2	72°43.1	01.7					
17	83°19.3	87°59.2	06.7	327°48.1	06.3	8°43.6	22.3	87°45.2	01.6					
18	98°21.7	103°02.6	N06°05.8	342°49.7	N24°06.1	23°45.6	N22°22.3	102°47.4	S04°01.5					
19	113°24.2	118°06.1	04.9	357°51.3	05.9	38°47.7	22.3	117°49.6	01.3					
20	128°26.6	133°09.5	04.0	12°53.0	05.7	53°49.7	22.4	32°51.8	01.2					
21	143°29.1	148°12.9	•• 03.1	27°54.6	•• 05.5	68°51.8	•• 22.4	147°54.0	•• 01.1					
22	158°31.6	163°16.4	02.3	42°56.2	05.3	83°53.8	22.5	162°56.2	01.0					
23	173°34.0	178°19.8	01.4	57°57.8	05.1	98°55.9	22.5	177°58.4	00.9					
Mer.pass.:11:28			v3.5 d-0.9 m-4.0			v1.6 d-0.2 m0.4			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2		

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	188°36.5	193°23.2	N06°00.5	72°59.4	N24°04.9	113°58.0	N22°22.6	193°00.5	S04°00.8					
1	203°39.0	208°26.7	05°59.6	88°01.0	04.7	129°00.0	22.6	208°02.7	00.6					
2	218°41.4	223°30.1	58.7	103°02.6	04.5	144°02.1	22.7	223°04.9	00.5					
3	233°43.9	238°33.5	•• 57.8	118°04.2	•• 04.3	159°04.1	•• 22.7	238°07.1	•• 00.4					
4	248°46.4	253°36.9	56.9	133°05.9	04.1	174°06.2	22.8	253°09.3	00.3					
5	263°48.8	268°40.3	56.0	148°07.5	03.9	189°08.2	22.8	268°11.5	00.2					
6	278°51.3	283°43.8	N05°55.1	163°09.1	N24°03.7	204°10.3	N22°22.9	283°13.7	S04°00.1					
7	293°53.8	298°47.2	54.2	178°10.7	03.5	219°12.3	22.9	298°15.8	03°59.9					
8	308°56.2	313°50.6	53.3	193°12.3	03.3	234°14.4	23.0	313°18.0	03.5					
9	323°58.7	328°54.0	•• 52.4	208°13.9	•• 03.1	249°16.4	•• 23.0	328°20.2	•• 59.7					
10	339°01.1	343°57.4	51.5	223°15.5	02.9	264°18.5	23.0	343°22.4	59.6					
11	354°03.6	359°00.8	50.7	238°17.1	02.7	279°20.5	23.1	358°24.6	59.5					
12	9°06.1	14°04.2	N05°49.8	253°18.7	N24°02.5	294°22.6	N22°23.1	13°26.8	S03°59.4					
13	24°08.5	29°07.5	48.9	268°20.3	02.3	309°24.6	23.2	28°29.0	59.3					
14	39°11.0	44°10.9	48.0	283°21.9	02.1	324°26.7	23.2	43°31.1	59.1					
15	54°13.5	59°14.3	•• 47.1	298°23.5	•• 01.9	339°28.7	•• 23.3	58°33.3	•• 59.0					
16	69°15.9	74°17.7	46.2	313°25.1	01.7	354°30.8	23.3	73°35.5	58.9					
17	84°18.4	89°21.1	45.3	328°26.7	01.5	9°32.8	23.4	88°37.7	58.8					
18	99°20.9	104°24.4	N05°44.4	343°28.3	N24°01.3	24°34.9	N22°23.4	103°39.9	S03°58.7					
19	114°23.3	119°27.8	43.5	358°29.9	01.1	39°36.9	23.5	118°42.1	58.6					
20	129°25.8	134°31.2	42.7	13°31.5	00.9	54°39.0	23.5	133°44.3	58.4					
21	144°28.3	149°34.5	•• 41.8	28°33.1	•• 00.7	69°41.0	•• 23.6	148°46.4	•• 58.3					
22	159°30.7	164°37.9	40.9	43°34.7	00.5	84°43.1	23.6	163°48.6	58.2					
23	174°33.2	179°41.2	40.0	58°36.3	00.3	99°45.1	23.7	178°50.8	58.1					
Mer.pass.:11:24			v3.4 d-0.9 m-4.1			v1.6 d-0.2 m0.4			v2.1 d0.0 m-2.0			v2.2 d0.1 m1.2		

SHA	Dec
Alperatz	357°35.0 29°13.7
Ankaa	353°07.4 -42°10.2
Schedar	349°31.5 56°40.5
Diphda	348°47.4 -17°51.0
Achernar	335°20.6 -57°06.6
Hamal	327°51.3 23°34.8
Polaris	314°21.2 89°22.4
Acamar	315°12.0 -40°12.4
Menkar	314°06.2 4°11.2
Mirfak	308°28.4 49°57.1
Aldebaran	290°39.6 16°33.6
Rigel	281°03.8 -8°10.5
Capella	280°21.8 46°01.5
Bellatrix	278°22.8 6°22.3
Elnath	278°01.8 28°37.8
Anilam	275°37.6 -1°11.2
Betelgeuse	270°52.0 7°24.6
Canopus	263°52.4 -52°42.8
Sirius	258°26.1 -16°45.2
Adhara	255°05.7 -29°00.6
Procyon	244°50.6 5°09.5
Pollux	243°17.0 27°58.0
Avior	234°14.4 -59°35.7
Suhail	222°46.0 -43°32.3
Miaplacidus	221°37.8 -69°49.5

Alphard	217°47.4 -8°46.2
Regulus	207°34.0 11°50.6
Dubhe	193°40.1 61°36.9
Denebola	182°24.5 14°25.7
Gienah	175°43.1 -17°41.1
Acrux	172°59.3 -63°14.4
Gacrux	171°50.9 -57°15.4
Alioth	166°12.2 55°49.3
Spica	158°21.8 -11°17.7
Alkaid	152°51.4 49°11.0
Hadar	148°35.2 -60°29.7
Menkent	147°57.1 -36°29.7
Arcturus	145°47.4 19°02.9
Rigel Kent	139°39.5 -60°56.3
Kochab	137°18.7 74°02.8
Zuben'ubi	136°55.6 -16°08.9
Alphecca	126°03.3 26°37.5
Antares	112°15.4 -26°29.3
Atria	107°09.3 -69°04.2
Sabik	102°02.5 -15°45.4
Shaula	96°10.0 -37°07.3
Rasalhague	95°58.3 12°32.3
Eltanin	90°42.0 51°28.7
Kaus Aug.	83°32.3 -34°22.3
Vega	80°33.1 38°48.1
Nunki	75°47.6 -26°15.9
Altair	61°59.9 8°55.9
Peacock	53°05.7 -56°39.1
Deneb	49°25.9 45°21.9
Enif	33°38.9 9°59.3
Al Nair	27°33.0 -46°50.3
Fomalhaut	15°14.6 -29°29.4
Scheat	13°45.4 28°13.0
Markab	13°30.0 15°20.3

Mar 29 Sat	SHA	Mer.pass
Venus	3°56.9	11:15
Mars	245°03.0	19:11
Jupiter	285°40.9	16:28
Saturn	4°37.4	11:13

Mar 30 Sun	SHA	Mer.pass
Venus	4°22.7	11:09
Mars	244°43.2	19:09
Jupiter	285°31.2	16:25
Saturn	4°30.7	11:10

Mar 31 Mon	SHA	Mer.pass.
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Aries		Venus		Mars		Jupiter		Saturn	
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	189°35.6	194°44.6	N05°39.1	73°37.9	N24°00.1	114°47.2	N22°23.7	193°53.0	S03°58.0
1	204°38.1	209°47.9	38.2	88°39.5	23°59.9	129°49.2	23.7	208°55.2	57.9
2	219°40.6	224°51.3	37.4	103°41.1	59.7	144°51.3	23.8	223°57.4	57.8
3	234°43.0	239°51.6	•• 36.5	118°42.7	•• 59.5	159°53.3	•• 23.8	238°59.6	•• 57.6
4	249°45.5	254°57.9	35.6	133°44.3	59.3	174°55.4	23.9	254°01.8	57.5
5	264°48.0	270°01.3	34.7	148°45.9	59.1	189°57.4	23.9	269°03.9	57.4
6	279°50.4	285°04.6	N05°33.8	163°47.5	N23°58.8	204°59.5	N22°24.0	284°06.1	S03°57.3
7	294°52.9	300°07.9	32.9	178°49.1	58.6	220°01.5	24.0	299°08.3	57.2
8	309°55.4	315°11.3	32.1	193°50.7	58.4	235°03.6	24.1	314°10.5	57.1
9	324°57.8	330°14.6	•• 31.2	208°52.2	•• 58.2	250°05.6	•• 24.1	329°12.7	•• 56.9
10	340°30.3	345°17.9	30.3	223°53.8	58.0	265°07.6	24.2	344°14.9	56.8
11	355°02.7	0°21.2	29.4	238°55.4	57.8	280°09.7	24.2	359°17.1	56.7
12	10°05.2	15°24.5	N05°28.5	253°57.0	N23°57.6	295°11.7	N22°24.3	14°19.3	S03°56.6
13	25°07.7	30°27.8	27.7	268°58.6	57.4	310°13.8	24.3	29°21.4	56.5
14	40°10.1	45°31.1	26.8	284°00.2	57.2	325°15.8	24.4	44°23.6	56.4
15	55°12.6	60°34.4	•• 25.9	299°03.8	•• 57.0	340°17.9	•• 24.4	59°25.8	•• 56.2
16	70°15.1	75°37.7	25.0	314°01.4	56.8	355°19.9	24.4	74°28.0	56.1
17	85°17.5	90°41.0	24.2	329°05.0	56.6	10°22.0	24.5	89°30.2	56.0
18	100°20.0	105°44.3	N05°23.3	344°06.5	N23°56.4	25°24.0	N22°24.5	104°32.4	S03°55.9
19	115°22.5	120°47.6	22.4	359°08.1	56.2	40°26.0	24.6	119°34.6	55.8
20	130°24.9	135°50.9	21.5	14°09.7	55.9	55°28.1	24.6	134°36.8	55.7
21	145°27.4	150°54.1	•• 20.7	29°11.3	•• 55.7	70°30.1	•• 24.7	149°38.9	•• 55.6
22	160°29.9	165°57.4	19.8	44°12.9	55.5	85°32.2	24.8	164°41.1	55.4
23	175°32.3	181°00.7	18.9	59°14.5	55.3	100°34.2	24.7	179°43.3	55.3
Mer.pass.:11:20		v3.3 d-0.9 m-4.1		v1.6 d-0.2 m0.5		v2.0 d0.0 m-2.0		v2.2 d0.1 m1.2	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	190°34.8	196°03.9	N05°18.1	74°16.0	N23°55.1	115°36.3	N22°24.8	194°45.5	S03°55.2
1	205°37.2	211°07.2	17.2	89°17.6	54.9	130°38.3	24.9	209°47.7	55.1
2	220°39.7	226°10.5	16.3	104°19.2	54.7	145°40.4	24.9	224°49.9	55.0
3	235°42.2	241°13.7	•• 15.5	119°20.8	•• 54.5	160°42.4	•• 25.0	239°52.1	•• 54.9
4	250°44.6	256°17.0	14.6	134°22.4	54.3	175°44.4	25.0	254°54.3	54.8
5	265°47.1	271°20.2	13.7	149°23.9	54.1	190°46.5	25.1	269°56.4	54.6
6	280°49.6	286°23.5	N05°12.8	164°25.5	N23°53.9	205°48.5	N22°25.1	284°58.6	S03°54.5
7	295°52.0	301°26.7	12.0	179°27.1	53.7	220°50.6	25.1	300°00.8	54.4
8	310°54.5	316°29.9	11.1	194°28.7	53.4	235°52.6	25.2	315°03.0	54.3
9	325°57.0	331°33.2	•• 10.3	209°30.2	•• 53.2	250°54.6	•• 25.2	330°05.2	•• 54.2
10	340°59.4	346°36.4	09.4	224°31.8	53.0	265°56.7	25.3	345°07.4	54.1
11	356°01.9	1°39.6	08.5	239°33.4	52.8	280°58.7	25.3	0°09.6	53.9
12	11°04.4	16°42.9	N05°07.7	254°35.0	N23°52.6	296°00.8	N22°25.4	15°11.8	S03°53.8
13	26°06.8	31°46.1	06.8	269°36.5	52.4	311°02.8	25.4	30°13.9	53.7
14	41°09.3	46°49.3	05.9	284°38.1	52.2	326°04.8	25.5	45°16.1	53.6
15	56°11.7	61°52.5	•• 05.1	299°39.7	•• 52.0	341°06.9	•• 25.5	60°18.3	•• 53.5
16	71°14.2	76°55.7	04.2	314°41.2	51.8	356°08.9	25.6	75°20.5	53.4
17	86°16.7	91°58.9	03.4	329°42.8	51.5	11°11.0	25.6	90°22.7	53.3
18	101°19.1	107°02.1	N05°02.5	344°44.4	N23°51.3	26°13.0	N22°25.7	105°24.9	S03°53.1
19	116°21.6	122°05.1	01.7	359°46.0	51.1	41°15.0	25.7	120°27.1	53.0
20	131°24.1	137°08.5	05°00.8	14°47.5	50.9	56°17.1	25.8	135°29.3	52.9
21	146°26.5	152°11.7	04°59.9	29°49.1	•• 50.7	71°19.1	•• 25.8	150°31.4	•• 52.8
22	161°29.0	167°14.9	59.1	44°50.7	50.5	86°21.2	25.8	165°33.6	52.7
23	176°31.5	182°18.1	58.2	59°52.2	50.3	101°23.2	25.9	180°35.8	52.6
Mer.pass.:11:16		v3.3 d-0.9 m-4.1		v1.6 d-0.2 m0.5		v2.0 d0.0 m-2.0		v2.2 d0.1 m1.2	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	191°33.9	197°21.3	N04°57.4	74°53.8	N23°50.1	116°25.2	N22°25.9	195°38.0	S03°52.5
1	206°36.4	212°24.4	56.5	89°55.4	49.8	131°27.3	26.0	210°40.2	52.3
2	221°38.9	227°27.6	55.7	104°56.9	49.6	146°29.3	26.0	225°42.4	52.2
3	236°41.3	242°30.8	•• 54.8	119°58.5	•• 49.4	161°31.3	•• 26.1	240°44.6	•• 52.1
4	251°43.8	257°33.9	54.0	135°00.1	49.2	176°33.4	26.1	255°46.8	52.0
5	266°46.2	272°27.1	53.1	150°01.6	49.0	191°35.4	26.2	270°49.0	51.9
6	281°48.7	287°40.3	N04°52.3	165°03.2	N23°48.8	206°37.5	N22°26.2	285°51.1	S03°51.8
7	296°51.2	302°43.4	51.4	180°04.7	48.6	221°39.5	26.3	300°53.3	51.7
8	311°53.6	317°46.6	50.6	195°06.3	48.4	236°41.5	26.3	315°55.5	51.5
9	326°56.1	332°49.9	•• 49.7	210°07.9	•• 48.1	251°43.6	•• 26.4	330°57.7	•• 51.4
10	341°58.6	347°52.9	48.9	225°09.4	47.9	266°45.6	26.4	345°59.9	51.3
11	357°01.0	2°56.0	48.1	240°11.0	47.7	281°47.6	26.5	1°02.1	51.2
12	12°03.5	17°59.1	N04°47.2	255°12.5	N23°47.5	296°49.7	N22°26.5	16°04.3	S03°51.1
13	27°06.4	33°02.3	46.4	270°14.1	47.3	311°51.7	26.6	31°06.5	51.0
14	42°08.0	48°05.4	45.5	285°15.7	47.1	326°53.7	26.6	46°08.7	50.9
15	57°10.9	63°08.5	•• 44.7	300°17.2	•• 46.9	341°55.8	•• 26.6	61°10.8	•• 50.7
16	72°13.3	78°11.6	43.9	315°18.8	46.6	356°57.8	26.7	76°13.0	50.6
17	87°15.8	93°14.7	43.0	330°20.3	46.4	11°59.8	26.7	91°15.2	50.5
18	102°18.3	108°21.9	N04°42.2	345°21.9	N23°46.2	27°01.9	N22°26.8	106°17.4	S03°50.4
19	117°20.7	123°17.0	41.3	0°23.4	46.0	42°03.9	26.8	121°19.6	50.3
20	132°23.2	138°24.1	40.5	15°25.0	45.8	57°05.9	26.9	136°21.8	50.2
21	147°25.7	153°27.2	•• 39.7	30°26.6	•• 45.6	72°08.0	•• 26.9	151°24.0	•• 50.1
22	162°28.1	168°30.3	38.8	45°28.1	45.3	87°10.0	27.0	166°26.2	49.9
23	177°30.6	183°33.4	38.0	60°29.7	45.1	102°12.0	27.0	181°28.4	49.8
Mer.pass.:11:12		v3.2 d-0.9 m-4.2		v1.6 d-0.2 m0.5		v2.0 d0.0 m-2.0		v2.2 d0.1 m1.2	

Stars		SHA	Dec
Alpheratz	357°35.0	29°13.7	
Ankaa	353°07.4	-42°10.2	
Schedar	349°31.5	56°40.5	
Diphda	348°47.4	-17°51.0	
Achernar	335°20.6	-57°06.6	
Hamal	327°51.3	23°34.8	
Polaris	314°21.7	89°22.4	
Acamar	315°12.0	-40°12.4	
Menkar	314°06.2	4°11.2	
Mirfak	308°28.4	49°57.1	
Aldebaran	290°39.6	16°33.6	
Rigel	320°03.8	-8°10.5	
Capella	280°21.8	46°01.5	
Bellatrix	278°22.8	6°22.3	
Elath	278°01.8	28°37.8	
Anilam	275°37.7	-1°11.2	
Betelgeuse	270°52.0	7°24.6	
Canopus	263°52.4	-52°42.8	
Sirius	258°26.1	-16°45.2	
Adhara	255°05.7	-29°00.6	
Procyon	244°50.6	5°09.5	
Pollux	243°17.0	27°58.0	
Avior	234°14.5	-59°35.7	
Suhail	222°46.0	-43°32.3	
Miaplacidus	221°37.8	-69°49.5	
Alphard	217°47.4	-8°46.2	
Regulus	207°34.0	11°50.6	
Dubhe	193°40.2	61°37.0	
Denebola	182°24.5	14°25.7	
Gienah	175°43.1	-17°41.1	
Acrux	172°59.3	-63°14.4	
Gacrux	171°50.9	-57°15.4	
Alioth	166°12.7	-55°49.3	
Spica	158°21.8	-11°17.7	
Alkaid	152°51.4	49°11.1	
Hadar	148°35.2	-60°29.7	
Menkent	147°57.1	-36°29.7	
Arcturus	145°47.4	19°02.9	
Rigel Kent.	139°39.5	-60°56.3	
Kochab	137°18.7	74°02.8	
Zuben'ubi	136°55.5	-16°08.9	
Alphecca	126°03.3	26°37.5	
Antares	112°15.4	-26°29.3	
Atria	107°09.2	-69°04.2	
Sabik	102°02.4	-15°45.4	
Shaula	96°10.0	-37°07.3	
Rasalhague	95°58.3	12°32.3	
Eltanin	90°42.0	51°28.7	
Kaus Aust.	83°32.2	-34°22.3	
Vega	80°33.1	38°48.1	
Nunki	75°47.5	-26°15.9	
Altair	61°59.9	8°55.9	
Peacock	53°05.6	-56°39.1	
Deneb	49°25.9	45°21.9	
Enif	33°38.8	9°59.3	
Al Na'ir	27°33.0	-46°50.3	
Fomalhaut	15°14.6	-29°29.4	
Scheat	13°45.4	28°13.0	
Markab	13°30.0	15°20.3	

Apr 01 Tue		SHA	Mer.pass.
Venus	5°08.9	10:59	
Mars	244°02.3	19:03	
Jupiter	285°11.5	16:19	
Saturn	4°17.4	11:03	
Apr 02 Wed		SHA	Mer.pass.
Venus	5°29.2	10:53	
Mars	243°41.3	19:01	
Jupiter	285°01.5	16:15	
Saturn	4°10.7	10:59	
Apr 03 Thu		SHA	Mer.pass.
Venus	5°47.3	10:48	
Mars	243°19.9	18:58	
Jupiter	284°51.3	16:12	
Saturn	4°04.1	10:56	
Horizontal parallax			
Venus:	0.5		
Mars:	0.1		

Aries			Venus			Mars			Jupiter			Saturn		
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	192°33.1	198°36.5	N04°37.2	75°31.2	N23°44.9	117°14.1	N22°27.1	196°30.5	S03°49.7					
1	207°35.5	213°39.5	36.3	90°32.8	44.7	132°16.1	27.1	211°32.7	49.6					
2	222°38.0	228°42.6	35.5	105°34.3	44.5	147°18.1	27.2	226°34.9	49.5					
3	237°40.5	243°45.7	•• 34.7	120°35.9	•• 44.3	162°20.2	•• 27.2	241°37.1	•• 49.4					
4	252°42.9	258°48.8	33.9	135°37.4	44.0	177°22.2	27.3	256°39.3	49.3					
5	267°45.4	273°51.8	33.0	150°39.0	43.8	192°24.2	27.3	271°41.5	49.1					
6	282°47.8	288°54.9	N04°32.2	165°40.5	N23°43.6	207°26.3	N22°27.3	286°43.7	S03°49.0					
7	297°50.3	303°58.0	31.4	180°42.1	43.4	222°28.3	27.4	301°45.9	48.9					
8	312°52.8	319°01.0	30.6	195°43.6	43.2	237°30.3	27.4	316°48.1	48.8					
9	327°55.2	334°04.1	•• 29.7	210°45.2	•• 43.0	252°32.4	•• 27.5	331°50.3	•• 48.7					
10	342°57.7	349°07.1	28.9	225°46.7	42.7	267°34.4	27.5	346°52.4	48.6					
11	358°00.2	4°10.2	28.1	240°48.2	42.5	282°36.4	27.6	1°54.6	48.5					
12	13°02.6	19°13.2	N04°27.3	255°49.8	N23°42.3	297°38.4	N22°27.6	16°56.8	S03°48.3					
13	28°05.1	34°16.3	26.5	270°51.3	42.1	312°40.5	27.7	31°59.0	48.2					
14	43°07.6	49°19.3	25.6	285°52.9	41.9	327°42.5	27.7	47°01.2	48.1					
15	58°10.0	64°22.3	•• 24.8	300°54.4	•• 41.6	342°44.5	•• 27.8	62°03.4	•• 48.0					
16	73°12.5	79°25.4	24.0	315°56.0	41.4	357°46.6	27.8	77°05.6	47.9					
17	88°15.0	94°28.4	23.2	330°57.5	41.2	12°48.6	27.9	92°07.8	47.8					
18	103°17.4	109°31.4	N04°22.4	345°59.0	N23°41.0	27°50.6	N22°27.9	107°10.0	S03°47.7					
19	118°19.9	124°34.4	21.6	1°00.6	40.8	42°52.6	28.0	122°12.1	47.5					
20	133°22.3	139°37.4	20.8	16°02.1	40.6	57°54.7	28.0	137°14.3	47.4					
21	148°24.8	154°40.5	•• 20.0	31°03.7	•• 40.3	72°56.7	•• 28.0	152°16.5	•• 47.3					
22	163°27.3	169°43.5	19.2	46°05.2	40.1	87°58.7	28.1	167°18.7	47.2					
23	178°29.7	184°46.5	18.3	61°06.7	39.9	103°00.8	28.1	182°20.9	47.1					
Mer.pass.:11:08			v3.1 d-0.8 m-4.2			v1.6 d-0.2 m0.5			v2.0 d0.0 m-1.9			v2.2 d0.1 m1.2		

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	193°32.2	199°49.5	N04°17.5	76°08.3	N23°39.7	118°02.8	N22°28.2	197°23.1	S03°47.0					
1	208°34.7	214°52.5	16.7	91°09.8	39.5	133°04.8	28.2	212°25.3	46.9					
2	223°37.1	229°55.4	15.9	106°11.4	39.0	148°06.8	28.3	227°27.5	46.7					
3	238°39.6	244°58.4	•• 15.1	121°12.9	•• 39.2	163°08.9	•• 28.3	242°29.7	•• 46.6					
4	253°42.1	260°01.4	14.3	136°14.4	38.8	178°10.9	28.4	257°31.9	46.5					
5	268°44.5	275°04.4	13.5	151°16.0	38.6	193°12.9	28.4	272°34.1	46.4					
6	283°47.0	290°07.4	N04°12.7	166°17.5	N23°38.3	208°14.9	N22°28.5	287°36.2	S03°46.3					
7	298°49.5	305°10.3	11.9	181°19.0	38.1	223°17.0	28.5	302°38.4	46.2					
8	313°51.9	320°13.3	11.1	196°20.6	37.9	238°19.0	28.6	317°40.6	46.1					
9	328°54.4	335°16.2	•• 10.3	211°22.1	•• 37.7	253°21.0	•• 28.6	332°42.8	•• 46.0					
10	343°56.8	350°19.2	09.5	226°23.6	37.5	268°23.1	28.7	347°45.0	45.8					
11	358°59.3	5°22.2	08.8	241°25.2	37.2	283°25.1	28.7	2°47.2	45.7					
12	14°01.8	20°25.1	N04°08.0	256°26.7	N23°37.0	298°27.1	N22°28.7	17°49.4	S03°45.6					
13	29°04.2	35°28.1	07.2	271°28.2	36.8	313°29.1	28.8	32°51.6	45.5					
14	44°06.7	50°31.0	06.4	286°29.8	36.6	328°31.2	28.8	47°53.8	45.4					
15	59°09.2	65°34.0	•• 05.6	301°31.3	•• 36.3	343°33.2	•• 28.9	62°56.0	•• 45.3					
16	74°11.6	80°36.9	04.8	316°32.8	36.1	358°35.2	28.9	77°58.2	45.2					
17	89°14.1	95°39.8	04.0	331°34.3	35.9	13°37.2	29.0	93°00.3	45.0					
18	104°16.6	110°42.8	N04°03.2	346°35.9	N23°35.7	28°39.2	N22°29.0	108°02.5	S03°44.9					
19	119°19.9	125°45.7	02.4	1°37.4	35.3	43°41.3	29.1	123°04.3	44.8					
20	134°21.5	140°48.6	01.7	16°38.9	35.2	58°43.3	29.1	138°06.9	44.7					
21	149°24.0	155°51.5	•• 00.9	31°40.5	•• 35.0	73°45.3	•• 29.2	153°09.1	•• 44.6					
22	164°26.4	170°54.4	04°00.1	46°42.0	34.8	88°47.3	29.2	168°11.3	44.5					
23	179°28.9	185°57.3	03°59.3	61°43.5	34.6	103°49.4	29.3	183°13.5	44.4					
Mer.pass.:11:04			v3.0 d-0.8 m-4.2			v1.5 d-0.2 m0.5			v2.0 d0.0 m-1.9			v2.2 d0.1 m1.2		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	194°31.3	201°00.2	N03°58.6	76°45.0	N23°34.3	118°51.4	N22°29.3	198°15.7	S03°44.3					
1	209°33.8	216°03.1	57.8	91°46.6	34.1	133°53.4	29.4	213°17.9	44.1					
2	224°36.3	231°06.0	57.0	106°48.1	33.9	148°55.4	29.4	228°20.1	44.0					
3	239°38.7	246°08.9	•• 56.2	121°49.6	•• 33.7	163°57.5	•• 29.4	243°22.3	•• 43.9					
4	254°41.2	261°11.8	55.5	136°51.1	33.4	178°59.5	29.5	258°24.4	43.8					
5	269°43.7	276°14.7	54.7	151°52.6	33.2	194°01.5	29.5	273°26.6	43.7					
6	284°46.1	291°17.6	N03°53.9	166°54.2	N23°33.0	209°03.5	N22°29.6	288°28.8	S03°43.6					
7	299°48.6	306°20.5	53.1	181°55.7	32.8	224°05.5	29.6	303°31.0	43.5					
8	314°51.1	321°23.3	52.4	196°57.2	32.5	239°07.6	29.7	318°33.2	43.4					
9	329°53.5	336°26.2	•• 51.6	211°58.7	•• 32.3	254°09.6	•• 29.7	333°35.4	•• 43.2					
10	344°56.0	351°29.1	50.8	227°00.2	32.1	269°11.6	29.8	348°37.6	43.1					
11	359°58.4	6°31.9	50.1	242°01.8	31.9	284°13.6	29.8	3°39.8	43.0					
12	15°00.4	21°34.8	N03°49.3	257°03.3	N23°31.6	299°15.6	N22°29.9	18°42.0	S03°42.9					
13	30°03.4	36°37.6	48.6	272°04.8	31.4	314°17.7	29.9	33°44.2	42.8					
14	45°05.8	51°40.5	47.8	287°06.3	31.2	329°19.7	30.0	48°46.4	42.7					
15	60°08.3	66°43.3	•• 47.0	302°07.8	•• 31.0	344°21.7	•• 30.0	63°48.6	•• 42.6					
16	75°10.8	81°46.2	46.3	317°09.4	30.7	359°23.7	30.1	78°50.7	42.4					
17	90°13.2	96°49.0	45.5	332°10.9	30.5	14°25.7	30.1	93°52.9	42.3					
18	105°15.7	111°51.8	N03°44.8	347°12.4	N23°30.3	29°27.8	N22°30.1	108°55.1	S03°42.2					
19	120°18.2	126°54.7	44.0	2°13.9	30.0	44°29.8	30.2	123°57.3	42.1					
20	135°20.6	141°57.5	43.3	17°15.4	29.8	59°31.8	30.2	138°59.5	42.0					
21	150°23.1	157°00.3	•• 42.5	32°16.9	•• 29.6	74°33.8	•• 30.3	154°01.7	•• 41.9					
22	165°25.6	172°03.1	41.8	47°18.4	29.4	89°35.8	30.3	169°03.9	41.8					
23	180°28.0	187°05.9	41.0	62°19.9	29.1	104°37.8	30.4	184°06.1	41.7					
Mer.pass.:11:00			v2.9 d-0.8 m-4.3			v1.5 d-0.2 m0.5			v2.0 d0.0 m-1.9			v2.2 d0.1 m1.2		

SHA	Dec
Alpheratz	357°34.9 29°13.6
Ankaa	353°07.4 -42°10.2
Schedar	349°31.4 56°40.5
Diphda	348°47.4 -17°51.0
Achernar	335°20.6 -57°06.6
Hamal	327°61.3 23°34.8
Polaris	314°22.2 89°22.4
Acamar	315°12.0 -40°12.4
Menkar	314°06.2 4°11.2
Mirfak	308°28.4 49°57.1
Aldebaran	290°39.6 16°33.6
Rigel	281°03.8 -8°10.5
Capella	280°21.8 46°01.5
Bellatrix	278°22.8 6°22.3
Elnath	278°01.8 28°37.8
Alnilam	275°37.7 -1°11.2
Betelgeuse	270°52.0 7°24.6
Canopus	263°52.4 -52°42.8
Sirius	258°26.1 -16°45.2
Adhara	255°05.7 -29°00.6
Procyon	244°50.6 5°09.5
Pollux	243°17.0 27°58.0
Avior	234°14.5 -59°35.7
Suhail	222°46.0 -43°32.3
Miaplacidus	221°37.8 -69°49.5
Alphard	217°47.4 -8°46.2
Regulus	207°34.0 11°50.6
Dubhe	193°24.2 61°37.0
Denebola	182°04.4 14°25.7
Gienah	175°43.1 -17°41.1
Acrux	172°59.3 -63°14.5
Gacrux	171°50.9 -57°15.4
Alioth	166°12.2 55°49.3
Spica	158°21.8 -11°17.7
Alkaid	152°51.4 49°11.1
Hadar	148°35.2 -60°29.7
Menkent	147°57.0 -36°29.7
Arcturus	145°47.4 19°02.9
Rigel Kent.	139°39.5 -60°56.3
Kochab	137°18.7 74°02.9
Zuben'ul	136°55.5 -16°08.9
Alphecca	126°03.3 26°37.5
Antares	112°15.4 26°29.3
Atria	107°09.2 -69°04.2
Sabik	102°02.4 -15°45.4
Shaula	96°10.0 -37°07.3
Rasalhague	95°58.2 12°32.3
Eltanin	90°41.9 51°28.7
Kaus Aust.	83°32.2 34°22.3
Vega	80°33.0 38°48.1
Nunki	75°47.5 -26°15.9
Altair	61°59.8 8°55.9
Peacock	53°05.6 -56°39.1
Deneb	49°25.9 45°21.9
Enif	33°38.8 9°59.3
Al Na'ir	27°33.0 -46°50.3
Fomalhaut	15°14.6 -29°29.3
Scheat	13°45.3 28°13.0
Markab	13°30.0 15°20.3

SHA	Mer.pass
Venus	6°03.4 10:43
Mars	242°58.1 18:56
Jupiter	284°41.0 16:09
Saturn	3°57.5 10:52
SHA	Mer.pass
Venus	6°17.3 10:39
Mars	242°36.1 18:54
Jupiter	284°30.6 16:06
Saturn	3°50.9 10:49
SHA	Mer.pass
Venus	6°28.9 10:34
Mars	242°13.7 18:51
Jupiter	284°20.0 16:02
Saturn	3°44.3 10:45

Aries				Venus				Mars				Jupiter				Saturn			
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	195°30.5	202°08.7	N03°40.3	77°21.5	N23°28.9	119°39.9	N22°30.4	199°08.3	S03°41.5										
1	210°32.9	217°11.6		39.5	92°23.0	28.7	134°41.9	30.5	214°10.5	41.4									
2	225°35.4	232°14.4		38.8	107°24.5	28.4	149°43.9	30.5	229°12.7	41.3									
3	240°37.9	247°17.2	•• 38.1	122°26.0	•• 28.2	164°45.9	•• 30.6	244°14.9	•• 41.2										
4	255°40.3	262°19.9		37.3	137°27.5	28.0	179°47.9	30.6	259°17.1	41.1									
5	270°42.8	277°22.7		36.6	152°29.0	27.8	194°49.9	30.7	274°19.2	41.0									
6	285°45.3	292°25.5	N03°35.8	167°30.5	N23°27.5	209°52.0	N22°30.7	289°21.4	S03°40.9										
7	300°47.7	307°28.3		35.1	182°32.0	27.3	224°54.0	30.8	304°23.6	40.8									
8	315°50.2	322°31.1		34.4	197°33.5	27.1	239°56.0	30.8	319°25.8	40.6									
9	330°52.7	337°33.9	•• 33.6	212°35.0	•• 26.8	254°58.0	•• 30.8	334°28.0	•• 40.4										
10	345°55.1	352°36.6		32.9	227°36.5	26.6	270°00.0	30.9	349°30.2	40.5									
11	0°57.6	7°39.4		32.2	242°38.1	26.4	285°02.0	30.9	4°32.4	40.3									
12	16°00.1	22°42.1	N03°31.4	257°39.6	N23°26.2	300°04.1	N22°31.0	19°34.6	S03°40.2										
13	31°02.5	37°44.9		30.7	272°41.1	25.9	315°06.1	31.0	34°36.8	40.1									
14	46°05.0	52°47.7		30.0	287°42.6	25.7	330°08.1	31.1	49°39.0	40.0									
15	61°07.4	67°50.4	•• 29.3	302°44.1	•• 25.5	345°10.1	•• 31.1	64°41.2	•• 39.9										
16	76°09.9	82°53.2		28.5	317°45.6	25.2	0°122.1	31.2	79°43.4	39.8									
17	91°12.4	97°55.9		27.8	332°47.1	25.0	15°14.1	31.2	94°45.6	39.6									
18	106°14.8	112°58.6	N03°27.1	347°48.6	N23°24.8	30°16.1	N22°31.3	109°47.8	S03°39.5										
19	121°17.3	128°01.4		26.4	2°50.1	24.5	45°18.2	31.3	124°49.8	39.4									
20	136°19.8	143°04.1		25.7	17°51.6	24.3	60°20.2	31.4	139°52.1	39.2									
21	151°22.2	158°06.8	•• 24.9	32°53.1	•• 24.1	75°22.2	•• 31.4	154°54.3	•• 39.2										
22	166°24.7	173°09.5		24.2	47°54.6	23.8	90°24.2	31.4	169°56.5	39.1									
23	181°27.2	188°12.3		23.5	62°56.1	23.6	105°26.2	31.5	184°58.7	39.0									
Mer.pass.:10:56				v2.8 d-0.7 m-4.3				v1.5 d-0.2 m0.6				v2.0 d0.0 m-1.9				v2.2 d0.1 m1.2			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	196°29.6	203°15.0	N03°22.8	77°57.6	N23°23.4	120°28.2	N22°31.5	200°00.9	S03°38.9										
1	211°32.1	218°17.7		22.1	92°59.1	23.1	135°30.2	31.6	215°03.1	38.7									
2	226°34.5	233°20.4		21.4	108°00.6	22.9	150°32.3	31.6	230°05.3	38.6									
3	241°37.0	248°23.1	•• 20.7	123°02.1	•• 22.7	165°34.3	•• 31.7	245°07.5	•• 38.5										
4	256°39.5	263°25.8		20.0	138°03.6	22.4	180°36.3	31.7	260°09.7	38.4									
5	271°41.9	278°28.5		19.3	153°05.1	22.2	195°38.3	31.8	275°11.9	38.3									
6	286°44.4	293°31.2	N03°18.6	168°06.6	N23°22.0	210°40.3	N22°31.8	290°14.1	S03°38.2										
7	301°46.9	308°33.9		17.9	183°08.1	21.7	225°42.3	31.9	305°16.3	38.1									
8	316°49.3	323°36.6		17.2	198°09.6	21.5	240°44.3	31.9	320°18.5	38.0									
9	331°51.8	338°39.2	•• 16.5	213°11.0	•• 21.3	255°46.3	•• 32.0	335°20.7	•• 37.8										
10	346°54.3	353°41.9		15.8	228°12.5	21.0	270°48.3	32.0	350°22.8	37.7									
11	1°56.7	8°44.6		15.1	243°14.0	20.8	285°50.4	32.0	5°25.0	37.6									
12	16°59.2	23°42.7	N03°14.4	258°15.5	N23°20.6	300°52.4	N22°32.1	20°27.2	S03°37.5										
13	32°01.7	38°49.9		13.7	273°17.0	20.3	315°54.4	32.1	35°29.4	37.4									
14	47°04.1	53°52.6		13.0	288°18.5	20.1	330°56.4	32.2	50°31.6	37.3									
15	62°06.6	68°55.2	•• 12.3	303°20.0	•• 19.9	345°58.4	•• 32.2	65°33.8	•• 37.2										
16	77°09.0	83°57.9		11.6	318°21.5	19.6	1°00.4	32.3	80°36.0	37.1									
17	92°11.5	99°00.5		10.9	333°23.0	19.4	16°02.4	32.3	95°38.2	37.0									
18	107°14.0	114°03.2	N03°10.2	348°24.5	N23°19.2	31°04.4	N22°32.4	110°40.4	S03°36.8										
19	122°16.4	129°05.8		09.6	3°26.0	18.9	46°06.4	32.4	125°42.6	36.7									
20	137°18.9	144°08.4		08.9	18°27.5	18.7	61°08.4	32.5	140°44.8	36.6									
21	152°21.4	159°11.1	•• 08.2	33°28.9	•• 18.5	76°10.4	•• 32.5	155°47.0	•• 36.5										
22	167°23.8	174°13.7		07.5	48°30.4	18.2	91°12.5	32.6	170°49.2	36.4									
23	182°26.3	189°16.3		06.8	63°31.9	18.0	106°15.4	32.6	185°51.4	36.3									
Mer.pass.:10:52				v2.7 d-0.7 m-4.3				v1.5 d-0.2 m0.6				v2.0 d0.0 m-1.9				v2.2 d0.1 m1.2			

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	197°28.8	204°18.9	N03°06.2	78°33.4	N23°17.7	121°16.5	N22°32.7	200°53.6	S03°36.2										
1	212°31.2	219°21.6	05.5	93°34.9	17.5	136°18.5	32.7	215°55.8	36.1										
2	227°33.7	234°24.2	04.8	108°36.4	17.3	151°20.5	32.7	230°58.0	36.0										
3	242°36.1	249°26.8	•• 04.1	123°37.9	•• 17.0	166°22.5	•• 32.8	246°00.2	•• 35.8										
4	257°38.6	264°29.4	03.5	138°39.3	16.8	181°24.5	32.8	261°02.3	35.7										
5	272°41.1	279°32.0	02.8	153°40.8	16.6	196°26.5	32.9	276°04.5	35.6										
6	287°43.5	294°34.6	N03°02.1	168°42.3	N23°16.3	211°28.5	N22°32.9	291°06.7	S03°35.5										
7	302°46.0	309°37.2	01.5	183°43.8	16.1	226°30.5	33.0	306°08.9	35.4										
8	317°48.5	324°39.7	00.8	198°45.3	15.9	241°32.5	33.0	321°11.1	35.3										
9	332°50.9	339°42.3	03°00.1	213°46.8	•• 15.6	256°34.5	•• 33.1	336°13.3	•• 35.2										
10	347°53.4	354°44.9	02°59.5	228°48.2	15.4	271°36.5	33.1	351°15.5	35.1										
11	2°55.9	9°47.5	58.8	243°49.7	15.1	286°38.5	33.2	6°17.7	35.0										
12	17°58.3	24°50.1	N02°58.2	258°51.2	N23°14.9	301°40.6	N22°33.2	21°19.9	S03°34.8										
13	33°00.8	39°52.6	57.5	273°52.7	14.7	316°42.6	33.3	36°22.1	34.7										
14	48°03.3	54°55.2	56.9	288°54.2	14.4	331°44.6	33.3	51°24.3	34.6										
15	63°05.7	69°57.7	•• 56.2	303°55.6	•• 14.2	346°46.6	•• 33.3	66°26.5	•• 34.5										
16	78°08.2	85°00.3	55.5	318°57.1	13.9	1°48.6	33.4	81°28.7	34.4										
17	93°10.6	100°02.9	54.9	333°58.6	13.7	16°50.6	33.4	96°30.9	34.3										
18	108°13.1	115°05.4	N02°54.3	349°00.1	N23°13.5	31°52.6	N22°33.5	111°33.1	S03°34.2										
19	123°15.6	130°07.9	53.6	4°01.6	13.2	46°54.6	33.5	126°35.3	34.1										
20	138°18.0	145°10.5	53.0	19°03.0	13.0	61°56.6	33.6	141°37.5	34.0										
21	153°20.5	160°13.0	•• 52.3	34°04.5	•• 12.7	76°58.6	•• 33.6	156°39.7	•• 33.8										
22	168°23.0	175°15.6	51.7	49°06.0	12.5	92°00.6	33.7	171°41.9	33.7										
23	183°25.4	190°18.1	51.0	64°07.5	12.3	107°02.6	33.7	186°44.1	33.6										
Mer.pass.:10:48				v2.6 d-0.7 m-4.3				v1.5 d-0.2 m0.6				v2.0 d0.0 m-1.9				v2.2 d0.1 m1.2			

	Stars	
	SHA	Dec
Alpheratz	357°34.9	29°13.6
Ankaa	353°07.3	-42°10.2
Schedar	349°31.4	56°40.5
Diphda	348°47.4	-17°51.0
Achernar	335°20.6	-57°06.6
Hamal	327°51.3	23°34.8
Polaris	314°22.9	89°22.4
Acamar	315°12.0	-40°12.3
Menkar	314°06.2	4°11.2
Mirfak	308°28.4	49°57.1
Aldebaran	290°39.6	16°33.6
Rigel	281°03.8	-8°10.5
Capella	280°21.8	46°01.5
Bellatrix	278°22.8	6°22.3
Elath	278°01.8	28°37.8
Anilam	275°37.7	-1°11.2
Betelgeuse	270°52.0	7°24.7
Canopus	263°52.4	-52°42.8
Sirius	258°26.1	-16°45.2
Adhara	255°05.8	-29°00.6
Procyon	244°50.6	5°09.5
Pollux	243°17.0	27°58.0
Avior	234°14.5	-59°35.7
Suhail	222°46.0	-43°32.3
Miaplacidus	221°37.9	-69°49.5
Alphard	217°47.4	-8°46.2

Aries		Venus		Mars		Jupiter		Saturn	
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	198°27.9	205°20.6	N02°50.4	79°08.9	N23°12.0	122°04.6	N22°33.8	201°46.3	S03°33.5
1	213°30.4	220°23.1	49.8	94°10.4	11.8	137°06.6	33.8	216°48.4	33.4
2	228°32.8	235°25.6	49.1	109°11.9	11.5	152°08.6	33.9	231°50.6	33.3
3	243°35.3	250°28.2	•• 48.5	124°13.4	•• 11.3	167°10.6	•• 33.9	246°52.8	•• 33.2
4	258°37.7	265°30.7	47.9	139°14.8	11.1	182°12.6	33.9	261°55.0	33.1
5	273°40.2	280°33.2	47.2	154°16.3	10.8	197°14.6	34.0	276°57.2	33.0
6	288°42.7	295°35.7	N02°46.6	169°17.8	N23°10.6	212°16.6	N22°34.0	291°59.4	S03°32.8
7	303°45.1	310°38.2	46.0	184°19.2	10.3	227°18.6	34.1	307°01.6	32.7
8	318°47.6	325°40.7	45.3	199°20.7	10.1	242°20.6	34.1	322°03.8	32.6
9	333°50.1	340°43.2	•• 44.7	214°22.2	•• 09.9	257°22.6	•• 34.2	337°06.0	•• 32.5
10	348°52.5	355°45.6	44.1	229°23.7	09.6	272°24.6	34.2	352°08.2	32.4
11	3°55.0	10°48.1	43.5	244°25.1	09.4	287°26.6	34.3	7°10.4	32.3
12	18°57.5	25°50.6	N02°42.9	259°26.6	N23°09.1	302°28.6	N22°34.3	22°12.6	S03°32.2
13	33°59.9	40°53.1	42.2	274°28.1	08.9	317°30.6	34.4	37°14.8	32.1
14	49°02.4	55°55.5	41.6	289°29.5	08.6	332°32.6	34.4	52°17.0	32.0
15	64°04.9	70°58.0	•• 41.0	304°31.0	•• 08.4	347°34.6	•• 34.4	67°19.2	•• 31.9
16	79°07.3	86°00.5	40.4	319°32.5	08.2	3°36.6	34.5	82°21.4	31.7
17	94°09.8	101°02.9	39.8	334°33.9	07.9	17°38.6	34.5	97°23.6	31.6
18	109°12.2	116°05.4	N02°39.2	349°35.4	N23°07.7	32°40.6	N22°34.6	112°25.8	S03°31.5
19	124°14.7	131°07.8	38.6	4°36.9	07.4	47°42.6	34.6	127°28.0	31.4
20	139°17.2	146°10.3	38.0	19°38.3	07.2	62°44.6	•• 34.7	142°30.2	31.3
21	154°19.6	161°12.7	•• 37.4	34°39.8	•• 06.9	77°46.6	•• 34.7	157°32.4	•• 31.2
22	169°22.1	176°15.2	36.8	49°41.3	06.7	92°48.6	34.8	172°34.6	31.1
23	184°24.6	191°17.6	36.2	64°42.7	06.5	107°50.6	34.8	187°36.8	31.0
Mer.pass.:10:44		v2.5 d-0.6 m-4.3		v1.5 d-0.2 m0.6		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	199°27.0	206°20.0	N02°35.6	79°44.2	N23°06.2	122°52.6	N22°34.9	202°39.0	S03°30.9
1	214°29.5	221°22.5	35.0	94°45.6	06.0	137°54.6	34.9	217°41.2	30.7
2	229°32.0	236°24.9	34.4	109°47.1	05.7	152°56.6	35.0	232°43.4	30.6
3	244°34.4	251°27.3	•• 33.8	124°48.6	•• 05.5	167°58.6	•• 35.0	247°45.6	•• 30.5
4	259°36.9	266°29.7	33.2	139°50.0	05.2	183°00.6	35.0	262°47.7	30.4
5	274°39.3	281°32.1	32.6	154°51.5	05.0	198°02.6	35.1	277°49.9	30.3
6	289°41.8	296°34.5	N02°32.0	169°53.0	N23°04.7	213°04.6	N22°35.1	292°52.1	S03°30.2
7	304°44.3	311°36.9	31.4	184°54.4	04.5	228°06.6	35.2	307°54.3	30.1
8	319°46.7	326°39.3	30.8	199°55.9	04.2	243°08.6	35.2	322°56.5	30.0
9	334°49.2	341°41.7	•• 30.2	214°57.3	•• 04.0	258°10.6	•• 35.3	337°58.7	•• 29.9
10	349°51.7	356°44.1	29.7	229°58.8	03.8	273°12.6	35.3	353°00.9	29.8
11	4°54.1	11°46.5	29.1	245°00.2	03.5	288°14.6	35.4	8°03.1	29.6
12	19°56.6	26°48.9	N02°28.5	260°01.7	N23°03.3	303°16.6	N22°35.4	23°05.3	S03°29.5
13	34°59.1	41°51.3	27.9	275°03.2	03.0	318°18.6	35.5	38°07.5	29.4
14	50°01.5	56°53.7	27.4	290°04.6	02.8	333°20.6	35.5	53°09.7	29.3
15	65°04.6	71°56.0	•• 26.8	305°06.1	•• 02.5	348°22.6	•• 35.5	68°11.9	•• 29.2
16	80°06.5	86°58.4	26.2	320°07.5	02.3	3°24.6	35.6	83°14.1	29.1
17	95°08.9	102°00.8	25.6	335°09.0	02.0	18°26.6	35.6	98°16.3	29.0
18	110°11.4	117°03.1	N02°25.1	350°10.4	N23°01.8	33°28.6	N22°35.7	113°18.5	S03°28.9
19	125°13.8	132°05.5	24.5	5°11.9	01.5	48°30.6	35.7	128°20.7	28.8
20	140°16.3	147°07.8	23.9	20°13.4	01.3	63°32.6	35.8	143°22.9	28.7
21	155°18.8	162°10.2	•• 23.4	35°14.8	•• 01.0	78°34.6	•• 35.8	158°25.1	•• 28.6
22	170°21.2	177°12.5	22.8	50°16.3	00.8	93°36.6	35.9	173°27.3	28.4
23	185°23.7	192°14.9	22.2	65°17.7	00.5	108°38.6	35.9	188°29.5	28.3
Mer.pass.:10:40		v2.4 d-0.6 m-4.4		v1.5 d-0.2 m0.6		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	200°26.2	207°17.2	N02°21.7	80°19.2	N23°00.3	123°40.5	N22°36.0	203°31.7	S03°28.2
1	215°28.6	222°19.5	21.1	95°20.6	23°00.0	138°42.5	36.0	218°33.9	28.1
2	230°31.1	237°21.9	20.6	110°22.1	22°59.8	153°44.4	36.1	233°36.1	28.0
3	245°33.6	252°24.2	•• 20.0	125°23.5	•• 59.5	168°46.5	•• 36.1	248°38.3	•• 27.9
4	260°36.0	267°26.5	19.5	140°25.0	59.3	183°48.5	36.1	263°40.5	27.8
5	275°38.5	282°28.8	18.9	155°26.4	59.0	198°50.5	36.2	278°42.7	27.7
6	290°41.0	297°31.2	N02°18.4	170°27.9	N22°58.8	213°52.5	N22°36.2	293°44.9	S03°27.6
7	305°43.4	312°33.5	17.8	185°29.3	58.5	228°54.5	36.3	308°47.1	27.5
8	320°45.9	327°35.8	17.3	200°30.8	58.3	243°56.5	36.3	323°49.3	27.3
9	335°48.3	342°38.1	•• 16.7	215°32.2	•• 58.0	258°58.5	•• 36.4	338°51.5	•• 27.2
10	350°50.8	357°40.4	16.2	230°33.7	57.8	274°00.5	36.4	353°53.7	27.1
11	5°53.3	12°42.7	15.7	245°35.1	57.5	289°02.5	36.5	8°55.9	27.0
12	20°55.7	27°45.0	N02°15.1	260°36.6	N22°57.3	304°04.5	N22°36.5	23°58.1	S03°26.9
13	35°58.2	42°47.3	14.6	275°38.0	57.0	319°06.5	36.6	39°00.3	26.8
14	51°00.7	57°49.5	14.0	290°39.4	56.8	334°08.4	36.6	54°02.5	26.7
15	66°03.1	72°51.8	•• 13.5	305°40.9	•• 56.5	349°10.4	•• 36.6	69°04.7	•• 26.6
16	81°05.6	87°54.1	13.0	320°42.3	56.3	4°12.4	36.7	84°06.9	26.5
17	96°08.1	102°56.4	12.5	335°43.8	56.0	19°14.4	36.7	99°09.1	26.4
18	111°10.5	117°58.7	N02°11.9	350°45.2	N22°55.8	34°16.4	N22°36.8	114°11.3	S03°26.3
19	126°13.0	133°00.9	11.4	5°46.7	55.5	49°18.4	36.8	129°13.5	26.1
20	141°15.4	148°03.2	10.9	20°48.1	55.3	64°20.4	36.9	144°15.7	26.0
21	156°17.9	163°05.4	•• 10.4	35°49.6	•• 55.0	79°22.4	•• 36.9	159°17.9	•• 25.9
22	171°20.4	178°07.7	09.8	50°51.0	54.8	94°24.4	37.0	174°20.1	25.8
23	186°22.8	193°09.9	09.3	65°52.4	54.5	109°26.4	37.0	189°22.3	25.7
Mer.pass.:10:37		v2.3 d-0.6 m-4.4		v1.5 d-0.2 m0.7		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

Stars		SHA	Dec
Alpheratz	357°34.9	29°13.6	
Ankaa	353°07.3	-42°10.1	
Schedar	349°31.4	56°40.4	
Diphda	348°47.4	-17°51.0	
Achernar	335°20.6	-57°06.6	
Hamal	327°51.3	23°34.8	
Polaris	314°23.6	89°22.4	
Acamar	315°12.0	-40°12.3	
Menkar	314°06.2	4°11.2	
Mirfak	308°28.4	49°57.1	
Aldebaran	290°39.6	16°33.6	
Rigel	281°03.9	-8°10.5	
Capella	280°21.9	46°01.5	
Bellatrix	278°22.8	6°22.3	
Elnath	278°01.8	28°37.8	
Anilam	275°37.7	-1°11.2	
Betelgeuse	270°52.0	7°24.7	
Canopus	263°52.5	-52°42.8	
Sirius	258°26.1	-16°45.2	
Adhara	255°05.8	-29°00.6	
Procyon	244°50.6	5°09.5	
Pollux	243°17.0	27°58.0	
Avior	234°14.6	-59°35.7	
Suhail	222°46.0	-43°32.3	
Miaplacidus	221°37.9	-69°49.5	
Alphard	217°47.4	-8°46.2	
Regulus	207°34.0	11°50.6	
Dubhe	193°40.2	61°37.0	
Denebola	182°24.5	14°25.8	
Gienah	175°43.1	-17°41.1	
Acrux	172°59.3	-63°14.5	
Gacrux	171°50.9	-57°15.4	
Alioth	166°12.2	55°49.3	
Spica	158°21.8	-11°17.7	
Alkaid	152°51.3	49°11.1	
Hadar	148°35.1	-60°29.7	
Menkent	147°57.0	-36°29.7	
Arcturus	145°47.4	19°02.9	
Rigel Kent.	139°39.5	-60°56.4	
Kochab	137°18.6	74°02.9	
Zuben'ubi	136°55.5	-16°08.9	
Alphecca	126°03.3	26°37.5	
Antares	112°15.3	-26°29.3	
Atria	107°09.1	-69°04.2	
Sabik	102°02.4	-15°45.4	
Shaula	96°09.9	-37°07.3	
Rasalhague	95°58.2	12°32.3	
Eltanin	90°41.9	51°28.7	
Kaus Aust.	83°32.1	-34°22.3	
Vega	80°33.0	38°48.1	
Nunki	75°47.5	-26°15.9	
Altair	61°59.8	8°55.9	
Peacock	53°05.5	-56°39.0	
Deneb	49°25.8	45°21.9	
Enif	33°38.8	9°59.3	
Al Na'ir	27°32.9	-46°50.2	
Fomalhaut	15°14.6	-29°29.3	
Scheat	13°45.3	28°13.0	
Markab	13°30.0	15°20.3	

Apr 10 Thu		SHA	Mer.pass
Venus	6°52.7	10:17	
Mars	240°41.0	18:42	
Jupiter	283°36.7	15:50	
Saturn	3°18.4	10:31	
Apr 11 Fri		SHA	Mer.pass
Venus	6°53.0	10:13	
Mars	240°17.2	18:39	
Jupiter	283°25.6	15:46	
Saturn	3°11.9	10:28	
Apr 12 Sat		SHA	Mer.pass
Venus	6°51.0	10:09	
Mars	239°53.0	18:37	
Jupiter	283°14.4	15:43	
Saturn	3°05.5	10:24	
Horizontal parallax		Venus:	0.4
		Mars:	0.1

Aries			Venus		Mars		Jupiter		Saturn	
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	201°25.3	208°12.2	N02°08.8	80°53.9	N22°54.3	124°28.4	N22°37.1	204°24.5	S03°25.6	
1	216°27.8	223°14.4	08.3	95°55.3	54.0	139°30.3	37.1	219°26.7	25.5	
2	231°30.2	238°16.7	07.8	110°56.8	53.8	154°32.3	37.1	234°28.9	25.4	
3	246°32.7	253°18.9	•• 07.3	125°58.2	•• 53.5	169°34.3	•• 37.2	249°31.1	•• 25.3	
4	261°35.2	268°21.1	06.7	140°59.6	53.3	184°36.3	37.2	264°33.3	25.2	
5	276°37.6	283°23.4	06.2	156°01.1	53.0	199°38.3	37.3	279°35.5	25.1	
6	291°40.1	298°25.6	N02°05.7	171°02.5	N22°52.7	214°40.3	N22°37.3	294°37.7	S03°25.0	
7	306°42.6	313°27.8	05.2	186°04.0	52.5	229°42.3	37.4	309°39.9	24.8	
8	321°45.0	328°30.0	04.7	201°05.4	52.2	244°44.3	37.4	324°42.1	24.7	
9	336°47.5	343°32.3	•• 04.2	216°06.8	•• 52.0	259°46.3	•• 37.5	339°44.3	•• 24.6	
10	351°49.9	358°34.5	03.7	231°08.3	51.7	274°48.2	37.5	354°46.5	24.5	
11	6°52.4	13°36.7	03.2	246°09.7	51.5	289°50.2	37.5	9°48.7	24.4	
12	21°54.9	28°38.9	N02°02.7	261°11.1	N22°51.2	304°52.2	N22°37.6	24°50.9	S03°24.3	
13	36°57.3	43°41.1	02.2	276°12.6	51.0	319°54.2	37.6	39°53.1	24.2	
14	51°59.8	58°43.3	01.7	291°14.0	50.7	334°56.2	37.7	54°55.3	24.1	
15	67°02.3	73°45.5	•• 01.2	306°15.4	•• 50.5	349°58.2	•• 37.7	69°57.5	•• 24.0	
16	82°04.7	88°47.6	00.8	321°16.9	50.2	5°00.2	37.8	84°59.7	23.9	
17	97°07.2	103°49.8	02°00.3	336°18.3	49.9	20°02.2	37.8	100°01.9	23.8	
18	112°09.7	118°52.0	N01°59.8	351°19.7	N22°49.7	35°04.1	N22°37.9	115°04.1	S03°23.6	
19	127°12.1	133°54.2	59.3	6°21.2	49.4	50°06.1	37.9	130°06.3	23.5	
20	142°14.6	148°56.4	58.8	21°22.6	49.2	65°08.1	38.0	145°08.5	23.4	
21	157°17.0	163°58.5	•• 58.3	36°24.0	•• 48.9	80°10.1	•• 38.0	160°10.7	•• 23.3	
22	172°19.5	179°00.7	57.9	51°25.5	48.7	95°12.1	38.0	175°12.9	23.2	
23	187°22.0	194°02.9	57.4	66°26.9	48.4	110°14.1	38.1	190°15.1	23.1	
Mer.pass.:10:33			v2.2 d-0.5 m-4.4		v1.4 d-0.3 m0.7		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	202°24.4	209°05.0	N01°56.9	81°28.3	N22°48.2	125°16.1	N22°38.1	205°17.3	S03°23.0	
1	217°26.9	224°07.2	56.4	96°29.8	47.9	140°18.0	38.2	220°19.5	22.9	
2	232°29.4	239°09.3	56.0	111°31.2	47.6	155°20.0	38.2	235°21.7	22.8	
3	247°31.8	254°11.5	•• 55.5	126°32.6	•• 47.4	170°22.0	•• 38.3	250°23.9	•• 22.7	
4	262°34.3	269°13.6	55.0	141°34.1	47.1	185°24.0	38.3	265°26.1	22.6	
5	277°36.8	284°15.8	54.6	156°35.5	46.9	200°26.0	38.4	280°28.3	22.5	
6	292°39.2	299°17.9	N01°54.1	171°36.9	N22°46.6	215°28.0	N22°38.4	295°30.5	S03°22.3	
7	307°41.7	314°20.0	53.6	186°38.3	46.3	230°29.9	38.5	310°32.7	22.2	
8	322°44.2	329°22.2	53.2	201°39.8	46.1	245°31.9	38.5	325°34.9	22.1	
9	337°46.6	344°24.3	•• 52.7	216°41.2	•• 45.8	260°33.9	•• 38.5	340°37.1	•• 22.0	
10	352°49.1	359°26.4	52.2	231°42.6	45.2	275°35.9	38.6	355°39.3	21.9	
11	7°51.5	14°28.5	51.8	246°44.0	45.3	290°37.9	38.6	10°41.5	21.8	
12	22°54.0	29°30.6	N01°51.3	261°45.5	N22°45.1	305°39.9	N22°38.7	25°43.7	S03°21.7	
13	37°56.5	44°32.7	50.9	276°46.9	44.8	320°41.8	38.7	40°45.9	21.6	
14	52°58.9	59°34.8	50.4	291°48.3	44.5	335°43.8	38.8	55°48.1	21.5	
15	68°01.4	74°37.0	•• 50.0	306°49.7	•• 44.3	350°45.8	•• 38.8	70°50.3	•• 21.4	
16	83°03.9	89°39.1	49.5	321°51.2	44.0	5°47.8	38.9	85°52.5	21.3	
17	98°06.3	104°41.1	49.1	336°52.6	43.8	20°49.8	38.9	100°54.7	21.2	
18	113°08.8	119°43.2	N01°48.6	351°54.0	N22°43.5	35°51.8	N22°38.9	115°56.9	S03°21.1	
19	128°11.3	134°45.3	48.2	6°55.4	43.2	50°53.7	39.0	130°59.1	20.9	
20	143°13.7	149°47.4	47.8	21°56.9	43.0	65°55.7	39.0	146°01.3	20.8	
21	158°16.2	164°49.5	•• 47.3	36°58.3	•• 42.7	80°57.7	•• 39.1	161°03.5	•• 20.7	
22	173°18.6	179°51.6	46.9	51°59.7	42.5	95°59.7	39.1	176°05.7	20.6	
23	188°21.1	194°53.7	46.5	67°01.1	42.2	111°01.7	39.2	191°07.9	20.5	
Mer.pass.:10:29			v2.2 d-0.5 m-4.4		v1.4 d-0.3 m0.7		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	203°23.6	209°55.7	N01°46.0	82°02.5	N22°41.9	126°03.7	N22°39.2	206°10.1	S03°20.4	
1	218°26.0	224°57.8	45.6	97°04.0	41.7	141°05.6	39.3	221°12.3	20.3	
2	233°28.5	239°59.9	45.2	112°05.4	41.4	156°07.6	39.3	236°14.5	20.2	
3	248°31.0	255°01.9	•• 44.7	127°06.8	•• 41.1	171°09.6	•• 39.3	251°16.7	•• 20.1	
4	263°33.4	270°04.0	44.3	142°08.2	40.9	186°11.6	39.4	266°18.9	20.0	
5	278°35.9	285°06.0	43.9	157°09.6	40.6	201°13.6	39.4	281°21.1	19.9	
6	293°38.4	300°08.1	N01°43.5	172°11.1	N22°40.4	216°15.5	N22°39.5	296°23.3	S03°19.8	
7	308°40.8	315°10.1	43.0	187°12.5	40.1	231°17.5	39.5	311°25.5	19.7	
8	323°43.3	330°12.2	42.6	202°13.9	39.8	246°19.5	39.6	326°27.7	19.5	
9	338°45.8	345°14.2	•• 42.2	217°15.3	•• 39.6	261°21.5	•• 39.6	341°29.9	•• 19.4	
10	353°48.2	0°16.2	41.8	232°16.7	39.3	276°23.5	39.7	356°32.1	19.3	
11	8°50.7	15°18.3	41.4	247°18.1	39.0	291°25.4	39.7	11°34.3	19.2	
12	23°53.1	30°20.3	N01°41.0	262°19.6	N22°38.8	306°27.4	N22°39.8	26°36.5	S03°19.1	
13	38°55.6	45°22.3	40.6	277°21.0	38.5	321°29.4	39.8	41°38.7	19.0	
14	53°58.1	60°24.3	40.1	292°22.4	38.3	336°31.4	39.8	56°40.9	18.9	
15	69°00.5	75°26.4	•• 39.7	307°23.8	•• 38.0	351°33.3	•• 39.9	71°43.1	•• 18.8	
16	84°03.0	90°28.4	39.3	322°25.2	37.7	6°35.3	39.9	86°45.3	18.7	
17	99°05.5	105°30.4	38.9	337°26.6	37.5	21°37.3	40.0	101°47.5	18.6	
18	114°07.9	120°32.4	N01°38.5	352°28.0	N22°37.2	36°39.3	N22°40.0	116°49.7	S03°18.5	
19	129°10.4	135°34.4	38.1	7°29.5	36.9	51°41.3	40.1	131°52.0	18.4	
20	144°12.9	150°36.4	37.7	22°30.9	36.7	66°43.2	40.1	146°54.2	18.3	
21	159°15.3	165°38.4	•• 37.3	37°32.3	•• 36.4	81°45.2	•• 40.2	161°56.4	•• 18.2	
22	174°17.8	180°40.4	36.9	52°33.7	36.1	96°47.2	40.2	176°58.6	18.1	
23	189°20.3	195°42.4	36.5	67°35.1	35.9	111°49.2	40.2	192°00.8	17.9	
Mer.pass.:10:25			v2.1 d-0.4 m-4.4		v1.4 d-0.3 m0.7		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

SHA	Dec
Alpheratz	357°34.9
Ankaa	353°07.3
Schedar	349°31.4
Diphda	348°47.4
Achernar	335°20.6
Hamal	327°51.3
Polaris	314°24.1
Acamar	315°12.0
Menkar	314°06.2
Mirfak	308°28.4
Aldebaran	290°39.6
Rigel	281°03.9
Capella	280°21.9
Bellatrix	278°22.9
Elath	278°01.8
Anilam	275°37.7
Betelgeuse	270°52.0
Canopus	263°52.5
Sirius	258°26.2
Adhara	255°05.8
Procyon	244°50.6
Pollux	243°17.1
Avior	234°14.6
Suhail	222°46.0
Miaplacidus	221°38.0
Alphard	217°47.4
Regulus	207°34.0
Dubhe	193°40.2
Denebola	182°24.5
Gienah	175°43.1
Acrux	172°59.2
Gacrux	171°50.9
Alioth	166°12.2
Spica	158°21.8
Alkaid	152°51.3
Hadar	148°35.1
Menkent	147°57.0
Arcturus	145°47.4
Rigel Kent	139°39.4
Kochab	137°18.6
Zuben'ubi	136°55.5
Alphecca	126°03.3
Antares	112°15.3
Atria	107°09.0
Sabik	102°02.4
Shaula	96°09.9
Rasalhague	95°58.2
Eltanin	90°41.9
Kaus Aust.	83°32.1
Vega	80°33.0
Nunki	75°47.4
Altair	61°59.8
Peacock	53°05.5
Deneb	49°25.8
Enif	33°38.8
Al Na'ir	27°32.9
Fomalhaut	15°14.6
Scheat	13°45.3
Markab	13°30.0

SHA	Dec
Venus	6°46.9
Mars	239°28.6
Jupiter	283°03.0
Saturn	2°59.2
Venus	6°40.6
Mars	239°03.9
Jupiter	282°51.6
Saturn	2°52.8
Venus	6°32.1
Mars	238°39.0
Jupiter	282°40.1
Saturn	2°46.5
Venus	6°32.1
Mars	238°39.0
Jupiter	282°40.1
Saturn	2°46.5

SHA	Dec
Venus	6°46.9
Mars	239°28.6
Jupiter	283°03.0
Saturn	2°59.2
Venus	6°40.6
Mars	239°03.9
Jupiter	282°51.6
Saturn	2°52.8
Venus	6°32.1
Mars	238°39.0
Jupiter	282°40.1
Saturn	2°46.5
Venus	6°32.1
Mars	238°39.0
Jupiter	282°40.1
Saturn	2°46.5

Horizontal parallax	
Venus:	0.4
Mars:	0.1

Sun			Moon				
Sun	GHA	Dec	GHA	ν	Dec	d	HP
0	179°50.6	N09°03.5	0°51.8	16.4'	S11°07.0	-13.3'	54.0'
1	194°50.8	04.4	15°27.2	16.4'	11°20.2	-13.2'	54.0'
2	209°51.0	05.3	30°02.6	16.4'	11°33.4	-13.2'	54.0'
3	224°51.1	•• 06.2	44°37.9	16.3'	11°46.6	-13.1'	54.0'
4	239°51.3	07.1	59°13.2	16.3'	11°59.7	-13.1'	54.0'
5	254°51.4	08.1	73°48.5	16.2'	12°12.8	-13.1'	54.0'
6	269°51.6	N09°09.0	88°23.7	16.2'	S12°25.8	-13.0'	54.0'
7	284°51.8	09.9	102°58.9	16.2'	12°38.8	-13.0'	54.0'
8	299°51.9	10.8	117°34.0	16.1'	12°51.7	-12.9'	54.0'
9	314°52.1	•• 11.7	132°09.1	16.1'	13°04.6	-12.9'	54.0'
10	329°52.2	12.6	146°44.2	16.0'	13°17.4	-12.8'	54.0'
11	344°52.4	13.5	161°19.2	16.0'	13°30.2	-12.8'	54.0'
12	359°52.5	N09°14.4	175°54.1	15.9'	S13°43.0	-12.7'	54.0'
13	14°52.7	15.3	190°29.0	15.9'	13°55.6	-12.7'	54.0'
14	29°52.9	16.2	205°03.9	15.8'	14°08.3	-12.6'	54.0'
15	44°53.0	•• 17.1	219°38.7	15.8'	14°20.8	-12.5'	54.0'
16	59°53.2	18.0	234°13.5	15.7'	14°33.4	-12.5'	54.0'
17	74°53.3	18.9	248°48.2	15.7'	14°45.8	-12.4'	54.0'
18	89°53.5	N09°19.8	263°22.8	15.6'	S14°58.2	-12.4'	54.0'
19	104°53.6	20.7	277°57.4	15.6'	15°10.6	-12.3'	54.0'
20	119°53.8	21.6	292°32.0	15.5'	15°22.9	-12.3'	54.0'
21	134°54.0	•• 22.5	307°06.5	15.5'	15°35.1	-12.2'	54.0'
22	149°54.1	23.4	321°40.9	15.4'	15°47.3	-12.1'	54.0'
23	164°54.3	24.3	336°15.3	15.4'	15°59.4	-12.1'	54.0'

Aries		Venus		Mars		Jupiter		Saturn	
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	204°22.7	210°44.4	N01°36.2	82°36.5	N22°35.6	126°51.1	N22°40.3	207°03.0	S03°17.8
1	219°25.2	225°46.4	35.8	97°37.9	35.3	141°53.1	40.3	222°05.2	17.7
2	234°27.6	240°48.3	35.4	112°39.3	35.1	156°55.1	40.4	237°07.4	17.6
3	249°30.1	255°50.3	•• 35.0	127°40.7	•• 34.8	171°57.1	•• 40.4	252°09.6	•• 17.5
4	264°32.6	270°52.3	34.6	142°42.1	34.5	186°59.1	40.5	267°11.8	17.4
5	279°35.0	285°54.2	34.2	157°43.6	34.3	202°01.0	40.5	282°14.0	17.3
6	294°37.5	300°56.2	N01°33.9	172°45.0	N22°34.0	217°03.0	N22°40.6	297°16.2	S03°17.2
7	309°40.0	315°58.2	33.5	187°46.4	33.8	232°05.0	40.6	312°18.4	17.1
8	324°42.4	331°00.1	33.1	202°47.8	33.5	247°07.0	40.6	327°20.6	17.0
9	339°44.9	346°02.1	•• 32.7	217°49.2	•• 33.2	262°08.9	•• 40.7	342°22.8	•• 16.9
10	354°47.4	361°04.0	32.3	232°50.6	33.0	277°10.9	40.7	357°25.0	16.8
11	9°49.8	16°06.0	32.0	247°52.0	32.7	292°12.9	40.8	12°27.2	16.7
12	24°52.3	31°07.9	N01°31.6	262°53.4	N22°32.4	307°14.9	N22°40.8	27°29.4	S03°16.6
13	39°54.7	46°09.9	31.2	277°54.8	31.1	322°16.8	40.9	42°31.6	16.4
14	54°57.2	61°11.8	30.9	292°56.2	32.9	337°18.8	40.9	57°33.8	16.3
15	69°59.7	76°13.7	•• 30.5	307°57.6	•• 31.6	352°20.8	•• 41.0	72°36.0	•• 16.2
16	85°02.1	91°15.7	30.1	322°59.0	31.3	7°22.8	41.0	87°38.2	16.1
17	100°04.6	106°17.6	29.8	338°00.4	31.1	22°24.7	41.0	102°40.4	16.0
18	115°07.1	121°19.5	N01°29.4	353°01.8	N22°30.8	37°26.7	N22°41.1	117°42.6	S03°15.9
19	130°09.5	136°21.5	29.1	8°03.2	30.5	52°28.7	41.1	132°44.8	15.8
20	145°12.0	151°23.4	28.7	23°04.6	30.3	67°30.6	41.2	147°47.0	15.7
21	160°14.5	166°25.3	•• 28.4	38°06.0	•• 30.0	82°32.6	•• 41.2	162°49.3	•• 15.6
22	175°16.9	181°27.2	28.0	53°07.4	26.9	97°34.6	41.3	177°51.5	15.5
23	190°19.4	196°29.1	27.7	68°08.8	29.5	112°36.6	41.3	192°53.7	15.4
Mer.pass.:10:21		v2.0 d-0.4 m-4.4		v1.4 d-0.3 m0.7		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	205°21.0	211°31.0	N01°27.3	83°10.2	N22°29.2	127°38.5	N22°41.4	207°55.9	S03°15.3
1	220°24.3	226°32.9	27.0	98°11.6	28.9	142°40.5	41.4	222°05.2	15.2
2	235°26.8	241°34.8	26.6	113°13.0	28.7	157°42.5	41.4	238°00.3	15.1
3	250°29.2	256°36.7	•• 26.3	128°14.4	•• 28.4	172°44.5	•• 41.5	253°02.5	•• 15.0
4	265°31.7	271°38.6	25.9	143°15.8	28.1	187°46.4	41.5	268°04.7	14.9
5	280°34.2	286°40.5	25.6	158°17.2	27.8	202°48.4	41.6	283°06.9	14.7
6	295°36.6	301°42.4	N01°25.3	173°18.6	N22°27.6	217°50.4	N22°41.6	298°09.1	S03°14.6
7	310°39.1	316°44.2	24.9	188°20.0	27.3	232°52.3	41.7	313°11.3	14.5
8	325°41.6	331°46.1	24.6	203°21.4	27.0	247°54.3	41.7	328°13.5	14.4
9	340°44.0	346°48.0	•• 24.3	218°22.8	•• 26.8	262°56.3	•• 41.7	343°15.7	•• 14.3
10	355°46.5	1°49.9	23.9	233°24.2	26.5	277°58.3	41.8	358°17.9	14.2
11	10°49.0	16°51.7	23.6	248°25.6	26.2	293°00.2	41.8	13°20.1	14.1
12	25°51.4	31°53.6	N01°23.3	263°27.0	N22°25.9	308°02.2	N22°41.9	28°22.3	S03°14.0
13	40°53.9	46°55.4	23.0	278°28.4	25.7	323°04.2	41.9	43°24.5	13.9
14	55°56.4	61°57.3	22.6	293°29.8	25.4	338°06.1	42.0	58°26.7	13.8
15	70°58.8	76°59.2	•• 22.3	308°31.2	•• 25.1	353°08.1	•• 42.0	73°28.9	•• 13.7
16	86°01.3	92°01.0	22.0	323°32.6	24.9	8°10.1	42.1	88°31.1	13.6
17	101°03.7	107°02.9	21.7	338°34.0	24.6	23°12.1	42.1	103°33.4	13.5
18	116°06.2	122°04.7	N01°21.4	353°35.4	N22°24.3	38°14.0	N22°42.1	118°35.6	S03°13.4
19	131°08.7	137°06.5	21.0	8°36.8	24.0	53°16.0	42.2	133°37.8	13.3
20	146°11.1	152°08.2	20.7	23°38.2	23.8	68°18.0	42.2	148°40.0	13.2
21	161°13.6	167°10.4	•• 20.4	38°39.6	•• 23.5	83°19.9	•• 42.3	163°42.2	•• 13.1
22	176°16.1	182°12.0	20.1	53°41.0	23.2	98°21.9	42.3	178°44.4	13.0
23	191°18.5	197°13.9	19.8	68°42.3	22.9	113°23.9	42.4	193°46.6	12.8
Mer.pass.:10:17		v1.9 d-0.3 m-4.4		v1.4 d-0.3 m0.7		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	206°21.0	212°15.7	N01°19.5	83°43.7	N22°22.7	128°25.8	N22°42.4	208°48.8	S03°12.7
1	221°23.5	227°17.5	19.2	98°45.1	22.4	143°27.8	42.5	223°51.0	12.6
2	236°25.8	242°19.3	18.9	113°46.5	22.1	158°29.8	42.5	238°53.2	12.5
3	251°28.4	257°21.1	•• 18.6	128°47.9	•• 21.8	173°31.7	•• 42.5	253°55.4	•• 12.4
4	266°30.9	272°23.0	18.3	143°49.3	21.6	188°33.7	42.6	268°57.6	12.3
5	281°33.3	287°24.8	18.0	158°50.7	21.3	203°35.7	42.6	283°59.8	12.2
6	296°35.8	302°26.6	N01°17.7	173°52.1	N22°21.0	218°37.6	N22°42.7	299°02.0	S03°12.1
7	311°38.2	317°28.4	17.4	188°53.5	20.7	233°39.6	42.7	314°04.2	12.0
8	326°40.7	332°30.2	17.1	203°54.9	20.5	248°41.6	42.8	329°06.4	11.9
9	341°43.2	347°32.0	•• 16.8	218°56.2	•• 20.2	263°43.5	•• 42.8	344°08.7	•• 11.8
10	356°45.6	2°33.7	16.5	233°57.6	19.6	278°45.5	42.8	359°10.9	11.7
11	11°48.1	17°35.5	16.2	248°59.0	19.6	293°47.5	42.9	14°13.1	11.6
12	26°50.6	32°37.3	N01°16.0	264°00.4	N22°19.4	308°49.4	N22°42.9	29°15.3	S03°11.5
13	41°53.0	47°39.1	15.7	279°01.8	19.1	323°51.4	43.0	44°17.5	11.4
14	56°55.5	62°40.9	15.4	294°03.2	18.8	338°53.4	43.0	59°19.7	11.3
15	71°58.0	77°42.7	•• 15.1	309°04.6	•• 18.5	353°55.3	•• 43.1	74°21.9	•• 11.2
16	87°00.4	92°44.4	14.8	324°05.9	18.3	8°57.3	43.1	89°24.1	11.1
17	102°02.9	107°46.2	14.6	339°07.3	18.0	23°59.3	43.2	104°26.3	11.0
18	117°05.3	122°48.0	N01°14.3	354°08.7	N22°17.4	39°01.2	N22°43.2	119°28.5	S03°10.8
19	132°07.8	137°49.7	14.0	9°10.1	17.7	54°03.2	43.2	134°30.7	10.7
20	147°10.3	152°51.5	13.7	24°11.5	17.2	69°05.2	43.3	149°32.9	10.6
21	162°12.7	167°53.2	•• 13.5	39°12.9	•• 16.9	84°07.1	•• 43.3	164°35.1	•• 10.5
22	177°15.2	182°55.0	13.2	54°14.3	16.6	99°09.1	43.4	179°37.3	10.4
23	192°17.7	197°56.7	12.9	69°15.6	16.3	114°11.1	43.4	194°39.6	10.3
Mer.pass.:10:13		v1.8 d-0.3 m-4.4		v1.4 d-0.3 m0.8		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

Stars	
SHA	Dec
Alpheratz	357°34.9
Ankaa	353°07.3
Schedar	349°31.4
Diphda	348°47.4
Achernar	335°20.6
Hamal	327°51.3
Polaris	314°24.2
Acamar	315°12.0
Menkar	314°06.2
Mirfak	308°28.4
Aldebaran	290°39.6
Rigel	281°03.9
Capella	280°21.9
Bellatrix	278°22.9
Elnath	278°01.8
Anilam	275°37.7
Betelgeuse	270°52.0
Canopus	263°52.5
Sirius	258°26.2
Adhara	255°05.8
Procyon	244°50.6
Pollux	243°17.1
Avior	234°14.6
Suhail	222°46.1
Miaplacidus	221°38.0
Alphard	217°47.4
Regulus	207°34.0
Dubhe	193°40.2
Denebola	182°24.5
Gienah	175°43.1
Acrux	172°59.3
Gacrux	171°50.9
Alioth	166°12.2
Spica	158°21.8
Alkaid	152°51.3
Hadar	148°35.1
Menkent	147°57.0
Arcturus	145°3.4
Rigil Kent.	139°39.4
Kochab	137°18.6
Zuben'ubi	136°55.5
Alphecca	126°03.2
Antares	112°15.3
Atria	107°09.0
Sabik	102°02.3
Shaula	96°09.9
Rasalhague	95°58.2
Eltanin	90°41.8
Kaus Augusta	83°32.1
Vega	80°32.9
Nunki	75°47.4
Altair	61°59.8
Peacock	53°05.5
Deneb	49°25.8
Enif	33°38.7
Al Na'ir	27°32.9
Fomalhaut	15°14.5
Scheat	13°45.3
Markab	13°29.9

Apr 16 Wed	
Venus	SHA
Mars	6°21.7
Jupiter	238°13.8
Saturn	282°28.4
Mer.pass	
09:56	
18:28	
15:31	
10:10	
Apr 17 Thu	
Venus	SHA
Mars	6°09.1
Jupiter	237°48.4
Saturn	282°16.7
Mer.pass	
09:53	
18:26	
15:27	
10:07	
Apr 18 Fri	
Venus	SHA
Mars	5°54.7
Jupiter	237°22.7
Saturn	282°04.8
Mer.pass	
09:50	
18:23	
15:24	
10:03	

Horizontal parallax	
Venus:	0.4
Mars:	0.1

Sun			Moon				
Wed	GHA	Dec	GHA	ν	Dec	d	HP
0	180°01.7	N10°08.1	329°01.0	12.0'	S24°20.2	-8.0'	54.2'
1	195°01.9	09.0	343°32.0	12.0'	24°28.2	-7.9'	54.2'
2	210°02.0	09.8	358°03.0	11.9'	24°36.0	-7.8'	54.2'
3	225°02.2	•• 10.7	12°33.8	11.8'	24°43.7	-7.7'	54.2'
4	240°02.3	11.6	27°04.6	11.7'	24°51.3	-7.6'	54.2'
5	255°02.5	12.5	41°35.3	11.7'	24°58.8	-7.4'	54.2'
6	270°02.6	N10°13.4	56°05.9	11.6'	S25°06.2	-7.3'	54.2'
7	285°02.8	14.3	70°36.5	11.5'	25°13.5	-7.2'	54.2'
8	300°02.9	15.1	85°07.0	11.5'	25°20.7	-7.1'	54.2'
9	315°03.0	•• 16.0	99°37.4	11.4'	25°27.7	-7.0'	54.2'
10	330°03.2	16.9	114°07.7	11.3'	25°34.7	-6.9'	54.3'
11	345°03.3	17.8	128°38.0	11.2'	25°41.5	-6.8'	54.3'
12	0°03.5	N10°18.7	143°08.2	11.2'	S25°48.2	-6.6'	54.3'
13	15°03.6	19.6	157°38.3	11.1'	25°54.8	-6.5'	54.3'
14	30°03.8	20.4	172°08.4	11.0'	26°01.3	-6.4'	54.3'
15	45°03.9	•• 21.3	186°38.4	11.0'	26°07.6	-6.3'	54.3'
16	60°04.1	22.2	201°08.3	10.9'	26°13.8	-6.2'	54.3'
17	75°04.2	23.1	215°38.1	10.8'	26°20.0	-6.1'	54.3'
18	90°04.4	N10°24.0	230°07.9	10.7'	S26°25.9	-5.9'	54.3'
19	105°04.5	24.9	244°37.6	10.7'	26°31.8	-5.8'	54.4'
20	120°04.6	25.7	259°07.3	10.6'	26°37.6	-5.7'	54.4'
21	135°04.8	•• 26.6	273°36.9	10.5'	26°43.2	-5.6'	54.4'
22	150°04.9	27.5	288°06.4	10.5'	26°48.7	-5.4'	54.4'
23	165°05.1	28.4	302°35.8	10.4'	26°54.1	-5.3'	54.4'

Aries		Venus		Mars		Jupiter		Saturn	
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	207°20.1	212°58.5	N01°12.7	84°17.0	N22°16.0	129°13.0	N22°43.5	209°41.8	S03°10.2
1	222°22.6	228°00.2	12.4	99°18.4	15.8	144°15.0	43.5	224°44.0	10.1
2	237°25.1	243°02.0	12.2	114°19.8	15.5	159°17.0	43.5	239°46.2	10.0
3	252°27.5	258°03.7	•• 11.9	129°21.2	•• 15.2	174°18.9	•• 43.6	254°48.4	•• 09.9
4	267°30.0	273°05.4	11.6	144°22.5	14.9	189°20.9	43.6	269°50.6	09.8
5	282°32.5	288°07.2	11.4	159°23.9	14.7	204°22.9	43.7	284°52.8	09.7
6	297°34.9	303°08.9	N01°11.1	174°25.3	N22°14.4	219°24.8	N22°43.7	299°55.0	S03°09.6
7	312°37.4	318°10.6	10.9	189°26.7	14.1	234°26.8	43.8	314°57.2	09.5
8	327°39.8	333°12.3	10.6	204°28.1	13.8	249°28.7	43.8	329°59.4	09.4
9	342°42.3	348°14.1	•• 10.4	219°29.4	•• 13.5	264°30.7	•• 43.8	345°01.3	•• 09.3
10	357°44.8	37°15.8	10.1	234°30.8	13.3	279°32.7	43.9	°03.8	09.2
11	12°47.2	18°17.5	09.9	249°32.2	13.0	294°34.6	43.9	15°06.1	09.1
12	27°49.7	33°19.2	N01°09.6	264°33.6	N22°12.7	309°36.6	N22°44.0	30°08.3	S03°09.0
13	42°52.2	48°20.9	09.4	279°35.0	12.4	324°38.6	44.0	45°10.5	08.9
14	57°54.6	63°22.6	09.2	294°36.3	12.1	339°40.5	44.1	60°12.7	08.8
15	72°57.1	78°24.3	•• 08.9	309°37.7	•• 11.9	354°42.5	•• 44.1	75°14.9	•• 08.7
16	87°59.6	93°26.0	08.7	324°39.1	11.6	9°44.4	44.2	90°17.1	08.5
17	103°02.0	108°27.7	08.5	339°40.5	11.3	24°46.4	44.2	105°19.3	08.4
18	118°04.5	123°29.4	N01°08.2	354°41.8	N22°11.0	39°48.4	N22°44.2	120°21.5	S03°08.3
19	133°07.0	138°31.1	08.0	9°43.2	10.7	54°50.3	44.3	135°23.7	08.2
20	148°09.4	153°32.7	07.8	24°44.6	10.4	69°52.3	44.4	150°25.9	08.1
21	163°11.9	168°34.4	•• 07.5	39°46.0	•• 10.2	84°54.3	•• 44.4	165°28.1	•• 08.0
22	178°14.3	183°36.1	07.3	54°47.3	09.9	99°56.2	44.4	180°30.3	07.9
23	193°16.8	198°37.8	07.1	69°48.7	09.6	114°58.2	44.5	195°32.6	07.8
Mer.pass.:10:09		v1.7 d-0.3 m-4.5		v1.4 d-0.3 m0.8		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	208°19.3	213°39.5	N01°06.9	84°50.1	N22°09.3	130°00.1	N22°44.5	210°34.8	S03°07.7
1	223°21.7	228°41.1	06.6	99°51.4	09.0	145°02.1	44.5	225°37.0	07.6
2	238°24.2	243°42.8	06.4	114°52.8	08.8	160°04.1	44.6	240°39.2	07.5
3	253°26.7	258°44.4	•• 06.2	129°54.2	•• 08.5	175°06.0	•• 44.6	255°41.4	•• 07.4
4	268°29.1	273°46.1	06.0	144°55.6	08.2	190°08.0	44.7	270°43.6	07.3
5	283°31.6	288°47.8	05.8	159°56.9	07.9	205°09.9	44.7	285°45.8	07.2
6	298°34.1	303°49.4	N01°05.6	174°58.3	N22°07.6	220°11.9	N22°44.8	300°48.0	S03°07.1
7	313°36.5	318°51.1	05.4	189°59.7	07.3	235°13.9	44.8	315°50.2	07.0
8	328°39.0	333°52.7	05.1	205°01.0	07.1	250°15.8	44.8	330°52.4	06.9
9	343°41.5	348°54.4	•• 04.9	220°02.4	•• 06.8	265°17.7	•• 44.9	345°54.7	•• 06.8
10	358°43.9	3°56.0	04.7	235°03.8	06.6	280°19.8	44.9	°56.9	06.7
11	13°46.4	18°57.6	04.5	250°05.2	06.2	295°21.7	45.0	15°59.1	06.6
12	28°48.8	33°59.3	N01°04.3	265°06.5	N22°05.9	301°23.6	N22°45.0	31°01.3	S03°06.5
13	43°51.3	49°00.9	04.1	280°07.9	05.6	325°25.6	45.1	46°03.5	06.4
14	58°53.8	64°02.5	03.9	295°09.3	05.3	340°27.6	45.1	61°05.7	06.3
15	73°56.2	79°04.2	•• 03.7	310°10.6	•• 05.1	355°29.5	•• 45.1	76°07.9	•• 06.2
16	88°58.7	94°05.8	03.5	325°12.0	04.8	10°31.5	45.2	91°10.1	06.1
17	104°01.2	109°07.4	03.3	340°13.4	04.5	25°33.4	45.2	106°12.3	06.0
18	119°03.6	124°09.0	N01°03.2	355°14.7	N22°04.2	40°35.4	N22°45.3	121°14.5	S03°05.8
19	134°06.1	139°10.6	03.0	10°16.1	03.9	55°37.4	45.3	136°16.8	05.7
20	149°08.6	154°12.2	02.8	25°17.5	03.6	70°39.3	45.4	151°19.0	05.6
21	164°11.0	169°13.8	•• 02.6	40°18.8	•• 03.3	85°41.3	•• 45.4	166°21.2	•• 05.5
22	179°13.5	184°15.5	02.4	55°20.2	03.1	100°43.2	45.4	181°23.4	05.4
23	194°15.9	199°17.1	02.2	70°21.6	02.8	115°45.2	45.5	196°25.6	05.3
Mer.pass.:10:05		v1.7 d-0.2 m-4.5		v1.4 d-0.3 m0.8		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	209°18.4	214°18.7	N01°02.0	85°22.9	N22°02.5	130°47.1	N22°45.5	211°27.8	S03°05.2
1	224°20.9	229°20.3	01.9	100°24.3	02.2	145°49.1	45.6	226°30.0	05.1
2	239°23.3	244°21.8	01.7	115°27.7	01.9	160°51.1	45.6	241°32.2	05.0
3	254°25.8	259°23.4	•• 01.5	130°27.0	•• 01.6	175°53.0	•• 45.7	256°34.4	•• 04.9
4	269°28.7	274°25.0	01.3	145°28.4	01.3	190°55.0	45.7	271°36.7	04.8
5	284°30.7	289°26.6	01.2	160°29.7	01.1	205°56.9	45.7	286°38.9	04.7
6	299°33.2	304°28.2	N01°01.0	175°31.1	N22°00.8	220°58.9	N22°45.8	301°41.1	S03°04.6
7	314°35.7	319°29.8	00.8	190°32.5	00.5	236°00.8	45.8	316°43.3	04.5
8	329°38.1	334°31.3	00.7	205°33.8	22°00.2	251°02.8	45.9	331°45.5	04.4
9	344°40.6	349°32.9	•• 00.5	220°35.2	21°59.9	266°04.7	•• 45.9	346°47.7	•• 04.3
10	359°43.1	4°34.5	00.3	235°36.6	59.6	281°06.7	46.0	1°49.9	04.2
11	14°45.5	19°36.0	00.2	250°37.9	59.3	296°08.7	46.0	16°52.1	04.1
12	29°48.0	34°37.6	N01°00.0	265°39.3	N21°59.0	311°10.6	N22°46.0	31°54.3	S03°04.0
13	44°50.4	49°39.2	00°59.8	280°40.6	58.7	326°12.6	46.1	46°56.6	03.9
14	59°52.9	64°40.7	59.7	295°42.0	58.5	341°15.8	46.1	61°58.8	03.8
15	74°55.4	79°42.3	•• 59.5	310°43.4	•• 58.2	356°16.5	•• 46.2	77°01.0	•• 03.7
16	89°57.8	94°43.8	59.4	325°44.7	57.9	11°18.4	46.2	92°03.2	03.6
17	105°00.3	109°45.4	59.2	340°46.1	57.6	26°20.4	46.3	107°05.4	03.5
18	120°02.8	124°46.9	N00°59.1	355°47.4	N21°57.3	41°22.3	N22°46.3	122°07.6	S03°03.4
19	135°05.2	139°48.5	58.9	10°48.8	57.0	56°24.3	46.3	137°09.8	03.3
20	150°07.7	154°50.0	58.8	25°50.1	56.7	71°26.2	46.4	152°12.0	03.2
21	165°10.2	169°51.6	•• 58.6	40°51.5	•• 56.4	86°28.2	•• 46.4	167°14.2	•• 03.1
22	180°12.6	184°53.1	58.5	55°52.9	56.1	101°30.2	46.5	182°16.5	03.0
23	195°15.1	199°54.6	58.3	70°54.2	55.8	116°32.1	46.5	197°18.7	02.9
Mer.pass.:10:01		v1.6 d-0.2 m-4.5		v1.4 d-0.3 m0.8		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

SHA	Dec
Alpheratz	357°34.9
Ankaa	353°07.3
Schedar	349°31.4
Diphda	348°47.4
Achernar	335°20.6
Hamal	327°51.3
Polaris	314°24.4
Acamar	315°12.0
Menkar	314°06.2
Mirfak	308°28.4
Aldebaran	290°39.6
Rigel	281°03.9
Capella	280°21.9
Bellatrix	278°22.9
Elath	278°01.8
Anilam	275°37.7
Betelgeuse	270°52.0
Canopus	263°52.5
Sirius	258°26.2
Adhara	255°05.8
Procyon	244°50.7
Pollux	243°17.1
Avior	234°14.6
Suhail	222°46.1
Miaplacidus	221°38.0
Alphard	217°47.4
Regulus	207°34.1
Dubhe	193°40.2
Denebola	182°24.5
Gienah	175°43.1
Acrux	172°59.3
Gacrux	171°50.9
Alioth	166°12.9
Spica	158°21.8
Alkaid	152°51.3
Hadar	148°35.1
Menkent	147°57.0
Arcturus	145°47.4
Rigil Kent	139°39.4
Kochab	137°18.6
Zuben'ubi	126°55.5
Alphecca	126°03.2
Antares	112°15.3
Atria	107°08.9
Sabik	102°02.3
Shaula	96°09.8
Rasalhague	95°58.1
Eltanin	90°41.8
Kaus Aust.	83°32.1
Vega	80°32.9
Nunki	75°47.4
Altair	61°59.7
Peacock	53°05.4
Deneb	49°25.7
Enif	33°38.7
Al Na'ir	27°32.9
Fomalhaut	15°14.5
Scheat	13°45.3
Markab	13°29.9

SHA	Mer.pass.
Venus	5°38.4
Mars	236°56.9
Jupiter	281°52.9
Saturn	2°21.6
SHA	Mer.pass.
Venus	5°20.2
Mars	236°30.8
Jupiter	281°40.9
Saturn	2°15.5
SHA	Mer.pass.
Venus	5°00.2
Mars	236°04.5
Jupiter	281°28.7
Saturn	2°09.4

Horizontal parallax	
Venus:	0.4
Mars:	0.1

Sun			Moon				
Sat	GHA	Dec	GHA	ν	Dec	d	HP
0	180°11.9	N11°11.1	291°37.6	8.4°	S28°29.5	1.6'	55.3'
1	195°12.1	12.0	306°05.0	8.4°	28°27.8	1.8'	55.3'
2	210°12.2	12.8	320°32.4	8.4°	28°25.9	1.9'	55.4'
3	225°12.3	•• 13.7	334°59.8	8.4°	28°23.9	2.1'	55.4'
4	240°12.5	14.6	349°27.3	8.4°	28°21.8	2.2'	55.4'
5	255°12.6	15.4	3°54.7	8.4°	28°19.5	2.4'	55.4'
6	270°12.8	N11°16.3	18°22.1	8.4°	S28°17.0	2.5'	55.5'
7	285°12.9	17.2	32°49.5	8.4°	28°14.4	2.7'	55.5'
8	300°13.0	18.0	47°16.9	8.4°	28°11.7	2.8'	55.5'
9	315°13.2	•• 18.9	61°44.3	8.4°	28°08.8	3.0'	55.5'
10	330°13.3	19.7	76°11.7	8.4°	28°05.7	3.1'	55.6'
11	345°13.4	20.6	90°39.0	8.4°	28°02.5	3.3'	55.6'
12	0°13.6	N11°21.5	105°06.5	8.4°	S27°59.1	3.4'	55.6'

Aries		Venus		Mars		Jupiter		Saturn	
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	210°17.6	214°56.2	N00°58.2	85°55.6	N21°55.6	131°34.1	N22°46.6	212°20.9	S03°02.8
1	225°20.0	229°57.7	58.1	100°56.9	55.3	146°36.0	46.6	227°23.1	02.7
2	240°22.5	244°59.2	57.9	115°58.3	55.0	161°38.0	46.6	242°25.3	02.6
3	255°24.9	260°00.7	•• 57.8	130°59.6	•• 54.7	176°39.9	•• 46.7	257°27.5	•• 02.5
4	270°27.4	275°02.2	57.6	146°01.0	54.4	191°41.9	46.7	272°29.7	02.4
5	285°29.9	290°03.8	57.5	161°02.3	54.1	206°43.8	46.8	287°31.9	02.3
6	300°32.3	305°05.3	N00°57.4	176°03.7	N21°53.8	221°45.8	N22°46.8	302°34.2	S03°02.2
7	315°34.8	320°06.8	57.3	191°05.1	53.5	236°47.7	46.8	317°36.4	02.0
8	330°37.3	335°08.3	57.1	206°06.4	53.2	251°49.7	46.9	332°38.6	01.9
9	345°39.7	350°09.8	•• 57.0	221°07.8	•• 52.9	266°51.6	•• 46.9	347°40.8	•• 01.8
10	0°42.2	5°11.3	56.9	236°09.1	52.6	281°53.6	47.0	2°43.0	01.7
11	15°44.7	20°12.8	56.7	251°10.5	52.3	296°55.5	47.0	17°45.2	01.6
12	30°37.1	35°14.3	N00°56.6	266°11.8	N21°52.0	311°57.5	N22°47.1	32°47.4	S03°01.5
13	45°49.6	50°15.8	56.5	281°13.2	51.8	326°59.4	47.1	47°49.7	01.4
14	60°52.1	65°17.3	56.4	296°14.5	51.5	342°01.4	47.1	62°51.9	01.3
15	75°54.5	80°18.8	•• 56.3	311°15.9	•• 51.2	357°03.3	•• 47.2	77°54.1	•• 01.2
16	90°57.0	95°20.2	56.2	326°17.2	50.9	12°05.3	47.2	92°56.3	01.1
17	105°59.4	110°21.7	56.0	341°18.6	50.6	27°07.2	47.3	107°58.5	01.0
18	121°01.9	125°23.2	N00°55.9	356°19.9	N21°50.3	42°09.2	N22°47.3	123°00.7	S03°00.9
19	136°04.4	140°24.7	55.8	11°21.3	50.0	57°11.1	47.4	138°02.9	00.8
20	151°06.8	155°26.2	55.7	26°22.6	49.7	72°13.1	•• 47.4	153°05.1	00.7
21	166°09.3	170°27.6	•• 55.6	41°24.0	•• 49.4	87°15.0	•• 47.4	168°07.4	•• 00.6
22	181°11.8	185°29.1	55.5	56°25.3	49.1	102°17.0	47.5	183°09.6	00.5
23	196°14.2	200°30.6	55.4	71°26.7	48.8	117°18.9	47.5	198°11.8	00.4
Mer.pass.:09:57		v1.5 d-0.1 m-4.5		v1.4 d-0.3 m0.8		v2.0 d0.0 m-1.9		v2.2 d0.1 m1.2	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	211°16.7	215°32.0	N00°55.3	86°28.0	N21°48.5	132°20.9	N22°47.6	213°14.0	S03°00.3
1	226°19.2	230°33.5	55.2	101°29.4	48.2	147°22.8	47.6	228°16.2	00.2
2	241°21.6	245°34.9	55.1	116°30.7	47.9	162°24.8	47.6	243°18.4	00.1
3	256°24.1	260°36.4	•• 55.0	131°32.1	•• 47.6	177°26.7	•• 47.7	258°20.6	03°00.0
4	271°26.5	275°37.8	54.9	146°33.4	47.3	192°28.7	47.7	273°22.9	02°59.9
5	286°29.0	290°39.3	54.8	161°34.7	47.0	207°30.6	47.8	288°25.1	59.8
6	301°31.5	305°40.7	N00°54.7	176°36.1	N21°46.7	222°32.6	N22°47.8	303°27.3	S02°59.7
7	316°33.9	320°42.2	54.6	191°37.4	46.4	237°34.5	47.9	318°29.5	59.6
8	331°36.4	335°43.6	54.5	206°38.8	46.1	252°36.5	47.9	333°31.7	59.5
9	346°38.9	350°45.1	•• 54.5	221°40.1	•• 45.8	267°38.4	•• 47.9	348°33.9	•• 59.4
10	1°41.3	5°46.5	54.4	236°41.5	45.6	282°40.4	48.0	3°36.1	59.3
11	16°43.8	20°47.9	54.3	251°42.8	45.3	297°42.3	48.0	18°38.4	59.2
12	31°46.3	35°49.4	N00°54.2	266°44.2	N21°45.0	312°44.3	N22°48.1	33°40.6	S02°59.1
13	46°48.7	50°50.8	54.1	281°45.5	44.7	327°46.2	48.1	48°42.8	59.0
14	61°51.2	65°52.2	54.0	296°46.8	44.4	342°48.2	48.1	63°45.0	58.9
15	76°53.7	80°53.6	•• 54.0	311°48.2	•• 44.1	357°50.1	•• 48.2	78°47.2	•• 58.8
16	91°56.1	95°55.5	53.9	326°49.5	43.8	12°52.0	48.2	93°49.4	58.7
17	106°58.6	110°56.5	53.8	341°50.9	43.5	27°54.0	48.3	108°51.7	58.6
18	122°01.0	125°57.9	N00°53.7	356°52.2	N21°43.2	42°55.9	N22°48.3	123°53.9	S02°58.5
19	137°03.5	140°59.3	53.7	11°53.6	42.9	57°57.9	48.4	138°56.1	58.4
20	152°06.0	156°00.7	53.6	26°54.9	42.6	72°59.8	48.4	153°58.3	58.3
21	167°08.4	171°02.1	•• 53.5	41°56.2	•• 42.3	88°01.8	•• 48.4	169°00.5	•• 58.2
22	182°10.9	186°03.5	53.5	56°57.6	42.0	103°03.7	48.5	184°02.7	58.1
23	197°13.4	201°04.9	53.4	71°58.9	41.7	118°05.7	48.5	199°04.9	58.0
Mer.pass.:09:53		v1.5 d-0.1 m-4.5		v1.3 d-0.3 m0.8		v1.9 d0.0 m-1.9		v2.2 d0.1 m1.2	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	212°15.8	216°06.3	N00°53.3	87°00.3	N21°41.4	133°07.6	N22°48.6	214°07.2	S02°57.9
1	227°18.3	231°07.7	53.3	102°01.6	41.1	148°09.6	48.6	229°09.4	57.8
2	242°20.8	246°09.1	53.2	117°02.9	40.8	163°11.5	48.6	244°11.6	57.6
3	257°23.2	261°10.5	•• 53.2	132°04.3	•• 40.5	178°13.4	•• 48.7	259°13.8	•• 57.7
4	272°25.7	276°11.9	53.1	147°05.6	40.2	193°15.4	48.7	274°16.0	57.5
5	287°28.1	291°13.3	53.1	162°07.0	39.9	208°17.3	48.8	289°18.2	57.4
6	302°30.6	306°14.6	N00°53.0	177°08.3	N21°39.6	223°19.3	N22°48.8	304°20.5	S02°57.3
7	317°33.1	321°16.0	52.9	192°09.6	39.3	238°21.2	48.9	319°22.7	57.2
8	332°35.5	336°17.4	52.9	207°11.0	39.0	253°23.2	48.9	334°24.9	57.1
9	347°38.0	351°18.8	•• 52.8	222°12.3	•• 38.7	268°25.1	•• 48.9	349°27.1	•• 57.0
10	2°40.5	6°20.1	52.8	237°13.6	38.4	283°27.1	49.0	4°29.3	56.9
11	17°42.9	21°21.5	52.8	252°15.0	38.1	298°29.0	49.0	19°31.5	56.8
12	32°45.4	36°22.9	N00°52.7	267°16.3	N21°37.8	313°30.9	N22°49.1	34°33.8	S02°56.7
13	47°47.9	51°24.2	52.7	282°17.7	37.5	328°32.9	49.1	49°36.0	56.6
14	62°50.3	66°25.6	52.6	297°19.0	37.2	343°34.8	49.1	64°38.2	56.5
15	77°52.8	81°27.0	•• 52.6	312°20.3	•• 36.9	358°36.8	•• 49.2	79°40.4	•• 56.4
16	92°55.3	96°28.3	52.6	327°21.7	36.5	13°38.7	49.2	94°42.6	56.3
17	107°57.7	111°29.7	52.5	342°23.0	36.2	28°40.7	49.3	109°44.8	56.2
18	123°00.2	126°31.0	N00°52.5	357°24.3	N21°35.9	43°42.6	N22°49.3	124°47.1	S02°56.1
19	138°02.6	141°32.4	52.4	12°25.7	35.6	58°44.5	49.3	139°49.3	56.0
20	153°05.1	156°33.7	52.4	27°27.0	35.3	73°46.5	49.4	154°51.5	55.9
21	168°07.6	171°35.1	•• 52.4	42°28.3	•• 35.0	88°48.4	•• 49.4	169°53.7	•• 55.8
22	183°10.0	186°36.4	52.4	57°29.7	34.7	103°50.4	49.5	184°55.9	55.7
23	198°12.5	201°37.7	52.3	72°31.0	34.4	118°52.3	49.5	199°58.1	55.6
Mer.pass.:09:49		v1.4 d-0.1 m-4.5		v1.3 d-0.3 m0.8		v1.9 d0.0 m-1.9		v2.2 d0.1 m1.2	

SHA	Dec
Alpheratz	357°34.9
Ankaa	353°07.3
Schedar	349°31.4
Diphda	348°47.4
Achernar	335°20.6
Hamal	327°51.3
Polaris	314°24.8
Acamar	315°12.0
Menkar	314°06.2
Mirfak	308°28.4
Aldebaran	290°39.6
Rigel	281°03.9
Capella	280°21.9
Bellatrix	278°22.9
Elnath	278°01.8
Anilam	275°37.7
Betelgeuse	270°52.0
Canopus	263°52.6
Sirius	258°26.2
Adhara	255°05.8
Procyon	244°50.7
Pollux	243°17.1
Avior	234°14.7
Suhail	222°46.1
Miaplacidus	221°38.1
Alphard	217°47.5
Regulus	207°34.1
Dubhe	193°40.3
Denebola	182°24.5
Gienah	175°43.1
Acrux	172°59.3
Gacrux	171°50.9
Alioth	166°12.2
Spica	158°21.8
Alkaid	152°51.3
Hadar	148°35.1
Menkent	147°57.0
Arcturus	145°47.4
Rigel Kent.	139°39.4
Kochab	137°18.6
Zuben'ubi	136°55.4
Alphecca	126°03.2
Antares	112°15.3
Atria	107°08.9
Sabik	102°02.3
Shaula	96°09.8
Rasalhague	95°58.1
Eltanin	90°41.8
Kaus Aus.	83°32.0
Vega	80°32.9
Nunki	75°47.4
Altair	61°59.7
Peacock	53°05.4
Deneb	49°25.7
Enif	33°38.7
Al Na'ir	27°32.8
Fomalhaut	15°14.5
Scheat	13°45.2
Markab	13°29.9

SHA	Dec
Venus	4°38.6
Mars	235°38.0
Jupiter	281°16.5
Saturn	2°03.3
Apr 22 Tue	
Venus	4°38.6
Mars	235°38.0
Jupiter	281°16.5
Saturn	2°03.3
Apr 23 Wed	
Venus	4°15.3
Mars	235°11.3
Jupiter	281°04.2
Saturn	1°57.3
Apr 24 Thu	
Venus	3°50.5
Mars	234°44.4
Jupiter	280°51.8
Saturn	1°51.3
Horizontal parallax	
Venus:	0.4
Mars:	0.1

Sun		Moon			
Tue	GHA	Dec	GHA	ν	Dec
0	180°21.2	N12°12.5	253°14.2	10.2°	S20°11.8
1	195°21.3	13.4	267°43.4	10.2°	19°59.9
2	210°21.5	14.2	282°12.7	10.3°	19°47.9
3	225°21.6	•• 15.0	296°42.0	10.3°	19°35.8
4	240°21.7	15.9	311°11.4	10.4°	19°23.5
5	255°21.8	16.7	325°40.7	10.4°	19°11.2
6	270°21.9	N12°17.6	340°10.1	10.4°	S18°58.7
7	285°22.1	18.4	354°39.6	10.5°	18°46.1
8	300°22.2	19.2	9°09.1	10.5°	18°33.4
9	315°22.3	•• 20.1	23°38.6	10.5°	18°20.6
10	330°22.4	20.9	38°08.2	10.6°	18°07

Aries				Venus				Mars				Jupiter				Saturn			
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	213°15.0	216°39.1	N00°52.3	87°32.3	N21°34.1	133°54.3	N22°49.6	215°00.4	S02°55.5										
1	228°17.4	231°40.4	52.3	102°33.7	33.8	148°56.2	49.6	230°02.6	55.4										
2	243°19.9	246°41.7	52.3	117°35.0	33.3	163°58.1	49.6	245°04.8	55.3										
3	258°22.4	261°43.1	.. 52.2	132°36.3	.. 33.2	179°00.1	.. 49.7	260°07.0	.. 55.2										
4	273°24.8	276°44.4	52.2	147°37.6	32.9	194°02.0	49.7	275°09.2	55.1										
5	288°27.3	291°45.7	52.2	162°39.0	32.6	209°04.0	49.8	290°11.4	55.0										
6	303°29.7	306°47.0	N00°52.2	177°40.3	N21°32.3	224°05.9	N22°49.8	305°13.7	S02°54.9										
7	318°32.2	321°48.4	52.2	192°41.6	32.0	239°07.8	49.8	320°15.9	54.8										
8	333°34.7	336°49.7	52.2	207°43.0	31.7	254°09.8	49.9	335°18.1	54.7										
9	348°37.1	351°51.0	.. 52.1	222°44.3	.. 31.4	269°11.7	.. 49.9	350°20.3	.. 54.6										
10	3°39.6	6°52.3	52.1	237°45.6	31.1	284°13.7	50.0	5°22.5	54.5										
11	18°42.1	21°53.6	52.1	252°47.0	30.8	299°15.6	50.0	20°24.8	54.4										
12	33°44.5	36°54.9	N00°52.1	267°48.3	N21°30.5	314°17.6	N22°50.0	35°27.0	S02°54.3										
13	48°47.0	51°56.2	52.1	282°49.6	30.1	329°19.5	50.1	50°29.2	54.2										
14	63°49.5	66°57.5	52.1	297°50.9	29.8	344°21.4	50.1	65°31.4	54.1										
15	78°51.9	81°58.8	.. 52.1	312°52.3	.. 29.5	359°23.4	.. 50.2	80°33.6	.. 54.0										
16	93°54.4	97°00.1	52.1	327°53.6	29.2	14°25.3	50.2	95°35.8	53.9										
17	108°56.9	112°01.4	52.1	342°54.9	28.9	29°27.2	50.2	110°38.1	53.8										
18	123°59.3	127°02.7	N00°52.1	357°56.2	N21°28.6	44°29.2	N22°50.3	125°40.3	S02°53.7										
19	139°01.8	142°04.0	52.1	12°57.6	28.3	59°31.1	50.3	140°42.5	53.6										
20	154°04.2	157°05.3	52.1	27°58.9	28.0	74°33.1	.. 50.4	155°44.7	53.5										
21	169°06.7	172°06.6	.. 52.1	43°00.2	.. 27.7	89°35.0	.. 50.4	170°46.9	.. 53.4										
22	184°09.2	187°07.8	52.1	58°01.5	27.4	104°36.9	50.4	185°49.2	53.3										
23	199°11.6	202°09.1	52.2	73°02.9	27.1	119°38.9	50.5	200°51.4	53.2										
Mer.pass.:09:45				v1.3 d-0.0 m-4.5				v1.3 d-0.3 m0.9				v1.9 d0.0 m-1.9				v2.2 d0.1 m1.2			

Sat	GHA		GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	214°14.1	217°10.4	N00°52.2	88°04.2	N21°26.8	134°40.8	N22°50.5	215°53.6	S02°53.1						
1	229°16.6	232°11.7	52.2	103°05.5	26.5	149°42.8	50.6	230°55.8	53.0						
2	244°19.0	247°13.0	52.2	118°06.8	26.1	164°44.7	50.6	245°58.0	52.9						
3	259°21.5	262°14.2	· · 52.2	133°08.2	· · 25.8	179°46.6	· · 50.6	261°00.3	· · 52.2						
4	274°24.0	277°15.5	52.2	148°09.5	25.5	194°48.6	50.7	276°02.5	52.7						
5	289°26.4	292°16.8	52.2	163°10.8	25.2	209°50.5	50.7	291°04.7	52.6						
6	304°28.9	307°18.0	N00°52.3	178°12.1	N21°24.9	224°52.4	N22°50.8	306°06.9	S02°52.5						
7	319°31.4	322°19.3	52.3	193°13.5	24.6	239°54.4	50.8	321°09.1	52.4						
8	334°33.8	337°20.5	52.3	208°14.8	24.3	254°56.3	50.9	336°11.4	52.3						
9	349°36.3	352°21.8	· · 52.3	223°16.1	· · 24.0	269°58.3	· · 50.9	351°13.6	· · 52.2						
10	4°38.7	7°23.0	52.4	238°17.4	23.7	285°00.2	50.9	6°15.8	52.1						
11	19°41.2	22°24.3	52.4	253°18.7	23.4	300°02.1	51.0	21°18.0	52.0						
12	34°43.7	37°25.5	N00°52.4	268°20.1	N21°23.0	315°04.1	N22°51.0	36°20.2	S02°51.9						
13	49°46.1	52°26.8	52.5	283°21.4	22.7	330°06.0	51.1	51°22.5	51.8						
14	64°48.6	67°28.0	52.5	298°22.7	22.4	345°07.9	51.1	66°24.7	51.7						
15	79°51.1	82°29.3	· · 52.5	313°24.0	· · 22.1	0°09.9	· · 51.1	81°26.9	· · 51.6						
16	94°53.5	97°30.5	52.6	328°25.3	21.8	15°11.8	51.2	96°29.1	51.5						
17	109°56.0	112°31.8	52.6	343°26.7	21.5	30°13.7	51.2	111°31.3	51.4						
18	124°58.5	127°33.0	N00°52.6	358°28.0	N21°21.2	45°15.7	N22°51.3	126°33.6	S02°51.3						
19	140°00.9	142°34.2	52.7	13°29.3	20.9	60°17.6	51.3	141°35.8	51.2						
20	155°03.4	157°35.4	52.7	28°30.6	20.5	75°19.6	51.3	156°38.0	51.1						
21	170°05.8	172°36.7	· · 52.8	43°31.9	· · 20.2	90°21.5	· · 51.4	171°40.2	· · 51.0						
22	185°08.3	187°37.9	52.8	58°33.3	19.9	105°23.4	51.4	186°42.4	50.9						
23	200°10.8	202°39.1	52.8	73°34.6	19.6	120°25.4	51.5	201°44.7	50.8						
Mer.pass.:09:41				v1.3 d0.0 m-4.5			v1.3 d-0.3 m0.9			v1.9 d0.0 m-1.9			v2.2 d0.1 m1.2		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	215°13.2	217°40.3	N00°52.9	88°35.9	N21°19.3	135°27.3	N22°51.5	216°46.9	S02°50.7	
1	230°15.7	232°41.6	52.9	103°37.2	19.0	150°29.2	51.5	231°49.1	50.6	
2	245°18.2	247°42.8	53.0	118°38.5	18.7	165°31.2	51.6	246°51.3	50.5	
3	260°20.6	262°44.0	.. 53.0	133°39.8	.. 18.4	180°33.1	.. 51.6	261°53.5	.. 50.4	
4	275°23.1	277°45.2	53.1	148°41.2	18.0	195°35.0	51.7	276°55.8	50.3	
5	290°25.6	292°46.4	53.2	163°42.5	17.7	210°37.0	51.7	291°58.0	50.2	
6	305°28.0	307°47.6	N00°53.2	178°43.8	N21°17.4	225°38.9	N22°51.7	307°00.2	S02°50.2	
7	320°30.5	322°48.8	53.3	193°45.1	17.1	240°40.8	51.8	322°02.4	50.1	
8	335°33.0	337°50.0	53.3	208°46.4	16.8	255°42.8	51.8	337°04.7	50.0	
9	350°35.4	352°51.2	.. 53.4	223°47.7	.. 16.5	270°44.7	.. 51.9	352°06.9	.. 49.9	
10	5°37.9	7°52.4	53.4	238°49.0	.. 16.2	285°46.6	51.9	7°09.1	49.8	
11	20°40.3	22°53.6	53.5	253°50.4	15.8	300°48.6	51.9	22°11.3	49.7	
12	35°42.8	37°54.8	N00°53.6	268°51.7	N21°15.5	315°50.5	N22°52.0	37°13.5	S02°49.6	
13	50°45.3	52°56.0	53.6	283°53.0	15.2	330°52.4	52.0	52°15.8	49.5	
14	65°47.7	67°57.2	53.7	298°54.3	14.9	345°54.4	52.0	67°18.0	49.4	
15	80°50.2	82°58.4	.. 53.8	313°55.6	.. 14.6	0°56.3	.. 52.1	82°20.2	.. 49.3	
16	95°52.7	97°59.6	53.9	328°56.9	14.3	15°58.2	52.1	97°22.4	49.2	
17	110°55.1	113°00.7	53.9	343°58.2	13.9	31°00.2	52.2	112°24.7	49.1	
18	125°57.6	128°01.9	N00°54.0	358°59.5	N21°13.6	46°02.1	N22°52.2	127°26.9	S02°49.0	
19	141°00.1	143°03.1	54.1	14°00.9	13.3	61°04.0	52.2	142°29.1	48.9	
20	156°02.5	158°04.3	54.2	29°02.2	13.0	76°06.0	52.3	157°31.3	48.8	
21	171°05.0	173°05.4	.. 54.2	44°03.5	.. 12.7	91°07.9	.. 52.3	172°33.5	.. 48.7	
22	186°07.4	188°06.6	54.3	59°04.8	12.4	106°09.8	52.4	187°35.8	48.6	
23	201°09.9	203°07.8	54.4	74°06.1	12.0	121°11.8	52.4	202°38.0	48.5	
Mer.pass.:09:38			v1.2 d0.0 m-4.5		v1.3 d-0.3 m0.9		v1.9 d0.0 m-1.9		v2.2 d0.1 m1.2	

Stars		
	SHA	Dec
Alpheratz	357° 34.9	29° 13.6
Ankaa	353° 07.3	-42° 10.1
Schedar	349° 31.3	56° 40.4
Diphda	348° 47.4	-17° 50.9
Achernar	335° 20.6	-57° 06.5
Hamal	327° 51.3	23° 34.8
Polaris	314° 25.0	89° 22.3
Acamar	315° 12.0	-40° 12.3
Menkar	314° 06.2	4° 11.3
Mirfak	308° 28.4	49° 57.1
Aldebaran	290° 39.7	16° 33.6
Rigel	281° 03.9	-8° 10.4
Capella	280° 21.9	46° 01.5
Bellatrix	278° 22.9	6° 22.3
Elnath	278° 01.9	28° 37.7
Alnilam	275° 37.7	-1° 12.2
Betelgeuse	270° 52.1	7° 24.7
Canopus	263° 52.6	-52° 42.8
Sirius	258° 26.2	-16° 45.2
Adhara	255° 05.8	-29° 00.6
Procyon	244° 50.7	5° 09.6
Pollux	243° 17.1	27° 58.0
Avior	234° 14.7	-59° 35.7
Suhail	222° 46.1	-43° 32.3
Miaplacidus	221° 38.1	-69° 49.5
Alphard	217° 47.5	-8° 46.2

	Aries			Venus			Mars			Jupiter			Saturn		
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	216°12.4	218°09.0	N00°54.5	89°07.4	N21°11.7	136°13.7	N22°52.4	217°40.2	S02°48.4						
1	231°14.8	233°10.1	54.6	104°08.7	11.4	151°15.6	52.5	232°42.4	48.3						
2	246°17.8	248°11.3	54.6	119°10.0	11.1	166°17.5	52.5	247°44.7	48.2						
3	261°19.8	263°12.4	.. 54.7	134°11.3	.. 10.8	181°19.5	.. 52.6	262°46.9	.. 48.1						
4	276°22.2	278°13.6	54.8	149°12.6	10.5	196°21.4	52.6	277°49.1	48.0						
5	291°24.7	293°14.8	54.9	164°13.9	10.1	211°23.3	52.6	292°51.3	47.9						
6	306°27.2	308°15.9	N00°55.0	179°15.3	N21°09.8	226°25.3	N22°52.7	307°53.6	S02°47.8						
7	321°29.6	323°17.1	55.1	194°16.6	09.5	241°27.2	52.7	322°55.8	47.7						
8	336°32.1	338°18.2	55.2	209°17.9	09.2	256°29.1	52.8	337°58.0	47.6						
9	351°34.6	353°19.3	.. 55.3	224°19.2	.. 08.9	271°31.1	.. 52.8	353°00.2	.. 47.5						
10	6°37.0	8°20.5	55.4	239°20.5	.. 08.5	286°33.0	52.8	8°02.4	47.4						
11	21°39.5	23°21.6	55.5	254°21.8	08.2	301°34.9	52.9	23°04.7	47.3						
12	36°41.9	38°22.8	N00°55.6	269°23.1	N21°07.9	316°36.9	N22°52.9	38°06.9	S02°47.2						
13	51°44.4	53°23.9	55.7	284°24.4	07.6	331°38.8	53.0	53°09.1	47.1						
14	66°46.9	68°25.0	55.8	299°25.7	07.3	346°40.7	53.0	68°11.3	47.0						
15	81°49.3	83°26.2	.. 55.9	314°27.0	.. 06.9	1°42.6	.. 53.0	83°13.6	.. 46.9						
16	96°51.8	98°27.3	56.0	329°28.3	06.6	16°44.6	53.1	98°15.8	46.8						
17	111°54.3	113°28.4	56.1	344°29.6	06.3	31°46.5	53.1	113°18.0	46.7						
18	126°56.7	128°29.6	N00°56.2	359°30.9	N21°06.0	46°48.4	N22°53.1	128°20.2	S02°46.7						
19	141°59.2	143°30.7	56.3	14°32.2	05.7	61°50.4	53.2	143°22.5	46.6						
20	157°01.7	158°31.8	56.4	29°33.5	05.3	76°52.3	53.2	158°24.7	46.5						
21	172°04.1	173°32.9	.. 56.5	44°34.8	.. 05.0	91°54.2	.. 53.3	173°26.9	.. 46.4						
22	187°06.6	188°34.1	56.6	59°36.1	04.7	106°56.1	53.3	188°29.1	46.3						
23	202°09.1	203°35.2	56.8	74°37.4	04.4	121°58.1	53.3	203°31.4	46.2						
Mer.pass.:09:34			v1.2 d0.1 m-4.5			v1.3 d-0.3 m0.9			v1.9 d0.0 m-1.8			v2.2 d0.1 m1.2			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	217°11.5	218°36.3	N00°56.9	89°38.8	N21°04.0	137°00.0	N22°53.4	218°33.6	S02°46.1					
1	232°14.0	233°37.4	57.0	104°40.1	03.7	152°01.9	53.4	233°35.8	46.0					
2	247°16.4	248°38.5	57.1	119°41.4	03.4	167°03.9	53.5	248°38.0	45.9					
3	262°18.9	263°39.6	.. 57.2	134°42.7	.. 03.1	182°05.8	.. 53.5	263°40.3	.. 45.8					
4	277°21.4	278°40.7	57.4	149°44.0	02.8	197°07.7	53.5	278°42.5	45.7					
5	292°23.8	293°41.7	57.5	164°45.3	02.4	212°09.6	53.6	293°44.7	45.6					
6	307°26.3	308°42.9	N00°57.6	179°46.6	N21°02.1	227°11.6	N22°53.6	308°46.9	S02°45.5					
7	322°28.8	323°44.0	57.7	194°47.9	01.8	242°13.5	53.7	323°49.2	45.4					
8	337°31.2	338°45.1	57.9	209°49.2	01.5	257°15.4	53.7	338°51.4	45.3					
9	352°33.7	353°46.2	.. 58.0	224°50.5	.. 01.1	272°17.3	.. 53.7	353°53.6	.. 45.2					
10	7°36.2	8°47.3	58.1	239°51.8	00.8	287°19.3	53.8	8°55.8	45.1					
11	22°38.6	23°48.4	58.2	254°53.1	00.5	302°21.2	53.8	23°58.1	45.0					
12	37°41.1	38°49.5	N00°58.4	269°54.4	N21°00.2	317°23.1	N22°53.8	39°00.3	S02°44.9					
13	52°43.6	53°50.6	58.5	284°55.7	20°59.8	332°25.0	53.9	54°02.5	44.8					
14	67°46.0	68°51.7	58.7	299°57.0	59.5	347°27.0	53.9	69°04.7	44.7					
15	82°48.5	83°52.7	.. 58.8	314°58.3	.. 59.2	2°28.9	.. 54.0	84°07.0	.. 44.6					
16	97°50.9	98°53.8	58.9	329°59.6	58.9	17°30.8	54.0	99°09.2	44.5					
17	112°53.4	113°54.9	59.1	345°00.9	58.5	32°32.8	54.0	114°11.4	44.4					
18	127°55.9	128°56.0	N00°59.2	0°02.2	N20°58.2	47°34.7	N22°54.1	129°13.6	S02°44.3					
19	142°58.3	143°55.1	59.4	15°03.5	57.9	62°36.6	54.1	144°15.9	44.3					
20	158°00.8	158°58.1	59.5	30°04.7	57.6	77°38.5	54.2	159°18.1	44.2					
21	173°03.3	173°59.2	.. 59.6	45°06.0	.. 57.2	92°40.5	.. 54.2	174°20.3	.. 44.1					
22	188°05.7	189°00.3	59.8	60°07.3	56.9	107°42.4	54.2	189°22.6	44.0					
23	203°08.2	204°01.3	59.9	75°08.6	56.6	122°44.3	54.3	204°24.8	43.9					
Mer.pass.:09:30			v1.1 d0.1 m-4.5			v1.3 d-0.3 m0.9			v1.9 d0.0 m-1.8			v2.2 d0.1 m1.2		

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	218°10.7	219°02.4	N01°00.1	90°09.9	N20°56.3	137°46.2	N22°54.3	219°27.0	S02°43.8					
1	233°13.1	234°03.5	00.2	105°11.2	55.9	152°48.2	54.3	234°29.2	43.7					
2	248°15.6	249°04.5	00.4	120°12.5	55.6	167°50.1	54.4	249°31.5	43.6					
3	263°18.0	264°05.6	.. 00.5	135°13.8	.. 55.3	182°52.0	.. 54.4	264°33.7	.. 43.5					
4	278°20.5	279°06.6	00.7	150°15.1	54.9	197°53.9	54.5	279°35.9	43.4					
5	293°23.0	294°07.7	00.9	165°16.4	54.6	212°55.9	54.5	294°38.1	43.3					
6	308°25.4	309°08.7	N01°01.0	180°17.7	N20°54.3	227°57.8	N22°54.5	309°40.4	S02°43.2					
7	323°27.9	324°09.8	01.2	195°19.0	54.0	242°59.7	54.6	324°42.6	43.1					
8	338°30.4	339°10.8	01.3	210°20.3	53.6	258°01.6	54.6	339°44.8	43.0					
9	353°32.8	354°11.9	.. 01.5	225°21.6	.. 53.3	273°03.5	.. 54.6	354°47.1	.. 42.9					
10	8°35.3	9°12.9	01.7	240°22.9	53.0	288°05.5	54.7	9°49.3	42.8					
11	23°37.8	24°14.0	01.8	255°24.2	52.6	303°07.4	54.7	24°51.5	42.7					
12	38°40.2	39°15.0	N01°02.0	270°25.5	N20°52.3	318°09.3	N22°54.8	39°53.7	S02°42.6					
13	53°42.7	54°16.1	02.1	285°26.8	52.0	333°11.2	54.8	54°56.0	42.5					
14	68°45.2	69°17.1	02.3	300°28.0	51.7	348°13.2	54.8	69°58.2	42.4					
15	83°47.6	84°18.1	.. 02.5	315°29.3	.. 51.3	3°15.1	.. 54.9	85°00.4	.. 42.4					
16	98°50.1	99°19.2	02.7	330°30.6	51.0	18°17.0	54.9	100°02.6	42.3					
17	113°52.5	114°20.2	02.8	345°31.9	50.7	33°18.9	55.0	115°04.9	42.2					
18	128°55.0	129°21.2	N01°03.0	0°33.2	N20°50.3	48°20.9	N22°55.0	130°07.1	S02°42.1					
19	143°57.5	144°22.2	03.2	15°34.5	50.3	63°22.8	55.0	145°09.3	42.0					
20	158°59.9	159°23.3	03.4	30°35.8	49.7	78°24.7	55.1	160°11.6	41.9					
21	174°02.4	174°24.3	.. 03.5	45°37.1	.. 49.3	93°26.6	.. 55.1	175°13.8	.. 41.8					
22	189°04.9	189°25.3	03.7	60°38.4	49.0	108°28.5	55.1	190°16.0	41.7					
23	204°07.3	204°26.3	03.9	75°39.7	48.7	123°30.5	55.2	205°18.2	41.6					
Mer.pass.:09:26			v1.1 d0.2 m-4.5			v1.3 d-0.3 m0.9			v1.9 d0.0 m-1.8			v2.2 d0.1 m1.2		

Stars		
SHA	Dec	
Alpheratz	357°34.8	29°13.6
Ankaa	353°07.3	-42°10.0
Schedar	349°31.3	56°40.4
Diphda	348°47.4	-17°50.9
Achernar	335°20.6	-57°06.4
Hamal	327°51.3	23°34.8
Polaris	314°24.9	89°22.3
Acamar	315°12.0	-40°12.2
Menkar	314°06.2	4°11.3
Mirfak	308°28.4	49°57.0
Aldebaran	290°39.7	16°33.6
Rigel	281°03.9	-8°10.4
Capella	280°21.9	46°01.5
Bellatrix	278°22.9	6°22.3
Elnath	278°01.9	28°37.7
Anilam	275°37.7	-1°12.2
Betelgeuse	270°52.1	7°24.7
Canopus	263°52.6	-52°42.7
Sirius	258°26.2	-16°45.2
Adhara	255°05.9	-29°00.6
Procyon	244°50.7	5°09.5
Pollux	243°17.1	27°58.0
Avior	234°14.7	-59°35.7
Suhail	222°46.1	-43°32.3
Miaplacidus	221°38.2	-69°49.5
Alphard	217°47.5	-8°46.2
Regulus	207°34.1	11°50.6
Dubhe	193°40.3	61°37.1
Denebola	182°24.5	14°25.8
Gienah	175°43.1	-17°41.1
Acrux	172°59.3	-63°14.6
Gacrux	171°50.9	-57°15.5
Alioth	166°12.2	55°49.4
Spica	158°21.8	-11°17.7

Aries				Venus				Mars				Jupiter				Saturn			
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	219°09.8	219°27.4	N01°04.1	90°41.0	N20°48.4	138°32.4	N22°55.2	220°20.5	S02°41.5										
1	234°12.3	234°28.4	04.3	105°42.2	48.0	153°34.3	55.3	235°07.2	-42°10.0	41.4									
2	249°14.7	249°29.4	04.4	120°43.5	47.7	168°36.2	55.3	250°24.9	41.3										
3	264°17.2	264°30.4	•• 04.6	135°44.8	•• 47.4	183°38.1	•• 55.3	265°27.2	•• 41.2										
4	279°19.7	279°31.4	04.8	150°46.1	47.0	198°40.1	55.4	280°29.4	41.1										
5	294°22.1	294°32.4	05.0	165°47.4	46.7	213°42.0	55.4	295°31.6	41.0										
6	309°24.6	309°33.4	N01°05.2	180°48.7	N20°46.4	228°43.9	N22°55.4	310°33.8	S02°40.9										
7	324°27.0	324°34.4	05.4	195°50.0	46.0	243°45.8	55.5	325°36.1	40.8										
8	339°29.5	339°35.4	05.6	210°51.3	45.7	258°47.8	55.5	340°38.3	40.7										
9	354°32.0	354°36.4	•• 05.8	225°52.6	•• 45.4	273°49.7	•• 55.6	355°40.5	•• 40.7										
10	9°34.4	9°37.4	06.0	240°53.8	45.0	288°51.6	55.6	10°42.8	40.6										
11	24°36.9	24°38.4	06.2	255°55.1	44.7	303°53.5	55.6	25°45.0	40.5										
12	39°39.4	39°39.4	N01°06.3	270°56.4	N20°44.4	318°55.4	N22°55.7	40°47.2	S02°40.4										
13	54°41.8	54°40.4	06.5	285°57.7	44.0	333°57.4	55.7	55°49.5	40.3										
14	69°44.3	69°41.4	06.7	300°59.0	43.7	348°59.3	55.7	70°51.7	40.2										
15	84°46.8	84°42.4	•• 06.9	316°00.3	•• 43.4	4°01.2	•• 55.8	85°53.9	•• 40.1										
16	99°49.2	99°43.4	07.1	331°01.6	43.0	19°03.1	55.8	100°56.1	40.0										
17	114°51.7	114°44.3	07.4	346°02.8	42.7	34°05.0	55.9	115°58.4	39.9										
18	129°54.2	129°45.3	N01°07.6	1°04.1	N20°42.4	49°07.0	N22°55.9	131°00.6	S02°39.8										
19	144°56.6	144°46.3	07.8	16°05.4	42.0	64°08.9	55.9	144°56.6	39.7										
20	159°59.1	159°47.3	08.0	31°06.7	41.7	79°10.8	56.0	161°05.1	39.6										
21	175°01.5	174°48.3	•• 08.2	46°08.0	•• 41.4	94°12.7	•• 56.0	176°07.3	•• 39.5										
22	190°04.0	189°49.2	08.4	61°09.3	41.0	109°14.6	56.0	191°09.5	39.4										
23	205°06.5	204°50.2	08.6	76°10.5	40.7	124°16.5	56.1	206°11.8	39.3										
Mer.pass.:09:22				v1.0 d0.2 m-4.5				v1.3 d-0.3 m0.9				v1.9 d0.0 m-1.8				v2.2 d0.1 m1.2			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	220°08.9	219°51.2	N01°08.8	91°11.8	N20°40.4	139°18.5	N22°56.1	221°14.0	S02°39.2										
1	235°11.4	234°52.1	09.0	106°13.1	40.0	154°20.4	56.1	236°16.2	39.2										
2	250°13.9	249°53.1	09.2	121°14.4	39.7	169°22.3	56.2	251°18.5	39.1										
3	265°16.3	264°54.1	•• 09.5	136°15.7	•• 39.3	184°24.2	•• 56.2	266°20.7	•• 39.0										
4	280°18.8	279°55.0	09.7	151°17.0	39.0	199°26.1	56.3	281°22.9	38.9										
5	295°21.3	294°56.0	09.9	166°18.2	38.7	214°28.1	56.3	296°25.1	38.8										
6	310°23.7	309°57.0	N01°10.1	181°19.5	N20°38.3	229°30.0	N22°56.3	311°27.4	S02°38.7										
7	325°26.2	324°57.9	10.3	196°20.8	38.0	244°31.9	56.4	326°29.6	38.6										
8	340°28.7	339°58.9	10.6	211°22.1	37.7	259°33.8	56.4	341°31.8	38.5										
9	355°31.1	354°59.8	•• 10.8	226°23.4	•• 37.3	274°35.7	•• 56.4	356°34.1	•• 38.4										
10	10°33.6	10°00.8	11.0	241°24.6	37.0	289°37.6	56.5	11°36.3	38.3										
11	25°36.0	25°01.7	11.2	256°25.9	36.6	304°39.6	56.5	26°38.5	38.2										
12	40°38.5	40°02.7	N01°11.5	271°27.2	N20°36.3	319°41.5	N22°56.6	41°40.8	S02°38.1										
13	55°41.0	55°03.6	11.7	286°28.5	36.0	334°43.4	56.6	56°43.0	38.0										
14	70°43.4	70°04.6	11.9	301°29.8	35.6	349°45.3	56.6	71°45.2	37.9										
15	85°45.9	85°05.5	•• 12.2	316°31.0	•• 35.3	4°47.2	•• 56.7	86°47.5	•• 37.9										
16	100°48.4	100°06.5	12.4	331°32.3	35.0	19°49.1	56.7	101°49.7	37.8										
17	115°50.8	115°07.4	12.6	346°33.6	34.6	34°51.1	56.7	116°51.9	37.7										
18	130°53.3	130°08.3	N01°12.9	1°34.9	N20°34.3	49°53.0	N22°56.8	131°54.2	S02°37.6										
19	145°55.8	145°09.3	13.1	16°36.2	33.9	64°54.9	56.8	146°56.4	37.5										
20	160°58.2	160°10.2	13.3	31°37.4	33.6	79°56.8	56.8	161°58.6	37.4										
21	176°00.7	175°11.1	•• 13.6	46°38.7	•• 33.9	94°58.7	•• 56.9	177°00.9	•• 37.3										
22	191°03.2	190°12.1	13.8	61°40.0	32.9	110°00.6	56.9	192°03.1	37.2										
23	206°05.6	205°13.0	14.0	76°41.3	32.6	125°02.6	57.0	207°05.3	37.1										
Mer.pass.:09:18				v1.0 d0.2 m-4.5				v1.3 d-0.3 m0.9				v1.9 d0.0 m-1.8				v2.2 d0.1 m1.2			

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	221°08.1	220°13.9	N01°14.3	91°42.6	N20°32.2	140°04.5	N22°57.0	222°07.6	S02°37.0										
1	236°10.5	235°14.9	14.5	106°43.8	31.9	155°06.4	57.0	237°09.8	36.9										
2	251°13.0	250°15.8	14.8	121°45.1	31.6	170°08.3	57.1	252°12.0	36.8										
3	266°15.5	265°16.7	•• 15.0	136°46.4	•• 31.2	185°10.2	•• 57.1	267°14.3	•• 36.7										
4	281°17.9	280°17.6	15.3	151°47.7	30.9	200°12.1	57.1	282°16.5	36.7										
5	296°20.4	295°18.5	15.5	166°48.9	30.5	215°14.0	57.2	297°18.7	36.6										
6	311°22.9	310°19.5	N01°15.8	181°50.2	N20°30.2	230°16.0	N22°57.2	312°21.0	S02°36.5										
7	326°25.3	325°20.4	16.0	196°51.5	29.9	245°17.9	57.2	327°23.2	36.4										
8	341°27.8	340°21.3	16.3	211°52.8	29.5	260°19.8	57.3	342°25.4	36.3										
9	356°30.3	355°22.2	•• 16.5	226°54.0	•• 29.2	275°21.7	•• 57.3	357°27.7	•• 36.2										
10	11°32.7	10°23.1	16.8	241°55.3	28.8	290°23.6	57.4	12°29.9	36.1										
11	26°35.2	25°24.0	17.0	256°56.6	28.5	305°25.5	57.4	27°32.1	36.0										
12	41°37.6	40°24.9	N01°17.3	271°57.9	N20°28.1	320°27.4	N22°57.4	42°34.4	S02°35.9										
13	56°40.1	55°25.8	17.6	286°59.1	27.8	335°29.4	57.5	57°36.6	35.8										
14	71°42.6	70°26.7	17.8	302°00.4	27.5	350°31.3	57.5	72°38.8	35.7										
15	86°45.0	85°27.6	•• 18.1	317°01.7	•• 27.1	5°33.2	•• 57.5	87°41.1	•• 35.6										
16	101°47.5	100°28.5	18.3	332°03.0	26.8	20°35.1	57.6	102°43.3	35.6										
17	116°50.0	115°29.4	18.6	347°04.2	26.4	35°37.0	57.6	117°45.5	35.5										
18	131°52.4	130°30.3	N01°18.9	2°05.5	N20°26.1	50°38.9	N22°57.6	132°47.8	S02°35.4										
19	146°54.9	145°31.2	19.1	17°06.8	25.7	65°40.8	57.7	147°50.0	35.3										
20	161°57.4	160°32.1	19.4	32°08.0	25.4	80°42.8	57.7	162°52.2	35.2										
21	176°59.8	175°33.0	•• 19.7	47°09.3	•• 25.1	95°44.7	•• 57.8	177°54.5	•• 35.1										
22	192°02.3	190°33.9	19.9	62°10.6	24.7	110°46.6	57.8	192°56.7	35.0										
23	207°04.8	205°34.8	20.2	77°11.9	24.4	125°48.5	57.8	207°58.9	34.9										
Mer.pass.:09:14				v0.9 d0.2 m-4.5				v1.3 d-0.3 m1.0				v1.9 d0.0 m-1.8				v2.2 d0.1 m1.2			

Stars			Sun			Moon				
	SHA	Dec	h							
			Thu	GHA	Dec	GHA	ν	Dec	d	HP
Alpheratz	357°34.8	29°13.6	0	180°42.5	N15°05.4	134°11.1	2.5'	N28°30.7	1.3'	59.7'
Ankaa	353°07.2	-42°10.0	1	195°42.5	06.1	148°32.5	2.5'	28°31.9	1.1'	59.7'
Schedar	349°31.3	56°40.4	2	210°42.6	06.9	162°54.1	2.5'	28°32.9	0.9'	59.7'
Diphda	348°47.3	-17°50.9	3	225°42.7	-- 07.6	177°15.6	2.6'	28°33.7	0.7'	59.6'
Achernar	335°20.5	-57°06.4	4	240°42.8	08.4	191°37.2	2.6'	28°34.3	0.5'	59.6'
Hamal	327°51.3	23°34.8	5	255°42.8	09.1	205°58.9	2.7'	28°34.6	0.3'	59.6'
Polaris	314°24.6	89°22.3	6	270°42.9	N15°09.9	220°20.6	2.7'	N28°34.8	0.1'	59.5'
Acamar	315°12.0	-40°12.2	7	285°43.0	10.6	234°42.4	2.8'	28°34.8	-0.1'	59.5'
Menkar	314°06.2	4°11.3	8	300°43.1	11.4	249°04.2	2.8'	28°34.6	-0.3'	59.4'
Mirfak	308°28.4	49°57.0	9	315°43.1	-- 12.1	263°26.1	2.9'	28°34.2	-0.5'	59.4'
Aldebaran	290°39.7	16°33.6	10	330°43.2	12.9	277°48.0	3.0'	28°33.5	-0.7'	59.4'
Rigel	281°03.9	-8°10.4	11	345°43.3	13.7	292°10.0	3.0'	28°32.7	-0.9'	59.3'
Capella	280°21.9	46°01.5	12	0°43.3	N15°14.4	306°32.1	3.1'	N28°31.7	-1.1'	59.3'
Bellatrix	278°22.9	6°22.3	13	15°43.4	15.2	320°54.2	3.2'	28°30.5	-1.3'	59.3'
Elnath	278°01.9	28°37.7	14	30°43.5	15.9	335°16.4	3.2'	28°29.0	-1.5'	59.2'
Anilam	275°37.7	-1°11.2	15	45°43.6	-- 16.7	349°38.7	3.3'	28°27.4	-1.7'	59.2'
Betelgeuse	270°52.1	7°24.7	16	60°43.6	17.4	4°01.1	3.4'	28°25.6	-1.9'	59.1'
Canopus	263°52.6	-52°42.7	17	75°43.7	18.2	18°23.5	3.5'	28°23.6	-2.1'	59.1'
Sirius	258°26.2	-16°45.2	18	90°43.8	N15°18.9	32°46.0	3.6'	N28°21.4	-2.3'	59.1'
Adhara	255°05.9	-29°00.6	19	105°43.8	19.6	47°08.6	3.6'	28°19.1	-2.5'	59.0'
Procyon	244°50.7	5°09.5	20	120°43.9	20.4	61°31.3	3.7'	28°16.5	-2.7'	59.0'
Pollux	243°17.1	27°58.0	21	135°44.0	-- 21.1	75°54.1	3.8'	28°13.7	-2.9'	58.9'
Avior	234°14.8	-59°35.7	22	150°44.1	21.9	90°17.0	3.9'	28°10.8	-3.0'	58.9'
Suhail	222°46.1	-43°32.3	23	165°44.1	22.6	104°40.0	4.0'	28°07.6	-3.2'	58.9'
Miaplacidus	221°38.2	-69°49.5								
Alphard	217°47.5	-8°46.2								

	Aries			Venus			Mars			Jupiter			Saturn		
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	222°07.2	220°35.7	N01°20.5	92°13.1	N20°24.0	140°50.4	N22°57.9	223°01.2	S02°34.8						
1	237°09.7	235°36.5	20.7	107°14.4	23.7	155°52.3	57.9	238°03.4	34.7						
2	252°12.1	250°37.4	21.0	122°15.7	23.0	170°54.2	57.9	253°05.6	34.6						
3	267°14.6	265°38.3	•• 21.3	137°16.9	•• 23.0	185°56.1	•• 58.0	268°07.9	•• 34.5						
4	282°17.1	280°39.2	21.6	152°18.2	22.6	200°58.1	58.0	283°10.1	34.5						
5	297°19.5	295°40.1	21.9	167°19.5	22.3	216°00.0	58.0	298°12.3	34.4						
6	312°22.0	310°40.9	N01°22.1	182°20.8	N20°21.9	231°01.9	N22°58.1	313°14.6	S02°34.3						
7	327°24.5	325°41.8	22.4	197°22.0	21.6	246°03.8	58.1	328°16.8	34.2						
8	342°26.9	340°42.7	22.7	212°23.3	21.3	261°05.7	58.1	343°19.1	34.1						
9	357°29.4	355°43.6	•• 23.0	227°24.6	•• 20.9	276°07.6	•• 58.2	358°21.3	•• 34.0						
10	12°31.9	10°44.4	23.3	242°25.8	20.6	291°09.5	58.2	13°23.5	33.9						
11	27°34.3	25°45.3	23.5	257°27.1	23.5	306°11.4	58.3	28°25.8	33.8						
12	42°36.8	40°46.2	N01°23.8	272°28.4	N20°19.9	321°13.3	N22°58.3	43°28.0	S02°33.7						
13	57°39.3	55°47.0	24.1	287°29.6	19.5	336°15.3	58.3	58°30.2	33.6						
14	72°41.7	70°47.9	24.4	302°30.9	19.2	351°17.2	58.4	73°32.5	33.5						
15	87°44.2	85°48.7	•• 24.7	317°32.2	•• 18.8	6°19.1	•• 58.4	88°34.7	•• 33.5						
16	102°46.6	100°49.6	25.0	332°33.4	18.5	21°21.0	58.4	103°36.9	33.4						
17	117°49.1	115°50.4	25.3	347°34.7	18.1	36°22.9	58.5	118°39.2	33.3						
18	132°51.6	130°51.3	N01°25.6	2°36.0	N20°17.8	51°24.8	N22°58.5	133°41.4	S02°33.2						
19	147°54.0	145°52.2	25.9	17°37.2	17.4	66°26.7	58.5	148°45.7	33.1						
20	162°56.5	160°53.0	26.2	32°38.5	17.1	81°28.6	58.6	163°45.9	33.0						
21	177°59.0	175°53.9	•• 26.5	47°39.8	•• 16.7	96°30.5	•• 58.6	178°48.1	•• 32.9						
22	193°01.4	190°54.7	26.8	62°41.0	16.4	111°32.5	58.6	193°50.4	32.8						
23	208°03.9	205°55.6	27.1	77°42.3	16.0	126°34.4	58.7	208°52.6	32.7						
Mer.pass.:09:10			v0.9 d0.3 m-4.4			v1.3 d-0.3 m1.0			v1.9 d0.0 m-1.8			v2.2 d0.1 m1.2			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	223°06.4	220°56.4	N01°27.4	92°43.6	N20°15.7	141°36.3	N22°58.7	223°54.8	S02°32.6					
1	238°08.8	235°57.2	27.7	107°44.8	15.3	156°38.2	58.7	238°57.1	32.6					
2	253°11.3	250°58.1	28.0	122°46.1	15.0	171°40.1	58.8	253°59.3	32.5					
3	268°13.7	265°58.9	•• 28.3	137°47.4	•• 14.6	186°42.0	•• 58.8	269°01.5	•• 32.4					
4	283°16.2	280°59.8	28.6	152°48.6	14.3	201°43.9	58.9	284°03.8	32.3					
5	298°18.7	296°00.6	28.9	167°49.9	13.9	216°45.8	58.9	299°06.0	32.2					
6	313°21.1	311°01.4	N01°29.2	182°51.2	N20°13.6	231°47.7	N22°58.9	314°08.3	S02°32.1					
7	328°23.6	326°02.3	29.5	197°52.4	13.2	246°49.6	59.0	329°10.5	32.0					
8	343°26.1	341°03.1	29.8	212°53.7	12.9	261°51.5	59.0	344°12.7	31.9					
9	358°28.5	356°03.9	•• 30.1	227°55.0	•• 12.5	276°53.5	•• 59.0	359°15.0	•• 31.8					
10	13°31.0	11°04.8	30.4	242°56.2	12.2	291°55.4	59.1	14°17.2	31.7					
11	28°33.5	26°05.6	30.7	257°57.5	11.8	306°57.3	59.1	29°19.4	31.7					
12	43°35.9	41°06.4	N01°31.0	272°58.8	N20°11.5	321°59.2	N22°59.1	44°21.7	S02°31.6					
13	58°38.4	56°07.2	31.4	288°00.0	11.1	337°01.1	59.2	59°23.9	31.5					
14	73°40.9	71°08.1	31.7	303°01.3	10.8	352°03.0	59.2	74°26.2	31.4					
15	88°43.8	86°08.9	•• 32.0	318°02.5	•• 10.4	7°04.9	•• 59.2	89°28.4	•• 31.3					
16	103°45.8	101°09.7	32.3	333°03.8	10.1	22°06.8	59.3	104°30.6	31.2					
17	118°48.2	116°10.5	32.6	348°05.1	09.7	37°08.7	59.3	119°32.9	31.1					
18	133°50.7	131°11.3	N01°33.0	3°06.3	N20°09.4	52°10.6	N22°59.3	134°35.1	S02°31.0					
19	148°53.2	146°12.1	33.3	18°07.6	09.0	67°12.5	59.4	149°37.4	30.9					
20	163°55.6	161°13.0	33.6	33°08.8	08.7	82°14.4	59.4	164°39.6	30.8					
21	178°58.1	176°13.8	•• 33.9	48°10.1	•• 08.3	97°16.3	•• 59.4	179°41.8	•• 30.8					
22	194°00.6	191°14.6	34.2	63°11.4	08.0	112°18.3	59.5	194°44.1	30.7					
23	209°03.0	206°15.4	34.6	78°12.6	07.6	127°20.2	59.5	209°46.3	30.6					
Mer.pass.:09:06			v0.8 d0.3 m-4.4			v1.3 d-0.3 m1.0			v1.9 d0.0 m-1.8			v2.2 d0.1 m1.2		

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	224°05.5	221°16.2	N01°34.9	93°13.9	N20°07.3	142°22.1	N22°59.5	224°48.6	S02°30.5					
1	239°08.0	236°17.0	35.2	108°15.2	06.9	157°24.0	59.6	239°50.8	30.4					
2	254°10.4	251°17.8	35.6	123°16.4	06.6	172°25.9	59.6	254°53.0	30.3					
3	269°12.9	266°18.6	•• 35.9	138°17.7	•• 06.2	187°27.8	•• 59.7	269°55.3	•• 30.2					
4	284°15.4	281°19.4	36.2	153°18.9	05.8	202°29.7	59.7	284°57.5	30.1					
5	299°17.8	296°20.2	36.6	168°20.2	05.5	217°31.6	59.7	299°59.7	30.0					
6	314°20.3	311°21.0	N01°36.9	183°21.5	N20°05.1	232°33.5	N22°59.8	315°02.0	S02°30.0					
7	329°22.7	326°21.8	37.2	198°22.7	04.8	247°35.4	59.8	330°04.2	29.9					
8	344°25.2	341°22.6	37.6	213°24.0	04.4	262°37.3	59.8	345°06.5	29.8					
9	359°27.7	356°23.4	•• 37.9	228°25.2	•• 04.1	277°39.2	•• 59.9	0°08.7	•• 29.7					
10	14°30.1	11°24.2	38.2	243°26.5	03.7	292°41.1	59.9	15°10.9	29.6					
11	29°32.6	26°25.0	38.6	258°27.7	03.4	307°43.0	22°59.9	30°13.2	29.5					
12	44°35.1	41°25.7	N01°38.9	273°29.0	N20°03.0	322°44.9	N23°00.0	45°15.4	S02°29.4					
13	59°37.5	56°26.5	39.3	288°30.3	02.6	337°46.8	00.0	60°17.7	29.3					
14	74°40.0	71°27.3	39.6	303°31.5	02.3	352°48.8	00.0	75°19.9	29.2					
15	89°42.5	86°28.1	•• 39.9	318°32.8	•• 01.9	7°50.7	•• 00.1	90°22.2	•• 29.2					
16	104°44.9	101°28.9	40.3	333°34.0	01.6	22°52.6	00.1	105°24.4	29.1					
17	119°47.4	116°29.7	40.6	348°35.3	01.2	37°54.5	00.1	120°26.6	29.0					
18	134°49.8	131°30.4	N01°41.0	3°36.5	N20°00.9	52°56.4	N23°00.2	135°28.9	S02°28.9					
19	149°52.3	146°31.2	41.3	18°37.8	00.5	67°58.3	00.2	150°31.1	28.8					
20	164°54.8	161°32.0	41.7	33°39.1	20°00.2	83°00.2	00.2	165°33.4	28.7					
21	179°57.2	176°32.8	•• 42.0	48°40.3	19°59.8	98°02.1	•• 00.3	180°35.6	•• 28.6					
22	194°59.7	191°33.5	42.4	63°41.6	59.4	113°04.0	00.3	195°37.8	28.5					
23	210°02.2	206°34.3	42.7	78°42.8	59.1	128°05.9	00.3	210°40.1	28.4					
Mer.pass.:09:02			v0.8 d0.3 m-4.4			v1.3 d-0.4 m1.0			v1.9 d0.0 m-1.8			v2.2 d0.1 m1.2		

SHA	Dec
Alpheratz	357°34.8 29°13.6
Ankaa	353°07.2 -42°10.0
Schedar	349°31.3 56°40.4
Diphda	348°47.3 -17°50.9
Achernar	335°20.5 -57°06.4
Hamal	327°51.3 23°34.8
Polaris	313°24.5 89°22.2
Acamar	315°12.0 -40°12.2
Menkar	314°06.2 4°11.3
Mirfak	308°28.4 49°57.0
Aldebaran	290°39.7 16°33.6
Rigel	281°03.9 -8°10.4
Capella	280°21.9 46°01.5
Bellatrix	278°22.9 6°22.3
Elnath	278°01.9 28°37.7
Anilnail	275°37.7 -1°12.2
Betelgeuse	270°52.1 7°24.7
Canopus	263°52.6 -52°42.7
Sirius	258°26.2 -16°45.2
Adhara	255°05.9 -29°00.6
Procyon	248°50.7 5°09.6
Pollux	243°17.1 27°58.0
Avior	234°14.8 -59°35.7
Suhail	222°46.2 -43°32.3
Miaplacidus	221°38.3 -69°49.5
Alphard	217°47.5 -8°46.2
Regulus	207°34.1 11°50.6
Dubhe	193°40.3 61°37.1
Denebola	182°24.5 14°25.8
Gienah	175°43.1 -17°41.1
Acrux	172°59.3 68°14.6
Gacrux	171°50.9 59°15.5
Alioth	166°12.2 55°49.4
Spica	158°21.7 -11°17.8
Alkaid	152°51.3 49°11.2
Hadar	148°35.1 -60°29.8
Menkent	147°56.9 -36°29.8
Arcturus	145°47.3 19°02.9
Rigil Kent	139°39.9 -60°56.5
Kochab	137°18.6 74°03.0
Zuben'ubi	136°55.4 16°08.9
Alphecca	126°03.2 26°37.6
Antares	112°15.2 26°29.3
Atria	107°08.7 -69°04.3
Sabik	102°02.2 -15°45.4
Shaula	96°09.7 -37°07.3
Rasalhague	95°58.0 12°32.3
Eltanin	90°41.7 51°28.8
Kaus Aust.	83°31.9 34°22.3
Vega	80°32.8 38°48.1
Nunki	75°47.2 -26°15.9
Altair	61°59.6 8°55.9
Peacock	53°05.2 -56°39.0
Deneb	49°25.6 45°21.9
Enif	33°38.6 9°59.3
Al Na'ir	27°32.7 -46°50.1
Fomalhaut	15°14.4 -29°29.2
Scheat	13°45.2 28°13.0
Markab	13°29.8 15°20.3

Dubhe	193°40.3	61°37.1
Denebola	182°24.5	14°25.8
Gienah	175°43.1	-17°41.1
Acrux	172°59.3	-63°14.6
Gacrux	171°50.9	-57°15.5
Alioth	166°12.2	55°49.4
Spica	158°21.7	-11°17.8
Alkaid	152°51.3	49°11.2
Hadar	148°35.1	-60°29.8
Menkent	147°56.9	-36°29.8
Arcturus	145°47.3	19°02.9
Rigil Cent	139°39.3	-60°56.5
Kochab	137°18.6	74°03.0
Zuben'ubi	136°55.4	-16°08.9
Alphecca	126°03.2	26°37.6
Antares	112°15.2	-26°29.3
Atria	107°08.7	-69°04.3
Sabik	102°02.2	-15°45.4
Shaula	96°09.7	-37°07.3
Rasalhague	95°58.0	12°32.3
Eltanin	90°41.7	51°28.8
Kaus Aust.	83°31.9	-34°22.3
Vega	80°32.8	38°48.1
Nunki	75°47.2	-26°15.9
Altair	61°59.6	8°55.9
Peacock	53°05.2	-56°39.0
Deneb	49°25.6	45°21.9
Enif	33°38.6	9°51.3
Al Na'ir	27°32.7	-46°50.1
Fomalhaut	15°14.4	-29°29.2
Scheat	13°45.2	28°13.0
Markab	13°29.8	15°20.3

	Aries			Venus			Mars			Jupiter			Saturn		
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	225°04.6	221°35.1	N01°43.1	93°44.1	N19°58.7	143°07.8	N23°00.4	225°42.3	S02°28.4						
1	240°07.1	236°35.8	43.4	108°45.3	58.4	158°09.7	00.4	240°44.6	28.3						
2	255°09.6	251°36.6	43.8	123°46.6	58.0	173°11.6	00.4	255°46.8	28.2						
3	270°12.0	266°37.4	•• 44.2	138°47.8	57.6	188°13.5	•• 00.5	270°49.0	•• 28.1						
4	285°14.6	281°38.1	44.5	153°49.1	57.3	203°15.4	00.5	285°51.3	28.0						
5	300°17.0	296°38.9	44.9	168°50.4	56.9	218°17.3	00.5	300°53.5	27.9						
6	315°19.4	311°39.6	N01°45.2	183°51.6	N19°56.6	233°19.2	N23°00.6	315°55.8	S02°27.8						
7	330°21.9	326°40.4	45.6	198°52.9	56.2	248°21.1	00.6	330°58.0	27.7						
8	345°24.3	341°41.2	46.0	213°54.1	55.9	263°23.0	00.6	346°00.3	27.7						
9	0°26.8	356°41.9	•• 46.3	228°55.4	•• 55.5	278°24.9	•• 00.7	1°02.5	•• 27.6						
10	15°29.3	11°42.7	46.7	243°56.6	55.1	293°26.8	00.7	16°04.7	27.5						
11	30°31.7	26°43.4	47.1	258°57.9	54.8	308°28.7	00.7	31°07.0	27.4						
12	45°34.2	41°44.2	N01°47.4	273°59.1	N19°54.4	323°30.6	N23°00.8	46°09.2	S02°27.3						
13	60°36.7	56°44.9	47.8	289°00.4	54.1	338°32.5	00.8	61°11.5	27.2						
14	75°39.1	71°45.7	48.2	304°01.6	53.7	353°34.4	00.8	76°13.7	27.1						
15	90°41.6	86°46.4	•• 48.5	319°02.9	•• 53.3	8°36.3	•• 00.9	91°16.0	•• 27.0						
16	105°44.1	101°47.2	48.9	334°04.1	53.0	23°38.3	00.9	106°18.2	27.0						
17	120°46.5	116°47.9	49.3	349°05.4	52.6	38°40.2	00.9	121°20.4	26.9						
18	135°49.0	131°48.6	N01°49.6	4°06.6	N19°52.2	53°42.1	N23°01.0	136°22.7	S02°26.8						
19	150°51.4	146°49.4	50.0	19°07.9	51.9	68°44.0	01.0	151°24.9	26.7						
20	165°53.9	161°50.1	50.4	34°09.1	51.5	83°45.9	01.0	166°27.2	26.6						
21	180°56.4	176°50.9	•• 50.8	49°10.4	•• 51.2	98°47.8	•• 01.1	181°29.4	•• 26.5						
22	195°58.8	191°51.6	51.2	64°11.6	50.8	113°49.7	01.1	196°31.7	26.4						
23	211°01.3	206°52.3	51.5	79°12.9	50.4	128°51.6	01.1	211°33.9	26.3						
Mer.pass.:08:58			v0.8 d0.4 m-4.4			v1.3 d-0.4 m1.0			v1.9 d0.0 m-1.8			v2.2 d0.1 m1.2			

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	226°03.8	221°53.1	N01°51.9	94°14.1	N19°50.1	143°53.5	N23°01.2	226°36.1	S02°26.3					
1	241°06.2	236°53.8	52.3	109°15.4	49.7	158°55.4	01.2	241°38.4	26.2					
2	256°08.7	251°54.5	52.7	124°16.6	49.4	173°57.3	01.2	256°40.6	26.1					
3	271°11.2	266°55.3	•• 53.1	139°17.9	•• 49.0	188°59.2	•• 01.3	271°42.9	•• 26.0					
4	286°13.6	281°56.0	53.4	154°19.1	48.6	204°01.1	01.3	286°45.1	25.9					
5	301°16.1	296°56.7	53.8	169°20.4	48.3	219°03.0	01.3	301°47.4	25.8					
6	316°18.6	311°57.4	N01°54.2	184°21.6	N19°47.9	234°04.9	N23°01.4	316°49.6	S02°25.7					
7	331°21.0	326°58.2	54.6	199°22.9	47.5	249°06.8	01.4	331°51.9	25.6					
8	346°23.5	341°58.9	55.0	214°24.1	47.2	264°08.7	01.4	346°54.1	25.6					
9	1°25.9	356°59.6	•• 55.4	229°25.4	•• 46.8	279°10.6	•• 01.5	1°56.3	•• 25.5					
10	16°28.4	12°00.3	55.8	244°26.6	46.4	294°12.5	01.5	16°58.6	25.4					
11	31°30.9	27°01.0	56.2	259°27.9	46.1	309°14.4	01.5	32°00.8	25.3					
12	46°33.3	42°01.8	N01°56.5	274°29.1	N19°45.7	324°16.3	N23°01.6	47°03.1	S02°25.2					
13	61°35.8	57°02.5	56.9	289°30.4	45.3	339°18.2	01.6	62°05.3	25.1					
14	76°38.3	72°03.2	57.3	304°31.6	45.0	354°20.1	01.6	77°07.6	25.0					
15	91°40.7	87°03.9	•• 57.7	319°32.9	•• 44.6	9°22.0	•• 01.7	92°09.8	•• 25.0					
16	106°43.2	102°04.6	58.1	334°34.1	44.3	24°23.9	01.7	107°12.1	24.9					
17	121°45.7	117°05.3	58.5	349°35.4	43.9	39°25.8	01.7	122°14.3	24.8					
18	136°48.1	132°06.0	N01°58.9	4°36.6	N19°43.5	54°27.7	N23°01.8	137°16.5	S02°24.7					
19	151°50.6	147°06.7	59.3	19°37.9	43.2	69°29.6	01.8	152°18.8	24.6					
20	166°53.1	162°07.4	01°59.7	34°39.1	42.8	84°31.5	01.8	167°21.0	24.5					
21	181°55.5	177°08.1	02°00.1	49°40.4	•• 42.4	99°33.4	•• 01.9	182°23.3	•• 24.4					
22	196°58.0	192°08.8	00.5	64°41.6	42.1	114°35.3	01.9	197°25.5	24.4					
23	212°00.4	207°09.5	00.9	79°42.8	41.7	129°37.2	01.9	212°27.8	24.3					
Mer.pass.:08:54			v0.7 d0.4 m-4.4			v1.3 d-0.4 m1.0			v1.9 d0.0 m-1.8			v2.2 d0.1 m1.2		

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	227°02.9	222°10.2	N02°01.3	94°44.1	N19°41.3	144°39.1	N23°02.0	227°30.0	S02°24.2	
1	242°05.4	237°10.9	01.7	109°45.3	41.0	159°41.0	02.0	242°32.3	24.1	
2	257°07.8	252°11.6	02.1	124°46.6	40.6	174°42.9	02.0	257°34.5	24.0	
3	272°10.3	267°12.3	•• 02.6	139°47.8	•• 40.2	189°44.8	•• 02.1	272°36.8	•• 23.9	
4	287°12.8	282°13.0	03.0	154°49.1	39.9	204°46.7	02.1	287°39.0	23.8	
5	302°15.2	297°13.7	03.4	169°50.3	39.5	219°48.6	02.1	302°41.3	23.8	
6	317°17.7	312°14.4	N02°03.8	184°51.6	N19°39.1	234°50.5	N23°02.1	317°43.5	S02°23.7	
7	332°20.2	327°15.1	04.2	199°52.8	38.8	249°52.4	02.2	332°45.7	23.6	
8	347°22.6	342°15.8	04.6	214°54.0	38.4	264°54.3	02.2	347°48.0	23.5	
9	2°25.1	357°16.5	•• 05.0	229°55.3	•• 38.0	279°56.2	•• 02.2	2°50.2	•• 23.4	
10	17°27.5	12°17.1	05.4	244°56.5	37.6	294°58.1	02.3	17°52.5	23.3	
11	32°30.0	27°17.8	05.8	259°57.8	37.3	310°00.0	02.3	32°54.7	23.2	
12	47°32.5	42°18.5	N02°06.3	274°59.0	N19°36.9	325°01.8	N23°02.3	47°57.0	S02°23.2	
13	62°34.9	57°19.2	06.7	290°00.3	36.5	340°03.7	02.4	62°59.2	23.1	
14	77°37.4	72°19.9	07.1	305°01.5	36.2	355°05.6	02.4	78°01.5	23.0	
15	92°39.9	87°20.5	•• 07.5	320°02.8	•• 35.8	10°07.5	•• 02.4	93°03.7	•• 22.9	
16	107°42.3	102°21.2	07.9	335°04.0	35.4	25°09.4	02.5	108°06.0	22.8	
17	122°44.8	117°21.9	08.4	350°05.2	35.1	40°11.3	02.5	123°08.2	22.7	
18	137°47.3	132°22.6	N02°08.8	5°06.5	N19°34.7	55°13.2	N23°02.5	138°10.5	S02°22.6	
19	152°49.7	147°23.2	09.2	20°07.7	34.3	70°15.1	02.6	153°12.7	22.6	
20	167°52.2	162°23.9	09.6	35°09.0	33.9	85°17.0	02.6	168°15.0	22.5	
21	182°54.7	177°24.6	•• 10.1	50°10.2	•• 33.6	100°18.9	•• 02.6	183°17.2	•• 22.4	
22	197°57.1	192°25.2	10.5	65°11.4	33.2	115°20.8	02.7	198°19.5	22.3	
23	212°59.6	207°25.9	10.9	80°12.7	32.8	130°22.7	02.7	213°21.7	22.2	
Mer.pass.:08:50			v0.7 d0.4 m-4.4		v1.2 d-0.4 m1.0		v1.9 d0.0 m-1.8		v2.2 d0.1 m1.2	

Stars			Sun			Moon				
SHA	Dec		h	GHA	Dec	GHA	ν	Dec	d	HP
Alpheratz	357°34.8	29°13.6	0	180°50.8	N16°49.6	58°58.9	16.4'	N07°05.9	-14.1'	54.9'
Ankaa	353°07.2	-42°10.0	1	195°50.8	50.2	73°34.3	16.4'	06°51.8	-14.2'	54.9'
Schedar	349°31.2	56°40.4	2	210°50.9	50.9	88°09.7	16.5'	06°37.6	-14.2'	54.8'
Diphda	348°47.3	-17°50.9	3	225°50.9	•• 51.6	102°45.2	16.5'	06°23.4	-14.2'	54.8'
Achernar	335°20.5	-57°06.4	4	240°51.0	52.3	117°20.7	16.6'	06°09.2	-14.2'	54.8'
Hamal	327°51.3	23°34.8	5	255°51.0	53.0	131°56.3	16.6'	05°55.0	-14.2'	54.8'
Polaris	314°24.5	89°22.2	6	270°51.0	N16°53.7	146°31.9	16.6'	N05°40.8	-14.2'	54.8'
Acamar	315°12.0	-40°12.2	7	285°51.1	54.4	161°07.6	16.7'	05°26.6	-14.2'	54.7'
Menkar	314°06.2	4°11.3	8	300°51.1	55.1	175°43.3	16.7'	05°12.3	-14.2'	54.7'
Mirfak	308°28.4	49°57.0	9	315°51.2	•• 55.7	190°19.0	16.7'	04°58.1	-14.3'	54.7'
Aldebaran	290°39.7	16°33.6	10	330°51.2	56.4	204°54.7	16.8'	04°43.8	-14.3'	54.7'
Rigel	281°03.9	-8°10.4	11	345°51.2	57.1	219°30.5	16.8'	04°29.5	-14.3'	54.7'
Capella	280°21.9	46°01.5	12	•°51.3	N16°57.8	234°06.4	16.8'	N04°15.3	-14.3'	54.7'
Bellatrix	278°22.9	6°22.3	13	15°51.3	58.5	248°42.2	16.9'	04°01.0	-14.3'	54.6'
Elmath	278°01.9	28°37.7	14	30°51.3	59.2	263°18.1	16.9'	03°46.7	-14.3'	54.6'
Anilam	275°37.7	-1°11.2	15	45°51.4	16°59.8	277°54.0	16.9'	03°32.4	-14.3'	54.6'
Betelgeuse	270°52.1	7°24.7	16	60°51.4	17°00.5	292°30.0	17.0'	03°18.1	-14.3'	54.6'
Canopus	263°52.7	-52°42.7	17	75°51.5	01.2	307°05.9	17.0'	03°03.8	-14.3'	54.6'
Sirius	258°26.2	-16°45.2	18	90°51.5	N17°01.9	321°41.9	17.0'	N02°49.5	-14.3'	54.6'
Adhara	255°05.9	-29°00.5	19	105°51.5	02.6	336°17.9	17.0'	02°35.1	-14.3'	54.5'
Procyon	244°50.7	5°09.6	20	120°51.6	03.2	350°54.0	17.1'	02°20.8	-14.3'	54.5'
Pollux	243°17.1	27°58.0	21	135°51.6	•• 03.9	5°30.0	17.1'	02°06.5	-14.3'	54.5'
Avior	234°14.8	-59°35.7	22	150°51.6	04.6	20°06.1	17.1'	01°52.2	-14.3'	54.5'
Suhail	222°46.2	-43°32.3	23	165°51.7	05.3	34°42.2	17.1'	01°37.9	-14.3'	54.5'
Miaplacidus	221°38.3	-69°49.5	SD=15.8 d=0.7 S.D.=14.9							
Alphard	217°47.5	-8°46.2								
Regulus	207°34.1	11°50.6								
Dubhe	193°40.4	61°37.1								
Denebola	182°24.5	14°25.8								
Gienah	175°43.1	-17°41.1								
Acrux	172°59.3	-63°14.6								
Gacrux	171°51.0	-57°15.5								
Alloth	166°12.2	55°49.4								
Spica	158°21.7	-11°17.8								
Alkaid	152°51.3	49°11.2								
Hadar	148°35.1	-60°29.9								
Menkent	147°57.0	-36°29.8								
Arcturus	145°47.3	19°02.9								
Rigil Kent	139°39.3	-60°56.5								
Kochab	137°18.6	74°03.0								
Zuben'ubi	136°55.4	-16°08.9								
Alphecca	126°03.2	26°37.6								
Antares	112°15.2	-26°29.3								
Atria	107°08.7	-69°04.3								
Sabik	102°02.2	-15°45.4								
Shaula	96°09.7	-37°07.3								
Rasalhague	95°58.0	12°32.3								
Eltanin	90°41.7	51°28.8								
Kaus Aust.	83°31.9	-34°22.3								
Vega	80°32.8	38°48.1								
Nunki	75°47.2	-26°15.9								
Altair	61°59.6	8°55.9								
Peacock	53°05.2	-56°39.0								
Deneb	49°25.6	45°21.9								
Enif	33°38.6	9°59.3								
Al Na'ir	27°32.7	-46°50.1								
Fomalhaut	15°14.4	-29°29.2								
Scheat	13°45.1	28°13.0								
Markab	13°29.8	15°20.3								
May 07 Wed			SHA	Mer.pass						
Venus	356°30.4	09.13								
Mars	228°39.4	17.44								
Jupiter	278°03.2	14.26								
Saturn	0°37.7	08.56								
May 08 Thu			SHA	Mer.pass						
Venus	355°49.3	09.12								
Mars	228°10.4	17.42								
Jupiter	277°49.7	14.23								
Saturn	0°32.4	08.52								
May 09 Fri			SHA	Mer.pass						
Venus	355°07.3	09.11								
Mars	227°41.2	17.40								
Jupiter	277°36.2	14.20								
Saturn	0°27.1	08.49								
Horizontal parallax										
Venus:	0.3									
Mars:	0.1									

Aries			Venus			Mars			Jupiter			Saturn		
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	228°02.0	222°26.6	N02°11.3	95°13.9	N19°32.5	145°24.6	N23°02.7	228°24.0	S02°22.1					
1	243°04.5	237°27.2	11.8	110°15.2	32.1	160°26.5	02.8	243°26.2	22.0					
2	258°07.0	252°27.9	12.2	125°16.4	31.7	175°28.4	02.8	258°28.5	22.0					
3	273°09.4	267°28.6	•• 12.6	140°17.6	•• 31.3	190°30.3	•• 02.8	273°30.7	•• 21.9					
4	288°11.9	282°29.2	13.1	155°18.9	31.0	205°32.2	02.8	288°32.9	21.8					
5	303°14.4	297°29.9	13.5	170°20.1	30.6	220°34.1	02.9	303°35.2	21.7					
6	318°16.8	312°30.5	N02°13.9	185°21.4	N19°30.2	235°36.0	N23°02.9	318°37.4	S02°21.6					
7	333°19.3	327°31.2	14.4	200°22.6	29.9	250°37.9	02.9	333°39.7	21.5					
8	348°21.8	342°31.9	14.8	215°23.8	29.5	265°39.8	03.0	348°41.9	21.5					
9	3°24.2	357°32.5	•• 15.2	230°25.1	•• 29.1	280°41.7	•• 03.0	3°44.2	•• 21.4					
10	18°26.7	12°32.5	15.7	245°26.3	28.7	295°43.6	03.0	18°46.4	21.3					
11	33°29.1	27°33.8	16.1	260°27.6	28.4	310°45.5	03.1	33°48.7	21.2					
12	48°31.6	42°34.5	N02°16.6	275°28.8	N19°28.0	325°47.4	N23°03.1	48°50.9	S02°21.1					
13	63°34.1	57°35.1	17.0	290°30.0	27.6	340°49.3	03.1	63°53.2	21.0					
14	78°36.5	72°35.8	17.4	305°31.3	27.2	355°51.2	03.2	78°55.4	20.9					
15	93°39.0	87°36.4	•• 17.9	320°32.5	•• 26.9	10°53.0	•• 03.2	93°57.7	•• 20.9					
16	108°41.5	102°37.0	18.3	335°33.8	26.5	25°54.9	03.2	108°59.9	20.8					
17	123°43.9	117°37.7	18.8	350°35.0	26.1	40°56.8	03.3	124°02.2	20.7					
18	138°46.4	132°38.3	N02°19.2	5°36.2	N19°25.8	55°58.7	N23°03.3	139°04.4	S02°20.6					
19	153°48.9	147°39.0	19.7	20°37.5	25.4	71°00.6	03.3	154°06.7	20.5					
20	168°51.3	162°39.6	20.1	35°38.7	25.0	86°02.5	03.3	169°08.9	20.4					
21	183°53.8	177°40.2	•• 20.6	50°39.9	•• 24.6	101°04.4	•• 03.4	184°11.2	•• 20.4					
22	198°56.3	192°40.9	21.0	65°41.2	24.3	116°06.3	03.4	199°13.4	20.3					
23	213°57.7	207°41.5	21.5	80°42.4	23.9	131°08.2	03.4	214°15.7	20.2					
Mer.pass:08:46			v0.7 d0.4 m-4.4			v1.2 d-0.4 m1.1			v1.9 d0.0 m-1.8			v2.2 d0.1 m1.2		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	229°01.2	222°42.2	N02°21.9	95°43.6	N19°23.5	146°10.1	N23°03.5	229°17.9	S02°20.1	
1	244°03.6	237°42.8	22.4	110°44.9	23.1	161°12.0	03.5	244°20.2	20.0	
2	259°06.1	252°44.4	22.8	125°46.1	22.7	176°13.9	03.5	259°22.4	19.9	
3	274°08.6	267°44.0	•• 23.3	140°47.4	•• 22.4	191°15.8	•• 03.6	274°24.7	•• 19.9	
4	289°11.0	282°44.7	23.7	155°48.6	22.0	206°17.7	03.6	289°26.9	19.8	
5	304°13.5	297°45.3	24.2	170°49.8	21.6	221°19.6	03.6	304°29.2	19.7	
6	319°16.0	312°45.9	N02°24.6	185°51.1	N19°21.2	236°21.5	N23°03.7	319°31.4	S02°19.6	
7	334°18.4	327°46.6	25.1	200°52.3	20.9	251°23.3	03.7	334°33.7	19.5	
8	349°20.9	342°47.2	25.6	215°53.5	20.5	266°25.2	03.7	349°36.0	19.4	
9	4°23.4	357°47.8	•• 26.0	230°54.8	•• 20.1	281°27.1	•• 03.7	4°38.2	•• 19.4	
10	19°25.8	12°48.4	26.5	245°56.0	19.7	296°29.0	03.8	19°40.5	19.3	
11	34°28.3	27°49.0	26.9	260°57.2	19.4	311°30.9	03.8	34°42.7	19.2	
12	49°30.8	42°49.7	N02°27.4	275°58.5	N19°19.0	326°32.8	N23°03.8	49°45.0	S02°19.1	
13	64°33.2	57°50.3	27.9	290°59.7	18.6	341°34.7	03.9	64°47.2	19.0	
14	79°35.7	72°50.9	28.3	306°00.9	18.2	356°36.6	03.9	79°49.5	18.9	
15	94°38.1	87°51.5	•• 28.8	321°02.2	•• 17.8	11°38.5	•• 03.9	94°51.7	•• 18.9	
16	109°40.6	102°52.1	29.3	336°03.4	17.5	26°40.4	04.0	109°54.0	18.8	
17	124°43.1	117°52.7	29.7	351°04.6	17.1	41°42.3	04.0	124°56.2	18.7	
18	139°45.5	132°53.3	N02°30.2	6°05.9	N19°16.7	56°44.2	N23°04.0	139°58.5	S02°18.6	
19	154°48.0	147°53.9	30.7	21°07.1	16.3	71°46.1	04.1	155°00.7	18.5	
20	169°50.5	162°54.6	31.1	36°08.3	15.9	86°48.0	04.1	170°03.0	18.4	
21	184°52.9	177°55.2	•• 31.6	51°09.6	•• 15.6	101°49.8	•• 04.1	185°05.2	•• 18.4	
22	199°55.4	192°55.8	32.1	66°10.8	15.2	116°51.7	04.1	200°07.5	18.3	
23	214°57.9	207°56.4	32.5	81°12.0	14.8	131°53.6	04.2	215°09.7	18.2	
Mer.pass:08:42			v0.6 d0.5 m-4.4			v1.9 d0.0 m-1.8			v2.3 d0.1 m1.2	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	230°00.3	222°57.0	N02°33.0	96°13.3	N19°14.4	146°55.5	N23°04.2	230°12.0	S02°18.1					
1	245°02.8	237°57.6	33.5	111°14.5	14.0	161°57.4	04.2	245°14.2	18.0					
2	260°05.2	252°58.2	34.0	126°15.7	13.7	176°59.3	04.3	260°16.5	17.9					
3	275°07.7	267°58.8	•• 34.4	141°17.0	•• 13.3	192°01.2	•• 04.3	275°18.7	•• 17.9					
4	290°10.2	282°59.4	34.9	156°18.2	12.9	207°03.1	04.3	290°21.0	17.8					
5	305°12.6	298°00.0	35.4	171°19.4	12.5	222°05.0	04.4	305°23.3	17.7					
6	320°15.1	313°00.6	N02°35.9	186°20.7	N19°12.1	237°06.9	N23°04.4	320°25.5	S02°17.6					
7	335°17.6	328°01.2	36.4	201°21.9	11.8	252°08.8	04.4	335°27.8	17.5					
8	350°20.0	343°01.8	36.8	216°23.1	11.4	267°10.6	04.4	350°30.0	17.5					
9	5°22.5	358°02.3	•• 37.3	231°24.3	•• 11.0	282°12.5	•• 04.5	5°32.3	•• 17.4					
10	20°25.0	13°02.9	37.8	246°25.6	10.6	297°14.4	04.5	20°34.5	17.3					
11	35°27.4	28°03.5	38.3	261°26.8	10.2	312°16.3	04.5	35°36.8	17.2					
12	50°29.9	43°04.1	N02°38.8	276°28.0	N19°09.9	327°18.2	N23°04.6	50°39.0	S02°17.1					
13	65°32.4	58°04.7	39.3	291°29.3	09.5	342°20.1	04.6	65°41.3	17.0					
14	80°34.8	73°05.3	39.7	306°30.5	09.1	357°22.0	04.6	80°43.5	17.0					
15	95°37.3	88°05.9	•• 40.2	321°31.7	•• 08.7	12°23.9	•• 04.7	95°45.8	•• 16.9					
16	110°39.7	103°06.5	40.7	336°33.0	08.3	27°25.8	04.7	110°48.0	16.8					
17	125°42.2	118°07.0	41.2	351°34.2	07.9	42°27.7	04.7	125°50.3	16.7					
18	140°44.7	133°07.6	N02°41.7	6°35.4	N19°07.6	57°29.5	N23°04.7	140°52.6	S02°16.6					
19	155°47.1	148°08.2	42.2	21°36.6	07.2	72°31.4	04.8	155°54.8	16.6					
20	170°49.6	163°08.8	42.7	36°37.9	06.8	87°33.3	04.8	170°57.1	16.5					
21	185°52.1	178°09.4	•• 43.2	51°39.1	•• 06.4	102°35.2	•• 04.8	185°59.3	•• 16.4					
22	200°54.5	193°09.9	43.7	66°40.3	06.0	117°37.1	04.9	201°01.6	16.3					
23	215°57.0	208°10.5	44.2	81°41.6	05.6	132°39.0	04.9	216°03.8	16.2					
Mer.pass:08:39			v0.6 d0.5 m-4.4			v1.2 d-0.4 m1.1			v1.9 d0.0 m-1.8			v2.3 d0.1 m1.2		

SHA	Dec
Alpheratz	357°34.8 29°13.6
Ankaa	353°07.2 -42°10.0
Schedar	349°31.2 56°40.4
Diphda	348°47.3 -17°50.9
Achernar	335°20.5 -57°06.4
Hamal	327°51.3 23°34.8
Polaris	315°24.2 89°22.2
Acamar	314°21.0 -40°12.2
Menkar	314°06.2 4°11.3
Mirfak	308°28.4 49°57.0
Aldebaran	290°39.7 16°33.6
Rigel	281°03.9 -8°10.4
Capella	280°21.9 46°01.5
Bellatrix	278°22.9 6°22.3
Elnath	278°01.9 28°37.7
Anilnail	275°37.8 -1°11.2
Betelgeuse	270°52.1 7°24.7
Canopus	263°52.7 -52°42.7
Sirius	258°26.2 -16°45.2
Adhara	255°05.9 -29°00.5
Procyon	244°50.7 5°09.6
Pollux	243°17.2 27°58.0
Avior	234°14.9 -59°35.7
Suhail	222°46.2 -43°32.3
Miaplacidus	221°38.4 -69°49.6
Alphard	217°47.5 -8°46.2
Regulus	207°34.1 11°50.6
Dubhe	193°40.4 61°37.1
Denebola	182°24.5 14°25.8

SHA	Dec
Gienah	175°43.1 -17°41.1
Acrux	172°59.4 -63°14.6
Gacrux	171°51.0 -57°15.6
Alioth	166°12.3 55°49.4
Spica	158°21.8 -11°17.7
Alkaid	152°51.3 49°11.2
Hadar	148°35.1 -60°29.9
Menkent	147°57.0 -36°29.8
Arcturus	145°47.3 19°03.0
Rigil Kent.	139°39.3 -60°56.5
Kochab	137°18.6 74°03.0
Zuben'ubi	136°55.4 -16°08.9
Alphecca	126°03.2 26°37.6
Antares	112°15.2 -26°29.3
Atria	107°08.7 -69°04.3
Sabik	102°02.2 -15°45.4
Shaula	96°09.7 -37°07.3
Rasalhague	95°58.0 12°32.3
Eltanin	90°41.6 51°28.9
Kaus Aust.	83°31.9 34°22.3
Vega	80°32.8 38°48.2
Nunki	75°47.2 -26°15.9
Altair	61°59.6 8°56.0
Peacock	53°05.1 -56°39.0
Deneb	49°25.5 45°21.9
Enif	33°38.6 9°59.3
Al Na'ir	27°32.7 -46°50.1
Fomalhaut	15°14.4 -29°29.2
Scheat	13°45.1 28°13.0
Markab	13°29.8 15°20.3

May 10 Sat	SHA	Mer.pass
Venus	354°24.5	09:10
Mars	227°11.9	17:38
Jupiter	277°22.6	14:17
Saturn	0°21.9	08:45

Aries		Venus		Mars		Jupiter		Saturn	
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	230°59.5	223°11.1	N02°44.7	96°42.8	N19°05.3	147°40.9	N23°04.9	231°06.1	S02°16.1
1	246°01.9	238°11.7	45.2	111°44.0	04.9	162°42.8	04.9	246°08.3	16.1
2	261°04.4	253°12.2	45.7	126°45.2	04.5	177°44.7	05.0	261°10.6	16.0
3	276°06.9	268°12.8	•• 46.1	141°46.5	•• 04.1	192°46.6	•• 05.0	276°12.9	•• 15.9
4	291°09.3	283°13.4	46.6	156°47.7	03.7	207°48.4	05.0	291°15.1	15.8
5	306°11.8	298°13.9	47.1	171°48.9	03.3	222°50.3	05.1	306°17.4	15.7
6	321°14.2	313°14.5	N02°47.6	186°50.1	N19°02.9	237°52.2	N23°05.1	321°19.6	S02°15.7
7	336°16.7	328°15.1	48.1	201°51.4	02.6	252°54.1	05.1	336°21.9	15.6
8	351°19.2	343°15.6	48.6	216°52.6	02.2	267°56.0	05.1	351°24.1	15.5
9	6°21.6	358°16.2	•• 49.2	231°53.8	•• 01.8	282°57.9	•• 05.2	6°26.4	•• 15.4
10	21°24.1	13°16.7	49.7	246°55.0	01.4	297°59.8	05.2	21°28.6	15.3
11	36°26.6	28°17.3	50.2	261°56.3	01.0	313°01.7	05.2	36°30.9	15.2
12	51°29.0	43°17.9	N02°50.7	276°57.5	N19°00.6	328°03.5	N23°05.3	51°33.2	S02°15.2
13	66°31.5	58°18.4	51.2	291°58.7	19°00.2	343°05.4	05.3	66°35.4	15.1
14	81°34.0	73°19.0	51.7	307°00.0	18°59.9	358°07.3	05.3	81°37.7	15.0
15	96°36.4	88°19.5	•• 52.2	322°01.2	•• 59.5	31°09.2	•• 05.4	96°39.9	•• 14.9
16	111°38.9	103°20.1	52.7	337°02.4	59.1	28°11.1	05.4	111°42.2	14.8
17	126°41.3	118°20.6	53.2	352°03.6	58.7	43°13.0	05.4	126°44.4	14.8
18	141°43.8	133°21.2	N02°53.7	7°04.9	N18°58.3	58°14.9	N23°05.4	141°46.7	S02°14.7
19	156°46.3	148°21.7	54.2	22°06.1	57.3	73°16.8	05.5	156°49.0	14.6
20	171°48.7	163°22.3	54.7	37°07.3	57.5	88°18.6	05.5	171°51.2	14.5
21	186°51.2	178°22.8	•• 55.3	52°08.5	•• 57.1	103°20.5	•• 05.5	186°53.5	•• 14.4
22	201°53.7	193°23.4	55.8	67°09.7	56.8	118°22.4	05.6	201°55.7	14.4
23	216°56.1	208°23.9	56.3	82°11.0	56.4	133°24.3	05.6	216°58.0	14.3
Mer.pass.:08:35		v0.6 d0.5 m-4.4		v1.2 d-0.4 m1.1		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.2	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	231°58.6	223°24.5	N02°56.8	97°12.2	N18°56.0	148°26.2	232°00.2	S02°14.2	
1	247°01.1	238°25.0	57.3	112°13.4	55.6	163°28.1	05.6	247°02.5	14.1
2	262°03.5	253°25.6	57.8	127°14.6	55.8	178°30.0	05.7	262°04.8	14.0
3	277°06.0	268°26.1	•• 58.3	142°15.9	•• 54.2	193°31.9	•• 05.7	277°07.0	•• 14.0
4	292°08.5	283°26.7	58.9	157°17.1	54.4	208°33.7	05.7	292°09.3	13.9
5	307°10.9	298°27.2	59.4	172°18.3	54.0	223°35.6	05.8	307°11.5	13.8
6	322°13.4	313°27.7	N02°59.9	187°19.5	N18°53.6	238°37.5	N23°05.8	322°13.8	S02°13.7
7	337°15.8	328°28.3	03°00.4	202°20.8	53.2	253°39.4	05.8	337°16.1	13.6
8	352°18.3	343°28.8	00.9	217°22.0	52.9	268°41.3	05.8	352°18.3	13.6
9	7°20.8	358°29.3	•• 01.5	232°23.2	•• 52.5	283°43.2	•• 05.9	7°20.6	•• 13.5
10	22°23.2	13°29.9	02.0	247°24.4	52.1	298°45.1	05.9	22°22.8	13.4
11	37°25.7	28°30.4	02.5	262°25.6	51.7	313°46.9	05.9	37°25.1	13.3
12	52°28.2	43°30.9	N03°03.0	277°26.9	N18°51.3	328°48.8	N23°06.0	52°27.4	S02°13.2
13	67°30.6	58°31.5	03.6	292°28.1	50.9	343°50.7	06.0	67°29.6	13.2
14	82°33.1	73°32.0	04.1	307°29.3	50.5	358°52.6	06.0	82°31.9	13.1
15	97°35.6	88°32.5	•• 04.6	322°30.5	•• 50.1	13°54.5	•• 06.0	97°34.1	•• 13.0
16	112°38.0	103°33.0	05.2	337°31.8	49.7	28°56.4	06.1	112°36.4	12.9
17	127°40.5	118°33.6	05.7	352°33.0	49.3	43°58.3	06.1	127°38.6	12.8
18	142°43.0	133°34.1	N03°06.2	7°34.2	N18°48.9	59°00.1	N23°06.1	142°40.9	S02°12.8
19	157°45.4	148°34.6	06.7	22°35.4	48.6	74°02.0	06.1	157°43.2	12.7
20	172°47.9	163°35.1	07.3	37°36.6	48.2	89°03.9	06.2	172°45.4	12.6
21	187°50.3	178°35.7	•• 07.8	52°37.9	•• 47.8	104°05.8	•• 06.2	187°47.7	•• 12.5
22	202°52.8	193°36.2	08.3	67°39.1	47.4	119°07.7	06.2	202°49.9	12.4
23	217°55.3	208°37.3	08.9	82°40.3	47.0	134°09.6	06.3	217°52.2	12.4
Mer.pass.:08:31		v0.5 d0.5 m-4.4		v1.2 d-0.4 m1.1		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.2	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	232°57.7	223°37.2	N03°09.4	97°41.5	N18°46.6	149°11.4	N23°06.3	232°54.5	S02°12.3
1	248°00.2	238°37.7	10.0	112°42.7	46.2	164°13.3	06.3	247°56.7	12.2
2	263°02.7	253°38.3	10.5	127°44.0	45.8	179°15.2	06.3	262°59.0	12.1
3	278°05.1	268°38.8	•• 11.0	142°45.2	•• 45.4	194°17.1	•• 06.4	278°01.2	•• 12.0
4	293°07.6	283°39.3	11.6	157°46.4	45.0	209°19.0	06.4	293°03.5	12.0
5	308°10.1	298°39.8	12.1	172°47.6	44.6	224°20.9	06.4	308°05.8	11.9
6	323°12.5	313°40.3	N03°12.6	187°48.8	N18°44.2	239°22.8	N23°06.5	323°08.0	S02°11.8
7	338°15.0	328°40.8	13.2	202°50.0	43.8	254°24.6	06.5	338°10.3	11.7
8	353°17.5	343°41.3	13.7	217°51.3	43.4	269°26.5	06.5	353°12.6	11.7
9	8°19.9	358°41.8	•• 14.3	232°52.5	•• 43.0	284°28.4	•• 06.5	8°14.8	•• 11.6
10	23°22.4	13°42.3	14.8	247°53.7	42.6	299°30.3	06.6	23°17.1	11.5
11	38°24.8	28°42.8	15.4	262°54.9	42.3	314°32.2	06.6	38°19.3	11.4
12	53°27.3	43°43.3	N03°15.9	277°56.1	N18°41.9	329°34.1	N23°06.6	53°21.6	S02°11.3
13	68°29.8	58°43.8	16.4	292°57.4	41.5	344°35.9	06.6	68°23.9	11.3
14	83°32.2	73°43.3	17.0	307°58.6	41.1	359°37.8	06.7	83°26.0	11.2
15	98°34.7	88°44.8	•• 17.5	322°59.8	•• 40.7	14°39.7	•• 06.7	98°28.4	•• 11.1
16	113°37.2	103°45.3	18.1	338°01.0	40.3	29°41.6	06.7	113°30.6	11.0
17	128°39.6	118°45.8	18.6	353°02.2	39.9	44°43.5	06.8	128°32.9	10.9
18	143°42.1	133°46.3	N03°19.2	8°03.4	N18°39.5	59°45.4	N23°06.8	143°35.2	S02°10.9
19	158°44.6	148°46.8	19.7	23°04.7	39.1	74°47.2	06.8	158°37.4	10.8
20	173°47.0	163°47.3	20.3	38°05.9	38.7	89°49.1	06.8	173°39.7	10.7
21	188°49.5	178°47.8	•• 20.8	53°07.1	•• 38.3	104°51.0	•• 06.9	188°42.0	•• 10.6
22	203°52.0	193°48.3	21.4	68°08.3	37.9	119°52.9	06.9	203°44.2	10.6
23	218°54.4	208°48.8	21.9	83°09.5	37.5	134°54.8	06.9	218°46.5	10.5
Mer.pass.:08:27		v0.5 d0.5 m-4.4		v1.2 d-0.4 m1.1		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.2	

SHA		Dec
Alpheratz	357°34.7	29°13.6
Ankaa	353°07.2	-42°10.0
Schedar	349°31.2	56°40.4
Diphda	348°47.3	-17°50.8
Achernar	335°20.5	-57°06.4
Hamal	327°51.2	23°34.8
Polaris	314°23.6	89°22.2
Acamar	315°12.0	-40°12.2
Menkar	314°06.2	4°11.3
Mirfak	308°28.4	49°57.0
Aldebaran	290°39.7	16°33.6
Rigel	281°03.9	-8°10.4
Capella	280°21.9	46°01.4
Bellatrix	278°22.9	6°22.3
Elnath	278°01.9	28°37.7
Anilnail	275°37.8	-1°12.2
Betelgeuse	270°52.1	7°24.7
Canopus	263°52.7	-52°42.7
Sirius	258°26.3	-16°45.2
Adhara	255°05.9	-29°00.5
Procyon	244°50.7	5°09.6
Pollux	243°17.2	27°58.0
Avior	234°14.9	-59°35.7
Shuail	222°46.2	-43°32.3
Miaplacidus	221°38.4	-69°49.6
Alphard	217°47.5	-8°46.2
Regulus	207°34.1	11°50.6
Dubhe	193°40.4	61°37.1
Denebola	182°24.5	14°25.8
Gienah	175°43.1	-17°41.1
Acrux	172°59.4	-63°14.6
Gacrux	171°51.0	-57°15.6
Alioth	166°12.3	-55°49.5
Spica	158°21.8	-11°17.7
Alkaid	152°51.3	49°11.2
Hadar	148°35.1	-60°29.9
Menkent	147°56.9	-36°29.8
Arcturus	145°47.3	19°03.0
Rigil Kent	139°39.3	-60°56.5
Kochab	137°18.6	74°03.1
Zuben'ubi	136°55.4	-16°08.9
Alphecca	126°03.1	26°37.7
Antares	112°15.2	-26°29.3
Atria	107°08.6	-69°04.3
Sabik	102°02.2	-15°45.4
Shaula	96°09.6	-37°07.3
Rasalhague	95°58.0	12°32.3
Eltanin	90°41.6	51°28.9
Kaus Aust.	83°31.9	-34°22.3
Vega	80°32.7	38°48.2
Nunki	75°47.2	-26°15.9
Altair	61°59.5	8°56.0
Peacock	53°05.1	-56°39.0
Deneb	49°25.5	45°21.9
Enif	33°38.5	9°59.3
Al Na'ir	27°32.6	-46°50.1
Fomalhaut	15°14.3	-29°29.2
Scheat	13°45.1	28°13.0
Markab	13°29.8	15°20.3

SHA		Mer.pass.
Venus	352°11.6	09:07
Mars	225°43.3	17:32
Jupiter	276°41.4	14:07
Saturn	0°06.6	08:34
May 14 Wed		
Venus	351°25.9	09:06
Mars	225°13.6	17:30
Jupiter	276°27.6	14:04
Saturn	0°01.7	08:31
May 15 Thu		
Venus	350°39.5	09:05
Mars	224°43.8	17:28
Jupiter	276°13.7	14:01
Saturn	359°56.7	08:27

Horizontal parallax	
Venus:	0.3
Mars:	0.1

Sun			Moon				
Tue	GHA	Dec	GHA	ν	Dec	d	HP
0	180°54.2	N18°23.6	358°43.9	12.3'	S23°27.1	-8.6'	54.1'
1	195°54.2	24.2	13°15.2	12.3'	23°35.6	-8.5'	54.2'
2	210°54.2	24.8	27°46.4	12.2'	23°44.0	-8.4'	54.2'
3	225°54.2	· · 25.5	42°17.6	12.1'	23°52.3	-8.2'	54.2'
4	240°54.2	26.1	56°48.6	12.0'	24°00.8	-8.1'	54.2'
5	255°54.2	26.7	71°19.6	12.0'	24°08.6	-8.0'	54.2'
6	270°54.2	N18°27.3	85°50.6	11.9'	S24°16.6	-7.9'	54.2'
7	285°54.2	27.9	100°21.4	11.8'	24°24.5	-7.8'	54.2'
8	300°54.2	28.5	114°52.2	11.7'	24°32.2	-7.7'	54.2'
9	315°54.2	· · 29.1	129°22.9	11.7'	24°39.9	-7.6'	54.2'
10	330°54.2	29.7	143°53.6	11.6'	24°47.5	-7.5'	54.2'
11	345°54.2	30.4	158°24.1	11.5'	24°54.9	-7.4'	54.2'
12	0°54.2	N18°31.0	172°54.6	11.5'	S25°02.2	-7.3'	54.2'
13	15°54.2	31.6	187°25.0	11.4'	25°09.4	-7.2'	54.3'
14	30°54.2	32.2	201°55.4	11.3'	25°16.5	-7.0'	54.3'
15	45°54.2	· · 32.8	216°25.6	11.2'	25°23.5	-6.9'	54.3'
16	60°54.2	33.4	230°55.8	11.2'	25°30.4	-6.8'	54.3'
17	75°54.2	34.0	245°25.9	11.1'	25°37.2	-6.7'	54.3'
18	90°54.2	N18°34.6	259°56.0	11.0'	S25°43.8	-6.6'	54.3'
19	105°54.2	35.2	274°26.0	10.9'	25°50.3	-6.5'	54.3'
20	120°54.2	35.8	288°55.9	10.9'	25°56.7	-6.3'	54.3'
21	135°54.2	· · 36.4	303°25.7	10.8'	26°03.0	-6.2'	54.3'
22	150°54.2	37.0	317°55.5	10.7'	26°09.2	-6.1'	54.3'
23	165°54.2	37.6	332°25.2	10.7'	26°15.2	-6.0'	54.4'
SD = 15.8			d = 0.6		SD = 14.8		

Aries				Venus				Mars				Jupiter				Saturn			
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	233°56.9	223°49.3	N03°22.5	98°10.7	N18°37.1	149°56.6	N23°06.9	233°48.7	S02°10.4			113°12.0	36.7	164°58.5	07.0	248°51.0	10.3		
1	248°59.3	238°49.8	23.1	128°13.2	36.3	180°00.4	07.0	263°53.3	10.2			143°14.4	35.9	195°02.3	07.0	278°55.5	10.2		
2	264°01.8	253°50.3	23.6	158°15.6	35.5	210°04.2	07.1	293°57.8	10.1			173°16.8	25.3	225°06.1	07.1	309°00.1	10.0		
3	279°04.3	268°50.8	24.2	188°18.0	N18°34.7	240°07.9	N23°07.1	324°02.3	S02°09.9			203°19.2	34.3	255°09.8	07.2	339°04.6	09.9		
4	294°06.7	283°51.3	24.7	218°20.5	33.9	270°11.7	07.1	354°06.9	09.8			248°22.9	33.1	300°15.5	07.2	24°11.4	09.6		
5	309°09.2	298°51.7	25.3	233°21.7	33.5	285°13.6	07.2	9°09.1	09.7			263°24.1	32.7	331°15.7	07.2	39°13.6	09.5		
6	324°11.7	313°52.2	N03°25.8	278°25.3	N18°32.3	330°19.2	N23°07.3	54°15.9	S02°09.5			283°38.7	27.9	135°39.9	07.6	219°40.8	08.6		
7	339°14.1	328°52.7	26.4	293°26.5	31.9	345°21.1	07.3	69°18.2	09.4			308°27.7	31.5	0°23.0	07.3	84°20.4	09.3		
8	354°16.6	343°53.2	27.0	323°29.0	30.1	15°24.9	07.3	99°22.7	09.2			338°30.2	31.7	30°26.8	07.4	114°25.0	09.2		
9	9°19.1	358°53.7	27.5	353°31.4	30.3	45°28.6	07.4	129°27.2	09.1			387°37.5	28.3	120°38.0	07.5	204°38.6	08.7		
10	24°21.5	13°54.2	28.1	68°37.5	27.9														
11	39°24.0	28°54.6	28.6																
12	54°26.4	43°55.1	N03°29.2																
13	69°28.9	58°55.6	29.8																
14	84°31.4	73°56.1	30.3																
15	99°33.8	88°56.5	30.9																
16	114°36.2	103°57.0	31.5																
17	129°38.8	118°57.5	32.0																
18	144°41.2	133°58.0	N03°32.6																
19	159°43.7	148°58.4	33.2																
20	174°46.2	163°58.9	33.7																
21	189°48.6	178°59.4	34.3																
22	204°51.1	193°59.8	34.9																
23	219°53.6	209°00.3	35.5																
Mer.pass.:08:23				v0.5 d0.6 m-4.4				v1.2 d-0.4 m1.1				v1.9 d0.0 m-1.8				v2.3 d0.1 m1.2			

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	234°56.0	224°00.8	N03°36.0	98°39.9	N18°27.5	150°41.8	N23°07.6	234°43.1	S02°08.5										
1	249°58.5	239°01.2	36.6	113°41.1	27.1	165°43.7	07.6	249°45.4	08.5										
2	265°00.9	254°01.7	37.2	128°42.3	26.7	180°45.6	07.6	264°47.6	08.4										
3	280°03.4	269°02.2	37.7	143°43.5	26.3	195°47.4	07.7	279°49.9	08.3										
4	295°05.9	284°02.6	38.3	158°44.7	25.9	210°49.3	07.7	294°52.1	08.2										
5	310°08.3	299°03.1	38.9	173°45.9	25.5	225°51.2	07.7	309°54.4	08.2										
6	325°10.8	314°03.5	N03°39.5	188°47.1	N18°25.1	240°53.1	N23°07.7	324°56.7	S02°08.1										
7	340°13.3	329°04.0	40.0	203°48.4	24.7	255°55.0	07.8	339°58.9	08.0										
8	355°15.7	344°04.5	40.6	218°49.6	24.3	270°56.8	07.8	355°01.2	07.9										
9	10°18.2	359°04.9	41.2	233°50.8	23.9	285°58.7	07.8	10°03.5	07.9										
10	25°20.7	14°05.4	41.8	248°52.0	23.5	301°00.6	07.8	25°05.7	07.8										
11	40°23.1	29°05.8	42.4	263°53.2	23.1	316°02.5	07.9	40°08.0	07.7										
12	55°25.6	44°06.3	N03°42.9	278°54.4	N18°22.7	331°04.4	N23°07.9	55°10.3	S02°07.6										
13	70°28.1	59°06.7	43.5	293°55.6	22.3	346°06.2	07.9	70°12.5	07.5										
14	85°30.5	74°07.2	44.1	308°56.8	21.9	1°08.1	07.9	85°14.8	07.5										
15	100°33.0	89°07.6	44.7	323°58.0	21.5	16°10.0	08.0	100°17.1	07.4										
16	115°35.4	104°08.1	45.3	338°59.2	21.1	31°11.9	08.0	115°19.3	07.3										
17	130°37.9	119°08.5	45.9	354°00.5	20.6	46°13.8	08.0	130°21.6	07.2										
18	145°40.4	134°09.0	N03°46.4	9°01.7	N18°20.2	61°15.6	N23°08.0	145°23.9	S02°07.2										
19	160°42.8	149°09.4	47.0	24°02.9	19.8	76°17.5	08.1	160°26.1	07.1										
20	175°45.3	164°09.9	47.6	39°04.1	19.4	91°19.4	08.1	175°28.4	07.0										
21	190°47.8	179°10.3	48.2	54°05.3	19.0	106°21.3	08.1	190°30.7	06.9										
22	205°50.2	194°10.7	48.8	69°06.5	18.6	121°23.1	08.2	205°33.0	06.9										
23	220°52.7	209°11.2	49.4	84°07.7	18.2	136°25.0	08.2	220°35.2	06.8										
Mer.pass.:08:19				v0.5 d0.6 m-4.4				v1.2 d-0.4 m1.1				v1.9 d0.0 m-1.8				v2.3 d0.1 m1.1			

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	235°55.2	224°11.6	N03°50.0	99°08.9	N18°17.8	151°26.9	N23°08.2	235°37.5	S02°06.7										
1	250°57.6	239°12.1	50.6	114°10.1	17.4	166°28.8	08.2	250°39.8	06.6										
2	266°00.1	254°12.5	51.2	129°11.3	17.0	181°30.7	08.3	265°42.0	06.6										
3	281°02.6	269°12.9	51.7	144°12.5	16.7	196°32.5	08.3	280°44.3	06.5										
4	296°05.0	284°13.4	52.3	159°13.8	16.2	211°34.4	08.3	295°46.6	06.4										
5	311°07.5	299°13.8	52.9	174°15.0	15.8	226°36.3	08.3	310°48.8	06.3										
6	326°09.9	314°14.3	N03°53.5	189°16.2	N18°15.4	241°38.2	N23°08.4	325°51.1	S02°06.3										
7	341°12.4	329°14.7	54.1	204°17.4	15.0	256°40.0	08.4	340°53.4	06.2										
8	356°14.9	344°15.1	54.7	219°18.6	14.6	271°41.9	08.4	355°55.6	06.1										
9	11°17.3	359°15.5	55.3	234°19.8	14.1	286°43.8	08.4	10°57.9	06.0										
10	26°19.8	14°16.0	55.9	249°21.0	13.7	301°45.7	08.5	26°00.2	06.0										
11	41°22.3	29°16.4	56.5	264°22.2	13.3	316°47.6	08.5	41°02.4	05.9										
12	56°24.7	44°16.8	N03°57.1	279°23.4	N18°12.9	331°49.4	N23°08.5	56°04.7	S02°08.5										
13	71°27.2	59°17.3	57.7	294°24.6	12.5	346°51.3	08.5	71°07.0	05.7										
14	86°29.7	74°17.7	58.3	309°25.8	12.1	1°53.2	08.6	86°09.2	05.7										
15	101°32.1	89°18.1	58.9	324°27.0	11.7	16°55.1	08.6	101°11.5	05.6										
16	116°34.6	104°18.5	03°59.5	339°28.2	11.3	31°56.9	08.6	116°13.8	05.5										
17	131°37.0	119°19.0	04°00.1	354°29.4	10.9	46°58.8	08.6	131°16.1	05.4										
18	146°39.5	134°19.4	N04°00.7	9°30.6	N18°10.5	62°00.7	N23°08.7	146°18.3	S02°05.4										
19	161°42.0	149°19.8	01.3	24°31.9	10.1	77°02.6	08.7	161°20.6	05.3										
20	176°44.4	164°20.2	01.9	39°33.1	09.6	92°04.4	08.7	176°22.9	05.2										
21	191°46.9	179°20.6	02.5	54°34.3	09.2	107°06.3	08.7	191°25.1	05.1										
22	206°49.4	194°21.1	03.1	69°35.5	08.8	122°08.2	08.8	206°27.4	05.1										
23	221°51.8	209°21.5	03.7	84°36.7	08.4	137°10.1	08.8	221°29.7	05.0										
Mer.pass.:08:15				v0.4 d0.6 m-4.3				v1.2 d-0.4 m1.1				v1.9 d0.0 m-1.8				v2.3 d0.1 m1.1			

SHA	Dec
Alpheratz	357°34.7
Ankaa	353°07.1
Schedar	349°31.2
Diphda	348°47.3
Achernar	335°20.5
Hamal	327°51.2
Polaris	314°23.1
Acamar	315°12.0
Menkar	314°06.2
Mirfak	308°28.4
Aldebaran	290°39.6
Rigel	281°03.9
Capella	280°21.9
Bellatrix	278°22.9
Elnath	278°01.9
Anilam	275°37.7
Betelgeuse	270°52.1
Canopus	263°52.7
Sirius	258°26.3
Adhara	255°05.9
Procyon	244°50.7
Pollux	243°17.2
Avior	234°14.9
Suhail	222°46.2
Miaplacidus	221°38.4
Alphard	217°47.5
Regulus	207°34.1
Dubhe	193°40.4
Denebola	182°24.5
Gienah	175°43.1
Acrux	172°59.4
Gacrux	171°51.0
Alioth	166°12.1
Spica	158°21.7
Alkaid	152°51.3
Hadar	148°35.0
Menkent	147°56.9
Arcturus	145°47.3
Rigel Kent.	139°39.3
Kochab	137°18.6
Zuben'ubi	136°55.4
Alphecca	126°03.1
Antares	112°15.1
Atria	107°08.6
Sabik	102°02.1
Shaula	96°09.6
Rasalhague	95°58.0
Eltanin	90°41.6
Kaus Aug.	83°31.8
Vega	80°32.7
Nunki	75°47.2
Altair	61°59.5
Peacock	53°05.1
Deneb	49°25.5
Enif	33°38.5
Al Na'ir	27°32.6
Fomalhaut	15°14.3
Scheat	13°45.1
Markab	13°29.7

SHA	Mer.pass
Venus	349°52.4
Mars	224°13.9
Jupiter	275°59.8
Saturn	359°47.1
Venus	349°04.8
Mars	223°43.9
Jupiter	275°45.8
Saturn	359°47.1
Venus	348°16.5
Mars	223°13.8
Jupiter	275°31.7
Saturn	359°42.3

Horizontal parallax	Mer.pass
Venus:	0.2
Mars:	0.1

Sun			Moon				
Fri	GHA	Dec	GHA	ν	Dec	d	HP
0	180°53.9	N19°06.5	321°36.1	8.6'	S28°27.2	0.8'	55.0'
1	195°53.9	07.1	336°03.6	8.6'	28°26.3	1.0'	55.1'
2	210°53.9	07.7	350°31.2	8.6'	28°25.3	1.1'	55.1'
3	225°53.9	· · 08.3	4°58.7	8.5'	28°24.1	1.3'	55.1'
4	240°53.9	08.8	19°26.3	8.5'	28°22.8	1.4'	55.1'
5	255°53.9	09.4	33°53.8	8.5'	28°21.3	1.6'	55.1'
6	270°53.9	N19°10.0	48°21.4	8.5'	S28°19.6	1.7'	55.2'
7	285°53.8	10.6	62°48.9	8.5'	28°17.9	1.9'	55.2'
8	300°53.8	11.1	77°16.4	8.5'	28°15.9	2.0'	55.2'
9	315°53.8	· · 11.7	91°44.0	8.5'	28°13.8	2.2'	55.2'
10	330°53.8	12.3	106°11.5	8.5'	28°11.6	2.3'	55.2'
11	345°53.8	12.8	120°39.0	8.5'	28°09.2	2.5'	55.3'
12	0°53.8	N19°13.4	135°06.6	8.5'	S28°06.7	2.6'	55.3'
13	15°53.8	14.0	149°34.1	8.6'	28°04.0	2.8'	55.3'
14	30°53.7	14.5	164°01.7	8.6'	28°01.2	2.9'	55.3'
15	45°53.7	· · 15.1	178°29.2	8.6'	27°58.2	3.1'	55.3'
16	60°53.7	15.7	192°56.8	8.6'	27°55.0	3.2'	55.4'
17	75°53.7	16.2	207°24.4	8.6'	27°51.8	3.4'	55.4'
18	90°53.7	N19°16.8	221°52.0	8.6'	S27°48.3	3.5'	55.4'
19	105°53.7	17.4	236°19.6	8.6'	27°44.7	3.7'	55.4'
20	120°53.6	17.9	250°47.3	8.6'	27°41.0	3.8'	55.4'
21	135°53.6	· · 18.5	265°14.9	8.7'	27°37.1	3.9'	55.5'
22	150°53.6	19.1	279°42.6	8.7'	27°33.1	4.1'	55.5'
23	165°53.6	19.6	294°10.3	8.7'	27°29.0	4.2'	55.5'

Aries		Venus		Mars		Jupiter		Saturn	
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	236°54.3	224°21.9	N04°04.3	99°37.9	N18°08.0	152°11.9	N23°08.8	236°32.0	S02°04.9
1	251°56.8	239°22.3	04.9	114°39.1	07.6	167°13.8	08.8	251°34.2	-04°09.9
2	266°59.2	254°22.7	05.5	129°40.5	07.2	182°15.7	08.9	266°36.5	04.8
3	282°01.7	269°23.1	•• 06.1	144°41.3	•• 06.8	197°17.6	•• 08.9	281°38.8	•• 04.7
4	297°04.2	284°23.6	06.8	159°42.7	06.4	212°19.5	08.9	296°41.0	04.6
5	312°06.6	299°24.0	07.4	174°43.9	06.0	227°21.3	08.9	311°43.3	04.5
6	327°09.1	314°24.4	N04°08.0	189°45.1	N18°05.5	242°23.2	N23°08.9	326°45.6	S02°04.5
7	342°11.5	329°24.8	08.6	204°46.3	05.1	257°25.1	09.0	341°47.8	04.4
8	357°14.0	344°25.2	09.2	219°47.5	04.7	272°27.0	09.0	356°50.1	04.3
9	12°16.5	359°25.6	•• 09.8	234°48.7	•• 04.3	287°28.8	•• 09.0	11°52.4	•• 04.2
10	27°18.9	14°26.0	10.4	249°49.9	03.0	302°30.7	09.0	26°54.7	04.2
11	42°21.4	29°26.4	11.0	264°51.1	03.5	317°32.6	09.1	41°56.9	04.1
12	57°23.9	44°26.8	N04°11.6	279°52.3	N18°03.1	332°34.5	N23°09.1	56°59.2	S02°04.0
13	72°26.3	59°27.2	12.3	294°53.5	02.7	347°36.3	09.1	72°01.5	04.0
14	87°28.8	74°27.2	12.9	309°54.7	02.2	2°38.2	09.1	87°03.7	03.9
15	102°31.3	89°28.0	•• 13.5	324°55.9	•• 01.8	17°40.1	•• 09.2	102°06.0	•• 03.8
16	117°33.7	104°28.4	14.1	339°57.1	01.4	32°42.0	09.2	117°08.3	03.7
17	132°36.2	119°28.8	14.7	354°58.3	01.0	47°43.8	09.2	132°10.6	03.7
18	147°38.7	134°29.2	N04°15.3	9°59.5	N18°00.6	62°45.7	N23°09.2	147°12.8	S02°03.6
19	162°41.1	149°29.6	16.0	25°00.7	18°00.2	77°47.6	09.3	162°15.1	03.5
20	177°43.6	164°30.0	16.6	40°01.9	17°59.8	92°49.5	09.3	177°17.4	03.4
21	192°46.0	179°30.4	•• 17.2	55°03.2	•• 59.3	107°51.3	•• 09.3	192°19.7	•• 03.4
22	207°48.5	194°30.8	17.8	70°04.4	58.9	122°53.2	09.3	207°21.9	03.3
23	222°51.0	209°31.2	18.4	85°05.6	58.5	137°55.1	09.4	222°24.2	03.2
Mer.pass.:08:11		v0.4 d0.6 m-4.3		v1.2 d-0.4 m1.1		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	237°53.4	224°31.6	N04°19.1	100°06.8	N17°58.1	152°57.0	N23°09.4	237°26.5	S02°03.1
1	252°55.9	239°32.0	19.7	115°08.0	57.7	167°58.8	09.4	252°28.8	03.1
2	267°58.4	254°32.4	20.3	130°09.2	57.3	183°00.7	09.4	267°31.0	03.0
3	283°00.8	269°32.8	•• 20.9	145°10.4	•• 56.9	198°02.6	•• 09.5	282°33.3	•• 02.9
4	298°03.3	284°33.2	21.5	160°11.6	56.4	213°04.4	09.5	297°35.6	02.9
5	313°05.8	299°33.6	22.2	175°12.8	56.0	228°06.3	09.5	312°37.8	02.8
6	328°08.2	314°34.0	N04°22.8	190°14.0	N17°55.6	243°08.2	N23°09.5	327°40.1	S02°02.7
7	343°10.7	329°34.3	23.4	205°15.2	55.2	258°10.1	09.5	342°42.4	02.6
8	358°13.2	344°34.7	24.0	220°16.4	54.8	273°11.9	09.6	357°44.7	02.6
9	13°15.6	359°35.1	•• 24.7	235°17.6	•• 54.4	288°13.8	•• 09.6	12°46.9	•• 02.5
10	28°18.1	14°35.5	25.3	250°18.8	53.0	303°15.7	09.6	27°49.2	02.4
11	43°20.5	29°35.9	25.9	265°20.0	53.5	318°17.6	09.6	42°51.5	02.3
12	58°23.0	44°36.3	N04°26.6	280°21.2	N17°53.1	333°19.4	N23°09.7	57°53.8	S02°02.3
13	73°25.5	59°36.6	27.2	295°22.4	52.7	348°21.3	09.7	72°56.0	02.2
14	88°27.9	74°37.0	27.8	310°23.6	52.3	3°23.2	09.7	87°58.3	02.1
15	103°30.4	89°37.4	•• 28.5	325°24.8	•• 51.9	18°25.1	•• 09.7	103°00.6	•• 02.1
16	118°32.9	104°37.8	29.1	340°26.0	51.4	33°26.9	09.8	118°02.9	02.0
17	133°35.3	119°38.2	29.7	355°27.2	51.0	48°28.8	09.8	133°05.1	01.9
18	148°37.8	134°38.5	N04°30.3	10°28.4	N17°50.6	63°30.7	N23°09.8	148°07.4	S02°01.8
19	163°40.3	149°38.9	31.0	25°29.6	50.2	78°32.5	09.8	163°09.7	01.8
20	178°42.7	164°39.3	31.6	40°30.8	49.8	93°34.4	09.8	178°12.0	01.7
21	193°45.2	179°39.7	•• 32.2	55°32.0	•• 49.3	108°36.3	•• 09.9	193°14.2	•• 01.6
22	208°47.6	194°40.0	32.9	70°33.2	48.9	123°38.2	09.9	208°16.5	01.6
23	223°50.1	209°40.4	33.5	85°34.4	48.5	138°40.0	09.9	223°18.8	01.5
Mer.pass.:08:07		v0.4 d0.6 m-4.3		v1.2 d-0.4 m1.2		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	238°52.6	224°40.8	N04°34.2	100°35.5	N17°48.1	153°41.9	N23°09.9	238°21.1	S02°01.4
1	253°55.0	239°41.1	34.8	115°36.7	47.7	168°43.8	10.0	253°23.3	01.3
2	268°57.5	254°41.5	35.4	130°37.9	47.3	183°45.7	10.0	268°25.6	01.2
3	284°00.2	269°41.9	•• 36.1	145°39.1	•• 46.8	198°47.5	•• 10.0	283°27.9	•• 01.3
4	299°02.4	284°42.3	36.7	160°40.3	46.4	213°49.4	10.0	298°30.2	01.1
5	314°04.9	299°42.6	37.3	175°41.5	46.0	228°51.3	10.1	313°32.4	01.0
6	329°07.4	314°43.0	N04°38.0	190°42.7	N17°45.6	243°53.1	N23°10.1	328°34.7	S02°01.0
7	344°09.8	329°43.3	38.6	205°43.9	45.2	258°55.0	10.1	343°37.0	00.9
8	359°12.3	344°43.7	39.3	220°45.1	44.7	273°56.9	10.1	358°39.3	00.8
9	14°14.8	359°44.1	•• 39.9	235°46.3	•• 44.3	288°58.8	•• 10.1	13°41.6	•• 00.8
10	29°17.2	14°44.4	40.5	250°47.5	44.0	304°00.6	10.2	28°43.8	00.7
11	44°19.7	29°44.8	41.2	265°48.7	43.5	319°02.5	10.2	43°46.1	00.6
12	59°22.1	44°45.2	N04°41.8	280°49.9	N17°43.0	334°04.4	N23°10.2	58°48.4	S02°00.5
13	74°24.6	59°45.5	42.5	295°51.1	42.6	349°06.2	10.2	73°50.7	00.5
14	89°27.1	74°45.9	43.1	310°52.3	42.2	4°08.1	10.3	88°52.9	00.4
15	104°29.5	89°46.2	•• 43.8	325°53.5	•• 41.8	19°10.0	•• 10.3	103°55.2	•• 00.3
16	119°32.0	104°46.6	44.4	340°54.7	41.4	34°11.9	10.3	118°57.5	00.3
17	134°34.5	119°46.9	45.1	355°55.9	40.9	49°13.7	10.3	133°59.8	00.2
18	149°36.9	134°47.3	N04°45.7	10°57.1	N17°40.5	64°15.6	N23°10.3	149°02.1	S02°00.1
19	164°39.4	149°47.7	46.4	25°58.3	40.1	79°17.5	10.4	164°04.3	00.1
20	179°41.9	164°48.0	47.0	40°59.5	39.7	94°19.3	10.4	179°06.6	02°00.0
21	194°44.3	179°48.4	•• 47.7	56°00.7	•• 39.2	109°21.2	•• 10.4	194°08.9	01°59.9
22	209°46.8	194°48.7	48.3	71°01.9	38.8	124°23.1	10.4	209°11.2	59.8
23	224°49.2	209°49.1	48.9	86°03.1	38.4	139°24.9	10.5	224°13.4	59.8
Mer.pass.:08:03		v0.4 d0.6 m-4.3		v1.2 d-0.4 m1.2		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

SHA	Dec
Alpheratz	357°34.7 29°13.6
Ankaa	353°07.1 -42°09.9
Schedar	349°31.1 56°40.3
Diphda	348°47.2 -17°50.8
Achernar	335°20.4 -57°06.3
Hamal	327°51.2 23°34.8
Polaris	314°22.7 89°22.2
Acamar	315°12.0 -40°12.1
Menkar	314°06.2 4°11.3
Mirfak	308°28.4 49°57.0
Aldebaran	290°39.6 16°33.6
Rigel	281°03.9 -8°10.4
Capella	280°21.9 46°01.4
Bellatrix	278°22.9 6°22.3
Elnath	278°01.9 28°37.7
Anilam	275°37.7 -1°12.2
Betelgeuse	270°52.1 7°24.7
Canopus	263°52.7 -52°42.7
Sirius	258°26.3 -16°45.1
Adhara	255°05.9 -29°00.5
Procyon	244°50.5 5°09.6
Pollux	243°17.2 27°58.0
Avior	234°14.9 -59°35.7
Suhail	222°46.2 -43°32.2
Miaplacidus	221°38.5 -69°49.6
Alphard	217°47.5 -8°46.2
Regulus	207°34.1 11°50.6
Dubhe	193°40.5 61°37.1
Denebola	182°24.5 14°25.8
Gienah	175°43.1 -17°41.1
Acrux	172°59.4 -63°14.7
Gacrux	171°51.0 -57°15.6
Alioth	166°12.3 55°49.5
Spica	158°21.7 -11°17.8
Alkaid	152°51.3 49°11.3
Hadar	148°35.0 -60°29.9
Menkent	147°56.9 -36°29.9
Arcturus	145°47.3 19°03.0
Rigil Kent.	139°39.3 -60°56.6
Kochab	137°18.6 74°03.1
Zuben'ubi	136°55.4 -16°08.9
Alphecca	126°03.1 26°37.7
Antares	112°15.1 -26°29.4
Atria	107°08.6 -69°04.3
Sabik	102°02.1 -15°45.4
Shaula	96°09.6 -37°07.3
Rasalhague	95°58.0 12°32.4
Eltanin	90°41.6 51°28.9
Kaus Aust.	83°31.8 -34°22.3
Vega	80°32.7 38°48.2
Nunki	75°47.1 -26°15.9
Altair	61°59.5 8°56.0
Peacock	53°05.0 -56°39.0
Deneb	49°25.5 45°21.9
Enif	33°38.5 9°59.3
Al Na'ir	27°32.5 -46°50.1
Fomalhaut	15°14.3 -29°29.2
Scheat	13°45.0 28°13.0
Markab	13°29.7 15°20.4

SHA	Mer.pass
Venus	347°27.6 09:02
Mars	222°43.6 17:20
Jupiter	275°17.7 13:49
Saturn	359°37.7 08:13
SHA	Mer.pass
Venus	346°38.2 09:02
Mars	222°13.3 17:18
Jupiter	275°03.5 13:46
Saturn	359°33.0 08:09
SHA	Mer.pass
Venus	345°48.2 09:01
Mars	221°43.0 17:16
Jupiter	274°49.3 13:43
Saturn	359°28.5 08:05

Horizontal parallax	
Venus:	0.2
Mars:	0.1

Sun			Moon				
Mon	GHA	Dec	GHA	ν	Dec	d	HP
0	180°52.4	N19°46.5	283°29.9	10.7°	S21°13.8	10.8'	56.7'
1	195°52.4	47.1	297°59.5	10.7°	21°02.9	10.9'	56.8'
2	210°52.4	47.6	312°29.3	10.8°	20°51.9	11.0'	56.8'
3	225°52.3	· · 48.2	326°59.0	10.8°	20°48.8	11.2'	56.8'
4	240°52.3	48.7	341°28.9	10.8°	20°29.6	11.3'	56.9'
5	255°52.3	49.2	355°58.7	10.9°	20°18.3	11.4'	56.9'
6	270°52.2	N19°49.7	10°28.7	10.9°	S20°06.9	11.5'	56.9'
7	285°52.2	50.3	24°58.6	11.0°	19°55.3	11.6'	56.9'
8	300°52.2	50.8	39°28.6	11.0°	19°43.6	11.7'	57.0'
9	315°52.1	· · 51.3	53°58.7	11.1°	19°31.9	11.8'	57.0'
10	330°52.1	51.9	68°28.8	11.1°	19°20.0	11.9'	57.0'
11	345°52.1	52.4	82°58.9	11.2°	19°08.0	12.0'	57.1'
12	0°52.0	N19°52.9	97°29.1	11.2°	S18°55.9	12.1'	57.1'
13	15°52.0	53.5	111°59.4	11.3°	18°43.7	12.3'	57.1'
14	30°52.0	54.0	126°29.7	11.3°	18°31.4	12.4'	57.2'
15	45°51.9	· · 54.5	141°00.0	11.3°	18°19.0	12.5'	57.2'
16	60°51.9	55.0	155°30.3	11.4°	18°06.5	12.6'	57.2'
17	75°51.9	55.6	170°00.8	11.4°	17°53.9	12.7'	57.3'
18	90°51.8	N19°56.1	184°31.2	11.5°	S17°41.2	12.8'	57.3'
19	105°51.8	56.6	199°01.7	11.5°	17°28.3	12.9'	57.3'
20	120°51.8	57.1	213°32.2	11.6°	17°15.4	13.0'	57.4'
21	135°51.7	· · 57.7	228°02.8	11.6°	17°02.4	13.1'	57.4'
22	150°51.7	58.2	242°33.4	11.6°	16°49.3	13.2'	57.4'
23	165°51.7	58.7	257°04.1	11.7°	16°36.1	13.3'	57.4'
SD = 15.6			SD = 15.6				

	Aries			Venus			Mars			Jupiter			Saturn		
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	239°51.7	224°49.4	N04°49.6	101°04.3	N17°38.0	154°26.8	N23°10.5	239°15.7	S01°59.7						
1	254°54.2	239°49.8		50.3	116°05.5	37.6	169°28.7	10.5	254°18.0	59.6					
2	269°56.6	254°50.1		50.9	131°06.7	37.1	184°30.6	10.5	269°20.3	59.6					
3	284°59.1	269°50.5	••	51.6	146°07.8	••	36.7	199°32.4	••	10.5	284°22.6	••	59.5		
4	300°01.6	284°50.8		52.2	161°09.0	36.3	214°34.3	10.6	299°24.8	59.4					
5	315°04.0	299°51.1		52.9	176°10.2	35.9	229°36.2	10.6	314°27.1	59.3					
6	330°06.5	314°51.5	N04°53.5	191°11.4	N17°35.4	244°38.0	N23°10.6	329°29.4	S01°59.3						
7	345°09.0	329°51.8		54.2	206°12.6	35.0	259°39.9	10.6	344°31.7	59.2					
8	•• 01°11.4	344°52.2		54.8	221°13.8	34.6	274°41.8	10.7	359°34.0	59.1					
9	15°13.9	359°52.5	••	55.5	236°15.0	••	34.2	289°43.6	••	10.7	14°36.2	••	59.1		
10	30°16.4	14°52.9		56.1	251°16.2	33.7	304°45.5	10.7	29°38.5	59.0					
11	45°18.8	29°53.2		56.8	266°17.4	33.3	319°47.4	10.7	44°40.8	58.9					
12	60°21.3	44°53.5	N04°57.4	281°18.6	N17°32.9	334°49.3	N23°10.7	59°43.1	S01°58.9						
13	75°23.7	59°53.9		58.1	296°19.8	32.5	349°51.1	10.8	74°45.4	58.8					
14	90°26.2	74°54.2		58.8	311°21.0	32.0	4°53.0	10.8	89°47.6	58.7					
15	105°28.7	89°54.5	04°59.4	326°22.2	••	31.6	19°54.9	••	10.8	104°49.9	••	58.6			
16	120°31.1	104°54.9	05°00.1	341°23.4		31.2	34°56.7		10.8	119°52.2		58.6			
17	135°33.6	119°55.2		00.7	356°24.6		30.8	49°58.6		10.8	134°54.5		58.5		
18	150°36.1	134°55.6	N05°01.4	11°25.7	N17°30.3	65°00.5	N23°10.9	149°56.8	S01°58.4						
19	165°38.5	149°55.9		02.1	26°26.9	29.9	80°02.3	10.9	164°59.0	58.4					
20	180°41.0	164°56.2		02.7	41°28.1	29.5	95°04.2	10.9	180°01.3	58.3					
21	195°43.5	179°56.5	••	03.4	56°29.3	••	29.0	110°06.1	••	10.9	195°03.6	••	58.2		
22	210°45.9	194°56.9		04.0	71°30.5	28.6	125°07.9	11.0	210°05.9	58.2					
23	225°48.4	209°57.2		04.7	86°31.7	28.2	140°09.8	11.0	225°08.2	58.1					
Mer.pass.:07:59		v0.3 d0.7 m-4.3			v1.2 d-0.4 m1.2			v1.9 d0.0 m-1.8			v2.3 d0.1 m1.1				

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	240°50.9	224°57.5	N05°05.4	101°32.9	N17°27.8	155°11.7	N23°11.0	240°10.4	S01°58.0					
1	255°53.3	239°57.9	06.0	116°34.1	27.3	170°13.6	11.0	255°12.7	58.0					
2	270°55.8	254°58.2	06.7	131°35.3	26.9	185°15.4	11.0	270°15.0	57.9					
3	285°58.2	269°58.5	•• 07.4	146°36.5	•• 26.5	200°17.3	•• 11.1	285°17.3	•• 57.8					
4	301°00.7	284°58.8	08.0	161°37.7	26.1	215°19.2	11.1	300°19.6	57.7					
5	316°03.7	299°59.2	08.7	176°38.9	25.6	230°21.0	11.1	315°21.9	57.7					
6	331°05.6	314°59.5	N05°09.4	191°40.0	N17°25.2	245°22.9	N23°11.1	330°24.1	S01°57.6					
7	346°08.1	329°59.8	10.0	206°41.2	24.8	260°24.8	11.1	345°26.4	57.5					
8	1°10.6	345°00.1	10.7	221°42.4	24.3	275°26.6	11.2	0°28.7	57.5					
9	16°13.0	0°00.5	•• 11.4	236°43.6	•• 23.9	290°28.5	•• 11.2	15°31.0	•• 57.4					
10	31°15.5	15°00.8	12.0	251°44.8	23.5	305°30.4	11.2	30°33.3	57.3					
11	46°18.0	30°01.1	12.7	266°46.0	23.0	320°32.2	11.2	45°35.5	57.3					
12	61°20.4	45°01.4	N05°13.4	281°47.2	N17°22.6	335°34.1	N23°11.2	60°37.8	S01°57.2					
13	76°22.9	60°01.7	14.0	296°48.4	22.2	350°36.0	11.3	75°40.1	57.1					
14	91°25.3	75°02.0	14.7	311°49.6	21.8	5°37.8	11.3	90°42.4	57.1					
15	106°27.8	90°02.4	•• 15.4	326°50.8	•• 21.3	20°39.7	•• 11.3	105°44.7	•• 57.0					
16	121°30.3	105°02.7	16.1	341°51.9	20.9	35°41.6	11.3	120°47.0	56.9					
17	136°32.7	120°03.0	16.7	356°53.1	20.5	50°43.4	11.3	135°49.2	56.9					
18	151°35.2	135°03.3	N05°17.4	11°54.3	N17°20.0	65°45.3	N23°11.4	150°51.5	S01°56.8					
19	166°37.7	150°03.6	18.1	26°55.5	19.6	80°47.2	11.4	165°53.8	56.7					
20	181°40.1	165°03.9	18.7	41°56.7	19.2	95°49.0	11.4	180°56.1	56.7					
21	196°42.6	180°04.2	•• 19.4	56°57.9	•• 18.7	110°50.9	•• 11.4	195°58.4	•• 56.6					
22	211°45.1	195°04.5	20.1	71°59.1	18.3	125°52.8	11.5	211°00.7	56.5					
23	226°47.5	210°04.9	20.8	87°00.3	17.9	140°54.6	11.5	226°03.0	56.4					
Mer.pass.:07:55			v0.3 d0.7 m-4.3			v1.2 d-0.4 m1.2			v1.9 d0.0 m-1.8			v2.3 d0.1 m1.1		

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	241°50.0	225°05.2	N05°21.4	102°01.5	N17°17.4	155°56.5	N23°11.5	241°05.2	S01°56.4					
1	256°52.5	240°05.5	22.1	117°02.6	17.0	170°58.4	11.5	256°07.5	56.3					
2	271°54.9	255°05.8	22.8	132°03.8	16.6	186°00.2	11.5	271°09.8	56.2					
3	286°57.4	270°06.1	•• 23.5	147°05.0	•• 16.1	201°02.1	•• 11.6	286°12.1	•• 56.2					
4	301°59.8	285°06.4	24.2	162°06.2	15.7	216°04.0	11.6	301°14.4	56.1					
5	317°02.3	300°06.7	24.8	177°07.4	15.3	231°05.8	11.6	316°16.7	56.0					
6	332°04.8	315°07.0	N05°25.5	192°08.6	N17°14.8	246°07.7	N23°11.6	331°18.9	S01°56.0					
7	347°07.2	330°07.3	26.2	207°09.8	14.4	261°09.6	11.6	346°21.2	55.9					
8	2°09.7	345°07.6	26.9	222°11.0	14.0	276°11.4	11.7	1°23.5	55.8					
9	17°12.2	0°07.9	•• 27.6	237°12.1	•• 13.5	291°13.3	•• 11.7	16°25.8	•• 55.8					
10	32°14.6	15°08.2	28.2	252°13.3	13.1	306°15.2	11.7	31°28.1	55.7					
11	47°17.1	30°08.5	28.9	267°14.5	12.7	321°17.0	11.7	46°30.4	55.6					
12	62°19.6	45°08.8	N05°29.6	282°15.7	N17°12.2	336°18.9	N23°11.7	61°32.7	S01°55.6					
13	77°22.0	60°09.1	30.3	297°16.9	11.8	351°20.8	11.7	76°34.9	55.5					
14	92°24.5	75°09.4	31.0	312°18.1	11.4	6°22.6	11.8	91°37.2	55.4					
15	107°26.9	90°09.7	•• 31.6	327°19.3	•• 10.9	21°24.5	•• 11.8	106°39.5	•• 55.4					
16	122°29.4	105°10.0	32.3	342°20.5	10.5	36°26.4	11.8	121°41.8	55.3					
17	137°31.9	120°10.3	33.0	357°21.6	10.1	51°28.2	11.8	136°44.1	55.2					
18	152°34.3	135°10.6	N05°33.7	12°22.8	N17°09.6	66°30.1	N23°11.8	151°46.4	S01°55.2					
19	167°36.8	150°10.9	34.4	27°24.8	09.2	81°32.0	11.9	166°48.7	55.1					
20	182°39.3	165°11.1	35.1	42°25.2	08.8	96°33.8	11.9	181°50.9	55.0					
21	197°41.7	180°11.4	•• 35.8	57°26.4	•• 08.3	111°35.7	•• 11.9	196°53.2	•• 55.0					
22	212°44.2	195°11.7	36.4	72°27.6	07.9	126°37.6	11.9	211°55.5	54.9					
23	227°46.7	210°12.0	37.1	87°28.8	07.5	141°39.4	11.9	226°57.8	54.8					
Mer.pass.:07:51			v0.3 d0.7 m-4.3			v1.2 d-0.4 m1.2			v1.9 d0.0 m-1.8			v2.3 d0.1 m1.1		

Stars		
SHA	Dec	
Alpheratz	357°34.7	29°13.6
Ankaa	353°07.1	-42°09.9
Schedar	349°31.1	56°40.3
Diphda	348°47.2	-17°50.8
Achernar	335°20.4	-57°06.3
Hamal	327°51.2	23°34.8
Polaris	314°22.2	89°22.2
Acamar	315°12.0	-40°12.1
Menkar	314°06.2	4°11.3
Mirfak	308°28.4	49°57.0
Aldebaran	290°39.6	16°33.6
Rigel	281°03.9	-8°10.4
Capella	280°21.9	46°01.4
Bellatrix	278°22.9	6°22.3
Elnath	278°01.9	28°37.7
Anilam	275°37.8	-1°11.2
Betelgeuse	270°52.1	7°24.7
Canopus	263°52.7	-52°42.7
Sirius	258°26.3	-16°45.1
Adhara	255°05.9	-29°00.5
Procyon	244°50.8	5°09.6
Pollux	243°17.2	27°58.0
Avior	234°15.0	-59°35.7
Suhail	222°46.3	-43°32.3
Miaplacidus	221°38.5	-69°49.5
Alphard	217°47.6	-8°46.2
Regulus	207°34.1	11°50.6
Dubhe	193°40.5	61°37.1
Denebola	182°24.5	14°25.8
Gienah	175°43.1	-17°41.1
Acrux	172°59.4	35°17.7
Gacrux	171°51.0	-57°15.6
Alieha	166°12.3	55°49.5
Spica	158°21.8	-11°17.7
Alkaid	152°51.4	49°11.3
Hadar	148°35.1	-60°29.9
Menkent	147°56.9	-36°29.9
Arcturus	145°47.3	19°03.0
Rigil Kent.	139°39.3	-60°56.6
Kochab	137°18.6	74°03.1
Zuben ubi	136°55.4	-16°08.9
Alphecca	126°03.1	26°37.7
Antares	112°15.1	-26°29.4
Atria	107°08.5	-69°04.3
Sabik	102°02.1	-15°45.4
Shaula	96°09.6	-37°07.3
Rasalhague	95°58.0	12°32.4
Eltanin	90°41.6	51°28.9
Kaus Aust.	83°31.8	-34°22.3
Vega	80°32.7	38°48.2
Nunki	75°47.1	-26°15.9
Altair	61°59.5	8°56.0
Peacock	53°05.0	-56°39.0
Deneb	49°25.4	45°22.0
Enif	33°38.5	9°59.4
Al Na'ir	27°32.5	-46°50.1
Fomalhaut	15°14.3	-29°29.2
Scheat	13°45.0	28°13.0
Markab	13°29.7	15°20.4

May 22 Thu		
Venus	SHA	Mer.pass
	344°57.7	09:00
Mars	221°12.5	17:14
Jupiter	274°35.1	13:41
Saturn	359°24.0	08:02
May 23 Fri		
Venus	SHA	Mer.pass
	344°06.7	09:00

Aries		Venus		Mars		Jupiter		Saturn	
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	242°49.1	225°12.3	N05°37.8	102°29.9	N17°07.0	156°41.3	N23°12.0	242°00.1	S01°54.8
1	257°51.6	240°12.6	38.5	117°31.1	06.6	171°43.2	12.0	257°02.4	54.7
2	272°54.1	255°12.9	39.2	132°32.3	06.1	186°45.0	12.0	272°04.7	54.6
3	287°56.5	270°13.2	•• 39.9	147°33.5	•• 05.7	201°46.9	•• 12.0	287°07.0	•• 54.6
4	302°59.0	285°13.4	40.6	162°34.7	05.3	216°48.8	12.0	302°09.2	54.5
5	318°01.4	300°13.7	41.3	177°35.9	04.8	231°50.6	12.1	317°11.5	54.4
6	333°03.9	315°14.0	N05°41.9	192°37.0	N17°04.4	246°52.5	N23°12.1	332°13.8	S01°54.4
7	348°06.4	330°14.3	42.6	207°38.2	04.0	261°54.3	12.1	347°16.1	54.3
8	3°08.8	345°14.6	43.3	222°39.4	03.5	276°56.2	12.1	2°18.4	54.2
9	18°11.3	0°14.9	•• 44.0	237°40.6	•• 03.1	291°58.1	•• 12.1	17°20.7	•• 54.2
10	33°13.8	15°15.1	44.7	252°41.8	02.6	306°59.9	12.2	32°23.0	54.1
11	48°16.2	30°15.4	45.4	267°43.0	02.2	322°01.8	12.2	47°25.3	54.0
12	63°18.7	45°16.5	N05°46.1	282°44.2	N17°01.8	337°03.7	N23°12.2	62°27.5	S01°54.0
13	78°21.2	60°16.0	46.8	297°45.3	01.3	352°05.5	12.2	77°29.8	53.9
14	93°23.6	75°16.3	47.5	312°46.5	00.9	7°07.4	12.2	92°32.1	53.8
15	108°26.1	90°16.5	•• 48.2	327°47.7	•• 00.5	22°09.3	•• 12.2	107°34.4	•• 53.8
16	123°28.6	105°16.8	48.9	342°48.9	17°00.0	37°11.1	12.3	122°36.7	53.7
17	138°31.0	120°17.1	49.6	357°50.1	16°59.6	52°13.0	12.3	137°39.0	53.6
18	153°33.5	135°17.4	N05°50.3	12°51.3	N16°59.1	67°14.9	N23°12.3	152°41.3	S01°53.6
19	168°35.9	150°17.6	51.0	27°52.4	58.7	82°16.7	12.3	167°43.6	53.5
20	183°38.4	165°17.9	51.7	42°53.6	58.3	97°18.6	12.3	182°45.9	53.4
21	198°40.9	180°18.2	•• 52.4	57°54.8	•• 57.8	112°20.4	•• 12.4	197°48.1	•• 53.4
22	213°43.3	195°18.4	53.1	72°56.0	57.4	127°22.3	12.4	212°50.4	53.3
23	228°45.8	210°18.7	53.8	87°57.2	56.9	142°24.2	12.4	227°52.7	53.2
Mer.pass.:07:47		v0.3 d0.7 m-4.3		v1.2 d-0.4 m1.2		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	243°48.3	225°19.0	N05°54.5	102°58.4	N16°56.5	157°26.0	N23°12.4	242°55.0	S01°53.2
1	258°50.7	240°19.2	55.2	117°59.5	56.1	172°27.9	12.4	257°57.3	53.1
2	273°53.2	255°19.5	55.9	133°00.7	55.6	187°29.8	12.5	272°59.6	53.1
3	288°55.7	270°19.8	•• 56.6	148°01.9	•• 55.2	202°31.6	•• 12.5	288°01.9	•• 53.0
4	303°58.1	285°20.0	57.3	163°03.1	54.7	217°33.5	12.5	303°04.2	52.9
5	319°00.6	300°20.3	58.0	178°04.3	54.3	232°35.4	12.5	318°06.5	52.9
6	334°03.1	315°20.6	N05°58.7	193°05.4	N16°53.8	247°37.2	N23°12.5	333°08.8	S01°52.8
7	349°05.5	330°20.8	05°59.4	208°06.6	53.4	262°39.1	12.5	348°11.1	52.7
8	4°08.0	345°21.1	06°00.1	223°07.8	53.0	277°40.9	12.6	3°13.3	52.7
9	19°10.4	0°21.4	•• 00.8	238°09.0	•• 52.5	292°42.8	•• 12.6	18°15.6	•• 52.6
10	34°12.9	15°21.6	01.5	253°10.2	51.3	307°44.7	12.6	33°17.9	52.5
11	49°15.4	30°21.9	02.2	268°11.3	51.6	322°46.5	12.6	48°20.2	52.5
12	64°17.8	45°22.1	N06°02.9	283°12.5	N16°51.2	337°48.4	N23°12.6	63°22.5	S01°52.4
13	79°20.3	60°22.4	03.6	298°13.7	50.7	352°50.3	12.7	78°24.8	52.3
14	94°22.8	75°22.7	04.3	313°14.9	50.3	7°52.1	12.7	93°27.1	52.3
15	109°25.2	90°22.9	•• 05.0	328°16.1	•• 49.9	22°54.0	•• 12.7	108°29.4	•• 52.2
16	124°27.7	105°23.2	05.7	343°17.3	49.4	37°55.8	12.7	123°31.7	52.1
17	139°30.2	120°23.4	06.4	358°18.4	49.0	52°57.7	12.7	138°34.0	52.1
18	154°32.6	135°23.7	N06°07.1	13°19.6	N16°48.5	67°59.6	N23°12.7	153°36.3	S01°52.0
19	169°35.1	150°23.9	07.8	28°20.8	48.1	83°01.4	12.8	168°38.5	52.0
20	184°37.5	165°24.2	08.5	43°22.0	47.6	98°03.3	12.8	183°40.8	51.9
21	199°40.0	180°24.4	•• 09.2	58°23.2	•• 47.2	113°05.2	•• 12.8	198°43.1	•• 51.8
22	214°42.5	195°24.7	09.9	73°24.3	46.8	128°07.0	12.8	213°45.4	51.8
23	229°44.9	210°25.0	10.6	88°25.5	46.3	143°08.9	12.8	228°47.7	51.7
Mer.pass.:07:44		v0.3 d0.7 m-4.3		v1.2 d-0.4 m1.2		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	244°47.4	225°25.2	N06°11.3	103°26.7	N16°45.9	158°10.7	N23°12.8	243°50.0	S01°51.6
1	259°49.9	240°25.5	12.1	118°27.9	45.4	173°12.6	12.9	258°52.3	51.6
2	274°52.3	255°25.7	12.8	133°29.0	45.0	188°14.5	12.9	273°54.6	51.5
3	289°54.8	270°25.9	•• 13.5	148°30.2	•• 44.5	203°16.3	•• 12.9	288°56.9	•• 51.4
4	304°57.3	285°26.2	14.2	163°31.4	44.1	218°18.2	12.9	303°59.2	51.4
5	319°59.7	300°26.4	14.9	178°32.6	43.6	233°20.0	12.9	319°01.5	51.3
6	335°02.2	315°26.7	N06°15.6	193°33.8	N16°43.2	248°21.9	N23°12.9	334°03.8	S01°51.2
7	350°04.7	330°26.9	16.3	208°34.9	42.7	263°23.8	13.0	349°06.1	51.2
8	5°07.1	345°27.2	17.0	223°36.1	42.3	278°25.6	13.0	4°08.4	51.1
9	20°09.6	0°27.4	•• 17.7	238°37.3	•• 41.9	293°27.5	•• 13.0	19°10.7	•• 51.1
10	35°12.0	15°27.7	18.5	253°38.5	41.4	308°29.4	13.0	34°12.9	51.0
11	50°14.5	30°27.9	19.2	268°39.7	41.0	323°31.2	13.0	49°15.2	50.9
12	65°17.0	45°28.1	N06°19.9	283°40.8	N16°40.5	338°33.1	N23°13.1	64°17.5	S01°50.9
13	80°19.4	60°28.4	20.6	298°42.0	40.1	353°34.9	13.1	79°19.8	50.8
14	95°21.9	75°28.6	21.3	313°43.2	39.6	8°36.8	13.1	94°22.1	50.7
15	110°24.4	90°28.9	•• 22.0	328°44.4	•• 39.2	23°38.7	•• 13.1	109°24.4	•• 50.7
16	125°26.8	105°29.1	22.7	343°45.5	38.7	38°40.5	13.1	124°26.7	50.6
17	140°29.3	120°29.3	23.5	358°46.7	38.3	53°42.4	13.1	139°29.0	50.6
18	155°31.8	135°29.6	N06°24.2	13°47.9	N16°37.8	68°44.2	N23°13.2	154°31.3	S01°50.5
19	170°34.2	150°29.8	24.9	28°49.1	37.4	83°46.1	13.2	169°33.6	50.4
20	185°36.7	165°30.0	25.6	43°50.3	36.9	98°48.0	13.2	184°35.9	50.4
21	200°39.2	180°30.3	•• 26.3	58°51.4	•• 36.5	113°49.8	•• 13.2	199°38.2	•• 50.3
22	215°41.6	195°30.5	27.0	73°52.6	36.0	128°51.7	13.2	214°40.5	50.2
23	230°44.1	210°30.7	27.8	88°53.8	35.6	143°53.5	13.2	229°42.8	50.2
Mer.pass.:07:40		v0.2 d0.7 m-4.3		v1.2 d-0.4 m1.2		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

SHA	Dec
Alpheratz	357°34.6 29°13.6
Ankaa	353°07.1 -42°09.9
Schedar	349°31.1 56°40.3
Diphda	348°47.2 -17°50.8
Achernar	335°20.4 -57°06.3
Hamal	327°51.2 23°34.8
Polaris	314°21.4 89°22.1
Acamar	315°11.9 -40°12.1
Menkar	314°06.2 4°11.3
Mirfak	308°28.3 49°57.0
Aldebaran	290°39.6 16°33.6
Rigel	281°03.9 -8°10.4
Capella	280°21.9 46°01.4
Bellatrix	278°22.9 6°22.3
Elnath	278°01.9 28°37.7
Anilnail	275°37.8 -1°12.4
Betelgeuse	270°52.1 7°24.7
Canopus	263°52.8 -52°42.6
Sirius	258°26.3 -16°45.1
Adhara	255°05.9 -29°00.5
Procyon	244°50.8 5°09.6
Pollux	243°17.2 27°58.0
Avior	234°15.0 -59°35.7
Suhail	222°46.3 -43°32.3
Miaplacidus	221°38.6 -69°49.5
Alphard	217°47.6 -8°46.2
Regulus	207°34.2 11°50.6
Dubhe	193°40.5 61°37.1
Denebola	182°24.5 14°25.8
Gienah	175°43.1 -17°41.1
Acrux	172°59.4 -63°14.7
Gacrux	171°51.0 -57°15.6
Alioth	166°12.3 55°49.5
Spica	158°21.8 -11°17.7
Alkaid	152°51.4 49°11.3
Hadar	148°35.1 -60°29.9
Menkent	147°56.9 -36°29.9
Arcturus	145°47.3 19°03.0
Rigil Kent	139°39.3 -60°56.6
Kochab	137°18.7 74°03.1
Zuben'ubi	136°55.4 -16°08.9
Alphecca	126°03.1 26°37.7
Antares	112°15.1 -26°29.4
Atria	107°08.5 -69°04.4
Sabik	102°02.1 -15°45.4
Shaula	96°09.6 -37°07.3
Rasalhague	95°57.9 12°32.4
Eltanin	90°41.5 51°28.9
Kaus Aust.	83°31.8 -34°22.3
Vega	80°32.7 38°48.2
Nunki	75°47.1 -26°15.9
Altair	61°59.5 8°56.0
Peacock	53°04.9 -56°39.0
Deneb	49°25.4 45°22.0
Enif	33°38.4 9°59.4
Al Na'ir	27°32.5 -46°50.1
Fomalhaut	15°14.2 -29°29.1
Scheat	13°45.0 28°13.0
Markab	13°29.7 15°20.4

May 25 Sun	SHA	Mer.pass
Venus	342°23.2	08:59
Mars	219°40.8	17:09
Jupiter	273°52.0	13:32
Saturn	359°11.0	07:51

May 26 Mon	SHA	Mer.pass
Venus	341°30.7	08:59
Mars	219°10.1	17:07
Jupiter	273°37.8	13:29
Saturn	359°06.8	07:47

May 27 Tue	SHA	Mer.pass
Venus	340°37.8	08:58
Mars	218°39.3	17:05
Jupiter	273°23.3	13:26
Saturn	359°02.6	07:43

Horizontal parallax	
Venus:	0.2
Mars:	0.1

Sun			Moon				
Sun	GHA	Dec	GHA	ν	Dec	d	HP
0	180°45.6	N20°57.4	212°12.9	7.8'	N15°50.2	15.3'	60.9'
1	195°45.5	57.8	226°39.6	7.7'	16°05.4	15.2'	60.9'
2	210°45.5	58.3	241°06.3	7.6'	16°20.5	15.1'	60.9'
3	225°45.4	•• 58.7	255°32.8	7.5'	16°35.6	15.0'	60.9'
4	240°45.3	59.2	269°59.2	7.4'	16°50.5	14.9'	60.9'
5	255°45.3	20°59.6	284°25.6	7.3'	17°05.3	14.8'	61.0'
6	270°45.2	N21°00.1	298°51.8	7.2'	N17°20.0	14.7'	61.0'
7	285°45.2	00.5	313°17.9	7.0'	17°34.6	14.6'	61.0'
8	300°45.1	01.0	327°43.9	6.9'	17°49.2	14.5'	61.0'
9	315°45.0	•• 01.4	342°09.8	6.8'	18°03.6	14.5'	61.0'
10	330°45.0	01.8	356°35.5	6.7'	18°17.9	14.2'	61.0'
11	345°44.9	02.3	11°01.2	6.6'	18°32.0	14.1'	61.0'
12	0°44.8	N21°02.7	25°26.7	6.5'	N18°46.1	14.0'	61.0'
13	15°44.8	03.2	39°52.2	6.4'	19°00.0	13.9'	61.0'
14	30°44.7	03.6	54°17.5	6.3'	19°13.9	13.8'	61.0'
15	45°44.6	•• 04.0	68°42.7	6.1'	19°27.6	13.6'	61.0'
16	60°44.6	04.5	83°07.8	6.0'	19°41.2	13.5'	61.0'
17	75°44.5	04.9	97°32.8	5.9'	19°54.6	13.4'	61.0'
18	90°44.4	N21°05.4	111°57.6	5.8'	N20°07.9	13.3'	61.1'
19	105°44.4	05.8	126°22.4	5.7'	20°21.1	13.1'	61.1'
20	120°44.3	06.2	140°47.0	5.6'	20°34.2	13.0'	61.1'
21	135°44.2	•• 06.7	155°11.5	5.5'	20°47.1	12.9'	61.1'
22	150°44.1	07.1	169°35.9	5.4'	20°59.9	12.7'	61.1'
23	165°44.1	07.5	184°00.2	5.2'	21°12.5	12.6'	61.1'

Aries		Venus		Mars		Jupiter		Saturn	
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	245°46.5	225°31.0	N06°28.5	103°55.0	N16°35.1	158°55.4	N23°13.3	244°45.1	S01°50.1
1	260°49.0	240°31.2	29.2	118°56.1	34.7	173°57.3	13.3	259°47.1	40.1
2	275°51.5	255°31.4	29.9	133°57.3	34.2	188°59.1	13.3	274°49.7	50.0
3	290°53.9	270°31.7	•• 30.6	148°58.5	•• 33.8	204°01.0	•• 13.3	289°52.0	•• 49.9
4	305°56.4	285°31.9	31.3	163°59.7	33.3	219°02.8	13.3	304°54.3	49.9
5	320°58.9	300°32.1	32.1	179°00.8	32.9	234°04.7	13.3	319°56.6	49.8
6	336°01.3	315°32.4	N06°32.8	194°02.0	N16°32.4	249°06.6	N23°13.4	334°58.9	S01°49.7
7	351°03.8	330°32.6	33.5	209°03.2	32.0	264°08.4	13.4	350°01.2	49.7
8	6°06.3	345°32.8	34.2	224°04.4	31.5	279°10.3	13.4	5°03.5	49.6
9	21°08.7	0°33.0	•• 35.0	239°05.5	•• 31.1	294°12.1	•• 13.4	20°05.7	•• 49.6
10	36°11.2	15°33.3	35.7	254°06.7	30.6	309°14.0	13.4	35°08.0	49.5
11	51°13.7	30°33.5	36.4	269°07.9	30.2	324°15.9	13.4	50°10.3	49.4
12	66°16.1	45°33.7	N06°37.1	284°09.1	N16°29.7	339°17.7	N23°13.4	65°12.6	S01°49.4
13	81°18.6	60°33.9	37.8	299°10.2	29.3	354°19.6	13.5	80°14.9	49.3
14	96°21.0	75°34.2	38.6	314°11.4	28.8	9°21.4	13.5	95°17.2	49.2
15	111°23.5	90°34.4	•• 39.3	329°12.6	•• 28.4	24°23.3	•• 13.5	110°19.5	•• 49.2
16	126°26.0	105°34.6	40.0	344°13.8	27.9	39°25.2	13.5	125°21.8	49.1
17	141°28.4	120°34.8	40.7	359°14.9	27.5	54°27.0	13.5	140°24.1	49.1
18	156°30.9	135°35.0	N06°41.5	14°16.1	N16°27.0	69°28.9	N23°13.5	155°26.4	S01°49.0
19	171°33.4	150°35.2	42.2	29°17.3	26.6	84°30.7	13.6	170°28.7	48.9
20	186°35.8	165°35.5	42.9	44°18.5	26.1	99°32.6	13.6	185°31.0	•• 48.9
21	201°38.3	180°35.7	•• 43.6	59°19.6	•• 25.7	114°34.5	•• 13.6	200°33.3	•• 48.8
22	216°40.8	195°35.9	44.4	74°20.8	25.2	129°36.3	13.6	215°35.6	48.8
23	231°43.2	210°36.1	45.1	89°22.0	24.8	144°38.2	13.6	230°37.9	48.7
Mer.pass.:07:36		v0.2 d0.7 m-4.3		v1.2 d-0.4 m1.2		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	246°45.7	225°36.3	N06°45.8	104°23.2	N16°24.3	159°40.0	N23°13.6	245°40.2	S01°48.6
1	261°48.2	240°36.5	46.5	119°24.3	23.8	174°41.9	13.7	260°42.5	48.6
2	276°50.6	255°36.8	47.3	134°25.5	23.4	189°43.8	13.7	275°44.8	48.5
3	291°53.1	270°37.0	•• 48.0	149°26.7	•• 22.9	204°45.6	•• 13.7	290°47.1	•• 48.4
4	306°55.5	285°37.2	48.7	164°27.9	22.5	219°47.5	13.7	305°49.4	48.4
5	321°58.0	300°37.4	49.5	179°29.0	22.0	234°49.3	13.7	320°51.7	48.3
6	337°00.5	315°37.6	N06°50.2	194°30.2	N16°21.6	249°51.2	N23°13.7	335°54.0	S01°48.3
7	352°02.9	330°37.8	50.9	209°31.4	21.1	264°53.1	13.7	350°56.3	48.2
8	7°05.4	345°38.0	51.6	224°32.6	20.7	279°54.9	13.8	5°58.6	48.1
9	22°07.9	0°38.2	•• 52.4	239°33.7	•• 20.2	294°56.8	•• 13.8	21°00.9	•• 48.1
10	37°10.3	15°38.4	53.1	254°34.9	19.8	309°58.6	13.8	36°03.2	48.0
11	52°12.8	30°38.6	53.8	269°36.1	19.3	325°00.5	13.8	51°05.5	47.9
12	67°15.3	45°38.8	N06°54.6	284°37.2	N16°18.8	340°02.3	N23°13.8	66°07.8	S01°48.0
13	82°17.7	60°39.0	55.3	299°38.4	18.4	355°04.2	13.8	81°10.1	47.8
14	97°20.2	75°39.2	56.0	314°39.6	17.9	10°06.1	13.9	96°12.4	47.8
15	112°22.7	90°39.5	•• 56.8	329°40.8	•• 17.5	25°07.9	•• 13.9	111°14.7	•• 47.7
16	127°25.1	105°39.7	57.5	344°41.9	17.0	40°09.8	13.9	126°17.0	47.7
17	142°27.6	120°39.9	58.2	359°43.1	16.6	55°11.6	13.9	141°19.3	47.6
18	157°30.0	135°40.1	N06°59.0	14°44.3	N16°16.1	70°13.5	N23°13.9	156°21.6	S01°47.5
19	172°32.5	150°40.3	56°59.7	29°45.5	15.7	85°15.4	13.9	171°23.9	47.5
20	187°35.0	165°40.5	07°00.4	44°46.6	15.2	100°17.2	13.9	186°26.2	47.4
21	202°37.4	180°40.7	•• 01.2	59°47.8	•• 14.7	115°19.1	•• 14.0	201°28.5	•• 47.4
22	217°39.9	195°40.9	01.9	74°49.0	14.3	130°20.9	14.0	216°30.8	47.3
23	232°42.2	210°41.1	02.6	89°50.1	13.8	145°22.8	14.0	231°33.1	47.2
Mer.pass.:07:32		v0.2 d0.7 m-4.3		v1.2 d-0.5 m1.2		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	247°44.8	225°41.2	N07°03.4	104°51.3	N16°13.4	160°24.6	N23°14.0	246°35.4	S01°47.2
1	262°47.3	240°41.4	04.1	119°52.5	12.9	175°26.5	14.0	261°37.7	47.1
2	277°49.8	255°41.6	04.8	134°53.7	12.0	190°28.4	14.0	276°40.0	47.1
3	292°52.2	270°41.8	•• 05.6	149°54.8	•• 12.5	205°30.2	•• 14.0	291°42.3	•• 47.0
4	307°54.7	285°42.0	06.3	164°56.0	11.5	220°32.1	14.1	306°44.6	46.9
5	322°57.2	300°42.2	07.0	179°57.2	11.1	235°33.9	14.1	321°46.9	46.9
6	337°59.6	315°42.4	N07°07.8	194°58.3	N16°10.6	250°35.8	N23°14.1	336°49.2	S01°46.8
7	353°02.1	330°42.6	08.5	209°59.5	10.2	265°37.6	14.1	351°51.5	46.8
8	8°04.5	345°42.8	09.3	225°00.7	09.7	280°39.5	14.1	6°53.8	46.7
9	23°07.0	0°43.0	•• 10.0	240°01.8	•• 09.2	295°41.4	•• 14.1	21°56.2	•• 46.6
10	38°09.5	15°43.2	10.7	255°03.0	08.8	310°43.2	14.1	36°58.5	46.6
11	53°11.9	30°43.4	11.5	270°04.2	08.3	325°45.1	14.2	52°00.8	46.5
12	68°14.4	45°43.6	N07°12.2	285°05.4	N16°07.9	340°46.9	N23°14.2	67°03.1	S01°46.5
13	83°16.9	60°43.7	12.9	300°06.5	07.4	355°48.8	14.2	82°05.4	46.4
14	98°19.3	75°43.9	13.7	315°07.7	06.9	10°50.6	14.2	97°07.7	46.3
15	113°21.8	90°44.1	•• 14.4	330°08.9	•• 06.5	25°52.5	•• 14.2	112°10.0	•• 46.3
16	128°24.3	105°44.3	15.2	345°10.0	06.0	40°54.4	14.2	127°12.3	46.2
17	143°26.7	120°44.5	15.9	0°11.2	05.6	55°56.2	14.2	142°14.6	46.2
18	158°29.2	135°44.7	N07°16.6	15°12.4	N16°05.1	70°58.1	N23°14.3	157°16.9	S01°46.1
19	173°31.7	150°44.9	17.4	30°13.5	04.6	85°59.9	14.3	172°19.2	46.1
20	188°34.1	165°45.0	18.1	45°14.7	04.2	101°01.8	14.3	187°21.5	46.0
21	203°36.6	180°45.2	•• 18.9	60°15.9	•• 03.7	116°03.6	•• 14.3	202°23.8	•• 45.9
22	218°39.0	195°45.4	19.6	75°17.1	03.3	131°05.5	14.3	217°26.1	45.9
23	233°41.5	210°45.6	20.4	90°18.2	02.8	146°07.4	14.3	232°28.4	45.8
Mer.pass.:07:28		v0.2 d0.7 m-4.3		v1.2 d-0.5 m1.3		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

SHA	Dec
Alpheratz	357°34.6 29°13.7
Ankaa	353°07.0 -42°09.9
Schedar	349°31.0 56°40.3
Diphda	348°47.2 -17°50.8
Achernar	335°20.4 -57°06.3
Hamal	327°51.1 23°34.8
Polaris	314°20.4 89°22.1
Acamar	315°11.9 -40°12.1
Menkar	314°06.1 4°11.3
Mirfak	308°28.3 49°57.0
Aldebaran	290°39.6 16°33.6
Rigel	281°03.9 -8°10.4
Capella	280°21.9 46°01.4
Bellatrix	278°22.9 6°22.3
Elnath	278°01.9 28°37.7
Anilnail	275°37.7 -1°12.1
Betelgeuse	270°52.1 7°24.7
Canopus	263°52.8 -52°42.6
Sirius	258°26.3 -16°45.1
Adhara	255°05.9 -29°00.5
Procyon	244°50.8 5°09.6
Pollux	243°17.2 27°58.0
Avior	234°15.0 -59°35.7
Suhail	222°46.3 -43°32.3
Miaplacidus	221°38.6 -69°49.5
Alphard	217°47.6 -8°46.2
Regulus	207°34.2 11°50.6
Dubhe	193°40.5 61°37.1
Denebola	182°24.5 14°25.8
Gienah	175°43.1 -17°41.1
Acrux	172°59.4 -63°14.7
Gacrux	171°51.0 -57°15.6
Alioth	166°12.3 55°49.5
Spica	158°21.8 -11°17.7
Alkaid	152°51.4 49°11.3
Hadar	148°35.1 -60°29.9
Menkent	147°56.9 -36°29.9
Arcturus	145°47.3 19°03.0
Rigil Kent.	139°39.3 -60°56.6
Kochab	137°18.7 74°03.1
Zuben'ubi	136°55.4 -16°08.9
Alphecca	126°03.1 26°37.7
Antares	112°15.1 -26°29.4
Atria	107°08.5 -69°04.4
Sabik	102°02.1 -15°45.4
Shaula	96°09.5 -37°07.3
Rasalhague	95°57.9 12°32.4
Eltanin	90°41.5 51°28.9
Kaus Aust.	83°31.7 -34°22.3
Vega	80°32.6 -38°48.2
Nunki	75°47.1 -26°15.9
Altair	61°59.4 8°56.0
Peacock	53°04.9 -56°39.0
Deneb	49°25.4 45°22.0
Enif	33°38.4 9°59.4
Al Na'ir	27°32.5 -46°50.1
Fomalhaut	15°14.2 -29°29.1
Scheat	13°45.0 28°13.0
Markab	13°29.6 15°20.4

Dubhe	193°40.5	61°37.1
Denebola	182°24.5	14°25.8
Gienah	175°43.1	-17°41.1
Acrux	172°59.4	-63°14.7
Gacrux	171°51.0	-55°15.6
Alioth	166°12.3	55°49.5
Spica	158°21.8	-11°17.7
Alkaid	152°51.4	49°11.3
Hadar	148°35.1	-60°29.9
Menkent	147°56.9	-36°29.9
Arcturus	145°47.3	19°03.0
Rigil Kent.	139°39.3	-60°56.6
Kochab	137°18.7	74°03.1
Zuben'ubi	136°55.4	-16°08.9
Alphecca	126°03.1	26°37.7
Antares	112°15.1	-26°29.4
Atria	107°08.5	-69°04.4
Sabik	102°02.1	-15°45.4
Shaula	96°09.5	-37°07.3
Rasalhague	95°57.9	12°32.4
Eltanin	90°41.5	51°28.9
Kaus Aust.	83°31.7	-34°22.3
Vega	80°32.6	38°48.2
Nunki	75°47.1	-26°15.9
Altair	61°59.4	8°56.0
Peacock	53°04.9	-56°39.0
Deneb	49°25.4	45°22.0
Enif	33°38.4	9°59.4
Al Na'ir	27°32.5	-46°50.1
Fomalhaut	15°14.2	-29°29.1
Scheat	13°45.0	28°13.0
Markab	13°29.6	15°20.4

Horizontal parallax	
Venus:	0.2
Mars:	0.1

Sun			Moon				
Wed	GHA	Dec	GHA	ν	Dec	d	HP
0	180°40.5	N21°28.0	167°59.1	1.6'	N27°59.4	3.4'	60.5'
1	195°40.4	28.4	182°19.8	1.6'	28°02.8	3.2'	60.5'
2	210°40.3	28.8	196°40.4	1.6'	28°05.9	3.0'	60.5'
3	225°40.2	•• 29.2	211°01.0	1.6'	28°08.8	2.8'	60.4'
4	240°40.1	29.6	225°21.6	1.6'	28°11.5	2.6'	60.4'
5	255°40.1	30.0	239°42.2	1.6'	28°13.9	2.4'	60.4'
6	270°40.0	N21°30.4	254°02.8	1.6'	N28°16.2	2.1'	60.4'
7	285°39.9	30.8	268°23.5	1.6'	28°18.2	1.9'	60.3'
8	300°39.8	31.2	282°44.1	1.7'	28°20.0	1.7'	60.3'
9	315°39.7	•• 31.6	297°04.8	1.7'	28°21.6	1.5'	60.3'
10	330°39.7	32.0	311°25.5	1.7'	28°23.0	1.3'	60.2'
11	345°39.6	32.4	325°46.2	1.7'	28°24.2	1.1'	60.2'
12	0°39.5	N21°32.8	340°06.9	1.7'	N28°25.2	0.9'	60.2'
13	15°39.4	33.2	354°27.6	1.8'	28°25.9	0.6'	60.2'
14	30°39.3	33.6	8°48.4	1.8'	28°26.5	0.4'	60.1'
15	45°39.2	•• 34.0	23°09.3	1.8'	28°26.8	0.2'	60.1'
16	60°39.2	34.4	37°30.1	1.9'	28°26.9	0.0'	60.1'
17	75°39.1	34.7	51°51.0	1.9'	28°26.8	-0.2'	60.0'
18	90°39.0	N21°35.1	66°12.0	2.0'	N28°26.5	-0.4'	60.0'
19	105°38.9	35.5	80°33.0	2.0'	28°26.0	-0.6'	60.0'
20	120°38.8	35.9	94°54.1	2.1'	28°25.3	-0.8'	59.9'
21	135°38.8	•• 36.3	109°15.2	2.1'	28°24.4	-1.0'	59.9'
22	150°38.7	36.7	123°36.4	2.2'	28°23.2	-1.2'	59.9'
23	165°38.6	37.1	137°57.6	2.3'	28°21.9	-1.4'	59.9'

	Aries		Venus		Mars		Jupiter		Saturn	
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	248°44.0	225°45.8	N07°21.1	105°19.4	N16°02.3	161°09.2	N23°14.3	247°30.7	S01°45.8	
1	263°46.4	240°45.9	21.8	120°20.6	01.9	176°11.1	14.4	262°33.0	45.7	
2	278°48.9	255°46.1	22.6	135°21.7	01.4	191°12.9	14.4	277°35.3	45.6	
3	293°51.4	270°46.4	•• 23.3	150°22.9	•• 01.0	206°14.8	•• 14.4	292°37.6	•• 45.6	
4	308°53.8	285°46.5	24.1	165°24.1	00.5	221°16.6	14.4	307°39.9	45.5	
5	323°56.3	300°46.6	24.8	180°25.2	16°00.0	236°18.5	14.4	322°42.2	45.5	
6	338°58.8	315°46.8	N07°25.6	195°26.4	N15°59.6	251°20.3	N23°14.4	337°44.5	S01°45.4	
7	354°01.2	330°47.0	26.3	210°27.6	59.1	266°22.2	14.4	352°46.9	45.4	
8	9°03.7	345°47.2	27.0	225°28.7	58.6	281°24.1	14.5	7°49.2	45.3	
9	24°06.1	0°47.3	•• 27.8	240°29.9	•• 58.2	296°25.9	•• 14.5	22°51.5	•• 45.2	
10	39°08.6	15°47.5	28.5	255°31.1	57.7	311°27.8	14.5	37°53.8	45.2	
11	54°11.1	30°47.7	29.3	270°32.2	57.3	326°29.6	14.5	52°56.1	45.1	
12	69°13.5	45°47.9	N07°30.0	285°33.4	N15°56.8	341°31.5	N23°14.5	67°58.4	S01°45.1	
13	84°16.0	60°48.0	30.8	300°34.6	56.3	356°33.3	14.5	83°00.7	45.0	
14	99°18.5	75°48.2	31.5	315°35.7	55.9	11°35.2	14.5	98°03.0	45.0	
15	114°20.9	90°48.4	•• 32.3	330°36.9	•• 55.4	26°37.1	•• 14.5	113°05.3	•• 44.9	
16	129°23.4	105°48.5	33.0	345°38.1	54.9	41°38.9	14.6	128°07.6	44.8	
17	144°25.9	120°48.7	33.8	0°39.2	54.5	56°40.8	14.6	143°09.9	44.8	
18	159°28.3	135°48.9	N07°34.5	15°40.4	N15°54.0	71°42.6	N23°14.6	158°12.2	S01°44.7	
19	174°30.8	150°49.0	35.3	30°41.6	53.5	86°44.5	14.6	173°14.5	44.7	
20	189°33.3	165°49.2	36.0	45°42.7	53.1	101°46.3	14.6	188°16.8	44.6	
21	204°35.7	180°49.4	•• 36.8	60°43.9	•• 52.6	116°48.2	•• 14.6	203°19.1	•• 44.6	
22	219°38.2	195°49.5	37.5	75°45.1	52.1	131°50.0	14.6	218°21.5	44.5	
23	234°40.6	210°49.7	38.2	90°46.2	51.7	146°51.9	14.7	233°23.8	44.4	
Mer.pass.:07:24			v0.2 d0.7 m-4.2		v1.2 d-0.5 m1.3		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	249°43.1	225°49.9	N07°39.0	105°47.4	N15°51.2	161°53.8	N23°14.7	248°26.1	S01°44.4					
1	264°45.6	240°50.0	39.7	120°48.6	50.7	176°55.6	14.7	263°28.4	44.3					
2	279°48.0	255°50.2	40.5	135°49.7	50.3	191°57.5	14.7	278°30.7	44.3					
3	294°50.5	270°50.3	•• 41.2	150°50.9	•• 49.8	206°59.3	•• 14.7	293°33.0	•• 44.2					
4	309°53.0	285°50.5	42.0	165°52.1	49.3	222°01.2	14.7	308°35.3	44.2					
5	324°55.4	300°50.7	42.7	180°53.2	48.9	237°03.0	14.7	323°37.6	44.1					
6	339°57.9	315°50.8	N07°43.5	195°54.4	N15°48.4	252°04.9	N23°14.7	338°39.9	S01°44.0					
7	355°00.4	330°51.0	44.2	210°55.6	47.9	267°06.7	14.8	353°42.2	44.0					
8	10°02.8	345°51.1	45.0	225°56.7	47.5	282°08.6	14.8	8°44.5	43.9					
9	25°05.3	0°51.3	•• 45.8	240°57.9	•• 47.0	297°10.4	•• 14.8	23°46.8	•• 43.9					
10	40°07.8	15°51.4	46.5	255°59.1	46.5	312°12.3	14.8	38°49.2	43.8					
11	55°10.2	30°51.6	47.3	271°00.2	46.1	327°14.2	14.8	53°51.5	43.8					
12	70°12.7	45°51.8	N07°48.0	286°01.4	N15°45.6	342°16.0	N23°14.8	68°53.8	S01°43.7					
13	85°15.1	60°51.9	48.8	301°02.6	45.1	357°17.9	14.8	83°56.1	43.6					
14	100°17.6	75°52.1	49.5	316°03.7	44.7	12°19.7	14.8	98°58.4	43.6					
15	115°20.1	90°52.2	•• 50.3	331°04.9	•• 44.2	27°21.6	•• 14.9	114°00.7	•• 43.5					
16	130°22.5	105°52.4	51.0	346°06.1	43.7	42°23.4	14.9	129°03.0	43.5					
17	145°25.0	120°52.5	51.8	1°07.2	43.3	57°25.3	14.9	144°05.3	43.4					
18	160°27.5	135°52.7	N07°52.5	16°08.4	N15°42.8	72°27.1	N23°14.9	159°07.6	S01°43.4					
19	175°29.9	150°52.8	53.3	31°09.6	42.8	87°29.0	14.9	174°09.9	43.3					
20	190°32.4	165°53.0	54.0	46°10.7	41.9	102°30.8	14.9	189°12.3	43.3					
21	205°34.9	180°53.1	•• 54.8	61°11.9	•• 41.4	117°32.7	•• 14.9	204°14.6	•• 43.2					
22	220°37.3	195°53.3	55.5	76°13.1	40.9	132°34.6	14.9	219°16.9	43.1					
23	235°39.8	210°53.4	56.3	91°14.2	40.5	147°36.4	15.0	234°19.2	43.1					
Mer.pass.:07:20			v0.2 d0.7 m-4.2			v1.2 d-0.5 m1.3			v1.9 d0.0 m-1.8			v2.3 d0.1 m1.1		

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	250°42.2	225°53.6	N07°57.1	106°15.4	N15°40.0	162°38.3	N23°15.0	249°21.5	S01°43.0	
1	265°44.7	240°53.7	57.8	121°16.5	39.5	177°40.1	15.0	264°23.8	43.0	
2	280°47.2	255°53.8	58.6	136°17.7	39.0	192°42.0	15.0	279°26.1	42.9	
3	295°49.6	270°54.0	07°59.3	151°18.9	•• 38.6	207°43.8	•• 15.0	294°28.4	•• 42.9	
4	310°52.1	285°54.1	08°00.1	166°20.0	38.1	222°45.7	15.0	309°30.7	42.8	
5	325°54.6	300°54.3	00.8	181°21.2	37.6	237°47.5	15.0	324°33.1	42.8	
6	340°57.0	315°54.4	N08°01.6	196°22.4	N15°37.2	252°49.4	N23°15.0	339°35.4	S01°42.7	
7	355°59.5	330°54.6	02.3	211°23.5	36.7	267°51.2	15.0	354°37.7	42.6	
8	11°02.0	345°54.7	03.1	226°24.7	36.2	282°53.1	15.1	9°40.0	42.6	
9	26°04.4	0°54.8	•• 03.9	241°25.9	•• 35.8	297°55.0	•• 15.1	24°42.3	•• 42.5	
10	41°06.9	15°55.0	04.6	256°27.0	35.3	312°56.8	15.1	39°44.6	42.5	
11	56°09.4	30°55.1	05.4	271°28.2	34.8	327°58.7	15.1	54°46.9	42.4	
12	71°11.8	45°55.2	N08°06.1	286°29.3	N15°34.3	343°00.5	N23°15.1	69°49.2	S01°42.4	
13	86°14.3	60°55.4	06.9	301°30.5	33.9	358°02.4	15.1	84°51.6	42.3	
14	101°16.7	75°55.5	07.6	316°31.7	33.4	13°04.2	15.1	99°53.9	42.3	
15	116°19.2	90°55.7	•• 08.4	331°32.8	•• 32.9	28°06.1	•• 15.1	114°56.2	•• 42.2	
16	131°21.7	105°55.8	09.2	346°34.0	32.5	43°07.9	15.1	129°58.5	42.2	
17	146°24.1	120°55.9	09.9	1°35.2	32.0	58°09.8	15.2	145°00.8	42.1	
18	161°26.6	135°56.1	N08°10.7	16°36.3	N15°31.5	73°11.6	N23°15.2	160°03.1	S01°42.0	
19	176°29.1	150°56.2	11.4	31°37.5	31.0	88°13.5	15.2	175°05.4	42.0	
20	191°31.5	165°56.3	12.2	46°38.6	30.6	103°15.3	15.2	190°07.8	41.9	
21	206°34.0	180°56.5	•• 13.0	61°39.8	•• 30.1	118°17.2	•• 15.2	205°10.1	•• 41.9	
22	221°36.5	195°56.6	13.7	76°41.0	29.6	133°19.0	15.2	220°12.4	41.8	
23	236°38.9	210°56.7	14.5	91°42.1	29.1	148°20.9	15.2	235°14.7	41.8	
Mer.pass.:07:16			v0.1 d0.8 m-4.2		v1.2 d-0.5 m1.3		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

SHA	Dec
Alpheratz	357°34.6 29°13.7
Ankaa	353°07.0 -42°09.9
Schedar	349°31.0 56°40.3
Diphda	348°47.1 -17°50.8
Achernar	335°20.3 -57°06.2
Hamal	327°51.1 23°34.8
Polaris	314°19.6 89°22.1
Acamar	315°51.9 -40°12.1
Menkar	314°06.1 4°11.3
Mirfak	308°28.3 49°57.0
Aldebaran	290°39.6 16°33.6
Rigel	281°03.9 -8°10.4
Capella	280°21.9 46°01.4
Bellatrix	278°22.9 6°22.3
Elnath	278°01.8 28°37.7
Anilnail	275°37.7 -1°12.2
Betelgeuse	270°52.1 7°24.7
Canopus	263°52.8 -52°42.6
Sirius	258°26.3 -16°45.1
Adhara	255°05.9 -29°00.5
Procyon	244°50.8 5°09.6
Pollux	243°17.2 27°58.0
Avior	234°15.0 -59°35.7
Suhail	222°46.3 -43°32.3
Miaplacidus	221°38.7 -69°49.5

Alphard	217°47.6 -8°46.2
Regulus	207°34.2 11°50.6
Dubhe	193°40.6 61°37.1
Denebola	182°24.5 14°25.8
Gienah	175°43.1 -17°41.1
Acrux	172°59.8 -63°14.7
Gacrux	171°51.0 -57°15.6
Alioth	166°12.4 55°49.5
Spica	158°21.8 -11°17.7
Alkaid	152°51.4 49°11.3
Hadar	148°35.1 -60°30.0
Menkent	147°56.9 -36°29.9
Arcturus	145°47.3 19°03.0
Rigil Kent.	139°39.3 -60°56.6
Kochab	137°18.7 74°03.1
Zuben'ubi	136°55.4 -16°08.9
Alphecca	126°03.1 26°37.7
Antares	112°15.1 -26°29.4
Atria	107°08.4 -69°04.4
Sabik	102°02.1 -15°45.4
Shaula	96°09.5 -37°07.3
Rasalhague	95°57.9 12°32.4
Eltanin	90°41.5 51°29.0
Kaus Aust.	83°31.7 -34°22.3
Vega	80°32.6 38°48.3
Nunki	75°47.0 -26°15.9
Altair	61°59.4 8°56.0
Peacock	53°04.9 -56°39.0
Deneb	49°25.3 45°22.0
Enif	33°38.4 9°59.4
Al Na'ir	27°32.4 -46°50.1
Fomalhaut	15°14.2 -29°29.1
Scheat	13°44.9 28°13.0
Markab	13°29.6 15°20.4

May 31 Sat	SHA	Mer.pass
Venus	337°01.8	08:57
Mars	216°35.4	16:57
Jupiter	272°25.2	13:14
Saturn	358°46.7	07:29

May 01 Sun	SHA	Mer.pass
Venus	336°06.7	08:57
Mars	216°04.3	16:56
Jupiter	272°10.6	13:11
Saturn	358°43.0	07:25

May 02 Mon	SHA	Mer.pass
Venus	335°11.3	08:56
Mars	215°33.1	16:54
Jupiter	271°56.0	13:08
Saturn	358°39.3	07:21

Horizontal parallax	
Venus:	0.2
Mars:	0.1

Aries		Venus		Mars		Jupiter		Saturn	
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	251°41.4	225°56.9	N08°15.2	106°43.3	N15°28.7	163°22.8	N23°15.2	250°17.0	S01°41.7
1	266°43.9	240°57.0	16.0	121°44.5	28.2	178°24.6	15.2	265°19.3	41.7
2	281°46.3	255°57.1	16.8	136°45.6	27.7	193°26.5	15.3	280°21.6	41.6
3	296°48.8	270°57.2	•• 17.5	151°46.8	•• 27.2	208°28.3	•• 15.3	295°24.0	•• 41.6
4	311°51.2	285°57.4	18.3	166°47.9	26.8	223°30.2	15.3	310°26.3	41.5
5	326°53.7	300°57.5	19.1	181°49.1	26.3	238°32.0	15.3	325°28.6	41.5
6	341°56.2	315°57.6	N08°19.8	196°50.3	N15°25.8	253°33.9	N23°15.3	340°30.9	S01°41.4
7	356°58.6	330°57.7	20.6	211°51.4	25.3	268°35.7	15.3	355°33.2	41.3
8	12°01.1	345°57.9	21.3	226°52.6	24.9	283°37.6	15.3	10°35.5	41.3
9	27°03.0	0°58.0	•• 22.1	241°53.8	•• 24.4	298°39.4	•• 15.3	25°37.8	•• 41.2
10	42°06.0	15°58.1	22.9	256°54.9	23.9	313°41.3	15.3	40°40.2	41.2
11	57°08.5	30°58.2	23.6	271°56.1	23.4	328°43.1	15.4	55°42.5	41.1
12	72°11.0	45°58.4	N08°24.4	286°57.2	N15°23.0	343°45.0	N23°15.4	70°44.8	S01°41.1
13	87°13.4	60°58.5	25.2	301°58.4	22.5	358°46.8	15.4	85°47.1	41.0
14	102°15.9	75°58.6	25.9	316°59.6	22.0	13°48.7	15.4	100°49.4	41.0
15	117°18.3	90°58.7	•• 26.7	332°00.7	•• 21.5	28°50.5	•• 15.4	115°51.7	•• 40.9
16	132°20.8	105°58.8	27.4	347°01.9	21.1	43°52.4	15.4	130°54.1	40.9
17	147°23.3	120°58.9	28.2	2°03.0	20.6	58°54.2	15.4	145°56.4	40.8
18	162°25.7	135°59.1	N08°29.0	17°04.2	N15°20.1	73°56.1	N23°15.4	160°58.7	S01°40.8
19	177°28.2	150°59.2	29.7	32°05.4	19.6	88°58.0	15.4	176°01.0	40.7
20	192°30.7	165°59.3	30.5	47°06.5	19.2	103°59.8	15.4	191°03.3	40.7
21	207°33.1	180°59.4	•• 31.3	62°07.7	•• 18.7	119°01.7	•• 15.5	206°05.6	•• 40.6
22	222°35.6	195°59.5	32.0	77°08.8	18.2	134°03.5	15.5	221°08.0	40.5
23	237°38.1	210°59.6	32.8	92°10.0	17.7	149°05.4	15.5	236°10.3	40.5
Mer.pass.:07:12		v0.1 d0.8 m-4.2		v1.2 d-0.5 m1.3		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	252°40.5	225°59.8	N08°33.6	107°11.2	N15°17.3	164°07.2	N23°15.5	251°12.6	S01°40.4
1	267°43.0	240°59.9	34.3	122°12.3	16.8	179°09.1	15.5	266°14.9	40.4
2	282°45.5	256°00.0	35.1	137°13.5	16.3	194°10.9	15.5	281°17.2	40.3
3	297°47.9	271°00.1	•• 35.9	152°14.6	•• 15.8	209°12.8	•• 15.5	296°19.5	•• 40.3
4	312°50.4	286°00.2	36.6	167°15.8	15.5	224°14.6	15.5	311°21.9	40.2
5	327°52.8	301°00.3	37.4	182°17.0	14.9	239°16.5	15.5	326°24.2	40.2
6	342°55.3	316°00.4	N08°38.2	197°18.1	N15°14.4	254°18.3	N23°15.5	341°26.5	S01°40.1
7	357°57.8	331°00.5	38.9	212°19.3	13.9	269°20.2	15.6	356°28.8	40.1
8	13°00.2	346°00.6	39.7	227°20.4	13.4	284°22.0	15.6	11°31.1	40.0
9	28°02.7	1°00.7	•• 40.5	242°21.6	•• 12.9	299°23.9	•• 15.6	26°33.5	•• 40.0
10	43°05.2	16°00.9	41.2	257°22.8	12.5	314°25.7	15.6	41°35.8	39.9
11	58°07.6	31°01.0	42.0	272°23.9	12.0	329°27.6	15.6	56°38.1	39.9
12	73°10.1	46°01.1	N08°42.8	287°25.1	N15°11.5	344°29.4	N23°15.6	71°40.4	S01°39.8
13	88°12.6	61°01.2	43.5	302°26.2	11.0	359°31.3	15.6	86°42.7	39.8
14	103°15.0	76°01.3	44.3	317°27.4	10.5	14°33.1	15.6	101°45.1	39.7
15	118°17.5	91°01.4	•• 45.1	332°28.5	•• 10.1	29°35.0	•• 15.6	116°47.4	•• 39.7
16	133°19.9	106°01.5	45.8	347°29.7	09.6	44°36.8	15.6	131°49.7	39.6
17	148°22.4	121°01.6	46.6	2°30.9	09.1	59°38.7	15.6	146°52.0	39.6
18	163°24.9	136°01.7	N08°47.4	17°32.0	N15°08.6	74°40.5	N23°15.7	161°54.3	S01°39.5
19	178°27.3	151°01.8	48.1	32°33.2	08.1	89°42.4	15.7	176°56.6	39.5
20	193°29.8	166°01.9	48.9	47°34.3	07.7	104°44.2	15.7	191°59.0	39.4
21	208°32.3	181°02.0	•• 49.7	62°35.5	•• 07.2	119°46.1	•• 15.7	207°01.3	•• 39.4
22	223°34.7	196°02.1	50.5	77°36.7	06.7	134°47.9	15.7	222°03.6	39.3
23	238°37.2	211°02.2	51.2	92°37.8	06.2	149°49.8	15.7	237°05.9	39.3
Mer.pass.:07:08		v0.1 d0.8 m-4.2		v1.2 d-0.5 m1.3		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	253°39.7	226°02.3	N08°52.0	107°39.0	N15°05.7	164°51.6	N23°15.7	252°08.3	S01°39.2
1	268°42.1	241°02.4	52.8	122°40.1	05.3	179°53.5	15.7	267°10.6	39.2
2	283°44.6	256°02.5	53.5	137°41.3	04.8	194°55.4	15.7	282°12.9	39.1
3	298°47.1	271°02.6	•• 54.3	152°42.4	•• 04.3	209°57.2	•• 15.7	297°15.2	•• 39.0
4	313°49.5	286°02.7	55.1	167°43.8	03.8	224°59.1	15.7	312°17.5	39.0
5	328°52.0	301°02.8	55.8	182°44.8	03.3	240°00.9	15.8	327°19.9	38.9
6	343°54.4	316°02.8	N08°56.6	197°45.9	N15°02.8	255°02.8	N23°15.8	342°22.2	S01°38.9
7	358°56.9	331°02.9	57.4	212°47.1	02.4	270°04.6	15.8	357°24.5	38.8
8	13°59.4	346°03.0	58.2	227°48.2	01.9	285°06.5	15.8	12°26.8	38.8
9	29°01.8	1°03.1	•• 58.9	242°49.4	•• 01.4	300°08.3	•• 15.8	27°29.1	•• 38.7
10	44°04.3	16°03.2	08°59.7	257°50.5	00.9	315°10.2	15.8	42°31.5	38.7
11	59°06.8	31°03.3	09°00.5	272°51.7	15°00.4	330°12.0	15.8	57°33.8	38.6
12	74°09.2	46°03.4	N09°01.2	287°52.9	N14°59.9	345°13.9	N23°15.8	72°36.1	S01°38.6
13	89°11.7	61°03.5	02.0	302°54.0	59.5	0°15.7	15.8	87°38.4	38.5
14	104°14.2	76°03.6	02.8	317°55.2	59.0	15°17.6	15.8	102°40.8	38.5
15	119°16.6	91°03.7	•• 03.6	332°56.3	•• 58.5	30°19.4	•• 15.8	117°43.1	•• 38.4
16	134°19.1	106°03.7	04.3	347°57.5	58.0	45°21.3	15.9	132°45.4	38.4
17	149°21.6	121°03.8	05.1	2°58.6	57.5	60°23.1	15.9	147°47.7	38.3
18	164°24.0	136°03.9	N09°05.9	17°59.8	N14°57.0	75°25.0	N23°15.9	162°50.0	S01°38.3
19	179°26.5	151°04.0	06.6	33°01.0	56.0	90°26.8	15.9	177°52.4	38.2
20	194°28.9	166°04.1	07.4	48°02.1	56.1	105°28.7	15.9	192°54.7	38.2
21	209°31.4	181°04.2	•• 08.2	63°03.3	•• 55.6	120°30.5	•• 15.9	207°57.0	•• 38.1
22	224°33.9	196°04.2	09.0	78°04.4	55.1	135°32.4	15.9	222°59.3	38.1
23	239°36.3	211°04.3	09.7	93°05.6	54.6	150°34.2	15.9	238°01.7	38.0
Mer.pass.:07:04		v0.1 d0.8 m-4.2		v1.2 d-0.5 m1.3		v1.9 d0.0 m-1.8		v2.3 d0.1 m1.1	

Stars	
SHA	Dec
Alpheratz	357°34.6
Ankaa	353°07.0
Schedar	349°31.0
Diphda	348°47.1
Achernar	335°20.3
Hamal	327°51.1
Polaris	314°18.9
Acamar	315°11.9
Menkar	314°06.1
Mirfak	308°28.3
Aldebaran	290°39.6
Rigel	281°03.9
Capella	280°21.9
Bellatrix	278°22.9
Elnath	278°10.8
Anilam	275°37.7
Betelgeuse	270°52.1
Canopus	263°52.8
Sirius	258°26.3
Adhara	255°06.0
Procyon	244°50.8
Pollux	234°17.2
Avior	234°15.1
Suhail	222°46.3
Miaplacidus	221°38.7
Alphard	217°47.6
Regulus	207°34.2
Dubhe	193°40.6
Denebola	182°24.5
Gienah	175°43.1
Acrux	172°59.5
Gacrux	171°51.1
Alioth	166°12.4
Spica	158°21.8
Alkaid	152°51.4
Hadar	148°35.1
Menkent	147°56.9
Arcturus	145°47.3
Rigel Kent	139°39.3
Kochab	137°18.7
Zuben'ubi	136°55.4
Alphecca	126°03.1
Antares	112°15.1
Atria	107°08.4
Sabik	102°02.1
Shaula	96°09.5
Rasalhague	95°57.9
Eltanin	90°41.5
Kaus Aust.	83°31.7
Vega	80°32.6
Nunki	75°47.0
Altair	61°59.4
Peacock	53°04.8
Deneb	49°25.3
Enif	33°38.4
Al Na'ir	27°32.4
Fomalhaut	15°14.2
Scheat	13°44.9
Markab	13°29.6

Mer-pass	
Venus	334°15.5
Mars	215°01.9
Jupiter	271°41.4
Saturn	358°35.6
Mer-pass	
Venus	333°19.2
Mars	214°30.6
Jupiter	271°26.7
Saturn	358°32.1
Mer-pass	
Venus	332°22.6
Mars	213°59.3
Jupiter	271°12.0
Saturn	358°28.6

Horizontal parallax	
Venus:	0.2
Mars:	0.1

Sun		Moon			
Tue	GHA	Dec	GHA	ν	Dec
0	180°27.2	N22°19.1	88°50.3	15.6'	N08°31.0
1	195°27.1	19.4	103°25.0	15.7'	08°16.8
2	210°27.0	19.7	117°59.6	15.7'	08°02.6
3	225°26.9	•• 20.0	132°34.4	15.8'	07°48.3
4	240°26.8	20.3	147°09.2	15.8'	07°34.1
5	255°26.7	20.6	161°44.1	15.9'	07°19.8
6	270°26.6	N22°20.9	176°19.0	15.9'	N07°05.5
7	285°26.5	21.2	190°54.0	16.0'	06°51.2
8	300°26.4	21.5	205°29.0	16.1'	06°36.9
9	315°26.3	•• 21.8	220°04.1	16.1'	06°22.5
10	330°26.2	22.1	234°39.2	16.2'	06°08.2
11	345°26.1	22.4	249°14.4	16.2'	05°53.8
12	0°26.0	N22°22.7	263°49.6	16.3'	N05°39.5
13	15°25.9	23.0	278°24.9	16.3'	05°25.1
14	30°25.8	23.3	293°00.2	16.3'	

Aries				Venus				Mars				Jupiter				Saturn			
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	254°38.8	226°04.4	N09°10.5	108°06.7	N14°54.1	165°36.1	N23°15.9	253°04.0	S01°38.0										
1	269°41.3	241°04.5	11.3	123°07.9	53.6	180°37.9	15.9	268°06.3	37.9										
2	284°43.7	256°04.6	12.1	138°09.0	53.2	195°39.8	15.9	283°08.6	37.9										
3	299°46.2	271°04.6	•• 12.8	153°10.2	•• 52.7	210°41.6	•• 15.9	298°11.0	•• 37.8										
4	314°48.7	286°04.7	13.6	168°11.4	52.2	225°43.5	15.9	313°13.3	37.8										
5	329°51.1	301°04.8	14.4	183°12.5	51.7	240°45.3	16.0	328°15.6	37.7										
6	344°53.6	316°04.9	N09°15.2	198°13.7	N14°51.2	255°47.2	N23°16.0	343°17.9	S01°37.7										
7	359°56.0	331°05.0	15.9	213°14.8	50.7	270°49.0	16.0	358°20.3	37.6										
8	14°58.5	346°05.0	16.7	228°16.0	50.2	285°50.9	16.0	13°22.6	37.6										
9	30°01.0	1°05.1	•• 17.5	243°17.1	•• 49.8	300°52.7	•• 16.0	28°24.9	•• 37.6										
10	45°03.4	16°05.2	18.3	258°18.3	49.3	315°54.6	16.0	43°27.2	37.5										
11	60°05.9	31°05.3	19.0	273°19.4	48.8	330°56.4	16.0	58°29.6	37.5										
12	75°08.4	46°05.3	N09°19.8	288°20.6	N14°48.3	345°58.3	N23°16.0	73°31.9	S01°37.4										
13	90°10.8	61°05.4	20.6	303°21.8	47.8	1°00.1	16.0	88°34.2	37.4										
14	105°13.3	76°05.5	21.4	318°22.9	47.3	16°02.0	16.0	103°36.5	37.3										
15	120°15.8	91°05.5	•• 22.1	333°24.1	•• 46.3	31°03.8	•• 16.0	118°38.9	•• 37.3										
16	135°18.2	106°05.6	22.9	348°25.2	46.4	46°05.7	16.0	133°41.2	37.2										
17	150°20.7	121°05.7	23.7	3°26.4	45.9	61°07.5	16.0	148°43.5	37.2										
18	165°23.2	136°05.8	N09°24.5	18°27.5	N14°45.4	76°09.4	N23°16.1	163°45.8	S01°37.1										
19	180°25.6	151°05.8	25.2	33°28.7	44.9	91°11.2	16.1	178°18.2	37.1										
20	195°28.1	166°05.9	26.0	48°29.8	44.4	106°13.1	•• 16.1	193°50.5	•• 37.0										
21	210°30.5	181°06.0	•• 26.8	63°31.0	•• 43.9	121°14.9	•• 16.1	208°52.8	•• 37.0										
22	225°33.0	196°06.0	27.6	78°32.1	43.4	136°16.8	16.1	223°55.1	36.9										
23	240°35.5	211°06.1	28.3	93°33.3	42.9	151°18.6	16.1	238°57.5	36.9										
Mer.pass.:07:00				v0.1 d0.8 m-4.2				v1.2 d-0.5 m1.3				v1.9 d0.0 m-1.8				v2.3 d0.0 m1.1			

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	255°37.9	226°06.2	N09°29.1	108°34.6	N14°42.4	166°20.5	N23°16.1	253°59.8	S01°36.8										
1	270°40.4	241°06.2	29.9	123°35.5	41.9	181°22.3	16.1	269°02.1	36.8										
2	285°42.9	256°06.3	30.7	138°36.8	41.5	196°24.2	16.1	284°04.5	36.7										
3	300°45.3	271°06.4	•• 31.4	153°37.9	•• 41.0	211°26.0	•• 16.1	299°06.8	•• 36.7										
4	315°47.8	286°06.4	32.2	168°39.1	40.5	226°27.9	16.1	314°09.1	36.6										
5	330°50.3	301°06.5	33.0	183°40.2	40.0	241°29.7	16.1	329°11.4	36.6										
6	345°52.7	316°06.5	N09°33.8	198°41.4	N14°39.5	256°31.6	N23°16.1	344°13.8	S01°36.5										
7	0°55.2	331°06.6	34.6	213°42.5	39.0	271°33.4	16.1	359°16.1	36.5										
8	15°57.7	346°06.7	35.3	228°43.7	38.5	286°35.3	16.1	14°18.4	36.4										
9	31°00.1	1°06.7	•• 36.1	243°44.8	•• 38.0	301°37.1	•• 16.2	29°20.8	•• 36.4										
10	46°02.6	16°06.8	36.9	258°46.0	37.5	316°39.0	16.2	44°23.1	36.3										
11	61°05.0	31°06.8	37.7	273°47.1	37.0	331°40.8	16.2	59°25.4	36.3										
12	76°07.5	46°06.9	N09°38.4	288°48.3	N14°36.5	346°42.6	N23°16.2	74°27.7	S01°36.2										
13	91°10.0	61°06.9	39.2	303°49.5	36.1	1°44.5	16.2	89°30.1	36.2										
14	106°12.4	76°07.0	40.0	318°50.6	35.6	16°46.3	16.2	104°32.4	36.2										
15	121°14.9	91°07.1	•• 40.8	333°51.8	•• 35.1	31°48.2	•• 16.2	119°34.7	•• 36.1										
16	136°17.4	106°07.1	41.6	348°52.9	34.6	46°50.0	16.2	134°37.1	36.1										
17	151°19.8	121°07.2	42.3	3°54.1	34.1	61°51.9	16.2	149°39.4	36.0										
18	166°22.3	136°07.2	N09°43.1	18°55.2	N14°33.6	76°53.7	N23°16.2	164°41.7	S01°36.0										
19	181°24.3	151°07.3	43.9	33°56.4	33.1	91°55.6	16.2	179°44.0	35.9										
20	196°27.2	166°07.3	44.7	48°57.5	32.6	106°57.4	16.2	194°46.4	35.9										
21	211°29.7	181°07.4	•• 45.4	63°58.7	•• 32.1	121°59.3	•• 16.2	209°48.7	•• 35.8										
22	226°32.1	196°07.4	46.2	78°59.8	31.6	137°01.1	16.2	224°51.0	35.8										
23	241°34.6	211°07.5	47.0	94°01.0	31.1	152°03.0	16.2	239°53.4	35.7										
Mer.pass.:06:56				v0.1 d0.8 m-4.2				v1.2 d-0.5 m1.3				v1.8 d0.0 m-1.8				v2.3 d0.0 m1.1			

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	256°37.1	226°07.5	N09°47.8	109°02.1	N14°30.6	167°04.8	N23°16.3	254°55.7	S01°35.7	
1	271°39.5	241°07.6	48.6	124°03.3	30.1	182°06.7	16.3	269°58.0	35.6	
2	286°42.0	256°07.6	49.3	139°04.4	29.7	197°08.5	16.3	285°00.4	35.6	
3	301°44.5	271°07.7	•• 50.1	154°05.6	•• 29.2	212°10.4	•• 16.3	300°02.7	•• 35.5	
4	316°46.9	286°07.7	50.9	169°06.7	28.7	227°12.2	16.3	315°05.0	35.5	
5	331°49.4	301°07.8	51.7	184°07.9	28.2	242°14.1	16.3	330°07.3	35.5	
6	346°51.9	316°07.8	N09°52.5	199°09.0	N14°27.7	257°15.9	N23°16.3	345°09.7	S01°35.4	
7	1°54.3	331°07.9	53.2	214°10.2	27.2	272°17.8	16.3	0°12.0	35.4	
8	16°56.8	346°07.9	54.0	229°11.3	26.7	287°19.6	16.3	15°14.3	35.3	
9	31°59.3	1°07.9	•• 54.8	244°12.5	•• 26.2	302°21.5	•• 16.3	30°16.7	•• 35.3	
10	47°01.7	16°08.0	55.6	259°13.6	25.7	317°23.3	16.3	45°19.0	35.2	
11	62°04.6	31°08.0	56.4	274°14.8	25.2	332°25.2	16.3	60°21.3	35.2	
12	77°06.6	46°08.1	N09°57.1	289°15.9	N14°24.7	347°27.0	N23°16.3	75°23.7	S01°35.1	
13	92°09.1	61°08.1	57.9	304°17.1	24.2	2°28.9	16.3	90°26.0	35.1	
14	107°11.6	76°08.2	58.7	319°18.3	23.7	17°30.7	16.3	105°28.3	35.0	
15	122°14.0	91°08.2	09°59.5	334°19.4	•• 23.2	32°32.6	•• 16.3	120°30.7	•• 35.0	
16	137°16.5	106°08.2	10°00.3	349°20.6	22.7	47°34.4	16.3	135°33.0	34.9	
17	152°19.0	121°08.3	01.0	4°21.7	22.2	62°36.3	16.3	150°35.3	34.9	
18	167°21.4	136°08.3	N10°01.8	19°22.9	N14°21.7	77°38.1	N23°16.4	165°37.7	S01°34.9	
19	182°23.9	151°08.4	02.6	34°24.0	21.2	92°39.9	16.4	180°40.0	34.8	
20	197°26.4	166°08.4	03.4	49°25.2	20.7	107°41.8	16.4	195°42.3	34.8	
21	212°28.8	181°08.4	•• 04.2	64°26.3	•• 20.3	122°43.6	•• 16.4	210°44.7	•• 34.7	
22	227°31.3	196°08.5	04.9	79°27.5	19.8	137°45.5	16.4	225°47.0	34.7	
23	242°33.8	211°08.5	05.7	94°28.6	19.3	152°47.3	16.4	240°49.3	34.6	
Mer.pass.:06:52		v0.0 d0.8 m-4.2			v1.2 d-0.5 m1.3		v1.8 d0.0 m-1.8		v2.3 d0.0 m1.1	

SHA	Dec
Alpheratz	357°34.5 29°13.7
Ankaa	353°07.0 -42°09.9
Schedar	349°30.9 56°40.3
Diphda	348°47.1 -17°50.7
Achernar	335°20.3 -57°06.2
Hamal	327°51.1 23°34.8
Polaris	314°18.0 89°22.1
Acamar	315°11.9 -40°12.0
Menkar	314°06.1 4°11.3
Mirfak	308°28.3 49°57.0
Aldebaran	290°39.6 16°33.6
Rigela	281°03.9 -8°10.3
Capella	280°21.9 46°01.4
Bellatrix	278°22.9 6°22.4
Enath	278°01.8 28°37.7
Alnilam	275°37.7 -1°11.1
Betelgeuse	270°52.1 7°24.4
Canopus	263°52.8 -52°42.6
Sirius	258°26.3 -16°45.1
Adhara	255°06.0 -29°00.5
Procyon	244°50.8 5°09.6
Pollux	243°17.2 27°58.0
Avior	234°15.1 -59°35.6
Suhail	222°46.3 -43°32.3
Miaplacidus	221°38.7 -69°49.5
Alphard	217°47.6 -8°46.2
Regulus	207°34.2 11°50.6
Dubhe	193°40.6 61°37.1
Denebola	182°24.6 14°25.8
Gienah	175°43.2 -17°41.1
Acrux	172°59.5 -63°14.7
Gacrux	171°51.1 -57°15.6
Alioth	166°12.4 55°49.5
Spica	158°21.8 -11°17.7
Alkaid	152°51.4 49°11.3
Hadar	148°35.1 -60°30.0
Menkent	147°57.0 -36°29.9
Arcturus	145°47.4 19°03.0
Rigel Kent.	139°39.3 -60°56.6
Kochab	137°18.8 74°03.2
Zuben'el	136°55.4 -16°08.9
Alphecca	126°03.1 26°37.7
Antares	112°15.1 -26°29.4
Atria	107°08.4 -69°04.4
Sabik	102°02.1 -15°45.4
Shaula	96°09.5 -37°07.3
Rasalhague	95°57.9 12°32.4
Eltanin	90°41.5 51°29.0
Kaus Aest.	83°31.7 34°22.3
Vega	80°32.6 38°48.3
Nunki	75°47.0 -26°15.9
Altair	61°59.4 8°56.0
Peacock	53°04.8 -56°39.0
Deneb	49°25.3 45°22.0
Enif	33°38.4 9°59.4
Al Na'ir	

Aries		Venus		Mars		Jupiter		Saturn	
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	257°36.2	226°08.5	N10°06.5	109°29.8	N14°18.8	167°49.2	255°51.7	S01°34.6	
1	272°37.7	241°08.6	07.3	124°30.9	18.3	182°51.0	16.4	270°54.0	34.5
2	287°41.1	256°08.6	08.1	139°32.1	17.8	197°52.9	16.4	285°56.3	34.5
3	302°43.6	271°08.6	•• 08.8	154°33.2	•• 17.3	212°54.7	•• 16.4	300°58.7	•• 34.5
4	317°46.1	286°08.7	09.6	169°34.4	16.8	227°56.6	16.4	316°01.0	34.4
5	332°48.5	301°08.7	10.4	184°35.5	16.3	242°58.4	16.4	331°03.3	34.4
6	347°51.0	316°08.7	N10°11.2	199°36.7	N14°15.8	258°00.3	N23°16.4	346°05.7	S01°34.3
7	2°53.5	331°08.7	12.0	214°37.8	15.3	273°02.1	16.4	1°08.0	34.3
8	17°55.9	346°08.7	12.7	229°39.0	14.8	288°04.0	16.4	16°10.3	34.2
9	32°58.4	1°08.8	•• 13.5	244°40.1	•• 14.3	303°05.8	•• 16.4	31°12.7	•• 34.2
10	48°00.9	16°08.8	14.3	259°41.3	13.8	318°07.7	16.4	46°15.0	34.1
11	63°03.3	31°08.9	15.1	274°42.4	13.3	333°09.5	16.4	61°17.3	34.1
12	78°05.8	46°08.9	N10°15.9	289°43.6	N14°12.8	348°11.4	N23°16.4	76°19.7	S01°34.0
13	93°08.2	61°08.9	16.7	304°44.7	12.3	3°13.2	16.4	91°22.0	34.0
14	108°10.7	76°08.9	17.4	319°45.9	11.8	18°15.1	16.4	106°24.4	34.0
15	123°13.2	91°09.0	•• 18.2	334°47.0	•• 11.3	33°16.9	•• 16.5	121°26.7	•• 33.9
16	138°15.6	106°09.0	19.0	349°48.2	10.8	48°18.7	16.5	136°29.0	33.9
17	153°18.1	121°09.0	19.8	4°49.3	10.3	63°20.6	16.5	151°31.4	33.8
18	168°20.6	136°09.0	N10°20.6	19°50.5	N14°09.8	78°22.4	N23°16.5	166°33.7	S01°33.8
19	183°23.0	151°09.0	21.3	34°51.6	09.3	93°24.3	16.5	181°36.0	33.7
20	198°25.5	166°09.1	22.1	49°52.8	08.8	108°26.1	16.5	196°38.4	33.7
21	213°28.0	181°09.1	•• 22.9	64°53.9	•• 08.8	123°28.0	•• 16.5	211°40.7	•• 33.7
22	228°30.4	196°09.1	23.7	79°55.0	07.8	138°29.8	16.5	226°43.0	33.6
23	243°32.9	211°09.1	24.5	94°56.2	07.3	153°31.7	16.5	241°45.4	33.6
Mer.pass.:06:48		v0.0 d0.8 m-4.2		v1.2 d-0.5 m1.3		v1.8 d0.0 m-1.8		v2.3 d0.0 m1.1	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	258°35.4	226°09.1	N10°25.2	109°57.3	N14°06.8	168°33.5	N23°16.5	256°47.7	S01°33.5
1	273°37.8	241°09.2	26.0	124°58.5	06.3	183°35.4	16.5	271°50.1	33.5
2	288°40.3	256°09.2	26.8	139°59.6	05.8	198°37.2	16.5	286°52.4	33.4
3	303°42.7	271°09.2	•• 27.6	155°00.8	•• 05.3	213°39.1	•• 16.5	301°54.7	•• 33.4
4	318°45.2	286°09.2	28.4	170°01.9	04.8	228°40.9	16.5	316°57.1	33.3
5	333°47.7	301°09.2	29.2	185°03.1	04.3	243°42.8	16.5	331°59.4	33.3
6	348°50.1	316°09.2	N10°29.9	200°04.2	N14°03.8	258°44.6	N23°16.5	347°01.7	S01°33.3
7	3°52.6	331°09.3	30.7	215°05.4	03.3	273°46.5	16.5	2°04.1	33.2
8	18°55.1	346°09.3	31.5	230°06.5	02.8	288°48.3	16.5	17°06.4	33.2
9	33°57.5	1°09.3	•• 32.3	245°07.7	•• 02.3	303°50.1	•• 16.5	32°08.8	•• 33.1
10	49°00.0	16°09.3	33.1	260°08.8	01.8	318°52.0	16.5	47°11.1	33.1
11	64°02.5	31°09.3	33.9	275°10.0	01.3	333°53.8	16.5	62°13.4	33.0
12	79°04.9	46°09.3	N10°34.6	290°11.1	N14°00.8	348°55.7	N23°16.5	77°15.8	S01°33.0
13	94°07.4	61°09.3	35.4	305°12.3	14°00.3	3°57.5	16.5	92°18.1	33.0
14	109°09.9	76°09.3	36.2	320°13.4	13°59.8	18°59.4	16.5	107°20.4	32.9
15	124°12.3	91°09.3	•• 37.0	335°14.6	•• 59.3	34°01.2	•• 16.5	122°22.8	•• 32.9
16	139°14.8	106°09.4	37.8	350°15.7	58.8	49°03.1	16.6	137°25.1	32.8
17	154°17.2	121°09.4	38.5	5°16.9	58.3	64°04.9	16.6	152°27.5	32.8
18	169°19.7	136°09.4	N10°39.3	20°18.0	N13°57.7	79°06.8	N23°16.6	167°29.8	S01°32.7
19	184°22.2	151°09.4	40.1	35°19.2	57.2	94°08.6	16.6	182°32.1	32.7
20	199°24.6	166°09.4	40.9	50°20.3	56.7	109°10.5	16.6	197°34.5	32.7
21	214°27.1	181°09.4	•• 41.7	65°21.5	•• 56.2	124°12.3	•• 16.6	212°36.8	•• 32.6
22	229°29.6	196°09.4	42.5	80°22.6	55.7	139°14.2	16.6	227°39.2	32.6
23	244°32.0	211°09.4	43.2	95°23.7	55.2	154°16.0	16.6	242°41.5	32.5
Mer.pass.:06:45		v0.0 d0.8 m-4.2		v1.1 d-0.5 m1.4		v1.8 d0.0 m-1.8		v2.3 d0.0 m1.1	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	259°34.5	226°09.4	N10°44.0	110°24.9	N13°54.7	169°17.8	N23°16.6	257°43.8	S01°32.5
1	274°37.0	241°09.4	44.8	125°26.0	54.8	184°19.7	16.6	272°46.2	32.4
2	289°39.4	256°09.4	45.6	140°27.2	53.7	199°21.5	16.6	287°48.5	32.4
3	304°41.9	271°09.4	•• 46.4	155°28.3	•• 53.2	214°23.4	•• 16.6	302°50.9	•• 32.4
4	319°44.4	286°09.4	47.2	170°29.5	52.7	229°25.2	16.6	317°53.2	32.3
5	334°46.8	301°09.4	47.9	185°30.6	52.2	244°27.1	16.6	332°55.6	32.3
6	349°49.3	316°09.4	N10°48.7	200°31.8	N13°51.7	259°28.9	N23°16.6	347°57.9	S01°32.2
7	4°51.7	331°09.4	49.5	215°32.9	51.2	274°30.8	16.6	3°00.2	32.2
8	19°54.2	346°09.4	50.3	230°34.1	50.7	289°32.6	16.6	18°02.6	32.2
9	34°56.7	1°09.4	•• 51.1	245°35.2	•• 50.2	304°34.5	•• 16.6	33°04.9	•• 32.1
10	49°59.1	16°09.4	51.9	260°36.4	49.7	319°36.3	16.6	48°07.3	32.1
11	65°01.6	31°09.4	52.6	275°37.5	49.2	334°38.2	16.6	63°09.6	32.0
12	80°04.1	46°09.4	N10°53.4	290°38.7	N13°48.7	349°40.0	N23°16.6	78°11.9	S01°32.0
13	95°06.5	61°09.4	54.2	305°39.8	48.2	4°41.8	16.6	93°14.3	31.9
14	110°09.0	76°09.4	55.0	320°40.9	47.6	19°43.7	16.6	108°16.6	31.9
15	125°11.5	91°09.4	•• 55.8	335°42.1	•• 47.1	34°45.5	•• 16.6	123°19.0	•• 31.9
16	140°13.9	106°09.3	56.5	350°43.2	46.6	49°47.4	16.6	138°21.3	31.8
17	155°16.4	121°09.3	57.3	5°44.4	46.1	64°49.2	16.6	153°23.7	31.8
18	170°18.9	136°09.3	N10°58.1	20°45.5	N13°45.6	79°51.1	N23°16.6	168°26.0	S01°31.7
19	185°21.3	151°09.3	58.9	35°46.7	45.1	94°52.9	16.6	183°28.3	31.7
20	200°23.8	166°09.3	10°59.7	50°47.8	44.6	109°54.8	16.6	198°30.7	31.7
21	215°26.2	181°09.3	11°00.5	65°49.0	•• 44.1	124°56.6	•• 16.6	213°33.0	•• 31.6
22	230°28.7	196°09.3	01.2	80°50.1	43.6	139°58.5	16.6	228°35.4	31.6
23	245°31.2	211°09.3	02.0	95°51.3	43.1	155°00.3	16.6	243°37.7	31.5
Mer.pass.:06:41		v0.0 d0.8 m-4.2		v1.1 d-0.5 m1.4		v1.8 d0.0 m-1.8		v2.3 d0.0 m1.1	

SHA	Dec
Alpheratz	357°34.5
Ankaa	353°06.9
Schedar	349°30.9
Diphda	348°47.1
Achernar	335°20.3
Hamal	327°51.1
Polaris	314°16.8
Acamar	315°11.9
Menkar	314°06.1
Mirfak	308°28.2
Aldebaran	290°39.6
Rigel	281°03.9
Capella	280°21.9
Bellatrix	278°22.9
Elmath	278°01.8
Anilam	275°37.7
Betelgeuse	270°52.1
Canopus	263°52.8
Sirius	258°26.3
Adhara	255°06.0
Procyon	244°50.8
Pollux	243°17.2
Avior	234°15.1
Suhail	222°46.3
Miaplacidus	221°38.8
Alphard	217°47.6
Regulus	207°34.2
Dubhe	193°40.6
Denebola	182°24.6
Gienah	175°43.2
Acrux	172°59.5
Gacrux	171°51.1
Alia	166°12.4
Spica	158°21.8
Alkaid	152°51.4
Hadar	148°35.1
Menkent	147°57.0
Arcturus	145°47.4
Rigel Kent	139°39.3
Kochab	137°18.8
Zuben'ubi	136°55.4
Alphecca	126°03.1
Antares	112°15.1
Atria	107°08.4
Sabik	102°02.0
Shaula	96°09.5
Rasalhague	95°57.9
Eltanin	90°41.5
Kaus Aust.	83°31.7
Vega	80°32.6
Nunki	75°47.0
Altair	61°59.4
Peacock	53°04.8
Deneb	49°25.3
Enif	33°38.3
Al Na'ir	27°32.3
Fomalhaut	15°14.1
Scheat	13°44.9
Makab	13°29.5

SHA	Dec
Venus	328°32.3
Mars	211°53.5
Jupiter	270°13.0
Saturn	358°15.5
Mer.pass	
08:55	
16:41	
12:47	
06:55	
SHA	Dec
Venus	327°33.8
Mars	211°22.0
Jupiter	269°58.2
Saturn	358°12.4
Mer.pass	
08:55	
16:39	
12:44	
06:52	
SHA	Dec
Venus	326°34.9
Mars	210°50.4
Jupiter	269°43.4
Saturn	358°09.4
Mer.pass	
08:55	
16:37	
12:41	
06:48	

Horizontal parallax	
Venus:	0.2
Mars:	0.1

Sun			Moon				
Mon	GHA	Dec	GHA	ν	Dec	d	HP
0	180°10.9	N22°56.1	28°38.8	12.7°	S22°33.4	-9.1'	54.2'
1	195°10.8	56.3	43°10.5	12.6°	22°42.4	-9.0'	54.2'
2	210°10.7	56.5	57°42.1	12.6°	22°51.3	-8.9'	54.2'
3	225°10.5	•• 56.7	72°13.6	12.5°	23°00.2	-8.8'	54.2'
4	240°10.4	56.9	86°45.0	12.4°	23°09.0	-8.7'	54.2'
5	255°10.3	57.1	101°16.4	12.3°	23°17.6	-8.6'	54.2'
6	270°10.2	N22°57.3	115°47.7	12.3°	S23°26.2	-8.5'	54.2'
7	285°10.1	57.5	130°18.9	12.2°	23°34.6	-8.4'	54.3'
8	300°09.9	57.7	144°50.1	12.1°	23°43.0	-8.3'	54.3'
9	315°09.8	•• 57.9	159°21.1	12.0°	23°51.2	-8.2'	54.3'
10	330°09.7	58.1	173°52.1	11.9°	23°59.4	-8.1'	54.3'
11	345°09.6	58.3	188°23.0	11.9°	24°07.4	-8.0'	54.3'
12	0°09.4	N22°58.5	202°53.8	11.8°	S24°15.4	-7.9'	54.3'
13	15°09.3	58.7	217°24.6	11.7°	24°23.2	-7.8'	54.3'
14	30°09.2	58.9	231°55.2	11.6°	24°30.9	-7.7'	54.3'
15	45°09.1	•• 59.1	246°25.8	11.5°	24°38.5	-7.6'	54.3'
16	60°08.9	59.3	260°56.3	11.5°	24°46.1	-7.5'	54.3'
17	75°08.8	59.5	275°26.8	11.4°	24°53.4	-7.3'	54.4'
18	90°08.7	N22°59.7	289°57.1	11.3°	S25°00.7	-7.2'	54.4'
19	105°08.6	22°59.9	304°27.4	11.2°	25°07.9	-7.1'	54.4'
20	120°08.5	23°00.1	318°57.6	11.2°	25°15.0	-7.0'	54.4'
21	135°08.3	•• 00.3	333°27.7	11.1°	25°21.9	-6.9'	54.4'
22	150°08.2	00.4	347°57.8	11.0°	25°28.7	-6.8'	54.4'
23	165°08.1	00.6	2°27.8	10.9°	25°35.5	-6.7'	54.4'
SD—15.7			4—0.2	SD—14.8			

	Aries			Venus			Mars			Jupiter			Saturn						
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec						
0	260°33.6	226°09.3	N11°02.8	110°52.4	N13°42.6	170°02.2	N23°16.6	258°40.1	S01°31.5										
1	275°36.1	241°09.3	03.6	125°53.5	42.1	185°04.0	16.6	273°42.4	31.5										
2	290°38.6	256°09.2	04.4	140°54.7	41.6	200°05.8	16.6	288°44.8	31.4										
3	305°41.0	271°09.2	•• 05.2	155°55.8	•• 41.0	215°07.7	•• 16.6	303°47.1	•• 31.4										
4	320°43.5	286°09.2	05.9	170°57.0	40.5	230°09.5	16.6	318°49.4	31.3										
5	335°46.0	301°09.2	06.7	185°58.1	40.0	245°11.4	16.6	333°51.8	31.3										
6	350°48.4	316°09.2	N11°07.5	200°59.3	N13°39.5	260°13.2	N23°16.7	348°54.1	S01°31.3										
7	5°50.9	331°09.2	08.3	216°00.4	39.0	275°15.1	16.7	3°56.5	31.2										
8	20°53.4	346°09.1	09.1	231°01.6	38.5	290°16.9	16.7	18°58.8	31.2										
9	35°55.8	1°09.1	•• 09.8	246°02.7	•• 38.0	305°18.8	•• 16.7	34°01.2	•• 31.1										
10	50°58.3	16°09.1	10.6	261°03.8	37.5	320°20.6	16.7	49°03.5	31.1										
11	66°00.7	31°09.1	11.4	276°05.0	37.0	335°22.5	16.7	64°05.9	31.1										
12	81°03.2	46°09.1	N11°12.2	291°06.1	N13°36.5	350°24.3	N23°16.7	79°08.2	S01°31.0										
13	96°05.7	61°09.0	13.0	306°07.3	36.0	5°26.1	16.7	94°10.5	31.0										
14	111°08.1	76°09.0	13.8	321°08.4	35.4	20°28.0	16.7	103°12.9	30.9										
15	126°10.6	91°09.0	•• 14.5	336°09.6	•• 34.9	35°29.8	•• 16.7	124°15.2	•• 30.9										
16	141°13.1	106°09.0	15.3	351°10.7	34.4	50°31.7	16.7	139°17.6	30.9										
17	156°15.5	121°09.0	16.1	6°11.9	33.9	65°33.5	16.7	154°19.9	30.8										
18	171°18.0	136°08.9	N11°16.9	21°13.0	N13°33.4	80°35.4	N23°16.7	169°22.3	S01°30.8										
19	186°20.5	151°08.9	17.7	36°14.1	32.9	95°37.2	16.7	184°24.6	30.7										
20	201°22.9	166°08.9	18.5	51°15.3	32.4	110°39.1	•• 16.7	199°27.0	30.7										
21	216°25.4	181°08.9	•• 19.2	66°16.4	•• 31.9	125°40.9	•• 16.7	214°29.3	•• 30.7										
22	231°27.8	196°08.8	20.0	81°17.6	31.4	140°42.8	16.7	229°31.7	30.6										
23	246°30.3	211°08.8	20.8	96°18.7	30.8	155°44.6	16.7	244°34.0	30.6										
Mer.pass.:06:37				v-0.0 d0.8 m-4.2				v1.1 d-0.5 m1.4				v1.8 d0.0 m-1.8				v2.3 d0.0 m1.1			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	261°32.8	226°08.8	N11°21.6	111°19.9	N13°30.3	170°46.4	N23°16.7	259°36.4	S01°30.5
1	276°35.2	241°08.7	22.4	126°21.0	29.8	185°48.3	16.7	274°38.7	30.5
2	291°37.7	256°08.7	23.1	141°22.2	29.3	200°50.1	16.7	289°41.1	30.5
3	306°40.2	271°08.7	.. 23.9	156°23.3	.. 28.8	215°52.0	.. 16.7	304°43.4	.. 30.4
4	321°42.6	286°08.7	24.7	171°24.4	28.3	230°53.8	16.7	319°45.7	30.4
5	336°45.1	301°08.6	25.5	186°25.6	27.8	245°55.7	16.7	334°48.1	30.3
6	351°47.6	316°08.6	N11°26.3	201°26.7	N13°27.3	260°57.5	N23°16.7	349°50.4	S01°30.3
7	6°50.0	331°08.6	27.1	216°27.9	26.7	275°59.4	16.7	4°52.8	30.3
8	21°52.5	346°08.5	27.8	231°29.0	26.2	291°01.2	16.7	19°55.1	30.2
9	36°55.0	1°08.5	.. 28.6	246°30.2	.. 25.7	306°03.1	.. 16.7	34°57.5	.. 30.2
10	51°57.4	16°08.5	29.4	261°31.3	25.2	321°04.9	16.7	49°59.8	30.2
11	66°59.9	31°08.4	30.2	276°32.4	24.7	336°06.7	16.7	65°02.2	30.1
12	82°02.3	46°08.4	N11°31.0	291°33.6	N13°24.2	351°08.6	N23°16.7	80°04.5	S01°30.1
13	97°04.8	61°08.3	31.7	306°34.7	23.7	6°10.4	16.7	95°06.9	30.0
14	112°07.3	76°08.3	32.5	321°35.9	23.2	21°12.3	16.7	110°09.2	30.0
15	127°09.7	91°08.3	.. 33.3	336°37.0	.. 22.6	36°14.1	.. 16.7	125°11.6	.. 30.0
16	142°12.2	106°08.2	34.1	351°38.2	22.1	51°16.0	16.7	140°13.9	29.9
17	157°14.7	121°08.2	34.9	6°39.3	21.6	66°17.8	16.7	155°16.3	29.9
18	172°17.1	136°08.2	N11°35.7	21°40.4	N13°21.1	81°19.7	N23°16.7	170°18.6	S01°29.9
19	187°19.6	151°08.1	36.4	36°41.6	20.6	96°21.5	16.7	185°21.0	29.8
20	202°22.1	166°08.1	37.2	51°42.7	20.1	111°23.3	16.7	200°23.3	29.8
21	217°24.5	181°08.0	.. 38.0	66°43.9	.. 19.6	126°25.2	.. 16.7	215°25.7	.. 29.7
22	232°27.0	196°08.0	38.8	81°45.0	19.0	141°27.0	16.7	230°28.0	29.7
23	247°29.5	211°07.9	39.6	96°46.1	18.5	156°28.9	16.7	245°30.4	29.7
Mer.pass.:06:33		v-0.0 d0.8 m-4.2		v1.1 d-0.5 m1.4		v1.8 d0.0 m-1.8		v2.3 d0.0 m1.1	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	262°31.9	226°07.9	N11°40.3	111°47.3	N13°18.0	171°30.7	N23°16.7	260°32.7	S01°29.6	
1	277°34.4	241°07.9	41.1	126°48.4	17.5	186°32.6	16.7	275°35.1	29.6	
2	292°36.8	256°07.8	41.9	141°49.6	17.0	201°34.4	16.7	290°37.4	29.6	
3	307°39.3	271°07.8	.. 42.7	156°50.7	.. 16.5	216°36.3	.. 16.7	305°39.8	.. 29.5	
4	322°41.8	286°07.7	43.5	171°51.9	15.9	231°38.1	16.7	320°42.1	29.5	
5	337°44.2	301°07.7	44.2	186°53.0	15.4	246°40.0	16.7	335°44.5	29.4	
6	352°46.7	316°07.6	N11°45.0	201°54.1	N13°14.9	261°41.8	N23°16.7	350°46.8	S01°29.4	
7	7°49.2	331°07.6	45.8	216°55.3	14.4	276°43.6	16.7	5°49.2	29.4	
8	22°51.6	346°07.5	46.6	231°56.4	13.9	291°45.5	16.7	20°51.5	29.3	
9	37°54.1	1°07.5	.. 47.4	246°57.6	.. 13.4	306°47.7	.. 16.7	35°53.9	.. 29.3	
10	52°56.6	16°07.4	48.1	261°58.7	12.8	321°49.2	16.7	50°56.2	29.3	
11	67°59.0	31°07.4	48.9	276°59.8	12.3	336°51.0	16.7	65°58.6	29.2	
12	83°01.5	46°07.3	N11°49.7	292°01.0	N13°11.8	351°52.9	N23°16.7	81°01.0	S01°29.2	
13	98°04.0	61°07.3	50.5	307°02.1	11.3	6°54.7	16.7	96°03.3	29.1	
14	113°06.4	76°07.2	51.3	322°03.3	10.8	21°56.6	16.7	111°05.7	29.1	
15	128°08.9	91°07.2	.. 52.0	337°04.4	.. 10.3	36°58.4	.. 16.7	126°08.0	.. 29.1	
16	143°11.3	106°07.1	52.8	352°05.6	09.7	52°00.2	16.7	141°10.4	29.0	
17	158°13.8	121°07.1	53.6	7°06.7	09.2	67°02.1	16.7	156°12.7	29.0	
18	173°16.3	136°07.0	N11°54.4	22°07.8	N13°08.7	82°03.9	N23°16.7	171°15.1	S01°29.0	
19	188°18.7	151°07.0	55.2	37°09.0	08.2	97°05.8	16.7	186°17.4	28.9	
20	203°21.2	166°06.9	55.9	52°10.1	07.7	112°07.6	16.7	201°19.8	28.9	
21	218°23.7	181°06.8	.. 56.7	67°11.3	.. 07.1	127°09.5	.. 16.7	216°22.1	.. 28.9	
22	233°26.1	196°06.8	57.5	82°12.4	06.6	142°11.3	16.7	231°24.5	28.8	
23	248°28.6	211°06.7	58.3	97°13.5	06.1	157°13.2	16.7	246°26.8	28.8	
Mer.pass.:06:29			v-0.0 d0.8 m-4.2		v1.1 d-0.5 m1.4		v1.8 d0.0 m-1.8		v2.4 d0.0 m1.1	

Stars		
SHA	Dec	
Alpheratz	357°34.5	29°13.7
Ankaa	353°06.9	-42°09.8
Schedar	349°30.8	56°40.3
Diphda	348°47.1	-17°50.7
Achernar	335°20.2	-57°06.2
Hamal	327°51.0	23°34.9
Polaris	314°15.6	89°22.1
Acamar	315°11.8	-40°12.0
Menkar	314°06.1	4°11.4
Mirfak	308°28.2	49°56.9
Aldebaran	290°39.6	16°33.6
Rigel	281°03.9	-8°10.3
Capella	280°21.9	46°01.4
Bellatrix	278°22.8	6°22.4
Elnath	278°01.8	28°37.7
Alnilam	275°37.7	-1°11.1
Betelgeuse	270°52.0	7°24.7
Canopus	263°52.8	-52°42.6
Sirius	258°26.3	-16°45.1
Adhara	255°06.0	-29°00.4
Procyon	244°50.8	5°09.6
Pollux	243°17.2	27°57.9
Avior	234°15.1	-59°35.6
Suhail	222°46.3	-43°32.3
Miaplacidus	221°38.8	-69°49.5
Alphard	217°47.6	-8°46.2
Regulus	207°34.2	11°50.6
Dubhe	193°40.7	61°37.1
Denebola	182°24.6	14°25.8
Gienah	175°43.2	-17°41.1
Acrux	172°59.6	-63°14.7
Gacrux	171°61.1	-57°15.6
Alioth	166°12.1	-55°49.5
Spica	158°21.8	-11°17.7
Alkaid	152°51.4	49°11.3
Hadar	148°35.1	-60°30.0
Menkent	147°57.0	-36°29.9
Arcturus	145°47.4	19°03.0
Rigel Kent.	139°39.3	-60°56.6
Kochab	137°18.8	74°03.2
Zuben'ubi	136°55.4	-16°08.9
Alphecca	126°03.1	26°37.8
Antares	112°15.0	-26°29.4
Atria	107°08.4	-69°04.4
Sabik	102°02.0	-15°45.4
Shaula	96°09.5	-37°07.3
Rasalhague	95°57.9	12°32.4
Eltanin	90°41.5	51°29.0
Kaus Aust.	83°31.7	-34°22.3
Vega	80°32.6	38°48.3
Nunki	75°47.0	-26°15.9
Altair	61°59.3	8°56.1
Peacock	53°04.7	-56°39.0
Deneb	49°25.2	45°22.1
Enif	33°38.3	9°59.4
Al Na'ir	27°32.3	-46°50.0
Fomalhaut	15°14.1	-29°29.1
Scheat	13°44.8	28°13.1
Markab	13°29.5	15°20.4

Sun		
h	GHA	Dec
0	180°01.9	N23°09.1
1	195°01.8	09.3
2	210°01.6	09.5
3	225°01.5	.. 09.6
4	240°01.4	09.8
5	255°01.3	09.9
6	270°01.1	N23°10.1
7	285°01.0	10.2
8	300°00.9	10.4
9	315°00.7	.. 10.5
10	330°00.6	10.7
11	345°00.5	10.8
12	0°00.3	N23°11.0
13	15°00.2	11.1
14	30°00.1	11.3
15	45°00.0	.. 11.4
16	59°59.8	11.6
17	74°59.7	11.7
18	89°59.6	N23°11.8
19	104°59.4	12.0
20	119°59.3	12.1
21	134°59.2	.. 12.3
22	149°59.1	12.4
23	164°58.9	12.6
SD.=15.7 d=0.2		

Moon		
GHA	ν	Dec
0	351°40.8	8.4°
1	367°08.2	8.4°

	Aries			Venus			Mars			Jupiter			Saturn		
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	263°31.1	226°06.7	N11°59.1	112°14.7	N13°05.6	172°15.0	N23°16.7	261°29.2	S01°28.7						
1	278°33.5	241°06.6	11°59.8	127°15.8	05.1	187°16.8	16.7	276°31.5	28.7						
2	293°36.0	256°06.5	12°00.6	142°17.0	04.0	202°18.7	16.7	291°33.9	28.7						
3	308°38.5	271°06.5	•• 01.4	157°18.1	•• 04.6	217°20.5	•• 16.7	306°36.3	•• 28.6						
4	323°40.9	286°06.4	02.2	172°19.2	03.5	232°22.4	16.7	321°38.6	28.6						
5	338°43.4	301°06.4	02.9	187°20.4	03.0	247°24.2	16.7	336°41.0	28.6						
6	353°45.8	316°06.3	N12°03.7	202°21.5	N13°02.5	262°26.1	N23°16.7	351°43.3	S01°28.5						
7	8°48.3	331°06.2	04.5	217°22.7	02.0	277°27.9	16.7	6°45.7	28.5						
8	23°50.8	346°06.2	05.3	232°23.8	01.4	292°29.8	16.7	21°48.0	28.5						
9	38°53.2	1°06.1	•• 06.1	247°24.9	•• 00.9	307°31.6	•• 16.7	36°50.4	•• 28.4						
10	53°55.7	16°06.0	06.8	262°26.1	13°04.0	322°33.4	16.7	51°52.7	28.4						
11	68°58.2	31°06.0	07.6	277°27.2	12°59.9	337°35.3	16.7	66°55.1	28.4						
12	84°00.6	46°05.9	N12°08.4	292°28.4	N12°59.4	352°37.1	N23°16.7	81°57.5	S01°28.3						
13	99°03.1	61°05.8	09.2	307°29.5	58.8	7°39.0	16.7	96°59.8	28.3						
14	114°05.6	76°05.8	10.0	322°30.6	58.3	22°40.8	16.7	112°02.2	28.2						
15	129°08.0	91°05.7	•• 10.7	337°31.8	•• 57.8	37°42.7	•• 16.7	127°04.5	•• 28.2						
16	144°10.5	106°05.6	11.5	352°32.9	57.3	52°44.5	16.7	142°06.9	28.2						
17	159°12.9	121°05.6	12.3	7°34.1	56.7	67°46.3	16.7	157°09.2	28.1						
18	174°15.4	136°05.5	N12°13.1	22°35.2	N12°56.2	82°48.2	N23°16.7	172°11.6	S01°28.1						
19	189°17.9	151°05.4	13.8	37°36.3	55.7	97°50.0	16.7	187°13.9	28.1						
20	204°20.3	166°05.4	14.6	52°37.5	55.2	112°51.9	16.7	202°16.3	28.0						
21	219°22.8	181°05.3	•• 15.4	67°38.6	•• 54.7	127°53.7	•• 16.7	217°18.7	•• 28.0						
22	234°25.3	196°05.2	16.2	82°39.7	54.1	142°55.6	16.7	232°21.0	28.0						
23	249°27.7	211°05.1	16.9	97°40.9	53.6	157°57.4	16.7	247°23.4	27.9						
Mer.pass.:06:25			v-0.1 d0.8 m-4.1			v1.1 d-0.5 m1.4			v1.8 d-0.0 m-1.8			v2.4 d0.0 m1.1			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	264°30.2	226°05.1	N12°17.7	112°42.0	N12°53.1	172°59.3	N23°16.7	262°25.7	S01°27.9	
1	279°32.7	241°05.0	18.5	127°43.2	52.6	188°01.1	16.7	277°28.1	27.9	
2	294°35.1	256°04.9	19.3	142°44.3	52.0	203°02.9	16.6	292°30.4	27.8	
3	309°37.6	271°04.8	•• 20.1	157°45.4	•• 51.5	218°04.8	•• 16.6	307°32.8	•• 27.8	
4	324°40.1	286°04.8	20.8	172°46.6	51.0	233°06.6	16.6	322°35.2	27.8	
5	339°42.5	301°04.7	21.6	187°47.7	50.5	248°08.5	16.6	337°37.5	27.7	
6	354°45.0	316°04.6	N12°22.4	202°48.9	N12°50.0	263°10.3	N23°16.6	352°39.9	S01°27.7	
7	9°47.4	331°04.5	23.2	217°50.0	49.4	278°12.2	16.6	7°42.2	27.7	
8	24°49.9	346°04.4	23.9	232°51.1	48.9	293°14.0	16.6	22°44.6	27.6	
9	39°52.4	1°04.4	•• 24.7	247°52.3	•• 48.4	308°15.9	•• 16.6	37°47.0	•• 27.6	
10	54°54.8	16°04.3	25.5	262°53.4	47.9	323°17.7	16.6	52°49.3	27.6	
11	69°57.3	31°04.2	26.3	277°54.5	47.3	338°19.5	16.6	67°51.7	27.5	
12	84°59.8	46°04.1	N12°27.0	292°55.7	N12°46.8	353°21.4	N23°16.6	82°54.0	S01°27.5	
13	100°02.2	61°04.0	27.8	307°56.8	46.3	8°23.2	16.6	97°56.4	27.5	
14	115°04.7	76°04.0	28.6	322°58.0	45.8	23°25.1	16.6	112°58.8	27.4	
15	130°07.2	91°03.9	•• 29.4	337°59.1	•• 45.2	38°26.9	•• 16.6	128°01.1	•• 27.4	
16	145°09.6	106°03.8	30.1	353°00.2	44.7	53°28.6	16.6	143°03.5	27.4	
17	160°12.1	121°03.7	30.9	8°01.4	44.2	68°30.6	16.6	158°05.8	27.3	
18	175°14.6	136°03.6	N12°31.7	23°02.5	N12°43.7	83°32.4	N23°16.6	173°08.2	S01°27.3	
19	190°17.0	151°03.5	32.5	38°03.6	43.1	98°34.3	16.6	188°10.6	27.3	
20	205°19.5	166°03.4	33.2	53°04.8	42.6	113°36.1	16.6	203°12.9	27.2	
21	220°21.9	181°03.4	•• 34.0	68°05.9	•• 42.1	128°38.0	•• 16.6	218°15.3	•• 27.2	
22	235°24.4	196°03.3	34.8	83°07.1	41.4	143°39.8	16.6	233°17.6	27.2	
23	250°26.9	211°03.2	35.6	98°08.2	41.0	158°41.7	16.6	248°20.0	27.1	
Mer.pass.:06:21			v-0.1 d0.8 m-4.1		v1.1 d-0.5 m1.4		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.1	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	265°29.3	226°03.1	N12°36.3	113°09.3	N12°40.5	173°43.5	N23°16.6	263°22.4	S01°27.1
1	280°31.8	241°03.0	37.1	128°10.5	40.0	188°45.3	16.6	278°24.7	27.1
2	295°34.3	256°02.9	37.9	143°11.6	39.5	203°47.2	16.6	293°27.1	27.0
3	310°36.7	271°02.8	•• 38.6	158°12.7	•• 38.9	218°49.0	•• 16.6	308°29.4	•• 27.0
4	325°39.2	286°02.7	39.4	173°13.9	38.4	233°50.9	16.6	323°31.8	27.0
5	340°41.7	301°02.6	40.2	188°15.0	37.9	248°52.7	16.6	338°34.2	26.9
6	355°44.1	316°02.5	N12°41.0	203°16.2	N12°37.4	263°54.6	N23°16.6	353°36.5	S01°26.9
7	10°46.6	331°02.4	41.7	218°17.3	36.8	278°56.4	16.6	8°38.9	26.9
8	25°49.0	346°02.4	42.5	233°18.4	36.5	293°58.3	16.6	23°41.3	26.8
9	40°51.5	1°02.3	•• 43.3	248°19.6	•• 35.8	309°00.1	•• 16.6	38°43.6	•• 26.8
10	55°54.0	16°02.2	44.1	263°20.7	35.2	324°01.9	16.6	53°46.0	26.8
11	70°56.4	31°02.1	44.8	278°21.8	34.7	339°03.8	16.6	68°48.3	26.7
12	85°58.9	46°02.0	N12°45.6	293°23.0	N12°34.2	354°05.6	N23°16.6	83°50.7	S01°26.7
13	101°01.4	61°01.9	46.4	308°24.1	33.7	9°07.5	16.6	98°53.1	26.7
14	116°03.8	76°01.8	47.1	323°25.2	33.1	24°09.3	16.6	113°55.4	26.6
15	131°06.3	91°01.7	•• 47.9	338°26.4	•• 32.6	39°11.2	•• 16.5	128°57.8	•• 26.6
16	146°08.8	106°01.6	48.7	353°27.5	32.1	54°13.0	16.5	144°00.2	26.6
17	161°11.2	121°01.5	49.5	8°28.7	31.5	69°14.8	16.5	159°02.5	26.5
18	176°13.7	136°01.4	N12°50.2	23°29.8	N12°31.0	84°16.7	N23°16.5	174°04.9	S01°26.5
19	191°16.2	151°01.3	51.0	38°30.9	30.5	99°18.5	16.5	189°07.2	26.5
20	206°18.6	166°01.2	51.8	53°32.1	30.0	114°20.4	16.5	204°09.6	26.5
21	221°21.1	181°01.1	•• 52.5	68°33.2	•• 29.4	129°22.2	•• 16.5	219°12.0	•• 26.4
22	236°23.5	196°01.0	53.3	83°34.3	28.9	144°24.1	16.5	234°14.3	26.4
23	251°26.0	211°00.9	54.1	98°35.5	28.4	159°25.9	16.5	249°16.7	26.4
Mer.pass.:06:17		v-0.1 d0.8 m-4.1		v1.1 d-0.5 m1.4		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.1	

Aries		Venus		Mars		Jupiter		Saturn	
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	266°28.5	226°00.8	N12°54.9	113°36.6	N12°27.8	174°27.7	N23°16.5	264°19.1	S01°26.3
1	281°30.9	241°00.7	55.6	128°37.7	27.3	189°29.6	16.5	279°21.4	26.3
2	296°33.4	256°00.5	56.4	143°38.9	26.8	204°31.4	16.5	294°23.8	26.3
3	311°35.9	271°00.4	•• 57.2	158°40.0	•• 26.3	219°33.3	•• 16.5	309°26.2	•• 26.2
4	326°38.3	286°00.3	57.9	173°41.1	25.7	234°35.1	16.5	324°28.5	26.2
5	341°40.8	301°00.2	58.7	188°42.3	25.2	249°37.0	16.5	339°30.9	26.2
6	356°43.3	316°00.1	N12°59.5	203°43.4	N12°24.7	264°38.8	N23°16.5	354°33.3	S01°26.1
7	11°45.7	331°00.0	13°00.2	218°44.6	24.1	279°40.6	16.5	9°35.6	26.1
8	26°48.2	345°59.9	01.0	233°45.7	23.6	294°42.5	16.5	24°38.0	26.1
9	41°50.7	0°59.8	•• 01.8	248°46.8	•• 23.1	309°44.4	•• 16.5	39°40.4	•• 26.1
10	56°53.1	15°59.7	02.5	263°48.0	22.5	324°46.2	16.5	54°42.7	26.0
11	71°55.6	30°59.6	03.3	278°49.1	22.0	339°48.0	16.5	69°45.1	26.0
12	86°58.0	45°59.5	N13°04.1	293°50.2	N12°21.5	354°49.9	N23°16.5	84°47.5	S01°26.0
13	102°00.5	60°59.3	04.8	308°51.4	20.9	9°51.7	16.5	99°49.8	25.9
14	117°03.0	75°59.2	05.6	323°52.5	20.4	24°53.6	16.5	114°52.2	25.9
15	132°05.4	90°59.1	•• 06.4	338°53.6	•• 19.9	39°55.4	•• 16.5	129°54.6	•• 25.9
16	147°07.9	105°59.0	07.1	353°54.8	19.4	54°57.2	16.4	144°56.9	25.8
17	162°10.4	120°58.9	07.9	8°55.9	18.8	69°59.1	16.4	159°59.3	25.8
18	177°12.8	135°58.8	N13°08.7	23°57.0	N12°18.3	85°00.9	N23°16.4	175°01.7	S01°25.8
19	192°15.3	150°58.6	09.5	38°58.2	17.8	100°02.8	16.4	190°04.0	25.8
20	207°17.8	165°58.5	10.2	53°59.3	17.2	115°04.6	16.4	205°06.4	25.7
21	222°20.2	180°58.4	•• 11.0	69°00.4	•• 16.7	130°06.5	•• 16.4	220°08.8	•• 25.7
22	237°22.7	195°58.3	11.8	84°01.7	16.2	145°08.3	16.4	235°11.1	25.7
23	252°25.1	210°58.2	12.5	99°02.6	15.6	160°10.1	16.4	250°13.5	25.6
Mer.pass.:06:13		v-0.1 d0.8 m-4.1		v1.1 d-0.5 m1.4		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.1	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	267°27.6	225°58.1	N13°13.3	114°03.8	N12°15.1	175°12.0	N23°16.4	265°15.9	S01°25.6
1	282°30.1	240°57.9	14.0	129°05.0	14.6	190°13.8	16.4	280°18.2	25.6
2	297°32.5	255°57.8	14.8	144°06.1	14.0	205°15.7	16.4	295°20.6	25.5
3	312°35.0	270°57.7	•• 15.6	159°07.2	•• 13.5	220°17.5	•• 16.4	310°23.0	•• 25.5
4	327°37.5	285°57.6	16.3	174°08.4	13.0	235°19.4	16.4	325°25.3	25.5
5	342°39.9	300°57.4	17.1	189°09.5	12.4	250°21.2	16.4	340°27.7	25.5
6	357°42.4	315°57.3	N13°17.9	204°10.6	N12°11.9	265°23.0	N23°16.4	355°30.1	S01°25.4
7	12°44.9	330°57.2	18.6	219°11.8	11.8	280°24.9	16.4	10°32.4	25.4
8	27°47.3	345°57.1	19.4	234°12.9	10.8	295°26.7	16.4	25°34.8	25.4
9	42°49.8	0°57.0	•• 20.2	249°14.0	•• 10.3	310°28.6	•• 16.4	40°37.2	•• 25.3
10	57°52.3	15°56.8	20.9	264°15.2	09.8	325°30.4	16.4	55°39.6	25.3
11	72°54.7	30°56.7	21.7	279°16.3	09.2	340°32.3	16.4	70°41.9	25.3
12	87°57.2	45°56.6	N13°22.5	294°17.4	N12°08.7	355°34.1	N23°16.3	85°44.3	S01°25.3
13	102°59.6	60°56.4	23.2	309°18.6	08.1	10°35.9	16.3	100°46.7	25.2
14	118°02.1	75°56.3	24.0	324°19.7	07.6	25°37.8	16.3	115°49.0	25.2
15	133°04.6	90°56.2	•• 24.7	339°20.8	•• 07.1	40°39.6	•• 16.3	130°51.4	•• 25.2
16	148°07.0	105°56.1	25.5	354°22.0	06.5	55°41.5	16.3	145°53.8	25.1
17	163°09.5	120°55.9	26.3	9°23.1	06.0	70°43.3	16.3	160°56.1	25.1
18	178°12.0	135°55.8	N13°27.0	24°24.2	N12°05.5	85°45.2	N23°16.3	175°58.5	S01°25.1
19	193°14.4	150°55.7	27.8	39°25.4	04.9	100°47.0	16.3	191°00.9	25.1
20	208°16.9	165°55.5	28.6	54°26.5	04.4	115°48.8	16.3	206°03.3	25.0
21	223°19.4	180°55.4	•• 29.3	69°27.6	•• 03.9	130°50.7	•• 16.3	221°05.6	•• 25.0
22	238°21.8	195°55.3	30.1	84°28.8	03.3	145°52.5	16.3	236°08.0	25.0
23	253°24.3	210°55.1	30.8	99°29.9	02.8	160°54.4	16.3	251°10.4	24.9
Mer.pass.:06:09		v-0.1 d0.8 m-4.1		v1.1 d-0.5 m1.4		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.1	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	268°26.7	225°55.0	N13°31.6	114°31.0	N12°02.3	175°56.2	N23°16.3	266°12.7	S01°24.9
1	283°29.2	240°54.9	32.4	129°32.2	01.7	190°58.1	16.3	281°15.1	24.9
2	298°31.7	255°54.7	33.1	144°33.3	01.2	205°59.9	16.3	296°17.5	24.9
3	313°34.1	270°54.6	•• 33.9	159°34.4	•• 00.6	221°01.7	•• 16.3	311°19.9	•• 24.8
4	328°36.6	285°54.4	34.6	174°35.6	12°00.1	236°03.6	16.3	326°22.2	24.8
5	343°39.1	300°54.3	35.4	189°36.7	11°59.6	251°05.4	16.3	341°24.6	24.8
6	358°41.5	315°54.2	N13°36.2	204°37.8	N11°59.0	266°07.3	N23°16.2	356°27.0	S01°24.7
7	13°44.0	330°54.0	36.9	219°39.0	58.5	281°09.1	16.2	11°29.4	24.7
8	28°46.5	345°53.9	37.7	234°40.1	58.0	296°11.0	16.2	26°31.7	24.7
9	43°48.9	0°53.8	•• 38.4	249°41.2	•• 57.4	311°12.8	•• 16.2	41°34.1	•• 24.7
10	58°51.4	15°53.6	39.2	264°42.4	56.9	326°14.6	16.2	56°36.5	24.6
11	73°53.9	30°53.5	40.0	279°43.5	56.3	341°16.5	16.2	71°38.8	24.6
12	88°56.3	45°53.3	N13°40.7	294°44.6	N11°55.8	356°18.3	N23°16.2	86°41.2	S01°24.6
13	103°58.8	60°53.2	41.5	309°45.7	55.3	11°20.2	16.2	101°43.6	24.6
14	119°01.2	75°53.0	42.2	324°46.9	54.7	26°42.0	16.2	116°46.0	24.5
15	134°03.7	90°52.9	•• 43.0	339°48.0	•• 54.2	41°23.9	•• 16.2	131°48.3	•• 24.5
16	149°06.2	105°52.8	43.8	354°49.1	53.7	56°25.7	16.2	146°50.7	24.5
17	164°08.6	120°52.6	44.5	9°50.3	53.1	71°27.5	16.2	161°53.1	24.4
18	179°11.1	135°52.5	N13°45.3	24°51.4	N11°52.8	86°29.4	N23°16.2	176°55.5	S01°24.4
19	194°13.6	150°52.3	46.0	39°52.5	52.0	101°31.2	16.2	191°57.8	24.4
20	209°16.0	165°52.2	46.8	54°53.7	51.5	116°33.1	16.2	207°00.2	24.4
21	224°18.5	180°52.0	•• 47.5	69°54.8	•• 51.0	131°34.9	•• 16.1	222°02.6	•• 24.4
22	239°21.0	195°51.9	48.3	84°55.9	50.4	146°36.7	16.1	237°05.0	24.3
23	254°23.4	210°51.7	49.0	99°57.1	49.9	161°38.6	16.1	252°07.3	24.3
Mer.pass.:06:05		v-0.1 d0.8 m-4.1		v1.1 d-0.5 m1.4		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

Stars	SHA	Dec
Alpheratz	357°34.4	29°13.7
Ankaa	353°06.8	-42°09.8
Schedar	349°30.8	56°40.4
Diphda	348°47.0	-17°50.7
Achernar	335°20.2	-57°06.2
Hamal	337°51.0	23°34.9
Polaris	314°13.6	89°22.1
Acamar	315°11.8	-40°12.0
Menkar	314°06.0	4°11.4
Mirfak	308°28.2	49°56.9
Aldebaran	290°39.5	16°33.6
Rigel	281°03.9	-8°10.3
Capella	280°21.8	46°01.4
Bellatrix	278°22.8	6°22.4
Elmath	278°01.8	28°37.7
Anilam	275°37.7	-1°11.1
Betelgeuse	270°52.0	7°24.7
Canopus	263°52.8	-52°42.5
Sirius	258°26.3	-16°45.1
Adhara	255°06.0	-29°00.4
Procyon	244°50.8	5°09.6
Pollux	243°17.2	27°57.9
Avior	234°15.1	-59°35.6
Suhail	222°46.4	-43°32.3
Miaplacidus	221°38.9	-69°49.5
Alphard	217°47.6	-8°46.2
Regulus	207°34.2	11°50.6
Dubhe	193°40.7	61°37.1
Denebola	182°24.6	14°25.9
Genah	175°43.2	-17°41.1
Acrux	172°59.6	-63°14.7
Gacrux	171°51.2	-57°15.6
Alioth	166°12.5	55°49.5
Spica	158°21.8	-11°17.7
Alkaid	152°51.5	49°11.4
Hadar	148°35.1	-60°30.0
Menkent	147°57.0	-36°29.9
Arcturus	145°47.4	19°03.0
Rigil Kent.	139°39.4	-60°56.7
Kochab	137°18.9	74°03.2
Zuben'ubi	136°55.4	-16°07.9
Alphecca	126°03.1	26°37.8
Antares	112°15.0	-26°29.4
Atria	107°08.4	-69°04.5
Sabik	102°02.0	-15°45.4
Shaula	96°09.5	-37°07.4
Rasalhague	95°57.9	12°32.5
Eltanin	90°41.5	51°29.1
Kaus Aust.	83°31.6	-34°22.3
Vega	80°32.6	38°48.3
Nunki	75°46.9	-26°15.9
Altair	61°59.3	8°56.1
Peacock	53°04.7	-56°39.0
Deneb	49°25.2	45°22.1
Enif	33°38.3	9°59.4
Al Na'ir	27°32.2	-46°50.0
Fomalhaut	15°14.0	-29°29.1
Scheat	13°44.8	28°13.1
Markab	13°29.5	15°20.5

Jun 18 Wed		SHA	Mer.pass
Venus	319°32.3	08:56	
Mars	207°08.1	16:24	
Jupiter	267°59.3	12:21	
Saturn	357°50.6	06:22	
Jun 19 Thu		SHA	Mer.pass
Venus	318°30.4	08:56	
Mars	206°36.2	16:23	
Jupiter	267°44.4	12:18	
Saturn	357°48.3	06:18	
Jun 20 Fri		SHA	Mer.pass
Venus	317°28.2	08:56	
Mars	206°04.3	16:21	
Jupiter	267°29.5	12:15	
Saturn	357°46.0	06:14	
Horizontal parallax			
Venus:	0.2		
Mars:	0.1		

Sun			Moon				
Wed	GHA	Dec	GHA	ν	Dec	d	HP
0	179°42.8	N23°24.3	278°28.8	13.1°	S05°40.8	16.0'	58.2'
1	194°42.6	24.3	293°00.9	13.1°	05°24.8	16.0'	58.3'
2	209°42.5	24.4	307°33.1	13.1°	05°08.7	16.1'	58.3'
3	224°42.4	.. 24.4	322°05.2	13.1°	04°52.6	16.1'	58.3'
4	239°42.2	24.5	336°37.3	13.1°	04°36.5	16.2'	58.3'
5	254°42.1	24.6	351°09.4	13.1°	04°20.3	16.2'	58.4'
6	269°41.9	N23°24.6	5°41.5	13.1°	S04°04.1	16.2'	58.4'
7	284°41.8	24.6	20°13.6	13.1°	03°47.9	16.2'	58.4'
8	299°41.7	24.7	34°45.7	13.1°	03°31.6	16.3'	58.4'
9	314°41.5	.. 24.7	49°17.8	13.1°	03°15.3	16.3'	58.5'
10	329°41.4	24.8	63°49.9	13.1°	02°59.0	16.3'	58.5'
11	344°41.3	24.8	78°21.9	13.1°	02°42.7	16.4'	58.5'
12	359°41.1	N23°24.9	92°54.0	13.0°	S02°26.3	16.4'	58.5'
13	14°41.0	24.9	107°26.0	13.0°	02°09.9	16.4'	58.6'
14	29°40.9	25.0	121°58.1	13.0°	01°53.4	16.4'	58.6'
15	44°40.7	.. 25.0	136°30.1	13.0°	01°37.0	16.5'	58.6'
16	59°40.6	25.1	151°02.1	13.0°	01°20.5	16.5'	58.6'
17	74°40.4	25.1	165°34.0	13.0°	01°04.0	16.5'	58.7'
18	89°40.3	N23°25.1	180°06.0	12.9°	S00°47.5	16.5'	58.7'
19	104°40.2	25.2	194°37.9	12.9°	00°31.0	16.5'	58.7'
20	119°40.0	25.2	209°09.8	12.9°	S00°14.4	16.6'	58.7'
21	134°39.9	.. 25.3	223°41.7	12.9°	N00°02.1	16.6'	58.8'
22	149°39.8	25.3	238°13.6	12.8°	00°18.7	16.6'	58.8'
23	164°39.6	25.3	252°45.4	12.8°	00°35.3	16.6'	58.8'
SD = -15.7			d = 0.1		SD = -16.0		

Aries		Venus		Mars		Jupiter		Saturn	
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	269°25.9	225°51.6	N13°49.8	114°58.2	N11°49.3	176°40.4	N23°16.1	267°09.7	S01°24.3
1	284°28.4	240°51.4	50.6	129°59.3	48.8	191°42.3	16.1	282°12.1	24.2
2	299°30.8	255°51.3	51.3	145°00.6	48.3	206°44.1	16.1	297°14.5	24.2
3	314°33.3	270°51.1	•• 52.1	160°01.6	•• 47.7	221°46.0	•• 16.1	312°16.8	•• 24.2
4	329°35.7	285°51.0	52.8	175°02.7	47.2	236°47.8	16.1	327°19.2	24.2
5	344°38.2	300°50.8	53.6	190°03.8	46.6	251°49.6	16.1	342°21.6	24.1
6	359°40.7	315°50.7	N13°54.3	205°05.0	N11°46.1	266°51.5	N23°16.1	357°24.0	S01°24.1
7	14°43.1	330°50.5	55.1	220°06.1	45.6	281°53.3	16.1	12°26.3	24.1
8	29°45.6	345°50.3	55.8	235°07.2	45.0	296°55.2	16.1	27°28.7	24.1
9	44°48.1	0°50.2	•• 56.6	250°08.4	•• 44.5	311°57.0	•• 16.1	42°31.1	•• 24.0
10	59°50.5	15°50.0	57.3	265°09.5	43.9	326°58.9	16.1	57°33.5	24.0
11	74°53.0	30°49.9	58.1	280°10.6	43.4	342°00.7	16.0	72°35.9	24.0
12	89°55.5	45°49.7	N13°58.9	295°11.8	N11°42.8	357°02.5	N23°16.0	87°38.2	S01°23.9
13	104°57.9	60°49.6	13°59.6	310°12.9	42.3	12°04.4	16.0	102°40.6	23.9
14	120°00.4	75°49.4	14°00.4	325°14.0	41.8	27°06.2	16.0	117°43.0	23.9
15	135°02.8	90°49.2	•• 01.1	340°15.1	•• 41.2	42°08.1	•• 16.0	132°45.4	•• 23.9
16	150°05.3	105°49.1	01.9	355°16.3	40.7	57°09.9	16.0	147°47.7	23.8
17	165°07.8	120°48.9	02.6	10°17.4	40.1	72°11.8	16.0	162°50.1	23.8
18	180°10.2	135°48.8	N14°03.4	25°18.5	N11°39.6	87°13.6	N23°16.0	177°52.5	S01°23.8
19	195°12.7	150°48.6	04.1	40°19.7	39.1	102°15.4	16.0	192°54.9	23.8
20	210°15.2	165°48.4	04.9	55°20.8	38.5	117°17.3	16.0	207°57.3	23.7
21	225°17.6	180°48.3	•• 05.6	70°21.9	•• 38.0	132°19.1	•• 16.0	222°59.6	•• 23.7
22	240°20.1	195°48.1	06.4	85°23.0	37.4	147°21.0	16.0	238°02.0	23.7
23	255°22.6	210°48.0	07.1	100°24.2	36.9	162°22.8	16.0	253°04.4	23.7
Mer.pass.:06:01		v-0.2 d0.8 m-4.1		v1.1 d-0.5 m1.4		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	270°25.0	225°47.8	N14°07.9	115°25.3	N11°36.3	177°24.7	N23°16.0	268°06.8	S01°23.6
1	285°27.5	240°47.6	08.6	130°26.4	35.8	192°26.5	15.9	283°09.1	23.6
2	300°30.0	255°47.5	09.4	145°27.6	35.2	207°28.3	15.9	298°11.5	23.6
3	315°32.4	270°47.3	•• 10.1	160°28.7	•• 34.7	222°30.2	•• 15.9	313°13.9	•• 23.6
4	330°34.9	285°47.1	10.9	175°29.8	34.2	237°32.0	15.9	328°16.3	23.5
5	345°37.3	300°47.0	11.6	190°31.0	33.6	252°33.9	15.9	343°18.7	23.5
6	0°39.8	315°46.8	N14°12.4	205°32.1	N11°33.1	267°35.7	N23°15.9	358°21.0	S01°23.5
7	15°42.3	330°46.6	13.1	220°33.2	32.5	282°37.6	15.9	13°23.4	23.5
8	30°44.7	345°46.4	13.9	235°34.3	32.0	297°39.4	15.9	28°25.8	23.5
9	45°47.2	0°46.3	•• 14.6	250°35.5	•• 31.4	312°41.2	•• 15.9	43°28.2	•• 23.4
10	60°49.7	15°46.1	15.4	265°36.6	30.9	327°43.1	15.9	58°30.6	23.4
11	75°52.1	30°45.9	16.1	280°37.7	30.3	342°44.9	15.9	73°32.9	23.4
12	90°54.6	45°45.8	N14°16.8	295°38.9	N11°29.8	357°46.8	N23°15.9	88°35.3	S01°23.4
13	105°57.1	60°45.6	17.6	310°40.0	29.3	12°48.6	15.8	103°37.7	23.3
14	120°59.5	75°45.4	18.3	325°41.1	28.7	27°50.5	15.8	118°40.1	23.3
15	136°02.0	90°45.2	•• 19.1	340°42.2	•• 28.2	42°52.3	•• 15.8	133°42.5	•• 23.3
16	151°04.5	105°45.1	19.8	355°43.4	27.6	57°54.1	15.8	148°44.9	23.3
17	166°06.9	120°44.9	20.6	10°44.5	27.1	72°56.0	15.8	163°47.2	23.2
18	181°09.4	135°44.7	N14°21.3	25°45.6	N11°26.5	87°57.8	N23°15.8	178°49.6	S01°23.2
19	196°11.8	150°44.5	22.1	40°46.7	26.0	102°59.7	15.8	193°52.0	23.2
20	211°14.3	165°44.4	22.8	55°47.9	25.4	118°01.5	15.8	208°54.4	23.2
21	226°16.8	180°44.2	•• 23.6	70°49.0	•• 24.9	133°03.3	•• 15.8	223°56.8	•• 23.1
22	241°19.2	195°44.0	24.3	85°50.1	24.3	148°05.2	15.8	238°59.1	23.1
23	256°21.7	210°43.8	25.0	100°51.3	23.8	163°07.0	15.8	254°01.5	23.1
Mer.pass.:05:57		v-0.2 d0.7 m-4.1		v1.1 d-0.5 m1.4		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	271°24.2	225°43.6	N14°25.8	115°52.4	N11°23.3	178°08.9	N23°15.7	269°03.9	S01°23.1
1	286°26.6	240°43.5	26.5	130°53.5	22.7	193°10.7	15.7	284°06.3	23.1
2	301°29.1	255°43.3	27.3	145°54.6	22.2	208°12.6	15.7	299°08.7	23.0
3	316°31.6	270°43.1	•• 28.0	160°55.8	•• 21.6	223°14.4	•• 15.7	314°11.1	•• 23.0
4	331°34.0	285°42.9	28.8	175°56.9	21.1	238°16.2	15.7	329°13.4	23.0
5	346°36.5	300°42.7	29.5	190°58.0	20.5	253°18.1	15.7	344°15.8	23.0
6	1°39.0	315°42.6	N14°30.2	205°59.2	N11°20.0	268°19.9	N23°15.7	359°18.2	S01°22.9
7	16°41.4	330°42.4	31.0	221°00.3	19.4	283°21.8	15.7	14°20.6	22.9
8	31°43.9	345°42.2	31.7	236°01.4	18.9	298°23.6	15.7	29°23.0	22.9
9	46°46.3	0°42.0	•• 32.5	251°02.5	•• 18.3	313°25.5	•• 15.7	44°25.4	•• 22.9
10	61°48.8	15°41.8	33.2	266°03.7	17.8	328°27.3	15.7	59°27.7	22.8
11	76°51.3	30°41.6	33.9	281°04.8	17.2	343°29.1	15.6	74°30.1	22.8
12	91°53.7	45°41.4	N14°34.7	296°05.9	N11°16.7	358°31.0	N23°15.6	89°32.5	S01°22.8
13	106°56.2	60°41.3	35.4	311°07.0	16.1	13°32.8	15.6	104°34.9	22.8
14	121°58.7	75°41.1	36.2	326°08.2	15.6	28°34.7	15.6	119°37.3	22.8
15	137°01.1	90°40.9	•• 36.9	341°09.3	•• 15.0	43°36.5	•• 15.6	134°39.7	•• 22.7
16	152°03.6	105°40.7	37.6	356°10.4	14.5	58°38.4	15.6	149°42.1	22.7
17	167°06.1	120°40.5	38.4	11°11.5	13.9	73°40.2	15.6	164°44.4	22.7
18	182°08.5	135°40.3	N14°39.1	26°12.7	N11°13.8	88°42.0	N23°15.6	179°46.8	S01°22.7
19	197°11.0	150°40.1	39.8	41°13.8	12.4	103°43.9	15.6	194°49.2	22.6
20	212°13.5	165°39.9	40.6	56°14.9	12.3	118°45.7	15.6	209°51.6	22.6
21	227°15.9	180°39.7	•• 41.3	71°16.0	•• 11.7	133°47.6	•• 15.5	224°54.0	•• 22.6
22	242°18.4	195°39.5	42.1	86°17.2	11.2	148°49.4	15.5	239°56.4	22.6
23	257°20.8	210°39.3	42.8	101°18.3	10.6	163°51.2	15.5	254°58.8	22.6
Mer.pass.:05:53		v-0.2 d0.7 m-4.1		v1.1 d-0.5 m1.4		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

SHA	Dec
Alpheratz	357°34.4 29°13.7
Ankaa	353°06.8 -42°09.8
Schedar	349°30.7 56°40.4
Diphda	348°47.0 -17°50.7
Achernar	335°20.1 -57°06.2
Hamal	327°51.0 23°34.9
Polaris	314°12.2 89°22.0
Acamar	315°11.8 -40°12.0
Menkar	314°06.0 4°11.4
Mirfak	308°28.1 49°56.9
Aldebaran	290°39.5 16°33.6
Rigel	281°03.8 -8°10.3
Capella	280°21.8 46°01.4
Bellatrix	278°22.8 6°22.4
Elath	278°01.8 28°37.7
Anilam	275°37.7 -1°11.1
Betelgeuse	270°52.0 7°24.7
Canopus	263°52.8 -52°42.5
Sirius	258°26.3 -16°45.1
Adhara	255°06.0 -29°00.4
Procyon	244°50.8 5°09.6
Pollux	243°17.2 27°57.9
Avior	234°15.2 -59°35.6
Suhail	222°46.4 -43°32.3
Miaplacidus	221°38.9 -69°49.5
Alphard	217°47.6 -8°46.2
Regulus	207°34.2 11°50.6
Dubhe	193°40.7 61°37.1
Denebola	182°24.6 14°25.9
Gienah	175°43.2 -17°41.1
Acrux	172°59.6 -63°14.7
Gacrux	171°51.2 -57°15.6
Alioth	166°12.5 -55°49.5
Spica	158°21.8 -11°17.7
Alkaid	152°51.5 49°11.4
Hadar	148°35.2 -60°30.0
Menkent	147°57.0 -36°29.9
Arcturus	145°47.4 19°03.1
Rigel Kent.	139°39.4 -60°56.7
Kochab	137°19.0 74°03.2
Zuben'ubi	136°55.4 -16°08.9
Alphecca	126°03.1 -26°37.8
Antares	112°15.0 -26°29.4
Atria	107°08.4 -69°04.5
Sabik	102°02.0 -15°45.4
Shaula	96°09.4 -37°07.4
Rasalhague	95°57.9 12°32.5
Eltanin	90°41.5 51°29.1
Kaus Aust.	83°31.6 34°22.3
Vega	80°32.5 38°48.4
Nunki	75°46.9 -26°15.9
Altair	61°59.3 8°56.1
Peacock	53°04.6 -56°39.0
Deneb	49°25.2 45°22.1
Enif	33°38.2 9°59.5
Al Na'ir	27°32.2 -46°50.0
Fomalhaut	15°14.0 -29°29.1
Scheat	13°44.8 28°13.1
Markab	13°29.4 15°20.5

SHA	Dec
Jun 21 Sat	Mer.pass
Venus	316°25.7 08:57
Mars	205°32.3 16:19
Jupiter	267°14.5 12:12
Saturn	357°41.7 06:10
Jun 22 Sun	Mer.pass
Venus	315°22.8 08:57
Mars	205°00.3 16:17
Jupiter	266°59.6 12:09
Saturn	357°41.7 06:07
Jun 23 Mon	Mer.pass
Venus	314°19.5 08:57
Mars	204°28.2 16:15
Jupiter	266°44.7 12:06
Saturn	357°39.7 06:03
Horizontal parallax	
Venus:	0.2
Mars:	0.1

Sun			Moon				
Sat	GHA	Dec	GHA	ν	Dec	d	HP
0	179°32.9	N23°26.3	243°42.1	9.7'	N13°52.9	15.3'	59.9'
1	194°32.8	26.3	258°10.7	9.6'	14°08.2	15.3'	59.9'
2	209°32.6	26.3	272°39.3	9.5'	14°23.4	15.2'	59.9'
3	224°32.5	•• 26.3	287°07.7	9.4'	14°38.6	15.1'	59.9'
4	239°32.4	26.3	301°36.1	9.3'	14°53.7	15.0'	59.9'
5	254°32.2	26.3	316°04.4	9.2'	15°08.7	15.0'	60.0'
6	269°32.1	N23°26.3	330°32.5	9.1'	N15°23.6	14.9'	60.0'
7	284°32.0	26.3	345°00.6	9.0'	15°38.4	14.8'	60.0'
8	299°31.8	26.3	359°28.6	8.9'	15°53.2	14.7'	60.0'
9	314°31.7	•• 26.3	13°56.4	8.8'	16°07.9	14.6'	60.0'
10	329°31.6	26.3	28°24.2	8.7'	16°22.5	14.6'	60.0'
11	344°31.4	26.3	42°51.8	8.6'	16°37.0	14.5'	60.0'
12	359°31.3	N23°26.3	57°19.3	8.5'	N16°51.4	14.4'	60.1'
13	14°31.1	26.3	71°46.8	8.4'	17°05.7	14.3'	60.1'
14	29°31.0	26.3	86°14.1	8.3'	17°20.0	14.2'	60.1'
15	44°30.9	•• 26.2	100°41.3	8.2'	17°34.1	14.1'	60.1'
16	59°30.7	26.2	115°08.4	8.0'	17°48.1	14.0'	60.1'
17	74°30.6	26.2	129°35.4	7.9'	N18°02.1	13.9'	60.1'
18	89°30.5	N23°26.2	144°02.3	7.8'	N18°15.9	13.8'	60.1'
19	104°30.3	26.2	158°29.0	7.7'	N18°29.7	13.7'	60.2'
20	119°30.2	26.2	172°55.7	7.6'	18°43.3	13.6'	60.2'
21	134°30.0	•• 26.2	187°22.2	7.5'	18°56.8	13.5'	60.2'
22	149°29.9	26.2	201°48.6	7.4'	19°10.2	13.4'	60.2'
23	164°29.8	26.2	216°15.0	7.3'	N19°23.5	13.2'	60.2'
SD—15.7			SD—16.4				
4—0.0							

Aries			Venus			Mars			Jupiter			Saturn		
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	272°23.3	225°39.1	N14°43.5	116°19.4	N11°10.1	178°53.1	N23°15.5	270°01.1	S01°22.5					
1	287°25.8	240°39.0		44.3	131°20.6	09.5	193°54.9	15.5	285°03.5	22.5				
2	302°28.2	255°38.8		45.0	146°21.7	09.0	208°56.8	15.5	300°05.9	22.5				
3	317°30.7	270°38.6	•• 45.7	161°22.8	•• 08.4	223°58.6	•• 15.5	315°08.3	•• 22.5					
4	332°33.2	285°38.4	46.5	176°23.9	07.9	239°00.5	15.5	330°10.7	22.5					
5	347°35.6	300°38.2	47.2	191°25.1	07.3	254°02.3	15.5	345°13.1	22.4					
6	2°38.1	315°38.0	N14°47.9	206°26.2	N11°06.8	269°04.1	N23°15.5	0°15.5	S01°22.4					
7	17°40.6	330°37.8	48.7	221°27.3	06.2	284°06.0	15.4	15°17.9	22.4					
8	32°43.0	345°37.6	49.4	236°28.4	05.7	299°07.8	15.4	30°20.2	22.4					
9	47°45.5	0°37.4	•• 50.1	251°29.6	•• 05.1	314°09.7	•• 15.4	45°22.6	•• 22.3					
10	62°47.9	15°37.2	50.9	266°30.7	04.6	329°11.5	15.4	60°25.0	22.3					
11	77°50.4	30°37.0	51.6	281°31.8	04.0	344°13.3	15.4	75°27.4	22.3					
12	92°52.9	45°36.8	N14°52.3	296°32.9	N11°03.5	359°15.2	N23°15.4	90°29.8	S01°22.3					
13	107°55.3	60°36.6	53.1	311°34.1	02.9	14°17.0	15.4	105°32.2	22.3					
14	122°57.8	75°36.4	53.8	326°35.2	02.4	29°18.9	15.3	120°34.6	22.2					
15	138°00.3	90°36.2	•• 54.5	341°36.3	•• 01.8	44°20.7	•• 15.3	135°37.0	•• 22.2					
16	153°02.7	105°36.0	55.3	356°37.4	01.3	59°22.6	15.3	150°39.3	22.2					
17	168°05.2	120°35.7	56.0	11°38.6	00.7	74°24.4	15.3	165°41.7	22.2					
18	183°07.7	135°35.5	N14°56.7	26°39.7	N11°00.2	89°26.3	N23°15.3	180°44.1	S01°22.2					
19	198°10.1	150°35.3	57.5	41°40.8	10°59.6	104°28.1	15.3	195°46.5	22.1					
20	213°12.6	165°35.1	58.2	56°41.9	59.1	119°30.0	15.3	210°48.9	22.1					
21	228°15.1	180°34.9	•• 58.9	71°43.1	•• 58.5	134°31.8	•• 15.3	225°51.3	•• 22.1					
22	243°17.5	195°34.7	14°59.6	86°44.2	58.0	149°33.7	15.3	240°53.7	22.1					
23	258°20.0	210°34.5	15°00.4	101°45.3	57.4	164°35.5	15.3	255°56.1	22.1					
Mer.pass.:05:49			v-0.2 d0.7 m-4.1			v1.1 d-0.6 m1.4			v1.8 d-0.0 m-1.8			v2.4 d0.0 m1.0		

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	273°22.4	225°34.3	N15°01.1	116°46.4	N10°56.8	179°37.3	N23°15.3	270°58.5	S01°22.0	
1	288°24.9	240°34.1	01.8	131°47.6	56.3	194°39.2	15.3	286°00.9	22.0	
2	303°27.4	255°33.9	02.6	146°48.7	55.7	209°41.0	15.2	301°03.2	22.0	
3	318°29.8	270°33.7	•• 03.3	161°49.8	•• 55.2	224°42.9	•• 15.2	316°05.6	•• 22.0	
4	333°32.3	285°33.5	04.0	176°50.9	54.6	239°44.7	15.2	331°08.0	22.0	
5	348°34.8	300°33.2	04.7	191°52.1	54.1	254°46.6	15.2	346°10.4	21.9	
6	3°37.2	315°33.0	N15°05.5	206°53.2	N10°53.5	269°48.4	N23°15.2	1°12.8	S01°21.9	
7	18°39.7	330°32.8	06.2	221°54.3	53.0	284°50.2	15.2	16°15.2	21.9	
8	33°42.2	345°32.6	06.9	236°55.4	52.4	299°52.1	15.2	31°17.6	21.9	
9	48°44.6	0°32.4	•• 07.6	251°56.5	•• 51.9	314°53.9	•• 15.2	46°20.0	•• 21.9	
10	63°47.1	15°32.2	08.4	266°57.7	51.3	329°55.8	15.2	61°22.4	21.8	
11	78°49.9	30°32.0	09.1	281°58.8	50.8	344°57.6	15.1	76°24.8	21.8	
12	93°52.0	45°31.7	N15°09.8	296°59.9	N10°50.2	359°59.4	N23°15.1	91°27.2	S01°21.8	
13	108°54.5	60°31.5	10.5	312°01.0	49.6	15°01.3	15.1	106°29.6	21.8	
14	123°56.9	75°31.3	11.3	327°02.2	49.1	30°03.1	15.1	121°31.9	21.8	
15	138°59.4	90°31.1	•• 12.0	342°03.3	•• 48.5	45°05.0	•• 15.1	136°34.3	•• 21.8	
16	154°01.9	105°30.9	12.7	357°04.4	48.0	60°06.8	15.1	151°36.7	21.7	
17	169°04.3	120°30.7	13.4	12°05.5	47.4	75°08.7	15.1	166°39.1	21.7	
18	184°06.8	135°30.4	N15°14.2	27°06.7	N10°46.9	90°10.5	N23°15.1	181°41.5	S01°21.7	
19	199°09.3	150°30.2	14.9	42°07.8	46.3	105°12.3	15.1	196°43.9	21.7	
20	214°11.7	165°30.0	15.6	57°08.9	45.8	120°14.2	15.0	211°46.3	21.7	
21	229°14.2	180°29.8	•• 16.3	72°10.0	•• 45.2	135°16.0	•• 15.0	226°48.7	•• 21.6	
22	244°16.7	195°29.5	17.0	87°11.2	44.6	150°17.9	15.0	241°51.1	21.6	
23	259°19.1	210°29.3	17.8	102°12.3	44.1	165°19.7	15.0	256°53.5	21.6	
Mer.pass.:05:46			v-0.2 d0.7 m-4.1		v1.1 d-0.6 m1.4		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	274°21.6	225°29.1	N15°18.5	117°13.4	N10°43.5	180°21.6	N23°15.0	271°55.9	S01°21.6	
1	289°24.1	240°28.9	19.2	132°14.5	43.0	195°23.4	15.0	286°58.3	21.6	
2	304°26.5	255°28.6	19.9	147°15.6	42.4	210°25.2	15.0	302°00.7	21.6	
3	319°29.0	270°28.4	•• 20.6	162°16.8	•• 41.9	225°27.1	•• 15.0	317°03.1	•• 21.5	
4	334°31.4	285°28.2	21.4	177°17.9	41.3	240°28.9	15.0	332°05.5	21.5	
5	349°33.9	300°28.0	22.1	192°19.0	40.7	255°30.8	14.9	347°07.8	21.5	
6	4°36.4	315°27.7	N15°22.8	207°20.1	N10°40.2	270°32.6	N23°14.9	2°10.2	S01°21.5	
7	19°38.8	330°27.5	23.5	222°21.3	39.6	285°34.5	14.9	17°12.6	21.5	
8	34°41.3	345°27.3	24.2	237°22.4	39.1	300°36.3	14.9	32°15.0	21.4	
9	49°43.8	0°27.1	•• 25.0	252°23.5	•• 38.5	315°38.1	•• 14.9	47°17.4	•• 21.4	
10	64°46.2	15°26.6	25.7	267°24.6	38.0	330°40.0	14.9	62°19.8	21.4	
11	79°48.7	30°26.6	26.4	282°25.7	37.4	345°41.8	14.9	77°22.2	21.4	
12	94°51.2	45°26.4	N15°27.1	297°26.9	N10°36.8	0°43.7	N23°14.9	92°24.6	S01°21.4	
13	109°53.6	60°26.1	27.8	312°28.0	36.3	15°45.5	14.8	107°27.0	21.4	
14	124°56.1	75°25.9	28.5	327°29.1	35.7	30°47.4	14.8	122°29.4	21.3	
15	139°58.6	90°25.7	•• 29.2	342°30.2	•• 35.2	45°49.2	•• 14.8	137°31.8	•• 21.3	
16	155°01.0	105°25.4	30.0	357°31.4	34.6	60°51.0	14.8	152°34.2	21.3	
17	170°03.5	120°25.2	30.7	12°32.5	34.0	75°52.9	14.8	167°36.6	21.3	
18	185°05.9	135°25.0	N15°31.4	27°33.6	N10°33.5	90°54.7	N23°14.8	182°39.0	S01°21.3	
19	200°08.4	150°24.7	32.1	42°34.7	32.9	105°56.6	14.8	197°41.4	21.3	
20	215°10.9	165°24.5	32.8	57°35.8	32.4	120°58.4	14.8	212°43.8	21.2	
21	230°13.3	180°24.3	•• 33.5	72°37.0	•• 31.8	136°00.3	•• 14.7	227°46.2	•• 21.2	
22	245°15.8	195°24.0	34.2	87°38.1	31.2	151°02.1	14.7	242°48.6	21.2	
23	260°18.3	210°23.8	34.9	102°39.2	30.7	166°03.9	14.7	257°51.0	21.2	
Mer.pass.:05:42			v-0.2 d0.7 m-4.1		v1.1 d-0.6 m1.4		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

Stars		
SHA	Dec	
Alpheratz	357°34.4	29°13.7
Ankaa	353°06.8	-42°09.8
Schedar	349°30.7	56°40.4
Diphda	348°47.0	-17°50.7
Achernar	335°20.1	-57°06.1
Hamal	327°50.9	23°34.9
Polaris	314°10.6	89°22.0
Acamar	315°11.8	-40°11.9
Menkar	314°06.0	4°11.4
Mirfak	308°28.1	49°56.9
Aldebaran	290°39.5	16°33.6
Rigel	281°03.8	-8°10.3
Capella	280°21.8	46°01.4
Bellatrix	278°22.8	6°22.4
Elath	278°01.8	28°37.7
Anilam	275°37.7	-1°11.1
Betelgeuse	270°52.0	7°24.7
Canopus	263°52.8	-52°42.5
Sirius	258°26.3	-16°45.0
Adhara	255°05.9	-29°00.4
Procyon	244°50.8	5°09.6
Pollux	243°17.2	27°57.9
Avior	234°15.2	-59°35.6
Suhail	222°46.4	-43°32.3
Miaplacidus	221°39.8	-69°49.5
Alphard	217°47.6	-8°46.2
Regulus	207°34.2	11°50.6
Dubhe	193°40.7	61°37.1
Denebda	182°24.6	14°25.9
Gienah	175°43.2	-17°41.1
Acrux	172°59.7	-63°14.7
Gacrux	171°51.2	-57°15.6
Alioth	166°12.5	55°49.5
Spica	158°21.8	-11°17.7
Alkaid	152°51.5	49°11.4
Hadar	148°35.2	-60°30.0
Menkent	147°57.0	-36°29.9
Arcturus	145°47.4	19°03.1
Rigel Kent	139°39.4	-60°56.7
Kochab	137°19.0	74°03.2
Zuben'ubi	136°55.4	-16°08.9
Alphecca	126°03.1	26°37.8
Antares	112°15.0	-26°29.4
Atria	107°08.4	-69°04.5
Sabik	102°02.0	-15°45.4
Shaula	96°09.4	-37°07.4
Rasalhague	95°57.9	12°32.5
Eltanin	90°41.5	51°29.1
Kaus Aus	83°31.6	34°22.3
Vega	80°32.5	38°48.4
Nunki	75°46.9	-26°15.9
Altair	61°59.3	8°56.1
Peacock	53°04.6	-56°39.0
Deneb	49°25.2	45°22.1
Enif	37°38.2	9°59.5
Al Na'ir	27°32.2	-46°50.0
Fomalhaut	15°14.0	-29°29.1
Scheat	13°44.7	28°13.1
Markab	13°29.4	15°20.5

Sun		
Tue	GHA	Dec
0	179°23.1	N23°24.6
1	194°23.0	24.

Aries			Venus			Mars			Jupiter			Saturn		
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	275°20.7	225°23.5	N15°35.7	117°40.3	N10°30.1	181°05.8	N23°14.7	272°53.4	S01°21.2					
1	290°23.2	240°23.3	36.4	132°41.4	29.6	196°07.6	14.7	287°55.8	21.2					
2	305°25.7	255°23.1	37.1	147°42.6	29.0	211°09.5	14.7	302°58.2	21.1					
3	320°28.1	270°22.8	•• 37.8	162°43.7	•• 28.4	226°11.3	•• 14.7	318°00.6	•• 21.1					
4	335°30.6	285°22.6	38.5	177°44.8	27.9	241°13.2	14.7	333°03.0	21.1					
5	350°33.1	300°22.3	39.2	192°45.9	27.3	256°15.0	14.6	348°05.4	21.1					
6	5°35.5	315°22.1	N15°39.9	207°47.1	N10°26.8	271°16.8	N23°14.6	3°07.8	S01°21.1					
7	20°38.0	330°29.9	40.6	222°48.2	26.2	286°18.7	14.6	18°10.2	21.1					
8	35°40.4	345°21.6	41.3	237°49.3	25.6	301°20.5	14.6	33°12.6	21.0					
9	50°42.9	0°21.4	•• 42.0	252°50.4	•• 25.1	316°22.4	•• 14.6	48°15.0	•• 21.0					
10	65°45.4	15°21.1	42.8	267°51.5	24.5	331°24.2	14.6	63°17.4	21.0					
11	80°47.8	30°20.9	43.5	282°52.7	24.0	346°26.1	14.6	78°19.8	21.0					
12	95°50.3	45°20.6	N15°44.2	297°53.8	N10°23.4	1°27.9	N23°14.5	93°22.2	S01°21.0					
13	110°52.8	60°20.4	44.9	312°54.9	22.8	16°29.7	14.5	108°24.6	21.0					
14	125°55.2	75°20.1	45.6	327°56.0	22.3	31°31.6	14.5	123°27.0	20.9					
15	140°57.7	90°19.9	•• 46.3	342°57.1	•• 21.7	46°33.4	•• 14.5	138°29.4	•• 20.9					
16	156°00.2	105°17.7	47.0	357°58.3	21.2	61°35.3	14.5	153°31.8	20.9					
17	171°02.6	120°19.4	47.7	12°59.4	20.6	76°37.1	14.5	168°34.2	20.9					
18	186°05.1	135°19.2	N15°48.4	28°00.5	N10°20.0	91°39.0	N23°14.5	183°36.6	S01°20.9					
19	201°07.6	150°18.9	49.1	43°01.6	19.5	106°40.8	14.5	198°39.0	20.9					
20	216°10.0	165°18.7	49.8	58°02.7	18.9	121°42.6	•• 14.4	213°41.4	20.9					
21	231°12.5	180°18.4	•• 50.5	73°03.9	•• 18.3	136°44.5	•• 14.4	228°43.8	•• 20.8					
22	246°14.9	195°18.2	51.2	88°05.0	17.8	151°46.3	14.4	243°46.2	20.8					
23	261°17.4	210°17.9	51.9	103°06.1	17.2	166°48.2	14.4	258°48.6	20.8					
Mer.pass.:05:38		v-0.2 d0.7 m-4.1			v1.1 d-0.6 m1.4			v1.8 d-0.0 m-1.8			v2.4 d0.0 m1.0			

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	276°19.9	225°17.6	N15°52.6	118°07.2	N10°16.7	181°50.0	N23°14.4	273°51.0	S01°20.8
1	291°22.3	240°17.4	53.3	133°08.3	16.1	196°51.9	14.4	288°53.4	20.8
2	306°24.8	255°17.1	54.0	148°09.5	15.0	211°53.7	14.4	303°55.8	20.8
3	321°27.3	270°16.9	•• 54.7	163°10.6	•• 15.5	226°55.5	•• 14.3	318°58.2	•• 20.8
4	336°29.7	285°16.6	55.4	178°11.7	14.4	241°57.4	14.3	334°00.6	20.7
5	351°32.2	300°16.4	56.1	193°12.8	13.8	256°59.2	14.3	349°03.0	20.7
6	6°34.7	315°16.1	N15°56.8	208°13.9	N10°13.3	272°01.1	N23°14.3	4°05.4	S01°20.7
7	21°37.1	330°15.9	57.5	223°15.1	12.7	287°02.9	14.3	19°07.8	20.7
8	36°39.6	345°15.6	58.2	238°16.2	12.1	302°04.8	14.3	34°10.2	20.7
9	51°42.0	0°15.3	•• 58.9	253°17.3	•• 11.6	317°06.6	•• 14.3	49°12.6	•• 20.7
10	66°44.5	15°15.1	15°59.6	268°18.4	11.0	332°08.5	14.2	64°15.0	20.7
11	81°47.0	30°14.8	16°00.3	283°19.5	10.5	347°10.3	14.2	79°17.4	20.6
12	96°49.4	45°14.6	N16°01.0	298°20.7	N10°09.9	2°12.1	N23°14.2	94°19.8	S01°20.6
13	111°51.9	60°14.3	01.7	313°21.8	09.3	17°14.0	14.2	109°22.2	20.6
14	126°54.4	75°14.0	02.4	328°22.9	08.8	32°15.8	14.2	124°24.6	20.6
15	141°56.8	90°13.8	•• 03.1	343°24.0	•• 08.2	47°17.7	•• 14.2	139°27.0	•• 20.6
16	156°59.3	105°13.5	03.8	358°25.1	07.6	62°19.5	14.2	154°29.4	20.6
17	172°01.8	120°13.3	04.5	13°26.2	07.1	77°21.4	14.1	169°31.8	20.6
18	187°04.2	135°13.0	N16°05.2	28°27.4	N10°06.5	92°23.2	N23°14.1	184°34.2	S01°20.5
19	202°06.7	150°12.7	05.9	43°28.5	05.9	107°25.0	14.1	199°36.6	20.5
20	217°09.2	165°12.5	06.6	58°29.6	05.4	122°26.9	14.1	214°39.0	20.5
21	232°11.6	180°12.2	•• 07.3	73°30.7	•• 04.8	137°28.7	•• 14.1	229°41.4	•• 20.5
22	247°14.1	195°11.9	08.0	88°31.8	04.2	152°30.6	14.1	244°43.8	20.5
23	262°16.5	210°11.7	08.7	103°33.0	03.7	167°32.4	14.1	259°46.2	20.5
Mer.pass.:05:34		v-0.3 d0.7 m-4.1		v1.1 d-0.6 m1.5		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	277°19.0	225°11.4	N16°09.3	118°34.1	N10°03.1	182°34.3	N23°14.0	274°48.7	S01°20.5	
1	292°21.5	240°11.1	10.0	133°35.2	02.5	197°36.1	14.0	289°51.1	20.4	
2	307°23.9	255°10.9	10.7	148°36.3	02.0	212°37.9	14.0	304°53.5	20.4	
3	322°26.4	270°10.6	•• 11.4	163°37.4	•• 01.4	227°39.8	•• 14.0	319°55.9	•• 20.4	
4	337°28.9	285°10.3	12.1	178°38.5	00.8	242°41.6	14.0	334°58.3	20.4	
5	352°31.3	300°10.1	12.8	193°39.7	10°00.3	257°43.5	14.0	350°00.7	20.4	
6	7°33.8	315°09.8	N16°13.5	208°40.8	N09°59.7	272°45.3	N23°14.0	5°03.1	S01°20.4	
7	22°36.3	330°09.5	14.2	223°41.9	59.1	287°47.2	13.9	20°05.5	20.4	
8	37°38.7	345°09.2	14.9	238°43.0	58.6	302°49.0	13.9	35°07.9	20.4	
9	52°41.2	0°09.0	•• 15.6	253°44.1	•• 58.0	317°50.9	•• 13.9	50°10.3	•• 20.3	
10	67°43.7	15°08.7	16.2	268°45.3	57.4	332°52.7	13.9	65°12.7	20.3	
11	82°46.1	30°08.4	16.9	283°46.4	56.9	347°54.5	13.9	80°15.1	20.3	
12	97°48.6	45°08.1	N16°17.6	298°47.5	N09°56.3	2°56.4	N23°13.9	95°17.5	S01°20.3	
13	112°51.0	60°07.9	18.3	313°48.6	55.7	17°58.2	13.8	110°19.9	20.3	
14	127°53.5	75°07.6	19.0	328°49.7	55.2	33°00.1	13.8	125°22.3	20.3	
15	142°56.0	90°07.3	•• 19.7	343°50.8	•• 54.6	48°01.9	•• 13.8	140°24.7	•• 20.3	
16	157°58.4	105°07.0	20.4	358°52.0	54.0	63°03.8	13.8	155°27.2	20.3	
17	173°00.9	120°06.8	21.0	13°53.1	53.5	78°05.6	13.8	170°29.6	20.2	
18	188°03.4	135°06.5	N16°21.7	28°54.2	N09°52.9	93°07.4	N23°13.8	185°32.0	S01°20.2	
19	203°05.8	150°06.2	22.4	43°55.3	52.3	108°09.3	13.8	200°34.4	20.2	
20	218°08.3	165°05.9	23.1	58°56.4	51.8	123°11.1	13.7	215°36.8	20.2	
21	233°10.8	180°05.7	•• 23.8	73°57.5	•• 51.2	138°13.0	•• 13.7	230°39.2	•• 20.2	
22	248°13.2	195°05.4	24.5	88°58.7	50.6	153°14.8	13.7	245°41.6	20.2	
23	263°15.7	210°05.1	25.1	103°59.8	50.1	168°16.7	13.7	260°44.0	20.2	
Mer.pass.:05:30			v-0.3 d0.7 m-4.1		v1.1 d-0.6 m1.5		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

SHA	Dec
Alpheratz	357°34.3
Ankaa	353°06.7
Schedar	349°30.6
Diphda	348°46.9
Achernar	335°20.1
Hamal	327°50.9
Polaris	314°09.3
Acamar	315°11.7
Menkar	314°06.0
Mirfak	308°28.1
Aldebaran	290°39.5
Rigel	281°03.8
Capella	280°21.8
Bellatrix	278°22.8
Elnath	278°01.7
Alnilam	275°37.7
Betelgeuse	270°52.0
Canopus	263°52.8
Sirius	258°26.2
Adhara	255°05.9
Procyon	244°50.7
Pollux	243°17.2
Avior	234°15.2
Suhail	222°46.4
Miaplacidus	221°39.0
Alphard	217°47.6
Regulus	207°34.2
Dubhe	193°40.8
Denebola	182°24.6
Gienah	175°43.2
Acrux	172°59.7
Gacrux	171°51.2
Alioth	166°12.5
Spica	158°21.8
Alkaid	152°51.5
Hadar	148°35.2
Menkent	147°57.0
Arcturus	145°47.4
Rigel Kent.	139°39.4
Kochab	137°19.0
Zuben'el	136°55.4
Alphecca	126°03.1
Antares	112°15.0
Atria	107°08.4
Sabik	102°02.0
Shaula	96°09.4
Rasalhague	95°57.8
Eltanin	90°41.5
Kaus Aust.	8

Aries		Venus		Mars		Jupiter		Saturn	
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	278°18.1	225°04.8	N16° 25.8	119°00.9	N09° 49.5	183°18.5	N23° 13.7	275°46.4	S01° 20.2
1	293°20.6	240°04.5	26.5	134°02.0	48.9	198°20.4	13.7	290°48.8	20.2
2	308°23.1	255°04.2	27.2	149°03.1	48.3	213°22.2	13.6	305°51.2	20.1
3	323°25.5	270°04.0	.. 27.9	164°04.2	.. 47.8	228°24.0	.. 13.6	320°53.7	.. 20.1
4	338°28.0	285°03.7	28.5	179°05.4	47.2	243°25.9	13.6	335°56.1	20.1
5	353°30.5	300°03.4	29.2	194°06.5	46.6	258°27.7	13.6	350°58.5	20.1
6	8°32.9	315°03.1	N16° 29.9	209°07.6	N09° 46.1	273°29.6	N23° 13.6	6°00.9	S01° 20.1
7	23°35.4	330°02.8	30.6	224°08.7	45.5	288°31.4	13.6	21°03.3	20.1
8	38°37.9	345°02.5	31.3	239°09.7	44.9	303°33.3	13.5	36°05.7	20.1
9	53°40.3	0°02.2	.. 31.9	254°10.9	.. 44.8	318°35.1	.. 13.5	51°08.1	.. 20.1
10	68°42.8	15°02.0	32.6	269°12.1	43.4	333°37.0	13.5	66°10.5	20.1
11	83°45.3	30°01.7	33.3	284°13.2	43.2	348°38.8	13.5	81°12.9	20.0
12	98°47.7	45°04.4	N16° 34.0	299°14.3	N09° 42.7	3°40.6	N23° 13.5	96°15.3	S01° 20.0
13	113°50.2	60°01.1	34.6	314°15.4	42.1	18°42.5	13.5	111°17.8	20.0
14	128°52.6	75°00.8	35.3	329°16.5	41.5	33°44.3	13.4	126°20.2	20.0
15	143°55.1	90°00.5	.. 36.0	344°17.6	.. 40.9	48°46.2	.. 13.4	141°22.6	.. 20.0
16	158°57.6	105°00.2	36.7	359°18.8	40.4	63°48.0	13.4	156°25.0	20.0
17	174°00.0	119°59.9	37.3	14°19.9	39.8	78°49.9	13.4	171°27.4	20.0
18	189°02.5	134°59.6	N16° 38.0	29°21.0	N09° 39.2	93°51.7	N23° 13.4	186°29.8	S01° 20.0
19	204°05.0	149°59.3	38.7	44°22.1	38.7	108°53.6	13.4	201°32.2	20.0
20	219°07.4	164°59.1	39.4	59°23.2	38.1	123°55.4	13.4	216°34.6	20.0
21	234°09.9	179°58.8	.. 40.0	74°24.3	.. 37.5	138°57.2	.. 13.3	231°37.0	.. 19.9
22	249°12.4	194°58.5	40.7	89°25.5	36.9	153°59.1	13.3	246°39.5	19.9
23	264°14.8	209°58.2	41.4	104°26.6	36.4	169°00.9	13.3	261°41.9	19.9
Mer.pass.:05:26		v-0.3 d0.7 m-4.0		v1.1 d-0.6 m1.5		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	279°17.3	224°57.9	N16° 42.1	119°27.7	N09° 35.8	184°02.8	N23° 13.3	276°44.3	S01° 19.9
1	294°19.8	239°57.6	42.7	134°28.8	35.2	199°04.6	13.3	291°46.7	19.9
2	309°22.2	254°57.3	43.4	149°29.9	34.7	214°06.5	13.3	306°49.1	19.9
3	324°24.7	269°57.0	.. 44.1	164°31.0	.. 34.1	229°08.3	.. 13.2	321°51.5	.. 19.9
4	339°27.1	284°56.7	44.7	179°32.1	33.5	244°10.2	13.2	336°53.9	19.9
5	354°29.6	299°56.4	45.4	194°33.3	32.9	259°12.0	13.2	351°56.4	19.9
6	9°32.1	314°56.1	N16° 46.1	209°34.4	N09° 32.4	274°13.8	N23° 13.2	6°58.8	S01° 19.9
7	24°34.5	329°55.8	46.7	224°35.5	31.8	289°15.7	13.2	22°01.2	19.8
8	39°37.0	344°55.5	47.4	239°36.6	31.2	304°17.5	13.1	37°03.6	19.8
9	54°39.5	359°55.2	.. 48.1	254°37.7	.. 30.6	319°19.4	.. 13.1	52°06.0	.. 19.8
10	69°41.9	14°54.9	48.7	269°38.8	30.1	334°21.2	13.1	67°08.4	19.8
11	84°44.4	29°54.6	49.4	284°40.0	29.5	349°23.1	13.1	82°10.8	19.8
12	99°46.9	44°54.3	N16° 50.1	299°41.1	N09° 28.9	4°24.9	N23° 13.1	97°13.3	S01° 19.8
13	114°49.3	59°54.0	50.7	314°42.2	28.4	19°26.8	13.1	112°15.7	19.8
14	129°51.8	74°53.7	51.4	329°43.3	27.8	34°28.6	13.0	127°18.1	19.8
15	144°54.2	89°53.4	.. 52.1	344°44.4	.. 27.2	49°30.4	.. 13.0	142°20.5	.. 19.8
16	159°56.7	104°53.1	52.7	359°45.5	26.6	64°32.3	13.0	157°22.9	19.8
17	174°59.2	119°52.7	53.4	14°46.6	26.1	79°34.1	13.0	172°25.3	19.8
18	190°01.6	134°52.4	N16° 54.0	29°47.8	N09° 25.5	94°36.0	N23° 13.0	187°27.2	S01° 19.7
19	205°04.1	149°52.1	54.7	44°48.9	24.9	109°37.8	13.0	202°30.7	19.7
20	220°06.6	164°51.8	55.4	59°50.0	24.3	124°39.7	12.9	217°32.6	19.7
21	235°09.9	179°51.5	.. 56.0	74°51.1	.. 23.8	139°41.5	.. 12.9	232°35.0	.. 19.7
22	250°11.5	194°51.2	56.7	89°52.2	23.2	154°43.4	12.9	247°37.4	19.7
23	265°14.0	209°50.9	57.4	104°53.3	22.6	169°45.2	12.9	262°39.8	19.7
Mer.pass.:05:22		v-0.3 d0.7 m-4.0		v1.1 d-0.6 m1.5		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	280°16.4	224°50.6	N16° 58.0	119°54.4	N09° 22.0	184°47.1	N23° 12.9	277°42.2	S01° 19.7
1	295°18.9	239°50.3	58.7	134°55.6	21.5	199°48.9	12.9	292°44.7	19.7
2	310°21.4	254°50.0	16°59.3	149°56.7	20.9	214°50.7	12.8	307°47.1	19.7
3	325°23.8	269°49.7	17°00.0	164°57.8	.. 20.3	229°52.6	.. 12.8	322°49.5	.. 19.7
4	340°26.3	284°49.3	00.6	179°58.9	19.7	244°54.4	12.8	337°51.9	19.7
5	355°28.7	299°49.0	01.3	195°00.0	19.2	259°56.3	12.8	352°54.3	19.7
6	10°31.2	314°48.7	N17° 02.0	210°01.1	N09° 18.6	274°58.1	N23° 12.8	7°56.7	S01° 19.7
7	25°33.7	329°48.4	02.6	225°02.2	18.0	290°00.0	12.7	22°59.2	19.6
8	40°36.1	344°48.1	03.3	240°03.4	17.4	305°01.8	12.7	38°01.6	19.6
9	55°38.6	359°47.8	.. 03.9	255°04.5	.. 16.9	320°03.7	.. 12.7	53°04.0	.. 19.6
10	70°41.1	14°47.5	04.6	270°05.6	16.6	335°05.5	12.7	68°06.4	19.6
11	85°43.5	29°47.1	05.2	285°06.7	15.7	350°07.4	12.7	83°08.8	19.6
12	100°46.0	44°46.8	N17° 05.9	300°07.8	N09° 15.1	5°09.2	N23° 12.7	98°11.3	S01° 19.6
13	115°48.5	59°46.5	06.5	315°08.9	14.6	20°11.0	12.6	113°13.7	19.6
14	130°50.9	74°46.2	07.2	330°10.0	14.0	35°12.9	12.6	128°16.1	19.6
15	145°53.4	89°45.9	.. 07.8	345°11.1	.. 13.4	50°14.7	.. 12.6	143°18.5	.. 19.6
16	160°55.9	104°45.5	08.5	0°12.3	12.8	65°16.6	12.6	158°20.9	19.6
17	175°58.3	119°45.2	09.1	15°13.4	12.2	80°18.4	12.6	173°23.3	19.6
18	191°00.8	134°44.9	N17° 09.8	30°14.5	N09° 11.7	95°20.3	N23° 12.5	188°25.8	S01° 19.6
19	206°03.2	149°44.0	10.4	45°15.6	11.1	110°22.1	12.5	203°28.2	19.6
20	221°05.7	164°44.3	11.1	60°16.7	10.5	125°24.0	12.5	218°30.6	19.5
21	236°08.2	179°43.9	.. 11.7	75°17.8	.. 09.9	140°25.8	.. 12.5	233°33.0	.. 19.5
22	251°10.6	194°43.6	12.4	90°18.9	09.4	155°27.7	12.5	248°35.4	19.5
23	266°13.1	209°43.3	13.0	105°20.0	08.8	170°29.5	12.5	263°37.9	19.5
Mer.pass.:05:18		v-0.3 d0.7 m-4.0		v1.1 d-0.6 m1.5		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

Stars		SHA		Dec	
Alpheratz	357°34.3	29°13.7			
Ankaa	353°06.7	-42°09.8			
Schedar	349°30.6	56°40.4			
Diphda	348°46.9	-17°50.7			
Achernar	335°20.0	-57°06.1			
Hamal	327°50.9	23°34.9			
Polaris	314°08.1	89°22.0			
Acamar	315°11.7	-40°11.9			
Menkar	314°05.9	4°11.4			
Mirfak	308°28.0	49°56.9			
Aldebaran	290°39.5	16°33.6			
Rigel	328°03.8	-8°10.3			
Capella	280°21.8	46°01.3			
Bellatrix	278°22.8	6°22.4			
Elnath	278°01.7	28°37.7			
Anilam	275°37.7	-1°11.1			
Betelgeuse	270°52.0	7°24.7			
Canopus	263°52.8	-52°42.5			
Sirius	258°26.2	-16°45.0			
Adhara	255°05.9	-29°00.4			
Procyon	244°50.7	5°09.6			
Pollux	243°17.2	27°57.9			
Avior	234°15.2	-59°35.5			
Suhail	222°46.4	-43°32.2			
Miaplacidus	221°39.0	-69°49.5			
Alphard	217°47.6	-8°46.2			
Regulus	207°34.2	11°50.6			
Dubhe	193°40.8	61°37.1			
Denebola	180°24.6	14°25.9			
Gienah	175°43.2	-17°41.1			
Acrux	172°59.7	-63°14.7			
Gacrux	171°51.2	-57°15.6			
Alioth	166°12.6	55°49.5			
Spica	158°21.8	-11°17.7			
Alkaid	152°51.5	49°11.4			
Hadar	148°35.2	-60°30.0			
Menkent	147°57.0	-36°29.9			
Arcturus	145°47.4	19°03.1			
Rigil Kent.	139°39.4	-60°56.7			
Kochab	137°19.1	74°03.2			
Zuben'ubi	136°55.4	-16°08.9			
Alphecca	126°03.1	26°37.8			
Antares	112°15.0	-26°29.4			
Atria	107°08.4	-69°04.5			
Sabik	102°02.0	-15°45.4			
Shaula	96°09.4	-37°07.4			
Rasalhague	95°57.8	12°32.5			
Eltanin	90°41.5	51°29.1			
Kaus Aust.	83°31.6	-34°22.3			
Vega	80°32.5	38°48.4			
Nunki	75°46.9	-26°15.9			
Altair	61°59.2	8°56.1			
Peacock	53°04.5	-56°39.0			
Deneb	49°25.1	45°22.1			
Enif	33°38.2	9°59.5			
Al Na'ir	27°32.1	-46°50.0			
Fomalhaut	15°13.9	-29°29.0			
Scheat	13°44.7	28°13.2			
Markab	13°29.4	15°20.5			

Aries				Venus				Mars				Jupiter				Saturn			
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	281°15.6	224°43.0	N17°13.7	120°21.2	N09°08.2	185°31.3	N23°12.4	278°40.3	S01°19.5										
1	296°18.0	239°42.6	14.3	135°22.3	07.6	200°33.2	12.4	293°42.7	19.5										
2	311°20.5	254°42.3	15.0	150°23.4	07.0	215°35.0	12.4	308°45.1	19.5										
3	326°23.0	269°42.0	.. 15.6	165°24.5	.. 06.5	230°36.9	.. 12.4	323°47.6	.. 19.5										
4	341°25.4	284°41.7	16.3	180°25.6	05.9	245°38.7	12.4	338°50.0	19.5										
5	356°27.9	299°41.3	16.9	195°26.7	05.3	260°40.6	12.3	353°52.4	19.5										
6	11°30.3	314°41.0	N17°17.6	210°27.8	N09°04.7	275°42.4	N23°12.3	8°54.8	S01°19.5										
7	26°32.8	329°40.7	18.2	225°28.9	04.2	290°44.3	12.3	23°57.2	19.5										
8	41°35.3	344°40.3	18.8	240°30.1	03.6	305°46.1	12.3	38°59.7	19.5										
9	56°37.7	359°40.0	.. 19.5	255°31.2	.. 03.0	320°48.0	.. 12.3	54°02.1	.. 19.5										
10	71°40.2	14°39.7	20.1	270°32.3	02.4	335°49.8	12.2	69°04.5	19.5										
11	86°42.7	29°39.4	20.8	285°33.4	01.8	350°51.6	12.2	84°06.9	19.5										
12	101°45.1	44°39.0	N17°21.4	300°34.5	N09°01.3	5°53.5	N23°12.2	99°09.3	S01°19.5										
13	116°47.6	59°38.7	22.1	315°35.6	00.7	20°55.3	12.2	114°11.8	19.4										
14	131°50.1	74°38.4	22.7	330°36.7	09°00.1	35°57.2	12.2	129°14.2	19.4										
15	146°52.5	89°38.0	.. 23.3	345°37.8	08°59.5	50°59.0	.. 12.1	144°16.6	.. 19.4										
16	161°55.0	104°37.7	24.0	0°39.0	58.9	66°00.9	12.1	159°19.0	19.4										
17	176°57.5	119°37.4	24.6	15°40.1	58.4	81°02.7	12.1	174°21.5	19.4										
18	191°59.9	134°37.0	N17°25.3	30°41.2	N08°57.8	96°04.6	N23°12.1	189°23.9	S01°19.4										
19	207°02.4	149°36.7	25.9	45°42.3	57.2	111°06.4	12.1	204°26.3	19.4										
20	222°04.8	164°36.3	26.5	60°43.4	56.6	126°08.3	12.1	219°28.7	19.4										
21	237°07.3	179°36.0	.. 27.2	75°44.5	.. 56.0	141°10.1	.. 12.0	234°31.2	.. 19.4										
22	252°09.8	194°35.7	27.8	90°45.6	55.5	156°12.0	12.0	249°33.6	19.4										
23	267°12.2	209°35.3	28.4	105°46.7	54.9	171°13.8	12.0	264°36.0	19.4										
Mer.pass.:05:14				v-0.3 d0.6 m-4.0				v1.1 d-0.6 m1.5				v1.8 d-0.0 m-1.8				v2.4 d0.0 m1.0			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec						
0	282°14.7	224°35.0	N17°29.1	120°47.9	N08°54.3	186°15.6	N23°12.0	279°38.4	S01°19.4						
1	297°17.2	239°34.7	29.7	135°49.0	53.7	201°17.5	12.0	294°40.9	19.4						
2	312°19.6	254°34.3	30.3	150°50.1	53.1	216°19.3	11.9	309°43.3	19.4						
3	327°22.1	269°34.0	31.0	165°51.2	52.6	231°21.2	11.9	324°45.7	19.4						
4	342°24.6	284°33.6	31.6	180°52.3	52.0	246°23.0	11.9	339°48.1	19.4						
5	357°27.0	299°33.3	32.2	195°53.4	51.4	261°24.9	11.9	354°50.6	19.4						
6	12°29.5	314°33.0	N17°32.9	210°54.5	N08°50.8	276°26.7	N23°11.9	9°53.0	S01°19.4						
7	27°31.9	329°32.6	33.5	225°55.6	50.2	291°28.6	11.8	24°55.4	19.4						
8	42°34.4	344°32.3	34.1	240°56.7	49.7	306°30.4	11.8	39°57.8	19.4						
9	57°36.9	359°31.9	34.8	255°57.8	49.1	321°32.3	11.8	55°00.3	19.3						
10	72°39.3	14°31.6	35.4	270°59.0	48.5	336°34.1	11.8	70°02.7	19.3						
11	87°41.8	29°31.2	36.0	286°00.1	47.9	351°36.0	11.8	85°05.1	19.3						
12	102°44.3	44°30.9	N17°36.6	301°01.2	N08°47.3	6°37.8	N23°11.7	100°07.5	S01°19.3						
13	117°46.7	59°30.5	37.3	316°02.3	46.7	21°39.7	11.7	115°10.0	19.3						
14	132°49.2	74°30.2	37.9	331°03.4	46.2	36°41.5	11.7	130°12.4	19.3						
15	147°51.7	89°29.8	38.5	346°04.5	45.6	51°43.3	11.7	145°14.8	19.3						
16	162°54.1	104°29.5	39.2	1°05.6	45.0	66°45.2	11.7	160°17.2	19.3						
17	177°56.6	119°29.1	39.8	16°06.7	44.4	81°47.0	11.6	175°19.7	19.3						
18	192°59.1	134°28.8	N17°40.4	31°07.8	N08°43.8	96°48.9	N23°11.6	190°22.1	S01°19.3						
19	208°01.5	149°28.4	41.0	46°09.0	43.3	111°50.7	11.6	205°24.5	19.3						
20	223°04.0	164°28.1	41.7	61°10.1	42.7	126°52.6	11.6	220°26.9	19.3						
21	238°06.4	179°27.7	42.3	76°11.2	42.1	141°54.4	11.5	235°29.4	19.3						
22	253°08.9	194°27.4	42.9	91°12.3	41.5	156°56.3	11.5	250°31.8	19.3						
23	268°11.4	209°27.0	43.5	106°13.4	40.9	171°58.1	11.5	265°34.2	19.3						
Mer.pass.:05:10				v-0.3 d0.6 m-4.0				v1.1 d-0.0 m-1.8				v2.4 d0.0 m1.0			

Sat	GHA		GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	283°13.8	224°26.7	N17°44.1		121°14.5	N08°40.3	187°00.0	N23°11.5	280°36.7	S01°19.3	
1	298°16.3	239°26.3		44.8	136°15.6	39.8	202°01.8	11.5	295°39.1	19.3	
2	313°18.8	254°26.0		45.4	151°16.7	39.2	217°03.7	11.4	310°41.5	19.3	
3	328°21.2	269°25.6		46.0	166°17.8	38.6	232°05.5	11.4	325°43.9	19.3	
4	343°23.7	284°25.3		46.6	181°18.9	38.0	247°07.4	11.4	340°46.4	19.3	
5	358°26.2	299°24.9		47.2	196°20.1	37.4	262°09.2	11.4	355°48.8	19.3	
6	13°28.6	314°24.6	N17°47.9		211°21.2	N08°36.8	277°11.1	N23°11.4	10°51.2	S01°19.3	
7	28°31.1	329°24.2		48.5	226°22.3	36.2	292°12.9	11.3	25°53.7	19.3	
8	43°33.6	344°23.8		49.1	241°23.4	35.7	307°14.7	11.3	40°56.1	19.3	
9	58°36.0	359°23.5		49.7	256°24.5	35.1	322°16.6	11.3	55°58.5	19.3	
10	73°38.5	14°23.1		50.3	271°25.6	34.3	337°18.4	11.3	71°00.9	19.3	
11	88°40.9	29°22.8		51.0	286°26.7	33.9	352°20.3	11.3	86°03.4	19.3	
12	103°43.4	44°22.4	N17°51.6		301°27.8	N08°33.3	7°22.1	N23°11.2	101°05.8	S01°19.3	
13	118°45.9	59°22.0		52.2	316°28.9	32.7	22°24.0	11.2	116°08.2	19.3	
14	133°48.3	74°21.7		52.8	331°30.0	32.2	37°25.8	11.2	131°10.7	19.3	
15	148°50.8	89°21.3		53.4	346°31.1	31.6	52°27.7	11.2	146°13.1	19.3	
16	163°53.3	104°21.0		54.0	1°32.3	31.0	67°29.5	11.2	161°15.5	19.3	
17	178°55.7	119°20.6		54.6	16°33.4	30.4	82°31.4	11.1	176°18.0	19.3	
18	193°58.2	134°20.2	N17°55.2		31°34.5	N08°29.8	97°33.2	N23°11.1	191°20.4	S01°19.2	
19	209°00.7	149°19.9		55.9	46°35.6	29.2	112°35.1	11.1	206°22.8	19.2	
20	224°03.1	164°19.5		56.5	61°36.7	28.6	127°36.9	11.1	221°25.3	19.2	
21	239°05.6	179°19.1		57.1	76°37.8	28.1	142°38.8	11.0	236°27.7	19.2	
22	254°08.1	194°18.8		57.7	91°38.9	27.5	157°40.6	11.0	251°30.1	19.2	
23	269°10.5	209°18.4		58.3	106°40.0	26.9	172°42.5	11.0	266°32.5	19.2	
Mer.pass.:05:06				v-0.4 d0.6 m-4.0		v1.1 d-0.6 m1.5		v1.8 d-0.0 m-1.8		v2.4 d0.0 m1.0	

Stars			Sun			Moon				
SHA	Dec		h	GHA	Dec	GHA	ν	Dec	d	HP
Alpheratz	357°34.3	29°13.8	0	178°55.6	N22°57.2	89°41.0	16.7°	S07°04.2	-13.9'	54.5'
Ankaa	353°06.7	-42°09.8	1	193°55.5	57.0	104°16.7	16.7°	07°18.0	-13.9'	54.5'
Schedar	349°30.6	56°40.4	2	208°55.4	56.8	118°52.4	16.7°	07°31.9	-13.8'	54.5'
Diphda	348°46.9	-17°50.6	3	223°55.3	.. 56.6	133°28.1	16.7°	07°45.7	-13.8'	54.5'
Achernar	335°20.0	-57°06.1	4	238°55.2	56.4	148°03.8	16.7°	07°59.4	-13.7'	54.5'
Hamal	327°50.9	23°34.9	5	253°55.1	56.2	162°39.5	16.7°	08°13.2	-13.7'	54.5'
Polaris	314°06.8	89°22.0	6	268°54.9	N22°56.0	177°15.2	16.6°	S08°26.9	-13.7'	54.5'
Acamar	315°11.7	-40°11.9	7	283°54.8	55.8	191°50.8	16.6°	08°40.5	-13.6'	54.4'
Menkar	314°05.9	4°11.4	8	298°54.7	55.6	206°26.4	16.6°	08°54.1	-13.6'	54.4'
Mirfak	308°28.0	49°56.9	9	313°54.6	.. 55.4	221°02.0	16.6°	09°07.7	-13.6'	54.4'
Aldebaran	290°39.5	16°33.6	10	328°54.5	55.2	235°37.6	16.6°	09°21.3	-13.5'	54.4'
Rigel	281°03.8	-8°10.3	11	343°54.4	55.0	250°13.1	16.5°	09°34.8	-13.5'	54.4'
Capella	280°21.7	46°01.3	12	358°54.3	N22°54.8	264°48.6	16.5°	S09°48.2	-13.4'	54.4'
Bellatrix	278°22.8	6°22.4	13	13°54.1	54.5	279°24.1	16.5°	10°01.7	-13.4'	54.4'
Elnath	278°01.7	28°37.7	14	28°54.0	54.5	293°59.6	16.5°	10°15.0	-13.4'	54.4'
Anilam	275°37.6	-1°11.1	15	43°53.9	.. 54.1	308°35.0	16.4°	10°28.4	-13.3'	54.4'
Betelgeuse	270°52.0	7°24.7	16	58°53.8	53.9	323°10.5	16.4°	10°41.7	-13.3'	54.3'
Canopus	263°52.8	-52°42.4	17	73°53.7	53.7	337°45.8	16.4°	10°54.9	-13.2'	54.3'
Sirius	258°26.2	-16°45.0	18	88°53.6	N22°53.5	352°21.2	16.3°	S11°08.1	-13.2'	54.3'
Adhara	255°05.9	-29°00.3	19	103°53.5	53.3	6°56.5	16.3°	11°21.3	-13.1'	54.3'
Procyon	244°50.7	5°09.6	20	118°53.4	53.0	21°31.8	16.3°	11°34.4	-13.1'	54.3'
Pollux	243°17.2	27°57.9	21	133°53.2	.. 52.8	36°07.0	16.2°	11°47.5	-13.1'	54.3'
Avior	234°15.2	-59°35.5	22	148°53.1	52.6	50°42.3	16.2°	12°00.5	-13.0'	54.3'
Suhail	222°46.4	-43°32.2	23	163°53.0	52.4	65°17.4	16.2°	12°13.5	-13.0'	54.3'
Miaplacidus	221°39.0	-69°49.4		SD.=15.7	d=-0.2			S.D.=14.8		
Alphard	217°47.6	-8°46.2	Fri	GHA	Dec	GHA	ν	Dec	d	HP
Regulus	207°34.2	11°50.6	0	178°52.9	N22°52.2	79°52.6	16.1°	S12°26.5	-12.9'	54.3'
Dubhe	193°40.8	61°37.1	1	193°52.8	52.0	94°27.7	16.1°	12°39.3	-12.9'	54.3'
Denebola	182°24.6	14°25.9	2	208°52.7	51.7	109°02.7	16.0°	12°52.2	-12.8'	54.3'
Geniah	175°43.2	-17°41.1	3	223°52.6	.. 51.5	123°37.7	16.0°	13°05.0	-12.8'	54.3'
Acrux	172°59.7	-63°14.7	4	238°52.5	51.3	138°12.7	16.0°	13°17.7	-12.7'	54.2'
Gacrux	171°51.3	-57°15.6	5	253°52.4	51.1	152°47.7	15.9°	13°30.4	-12.7'	54.2'
Alloth	166°12.6	55°49.5	6	268°52.2	N22°50.8	167°22.6	15.9°	S13°43.0	-12.6'	54.2'
Spica	158°21.8	-11°17.7	7	283°52.1	50.6	181°57.4	15.8°	13°55.6	-12.5'	54.2'
Alkaid	152°61.5	49°11.4	8	298°52.0	50.4	196°32.2	15.8°	14°08.1	-12.5'	54.2'
Hadar	148°35.2	-60°30.0	9	313°51.9	.. 50.2	211°07.0	15.7°	14°20.6	-12.4'	54.2'
Menkent	147°57.0	-36°29.9	10	328°51.8	50.0	225°41.7	15.7°	14°33.0	-12.4'	54.2'
Arcturus	145°47.4	19°03.1	11	343°51.7	49.7	240°16.3	15.6°	14°45.3	-12.3'	54.2'
Rigel Kent.	139°39.4	-60°56.9	12	358°51.6	N22°49.5	254°50.9	15.6°	S14°57.6	-12.3'	54.2'
Kochab	137°19.1	74°03.2	13	13°51.5	49.3	269°25.5	15.5°	15°09.9	-12.2'	54.2'
Zuben al	136°55.4	-16°08.9	14	28°61.4	49.0	284°00.0	15.5°	15°22.0	-12.2'	54.2'
Alphecca	126°03.1	26°37.8	15	43°51.2	.. 48.8	298°34.4	15.4°	15°34.2	-12.1'	54.2'
Antares	112°15.0	-26°29.4	16	58°51.1	48.6	313°08.8	15.4°	15°46.2	-12.0'	54.2'
Atria	107°04.4	-69°04.5	17	73°51.0	48.4	327°43.2	15.3°	15°58.2	-12.0'	54.2'
Sabik	102°02.0	-15°45.4	18	88°50.9	N22°48.1	342°17.5	15.3°	S16°10.2	-11.9'	54.2'
Shaula	96°09.4	-37°07.4	19	103°50.8	47.9	356°51.7	15.2°	16°22.0	-11.8'	54.2'
Rasalhague	95°57.8	12°32.5	20	118°50.7	.. 47.7	11°25.9	15.2°	16°33.8	-11.8'	54.2'
Eltanin	90°41.5	51°29.1	21	133°50.6	.. 47.4	26°00.0	15.1°	16°45.6	-11.7'	54.2'
Kaus Aust.	83°31.6	-34°22.3	22	148°50.5	47.2	40°34.1	15.0°	16°57.3	-11.7'	54.2'
Vega	80°32.5	38°48.4	23	163°50.4	47.0	55°08.1	15.0°	17°08.9	-11.6'	54.2'
Nunki	75°46.9	-26°15.9		SD.=15.7	d=-0.2			S.D.=14.8		
Altair	61°59.2	8°56.1	Sat	GHA	Dec	GHA	ν	Dec	d	HP
Peacock	53°04.5	-56°39.0	0	178°50.3	N22°46.7	69°42.0	14.9°	S17°20.4	-11.5'	54.2'
Deneb	49°25.1	45°22.2	1	193°50.2	46.5	84°15.9	14.9°	17°31.9	-11.5'	54.2'
Enif	33°38.2	9°59.5	2	208°50.1	46.2	98°49.7	14.8°	17°43.4	-11.4'	54.2'
Al Na'ir	27°32.1	-46°50.0	3	223°49.9	.. 46.0	113°23.5	14.7°	17°54.7	-11.3'	54.2'
Fomalhaut	15°13.9	-29°29.0	4	238°49.8	45.8	127°57.2	14.7°	18°06.0	-11.2'	54.2'
Scheat	13°44.7	28°13.2	5	253°49.7	45.5	142°30.8	14.6°	18°17.2	-11.2'	54.2'
Markab	13°29.3	15°20.5	6	268°49.6	N22°45.3	157°04.4	14.5°	S18°28.3	-11.1'	54.2'
Jul 03 Thu	SHA	Mer.pass	7	283°49.5	45.1	171°37.9	14.5°	18°39.4	-11.0'	54.2'
Venus	303°27.4	09:01	8	298°49.4	44.8	186°11.3	14.4°	18°50.4	-11.0'	54.2'
Mars	199°05.6	15:57	9	313°49.3	.. 44.6	200°44.7	14.3°	19°01.3	-10.9'	54.2'
Jupiter	264°15.8	11:36	10	328°49.2	44.3	215°18.0	14.3°	19°12.1	-10.8'	54.2'
Saturn	357°24.7	05:24	11	343°49.1	44.1	229°51.2	14.2°	19°22.9	-10.7'	54.2'
Jul 04 Fri	SHA	Mer.pass	12	358°49.0	N22°43.8	244°24.4	14.1°	S19°33.6	-10.7'	54.2'
Venus	302°20.3	09:02	13	13°48.9	43.6	258°57.5	14.1°	19°44.2	-10.6'	54.2'
Mars	198°33.1	15:56	14	28°48.8	43.4	273°30.5	14.0°	19°54.8	-10.5'	54.2'
Jupiter	264°00.0	11:34	15	43°48.7	.. 43.1	288°03.5	13.9°	20°05.2	-10.4'	54.2'
Saturn	357°23.7	05:21	16	58°48.6	42.9	302°36.3	13.8°	20°15.6	-10.3'	54.2'
Jul 05 Sat	SHA	Mer.pass	17	73°48.5	42.6	317°09.2	13.8°	20°25.9	-10.3'	54.2'
Venus	301°12.9	09:02	18	88°48.3	N22°42.4	331°41.9	13.7°	S20°36.1	-10.2'	54.2'
Mars	198°07.7	15:54	19	103°48.2	42.1	346°14.6	13.6°	20°46.2	-10.1'	54.2'
Jupiter	263°46.1	11:31	20	118°48.1	41.9	0°47.1	13.6°	20°56.3	-10.0'	54.2'
Saturn	357°22.8	05:17	21	133°48.0	.. 41.6	15°19.7	13.5°	21°06.2	-9.9'	54.2'
Horizontal parallax			22	148°47.9	41.4	29°52.1	13.4°	21°16.1	-9.8'	54.2'
Venus:	0.2		23	163°47.8	41.1	44°24.5	13.3°	21°25.9	-9.7'	54.2'
Mars:	0.1			SD.=15.7	d=-0.2			S.D.=14.8		

	Aries			Venus			Mars			Jupiter			Saturn		
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	284°13.0	224°18.0	N17°58.9	121°41.1	N08°26.3	187°44.3	N23°11.0	281°35.0	S01°19.2						
1	299°15.4	239°17.7	17°59.5	136°42.2	25.7	202°46.2	11.0	296°37.4	19.2						
2	314°17.9	254°17.3	18°00.1	151°43.3	25.1	217°48.0	10.9	311°39.8	19.2						
3	329°20.4	269°16.9	•• 00.7	166°44.5	•• 24.5	232°49.9	•• 10.9	326°42.3	•• 19.2						
4	344°22.8	284°16.6	01.3	181°45.6	24.0	247°51.7	10.9	341°44.7	19.2						
5	359°25.3	299°16.2	01.9	196°46.7	23.4	262°53.5	10.9	356°47.1	19.2						
6	14°27.8	314°15.8	N18°02.5	211°47.8	N08°22.8	277°55.4	N23°10.9	11°49.6	S01°19.2						
7	29°30.2	329°15.5	03.2	226°48.9	22.2	292°57.2	10.8	26°52.0	19.2						
8	44°32.7	344°15.1	03.8	241°50.0	21.6	307°59.1	10.8	41°54.4	19.2						
9	59°35.2	359°14.7	•• 04.4	256°51.1	•• 21.0	323°00.9	•• 10.8	56°56.9	•• 19.2						
10	74°37.6	14°14.3	05.0	271°52.2	20.4	338°02.8	10.8	71°59.3	19.2						
11	89°40.1	29°14.0	05.6	286°53.3	19.9	353°04.6	10.7	87°01.7	19.2						
12	104°42.5	44°13.6	N18°06.2	301°54.4	N08°19.3	8°06.5	N23°10.7	102°04.2	S01°19.2						
13	119°45.0	59°13.2	06.8	316°55.5	18.7	23°08.3	10.7	117°06.6	19.2						
14	134°47.5	74°12.8	07.4	331°56.6	18.1	38°10.2	10.7	132°09.0	19.2						
15	149°49.9	89°12.5	•• 08.0	346°57.7	•• 17.5	53°12.0	•• 10.7	147°11.5	•• 19.2						
16	164°52.4	104°12.1	08.6	1°58.9	16.9	68°13.9	10.6	162°13.9	19.2						
17	179°54.9	119°11.7	09.2	17°00.0	16.3	83°15.7	10.6	177°16.3	19.2						
18	194°57.3	134°11.3	N18°09.8	32°01.1	N08°15.7	98°17.6	N23°10.6	192°18.8	S01°19.2						
19	209°59.8	149°11.0	10.4	47°02.2	15.1	113°19.4	10.6	207°21.2	19.2						
20	225°02.3	164°10.6	11.0	62°03.3	14.6	128°21.3	10.5	222°23.7	19.2						
21	240°04.7	179°10.2	•• 11.6	77°04.4	•• 14.0	143°23.1	•• 10.5	237°26.1	19.2						
22	255°07.2	194°09.8	12.1	92°05.5	13.4	158°25.0	10.5	252°28.5	19.2						
23	270°09.7	209°09.4	12.7	107°06.6	12.8	173°26.8	10.5	267°31.0	19.2						
Mer.pass.:05:02			v-0.4 d0.6 m-4.0			v1.1 d-0.6 m1.5			v1.8 d-0.0 m-1.8			v2.4 d0.0 m1.0			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	285°12.1	224°09.1	N18°13.3	122°07.7	N08°12.2	188°28.7	N23°10.5	282°33.4	S01°19.2					
1	300°14.6	239°08.7	13.9	137°08.8	11.6	203°30.5	10.4	297°35.8	19.2					
2	315°17.0	254°08.3	14.5	152°09.9	11.0	218°32.4	10.4	312°38.3	19.2					
3	330°19.5	269°07.9	•• 15.1	167°11.0	•• 10.4	233°34.2	•• 10.4	327°40.7	•• 19.2					
4	345°22.8	284°07.5	15.7	182°12.1	09.9	248°36.1	10.4	342°43.1	19.2					
5	0°24.4	299°07.1	16.3	197°13.3	09.3	263°37.9	10.3	357°45.6	19.2					
6	15°26.9	314°06.8	N18°16.9	212°14.4	N08°08.7	278°39.8	N23°10.3	12°48.0	S01°19.2					
7	30°29.4	329°06.4	17.5	227°15.5	08.1	293°41.6	10.3	27°50.4	19.2					
8	45°31.8	344°06.0	18.1	242°16.6	07.5	308°43.5	10.3	42°52.9	19.2					
9	60°34.3	359°05.6	•• 18.7	257°17.7	•• 06.9	323°45.3	•• 10.2	57°55.3	•• 19.2					
10	75°36.8	14°05.2	19.3	272°18.8	06.3	338°47.2	10.2	72°57.8	19.2					
11	90°39.2	29°04.8	19.8	287°19.9	05.7	353°49.0	10.2	88°00.2	19.2					
12	105°41.7	44°04.4	N18°20.4	302°21.0	N08°05.1	8°50.8	N23°10.2	103°02.6	S01°19.2					
13	120°44.2	59°04.1	21.0	317°22.1	04.5	23°52.7	10.2	118°05.1	19.2					
14	135°46.6	74°03.7	21.6	332°23.2	04.0	38°54.5	10.1	133°07.5	19.2					
15	150°49.1	89°03.3	•• 22.2	347°24.3	•• 03.4	53°56.4	•• 10.1	148°09.9	•• 19.2					
16	165°51.5	104°02.9	22.8	2°25.4	02.8	68°58.2	10.1	163°12.4	19.2					
17	180°54.0	119°02.5	23.4	17°26.5	02.2	84°00.1	10.1	178°14.8	19.2					
18	195°56.5	134°02.1	N18°23.9	32°27.6	N08°01.6	99°01.9	N23°10.0	193°17.3	S01°19.2					
19	210°58.9	149°01.7	24.5	47°28.7	01.0	114°03.8	10.0	208°19.7	19.2					
20	226°01.4	164°01.3	25.1	62°29.8	08°00.4	129°05.6	10.0	223°22.1	19.2					
21	241°03.9	179°00.9	•• 25.7	77°31.0	07°59.8	144°07.5	•• 10.0	238°24.6	•• 19.2					
22	256°06.3	194°00.5	26.3	92°32.1	09.2	159°09.3	09.9	253°27.0	19.2					
23	271°08.8	209°00.1	26.8	107°33.2	58.6	174°11.2	09.9	268°29.5	19.2					
Mer.pass.:04:58			v-0.4 d-0.6 m-4.0			v1.1 d-0.6 m1.5			v1.8 d-0.0 m-1.8			v2.4 d-0.0 m1.0		

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	286°11.3	223°59.7	N18°27.4	122°34.3	N07°58.0	189°13.0	N23°09.9	283°31.9	S01°19.2					
1	301°13.7	238°59.3	28.0	137°35.4	57.5	204°14.9	09.9	298°34.3	19.2					
2	316°16.2	253°58.9	28.6	152°36.5	56.9	219°16.7	09.9	313°36.8	19.3					
3	331°18.7	268°58.5	•• 29.2	167°37.6	•• 56.3	234°18.6	•• 09.8	328°39.2	•• 19.3					
4	346°21.1	283°58.2	29.7	182°38.7	55.7	249°20.4	09.8	343°41.7	19.3					
5	1°23.6	298°57.8	30.3	197°39.8	55.1	264°22.3	09.8	358°44.1	19.3					
6	16°26.0	313°57.4	N18°30.9	212°40.9	N07°54.5	279°24.1	N23°09.8	13°46.5	S01°19.3					
7	31°28.5	328°57.0	31.5	227°42.0	53.9	294°26.0	09.7	28°49.0	19.3					
8	46°31.0	343°56.6	32.0	242°43.1	53.3	309°27.8	09.7	43°51.4	19.3					
9	61°33.4	358°56.2	•• 32.6	257°44.2	•• 52.7	324°29.7	•• 09.7	58°53.9	•• 19.3					
10	76°35.9	13°55.8	33.2	272°45.3	52.1	339°31.5	09.7	73°56.3	19.3					
11	91°38.4	28°55.4	33.8	287°46.4	51.5	354°33.4	09.6	88°58.7	19.3					
12	106°40.8	43°55.0	N18°34.3	302°47.5	N07°50.9	9°35.2	N23°09.6	104°01.2	S01°19.3					
13	121°43.3	58°54.6	34.9	317°48.6	50.4	24°37.1	09.6	119°03.6	19.3					
14	136°45.8	73°54.1	35.5	332°49.7	49.8	39°38.9	09.6	134°06.8	19.3					
15	151°48.2	88°53.7	•• 36.1	347°50.9	•• 49.2	54°40.8	•• 09.5	149°08.5	•• 19.3					
16	166°50.7	103°53.3	36.6	2°52.0	48.6	69°42.6	09.5	164°11.0	19.3					
17	181°53.1	118°52.9	37.2	17°53.1	48.0	84°44.5	09.5	179°13.4	19.3					
18	196°55.6	133°52.5	N18°37.8	32°54.2	N07°47.4	99°46.3	N23°09.5	194°15.8	S01°19.3					
19	211°58.1	148°52.1	38.3	47°55.3	46.8	114°48.2	09.4	209°18.3	19.3					
20	227°00.5	163°51.7	38.9	62°56.4	46.2	129°50.0	09.4	224°20.7	19.3					
21	242°03.0	178°51.3	•• 39.5	77°57.5	•• 45.6	144°51.9	•• 09.4	239°23.2	•• 19.3					
22	257°05.5	193°50.9	40.0	92°58.6	45.0	159°53.7	09.4	254°25.6	19.3					
23	272°07.9	208°50.5	40.6	107°59.7	44.4	174°55.6	09.4	269°28.1	19.3					
Mer.pass.:04:54			v-0.4 d0.6 m-4.0			v1.1 d-0.6 m1.5			v1.8 d-0.0 m-1.8			v2.4 d-0.0 m1.0		

	Stars	
	SHA	Dec
Alpheratz	357° 34.3	29° 13.8
Ankaa	353° 06.7	-42° 09.8
Schedar	349° 30.5	56° 40.4
Diphda	348° 46.9	-17° 50.6
Achernar	335° 20.0	-57° 06.1
Hamal	327° 50.8	23° 34.9
Polaris	314° 05.2	89° 22.0
Acamar	315° 11.7	-40° 11.9
Menkar	314° 05.9	4° 11.4
Mirfak	308° 28.0	49° 56.9
Aldebaran	290° 39.4	16° 33.6
Rigel	281° 03.8	-8° 10.2
Capella	280° 21.7	46° 01.3
Bellatrix	278° 22.7	6° 22.4
Elnath	278° 01.7	28° 37.7
Alnilam	275° 37.6	-1° 11.1
Betelgeuse	270° 52.0	7° 24.7
Canopus	263° 52.8	-52° 42.4
Sirius	258° 26.2	-16° 45.0
Adhara	255° 05.9	-29° 00.3
Procyon	244° 50.7	5° 09.6
Pollux	243° 17.2	27° 57.9
Avior	234° 15.2	-59° 35.5
Suhail	222° 46.4	-43° 32.2
Miaplacidus	221° 39.0	-69° 49.4
Alphard	217° 47.6	-8° 46.1

Dubhe	193°40.6	61°37.1
Denebola	182°24.8	14°25.9
Gienah	175°43.2	-17°41.1
Acrux	172°59.8	-63°14.7
Gacrux	171°61.3	-57°15.6
Alioth	166°12.1	55°49.5
Spica	158°21.8	-11°17.7
Alkaid	152°61.6	49°11.4
Hadar	148°35.2	-60°30.0
Menkent	147°67.0	-36°29.9
Arcturus	145°47.4	19°03.1
Rigel Kent.	139°39.4	-60°56.7
Kochab	137°19.2	74°03.3
Zuben'ubi	136°55.4	-16°08.9
Alphecca	126°03.1	26°37.8
Antares	112°15.0	-26°29.4
Atria	107°08.4	-69°04.5
Sabik	106°02.0	-15°45.4
Shaula	96°09.4	-37°07.4
Rasalhague	95°67.8	12°32.5
Eltanin	90°41.5	51°29.2
Kaus Aua.	83°31.6	-34°22.3
Vega	80°32.5	38°48.4
Nunki	75°46.9	-26°15.9
Altair	61°59.2	8°56.2
Peacock	53°04.5	-56°39.0
Deneb	49°25.1	45°22.2
Enif	33°38.1	9°59.5
Al Na'ir	27°32.1	-46°50.0
Fomalhaut	15°13.9	-29°29.0
Scheat	13°44.6	-28°13.2
Markab	13°29.3	15°20.5

	Aries			Venus			Mars			Jupiter			Saturn		
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	287°10.4	223°50.1	N18°41.2	123°00.8	N07°43.8	189°57.4	N23°09.3	284°30.5	S01°19.3						
1	302°12.9	238°49.7	41.7	138°01.9	43.2	204°59.3	09.3	299°32.9	19.3						
2	317°15.3	253°49.3	42.3	153°03.0	42.6	220°01.1	09.3	314°35.4	19.3						
3	332°17.8	268°48.9	•• 42.9	168°04.1	•• 42.0	235°03.0	•• 09.3	329°37.8	•• 19.3						
4	347°20.3	283°48.4	43.4	183°05.2	41.4	250°04.8	09.2	344°40.3	19.3						
5	2°22.7	298°48.0	44.0	198°06.3	40.9	265°06.7	09.2	359°42.7	19.3						
6	17°25.2	313°47.6	N18°44.5	213°07.4	N07°40.3	280°08.5	N23°09.2	14°45.2	S01°19.3						
7	32°27.6	328°47.2	45.1	228°08.5	39.7	295°10.4	09.2	29°47.6	19.3						
8	47°30.1	343°46.8	45.7	243°09.6	39.1	310°12.2	09.1	44°50.1	19.3						
9	62°32.6	358°46.4	•• 46.2	258°10.7	•• 38.5	325°14.1	•• 09.1	59°52.5	•• 19.3						
10	77°35.0	13°46.0	46.8	273°11.8	37.9	340°15.9	09.1	74°54.9	19.3						
11	92°37.5	28°45.6	47.3	288°12.9	37.3	355°17.8	09.1	89°57.4	19.4						
12	107°40.0	43°45.1	N18°47.9	303°14.0	N07°36.7	360°19.6	N23°09.0	104°59.8	S01°19.4						
13	122°42.4	58°44.7	48.5	318°15.1	36.1	25°21.5	09.0	120°02.3	19.4						
14	137°44.9	73°44.3	49.0	333°16.2	35.5	40°23.3	09.0	135°04.7	19.4						
15	152°47.8	88°43.9	•• 49.6	348°17.4	•• 34.9	55°25.2	•• 09.0	150°07.2	•• 19.4						
16	167°49.8	103°43.5	50.1	3°18.5	34.3	70°27.0	08.9	165°09.6	19.4						
17	182°52.3	118°43.0	50.7	18°19.6	33.7	85°28.9	08.9	180°12.1	19.4						
18	197°54.8	133°42.6	N18°51.2	33°20.7	N07°33.1	100°30.7	N23°08.9	195°14.5	S01°19.4						
19	212°57.2	148°42.2	51.8	48°21.8	32.5	115°32.6	08.9	210°17.0	19.4						
20	227°59.7	163°41.8	52.3	63°22.9	31.9	130°34.4	08.8	225°19.4	19.4						
21	243°02.1	178°41.4	•• 52.9	78°24.0	•• 31.3	145°36.3	•• 08.9	240°21.8	•• 19.4						
22	258°04.6	193°40.9	53.4	93°25.1	30.7	160°38.2	08.8	255°24.3	19.4						
23	273°07.1	208°40.5	54.0	108°26.2	30.1	175°40.0	08.8	270°26.7	19.4						
Mer.pass.:04:51			v-0.4 d0.6 m-4.0			v1.1 d-0.6 m1.5			v1.9 d-0.0 m-1.8			v2.4 d-0.0 m0.9			

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	288°09.5	223°40.1	N18°54.5	123°27.3	N07°29.5	190°41.9	N23°08.7	285°29.2	S01°19.4
1	303°12.0	238°39.7	55.1	138°28.4	28.9	205°43.7	08.7	300°31.6	19.4
2	318°14.5	253°39.3	55.6	153°29.5	28.3	220°45.6	08.7	315°34.1	19.4
3	333°16.9	268°38.8	•• 56.2	168°30.6	•• 27.8	235°47.4	•• 08.7	330°36.5	•• 19.4
4	348°19.4	283°38.4	56.7	183°31.7	27.2	250°49.3	08.6	345°39.0	19.4
5	3°21.9	298°38.0	57.3	198°32.8	26.6	265°51.1	08.6	0°41.4	19.4
6	18°24.3	313°37.6	N18°57.8	213°33.9	N07°26.0	280°53.0	N23°08.6	15°43.9	S01°19.4
7	33°26.8	328°37.1	58.4	228°35.0	25.4	295°54.8	08.6	30°46.3	19.5
8	48°29.3	343°36.7	58.9	243°36.1	24.8	310°56.7	08.5	45°48.8	19.5
9	63°31.7	358°36.3	18°59.5	258°37.2	•• 24.2	325°58.5	•• 08.5	60°51.2	•• 19.5
10	78°34.2	13°35.8	19°00.0	273°38.3	23.6	341°00.4	08.5	75°53.7	19.5
11	93°36.6	28°35.4	00.5	288°39.4	23.0	356°02.2	08.5	90°56.1	19.5
12	108°39.1	43°35.0	N19°01.1	303°40.5	N07°22.4	11°04.1	N23°08.4	105°58.6	S01°19.5
13	123°41.6	58°34.6	01.6	318°41.6	21.8	26°05.9	08.4	121°01.0	19.5
14	138°44.0	73°34.1	02.2	333°42.7	21.2	41°07.8	08.4	136°03.5	19.5
15	153°46.5	88°33.7	•• 02.7	348°43.8	•• 20.6	56°09.6	•• 08.3	151°05.9	•• 19.5
16	168°49.0	103°33.3	03.2	3°44.9	20.0	71°11.5	08.3	166°08.4	19.5
17	183°51.4	118°32.8	03.8	18°46.0	19.4	86°13.3	08.3	181°10.8	19.5
18	198°53.9	133°32.4	N19°04.3	33°47.1	N07°18.8	101°15.2	N23°08.3	196°13.3	S01°19.5
19	213°56.4	148°32.0	04.9	48°48.2	18.2	116°17.0	08.2	211°15.7	19.5
20	228°58.8	163°31.5	05.4	63°49.3	17.6	131°18.9	08.2	226°18.2	19.5
21	244°01.3	178°31.1	•• 05.9	78°50.4	•• 17.0	146°20.7	•• 08.2	241°20.6	•• 19.5
22	259°03.8	193°30.7	06.5	93°51.5	16.4	161°22.6	08.2	256°23.1	19.5
23	274°06.2	208°30.2	07.0	108°52.6	15.8	176°24.4	08.1	271°25.5	19.6
Mer.pass.:04:47 v-0.4 d0.5 m-4.0 v1.1 d-0.6 m1.5 v1.9 d-0.0 m-1.7 v2.4 d-0.0 m0.9									

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	289°08.7	223°29.8	N19°07.5	123°53.7	N07°15.2	191°26.3	N23°08.1	286°28.0	S01°19.6					
1	304°11.1	238°29.4	08.1	138°54.8	14.6	206°28.1	08.1	301°30.4	19.6					
2	319°13.6	253°28.9	08.6	153°55.9	14.0	221°30.0	08.1	316°32.9	19.6					
3	334°16.1	268°28.5	•• 09.1	168°57.0	•• 13.4	236°31.9	•• 08.0	331°35.3	•• 19.6					
4	349°18.5	283°28.0	09.7	183°58.1	12.8	251°33.7	08.0	346°37.8	19.6					
5	4°21.0	298°27.6	10.2	198°59.2	12.2	266°35.6	08.0	1°40.2	19.6					
6	19°23.5	313°27.2	N19°10.7	214°00.3	N07°11.6	281°37.4	N23°08.0	16°42.7	S01°19.6					
7	34°25.9	328°26.7	11.3	229°01.4	11.0	296°39.3	07.9	31°45.1	19.6					
8	49°28.4	343°26.3	11.8	244°02.5	10.4	311°41.1	07.9	46°47.6	19.6					
9	64°30.9	358°25.8	•• 12.3	259°03.6	•• 09.8	326°43.0	•• 07.9	61°50.0	•• 19.6					
10	79°33.3	13°25.4	12.8	274°04.7	09.2	341°44.8	07.9	76°52.5	19.6					
11	94°35.8	28°25.0	13.4	289°05.8	08.6	356°46.7	07.8	91°54.9	19.6					
12	109°38.3	43°24.3	N19°13.9	304°06.9	N07°08.0	11°48.5	N23°07.8	106°57.4	S01°19.6					
13	124°40.7	58°24.1	14.4	319°08.0	07.4	26°50.4	07.8	121°59.9	19.7					
14	139°43.2	73°23.6	14.9	334°09.1	06.8	41°52.2	07.7	137°02.3	19.7					
15	154°45.6	88°23.2	•• 15.5	349°10.2	•• 06.2	56°54.1	•• 07.7	152°04.8	•• 19.7					
16	169°48.1	103°22.7	16.0	4°11.3	05.6	71°55.9	07.7	167°07.2	19.7					
17	184°50.6	118°22.3	16.5	19°12.4	05.0	86°57.8	07.7	182°09.7	19.7					
18	199°53.0	133°21.8	N19°17.0	34°13.5	N07°04.4	101°59.6	N23°07.6	197°12.1	S01°19.7					
19	214°55.5	148°21.4	17.6	49°14.6	03.8	117°01.5	07.6	212°14.6	19.7					
20	229°58.0	163°21.0	18.1	64°15.7	03.2	132°03.3	07.6	227°17.0	19.7					
21	245°00.4	178°20.5	•• 18.6	79°16.8	•• 02.6	147°05.2	•• 07.6	242°19.5	•• 19.7					
22	260°02.9	193°20.1	19.1	94°17.9	02.0	162°07.1	07.5	257°21.9	19.7					
23	275°05.4	208°19.6	19.6	109°19.0	01.4	177°08.9	07.5	272°24.4	19.7					
Mer.pass.:04:43			v-0.4 d0.5 m-4.0			v1.1 d-0.6 m1.5			v1.9 d-0.0 m-1.7			v2.5 d-0.0 m0.9		

	SHA	Dec
Alpheratz	357°34.2	29°13.8
Ankaa	353°06.6	-42°09.8
Schedar	349°30.5	56°40.4
Diphda	348°46.8	-17°50.6
Achernar	335°19.9	-57°06.1
Hamal	327°50.8	23°34.9
Polaris	314°03.6	89°22.0
Acamar	315°01.5	-40°11.9
Menkar	314°05.9	4°11.4
Mirfak	308°27.9	49°56.9
Aldebaran	290°39.4	16°33.6
Rigel	281°03.8	-8°10.2
Capella	280°21.7	46°01.3
Bellatrix	278°22.7	6°22.4
Elath	278°01.7	28°37.7
Alnilam	275°37.6	-1°11.1
Betelgeuse	270°51.9	7°24.8
Canopus	263°52.8	-52°42.4
Sirius	258°26.2	-16°45.0
Adhara	255°05.9	-29°00.3
Procyon	244°50.7	5°09.6
Pollux	243°17.2	27°57.9
Avior	234°15.2	-59°35.5
Suhail	222°46.4	-43°32.2
Miaplacidus	221°39.1	-69°49.4
Alphard	217°47.6	-8°46.1
Regulus	207°34.2	11°50.6
Dubhe	193°40.8	61°37.1
Denebola	182°24.6	14°25.9

	SHA	Dec
Genah	175°43.2	-17°41.1
Acrux	172°59.8	-63°14.7
Gacrux	171°61.3	-57°15.6
Alioth	166°12.6	-55°49.5
Spica	158°21.8	-11°17.7
Alkaid	152°51.6	49°11.4
Hadar	148°35.3	-60°30.0
Menkent	147°57.0	-36°29.9
Arcturus	145°47.4	19°03.1
Rigel Kent.	139°39.5	-60°56.7
Kochab	137°19.3	74°03.3
Zuben'ubi	136°55.4	-16°08.9
Alphecca	126°03.2	26°37.8
Antares	112°15.0	-26°29.4
Atria	107°08.4	-69°04.5
Sabik	102°02.0	-15°45.4
Shaula	96°09.4	-37°07.4
Rasalhague	95°57.8	12°32.5
Eltanin	90°41.5	51°29.2
Kaus Aest.	83°31.5	-34°22.3
Vega	80°32.5	38°48.5
Nunki	75°46.9	-26°15.9
Altair	61°59.2	8°56.2
Peacock	53°04.5	-56°39.0
Deneb	49°25.1	45°22.2
Enif	33°38.1	9°59.5
Al Na'ir	27°32.0	-46°50.0
Fomalhaut	15°13.8	-29°29.0
Scheat	13°44.6	28°13.2
Markab	13°29.3	15°20.5

Jul 09 Wed	SHA	Mer.pass
Venus	296° 39.7	09:05
Mars	195° 50.4	15:47
Jupiter	262° 47.0	11:19
Saturn	357° 20.1	05:01

Aries			Venus			Mars			Jupiter			Saturn		
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	290°07.8	223°19.2	N19°20.1	124°20.1	N07°00.8	192°10.8	N23°07.5	287°26.8	S01°19.7					
1	305°10.3	238°18.7		20.7	139°21.2	07°00.8		302°29.3		07.4		32°44.0		
2	320°12.7	253°18.3		21.2	154°22.3	06°59.0		317°31.8		07.4		31°31.8		
3	335°15.2	268°17.8	· ·	21.7	169°23.4	· ·	59.6	332°34.2	· ·	19.8		17°50.6		
4	350°17.2	283°17.4		22.2	184°24.5	58.4		347°36.7		19.8				
5	5°20.1	298°16.9		22.7	199°25.6	57.8		267°20.0		07.3		2°39.1		
6	20°22.6	313°16.4	N19°23.2	214°26.7	N06°57.2	282°21.9	N23°07.3	17°41.6	S01°19.8					
7	35°25.1	328°16.0		23.8	229°27.8	56.6		297°23.7		07.3		32°44.0		
8	50°27.5	343°15.5		24.3	244°28.9	56.0		312°25.6		07.3		47°46.5		
9	65°30.0	358°15.1	· ·	24.8	259°30.0	· ·	55.4	327°27.4	· ·	07.2		62°49.0	· ·	
10	80°32.5	13°14.6		25.3	274°31.1	54.8		342°29.3		07.2		77°51.4		
11	95°34.9	28°14.2		25.8	289°32.2	54.2		357°31.1		07.2		92°53.9		
12	110°37.4	43°13.7	N19°26.3	304°33.3	N06°53.6	12°33.0	N23°07.1	107°56.3	S01°19.8					
13	125°39.9	58°13.3		26.8	319°34.4	53.0		27°34.9		07.1		122°58.8		
14	140°42.3	73°12.8		27.3	334°35.5	52.4		42°36.7		07.1		138°01.2		
15	155°44.8	88°12.3	· ·	27.8	349°36.6	· ·	51.8	57°38.6	· ·	07.1		153°03.7	· ·	
16	170°47.2	103°11.9		28.3	4°37.7	51.2		72°40.4		07.0		168°06.2		
17	185°49.7	118°11.4		28.8	19°38.8	50.6		87°42.3		07.0		183°08.6		
18	200°52.2	133°11.0	N19°29.3	34°39.9	N06°50.0	102°44.1	N23°07.0	198°11.1	S01°19.9					
19	215°54.6	148°10.5		29.9	49°41.0	49.4		117°46.0		07.0		213°13.5		
20	230°57.1	163°10.0		30.4	64°42.1	48.8		132°47.8		06.9		228°16.0		
21	245°59.6	178°09.6	· ·	30.9	79°43.2	· ·	48.2	147°49.7	· ·	06.9		243°18.4	· ·	
22	261°02.0	193°09.1		31.4	94°44.3	47.5		162°51.5		06.9		258°20.9		
23	276°04.5	208°08.7		31.9	109°45.4	46.9		177°53.4		06.8		273°23.4		
Mer.pass.:04:39			v-0.5 d0.5 m-4.0			v1.1 d-0.6 m1.5			v1.9 d-0.0 m-1.7			v2.5 d-0.0 m0.9		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	291°07.0	223°08.2	N19° 32.4	124°46.5	N06° 46.3	192°55.2	N23° 06.8	288°25.8	S01° 20.0	
1	306°09.4	238°07.7		32.9	139°47.6	45.7		303°28.3	20.0	
2	321°11.9	253°07.3		33.4	154°48.7	45.1		318°30.7	20.0	
3	336°14.4	268°06.8	· ·	33.9	169°49.8	· ·	44.5	333°33.2	· ·	
4	351°16.8	283°06.3		34.4	184°50.9	43.9		348°35.7	20.0	
5	6°19.3	298°05.9		34.9	199°52.0	43.3		3°38.1	20.0	
6	21°21.7	313°05.4	N19° 35.4	214°53.1	N06° 42.7	283°06.4	N23° 06.6	18°40.6	S01° 20.0	
7	36°24.2	328°04.9		35.8	229°54.2	42.1		298°08.2	20.0	
8	51°26.7	343°04.5		36.3	244°55.3	41.5		313°10.1	20.0	
9	66°29.1	358°04.0	· ·	36.8	259°56.4	· ·	40.9	328°11.9	· ·	
10	81°31.6	13°03.5		37.3	274°57.5	40.3		343°13.8	20.1	
11	96°34.1	28°03.1		37.8	289°58.6	39.7		358°15.6	20.1	
12	111°36.5	43°02.6	N19° 38.3	304°59.7	N06° 39.1	13°17.5	N23° 06.5	108°55.3	S01° 20.1	
13	126°39.0	58°02.1		38.8	320°00.8	38.5		28°19.4	20.1	
14	141°41.5	73°01.7		39.3	335°01.9	37.9		43°21.2	20.1	
15	156°43.9	88°01.2	· ·	39.8	350°03.0	· ·	37.3	58°23.1	· ·	
16	171°46.4	103°00.7		40.3	5°04.1	36.7		73°24.9	20.1	
17	186°48.9	118°00.3		40.8	20°05.2	36.1		88°26.8	20.1	
18	201°51.3	132°59.8	N19° 41.3	35°06.3	N06° 35.5	103°28.6	N23° 06.3	199°10.1	S01° 20.2	
19	216°53.8	147°59.3		41.7	50°07.4	34.9		118°30.5	20.2	
20	231°56.2	162°58.8		42.2	65°08.5	34.2		133°32.3	20.2	
21	246°58.7	177°58.4	· ·	42.7	80°09.6	· ·	33.6	148°34.2	· ·	
22	262°01.2	192°57.9		43.2	95°10.7	33.0		163°36.1	20.2	
23	277°03.6	207°57.4		43.7	110°11.8	32.4		178°37.9	20.2	
Mer.pass.:04:35			v-0.5 d0.5 m-4.0		v1.1 d-0.6 m1.5		v1.9 d-0.0 m-1.7		v2.5 d-0.0 m0.9	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	292°06.1	222°56.9	N19° 44.2	125°12.9	N06° 31.8	193°39.8	N23° 06.1	289°24.9	S01° 20.2	
1	307°08.6	237°56.5	44.6	140°14.0	31.2	208°41.6	06.1	304°27.3	20.2	
2	322°11.0	252°56.0	45.1	155°15.1	30.6	223°43.5	06.1	319°29.8	20.3	
3	337°13.5	267°55.5	· · 45.6	170°16.2	· · 30.0	238°45.3	· · 06.0	334°32.3	· · 20.3	
4	352°16.0	282°55.0	46.1	185°17.3	29.4	253°47.2	06.0	349°34.7	20.3	
5	7°18.4	297°54.5	46.6	200°18.4	28.8	268°49.0	06.0	4°37.2	20.3	
6	22°20.9	312°54.1	N19° 47.0	215°19.5	N06° 28.2	283°50.9	N23° 06.0	19°39.7	S01° 20.3	
7	37°23.3	327°53.6	47.5	230°20.6	27.6	298°52.8	05.9	34°42.1	20.3	
8	52°25.8	342°53.1	48.0	245°21.6	27.0	313°54.6	05.9	49°44.6	20.3	
9	67°28.3	357°52.6	· · 48.5	260°22.7	· · 26.4	328°56.5	· · 05.9	64°47.1	· · 20.3	
10	82°30.7	12°52.1	49.0	275°23.8	25.8	343°58.3	05.8	79°49.5	20.3	
11	97°33.2	27°51.7	49.4	290°24.9	25.2	359°00.2	05.8	94°52.0	20.4	
12	112°35.7	42°61.2	N19° 49.9	305°26.0	N06° 24.5	14°02.0	N23° 05.8	109°54.4	S01° 20.4	
13	127°38.1	57°50.7	50.4	320°27.1	23.9	29°03.9	05.8	124°56.9	20.4	
14	142°40.6	72°50.2	50.9	335°28.2	23.3	44°05.7	05.7	139°59.4	20.4	
15	157°43.1	87°49.7	· · 51.3	350°29.3	· · 22.7	59°07.6	· · 05.7	155°01.8	· · 20.4	
16	172°45.5	102°49.2	51.8	5°30.4	22.1	74°09.5	05.7	170°04.3	20.4	
17	187°48.0	117°48.8	52.3	20°31.5	21.5	89°11.3	05.6	185°06.8	20.4	
18	202°50.5	132°48.8	N19° 52.7	35°32.6	N06° 20.9	104°13.2	N23° 05.6	200°09.2	S01° 20.5	
19	217°52.9	147°47.3	53.2	50°33.7	20.3	119°15.0	05.6	215°17.1	20.5	
20	232°55.4	162°47.3	53.7	65°34.8	19.7	134°16.9	05.6	230°14.2	20.5	
21	247°57.8	177°46.8	· · 54.1	80°35.9	· · 19.1	149°18.7	· · 05.5	245°16.6	· · 20.5	
22	263°00.3	192°46.3	54.6	95°37.0	18.5	164°20.6	05.5	260°19.1	20.5	
23	278°02.8	207°45.8	55.1	110°38.1	17.9	179°22.5	05.5	275°21.6	20.5	
Mer.pass.:04:31			v-0.5 d0.5 m-4.0		v1.1 d-0.6 m1.5		v1.9 d-0.0 m-1.7		v2.5 d-0.0 m0.9	

SHA	Dec
Alpheratz	357°34.2
Ankaa	353°06.6
Schedar	349°30.5
Diphda	348°46.8
Achernar	335°19.9
Hamal	327°50.8
Polaris	314°02.2
Acamar	310°11.6
Menkar	314°05.8
Mirfak	308°27.9
Aldebaran	290°39.4
Rigel	281°03.7
Capella	280°21.7
Bellatrix	278°22.7
Elnath	278°01.7
Alnilam	275°37.6
Betelgeuse	270°51.9
Canopus	263°52.7
Sirius	258°26.2
Adhara	255°05.9
Procyon	244°50.7
Pollux	243°17.2
Avior	234°15.2
Suhail	222°46.4
Miaplacidus	221°39.1
Alphard	217°47.6
Regulus	207°34.2
Dubhe	193°40.8
Denebola	182°24.6
Gienah	175°43.2
Acrux	172°59.8
Gacrux	171°61.3
Alioth	166°12.6
Spica	158°21.8
Alkaid	152°51.6
Hadar	148°35.3
Menkent	147°57.0
Arcturus	145°47.4
Rigel Kent.	139°39.5
Kochab	137°19.3
Zuben'elubi	136°55.4
Alphacca	126°03.2
Antares	112°15.0
Atria	107°08.4
Sabik	102°02.0
Shaula	96°09.4
Rasalhague	95°57.8
Eltanin	90°41.5
Kaus Aus.	83°31.5
Vega	80°32.5
Nunki	75°46.8
Altair	61°59.2
Peacock	53°04.4
Deneb	49°25.1
Enif	33°38.1
Al Na'ir	27°32.0
Fomalhaut	15°13.8
Scheat	13°44.6
Markab	13°29.3

SHA	Mer.pass
Venus	293°11.3
Mars	194°12.3
Jupiter	262°02.9
Saturn	357°19.9
Jul 12 Sat	
Venus	292°01.2
Mars	193°39.6
Jupiter	261°48.3
Saturn	357°18.9
Jul 13 Sun	
Venus	292°01.2
Mars	193°39.6
Jupiter	261°48.3
Saturn	357°18.9
Jul 14 Mon	
Venus	290°50.8
Mars	193°06.8
Jupiter	261°33.7
Saturn	357°18.8
Horizontal parallax	
Venus:	0.1
Mars:	0.1

Sun			Moon				
Sat	GHA	Dec	GHA	ν	Dec	d	HP
0	178°34.5	N21°57.6	343°16.7	9.6'	S22°54.8	9.7'	56.7'
1	193°34.4	57.2	357°45.4	9.7'	22°45.0	9.9'	56.7'
2	208°34.4	56.9	12°14.1	9.7'	22°35.1	10.0'	56.8'
3	223°34.3	· · 56.5	26°42.8	9.8'	22°25.1	10.1'	56.8'
4	238°34.2	56.2	41°11.6	9.8'	22°14.9	10.2'	56.8'
5	253°34.1	55.8	55°40.5	9.9'	22°04.6	10.4'	56.8'
6	268°34.0	N21°55.5	70°09.4	10.0'	S21°54.2	10.5'	56.8'
7	283°34.0	55.1	84°38.4	10.0'	21°43.7	10.6'	56.9'
8	298°33.9	54.8	99°07.4	10.1'	21°33.0	10.7'	56.9'
9	313°33.8	· · 54.4	113°36.5	10.1'	21°22.3	10.8'	56.9'
10	328°33.7	54.1	128°05.7	10.2'	21°11.4	10.9'	56.9'
11	343°33.7	53.7	142°34.9	10.2'	21°00.4	11.1'	56.9'
12	358°33.6	N21°53.4	157°04.2	10.3'	S20°49.2	11.2'	57.0'
13	13°33.5	53.0	171°33.5	10.4'	20°38.0	11.3'	57.0'
14	28°33.4	52.6	186°02.9	10.4'	20°26.7	11.4'	57.0'
15	43°33.4	· · 52.3	200°32.3	10.5'	20°15.2	11.5'	57.0'
16	58°33.3	51.9	215°01.8	10.5'	20°03.6	11.6'	57.1'
17	73°33.2	51.6	229°31.4	10.6'	19°51.9	11.7'	57.1'
18	88°33.1	N21°51.2	244°01.0	10.7'	S19°40.1	11.8'	57.1'
19	103°33.1	50.9	258°30.7	10.7'	19°28.2	12.0'	57.1'
20	118°33.0	50.5	273°00.5	10.8'	19°16.2	12.1'	57.1'
21	133°32.9	· · 50.1	287°30.3	10.8'	19°04.1	12.2'	57.2'
22	148°32.8	49.8	302°00.1	10.9'	18°51.9	12.3'	57.2'
23	163°32.8	49.4	316°30.0	10.9'	18°39.6	12.4'	57.2'
SD = -15.7			SD = -15.5				

Aries		Venus		Mars		Jupiter		Saturn	
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	293°05.2	222°45.3	N19°55.5	125°39.2	N06°17.3	194°24.3	N23°05.4	290°24.0	S01°20.5
1	308°07.7	237°44.9	56.0	140°40.3	16.6	209°26.2	05.4	305°26.5	20.5
2	323°10.2	252°44.4	56.5	155°41.4	16.0	224°28.0	05.4	320°29.0	20.6
3	338°12.6	267°43.9	•• 56.9	170°42.5	•• 15.4	239°29.9	•• 05.3	335°31.4	•• 20.6
4	353°15.1	282°43.4	57.4	185°43.6	14.8	254°31.7	05.3	350°33.9	20.6
5	8°17.6	297°42.9	57.9	200°44.7	14.2	269°33.6	05.3	5°36.4	20.6
6	23°20.0	312°42.4	N19°58.3	215°45.8	N06°13.6	284°35.4	N23°05.3	20°38.8	S01°20.6
7	38°22.5	327°41.9	58.2	230°46.8	13.0	299°37.3	05.2	35°41.3	20.6
8	53°25.0	342°41.9	59.2	245°47.9	12.4	314°39.2	05.2	50°43.8	20.6
9	68°27.4	357°40.9	19°59.7	260°49.0	•• 11.8	329°41.0	•• 05.2	65°46.2	•• 20.7
10	83°29.9	12°40.4	20°00.2	275°50.1	11.2	344°42.9	05.1	80°48.7	20.7
11	98°32.3	27°39.9	00.6	290°51.2	10.6	359°44.7	05.1	95°51.2	20.7
12	113°34.8	42°39.4	N20°01.1	305°52.3	N06°10.0	14°46.6	N23°05.1	110°53.6	S01°20.7
13	128°37.3	57°38.9	01.5	320°53.4	09.3	29°48.4	05.0	125°56.1	20.7
14	143°39.7	72°38.5	02.0	335°54.5	08.7	44°50.3	05.0	140°58.6	20.7
15	158°42.2	87°38.0	•• 02.4	350°55.6	•• 08.1	59°52.2	•• 05.0	156°01.1	•• 20.7
16	173°44.7	102°37.5	02.9	5°56.7	07.5	74°54.0	05.0	171°03.5	20.8
17	188°47.1	117°37.0	03.3	20°57.8	06.9	89°55.9	04.9	186°06.0	20.8
18	203°49.6	132°36.5	N20°03.8	35°58.9	N06°06.3	104°57.7	N23°04.9	201°08.5	S01°20.8
19	218°52.1	147°36.0	04.3	51°00.0	05.7	119°59.6	04.9	216°10.9	20.8
20	233°54.5	162°35.5	04.7	66°01.1	05.1	135°01.4	04.8	231°13.4	20.8
21	248°57.0	177°35.0	•• 05.2	81°02.2	•• 04.5	150°03.3	•• 04.8	246°15.9	•• 20.8
22	263°53.9	192°34.5	05.6	96°03.3	03.9	165°05.2	04.8	261°18.3	20.8
23	279°01.9	207°34.0	06.0	111°04.4	03.2	180°07.0	04.7	276°20.8	20.9
Mer.pass.:04:27		v-0.5 d0.5 m-4.0		v1.1 d-0.6 m1.5		v1.9 d-0.0 m-1.7		v2.5 d-0.0 m0.9	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	294°04.4	222°33.5	N20°06.5	126°05.4	N06°02.6	195°08.9	N23°04.7	291°23.3	S01°20.9
1	309°06.8	237°33.0	06.9	141°06.5	02.0	210°10.7	04.7	306°25.8	20.9
2	324°09.3	252°32.5	07.4	156°07.6	01.4	225°12.6	04.6	321°28.2	20.9
3	339°11.8	267°32.0	•• 07.8	171°08.7	•• 00.8	240°14.5	•• 04.6	336°30.7	•• 20.9
4	354°14.2	282°31.4	08.3	186°09.8	06°00.2	255°16.3	04.6	351°33.2	20.9
5	9°16.7	297°30.9	08.7	201°10.9	05°59.6	270°18.2	04.6	6°35.6	20.9
6	24°19.2	312°30.4	N20°09.2	216°12.0	N05°59.0	285°20.0	N23°04.5	21°38.1	S01°21.0
7	39°21.6	327°29.9	09.6	231°13.1	58.4	300°21.9	04.5	36°40.6	21.0
8	54°24.1	342°29.4	10.0	246°14.2	57.7	315°23.7	04.5	51°43.0	21.0
9	69°26.6	357°28.9	•• 10.5	261°15.3	•• 57.1	330°25.6	•• 04.4	66°45.5	•• 21.0
10	84°29.0	12°28.4	10.9	276°16.4	56.5	345°27.5	04.8	81°48.0	21.0
11	99°31.5	27°27.9	11.4	291°17.5	55.9	0°29.3	04.4	96°50.5	21.0
12	114°33.9	42°27.4	N20°11.8	306°18.6	N05°55.3	15°31.2	N23°04.3	111°52.9	S01°21.1
13	129°36.4	57°26.9	12.2	321°19.7	54.7	30°33.0	04.3	126°55.4	21.1
14	144°38.9	72°26.4	12.7	336°20.8	54.1	45°34.9	04.3	141°57.9	21.1
15	159°41.3	87°25.9	•• 13.1	351°21.8	•• 53.5	60°36.8	•• 04.2	157°00.4	•• 21.1
16	174°43.8	102°25.4	13.5	6°22.9	52.9	75°38.6	04.2	172°02.8	21.1
17	189°46.3	117°24.9	14.0	21°24.0	52.2	90°40.5	04.2	187°05.3	21.1
18	204°48.7	132°24.3	N20°14.4	36°25.1	N05°51.6	105°42.3	N23°04.2	202°07.8	S01°21.2
19	219°51.2	147°23.8	14.8	51°26.2	51.0	120°44.2	04.1	217°10.2	21.2
20	234°53.7	162°23.3	15.3	66°27.3	50.4	135°46.0	04.1	232°12.7	21.2
21	249°56.1	177°22.8	•• 15.7	81°28.4	•• 49.8	150°47.9	•• 04.1	247°15.2	•• 21.2
22	264°58.6	192°22.3	16.1	96°29.5	49.2	165°49.8	04.0	262°17.7	21.2
23	280°01.0	207°21.8	16.6	111°30.6	48.6	180°51.6	04.0	277°20.1	21.2
Mer.pass.:04:23		v-0.5 d0.4 m-4.0		v1.1 d-0.6 m1.5		v1.9 d-0.0 m-1.7		v2.5 d-0.0 m0.9	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	295°03.5	222°21.3	N20°17.0	126°31.7	N05°48.0	195°53.5	N23°04.0	292°22.6	S01°21.3
1	310°06.0	237°20.8	17.4	141°32.8	47.3	210°55.3	03.9	307°25.1	21.3
2	325°08.4	252°20.2	17.9	156°33.9	46.7	225°57.2	03.9	322°27.6	21.3
3	340°10.9	267°19.7	•• 18.3	171°35.0	•• 46.1	240°59.1	•• 03.9	337°30.0	•• 21.3
4	355°13.4	282°19.2	18.7	186°36.0	45.5	256°00.9	03.8	352°32.5	21.3
5	10°15.8	297°18.7	19.1	201°37.1	44.9	271°02.8	03.8	7°35.0	21.3
6	25°18.3	312°18.2	N20°19.6	216°38.2	N05°44.3	286°04.6	N23°03.8	22°37.5	S01°21.4
7	40°20.8	327°17.1	20.0	231°39.3	43.7	301°06.5	03.7	37°39.9	21.4
8	55°23.2	342°17.0	20.4	246°40.4	43.0	316°08.4	03.7	52°42.4	21.4
9	70°25.7	357°16.6	•• 20.8	261°41.5	•• 42.4	331°10.2	•• 03.7	67°44.9	•• 21.4
10	85°28.2	12°16.1	21.2	276°42.6	41.8	346°12.1	03.6	82°47.4	21.4
11	100°30.6	27°15.6	21.7	291°43.7	41.2	1°13.9	03.6	97°49.8	21.4
12	115°33.1	42°15.1	N20°22.1	306°44.8	N05°40.6	16°15.8	N23°03.6	112°52.3	S01°21.5
13	130°35.5	57°14.5	22.5	321°45.9	40.0	31°17.7	03.6	127°54.8	21.5
14	145°38.0	72°14.0	22.9	336°47.0	39.4	46°19.5	03.5	142°57.1	21.5
15	160°40.5	87°13.5	•• 23.3	351°48.0	•• 38.8	61°21.4	•• 03.5	157°59.8	•• 21.5
16	175°42.9	102°13.0	23.8	6°49.1	38.1	76°23.2	03.5	173°02.2	21.5
17	190°45.4	117°12.5	24.2	21°50.2	37.5	91°25.1	03.4	188°04.7	21.5
18	205°47.9	132°11.9	N20°24.6	36°51.3	N05°36.9	106°27.0	N23°03.4	203°07.2	S01°21.6
19	220°50.3	147°11.4	25.0	51°52.4	36.3	121°28.8	03.4	218°09.7	21.6
20	235°52.8	162°10.9	25.4	66°53.5	35.7	136°30.7	03.3	233°12.1	21.6
21	250°55.3	177°10.4	•• 25.8	81°54.6	•• 35.1	151°32.5	•• 03.3	248°14.6	•• 21.6
22	265°57.7	192°09.8	26.2	96°55.7	34.5	166°34.4	03.3	263°17.1	21.6
23	281°00.2	207°09.3	26.6	111°56.8	33.8	181°36.3	03.2	278°19.6	21.6
Mer.pass.:04:19		v-0.5 d0.4 m-4.0		v1.1 d-0.6 m1.5		v1.9 d-0.0 m-1.7		v2.5 d-0.0 m0.9	

SHA	Dec
Alpheratz	357°34.2
Ankaa	353°06.6
Schedar	349°30.4
Diphda	348°46.8
Achernar	335°19.9
Hamal	327°50.8
Polaris	315°00.8
Acamar	314°11.6
Menkar	314°05.8
Mirfak	308°27.9
Aldebaran	290°39.4
Rigel	281°03.7
Capella	280°21.6
Bellatrix	278°22.7
Elnath	278°01.6
Alnilam	275°37.6
Betelgeuse	270°51.9
Canopus	263°52.7
Sirius	258°26.2
Adhara	255°05.9
Procyon	244°50.7
Pollux	243°17.1
Avior	234°15.2
Suhail	222°46.4
Miaplacidus	221°39.1
Alphard	217°47.6
Regulus	207°34.2
Dubhe	193°40.9
Denebola	182°24.6
Gienah	175°43.3
Acrux	172°59.8
Gacrux	171°51.3
Alioth	166°12.7
Spica	158°21.8
Alkaid	152°51.6
Hadar	148°35.3
Menkent	147°57.0
Arcturus	145°47.4
Rigel Kent.	139°39.5
Kochab	137°19.3
Zuben'ubi	136°55.4
Alphecca	126°03.2
Antares	112°15.0
Atria	107°08.4
Sabik	102°02.0
Shaula	96°09.4
Rasalhague	95°57.8
Eltanin	90°41.5
Kaus Aug.	83°31.5
Vega	80°32.5
Nunki	75°46.8
Altair	61°59.2
Peacock	53°04.4
Deneb	49°25.1
Enif	33°38.1
Al Na'ir	27°32.0
Fomalhaut	15°13.8
Scheat	13°44.6
Makab	13°29.3

SHA	Mer.pass
Venus	289°40.1
Mars	192°33.9
Jupiter	261°19.1
Saturn	357°18.8
Jul 15 Tue	09:09
Jul 16 Wed	09:10
Jul 17 Thu	09:11
Venus	287°17.8
Mars	191°28.2
Jupiter	260°50.0
Saturn	357°19.1
Jul 15 Tue	04:38
Jul 16 Wed	04:39
Jul 17 Thu	04:40

SHA	Mer.pass
Venus	287°17.8
Mars	191°28.2
Jupiter	260°50.0
Saturn	357°19.1
Horizontal parallax	
Venus:	0.1
Mars:	0.1

Sun			Moon				
Tue	GHA	Dec	GHA	ν	Dec	d	HP
0	178°29.4	N21°30.8	307°54.9	13.0'	S06°55.1	15.9'	58.1'
1	193°29.3	30.4	322°26.8	13.0'	06°39.2	15.9'	58.2'
2	208°29.3	30.0	336°58.8	13.0'	06°23.2	16.0'	58.2'
3	223°29.2	•• 29.7	351°30.8	13.0'	06°07.2	16.0'	58.2'
4	238°29.2	29.3	6°02.9	13.0'	05°51.2	16.0'	58.2'
5	253°29.1	28.9	20°34.9	13.0'	05°35.1	16.1'	58.2'
6	268°29.0	N21°28.5	35°06.9	13.1'	S05°19.0	16.1'	58.3'
7	283°29.0	28.1	49°39.0	13.1'	05°02.9	16.1'	58.3'
8	298°28.9	27.7	64°11.1	13.1'	04°46.8	16.2'	58.3'
9	313°28.9	•• 27.3	78°43.1	13.1'	04°30.6	16.2'	58.3'
10	328°28.8	26.9	93°15.2	13.1'	04°14.3	16.2'	58.3'
11	343°28.7	26.5	107°47.3	13.1'	03°58.1	16.3'	58.3'
12	358°28.7	N21°26.1	122°19.4	13.1'	S03°41.8	16.3'	58.4'
13	13°28.6	25.7	136°51.5	13.1'	03°25.5	16.3'	58.4'
14	28°28.5	25.3	151°23.6	13.1'	03°09.2	16.3'	58.4'
15	43°28.5	•• 24.8	165°55.7	13.1'	02°52.8	16.4'	58.4'
16	58°28.4	24.4	180°27.8	13.1'	02°36.5	16.4'	58.4'
17	73°28.4	24.0	194°59.9	13.1'	02°20.1	16.4'	58.4'
18	88°28.3	N21°23.6	209°32.0	13.1'	S02°03.7	16.4'	58.5'
19	103°28.2	23.2	224°04.0	13.1'	01°47.2	16.4'	58.5'
20	118°28.2	22.8	238°36.1	13.1'	01°30.8	16.5'	58.5'
21	133°28.1	•• 22.4	253°08.2	13.1'	01°14.3	16.5'	58.5'
22	148°28.1	22.0	267°40.3	13.1'	00°57.9	16.5'	58.5'
23	163°28.0	21.6	282°12.3	13.0'	00°41.4	16.5'	58.5'
SD = 15.7 d = 0.4			SD = 15.0				

Aries			Venus			Mars			Jupiter			Saturn		
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	296°02.7	222°08.8	N20°27.1	126°57.9	N05°33.2	196°38.1	N23°03.2	293°22.1	S01°21.7					
1	311°05.1	237°08.3	27.5	141°59.0	32.6	211°40.0	03.2	308°24.5	21.7					
2	326°07.6	252°07.7	27.9	157°00.0	32.0	226°41.8	03.1	323°27.0	21.7					
3	341°10.0	267°07.2	•• 28.3	172°01.1	•• 31.4	241°43.7	•• 03.1	338°29.5	•• 21.7					
4	356°12.5	282°06.7	28.7	187°02.2	30.8	256°45.6	03.1	353°32.0	21.8					
5	11°15.0	297°06.2	29.1	202°03.3	30.1	271°47.4	03.0	8°34.4	21.8					
6	26°17.4	312°05.6	N20°29.5	217°04.4	N05°29.5	286°49.3	N23°03.0	23°36.9	S01°21.8					
7	41°19.9	327°05.1	29.9	232°05.5	28.9	301°51.1	03.0	38°39.4	21.8					
8	56°22.4	342°04.6	30.3	247°06.6	28.3	316°53.0	02.9	53°41.9	21.8					
9	71°24.8	357°04.0	•• 30.7	262°07.7	•• 27.1	331°54.9	•• 02.9	68°44.4	•• 21.8					
10	86°27.3	12°03.5	31.1	277°08.8	27.1	346°56.7	02.9	83°46.8	21.9					
11	101°29.8	27°03.0	31.5	292°09.8	26.5	1°58.6	02.8	98°49.3	21.9					
12	116°32.2	42°02.4	N20°31.9	307°10.9	N05°25.8	17°00.4	N23°02.8	113°51.8	S01°21.9					
13	131°34.7	57°01.9	32.3	322°12.0	25.2	32°02.3	02.8	128°54.3	21.9					
14	146°37.1	72°01.4	32.7	337°13.1	24.6	47°04.2	02.7	143°56.8	21.9					
15	161°39.6	87°00.8	•• 33.1	352°14.2	•• 24.0	62°06.0	•• 02.7	158°59.2	•• 22.0					
16	176°42.1	102°00.3	33.5	7°15.3	23.4	77°07.9	02.7	174°01.7	22.0					
17	191°44.5	116°59.8	33.9	22°16.4	22.8	92°09.8	02.6	189°04.2	22.0					
18	206°47.0	131°59.2	N20°34.3	37°17.5	N05°22.1	107°11.6	N23°02.6	204°06.7	S01°22.0					
19	221°49.5	146°58.7	34.7	52°18.6	21.5	122°13.5	02.6	219°09.2	22.0					
20	236°51.9	161°58.2	35.1	67°19.6	20.9	137°15.3	02.5	234°11.6	22.1					
21	251°54.4	176°57.2	•• 35.5	82°20.7	•• 20.3	152°17.2	•• 02.5	249°14.1	•• 22.1					
22	266°56.9	191°57.1	35.9	97°21.8	19.7	167°19.1	02.5	264°16.6	22.1					
23	281°59.3	206°56.6	36.3	112°22.9	19.1	182°20.9	02.4	279°19.1	22.1					
Mer.pass.:04:15		v-0.5 d0.4 m-4.0		v1.1 d-0.6 m1.5		v1.9 d-0.0 m-1.7		v2.5 d-0.0 m0.9						

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	297°01.8	221°56.0	N20°36.6	127°24.0	N05°18.4	197°22.8	N23°02.4	294°21.6	S01°22.1	
1	312°04.3	236°55.5	37.0	142°25.1	17.8	212°24.6	02.4	303°24.0	22.2	
2	327°06.7	251°54.9	37.4	157°26.2	17.2	227°26.5	02.3	324°26.5	22.2	
3	342°09.2	266°54.4	•• 37.8	172°27.3	•• 16.6	242°28.4	•• 02.3	339°29.0	•• 22.2	
4	357°11.6	281°53.9	38.2	187°28.4	16.0	257°30.2	02.3	354°31.5	22.2	
5	12°14.1	296°53.3	38.6	202°29.4	15.4	272°32.1	02.2	9°34.0	22.2	
6	27°16.6	311°52.8	N20°39.0	217°30.5	N05°14.7	287°34.0	N23°02.2	24°36.5	S01°22.3	
7	42°19.0	326°52.2	39.4	232°31.6	14.1	302°35.8	02.2	39°39.0	22.3	
8	57°21.5	341°51.7	39.7	247°32.7	13.5	317°37.7	02.1	54°41.4	22.3	
9	72°24.0	356°51.2	•• 40.1	262°33.8	•• 12.9	332°39.5	•• 02.1	69°43.9	•• 22.3	
10	87°26.4	11°50.6	40.5	277°34.9	12.3	347°41.4	02.1	84°46.4	22.3	
11	102°28.9	26°50.1	40.9	292°36.0	11.6	2°43.3	02.0	99°48.9	22.4	
12	117°31.4	41°49.5	N20°41.3	307°37.1	N05°11.0	17°45.1	N23°02.0	114°51.4	S01°22.4	
13	132°33.8	56°49.0	41.6	322°38.1	10.4	32°47.0	02.0	129°53.9	22.4	
14	147°36.3	71°48.4	42.0	337°39.2	09.8	47°48.9	01.9	144°56.3	22.4	
15	162°38.8	86°47.9	•• 42.4	352°40.3	•• 09.2	62°50.7	•• 01.9	159°58.8	•• 22.4	
16	177°41.2	101°47.4	42.8	7°41.4	08.6	77°52.6	01.9	175°01.3	22.5	
17	192°43.7	116°46.8	43.2	22°42.5	07.9	92°54.4	01.8	190°03.8	22.5	
18	207°46.1	131°46.3	N20°43.5	37°43.6	N05°07.3	107°56.3	N23°01.8	205°06.3	S01°22.5	
19	222°48.6	146°45.7	43.9	52°44.7	06.7	122°58.2	01.8	220°08.2	22.5	
20	237°51.1	161°45.2	44.3	67°45.8	06.1	138°00.0	01.7	235°11.3	22.6	
21	252°53.5	176°44.6	•• 44.6	82°46.8	•• 05.5	153°01.9	•• 01.7	250°13.7	•• 22.6	
22	267°56.0	191°44.1	45.0	97°47.9	04.8	168°03.8	01.7	265°16.2	22.6	
23	282°58.5	206°43.5	45.4	112°49.0	04.2	183°05.6	01.6	280°18.7	22.6	
Mer.pass.:04:11			v-0.5 d0.4 m-4.0		v1.1 d-0.6 m1.6		v1.9 d-0.0 m-1.8		v2.5 d-0.0 m0.9	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	298°00.9	221°43.0	N20°45.8	127°50.1	N05°03.6	198°07.5	N23°01.6	295°21.2	S01°22.6	
1	313°03.4	236°42.4	46.1	142°51.2	03.0	213°09.3	01.6	310°23.7	22.7	
2	328°05.9	251°41.9	46.5	157°52.3	02.4	228°11.2	01.5	325°26.2	22.7	
3	343°08.3	266°41.3	•• 46.9	172°53.4	•• 01.7	243°13.1	•• 01.5	340°28.7	•• 22.7	
4	358°10.8	281°40.8	47.2	187°54.4	01.1	258°14.9	01.5	355°31.1	22.7	
5	13°13.2	296°40.2	47.6	202°55.5	05°00.5	273°16.8	01.4	10°33.6	22.7	
6	28°15.7	311°39.7	N20°48.0	217°56.6	N04°59.9	288°18.7	N23°01.4	25°36.1	S01°22.8	
7	43°18.2	326°39.1	48.3	232°57.7	59.3	303°20.5	01.4	40°38.6	22.8	
8	58°20.6	341°38.6	48.7	247°58.8	58.6	318°22.4	01.3	55°41.1	22.8	
9	73°23.1	356°38.0	•• 49.1	262°59.9	•• 58.0	333°24.3	•• 01.3	70°43.6	•• 22.8	
10	88°25.6	11°37.5	49.4	278°01.0	57.4	348°26.1	01.3	85°46.1	22.9	
11	103°28.0	26°36.9	49.8	293°02.1	56.8	3°28.0	01.2	100°48.5	22.9	
12	118°30.5	41°36.4	N20°50.1	308°03.1	N04°56.2	18°29.8	N23°01.2	115°51.0	S01°22.9	
13	133°33.0	56°35.8	50.5	323°04.2	55.5	33°31.7	01.2	130°53.5	22.9	
14	148°35.4	71°35.2	50.9	338°05.3	54.9	48°33.6	01.1	145°56.0	22.9	
15	163°37.9	86°34.7	•• 51.2	353°06.4	•• 54.3	63°35.4	•• 01.1	160°58.5	•• 23.0	
16	178°40.4	101°34.1	51.6	8°07.5	53.7	78°37.3	01.1	176°01.0	23.0	
17	193°42.8	116°33.6	51.9	23°08.6	53.1	93°39.2	01.0	191°03.5	23.0	
18	208°45.3	131°33.0	N20°52.3	38°09.6	N04°52.4	108°41.0	N23°01.0	206°06.0	S01°23.0	
19	223°47.7	146°32.5	52.6	53°10.7	51.8	123°42.9	01.0	221°08.5	23.1	
20	238°50.2	161°31.9	53.0	68°11.8	51.2	138°44.8	•• 00.9	236°10.9	23.1	
21	253°52.7	176°31.3	•• 53.3	83°12.9	•• 50.6	153°46.6	•• 00.9	251°13.4	•• 23.1	
22	268°55.1	191°30.8	53.7	98°14.0	50.0	168°48.5	00.8	266°15.9	23.1	
23	283°57.6	206°30.2	54.0	113°15.1	49.3	183°50.4	00.8	281°18.4	23.2	
Mer.pass.:04:07		v-0.5 d0.4 m-4.0			v1.1 d-0.6 m1.6		v1.9 d-0.0 m-1.8		v2.5 d-0.0 m0.9	

SHA	Dec
Alpheratz	357°34.2
Ankaa	353°06.6
Schedar	349°30.4
Diphda	348°46.8
Achernar	335°19.8
Hamal	327°50.7
Polaris	313°59.2
Acamar	315°11.6
Menkar	314°05.8
Mirfak	308°27.9
Aldebaran	290°39.4
Rigel	281°03.7
Capella	280°21.6
Bellatrix	278°22.7
Elnath	278°01.6
Alnilam	275°37.6
Betelgeuse	270°51.9
Canopus	263°52.7
Sirius	258°26.2
Adhara	255°05.9
Procyon	244°50.7
Pollux	243°17.1
Avior	234°15.2
Suhail	222°46.4
Miaplacidus	221°39.1
Alphard	217°47.6
Regulus	207°34.2
Dubhe	193°40.9
Denebola	182°24.9
Gienah	175°43.3
Acrux	172°59.9
Gacrux	171°51.4
Alioth	166°12.7
Spica	158°21.9
Alkaid	152°51.6
Hadar	148°35.3
Menkent	147°57.1
Arcturus	145°47.0
Rigel Kent.	139°39.5
Kochab	137°19.4
Zuben'el	136°55.4
Alphecca	126°03.2
Antares	112°15.0
Atria	107°08.6
Sabik	102°02.0
Shaula	96°09.4
Rasalhague	95°57.8
Eltanin	90°41.5
Kaus Aust.	83°31.5
Vega	80°32.5
Nunki	75°46.8
Altair	61°59.2
Peacock	53°04.4
Deneb	49°25.1
Enif	33°38.1
Al Na'ir	27°32.0
Fomalhaut	15°13.8
Scheat	13°44.5
Markab	13°29.2

SHA	Mer.pass
Jul 18 Venus	286°06.1 09:12
Mars	190°55.2 15:31
Jupiter	260°35.5 10:52
Saturn	357°19.8 04:26
Jul 19 Sat	284°54.2 09:13
Venus	190°22.2 15:29
Jupiter	260°21.0 10:49
Saturn	357°19.8 04:22
Jul 20 Sun	283°42.0 09:13
Venus	189°49.2 15:28
Jupiter	260°06.6 10:46
Saturn	357°20.3 04:18

Horizontal parallax	
Venus:	0.1
Mars:	0.1

Sun			Moon				
Fri	GHA	Dec	GHA	ν	Dec	d	HP
0	178°25.4	N21°00.8	273°42.7	10.9°	N12°33.5	15.4'	59.2'
1	193°25.4	21°00.3	288°12.5	10.8°	12°48.8	15.3'	59.2'
2	208°25.3	20°59.9	302°42.2	10.7°	13°04.1	15.2'	59.2'
3	223°25.3	•• 59.5	317°11.9	10.6°	13°19.3	15.2'	59.2'
4	238°25.2	59.0	331°41.5	10.6°	13°34.4	15.1'	59.2'
5	253°25.2	58.6	346°11.0	10.5°	13°49.5	15.0'	59.3'
6	268°25.1	N20°58.1	0°40.4	10.4°	N14°04.5	15.0'	59.3'
7	283°25.1	57.7	15°09.8	10.3°	14°19.5	14.9'	59.3'
8	298°25.0	57.3	29°39.1	10.2°	14°34.3	14.8'	59.3'
9	313°25.0	•• 56.8	44°08.2	10.1°	14°49.1	14.8'	59.3'
10	328°24.9	56.4	58°37.3	10.0°	15°03.9	14.7'	59.3'
11	343°24.9	55.9	73°06.3	10.0°	15°18.5	14.6'	59.3'
12	358°24.8	N20°55.8	87°35.2	9.9°	N15°33.1	14.5'	59.3'
13	13°24.8	55.0	102°04.0	9.8°	15°47.6	14.4'	59.3'
14	28°24.8	54.6	116°32.8	9.7°	16°02.0	14.4'	59.3'
15	43°24.7	•• 54.1	131°01.4	9.6°	16°16.3	14.3'	59.4'
16	58°24.7	53.7	145°30.0	9.5°	16°30.5	14.2'	59.4'
17	73°24.6	53.2	159°58.4	9.4°	16°44.7	14.1'	59.4'
18	88°24.6	N20°52.8	174°26.8	9.3°	N16°58.7	14.0'	59.4'
19	103°24.5	52.3	188°55.0	9.2°	17°12.7	13.9'	59.4'
20	118°24.5	51.9	203°23.2	9.1°	17°26.6	13.8'	59.4'
21	133°24.5	•• 51.4	217°51.2	9.0°	17°40.4	13.7'	59.4'
22	148°24.4	51.0	232°19.2	8.9°	17°54.1	13.6'	59.4'
23	163°24.4	50.5	246°47.1	8.8°	18°07.7	13.5'	59.4'

Aries		Venus		Mars		Jupiter		Saturn	
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	299°00.1	221°29.7	N20°54.4	128°16.2	N04°48.7	198°52.2	N23°00.8	296°20.9	S01°23.2
1	314°02.5	236°29.1	54.7	143°17.2	48.1	213°54.1	00.7	311°23.4	23.2
2	329°05.0	251°28.5	55.1	158°18.3	47.5	228°55.9	00.7	326°25.9	23.2
3	344°07.5	266°28.0	•• 55.4	173°19.4	•• 46.9	243°57.8	•• 00.7	341°28.4	•• 23.2
4	359°09.9	281°27.4	55.8	188°20.5	46.2	258°59.7	00.6	356°30.9	23.3
5	14°12.4	296°26.9	56.1	203°21.6	45.6	274°01.5	00.6	11°33.4	23.3
6	29°14.9	311°26.3	N20°56.5	218°22.7	N04°45.0	289°03.4	N23°00.6	26°35.8	S01°23.3
7	44°17.3	326°25.7	56.8	233°23.7	44.4	304°05.3	00.5	41°38.3	23.3
8	59°19.8	341°25.2	57.2	248°24.8	43.7	319°07.1	00.5	56°40.8	23.4
9	74°22.2	356°24.6	•• 57.5	263°25.9	•• 43.1	334°09.0	•• 00.5	71°43.3	•• 23.4
10	89°24.7	11°24.0	57.8	278°27.0	42.5	349°10.9	00.4	86°45.8	23.4
11	104°27.2	26°23.5	58.2	293°28.1	41.9	4°12.7	00.4	101°48.3	23.4
12	119°29.6	41°22.9	N20°58.5	308°29.2	N04°41.3	19°14.6	N23°00.4	116°50.8	S01°23.5
13	134°32.1	56°22.3	58.9	323°30.3	40.6	34°16.5	00.3	131°53.3	23.5
14	149°34.6	71°21.8	59.2	338°31.3	40.0	49°18.3	00.3	146°55.8	23.5
15	164°37.0	86°21.2	•• 59.5	353°32.4	•• 39.4	64°20.2	•• 00.2	161°58.3	•• 23.5
16	179°39.5	101°20.6	20°59.9	8°33.5	38.8	79°22.1	00.2	177°00.8	23.6
17	194°42.0	116°20.1	21°00.2	23°34.6	38.1	94°23.9	00.2	192°03.3	23.6
18	209°44.4	131°19.5	N21°00.5	38°35.7	N04°37.5	109°25.8	N23°00.1	207°05.7	S01°23.6
19	224°46.9	146°18.9	00.9	53°36.8	36.9	124°27.7	00.1	222°08.2	23.6
20	239°49.4	161°18.4	01.2	68°37.8	36.3	139°29.5	00.1	237°10.7	23.7
21	254°51.8	176°17.8	•• 01.5	83°38.9	•• 35.7	154°31.4	•• 00.0	252°13.2	•• 23.7
22	269°54.3	191°17.2	01.9	98°40.0	35.0	169°33.3	00.0	267°15.7	23.7
23	284°56.7	206°16.7	02.2	113°41.1	34.4	184°35.1	00.0	282°18.2	23.7
Mer.pass.:04:03		v-0.6 d0.3 m-4.0		v1.1 d-0.6 m1.6		v1.9 d-0.0 m-1.8		v2.5 d-0.0 m0.9	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	299°59.2	221°16.1	N21°02.5	128°42.2	N04°33.8	199°37.0	N22°59.9	297°20.7	S01°23.8
1	315°01.7	236°15.5	02.9	143°43.3	33.2	214°38.9	59.9	312°23.2	23.8
2	330°04.1	251°14.9	03.2	158°44.3	32.5	229°40.7	59.9	327°25.7	23.8
3	345°06.6	266°14.4	•• 03.5	173°45.4	•• 31.9	244°42.6	•• 59.8	342°28.2	•• 23.8
4	0°09.1	281°13.8	03.8	188°46.5	31.3	259°44.5	59.8	357°30.7	23.9
5	15°11.5	296°13.02	04.2	203°47.6	30.7	274°46.3	59.8	12°33.2	23.9
6	30°14.0	311°12.6	N21°04.5	218°48.7	N04°30.0	289°48.2	N22°59.7	27°35.7	S01°23.9
7	45°16.5	326°12.1	04.8	233°49.7	29.4	304°50.1	59.7	42°38.2	23.9
8	60°18.9	341°11.5	05.1	248°50.8	28.8	319°51.9	59.6	57°40.7	24.0
9	75°21.4	356°10.9	•• 05.5	263°51.9	•• 28.2	334°53.8	•• 59.6	72°43.2	•• 24.0
10	90°23.9	11°10.4	05.8	278°53.0	27.6	349°55.7	59.6	87°45.7	24.0
11	105°26.3	26°09.8	06.1	293°54.1	26.9	4°57.5	59.5	102°48.1	24.0
12	120°28.8	41°09.2	N21°06.4	308°55.2	N04°26.3	19°59.4	N22°59.5	117°50.6	S01°24.1
13	135°31.2	56°08.6	06.7	323°56.2	25.7	35°01.3	59.5	132°53.1	24.1
14	150°33.7	71°08.0	07.1	338°57.3	25.1	50°03.1	59.4	147°55.6	24.1
15	165°36.2	86°07.5	•• 07.4	353°58.4	•• 24.4	65°05.0	•• 59.4	162°58.1	•• 24.1
16	180°38.6	101°06.9	07.7	8°59.5	23.8	80°06.9	59.4	178°00.6	24.2
17	195°41.1	116°06.3	08.0	24°00.6	23.2	95°08.7	59.3	193°03.1	24.2
18	210°43.6	131°05.7	N21°08.3	39°01.6	N04°22.6	110°10.6	N22°59.3	208°05.6	S01°24.2
19	225°46.0	146°05.2	08.6	54°02.7	21.9	125°12.5	59.2	223°08.1	24.2
20	240°48.5	161°04.6	08.9	69°03.8	20.3	140°14.3	59.2	238°10.6	24.3
21	255°51.0	176°04.0	•• 09.3	84°04.9	•• 20.7	155°16.2	•• 59.2	253°13.1	•• 24.3
22	270°53.4	191°03.4	09.6	99°06.0	20.1	170°18.1	59.1	268°15.6	24.3
23	285°55.9	206°02.8	09.9	114°07.0	19.4	185°19.9	59.1	283°18.1	24.3
Mer.pass.:03:59		v-0.6 d0.3 m-4.0		v1.1 d-0.6 m1.6		v1.9 d-0.0 m-1.8		v2.5 d-0.0 m0.9	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	300°58.4	221°02.3	N21°10.2	129°08.1	N04°18.8	200°21.8	N22°59.1	298°20.6	S01°24.4
1	316°00.8	236°01.7	10.5	144°09.2	18.2	215°23.7	59.0	313°23.1	24.4
2	331°03.3	251°01.1	10.8	159°10.3	17.6	230°25.5	59.0	328°25.6	24.4
3	346°05.7	266°00.5	•• 11.1	174°11.4	•• 16.9	245°27.4	•• 59.0	343°28.1	•• 24.4
4	1°08.2	280°59.9	11.4	189°12.5	16.3	260°29.3	58.9	358°30.6	24.5
5	16°10.7	295°59.3	11.7	204°13.5	15.7	275°31.1	58.9	13°33.1	24.5
6	31°13.1	310°58.8	N21°12.0	219°14.6	N04°15.1	290°33.0	N22°58.8	28°35.6	S01°24.5
7	46°15.6	325°58.2	12.3	234°15.7	14.4	305°34.9	58.8	43°38.1	24.6
8	61°18.1	340°57.6	12.6	249°16.8	13.8	320°36.7	58.8	58°40.6	24.6
9	76°20.5	355°57.0	•• 12.9	264°17.9	•• 13.2	335°38.6	•• 58.7	73°43.1	•• 24.6
10	91°23.0	10°56.4	13.2	279°18.9	12.6	350°40.5	58.7	88°45.6	24.6
11	106°25.5	25°55.8	13.5	294°20.0	11.9	5°42.3	58.7	103°48.1	24.7
12	121°27.9	40°55.3	N21°13.8	309°21.1	N04°11.3	20°44.2	N22°58.6	118°50.6	S01°24.7
13	136°30.4	55°54.7	14.1	324°22.2	10.7	35°46.1	58.6	133°53.1	24.7
14	151°32.9	70°54.1	14.4	339°23.3	10.0	50°48.0	58.6	148°55.6	24.7
15	166°35.3	85°53.5	•• 14.7	354°24.3	•• 09.4	65°49.8	•• 58.5	163°58.1	•• 24.8
16	181°37.8	100°52.9	15.0	9°25.4	08.8	80°51.7	58.5	179°00.6	24.8
17	196°40.2	115°52.3	15.3	24°26.5	08.2	95°53.6	58.4	194°03.1	24.8
18	211°42.7	130°51.7	N21°15.6	39°27.6	N04°07.5	110°55.4	N22°58.4	209°05.6	S01°24.9
19	226°45.2	145°51.1	15.9	54°28.7	06.9	125°57.3	58.4	224°08.1	24.9
20	241°47.6	160°50.5	16.2	69°29.7	06.3	140°59.2	58.3	239°10.6	24.9
21	256°50.1	175°50.0	•• 16.4	84°30.8	•• 05.7	156°01.0	•• 58.3	254°13.1	•• 24.9
22	271°52.6	190°49.4	16.7	99°31.9	05.0	171°02.9	58.3	269°15.6	25.0
23	286°55.0	205°48.8	17.0	114°33.0	04.4	186°04.8	58.2	284°18.1	25.0
Mer.pass.:03:55		v-0.6 d0.3 m-4.0		v1.1 d-0.6 m1.6		v1.9 d-0.0 m-1.8		v2.5 d-0.0 m0.9	

Stars		SHA	Dec
Alpheratz	357°34.1	29°13.8	
Ankaa	353°06.5	-42°09.7	
Schedar	349°30.4	56°40.4	
Diphda	348°46.7	-17°50.6	
Achernar	335°19.8	-57°06.1	
Hamal	327°60.7	23°35.0	
Polaris	313°57.4	89°22.0	
Acamar	315°11.5	-40°11.8	
Menkar	314°05.8	4°11.5	
Mirfak	308°27.8	49°56.9	
Aldebaran	290°39.3	16°33.6	
Rigel	281°03.7	-8°10.2	
Capella	280°21.6	46°01.3	
Bellatrix	278°22.7	6°22.4	
Elnath	278°01.6	28°37.7	
Alnilam	275°31.5	-1°11.0	
Betelgeuse	270°51.0	7°24.8	
Canopus	263°52.7	-52°42.4	
Sirius	258°26.2	-16°45.0	
Adhara	255°05.9	-29°00.3	
Procyon	244°50.7	5°09.6	
Pollux	243°17.1	27°57.9	
Avior	234°15.2	-59°35.4	
Suhail	222°46.4	-43°32.2	
Miaplacidus	221°39.1	-69°49.4	
Alphard	217°47.6	-8°46.1	
Regulus	207°34.2	11°50.6	
Dubhe	193°49.9	61°37.0	
Denebola	182°20.7	14°25.9	
Gienah	175°43.3	-17°41.1	
Acrux	172°59.9	-63°14.7	
Gacrux	171°61.4	-57°15.6	
Alioth	166°12.7	-55°49.5	
Spica	158°21.9	-11°17.7	
Alkaid	152°51.6	49°11.4	
Hadar	148°35.3	-60°30.0	
Menkent	147°57.1	-36°29.9	
Arcturus	145°47.5	19°03.1	
Rigel Kent.	139°39.5	-60°56.7	
Kochab	137°19.5	74°03.3	
Zuben'ubi	136°55.4	-16°08.9	
Alphecca	126°03.2	26°37.9	
Antares	112°15.0	-26°29.4	
Atria	107°08.4	-69°04.6	
Sabik	102°02.0	-15°45.4	
Shaula	96°09.4	-37°07.4	
Rasalhague	95°57.8	12°32.6	
Eltanin	90°41.5	51°29.2	
Kaus Aust.	83°31.5	-34°22.4	
Vega	80°32.5	-38°48.5	
Nunki	75°46.8	-26°15.9	
Altair	61°59.2	8°56.2	
Peacock	53°04.4	-56°39.1	
Deneb	49°25.0	45°22.3	
Enif	33°38.1	9°59.6	
Al Na'ir	27°31.9	-46°50.0	
Fomalhaut	15°13.7	-29°29.0	
Scheat	13°44.5	28°13.2	
Markab	13°29.2	15°20.6	

Jul 21 Mon	SHA	Mer.pass
Venus	282°29.6	09:14
Mars	189°16.1	15:26
Jupiter	259°52.1	10:43
Saturn	357°20.8	04:14

Jul 22 Tue	SHA	Mer.pass
Venus	281°16.9	09:15
Mars	188°43.0	15:24
Jupiter	259°37.8	10:40
Saturn	357°21.5	04:10

Jul 23 Wed	SHA	Mer.pass
Venus	280°03.9	09:16
Mars	188°09.8	15:22
Jupiter	259°23.4	10:37
Saturn	357°22.2	04:06

Horizontal parallax	
Venus:	0.1
Mars:	0.1

	Aries			Venus			Mars			Jupiter			Saturn		
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	301°57.5	220°48.2	N21°17.3	129°34.0	N04°03.8	201°06.6	N22°58.2	299°20.6	S01°25.0	314°23.1	29°20.6	299°20.6	S01°25.0		
1	317°00.0	235°47.6	17.6	144°35.1	03.2	216°08.5	58.1	314°23.1	25.0	314°23.1	25.0	299°20.6	25.0		
2	332°02.4	250°47.0	17.9	159°36.2	02.5	231°10.4	58.1	329°25.6	25.1	329°25.6	25.1	329°25.6	25.1		
3	347°04.9	265°46.4	•• 18.2	174°37.3	•• 01.9	246°12.3	•• 58.1	344°28.1	•• 25.1	344°28.1	•• 25.1	344°28.1	•• 25.1		
4	2°07.4	280°45.8	18.5	189°38.4	01.3	261°14.1	58.0	359°30.6	25.1	359°30.6	25.1	359°30.6	25.1		
5	17°09.8	295°45.2	18.7	204°39.4	00.6	276°16.0	58.0	14°33.1	25.2	14°33.1	25.2	14°33.1	25.2		
6	32°12.3	310°44.6	N21°19.0	219°40.5	N04°00.0	291°19.7	N22°58.0	29°35.6	S01°25.2	29°35.6	S01°25.2	29°35.6	S01°25.2		
7	47°14.7	325°44.0	19.3	234°41.6	03°59.4	306°19.7	57.9	44°38.1	25.2	44°38.1	25.2	44°38.1	25.2		
8	62°17.2	340°43.4	19.6	249°42.7	58.8	321°21.6	57.9	59°40.6	25.2	59°40.6	25.2	59°40.6	25.2		
9	77°19.7	355°42.8	•• 19.9	264°43.8	•• 58.1	336°23.5	•• 57.8	74°43.1	•• 25.3	74°43.1	•• 25.3	74°43.1	•• 25.3		
10	92°22.1	10°42.3	20.1	279°44.8	57.5	351°25.3	57.8	89°45.6	25.3	89°45.6	25.3	89°45.6	25.3		
11	107°24.6	25°41.7	20.4	294°45.9	56.9	6°27.2	57.8	104°48.1	25.3	104°48.1	25.3	104°48.1	25.3		
12	122°27.1	40°41.1	N21°20.7	309°47.0	N03°56.3	21°29.1	N22°57.7	119°50.6	S01°25.4	119°50.6	S01°25.4	119°50.6	S01°25.4		
13	137°29.5	55°40.5	21.0	324°48.1	55.6	36°31.0	57.7	134°53.1	25.4	134°53.1	25.4	134°53.1	25.4		
14	152°32.0	70°39.9	21.2	339°49.1	55.0	51°32.8	57.7	149°55.6	25.4	149°55.6	25.4	149°55.6	25.4		
15	167°34.5	85°39.3	•• 21.5	354°50.2	•• 54.4	66°34.7	•• 57.6	164°58.1	•• 25.4	164°58.1	•• 25.4	164°58.1	•• 25.4		
16	182°36.9	100°38.7	21.8	9°51.3	53.7	81°36.6	57.6	180°00.6	25.5	180°00.6	25.5	180°00.6	25.5		
17	197°39.4	115°38.1	22.1	24°52.4	53.1	96°38.4	57.5	195°03.1	25.5	195°03.1	25.5	195°03.1	25.5		
18	212°41.8	130°37.5	N21°22.3	39°53.5	N03°52.5	111°40.3	N22°57.5	210°05.6	S01°25.5	210°05.6	S01°25.5	210°05.6	S01°25.5		
19	227°44.3	145°36.9	22.6	54°54.5	51.9	126°42.2	57.5	225°08.1	25.6	225°08.1	25.6	225°08.1	25.6		
20	242°46.8	160°36.3	22.9	69°55.6	51.2	141°44.1	57.4	240°10.6	25.6	240°10.6	25.6	240°10.6	25.6		
21	257°49.2	175°35.7	•• 23.1	84°56.7	•• 50.6	156°45.9	•• 57.4	255°13.2	•• 25.6	255°13.2	•• 25.6	255°13.2	•• 25.6		
22	272°51.7	190°35.1	23.4	99°57.8	50.0	171°47.8	57.4	270°15.7	25.7	270°15.7	25.7	270°15.7	25.7		
23	287°54.2	205°34.5	23.7	114°58.8	49.3	186°49.7	57.3	285°18.2	25.7	285°18.2	25.7	285°18.2	25.7		
Mer.pass.:03:52			v-0.6 d0.3 m-3.9			v1.1 d-0.6 m1.6			v1.9 d-0.0 m-1.8			v2.5 d-0.0 m0.9			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	302°56.6	220°33.9	N21°23.9	129°59.9	N03°48.7	201°51.5	N22°57.3	300°20.7	S01°25.7	
1	317°59.1	235°33.3	24.2	145°01.0	48.1	216°53.4	57.2	315°23.2	25.7	
2	333°01.6	250°32.7	24.5	160°02.1	47.5	231°55.3	57.2	330°25.7	25.8	
3	348°04.0	265°32.1	•• 24.7	175°03.1	•• 46.8	246°57.2	•• 57.2	345°28.2	•• 25.8	
4	3°06.5	280°31.5	25.0	190°04.2	46.2	261°59.0	57.1	0°30.7	25.8	
5	18°09.0	290°30.9	25.2	205°05.3	45.6	277°00.9	57.1	15°33.2	25.9	
6	33°11.4	310°30.3	N21°25.5	220°06.4	N03°44.9	292°02.8	N22°57.0	30°35.7	S01°25.9	
7	48°13.9	325°29.7	25.8	235°07.5	44.3	307°04.6	57.0	45°38.2	25.9	
8	63°16.3	340°29.1	26.0	250°08.5	43.7	322°06.5	57.0	60°40.7	26.0	
9	78°18.8	355°28.5	•• 26.3	265°09.6	•• 43.0	337°08.4	•• 56.9	75°43.2	•• 26.0	
10	93°21.3	10°27.9	26.5	280°10.7	42.4	352°10.3	56.9	90°45.7	26.0	
11	108°23.7	25°27.3	26.8	295°11.8	41.8	7°12.1	56.9	105°48.2	26.0	
12	123°26.2	40°26.6	N21°27.0	301°12.8	N03°41.2	22°14.0	N22°56.8	120°50.7	S01°26.1	
13	138°28.7	55°26.0	27.3	325°13.9	40.5	37°15.9	56.8	135°53.2	26.1	
14	153°31.1	70°25.4	27.5	340°15.0	39.9	52°17.7	56.7	150°55.8	26.1	
15	168°33.6	85°24.8	•• 27.8	355°16.1	•• 39.3	67°19.6	•• 56.7	165°58.3	•• 26.2	
16	183°36.1	100°24.2	28.0	10°17.1	38.6	82°21.5	56.7	181°00.8	26.2	
17	198°38.5	115°23.6	28.3	25°18.2	38.0	97°23.4	56.6	196°03.3	26.2	
18	213°41.0	130°20.3	N21°28.5	40°19.3	N03°37.4	112°25.2	N22°56.6	211°05.8	S01°26.3	
19	228°43.5	145°22.4	28.8	55°20.4	36.7	127°27.1	56.6	226°08.7	26.3	
20	243°45.9	160°21.8	29.0	70°21.4	36.1	142°29.0	56.5	241°10.8	26.3	
21	258°48.4	175°21.2	•• 29.3	85°22.5	•• 35.5	157°30.9	•• 56.5	256°13.3	•• 26.4	
22	273°50.8	190°20.6	29.5	100°23.6	34.9	172°32.7	56.4	271°15.8	26.4	
23	288°53.3	205°20.0	29.8	115°24.7	34.2	187°34.6	56.4	286°18.3	26.4	
Mer.pass.:03:48			v-0.6 d0.3 m-3.9		v1.1 d-0.6 m1.6		v1.9 d-0.0 m-1.8		v2.5 d-0.0 m0.9	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	303°55.8	220°19.4	N21°30.0	130°25.7	N03°33.6	202°36.5	N22°56.4	301°20.8	S01°26.4	
1	318°58.2	235°18.8	30.3	145°26.8	33.0	217°38.3	56.3	316°23.3	26.5	
2	334°00.7	250°18.1	30.5	160°27.9	32.3	232°40.2	56.3	331°25.9	26.5	
3	349°03.2	265°17.5	•• 30.7	175°29.0	•• 31.7	247°42.1	•• 56.2	346°28.4	•• 26.5	
4	4°05.6	280°16.9	31.0	190°30.0	31.1	262°44.0	56.2	1°30.9	26.6	
5	19°08.1	295°16.3	31.2	205°31.1	30.4	277°45.8	56.2	16°33.4	26.6	
6	34°10.6	310°15.7	N21°31.5	220°32.2	N03°29.8	292°47.7	N22°56.1	31°35.9	S01°26.6	
7	49°13.0	325°15.1	31.7	235°33.3	29.2	307°49.6	56.1	46°38.4	26.7	
8	64°15.5	340°14.5	31.9	250°34.3	28.6	322°51.5	56.0	61°40.9	26.7	
9	79°17.9	355°13.9	•• 32.2	265°35.4	•• 27.9	337°53.3	•• 56.0	76°43.4	•• 26.7	
10	94°20.4	10°13.2	32.4	280°36.5	27.3	352°55.2	56.0	91°45.9	26.8	
11	109°22.9	25°12.6	32.6	295°37.6	26.7	7°57.1	55.9	106°48.4	26.8	
12	124°25.3	40°12.0	N21°32.9	301°38.6	N03°26.0	22°59.0	N22°55.9	121°51.0	S01°26.8	
13	139°27.8	55°11.4	33.1	325°39.7	25.4	38°00.8	55.9	136°53.5	26.9	
14	154°30.7	70°10.8	33.3	340°40.8	24.8	53°02.7	55.8	151°56.0	26.9	
15	169°32.7	85°10.2	•• 33.6	355°41.8	•• 24.1	68°04.6	•• 55.8	166°58.5	•• 26.9	
16	184°35.2	100°09.6	33.8	10°42.9	23.5	83°06.5	55.7	182°01.0	27.0	
17	199°37.7	115°08.9	34.0	25°44.0	22.9	98°08.3	55.7	197°03.5	27.0	
18	214°40.1	130°08.3	N21°34.2	40°45.1	N03°22.2	113°10.2	N22°55.7	212°06.0	S01°27.0	
19	229°42.6	145°07.7	34.5	55°46.1	21.6	128°12.1	55.6	227°08.5	27.0	
20	244°45.1	160°07.1	•• 34.7	70°47.2	•• 21.0	143°14.0	•• 55.6	242°11.0	•• 27.1	
21	259°47.5	175°06.5	•• 34.9	85°48.3	•• 20.3	158°15.8	•• 55.5	257°13.6	•• 27.1	
22	274°50.0	190°05.9	35.1	100°49.4	19.7	173°17.7	55.5	272°16.1	27.1	
23	289°52.4	205°05.2	35.4	115°50.4	19.1	188°19.6	55.5	287°18.6	27.2	
Mer.pass:03:44			v-0.6 d-0.2 m-3.9		v1.1 d-0.6 m1.6		v1.9 d-0.0 m-1.8		v2.5 d-0.0 m0.9	

Aries				Venus				Mars				Jupiter				Saturn			
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	304°54.9	220°04.6	N21°35.6	130°51.5	N03°18.4	203°21.5	N22°55.4	302°21.1	S01°27.2										
1	319°57.4	235°04.0	35.8	145°52.6	17.8	218°23.3	55.4	317°23.6	27.2										
2	334°59.8	250°03.4	36.0	160°53.7	17.2	233°25.2	55.3	332°26.1	27.3										
3	350°02.3	265°02.8	•• 36.2	175°54.7	•• 16.5	248°27.1	•• 55.3	347°28.6	•• 27.3										
4	5°04.8	280°02.1	36.5	190°55.8	15.9	263°29.0	55.3	2°31.1	27.3										
5	20°07.2	295°01.5	36.7	205°56.9	15.3	278°30.8	55.2	17°33.7	27.4										
6	35°09.7	310°00.9	N21°36.9	220°57.9	N03°14.6	293°32.7	N22°55.2	32°36.2	S01°27.4										
7	50°12.2	325°00.3	37.1	235°59.0	14.0	308°34.6	55.1	47°38.7	27.4										
8	65°14.6	339°59.7	37.3	251°00.1	13.4	323°36.5	55.1	62°41.2	27.5										
9	80°17.1	354°59.0	•• 37.5	266°01.2	•• 12.8	338°38.3	•• 55.1	77°43.7	•• 27.5										
10	95°19.6	9°58.4	37.7	281°02.2	12.1	353°40.2	55.0	92°46.2	27.5										
11	110°22.0	24°57.8	37.9	296°03.3	11.5	8°42.1	55.0	107°48.7	27.6										
12	125°24.5	39°57.2	N21°38.2	311°04.4	N03°10.9	23°44.0	N22°54.9	122°51.3	S01°27.6										
13	140°26.9	54°56.6	38.4	326°05.4	10.2	38°45.8	54.9	137°53.8	27.6										
14	155°29.4	69°55.9	38.6	341°06.5	09.6	53°47.7	54.9	152°56.3	27.7										
15	170°31.9	84°55.3	•• 38.8	356°07.6	•• 09.0	68°49.6	•• 54.8	167°58.8	•• 27.7										
16	185°34.3	99°54.7	39.0	11°08.7	08.3	83°51.5	54.6	183°01.3	27.7										
17	200°36.8	114°54.1	39.2	26°09.7	07.7	98°53.3	54.7	198°03.8	27.8										
18	215°39.3	129°53.4	N21°39.4	41°10.8	N03°07.1	113°55.2	N22°54.7	213°06.3	S01°27.8										
19	230°47.7	144°52.8	39.6	56°11.9	06.4	128°57.1	54.7	228°08.9	27.8										
20	245°44.2	159°52.2	39.8	71°12.9	05.8	143°59.0	54.6	243°11.4	27.9										
21	260°46.7	174°51.7	•• 40.0	86°14.0	•• 05.2	159°00.9	•• 54.6	258°13.9	•• 27.9										
22	275°49.1	189°50.9	40.2	101°15.1	04.5	174°02.7	54.5	273°16.4	27.9										
23	290°51.6	204°50.3	40.4	116°16.2	03.9	189°04.6	54.5	288°18.9	28.0										
Mer.pass.:03:40				v-0.6 d0.2 m-3.9				v1.1 d-0.6 m1.6				v1.9 d-0.0 m-1.8				v2.5 d-0.0 m0.9			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	305°54.0	219°49.7	N21°40.6	131°17.2	N03°03.3	204°06.5	N22°54.5	303°21.4	S01°28.0										
1	320°56.5	234°49.1	40.8	146°18.3	02.6	219°08.4	54.4	318°24.0	28.1										
2	335°59.0	249°48.4	41.0	161°19.4	02.0	234°10.2	54.4	333°26.5	28.1										
3	351°01.4	264°47.8	•• 41.2	176°20.4	•• 01.3	249°12.1	•• 54.3	348°29.0	•• 28.1										
4	6°03.9	279°47.2	41.4	191°21.5	00.7	264°14.0	54.3	3°31.5	28.2										
5	21°06.4	294°46.6	41.6	206°22.6	03°00.1	279°15.9	54.3	18°34.0	28.2										
6	36°08.8	309°45.9	N21°41.8	221°23.7	N02°59.4	294°17.7	N22°54.2	33°36.5	S01°28.2										
7	51°11.3	324°45.3	42.0	236°24.7	58.8	309°19.6	54.2	48°39.1	28.3										
8	66°13.8	339°44.7	42.1	251°25.8	58.2	324°21.5	54.1	63°41.6	28.3										
9	81°16.2	354°44.0	•• 42.3	266°26.9	•• 57.5	339°23.4	•• 54.1	78°44.1	•• 28.3										
10	96°18.7	9°43.4	42.5	281°27.9	56.9	354°25.3	54.1	93°46.6	28.4										
11	111°21.2	24°42.8	42.7	296°29.0	56.3	9°27.1	54.0	108°49.1	28.4										
12	126°23.6	39°42.1	N21°42.9	311°30.1	N02°55.6	24°29.0	N22°54.6	123°51.7	S01°28.4										
13	141°26.1	54°41.5	43.1	326°31.1	55.0	39°30.9	53.9	138°54.2	28.5										
14	156°28.5	69°40.9	43.3	341°32.2	54.4	54°32.8	53.9	153°56.7	28.5										
15	171°31.0	84°40.3	•• 43.5	356°33.3	•• 53.7	69°34.6	•• 53.9	168°59.2	•• 28.5										
16	186°33.5	99°39.6	43.6	11°34.4	53.1	84°36.5	53.8	184°01.7	28.6										
17	201°35.9	114°39.0	43.8	26°35.4	52.5	99°38.4	53.8	199°04.2	28.6										
18	216°38.4	129°38.4	N21°44.0	41°36.5	N02°51.8	114°40.3	N22°53.7	214°06.8	S01°28.6										
19	231°40.9	144°37.7	44.2	56°37.6	51.2	129°42.2	53.7	229°09.3	28.7										
20	246°43.3	159°37.1	44.4	71°38.6	50.6	144°44.0	53.7	244°11.8	28.7										
21	261°45.8	174°36.5	•• 44.5	86°39.7	•• 49.9	159°45.9	•• 53.6	259°14.3	•• 28.8										
22	276°48.3	189°35.8	44.7	101°40.8	49.3	174°47.8	53.6	274°16.8	28.8										
23	291°50.7	204°35.2	44.9	116°41.8	48.7	189°49.7	53.5	289°19.4	28.8										
Mer.pass.:03:36				v-0.6 d0.2 m-3.9				v1.1 d-0.6 m1.6				v1.9 d-0.0 m-1.8				v2.5 d-0.0 m0.8			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	306°53.2	219°34.6	N21°45.1	131°42.9	N02°48.0	204°51.6	N22°53.5	304°21.9	S01°28.9		
1	321°55.7	234°33.9	45.2	146°44.0	47.4	219°53.4	53.4	319°24.4	28.9		
2	336°58.1	249°33.3	45.4	161°45.0	46.7	234°55.3	53.4	334°26.9	28.9		
3	352°00.6	264°32.7	•• 45.6	176°46.1	•• 46.1	249°57.2	•• 53.4	349°29.4	•• 29.0		
4	7°03.0	279°32.0	45.8	191°47.2	45.5	264°59.1	53.3	4°32.0	29.0		
5	22°05.5	294°31.4	45.9	206°48.2	44.8	280°01.0	53.3	19°34.5	29.0		
6	37°08.0	309°30.7	N21°46.1	221°49.3	N02°44.2	295°02.8	N22°53.2	34°37.0	S01°29.1		
7	52°10.4	324°30.1	46.3	236°50.4	43.6	310°04.7	53.2	49°39.5	29.1		
8	67°12.9	339°29.5	46.4	251°51.4	42.9	325°06.6	53.2	64°42.0	29.2		
9	82°15.4	354°28.8	•• 46.6	266°52.5	•• 42.3	340°08.5	•• 53.1	79°44.6	•• 29.2		
10	97°17.8	9°28.2	46.8	281°53.6	41.7	355°10.4	53.1	94°47.1	29.2		
11	112°20.3	24°27.6	46.9	296°54.7	41.0	10°12.2	53.0	109°49.6	29.3		
12	127°22.8	39°26.9	N21°47.1	311°55.7	N02°40.4	25°14.1	N22°53.0	124°52.1	S01°29.3		
13	142°25.2	54°26.3	47.3	326°56.8	39.8	40°16.0	53.0	139°54.7	29.3		
14	157°27.7	69°25.6	47.4	341°57.9	39.1	55°17.9	52.9	154°57.2	29.4		
15	172°30.1	84°25.0	•• 47.6	356°58.9	•• 38.5	70°19.8	•• 52.9	169°59.7	•• 29.4		
16	187°32.6	99°24.4	47.7	12°00.0	37.8	85°21.6	52.8	185°02.2	29.4		
17	202°35.1	114°23.7	47.9	27°01.1	37.2	100°23.5	52.8	200°04.7	29.5		
18	217°37.5	129°23.1	N21°48.1	42°02.1	N02°36.6	115°25.4	N22°52.7	215°07.3	S01°29.5		
19	232°40.0	144°22.5	48.2	57°03.2	35.9	130°27.3	52.7	230°09.8	29.6		
20	247°42.5	159°21.8	48.4	72°04.3	35.3	145°29.2	52.7	245°12.3	29.6		
21	262°44.9	174°21.2	•• 48.5	87°05.3	•• 34.7	160°31.0	•• 52.6	260°14.8	•• 29.6		
22	277°47.4	189°20.5	48.7	102°06.4	34.0	175°32.9	52.6	275°17.4	29.7		
23	292°49.9	204°19.9	48.8	117°07.5	33.4	190°34.8	52.5	290°19.9	29.7		
Mer.pass.:03:32				v-0.6 d0.2 m-3.9		v1.1 d-0.6 m1.6		v1.9 d-0.0 m-1.8		v2.5 d-0.0 m0.8	

	Stars	
	SHA	Dec
Alpheratz	357° 34.1	29° 13.9
Ankaa	353° 06.5	-42° 09.7
Schedar	349° 30.3	56° 40.5
Diphda	348° 46.7	-17° 50.6
Achernar	335° 19.7	-57° 06.1
Hamal	327° 50.7	23° 35.0
Polaris	313° 54.3	89° 22.0
Acamar	315° 11.5	-40° 11.8
Menkar	314° 05.7	4° 11.5
Mirfak	308° 27.7	49° 56.9
Aldebaran	290° 39.3	16° 33.7
Rigel	281° 03.6	-8° 10.2
Capella	280° 21.5	46° 01.3
Bellatrix	278° 22.6	6° 22.5
Elnath	278° 01.6	28° 37.7
Alnilam	275° 37.5	-1° 11.0
Betelgeuse	270° 51.8	7° 24.8
Canopus	263° 52.7	-52° 42.3
Sirius	258° 26.1	-16° 44.9
Adhara	255° 05.9	-29° 00.2
Procyon	244° 50.7	5° 09.6
Pollux	243° 17.1	27° 57.9
Avior	234° 15.2	-59° 35.4
Suhail	222° 46.4	-43° 32.1
Miaplacidus	221° 39.2	-69° 49.3

	Aries			Venus			Mars			Jupiter			Saturn		
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	307°52.3	219°19.2	N21°49.0	132°08.5	N02°32.8	205°36.7	N22°52.5	305°22.4	S01°29.7						
1	322°54.8	234°18.6	49.1	147°09.6	32.1	220°38.6	52.5	320°24.9	29.8						
2	337°57.3	249°18.0	49.3	162°10.7	31.5	235°40.4	52.4	335°27.5	29.8						
3	352°59.7	264°17.3	.. 49.4	177°11.7	.. 30.8	250°42.3	.. 52.4	350°30.0	.. 29.9						
4	8°02.2	279°16.7	49.6	192°12.8	30.2	265°44.2	52.3	5°32.5	29.9						
5	23°04.6	294°16.0	49.7	207°13.9	29.6	280°46.1	52.3	20°35.0	29.9						
6	38°07.1	309°15.4	N21°49.9	222°14.9	N02°28.9	295°48.0	N22°52.2	35°37.6	S01°30.0						
7	53°09.6	324°14.7	50.0	237°16.0	28.3	310°49.9	52.2	50°40.1	30.0						
8	68°12.0	339°14.1	50.2	252°17.1	27.7	325°51.7	52.2	65°42.6	30.0						
9	83°14.5	354°13.5	.. 50.3	267°18.1	.. 27.0	340°53.6	.. 52.1	80°45.1	.. 30.1						
10	98°17.0	9°12.8	50.5	282°19.2	26.4	355°55.5	52.1	95°47.7	30.1						
11	113°19.4	24°12.2	50.6	297°20.3	25.7	10°57.4	52.0	110°50.2	30.2						
12	128°21.9	39°11.5	N21°50.7	312°21.3	N02°25.1	25°59.3	N22°52.0	125°52.7	S01°30.2						
13	143°24.4	54°10.9	50.9	327°22.4	24.5	41°01.1	52.0	140°55.2	30.2						
14	158°26.8	69°10.2	51.0	342°23.4	23.8	56°03.0	51.9	155°57.8	30.3						
15	173°29.3	84°09.6	.. 51.2	357°24.5	.. 23.2	71°04.9	.. 51.9	171°00.3	.. 30.3						
16	188°31.7	99°08.9	51.3	12°25.6	22.6	86°06.8	51.8	186°02.8	30.3						
17	203°34.2	114°08.3	51.4	27°26.6	21.9	101°08.7	51.8	201°05.3	30.4						
18	218°36.7	129°07.7	N21°51.6	42°27.7	N02°21.3	116°10.6	N22°51.7	216°07.9	S01°30.4						
19	233°39.1	144°07.0	51.7	57°28.8	20.6	131°12.4	51.7	231°10.4	30.5						
20	248°41.6	159°06.4	51.8	72°29.8	20.0	146°14.3	51.6	246°12.9	30.5						
21	263°44.1	174°05.7	.. 52.0	87°30.9	.. 19.4	161°16.2	.. 51.7	261°15.4	.. 30.5						
22	278°46.5	189°05.1	52.1	102°32.0	18.7	176°18.1	51.6	276°18.0	30.6						
23	293°49.0	204°04.4	52.2	117°33.0	18.1	191°20.0	51.5	291°20.5	30.6						
Mer.pass.:03:28				v-0.6 d0.2 m-3.9			v1.1 d-0.6 m1.6			v1.9 d-0.0 m-1.8			v2.5 d-0.0 m0.8		

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	308°51.5	219°03.8	N21°52.3	132°34.1	N02°17.4	206°21.9	N22°51.5	306°23.0	S01°30.7
1	323°53.9	234°03.1	52.5	147°35.2	16.8	221°23.7	51.4	321°25.6	30.7
2	338°56.4	249°02.5	52.6	162°36.2	16.2	236°25.6	51.4	336°28.1	30.7
3	353°58.9	264°01.8	.. 52.7	177°37.3	.. 15.5	251°27.5	.. 51.4	351°30.6	.. 30.8
4	9°01.3	279°01.2	52.8	192°38.4	14.9	266°29.4	51.3	6°33.1	30.8
5	24°03.8	294°00.5	53.0	207°39.4	14.3	281°31.3	51.3	21°35.7	30.9
6	39°06.2	308°59.9	N21°53.1	222°40.5	N02°13.6	296°33.2	N22°51.2	36°38.2	S01°30.9
7	54°08.7	323°59.2	53.2	237°41.5	13.0	311°35.0	51.2	51°40.7	30.9
8	69°11.2	338°58.6	53.3	252°42.6	12.3	326°36.9	51.1	66°43.2	31.0
9	84°13.6	353°57.9	.. 53.5	267°43.7	.. 11.7	341°38.8	.. 51.1	81°45.8	.. 31.0
10	99°16.1	8°57.3	53.6	282°44.7	11.1	356°40.7	51.1	96°48.3	31.0
11	114°18.6	23°56.6	53.7	297°45.8	10.4	11°42.6	51.0	111°50.8	31.1
12	129°21.0	38°56.0	N21°53.8	312°46.9	N02°09.8	26°44.5	N22°51.0	126°53.4	S01°31.1
13	144°23.5	53°55.3	53.9	327°47.9	09.1	41°46.3	50.9	141°55.9	31.2
14	159°26.0	68°54.7	54.0	342°49.0	08.5	56°48.2	50.9	156°58.4	31.2
15	174°28.4	83°54.0	.. 54.2	357°50.1	.. 07.9	71°50.1	.. 50.8	172°01.0	.. 31.2
16	189°30.9	98°53.4	54.3	12°51.1	07.2	86°52.0	50.8	187°03.5	31.3
17	204°33.4	113°52.7	54.4	27°52.2	06.6	101°53.9	50.8	202°06.0	31.3
18	219°35.8	128°52.0	N21°54.5	42°53.2	N02°06.0	116°55.8	N22°50.7	217°08.5	S01°31.4
19	234°38.3	143°51.4	54.6	57°54.3	05.3	131°57.7	50.7	232°11.1	31.4
20	249°40.7	158°50.7	54.7	72°55.4	04.7	146°59.5	50.6	247°13.6	31.4
21	264°43.2	173°50.1	.. 54.8	87°56.4	.. 04.0	162°01.4	.. 50.6	262°16.1	.. 31.5
22	279°45.7	188°49.4	54.9	102°57.5	03.4	177°03.3	50.5	277°18.7	31.5
23	294°48.1	203°48.8	55.0	117°58.6	02.8	192°05.2	50.5	292°21.2	31.6

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec						
0	309°50.6	218°48.1	N21°55.1	132°59.6	N02°02.1	207°07.1	N22°50.5	307°23.7	S01°31.6						
1	324°53.1	233°47.5	55.2	148°00.7	01.5	222°09.0	50.4	322°26.3	31.6						
2	339°55.5	248°46.8	55.3	163°01.7	00.8	237°10.9	50.4	337°28.8	31.7						
3	354°58.0	263°46.2	· · 55.4	178°02.8	02°00.2	252°12.7	· · 50.3	352°31.3	· · 31.7						
4	10°00.5	278°45.5	55.5	193°03.9	01°59.6	267°14.6	50.3	7°33.9	31.8						
5	25°02.9	293°44.8	55.7	208°04.9	58.9	282°16.5	50.2	22°36.4	31.8						
6	40°05.4	308°44.2	N21°55.7	223°06.0	N01°58.3	297°18.4	N22°50.2	37°38.9	S01°31.9						
7	55°07.8	323°43.5	55.8	238°07.1	57.6	312°20.3	50.2	52°41.4	31.9						
8	70°10.3	338°42.9	55.9	253°08.1	55.9	327°22.2	50.1	67°44.0	31.9						
9	85°12.8	353°42.2	· · 56.0	268°09.2	· · 56.4	342°24.1	· · 50.1	82°46.5	· · 32.0						
10	100°15.2	8°41.6	56.1	283°10.2	55.5	357°25.9	50.0	87°49.0	32.0						
11	115°17.7	23°40.9	56.2	298°11.3	55.1	12°27.8	50.0	112°51.6	32.1						
12	130°20.2	38°40.2	N21°56.3	313°12.4	N01°54.4	27°29.7	N22°49.9	127°54.1	S01°32.1						
13	145°22.6	53°39.6	56.4	328°13.4	53.8	42°31.6	49.9	142°56.6	32.1						
14	160°25.1	68°38.9	56.5	343°14.5	53.2	57°33.5	49.9	157°59.2	32.2						
15	175°27.6	83°38.3	· · 56.6	358°15.5	· · 52.5	72°35.4	· · 49.8	173°01.7	· · 32.2						
16	190°30.0	98°37.6	56.7	13°16.6	51.9	87°37.3	49.8	188°04.2	32.3						
17	205°32.5	113°37.0	56.8	28°17.7	51.2	102°39.2	49.7	203°06.8	32.3						
18	220°35.0	128°36.3	N21°56.9	43°18.7	N01°50.6	117°41.0	N22°49.7	218°09.3	S01°32.3						
19	235°37.4	143°35.6	56.9	58°19.8	49.9	132°42.9	49.6	233°11.8	32.4						
20	250°39.9	158°35.0	57.0	73°20.8	49.3	147°44.8	49.6	248°14.4	32.4						
21	265°42.3	173°34.3	· · 57.1	88°21.9	· · 48.7	162°46.7	· · 49.6	263°16.9	· · 32.5						
22	280°44.8	188°33.7	57.2	103°23.0	48.0	177°48.6	49.5	278°19.4	32.5						
23	295°47.3	203°33.0	57.3	118°24.0	47.4	192°50.5	49.5	293°22.0	32.6						
Mer.pass.:03:20				v-0.7 d0.1 m-3.9			v1.1 d-0.6 m1.6			v1.9 d-0.0 m-1.8			v2.5 d-0.0 m0.8		

	SHA	Dec
Alpheratz	357°34.1	29°13.9
Ankaa	353°06.4	-42°09.7
Schedar	349°30.3	56°40.5
Diphda	348°46.7	-17°50.6
Achernar	335°19.7	-57°06.1
Hamal	327°50.6	23°35.0
Polaris	313°52.8	89°22.0
Acamar	315°11.5	-40°11.8
Menkar	314°05.7	4°11.5
Mirfak	308°27.7	49°56.9
Aldebaran	290°39.3	16°33.7
Rigel	281°03.6	-8°10.2
Capella	280°21.5	46°01.3
Bellatrix	278°22.6	6°22.5
Elnath	278°01.5	28°37.7
Alnilam	275°37.5	-1°11.0
Betelgeuse	270°51.8	7°24.8
Canopus	263°52.7	-52°42.3
Sirius	258°26.1	-16°44.9
Adhara	255°05.8	-29°00.2
Procyon	244°50.7	5°09.7
Pollux	234°17.1	27°57.9
Avior	234°15.2	-59°35.4
Suhail	222°46.4	-43°32.1
Miaplacidus	221°39.2	-69°49.3
Alphard	217°47.6	-8°46.1
Regulus	207°34.2	11°50.6
Dubhe	193°24.9	61°37.0
Denebola	182°40.7	14°25.9
Gienah	175°43.3	-17°41.1
Acrux	173°00.0	-63°14.7
Gacrux	171°51.4	-57°15.6
Alioth	166°12.8	55°49.5
Spica	158°21.9	-11°17.7
Alkaid	152°51.7	49°11.4
Hadar	148°35.4	-60°30.0
Menkent	147°57.1	-36°29.9
Tarasus	145°47.5	19°03.1
Rigel Kent.	139°39.6	-60°56.7
Kochab	137°19.6	74°03.3
Zuben'ubi	136°55.5	-16°08.9
Alphecca	126°03.2	26°37.9
Antares	112°15.1	-26°29.4
Atria	107°08.5	-69°04.6
Sabik	102°02.0	-15°45.4
Shaula	96°09.4	-37°07.4
Rasalhague	95°57.9	12°32.6
Eltanin	90°41.5	51°29.3
Kaus Aug.	83°31.5	-34°22.4
Vega	80°32.5	-38°48.5
Nunki	75°46.8	-26°15.9
Altair	61°59.2	8°56.2
Peacock	53°04.4	-56°39.1
Deneb	49°25.0	45°22.3
Enif	33°38.0	9°59.6
Al Na'ir	27°31.9	-46°50.0
Fomalhaut	15°13.7	-29°29.0
Scheat	13°44.5	28°13.3
Markab	13°29.2	15°20.6

Dubhe	193° 40.9	61° 37.0
Denebola	182° 24.7	14° 25.9
Gienah	175° 43.3	-17° 41.1
Acrux	173° 00.0	-63° 14.7
Gacrux	171° 51.4	-57° 15.6
Alioth	166° 12.8	55° 49.5
Spica	158° 21.9	-11° 17.7
Alkaid	152° 51.7	49° 11.4
Hadar	148° 35.4	-60° 30.0
Menkent	147° 57.1	-36° 29.9
Arcturus	145° 47.5	19° 03.1
Rigel Kent	139° 39.6	-60° 56.7
Kochab	137° 19.6	74° 03.3
Zuben ubi	136° 55.5	-16° 08.9
Alphecca	126° 03.2	26° 37.9
Antares	112° 15.1	-26° 29.4
Atria	107° 08.5	-69° 04.6
Sabik	102° 02.0	-15° 45.4
Shaula	96° 09.4	-37° 07.4
Rasalhague	95° 67.9	12° 32.6
Eltanin	90° 41.5	51° 29.3
Kaus Aua	83° 31.5	-34° 22.4
Vega	80° 32.5	38° 48.5
Nunki	75° 46.8	-26° 15.9
Altair	61° 59.2	8° 56.2
Peacock	53° 04.4	-56° 39.1
Deneb	49° 25.0	45° 22.3
Enif	33° 38.0	9° 59.6
Al Na'ir	27° 31.9	-46° 50.0
Fomalhaut	15° 13.7	-29° 29.0
Scheat	13° 44.5	-28° 13.3
Markab	13° 29.2	15° 20.6

Aries			Venus			Mars			Jupiter			Saturn		
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	310°49.7	218°32.3	N21°57.4	133°25.1	N01°46.7	207°52.4	N22°49.4	308°24.5	S01°32.6					
1	325°52.2	233°31.7		57.4	148°26.1	46.1	222°54.3	49.4	323°27.1					
2	340°54.7	248°31.0		57.5	163°27.2	45.5	237°56.1	49.3	338°29.6					
3	355°57.1	263°30.3	.. 57.6	178°28.3	.. 44.8	252°58.0	.. 49.3	353°32.1	.. 32.7					
4	10°59.6	278°29.7		57.7	193°29.3	44.2	267°59.9	49.2	8°34.7					
5	26°02.1	293°29.0		57.8	208°30.4	43.5	283°01.8	49.2	23°37.2					
6	41°04.5	308°28.4	N21°57.8	223°31.4	N01°42.9	298°03.7	N22°49.2	38°39.7	S01°32.8					
7	56°07.0	323°27.7		57.9	238°32.5	42.3	313°05.6	49.1	53°42.3					
8	71°09.5	338°27.0		58.0	253°33.6	41.6	328°07.5	49.1	68°44.8					
9	86°11.9	353°26.4	.. 58.1	268°34.6	.. 41.0	343°09.4	.. 49.0	83°47.3	.. 33.0					
10	101°14.4	8°25.7		58.1	283°35.7	40.3	358°11.2	49.0	98°49.9					
11	116°16.8	23°25.0		58.2	298°36.7	39.7	13°13.1	48.9	113°52.4					
12	131°19.3	38°24.4	N21°58.3	313°37.8	N01°39.0	28°15.0	N22°48.9	128°54.9	S01°33.1					
13	146°21.8	53°23.7		58.3	328°38.9	38.4	43°16.9	48.8	143°57.5					
14	161°24.2	68°23.1		58.4	343°39.9	37.8	58°18.8	48.8	159°00.0					
15	176°26.7	83°22.4	.. 58.5	358°41.0	.. 37.1	73°20.7	.. 48.8	174°02.6	.. 33.2					
16	191°29.2	98°21.7		58.5	13°42.0	36.5	88°22.6	48.7	189°05.1					
17	206°31.6	113°21.1		58.6	28°43.1	35.8	103°24.5	48.7	204°07.6					
18	221°34.1	128°20.4	N21°58.7	43°44.2	N01°35.2	118°26.4	N22°48.6	219°10.2	S01°33.4					
19	236°36.6	143°19.7		58.7	58°45.2	34.6	133°28.2	48.6	234°12.7					
20	251°39.0	158°19.1		58.8	73°46.3	33.9	148°30.1	48.5	249°15.2					
21	266°41.5	173°18.4	.. 58.8	88°47.3	.. 33.3	163°32.0	.. 48.5	264°17.8	.. 33.5					
22	281°43.9	188°17.7		58.9	103°48.4	32.6	178°33.9	48.5	279°20.3					
23	296°46.4	203°17.1		59.0	118°49.4	32.0	193°35.8	48.4	294°22.9					
Mer.pass.:03:16				v-0.7 d0.1 m-3.9			v1.1 d-0.6 m1.6			v1.9 d-0.0 m-1.8			v2.5 d-0.0 m0.8	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	311°48.9	218°16.4	N21°59.0	133°50.5	N01°31.3	208°37.7	N22°48.4	309°25.4	S01°33.6
1	326°51.3	233°15.7	59.1	148°51.6	30.7	223°39.6	48.3	324°27.9	33.7
2	341°53.8	248°15.1	59.1	163°52.6	30.1	238°41.5	48.3	339°30.5	33.7
3	356°56.3	263°14.4	59.2	178°53.7	29.4	253°43.4	48.2	354°33.0	33.7
4	11°58.7	278°13.7	59.2	193°54.7	28.8	268°45.3	48.2	9°35.5	33.8
5	27°01.2	293°13.1	59.3	208°55.8	28.1	283°47.2	48.1	24°38.1	33.8
6	42°03.7	308°12.4	N21°59.3	223°56.8	N01°27.5	298°49.0	N22°48.1	39°40.6	S01°33.9
7	57°06.1	323°11.7	59.4	238°57.9	26.8	313°50.9	48.1	54°43.2	33.9
8	72°08.6	338°11.1	59.4	253°59.0	26.2	328°52.8	48.0	69°45.7	34.0
9	87°11.1	353°10.4	59.5	269°00.0	25.6	343°54.7	48.0	84°48.2	34.0
10	102°13.5	8°09.7	59.5	284°01.1	24.9	358°56.6	47.9	99°50.8	34.0
11	117°16.0	23°09.1	59.6	299°02.1	24.3	13°58.5	47.9	114°53.3	34.1
12	132°18.4	38°08.4	N21°59.6	314°03.2	N01°23.6	29°00.4	N22°47.8	129°55.9	S01°34.1
13	147°20.9	53°07.7	59.7	329°04.2	23.0	44°02.3	47.8	144°58.4	34.2
14	162°23.4	68°07.0	59.7	344°05.3	22.4	59°04.2	47.7	160°00.9	34.2
15	177°25.8	83°06.4	59.8	359°06.4	21.7	74°06.1	47.7	175°03.5	34.3
16	192°28.3	98°05.7	59.8	14°07.4	21.1	89°08.0	47.6	190°06.0	34.3
17	207°30.8	113°05.0	59.8	29°08.5	20.4	104°09.8	47.6	205°08.6	34.4
18	222°33.2	128°04.4	N21°59.9	44°09.5	N01°19.8	119°11.7	N22°47.6	220°11.1	S01°34.4
19	237°35.7	143°03.7	59.9	59°10.6	19.1	134°13.6	47.5	235°13.6	34.4
20	252°38.2	158°03.0	60.0	74°11.6	18.5	149°15.5	47.5	250°16.2	34.5
21	267°40.6	173°02.4	00.0	89°12.7	17.8	164°17.4	47.4	265°18.7	34.5
22	282°43.1	188°01.7	00.0	104°13.8	17.2	179°19.3	47.4	280°21.3	34.6
23	297°45.6	203°01.0	00.1	119°14.8	16.6	194°21.2	47.3	295°23.8	34.6
Mer.pass.:03:12				v-0.7 d0.1 m-3.9		v1.9 d-0.0 m-1.8		v2.5 d-0.0 m0.8	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec						
0	312°48.0	218°00.3	N22°00.1	134°15.9	N01°15.9	209°23.1	N22°47.3	310°26.3	S01°34.7						
1	327°50.5	232°59.7	00.1	149°16.9	15.3	224°25.0	47.2	325°28.9	34.7						
2	342°52.9	247°59.0	00.2	164°18.0	14.0	239°26.9	47.2	340°31.4	34.8						
3	357°55.4	262°58.3	.. 00.2	179°19.0	.. 14.6	254°28.8	.. 47.2	355°34.0	.. 34.8						
4	12°57.9	277°57.7	00.2	194°20.1	13.3	269°30.7	47.1	10°36.5	34.8						
5	28°00.3	292°57.0	00.2	209°21.1	12.7	284°32.6	47.1	25°39.1	34.9						
6	43°02.8	307°56.3	N22°00.3	224°22.2	N01°12.1	299°34.4	N22°47.0	40°41.6	S01°34.9						
7	58°05.3	322°55.6	00.3	239°23.3	11.4	314°36.3	47.0	55°44.1	35.0						
8	73°07.7	337°55.0	00.3	254°24.3	10.8	329°38.2	46.9	70°46.7	35.0						
9	88°10.2	352°54.3	.. 00.3	269°25.4	.. 10.1	344°40.1	.. 46.9	85°49.2	.. 35.1						
10	103°12.7	7°53.6	00.4	284°26.4	09.5	359°42.0	46.8	100°51.8	35.1						
11	118°15.1	22°52.9	00.4	299°27.5	08.8	14°43.9	46.8	115°54.3	35.2						
12	133°17.6	37°62.3	N22°00.4	314°28.5	N01°08.2	29°45.8	N22°46.7	130°56.9	S01°35.2						
13	148°20.1	52°51.6	00.4	329°29.6	07.6	44°47.7	46.7	145°59.4	35.3						
14	163°22.5	67°50.9	00.4	344°30.6	06.9	59°49.6	46.7	161°01.9	35.3						
15	178°25.0	82°50.2	.. 00.5	359°31.7	.. 06.3	74°51.5	.. 46.6	176°04.5	.. 35.3						
16	193°27.4	97°49.6	00.5	14°32.7	05.6	89°53.4	46.6	191°07.0	35.4						
17	208°29.9	112°48.9	00.5	29°33.8	05.0	104°55.3	46.5	206°09.6	35.4						
18	223°32.4	127°48.2	N22°00.5	44°34.9	N01°04.3	119°57.2	N22°46.5	221°12.1	S01°35.5						
19	238°34.8	142°47.5	00.5	59°35.9	03.7	134°59.1	46.4	236°14.7	35.5						
20	253°37.3	157°46.9	00.5	74°37.0	03.0	150°01.0	46.4	251°17.2	35.6						
21	268°39.8	172°46.2	.. 00.6	89°38.0	.. 02.4	165°02.9	.. 46.3	266°19.8	.. 35.6						
22	283°42.2	187°45.5	00.6	104°39.1	01.8	180°04.7	46.3	281°22.3	35.7						
23	298°44.7	202°44.8	00.6	119°40.1	01.1	195°06.6	46.2	296°24.8	35.7						
Mer.pass.:03:08				v-0.7 d0.0 m-3.9			v1.1 d-0.6 m1.6			v1.9 d-0.0 m-1.8			v2.5 d-0.0 m0.8		

Stars			Sun			Moon				
SHA	Dec		Sat	GHA	Dec	GHA	ν	Dec	d	HP
Alpheratz	357°34.1	29°13.9	0	178°24.3	N17°44.7	89°31.2	13.8°	S20°28.8	-10.3'	54.2'
Ankaa	353°06.4	-42°09.7	1	193°24.4		104°04.0	13.8°	20°39.0	-10.2'	54.2'
Schedar	349°30.2	56°40.5	2	208°24.4		118°36.7	13.7°	20°49.2	-10.1'	54.2'
Diphda	348°46.6	-17°50.6	3	223°24.4	.. 42.8	133°09.3	13.6°	20°59.2	-10.0'	54.2'
Achernar	335°19.7	-57°06.1	4	238°24.5		147°41.9	13.6°	21°09.2	-9.9'	54.2'
Hamal	327°50.6	23°35.0	5	253°24.5		162°14.4	13.5°	21°19.1	-9.9'	54.3'
Polaris	313°51.1	89°22.0	6	268°24.6	N17°40.9	176°46.9	13.4°	S21°29.0	-9.8'	54.3'
Acamar	315°11.4	-40°11.8	7	283°24.6		191°19.3	13.3°	21°38.7	-9.7'	54.3'
Menkar	314°05.7	4°11.5	8	298°24.7		205°51.6	13.3°	21°48.3	-9.6'	54.3'
Mirfak	308°27.7	49°56.9	9	313°24.7	.. 38.9	220°23.8	13.2°	21°57.9	-9.5'	54.3'
Aldebaran	290°39.2	16°33.7	10	328°24.8		234°56.0	13.1°	22°07.3	-9.4'	54.3'
Rigel	281°03.6	-8°10.2	11	343°24.8		249°28.0	13.0°	22°16.7	-9.3'	54.3'
Capella	280°21.5	46°01.3	12	358°24.9	N17°37.0	264°00.0	13.0°	S22°26.0	-9.2'	54.3'
Bellatrix	278°22.6	6°22.5	13	13°24.9		278°32.0	12.9°	22°35.1	-9.1'	54.3'
Elnath	278°01.5	28°37.7	14	28°25.0		293°03.9	12.8°	22°44.2	-9.0'	54.3'
Alnilam	275°37.5	-1°11.0	15	43°25.0	.. 35.1	307°35.6	12.8°	22°53.2	-8.9'	54.3'
Betelgeuse	270°51.8	7°24.8	16	58°25.1	34.4	322°07.4	12.7°	23°02.1	-8.8'	54.3'
Canopus	263°52.6	-52°42.3	17	73°25.1	33.8	336°39.0	12.6°	23°10.9	-8.7'	54.3'
Sirius	258°26.1	-16°44.9	18	88°25.2	N17°33.1	351°10.6	12.5°	S23°19.6	-8.6'	54.3'
Adhara	255°05.8	-29°00.2	19	103°25.2		5°42.1	12.5°	23°28.2	-8.5'	54.3'
Procyon	244°50.7	5°09.7	20	118°25.3		20°13.5	12.4°	23°36.7	-8.4'	54.3'
Pollux	234°17.1	27°57.9	21	133°25.3	.. 31.2	34°44.8	12.3°	23°45.1	-8.3'	54.3'
Avior	234°15.2	-59°35.4	22	148°25.4		49°16.1	12.2°	23°53.4	-8.2'	54.3'
Suhail	222°46.4	-43°32.1	23	163°25.4	29.8	63°47.2	12.1°	24°01.6	-8.1'	54.3'
Miaplacidus	221°39.2	-69°49.3		SD.=15.7	d=-0.6			S.D.=14.8		
Alphard	217°47.6	-8°46.1	Sun	GHA	Dec	GHA	ν	Dec	d	HP
Regulus	207°34.2	11°50.6	0	178°25.5	N17°29.2	78°18.4	12.1°	S24°09.7	-8.0'	54.4'
Dubhe	193°40.9	61°37.0	1	193°25.5		92°49.4	12.0°	24°17.6	-7.9'	54.4'
Denebola	182°24.7	14°25.9	2	208°25.6		107°20.3	11.9°	24°25.5	-7.8'	54.4'
Gienah	175°43.3	-17°41.1	3	223°25.6	.. 27.2	121°51.2	11.8°	24°33.3	-7.7'	54.4'
Acrux	173°00.0	-63°14.7	4	238°25.7		136°22.0	11.8°	24°41.0	-7.6'	54.4'
Gacrux	171°51.5	-57°15.6	5	253°25.7		150°52.7	11.7°	24°48.5	-7.5'	54.4'
Alioth	166°12.8	55°49.5	6	268°25.8	N17°25.3	165°23.4	11.6°	S24°56.0	-7.4'	54.4'
Spica	158°21.9	-11°17.7	7	283°25.8		179°54.0	11.5°	25°03.3	-7.3'	54.4'
Alkaid	152°51.7	49°11.4	8	298°25.9		194°24.5	11.5°	25°10.5	-7.2'	54.4'
Hadar	148°35.4	-60°30.0	9	313°25.9	.. 23.9	208°54.9	11.4°	25°17.7	-7.1'	54.4'
Menkent	147°57.1	-36°29.9	10	328°26.0		223°25.2	11.3°	25°24.7	-6.9'	54.4'
Arcturus	145°47.5	19°03.1	11	343°26.0		237°55.5	11.2°	25°31.6	-6.8'	54.5'
Rigel Kent.	139°39.6	-60°56.7	12	358°26.1	N17°21.3	252°25.7	11.2°	S25°38.3	-6.7'	54.5'
Kochab	137°19.7	74°03.3	13	13°26.1		266°55.8	11.1°	25°45.0	-6.6'	54.5'
Zuben'ubi	136°55.5	-16°08.9	14	28°26.2		281°25.8	11.0°	25°51.5	-6.5'	54.5'
Alphecca	126°03.2	26°37.9	15	43°26.3	.. 19.3	295°55.8	10.9°	25°58.0	-6.4'	54.5'
Antares	112°15.1	-26°29.4	16	58°26.3		310°25.7	10.8°	26°04.3	-6.3'	54.5'
Atria	107°08.5	-69°04.6	17	73°26.4	18.0	324°55.5	10.8°	26°10.5	-6.1'	54.5'
Sabik	102°02.0	-15°45.4	18	88°26.4	N17°17.3	339°25.2	10.7°	S26°16.5	-6.0'	54.5'
Shaula	96°09.4	-37°07.4	19	103°26.5		353°54.9	10.6°	26°22.5	-5.9'	54.6'
Rasalhague	95°57.9	12°32.6	20	118°26.5	16.0	8°24.5	10.6°	26°28.3	-5.8'	54.6'
Eltanin	90°41.6	51°29.3	21	133°26.6	.. 15.4	22°54.0	10.5°	26°34.0	-5.6'	54.6'
Kaus Aust.	83°31.5	-34°22.4	22	148°26.6		14.7	10.4°	26°39.6	-5.5'	54.6'
Vega	80°32.5	38°48.6	23	163°26.7	14.0	51°52.8	10.3°	26°45.1	-5.4'	54.6'
Nunki	75°46.8	-26°15.9		SD.=15.8	d=-0.7			S.D.=14.8		
Altair	61°59.2	8°56.2	Mon	GHA	Dec	GHA	ν	Dec	d	HP
Peacock	53°04.4	-56°39.1	0	178°26.8	N17°13.4	66°22.1	10.3°	S26°50.4	-5.3'	54.6'
Deneb	49°25.0	45°22.3	1	193°26.8		80°51.3	10.2°	26°55.6	-5.1'	54.6'
Enif	33°38.0	9°59.6	2	208°26.9	.. 11.4	95°20.5	10.1°	27°00.7	-5.0'	54.7'
Al Na'ir	27°31.9	-46°50.0	3	223°26.9		109°49.6	10.0°	27°05.6	-4.9'	54.7'
Fomalhaut	15°14.7	-29°29.0	4	238°27.0		124°18.6	10.0°	27°10.4	-4.8'	54.7'
Scheat	13°43.4	28°13.3	5	253°27.0		138°47.5	9.9°	27°15.1	-4.6'	54.7'
Markab	13°29.2	15°20.6	6	268°27.1	N17°09.4	153°16.4	9.8°	S27°19.7	-4.5'	54.7'
Aug 02 Sat	SHA	Mer.pass	7	283°27.2		167°45.2	9.8°	27°24.1	-4.4'	54.7'
Venus	267°42.6	09:26	8	298°27.2		182°14.0	9.7°	27°28.4	-4.2'	54.7'
Mars	182°35.4	15:05	9	313°27.3	.. 07.4	196°42.6	9.6°	27°32.6	-4.1'	54.8'
Jupiter	257°02.6	10:07	10	328°27.3		211°11.2	9.6°	27°36.6	-4.0'	54.8'
Saturn	357°34.8	03:26	11	343°27.4	06.0	225°39.8	9.5°	27°40.5	-3.8'	54.8'
Aug 03 Sun	SHA	Mer.pass	12	358°27.5	N17°05.3	240°08.3	9.5°	S27°44.3	-3.7'	54.8'
Venus	266°27.5	09:27	13	13°27.5		254°36.7	9.4°	27°47.9	-3.6'	54.8'
Mars	182°01.6	15:04	14	28°27.6	04.0	269°05.1	9.3°	27°51.4	-3.4'	54.9'
Jupiter	256°48.8	10:04	15	43°27.7	.. 03.3	283°33.4	9.3°	27°54.8	-3.3'	54.9'
Saturn	357°36.5	03:22	16	58°27.7	02.0	298°01.6	9.2°	27°58.0	-3.1'	54.9'
Aug 04 Mon	SHA	Mer.pass	17	73°27.8	02.0	312°29.8	9.2°	28°01.0	-3.0'	54.9'
Venus	265°12.3	09:28	18	88°27.8	N17°01.3	326°57.9	9.1°	S28°04.0	-2.9'	54.9'
Mars	181°27.9	15:02	19	103°27.9	00.6	341°26.0	9.0°	28°06.8	-2.7'	54.9'
Jupiter	256°35.1	10:01	20	118°28.0	17°00.0	355°54.0	9.0°	28°09.4	-2.6'	55.0'
Saturn	357°38.3	03:18	21	133°28.0	16°59.3	10°21.9	8.9°	28°11.9	-2.4'	55.0'
Horizontal parallax			22	148°28.1	58.6	24°49.8	8.9°	28°14.3	-2.3'	55.0'
Venus:	0.1		23	163°28.2	57.9	39°17.7	8.8°	28°16.5	-2.2'	55.0'
Mars:	0.1			SD.=15.8	d=-0.7			S.D.=14.9		

	Aries			Venus			Mars			Jupiter			Saturn		
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	313°47.2	217°44.2	N22°00.6	134°41.2	N01°00.5	210°08.5	N22°46.2	311°27.4	S01°35.8						
1	328°49.6	232°43.5	00.6	149°42.2	00°59.8	225°10.4	46.2	326°29.9	35.8						
2	343°52.1	247°42.8	00.6	164°43.3	59.2	240°12.3	46.1	341°32.5	35.8						
3	358°54.5	262°42.1	•• 00.6	179°44.3	•• 58.5	255°14.2	•• 46.1	356°35.0	•• 35.9						
4	13°57.0	277°41.5	00.6	194°45.4	57.9	270°16.1	46.0	11°37.6	35.9						
5	28°59.5	292°40.8	00.6	209°46.4	57.2	285°18.0	46.0	26°40.1	36.0						
6	44°01.9	307°40.1	N22°00.6	224°47.5	N00°56.6	300°19.9	N22°45.9	41°42.7	S01°36.0						
7	59°04.4	322°39.4	00.6	239°48.5	56.0	315°21.8	45.9	56°45.2	36.1						
8	74°06.9	337°38.7	00.6	254°49.7	55.3	330°23.7	45.8	71°47.8	36.1						
9	89°09.3	352°38.1	•• 00.6	269°50.7	•• 54.7	345°25.6	•• 45.8	86°50.3	•• 36.2						
10	104°11.8	7°37.4	00.6	284°51.7	54.0	0°27.5	45.7	101°52.9	36.2						
11	119°14.3	22°36.7	00.6	299°52.8	53.4	15°29.4	45.7	116°55.4	36.3						
12	134°16.7	37°36.0	N22°00.6	314°53.8	N00°52.7	30°31.3	N22°45.7	131°57.9	S01°36.3						
13	149°19.2	52°35.4	00.6	329°54.9	52.1	45°33.2	45.6	147°00.5	36.4						
14	164°21.7	67°34.7	00.6	344°55.9	51.4	60°35.1	45.6	162°03.0	36.4						
15	179°24.1	82°34.0	•• 00.6	359°57.0	•• 50.8	75°37.0	•• 45.5	177°05.6	•• 36.5						
16	194°26.6	97°33.3	00.6	14°58.0	50.1	90°38.9	45.5	192°08.1	36.5						
17	209°29.0	112°32.6	00.6	29°59.1	49.5	105°40.8	45.4	207°10.7	36.5						
18	224°31.5	127°32.0	N22°00.6	45°00.1	N00°48.9	120°42.7	N22°45.4	222°13.2	S01°36.6						
19	239°34.0	142°31.0	00.6	60°01.2	48.2	135°44.6	45.3	237°15.8	36.6						
20	254°36.4	157°30.6	00.5	75°02.2	47.6	150°46.5	45.3	252°18.3	36.7						
21	269°38.9	172°29.9	•• 00.5	90°03.3	•• 46.9	165°48.4	•• 45.2	267°20.9	•• 36.7						
22	284°41.4	187°29.2	00.5	105°04.3	46.4	180°50.2	45.2	282°23.4	36.8						
23	299°43.8	202°28.6	00.5	120°05.4	45.6	195°52.1	45.1	297°26.0	36.8						
Mer.pass.:03:04			v-0.7 d0.0 m-3.9			v1.1 d-0.6 m1.6			v1.9 d-0.0 m-1.8			v2.5 d-0.0 m0.8			

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	314°46.3	217°27.9	N22°00.5	135°06.4	N00°45.0	210°54.0	N22°45.1	312°28.5	S01°36.9	
1	329°48.8	232°27.2	00.5	150°07.5	44.3	225°55.9	45.1	327°31.1	36.9	
2	344°51.2	247°26.5	00.5	165°08.5	43.7	240°57.8	45.0	342°33.6	37.0	
3	359°53.7	262°25.8	•• 00.4	180°09.6	•• 43.0	255°59.7	•• 45.0	357°36.2	•• 37.0	
4	14°56.2	277°25.2	00.4	195°10.6	42.4	271°01.6	44.9	12°38.7	37.1	
5	29°58.6	292°24.5	00.4	210°11.7	41.8	286°03.5	44.9	27°41.3	37.1	
6	45°01.1	307°23.8	N22°00.4	225°12.7	N00°41.1	301°05.4	N22°44.8	42°43.8	S01°37.2	
7	60°03.5	322°23.1	00.3	240°13.8	40.5	316°07.3	44.8	57°46.4	37.2	
8	75°06.0	337°22.4	00.3	255°14.8	39.8	331°09.2	44.7	72°48.9	37.3	
9	90°08.5	352°21.7	•• 00.3	270°15.9	•• 39.2	346°11.1	•• 44.7	87°51.5	•• 37.3	
10	105°10.9	7°21.1	00.3	285°16.9	38.5	1°13.0	44.6	102°54.0	37.4	
11	120°13.4	22°20.4	00.2	300°18.0	37.9	16°14.9	44.6	117°56.6	37.4	
12	135°15.9	37°19.7	N22°00.2	315°19.0	N00°37.2	31°16.8	N22°44.5	132°59.1	S01°37.4	
13	150°18.3	52°19.0	00.2	330°20.1	36.6	46°18.7	44.5	148°01.7	37.5	
14	165°20.8	67°18.3	00.2	345°21.1	35.9	61°20.6	44.5	163°04.2	37.5	
15	180°23.3	82°17.7	•• 00.1	0°22.2	•• 35.3	76°22.5	•• 44.4	178°06.8	•• 37.6	
16	195°25.7	97°17.0	00.1	15°23.2	34.6	91°24.4	44.4	193°09.3	37.6	
17	210°28.2	112°16.3	00.1	30°24.3	34.0	106°26.3	44.3	208°11.9	37.7	
18	225°30.7	127°15.6	N22°00.0	45°25.3	N00°33.4	121°28.2	N22°44.3	223°14.4	S01°37.7	
19	240°33.1	142°14.9	00.0	60°26.4	32.7	136°30.1	44.2	238°17.0	37.8	
20	255°35.6	157°14.2	22°00.0	75°27.4	32.1	151°32.0	44.2	253°19.5	37.8	
21	270°38.0	172°13.6	21°59.9	90°28.5	•• 31.4	166°33.9	•• 44.1	268°22.1	•• 37.9	
22	285°40.5	187°12.9	59.9	105°29.5	30.8	181°35.8	44.1	283°24.6	37.9	
23	300°43.0	202°12.2	59.8	120°30.6	30.1	196°37.7	44.0	298°27.2	38.0	
Mer.pass.:03:00			v-0.7 d-0.0 m-3.9		v1.1 d-0.6 m1.6		v1.9 d-0.0 m-1.8		v2.5 d-0.0 m0.8	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	315°45.4	217°11.5	N21°59.8	135°31.6	N00°29.5	211°39.6	N22°44.0	313°29.7	S01°38.0	
1	330°47.9	232°10.8	59.8	150°32.7	28.8	226°41.5	43.9	328°32.3	38.1	
2	345°50.4	247°10.1	59.7	165°33.7	28.2	241°43.4	43.9	343°34.8	38.1	
3	0°52.8	262°09.4	•• 59.7	180°34.8	•• 27.5	256°45.3	•• 43.8	358°37.4	•• 38.1	
4	15°55.3	277°08.8	59.6	195°35.8	26.9	271°47.2	43.8	13°39.9	38.2	
5	30°57.8	292°08.1	59.6	210°36.9	26.2	286°49.1	43.8	28°42.5	38.3	
6	46°00.2	307°07.4	N21°59.5	225°37.9	N00°25.6	301°51.0	N22°43.7	43°45.0	S01°38.3	
7	61°02.7	322°06.7	59.5	240°39.0	25.0	316°52.9	43.7	58°47.6	38.4	
8	76°05.2	337°06.0	59.4	255°40.0	24.3	331°54.8	43.6	73°50.1	38.4	
9	91°07.6	352°05.3	•• 59.4	270°41.1	•• 23.7	346°56.7	•• 43.6	88°52.7	•• 38.5	
10	106°10.1	7°04.6	59.3	285°42.1	23.0	1°58.6	43.5	103°55.3	38.5	
11	121°12.5	22°04.0	59.3	300°43.1	22.4	17°00.5	43.5	118°57.8	38.6	
12	136°15.0	37°03.3	N21°59.2	315°44.2	N00°21.7	32°02.4	N22°43.4	134°00.4	S01°38.6	
13	151°17.5	52°02.6	59.2	330°45.2	21.1	47°04.3	43.4	149°02.9	38.7	
14	166°19.9	67°01.9	59.1	345°46.3	20.4	62°06.2	43.3	164°05.5	38.7	
15	181°22.4	82°01.2	•• 59.1	0°47.3	•• 19.8	77°08.1	•• 43.3	179°08.0	•• 38.8	
16	196°24.9	97°00.5	59.0	15°48.4	19.1	92°10.0	43.2	194°10.6	38.8	
17	211°27.3	111°59.8	59.0	30°49.4	18.5	107°11.9	43.2	209°13.1	38.9	
18	226°29.8	126°59.2	N21°58.9	45°50.5	N00°17.8	122°13.8	N22°43.1	224°15.7	S01°38.9	
19	241°32.3	141°58.5	58.8	60°51.5	17.2	137°15.7	43.1	239°18.2	39.0	
20	256°34.7	156°57.8	58.8	75°52.6	16.5	152°17.6	43.0	254°20.8	39.0	
21	271°37.2	171°57.1	•• 58.7	90°53.6	•• 15.9	167°19.5	•• 43.0	269°23.3	•• 39.1	
22	286°39.6	186°56.4	58.7	105°54.7	15.2	182°21.4	43.0	284°25.9	39.1	
23	301°42.1	201°55.7	58.6	120°55.7	14.6	197°23.3	42.9	299°28.5	39.2	
Mer.pass.:02:56			v-0.7 d-0.0 m-3.9		v1.0 d-0.6 m1.6		v1.9 d-0.0 m-1.8		v2.6 d-0.0 m0.8	

	SHA	Dec
Alpheratz	357°34.0	29°13.9
Ankaa	353°06.4	-42°09.7
Schedar	349°30.2	56°40.5
Diphda	348°46.6	-17°50.6
Achernar	335°19.6	-57°06.0
Hamal	327°50.6	23°35.0
Polaris	313°49.3	89°22.0
Acamar	315°11.4	-40°11.8
Menkar	314°05.7	4°11.5
Mirfak	308°27.6	49°57.0
Aldebaran	290°39.2	16°33.7
Rigel	281°03.6	-8°10.2
Capella	280°21.4	46°01.3
Bellatrix	278°22.6	6°22.5
Elnath	278°01.5	28°37.7
Anilam	275°37.4	-1°11.0
Betelgeuse	270°51.8	7°24.8
Canopus	263°52.6	-52°42.3
Sirius	258°26.1	-16°44.9
Adhara	255°05.8	-29°00.2
Procyon	244°50.6	5°09.7
Pollux	243°17.1	27°57.9
Avior	234°15.2	-59°35.4
Suhail	222°46.4	-43°32.1
Miaplacidus	221°39.2	-69°49.3
Alphard	217°47.6	-8°46.1
Regulus	207°34.2	11°50.6
Dubhe	193°40.9	61°37.0
Denebola	182°24.7	14°25.9
Gienah	175°43.3	-17°41.1
Acrux	173°00.0	-63°14.7
Gacrux	171°51.5	-57°15.6
Alloth	166°12.8	55°49.5
Spica	158°21.9	-11°17.7
Alkaid	152°51.7	49°11.4
Hadar	148°35.5	-60°30.0
Menkent	147°57.1	-36°29.9
Arcturus	145°47.5	19°03.1
Rigel Cent.	139°39.7	-60°56.7
Kochab	137°19.8	74°03.3
Zuben'ubi	136°55.5	-16°08.9
Alphecca	126°03.2	26°37.9
Antares	112°15.1	-26°29.4
Atria	107°08.6	-69°04.6
Sabik	102°02.0	-15°45.4
Shaula	96°09.4	-37°07.4
Rasalhague	95°57.9	12°32.6
Eltanin	90°41.6	51°29.3
Kaus Aust.	83°31.1	34°22.4
Vega	80°32.5	38°48.6
Nunki	75°46.8	-26°15.9
Altair	61°59.2	8°56.2
Peacock	53°04.3	-56°39.1
Deneb	49°25.0	45°22.3
Enif	33°38.0	9°59.6
Al Na'ir	27°31.8	-46°50.1
Fomalhaut	15°13.6	-29°29.0
Scheat	13°44.4	28°13.3
Markab	13°29.1	15°20.6

Dubhe	193°40.9	61°37.0
Denebola	182°24.7	14°25.9
Gienah	175°43.3	-17°41.1
Acrux	173°00.0	-63°14.7
Gacrux	171°51.5	-55°15.6
Alioth	166°12.8	57°49.5
Spica	158°21.9	-11°17.7
Alkaid	152°51.7	49°11.4
Hadar	148°35.5	-60°30.0
Menkent	147°57.1	-36°29.9
Arcturus	145°47.5	19°03.1
Rigil Kent.	139°39.7	-60°56.7
Kochab	137°19.8	74°03.3
Zuben 'ubi	136°55.5	-16°08.9
Alphecca	126°03.2	26°37.9
Antares	112°15.1	-26°29.4
Atria	107°08.6	-69°04.6
Sabik	102°02.0	-15°45.4
Shaula	96°09.4	-37°07.4
Rasalhague	95°57.9	12°32.6
Eltanin	90°41.6	51°29.3
Kaus Aust.	83°31.5	-34°22.4
Vega	80°32.5	38°48.6
Nunki	75°46.8	-26°15.9
Altair	61°59.2	8°56.2
Peacock	53°04.3	-56°39.1
Deneb	49°25.0	45°22.3
Enif	33°38.0	9°59.6
Al Na'ir	27°31.8	-46°50.1
Fomalhaut	15°13.6	-29°29.0
Scheat	13°44.4	28°13.3
Markab	13°29.1	15°20.6

	Aries		Venus		Mars		Jupiter		Saturn				
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	316°44.6	216°55.0	N21°58.5	135°56.8	N00°14.0	212°25.2	N22°42.9	314°31.0	S01°39.2				
1	331°47.0	231°54.3	58.5	150°57.8	13.3	227°27.1	42.8	329°33.6	39.3				
2	346°49.5	246°53.7	58.4	165°58.8	12.7	242°29.0	42.8	344°36.1	39.3				
3	1°52.0	261°53.0	.. 58.3	180°59.9	.. 12.0	257°30.9	.. 42.7	359°38.7	.. 39.4				
4	16°54.4	276°52.3	58.3	196°09.9	11.4	272°32.8	42.7	14°41.2	39.4				
5	31°56.9	291°51.6	58.2	211°02.0	10.7	287°34.7	42.6	29°43.8	39.5				
6	46°59.4	306°50.9	N21°58.1	226°03.0	N00°10.1	302°36.7	N22°42.6	44°46.4	S01°39.5				
7	62°01.8	321°50.2	58.0	241°04.1	09.4	317°38.6	42.5	59°48.9	39.6				
8	77°04.3	336°49.5	58.0	256°05.1	08.8	332°40.5	42.5	74°51.5	39.6				
9	92°06.8	351°48.8	.. 57.9	271°06.2	.. 08.1	347°42.4	.. 42.4	89°54.0	.. 39.7				
10	107°09.8	6°48.2	57.8	286°07.2	07.5	2°44.3	42.4	104°56.6	39.7				
11	122°11.7	21°47.5	57.7	301°08.3	06.8	17°46.2	42.3	119°59.1	39.8				
12	137°14.1	36°46.8	N21°57.7	316°09.3	N00°06.2	32°48.1	N22°42.3	135°01.7	S01°39.8				
13	152°16.6	51°46.1	57.6	331°10.3	05.5	47°50.0	42.2	150°04.2	39.9				
14	167°19.1	66°45.4	57.5	346°11.4	04.9	62°51.9	42.2	165°06.8	39.9				
15	182°21.5	81°44.7	.. 57.4	1°12.4	.. 04.2	77°53.8	.. 42.1	180°09.4	.. 40.0				
16	197°24.0	96°44.0	57.3	16°13.5	03.6	92°55.7	42.1	195°11.9	40.0				
17	212°26.5	111°43.3	57.3	31°14.5	02.9	107°57.6	42.1	210°14.5	40.1				
18	227°28.9	126°42.6	N21°57.2	46°15.6	N00°02.3	122°59.5	N22°42.0	225°17.0	S01°40.1				
19	242°31.4	141°42.0	57.1	61°16.6	01.6	138°01.4	42.0	240°19.6	40.2				
20	257°33.9	156°41.3	57.0	76°17.7	01.0	153°03.3	.. 41.9	255°22.2	.. 40.2				
21	272°36.3	171°40.6	.. 56.9	91°18.7	N00°00.3	168°05.2	.. 41.9	270°24.7	.. 40.3				
22	287°38.8	186°39.9	56.8	106°19.7	S00°00.3	183°07.1	41.8	285°27.3	40.3				
23	302°41.3	201°39.2	56.7	121°20.8	00.9	198°09.0	41.8	300°29.8	40.4				
Mer.pass.:02:53			v-0.7 d-0.1 m-3.9			v1.0 d-0.6 m1.6			v1.9 d-0.0 m-1.8			v2.6 d-0.1 m0.8	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	317°43.7	216°38.5	N21°56.7	136°21.8	S00°01.6	213°10.9	N22°41.7	315°32.4	S01°40.4					
1	332°46.2	231°37.8	56.6	151°22.9	02.2	228°12.8	41.7	330°34.9	40.5					
2	347°48.6	246°37.1	56.5	166°23.9	02.9	243°14.7	41.6	345°37.5	40.5					
3	2°51.1	261°36.4	.. 56.4	181°25.0	.. 03.5	258°16.6	.. 41.6	0°40.1	.. 40.6					
4	17°53.6	276°35.7	56.3	196°26.0	04.2	273°18.5	41.5	15°42.6	40.6					
5	32°56.0	291°35.0	56.2	211°27.1	04.8	288°20.5	41.5	30°45.2	40.7					
6	47°58.5	306°34.4	N21°56.1	226°28.1	S00°05.5	303°22.4	N22°41.4	45°47.7	S01°40.7					
7	63°01.0	321°33.7	56.0	241°29.1	06.1	318°24.3	41.4	60°50.3	40.8					
8	78°03.4	336°33.0	55.9	256°30.2	06.8	333°26.2	41.3	75°52.9	40.8					
9	93°05.9	351°32.3	.. 55.8	271°31.2	.. 07.4	348°28.1	.. 41.3	90°55.4	.. 40.9					
10	108°08.4	6°31.6	55.7	286°32.3	08.1	3°30.0	41.2	105°58.0	40.9					
11	123°10.8	21°30.9	55.6	301°33.3	08.7	18°31.9	41.2	121°00.5	41.0					
12	138°13.3	36°30.2	N21°55.5	316°34.4	S00°09.4	33°33.8	N22°41.1	136°03.1	S01°41.1					
13	153°15.7	51°29.5	55.4	331°35.4	10.0	48°35.7	41.1	151°05.7	41.1					
14	168°18.2	66°28.8	55.3	346°36.4	10.7	63°37.6	41.0	166°08.2	41.2					
15	183°20.7	81°28.1	.. 55.2	1°37.5	.. 11.3	78°39.5	.. 41.0	181°10.8	.. 41.2					
16	198°23.1	96°27.4	55.1	16°38.5	12.0	93°41.4	40.9	196°13.3	41.3					
17	213°25.6	111°26.8	55.0	31°39.6	12.6	108°43.3	40.9	211°15.9	41.3					
18	228°28.1	126°26.1	N21°54.9	46°40.6	S00°13.3	123°45.2	N22°40.9	226°18.5	S01°41.4					
19	243°30.5	141°25.4	54.7	61°41.6	13.9	138°47.1	40.8	241°21.0	41.4					
20	258°33.0	156°24.7	54.6	76°42.7	14.6	153°49.0	40.8	256°23.6	41.5					
21	273°35.5	171°24.0	.. 54.5	91°43.7	.. 15.2	168°51.0	.. 40.7	271°26.1	.. 41.5					
22	288°37.9	186°23.3	54.4	106°44.8	15.9	183°52.9	40.7	286°28.7	41.6					
23	303°40.4	201°22.6	54.3	121°45.8	16.5	198°54.8	40.6	301°31.3	41.6					
Mer.pass.:02:49			v-0.7 d-0.1 m-3.9			v1.0 d-0.6 m1.6			v1.9 d-0.0 m-1.8			v2.6 d-0.1 m0.8		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	318°42.9	216°21.9	N21°54.2	136°46.9	S00°17.2	213°56.7	N22°40.6	316°33.8	S01°41.7					
1	333°45.3	231°21.2	54.1	151°47.9	17.8	228°58.6	40.5	331°36.4	41.7					
2	348°47.8	246°20.5	54.0	166°48.9	18.5	244°00.5	40.5	346°39.0	41.8					
3	3°50.2	261°19.8	.. 53.8	181°50.0	.. 19.1	259°02.4	.. 40.4	1°41.5	.. 41.8					
4	18°52.7	276°19.1	53.7	196°51.0	19.8	274°04.3	40.4	16°44.1	41.9					
5	33°55.2	291°18.4	53.6	211°52.1	20.4	289°06.2	40.3	31°46.6	41.9					
6	48°57.6	306°17.7	N21°53.5	226°53.1	S00°21.1	304°08.1	N22°40.3	46°49.2	S01°42.0					
7	64°00.1	321°17.1	53.4	241°54.1	21.7	319°10.0	40.2	61°51.8	42.1					
8	79°02.6	336°16.4	53.2	256°55.2	22.4	334°11.9	40.2	76°54.3	42.1					
9	94°05.0	351°15.7	.. 53.1	271°56.2	.. 23.0	349°13.9	.. 40.1	91°56.9	.. 42.2					
10	109°07.5	6°15.0	53.0	286°57.3	23.7	4°15.8	40.1	106°59.5	.. 42.2					
11	124°10.0	21°14.3	52.9	301°58.3	24.3	19°17.7	40.0	122°02.0	42.3					
12	139°12.4	36°13.6	N21°52.7	316°59.3	S00°25.0	34°19.6	N22°40.0	137°04.6	S01°42.3					
13	154°14.9	51°12.9	52.6	332°00.4	25.6	49°21.5	39.9	152°07.2	42.4					
14	169°17.4	66°12.2	52.5	347°01.4	26.3	64°23.4	39.9	167°09.7	42.4					
15	184°19.8	81°11.5	.. 52.3	2°02.5	.. 26.9	79°25.3	.. 39.8	182°12.3	.. 42.5					
16	199°22.3	96°10.8	52.2	17°03.5	27.6	94°27.2	39.8	197°14.8	42.5					
17	214°24.7	111°10.1	52.1	32°04.5	28.2	109°29.1	39.7	212°17.4	42.6					
18	229°27.2	126°09.4	N21°51.9	47°05.6	S00°28.9	124°31.0	N22°39.7	227°20.0	S01°42.6					
19	244°29.7	141°08.7	51.8	62°06.6	29.5	139°32.9	39.6	242°22.5	42.7					
20	259°32.1	156°08.0	51.7	77°07.7	30.2	154°34.9	39.6	257°25.1	42.7					
21	274°34.6	171°07.3	.. 51.5	92°08.7	.. 30.8	169°36.8	.. 39.5	272°27.7	.. 42.8					
22	289°37.1	186°06.6	51.4	107°09.7	31.5	184°38.7	39.5	287°30.2	42.9					
23	304°39.5	201°06.0	51.3	122°10.8	32.1	199°40.6	39.4	302°32.8	42.9					
Mer.pass.:02:45			v-0.7 d-0.1 m-3.9			v1.0 d-0.6 m1.6			v1.9 d-0.0 m-1.8			v2.6 d-0.1 m0.8		

Stars		
SHA	Dec	
Alpheratz	357°34.0	29°13.9
Ankaa	353°06.4	-42°09.7
Schedar	349°30.2	56°40.5
Diphda	348°46.6	-17°50.6
Achernar	335°19.6	-57°06.0
Hamal	327°50.6	23°35.0
Polaris	313°47.7	89°22.0
Acamar	315°11.4	-40°11.8
Menkar	314°05.6	4°11.5
Mirfak	308°27.6	49°57.0
Aldebaran	290°39.2	16°33.7
Rigel	281°03.6	-8°10.1
Capella	280°21.4	46°01.3
Bellatrix	278°22.5	6°22.5
Elnath	278°01.5	28°37.7
Anilam	275°37.4	-1°11.0
Betelgeuse	270°51.8	7°24.8
Canopus	263°52.6	-52°42.3
Sirius	258°26.1	-16°44.9
Adhara	255°05.8	-29°00.2
Procyon	244°50.6	5°09.7
Pollux	243°17.0	27°57.9
Avior	234°15.2	-59°35.3
Suhail	222°46.4	-43°32.1
Miaplacidus	221°39.2	-69°49.3
Alphard	217°47.6	-8°46.1
Regulus	207°34.2	11°50.6
Dubhe	193°40.9	61°36.9
Denebola	182°24.7	14°25.9
Gienah	175°43.3	-17°41.1
Acrux	173°00.0	-63°14.7
Gacrux	171°51.5	-57°15.6
Aliota	166°12.8	-55°49.5
Spica	158°21.9	-11°17.7
Alkaid	152°51.5	49°11.4
Hadar	148°35.7	-60°30.0
Menkent	147°57.1	-36°29.9
Arcturus	145°47.5	19°03.1
Rigel Kent	139°39.7	-60°56.7
Kochab	137°19.8	74°03.3
Zuben'ubi	126°55.5	-16°08.9
Alphecca	126°03.3	26°37.9
Antares	112°15.1	-26°29.4
Atria	107°08.6	-69°04.6
Sabik	102°02.0	-15°45.4
Shaula	96°09.4	-37°07.4
Rasalhague	95°57.9	12°32.6
Eltanin	90°41.6	51°29.3
Kaus Aust.	83°31.5	34°22.4
Vega	80°32.5	38°48.6
Nunki	75°46.8	-26°15.9
Altair	61°59.2	8°56.3
Peacock	53°04.3	-56°39.1
Deneb	49°25.0	45°22.4
Enif	33°38.0	9°59.6
Al Na'ir	27°31.8	-46°50.1
Fomalhaut	15°13.6	-29°29.0
Scheat	13°44.4	28°13.3
Markab	13°29.1	15°20.7

Dubhe	193°24.9	61°36.9
Denebola	182°40.7	17°25.9
Gienah	175°43.3	-17°41.1
Acrux	173°00.0	-63°14.7
Gacrux	171°51.5	-57°15.6
Alioth	166°12.8	55°49.5
Spica	158°21.9	-11°17.7
Alkaid	152°51.7	49°11.4
Hadar	148°35.5	-66°30.0
Menkent	147°57.1	-30°29.9
Arcturus	145°47.5	19°03.1
Rigil Kent.	139°39.7	-60°56.7
Kochab	137°19.8	74°03.3
Zuben ul	136°55.5	-16°08.9
Alphecca	126°03.3	26°37.9
Antares	112°15.1	-26°29.4
Atria	107°08.6	-69°04.6
Sabik	102°02.0	-15°45.4
Shaula	96°09.4	-37°07.4
Rasalhague	95°57.9	12°32.6
Eltanin	90°41.6	51°29.3
Kaus Aust.	83°31.5	-34°22.4
Vega	80°32.5	38°48.6
Nunki	75°46.8	-26°15.9
Altair	61°59.2	8°56.3
Peacock	53°04.3	-56°39.1
Deneb	49°25.0	45°22.4
Enif	33°38.0	9°59.6
Al Na'ir	27°31.8	-46°50.1
Fomalhaut	15°13.6	-29°29.0
Scheat	13°44.4	28°13.3
Makrab	13°29.1	15°20.7

	Aries			Venus			Mars			Jupiter			Saturn		
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	319°42.0	216°05.3	N21°51.1	137°11.8	S00°32.8	214°42.5	N22°39.4	317°35.4	S01°43.0						
1	334°44.5	231°04.6	51.0	152°12.8	33.4	229°44.4	39.3	332°37.9	43.0						
2	349°46.9	246°03.9	50.8	167°13.9	34.1	244°46.3	39.3	347°40.5	43.1						
3	4°49.4	261°03.2	•• 50.7	182°14.9	•• 34.7	259°48.2	•• 39.2	2°43.1	•• 43.1						
4	19°51.8	276°02.5	50.5	197°16.0	35.4	274°50.1	39.2	17°45.6	43.2						
5	34°54.3	291°01.8	50.4	212°17.0	36.0	289°52.0	39.2	32°48.2	43.2						
6	49°56.8	306°01.1	N21°50.3	227°18.0	S00°36.7	304°54.0	N22°39.1	47°50.8	S01°43.3						
7	64°59.2	321°00.4	50.1	242°19.1	37.3	319°55.9	39.1	62°53.3	43.3						
8	80°01.7	335°59.7	50.0	257°20.1	38.0	334°57.8	39.0	77°55.9	43.4						
9	95°04.2	350°59.0	•• 49.8	272°21.1	•• 38.6	349°59.7	•• 39.0	92°58.5	•• 43.5						
10	110°06.6	5°58.3	49.7	287°22.2	39.7	5°01.6	38.9	108°01.0	43.5						
11	125°09.1	20°57.6	49.5	302°23.2	39.9	20°03.5	38.9	123°03.6	43.6						
12	140°11.6	35°56.9	N21°49.4	317°24.3	S00°40.6	35°05.4	N22°38.8	138°06.2	S01°43.6						
13	155°14.0	50°56.2	49.2	332°25.3	41.2	50°07.3	38.8	153°08.7	43.7						
14	170°16.5	65°55.5	49.1	347°26.3	41.9	65°09.3	38.7	168°11.3	43.7						
15	185°19.0	80°54.8	•• 48.9	2°27.4	•• 42.5	80°11.2	•• 38.7	183°13.9	•• 43.8						
16	200°21.4	95°54.1	48.7	17°28.4	43.2	95°13.1	38.6	198°16.4	43.8						
17	215°23.9	110°53.4	48.6	32°29.4	43.8	110°15.0	38.6	213°19.0	43.9						
18	230°26.3	125°52.7	N21°48.4	47°30.5	S00°44.5	125°16.9	N22°38.5	228°21.6	S01°43.9						
19	245°28.8	140°52.0	48.3	62°31.5	45.1	140°18.8	38.5	243°24.1	44.0						
20	260°31.3	155°51.4	48.1	77°32.6	45.8	155°20.7	38.4	258°26.7	44.1						
21	275°33.7	170°50.7	•• 47.9	92°33.6	•• 46.4	170°22.6	•• 38.4	273°29.3	•• 44.1						
22	290°36.2	185°50.0	47.8	107°34.6	47.1	185°24.6	38.3	288°31.8	44.2						
23	305°38.7	200°49.3	47.6	122°35.7	47.7	200°26.5	38.3	303°34.4	44.2						
Mer.pass.:02:41			v-0.7 d-0.1 m-3.9			v1.0 d-0.6 m1.6			v1.9 d-0.0 m-1.8			v2.6 d-0.1 m0.8			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	320°41.1	215°48.6	N21°47.5	137°36.7	S00°48.4	215°28.4	N22°38.2	318°37.0	S01°44.3					
1	335°43.6	230°47.9	47.3	152°37.7	49.0	230°30.3	38.2	333°39.5	44.3					
2	350°46.1	245°47.2	47.1	167°38.8	49.7	245°32.2	38.1	348°42.1	44.4					
3	5°48.5	260°46.5	•• 46.9	182°39.8	•• 50.3	260°34.1	•• 38.1	3°44.7	•• 44.4					
4	20°51.0	275°45.8	46.8	197°40.8	51.0	275°36.0	38.0	18°47.2	44.5					
5	35°53.4	290°45.1	46.6	212°41.9	51.6	290°37.9	38.0	33°49.8	44.6					
6	50°55.9	305°44.4	N21°46.4	227°42.9	S00°52.3	305°39.9	N22°37.9	48°52.4	S01°44.6					
7	65°58.4	320°43.7	46.3	242°43.9	52.9	320°41.8	37.9	63°54.9	44.7					
8	81°00.8	335°43.0	46.1	257°45.0	53.6	335°43.7	37.8	78°57.5	44.7					
9	96°03.3	350°42.3	•• 45.9	272°46.0	•• 54.2	350°45.6	•• 37.8	94°00.1	•• 44.8					
10	111°05.8	5°41.6	45.7	287°47.0	54.9	5°47.5	37.7	109°02.7	44.8					
11	126°08.2	20°40.9	45.6	302°48.1	55.5	20°49.4	37.7	124°05.2	44.9					
12	141°10.7	35°40.2	N21°45.4	317°49.1	S00°56.2	35°51.3	N22°37.6	139°07.6	S01°44.9					
13	156°13.2	50°39.5	45.2	332°50.1	56.8	50°53.3	37.6	154°10.4	45.0					
14	171°15.6	65°38.8	45.0	347°51.2	57.5	65°55.2	37.5	169°12.9	45.1					
15	186°18.1	80°38.1	•• 44.9	2°52.2	•• 58.1	80°57.1	•• 37.5	184°15.5	•• 45.1					
16	201°20.6	95°37.4	44.7	17°53.3	58.8	95°59.0	37.4	199°18.1	45.2					
17	216°23.0	110°36.7	44.5	32°54.3	00°59.4	111°00.9	37.4	214°20.6	45.2					
18	231°25.5	125°36.0	N21°44.3	47°55.3	S01°00.1	126°02.8	N22°37.3	229°23.2	S01°45.3					
19	246°27.9	140°35.3	44.1	62°56.4	00.7	141°04.7	37.3	244°25.8	45.3					
20	261°30.4	155°34.6	43.9	77°57.4	01.4	156°06.7	37.2	259°28.4	45.4					
21	276°32.9	170°33.9	•• 43.7	92°58.4	•• 02.0	171°08.6	•• 37.2	274°30.9	•• 45.4					
22	291°35.3	185°33.2	43.6	107°59.5	02.7	186°10.5	37.1	289°33.5	45.5					
23	306°37.8	200°32.6	43.4	123°00.5	03.3	201°12.4	37.1	304°36.1	45.6					
Mer.pass.:02:37			v-0.7 d-0.2 m-3.9			v1.0 d-0.7 m1.6			v1.9 d-0.0 m-1.8			v2.6 d-0.1 m0.8		

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	321°40.3	215°31.9	N21°43.2	138°01.5	S01°04.0	216°14.3	N22°37.0	319°38.6	S01°45.6					
1	336°42.7	230°31.2	43.0	153°02.6	04.6	231°16.2	37.0	334°41.2	45.7					
2	351°45.2	245°30.5	42.8	168°03.6	05.3	246°18.2	36.9	349°43.8	45.7					
3	6°47.7	260°29.8	•• 42.6	183°04.6	•• 05.9	261°20.1	•• 36.9	4°46.4	•• 45.8					
4	21°50.1	275°29.1	42.4	198°05.6	06.6	276°22.0	36.8	19°48.9	45.8					
5	36°52.6	290°28.4	42.2	213°06.7	07.2	291°23.9	36.8	34°51.5	45.9					
6	51°55.1	305°27.7	N21°42.0	228°07.7	S01°07.9	306°25.8	N22°36.7	49°54.1	S01°46.0					
7	66°57.5	320°27.0	41.8	243°08.7	08.5	321°27.7	36.7	64°56.7	46.0					
8	82°00.0	335°26.3	41.6	258°09.8	09.2	336°29.7	36.6	79°59.2	46.1					
9	97°02.4	350°25.6	•• 41.4	273°10.8	•• 09.8	351°31.6	•• 36.6	95°01.8	•• 46.1					
10	112°04.9	5°24.9	41.2	288°11.8	10.5	6°33.5	36.5	110°04.4	46.2					
11	127°07.4	20°24.2	41.0	303°12.9	11.1	21°35.4	36.5	125°06.9	46.2					
12	142°09.8	35°23.5	N21°40.8	318°13.9	S01°11.8	36°37.3	N22°36.4	140°09.5	S01°46.3					
13	157°12.3	50°22.8	40.6	333°14.9	12.4	51°39.2	36.4	155°12.1	46.4					
14	172°14.8	65°22.1	40.4	348°16.0	13.1	66°41.2	36.3	170°14.7	46.4					
15	187°17.2	80°21.4	•• 40.2	3°17.0	•• 13.7	81°43.1	•• 36.3	185°17.2	•• 46.5					
16	202°19.7	95°20.7	40.0	18°18.0	14.4	96°45.0	36.2	200°19.8	46.5					
17	217°22.2	110°20.0	39.8	33°19.1	15.0	111°46.9	36.2	215°22.4	46.6					
18	232°24.6	125°19.3	N21°39.6	48°20.1	S01°15.7	126°48.8	N22°36.1	230°25.0	S01°46.6					
19	247°27.1	140°18.6	39.4	63°21.1	16.4	141°50.8	36.1	245°27.5	46.7					
20	262°29.5	155°17.9	39.2	78°22.2	17.0	156°52.7	36.0	260°30.1	46.8					
21	277°32.0	170°17.2	•• 39.0	93°23.2	•• 17.7	171°54.6	•• 36.0	275°32.7	•• 46.8					
22	292°34.5	185°16.5	38.7	108°24.2	18.3	186°56.5	35.9	290°35.3	46.9					
23	307°36.9	200°15.8	38.5	123°25.2	19.0	201°58.4	35.9	305°37.8	46.9					
Mer.pass.:02:33			v-0.7 d-0.2 m-3.9			v1.0 d-0.7 m1.6			v1.9 d-0.0 m-1.8			v2.6 d-0.1 m0.8		

SHA	Dec
Alpheratz	357°34.0 29°13.9
Ankaa	353°06.3 -42°09.7
Schedar	349°30.1 56°40.5
Diphda	348°46.6 -17°50.6
Achernar	335°19.5 -57°06.0
Hamal	327°50.5 23°35.0
Polaris	313°46.3 89°22.0
Acamar	315°11.4 -40°11.8
Menkar	314°05.6 4°11.5
Mirfak	308°27.6 49°57.0
Aldebaran	290°39.2 16°33.7
Rigel	281°03.6 -8°10.1
Capella	280°21.4 46°01.3
Bellatrix	278°22.5 6°22.5
Elnath	278°01.4 28°37.7
Anilam	275°37.4 -1°11.0
Betelgeuse	270°51.8 7°24.8
Canopus	263°52.6 -52°42.2
Sirius	258°26.1 -16°44.9
Adhara	255°05.8 -29°00.2
Procyon	244°50.6 5°09.7
Pollux	243°17.0 27°57.9
Avior	234°15.2 -59°35.3
Suhail	222°46.4 -43°32.1
Miaplacidus	221°39.2 -69°49.3
Alphard	217°47.6 -8°46.1
Regulus	207°34.2 11°50.6
Dubhe	193°41.0 61°36.9
Denebola	182°24.7 14°25.9
Gienah	175°43.1 -17°41.0
Acrux	173°00.3 -63°14.7
Gacrux	171°51.5 -57°15.6
Alioth	166°12.8 55°49.5
Spica	158°21.9 -11°17.7
Alkaid	152°51.8 49°11.4
Hadar	148°35.5 -60°30.0
Menkent	147°57.1 -36°29.9
Arcturus	145°47.5 19°03.1
Rigel Kent	139°39.7 -60°56.7
Kochab	137°19.7 74°03.3
Zuben'ubi	136°55.5 -16°08.9
Alphecca	126°03.3 26°37.9
Antares	112°15.1 -26°29.4
Atria	107°08.6 65°04.6
Sabik	102°02.0 -15°45.4
Shaula	96°09.4 -37°07.4
Rasalhague	95°57.9 12°32.6
Eltanin	90°41.6 51°29.3
Kaus Vega	83°31.5 -34°22.4
Vega	80°32.6 38°48.6
Nunki	75°46.8 -26°15.9
Altair	61°59.2 8°56.3
Peacock	53°04.3 -56°39.1
Deneb	49°25.0 45°22.4
Enif	33°38.0 9°59.6
Al Nair	27°31.8 -46°50.1
Fomalhaut	15°13.6 -29°29.0
Scheat	13°44.4 28°13.3
Markab	13°29.1 15°20.7

Alphard	217°47.2	-8°46.1
Regulus	207°34.2	11°50.6
Dubhe	193°41.0	61°36.9
Denebola	182°24.7	14°25.9
Geniah	175°43.3	-17°01.4
Acrux	173°00.1	-63°14.7
Gacrux	171°51.5	-57°15.6
Alioth	166°12.8	55°49.5
Spica	158°21.9	-11°17.7
Alkaid	152°51.8	49°11.4
Hadar	148°35.5	-60°30.4
Menkent	147°57.1	-36°29.9
Arcturus	145°47.5	19°03.1
Rigil Kent	139°39.7	-60°56.7
Kochab	137°19.9	74°03.3
Zuben'ubi	136°55.5	-16°08.9
Alphecca	126°03.3	26°37.9
Antares	121°15.1	-26°29.4
Atria	107°08.6	-69°04.6
Sabik	102°02.0	-15°45.4
Shaula	96°09.4	-37°07.4
Rasalhague	95°57.9	12°32.6
Eltanin	90°41.6	51°29.3
Kaus Aust.	83°31.5	-34°22.4
Vega	80°32.6	38°48.6
Nunki	75°46.8	-26°15.9
Altair	61°59.2	8°56.3
Peacock	53°04.3	-56°39.1
Deneb	49°25.0	45°22.4
Enif	33°38.0	9°59.6
Al Na'ir	27°31.8	-46°50.1
Fomalhaut	15°13.6	-29°50.1
Scheat	13°44.4	28°13.3
Markab	13°29.1	15°20.7

Aries				Venus				Mars				Jupiter				Saturn			
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	322°39.4	215°15.1	N21° 38.3	138°26.3	S01° 19.6	217°00.3	N22° 35.8	320°40.4	S01° 47.0										
1	337°41.9	230°14.4	38.1	153°27.3	20.3	232°02.3	35.8	335°43.0	47.0										
2	352°44.3	245°13.7	37.9	168°28.3	20.9	247°04.2	35.7	350°45.6	47.1										
3	7°46.8	260°13.0	•• 37.7	183°29.4	•• 21.6	262°06.1	•• 35.7	5°48.1	•• 47.2										
4	22°49.3	275°12.3	37.4	198°30.4	22.2	277°08.0	35.6	20°50.7	47.2										
5	37°51.7	290°11.6	37.2	213°31.4	22.9	292°09.9	35.6	35°53.3	47.3										
6	52°54.2	305°10.9	N21° 37.0	228°32.5	S01° 23.5	307°11.9	N22° 35.5	50°55.9	S01° 47.3										
7	67°56.7	320°10.2	36.8	243°33.5	24.2	322°13.8	35.5	65°58.4	47.4										
8	82°59.1	335°09.5	36.6	258°34.5	24.8	337°15.7	35.4	81°01.0	47.5										
9	98°01.6	350°08.8	•• 36.1	273°35.5	•• 25.5	352°17.6	•• 35.4	96°03.6	•• 47.5										
10	113°04.0	5°01.0	36.1	288°36.6	26.1	7°19.5	35.5	111°06.2	47.6										
11	128°06.5	20°07.5	35.9	303°37.6	26.8	22°21.5	35.3	126°08.7	47.6										
12	143°09.0	35°06.8	N21° 35.6	318°38.6	S01° 27.4	37°23.4	N22° 35.2	141°11.3	S01° 47.7										
13	158°11.4	50°06.1	35.4	333°39.7	28.1	52°25.3	35.2	156°13.9	47.7										
14	173°13.9	65°05.4	35.2	348°40.7	28.7	67°27.2	35.1	171°16.5	47.8										
15	188°16.4	80°04.7	•• 35.0	3°41.7	•• 29.4	82°29.1	•• 35.1	186°19.0	•• 47.8										
16	203°18.8	95°04.0	34.7	18°42.7	30.0	97°31.1	35.0	201°21.6	47.9										
17	218°21.3	110°03.3	34.5	33°43.8	30.7	112°33.0	35.0	216°24.2	48.0										
18	233°23.8	125°02.6	N21° 34.3	48°44.8	S01° 31.3	127°34.9	N22° 34.9	231°26.8	S01° 48.0										
19	248°26.2	140°01.9	34.0	63°45.8	32.0	142°36.8	34.6	249°26.8	48.1										
20	263°28.7	155°01.2	33.8	78°46.9	32.6	157°38.8	•• 34.8	261°31.9	•• 48.2										
21	278°31.1	170°00.5	•• 33.6	93°47.9	•• 33.3	172°40.7	•• 34.8	276°34.5	•• 48.2										
22	293°33.6	184°59.8	33.3	108°48.9	34.0	187°42.6	34.7	291°37.1	48.3										
23	308°36.1	199°59.7	33.1	123°49.9	34.6	202°44.5	34.7	306°39.7	48.3										
Mer.pass.:02:29				v-0.7 d-0.2 m-3.9				v1.0 d-0.7 m1.6				v1.9 d-0.1 m-1.8				v2.6 d-0.1 m0.8			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	323°38.5	214°58.4	N21°32.8	138°51.0	S01°35.3	217°46.4	N22°34.6	321°42.2	S01°48.4										
1	338°41.0	229°57.7	32.6	153°52.0	35.9	232°48.4	34.6	336°44.8	48.4										
2	353°43.5	244°57.0	32.4	168°53.0	36.2	247°50.3	34.5	351°47.4	48.5										
3	8°45.9	259°56.3	•• 32.1	183°54.0	•• 37.6	262°52.2	•• 34.5	6°50.0	•• 48.6										
4	23°48.4	274°55.6	31.9	198°55.1	37.9	277°54.1	34.4	21°52.5	48.6										
5	38°50.9	289°54.9	31.6	213°56.1	38.5	292°56.0	34.4	36°55.1	48.7										
6	53°53.3	304°54.2	N21°31.4	228°57.1	S01°39.2	307°58.0	N22°34.3	51°57.7	S01°48.7										
7	68°55.8	319°53.5	31.1	243°58.1	39.8	322°59.9	34.3	67°00.3	48.8										
8	83°58.3	334°52.8	30.9	258°59.2	40.5	338°01.8	34.2	82°02.9	48.9										
9	99°00.7	349°52.1	•• 30.6	274°00.2	•• 41.1	353°03.7	•• 34.1	97°05.4	•• 48.9										
10	114°03.2	4°51.4	30.4	289°01.2	41.8	8°05.7	34.1	112°08.0	49.0										
11	129°05.6	19°50.7	30.1	304°02.3	42.4	23°07.6	34.0	127°10.6	49.0										
12	144°08.1	34°50.0	N21°29.9	319°03.3	S01°43.1	38°09.5	N22°34.0	142°13.2	S01°49.1										
13	159°10.6	49°49.3	29.6	334°04.3	43.7	53°11.4	33.9	157°15.8	49.2										
14	174°13.0	64°48.6	29.4	349°05.3	44.4	68°13.4	33.9	172°18.3	49.2										
15	189°15.5	79°47.9	•• 29.1	4°06.4	•• 45.0	83°15.3	•• 33.8	187°20.9	•• 49.3										
16	204°18.0	94°47.2	28.9	19°07.4	45.7	98°17.2	33.8	202°23.5	49.3										
17	219°20.4	109°46.5	28.6	34°08.4	46.3	113°19.1	33.7	217°26.1	49.4										
18	234°22.9	124°45.8	N21°28.3	49°09.4	S01°47.0	128°21.1	N22°33.7	232°28.7	S01°49.5										
19	249°25.4	139°45.1	28.1	64°10.5	47.7	143°23.0	33.6	247°31.2	49.5										
20	264°27.8	154°44.4	27.8	79°11.5	48.3	158°24.9	33.6	262°33.8	49.6										
21	279°30.3	169°43.7	•• 27.6	94°12.5	•• 49.0	173°26.8	•• 33.5	277°36.4	•• 49.6										
22	294°32.8	184°43.1	27.3	109°13.5	49.6	188°28.7	33.5	292°39.0	49.7										
23	309°35.2	199°42.4	27.0	124°14.6	50.3	203°30.7	33.4	307°41.6	49.8										
Mer.pass.:02:25				v-0.7 d-0.2 m-3.9				v1.0 d-0.7 m1.6				v1.9 d-0.1 m-1.8				v2.6 d-0.1 m0.8			

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	324°37.7	214°41.7	N21°26.8	139°15.6	S01°50.9	218°32.6	N22°33.4	322°44.1	S01°49.8										
1	339°40.1	229°41.0	26.5	154°16.6	51.6	233°34.5	33.3	337°46.7	49.9										
2	354°42.6	244°40.3	26.2	169°17.6	52.2	248°36.4	33.3	352°49.3	49.9										
3	9°45.1	259°39.6	•• 26.0	184°18.6	•• 52.9	263°38.4	•• 33.2	7°51.9	•• 50.0										
4	24°47.5	274°38.9	25.7	199°19.7	53.5	278°40.3	33.2	22°54.5	50.1										
5	39°50.0	289°38.2	25.4	214°20.7	54.2	293°42.2	33.1	37°57.0	50.1										
6	54°52.5	304°37.5	N21°25.1	229°21.7	S01°54.8	308°44.1	N22°33.1	52°59.6	S01°50.2										
7	69°54.9	319°36.8	24.9	244°22.7	55.5	323°46.1	33.0	68°02.2	50.2										
8	84°57.4	334°36.1	24.6	259°23.8	56.1	338°48.0	33.0	83°04.8	50.3										
9	99°59.9	349°35.4	•• 24.3	274°24.8	•• 56.8	353°49.9	•• 32.9	98°07.4	•• 50.4										
10	115°02.3	4°34.7	24.1	289°25.8	57.4	8°51.9	32.9	113°10.0	50.4										
11	130°04.8	19°34.0	23.8	304°26.8	58.1	23°53.8	32.8	128°12.5	50.5										
12	145°07.3	34°33.3	N21°23.5	319°27.9	S01°58.8	38°55.7	N22°32.8	143°15.1	S01°50.5										
13	160°09.7	49°32.6	23.2	334°28.9	01°59.4	53°57.6	32.7	158°17.7	50.6										
14	175°12.2	64°31.9	22.9	349°29.9	02°00.1	68°59.6	32.7	173°20.3	50.7										
15	190°14.6	79°31.2	•• 22.7	4°30.9	•• 00.7	84°01.5	•• 32.6	188°22.9	•• 50.7										
16	205°17.1	94°30.5	22.4	19°31.9	01.4	99°03.4	32.6	203°25.5	50.8										
17	220°19.6	109°29.8	22.1	34°33.0	02.0	114°05.3	32.5	218°28.0	50.8										
18	235°22.0	124°29.1	N21°21.8	49°34.0	S02°02.7	129°07.3	N22°32.5	233°30.6	S01°50.9										
19	250°24.5	139°28.4	21.5	64°35.0	03.3	144°09.2	32.4	248°33.2	51.0										
20	265°27.0	154°27.7	21.2	79°36.0	04.0	159°11.1	32.4	263°35.8	51.0										
21	280°29.4	169°27.0	•• 21.0	94°37.1	•• 04.6	174°13.0	•• 32.3	278°38.4	•• 51.1										
22	295°31.9	184°26.3	20.7	109°38.1	05.3	189°15.0	32.2	293°40.9	51.1										
23	310°34.4	199°25.6	20.4	124°39.1	05.9	204°16.9	32.2	308°43.5	51.2										
Mer.pass.:02:21				v-0.7 d-0.3 m-3.9				v1.0 d-0.7 m1.6				v1.9 d-0.1 m-1.8				v2.6 d-0.1 m0.8			

Stars		
	SHA	Dec
Alpheratz	357° 34.0	29° 13.9
Ankaa	353° 06.3	-42° 09.7
Schedar	349° 30.1	56° 40.6
Diphda	348° 46.6	-17° 50.6
Achernar	335° 19.5	-57° 06.1
Hamal	327° 50.5	23° 35.0
Polaris	313° 44.7	89° 22.0
Acamar	315° 11.3	-40° 11.8
Menkar	314° 05.6	4° 11.5
Mirfak	308° 27.5	49° 57.0
Aldebaran	290° 39.1	16° 37.3
Rigel	281° 03.5	-8° 10.1
Capella	280° 21.4	46° 01.3
Bellatrix	278° 22.5	6° 22.5
Elnath	278° 01.4	28° 37.7
Anilam	275° 37.4	-1° 11.0
Betelgeuse	270° 51.7	7° 24.8
Canopus	263° 52.6	-52° 42.2
Sirius	258° 26.1	-16° 44.9
Adhara	255° 05.8	-29° 00.2
Procyon	244° 50.6	5° 09.7
Pollux	243° 17.0	27° 57.9
Avior	234° 15.2	-59° 35.3
Suhail	222° 46.4	-43° 32.0
Miaplacidus	221° 39.2	-69° 49.2

Aries			Venus			Mars			Jupiter			Saturn		
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	325°36.8	214°24.9	N21°20.1	139°40.1	S02°06.6	219°18.8	N22°32.1	323°46.1	S01°51.3					
1	340°39.3	229°24.3		19.8	154°41.1	07.2	234°20.8	32.1	338°48.7	51.3				
2	355°41.7	244°23.6		19.5	169°42.2	07.9	249°22.7	32.0	353°51.3	51.4				
3	10°44.2	259°22.9	•• 19.2	184°43.2	•• 08.5	264°24.6	•• 32.0	8°53.9	•• 51.5					
4	25°46.7	274°22.2		18.9	199°44.2	09.2	279°26.5	31.9	23°56.5	51.5				
5	40°49.1	289°21.5		18.6	214°45.2	09.9	294°28.5	31.9	38°59.0	51.6				
6	55°51.6	304°20.8	N21°18.3	229°46.2	S02°10.5	309°30.4	N22°31.8	54°01.6	S01°51.6					
7	70°54.1	319°20.1		18.0	244°47.3	11.2	324°32.3	31.8	69°04.2	51.7				
8	85°56.5	334°19.4		17.7	259°48.3	11.8	339°34.3	31.7	84°06.8	51.8				
9	100°59.0	349°18.7	•• 17.4	274°49.3	•• 12.5	354°36.2	•• 31.7	99°09.4	•• 51.8					
10	116°01.5	4°18.0		17.1	289°50.3	13.1	9°38.1	31.6	114°12.0	51.9				
11	131°03.9	19°17.3		16.8	304°51.3	13.8	24°40.0	31.6	129°14.5	51.9				
12	146°06.4	34°16.6	N21°16.5	319°52.4	S02°14.4	39°42.0	N22°31.5	144°17.1	S01°52.0					
13	161°08.9	49°15.9		16.2	334°53.4	15.1	54°43.9	31.5	159°19.7	52.1				
14	176°11.3	64°15.2		15.9	349°54.4	15.7	69°45.8	31.4	174°22.3	52.1				
15	191°13.8	79°14.5	•• 15.6	4°55.4	•• 16.4	84°47.8	•• 31.4	189°24.9	•• 52.2					
16	206°16.2	94°13.8		15.3	19°56.4	17.0	99°49.7	31.3	204°27.5	52.3				
17	221°18.7	109°13.1		15.0	34°57.5	17.7	114°51.6	31.3	219°30.1	52.3				
18	236°21.2	124°12.4	N21°14.7	49°58.5	S02°18.4	129°53.6	N22°31.2	234°32.6	S01°52.4					
19	251°23.6	139°11.7		14.4	64°59.5	19.0	144°55.5	31.2	249°50.2	52.4				
20	266°26.1	154°11.0		14.1	80°00.5	19.7	159°57.4	31.1	264°37.8	52.5				
21	281°28.6	169°10.4	•• 13.8	95°01.5	•• 20.3	174°59.3	•• 31.1	279°40.4	•• 52.6					
22	296°31.0	184°09.7		13.4	110°02.6	21.0	190°01.3	31.0	294°43.0	52.6				
23	311°33.5	199°09.0		13.1	125°03.6	21.6	205°03.2	31.0	309°45.6	52.7				
Mer.pass.:02:17			v-0.7 d-0.3 m-3.9			v1.0 d-0.7 m1.6			v1.9 d-0.1 m-1.8			v2.6 d-0.1 m0.8		

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	326°36.0	214°08.3	N21°12.8	140°04.6	S02°22.3	220°05.1	N22°30.9	324°48.2	S01°52.7					
1	341°38.4	229°07.6		12.5	155°05.6	22.9	235°07.1	30.8	339°50.8	52.8				
2	356°40.9	244°06.9		12.2	170°06.6		23.6	250°09.0	30.8	354°53.3	52.9			
3	11°43.4	259°06.2	• 11.9	185°07.6	•• 24.2	265°10.9	•• 30.7	9°55.9	•• 52.9					
4	26°45.8	274°05.5		11.5	200°08.7	24.9	280°12.9	30.7	24°58.5	53.0				
5	41°48.3	289°04.8		11.2	215°09.7	25.5	295°14.8	30.6	40°01.1	53.1				
6	56°50.7	304°04.1	N21°10.9	230°10.7	S02°26.2	310°16.7	N22°30.6	55°03.7	S01°53.1					
7	71°53.2	319°03.4		10.6	245°11.7	26.8	325°18.7	30.5	70°06.3	53.2				
8	86°55.7	334°02.7		10.3	260°12.7	27.5	340°20.6	30.5	85°08.9	53.2				
9	101°58.1	349°02.0	•• 09.9	275°13.7	•• 28.2	355°22.5	•• 30.4	100°11.5	•• 53.3					
10	117°00.6	4°01.3		09.6	290°14.8	28.8	10°24.5	30.4	115°14.0	53.4				
11	132°03.1	19°00.6		09.3	305°15.8	29.5	25°26.4	30.3	130°16.6	53.4				
12	147°05.5	33°59.9	N21°09.0	320°16.8	S02°30.1	40°28.3	N22°30.3	145°19.2	S01°53.5					
13	162°08.0	48°59.3		08.6	335°17.8	30.8	55°30.3	30.2	160°21.8	53.6				
14	177°10.5	63°58.6		08.3	350°18.8	31.4	70°32.2	30.2	175°24.4	53.6				
15	192°12.9	78°57.9	•• 08.0	5°19.8	•• 32.1	85°34.1	•• 30.1	190°27.0	•• 53.7					
16	207°15.4	93°57.2		07.6	20°20.9	32.7	100°36.1	30.1	205°29.6	53.8				
17	222°17.9	108°56.5		07.3	35°21.9	33.4	115°38.0	30.0	220°32.2	53.8				
18	237°20.3	123°55.8	N21°07.0	50°22.9	S02°34.0	130°39.9	N22°30.0	235°34.7	S01°53.9					
19	252°22.8	138°55.1		06.6	65°23.9	34.7	145°41.9	29.9	250°37.3	53.9				
20	267°25.2	153°54.4		06.3	80°24.9	35.3	160°43.8	29.9	265°39.9	54.0				
21	282°27.7	168°53.7	•• 06.0	95°25.9	•• 36.0	175°45.7	•• 29.8	280°42.5	•• 54.1					
22	297°30.2	183°53.0		05.6	110°26.9	36.7	190°47.7	29.8	295°45.1	54.1				
23	312°32.6	198°52.3		05.3	125°28.0	37.3	205°49.6	29.7	310°47.7	54.2				
Mer.pass.:02:13			v-0.7 d-0.3 m-3.9			v1.0 d-0.7 m1.6			v1.9 d-0.1 m-1.8			v2.6 d-0.1 m0.7		

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	327°35.1	213°51.6	N21°04.9	140°29.0	S02°38.0	220°51.5	N22°29.6	325°50.3	S01°54.3					
1	342°37.6	228°50.9		04.6	155°30.0	38.6	235°53.5	29.6	340°52.9	54.3				
2	357°40.0	243°50.2		04.3	170°31.0	39.3	250°55.4	29.5	355°55.5	54.4				
3	12°42.5	258°49.6	•• 03.9	185°32.0	•• 39.9	265°57.3	•• 29.5	10°58.1	•• 54.4					
4	27°45.0	273°48.9		03.6	200°33.0	40.6	280°59.3	29.4	26°00.6	54.5				
5	42°47.4	288°48.2		03.2	215°34.0	41.2	296°01.2	29.4	41°03.2	54.6				
6	57°49.9	303°47.5	N21°02.9	230°35.1	S02°41.9	311°03.1	N22°29.3	56°05.8	S01°54.6					
7	72°52.4	318°46.8		02.5	245°36.1	42.5	326°05.1	29.3	71°08.4	54.7				
8	87°54.8	333°46.1		02.2	260°37.1	43.2	341°07.0	29.2	86°11.0	54.8				
9	102°57.3	348°45.4	•• 01.8	275°38.1	•• 43.8	356°08.9	•• 29.2	101°13.6	•• 54.8					
10	117°59.7	3°44.7		01.5	290°39.1	44.5	11°10.9	29.1	116°16.2	54.9				
11	133°02.2	18°44.0		01.1	305°40.1	45.2	26°12.8	29.1	131°18.8	55.0				
12	148°04.7	33°43.3	N21°00.8	320°41.1	S02°45.8	41°14.7	N22°29.0	146°21.4	S01°55.0					
13	163°07.1	48°42.6		00.4	335°42.2	46.5	56°16.7	29.0	161°24.0	55.1				
14	178°09.6	63°42.0	21°00.1	350°43.2	47.1	71°18.6	28.9	176°26.5	55.1					
15	193°12.1	78°41.3	20°59.7	5°44.2	•• 47.8	86°26.0	•• 28.9	191°29.1	•• 55.2					
16	208°14.5	93°40.6		59.4	20°45.2	48.4	101°22.5	28.8	206°31.7	55.3				
17	223°17.0	108°39.9		59.0	35°46.2	49.1	116°24.4	28.8	221°34.3	55.3				
18	238°19.5	123°39.2	N20°58.6	50°47.2	S02°49.7	131°26.4	N22°28.7	236°36.9	S01°55.4					
19	253°21.9	138°38.5		58.3	65°48.2	50.4	146°28.3	28.6	251°39.5	55.5				
20	268°24.4	153°37.8		57.9	80°49.2	51.0	161°30.2	28.6	266°42.1	55.5				
21	283°26.8	168°37.1	•• 57.6	95°50.3	•• 51.7	176°32.2	•• 28.5	281°44.7	•• 55.6					
22	298°29.3	183°36.4		57.2	110°51.3	52.3	191°34.1	28.5	296°47.3	55.7				
23	313°31.8	198°35.7		56.8	125°52.3	53.0	206°36.1	28.4	311°49.9	55.7				
Mer.pass.:02:09			v-0.7 d-0.3 m-3.9			v1.0 d-0.7 m1.6			v1.9 d-0.1 m-1.8			v2.6 d-0.1 m0.7		

SHA	Dec
Alpheratz	357°34.0 29°13.9
Ankaa	353°06.3 -42°09.7
Schedar	349°30.1 56°40.6
Diphda	348°46.5 -17°50.5
Achernar	335°19.5 -57°06.1
Hamal	327°50.5 -23°35.0
Polaris	313°42.8 89°22.0
Acamar	315°11.3 -40°11.8
Menkar	314°05.6 4°11.5
Mirfak	308°27.5 49°57.0
Aldebaran	290°39.1 16°33.7
Rigel	281°03.5 -8°10.1
Capella	280°21.3 46°01.3
Bellatrix	278°22.5 6°22.5
Elnath	278°01.4 28°37.7
Anilam	275°37.4 -1°11.0
Betelgeuse	270°51.7 7°24.8
Canopus	263°52.5 -52°42.2
Sirius	258°26.0 -16°44.9
Adhara	255°05.7 -29°00.2
Procyon	244°50.6 5°09.7
Pollux	243°17.0 27°57.9
Avior	234°15.2 -59°35.3
Suhail	222°46.4 -43°32.0
Miaplacidus	221°39.2 -69°49.2
Alphard	217°47.6 -8°46.1
Regulus	207°34.2 11°50.6
Dubhe	193°41.0 61°36.9
Denebola	182°24.7 14°25.9
Gienah	175°43.3 -17°41.0
Acrux	173°00.1 -63°14.6
Gacrux	171°51.5 -57°15.6
Alloth	166°12.9 55°49.5
Spica	158°21.9 -11°17.7
Alkaid	152°51.8 49°11.4
Hadar	148°35.5 -60°30.0
Menkent	147°57.2 -36°29.9
Arcturus	145°47.5 19°03.1
Rigel Kent.	139°39.8 -60°56.7
Kochab	137°20.0 74°03.2
Zuben'ubi	136°55.5 -16°08.9
Alphecca	126°03.3 26°37.9
Antares	112°15.1 -26°29.4
Atria	107°08.7 -69°04.6
Sabik	102°02.1 -15°45.4
Shaula	96°09.5 -37°07.4
Rasalhague	95°57.9 12°32.6
Eltanin	90°41.6 51°29.3
Kaus Aug.	83°31.6 34°22.4
Vega	80°32.6 38°48.6
Nunki	75°46.8 -26°15.9
Altair	61°59.2 8°56.3
Peacock	53°04.3 -56°39.2
Deneb	49°25.0 45°22.4
Enif	33°38.0 9°59.7
Al Nair	27°31.8 -46°50.1
Fomalhaut	15°13.6 -29°29.0
Scheat	13°44.4 28°13.4
Markab	13°29.1 15°20.7

Aug 17 Sun	SHA
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	Aries			Venus			Mars			Jupiter			Saturn		
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	328°34.2	213°35.1	N20°56.5	140°53.3	S02°53.7	221°38.0	N22°28.4	326°52.5	S01°55.8						
1	343°36.7	228°34.4	56.1	155°54.3	54.3	236°39.9	28.3	341°55.1	55.9						
2	358°39.2	243°33.7	55.7	170°55.3	55.0	251°41.9	28.3	356°57.7	55.9						
3	13°41.6	258°33.0	•• 55.4	185°56.3	•• 55.6	266°43.8	•• 28.2	12°00.2	•• 56.0						
4	28°44.1	273°32.3	55.0	200°57.3	56.3	281°45.7	28.2	27°02.8	56.0						
5	43°46.6	288°31.6	54.6	215°58.3	56.9	296°47.7	28.1	42°05.4	56.1						
6	58°49.0	303°30.9	N20°54.3	230°59.4	S02°57.6	311°49.6	N22°28.1	57°08.0	S01°56.2						
7	73°51.5	318°30.2	53.9	246°00.4	58.2	326°51.6	28.0	72°10.6	56.2						
8	88°54.0	333°29.5	53.5	261°01.4	58.9	341°53.5	28.0	87°13.2	56.3						
9	103°56.4	348°28.8	•• 53.2	276°02.4	02°59.5	356°55.4	•• 27.9	102°15.8	•• 56.4						
10	118°58.9	3°28.2	52.8	291°03.4	03°00.2	11°57.4	27.9	117°18.4	56.4						
11	134°01.3	18°27.5	52.4	306°04.4	00.9	26°59.3	27.8	132°21.0	56.5						
12	149°03.8	33°26.8	N20°52.0	321°05.4	S03°01.5	42°01.3	N22°27.8	147°23.6	S01°56.6						
13	164°06.3	48°26.1	51.6	336°06.4	02.2	57°03.2	27.7	162°26.2	56.6						
14	179°08.7	63°25.4	51.3	351°07.4	02.8	72°05.1	27.6	177°28.8	56.7						
15	194°11.2	78°24.7	•• 50.9	6°08.4	•• 03.5	87°07.1	•• 27.6	192°31.4	•• 56.8						
16	209°13.7	93°24.0	50.5	21°09.5	04.1	102°09.0	27.5	207°34.0	56.8						
17	224°16.1	108°23.3	50.1	36°10.5	04.8	117°11.0	27.5	222°36.6	56.9						
18	239°18.6	123°22.7	N20°49.7	51°11.5	S03°05.4	132°12.9	N22°27.4	237°39.1	S01°57.0						
19	254°21.1	138°22.0	49.4	66°12.5	06.1	147°14.8	27.4	252°41.7	57.0						
20	269°23.5	153°21.3	49.0	81°13.5	06.7	162°16.8	27.3	267°44.3	57.1						
21	284°26.0	168°20.6	•• 48.6	96°14.5	•• 07.4	177°18.7	•• 27.3	282°46.9	•• 57.1						
22	299°28.5	183°19.9	48.2	111°15.5	08.0	192°20.7	27.2	297°49.5	57.2						
23	314°30.9	198°19.2	47.8	126°16.5	08.7	207°22.6	27.2	312°52.1	57.3						
Mer.pass.:02:05			v-0.7 d-0.4 m-3.9			v1.0 d-0.7 m1.6			v1.9 d-0.1 m-1.8			v2.6 d-0.1 m0.7			

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	329°33.4	213°18.5	N20°47.4	141°17.5	S03°09.4	222°24.5	N22°27.1	327°54.7	S01°57.3					
1	344°35.8	228°17.8	47.0	156°18.5	10.0	237°26.5	27.1	342°57.3	57.4					
2	359°38.3	243°17.2	46.6	171°19.5	10.7	252°28.4	27.0	357°59.9	57.5					
3	14°40.8	258°16.5	•• 46.2	186°20.5	•• 11.3	267°30.4	•• 27.0	13°02.5	•• 57.5					
4	29°43.2	273°15.8	45.9	201°21.6	12.0	282°32.3	26.9	28°05.1	57.6					
5	44°45.7	288°15.1	45.5	216°22.6	12.6	297°34.2	26.9	43°07.7	57.7					
6	59°48.2	303°14.4	N20°45.1	231°23.6	S03°13.3	312°36.2	N22°26.8	58°10.3	S01°57.7					
7	74°50.6	318°13.7	44.7	246°24.6	13.9	327°38.1	26.7	73°12.9	57.8					
8	89°53.1	333°13.0	44.3	261°25.6	14.6	342°40.1	26.7	88°15.5	57.9					
9	104°55.6	348°12.2	•• 43.9	276°26.6	•• 15.2	357°42.0	•• 26.6	103°18.1	•• 57.9					
10	119°58.0	3°11.7	43.5	291°27.6	15.9	12°44.0	26.6	118°20.7	58.0					
11	135°00.5	18°11.0	43.1	306°28.6	16.6	27°45.9	26.5	133°23.3	58.1					
12	150°03.0	33°10.3	N20°42.7	321°29.6	S03°17.2	42°47.8	N22°26.5	148°25.9	S01°58.1					
13	165°05.4	48°09.6	42.3	336°30.6	17.9	57°49.8	26.4	163°28.5	58.2					
14	180°07.9	63°08.9	41.9	351°31.6	18.5	72°51.7	26.4	178°31.1	58.3					
15	195°10.3	78°08.2	•• 41.5	6°32.6	•• 19.2	87°53.7	•• 26.3	193°33.7	•• 58.3					
16	210°12.8	93°07.6	41.1	21°33.6	19.8	102°55.6	26.3	208°36.3	58.4					
17	225°15.3	108°06.9	40.7	36°34.6	20.5	117°57.6	26.2	223°38.9	58.5					
18	240°17.7	123°06.2	N20°40.2	51°35.6	S03°21.1	132°59.5	N22°26.2	238°41.5	S01°58.5					
19	255°20.2	138°05.5	39.8	66°36.7	21.8	148°01.4	26.1	253°44.0	58.6					
20	270°22.7	153°04.8	39.4	81°37.7	22.4	163°03.4	26.1	268°46.6	58.7					
21	285°25.1	168°04.1	•• 39.0	96°38.7	•• 23.1	178°05.3	•• 26.0	283°49.2	•• 58.7					
22	300°27.6	183°03.5	38.6	111°39.7	23.8	193°07.3	25.9	298°51.8	58.8					
23	315°30.1	198°02.8	38.2	126°40.7	24.4	208°09.2	25.9	313°54.4	58.9					
Mer.pass.:02:01			v-0.7 d-0.4 m-3.9			v1.0 d-0.7 m1.6			v1.9 d-0.1 m-1.8			v2.6 d-0.1 m0.7		

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	330°32.5	213°02.1	N20°37.8	141°41.7	S03°25.1	223°11.2	N22°25.8	328°57.0	S01°58.9	
1	345°35.0	228°01.4		156°42.7	25.7	238°13.1	25.8	343°59.6	59.0	
2	0°37.4	243°00.7		171°43.7	26.4	253°15.1	25.7	359°02.2	59.1	
3	15°39.9	258°00.0	•• 36.5	186°44.7	•• 27.0	268°17.0	•• 25.7	14°04.8	•• 59.1	
4	30°42.4	272°59.4	36.1	201°45.7	27.7	283°18.9	25.6	29°07.4	59.2	
5	45°44.8	287°58.7	35.7	216°46.7	28.3	298°20.9	25.6	44°10.0	59.3	
6	60°47.3	302°58.0	N20°35.3	231°47.7	S03°29.0	313°22.8	N22°25.5	59°12.6	S01°59.3	
7	75°49.8	317°57.3	34.9	246°48.7	29.6	328°24.8	25.5	74°15.2	59.4	
8	90°52.2	332°56.6	34.4	261°49.7	30.3	343°26.7	25.4	89°17.8	59.5	
9	105°54.7	347°55.9	•• 34.0	276°50.7	•• 30.9	358°28.7	•• 25.4	104°20.4	•• 59.5	
10	120°57.2	2°55.3	33.6	291°51.7	31.6	13°30.6	25.3	119°23.0	59.6	
11	135°59.6	17°54.6	33.2	306°52.7	32.3	28°32.6	25.3	134°25.6	59.7	
12	151°02.1	32°53.9	N20°32.7	321°53.7	S03°32.9	43°34.5	N22°25.2	149°28.2	S01°59.7	
13	166°04.6	47°53.2	32.3	336°54.7	33.6	58°36.5	25.1	164°30.8	59.8	
14	181°07.0	62°52.5	31.9	351°55.7	34.2	73°38.4	25.1	179°33.4	59.9	
15	196°09.5	77°51.9	•• 31.5	6°56.7	•• 34.9	88°40.3	•• 25.0	194°36.0	01°59.9	
16	211°11.9	92°51.2	31.0	21°57.7	35.5	103°42.3	25.0	209°38.6	02°00.0	
17	226°14.4	107°50.5	30.6	36°58.7	36.2	118°44.2	24.9	224°41.2	00.1	
18	241°16.9	122°49.8	N20°30.2	51°59.7	S03°36.8	133°46.2	N22°24.9	239°43.8	S02°00.1	
19	256°19.3	137°49.1	29.7	67°00.7	37.5	148°48.1	24.8	254°46.4	00.2	
20	271°21.8	152°48.5	29.3	82°01.7	38.1	163°50.1	24.8	269°49.0	00.3	
21	286°24.3	167°47.8	•• 28.9	97°02.7	•• 38.8	178°52.0	•• 24.7	284°51.6	•• 00.3	
22	301°26.7	182°47.1	28.4	112°03.7	39.5	193°54.0	24.7	299°54.2	00.4	
23	316°29.2	197°46.4	28.0	127°04.7	40.1	208°55.9	24.6	314°56.8	00.5	
Mer.pass.:01:58			v-0.7 d-0.4 m-3.9		v1.0 d-0.7 m1.6		v1.9 d-0.1 m-1.8		v2.6 d-0.1 m0.7	

SHA	Dec
Alpheratz	357°33.9 29°14.0
Ankaa	353°06.3 -42°09.7
Schedar	349°30.0 56°40.6
Diphda	348°46.5 -17°50.5
Achernar	335°19.4 -57°06.1
Hamal	327°50.5 23°35.0
Polaris	313°41.1 89°22.0
Acamar	315°11.3 -40°11.8
Menkar	314°05.5 4°11.5
Mirfak	308°27.5 49°57.0
Aldebaran	290°39.1 16°33.7
Rigel	281°03.5 -8°10.1
Capella	280°21.3 46°01.3
Bellatrix	278°22.4 6°22.5
Elnath	278°01.4 28°37.7
Anilam	275°37.3 -1°11.0
Betelgeuse	270°51.7 7°24.8
Canopus	263°52.5 -52°42.2
Sirius	258°26.0 -16°44.9
Adhara	255°05.7 -29°00.2
Procyon	244°50.6 5°09.7
Pollux	243°17.0 27°57.9
Avior	234°15.1 -59°35.3
Suhail	222°46.4 -43°32.0
Miaplacidus	221°39.1 -69°49.2
Alphard	217°47.6 -8°46.1
Regulus	207°34.2 11°50.6
Dubhe	193°41.0 61°36.9
Denebola	182°24.7 14°25.8
Gienah	175°43.3 -17°41.0
Acrux	173°00.1 -63°14.6
Gacrux	171°51.5 -57°15.5
Alioth	166°12.9 55°49.5
Spica	158°21.9 -11°17.7
Alkaid	152°51.8 49°11.3
Hadar	148°35.6 -60°30.0
Menkent	147°57.2 -36°29.9
Arcturus	145°47.6 19°03.1
Rigel Kent.	139°39.8 -60°56.7
Kochab	137°20.0 74°03.2
Zuben'ubi	136°55.5 -16°08.9
Alphecca	126°03.3 26°37.9
Antares	112°15.1 -26°29.4
Atria	107°08.7 -69°04.6
Sabik	102°02.1 -15°45.4
Shaula	96°09.5 -37°07.4
Rasalhague	95°57.9 12°32.6
Eltanin	90°41.7 51°29.3
Kaus Aust.	83°31.6 -34°22.4
Vega	80°32.6 38°48.6
Nunki	75°46.8 -26°15.9
Altair	61°59.2 8°56.3
Peacock	53°04.3 -56°39.2
Deneb	49°25.0 45°22.4
Enif	33°38.0 9°59.7
Al Na'ir	27°31.8 -46°50.1
Fomalhaut	15°13.6 -29°29.0
Scheat	13°44.4 28°13.4
Markab	13°29.1 15°20.7

Dubhe	193°41.0	61°36.9
Denebola	182°24.7	14°25.8
Gienah	175°43.3	-17°41.0
Acrux	173°00.1	-63°14.6
Gacrux	171°51.5	-57°15.5
Alioth	166°12.9	55°49.5
Spica	158°21.9	-11°17.7
Alkaid	152°51.8	49°11.3
Hadar	148°35.6	-60°30.0
Menkent	147°57.2	-36°29.9
Arcturus	145°47.6	19°03.1
Rigil Kent	139°39.8	-60°56.7
Kochab	137°20.0	74°03.2
Zuben'ubi	136°55.5	-16°08.9
Alphecca	126°03.3	26°37.9
Antares	112°15.1	-26°29.4
Atria	107°08.7	-69°04.6
Sabik	102°02.1	-15°45.4
Shaula	96°09.5	-37°07.4
Rasalhague	95°57.9	12°32.6
Eltanin	90°41.7	51°29.3
Kaus Aust.	83°31.6	-34°22.4
Vega	80°32.6	38°48.6
Nunki	75°46.8	-26°15.9
Altair	61°59.2	8°56.3
Peacock	53°04.3	-56°39.2
Deneb	49°25.0	45°22.4
Enif	33°38.0	9°57.9
Al Na'ir	27°31.8	-46°50.1
Fomalhaut	15°13.6	-29°29.0
Scheat	13°44.4	28°13.4
Markab	13°29.1	15°20.7

Aries		Venus		Mars		Jupiter		Saturn	
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	331°31.7	212°45.7	N20°27.6	142°05.8	S03°40.8	223°57.9	N22°24.6	329°59.4	S02°00.5
1	346°34.1	227°45.1	27.1	157°06.8	41.4	238°59.8	24.5	345°02.0	00.6
2	1°36.6	242°44.4	26.7	172°07.8	42.1	254°01.8	24.4	0°04.6	00.7
3	16°39.1	257°43.7	•• 26.2	187°08.8	•• 42.7	269°03.7	•• 24.4	15°07.2	•• 00.7
4	31°41.5	272°43.0	25.8	202°09.8	43.4	284°05.7	24.3	30°09.8	00.8
5	46°44.0	287°42.3	25.4	217°10.8	44.0	299°07.6	24.3	45°12.4	00.9
6	61°46.4	302°41.7	N20°24.9	232°11.8	S03°44.7	314°09.6	N22°24.2	60°15.0	S02°00.9
7	76°48.9	317°41.0	24.5	247°12.8	45.3	329°11.5	24.2	75°17.6	01.0
8	91°51.4	332°40.3	24.0	262°13.8	46.0	344°13.5	24.1	90°20.2	01.1
9	106°53.8	347°39.6	•• 23.6	277°14.8	•• 46.7	359°15.4	•• 24.1	105°22.8	•• 01.1
10	121°56.3	2°38.9	23.1	292°15.8	47.3	14°17.4	24.0	120°25.4	01.2
11	136°58.8	17°38.3	22.7	307°16.8	48.0	29°19.3	24.0	135°28.0	01.3
12	152°01.2	32°37.6	N20°22.2	322°17.8	S03°48.6	44°21.3	N22°23.9	150°30.6	S02°01.3
13	167°03.7	47°36.9	21.8	337°18.8	49.3	59°23.2	23.9	165°33.2	01.4
14	182°06.2	62°36.2	21.3	352°19.8	49.9	74°25.2	23.8	180°35.8	01.5
15	197°08.6	77°35.6	•• 20.9	7°20.8	•• 50.6	89°27.1	•• 23.8	195°38.4	•• 01.5
16	212°11.1	92°34.9	20.4	22°21.8	51.2	104°29.1	23.7	210°41.0	01.6
17	227°13.5	107°34.2	20.0	37°22.8	51.9	119°31.0	23.6	225°43.6	01.7
18	242°16.0	122°33.5	N20°19.5	52°23.8	S03°52.5	134°33.0	N22°23.6	240°46.2	S02°01.8
19	257°18.5	137°32.9	19.0	67°24.7	53.5	149°34.9	23.5	255°48.8	01.8
20	272°20.9	152°32.2	18.6	82°25.7	53.8	164°36.9	23.5	270°51.4	01.9
21	287°23.4	167°31.5	•• 18.1	97°26.7	•• 54.5	179°38.8	•• 23.4	285°54.1	•• 02.0
22	302°25.9	182°30.8	17.7	112°27.7	55.2	194°40.8	23.4	300°56.7	02.0
23	317°28.3	197°30.2	17.2	127°28.7	55.8	209°42.7	23.3	315°59.3	02.1
Mer.pass.:01:54		v-0.7 d-0.4 m-3.9		v1.0 d-0.7 m1.6		v1.9 d-0.1 m-1.8		v2.6 d-0.1 m0.7	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	332°30.8	212°29.5	N20°16.8	142°29.7	S03°56.5	224°44.7	N22°23.3	331°01.9	S02°02.2
1	347°33.3	227°28.8	16.3	157°30.7	57.1	239°46.6	23.2	346°04.5	02.2
2	2°35.7	242°28.1	15.8	172°31.7	57.8	254°48.6	23.2	1°07.1	02.3
3	17°38.2	257°27.5	•• 15.4	187°32.7	•• 58.4	269°50.5	•• 23.1	16°09.7	•• 02.4
4	32°40.7	272°26.8	14.9	202°33.7	59.1	284°52.5	23.1	31°12.3	02.4
5	47°43.1	287°26.1	14.4	217°34.7	03°59.7	299°54.4	23.0	46°14.9	02.5
6	62°45.6	302°25.4	N20°14.0	232°35.7	S04°00.4	314°56.4	N22°22.9	61°17.5	S02°02.6
7	77°48.0	317°24.8	13.5	247°36.7	01.0	329°58.3	22.9	76°20.1	02.6
8	92°50.5	332°24.1	13.0	262°37.7	01.7	345°00.3	22.8	91°22.7	02.7
9	107°53.0	347°23.4	•• 12.6	277°38.7	•• 02.4	0°02.2	•• 22.8	106°25.3	•• 02.8
10	122°55.4	2°22.7	12.1	292°39.7	03.0	15°04.2	22.7	121°27.9	02.8
11	137°57.9	17°22.1	11.6	307°40.7	03.7	30°06.1	22.7	136°30.5	02.9
12	153°00.4	32°21.4	N20°11.1	322°41.7	S04°04.3	45°08.1	N22°22.6	151°33.1	S02°03.0
13	168°02.8	47°20.7	10.7	337°42.7	05.0	60°10.1	22.6	166°35.7	03.1
14	183°05.3	62°20.0	10.2	352°43.7	05.6	75°12.0	22.5	181°38.3	03.1
15	198°07.8	77°19.4	•• 09.7	7°44.7	•• 06.3	90°14.0	•• 22.5	196°40.9	•• 03.2
16	213°10.2	92°18.7	09.2	22°45.7	06.9	105°15.9	22.4	211°43.5	03.3
17	228°12.7	107°18.0	08.7	37°46.7	07.6	120°17.9	22.3	226°46.1	03.3
18	243°15.1	122°17.3	N20°08.3	52°47.7	S04°08.2	135°19.8	N22°22.3	241°48.7	S02°03.4
19	258°17.6	137°16.7	07.8	67°48.7	08.9	150°21.8	22.2	256°51.3	03.5
20	273°20.1	152°16.0	07.3	82°49.7	09.5	165°23.7	22.2	271°53.9	03.5
21	288°22.5	167°15.3	•• 06.8	97°50.7	•• 10.2	180°25.7	•• 22.1	286°56.5	•• 03.6
22	303°25.0	182°14.7	06.3	112°51.7	10.9	195°27.6	22.1	301°59.2	03.7
23	318°27.5	197°14.0	05.9	127°52.7	11.5	210°29.6	22.0	317°01.8	03.7
Mer.pass.:01:50		v-0.7 d-0.5 m-3.9		v1.0 d-0.7 m1.6		v2.0 d-0.1 m-1.8		v2.6 d-0.1 m0.7	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	333°29.9	212°13.3	N20°05.4	142°53.6	S04°12.2	225°31.6	N22°22.0	332°04.4	S02°03.8
1	348°32.4	227°12.7	04.9	157°54.6	12.8	240°33.5	21.9	347°07.0	03.9
2	3°34.9	242°12.0	04.4	172°55.6	13.5	255°35.5	21.9	2°09.6	04.0
3	18°37.3	257°11.3	•• 03.9	187°56.6	•• 14.1	270°37.4	•• 21.8	17°12.2	•• 04.0
4	33°39.8	272°10.6	03.4	202°57.6	14.8	285°39.4	21.8	32°14.8	04.1
5	48°42.3	287°10.0	02.9	217°58.6	15.4	300°41.3	21.7	47°17.4	04.2
6	63°44.7	302°09.3	N20°02.4	232°59.6	S04°16.1	315°43.3	N22°21.6	62°20.0	S02°04.2
7	78°47.2	317°08.6	01.9	248°00.6	16.7	330°45.2	21.6	77°22.6	04.3
8	93°49.6	332°08.0	01.5	263°01.6	17.4	345°47.2	21.5	92°25.2	04.4
9	108°52.1	347°07.3	•• 01.0	278°02.6	•• 18.0	0°49.2	•• 21.5	107°27.8	•• 04.4
10	123°54.6	2°06.6	00.5	293°03.6	18.7	15°51.1	21.4	122°30.4	04.5
11	138°57.0	17°06.0	20°00.0	308°04.6	19.4	30°53.1	21.4	137°33.0	04.6
12	153°59.5	32°05.3	N19°59.5	323°05.6	S04°20.0	45°55.0	N22°21.3	152°35.6	S02°04.6
13	169°02.0	47°04.6	59.0	338°06.6	20.7	60°57.0	21.3	167°38.2	04.7
14	184°04.4	62°04.0	58.5	353°07.6	21.3	75°58.9	21.2	182°40.8	04.8
15	199°06.9	77°03.3	•• 58.0	8°08.5	•• 22.0	91°00.9	•• 21.2	197°43.5	•• 04.9
16	214°09.4	92°02.6	57.5	23°09.5	22.6	106°02.9	21.1	212°46.1	04.9
17	229°11.8	107°01.9	57.0	38°10.5	23.3	121°04.8	21.0	227°48.7	05.0
18	244°14.3	122°01.3	N19°56.5	53°11.5	S04°23.9	136°06.8	N22°21.0	242°51.3	S02°05.1
19	259°16.7	137°00.6	56.0	68°12.5	24.6	151°08.7	20.9	257°53.9	05.1
20	274°19.2	151°59.9	55.5	83°13.5	25.2	166°10.7	20.9	272°56.5	05.2
21	289°21.7	166°59.3	•• 54.9	98°14.5	•• 25.9	181°12.6	•• 20.8	287°59.1	•• 05.3
22	304°24.1	181°58.6	54.4	113°15.5	26.5	196°14.6	20.8	303°01.7	05.4
23	319°26.6	196°57.9	53.9	128°16.5	27.2	211°16.6	20.7	318°04.3	05.4
Mer.pass.:01:46		v-0.7 d-0.5 m-3.9		v1.0 d-0.7 m1.6		v2.0 d-0.1 m-1.8		v2.6 d-0.1 m0.7	

SHA	Dec
Alpheratz	357°33.9 29°14.0
Ankaa	353°06.3 -42°09.7
Schedar	349°30.0 56°40.6
Diphda	348°46.5 -17°50.5
Achernar	335°19.4 -57°06.1
Hamal	327°50.4 23°35.1
Polaris	313°39.7 89°22.0
Acamar	315°11.2 -40°11.8
Menkar	314°05.5 4°11.6
Mirfak	308°27.4 49°57.0
Aldebaran	290°39.1 16°33.7
Rigel	281°03.5 -8°10.1
Capella	280°21.3 46°01.3
Bellatrix	278°22.4 6°22.5
Elnath	278°01.3 28°37.7
Anilam	275°37.3 -1°11.0
Betelgeuse	270°51.7 7°24.8
Canopus	263°52.5 -52°42.2
Sirius	258°26.0 -16°44.9
Adhara	255°05.7 -29°00.2
Procyon	244°50.5 5°09.7
Pollux	243°17.0 27°57.9
Avior	234°15.1 -59°35.3
Suhail	222°46.4 -43°32.0
Miaplacidus	221°39.1 -69°49.2
Alphard	217°47.6 -8°46.1
Regulus	207°34.2 11°50.6
Dubhe	193°41.0 61°36.9
Denebola	182°24.7 14°25.8
Gienah	175°43.3 -17°41.0
Acrux	173°00.1 -63°14.6
Gacrux	171°51.6 -57°15.5
Alioth	166°12.9 55°49.4
Spica	158°21.9 -11°17.7
Alkaid	152°51.8 49°11.3
Hadar	148°35.6 -60°30.0
Menkent	147°57.2 -36°29.9
Arcturus	145°47.6 19°03.1
Rigel Kent.	139°39.8 -60°56.7
Kochab	137°20.1 74°03.2
Zuben'ubi	136°55.5 -16°08.9
Alphecca	126°03.3 26°37.9
Antares	112°15.1 -26°29.4
Atria	107°08.7 -69°04.7
Sabik	102°02.1 -15°45.4
Shaula	96°09.5 -37°07.4
Rasalhague	95°57.9 12°32.6
Eltanin	90°41.7 51°29.3
Kaus Aug.	83°31.6 -34°22.4
Vega	80°32.6 -38°48.6
Nunki	75°46.8 -26°15.9
Altair	61°59.2 -8°56.3
Peacock	53°04.3 -56°39.2
Deneb	49°25.0 45°22.4
Enif	33°38.0 9°59.7
Al Nair	27°31.8 -46°50.1
Fomalhaut	15°13.6 -29°29.0
Scheat	13°44.4 28°13.4
Markab	13°29.1 15°20.7

Dubhe	193°41.0	61°36.9
Denebola	182°24.7	14°25.8
Gienah	175°43.3	-17°41.0
Acrux	173°00.1	-63°14.6
Gacrux	171°51.6	-57°15.5
Alioth	166°12.9	55°49.4
Spica	158°21.9	-11°17.7
Alkaid	152°51.8	49°11.3
Hadar	148°35.6	-60°30.0
Menkent	147°57.2	-36°29.9
Arcturus	145°47.6	19°03.1
Rigil Kent	139°39.8	-60°56.7
Kochab	137°20.1	74°03.2
Zuben'ubi	136°55.5	-16°08.9
Alphecca	126°03.3	26°37.9
Antares	12°15.1	-26°29.4
Atria	107°08.7	-69°04.7
Sabik	102°02.1	-15°45.4
Shaula	96°09.5	-37°07.4
Rasalhague	95°57.9	12°32.6
Eltanin	90°41.7	51°29.3
Kaus Aust	83°31.6	-34°22.4
Vega	80°32.6	38°48.6
Nunki	75°46.8	-26°15.9
Altair	61°59.2	8°56.3
Peacock	53°04.3	-56°39.2
Deneb	49°25.0	45°22.4
Enif	33°38.8	9°59.7
Al Na'ir	27°31.8	-46°50.1
Fomalhaut	15°13.6	-29°29.0
Scheat	13°44.4	28°13.4
Markab	13°29.1	15°20.7

Horizontal parallax	
Venus:	0.1
Mars:	0.1

Sun			Moon				
Sat	GHA	Dec	GHA	ν	Dec	d	HP
0	179°18.4	N11°25.4	181°34.7	12.8'	N14°16.9	-13.9'	56.8'
1	194°18.6	24.5	196°06.6	12.9'	14°03.0	-13.9'	56.8'
2	209°18.7	23.7	210°38.5	13.0'	13°49.1	-14.0'	56.7'
3	224°18.9	· · 22.8	225°10.6	13.1'	13°35.1	-14.0'	56.7'
4	239°19.0	22.0	239°42.7	13.2'	13°21.0	-14.1'	56.7'
5	254°19.2	21.1	254°14.9	13.3'	13°06.9	-14.1'	56.7'
6	269°19.4	N11°20.3	268°47.2	13.3'	N12°52.8	-14.2'	56.6'
7	284°19.5	19.4	283°19.6	13.4'	12°38.6	-14.2'	56.6'
8	299°19.7	18.6	297°52.0	13.5'	12°24.3	-14.3'	56.6'
9	314°19.9	· · 17.7	312°24.6	13.6'	12°10.1	-14.3'	56.6'
10	329°20.0	16.9	326°57.2	13.7'	11°55.7	-14.3'	56.6'
11	344°20.2	16.0	341°29.9	13.7'	11°41.4	-14.4'	56.5'
12	359°20.4	N11°15.2	356°02.6	13.8'	N11°27.0	-14.4'	56.5'
13	14°20.5	14.3	10°35.5	13.9'	11°12.5	-14.5'	56.5'
14	29°20.7	13.5	25°08.4	14.0'	10°58.0	-14.5'	56.5'
15	44°20.9	· · 12.6	39°41.4	14.0'	10°43.5	-14.5'	56.4'
16	59°21.0	11.8	54°14.5	14.1'	10°29.0	-14.6'	56.4'
17	74°21.2	10.9	68°47.6	14.2'	10°14.4	-14.6'	56.4'
18	89°21.3	N11°10.1	83°20.8	14.2'	N09°59.8	-14.6'	56.4'
19	104°21.5	09.2	97°54.1	14.3'	09°45.1	-14.7'	56.3'
20	119°21.7	08.4	112°27.4	14.4'	09°30.5	-14.7'	56.3'
21	134°21.8	· · 07.5	127°00.8	14.4'	09°15.8	-14.7'	56.3'
22	149°21.0	06.7	142°34.3	14.5'	09°01.1	-14.7'	56.3'
23	164°22.2	05.8	156°07.8	14.6'	08°46.3	-14.8'	56.2'
SD - 15.8			SD - 15.4				

	Aries			Venus			Mars			Jupiter			Saturn		
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	334°29.1	211°57.3	N19°53.4	143°17.5	S04°27.9	226°18.5	N22°20.7	333°06.9	S02°05.5						
1	349°31.5	226°56.6	52.9	158°18.5	28.5	241°20.5	20.6	348°09.5	05.6						
2	4°34.0	241°56.0	52.4	173°19.4	29.2	256°22.4	20.6	3°12.1	05.6						
3	19°36.5	256°55.3	•• 51.9	188°20.4	•• 29.8	271°24.4	•• 20.5	18°14.7	•• 05.7						
4	34°38.9	271°54.6	51.4	203°21.4	30.5	286°26.4	20.5	33°17.4	05.8						
5	49°41.4	286°54.0	50.9	218°22.4	31.1	301°28.3	20.4	48°20.0	05.8						
6	64°43.9	301°53.3	N19°50.3	233°23.4	S04°31.8	316°30.3	N22°20.3	63°22.6	S02°05.9						
7	79°46.3	316°52.6	49.8	248°24.4	32.4	331°32.2	20.3	78°25.2	06.0						
8	94°48.8	331°52.0	49.3	263°25.4	33.1	346°34.2	20.2	93°27.8	06.0						
9	109°51.2	346°51.3	•• 48.8	278°26.4	•• 33.7	1°36.2	•• 20.2	108°30.4	•• 06.1						
10	124°53.7	1°50.6	48.3	293°27.4	34.4	16°38.1	20.1	123°33.0	06.2						
11	139°56.2	16°50.0	47.8	308°28.4	35.0	31°40.1	20.1	138°35.6	06.3						
12	154°58.6	31°49.3	N19°47.2	323°29.3	S04°35.7	46°42.0	N22°20.0	153°38.2	S02°06.3						
13	170°01.1	46°48.6	46.7	338°30.3	36.4	61°44.0	20.0	168°40.8	06.4						
14	185°03.6	61°48.0	46.2	353°31.3	37.0	76°46.0	19.9	183°43.4	06.5						
15	200°06.0	76°47.3	•• 45.7	8°32.3	•• 37.7	91°47.9	•• 19.9	198°46.1	•• 06.5						
16	215°08.5	91°46.7	45.1	23°33.3	38.3	106°49.9	19.8	213°48.7	06.6						
17	230°11.0	106°46.0	44.6	38°34.3	39.0	121°51.9	19.7	228°51.3	06.7						
18	245°13.4	121°45.3	N19°44.1	53°35.3	S04°39.6	136°53.8	N22°19.7	243°53.9	S02°06.8						
19	260°15.9	136°44.7	43.6	68°36.3	40.3	151°55.8	19.6	256°55.5	06.8						
20	275°18.4	151°44.0	43.0	83°37.3	40.9	166°57.7	19.6	273°59.1	06.9						
21	290°20.8	166°43.3	•• 42.5	98°38.2	•• 41.6	181°59.7	•• 19.5	289°01.7	•• 07.0						
22	305°23.3	181°42.7	42.0	113°39.2	42.2	197°01.7	19.5	304°04.3	07.0						
23	320°25.7	196°42.0	41.4	128°40.2	42.9	212°03.6	19.4	319°06.9	07.1						
Mer.pass.:01:42				v-0.7 d-0.5 m-3.9			v1.0 d-0.7 m1.6			v2.0 d-0.1 m-1.8			v2.6 d-0.1 m0.7		

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec						
0	335°28.2	211°41.4	N19°40.9	143°41.2	S04°43.5	227°05.6	N22°19.4	334°09.5	S02°07.2						
1	350°30.7	226°40.7	40.4	158°42.2	44.2	242°07.6	19.3	349°12.2	07.2						
2	5°33.1	241°40.0	39.8	173°43.2	44.8	257°09.5	19.3	4°14.8	07.3						
3	20°35.6	256°39.4	•• 39.3	188°44.2	•• 45.5	272°11.5	•• 19.2	19°17.4	•• 07.4						
4	35°38.1	271°38.7	38.8	203°45.1	46.2	287°13.4	19.1	34°20.0	07.5						
5	50°40.5	286°38.1	38.2	218°46.1	46.8	302°15.4	19.1	49°22.6	07.5						
6	65°43.0	301°37.4	N19°37.7	233°47.1	S04°47.5	317°17.4	N22°19.0	64°25.2	S02°07.6						
7	80°45.5	316°36.7	37.1	248°48.1	48.1	332°19.3	19.0	79°27.8	07.7						
8	95°47.9	331°36.1	36.6	263°49.1	48.8	347°21.3	18.9	94°30.4	07.7						
9	110°50.4	346°35.4	•• 36.1	278°50.1	•• 49.4	2°23.3	•• 18.9	109°33.0	•• 07.8						
10	125°52.8	1°34.8	35.5	293°51.1	50.1	17°25.2	18.8	124°35.6	07.9						
11	140°55.3	16°34.1	35.0	308°52.0	50.7	32°27.2	18.8	139°38.3	08.0						
12	155°57.8	31°33.5	N19°34.4	323°53.0	S04°51.4	47°29.2	N22°18.7	154°40.9	S02°08.0						
13	171°00.2	46°32.8	33.9	338°54.0	52.0	62°31.1	18.7	169°43.5	08.1						
14	186°02.7	61°32.1	33.3	353°55.0	52.7	77°33.1	18.6	184°46.1	08.2						
15	201°05.2	76°31.5	•• 32.8	8°56.0	•• 53.3	92°35.1	•• 18.5	199°48.7	•• 08.2						
16	216°07.6	91°30.8	32.3	23°57.0	54.0	107°37.0	18.5	214°51.3	08.3						
17	231°10.1	106°30.2	31.7	38°58.0	54.6	122°39.0	18.4	229°53.9	08.4						
18	246°12.6	121°29.5	N19°31.2	53°58.9	S04°55.3	137°40.9	N22°18.4	244°56.5	S02°08.5						
19	261°15.0	136°28.9	30.6	68°59.9	56.0	152°42.9	18.3	259°59.2	08.5						
20	276°17.5	151°28.2	30.0	84°00.9	56.6	167°44.9	18.3	275°01.8	08.6						
21	291°20.0	166°27.0	•• 29.5	99°01.9	•• 57.3	182°46.8	•• 18.2	290°04.4	•• 08.7						
22	306°22.4	181°26.9	28.9	114°02.9	57.9	197°48.8	18.2	305°07.0	08.7						
23	321°24.9	196°26.2	28.4	129°03.9	58.6	212°50.8	18.1	320°09.6	08.8						
Mer.pass.:01:38				v-0.7 d-0.5 m-3.9			v1.0 d-0.7 m1.6			v2.0 d-0.1 m-1.8			v2.6 d-0.1 m0.7		

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec						
0	336°27.3	211°25.6	N19°27.8	144°04.8	S04°59.2	227°52.7	N22°18.1	335°12.2	S02°08.9						
1	351°29.8	226°24.9	27.3	159°05.8	04°59.9	242°54.7	18.0	350°14.8	09.0						
2	6°32.3	241°24.3	26.7	174°06.8	05°00.5	257°56.7	17.9	5°17.4	09.0						
3	21°34.7	256°23.6	•• 26.2	189°07.8	•• 01.2	272°58.6	•• 17.9	20°20.1	•• 09.0						
4	36°37.2	271°23.0	25.6	204°08.8	01.8	288°00.6	17.8	35°22.7	09.2						
5	51°39.7	286°22.3	25.0	219°09.8	02.5	303°02.6	17.8	50°25.3	09.2						
6	66°42.1	301°21.7	N19°24.5	234°10.7	S05°03.1	318°04.5	N22°17.7	65°27.9	S02°09.3						
7	81°44.6	316°21.0	23.9	249°11.7	03.8	333°06.5	17.7	80°30.5	09.4						
8	96°47.1	331°20.3	23.3	264°12.7	04.4	348°08.5	17.6	95°33.1	09.5						
9	111°49.5	346°19.7	•• 22.8	279°13.7	•• 05.1	3°10'0.5	•• 17.6	110°35.7	•• 09.5						
10	126°52.0	1°19.0	22.2	294°14.7	05.7	18°12.4	17.5	125°38.3	09.6						
11	141°54.4	16°18.4	21.7	309°15.7	06.4	33°14.4	17.4	140°41.0	09.7						
12	156°56.9	31°17.7	N19°21.1	324°16.6	S05°07.1	48°16.4	N22°17.4	155°43.6	S02°09.7						
13	171°59.4	46°17.1	20.5	339°17.6	07.7	63°18.3	17.3	170°46.2	09.8						
14	187°01.8	61°16.4	19.9	354°18.6	08.4	78°20.3	17.3	185°48.8	09.9						
15	202°04.3	76°15.8	•• 19.4	9°19.6	•• 09.0	93°22.3	•• 17.2	200°51.4	•• 10.0						
16	217°06.8	91°15.1	18.8	24°20.6	09.7	108°24.2	17.2	215°54.0	10.0						
17	232°09.2	106°14.5	18.2	39°21.5	10.3	123°26.2	17.1	230°56.6	10.1						
18	247°11.7	121°13.8	N19°17.7	54°22.5	S05°11.0	138°28.2	N22°17.1	245°59.3	S02°10.2						
19	262°14.2	136°13.2	17.1	69°23.5	11.6	153°30.1	17.0	261°01.9	10.3						
20	277°16.6	151°12.5	16.5	84°24.5	12.3	168°32.1	17.0	276°04.5	10.3						
21	292°19.1	166°11.9	•• 15.9	99°25.5	•• 12.9	183°34.1	•• 16.9	291°07.1	•• 10.4						
22	307°21.6	181°11.2	15.4	114°26.4	13.6	198°36.1	16.8	306°09.7	10.5						
23	322°24.0	196°10.6	14.8	129°27.4	14.2	213°38.0	16.8	321°12.3	10.5						
Mer.pass.:01:34				v-0.7 d-0.6 m-3.9			v1.0 d-0.7 m1.6			v2.0 d-0.1 m-1.8			v2.6 d-0.1 m0.7		

	SHA	Dec
Alpheratz	357°33.9	29°14.0
Ankaa	353°06.2	-42°09.7
Schedar	349°30.0	56°40.6
Diphda	348°46.5	-17°50.5
Achernar	335°19.4	-57°06.1
Hamal	327°50.4	23°35.1
Polaris	313°38.2	89°22.0
Acamar	315°11.2	-40°11.8
Menkar	314°05.5	4°11.6
Mirfak	308°27.4	49°57.0
Aldebaran	290°39.0	16°33.7
Rigel	281°03.4	-8°10.1
Capella	280°21.2	46°01.3
Bellatrix	278°22.4	6°22.5
Elnath	278°01.3	28°37.7
Anilam	275°37.3	-1°11.0
Betelgeuse	270°51.7	7°24.8
Canopus	263°52.5	-52°42.2
Sirius	258°26.0	-16°44.9
Adhara	255°05.7	-29°00.1
Procyon	244°50.5	5°09.7
Pollux	243°16.9	27°57.9
Avior	234°15.1	-59°35.3
Suhail	222°46.4	-43°32.0
Miaplacidus	221°39.1	-69°49.2
Alphard	217°47.6	-8°46.1
Regulus	207°34.2	11°50.6
Dubhe	193°41.0	61°36.9
Denebola	182°24.7	14°25.8
Gienah	175°43.3	-17°41.0
Acrux	173°00.1	-63°14.6
Gacrux	171°51.6	-57°15.5
Alloth	166°12.9	55°49.4
Alioth	158°22.0	-11°17.7
Alkaid	152°51.8	49°11.3
Hadar	148°35.6	-60°30.0
Menkent	147°57.2	-36°29.9
Arcturus	145°47.6	19°03.1
Rigel Kent.	139°39.8	-60°56.7
Kochab	137°20.1	74°03.2
Zuben'ubi	136°55.5	-16°08.9
Alphecca	126°03.3	26°37.9
Antares	112°15.2	-26°29.4
Atria	107°08.8	-69°04.7
Sabik	102°02.1	-15°45.4
Shaula	96°09.5	-37°07.4
Rasalhague	95°57.9	12°32.6
Eltanin	90°41.7	51°29.3
Kaus Aug.	83°31.6	-34°22.4
Vega	80°32.6	38°48.6
Nunki	75°46.9	-26°15.9
Altair	61°59.2	8°56.3
Peacock	53°04.3	-56°39.2
Deneb	49°25.0	45°22.5
Enif	33°38.0	9°59.7
Al Na'ir	27°31.8	-46°50.1
Fomalhaut	15°13.6	-29°29.0
Scheat	13°44.3	28°13.4
Markab	13°29.1	15

	Aries			Venus			Mars			Jupiter			Saturn						
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec						
0	337°26.5	211°09.9	N19°14.2	144°28.4	S05°14.9	228°40.0	N22°16.7	336°14.9	S02°10.6										
1	352°28.9	226°09.3	13.6	159°29.4	15.5	243°42.0	16.7	351°17.6	10.7										
2	7°31.4	241°08.6	13.0	174°30.4	16.2	258°43.9	16.6	6°20.2	10.8										
3	22°33.9	256°08.0	•• 12.5	189°31.3	•• 16.8	273°45.9	•• 16.6	21°22.8	•• 10.8										
4	37°36.3	271°07.3	11.9	204°32.3	17.5	288°47.9	16.5	36°25.4	10.9										
5	52°38.8	286°06.7	11.3	219°33.3	18.1	303°49.9	16.5	51°28.0	11.0										
6	67°41.3	301°06.0	N19°10.7	234°34.3	S05°18.8	318°51.8	N22°16.4	66°30.6	S02°11.1										
7	82°43.7	316°05.4	10.1	249°35.3	19.5	333°53.8	16.4	81°33.2	11.1										
8	97°46.2	331°04.7	09.5	264°36.2	20.1	348°55.8	16.3	96°35.9	11.2										
9	112°48.7	346°04.1	•• 09.0	279°37.2	•• 20.8	3°57.7	•• 16.2	111°38.5	•• 11.3										
10	127°51.1	1°03.5	08.4	294°38.2	21.4	18°59.7	16.2	126°41.1	11.3										
11	142°53.6	16°02.8	07.8	309°39.2	22.1	34°01.7	16.1	141°43.7	11.4										
12	157°56.1	31°02.2	N19°07.2	324°40.2	S05°22.7	49°03.7	N22°16.1	156°46.3	S02°11.5										
13	172°58.5	46°01.5	06.6	339°41.1	23.4	64°05.6	16.0	171°48.9	11.6										
14	188°01.0	61°00.9	06.0	354°42.1	24.0	79°07.6	16.0	186°51.6	11.6										
15	203°03.4	76°00.2	•• 05.4	9°43.1	•• 24.7	94°09.6	•• 15.9	201°54.2	•• 11.7										
16	218°05.9	90°59.6	04.8	24°44.1	25.3	109°11.5	15.9	216°56.8	11.8										
17	233°08.4	105°58.9	04.2	39°45.0	26.0	124°13.5	15.8	231°59.4	11.8										
18	248°10.8	120°58.3	N19°03.6	54°46.0	S05°26.6	139°15.5	N22°15.7	247°02.0	S02°11.9										
19	263°13.3	135°57.6	03.0	69°47.0	27.3	154°17.5	15.5	262°04.6	12.0										
20	278°15.8	150°57.0	02.4	84°48.0	27.9	169°19.4	•• 15.6	277°07.3	12.1										
21	293°18.2	165°56.4	•• 01.8	99°48.9	•• 28.6	184°21.4	•• 15.6	292°09.9	•• 12.1										
22	308°20.7	180°55.7	01.2	114°49.9	29.2	199°23.4	15.5	307°12.5	12.2										
23	323°23.2	195°55.1	00.6	129°50.9	29.9	214°25.4	15.5	322°15.1	12.3										
Mer.pass.:01:30				v-0.6 d-0.6 m-3.9				v1.0 d-0.7 m1.6				v2.0 d-0.1 m-1.8				v2.6 d-0.1 m0.7			

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	338°25.6	210°54.4	N19° 00.0	144°51.9	S05° 30.5	229°27.3	N22° 15.4	337°17.7	S02° 12.4										
1	353°28.1	225°53.8	18°59.4	159°52.9	31.2	244°29.3	15.4	352°20.3	12.4										
2	8°30.5	240°53.1	58.8	174°53.8	31.8	259°31.3	15.3	7°23.0	12.5										
3	23°33.0	255°52.5	•• 58.2	189°54.8	•• 32.5	274°33.3	•• 15.3	22°25.6	•• 12.6										
4	38°35.5	270°51.9	57.6	204°55.8	33.1	289°35.2	15.2	37°28.2	12.7										
5	53°37.9	285°51.2	57.0	219°56.8	33.8	304°37.2	15.1	52°30.8	12.7										
6	68°40.4	300°50.6	N18° 56.4	234°57.7	S05° 34.5	319°39.2	N22° 15.1	67°33.4	S02° 12.8										
7	83°42.9	315°49.9	55.8	249°58.7	35.1	334°41.2	15.0	82°36.0	12.9										
8	98°45.3	330°49.3	55.2	264°59.7	35.8	349°43.1	15.0	97°38.7	12.9										
9	113°47.8	345°48.7	•• 54.6	280°00.7	•• 36.4	4°45.1	•• 14.9	112°41.3	•• 13.0										
10	128°50.3	0°48.0	54.0	295°01.6	37.1	19°47.1	14.9	127°43.9	13.1										
11	143°52.7	15°47.4	53.4	301°02.6	37.7	34°49.1	14.8	142°46.5	13.2										
12	158°55.2	30°46.7	N18° 52.7	325°03.6	S05° 38.4	49°51.0	N22° 14.8	157°49.1	S02° 13.2										
13	173°57.7	45°46.1	52.1	340°04.6	39.0	64°53.0	14.7	172°51.7	13.3										
14	189°00.1	60°45.5	51.5	355°05.5	39.7	79°55.0	14.6	187°54.4	13.4										
15	204°02.6	75°44.8	•• 50.9	10°06.5	•• 40.3	94°57.0	•• 14.6	202°57.0	•• 13.5										
16	219°05.0	90°44.2	50.3	25°07.5	41.0	109°59.0	14.5	217°59.6	13.5										
17	234°07.5	105°43.5	49.7	40°08.4	41.6	125°00.9	14.5	233°02.2	13.6										
18	249°10.0	120°42.9	N18° 49.0	55°09.4	S05° 42.3	140°02.9	N22° 14.4	248°04.8	S02° 13.7										
19	264°12.4	135°42.3	48.4	70°10.4	42.9	155°04.9	14.4	263°07.5	13.8										
20	279°14.9	150°41.6	47.8	85°11.4	43.6	170°06.9	14.3	278°10.1	13.8										
21	294°17.4	165°41.0	•• 47.2	100°12.3	•• 44.2	185°08.8	•• 14.3	293°12.7	•• 13.9										
22	309°19.8	180°40.3	46.6	115°13.3	44.9	200°10.8	14.2	308°15.3	14.0										
23	324°22.2	195°39.7	45.9	130°14.3	45.5	215°12.8	14.2	323°17.9	14.0										
Mer.pass.:01:26				v-0.6 d-0.6 m-3.9				v1.0 d-0.7 m1.6				v2.0 d-0.1 m-1.8				v2.6 d-0.1 m0.7			

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	339°24.8	210°39.1	N18°45.3	145°15.3	S05°46.2	230°14.8	N22°14.1	338°20.5	S02°14.1										
1	354°27.2	225°38.4	44.7	160°16.2	46.8	245°16.8	14.0	353°23.2	14.2										
2	9°29.7	240°37.8	44.1	175°17.2	47.5	260°18.7	14.0	8°25.8	14.3										
3	24°32.2	255°37.2	•• 43.4	190°18.2	•• 48.1	275°20.7	•• 13.9	23°28.4	•• 14.3										
4	39°34.6	270°36.5	42.8	205°19.1	48.8	290°22.7	13.9	38°31.0	14.4										
5	54°37.1	285°35.9	42.2	220°20.1	49.4	305°24.7	13.8	53°33.6	14.5										
6	69°39.5	300°35.3	N18°41.6	235°21.1	S05°50.1	320°26.7	N22°13.8	68°36.3	S02°14.6										
7	84°42.0	315°34.6	40.9	250°22.1	50.7	335°28.6	13.7	83°38.9	14.6										
8	99°44.5	330°34.0	40.3	265°23.0	51.4	350°30.6	13.7	98°41.5	14.7										
9	114°46.9	345°33.4	•• 39.7	280°24.0	•• 52.0	5°32.6	•• 13.6	113°44.1	•• 14.8										
10	129°49.4	0°32.7	39.0	295°25.0	52.7	20°34.6	13.5	128°46.7	14.9										
11	144°51.9	15°32.1	38.4	310°25.9	53.3	35°36.6	13.5	143°49.4	14.9										
12	159°54.3	30°31.8	N18°37.8	325°26.9	S05°54.0	50°38.5	N22°13.4	158°52.0	S02°15.0										
13	174°56.8	45°30.8	37.1	340°27.9	54.6	65°40.5	13.4	173°54.6	15.1										
14	189°59.3	60°30.2	36.5	355°28.9	55.3	80°42.5	13.3	188°57.2	15.2										
15	205°01.7	75°29.6	•• 35.8	10°29.8	•• 55.9	95°44.5	•• 13.3	203°59.8	•• 15.2										
16	220°04.2	90°28.9	35.2	25°30.8	56.6	110°46.5	13.2	219°02.5	15.3										
17	235°06.6	105°28.3	34.6	40°31.8	57.2	125°48.4	13.2	234°05.1	15.4										
18	250°09.1	120°27.7	N18°33.9	55°32.7	S05°57.9	140°50.4	N22°13.1	249°07.7	S02°15.5										
19	265°11.6	135°27.0	33.3	70°33.7	58.5	155°52.4	13.1	264°10.3	15.5										
20	280°14.0	150°26.4	32.6	85°34.7	59.2	170°54.4	13.0	279°12.9	15.6										
21	295°16.5	165°25.8	•• 32.0	100°35.6	05°59.9	185°56.4	•• 12.9	294°15.6	•• 15.7										
22	310°19.0	180°25.1	31.4	115°36.6	06°00.5	200°58.4	12.9	309°18.2	15.7										
23	325°21.4	195°24.5	30.7	130°37.6	01.2	216°00.3	12.8	324°20.8	15.8										
Mer.pass.:01:22				v-0.6 d-0.6 m-3.9				v1.0 d-0.7 m1.6				v2.0 d-0.1 m-1.8				v2.6 d-0.1 m0.7			

SHA			Dec
Alpheratz	357°33.9	29°14.0	
Ankaa	353°06.2	-42°09.8	
Schedar	349°30.0	56°40.6	
Diphda	348°46.5	-17°50.5	
Achernar	335°19.4	-57°06.1	
Hamal	327°50.4	23°35.1	
Polaris	313°36.6	89°22.0	
Acamar	315°11.2	-40°11.8	
Menkar	314°05.4	4°11.6	
Mirfak	308°27.4	49°57.0	
Aldebaran	290°39.0	16°33.7	
Rigel	281°03.4	-8°10.1	
Capella	280°21.2	46°01.3	
Bellatrix	278°22.4	6°22.5	
Elnath	270°13.3	28°37.7	
Anilam	275°37.3	-1°11.0	
Betelgeuse	270°51.6	7°24.8	
Canopus	263°52.4	-52°42.2	
Sirius	258°26.0	-16°44.8	
Adhara	255°05.7	-29°00.1	
Procyon	244°50.5	5°09.7	
Pollux	243°16.9	27°57.9	
Avior	234°15.1	-59°35.2	
Suhail	222°46.4	-43°32.0	
Miaplacidus	221°39.1	-69°49.2	
Alphard	217°47.5	-8°46.1	
Regulus	207°34.2	11°50.6	
Dubhe	193°01.4	61°36.8	
Denebola	182°24.7	14°25.8	
Gienah	175°43.3	-17°41.0	
Acrux	173°00.2	-63°14.6	
Gacrux	171°51.6	-57°15.5	
Alioth	166°12.9	55°49.4	
Spica	158°22.0	-11°17.7	
Alkaid	152°51.9	49°11.3	
Hadar	148°35.6	-60°30.0	
Menkent	147°57.2	-36°29.9	
Arcturus	145°47.6	19°03.1	
Rigel Kent.	139°39.9	-60°56.7	
Kochab	137°20.2	74°03.2	
Zuben'ubi	136°55.6	-16°08.9	
Alphecca	126°03.4	26°37.9	
Antares	112°15.2	-26°29.4	
Atria	107°08.4	-69°04.7	
Sabik	102°02.1	-15°45.4	
Shaula	96°09.5	-37°07.4	
Rasalhague	95°57.9	12°32.6	
Eltanin	90°41.7	51°29.4	
Kaus Aust.	83°31.6	34°22.4	
Vega	80°32.6	38°48.7	
Nunki	75°46.9	-26°15.9	
Altair	61°59.2	8°56.3	
Peacock	53°04.4	-56°39.2	
Deneb	49°25.0	45°22.5	
Enif	33°38.0	9°59.7	
Al Na'ir	27°31.8	-46°50.1	
Fomalhaut	15°13.6	-29°29.0	
Scheat	13°44.3	28°13.4	
Markab	13°29.0	15°20.7	

Dubhe	193°41.0	61°36.8
Denebola	182°24.7	14°25.8
Gienah	175°43.0	-17°41.0
Acrux	173°00.2	-63°14.6
Gacrux	171°16.1	-57°15.5
Alioth	166°12.9	55°49.4
Spica	158°22.0	-11°17.7
Alkaid	152°51.9	49°11.3
Hadar	148°35.6	-60°30.0
Menkent	147°57.2	-36°29.9
Arcturus	145°47.9	19°03.1
Rigel Kent.	139°39.6	-60°56.7
Kochab	137°20.2	74°03.2
Zuben ubi	136°55.6	-16°08.9
Alphecca	126°03.4	26°37.9
Antares	112°15.2	-26°29.4
Atria	107°08.8	-69°04.7
Sabik	102°02.1	-15°45.4
Shaula	96°09.5	-37°07.4
Rasalhague	95°57.9	12°32.6
Eltanin	90°41.4	51°29.4
Kaus Aua.	83°31.6	-34°22.4
Vega	80°32.6	38°48.7
Nunki	75°54.9	-26°15.9
Altair	61°59.2	8°56.3
Peacock	53°04.4	-56°39.2
Deneb	49°25.0	45°22.5
Enif	33°38.0	9°59.7
Al Na'ir	27°31.8	-46°50.1
Fomalhaut	15°13.6	-29°29.0
Scheat	13°44.3	28°13.4
Markab	13°29.0	15°20.7

Aries			Venus			Mars			Jupiter			Saturn		
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	340°23.9	210°23.9	N18°30.1	145°38.5	S06°01.8	231°02.3	N22°12.8	339°23.4	S02°15.9					
1	355°26.4	225°23.2		160°39.5	02.5	246°04.3	12.7	354°26.0	16.0					
2	10°28.8	240°22.6		175°40.5	03.1	261°06.3	12.7	9°28.7	16.0					
3	25°31.3	255°22.0	•• 28.1	190°41.4	•• 03.8	276°08.3	•• 12.6	24°31.3	•• 16.1					
4	40°33.8	270°21.4		205°42.4	04.4	291°10.3	12.6	39°33.9	16.2					
5	55°36.2	285°20.7		220°43.4	05.1	306°12.2	12.5	54°36.5	16.3					
6	70°38.7	300°20.1	N18°26.2	235°44.4	S06°05.7	321°14.2	N22°12.4	69°39.1	S02°16.3					
7	85°41.1	315°19.5		250°45.3	06.4	336°16.2	12.4	84°41.8	16.4					
8	100°43.6	330°18.8		265°46.3	07.0	351°18.2	12.3	99°44.4	16.5					
9	115°46.1	345°18.2	•• 24.2	280°47.3	•• 07.7	6°20.2	•• 12.3	114°47.0	•• 16.6					
10	130°48.5	0°17.6		23.6	295°48.2	08.3	21°22.2	12.2	129°49.6	16.6				
11	145°51.0	15°17.0		22.9	310°49.2	09.0	36°24.1	12.2	144°52.2	16.7				
12	160°53.5	30°16.3	N18°22.2	325°50.2	S06°09.6	51°26.1	N22°12.1	159°54.9	S02°16.8					
13	175°55.9	45°15.7		21.6	340°51.1	10.3	66°28.1	12.1	174°57.5	16.9				
14	190°58.4	60°15.1		20.9	355°52.1	10.9	81°30.1	12.0	190°00.1	16.9				
15	206°00.9	75°14.5	•• 20.3	10°53.1	•• 11.6	96°32.1	•• 12.0	205°02.7	•• 17.0					
16	221°03.9	90°13.8		19.6	25°54.0	12.2	111°34.1	11.9	220°05.4	17.1				
17	236°05.8	105°13.2		18.9	40°55.0	12.9	126°36.1	11.8	235°08.0	17.2				
18	251°08.3	120°12.6	N18°18.3	55°55.9	S06°13.5	141°38.0	N22°11.8	250°10.6	S02°17.2					
19	266°10.7	135°12.0		17.6	70°56.9	14.2	156°40.0	11.7	265°13.2	17.3				
20	281°13.2	150°11.3		17.0	85°57.9	14.8	171°42.0	11.7	280°15.8	17.4				
21	296°15.6	165°10.7	•• 16.3	100°58.8	•• 15.5	186°44.0	•• 11.6	295°18.5	•• 17.5					
22	311°18.1	180°10.1		15.6	115°59.8	16.1	201°46.0	11.6	310°21.1	17.5				
23	326°20.6	195°09.5		15.0	131°00.8	16.8	216°48.0	11.5	325°23.7	17.6				
Mer.pass.:01:18			v-0.6 d-0.6 m-3.9			v1.0 d-0.7 m1.6			v2.0 d-0.1 m-1.8			v2.6 d-0.1 m0.7		

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	341°23.0	210°08.8	N18°14.3	146°01.7	S06°17.4	231°50.0	N22°11.5	340°26.3	S02°17.7	
1	356°25.5	225°08.2		13.6	161°02.7	18.1	246°51.9	11.4	355°29.0	17.8
2	11°28.0	240°07.6		13.0	176°03.7	18.7	261°53.9	11.3	10°31.6	17.8
3	26°30.4	255°07.0	•• 12.3	191°04.6	•• 19.4	276°55.9	•• 11.3	25°34.2	•• 17.9	
4	41°32.9	270°06.4		11.6	206°05.6	20.0	291°57.9	11.2	40°36.8	18.0
5	56°35.4	285°05.7		10.9	221°06.6	20.7	306°59.9	11.2	55°39.4	18.1
6	71°37.8	300°05.1	N18°10.3	236°07.5	S06°21.3	322°01.9	N22°11.1	70°42.1	S02°18.1	
7	86°40.3	315°04.5		09.6	251°08.5	22.0	337°03.9	11.1	85°44.7	18.2
8	101°42.8	330°03.9		08.9	266°09.4	22.6	352°05.9	11.0	100°47.3	18.3
9	116°45.2	345°03.2	•• 08.2	281°10.4	•• 23.3	7°07.8	•• 11.0	115°49.9	•• 18.4	
10	131°47.7	•• 02.02		07.6	296°11.4	23.9	22°09.8	10.9	130°52.6	18.4
11	146°50.1	15°02.0		06.9	311°12.3	24.6	37°11.8	10.8	145°55.2	18.5
12	161°52.6	30°01.4	N18°06.2	326°13.3	S06°25.2	52°13.8	N22°10.8	160°57.8	S02°18.6	
13	176°55.1	45°00.8		05.5	341°14.3	25.9	67°15.8	10.7	176°00.4	18.7
14	191°57.5	60°00.1		04.8	356°15.2	26.5	82°17.8	10.7	191°03.1	18.7
15	207°00.0	74°59.5	•• 04.2	11°16.2	•• 27.1	97°19.8	•• 10.6	206°05.7	•• 18.8	
16	222°02.5	89°58.9		03.5	26°17.1	27.8	112°21.8	10.6	221°08.3	18.9
17	237°04.9	104°58.3		02.8	41°18.1	28.4	127°23.8	10.5	236°10.9	19.0
18	252°07.4	119°57.7	N18°02.1	56°19.1	S06°29.1	142°25.8	N22°10.5	251°13.6	S02°19.0	
19	267°09.9	134°57.1		01.4	71°20.0	29.7	157°27.7	10.4	266°16.2	19.1
20	282°12.3	149°56.4		00.7	86°21.0	30.4	172°29.7	10.4	281°18.8	19.2
21	297°14.8	164°55.8	18°00.1	101°22.0	•• 31.0	187°31.7	•• 10.3	296°21.4	•• 19.3	
22	312°17.2	179°55.2		17°59.4	116°22.9	31.7	202°33.7	10.2	311°24.0	19.3
23	327°19.7	194°54.6		58.7	131°23.9	32.3	217°35.7	10.2	326°26.7	19.4
Mer.pass.:01:14			v-0.6 d-0.7 m-3.9		v1.0 d-0.6 m1.6		v2.0 d-0.1 m-1.9		v2.6 d-0.1 m0.7	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	342°22.2	209°54.0	N17°58.0	146°24.8	S06°33.0	232°37.7	N22°10.1	341°29.3	S02°19.5					
1	357°24.6	224°53.4		57.3	161°25.8	33.6	247°39.7	10.1	356°31.9	19.6				
2	12°27.1	239°52.7		56.6	176°26.8	34.3	262°41.7	10.0	11°34.5	19.6				
3	27°29.6	254°52.1	•• 55.9	191°27.7	•• 34.9	277°43.7	•• 10.0	26°37.2	•• 19.7					
4	42°32.0	269°51.5		55.2	206°28.7	35.6	292°45.7	09.9	41°39.8	19.8				
5	57°34.5	284°50.9		54.5	221°29.6	36.2	307°47.7	09.9	56°42.4	19.9				
6	72°37.0	299°50.3	N17°53.8	236°30.6	S06°36.9	322°49.7	N22°09.8	71°45.0	S02°19.9					
7	87°39.4	314°49.7		53.1	251°31.6	37.5	337°51.6	09.7	86°47.7	20.0				
8	102°41.9	329°49.0		52.5	266°32.5	38.2	352°53.6	09.7	101°50.3	20.1				
9	117°44.4	344°48.4	•• 51.8	281°33.5	•• 38.8	7°55.6	•• 09.6	116°52.9	•• 20.2					
10	132°46.8	359°47.8		51.1	296°34.4	39.5	22°57.6	09.6	131°55.5	20.2				
11	147°49.3	14°47.2		50.4	311°35.4	40.1	37°59.6	09.5	146°58.2	20.3				
12	162°51.7	29°46.6	N17°49.7	326°36.4	S06°40.8	53°01.6	N22°09.5	162°00.8	S02°20.4					
13	177°54.2	44°46.0		49.0	341°37.3	41.4	68°03.6	09.4	177°03.4	20.5				
14	192°56.7	59°45.4		48.3	356°38.3	42.1	83°05.6	09.4	192°06.0	20.6				
15	207°59.1	74°44.8	•• 47.6	11°39.2	•• 42.7	98°07.6	•• 09.3	207°08.7	•• 20.6					
16	223°01.6	89°44.1		46.8	26°40.2	43.4	113°09.6	09.2	222°11.3	20.7				
17	238°04.1	104°43.5		46.1	41°41.1	44.0	128°11.6	09.2	237°13.9	20.8				
18	253°06.5	119°42.9	N17°45.4	56°42.1	S06°44.7	143°13.6	N22°09.1	252°16.5	S02°20.9					
19	268°09.0	134°42.3		44.7	71°43.1	45.3	158°15.6	09.1	267°19.2	20.9				
20	283°11.5	149°41.7		44.0	86°44.0	46.0	173°17.6	09.0	282°21.8	21.0				
21	298°13.9	164°41.1	•• 43.3	101°45.0	•• 46.6	188°19.6	•• 09.0	297°24.4	•• 21.1					
22	313°16.4	179°40.5		42.6	116°45.9	47.3	203°21.6	08.9	312°27.0	21.2				
23	328°18.9	194°39.9		41.9	131°46.9	47.9	218°23.5	08.9	327°29.7	21.2				
Mer.pass.:01:10			v-0.6 d-0.7 m-3.9			v1.0 d-0.6 m1.6			v2.0 d-0.1 m-1.9			v2.6 d-0.1 m0.7		

	Stars	
	SHA	Dec
Alpheratz	357°33.9	29°14.0
Ankaa	353°06.2	-42°09.8
Schedar	349°30.0	56°40.7
Diphda	348°46.5	-17°50.5
Achernar	335°19.3	-57°06.1
Hamal	327°50.4	23°35.1
Polaris	313°34.9	89°22.1
Acamar	313°11.2	-40°11.8
Menkar	314°05.5	4°11.6
Mirfak	308°27.3	49°57.0
Aldebaran	290°39.0	16°33.7
Rigel	281°03.4	-8°10.1
Capella	280°21.2	46°01.3
Bellatrix	278°22.4	6°22.5
Elath	278°01.3	28°37.7
Anilam	275°37.3	-1°11.0
Betelgeuse	270°51.6	7°24.8
Canopus	263°52.4	-52°42.2
Sirius	258°25.9	-16°44.8
Adhara	255°05.7	-29°00.1
Procyon	244°50.5	5°09.7
Pollux	243°16.9	27°57.9
Avior	234°15.1	-59°35.2
Suhail	222°46.3	-43°32.0
Miaplacidus	221°39.1	-69°49.2
Alphard	217°47.5	-8°46.0

Dubhe	193°41.0	61°36.8
Denebola	182°24.7	14°25.8
Gienah	175°43.3	-17°41.0
Acrux	173°00.2	-63°14.6
Gacrux	171°51.6	-57°15.5
Alioth	166°12.9	55°49.4
Spica	158°22.0	-11°17.7
Alkaid	152°51.9	49°11.3
Hadar	148°35.7	-60°30.0
Menkent	147°57.2	-36°29.9
Arcturus	145°47.6	19°03.1
Rigel Kent	139°39.9	-60°56.7
Kochab	137°20.3	74°03.2
Zuben ubi	136°55.6	-16°08.9
Alphecca	126°03.4	26°37.9
Antares	112°15.2	-26°29.4
Atria	107°08.9	-69°04.7
Sabik	102°02.1	-15°45.4
Shaula	96°09.5	-37°07.4
Rasalhague	95°58.0	12°32.6
Eltanin	90°41.8	51°29.4
Kaus Aus	83°31.6	-34°22.4
Vega	80°32.7	38°47.7
Nunki	75°46.9	-26°15.9
Altair	61°59.2	8°56.3
Peacock	53°04.4	-56°39.2
Deneb	49°25.1	45°22.5
Enif	33°38.0	9°59.7
Al Na'ir	27°31.7	-46°50.1
Fomalhaut	15°13.5	-29°29.0
Scheat	13°44.3	28°13.4
Markab	13°29.0	15°20.7

Aries			Venus			Mars			Jupiter			Saturn		
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	343°21.3	209°39.3	N17°41.2	146°47.8	S06°48.6	233°25.5	N22°08.8	342°32.3	S02°21.3					
1	358°23.8	224°38.7	40.5	161°48.8	49.2	248°27.5	08.8	357°34.9	21.4					
2	13°26.2	239°38.0	39.8	176°49.8	49.8	263°29.5	08.7	12°37.6	21.5					
3	28°28.7	254°37.4	•• 39.1	191°50.7	•• 50.5	278°31.5	•• 08.6	27°40.2	•• 21.5					
4	43°31.2	269°36.8	38.3	206°51.7	51.1	293°33.5	08.6	42°42.8	21.6					
5	58°33.6	284°36.2	37.6	221°52.6	51.8	308°35.5	08.5	57°45.4	21.7					
6	73°36.1	299°35.6	N17°36.9	236°53.6	S06°52.4	323°37.5	N22°08.5	72°48.1	S02°21.8					
7	88°38.6	314°35.0	36.2	251°54.5	53.1	338°39.5	08.4	87°50.7	21.8					
8	103°41.0	329°34.4	35.5	266°55.5	53.7	353°41.5	08.4	102°53.3	21.9					
9	118°43.5	344°33.8	•• 34.8	281°56.4	•• 54.4	8°43.5	•• 08.3	117°55.9	•• 22.0					
10	133°46.0	359°33.2	34.0	296°57.4	55.0	23°45.5	08.3	132°58.6	22.1					
11	148°48.4	14°32.6	33.3	311°58.4	55.7	38°47.5	08.2	148°01.2	22.1					
12	163°50.9	29°32.0	N17°32.6	326°59.3	S06°56.3	53°49.5	N22°08.1	163°03.8	S02°22.2					
13	178°53.4	44°31.4	31.9	342°00.3	57.0	68°51.5	08.1	178°06.4	22.3					
14	193°55.8	59°30.8	31.2	357°01.2	57.6	83°53.5	08.0	193°09.1	22.4					
15	208°58.3	74°30.2	•• 30.4	12°02.2	•• 58.3	98°55.5	•• 08.0	208°11.7	•• 22.5					
16	224°00.7	89°29.6	29.7	27°03.1	58.9	113°57.5	07.9	223°14.3	22.5					
17	239°03.2	104°29.0	29.0	42°04.1	06°59.6	128°59.5	07.9	238°17.0	22.6					
18	254°05.7	119°28.4	N17°28.3	57°05.0	S07°00.2	144°01.5	N22°07.8	253°19.6	S02°22.7					
19	269°08.1	134°27.8	27.5	72°06.0	00.9	159°03.5	07.8	268°22.2	22.8					
20	284°10.6	149°27.1	26.8	87°06.9	01.5	174°05.5	07.7	283°24.8	22.8					
21	299°13.1	164°26.5	•• 26.1	102°07.9	•• 02.1	189°07.5	•• 07.7	298°27.5	•• 22.9					
22	314°15.5	179°25.9	25.3	117°08.8	02.8	204°09.5	07.6	313°30.1	23.0					
23	329°18.0	194°25.3	24.6	132°09.8	03.4	219°11.5	07.5	328°32.7	23.1					
Mer.pass.:01:06			v-0.6 d-0.7 m-3.9			v1.0 d-0.6 m1.6			v2.0 d-0.1 m-1.9			v2.6 d-0.1 m0.7		

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	344°20.5	209°24.7	N17°23.9	147°10.7	S07°04.1	234°13.5	N22°07.5	343°35.3	S02°23.1					
1	359°22.9	224°24.1	23.2	162°11.7	04.7	249°15.5	07.4	358°38.0	23.2					
2	14°25.4	239°23.5	22.4	177°12.7	05.4	264°17.5	07.4	13°40.6	23.3					
3	29°27.8	254°22.9	•• 21.7	192°13.6	•• 06.0	279°19.5	•• 07.3	28°43.2	•• 23.4					
4	44°30.3	269°22.3	20.9	207°14.6	06.7	294°21.5	07.3	43°45.9	23.4					
5	59°32.8	284°21.7	20.2	222°15.5	07.3	309°23.5	07.2	58°48.5	23.5					
6	74°35.2	299°21.1	N17°19.5	237°16.5	S07°08.0	324°25.5	N22°07.2	73°51.1	S02°23.6					
7	89°37.7	314°20.5	18.7	252°17.4	08.6	339°27.5	07.1	88°53.7	23.7					
8	104°40.2	329°19.9	18.0	267°18.4	09.3	354°29.5	07.0	103°56.4	23.7					
9	119°42.6	344°19.3	•• 17.3	282°19.3	•• 09.9	9°31.5	•• 07.0	118°59.0	•• 23.8					
10	134°45.1	359°18.7	16.5	297°20.3	10.6	24°33.5	06.9	134°01.6	23.9					
11	149°47.6	14°18.1	15.8	312°21.2	11.2	39°35.5	06.9	149°04.2	24.0					
12	164°50.0	29°17.5	N17°15.0	327°22.2	S07°11.8	54°37.5	N22°06.8	164°06.9	S02°24.1					
13	179°52.5	44°16.9	14.3	342°23.1	12.5	69°39.5	06.8	179°09.5	24.1					
14	194°55.0	59°16.3	13.6	357°24.1	13.1	84°41.5	06.7	194°12.1	24.2					
15	209°57.4	74°15.7	•• 12.8	12°25.0	•• 13.8	99°43.5	•• 06.7	209°14.8	•• 24.3					
16	224°59.9	89°15.1	12.1	27°26.0	14.4	114°45.5	06.6	224°17.4	24.4					
17	240°02.3	104°14.6	11.3	42°26.9	15.1	129°47.5	06.5	239°20.0	24.4					
18	255°04.8	119°14.0	N17°10.6	57°27.9	S07°15.7	144°49.5	N22°06.5	254°22.6	S02°24.5					
19	270°07.3	134°13.4	09.8	72°28.8	16.4	159°51.5	06.4	269°25.3	24.6					
20	285°09.7	149°12.8	09.1	87°29.8	17.0	174°53.5	06.4	284°27.9	24.7					
21	300°12.2	164°12.2	•• 08.3	102°30.7	•• 17.0	189°55.5	•• 06.3	299°30.5	•• 24.7					
22	315°14.7	179°11.6	07.6	117°31.7	18.3	204°57.5	06.3	314°33.2	24.8					
23	330°17.1	194°11.0	06.8	132°32.6	19.0	219°59.5	06.2	329°35.8	24.9					
Mer.pass.:01:02			v-0.6 d-0.7 m-3.9			v2.0 d-0.6 m1.6			v2.0 d-0.1 m-1.9			v2.6 d-0.1 m0.7		

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	345°19.6	209°10.4	N17°06.1	147°33.6	S07°19.6	235°01.5	N22°06.2	344°38.4	S02°25.0		
1	0°22.1	224°09.8	05.3	162°34.5	20.2	250°03.5	06.1	359°41.1	25.1		
2	15°24.5	239°09.2	04.6	177°35.5	20.9	265°05.6	06.1	14°43.7	25.1		
3	30°27.0	254°08.6	•• 03.8	192°36.4	•• 21.5	280°07.6	•• 06.0	29°46.3	•• 25.2		
4	45°29.5	269°08.0	03.1	207°37.3	22.2	295°09.6	05.9	44°48.9	25.3		
5	60°31.9	284°07.4	02.3	222°38.3	22.8	310°11.6	05.9	59°51.6	25.4		
6	75°34.4	299°06.8	N17°01.6	237°39.2	S07°23.5	325°13.6	N22°05.8	74°54.2	S02°25.4		
7	90°36.8	314°06.2	00.8	252°40.2	24.1	340°15.6	05.8	89°56.8	25.5		
8	105°39.3	329°05.6	17°00.0	267°41.1	24.8	355°17.6	05.7	104°59.5	25.6		
9	120°41.8	344°05.0	16°59.3	282°42.1	•• 25.4	10°19.6	•• 05.7	120°02.1	•• 25.7		
10	135°44.2	359°04.5	58.5	297°43.0	26.1	25°21.6	05.6	135°04.7	25.7		
11	150°46.7	14°03.9	57.8	312°44.0	26.7	40°23.6	05.6	150°07.3	25.8		
12	165°49.2	29°03.3	N16°57.0	327°44.9	S07°27.3	55°25.6	N22°05.5	165°10.0	S02°25.9		
13	180°51.6	44°02.7	56.2	342°45.9	28.0	70°27.6	05.4	180°12.6	26.0		
14	195°54.1	59°02.1	55.5	357°46.8	28.6	85°29.6	05.4	195°15.2	26.1		
15	210°56.6	74°01.5	•• 54.7	12°47.8	•• 29.3	100°31.6	•• 05.3	210°17.9	•• 26.1		
16	225°59.0	89°00.9	53.9	27°48.7	29.9	115°33.6	05.3	225°20.5	26.2		
17	241°01.5	104°00.3	53.2	42°49.6	30.6	130°35.6	05.2	240°23.1	26.3		
18	256°03.9	118°59.7	N16°52.4	57°50.6	S07°31.2	145°37.7	N22°05.2	255°25.8	S02°26.4		
19	271°06.4	133°59.1	51.6	72°51.5	31.9	160°39.7	05.1	270°28.4	26.4		
20	286°08.9	148°58.6	50.9	87°52.5	32.5	175°41.7	05.1	285°31.0	26.5		
21	301°11.3	163°58.0	•• 50.1	102°53.4	•• 33.1	190°43.7	•• 05.0	300°33.6	•• 26.6		
22	316°13.8	178°57.4	49.3	117°54.4	33.8	205°45.7	05.0	315°36.3	26.7		
23	331°16.3	193°56.8	48.6	132°55.3	34.4	220°47.7	04.9	330°38.9	26.8		
Mer.pass.:00:59			v-0.6 d-0.8 m-3.9			v2.0 d-0.1 m-1.9			v2.6 d-0.1 m0.7		

Stars		
	SHA	Dec
Alpheratz	357° 33.9	29° 14.0
Ankaa	353° 06.2	-42° 09.8
Schedar	349° 29.9	56° 40.7
Diphda	348° 46.4	-17° 50.5
Achernar	335° 19.3	-57° 06.1
Hamal	327° 50.4	23° 35.1
Polaris	313° 33.4	89° 22.1
Acamar	315° 11.1	-40° 11.8
Menkar	314° 05.4	4° 11.6
Mirfak	308° 27.3	49° 57.0
Aldebaran	290° 39.0	16° 33.7
Rigel	281° 03.4	-8° 10.1
Capella	280° 21.1	46° 01.3
Bellatrix	278° 22.3	6° 22.5
Elnath	278° 01.2	28° 37.7
Anilam	275° 37.2	-1° 11.0
Betelgeuse	270° 51.6	7° 24.8
Canopus	263° 52.4	-52° 42.2
Sirius	258° 25.9	-16° 44.8
Adhara	255° 05.6	-29° 00.1
Procyon	244° 50.5	5° 09.7
Pollux	243° 16.9	27° 57.9
Avior	234° 15.0	-59° 35.2
Suhail	222° 46.3	-43° 32.0
Miaplacidus	221° 39.1	-69° 49.1
Alphard	217° 47.5	-8° 46.0

Aries			Venus			Mars			Jupiter			Saturn		
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	346°18.7	208°56.2	N16°47.8	147°56.3	S07°35.1	235°49.7	N22°04.8	345°41.5	S02°26.8					
1	1°21.2	223°55.6		47.0	162°57.2	35.7	250°51.7	04.8	0°44.2	26.9				
2	16°23.7	238°55.0		46.2	177°58.1	36.4	265°53.7	04.7	15°46.8	27.0				
3	31°26.1	253°54.4	•• 45.5	192°59.1	•• 37.0	280°55.7	•• 04.7	30°49.4	•• 27.1					
4	46°28.6	268°53.9		44.7	208°00.0	37.7	295°57.7	04.6	45°52.1	27.1				
5	61°31.1	283°53.3		43.9	223°01.0	38.3	310°59.8	04.6	60°54.7	27.2				
6	76°33.5	298°52.7	N16°43.1	238°01.9	S07°38.9	326°01.8	N22°04.5	75°57.3	S02°27.3					
7	91°36.0	313°52.1		42.4	253°02.9	39.6	341°03.8	04.5	91°00.0	27.4				
8	106°38.4	328°51.5		41.6	268°03.8	40.2	356°05.8	04.4	106°02.6	27.4				
9	121°40.9	343°50.9	•• 40.8	283°04.8	•• 40.9	11°07.8	•• 04.3	121°05.2	•• 27.5					
10	136°43.4	358°50.4		40.0	298°05.7	41.5	26°09.8	04.3	136°07.8	27.6				
11	151°45.8	13°49.8		39.2	313°06.6	42.2	41°11.8	04.2	151°10.5	27.7				
12	166°48.3	28°49.2	N16°38.5	328°07.6	S07°42.8	56°13.8	N22°04.2	166°13.1	S02°27.8					
13	181°50.8	43°48.6		37.7	343°08.5	43.4	71°15.8	04.1	181°15.7	27.8				
14	196°53.2	58°48.0		36.9	358°09.5	44.1	86°17.8	04.1	196°18.4	27.9				
15	211°55.7	73°47.4	•• 36.1	13°10.4	•• 44.7	101°19.9	•• 04.0	211°21.0	•• 28.0					
16	226°58.2	88°46.9		35.3	28°11.3	45.4	116°21.9	04.0	226°23.6	28.1				
17	242°00.6	103°46.3		34.5	43°12.3	46.0	131°23.9	03.9	241°26.3	28.1				
18	257°03.1	118°45.7	N16°33.8	58°13.2	S07°46.7	146°25.9	N22°03.9	256°28.9	S02°28.2					
19	272°05.5	133°45.1		33.0	73°14.2	47.3	161°27.9	03.8	271°31.5	28.3				
20	287°08.0	148°44.5		32.2	88°15.1	48.0	176°29.9	03.7	286°34.2	28.4				
21	302°10.5	163°44.0	•• 31.4	103°16.0	•• 48.6	191°31.9	•• 03.7	301°36.8	•• 28.5					
22	317°12.9	178°43.4		30.6	118°17.0	49.2	206°33.9	03.6	316°39.4	28.5				
23	332°15.4	193°42.8		29.8	133°17.9	49.9	221°36.0	03.6	331°42.1	28.6				
Mer.pass.:00:55			v-0.6 d-0.8 m-3.9			v0.9 d-0.6 m1.6			v2.0 d-0.1 m-1.9			v2.6 d-0.1 m0.6		

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	347°17.9	208°42.2	N16°29.0	148°18.9	S07°50.5	236°38.0	N22°03.5	346°44.7	S02°28.7					
1	2°20.3	223°41.6		28.2	163°19.8	51.2	251°40.0	03.5	1°47.3					
2	17°22.8	238°41.1		27.4	178°20.7	51.8	266°42.0	03.4	16°50.0					
3	32°25.3	253°40.5	•• 26.6	193°21.7	•• 52.5	281°44.0	•• 03.4	31°52.6	•• 28.9					
4	47°27.7	268°39.9		25.8	208°22.6	53.1	296°46.0	03.3	46°55.2					
5	62°30.2	283°39.3		25.0	223°23.6	53.7	311°48.0	03.3	61°57.8					
6	77°32.7	298°38.7	N16°24.2	238°24.5	S07°54.4	326°50.1	N22°03.2	77°00.5	S02°29.2					
7	92°35.1	313°38.2		23.5	253°25.4	55.0	341°52.1	03.1	92°03.1					
8	107°37.6	328°37.6		22.7	268°26.4	55.7	356°54.1	03.1	107°05.7					
9	122°40.0	343°37.0	•• 21.9	283°27.3	•• 56.3	11°56.1	•• 03.0	122°08.4	•• 29.4					
10	137°42.5	358°36.4		21.1	298°28.3	57.0	26°58.1	03.0	137°11.0					
11	152°45.0	13°35.9		20.3	313°29.2	57.6	42°00.1	02.9	152°13.6					
12	167°47.4	28°35.3	N16°19.5	328°30.1	S07°58.2	57°02.2	N22°02.9	167°16.3	S02°29.6					
13	182°49.9	43°34.7		18.7	343°31.1	58.9	72°04.2	02.8	182°18.9					
14	197°52.4	58°34.1		17.8	358°32.0	07°59.5	87°06.2	02.8	197°21.5					
15	212°54.8	73°33.6	•• 17.0	13°32.9	08°00.2	102°08.2	•• 02.7	212°24.2	•• 29.9					
16	227°57.3	88°33.0		16.2	28°33.9	00.8	117°10.2	02.6	227°26.8					
17	242°59.8	103°32.4		15.4	43°34.8	01.5	132°12.2	02.6	242°29.4					
18	258°02.2	118°31.8	N16°14.6	58°35.8	S08°02.1	147°14.2	N22°02.5	257°32.1	S02°30.1					
19	273°04.7	133°31.3		13.8	73°36.7	02.7	162°16.3	02.5	272°34.7					
20	288°07.1	148°30.7		13.0	88°37.6	03.4	177°18.3	02.4	287°37.3					
21	303°09.6	163°30.1	•• 12.2	103°38.6	•• 04.0	192°20.3	•• 02.4	302°40.0	•• 30.3					
22	318°12.1	178°29.5		11.4	118°39.5	04.7	207°22.3	02.3	317°42.6					
23	333°14.5	193°29.0		10.6	133°40.4	05.3	222°24.3	02.3	332°45.2					
Mer.pass.:00:51			v-0.6 d-0.8 m-3.9			v0.9 d-0.6 m1.6			v2.0 d-0.1 m-1.9			v2.6 d-0.1 m0.6		

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	348°17.0	208°28.4	N16°09.8	148°41.4	S08°05.9	237°26.4	N22°02.2	347°47.9	S02°30.6	
1	3°19.5	223°27.8		09.0	163°42.3	06.6	252°28.4	02.2	2°50.5	30.6
2	18°21.9	238°27.3		08.1	178°43.2	07.2	267°30.4	02.1	17°53.1	30.7
3	33°24.4	253°26.7	•• 07.3	193°44.2	•• 07.9	282°32.4	•• 02.0	32°55.8	•• 30.8	
4	48°26.9	268°26.1		06.5	208°45.1	08.5	297°34.4	02.0	47°58.4	30.9
5	63°29.3	283°25.5		05.7	223°46.0	09.2	312°36.4	01.9	63°01.0	30.9
6	78°31.8	298°25.0	N16°04.9	238°47.0	S08°09.8	327°38.5	N22°01.9	78°03.7	S02°31.0	
7	93°34.3	313°24.4		04.1	253°47.9	10.4	342°40.5	01.8	93°06.3	31.1
8	108°36.7	328°23.8		03.3	268°48.8	11.1	357°42.5	01.8	108°08.9	31.2
9	123°39.2	343°23.3	•• 02.4	283°49.8	•• 11.7	12°44.5	•• 01.7	123°11.6	•• 31.3	
10	138°41.6	358°22.7		01.6	298°50.7	12.4	27°46.5	01.7	138°14.2	31.3
11	153°44.1	13°22.1		00.8	313°51.6	13.0	42°48.6	01.6	153°16.8	31.4
12	168°46.6	28°21.0	N16°00.0	328°52.6	S08°13.6	57°50.6	N22°01.6	168°19.5	S02°31.5	
13	183°49.0	43°21.0		15°59.2	343°53.5	14.3	72°52.6	01.5	183°22.1	31.6
14	198°51.5	58°20.4		58.3	358°54.4	14.9	87°54.6	01.4	198°24.7	31.6
15	213°54.0	73°19.9	•• 57.5	13°55.4	•• 15.6	102°56.6	•• 01.4	213°27.4	•• 31.7	
16	228°56.4	88°19.3		56.7	28°56.3	16.2	117°58.7	01.3	228°30.0	31.8
17	243°58.9	103°18.7		55.9	43°57.2	16.8	133°00.7	01.3	243°32.6	31.9
18	259°01.4	118°18.2	N15°55.0	58°58.2	S08°17.5	148°02.7	N22°01.2	258°35.3	S02°32.0	
19	274°03.8	133°17.6		54.2	73°59.1	18.1	163°04.7	01.2	273°37.9	32.0
20	289°06.3	148°17.0		53.4	89°00.0	18.8	178°06.8	01.1	288°40.5	32.1
21	304°08.8	163°16.5	•• 52.6	104°01.0	•• 19.4	193°08.8	•• 01.1	303°43.2	•• 32.2	
22	319°11.2	178°15.9		51.7	119°01.9	20.0	208°10.8	01.0	318°45.8	32.3
23	334°13.7	193°15.3		50.9	134°02.8	20.7	223°12.8	01.0	333°48.4	32.4
Mer.pass.:00:47 v-0.6 d-0.8 m-3.9 v0.9 d-0.6 m1.6 v2.0 d-0.1 m-1.9 v2.6 d-0.1 m0.6										

	SHA	Dec
Alpheratz	357°33.9	29°14.0
Ankaa	353°06.2	-42°09.8
Schedar	349°29.9	56°40.7
Diphda	348°46.4	-17°50.5
Achernar	335°19.3	-57°06.1
Hamal	327°50.3	23°35.1
Polaris	313°32.1	89°22.1
Acamar	315°11.1	-40°11.8
Menkar	314°05.4	4°11.6
Mirfak	308°27.3	49°57.0
Aldebaran	290°38.9	16°33.7
Rigel	281°03.4	-8°10.1
Capella	280°21.1	46°01.3
Bellatrix	278°22.3	6°22.5
Elath	278°01.2	28°37.7
Anilam	275°37.2	-1°11.0
Betelgeuse	270°51.6	7°24.8
Canopus	263°52.3	-52°42.2
Sirius	258°25.9	-16°44.8
Adhara	255°05.6	-29°00.1
Procyon	244°50.5	5°09.7
Pollux	234°16.9	27°57.9
Avior	234°15.0	-59°35.2
Suhail	222°46.3	-43°31.9
Miaplacidus	221°39.0	-69°49.1
Alphard	217°47.5	-8°46.0

Aries		Venus		Mars		Jupiter		Saturn	
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	349°16.1	208°14.8	N15°50.1	149°03.8	S08°21.3	238°14.8	N22°00.9	348°51.1	S02°32.4
1	4°18.6	223°14.2	49.2	164°04.7	22.0	253°16.9	00.8	3°53.7	32.5
2	19°21.1	238°13.6	48.4	179°05.6	22.6	268°18.9	00.8	18°56.3	32.6
3	34°23.5	253°13.1	•• 47.6	194°06.5	•• 23.3	283°20.9	•• 00.7	33°59.0	•• 32.7
4	49°26.0	268°12.5	46.7	209°07.5	23.9	298°22.9	00.7	49°01.6	32.7
5	64°28.5	283°11.9	45.9	224°08.4	24.5	313°25.0	00.6	64°04.3	32.8
6	79°30.9	298°11.4	N15°45.1	239°09.3	S08°25.2	328°27.0	N22°00.6	79°06.9	S02°32.9
7	94°33.4	313°10.8	44.2	254°10.3	25.8	343°29.0	00.5	94°09.5	33.0
8	109°35.9	328°10.3	43.4	269°11.2	26.5	358°31.0	00.5	109°12.2	33.1
9	124°38.3	343°09.7	•• 42.6	284°12.1	•• 27.1	13°33.1	•• 00.4	124°14.8	•• 33.1
10	139°40.8	358°09.1	41.7	299°13.1	27.7	28°35.1	00.4	139°17.4	33.2
11	154°43.2	13°08.6	40.9	314°14.0	28.4	43°37.1	00.3	154°20.1	33.3
12	169°45.7	28°08.0	N15°40.0	329°14.9	S08°29.0	58°39.1	N22°00.2	169°22.7	S02°33.4
13	184°48.2	43°07.5	39.2	344°15.8	29.6	73°41.2	00.2	184°25.3	33.4
14	199°50.6	58°06.9	38.4	359°16.8	30.3	88°43.2	00.1	199°28.0	33.5
15	214°53.1	73°06.3	•• 37.5	14°17.7	•• 30.9	103°45.2	•• 00.1	214°30.6	•• 33.6
16	229°55.6	88°05.8	36.7	29°18.6	31.6	118°47.2	00.0	229°33.2	33.7
17	244°58.0	103°05.2	35.8	44°19.6	32.2	133°49.3	22°00.0	244°35.9	33.8
18	260°00.5	118°04.7	N15°35.0	59°20.5	S08°32.8	148°51.3	N21°59.9	259°38.5	S02°33.8
19	275°03.0	133°04.1	34.1	74°21.4	33.5	163°53.3	59.9	274°04.1	33.9
20	290°05.4	148°03.5	33.3	89°22.3	34.1	178°55.3	•• 59.8	289°43.8	•• 34.0
21	305°07.9	163°03.0	•• 32.5	104°23.3	•• 34.8	193°57.4	•• 59.8	304°46.4	•• 34.1
22	320°10.4	178°02.4	31.6	119°24.2	35.4	208°59.4	59.7	319°49.0	34.2
23	335°12.8	193°01.9	30.8	134°25.1	36.0	224°01.4	59.6	334°51.7	34.2
Mer.pass.:00:43		v-0.6 d-0.8 m-3.9		v0.9 d-0.6 m1.6		v2.0 d-0.1 m-1.9		v2.6 d-0.1 m0.6	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	350°15.3	208°01.3	N15°29.9	149°26.0	S08°36.7	239°03.5	N21°58.3	349°54.3	S02°34.3
1	5°17.7	223°00.8	29.1	164°27.0	37.3	254°05.5	59.5	4°57.0	34.4
2	20°20.2	238°00.2	28.2	179°27.9	38.0	269°07.5	59.5	19°59.6	34.5
3	35°22.7	252°59.6	•• 27.4	194°28.8	•• 38.6	284°09.5	•• 59.4	35°02.2	•• 34.5
4	50°25.1	267°59.1	26.5	209°29.7	39.2	299°11.6	59.4	50°04.9	34.6
5	65°27.6	282°58.5	25.7	224°30.7	39.9	314°13.6	59.3	65°07.5	34.7
6	80°30.1	297°58.0	N15°24.8	239°31.6	S08°40.5	329°15.6	N21°59.3	80°10.1	S02°34.8
7	95°32.5	312°57.4	23.9	254°32.5	41.1	344°17.6	59.2	95°12.8	34.9
8	110°35.0	327°56.9	23.1	269°33.4	41.8	359°19.7	59.2	110°15.4	34.9
9	125°37.5	342°56.3	•• 22.2	284°34.4	•• 42.4	14°21.7	•• 59.1	125°18.0	•• 35.0
10	140°39.9	357°55.8	21.4	299°35.3	43.1	29°23.7	59.0	140°20.7	35.1
11	155°42.4	12°55.2	20.5	314°36.2	43.7	44°25.8	59.0	155°23.3	35.2
12	170°44.8	27°54.7	N15°19.7	329°37.1	S08°44.3	59°27.8	N21°58.9	170°51.9	S02°35.3
13	185°47.3	42°54.1	18.8	344°38.1	45.0	74°29.8	58.9	185°28.6	35.3
14	200°49.8	57°53.7	17.9	359°39.0	45.6	89°31.9	58.8	200°31.2	35.4
15	215°52.2	72°53.0	•• 17.1	14°39.9	•• 46.3	104°33.9	•• 58.8	215°33.9	•• 35.5
16	230°54.7	87°52.4	16.2	29°52.4	46.9	119°35.9	58.7	230°36.5	35.6
17	245°57.2	102°51.9	15.4	44°41.8	47.5	134°37.9	58.7	245°39.1	35.6
18	260°59.6	117°51.3	N15°14.5	59°42.7	S08°48.2	149°40.0	N21°58.6	260°41.8	S02°35.7
19	276°02.1	132°50.8	13.6	74°43.6	48.8	164°42.0	58.6	275°44.4	35.8
20	291°04.6	147°50.2	12.8	89°44.5	49.4	179°44.0	58.5	290°47.0	35.9
21	306°07.0	162°49.7	•• 11.9	104°45.5	•• 50.1	194°46.1	•• 58.4	305°49.7	•• 36.0
22	321°09.5	177°49.1	11.0	119°46.4	50.7	209°48.1	58.4	320°52.3	36.0
23	336°12.0	192°48.6	10.2	134°47.3	51.4	224°50.1	58.3	335°54.9	36.1
Mer.pass.:00:39		v-0.6 d-0.8 m-3.9		v0.9 d-0.6 m1.6		v2.0 d-0.1 m-1.9		v2.6 d-0.1 m0.6	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	351°14.4	207°48.0	N15°09.3	149°48.2	S08°52.0	239°52.2	N21°58.3	350°57.6	S02°36.2
1	6°16.9	222°47.5	08.4	164°49.1	52.6	254°54.2	58.2	6°00.2	36.3
2	21°19.3	237°46.9	07.6	179°50.1	53.3	269°56.2	58.2	21°02.9	36.4
3	36°21.8	252°46.4	•• 06.7	194°51.0	•• 53.9	284°58.3	•• 58.1	36°05.5	•• 36.4
4	51°24.3	267°45.8	05.8	209°51.9	54.5	300°00.3	58.1	51°08.1	36.5
5	66°26.7	282°45.3	05.0	224°52.8	55.2	315°02.3	58.0	66°10.8	36.6
6	81°29.2	297°44.8	N15°04.1	239°53.7	S08°55.8	330°04.4	N21°58.0	81°13.4	S02°36.7
7	96°31.7	312°44.2	03.2	254°54.7	56.4	345°06.4	57.9	96°16.0	36.7
8	111°34.1	327°43.7	02.3	269°55.6	57.1	0°08.4	57.8	111°18.7	36.8
9	126°36.6	342°43.1	•• 01.5	284°56.5	•• 57.7	15°10.5	•• 57.8	126°21.3	•• 36.9
10	141°39.1	357°42.6	15°00.6	299°57.4	58.4	30°12.5	57.7	141°23.9	37.0
11	156°41.5	12°42.0	14°59.7	314°58.3	59.0	45°14.5	57.7	156°26.6	37.1
12	171°44.0	27°41.5	N14°58.8	329°59.3	S08°59.8	60°16.6	N21°57.6	171°29.2	S02°37.1
13	186°46.5	42°40.9	58.0	345°00.2	09°00.3	75°18.6	57.6	186°31.9	37.2
14	201°48.9	57°40.4	57.1	0°01.1	00.9	90°20.6	57.5	201°34.5	37.3
15	216°51.4	72°39.8	•• 56.2	15°02.0	•• 01.5	105°22.7	•• 57.5	216°37.1	•• 37.4
16	231°53.8	87°39.3	55.3	30°02.9	02.2	120°24.7	57.4	231°39.8	37.5
17	246°56.3	102°38.8	54.4	45°03.9	02.8	135°26.8	57.4	246°42.4	37.5
18	261°58.8	117°38.2	N14°53.6	60°04.8	S09°03.4	150°28.8	N21°57.3	261°45.0	S02°37.6
19	277°01.2	132°37.7	52.7	75°05.7	04.1	165°30.8	57.3	276°47.7	37.7
20	292°03.7	147°37.1	51.8	90°06.6	04.7	180°32.9	57.2	291°50.3	37.8
21	307°06.2	162°36.6	•• 50.9	105°07.5	•• 05.4	195°34.9	•• 57.1	306°53.0	•• 37.9
22	322°08.6	177°36.0	50.0	120°08.4	06.0	210°36.9	57.1	321°55.6	37.9
23	337°11.1	192°35.5	49.2	135°09.4	06.6	225°39.0	57.0	336°58.2	38.0
Mer.pass.:00:35		v-0.5 d-0.9 m-3.9		v0.9 d-0.6 m1.6		v2.0 d-0.1 m-1.9		v2.6 d-0.1 m0.6	

SHA	Dec
Alpheratz	357°33.9
Ankaa	353°06.2
Schedar	349°29.9
Diphda	348°46.4
Achernar	335°19.3
Hamal	327°50.3
Polaris	313°30.7
Acamar	315°11.1
Menkar	314°05.4
Mirfak	308°27.2
Aldebaran	290°38.9
Rigel	281°33.3
Capella	280°21.1
Bellatrix	278°22.3
Elath	279°01.2
Anilam	275°37.2
Betelgeuse	270°51.5
Canopus	263°52.3
Sirius	258°25.9
Adhara	255°05.6
Procyon	274°50.4
Pollux	243°16.8
Avior	234°15.0
Suhail	222°46.3
Miaplacidus	221°39.0
Alphard	217°47.5
Regulus	207°34.2
Dubhe	193°40.9
Denebola	182°24.7
Gienah	175°43.3
Acrux	173°00.2
Gacrux	171°51.6
Alioth	166°12.9
Spica	158°22.0
Alkaid	152°51.9
Hadar	148°35.7
Menkent	147°57.3
Arcturus	145°47.6
Rigel Kent.	139°40.0
Kochab	137°20.4
Zuben'ubi	136°55.6
Alphecca	126°03.4
Antares	112°15.2
Atria	107°09.0
Sabik	102°02.1
Shaula	96°09.1
Rasalhague	95°58.0
Eltanin	90°41.8
Kaus Aust.	83°31.7
Vega	80°32.7
Nunki	75°46.9
Altair	61°59.2
Peacock	53°04.2
Deneb	49°25.1
Enif	33°38.0
Al Na'ir	27°31.7
Fomalhaut	15°13.5
Scheat	13°44.3
Markab	13°29.0

SHA	Mer.pass.
Venus	218°58.6
Mars	159°47.6
Jupiter	248°58.7
Saturn	359°34.9

SHA	Mer.pass.
Venus	217°46.0
Mars	159°10.8
Jupiter	248°48.2
Saturn	359°39.0

SHA	Mer.pass.
Venus	216°33.6
Mars	158°33.8
Jupiter	248°37.8
Saturn	359°43.2

Horizontal parallax	
Venus:	0.1
Mars:	0.1

Sun			Moon				
Wed	GHA	Dec	GHA	ν	Dec	d	HP
0	180°43.0	N04°55.1	333°52.1	10.5'	N09°23.2	16.7'	60.1'
1	195°43.2	54.1	348°21.6	10.4'	09°39.9	16.6'	60.1'
2	210°43.4	53.2	2°51.0	10.4'	09°56.5	16.6'	60.1'
3	225°43.7	.. 52.2	17°20.3	10.3'	10°13.1	16.5'	60.1'
4	240°43.9	51.3	31°49.6	10.3'	10°29.6	16.5'	60.1'
5	255°44.1	50.3	46°18.8	10.2'	10°46.1	16.4'	60.1'
6	270°44.3	N04°49.4	60°48.0	10.1'	N11°02.5	16.4'	60.1'
7	285°44.5	48.5	75°17.1	10.1'	11°18.8	16.3'	60.1'
8	300°44.8	47.5	89°46.2	10.0'	11°35.1	16.2'	60.1'
9	315°45.0	.. 46.6	104°15.1	9.9'	11°51.3	16.2'	60.1'
10	330°45.2	45.6	118°44.1	9.9'	12°07.5	16.1'	60.1'
11	345°45.4	44.7	133°12.9	9.8'	12°23.5	16.0'	60.1'
12	0°45.6	N04°43.7	147°41.7	9.7'	N12°39.5	16.0'	60.1'
13	15°45.9	42.8	162°10.4	9.7'	12°55.5	15.9'	60.1'
14	30°46.1	41.8	176°39.0	9.6'	13°11.3	15.8'	60.1'
15	45°46.3	.. 40.9	191°07.6	9.5'	13°27.1	15.7'	60.1'
16	60°46.5	39.9	205°36.1	9.5'	13°42.8	15.7'	60.1'
17	75°46.7	39.0	220°04.5	9.4'	13°58.5	15.6'	60.1'
18	90°47.0	N04°38.0	234°32.9	9.3'	N14°14.0	15.5'	60.1'
19	105°47.2	37.1	249°01.2	9.2'	14°29.5	15.4'	60.1'
20	120°47.4	36.1	263°29.4	9.2'	14°44.9	15.3'	60.1'
21	135°47.6	.. 35.2	277°57.5	9.1'	15°00.2	15.3'	60.1'
22	150°47.8	34.2	292°25.6	9.0'	15°15.4	15.2'	60.1'
23	165°48.1	33.3	306°53.6	8.9'	15°30.5	15.1'	60.1'
SD = 15.9' ± 0.0'			SD = 16.4'				

Aries			Venus			Mars			Jupiter			Saturn			
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	352°13.6	207°35.0	N14°48.3	150°10.3	S09°07.3	240°41.0	N21°57.0	352°00.9	S02°38.1	1	7°16.0	222°34.4	47.4	165°11.2	07.9
1	22°18.5	237°33.9		46.5	180°12.1	08.5	270°45.1	56.9	22°06.1	38.2	2	37°20.9	252°33.3	•• 45.6	195°13.0
2	52°23.4	267°32.8		44.7	210°13.9	09.8	300°49.2	56.8	52°11.4	38.4	3	67°25.9	282°32.2		43.8
3	82°28.3	297°31.7	N14°42.9	240°15.8	S09°11.1	330°53.2	N21°56.7	82°16.7	S02°38.6	4	97°30.8	312°31.2	42.1	255°16.7	11.7
4	112°33.3	327°30.6		41.2	270°17.6	12.3	0°57.3	56.5	112°22.0	38.7	5	127°35.7	342°30.1	•• 40.3	285°18.5
5	142°38.2	357°29.6		39.4	300°19.4	13.6	31°01.4	56.4	142°27.2	38.9	6	157°40.7	12°29.8	38.5	315°20.4
6	172°43.1	27°28.5	N14°37.6	330°21.3	S09°14.9	61°05.5	N21°56.3	172°32.5	S02°39.0	7	187°45.6	42°27.9	36.7	345°22.2	15.5
7	202°48.1	57°27.4		35.8	0°23.1	16.2	91°09.6	56.2	202°37.8	39.2	8	217°50.5	72°26.9	•• 34.9	15°24.0
8	232°53.0	87°26.3		34.0	30°24.9	17.4	121°13.6	56.1	232°43.1	39.4	9	247°55.4	102°25.8	33.1	45°25.8
9	262°57.9	117°25.3	N14°32.2	60°26.7	S09°18.7	151°17.7	N21°56.0	262°58.3	S02°39.5	10	278°00.4	132°24.7	31.3	75°27.7	19.3
10	293°02.8	147°24.2		30.4	90°28.6	20.0	181°21.8	55.9	292°53.6	39.7	11	308°05.3	162°23.7	•• 29.5	105°29.5
11	323°07.8	177°23.1		28.6	120°30.4	21.2	211°25.9	55.8	322°58.9	39.8	12	338°10.2	192°22.6	27.7	135°31.3
12	338°10.2	192°22.6		27.7	135°31.3	21.9	226°27.9	55.7	338°01.5	39.9	13				
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	Aries			Venus			Mars			Jupiter			Saturn		
Tue	GHA	GHA	Dec	GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec	
0	355°11.0	206°56.8	N13°42.6	151°15.8	S09°52.8		243°08.2	N21°53.1		355°10.9	S02°43.8				
1	10°13.4	221°56.3	41.7	166°16.7	53.5		258°10.3	53.1		10°13.5	43.9				
2	25°15.9	236°55.7	40.8	181°17.6	54.1		273°12.3	53.0		25°16.1	43.9				
3	40°18.4	251°55.2	•• 39.8	196°18.5	•• 54.7		288°14.4	•• 53.0		40°18.8	•• 44.0				
4	55°20.8	266°54.7	38.9	211°19.4	55.4		303°16.5	52.9		55°21.4	44.1				
5	70°23.3	281°54.2	38.0	226°20.3	56.0		318°18.5	52.9		70°24.1	44.2				
6	85°25.8	296°53.7	N13°37.0	241°21.2	S09°56.6		333°20.6	N21°52.8		85°26.7	S02°44.3				
7	100°28.2	311°53.2	36.1	256°22.1	57.2		348°22.6	52.7		100°29.3	44.3				
8	115°30.7	326°52.6	35.1	271°23.0	57.9		3°24.7	52.7		115°32.0	44.4				
9	130°33.2	341°52.1	•• 34.2	286°23.9	•• 58.5		18°26.7	•• 52.6		130°34.6	•• 44.5				
10	145°35.6	356°51.6	33.2	301°24.8	59.1		33°28.8	52.6		145°37.3	44.6				
11	160°38.1	1°51.1	32.3	316°25.7	09°59.8		48°30.8	52.5		160°39.9	44.6				
12	175°40.5	26°50.6	N13°31.4	331°26.0	S10°00.4		63°32.9	N21°52.5		175°42.5	S02°44.7				
13	190°43.0	41°50.1	30.4	346°27.5	01.0		78°34.9	52.4		190°45.2	44.8				
14	205°45.5	56°49.5	29.5	1°28.4	01.6		93°37.0	52.4		205°47.8	44.9				
15	220°47.7	71°49.0	•• 28.5	16°29.3	•• 02.3		108°39.1	•• 52.3		220°50.5	•• 45.0				
16	235°50.4	86°48.5	27.6	31°30.2	02.9		123°41.1	52.3		235°53.1	45.0				
17	250°52.9	101°48.0	26.6	46°31.1	03.5		138°43.2	52.2		250°55.7	45.1				
18	265°55.3	116°47.5	N13°25.7	61°32.0	S10°04.2		153°45.2	N21°52.2		265°58.4	S02°45.2				
19	280°57.8	131°47.0	24.7	76°32.9	04.8		168°47.3	52.1		281°01.0	45.3				
20	296°00.3	146°46.5	23.8	91°33.8	05.4		183°49.3	52.1		296°03.7	•• 45.4				
21	311°02.7	161°46.0	•• 22.8	106°34.7	•• 06.0		198°51.4	•• 52.0		311°06.3	•• 45.4				
22	326°05.2	176°45.4	21.9	121°35.6	06.7		213°53.4	51.9		326°08.9	45.5				
23	341°07.7	191°44.9	20.9	136°36.5	07.3		228°55.5	51.9		341°11.6	45.6				
Mer.pass.:00:19			v-0.5 d-0.9 m-3.8	v0.9 d-0.6 m1.6			v2.1 d-0.1 m-1.9			v2.6 d-0.1 m0.6					

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec			
0	356°10.1	206°44.4	N13°20.0	151°37.4	S10°07.9	243°57.6	N21°51.8	356°14.2	S02°45.7			
1	11°12.6	221°43.9	19.0	166°38.3	08.6	258°59.6	51.8	11°16.9	45.8			
2	26°15.0	236°43.4	18.1	181°39.2	09.2	274°01.7	51.7	26°19.5	45.8			
3	41°17.5	251°42.9	•• 17.1	196°40.0	•• 09.8	289°03.7	•• 51.7	41°22.1	•• 45.9			
4	56°20.0	266°42.4	16.2	211°40.9	10.4	304°05.8	51.6	56°24.8	46.0			
5	71°22.4	281°41.9	15.2	226°41.8	11.1	319°07.9	51.6	71°27.4	46.1			
6	86°24.9	296°41.4	N13°14.2	241°42.7	S10°11.7	334°09.9	N21°51.5	86°30.1	S02°46.2			
7	101°27.4	311°40.8	13.3	256°43.6	12.3	349°12.0	51.5	101°32.7	46.2			
8	116°29.8	326°40.3	12.3	271°44.5	13.0	4°14.0	51.4	116°35.2	46.3			
9	131°32.3	341°39.8	•• 11.4	286°45.4	•• 13.6	19°16.1	•• 51.4	131°38.0	•• 46.4			
10	146°34.8	356°39.3	10.4	301°46.3	14.2	34°18.2	51.3	146°40.6	46.5			
11	161°37.2	1°38.8	09.4	316°47.2	14.8	49°20.2	51.3	161°43.3	46.5			
12	176°39.7	26°38.3	N13°08.5	331°48.1	S10°15.5	64°22.3	N21°51.2	176°45.9	S02°46.6			
13	191°42.2	41°37.8	07.5	346°49.0	16.1	79°24.3	51.2	191°48.5	46.7			
14	206°44.6	56°37.3	06.6	1°49.9	16.7	94°26.4	51.1	206°51.2	46.8			
15	221°47.1	71°36.8	•• 05.6	16°50.8	•• 17.3	109°28.5	•• 51.1	221°53.8	•• 46.9			
16	236°49.5	86°36.3	04.6	31°51.7	18.0	124°30.5	51.0	236°56.5	46.9			
17	251°52.0	101°35.8	03.7	46°52.6	18.6	139°32.6	50.9	251°59.1	47.0			
18	266°54.5	116°35.3	N13°02.7	61°53.5	S10°19.2	154°34.6	N21°50.9	267°01.7	S02°47.1			
19	281°56.9	131°34.8	01.7	76°54.4	19.8	169°36.7	50.8	282°04.4	47.2			
20	296°59.4	146°34.3	13°00.8	91°55.3	20.5	184°38.8	50.8	297°07.0	47.3			
21	312°01.9	161°33.7	12°59.8	106°56.2	•• 21.1	199°40.8	•• 50.7	312°09.7	•• 47.3			
22	327°04.3	176°33.2	58.8	121°57.0	21.7	214°42.9	50.7	327°12.3	47.4			
23	342°06.8	191°32.7	57.9	136°57.9	22.4	229°45.0	50.6	342°14.9	47.5			
Mer.pass.:00:15			v-0.5 d-1.0 m-3.8	v0.9 d-0.6 m1.6			v2.1 d-0.1 m-1.9			v2.6 d-0.1 m0.6		

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	357°09.3	206°32.2	N12°56.9	151°58.8	S10°23.0	244°47.0	N21°50.6	357°17.6	S02°47.6	
1	12°11.7	221°31.7	55.9	166°59.7	23.6	259°49.1	50.5	12°20.2	47.7	
2	27°14.2	236°31.2	55.0	182°00.6	24.2	274°51.1	50.5	27°22.9	47.7	
3	42°16.6	251°30.7	.. 54.0	197°01.5	.. 24.9	289°53.2	.. 50.4	42°25.5	.. 47.8	
4	57°19.1	266°30.2	53.0	212°02.4	25.5	304°55.3	50.4	57°28.1	47.9	
5	72°21.6	281°29.7	52.1	227°03.3	26.1	319°57.3	50.3	72°30.8	48.0	
6	87°24.0	296°29.2	N12°51.1	242°04.2	S10°26.7	334°59.4	N21°50.3	87°33.4	S02°48.1	
7	102°26.5	311°28.7	50.1	257°05.1	27.4	350°01.5	50.2	102°36.1	48.1	
8	117°29.0	326°28.2	49.1	272°06.0	28.0	5°03.5	50.2	117°38.7	48.2	
9	132°31.4	341°27.7	.. 48.2	287°06.8	.. 28.6	20°05.6	.. 50.1	132°41.4	.. 48.3	
10	147°33.9	356°27.2	47.2	302°07.7	29.2	35°07.7	50.1	147°44.0	48.4	
11	162°36.4	1°26.7	46.2	317°08.6	29.9	50°09.7	50.0	162°46.6	48.4	
12	177°38.8	26°26.2	N12°45.2	332°09.5	S10°30.5	65°11.8	N21°50.0	177°49.3	S02°48.5	
13	192°41.3	41°25.7	44.3	347°10.4	31.1	80°13.9	49.9	192°51.9	48.6	
14	207°43.8	56°25.2	43.3	2°11.3	31.7	95°15.9	49.8	207°54.6	48.7	
15	222°46.2	71°24.7	.. 42.3	17°12.2	.. 32.4	110°18.0	.. 49.8	222°57.2	.. 48.8	
16	237°48.7	86°24.2	41.3	32°13.1	33.0	125°20.1	49.7	237°59.8	48.8	
17	252°51.1	101°23.7	40.3	47°14.0	33.6	140°22.1	49.7	253°02.5	48.9	
18	267°53.6	116°23.2	N12°39.4	62°14.8	S10°34.2	155°24.2	N21°49.6	268°05.1	S02°49.0	
19	282°56.1	131°22.7	38.4	77°15.7	34.9	170°26.3	49.6	283°07.8	49.1	
20	297°58.5	146°22.2	37.4	92°16.6	35.5	185°28.3	49.5	298°10.4	49.2	
21	313°01.0	161°21.7	.. 36.4	107°17.5	.. 36.1	200°30.4	.. 49.5	313°13.0	.. 49.2	
22	328°03.5	176°21.2	35.4	122°18.4	36.7	215°32.5	49.4	328°15.7	49.3	
23	343°05.9	191°20.7	34.5	137°19.3	37.4	230°34.5	49.4	343°18.3	49.4	
Mer.pass.:00:11			v-0.5 d-1.0 m-3.8		v0.9 d-0.6 m1.6		v2.1 d-0.1 m-1.9		v2.6 d-0.1 m0.6	

	SHA	Dec
Alpheratz	357°33.8	29°14.1
Ankaa	353°06.1	-42°09.8
Schedar	349°29.9	56°40.7
Diphda	348°46.4	-17°50.5
Achernar	335°19.2	-57°06.1
Hamal	327°50.3	23°35.1
Polaris	313°27.5	89°22.1
Acamar	315°11.1	-40°11.8
Menkar	314°05.3	4°11.6
Mirfak	308°27.2	49°57.1
Aldebaran	290°38.9	16°33.7
Rigel	281°03.3	-8°10.1
Capella	280°21.0	46°01.3
Bellatrix	278°22.2	6°22.5
Elath	278°01.1	28°37.7
Anilam	275°37.1	-1°11.0
Betelgeuse	270°51.5	7°24.8
Canopus	263°52.2	-52°42.2
Sirius	258°25.8	-16°44.8
Adhara	255°05.5	-29°00.1
Procyon	244°50.4	5°09.7
Pollux	243°16.8	27°57.8
Avior	231°19.6	-59°35.2
Suhail	222°46.3	-43°31.9
Miaplacidus	221°39.0	-69°49.1
Alphard	217°47.5	-8°46.0
Regulus	207°34.1	11°50.6
Dubhe	193°40.9	61°36.7
Denebola	182°24.7	14°25.8
Gienah	175°43.3	-17°41.0
Acrux	173°00.2	-63°14.5
Gacrux	171°51.6	-57°15.4
Alioth	166°13.0	55°49.3
Spica	158°22.0	-11°17.7
Alkaid	152°51.9	49°11.3
Hadar	148°35.7	-60°29.9
Menkent	147°57.3	-36°29.8
Arcturus	145°47.6	19°03.1
Rigel Kent.	139°40.0	-60°56.6
Kochab	137°20.5	74°03.2
Zuben'ubi	136°55.6	-16°08.9
Alphecca	126°03.4	26°37.9
Antares	112°15.2	-26°29.4
Atria	107°09.0	-69°04.7
Sabik	102°02.2	-15°45.4
Shaula	96°09.6	-37°07.4
Rasalhague	95°58.0	12°32.6
Eltanin	90°41.9	51°29.4
Kaus Augusta	83°31.7	-34°22.4
Vega	80°32.7	38°48.7
Nunki	75°46.9	-26°15.9
Altair	61°59.2	8°56.3
Peacock	53°04.4	-56°39.2
Deneb	49°25.1	45°22.5
Enif	33°38.0	9°59.7
Al Na'ir	27°31.7	-46°50.2
Fomalhaut	15°13.5	-29°29.1
Scheat	13°44.3	28°13.5
Markab	13°29.0	15°20.8

Dubhe	193°40.9	61°36.7
Denebola	182°24.7	14°25.8
Gienah	175°43.3	-17°41.0
Acrux	173°00.2	-63°14.5
Gacrux	171°51.6	-57°15.4
Alioth	166°13.0	55°49.3
Spica	158°22.0	-11°17.7
Alkaid	152°51.9	49°11.3
Hadar	148°35.7	-60°29.9
Menkent	147°57.3	-36°29.8
Arcturus	145°47.6	19°03.1
Rigel Kent	139°40.0	-60°56.6
Kochab	137°20.5	74°03.2
Zuben'ubi	136°55.6	-16°08.9
Alphecca	126°03.4	26°37.9
Antares	112°15.2	-26°29.4
Atria	107°09.0	-69°04.7
Sabik	102°02.2	-15°45.4
Shaula	96°09.6	-37°07.4
Rasalhague	95°58.0	12°32.6
Eltanin	90°41.9	51°29.4
Kaus Aust	83°31.7	-34°22.4
Vega	80°32.7	38°47.8
Nunki	75°46.9	-26°19.9
Altair	61°59.2	8°56.3
Peacock	53°04.4	-56°39.2
Deneb	49°25.1	45°22.5
Enif	33°38.0	9°59.7
Al Na'ir	27°31.7	-46°50.2
Fomalhaut	15°13.5	-29°29.1
Scheat	13°44.3	28°13.5
Makab	13°29.0	15°20.8

	Aries			Venus			Mars			Jupiter			Saturn		
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	358°08.4	206°20.2	N12°33.5	152°20.2	S10°38.0	245°36.6	N21°49.3	358°21.0	S02°49.5						
1	13°10.9	221°19.7	32.5	167°21.1	38.6	260°38.7	49.3	13°23.6	49.6						
2	28°13.3	236°19.2	31.5	182°21.9	39.2	275°40.7	49.2	28°26.3	49.6						
3	43°15.8	251°18.7	•• 30.5	197°22.8	•• 39.8	290°42.8	•• 49.2	43°28.9	•• 49.7						
4	58°18.3	266°18.2	29.5	212°23.7	40.5	305°44.9	49.1	58°31.5	49.8						
5	73°20.7	281°17.7	28.5	227°24.6	41.1	320°46.9	49.1	73°34.2	49.9						
6	88°23.2	296°17.2	N12°27.6	242°25.5	S10°41.7	335°49.0	N21°49.0	88°36.8	S02°49.9						
7	103°25.6	311°16.8	26.6	257°26.4	42.3	350°51.1	49.0	103°39.5	50.0						
8	118°28.1	326°16.3	25.6	272°27.3	43.0	5°53.2	48.9	118°42.1	50.1						
9	133°30.6	341°15.8	•• 24.6	287°28.1	•• 43.6	20°55.2	•• 48.9	133°44.7	•• 50.2						
10	148°33.0	356°15.3	23.6	302°29.0	44.2	35°57.3	48.8	148°47.4	50.3						
11	163°35.5	1°114.8	22.6	317°29.9	44.8	50°59.4	48.8	163°50.0	50.3						
12	178°38.0	2°164.3	N12°21.6	332°30.8	S10°45.5	66°01.4	N21°48.7	178°52.7	S02°50.4						
13	193°40.4	4°113.8	20.6	347°31.7	46.1	81°03.5	48.6	193°55.3	50.5						
14	208°42.9	5°613.3	19.6	2°32.6	46.7	96°05.6	48.6	208°57.9	50.6						
15	223°45.4	7°12.8	•• 18.6	17°33.5	•• 47.3	111°07.6	•• 48.5	224°00.6	•• 50.7						
16	238°47.8	8°612.3	17.7	32°34.3	47.9	126°09.7	48.5	239°03.2	50.7						
17	253°50.3	101°11.8	16.7	47°35.2	48.6	141°11.8	48.4	254°05.9	50.8						
18	268°52.7	116°113.3	N12°15.7	62°36.1	S10°49.2	156°13.9	N21°48.4	269°08.5	S02°50.9						
19	283°55.2	131°10.8	14.7	77°37.0	49.8	171°15.9	48.3	284°11.2	51.0						
20	298°57.7	146°103.3	13.7	92°37.9	50.4	186°18.0	48.3	299°13.8	51.1						
21	314°00.1	161°09.9	•• 12.7	107°38.8	•• 51.1	201°20.1	•• 48.2	314°16.4	•• 51.1						
22	329°02.6	176°09.4	11.7	122°39.6	51.7	216°22.2	48.2	329°19.1	51.2						
23	344°05.1	191°08.9	10.7	137°40.5	52.3	231°24.2	48.1	344°21.7	51.3						
Mer.pass.:00:07		v-0.5 d-1.0 m-3.8			v0.9 d-0.6 m1.6			v2.1 d-0.1 m-1.9			v2.6 d-0.1 m0.6				

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	359°07.5	206°08.4	N12°09.7	152°41.4	S10°52.9	246°26.3	N21°48.1	359°24.4	S02°51.4
1	14°10.0	221°07.9	08.7	167°42.3	53.5	261°28.4	48.0	14°27.0	51.4
2	29°12.5	236°07.4	07.7	182°43.2	54.2	276°30.5	48.0	29°29.6	51.5
3	44°14.9	251°06.9	•• 06.7	197°44.0	•• 54.8	291°32.5	•• 47.9	44°32.3	•• 51.6
4	59°17.4	266°06.4	05.7	212°44.9	55.4	306°34.6	47.9	59°34.9	51.7
5	74°19.9	281°05.9	04.7	227°45.8	56.0	321°36.7	47.8	74°37.6	51.8
6	89°22.3	296°05.5	N12°03.7	242°46.7	S10°56.6	336°38.8	N21°47.8	89°40.2	S02°51.8
7	104°24.8	311°05.0	02.7	257°47.6	57.3	351°40.8	47.7	104°42.9	51.9
8	119°27.2	326°04.5	01.7	272°48.4	57.9	6°42.9	47.7	119°45.5	52.0
9	134°29.7	341°04.0	12°00.7	287°49.3	•• 58.5	21°45.0	•• 47.6	134°48.1	•• 52.1
10	149°32.2	356°03.5	11°59.7	302°50.2	59.1	36°47.1	47.6	149°50.8	52.2
11	164°34.6	1°103.0	58.7	317°51.1	10°59.7	51°49.1	47.5	164°53.4	52.2
12	179°37.1	2°02.5	N11°57.7	332°52.0	S11°00.4	66°51.2	N21°47.5	179°56.1	S02°52.3
13	194°39.6	4°102.0	56.6	347°52.8	01.0	81°53.3	47.4	194°58.7	52.4
14	209°42.0	5°601.6	55.6	2°53.7	01.6	96°55.4	47.4	210°01.3	52.5
15	224°44.5	7°101.1	•• 54.6	17°54.6	•• 02.2	111°57.4	•• 47.3	225°04.0	•• 52.6
16	239°47.0	8°600.9	53.6	32°55.5	02.8	126°59.5	47.3	240°06.6	52.6
17	254°49.4	101°00.1	52.6	47°56.4	03.5	142°01.6	47.2	255°09.3	52.7
18	269°51.9	115°59.6	N11°51.6	62°57.2	S11°04.1	157°03.7	N21°47.2	270°11.9	S02°52.8
19	284°54.3	130°59.1	50.6	77°58.1	04.7	172°05.8	47.1	285°14.5	52.9
20	299°56.8	145°58.7	49.6	92°59.0	05.3	187°07.8	47.1	300°17.2	52.9
21	314°59.3	160°58.2	•• 48.6	107°59.9	•• 05.9	202°09.9	•• 47.0	315°19.8	•• 53.0
22	330°01.7	175°57.7	47.6	123°00.7	06.6	217°12.0	46.9	330°22.5	53.1
23	345°04.2	190°57.2	46.6	138°01.6	07.2	232°14.1	46.9	345°25.1	53.2
Mer.pass.:00:00 v-0.5 d-1.0 m-3.8 v0.9 d-0.6 m1.6 v2.1 d-0.1 m-1.9 v2.6 d-0.1 m0.6									

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	0°06.7	205°56.7	N11°45.5	153°02.5	S11°07.8	247°16.2	N21°46.8	0°27.8	S02°53.3					
1	15°09.1	220°56.2	44.5	168°03.4	08.4	262°18.2	46.8	15°30.4	53.3					
2	30°11.6	235°55.8	43.5	183°04.2	09.0	277°20.3	46.7	30°33.0	53.4					
3	45°14.1	250°55.3	•• 42.5	198°05.1	•• 09.7	292°22.4	•• 46.7	45°35.7	•• 53.5					
4	60°16.5	265°54.8	41.5	213°06.0	10.3	307°24.5	46.6	60°38.3	53.6					
5	75°19.9	280°54.3	40.5	228°06.9	10.9	322°26.6	46.6	75°41.0	53.7					
6	90°21.5	295°53.8	N11°39.5	243°07.7	S11°11.5	337°28.6	N21°46.5	90°43.6	S02°53.7					
7	105°23.9	310°53.4	38.4	258°08.6	12.1	352°30.7	46.5	105°46.2	53.8					
8	120°26.4	325°52.9	37.4	273°09.5	12.8	7°32.8	46.4	120°48.9	53.9					
9	135°28.8	340°52.4	•• 36.4	288°10.4	•• 13.4	22°34.9	•• 46.4	135°51.5	•• 54.0					
10	150°31.3	355°51.9	35.4	303°11.2	14.0	37°37.0	46.3	150°54.2	54.0					
11	165°33.8	1°51.4	34.4	318°12.1	14.6	52°39.0	46.3	165°56.8	54.1					
12	180°36.2	25°51.0	N11°33.3	333°13.0	S11°15.2	67°41.1	N21°46.2	180°59.5	S02°54.2					
13	195°38.7	40°50.5	32.3	348°13.9	15.8	82°43.2	46.2	196°02.1	54.3					
14	210°41.2	55°50.0	31.3	3°14.7	16.5	97°45.3	46.1	211°04.7	54.4					
15	225°43.6	70°49.5	•• 30.3	18°15.6	•• 17.1	112°47.4	•• 46.1	226°07.4	•• 54.4					
16	240°46.1	85°49.0	29.3	33°16.5	17.7	127°49.5	46.0	241°10.0	54.5					
17	255°48.6	100°48.6	28.2	48°17.4	18.3	142°51.5	46.0	256°12.7	54.6					
18	270°51.0	115°48.1	N11°27.2	63°18.2	S11°18.9	157°53.6	N21°45.9	271°15.3	S02°54.7					
19	285°53.5	130°47.6	26.2	78°19.1	19.5	172°55.7	45.9	286°17.9	54.8					
20	300°55.9	145°47.1	25.2	93°20.0	20.2	187°57.8	45.8	301°20.6	54.8					
21	315°58.4	160°46.7	•• 24.1	108°20.9	•• 20.8	202°59.9	•• 45.8	316°23.2	•• 54.9					
22	331°00.9	175°46.2	23.1	123°21.7	21.4	218°02.0	45.7	331°25.9	55.0					
23	346°03.3	190°45.7	22.1	138°22.6	22.0	233°04.0	45.7	346°28.5	55.1					
Mer.pass.:23:56			v-0.5 d-1.0 m-3.8			v0.9 d-0.6 m1.6			v2.1 d-0.1 m-1.9			v2.6 d-0.1 m0.6		

SHA	Dec
Alpheratz	357°33.8 29°14.1
Ankaa	353°06.1 -42°09.8
Schedar	349°29.9 56°40.8
Diphda	348°46.4 -17°50.5
Achernar	335°19.2 -57°06.1
Hamal	327°50.3 23°35.1
Polaris	313°26.3 89°22.1
Acamar	315°11.0 -40°11.8
Menkar	314°05.3 4°11.6
Mirfak	308°27.1 -49°57.1
Aldebaran	290°38.9 16°33.7
Rigel	281°03.9 -8°10.1
Capella	280°21.0 46°01.3
Bellatrix	278°22.2 6°22.5
Elnath	278°01.1 28°37.7
Alnilam	275°37.1 -1°10.9
Betelgeuse	270°51.5 7°24.8
Canopus	263°52.2 -52°42.2
Sirius	258°25.8 -16°44.8
Procyon	255°05.5 -29°00.1
Adhara	244°50.4 5°09.7
Pollux	243°16.8 27°57.8
Avior	234°14.9 -59°35.2
Suhail	222°46.2 -43°31.9
Miaplacidus	221°38.9 -69°49.1
Alphard	217°47.5 -8°46.0
Regulus	207°34.1 11°50.6
Dubhe	193°40.9 61°36.7
Denebola	182°24.7 14°25.8
Gienah	175°43.3 -17°41.0
Acrux	173°00.2 -63°14.5
Gacrux	171°51.6 -57°15.4
Alioth	166°13.0 55°49.3
Spica	158°22.0 -11°17.7
Alkaid	152°51.9 49°11.2
Hadar	148°35.8 -60°29.9
Menkent	147°57.3 -36°29.8
Arcturus	145°47.0 19°03.0
Rigel Kent.	139°40.0 -60°56.6
Kochab	137°20.5 74°03.1
Zuben'ubi	136°55.6 -16°08.9
Alphecca	126°03.4 26°37.9
Antares	112°15.3 -26°29.4
Atria	107°09.1 -69°04.7
Sabik	102°02.2 -15°45.4
Shaula	96°09.6 -37°07.4
Rasalhague	95°58.0 12°32.6
Eltanin	90°41.9 51°29.4
Kaus Aug.	83°31.7 -34°22.4
Vega	80°32.8 -38°48.7
Nunki	75°46.9 -26°15.9
Altair	61°59.2 8°56.3
Pearcock	53°04.4 -56°39.3
Deneb	49°25.1 45°22.6
Enif	33°38.0 9°59.7
Al Na'ir	27°31.7 -46°50.2
Fomalhaut	15°13.5 -29°29.1
Scheat	13°44.3 28°13.5
Markab	13°29.0 15°20.8

Alphard	217°47.5	-8°46.0
Regulus	207°34.1	-11°50.6
Dubhe	193°40.9	61°36.7
Denebola	182°24.7	14°25.8
Gienah	175°43.3	-17°41.0
Acrux	173°00.2	-63°14.5
Gacrux	171°51.6	-57°15.4
Alioth	166°13.0	55°49.3
Spica	158°22.0	-11°17.7
Alkaid	152°51.9	49°11.2
Hadar	148°35.8	-60°29.9
Menkent	147°57.3	-36°29.8
Arcturus	145°47.6	19°03.0
Rigel Kent.	139°40.0	-60°56.6
Kochab	137°20.5	74°03.1
Zuben'ubi	136°55.6	-16°08.9
Alphica	126°03.4	26°37.9
Antares	112°15.3	-26°29.4
Atria	107°09.1	-69°04.7
Sabik	102°02.2	-15°45.4
Shaula	96°09.6	-37°07.4
Rasalhague	95°58.0	12°32.6
Eltanin	90°41.9	51°29.4
Kaus Aua.	83°31.7	-34°22.4
Vega	80°32.8	38°47.8
Nunki	75°46.9	-26°15.9
Altair	61°59.2	8°56.3
Peacock	53°04.4	-56°39.3
Deneb	49°25.1	45°22.6
Enif	33°38.8	9°59.7
Al Na'ir	27°31.7	-46°50.2
Fomalhaut	15°13.5	-29°29.1
Scheat	13°44.3	28°13.5
Markab	13°29.0	15°20.8

Aries			Venus			Mars			Jupiter			Saturn		
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	1°05'8	205°45.2	N11°21.1	153°23.5	S11°22.6	248°06.1	N21°45.6	1°31.2	S02°55.1					
1	16°08.3	220°44.8	20.0	168°24.3	23.2	263°08.2	45.6	16°33.8	55.2					
2	31°10.7	235°44.3	19.0	183°25.2	23.9	278°10.3	45.5	31°36.4	55.3					
3	46°13.2	250°43.8	18.0	198°26.1	24.5	293°12.4	45.5	46°39.1	55.4					
4	61°15.7	265°43.3	16.9	213°26.9	25.1	308°14.5	45.4	61°41.7	55.5					
5	76°18.1	280°42.9	15.9	228°27.8	25.7	323°16.6	45.4	76°44.4	55.5					
6	91°20.6	295°42.4	N11°14.9	243°28.7	S11°26.3	338°18.6	N21°45.3	91°47.0	S02°55.6					
7	106°23.1	310°41.9	13.9	258°29.6	26.9	353°20.7	45.3	106°49.6	55.7					
8	121°25.5	325°41.4	12.8	273°30.4	27.6	8°22.8	45.2	121°52.3	55.8					
9	136°28.0	340°41.0	11.8	288°31.3	28.2	23°24.9	45.2	136°54.9	55.9					
10	151°30.4	355°40.5	10.8	303°32.2	28.8	38°27.0	45.1	151°57.6	55.9					
11	166°32.9	10°40.0	09.7	318°33.0	29.4	53°29.1	45.1	167°00.2	56.0					
12	181°35.4	25°39.5	N11°08.7	333°33.9	S11°30.0	68°31.2	N21°45.0	182°02.9	S02°56.1					
13	196°37.8	40°39.1	07.7	348°34.8	30.6	83°33.3	45.0	197°05.5	56.2					
14	211°40.3	55°38.6	06.6	3°35.6	31.3	98°35.3	44.9	212°08.1	56.2					
15	226°42.8	70°38.1	05.6	18°36.5	31.9	113°37.4	44.9	227°10.8	56.3					
16	241°45.2	85°37.7	04.6	33°37.4	32.5	128°39.5	44.8	242°13.4	56.4					
17	256°47.7	100°37.2	03.5	48°38.2	33.1	143°41.6	44.8	257°16.1	56.5					
18	271°50.2	115°36.7	N11°02.5	63°39.1	S11°33.7	158°43.7	N21°44.7	272°18.7	S02°56.6					
19	286°52.6	130°36.2	01.4	78°40.0	34.3	173°45.8	44.7	287°21.4	56.6					
20	301°55.1	145°35.8	11°00.4	93°40.8	34.9	188°47.9	44.6	302°24.0	56.7					
21	316°57.5	160°35.3	10°59.4	108°41.7	35.6	203°50.0	44.6	317°26.6	56.8					
22	332°00.0	175°34.8	58.3	123°42.6	36.2	218°52.1	44.5	332°29.3	56.9					
23	347°02.0	190°34.4	57.3	138°43.4	36.8	233°54.2	44.5	347°31.9	57.0					
Mer.pass.:23:52			v-0.5 d-1.0 m-3.8			v0.9 d-0.6 m1.6			v2.1 d-0.1 m-1.9			v2.6 d-0.1 m0.6		

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	2°04.9	205°33.9	N10°56.2	153°44.3	S11°37.4	248°56.2	N21°44.4	2°34.6	S02°57.0		
1	17°07.4	220°33.4	55.2	168°45.2	38.0	263°58.3	44.4	17°37.2	57.1		
2	32°09.9	235°33.0	54.2	183°46.0	38.6	279°00.4	44.3	32°39.8	57.2		
3	47°12.3	250°32.5	53.1	198°46.9	39.2	294°02.5	44.3	47°42.5	57.3		
4	62°14.8	265°32.0	52.1	213°47.8	39.9	309°04.6	44.2	62°45.1	57.3		
5	77°17.3	280°31.6	51.0	228°48.6	40.5	324°06.7	44.2	77°47.8	57.4		
6	92°19.7	295°31.1	N10°50.0	243°49.5	S11°41.1	339°08.8	N21°44.1	92°50.4	S02°57.5		
7	107°22.2	310°30.6	48.9	258°50.4	41.7	354°10.9	44.1	107°53.1	57.6		
8	122°24.7	325°30.2	47.9	273°51.2	42.3	9°13.0	44.0	122°55.7	57.7		
9	137°27.1	340°29.7	46.9	288°52.1	42.9	24°15.1	44.0	137°58.3	57.7		
10	152°29.6	355°29.2	45.8	303°53.0	43.5	39°17.2	43.9	153°01.0	57.8		
11	167°32.0	10°28.8	44.8	318°53.8	44.1	54°19.3	43.9	168°03.6	57.9		
12	182°34.5	25°28.3	N10°43.7	333°54.7	S11°44.8	69°21.4	N21°43.8	183°06.3	S02°58.0		
13	197°37.0	40°27.8	42.7	348°55.5	45.4	84°23.5	43.8	198°08.9	58.0		
14	212°39.4	55°27.4	41.6	3°56.4	46.0	99°25.5	43.7	213°11.5	58.1		
15	227°41.9	70°26.9	40.6	18°57.3	46.2	114°27.6	43.7	228°14.2	58.2		
16	242°44.4	85°26.4	39.5	33°58.1	47.2	129°29.7	43.6	243°16.8	58.3		
17	257°46.8	100°26.0	38.5	48°59.0	47.8	144°31.8	43.6	258°19.5	58.4		
18	272°49.3	115°25.5	N10°37.4	63°59.9	S11°48.4	159°33.9	N21°43.5	273°22.1	S02°58.4		
19	287°51.8	130°25.0	36.4	79°00.7	49.0	174°36.0	43.5	288°24.7	58.5		
20	302°54.2	145°24.6	35.3	94°01.6	49.7	189°38.1	43.4	303°27.4	58.6		
21	317°56.7	160°24.1	34.3	109°02.4	50.3	204°40.2	43.4	318°30.0	58.7		
22	332°59.1	175°23.7	33.2	124°03.3	50.9	219°42.3	43.3	333°32.7	58.8		
23	348°01.6	190°23.2	32.2	139°04.2	51.5	234°44.4	43.3	348°35.3	58.8		
Mer.pass.:23:48			v-0.5 d-1.0 m-3.8			v2.1 d-0.1 m-1.9			v2.6 d-0.1 m0.6		

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	3°04.1	205°22.7	N10°31.1	154°05.0	S11°52.1	249°46.5	N21°43.2	3°38.0	S02°58.9		
1	18°06.5	220°22.3	30.1	169°05.9	52.7	264°48.6	43.2	18°40.6	59.0		
2	33°09.0	235°21.8	29.0	184°06.7	53.3	279°50.7	43.1	33°43.2	59.1		
3	48°11.5	250°21.3	28.0	199°07.6	53.9	294°52.8	43.1	48°45.9	59.1		
4	63°13.9	265°20.9	26.9	214°08.5	54.5	309°54.9	43.0	63°48.5	59.2		
5	78°16.4	280°20.4	25.8	229°09.3	55.2	324°57.0	43.0	78°51.2	59.3		
6	93°18.9	295°20.0	N10°24.8	244°10.2	S11°55.8	339°59.1	N21°42.9	93°53.8	S02°59.4		
7	108°21.3	310°19.5	23.7	259°11.0	56.4	355°01.2	42.9	108°56.4	59.5		
8	123°23.8	325°19.0	22.7	274°11.9	57.0	10°03.3	42.8	123°59.1	59.5		
9	138°26.3	340°18.6	21.6	289°12.8	57.6	25°05.4	42.8	139°01.7	59.6		
10	153°28.7	355°18.1	20.6	304°13.6	58.2	40°07.5	42.7	154°04.4	59.7		
11	168°31.2	10°17.7	19.5	319°14.5	58.8	55°09.6	42.7	169°07.0	59.8		
12	183°33.6	25°17.2	N10°18.4	334°15.3	S11°59.4	70°11.7	N21°42.6	184°09.7	S02°59.8		
13	198°36.1	40°16.7	17.4	349°16.2	12°00.0	85°13.8	42.6	199°12.3	02°59.9		
14	213°38.6	55°16.3	16.3	4°17.0	00.6	100°15.9	42.5	214°14.9	03°00.0		
15	228°41.0	70°15.8	15.3	19°17.9	01.3	115°18.0	42.5	229°17.6	03°00.1		
16	243°43.5	85°15.4	14.2	34°18.8	01.9	130°20.1	42.4	244°20.2	03°00.2		
17	258°46.0	100°14.9	13.1	49°19.6	02.5	145°22.2	42.4	259°22.9	03°00.2		
18	273°48.4	115°14.4	N10°12.1	64°20.5	S12°03.1	160°24.3	N21°42.3	274°25.5	S03°00.3		
19	288°50.9	130°14.0	11.0	79°21.3	03.7	175°26.4	42.3	289°28.1	04.0		
20	303°53.4	145°13.5	09.9	94°22.2	04.3	190°28.5	42.2	304°30.8	04.0		
21	318°55.8	160°13.1	08.9	109°23.0	04.9	205°30.6	42.2	319°33.4	04.0		
22	333°58.3	175°12.6	07.8	124°23.9	05.5	220°32.7	42.1	334°36.1	04.0		
23	349°00.8	190°12.2	06.7	139°24.7	06.1	235°34.8	42.1	349°38.7	04.0		
Mer.pass.:23:44				v-0.5 d-1.1 m-3.8		v0.9 d-0.6 m1.6		v2.1 d-0.0 m-1.9		v2.6 d-0.1 m0.6	

SHA	Dec
Alpheratz	357°33.8 29°14.1
Ankaa	353°06.1 -42°09.8
Schedar	349°29.9 56°40.8
Diphda	348°46.4 -17°50.6
Achernar	335°19.2 -57°06.1
Hamal	327°50.3 23°35.1
Polaris	313°25.2 89°22.1
Acamar	315°11.0 -40°11.8
Menkar	314°05.3 4°11.6
Mirfak	308°27.1 49°57.1
Aldebaran	290°38.8 16°33.7
Rigel	281°03.2 -8°10.1
Capella	280°20.9 46°01.3
Bellatrix	278°22.2 6°22.5
Elath	278°01.1 28°37.7
Anilam	275°37.1 -1°10.9
Betelgeuse	270°51.4 7°24.8
Canopus	263°52.2 -52°42.2
Sirius	258°25.8 -16°44.8
Procyon	255°05.5 -29°00.1
Adhara	244°50.4 5°09.7
Pollux	243°16.8 27°57.8
Avior	234°14.9 -59°35.2
Suhail	222°46.2 -43°31.9
Miaplacidus	221°38.9 -69°49.1
Alphard	217°47.4 -8°46.0
Regulus	207°34.1 11°50.6
Dubhe	193°40.9 61°36.7
Denebola	182°24.7 14°25.8
Gienah	175°43.3 -17°41.0
Acrux	173°00.2 -63°14.5
Gacrux	171°51.6 -57°15.4
Alioth	166°13.0 55°49.3
Spica	158°22.0 -11°17.7
Alkaid	152°51.9 49°11.2
Hadar	148°35.8 -60°29.9
Menkent	147°57.3 -36°29.8
Arcturus	145°47.7 19°03.0
Rigel Kent.	139°40.0 -60°56.6
Kochab	137°20.6 74°03.1
Zuben'ubi	136°55.6 -16°08.9
Alphecca	126°03.5 26°37.9
Antares	112°15.3 -26°29.4
Atria	107°09.1 -69°04.6
Sabik	102°02.2 -15°45.4</

Aries		Venus		Mars		Jupiter		Saturn	
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	4°03.2	205°11.7	N10° 05.7	154°25.6	S12° 06.7	250°36.9	N21° 42.0	4°41.4	S03° 00.8
1	19°05.7	220°11.3	04.6	169°26.5	07.3	265°39.0	42.0	19°44.0	00.9
2	34°08.1	235°10.8	03.5	184°27.3	07.9	280°41.1	41.9	34°46.6	00.9
3	49°10.6	250°10.3	•• 02.5	199°28.2	•• 08.6	295°43.2	•• 41.9	49°49.3	•• 01.0
4	64°13.1	265°09.9	01.4	214°29.0	09.2	310°45.3	41.8	64°51.9	01.1
5	79°15.5	280°09.4	10°00.3	229°29.9	09.8	325°47.4	41.8	79°54.6	01.2
6	94°18.0	295°09.0	N09° 59.3	244°30.7	S12° 10.4	340°49.5	N21° 41.7	94°57.2	S03° 01.2
7	109°20.5	310°08.5	58.2	259°31.6	11.0	355°51.6	41.7	109°59.8	01.3
8	124°22.9	325°08.1	57.1	274°32.4	11.6	10°57.3	41.6	125°02.5	01.4
9	139°25.4	340°07.6	•• 56.1	289°33.3	•• 12.2	25°55.8	•• 41.6	140°05.1	•• 01.5
10	154°27.9	355°07.2	55.0	304°34.1	12.8	40°57.9	41.5	150°07.8	01.5
11	169°30.3	1°06.7	53.9	319°35.0	13.4	56°00.0	41.5	170°10.4	01.6
12	184°32.8	25°06.3	N09° 52.9	334°35.8	S12° 14.0	71°02.1	N21° 41.4	185°13.0	S03° 01.7
13	199°35.2	40°05.8	51.8	349°36.7	14.6	86°04.3	41.4	200°15.7	01.8
14	214°37.7	55°05.4	50.7	4°37.6	15.2	101°06.4	41.3	215°18.3	01.9
15	229°40.2	70°04.9	•• 49.6	19°38.4	•• 15.8	116°08.5	•• 41.3	230°21.0	•• 01.9
16	244°42.6	85°04.4	48.6	34°39.3	16.5	131°10.6	41.2	245°23.6	02.0
17	259°45.1	100°04.0	47.5	49°40.1	17.1	146°12.7	41.2	260°26.3	02.1
18	274°47.6	115°03.5	N09° 46.4	64°41.0	S12° 17.7	161°14.8	N21° 41.1	275°28.9	S03° 02.2
19	289°50.0	130°03.1	45.3	79°41.8	18.3	176°16.9	41.1	290°31.5	02.2
20	304°52.5	145°02.6	44.3	94°42.7	18.9	191°19.0	41.0	305°34.2	02.3
21	319°55.0	160°02.2	•• 43.2	109°43.5	•• 19.5	206°21.1	•• 41.0	320°36.8	•• 02.4
22	334°57.4	175°01.7	42.1	124°44.2	20.1	221°23.2	40.9	335°39.5	02.5
23	349°59.9	190°01.3	41.0	139°45.2	20.7	236°25.3	40.9	350°42.1	02.6
Mer.pass.:23:40		v-0.5 d-1.1 m-3.8		v0.9 d-0.6 m1.6		v2.1 d-0.0 m-2.0		v2.6 d-0.1 m0.6	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	5°02.4	205°00.8	N09° 39.9	154°46.1	S12° 21.3	251°27.4	N21° 40.9	5°44.7	S03° 02.6
1	20°04.8	220°00.4	38.9	169°46.9	21.9	266°29.5	40.8	20°47.4	02.7
2	35°07.7	234°59.9	37.8	184°47.8	22.5	281°31.7	40.8	35°50.0	02.8
3	50°09.7	249°59.5	•• 36.7	199°48.6	•• 23.1	296°33.8	•• 40.7	50°52.7	•• 02.9
4	65°12.2	264°59.0	35.6	214°49.5	23.7	311°35.9	40.7	65°55.3	02.9
5	80°14.7	279°58.6	34.6	229°50.3	24.3	326°38.0	40.6	80°57.9	03.0
6	95°17.1	294°58.2	N09° 33.5	244°51.1	S12° 24.9	341°40.1	N21° 40.6	96°00.6	S03° 03.1
7	110°19.6	309°57.7	32.4	259°52.0	25.5	356°42.2	40.5	111°03.2	03.2
8	125°22.1	324°57.3	31.3	274°52.8	26.1	11°44.3	40.5	126°05.9	03.2
9	140°24.5	339°56.8	•• 30.2	289°53.7	•• 26.7	26°46.4	•• 40.4	141°08.5	•• 03.3
10	155°27.0	354°56.4	29.1	304°54.5	27.3	41°48.5	40.4	156°11.2	03.4
11	170°29.5	9°55.9	28.1	319°55.4	28.0	56°50.6	40.3	171°13.8	03.5
12	185°31.9	24°55.5	N09° 27.0	334°56.2	S12° 28.6	71°52.8	N21° 40.3	186°16.4	S03° 03.6
13	200°34.4	39°55.0	25.9	349°57.1	29.2	86°54.9	40.2	201°19.1	03.6
14	215°36.9	54°56.4	24.8	4°57.9	29.8	101°57.0	40.2	216°21.7	03.7
15	230°39.3	69°54.1	•• 23.7	19°58.8	•• 30.4	116°59.1	•• 40.1	231°24.4	•• 03.8
16	245°41.8	84°53.7	22.6	34°53.7	31.0	132°01.2	40.1	246°27.0	03.9
17	260°44.2	99°53.2	21.6	50°00.5	31.6	147°03.3	40.0	261°29.6	03.9
18	275°46.7	114°52.8	N09° 20.5	65°01.3	S12° 32.2	162°05.4	N21° 40.0	276°32.3	S03° 04.0
19	290°49.2	129°52.3	19.4	80°02.2	32.8	177°07.5	39.9	291°34.9	04.1
20	305°51.6	144°51.9	18.3	95°03.0	33.4	192°09.7	39.9	306°37.6	04.2
21	320°54.1	159°51.5	•• 17.2	110°03.8	•• 34.0	207°11.8	•• 39.8	321°40.2	•• 04.2
22	335°56.6	174°51.0	16.1	125°04.7	34.6	222°13.9	39.8	336°42.8	04.3
23	350°59.0	189°50.6	15.0	140°05.5	35.2	237°16.0	39.7	351°45.5	04.4
Mer.pass.:23:36		v-0.4 d-1.1 m-3.8		v0.8 d-0.6 m1.6		v2.1 d-0.0 m-2.0		v2.6 d-0.1 m0.6	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	6°01.5	204°50.1	N09° 13.9	155°06.4	S12° 35.8	252°18.1	N21° 39.7	6°48.1	S03° 04.5
1	21°04.0	219°49.7	12.8	170°07.2	36.4	267°20.2	39.6	21°50.8	04.6
2	36°06.4	234°49.2	11.8	185°08.1	37.0	282°22.3	39.6	36°53.4	04.6
3	51°08.9	249°48.8	•• 10.7	200°08.9	•• 37.6	297°24.5	•• 39.5	51°56.0	•• 04.7
4	66°11.3	264°48.4	09.6	215°09.7	38.2	312°26.6	39.5	66°58.7	04.8
5	81°13.8	279°47.9	08.5	230°10.6	38.8	327°28.7	39.5	82°01.3	04.9
6	96°16.3	294°47.5	N09° 07.4	245°11.4	S12° 39.4	342°30.8	N21° 39.4	97°04.0	S03° 04.9
7	111°18.7	309°47.0	06.3	260°12.3	40.0	357°32.9	39.4	112°06.6	05.0
8	126°21.2	324°46.6	05.2	275°13.1	40.6	12°35.0	39.3	127°09.2	05.1
9	141°23.7	339°46.1	•• 04.1	290°14.0	•• 41.2	27°37.2	•• 39.3	142°11.9	•• 05.2
10	156°26.1	354°45.7	03.0	305°14.8	41.8	42°39.3	39.2	157°14.5	05.2
11	171°28.6	9°45.3	01.9	320°15.6	42.4	57°41.4	39.2	172°17.2	05.3
12	186°31.1	24°44.8	N09° 00.8	335°16.5	S12° 43.0	72°43.5	N21° 39.1	187°19.8	S03° 05.4
13	201°33.5	39°44.4	08°59.7	350°17.3	43.6	87°45.6	39.1	202°22.4	05.5
14	216°36.0	54°43.9	58.6	5°18.2	44.2	102°47.7	39.0	217°25.1	05.6
15	231°38.5	69°43.5	•• 57.5	20°19.0	•• 44.8	117°49.9	•• 39.0	232°27.7	•• 05.6
16	246°40.9	84°43.1	56.4	35°19.8	45.4	132°52.0	38.9	247°30.4	05.7
17	261°43.4	99°42.6	55.3	50°20.7	46.0	147°54.1	38.9	262°33.0	05.8
18	276°45.8	114°42.2	N08° 54.2	65°21.5	S12° 46.6	162°56.2	N21° 38.8	277°35.6	S03° 05.9
19	291°48.3	129°41.7	53.1	80°22.4	47.2	177°58.3	38.8	292°38.3	05.9
20	306°50.8	144°41.3	52.0	95°23.2	47.8	193°00.5	38.7	307°40.9	06.0
21	321°53.2	159°40.9	•• 51.0	110°24.0	•• 48.4	208°02.6	•• 38.7	322°43.6	•• 06.1
22	336°55.7	174°40.4	49.9	125°24.9	49.0	223°04.7	38.6	337°46.2	06.2
23	351°58.2	189°40.0	48.8	140°25.7	49.6	238°06.8	38.6	352°48.8	06.2
Mer.pass.:23:32		v-0.4 d-1.1 m-3.8		v0.8 d-0.6 m1.6		v2.1 d-0.0 m-2.0		v2.6 d-0.1 m0.6	

Stars	
SHA	Dec
Alpheratz	357°33.8 29°14.1
Ankaa	353°06.1 -42°09.8
Schedar	349°29.8 56°40.8
Diphda	348°46.4 -17°50.6
Achernar	335°19.2 -57°06.2
Hamal	327°50.2 23°35.1
Polaris	313°23.8 89°22.1
Acamar	315°11.0 -40°11.8
Menkar	314°05.3 4°11.6
Mirfak	308°27.1 49°57.1
Aldebaran	290°38.8 16°33.7
Rigel	281°03.2 -8°10.1
Capella	280°20.9 46°01.3
Bellatrix	278°22.2 6°22.5
Elnath	278°01.1 28°37.7
Anilam	275°37.1 -1°11.0
Betelgeuse	270°51.4 7°24.8
Canopus	263°52.2 -52°42.2
Sirius	258°25.8 -16°44.8
Adhara	255°05.5 -29°00.1
Procyon	244°50.3 5°09.7
Pollux	243°16.7 27°57.8
Avior	234°14.9 -59°35.2
Suhail	222°46.2 -43°31.9
Miaplacidus	221°38.9 -69°49.1
Alphard	217°47.4 -8°46.0
Regulus	207°34.1 11°50.6
Dubhe	193°40.9 61°36.7
Denebola	182°24.7 14°25.8
Gienah	175°43.3 -17°41.0
Acrux	173°00.2 -63°14.5
Gacrux	171°51.6 -57°15.4
Alioth	166°13.0 55°49.3
Spica	158°22.0 -11°17.7
Alkaid	152°52.0 49°11.2
Hadar	148°35.8 -60°29.9
Menkent	147°57.3 -36°29.8
Arcturus	145°47.7 19°03.0
Rigel Kent.	139°40.1 -60°56.6
Kochab	137°20.6 74°03.1
Zuben'ubi	136°55.6 -16°08.9
Alphecca	126°03.5 26°37.9
Antares	112°05.3 -26°29.4
Atria	107°19.2 -69°04.6
Sabik	102°02.2 -15°45.4
Shaula	96°09.7 -37°07.4
Rasalhague	95°58.1 12°32.6
Eltanin	90°42.0 51°29.4
Kaus Aust.	83°31.7 -34°22.4
Vega	80°32.8 -38°48.7
Nunki	75°47.0 -26°15.9
Altair	61°59.3 8°56.3
Pearcock	53°04.5 -56°39.3
Deneb	49°25.2 45°22.6
Enif	33°38.0 9°59.7
Al Na'ir	27°31.8 -46°50.2
Fomalhaut	15°13.5 -29°29.1
Scheat	13°44.3 28°13.5
Markab	13°29.0 15°20.8

Sep 25 Thu	
SHA	Mer.pass
Venus	201°08.5 10:20
Mars	150°22.4 13:42
Jupiter	246°33.7 07:17
Saturn	0°38.1 23:37
Sep 26 Fri	
SHA	Mer.pass
Venus	199°58.5 10:20
Mars	149°43.7 13:40
Jupiter	246°25.1 07:13
Saturn	0°42.4 23:33
Sep 27 Sat	
SHA	Mer.pass
Venus	198°48.6 10:21
Mars	149°04.9 13:39
Jupiter	246°16.9 07:10
Saturn	0°46.6 23:29

Horizontal parallax	
Venus:	0.1
Mars:	0.1

Sun			Moon				
Thu	GHA	Dec	GHA	ν	Dec	d	HP
0	182°02.6	S00°52.3	150°18.6	14.7°	S17°45.7	-11.5'	54.2'
1	197°02.8	53.2	164°52.2	14.6°	17°57.2	-11.5'	54.2'
2	212°03.1	54.2	179°25.8	14.6°	18°08.6	-11.4'	54.2'
3	227°03.3	· · 55.2	193°59.3	14.5°	18°20.0	-11.3'	54.2'
4	242°03.5	56.2	208°32.8	14.5°	18°31.2	-11.2'	54.2'
5	257°03.7	57.1	223°06.2	14.4°	18°42.4	-11.1'	54.2'
6	272°03.9	S00°58.1	237°39.6	14.3°	S18°53.5	-11.1'	54.1'
7	287°04.1	00°59.1	252°12.9	14.3°	19°04.6	-11.0'	54.1'
8	302°04.4	01°00.1	266°46.2	14.2°	19°15.5	-10.9'	54.1'
9	317°04.6	01°01.0	281°19.4	14.2°	19°26.4	-10.8'	54.1'
10	332°04.8	02.0	295°52.5	14.1°	19°37.2	-10.7'	54.1'
11	347°05.0	03.0	310°25.6	14.1°	19°47.9	-10.7'	54.1'
12	2°05.2	S01°04.0	324°58.6	14.0°	S19°58.5	-10.6'	54.1'
13	17°05.4	04.9	339°31.6	13.9°	20°09.0	-10.5'	54.1'
14	32°05.6	05.9	354°04.5	13.9°	20°19.5	-10.4'	54.1'
15	47°05.9	· · 06.9	8°37.4	13.8°	20°29.8	-10.3'	54.1'
16	62°06.1	07.9	23°10.2	13.8°	20°40.1	-10.2'	54.1'
17	77°06.3	08.8	37°42.9	13.7°	20°50.3	-10.1'	54.1'
18	92°06.5	S01°09.8	52°15.6	13.7°	S21°00.4	-10.1'	54.1'
19	107°06.7	10.8	66°48.2	13.6°	21°10.4	-10.0'	54.1'
20	122°06.9	11.8	81°20.8	13.5°	21°20.4	-9.9'	54.1'
21	137°07.1	· · 12.7	95°53.3	13.5°	21°30.2	-9.8'	54.1'
22	152°07.4	13.7	110°25.7	13.4°	21°39.9	-9.7'	54.1'
23	167°07.6	14.7	124°58.1	13.3°	21°49.6	-9.6'	54.1'

Aries			Venus			Mars			Jupiter			Saturn		
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	7°00'6	204°39.5	N08°47.6	155°26.6	S12°50.2	253°08.9	N21°38.5	7°51.5	S03°06.3					
1	22°03.1	219°39.1	46.5	170°27.4	50.8	268°11.1	38.5	22°54.1	06.4					
2	37°05.6	234°38.7	45.4	185°28.2	51.4	283°13.2	38.5	37°56.8	06.5					
3	52°08.0	249°38.2	•• 44.3	200°29.1	•• 52.0	298°15.3	•• 38.4	52°59.4	•• 06.5					
4	67°10.5	264°37.8	43.2	215°29.9	52.6	313°17.4	38.4	68°02.0	06.6					
5	82°13.0	279°37.4	42.1	230°30.8	53.2	328°19.6	38.3	83°04.7	06.7					
6	97°15.4	294°36.9	N08°41.0	245°31.6	S12°53.8	343°21.7	N21°38.3	98°07.3	S03°06.8					
7	112°17.9	309°36.5	39.9	260°32.4	54.4	358°23.8	38.2	113°10.0	06.8					
8	127°20.3	324°36.0	38.8	275°33.3	55.0	13°25.9	38.2	128°12.6	06.9					
9	142°22.8	339°35.6	•• 37.7	290°34.1	•• 55.6	28°28.0	•• 38.1	143°15.2	•• 07.0					
10	157°25.3	354°35.2	36.6	305°34.9	56.2	43°30.2	38.1	158°17.9	07.1					
11	172°27.7	9°34.7	35.5	320°35.8	56.8	58°32.3	38.0	173°20.5	07.2					
12	187°30.2	24°34.4	N08°34.4	335°36.6	S12°57.4	73°34.4	N21°38.0	188°23.2	S03°07.2					
13	202°32.7	39°33.9	33.3	350°37.4	58.0	88°36.5	37.9	203°25.8	07.3					
14	217°35.1	54°33.4	32.2	5°38.3	58.6	103°38.7	37.9	218°28.4	07.4					
15	232°37.6	69°33.0	•• 31.1	20°39.1	•• 59.2	118°40.8	•• 37.8	233°31.1	•• 07.5					
16	247°40.1	84°32.6	30.0	35°39.9	12°59.8	133°42.9	37.8	248°33.7	07.5					
17	262°42.5	99°32.1	28.9	50°40.8	13°00.4	148°45.0	37.7	263°36.4	07.6					
18	277°45.0	114°31.7	N08°27.8	65°41.6	S13°01.0	163°47.2	N21°37.7	278°39.0	S03°07.7					
19	292°47.4	129°31.7	26.7	80°42.4	01.6	178°49.3	37.7	293°41.6	07.8					
20	307°49.9	144°30.8	25.5	95°43.3	02.2	193°51.4	•• 37.6	308°44.3	•• 07.8					
21	322°52.4	159°30.4	•• 24.4	110°44.1	•• 02.8	208°53.5	•• 37.6	323°46.9	•• 07.9					
22	337°54.8	174°30.0	23.3	125°44.9	03.4	223°55.7	37.5	338°49.6	08.0					
23	352°57.3	189°29.5	22.2	140°45.8	04.0	238°57.8	37.5	353°52.2	08.1					
Mer.pass.:23:28			v-0.4 d-1.1 m-3.8			v0.8 d-0.6 m1.6			v2.1 d-0.0 m-2.0			v2.6 d-0.1 m0.6		

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	7°59.8	204°29.1	N08°21.1	155°46.6	S13°04.6	253°59.9	N21°37.4	8°54.8	S03°08.1		
1	23°02.2	219°28.7	20.0	170°47.4	05.2	269°02.0	37.4	23°57.5	08.2		
2	38°07.2	234°28.2	18.9	185°48.3	05.8	284°04.2	37.3	39°00.1	08.3		
3	53°04.7	249°27.8	•• 17.8	200°49.1	•• 06.4	299°06.3	•• 37.3	54°02.8	•• 08.4		
4	68°09.6	264°27.4	16.7	215°49.9	06.9	314°08.4	37.2	69°05.4	08.4		
5	83°12.1	279°26.9	15.5	230°50.8	07.5	329°10.6	37.2	84°08.0	08.5		
6	98°14.6	294°26.5	N08°14.4	245°51.6	S13°08.1	344°12.7	N21°37.1	99°10.7	S03°08.6		
7	113°17.0	309°26.1	13.3	260°52.4	08.7	359°14.8	37.1	114°13.3	08.7		
8	128°19.5	324°25.6	12.2	275°53.3	09.3	14°16.9	37.1	129°16.0	08.7		
9	143°21.9	339°25.2	•• 11.1	290°54.1	•• 09.9	29°19.1	•• 37.0	144°18.6	•• 08.8		
10	158°24.4	354°24.8	10.0	305°54.9	10.5	44°21.2	37.0	159°21.2	08.9		
11	173°26.9	9°24.4	08.9	320°55.8	11.1	59°23.3	36.9	174°23.9	09.0		
12	188°29.3	24°23.9	N08°07.7	335°56.6	S13°11.7	74°25.5	N21°36.9	189°26.5	S03°09.0		
13	203°31.8	39°23.5	06.6	350°57.4	12.3	89°27.6	36.8	204°29.2	09.1		
14	218°34.3	54°23.1	05.5	5°58.2	12.9	104°29.7	36.8	219°31.8	09.2		
15	233°36.7	69°22.6	•• 04.4	20°59.1	•• 13.5	119°31.9	•• 36.7	234°34.4	•• 09.3		
16	248°39.2	84°22.2	03.3	35°59.9	14.1	134°34.0	36.7	249°37.1	09.3		
17	263°41.7	99°21.8	02.1	51°00.7	14.7	149°36.1	36.6	264°39.7	09.4		
18	278°44.1	114°21.3	N08°01.0	66°01.6	S13°15.3	164°38.2	N21°36.6	279°42.3	S03°09.5		
19	293°46.6	129°20.9	07°59.9	81°02.4	15.9	179°40.4	36.5	294°45.0	09.6		
20	308°49.1	144°20.5	58.8	96°03.2	16.5	194°42.5	36.5	309°47.6	09.7		
21	323°51.5	159°20.1	•• 57.7	111°04.0	•• 17.1	209°44.6	•• 36.5	324°50.3	•• 09.7		
22	338°54.0	174°19.6	56.6	126°04.9	17.6	224°46.8	36.4	339°52.9	09.8		
23	353°56.4	189°19.2	55.4	141°05.7	18.2	239°48.9	36.4	354°55.5	09.9		
Mer.pass.:23:24			v-0.4 d-1.1 m-3.8			v2.1 d-0.0 m-2.0			v2.6 d-0.1 m0.7		

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	8°58.9	204°18.8	N07°54.3	156°06.5	S13°18.8	254°51.0	N21°36.3	9°58.2	S03°10.0		
1	24°01.4	219°18.3	53.2	171°07.4	19.4	269°53.2	36.3	25°00.8	10.0		
2	39°03.8	234°17.9	52.1	186°08.2	20.0	284°55.3	36.2	40°03.5	10.1		
3	54°06.3	249°17.5	•• 50.9	201°09.0	•• 20.6	299°57.4	•• 36.2	55°06.1	•• 10.2		
4	69°08.8	264°17.1	49.8	216°09.8	21.2	314°59.6	36.1	70°08.7	10.3		
5	84°11.2	279°16.6	48.7	231°10.7	21.8	330°01.7	36.1	85°11.4	10.3		
6	99°13.7	294°16.2	N07°47.6	246°11.5	S13°22.4	345°03.8	N21°36.0	100°14.0	S03°10.4		
7	114°16.2	309°15.8	46.4	261°12.3	23.0	0°06.0	36.0	115°16.7	10.5		
8	129°18.6	324°15.4	45.3	276°13.1	23.6	15°08.1	35.9	130°19.3	10.6		
9	144°21.1	339°14.9	•• 44.2	291°14.0	•• 24.2	30°10.3	•• 35.9	145°21.9	•• 10.6		
10	159°23.6	354°14.5	43.1	306°14.8	24.8	45°12.4	35.9	160°24.6	10.7		
11	174°26.0	9°14.1	41.9	321°15.6	25.3	60°14.5	35.8	175°27.2	10.8		
12	189°28.5	24°13.7	N07°40.8	336°16.4	S13°25.9	75°16.7	N21°35.8	190°29.8	S03°10.9		
13	204°30.9	39°13.2	39.7	351°17.3	26.5	90°18.8	35.7	205°32.5	10.9		
14	219°33.4	54°12.8	38.6	6°18.1	27.1	105°20.9	35.7	220°35.1	11.0		
15	234°35.9	69°12.4	•• 37.4	21°18.9	•• 27.7	120°23.1	•• 35.6	235°37.8	•• 11.1		
16	249°38.3	84°12.0	36.3	36°19.7	28.3	135°25.2	35.6	250°40.4	11.2		
17	264°40.8	99°11.5	35.2	51°20.6	28.9	150°27.3	35.5	265°43.0	11.2		
18	279°43.3	114°11.1	N07°34.1	66°21.4	S13°29.5	165°29.5	N21°35.5	280°45.7	S03°11.3		
19	294°45.7	129°10.7	32.9	81°22.2	30.1	180°31.6	35.4	295°48.3	11.4		
20	309°48.2	144°10.3	31.8	96°23.0	30.7	195°33.8	35.4	310°50.9	11.4		
21	324°50.7	159°09.8	•• 30.7	111°23.8	•• 31.2	210°35.9	•• 35.4	325°53.6	•• 11.5		
22	339°53.1	174°09.4	29.5	126°24.7	31.8	225°38.0	35.3	340°56.2	11.6		
23	354°55.6	189°09.0	28.4	141°25.5	32.4	240°40.2	35.3	355°58.9	11.7		
Mer.pass.:23:20			v-0.4 d-1.1 m-3.8			v2.1 d-0.0 m-2.0			v2.6 d-0.1 m0.7		

SHA	Dec
Alpheratz	357°33.8 29°14.1
Ankaa	353°06.1 -42°09.8
Schedar	349°29.8 56°40.8
Diphda	348°46.4 -17°50.6
Achernar	335°19.2 -57°06.2
Hamal	327°50.2 23°35.1
Polaris	313°22.4 89°22.2
Acamar	315°11.0 -40°11.8
Menkar	314°05.3 4°11.6
Mirfak	308°27.1 49°57.1
Aldebaran	290°38.8 16°33.7
Rigel	281°03.2 -8°10.1
Capella	280°20.9 46°01.3
Bellatrix	278°22.2 6°22.5
Elath	278°01.0 28°37.7
Anilam	275°37.1 -1°11.0
Betelgeuse	270°51.4 7°24.8
Canopus	263°52.1 -52°42.2
Sirius	258°25.7 -16°44.8
Procyon	255°05.5 -29°00.1
Adhara	244°50.3 5°09.7
Pollux	243°16.7 27°57.8
Avior	234°14.8 59°35.2
Suhail	222°46.2 -43°31.9
Miaplacidus	221°38.8 -69°49.1
Alphard	217°47.4 -8°46.0
Regulus	207°34.1 11°50.6
Dubhe	193°40.9 61°36.7
Denebola	182°24.7 14°25.8
Gienah	175°43.3 -17°41.0
Acrux	173°00.2 28°34.5
Gacrux	171°51.6 -57°15.4
Alioth	166°13.0 55°49.3
Spica	158°22.0 -11°17.7
Alkaid	152°52.0 49°11.2
Hadar	148°35.8 -60°29.9
Menkent	147°57.3 -36°29.8
Arcturus	145°47.7 19°03.0
Rigel Kent.	139°40.1 -60°56.6
Kochab	137°20.7 74°03.1
Zuben'ubi	136°55.6 -16°08.9
Alphecca	126°03.5 26°37.8
Antares	112°15.3 -26°29.4
Atria	107°09.2 -69°04.6
Sabik	102°02.2 -15°45.4
Shaula	96°09.7 -37°07.4
Rasalhague	95°58.1 12°32.6
Eltanin	90°42.0 51°29.4
Kaus Aust.	83°31.7 34°22.4
Vega	80°32.8 38°48.7
Nunki	75°47.0 -26°15.9
Altair	61°59.3 8°56.3
Peacock	53°04.5 -56°39.3
Deneb	49°25.2 45°22.6
Enif	33°38.0 9°59.7
Al Na'ir	27°31.8 -46°50.2
Fomalhaut	15°13.5 -29°29.1
Scheat	13°44.3 28°13.5
Markab	13°29.0 15°20.8

Dubhe	193°40.9	61°36.7
Denebola	182°24.7	14°25.8
Geniah	175°43.3	-17°41.0
Acruz	173°00.2	-63°14.5
Gacrux	171°51.6	-57°15.4
Alioth	166°13.0	-55°49.3
Spica	158°22.0	-11°17.7
Alkaid	152°52.0	-49°11.2
Hadar	148°35.8	-60°29.9
Menkent	147°57.3	-36°29.8
Arcturus	145°47.7	19°03.0
Rigil Kent	139°40.1	-60°56.6
Kochab	137°20.7	74°03.1
Zuben'ubi	136°55.6	-16°08.9
Alphecca	126°03.5	26°37.8
Antares	112°15.3	-26°29.4
Atria	107°09.2	-69°04.6
Sabik	102°02.2	-15°45.4
Shaula	96°09.7	-37°07.4
Rasalhage	95°58.1	12°32.6
Eltanin	90°42.0	51°29.4
Kaus Aust.	83°31.7	-34°22.4
Vega	80°32.8	38°48.7
Nunki	75°47.0	-26°15.9
Altair	61°59.3	8°56.3
Peacock	53°04.5	-56°39.3
Deneb	49°25.2	45°22.6
Enif	33°38.0	9°59.7

	Aries			Venus			Mars			Jupiter			Saturn		
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	9°58.0	204°08.6	N07°27.3	156°26.3	S13°33.0	255°42.3	N21°35.2	11°01.5	S03°11.7						
1	25°00.5	219°08.2	26.1	171°27.1	33.6	270°44.5	35.2	26°04.1	11.8						
2	40°03.0	234°07.7	25.0	186°28.0	34.2	285°46.6	35.1	41°06.8	11.9						
3	55°05.4	249°07.3	•• 23.9	201°28.8	•• 34.8	300°48.7	•• 35.1	56°09.4	•• 12.0						
4	70°07.9	264°06.9	22.7	216°29.6	35.4	315°50.9	35.0	71°12.1	12.0						
5	85°10.4	279°06.5	21.6	231°30.4	36.0	330°53.0	35.0	86°14.7	12.1						
6	100°12.8	294°06.0	N07°20.5	246°31.2	S13°36.5	345°55.2	N21°35.0	101°17.3	S03°12.2						
7	115°15.3	309°05.6	19.3	261°32.1	37.1	0°57.3	34.9	116°20.0	12.3						
8	130°17.8	324°05.2	18.2	276°32.9	37.7	15°59.4	34.9	131°22.6	12.3						
9	145°20.7	339°04.8	•• 17.1	291°33.7	•• 38.3	31°01.6	•• 34.8	146°25.2	•• 12.4						
10	160°22.7	354°04.4	15.9	306°34.5	38.9	46°03.7	34.8	161°27.9	12.5						
11	175°25.2	9°03.9	14.8	321°35.3	39.5	61°05.9	34.7	176°30.5	12.6						
12	190°27.6	24°03.5	N07°13.7	336°36.1	S13°40.1	76°08.0	N21°34.7	191°33.2	S03°12.6						
13	205°30.1	39°03.1	12.5	351°37.0	40.7	91°10.2	34.6	206°35.8	12.7						
14	220°32.5	54°02.7	11.4	6°37.8	41.3	106°12.3	34.6	221°38.4	12.8						
15	235°35.0	69°02.3	•• 10.3	21°38.6	•• 41.8	121°14.4	•• 34.5	236°41.1	•• 12.9						
16	250°37.5	84°01.8	09.1	36°39.4	42.4	136°16.6	34.5	251°43.7	12.9						
17	265°39.9	99°01.4	08.0	51°40.2	43.0	151°18.7	34.5	266°46.3	13.0						
18	280°42.4	114°01.0	N07°06.9	66°41.1	S13°43.6	166°20.9	N21°34.4	281°49.0	S03°13.1						
19	295°44.9	129°00.6	05.7	81°41.9	44.2	181°23.0	34.4	296°51.6	13.2						
20	310°47.3	144°00.2	04.6	96°42.7	44.8	196°25.2	34.3	311°54.3	13.2						
21	325°49.8	158°59.7	•• 03.4	111°43.5	•• 45.4	211°27.3	•• 34.3	326°56.9	•• 13.3						
22	340°52.3	173°59.3	02.3	126°44.3	45.9	226°29.5	34.2	341°59.5	13.4						
23	355°54.7	188°58.9	01.2	141°45.1	46.5	241°31.6	34.2	357°02.2	13.5						
Mer.pass.:23:16			v-0.4 d-1.1 m-3.8			v0.8 d-0.6 m1.6			v2.1 d-0.0 m-2.0			v2.6 d-0.1 m0.7			

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	10°57.2	203°58.5	N07°00.0	156°46.0	S13°47.1	256°33.7	N21°34.1	12°04.8	S03°13.5	
1	25°59.7	218°58.1	06°58.9	171°46.8	47.7	271°35.9	34.1	27°07.4	13.6	
2	41°02.1	233°57.7	57.7	186°47.6	48.3	286°38.0	34.1	42°10.1	13.7	
3	56°04.6	248°57.2	•• 56.6	201°48.4	•• 48.9	301°40.2	•• 34.0	57°12.7	•• 13.8	
4	71°07.0	263°56.8	55.5	216°49.2	49.5	316°42.3	34.0	72°15.3	13.8	
5	86°09.5	278°56.4	54.3	231°50.0	50.0	331°44.5	33.9	87°18.0	13.9	
6	101°12.0	293°56.0	N06°53.2	246°50.8	S13°50.6	346°46.6	N21°33.9	102°20.6	S03°14.0	
7	116°14.4	308°55.6	52.0	261°51.7	51.2	1°48.8	33.8	117°23.3	14.0	
8	131°16.9	323°55.2	50.9	276°52.5	51.8	16°50.9	33.8	132°25.9	14.1	
9	146°19.4	338°54.7	•• 49.7	291°53.3	•• 52.4	31°53.1	•• 33.7	147°28.5	•• 14.2	
10	161°21.8	353°54.3	48.6	306°54.1	53.0	46°55.2	33.7	162°31.2	14.3	
11	176°24.3	8°53.9	47.5	321°54.9	53.6	61°57.4	33.7	177°33.8	14.3	
12	191°26.8	23°53.5	N06°46.3	336°55.7	S13°54.1	76°59.5	N21°33.6	192°36.4	S03°14.4	
13	206°29.2	38°53.1	45.2	351°56.5	54.7	92°01.7	33.6	207°39.1	14.5	
14	221°31.7	53°52.7	44.0	6°57.3	55.3	107°03.8	33.5	222°41.7	14.6	
15	236°34.1	68°52.2	•• 42.9	21°58.2	•• 55.9	122°06.0	•• 33.5	237°44.4	•• 14.6	
16	251°36.6	83°51.8	41.7	36°59.0	56.5	137°08.1	33.4	252°47.0	14.7	
17	266°39.1	98°51.4	40.6	51°59.8	57.1	152°10.3	33.4	267°49.6	14.8	
18	281°41.5	113°51.0	N06°39.4	67°00.6	S13°57.6	167°12.4	N21°33.4	282°52.3	S03°14.9	
19	296°44.0	128°50.6	38.3	82°01.4	58.2	182°14.6	33.3	297°54.9	14.9	
20	311°46.5	143°50.2	37.1	97°02.2	58.8	197°16.7	33.3	312°57.5	15.0	
21	326°48.9	158°49.8	•• 36.0	112°03.0	13°59.4	212°18.9	•• 33.2	328°00.2	•• 15.1	
22	341°51.4	173°49.3	34.8	127°03.8	14°00.0	227°21.0	33.2	343°02.8	15.2	
23	356°53.9	188°48.9	33.7	142°04.6	00.6	242°23.2	33.1	358°05.4	15.2	
Mer.pass.:23:12			v-0.4 d-1.1 m-3.8		v0.8 d-0.6 m1.6		v2.1 d-0.0 m-2.0		v2.6 d-0.1 m0.7	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	11°56.3	203°48.5	N06°32.5	157°05.5	S14°01.1	257°25.3	N21°33.1	13°08.1	S03°15.3	
1	26°58.8	218°48.1	31.4	172°06.3	01.7	272°27.5	33.0	28°10.7	15.4	
2	42°01.3	233°47.7	30.2	187°07.1	02.3	287°29.6	33.0	43°13.3	15.4	
3	57°03.7	248°47.3	•• 29.1	202°07.9	•• 02.9	302°31.8	•• 33.0	58°16.0	•• 15.5	
4	72°06.2	263°46.9	27.9	217°08.7	03.5	317°33.9	32.9	73°18.6	15.6	
5	87°08.6	278°46.4	26.8	232°09.5	04.0	332°36.1	32.9	88°21.3	15.7	
6	102°11.1	293°46.0	N06°25.6	247°10.3	S14°04.6	347°38.2	N21°32.8	103°23.9	S03°15.7	
7	117°13.6	308°45.6	24.5	262°11.1	05.2	2°40.4	32.8	118°26.5	15.8	
8	132°16.0	323°45.2	23.3	277°11.9	05.8	17°42.6	32.7	133°29.2	15.9	
9	147°18.5	338°44.8	•• 22.2	292°12.7	•• 06.4	32°44.7	•• 32.7	148°31.8	•• 16.0	
10	162°21.0	353°44.4	21.0	307°13.5	06.9	47°46.9	32.7	163°34.4	16.0	
11	177°23.4	8°44.4	19.9	322°14.4	07.5	62°49.0	32.6	178°37.1	16.1	
12	192°25.9	23°43.6	N06°18.7	337°15.2	S14°08.1	77°51.2	N21°32.6	193°39.7	S03°16.2	
13	207°28.4	38°43.1	17.6	352°16.0	08.7	92°53.3	32.5	208°42.3	16.2	
14	222°30.8	53°42.7	16.4	7°16.8	09.3	107°55.5	32.5	223°45.0	16.3	
15	237°33.3	68°42.3	•• 15.3	22°17.6	•• 09.8	122°57.6	•• 32.4	238°47.6	•• 16.4	
16	252°35.8	83°41.9	14.1	37°18.4	10.4	137°59.8	32.4	253°50.2	16.5	
17	267°38.2	98°41.5	13.0	52°19.2	11.0	153°02.0	32.4	268°52.9	16.5	
18	282°40.7	113°41.1	N06°11.8	67°20.0	S14°11.6	168°04.1	N21°32.3	283°55.5	S03°16.6	
19	297°43.1	128°40.7	10.6	82°20.8	12.2	183°06.3	32.3	298°58.2	16.7	
20	312°45.6	143°40.3	09.5	97°21.6	12.7	198°08.4	32.2	314°00.8	16.8	
21	327°48.1	158°39.9	•• 08.3	112°22.4	•• 13.3	213°10.6	•• 32.2	329°03.4	•• 16.8	
22	342°50.5	173°39.4	07.2	127°23.2	13.9	228°12.7	32.1	344°06.1	16.9	
23	357°53.0	188°39.0	06.0	142°24.0	14.5	243°14.9	32.1	359°08.7	17.0	
Mer.pass.:23:08			v-0.4 d-1.1 m-3.8		v0.8 d-0.6 m1.6		v2.2 d-0.0 m-2.0		v2.6 d-0.1 m0.7	

Stars		
	SHA	Dec
Alpheratz	357° 33.8	29° 14.1
Ankaa	353° 06.1	-42° 09.8
Schedar	349° 29.8	56° 40.8
Diphda	348° 46.4	-17° 50.6
Achernar	335° 19.1	-57° 06.2
Hamal	327° 50.2	23° 35.2
Polaris	313° 21.2	89° 22.2
Acamar	315° 11.0	-40° 11.8
Menkar	314° 05.3	4° 11.6
Mirfak	308° 27.0	49° 57.1
Aldebaran	290° 38.8	16° 33.7
Rigel	281° 03.2	-8° 10.1
Capella	280° 20.8	46° 01.3
Bellatrix	278° 22.1	6° 22.5
Elath	278° 01.0	28° 37.7
Anilam	275° 37.0	-1° 11.0
Betelgeuse	270° 51.4	7° 24.8
Canopus	263° 52.1	-52° 42.2
Sirius	258° 25.7	-16° 44.8
Adhara	255° 05.4	-29° 00.1
Procyon	244° 50.3	5° 09.7
Pollux	243° 16.7	27° 57.8
Avior	234° 14.8	-59° 35.1
Suhail	222° 46.2	-43° 31.9
Miaplacidus	221° 38.8	-69° 49.0

Oct 01 Wed	SHA	Mer.pass
Venus	194°10.5	10:24
Mars	146°28.3	13:34
Jupiter	245°44.3	06:56
Saturn	1°03.5	23:12

Aries				Venus				Mars				Jupiter				Saturn			
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	12°55.5	203°38.6	N06°04.9	157°24.8	S14°15.1	258°17.1	N21°32.1	14°11.3	S03°17.0										
1	27°57.9	218°38.2	03.7	172°25.6	15.6	172°19.2	32.0	29°14.0	17.1										
2	43°00.4	233°37.8	02.6	187°26.4	16.2	288°21.4	32.0	44°16.6	17.3										
3	58°02.9	248°37.4	•• 01.4	202°27.2	•• 16.8	303°23.5	•• 31.9	59°19.2	•• 17.3										
4	73°05.3	263°37.0	06°00.2	217°28.0	17.4	318°25.7	31.9	74°21.9	17.3										
5	88°07.8	278°36.6	05°59.1	232°28.8	18.0	333°27.9	31.8	89°24.5	17.4										
6	103°10.2	293°36.2	N05°57.9	247°29.6	S14°18.5	348°30.0	N21°31.8	104°27.1	S03°17.5										
7	118°12.7	308°35.8	56.8	262°30.4	19.1	3°32.2	31.8	119°29.8	17.6										
8	133°15.2	323°35.4	55.6	277°31.2	19.7	18°34.3	31.7	134°32.4	17.6										
9	148°17.6	338°34.9	•• 54.4	292°32.0	•• 20.3	33°36.5	•• 31.7	149°35.0	•• 17.7										
10	163°20.1	353°34.5	53.3	307°32.8	20.8	48°38.7	31.6	164°37.7	17.8										
11	178°22.6	8°34.1	52.1	322°33.6	21.4	63°40.8	31.6	179°40.3	17.8										
12	193°25.0	23°33.7	N05°51.0	337°34.5	S14°22.0	78°43.0	N21°31.5	194°42.9	S03°17.9										
13	208°27.5	38°33.3	49.8	352°35.3	22.6	93°45.2	31.5	209°45.6	18.0										
14	223°30.0	53°32.9	48.6	7°36.1	23.1	108°47.3	31.5	224°48.2	18.1										
15	238°32.4	68°32.5	•• 47.5	22°36.9	•• 23.7	123°49.5	•• 31.4	239°50.8	•• 18.1										
16	253°34.9	83°32.1	46.3	37°37.7	24.3	138°51.6	31.4	254°53.5	18.2										
17	268°37.4	98°31.7	45.1	52°38.5	24.9	153°53.8	31.3	269°56.1	18.3										
18	283°39.8	113°31.3	N05°44.0	67°39.3	S14°25.4	168°56.0	N21°31.3	284°58.8	S03°18.4										
19	298°42.3	128°30.9	42.8	82°40.1	26.0	183°58.1	31.2	300°51.4	18.4										
20	313°44.7	143°30.5	41.7	97°40.9	26.6	199°00.3	•• 31.2	315°04.0	•• 18.5										
21	328°47.2	158°30.1	•• 40.5	112°41.6	•• 27.2	214°02.5	•• 31.2	330°06.1	•• 18.6										
22	343°49.7	173°29.6	39.3	127°42.4	27.7	229°04.6	31.1	345°09.3	18.6										
23	358°52.1	188°29.2	38.2	142°43.2	28.3	244°06.8	31.1	0°11.9	18.7										
Mer.pass.:23:05				v-0.4 d-1.2 m-3.8				v0.8 d-0.6 m1.6				v2.2 d-0.0 m-2.0				v2.6 d-0.1 m0.7			

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	13°54.6	203°28.8	N05°37.0	157°44.0	S14°28.9	259°09.0	N21°31.0	15°14.6	S03°18.8		
1	28°57.1	218°28.4	35.8	172°44.8	29.5	274°11.1	31.0	30°17.2	18.9		
2	43°59.5	233°28.0	34.7	187°45.6	30.0	289°13.3	31.0	45°19.8	18.9		
3	59°02.0	248°27.6	•• 33.5	202°46.4	•• 30.6	304°15.5	•• 30.9	60°22.5	•• 19.0		
4	74°04.5	263°27.2	32.3	217°47.2	31.2	319°17.6	30.9	75°25.1	19.1		
5	89°06.9	278°26.8	31.2	232°48.0	31.8	334°19.8	30.8	90°27.7	19.1		
6	104°09.4	293°26.4	N05°30.0	247°48.8	S14°32.3	349°22.0	N21°30.8	105°30.4	S03°19.2		
7	119°11.8	308°26.0	28.8	262°49.6	32.9	4°24.1	30.7	120°33.0	19.3		
8	134°14.3	323°25.0	27.7	277°50.4	33.5	19°26.3	30.7	135°35.6	19.4		
9	149°16.8	338°25.2	•• 26.5	292°51.2	•• 34.1	34°28.5	•• 30.7	150°38.3	•• 19.4		
10	164°19.2	353°24.8	25.3	307°52.0	30.6	49°30.6	30.6	165°40.9	19.5		
11	179°21.7	8°24.4	24.2	322°52.8	35.2	64°32.8	30.6	180°43.5	19.6		
12	194°24.2	23°24.0	N05°23.0	337°53.6	S14°35.8	79°35.0	N21°30.5	189°46.2	S03°19.6		
13	209°26.6	38°23.6	21.8	352°54.4	36.4	94°37.1	30.5	210°48.8	19.7		
14	224°29.1	53°23.2	20.7	7°55.2	36.9	109°39.3	30.5	225°51.4	19.8		
15	239°31.6	68°22.8	•• 19.5	22°56.0	•• 37.5	124°41.5	•• 30.4	240°54.1	•• 19.9		
16	254°34.0	83°22.4	18.3	37°56.8	38.1	139°43.6	30.4	255°56.7	19.9		
17	269°36.5	98°21.9	17.1	52°57.6	38.6	154°45.8	30.3	270°59.3	20.0		
18	284°39.0	113°21.5	N05°16.0	67°58.4	S14°39.2	169°48.0	N21°30.3	286°02.0	S03°20.1		
19	299°41.4	128°21.1	14.8	82°59.2	39.8	184°50.2	30.2	301°04.6	20.1		
20	314°43.9	143°20.7	13.6	98°00.0	40.4	199°52.3	30.2	316°07.2	20.2		
21	329°46.3	158°20.3	•• 12.5	113°00.7	•• 40.9	214°54.5	•• 30.2	331°09.9	•• 20.3		
22	344°48.8	173°19.9	11.3	128°01.5	41.5	229°56.7	30.1	346°12.5	20.4		
23	359°51.3	188°19.5	10.1	143°02.3	42.1	244°58.8	30.1	1°15.1	20.4		
Mer.pass.:23:01				v-0.4 d-1.2 m-3.8				v2.6 d-0.1 m0.7			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec						
0	14°53.7	203°19.1	N05°08.9	158°03.1	S14°42.6	260°01.0	N21°30.0	16°17.7	S03°20.5						
1	29°56.2	218°18.7	07.8	173°03.9	43.2	275°03.2	30.0	31°20.4	20.6						
2	44°58.7	233°18.3	06.6	188°04.7	43.8	290°05.4	30.0	46°23.0	20.6						
3	60°01.1	248°17.9	•• 05.4	203°05.5	•• 44.3	305°07.5	•• 29.9	61°25.6	•• 20.7						
4	75°03.6	263°17.5	04.3	218°06.3	44.9	320°09.7	29.9	76°28.3	20.8						
5	90°06.1	278°17.1	03.1	233°07.1	45.5	335°11.9	29.8	91°30.9	20.9						
6	105°08.5	293°16.7	N05°01.9	248°07.9	S14°46.1	350°14.0	N21°29.8	106°33.5	S03°20.9						
7	120°11.0	308°16.3	05°00.7	263°08.7	46.6	5°16.2	29.8	121°36.2	21.0						
8	135°13.4	323°15.9	04°59.6	278°09.5	47.2	20°18.4	29.7	136°38.8	21.1						
9	150°15.9	338°15.5	•• 58.4	293°10.2	•• 47.8	35°20.6	•• 29.7	151°41.4	•• 21.1						
10	165°18.4	353°15.1	57.2	308°11.0	48.3	50°22.7	29.6	166°44.1	21.2						
11	180°20.8	8°14.7	56.0	323°11.8	48.9	65°24.9	29.6	181°46.7	21.3						
12	195°23.3	23°14.3	N04°54.9	338°12.6	S14°49.5	80°27.1	N21°29.6	196°49.3	S03°21.3						
13	210°25.8	38°13.9	53.7	353°13.4	50.0	95°29.3	29.5	211°52.0	21.4						
14	225°28.2	53°13.5	52.5	8°14.2	50.6	110°31.4	29.5	226°54.6	21.5						
15	240°30.7	68°13.1	•• 51.3	23°15.0	•• 51.2	125°33.6	•• 29.4	241°57.2	•• 21.6						
16	255°33.2	83°12.7	50.2	38°15.8	51.7	140°35.8	29.4	256°59.9	21.6						
17	270°35.6	98°12.3	49.0	53°16.6	52.3	155°38.0	29.3	272°02.5	21.7						
18	285°38.1	113°11.9	N04°47.8	68°17.3	S14°52.9	170°40.2	N21°29.3	287°05.1	S03°21.8						
19	300°40.6	128°10.5	46.6	83°18.1	53.4	185°42.3	29.3	302°07.8	21.8						
20	315°43.0	143°11.1	45.4	98°18.9	54.0	200°44.5	29.2	317°10.4	21.9						
21	330°45.5	158°10.7	•• 44.3	113°19.7	•• 54.6	215°46.7	•• 29.2	332°13.0	•• 22.0						
22	345°47.9	173°10.3	43.1	128°20.5	55.1	230°48.9	29.1	347°15.7	22.1						
23	0°50.4	188°09.9	41.9	143°21.3	55.7	245°51.0	29.1	2°18.3	22.1						
Mer.pass.:22:57				v-0.4 d-1.2 m-3.8				v2.2 d-0.0 m-2.0				v2.6 d-0.1 m0.7			

SHA	Dec
Alpheratz	357°33.8
Ankaa	353°06.1
Schedar	349°29.8
Diphda	348°46.4
Achernar	335°19.1
Hamal	327°50.2
Polaris	313°20.3
Acamar	315°10.9
Menkar	314°05.3
Mirfak	308°27.0
Aldebaran	290°38.7
Rigel	281°03.2
Capella	280°20.8
Bellatrix	278°22.1
Elnath	278°01.0
Anilam	275°37.0
Betelgeuse	270°51.4
Canopus	263°52.1
Sirius	258°25.7
Adhara	255°05.4
Procyon	244°50.3
Pollux	234°16.6
Avior	234°14.8
Suhail	222°46.1
Miaplacidus	221°38.7
Alphard	217°47.4
Regulus	207°34.0
Dubhe	193°40.8
Denebola	182°24.6
Gienah	175°43.3
Acrux	173°00.2
Gacrux	171°51.6
Alioth	166°13.0
Spica	158°22.0
Alkaid	152°52.0
Hadar	148°35.8
Menkent	147°57.3
Arcturus	145°47.7
Rigel Kent.	139°40.1
Kochab	137°20.7
Zuben'ubi	136°55.6
Alphecca	126°03.5
Antares	112°15.3
Atria	107°09.3
Sabik	102°02.2
Shaula	96°09.7
Rasalhague	95°58.1
Eltanin	90°42.0
Kaus Aust.	83°31.8
Vega	80°32.9
Nunki	75°47.0
Altair	61°59.3
Peacock	53°04.5
Deneb	49°25.2
Enif	33°38.0
Al Na'ir	27°31.8
Fomalhaut	15°13.5
Scheat	13°44.3
Markab	13°29.0

Alphard	217°47.4	-8°46.0
Regulus	207°34.0	11°50.6
Dubhe	193°40.6	61°36.6
Denebola	182°24.8	14°25.8
Gienah	175°43.3	-17°41.0
Acrux	173°00.2	-63°14.4
Gacrux	171°51.6	-57°15.4
Alieeth	166°13.1	55°49.2
Spica	158°22.0	-11°17.7
Alkaid	152°52.0	49°11.2
Hadar	148°35.8	-60°29.9
Menkent	147°57.3	-36°29.8
Arcturus	145°47.7	19°03.0
Rigel Kent.	139°40.1	-60°56.6
Kochab	137°20.7	74°03.1
Zuben ubi	136°55.6	-16°08.9
Alphecca	126°03.5	26°37.8
Antares	112°15.3	-26°29.4
Atria	107°09.3	-69°04.6
Sabik	102°02.2	-55°45.4
Shaula	96°09.7	-37°07.4
Rasalhague	95°58.1	12°32.6
Eltanin	90°42.0	51°29.4
Kaus Aust.	83°31.8	-34°22.4
Vega	80°32.9	38°47.8
Nunki	75°47.0	-26°15.9
Altair	61°59.3	8°56.3
Peacock	53°04.5	-56°39.3
Deneb	49°25.2	45°22.6
Enif	33°38.8	9°59.8
Al Na'ir	27°31.8	-46°50.2
Fomalhaut	15°13.5	-29°29.1
Scheat	13°44.3	28°13.5
Markab	13°29.0	15°20.8

	Aries			Venus			Mars			Jupiter			Saturn		
Tue	GHA	GHA	Dec	GHA	Dec	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA
0	15°52.9	203°09.5	N04°40.7	158°22.1	S14°56.3	260°53.2	N21°29.1	17°20.9	S03°22.2						
1	30°55.3	218°09.1	39.6	173°22.8	56.8	275°55.4	29.0	32°23.5	22.3						
2	45°57.8	233°08.7	38.4	188°23.6	57.4	290°57.6	29.0	47°26.2	22.3						
3	61°00.3	248°08.3	•• 37.2	203°24.4	•• 58.0	305°59.8	•• 28.9	62°28.8	•• 22.4						
4	76°02.7	263°07.9	36.0	218°25.2	58.5	321°01.9	28.9	77°31.4	22.5						
5	91°05.2	278°07.5	34.8	233°26.0	59.1	336°04.1	28.9	92°34.1	22.5						
6	106°07.7	293°07.1	N04°33.7	248°26.8	S14°59.7	351°06.3	N21°28.8	107°36.7	S03°22.6						
7	121°10.1	308°06.7	32.5	263°27.6	15°00.2	6°08.5	28.8	122°39.3	22.7						
8	136°12.6	323°06.3	31.3	278°28.3	00.8	21°10.7	28.7	137°42.0	22.8						
9	151°15.0	338°05.9	•• 30.1	293°29.1	•• 01.4	36°12.8	•• 28.7	152°44.6	•• 22.8						
10	166°17.5	353°05.5	28.9	308°29.9	01.9	51°15.0	28.7	167°47.2	22.9						
11	181°20.0	8°05.1	27.7	323°30.7	02.5	66°17.2	28.6	182°49.9	23.0						
12	196°22.4	23°04.7	N04°26.6	338°31.5	S15°03.1	81°19.4	N21°28.6	197°52.5	S03°23.0						
13	211°24.9	38°04.3	25.4	353°32.3	03.6	96°21.6	28.5	212°55.1	23.1						
14	226°27.4	53°03.9	24.2	8°33.0	04.2	111°23.8	28.5	227°57.7	23.2						
15	241°29.8	68°03.5	•• 23.0	23°33.8	•• 04.8	126°25.9	•• 28.5	243°00.4	•• 23.2						
16	256°32.3	83°03.1	21.8	38°34.6	05.3	141°28.1	28.4	258°03.0	23.3						
17	271°34.8	98°02.7	20.6	53°35.4	05.9	156°30.3	28.4	273°05.6	23.4						
18	286°37.2	113°02.3	N04°19.5	68°36.2	S15°06.5	171°32.5	N21°28.3	288°08.3	S03°23.5						
19	301°39.7	128°01.9	18.3	83°36.9	07.0	186°34.7	28.3	303°10.9	23.5						
20	316°42.2	143°01.5	17.1	98°37.7	07.6	201°36.9	28.3	318°13.3	23.6						
21	331°44.6	158°01.1	•• 15.9	113°38.5	•• 08.1	216°39.0	•• 28.2	333°16.2	•• 23.7						
22	346°47.1	173°00.7	14.7	128°39.3	08.7	231°41.2	28.2	348°18.8	23.7						
23	1°49.5	188°00.3	13.5	143°40.1	09.3	246°43.4	28.2	3°21.4	23.8						
Mer.pass.:22:53			v-0.4 d-1.2 m-3.8			v0.8 d-0.6 m1.6			v2.2 d-0.0 m-2.0			v2.6 d-0.1 m0.7			

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	16°52.0	202°59.9	N04°12.4	158°40.9	S15°09.8	261°45.6	N21°28.1	18°24.0	S03°23.9					
1	31°54.5	217°59.5	11.2	173°41.6	10.4	276°47.8	28.1	33°26.7	23.9					
2	46°56.9	232°59.1	10.0	188°42.4	11.0	291°50.0	28.0	48°29.3	24.0					
3	61°59.4	247°58.7	•• 08.8	203°43.2	•• 11.5	306°52.2	•• 28.0	63°31.9	•• 24.1					
4	77°01.9	262°58.3	07.6	218°44.0	12.1	321°54.3	28.0	78°34.6	24.1					
5	92°04.3	277°57.9	06.4	233°44.7	12.6	336°56.5	27.9	93°37.2	24.2					
6	107°06.8	292°57.5	N04°05.2	248°45.5	S15°13.2	351°58.7	N21°27.9	108°39.8	S03°24.3					
7	122°09.3	307°57.1	04.0	263°46.3	13.8	7°00.9	27.8	123°42.5	24.4					
8	137°11.7	322°56.7	02.9	278°47.1	14.3	22°03.1	27.8	138°45.1	24.4					
9	152°14.2	337°56.3	•• 01.7	293°47.9	•• 14.9	37°05.3	•• 27.8	153°47.7	•• 24.5					
10	167°16.7	352°55.9	04°00.5	308°48.6	15.4	52°07.5	27.7	168°50.3	24.6					
11	182°19.1	7°55.5	03°59.3	323°49.4	16.0	67°09.7	27.7	183°53.0	24.6					
12	197°21.6	22°55.2	N03°58.1	338°50.2	S15°16.6	82°11.8	N21°27.6	198°55.6	S03°24.7					
13	212°24.0	37°54.8	56.9	353°51.0	17.1	97°14.0	27.6	213°58.2	24.8					
14	227°26.5	52°54.4	55.7	8°51.7	17.7	112°16.2	27.6	229°00.9	24.8					
15	242°29.0	67°54.0	•• 54.5	23°52.5	•• 18.2	127°18.4	•• 27.5	244°03.5	•• 24.9					
16	257°31.4	82°53.6	53.4	38°53.3	18.8	142°20.6	27.5	259°06.1	25.0					
17	272°33.9	97°53.2	52.2	53°54.1	19.4	157°22.8	27.4	274°08.7	25.0					
18	287°36.4	112°52.8	N03°51.0	68°54.8	S15°19.9	172°25.0	N21°27.4	289°11.4	S03°25.1					
19	302°38.8	127°52.4	49.8	83°55.6	20.5	187°27.2	27.4	304°14.0	25.2					
20	317°41.3	142°52.0	48.6	98°56.4	21.0	202°29.4	27.3	319°16.6	25.2					
21	332°43.8	157°51.6	•• 47.4	113°57.2	•• 21.6	217°31.6	•• 27.3	334°19.3	•• 25.3					
22	347°46.2	172°51.2	46.2	128°57.9	22.2	232°33.8	27.3	349°21.9	25.4					
23	2°48.7	187°50.8	45.0	143°58.7	22.7	247°35.9	27.2	4°24.5	25.5					
Mer.pass.:22:49			v-0.4 d-1.2 m-3.8			v0.8 d-0.6 m1.6			v2.2 d-0.0 m-2.0			v2.6 d-0.1 m0.7		

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	17°51.1	202°50.4	N03°43.8	158°59.5	S15°23.3	262°38.1	N21°27.2	19°27.1	S03°25.5	
1	32°53.6	217°50.0	42.6	174°00.3	23.8	277°40.3	27.1	34°29.8	25.6	
2	47°56.1	232°49.6	41.4	189°01.0	24.4	292°42.5	27.1	49°32.4	25.7	
3	62°58.5	247°49.2	•• 40.3	204°01.8	•• 24.9	307°44.7	•• 27.1	64°35.0	•• 25.7	
4	78°01.0	262°48.8	39.1	219°02.6	25.5	322°46.9	27.0	79°37.7	25.8	
5	93°03.5	277°48.4	37.9	234°03.4	26.1	337°49.1	27.0	94°40.3	25.9	
6	108°05.9	292°48.0	N03°36.7	249°04.1	S15°26.6	352°51.3	N21°26.9	109°42.9	S03°25.9	
7	123°08.4	307°47.6	35.5	264°04.9	27.2	7°53.5	26.9	124°45.5	26.0	
8	138°10.9	322°47.2	34.3	279°05.7	27.7	22°55.7	26.9	139°48.2	26.1	
9	153°13.3	337°46.8	•• 33.1	294°06.4	•• 28.3	37°57.9	•• 26.8	154°50.8	•• 26.1	
10	168°15.8	352°46.3	31.9	309°07.2	28.8	53°00.1	26.8	169°53.4	26.2	
11	183°18.3	7°46.1	30.7	324°08.0	29.4	68°02.3	26.8	184°56.0	26.3	
12	198°20.7	22°45.7	N03°29.5	339°08.8	S15°30.0	83°04.5	N21°26.7	199°58.7	S03°26.3	
13	213°23.2	37°45.3	28.3	354°09.5	30.5	98°06.7	26.7	215°01.3	26.4	
14	228°25.6	52°44.9	27.1	9°10.3	31.1	113°08.9	26.6	230°03.9	26.5	
15	243°28.1	67°44.5	•• 25.9	24°11.1	•• 31.6	128°11.1	•• 26.6	245°06.6	•• 26.5	
16	258°30.6	82°44.1	24.7	39°11.8	32.2	143°13.3	26.6	260°09.2	26.6	
17	273°33.0	97°43.7	23.5	54°12.6	32.7	158°15.5	26.5	275°11.8	26.7	
18	288°35.5	112°43.3	N03°22.3	69°13.4	S15°33.3	173°17.7	N21°26.5	290°14.4	S03°26.7	
19	303°38.0	127°42.9	21.2	84°14.2	33.8	188°19.9	26.5	305°17.1	26.8	
20	318°40.4	142°42.5	20.0	99°14.9	34.4	203°22.0	26.4	320°19.7	26.9	
21	333°42.9	157°42.1	•• 18.8	114°15.7	•• 35.0	218°24.2	•• 26.4	335°22.3	•• 27.0	
22	348°45.4	172°41.7	17.6	129°16.5	35.5	233°26.4	26.3	350°24.9	27.0	
23	3°47.8	187°41.3	16.4	144°17.2	36.1	248°28.6	26.3	5°27.6	27.1	
Mer.pass.:22:45			v-0.4 d-1.2 m-3.8		v0.8 d-0.6 m1.5		v2.2 d-0.0 m-2.0		v2.6 d-0.1 m0.7	

	SHA	Dec
Alpheratz	357°33.8	29°14.1
Ankaa	353°06.1	-42°09.9
Schedar	349°29.8	56°40.8
Diphda	348°46.4	-17°50.6
Achernar	335°19.1	-57°06.2
Hamal	327°50.2	23°35.2
Polaris	313°19.3	89°22.2
Acamar	315°10.9	-40°11.8
Menkar	314°05.2	4°11.6
Mirfak	308°27.0	49°57.1
Aldebaran	290°38.7	16°33.7
Rigel	281°03.1	-8°10.1
Capella	280°20.8	46°01.3
Bellatrix	278°22.1	6°22.5
Elath	278°01.0	28°37.7
Anilam	275°37.0	-1°11.0
Betelgeuse	270°51.3	7°24.8
Canopus	263°52.0	-52°42.2
Sirius	258°25.7	-16°44.8
Procyon	255°05.4	-29°00.1
Adhara	244°50.3	5°09.7
Pollux	243°16.6	27°57.8
Avior	234°14.7	-59°35.1
Suhail	222°46.1	-43°31.9
Miaplacidus	221°38.7	-69°49.0
Alphard	217°47.4	-8°46.0
Regulus	207°34.0	11°50.6
Dubhe	193°40.6	61°36.6
Denebola	182°24.6	14°25.8
Gienah	175°43.3	-17°41.0
Acrux	173°00.2	63°14.4
Gacrux	171°51.6	-57°15.4
Alioth	166°13.0	55°49.2
Spica	158°22.0	-11°17.7
Alkaid	152°52.0	49°11.2
Hadar	148°35.8	-60°29.9
Menkent	147°57.3	-36°29.8
Arcturus	145°47.7	19°03.0
Rigil Kent.	139°40.1	-60°56.6
Kochab	137°20.8	74°03.1
Zuben'ubi	136°55.7	-16°08.9
Alphecca	126°03.5	26°37.8
Antares	112°15.3	-26°29.4
Atria	107°09.3	-69°04.6
Sabik	102°02.3	-15°45.4
Shaula	96°09.7	-37°07.4
Rasalhague	95°58.1	12°32.6
Eltanin	90°42.1	51°29.4
Kaus Aust.	83°31.9	34°22.4
Vega	80°32.8	38°48.7
Nunki	75°47.0	-26°15.9
Altair	61°59.3	8°56.3
Peacock	53°04.6	-56°39.3
Deneb	49°25.2	45°22.6
Enif	33°38.0	9°58.8
Al Na'ir	27°31.8	-46°50.2
Fomalhaut	15°13.5	-29°29.1
Scheat	13°44.3	28°13.6
Markab	13°29.0	15°20.8

Dubhe	193°40.8	61°36'66"
Denebola	182°24.6	24°25'8"
Gienah	175°43.3	-17°41'0"
Acrux	173°00.2	-63°14'4"
Gacrux	171°51.6	-57°15'4"
Alioth	166°13.0	55°49'2"
Spica	158°22.0	-11°17'7"
Alkaid	152°52.0	49°11'2"
Hadar	148°35.8	-60°29'9"
Menken	147°57.3	-36°29'8"
Arcturus	145°47.0	19°03'0"
Rigel Kent.	139°40.1	-60°56'6"
Kochab	137°20.8	74°03'1"
Zuben ubi	136°55.7	-16°08'9"
Alphecca	126°03.5	26°37'8"
Antares	112°15.3	-26°29'4"
Atria	107°09.3	-69°04'6"
Sabik	102°02.3	-15°45'4"
Shaula	96°09.9	-37°07'4"
Rasalhague	95°58.1	12°32'6"
Eltanin	90°42.1	51°29'4"
Kaus Aus.	83°31.8	-34°22'4"
Vega	80°32.9	38°47'7"
Nunki	75°47.0	-26°15'9"
Altair	61°59.3	8°56'3"
Peacock	53°04.6	-56°39'3"
Deneb	49°25.2	45°22'6"
Enif	33°38.0	9°59'8"
Al Na'ir	27°31.8	-46°50'2"
Fomalhaut	15°13.5	-29°29'1"
Scheat	13°44.3	28°13'6"
Makrab	13°29.0	15°20'8"

Aries			Venus			Mars			Jupiter			Saturn		
Fri	GHA		GHA	Dec		GHA	Dec		GHA	Dec		GHA	Dec	
0	18°50.3		202°40.9	N03°15.2		159°18.0	S15°36.6		263°30.8	N21°26.3		20°30.2	S03°27.2	
1	33°52.8		217°40.5	14.0		174°18.8	37.2		278°33.0	26.2		35°32.8	27.2	
2	48°55.2		232°40.1	12.8		189°19.5	37.3		293°35.2	26.2		50°35.5	27.3	
3	63°57.7		247°39.7	•• 11.6		204°20.3	•• 38.3		308°37.4	•• 26.2		65°38.1	•• 27.4	
4	79°00.1		262°39.4	10.4		219°21.1	38.8		323°39.6	26.1		80°40.7	27.4	
5	94°02.6		277°39.0	09.2		234°21.8	39.4		338°41.8	26.1		95°43.3	27.5	
6	109°05.1		292°38.6	N03°08.0		249°22.6	S15°39.9		353°44.0	N21°26.0		110°46.0	S03°27.6	
7	124°07.5		307°38.2	06.8		264°23.4	40.5		8°46.2	26.0		125°48.6	27.6	
8	139°10.0		322°37.8	05.6		279°24.1	41.0		23°48.5	26.0		140°51.2	27.7	
9	154°12.5		337°37.4	•• 04.4		294°24.9	•• 41.6		38°50.7	•• 25.9		155°53.8	•• 27.8	
10	169°14.9		352°37.0	03.2		309°25.7	42.1		53°52.9	25.9		170°56.5	27.8	
11	184°17.4		7°36.6	02.0		324°26.4	42.7		68°55.1	25.9		185°59.1	27.9	
12	199°19.9		22°36.2	N03°00.8		339°27.2	S15°43.2		83°57.3	N21°25.8		201°01.7	S03°28.0	
13	214°22.3		37°35.8	02°59.6		354°27.9	43.8		98°59.5	25.8		216°04.3	28.0	
14	229°24.8		52°35.4	58.4		9°28.7	44.4		114°01.7	25.7		231°07.0	28.1	
15	244°27.2		67°35.0	•• 57.2		24°29.5	•• 44.9		129°03.9	•• 25.7		246°09.6	•• 28.2	
16	259°29.7		82°34.6	56.0		39°30.2	45.5		144°06.1	25.7		261°12.2	28.2	
17	274°32.2		97°34.2	54.8		54°31.0	46.0		159°08.3	25.6		276°14.8	28.3	
18	289°34.6		112°33.8	N02°53.6		69°31.8	S15°46.6		174°10.5	N21°25.6		291°17.5	S03°28.4	
19	304°37.1		127°33.5	52.4		84°32.5	47.1		189°12.7	25.6		306°20.1	28.4	
20	319°39.6		142°33.1	51.2		99°33.3	47.7		204°14.9	•• 25.5		321°22.7	28.5	
21	334°42.0		157°32.7	•• 50.0		114°34.1	•• 48.2		219°17.1	•• 25.5		336°25.3	•• 28.6	
22	349°44.5		172°32.3	48.8		129°34.8	48.8		234°19.3	25.5		351°28.0	28.6	
23	4°47.0		187°31.9	47.6		144°35.6	49.3		249°21.5	25.4		6°30.6	28.7	
Mer.pass.:22:41			v-0.4 d-1.2 m-3.8			v0.8 d-0.6 m1.5			v2.2 d-0.0 m-2.0			v2.6 d-0.1 m0.7		

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	19°49.4	202°31.5	N02°46.4	159°36.3	S15°49.9	264°23.7	N21°25.4	21°33.2	S03°28.8					
1	34°51.9	217°31.1	45.2	174°37.1	50.4	279°25.9	25.3	36°35.8	28.8					
2	49°54.4	232°30.7	44.0	189°37.9	51.0	294°28.1	25.3	51°38.5	28.9					
3	64°56.8	247°30.3	•• 42.8	204°38.6	•• 51.5	309°30.3	•• 25.3	66°41.1	•• 29.0					
4	79°59.3	262°29.9	41.6	219°39.4	52.0	324°32.5	25.2	81°43.7	29.0					
5	95°01.7	277°29.5	40.4	234°40.1	52.6	339°34.8	25.2	96°46.3	29.1					
6	110°04.2	292°29.1	N02°39.2	249°40.9	S15°53.1	354°37.0	N21°25.2	111°49.0	S03°29.2					
7	125°06.7	307°28.7	38.0	264°41.7	53.7	9°39.2	25.1	126°51.6	29.2					
8	140°09.1	322°28.4	36.8	279°42.4	54.2	24°41.4	25.1	141°54.2	29.3					
9	155°11.6	337°28.0	•• 35.6	294°43.2	•• 54.8	39°43.6	•• 25.1	156°56.8	•• 29.4					
10	170°14.1	352°27.6	34.4	309°43.9	55.3	54°45.8	25.0	171°59.5	29.4					
11	185°16.5	7°27.2	33.2	324°44.7	55.9	69°48.0	25.0	187°02.1	29.5					
12	200°19.0	22°36.8	N02°32.0	339°45.5	S15°56.4	84°50.2	N21°24.9	202°04.7	S03°29.6					
13	215°21.5	37°26.4	30.8	354°46.2	57.0	99°52.4	24.9	217°07.3	29.6					
14	230°23.9	52°26.0	29.5	9°47.0	57.5	114°54.6	24.9	232°10.9	29.7					
15	245°26.4	67°25.6	•• 28.3	24°47.7	•• 58.1	129°56.8	•• 24.8	247°12.6	•• 29.8					
16	260°28.9	82°25.2	27.1	39°48.5	58.6	144°59.1	24.8	262°15.2	29.8					
17	275°31.3	97°24.8	25.9	54°49.2	59.2	160°01.3	24.8	277°17.8	29.9					
18	290°33.8	112°24.4	N02°24.7	69°50.0	S15°59.7	175°03.5	N21°24.7	292°20.5	S03°30.0					
19	305°36.2	127°24.0	23.5	84°50.8	16°00.3	190°05.7	24.7	307°23.1	30.0					
20	320°38.7	142°23.7	22.3	99°51.5	00.8	205°07.9	24.7	322°25.7	30.1					
21	335°41.2	157°23.3	•• 21.1	114°52.3	•• 01.3	220°10.1	•• 24.6	337°28.3	•• 30.2					
22	350°43.6	172°22.9	19.9	129°53.0	01.9	235°12.3	24.6	352°31.0	30.2					
23	5°46.1	187°22.5	18.7	144°53.8	02.4	250°14.5	24.6	7°33.6	30.3					
Mer.pass.:22:37			v-0.4 d-1.2 m-3.8			v0.8 d-0.5 m1.5			v2.2 d-0.0 m-2.0			v2.6 d-0.1 m0.7		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	20°48.6	202°22.1	N02°17.5	159°54.5	S16°03.0	265°16.8	N21°24.5	22°36.2	S03°30.4					
1	35°51.0	217°21.7	16.3	174°55.3	03.5	280°19.0	24.5	37°38.8	30.4					
2	50°53.5	232°21.3	15.1	189°56.0	04.1	295°21.2	24.4	52°41.4	30.5					
3	65°56.0	247°20.9	•• 13.9	204°56.8	•• 04.6	310°23.4	•• 24.4	67°44.1	•• 30.5					
4	80°58.4	262°20.5	12.7	219°57.5	05.2	325°25.6	24.4	82°46.7	30.6					
5	96°00.9	277°20.1	11.5	234°58.3	05.7	340°27.8	24.3	97°49.3	30.7					
6	111°03.4	292°19.7	N02°10.3	249°59.1	S16°06.2	355°30.0	N21°24.3	112°51.9	S03°30.7					
7	126°05.8	307°19.3	09.0	264°59.8	06.8	10°32.3	24.3	127°54.6	30.8					
8	141°08.3	322°19.0	07.8	280°00.6	07.3	25°34.5	24.2	142°57.2	30.9					
9	156°10.7	337°18.6	•• 06.6	295°01.3	•• 07.9	40°36.7	•• 24.2	157°59.8	•• 30.9					
10	171°13.2	352°18.2	05.4	310°02.1	08.4	55°38.9	24.2	173°02.4	31.0					
11	186°15.7	7°17.8	04.2	325°02.8	08.0	70°41.1	24.1	188°05.0	31.1					
12	201°18.1	22°17.4	N02°03.0	340°03.6	S16°09.5	85°43.3	N21°24.1	203°07.7	S03°31.1					
13	216°20.6	37°17.0	01.8	355°04.3	10.0	100°45.6	24.1	218°10.3	31.2					
14	231°23.1	52°16.6	02°00.6	10°05.1	10.6	115°47.8	24.0	233°12.9	31.3					
15	246°25.5	67°16.2	01°59.4	25°05.8	•• 11.1	130°50.0	•• 24.0	248°15.5	•• 31.3					
16	261°28.0	82°15.8	58.2	40°06.6	11.7	145°52.2	24.0	263°18.2	31.4					
17	276°30.5	97°15.4	57.0	55°07.3	12.2	160°54.4	23.9	278°20.8	31.5					
18	291°32.9	112°15.0	N01°55.8	70°08.1	S16°12.8	175°56.7	N21°23.9	293°23.4	S03°31.5					
19	306°35.4	127°14.7	54.6	85°08.8	13.8	190°58.9	23.9	308°26.0	31.6					
20	321°37.9	142°14.3	53.3	100°09.6	13.8	206°01.1	23.8	323°28.6	31.7					
21	336°40.3	157°13.9	•• 52.1	115°10.3	•• 14.4	221°03.3	•• 23.8	338°31.3	•• 31.7					
22	351°42.8	172°13.5	50.9	130°11.1	14.9	236°05.5	23.7	353°33.9	31.8					
23	6°45.2	187°13.1	49.7	145°11.8	15.5	251°07.8	23.7	8°36.5	31.8					
Mer.pass.:22:33			v-0.4 d-1.2 m-3.8			v0.8 d-0.5 m1.5			v2.2 d-0.0 m-2.1			v2.6 d-0.1 m0.8		

Stars		
SHA	Dec	
Alpheratz	357°33.8	29°14.1
Ankaa	353°06.1	-42°09.9
Schedar	349°29.8	56°40.9
Diphda	348°46.3	-17°50.6
Achernar	335°19.1	-57°06.2
Hamal	327°60.2	23°35.2
Polaris	313°18.0	89°22.2
Acamar	315°10.9	-40°11.8
Menkar	314°05.2	4°11.6
Mirfak	308°27.0	49°57.1
Aldebaran	290°38.7	16°33.7
Rigel	281°03.1	-8°10.1
Capella	280°20.8	46°01.3
Bellatrix	278°22.1	6°22.5
Elnath	278°09.9	28°37.7
Alnilam	275°31.0	-1°11.0
Betelgeuse	270°51.3	7°24.8
Canopus	263°52.0	-52°42.2
Sirius	258°25.7	-16°44.8
Adhara	255°05.4	-29°00.1
Procyon	244°50.2	5°09.6
Pollux	243°16.6	27°57.8
Avior	234°14.7	-59°35.1
Suhail	222°46.1	-43°31.9
Miaplacidus	221°38.6	-69°49.0
Alphard	217°47.3	-8°46.0
Regulus	207°34.0	11°50.5
Dubhe	193°40.8	61°36.6
Denebola	182°24.6	14°25.8
Gienah	175°43.3	-17°41.0
Acrux	173°00.2	-63°14.4
Gacrux	171°61.6	-57°15.3
Alioth	166°13.0	55°49.2
Spica	158°22.0	-11°17.7
Alkaid	152°52.0	49°11.1
Hadar	148°35.8	-60°29.8
Menkent	147°57.3	-36°29.8
Arcturus	145°47.4	19°03.0
Rigel Kent.	139°40.1	-60°56.6
Kochab	137°20.8	74°03.0
Zuben'ubi	136°55.7	-16°08.9
Alphecca	126°03.5	26°37.8
Antares	112°15.3	-26°29.4
Atria	107°09.3	-69°04.6
Sabik	102°02.3	-15°45.4
Shaula	96°09.7	-37°07.4
Rasalhague	95°58.1	12°32.6
Eltanin	90°42.1	51°29.4
Kaus Aust.	83°31.8	-34°22.4
Vega	80°32.9	38°48.7
Nunki	75°47.0	-26°15.9
Altair	61°59.3	8°56.3
Peacock	53°04.6	-56°39.3
Deneb	49°25.2	45°22.6
Enif	33°38.0	9°59.8
Al Na'ir	27°31.8	-46°50.2
Fomalhaut	15°13.5	-29°29.1
Scheat	13°44.3	28°13.6
Markab	13°29.0	15°20.8

Dubhe	193°40.6	61°36.6
Denebola	182°24.8	14°25.8
Gienah	175°40.3	-17°41.0
Acrux	173°03.2	-63°14.4
Gacrux	171°51.6	-57°15.3
Alioth	166°13.0	55°49.2
Spica	158°22.0	-11°17.7
Alkaid	152°52.0	49°11.1
Hadar	148°35.8	-60°29.8
Menkent	147°57.3	-36°29.8
Arcturus	145°47.7	19°03.0
Rigel Kent.	139°40.1	-60°56.6
Kochab	137°20.8	74°03.0
Zuben ubi	136°55.7	-16°08.9
Alphecca	126°03.5	26°37.8
Antares	112°15.3	-26°29.4
Atria	107°09.3	-69°04.6
Sabik	102°02.3	-15°45.4
Shaula	96°09.7	-37°07.4
Rasalhague	95°58.1	12°32.6
Eltanin	90°42.1	51°29.4
Kaus Aust.	83°31.8	-34°22.4
Vega	80°32.9	38°47.8
Nunki	75°47.0	-26°15.9
Altair	61°59.3	8°56.3
Peacock	53°04.6	-56°39.3
Deneb	49°25.2	45°22.6
Enif	33°38.0	9°59.8
Al Na'ir	27°31.8	-46°50.2
Fomalhaut	15°13.5	-29°29.1
Scheat	13°44.3	28°13.6
Markab	13°29.0	15°20.8

Aries		Venus		Mars		Jupiter		Saturn	
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	21°47.7	202°12.7	N01°48.5	160°12.6	S16°16.0	266°10.0	N21°23.7	23°39.1	S03°31.9
1	36°50.2	217°12.3	47.3	175°13.3	16.5	281°12.2	23.6	38°41.8	32.0
2	51°52.6	232°11.9	46.1	190°14.1	17.1	296°14.4	23.6	53°44.4	32.0
3	66°55.1	247°11.5	•• 44.9	205°14.8	•• 17.6	311°16.6	•• 23.6	68°47.0	•• 32.1
4	81°57.6	262°11.1	43.7	220°15.6	18.2	326°18.9	23.5	83°49.6	32.2
5	97°00.0	277°10.7	42.5	235°16.3	18.7	341°21.1	23.5	98°52.2	32.2
6	112°02.5	292°10.4	N01°41.2	250°17.1	S16°19.2	356°23.3	N21°23.5	113°54.9	S03°32.3
7	127°05.0	307°10.0	40.0	265°17.8	19.8	371°25.5	23.4	128°57.5	32.4
8	142°07.4	322°09.6	38.8	280°18.5	20.3	267°27.7	23.4	144°00.1	32.4
9	157°09.9	337°09.2	•• 37.6	295°19.3	•• 20.9	41°30.0	•• 23.4	159°02.7	•• 32.5
10	172°12.3	352°08.8	36.4	310°20.0	21.4	56°32.2	23.3	174°05.3	32.6
11	187°14.8	7°08.4	35.2	325°20.8	21.9	71°34.4	23.3	189°08.0	32.6
12	202°17.3	22°08.0	N01°34.0	340°21.5	S16°22.5	86°36.6	N21°23.3	204°10.6	S03°32.7
13	217°19.7	37°07.6	32.8	355°22.3	23.0	101°38.9	23.2	219°13.2	32.7
14	232°22.2	52°07.2	31.5	10°23.0	23.5	116°41.1	23.2	234°15.8	32.8
15	247°24.7	67°06.8	•• 30.3	25°23.8	•• 24.1	131°43.3	•• 23.2	249°18.4	•• 32.9
16	262°27.1	82°06.4	29.1	40°24.5	24.6	146°45.5	23.1	264°21.1	32.9
17	277°29.6	97°06.1	27.9	55°25.3	25.2	161°47.8	23.1	279°23.7	33.0
18	292°32.1	112°05.7	N01°26.7	70°26.0	S16°25.7	176°50.0	N21°23.1	294°26.3	S03°33.1
19	307°34.5	127°05.3	25.5	85°26.7	26.2	191°52.2	23.0	309°28.9	33.1
20	322°37.0	142°04.9	24.3	100°27.5	26.8	206°54.5	•• 23.0	324°31.5	33.2
21	337°39.5	157°04.5	•• 23.1	115°28.2	•• 27.3	221°56.7	•• 23.0	339°34.2	•• 33.3
22	352°41.9	172°04.1	21.8	130°29.0	27.8	236°58.9	22.9	354°36.8	33.3
23	7°44.4	187°03.7	20.6	145°29.7	28.4	252°01.1	22.9	9°39.4	33.4
Mer.pass.:22:29		v-0.4 d-1.2 m-3.8		v0.7 d-0.5 m1.5		v2.2 d-0.0 m-2.1		v2.6 d-0.1 m0.8	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	22°46.8	202°03.3	N01°19.4	160°30.5	S16°28.9	267°03.4	N21°22.9	24°42.0	S03°33.4
1	37°49.3	217°02.9	18.2	175°31.2	29.4	282°05.6	22.8	39°44.6	33.5
2	52°51.8	232°02.5	17.0	190°31.9	30.0	297°07.8	22.8	54°47.3	33.6
3	67°54.2	247°02.2	•• 15.8	205°32.7	•• 30.5	312°10.0	•• 22.8	69°49.9	•• 33.6
4	82°56.2	262°01.8	14.6	220°33.4	31.0	327°12.3	22.7	84°52.5	33.7
5	97°59.7	277°01.4	13.4	235°34.2	31.6	342°14.5	22.7	99°55.1	33.8
6	113°01.6	292°01.0	N01°12.1	250°34.9	S16°32.1	357°16.7	N21°22.7	114°57.7	S03°33.8
7	128°04.1	307°00.6	10.9	265°35.6	32.7	12°19.0	22.6	130°00.4	33.9
8	143°06.6	322°00.2	09.7	280°36.4	33.2	27°21.2	22.6	145°03.0	34.0
9	158°09.0	336°59.8	•• 08.5	295°37.1	•• 33.7	42°23.4	•• 22.6	160°05.6	•• 34.0
10	173°11.5	351°59.7	07.3	310°37.9	34.3	57°25.7	22.5	175°08.2	34.1
11	188°14.0	6°59.0	06.1	325°38.6	34.8	72°27.9	22.5	190°10.8	34.1
12	203°16.4	21°58.6	N01°04.9	340°39.3	S16°35.3	87°30.1	N21°22.5	205°13.4	S03°34.2
13	218°18.9	36°58.2	03.6	355°40.1	35.9	102°32.4	22.4	220°16.1	34.3
14	233°21.3	51°57.9	02.4	10°40.8	36.4	117°34.6	22.4	235°18.7	34.3
15	248°23.8	66°57.5	•• 01.2	25°41.6	•• 36.9	132°36.8	•• 22.4	250°21.3	•• 34.4
16	263°26.3	81°57.1	01°00.0	40°42.3	37.4	147°39.0	22.3	265°23.9	34.5
17	278°28.7	96°56.7	00°58.8	55°43.0	38.0	162°41.3	22.3	280°26.5	34.5
18	293°31.2	111°56.3	N00°57.6	70°43.8	S16°38.5	177°43.5	N21°22.3	295°29.2	S03°34.6
19	308°33.7	126°55.9	56.3	85°44.5	39.0	192°45.8	22.2	310°31.8	34.6
20	323°36.1	141°55.5	55.1	100°45.2	39.6	207°48.0	22.2	325°34.4	34.7
21	338°38.6	156°55.1	•• 53.9	115°46.0	•• 40.1	222°50.2	•• 22.2	340°37.0	•• 34.8
22	353°41.1	171°54.7	52.7	130°46.7	40.2	237°52.5	22.1	355°39.6	34.8
23	8°43.5	186°54.3	51.5	145°47.4	41.6	252°54.7	22.1	10°42.2	34.9
Mer.pass.:22:25		v-0.4 d-1.2 m-3.8		v0.7 d-0.5 m1.5		v2.2 d-0.0 m-2.1		v2.6 d-0.1 m0.8	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	23°46.0	201°53.9	N00°50.3	160°48.2	S16°41.7	267°56.9	N21°22.1	25°44.9	S03°35.0
1	38°48.5	216°53.6	49.1	175°48.9	42.2	282°59.2	22.1	40°47.5	35.0
2	53°50.9	231°53.2	47.8	190°49.7	42.8	298°01.4	22.0	55°50.1	35.1
3	68°53.4	246°52.8	•• 46.6	205°50.4	•• 43.3	313°03.6	•• 22.0	70°52.7	•• 35.1
4	83°55.8	261°52.4	45.4	220°51.1	43.8	328°05.9	22.0	85°55.3	35.2
5	98°58.3	276°52.0	44.2	235°51.9	44.3	343°08.1	21.9	100°58.0	35.3
6	114°00.8	291°51.6	N00°43.0	250°52.6	S16°44.9	358°10.3	N21°21.9	116°00.6	S03°35.3
7	129°03.2	306°51.2	41.8	265°53.3	45.4	13°12.6	21.9	131°03.2	35.4
8	144°05.7	321°50.8	40.5	280°54.1	45.9	28°14.8	21.8	146°05.5	35.5
9	159°08.2	336°50.0	•• 39.3	295°54.8	•• 46.5	43°17.1	•• 21.8	161°08.4	•• 35.5
10	174°10.6	351°50.4	38.1	310°55.5	47.0	58°19.3	21.8	176°11.0	35.6
11	189°13.1	6°49.7	36.9	325°56.3	47.5	73°21.5	21.7	191°13.7	35.6
12	204°15.6	21°49.3	N00°35.7	340°57.0	S16°48.0	88°23.8	N21°21.7	206°16.3	S03°35.7
13	219°18.0	36°48.9	34.4	355°57.7	48.6	103°26.0	21.7	221°18.9	35.8
14	234°20.5	51°48.5	33.2	10°58.5	49.1	118°28.3	21.6	236°21.5	35.8
15	249°22.9	66°48.1	•• 32.0	25°59.2	•• 49.6	133°30.5	•• 21.6	251°24.1	•• 35.9
16	264°25.4	81°47.7	30.8	40°59.9	50.2	148°32.7	21.6	266°26.7	36.0
17	279°27.9	96°47.3	29.6	56°00.6	50.7	163°35.0	21.5	281°29.3	36.0
18	294°30.3	111°46.9	N00°28.4	71°01.4	S16°51.2	178°37.2	N21°21.5	296°32.0	S03°36.1
19	309°32.8	126°46.5	27.1	86°02.1	51.7	193°39.5	21.5	311°34.6	36.1
20	324°35.3	141°46.1	25.9	101°02.8	52.3	208°41.7	21.4	326°37.2	36.2
21	339°37.7	156°45.7	•• 24.7	116°03.6	•• 52.8	223°43.9	•• 21.4	341°39.8	•• 36.3
22	354°40.2	171°45.3	23.5	131°04.3	53.3	238°46.2	21.4	356°42.4	36.3
23	9°42.7	186°45.0	22.3	146°05.0	53.8	253°48.4	21.4	11°45.0	36.4
Mer.pass.:22:21		v-0.4 d-1.2 m-3.8		v0.7 d-0.5 m1.5		v2.2 d-0.0 m-2.1		v2.6 d-0.1 m0.8	

SHA	Dec
Alpheratz	357°33.8 29°14.2
Ankaa	353°06.1 -42°09.9
Schedar	349°29.8 56°40.9
Diphda	348°46.3 -17°50.6
Achernar	335°19.1 -57°06.2
Hamal	327°50.2 23°35.2
Polaris	313°16.9 89°22.2
Acamar	315°10.9 -40°11.9
Menkar	314°05.2 4°11.6
Mirfak	308°26.9 49°57.1
Aldebaran	290°38.7 16°33.7
Rigel	281°03.1 -8°10.1
Capella	280°20.7 46°01.3
Bellatrix	278°22.0 6°22.5
Elath	278°00.9 28°37.7
Anilam	275°36.9 -1°12.0
Betelgeuse	270°51.3 7°24.8
Canopus	263°52.0 -52°42.2
Sirius	258°25.6 -16°44.8
Adhara	255°05.3 -29°00.1
Procyon	244°50.2 5°09.6
Pollux	234°16.6 27°57.8
Avior	243°14.6 -59°35.1
Suhail	222°46.1 -43°31.9
Miaplacidus	221°38.6 -69°49.0
Alphard	217°47.3 -8°46.0
Regulus	207°34.0 11°50.5
Dubhe	193°40.7 61°36.6
Denebola	182°24.6 14°25.7
Gienah	175°43.3 -17°41.0
Acrux	173°00.1 -63°14.4
Gacrux	171°51.6 -57°15.3
Alioth	166°13.0 55°49.2
Spica	158°22.0 -11°17.7
Alkaid	152°52.0 49°11.8
Hadar	148°35.8 -60°29.8
Menkent	147°57.3 -36°29.8
Arcturus	145°47.7 19°03.0
Rigel Cent.	139°40.1 -60°56.6
Kochab	137°20.8 74°03.0
Zuben'ubi	136°55.6 -16°08.9
Alphecca	126°03.5 26°37.8
Antares	112°15.3 -26°29.4
Atria	107°03.9 -69°04.6
Sabik	102°02.3 -15°45.4
Shaula	96°09.7 -37°07.4
Rasalhague	95°58.1 12°32.6
Eltanin	90°42.1 51°29.4
Kaus Aust.	83°31.9 34°22.4
Vega	80°32.9 38°48.7
Nunki	75°47.0 -26°15.9
Altair	61°59.3 8°56.3
Peacock	53°04.6 -56°39.3
Deneb	49°25.3 45°22.6
Enif	33°38.0 9°59.8
Al Na'ir	27°31.8 -46°50.2
Fomalhaut	15°13.5 -29°29.1
Scheat	13°44.3 28°13.6
Markab	13°29.0 15°20.8

SHA	Dec
Oct 13 Sun	Mer.pass
Venus	180°25.0 10:31
Mars	138°24.9 13:18
Jupiter	244°22.3 06:14
Saturn	1°51.4 22:21
Oct 14 Tue	Mer.pass
Venus	179°16.5 10:32
Mars	137°43.6 13:17
Jupiter	244°16.5 06:11
Saturn	1°55.2 22:17
Oct 15 Wed	Mer.pass
Venus	178°08.0 10:33
Mars	137°02.2 13:16
Jupiter	244°10.9 06:10
Saturn	1°58.9 22:13

Horizontal parallax	
Venus:	0.1
Mars:	0.1

Sun		Moon			
Mon	GHA	Dec	GHA	ν	Dec
0	183°24.7	S07°47.1	280°17.2	4.4'	N27°51.3
1	198°24.8	48.1	294°40.6	4.5'	27°47.3
2	213°25.0	49.0	309°04.2	4.6'	27°43.0
3	228°25.1	•• 49.9	323°27.8	4.7'	27°38.6
4	243°25.3	50.9	337°51.6	4.8'	27°34.1
5	258°25.4	51.8	352°15.4	4.9'	27°29.3
6	273°25.6	S07°52.7	6°39.4	5.0'	N27°24.4
7	288°25.7	53.7	21°03.4	5.1'	27°19.3

	Aries			Venus			Mars			Jupiter			Saturn		
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	24°45.1	201°44.6	N00°21.1	161°05.8	S16°54.4	268°50.7	N21°21.3	26°47.7	S03°36.4						
1	39°47.6	216°44.2		19.8	176°06.5	54.9	283°52.9	21.3	41°50.3	36.5					
2	54°50.1	231°43.8		18.6	191°07.2	55.4	298°55.2	21.3	56°52.9	36.6					
3	69°52.5	246°43.4	•• 17.4	206°07.9	•• 55.9	313°57.4	•• 21.2	71°55.5	•• 36.6						
4	84°55.0	261°43.0		16.2	221°08.7	56.5	328°59.6	21.2	86°58.1	36.7					
5	99°57.4	276°42.6		15.0	236°09.4	57.0	344°01.9	21.2	102°00.7	36.8					
6	114°59.9	291°42.2	N00°13.7	251°10.1	S16°57.5	359°04.1	N21°21.1	117°03.3	S03°36.8						
7	130°02.4	306°41.8		12.5	266°10.9	58.0	14°06.4	21.1	132°06.0	36.9					
8	145°04.8	321°41.4		11.3	281°11.6	58.6	29°08.6	21.1	147°08.6	36.9					
9	160°07.3	336°41.0	•• 10.1	296°12.3	•• 59.1	44°10.9	•• 21.0	162°11.2	•• 37.0						
10	175°09.8	351°40.7		08.9	311°13.0	16°59.6	59°13.1	21.0	177°13.8	37.1					
11	190°12.2	6°40.3		07.6	326°13.8	17°00.1	74°15.4	21.0	192°16.4	37.1					
12	205°14.7	21°39.9	N00°06.4	341°14.5	S17°00.7	89°17.6	N21°21.0	207°19.0	S03°37.2						
13	220°17.2	36°39.5		05.2	356°15.2	01.2	104°19.8	20.9	222°21.6	37.2					
14	235°19.6	51°39.1		04.0	11°15.9	01.7	119°22.1	20.9	237°24.3	37.3					
15	250°22.1	66°38.7	•• 02.8	26°16.7	•• 02.2	134°24.3	•• 20.9	252°26.9	•• 37.4						
16	265°24.5	81°38.3		01.5	41°17.4	02.7	149°26.6	20.8	267°29.5	37.4					
17	280°27.0	96°37.9	N00°00.3	56°18.1	03.3	164°28.8	20.8	282°32.1	37.5						
18	295°29.5	111°37.5	S00°00.9	71°18.8	S17°03.8	179°31.1	N21°20.8	297°34.7	S03°37.5						
19	310°31.9	126°37.1		02.1	86°19.6	04.3	194°33.3	20.7	312°37.3	37.6					
20	325°34.4	141°36.7		03.3	101°20.3	04.8	209°35.6	20.7	327°39.9	37.7					
21	340°36.9	156°36.3	•• 04.6	116°21.0	•• 05.4	224°37.8	•• 20.7	342°42.6	•• 37.7						
22	355°39.3	171°36.0		05.8	131°21.7	05.9	239°40.1	20.7	357°45.2	37.8					
23	10°41.8	186°35.6		07.0	146°22.5	06.4	254°42.3	20.6	12°47.8	37.8					
Mer.pass.:22:17			v-0.4 d-1.2 m-3.8			v0.7 d-0.5 m1.5			v2.2 d-0.0 m-2.1			v2.6 d-0.1 m0.8			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	25°44.3	201°35.2	S00°08.2	161°23.2	S17°06.9	269°44.6	N21°20.6	27°50.4	S03°37.9
1	40°46.7	216°34.8	09.4	176°23.9	07.4	284°46.8	20.6	42°53.0	38.0
2	55°49.2	231°34.4	10.7	191°24.6	08.0	299°49.1	20.5	57°55.6	38.0
3	70°51.7	246°34.0	•• 11.9	206°25.3	•• 08.5	314°51.3	•• 20.5	72°58.2	•• 38.1
4	85°54.1	261°33.6	13.1	221°26.1	09.0	329°53.6	20.5	88°00.8	38.1
5	100°56.6	276°33.2	14.3	236°26.8	09.5	344°55.8	20.4	103°03.5	38.2
6	115°59.0	291°32.8	S00°15.5	251°27.5	S17°10.0	359°58.1	N21°20.4	118°06.1	S03°38.3
7	131°01.5	306°32.4	16.8	266°28.2	10.6	15°00.3	20.4	133°08.7	38.3
8	146°04.0	321°32.0	18.0	281°28.9	11.1	30°02.6	20.4	148°11.3	38.4
9	161°06.4	336°31.6	•• 19.2	296°29.7	•• 11.6	45°04.9	•• 20.3	163°13.9	•• 38.4
10	176°08.9	351°31.2	20.4	311°30.4	12.1	60°07.1	20.3	178°16.5	38.5
11	191°11.4	6°30.9	21.6	326°31.1	12.6	75°09.4	20.3	193°19.1	38.6
12	206°13.8	21°30.5	S00°22.9	341°31.8	S17°13.1	90°11.6	N21°20.2	208°21.7	S03°38.6
13	221°16.3	36°30.1	24.1	356°32.5	13.7	105°13.9	20.2	223°24.4	38.7
14	236°18.8	51°29.7	25.3	11°33.3	14.2	120°16.1	20.2	238°27.0	38.7
15	251°21.2	66°29.3	•• 26.5	26°34.0	•• 14.7	135°18.4	•• 20.1	253°29.6	•• 38.8
16	266°23.7	81°28.9	27.7	41°34.7	15.2	150°20.6	20.1	268°32.2	38.9
17	281°26.2	96°28.5	29.0	56°35.4	15.7	165°22.9	20.1	283°34.8	38.9
18	296°28.6	111°28.1	S00°30.2	71°36.1	S17°16.2	180°25.1	N21°20.1	298°37.4	S03°39.0
19	311°31.1	126°27.7	31.4	86°36.9	16.8	195°27.4	20.0	313°40.0	39.0
20	326°33.5	141°27.3	32.6	101°37.6	17.3	210°29.7	20.0	328°42.6	39.1
21	341°36.0	156°26.9	•• 33.9	116°38.3	•• 17.8	225°31.9	•• 20.0	343°45.3	•• 39.2
22	356°38.5	171°26.5	35.1	131°39.0	18.3	240°34.2	19.9	358°47.9	39.2
23	11°40.9	186°26.1	36.3	146°39.7	18.8	255°36.4	19.9	13°50.5	39.3

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	26°43.4	201°25.7	S00°37.5	161°40.4	S17°19.3	270°38.7	N21°19.9	28°53.1	S03°39.3					
1	41°45.9	216°25.4	38.7	176°41.2	19.9	285°40.9	19.9	43°55.7	39.4					
2	56°48.3	231°25.0	40.0	191°41.9	20.4	300°43.2	19.8	58°58.3	39.5					
3	71°50.8	246°24.6	.. 41.2	206°42.6	.. 20.9	315°45.5	.. 19.8	74°00.9	.. 39.5					
4	86°53.3	261°24.2	42.4	221°43.3	21.4	330°47.7	19.8	89°03.5	39.6					
5	101°55.7	276°23.8	43.6	236°44.0	21.9	345°50.0	19.7	104°06.1	39.6					
6	116°58.2	291°23.4	S00°44.8	251°44.7	S17°22.4	0°52.2	N21°19.7	119°08.7	S03°39.7					
7	132°00.6	306°23.0	46.1	266°45.4	22.9	15°54.5	19.7	134°11.4	39.7					
8	147°03.1	321°22.6	47.3	281°46.2	23.5	30°56.8	19.7	149°14.0	39.8					
9	162°05.6	336°22.2	.. 48.5	296°46.9	.. 24.0	45°59.0	.. 19.6	164°16.6	.. 39.9					
10	177°08.0	351°21.8	49.7	311°47.6	24.5	61°01.3	19.6	179°19.2	39.9					
11	192°10.5	6°21.4	51.0	326°48.3	25.0	76°03.5	19.6	194°21.8	40.0					
12	207°13.0	21°21.0	S00°52.2	341°49.0	S17°25.5	91°05.8	N21°19.5	209°24.4	S03°40.0					
13	222°15.4	36°20.6	53.4	356°49.7	26.0	106°08.1	19.5	224°27.0	40.1					
14	237°17.9	51°20.2	54.6	11°50.4	26.5	121°10.3	19.5	239°29.6	40.2					
15	252°20.4	66°19.8	.. 55.8	26°51.1	.. 27.0	136°12.6	.. 19.5	254°32.2	.. 40.2					
16	267°22.8	81°19.4	57.1	41°51.9	27.6	151°14.9	19.4	269°34.8	40.3					
17	282°25.3	96°19.0	58.3	56°52.6	28.1	166°17.1	19.4	284°37.5	40.3					
18	297°27.8	111°18.7	S00°59.5	71°53.3	S17°28.6	181°19.4	N21°19.4	299°40.0	S03°40.4					
19	312°30.2	126°18.3	01°00.7	86°54.0	29.1	196°21.7	19.4	314°42.7	40.4					
20	327°32.7	141°17.9	02.0	101°54.7	29.6	211°23.9	19.3	329°45.3	40.5					
21	342°35.1	156°17.5	.. 03.2	116°55.4	.. 30.1	226°26.2	.. 19.3	344°47.9	.. 40.6					
22	357°37.6	171°17.1	04.4	131°56.1	30.6	241°28.4	19.3	359°50.5	40.6					
23	12°40.1	186°16.7	05.6	146°56.8	31.1	256°30.7	19.2	14°53.1	40.7					
Mer.pass.:22:09			v-0.4 d-1.2 m-3.8			v0.7 d-0.5 m1.5			v2.3 d-0.0 m-2.1			v2.6 d-0.1 m0.8		

Stars		
SHA	Dec	
Alpheratz	357°33.8	29°14.2
Ankaa	353°06.1	-42°09.9
Schedar	349°29.8	56°40.9
Diphda	348°46.3	-17°50.6
Achernar	335°19.1	-57°06.2
Hamal	327°50.2	23°35.2
Polaris	313°16.2	89°22.3
Acamar	315°10.9	-40°11.9
Menkar	314°05.2	4°11.6
Mirfak	308°26.9	49°57.2
Aldebaran	290°38.7	16°33.8
Rigel	281°03.1	-8°10.1
Capella	280°20.7	46°01.3
Bellatrix	278°22.0	6°22.5
Elath	279°09.9	28°37.7
Anilam	275°36.9	-1°11.0
Betelgeuse	270°51.3	7°24.8
Canopus	263°51.9	-52°42.2
Sirius	258°25.6	-16°44.8
Adhara	255°05.3	-29°00.1
Procyon	244°50.2	5°09.6
Pollux	243°16.5	27°57.8
Avior	234°14.6	-59°35.1
Suhail	222°46.0	-43°31.9
Miaplacidus	221°38.6	-69°49.0
Alphard	217°47.3	-8°46.1
Regulus	207°34.0	11°50.5
Dubhe	193°40.7	61°36.6
Denebola	182°24.6	14°25.7
Gienah	175°43.3	-17°41.0
Acrux	173°00.1	-63°14.4
Gacrux	171°51.6	-57°15.3
Alioth	166°12.9	5°49.2
Spica	158°22.0	-11°17.7
Alkaid	152°52.0	49°11.1
Hadar	148°35.8	-60°29.8
Menkent	147°57.3	-36°29.8
Arcturus	145°47.7	19°03.0
Rigel Kent.	139°40.1	-60°56.5
Kochab	137°20.9	74°03.0
Zuben'ubi	136°55.6	-16°08.9
Alphecca	126°03.5	26°37.8
Antares	112°15.3	-26°29.4
Atria	107°09.4	-69°04.6
Sabik	102°02.3	-15°45.4
Shaula	96°09.9	-37°07.4
Rasalhague	95°58.1	12°32.6
Eltanin	90°42.1	51°29.3
Kaus Aua	83°31.8	-34°22.4
Vega	80°32.9	38°48.7
Nunki	75°47.1	-26°15.9
Altair	61°59.3	8°56.3
Pearcock	53°04.6	-56°39.3
Deneb	49°25.3	45°22.6
Enif	37°38.0	9°59.8
Al Na'ir	27°31.8	-46°50.3
Fomalhaut	15°13.5	-29°29.1
Scheat	13°44.3	28°13.6
Markab	13°29.0	15°20.8

Dubhe	193° 40.7	61° 36.6
Denebola	182° 24.6	14° 25.7
Gienah	175° 43.3	-17° 41.0
Acrux	173° 00.1	-63° 14.4
Gacrux	171° 51.6	-57° 15.3
Alioth	166° 12.9	-55° 49.2
Spica	158° 22.0	-11° 17.7
Alkaid	152° 52.0	49° 11.1
Hadar	148° 35.8	-60° 29.8
Menkent	147° 57.3	-36° 29.8
Arcturus	145° 47.7	19° 03.0
Rigil Kent	139° 40.1	-60° 56.5
Kochab	137° 20.9	74° 03.0
Zuben ubi	136° 55.6	-16° 08.9
Alphecca	126° 03.5	26° 37.8
Antares	112° 15.3	-26° 29.4
Atria	107° 09.4	-69° 04.6
Sabik	102° 02.3	-15° 45.4
Shaula	96° 09.7	-37° 07.4
Rasalhague	95° 58.1	12° 32.6
Eltanin	90° 42.1	51° 29.3
Kaus Aust.	83° 31.8	-34° 22.4
Vega	80° 32.9	38° 48.7
Nunki	75° 47.1	-26° 15.9
Altair	61° 59.3	8° 56.3
Peacock	53° 04.6	-56° 39.3
Deneb	49° 25.3	45° 22.6
Enif	33° 38.0	9° 59.8
Al Na'ir	27° 31.8	-46° 50.3
Fomalhaut	15° 13.5	-29° 29.1
Scheat	13° 44.3	28° 13.6
Makrab	13° 29.0	15° 20.8

	Aries	Venus		Mars		Jupiter		Saturn		
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	27°42.5	201°16.3	S01°06.8	161°57.5	S17°31.6	271°33.0	N21°19.2	29°55.7	S03°40.7	
1	42°45.0	216°15.9	08.1	176°58.2	32.1	286°35.2	19.2	44°58.3	40.8	
2	57°47.5	231°15.5	09.3	191°59.0	32.7	301°37.5	19.2	60°00.9	40.8	
3	72°49.9	246°15.1	•• 10.5	206°59.7	•• 33.2	316°39.8	•• 19.1	75°03.5	•• 40.9	
4	87°52.4	261°14.7	11.7	222°00.4	33.7	331°42.0	19.1	90°06.1	41.0	
5	102°54.9	276°14.3	13.0	237°01.1	34.2	346°44.3	19.1	105°08.8	41.0	
6	117°57.3	291°13.9	S01°14.2	252°01.8	S17°34.7	1°46.6	N21°19.0	120°11.4	S03°41.1	
7	132°59.8	306°13.5	15.4	267°02.5	35.2	16°48.8	19.0	135°14.0	41.1	
8	148°02.2	321°13.1	16.6	282°03.2	35.7	31°51.1	19.0	150°16.6	41.2	
9	163°04.7	336°12.7	•• 17.8	297°03.9	•• 36.2	46°53.4	•• 19.0	165°19.2	•• 41.3	
10	178°07.2	351°12.3	19.1	312°04.6	36.7	61°55.6	18.9	180°21.8	41.3	
11	193°09.6	6°11.9	20.3	327°05.3	37.2	76°57.9	18.9	195°24.4	41.4	
12	208°12.1	21°11.5	S01°21.5	342°06.0	S17°37.7	92°00.2	N21°18.9	210°27.0	S03°41.4	
13	223°14.6	36°11.1	22.7	357°06.7	38.2	107°02.5	18.9	225°29.6	41.5	
14	238°17.0	51°10.8	24.0	12°07.4	38.8	122°04.7	18.8	240°32.2	41.5	
15	253°19.5	66°10.4	•• 25.2	27°08.1	•• 39.3	137°07.0	•• 18.8	255°34.8	•• 41.6	
16	268°22.0	81°10.0	26.4	42°08.8	39.8	152°09.3	18.8	270°37.4	41.7	
17	283°24.4	96°09.6	27.6	57°09.6	40.3	167°11.5	18.8	285°40.0	41.7	
18	298°26.9	111°09.2	S01°28.9	72°10.3	S17°40.8	182°13.8	N21°18.7	300°42.7	S03°41.8	
19	313°29.4	126°08.8	30.1	87°11.0	41.3	197°16.1	18.7	315°45.3	41.8	
20	328°31.8	141°08.4	31.3	102°11.7	41.8	212°18.4	18.7	330°47.9	41.9	
21	343°34.3	156°08.0	•• 32.5	117°12.4	•• 42.3	227°20.6	•• 18.6	345°50.5	•• 41.9	
22	358°36.7	171°07.6	33.7	132°13.1	42.8	242°22.9	18.6	•• 53.1	42.0	
23	13°39.2	186°07.2	35.0	147°13.8	43.3	257°25.2	18.6	15°55.7	42.0	
Mer.pass.:22:06			v-0.4 d-1.2 m-3.8		v0.7 d-0.5 m1.5		v2.3 d-0.0 m-2.1		v2.6 d-0.1 m0.8	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	28°44.1	201°06.8	S01°36.2	162°14.5	S17°43.8	272°27.4	N21°18.6	30°58.3	S03°42.1						
1	43°41.7	216°06.4	37.4	177°15.2	44.3	287°29.7	18.5	46°00.9	42.2						
2	58°46.6	231°06.0	38.6	192°15.9	44.8	302°32.0	18.5	61°03.5	42.2						
3	73°49.1	246°05.6	•• 39.9	207°16.6	•• 45.3	317°34.3	•• 18.5	76°06.1	•• 42.3						
4	88°51.5	261°05.2	41.1	222°17.3	45.8	332°36.5	18.5	91°08.7	42.3						
5	103°54.0	276°04.8	42.3	237°18.0	46.3	347°38.8	18.4	106°11.3	42.4						
6	118°56.5	291°04.4	S01°43.5	252°18.7	S17°46.8	2°41.1	N21°18.4	121°13.9	S03°42.4						
7	133°58.9	306°04.0	44.7	267°19.4	47.3	17°43.4	18.4	136°16.5	42.5						
8	149°01.4	321°03.6	46.0	282°20.1	47.8	32°45.6	18.4	151°19.1	42.6						
9	164°03.8	336°03.2	•• 47.2	297°20.8	•• 48.3	47°47.9	•• 18.3	166°21.7	•• 42.6						
10	179°06.3	351°02.8	48.4	312°21.5	48.8	62°50.2	18.3	181°24.3	42.7						
11	194°08.8	•• 02.4	49.6	327°22.2	49.3	77°52.5	18.3	196°26.9	42.7						
12	209°11.2	21°02.0	S01°50.9	342°22.9	S17°49.8	92°54.8	N21°18.3	211°29.6	S03°42.8						
13	224°13.7	36°01.6	52.1	357°23.6	50.3	107°57.0	18.2	226°32.2	42.8						
14	239°16.2	51°01.2	53.3	12°24.3	50.8	122°59.3	18.2	241°34.8	42.9						
15	254°18.6	66°00.8	•• 54.5	27°25.0	•• 51.3	138°01.6	•• 18.2	256°37.4	•• 42.9						
16	269°21.1	81°00.4	55.8	42°25.7	51.8	153°03.9	18.2	271°40.0	43.0						
17	284°23.6	96°00.0	57.0	57°26.4	52.3	168°06.1	18.1	286°42.6	43.1						
18	299°26.0	110°59.6	S01°58.2	72°27.1	S17°52.8	183°08.4	N21°18.1	301°45.2	S03°43.1						
19	314°28.5	125°59.2	01°59.4	87°27.8	53.8	198°10.7	18.1	316°47.8	43.2						
20	329°31.0	140°58.8	02°00.6	102°28.5	53.8	213°13.0	18.1	331°50.4	43.2						
21	344°33.4	155°58.4	•• 01.9	117°29.2	•• 54.3	228°15.3	•• 18.0	346°53.0	•• 43.3						
22	359°35.9	170°58.0	03.1	132°29.9	54.8	243°17.5	18.0	1°55.6	43.3						
23	14°38.3	185°57.6	04.3	147°30.6	55.3	258°19.8	18.0	16°58.2	43.4						
Mer.pass.:22:02			v-0.4 d-1.2 m-3.8			v0.7 d-0.5 m1.5			v2.3 d-0.0 m-2.1			v2.6 d-0.1 m0.8			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	29°40.8	200°57.2	S02°05.5	162°31.3	S17°55.8	273°22.1	N21°18.0	32°00.8	S03°43.4						
1	44°43.3	215°56.8	06.8	177°32.0	56.3	288°24.4	17.9	47°03.4	43.5						
2	59°45.7	230°56.4	08.0	192°32.7	56.8	303°26.7	17.9	62°06.0	43.6						
3	74°48.2	245°56.0	•• 09.2	207°33.4	•• 57.3	318°29.0	•• 17.9	77°08.6	•• 43.6						
4	89°50.7	260°55.6	10.4	222°34.0	57.8	333°31.2	17.9	92°11.2	43.7						
5	104°53.1	275°55.2	11.6	237°34.7	58.3	348°33.5	17.8	107°13.8	43.7						
6	119°55.6	290°54.8	S02°12.9	252°35.4	S17°58.8	3°35.8	N21°17.8	122°16.4	S03°43.8						
7	134°58.1	305°54.4	14.1	267°36.1	59.3	18°38.1	17.8	137°19.0	43.8						
8	150°00.5	320°54.0	15.3	282°36.8	17°59.8	33°40.4	17.8	152°21.6	43.9						
9	165°03.0	335°53.6	•• 16.5	297°37.5	18°00.3	48°42.6	•• 17.7	167°24.2	•• 43.9						
10	180°05.4	350°53.2	17.8	312°38.2	00.8	63°44.9	17.7	182°26.8	44.0						
11	195°07.9	•• 52.8	19.0	327°38.9	01.3	78°47.2	17.7	197°29.4	44.0						
12	210°10.4	20°52.4	S02°20.2	342°39.6	S18°01.8	93°49.5	N21°17.7	212°32.0	S03°44.1						
13	225°12.8	35°52.0	21.4	357°40.3	02.3	108°51.8	17.6	227°34.6	44.2						
14	240°15.3	50°51.6	22.6	12°41.0	02.8	123°54.1	17.6	242°37.2	44.2						
15	255°17.8	65°51.2	•• 23.9	27°41.7	•• 03.3	138°56.4	•• 17.6	257°39.8	•• 44.3						
16	270°20.2	80°50.8	25.1	42°42.4	03.8	153°58.6	17.6	272°42.4	44.3						
17	285°22.7	95°50.4	26.3	57°43.1	04.3	169°00.9	17.5	287°45.0	44.4						
18	300°25.2	110°50.0	S02°27.5	72°43.7	S18°04.8	184°03.2	N21°17.5	302°47.6	S03°44.4						
19	315°27.6	125°49.6	28.8	87°44.4	05.3	199°05.5	17.5	317°50.2	44.5						
20	330°30.1	140°49.2	30.0	102°45.1	05.8	214°07.8	17.5	332°52.9	44.5						
21	345°32.6	155°48.8	•• 31.2	117°45.8	•• 06.3	229°10.1	•• 17.4	347°55.5	•• 44.6						
22	0°35.0	170°48.4	32.4	132°46.5	06.8	244°12.4	17.4	2°58.1	44.6						
23	15°37.5	185°48.0	33.6	147°47.2	07.2	259°14.7	17.4	18°00.7	44.7						
Mer.pass.:21:58			v-0.4 d-1.2 m-3.8			v0.7 d-0.5 m1.5			v2.3 d-0.0 m-2.1			v2.6 d-0.1 m0.8			

Stars		
	SHA	Dec
Alpheratz	357°33.8	29°14.2
Ankaa	353°06.1	-42°09.9
Schedar	349°29.8	56°40.9
Diphda	348°46.3	-17°50.6
Achernar	335°19.1	-57°06.3
Hamal	327°50.1	23°35.2
Polaris	313°15.5	89°22.3
Acamar	315°10.9	-40°11.9
Menkar	314°05.2	4°11.6
Mirfak	308°26.9	49°57.2
Aldebaran	290°38.6	16°33.8
Rigel	281°03.1	-8°10.1
Capella	280°20.7	46°01.3
Bellatrix	278°22.0	6°22.5
Elath	278°00.9	28°37.7
Anilam	275°36.9	-1°11.0
Betelgeuse	270°51.2	7°24.8
Canopus	263°51.9	-52°42.2
Sirius	258°25.6	-16°44.8
Adhara	255°05.3	-29°00.1
Procyon	244°50.2	5°09.6
Pollux	243°16.5	27°57.8
Avior	234°14.6	-59°35.1
Suhail	222°46.0	-43°31.9
Miaplacidus	221°38.5	-69°49.0

Aries		Venus		Mars		Jupiter		Saturn	
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	30°39.9	200°47.6	S02°34.9	162°47.9	S18°07.7	274°17.0	N21°17.4	33°03.3	S03°44.8
1	45°42.4	215°47.2	36.1	177°48.6	08.2	289°19.2	17.3	48°05.9	44.8
2	60°44.9	230°46.8	37.3	192°49.3	08.2	304°21.5	17.3	63°08.5	44.9
3	75°47.3	245°46.4	•• 38.5	207°50.0	•• 09.7	319°23.8	•• 17.3	78°11.1	•• 44.9
4	90°49.8	260°46.0	39.7	222°50.6	09.7	334°26.1	17.3	93°13.7	45.0
5	105°52.3	275°45.6	41.0	237°51.3	10.2	349°28.4	17.2	108°16.3	45.0
6	120°54.7	290°45.2	S02°42.2	252°52.0	S18°10.7	4°30.7	N21°17.2	123°18.9	S03°45.1
7	135°57.2	305°44.8	43.4	267°52.7	11.2	19°33.0	17.2	138°21.5	45.1
8	150°59.7	320°44.4	44.6	282°53.4	11.7	34°35.3	17.2	153°24.1	45.2
9	166°02.1	335°44.0	•• 45.9	297°54.1	•• 12.2	49°37.6	•• 17.2	168°26.7	•• 45.2
10	181°04.6	350°43.6	47.1	312°54.8	12.7	64°39.9	17.1	183°29.3	45.3
11	196°07.1	5°43.2	48.3	327°55.5	13.1	79°42.2	17.1	198°31.9	45.3
12	211°09.5	20°42.8	S02°49.5	342°56.1	S18°13.6	94°44.4	N21°17.1	213°34.5	S03°45.4
13	226°12.0	35°42.4	50.7	357°56.8	14.1	109°46.7	17.1	228°37.1	45.4
14	241°14.4	50°42.0	52.0	12°57.5	14.6	124°49.0	17.0	243°39.7	45.5
15	256°16.9	65°41.6	•• 53.2	27°58.2	•• 15.1	139°51.3	•• 17.0	258°42.3	•• 45.6
16	271°19.4	80°41.2	54.4	42°58.9	15.6	154°53.6	17.0	273°44.9	45.6
17	286°21.8	95°40.8	55.6	57°59.6	16.1	169°55.9	17.0	288°47.5	45.7
18	301°24.3	110°40.4	S02°56.8	73°00.3	S18°16.6	184°58.2	N21°16.9	303°50.1	S03°45.7
19	316°26.8	125°40.0	58.1	88°00.9	17.1	200°00.5	16.9	318°52.7	45.8
20	331°29.2	140°39.6	02°59.3	103°01.6	17.5	215°02.8	16.9	333°55.3	45.8
21	346°31.7	155°39.1	03°00.5	118°02.3	•• 18.0	230°05.1	•• 16.9	348°57.8	•• 45.9
22	1°34.2	170°38.7	01.7	133°03.0	18.5	245°07.4	16.9	4°00.4	45.9
23	16°36.6	185°38.3	02.9	148°03.7	19.0	260°09.7	16.8	19°03.0	46.0
Mer.pass.:21:54		v-0.4 d-1.2 m-3.8		v0.7 d-0.5 m1.5		v2.3 d-0.0 m-2.1		v2.6 d-0.1 m0.8	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	31°39.1	200°37.9	S03°04.2	163°04.4	S18°19.5	275°12.0	N21°16.8	34°05.6	S03°46.0
1	46°41.5	215°37.5	05.4	178°05.0	20.0	290°14.3	16.8	49°08.2	46.1
2	61°44.0	230°37.1	06.6	193°05.7	20.5	305°16.6	16.8	64°10.8	46.1
3	76°46.5	245°36.7	•• 07.8	208°06.4	•• 21.0	320°18.9	•• 16.7	79°13.4	•• 46.2
4	91°48.9	260°36.3	09.0	223°07.1	21.4	335°21.2	16.7	94°16.0	46.2
5	106°51.4	275°35.9	10.3	238°07.8	21.9	350°23.5	16.7	109°18.6	46.3
6	121°53.9	290°35.5	S03°11.5	253°08.4	S18°22.4	5°25.8	N21°16.7	124°21.2	S03°46.3
7	136°56.3	305°35.1	12.7	268°09.1	22.9	20°28.1	16.7	139°23.8	46.4
8	151°58.8	320°34.7	13.9	283°09.8	23.4	35°30.4	16.6	154°26.4	46.4
9	167°01.3	335°34.3	•• 15.1	298°10.5	•• 23.9	50°32.7	•• 16.6	169°29.0	•• 46.5
10	182°03.7	350°33.9	16.4	313°11.2	24.4	65°35.0	16.6	184°31.6	46.5
11	197°06.2	5°33.5	17.6	328°11.9	24.8	80°37.3	16.6	199°34.2	46.6
12	212°08.7	20°33.1	S03°18.8	343°12.5	S18°25.3	95°39.6	N21°16.5	214°36.8	S03°46.7
13	227°11.1	35°32.7	20.0	358°13.2	25.8	110°41.9	16.5	229°39.4	46.7
14	242°13.6	50°32.2	21.2	13°13.9	26.3	125°44.2	16.5	244°42.9	46.8
15	257°16.0	65°31.8	•• 22.5	28°14.6	•• 26.8	140°46.5	•• 16.5	259°44.6	•• 46.8
16	272°18.5	80°31.4	23.7	43°15.2	27.3	155°48.8	16.5	274°47.2	46.9
17	287°21.0	95°31.0	24.9	58°15.9	27.7	170°51.1	16.4	289°49.8	46.9
18	302°23.4	110°30.6	S03°26.1	73°16.6	S18°28.2	185°53.4	N21°16.4	304°52.4	S03°47.0
19	317°25.9	125°30.2	27.3	88°17.3	28.2	200°55.7	16.7	319°55.0	47.0
20	332°28.4	140°29.8	28.6	103°18.0	29.2	215°58.0	16.4	334°57.6	47.1
21	347°30.8	155°29.4	•• 29.8	118°18.6	•• 29.7	231°00.3	•• 16.3	350°00.2	•• 47.1
22	2°33.3	170°29.0	31.0	133°19.3	30.2	246°02.6	16.3	5°02.8	47.2
23	17°35.8	185°28.6	32.2	148°20.0	30.6	261°04.9	16.3	20°05.4	47.2
Mer.pass.:21:50		v-0.4 d-1.2 m-3.8		v0.7 d-0.5 m1.5		v2.3 d-0.0 m-2.1		v2.6 d-0.1 m0.8	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	32°38.2	200°28.2	S03°33.4	163°20.7	S18°31.1	276°07.2	N21°16.3	35°08.0	S03°47.3
1	47°40.7	215°27.8	34.6	178°21.3	31.6	291°09.5	16.3	50°10.6	47.3
2	62°43.2	230°27.4	35.9	193°22.0	32.1	306°11.8	16.2	65°13.2	47.4
3	77°45.6	245°26.9	•• 37.1	208°22.7	•• 32.6	321°14.1	•• 16.2	80°15.8	•• 47.4
4	92°48.1	260°26.5	38.3	223°23.4	33.0	336°16.4	16.2	95°18.3	47.5
5	107°50.5	275°26.1	39.5	238°24.0	33.5	351°18.7	16.2	110°20.9	47.5
6	122°53.0	290°25.7	S03°40.7	253°24.7	S18°34.0	6°21.1	N21°16.2	125°23.5	S03°47.6
7	137°55.5	305°25.3	42.0	268°25.4	34.5	21°23.4	16.1	140°26.1	47.6
8	152°57.9	320°24.9	43.2	283°26.1	35.0	36°25.7	16.1	155°28.7	47.7
9	168°00.4	335°24.5	•• 44.4	298°26.7	•• 35.4	51°28.0	•• 16.1	170°31.3	•• 47.7
10	183°02.9	350°24.1	45.6	313°27.4	35.9	66°30.3	16.1	185°33.9	47.8
11	198°05.3	5°23.7	46.8	328°28.1	36.4	81°32.6	16.1	200°36.5	47.8
12	213°07.8	20°23.3	S03°48.0	343°28.8	S18°36.9	96°34.9	N21°16.0	215°39.1	S03°47.9
13	228°10.3	35°22.8	49.3	358°29.4	37.3	111°37.2	16.0	230°41.7	47.9
14	243°12.7	50°22.4	50.5	13°30.1	37.8	126°39.5	16.0	245°44.3	48.0
15	258°15.2	65°22.0	•• 51.7	28°30.8	•• 38.3	141°41.8	•• 16.0	260°46.9	•• 48.0
16	273°17.6	80°21.6	52.9	43°31.4	38.8	156°44.1	16.0	275°49.5	48.1
17	288°20.1	95°21.2	54.1	58°32.1	39.3	171°46.5	15.9	290°52.1	48.1
18	303°22.6	110°20.8	S03°55.3	73°32.8	S18°39.7	186°48.8	N21°15.9	305°54.7	S03°48.2
19	318°25.0	125°20.4	56.6	88°33.5	40.2	201°51.1	15.9	320°57.1	48.2
20	333°27.5	140°20.0	57.8	103°34.1	40.7	216°53.4	15.9	335°59.9	48.3
21	348°30.0	155°19.6	03°59.0	118°34.8	•• 41.2	231°55.7	•• 15.8	351°02.4	•• 48.3
22	3°32.4	170°19.1	04°00.2	133°35.5	41.6	246°58.0	15.8	6°05.0	48.4
23	18°34.9	185°18.7	01.4	148°36.1	42.1	262°00.3	15.8	21°07.6	48.4
Mer.pass.:21:46		v-0.4 d-1.2 m-3.8		v0.7 d-0.5 m1.5		v2.3 d-0.0 m-2.1		v2.6 d-0.1 m0.8	

Stars	
SHA	Dec
Alpheratz	357°33.8 29°14.2
Ankaa	353°06.1 -42°09.9
Schedar	349°29.8 56°40.9
Diphda	348°46.3 -17°50.6
Achernar	335°19.1 -57°06.3
Hamal	327°50.1 23°35.2
Polaris	313°14.7 89°22.3
Acamar	315°10.9 -40°11.9
Menkar	314°05.2 4°11.6
Mirfak	308°26.9 49°57.2
Aldebaran	290°38.6 16°33.7
Rigel	281°03.0 -8°10.1
Capella	280°20.6 46°01.3
Bellatrix	278°22.0 6°22.5
Elmath	278°00.8 28°37.7
Anilam	275°36.9 -1°11.0
Betelgeuse	270°51.2 7°24.8
Canopus	263°51.9 -52°42.2
Sirius	258°25.6 -16°44.9
Adhara	255°05.3 -29°00.1
Procyon	244°50.1 5°09.6
Pollux	234°16.5 27°57.8
Avior	234°14.5 -59°35.1
Suhail	222°46.0 -43°31.9
Miaplacidus	221°38.5 -69°49.0
Alphard	217°47.3 -8°46.1
Regulus	207°33.9 11°50.5
Dubhe	193°40.7 61°36.5
Denebola	182°24.6 14°25.7
Gienah	175°43.2 -17°41.0
Acrux	173°00.1 63°14.4
Gacrux	171°51.5 -57°15.3
Alioth	166°12.9 55°49.1
Spica	158°22.0 -11°17.7
Alkaid	152°52.0 49°11.1
Hadar	148°35.8 -60°29.8
Menkent	147°57.3 -36°29.7
Arcturus	145°47.7 19°03.0
Rigel Kent.	139°40.1 -60°56.5
Kochab	137°20.9 74°03.0
Zuben'ubi	136°55.7 -16°08.9
Alphecca	126°03.5 26°37.8
Antares	112°15.4 -26°29.3
Atria	107°09.4 -69°04.6
Sabik	102°02.3 -15°45.4
Shaula	96°09.8 -37°07.4
Rasalhague	95°58.2 12°32.6
Eltanin	90°42.2 51°29.3
Kaus Aust.	83°31.9 34°22.4
Vega	80°33.0 38°48.7
Nunki	75°47.1 -26°15.9
Altair	61°59.4 8°56.3
Peacock	53°04.7 -56°39.3
Deneb	49°25.3 45°22.6
Enif	33°38.1 9°59.8
Al Na'ir	27°31.9 -46°50.3
Fomalhaut	15°13.6 -29°29.1
Scheat	13°44.4 28°13.6
Markab	13°29.0 15°20.8

Oct 22 Wed	SHA	Mer.pass
Venus	170°07.7	10:37
Mars	132°07.9	13:08
Jupiter	243°37.0	05:42
Saturn	2°23.3	21:44

Oct 23 Thu	SHA	Mer.pass
Venus	168°58.8	10:38
Mars	131°25.3	13:07
Jupiter	243°32.9	05:38
Saturn	2°26.6	21:40

Oct 24 Fri	SHA	Mer.pass
Venus	167°49.9	10:38
Mars	130°42.4	13:06
Jupiter	243°29.0	05:35
Saturn	2°29.7	21:36

Horizontal parallax	
Venus:	0.1
Mars:	0.1

Sun			Moon				
Wed	GHA	Dec	GHA	ν	Dec	d	HP
0	183°51.4	S11°03.8	180°06.3	15.0'	S16°24.0	-11.9'	54.1'
1	198°51.5	04.7	194°40.3	15.0'	16°35.9	-11.9'	54.1'
2	213°51.6	05.6	209°14.3	14.9'	16°47.7	-11.8'	54.1'
3	228°51.7	•• 06.5	223°48.1	14.9'	16°59.5	-11.7'	54.1'
4	243°51.8	07.3	238°22.0	14.8'	17°11.2	-11.7'	54.1'
5	258°51.9	08.2	252°55.7	14.8'	17°22.8	-11.6'	54.1'
6	273°52.0	S11°09.1	267°29.5	14.7'	S17°34.3	-11.5'	54.1'
7	288°52.1	10.0	282°03.1	14.6'	17°45.8	-11.4'	54.1'
8	303°52.2	10.9	296°36.8	14.6'	17°57.2	-11.4'	54.1'
9	318°52.3	•• 11.8	311°10.3	14.5'	18°08.6	-11.3'	54.1'
10	333°52.3	12.6	325°43.8	14.5'	18°19.8	-11.2'	54.1'
11	348°52.4	13.5	340°17.3	14.4'	18°31.0	-11.1'	54.1'
12	3°52.5	S11°14.4	354°50.7	14.4'	S18°42.1	-11.1'	54.0'
13	18°52.6	15.3	9°24.0	14.3'	18°53.1	-11.0'	54.0'
14	33°52.7	16.2	23°57.3	14.3'	19°04.1	-10.9'	54.0'
15	48°52.8	•• 17.0	38°30.5	14.2'	19°15.0	-10.8'	54.0'
16	63°52.9	17.9	53°03.7	14.1'	19°25.7	-10.7'	54.0'
17	78°53.0	18.8	67°36.8	14.1'	19°36.5	-10.7'	54.0'
18	93°53.1	S11°19.7	82°09.9	14.0'	S19°47.1	-10.6'	54.0'
19	108°53.2	20.5	96°42.9	13.9'	19°57.6	-10.5'	54.0'
20	123°53.2	21.4	111°15.8	13.9'	20°08.1	-10.4'	54.0'
21	138°53.3	•• 22.3	125°48.7	13.8'	20°18.5	-10.3'	54.0'
22	153°53.4	23.2	140°21.5	13.8'	20°28.7	-10.2'	54.0'
23	168°53.5	24.1	154°54.3	13.7'	20°38.9	-10.2'	54.0'
SD = 16.1			d = 0.9		SD = 14.7		

Aries				Venus				Mars				Jupiter				Saturn			
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	33°37.4	200°18.3	S04°02.6	163°36.8	S18°42.6	277°02.6	N21°15.8	36°10.2	S03°48.5	0		178°37.5	43.1	292°05.0	15.8	51°12.8	48.5		
1	48°39.8	215°17.9	03.9	193°38.2	44.5	307°07.3	15.8	66°15.4	48.6	2		245°17.1	•• 06.3	322°09.6	•• 15.7	81°18.0	•• 48.6		
2	63°42.3	230°17.5	05.1	208°38.8	•• 43.0	337°11.9	15.7	96°20.6	48.7	3		260°16.7	07.5	223°39.5	44.5	337°11.9	15.7		
3	78°44.8	245°17.1	•• 06.3	238°40.2	48.7	352°14.2	15.1	111°23.2	48.7	4		275°16.2	08.7	238°40.2	45.0	352°14.2	15.1		
4	93°47.2	260°16.7	07.5	253°40.8	S18°45.4	7°16.5	N21°15.7	126°25.8	S03°48.8	5		290°15.8	S04°09.9	253°40.8	•• 44.5	352°14.2	15.1		
5	108°49.7	275°16.2	08.7	305°15.4	11.2	268°41.5	45.9	22°18.8	15.7	6		320°15.0	12.4	283°42.2	46.4	37°21.2	15.6		
6	123°52.1	290°15.8	S04°09.9	335°14.6	•• 13.6	298°42.8	•• 46.9	52°23.5	•• 15.6	7		350°14.2	14.8	313°43.5	47.3	67°25.8	15.6		
7	138°54.6	305°15.4	11.2	328°44.2	16.0	328°44.2	47.8	82°28.1	15.6	8		350°14.2	14.8	313°43.5	47.3	67°25.8	15.6		
8	153°57.1	320°15.0	12.4	343°44.8	S18°48.3	97°30.4	N21°15.6	216°41.3	S03°49.1	9		350°14.2	14.8	313°43.5	47.3	67°25.8	15.6		
9	168°59.5	335°14.6	•• 13.6	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	10		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
10	184°02.0	350°14.2	14.8	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	11		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
11	199°04.5	5°13.8	16.0	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	12		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
12	214°06.9	20°13.4	S04°17.2	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	13		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
13	229°09.4	35°12.9	18.4	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	14		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
14	244°11.9	50°12.5	19.7	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	15		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
15	259°14.3	65°12.1	•• 20.9	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	16		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
16	274°16.8	80°11.7	22.1	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	17		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
17	289°19.3	95°11.3	23.3	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	18		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
18	304°21.7	110°10.9	S04°24.5	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	19		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
19	319°24.2	125°10.4	25.7	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	20		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
20	334°26.6	140°10.0	26.9	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	21		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
21	349°29.1	155°09.6	•• 28.2	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	22		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
22	4°31.6	170°09.2	29.4	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6	23		350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
23	19°34.2	185°08.8	30.6	350°13.8	16.0	350°13.8	16.0	82°28.1	15.6			350°13.8	16.0	350°13.8	16.0	82°28.1	15.6		
Mer.pass.:21:42				v-0.4 d-1.2 m-3.8				v0.7 d-0.5 m1.5				v2.3 d-0.0 m-2.1				v2.6 d-0.0 m0.8			

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	34°36.5	200°08.4	S04°31.8	163°52.8	S18°53.9	277°58.3	N21°15.3	37°12.4	S03°49.7
1	49°39.0	215°07.9	33.0	178°53.5	54.4	293°00.6	15.3	52°15.0	49.7
2	64°41.4	230°07.5	34.2	193°54.1	54.8	308°02.9	15.3	67°17.6	49.7
3	79°43.9	245°07.1	•• 35.4	208°54.8	•• 55.3	323°05.2	•• 15.3	82°20.2	•• 49.8
4	94°46.4	260°06.7	36.6	223°55.5	55.8	338°07.5	15.3	97°22.8	49.8
5	109°48.8	275°06.3	37.9	238°56.1	56.3	353°09.9	15.2	112°25.4	49.9
6	124°51.3	290°05.9	S04°39.1	253°56.8	S18°56.7	8°12.2	N21°15.2	127°27.9	S03°49.9
7	139°53.7	305°05.4	40.3	268°57.4	57.2	23°14.5	15.2	142°30.5	50.0
8	154°56.2	320°05.0	41.5	283°58.1	57.7	38°16.8	15.2	157°33.1	50.0
9	169°58.7	335°04.6	•• 42.7	298°58.8	•• 58.1	53°19.2	•• 15.2	172°35.7	•• 50.1
10	185°01.1	350°04.2	43.9	313°59.4	58.6	68°21.5	15.1	187°38.3	50.1
11	200°03.6	5°03.8	45.1	329°00.1	59.1	83°23.8	15.1	202°40.9	50.2
12	215°06.1	20°03.3	S04°46.3	344°00.7	S18°59.5	98°26.1	N21°15.1	217°43.5	S03°50.2
13	230°08.5	35°02.9	47.6	359°01.4	19°00.0	113°28.5	15.1	232°46.1	50.3
14	245°11.0	50°02.5	48.8	374°02.1	00.4	128°30.8	15.1	247°48.7	50.3
15	260°13.5	65°02.1	•• 50.0	29°02.7	•• 00.9	143°33.1	•• 15.1	262°51.2	•• 50.4
16	275°15.9	80°01.7	51.2	44°03.4	01.4	158°35.4	15.0	277°53.8	50.4
17	290°18.4	95°01.2	52.4	59°04.0	01.8	173°37.8	15.0	292°56.4	50.5
18	305°20.9	110°00.8	S04°53.6	74°07.4	S19°02.3	188°40.1	N21°15.0	307°59.0	S03°50.5
19	320°23.3	125°00.4	54.8	89°05.4	02.8	203°42.4	15.0	323°01.6	50.6
20	335°25.8	140°00.0	56.0	104°06.0	03.2	218°44.7	15.0	338°04.2	50.6
21	350°28.2	154°59.6	•• 57.2	119°06.7	•• 03.7	233°47.1	•• 15.0	353°06.8	•• 50.7
22	5°30.7	169°59.1	58.5	134°07.3	04.2	248°49.4	14.9	8°09.4	50.7
23	20°33.2	184°58.7	59.7	149°08.0	04.6	263°51.7	14.9	23°11.9	50.7
Mer.pass.:21:38				v-0.4 d-1.2 m-3.8		v2.3 d-0.0 m-2.1		v2.6 d-0.0 m0.8	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	35°35.6	199°58.3	S05°00.9	164°08.6	S19°05.1	278°54.1	N21°14.9	38°14.5	S03°50.8										
1	50°38.1	214°57.9	02.1	179°09.3	05.5	293°56.4	14.9	53°17.1	50.8										
2	65°40.6	229°57.5	03.3	194°10.0	06.0	308°58.7	14.9	68°19.7	50.9										
3	80°43.0	244°57.0	•• 04.5	209°10.6	•• 06.0	324°01.1	•• 14.8	83°22.3	•• 50.9										
4	95°45.5	259°56.6	05.7	224°11.3	06.9	339°03.4	14.8	98°24.9	51.0										
5	110°48.0	274°56.2	06.9	239°11.9	07.4	354°05.7	14.8	113°27.5	51.0										
6	125°50.4	289°55.8	S05°08.1	254°12.6	S19°07.9	9°08.0	N21°14.8	128°30.0	S03°51.1										
7	140°52.9	304°55.3	09.3	269°13.2	08.3	24°10.4	14.8	143°32.6	51.1										
8	155°55.4	319°54.9	10.5	284°13.9	08.8	39°12.7	14.8	158°35.2	51.2										
9	170°57.8	334°54.5	•• 11.8	299°14.5	•• 09.2	54°15.0	•• 14.7	173°37.8	•• 51.2										
10	186°00.3	349°54.1	13.0	314°15.2	09.7	69°17.4	14.7	188°40.4	51.3										
11	201°02.7	4°53.7	14.2	329°15.8	10.2	84°19.7	14.7	203°43.0	51.3										
12	216°05.2	19°53.2	S05°15.4	344°16.5	S19°10.6	99°22.0	N21°14.7	218°45.6	S03°51.3										
13	231°07.7	34°52.8	16.6	359°17.1	11.1	114°24.4	14.7	233°48.1	51.4										
14	246°10.1	49°52.4	17.8	374°17.8	11.5	129°26.7	14.7	248°50.7	51.4										
15	261°12.6	64°52.0	•• 19.0	29°18.5	•• 12.0	144°29.0	•• 14.7	263°53.3	•• 51.5										
16	276°15.1	79°51.5	20.2	44°19.1	12.5	159°31.4	14.6	278°55.9	51.5										
17	291°17.5	94°51.1	21.4	59°19.8	12.9	174°33.7	14.6	293°58.5	51.6										
18	306°20.0	109°50.7	S05°22.6	74°20.4	S19°13.4	189°36.0	N21°14.6	309°01.1	S03°51.6										
19	321°22.5	124°50.3	23.8	89°21.1	13.8	204°38.4	14.6	324°03.7	51.7										
20	336°24.9	139°49.8	25.0	104°21.7	14.3	219°40.7	14.6	339°06.2	51.7										
21	351°27.4	154°49.4	•• 26.2	119°22.4	•• 14.7	234°43.1	•• 14.6	354°08.8	•• 51.8										
22	6°29.9	169°49.0	27.4	134°23.0	15.2	249°45.4	14.5	9°11.4	51.8										
23	21°32.3	184°48.6	28.7	149°23.7	15.7	264°47.7	14.5	24°14.0	51.8										
Mer.pass.:21:34				v-0.4 d-1.2 m-3.8				v0.7 d-0.5 m1.5				v2.3 d-0.0 m-2.1				v2.6 d-0.0 m0.9			

Stars		
	SHA	Dec
Alpheratz	357°33.8	29°14.2
Ankaa	353°06.1	-42°09.9
Schedar	349°29.8	56°40.9
Diphda	348°46.3	-17°50.6
Achernar	335°19.1	-57°06.3
Hamal	327°50.1	23°35.2
Polaris	313°13.8	89°22.3
Acamar	315°10.9	-40°11.9
Menkar	314°05.2	4°11.6
Mirfak	308°26.9	49°57.2
Aldebaran	290°38.6	16°33.7
Rigel	281°03.0	-8°10.1
Capella	280°20.6	46°01.3
Bellatrix	278°22.0	6°22.5
Elnath	278°00.8	28°37.7
Anilam	275°36.9	-1°11.0
Betelgeuse	270°51.2	7°24.8
Canopus	263°51.8	-52°42.2
Sirius	258°25.5	-16°44.9
Adhara	255°05.2	-29°00.1
Procyon	244°50.1	5°09.6
Pollux	243°16.5	27°57.8
Avior	234°14.5	-59°35.1
Suhail	222°45.9	-43°31.9
Miaplaciud	221°38.4	-69°49.0
Alphard	217°47.2	-8°46.1

	Aries			Venus			Mars			Jupiter			Saturn		
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	36°34.8	199°48.1	S05°29.9		164°24.3	S19°16.1		279°50.1	N21°14.5		39°16.6	S03°51.9			
1	51°37.2	214°47.7	31.1		179°25.0	16.6		294°52.4	14.5		54°19.2	51.9			
2	66°39.7	229°47.3	32.3		194°25.6	17.0		309°54.7	14.5		69°21.7	52.0			
3	81°42.2	244°46.8	•• 33.5		209°26.3	•• 17.5		324°57.1	•• 14.5		84°24.3	•• 52.0			
4	96°44.6	259°46.4	34.7		224°26.9	17.9		339°59.4	14.4		99°26.9	52.1			
5	111°47.1	274°46.0	35.9		239°27.6	18.4		355°01.8	14.4		114°29.5	52.1			
6	126°49.6	289°45.6	S05°37.1		254°28.2	S19°18.8		10°04.1	N21°14.4		129°32.1	S03°52.2			
7	141°52.0	304°45.1	38.3		269°28.9	19.3		25°06.4	14.4		144°34.7	52.2			
8	156°54.5	319°44.7	39.5		284°29.5	19.7		40°08.8	14.4		159°37.2	52.3			
9	171°57.0	334°44.3	•• 40.7		299°30.2	•• 20.2		55°11.1	•• 14.4		174°39.8	•• 52.3			
10	186°59.4	349°43.8	41.9		314°30.8	20.7		70°13.5	14.4		189°42.4	52.3			
11	202°01.9	4°43.4	43.1		329°31.4	21.1		85°15.8	14.3		204°45.0	52.4			
12	217°04.4	19°43.0	S05°44.3		344°32.1	S19°21.6		100°18.1	N21°14.3		219°47.6	S03°52.4			
13	232°06.8	34°42.6	45.5		359°32.7	22.0		115°20.5	14.3		234°50.2	52.5			
14	247°09.3	49°42.1	46.7		14°33.4	22.5		130°22.8	14.3		249°52.7	52.5			
15	262°11.7	64°41.7	•• 47.9		29°34.0	•• 22.9		145°25.2	•• 14.3		264°55.3	•• 52.6			
16	277°14.2	79°41.3	49.1		44°34.7	23.4		160°27.5	14.3		279°57.9	52.6			
17	292°16.7	94°40.8	50.3		59°35.3	23.8		175°29.9	14.2		295°00.5	52.7			
18	307°19.1	109°40.4	S05°51.5		74°36.0	S19°24.3		190°32.2	N21°14.2		310°03.1	S03°52.7			
19	322°21.6	124°40.0	52.7		89°36.6	24.7		205°34.5	14.2		325°05.6	52.7			
20	337°24.1	139°39.5	53.9		104°37.3	25.2		220°36.9	•• 14.2		340°08.2	52.8			
21	352°26.5	154°39.1	•• 55.1		119°37.9	•• 25.6		235°39.2	•• 52.8		355°10.8	•• 52.8			
22	7°29.0	169°38.7	56.3		134°38.5	26.1		250°41.6	14.2		10°13.4	52.9			
23	22°31.5	184°38.3	57.5		149°39.2	26.5		265°43.9	14.2		25°16.0	52.9			
Mer.pass.:21:30			v-0.4 d-1.2 m-3.8			v0.6 d-0.5 m1.5			v2.3 d-0.0 m-2.2			v2.6 d-0.0 m0.9			

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	37°33.9	199°37.8	S05°58.7	164°39.8	S19°27.0	280°46.3	N21°14.1	40°18.5	S03°53.0		
1	52°36.4	214°37.4	05°59.9	179°40.5	27.4	295°48.6	14.1	55°21.1	53.0		
2	67°38.8	229°37.0	06°01.1	194°41.1	27.9	310°51.0	14.1	70°23.7	53.1		
3	82°41.3	244°36.5	•• 02.3	209°41.8	•• 28.3	325°53.3	•• 14.1	85°26.3	•• 53.1		
4	97°43.8	259°36.1	03.5	224°42.4	28.8	340°55.7	14.1	100°28.9	53.1		
5	112°46.2	274°35.7	04.7	239°43.0	29.2	355°58.0	14.1	115°31.4	53.2		
6	127°48.7	289°35.2	S06°06.0	254°43.7	S19°29.7	11°00.4	N21°14.1	130°34.0	S03°53.2		
7	142°51.2	304°34.8	07.2	269°44.3	30.1	26°02.7	14.0	145°36.6	53.3		
8	157°53.6	319°34.4	08.3	284°45.0	30.6	41°05.1	14.0	160°39.2	53.3		
9	172°56.1	334°33.9	•• 09.5	299°45.6	•• 31.0	56°07.4	•• 14.0	175°41.8	•• 53.4		
10	187°58.6	349°33.5	10.7	314°46.2	31.5	71°09.8	14.0	190°44.3	53.4		
11	203°01.0	4°33.1	11.9	329°46.9	31.9	86°12.1	14.0	205°46.9	53.4		
12	218°03.5	19°32.6	S06°13.1	344°47.5	S19°32.3	101°14.4	N21°14.0	220°49.5	S03°53.5		
13	233°06.0	34°32.2	14.3	359°48.2	32.8	116°16.8	14.0	235°52.1	53.5		
14	248°08.4	49°31.7	15.5	14°48.8	33.2	131°19.2	14.0	250°54.7	53.6		
15	263°10.9	64°31.3	•• 16.7	29°49.4	•• 33.7	146°21.5	•• 13.9	265°57.2	•• 53.6		
16	278°13.3	79°30.9	17.9	44°50.1	34.1	161°23.9	13.9	280°59.8	53.7		
17	293°15.8	94°30.4	19.1	59°50.7	34.6	176°26.2	13.9	296°02.4	53.7		
18	308°18.3	109°30.0	S06°20.3	74°51.4	S19°35.0	191°28.6	N21°13.9	311°05.0	S03°53.7		
19	323°20.7	124°29.6	21.5	89°52.0	35.5	206°30.9	13.9	326°07.9	53.8		
20	338°23.2	139°29.1	22.7	104°52.6	35.9	221°33.3	13.9	341°10.1	53.8		
21	353°25.7	154°28.7	•• 23.9	119°53.3	•• 36.4	236°35.6	•• 13.9	356°12.7	•• 53.8		
22	8°28.1	169°28.3	25.1	134°53.9	36.8	251°38.0	13.8	11°15.3	53.9		
23	23°30.6	184°27.8	26.3	149°54.6	37.2	266°40.3	13.8	26°17.9	54.0		
Mer.pass.:21:26			v-0.4 d-1.2 m-3.8			v2.3 d-0.0 m-2.2			v2.6 d-0.0 m0.9		

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	38°33.1	199°27.4	S06°27.5	164°55.2	S19°37.7	281°42.7	N21°13.8	41°20.4	S03°54.0		
1	53°35.5	214°26.9	28.7	179°55.8	38.1	296°45.0	13.8	56°23.0	54.0		
2	68°38.0	229°26.5	29.9	194°56.5	38.6	311°47.4	13.8	71°25.6	54.1		
3	83°40.5	244°26.1	•• 31.1	209°57.1	•• 39.0	326°49.7	•• 13.8	86°28.2	•• 54.1		
4	98°42.9	259°25.6	32.3	224°57.7	39.4	341°52.1	13.8	101°30.8	54.2		
5	113°45.4	274°25.2	33.5	239°58.4	39.9	356°54.5	13.8	116°33.3	54.2		
6	128°47.8	289°24.8	S06°34.7	254°59.0	S19°40.3	11°56.8	N21°13.7	131°35.9	S03°54.2		
7	143°50.3	304°24.3	35.9	269°59.6	40.8	26°59.2	13.7	146°38.5	54.3		
8	158°52.8	319°23.9	37.1	285°00.3	41.2	42°01.5	13.7	161°41.1	54.3		
9	173°55.2	334°23.4	•• 38.3	300°00.9	•• 41.7	57°03.9	•• 13.7	176°43.6	•• 54.4		
10	188°57.7	349°23.0	39.5	315°01.5	42.1	72°06.2	13.7	191°46.2	54.4		
11	204°00.2	4°22.6	40.7	330°02.2	42.5	87°08.6	13.7	206°48.8	54.5		
12	219°02.6	19°22.1	S06°41.9	345°02.8	S19°43.0	102°11.0	N21°13.7	221°51.4	S03°54.5		
13	234°05.1	34°21.7	43.1	0°03.4	43.4	117°13.3	13.7	236°53.9	54.5		
14	249°07.6	49°21.2	44.2	15°04.1	43.9	132°15.7	13.6	251°56.5	54.6		
15	264°10.0	64°20.8	•• 45.4	30°04.7	•• 44.3	147°18.0	•• 13.6	266°59.1	•• 54.6		
16	279°12.5	79°20.3	46.6	45°05.3	44.7	162°20.4	13.6	282°01.7	54.7		
17	294°14.9	94°19.9	47.8	60°06.0	45.2	177°22.7	13.6	297°04.2	54.7		
18	309°17.4	109°19.5	S06°49.0	75°06.6	S19°45.6	192°25.1	N21°13.6	312°06.8	S03°54.7		
19	324°19.9	124°19.0	50.2	90°07.2	46.0	207°27.5	13.6	327°09.4	54.8		
20	339°22.3	139°18.6	51.4	105°07.9	46.5	222°29.8	13.6	342°12.0	54.8		
21	354°24.8	154°18.1	•• 52.6	120°08.5	•• 46.9	237°32.2	•• 13.6	357°14.5	•• 54.9		
22	9°27.3	169°17.7	53.8	135°09.1	47.4	252°34.6	13.5	12°17.1	54.9		
23	24°29.7	184°17.2	55.0	150°09.8	47.8	267°36.9	13.5	27°19.7	54.9		
Mer.pass.:21:22			v-0.4 d-1.2 m-3.8			v2.4 d-0.0 m-2.2			v2.6 d-0.0 m0.9		

	SHA	Dec
Alpheratz	357°33.8	29°14.2
Ankaa	353°06.1	-42°09.9
Schedar	349°29.8	56°41.0
Diphda	348°46.3	-17°50.6
Achernar	335°19.1	-57°06.3
Hamal	327°50.1	23°35.2
Polaris	313°13.2	89°22.3
Acamar	315°10.8	-40°11.9
Menkar	314°05.1	4°11.6
Mirfak	308°26.8	49°57.2
Aldebaran	290°38.6	16°33.7
Rigel	281°03.0	-8°10.1
Capella	280°20.6	46°01.4
Bellatrix	278°21.9	6°22.5
Elmath	278°00.8	28°37.7
Anilam	275°36.8	-1°11.0
Betelgeuse	270°51.2	7°24.8
Canopus	263°51.8	-52°42.2
Sirius	258°25.5	-16°44.9
Adhara	255°05.2	-29°00.1
Procyon	244°50.1	5°09.6
Pollux	234°16.4	27°57.8
Avior	243°14.5	-59°35.1
Suhail	222°45.9	-43°31.9
Miaplacidus	221°38.3	-69°49.0
Alphard	217°47.2	-8°46.1
Regulus	207°33.9	11°50.5
Dubhe	193°40.6	61°36.5
Denebola	182°24.5	14°25.7
Gienah	175°43.2	-17°41.0
Acrux	173°00.0	28°36°14.3
Gacrux	171°51.5	-57°15.3
Alioth	166°12.9	55°49.1
Spica	158°21.9	-11°17.7
Alkaid	152°52.0	49°11.0
Hadar	148°35.8	-60°29.8
Menkent	147°57.3	-36°29.7
Arcturus	145°47.7	19°02.9
Rigel Kent.	139°40.1	-60°56.5
Kochab	137°20.9	74°02.9
Zuben'ubi	136°55.6	-16°08.9
Alphecca	126°03.5	26°37.8
Antares	112°15.4	-26°29.3
Atria	107°09.4	-69°04.5
Sabik	102°02.3	-15°45.4
Shaula	96°09.8	-37°07.4
Rasalhague	95°58.2	12°32.6
Eltanin	90°42.2	51°29.3
Kaus Aug.	83°31.9	34°22.4
Vega	80°33.0	38°48.7
Nunki	75°47.1	-26°15.9
Altair	61°59.4	8°56.3
Peacock	53°04.7	-56°39.3
Deneb	49°25.4	45°22.6
Enif	33°38.1	9°59.8
Al Na'ir	27°31.9	-46°50.3
Fomalhaut	15°13.6	-29°29.1
Scheat	13°44.4	28°13.6
Markab	13°29.1	15°20.8

	SHA	Dec
Oct 28 Tue		Mer.pass.
Venus	163°13.3	10:41
Mars	127°49.5	13:02
Jupiter	243°15.3	05:20
Saturn	2°41.8	21:19
Oct 29 Wed	SHA	Mer.pass.
Venus	162°03.9	10:42
Mars	127°05.9	13:01
Jupiter	243°12.4	05:16
Saturn	2°44.6	21:15
Oct 30 Thu	SHA	Mer.pass.
Venus	160°54.3	10:42
Mars	126°22.1	13:00
Jupiter	243°09.6	05:12
Saturn	2°47.4	21:11
Horizontal parallax		
Venus:	0.1	
Mars:	0.1	

h	Sun			Moon			
Tue	GHA	Dec	GHA	ν	Dec	d	HP
0	184°01.8	S13°07.8	109°00.4	9.8'	S26°59.7	5.0'	55.0'
1	199°01.9		123°29.2	9.8'	26°54.7	5.1'	55.0'
2	214°01.9	09.4	137°58.0	9.8'	26°49.5	5.2'	55.0'
3	229°02.0	· · 10.3	152°26.9	9.9'	26°44.2	5.4'	55.0'
4	244°02.0	11.1	166°55.7	9.9'	26°38.8	5.5'	55.1'
5	259°02.1	12.0	181°24.6	9.9'	26°33.2	5.6'	55.1'
6	274°02.1	S13°12.8	195°53.6	9.9'	S26°27.5	5.8'	55.1'
7	289°02.2	13.6	210°22.5	10.0'	26°21.7	5.9'	55.1'
8	304°02.2	14.5	224°51.5	10.0'	26°15.7	6.0'	55.2'
9	319°02.3	· · 15.3	239°20.5	10.0'	26°09.6	6.2'	55.2'
10	334°02.3	16.1	253°49.6	10.1'	26°03.4	6.3'	55.2'
11	349°02.4	17.0	268°18.6	10.1'	25°57.0	6.4'	55.2'
12	4°02.4	S13°17.8	282°47.8	10.1'	S25°50.5	6.6'	55.3'
13	19°02.5	18.6	297°16.9	10.2'	25°43.9	6.7'	55.3'
14	34°02.5	19.5	311°46.1	10.2'	25°37.1	6.8'	55.3'
15	49°02.6	· · 20.3	326°15.3	10.2'	25°30.2	7.0'	55.3'
16	64°02.6	21.1	340°44.5	10.3'	25°23.1	7.1'	55.4'
17	79°02.6	21.9	355°13.8	10.3'	25°16.0	7.2'	55.4'
18	94°02.7	S13°22.8	9°43.1	10.3'	S25°08.7	7.4'	55.4'
19	109°02.7	23.6	24°12.4	10.4'	25°01.2	7.5'	55.4'
20	124°02.8	24.4	38°41.8	10.4'	24°53.7	7.6'	55.5'
21	139°02.8	· · 25.3	53°11.2	10.4'	24°46.0	7.8'	55.5'
22	154°02.9	26.1	67°40.7	10.5'	24°38.2	7.9'	55.5'
23	169°02.9	26.9	82°10.2	10.5'	24°30.2	8.0'	55.6'
	SD.=16.1	d=−0.8			S.D.=15.1		

Aries		Venus		Mars		Jupiter		Saturn	
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	39°32.2	199°16.8	S06°56.2	165°10.4	S19°48.2	282°39.3	N21°13.5	42°22.3	S03°55.0
1	54°34.7	214°16.4	57.4	180°11.0	48.7	297°41.6	13.5	57°24.8	55.0
2	69°37.1	229°15.9	58.5	195°11.7	49.1	312°44.0	13.5	72°27.4	55.1
3	84°39.6	244°15.5	06°59.7	210°12.3	49.5	327°46.4	13.5	87°30.0	55.1
4	99°42.1	259°15.0	07°00.9	225°12.9	50.0	342°48.7	13.5	102°32.6	55.2
5	114°44.5	274°14.6	02.1	240°13.5	50.4	357°51.1	13.5	117°35.1	55.2
6	129°47.0	289°14.1	S07°03.3	255°14.2	S19°50.8	12°53.5	N21°13.5	132°37.7	S03°55.2
7	144°49.4	304°13.7	04.5	270°14.8	51.3	27°55.8	13.4	147°40.3	55.3
8	159°51.9	319°13.2	05.7	285°15.4	51.7	42°58.2	13.4	162°42.9	55.3
9	174°54.4	334°12.8	06.9	300°16.1	52.1	58°00.6	13.4	177°45.4	55.4
10	189°56.8	349°12.3	08.1	315°16.7	52.6	73°02.9	13.4	192°48.0	55.4
11	204°59.3	4°11.9	09.2	330°17.3	53.0	88°05.3	13.4	207°50.6	55.4
12	220°01.8	19°11.5	S07°10.4	345°17.9	S19°53.4	103°07.7	N21°13.4	222°53.1	S03°55.5
13	235°04.2	34°11.0	11.6	0°18.6	53.9	118°10.0	13.4	237°55.7	55.5
14	250°06.7	49°10.6	12.8	15°19.2	54.3	133°12.4	13.4	252°58.3	55.6
15	265°09.2	64°10.1	14.0	30°19.8	54.7	148°14.8	13.4	268°00.9	55.6
16	280°11.6	79°09.7	15.2	45°20.4	55.2	163°17.1	13.4	283°03.4	55.6
17	295°14.1	94°09.2	16.4	60°21.1	55.6	178°19.5	13.3	298°06.0	55.7
18	310°16.6	109°08.8	S07°17.6	75°21.7	S19°56.0	193°21.9	N21°13.3	313°08.6	S03°55.7
19	325°19.0	124°08.3	18.7	90°22.3	56.5	208°24.2	13.3	328°11.2	55.8
20	340°21.5	139°07.9	19.9	105°22.9	56.9	223°26.6	13.3	343°13.7	55.8
21	355°23.9	154°07.4	21.1	120°23.6	57.3	238°29.0	13.3	358°16.3	55.8
22	10°26.4	169°07.0	22.3	135°24.2	57.7	253°31.3	13.3	13°18.9	55.9
23	25°28.9	184°06.5	23.5	150°24.8	58.2	268°33.7	13.3	28°21.4	55.9
Mer.pass.:21:18		v-0.4 d-1.2 m-3.8		v0.6 d-0.4 m1.5		v2.4 d-0.0 m-2.2		v2.6 d-0.0 m0.9	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	40°31.3	199°06.1	S07°24.7	165°25.4	S19°58.6	283°36.1	N21°13.3	43°24.0	S03°55.9
1	55°33.8	214°05.6	25.9	180°26.1	59.0	298°38.5	13.3	58°26.6	56.0
2	70°36.3	229°05.2	27.0	195°26.7	59.5	313°40.8	13.2	73°29.2	56.0
3	85°38.7	244°04.7	28.2	210°27.3	59.9	328°43.2	13.2	88°31.7	56.1
4	100°41.2	259°04.3	29.4	225°27.9	60.0	343°45.6	13.2	103°34.3	56.1
5	115°43.7	274°03.8	30.6	240°28.6	60.7	358°47.9	13.2	118°36.9	56.1
6	130°46.1	289°03.4	S07°31.8	255°29.2	S20°01.2	13°50.3	N21°13.2	133°39.4	S03°56.2
7	145°48.6	304°02.9	33.0	270°29.8	61.6	28°52.7	13.2	148°42.0	56.2
8	160°51.0	319°02.4	34.1	285°30.4	62.0	43°55.1	13.2	163°44.6	56.3
9	175°53.5	334°02.0	35.3	300°31.0	62.5	58°57.4	13.2	178°47.1	56.3
10	190°56.0	349°01.5	36.5	315°31.7	62.9	73°59.8	13.2	193°49.7	56.3
11	205°58.4	4°01.1	37.7	330°32.3	63.3	89°02.2	13.2	208°52.3	56.4
12	221°00.9	19°00.6	S07°38.9	345°32.9	S20°03.7	104°04.6	N21°13.2	223°54.9	S03°56.4
13	236°03.4	34°00.2	40.0	0°33.5	64.2	119°06.9	13.1	238°57.4	56.5
14	251°05.8	48°59.7	41.2	15°34.1	64.6	134°09.3	13.1	254°00.0	56.5
15	266°08.3	63°59.3	42.4	30°34.8	65.0	149°11.7	13.1	269°02.6	56.5
16	281°10.8	78°58.8	43.6	45°35.4	65.4	164°14.1	13.1	284°05.1	56.6
17	296°13.2	93°58.4	44.8	60°36.0	65.9	179°16.4	13.1	299°07.7	56.6
18	311°15.7	108°57.9	S07°45.9	75°36.6	S20°06.3	194°18.8	N21°13.1	314°10.3	S03°56.6
19	326°18.2	123°57.4	47.1	90°37.2	66.7	209°21.2	13.1	329°12.8	56.7
20	341°20.6	138°57.0	48.3	105°37.9	67.1	224°23.6	13.1	344°15.4	56.7
21	356°23.1	153°56.5	49.5	120°38.5	67.5	239°26.0	13.1	359°18.0	56.8
22	11°25.5	168°56.1	50.7	135°39.1	68.0	254°28.3	13.1	14°20.5	56.8
23	26°28.0	183°55.6	51.8	150°39.7	68.4	269°30.7	13.1	29°23.1	56.8
Mer.pass.:21:14		v-0.5 d-1.2 m-3.8		v0.6 d-0.4 m1.5		v2.4 d-0.0 m-2.2		v2.6 d-0.0 m0.9	

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	41°30.5	198°55.2	S07°53.0	165°40.3	S20°08.8	284°33.1	N21°13.0	44°25.7	S03°56.9
1	56°32.9	213°54.7	54.2	180°40.9	69.2	299°35.5	13.0	59°28.2	56.9
2	71°35.4	228°54.2	55.4	195°41.6	69.7	314°37.8	13.0	74°30.8	56.9
3	86°37.9	243°53.8	56.6	210°42.2	70.1	329°40.2	13.0	89°33.4	57.0
4	101°40.3	258°53.3	57.7	225°42.8	70.5	344°42.6	13.0	104°35.9	57.0
5	116°42.8	273°52.9	07°58.9	240°43.4	70.9	359°45.0	13.0	119°38.5	57.1
6	131°45.3	288°52.4	S08°00.1	255°44.0	S20°11.3	14°47.4	N21°13.0	134°41.1	S03°57.1
7	146°47.7	303°50.2	01.3	270°44.6	71.8	29°49.8	13.0	149°43.6	57.1
8	161°50.2	318°51.5	02.4	285°45.3	72.2	44°52.1	13.0	164°46.2	57.2
9	176°52.6	333°51.0	03.6	300°45.9	72.6	59°54.5	13.0	179°48.8	57.2
10	191°55.1	348°50.6	04.8	315°46.5	73.0	74°56.9	13.0	194°51.3	57.2
11	206°57.6	3°50.1	06.0	330°47.1	73.4	89°59.3	13.0	209°53.9	57.3
12	222°00.0	18°49.6	S08°07.1	345°47.7	S20°13.9	105°01.7	N21°12.9	224°56.5	S03°57.3
13	237°02.5	33°49.2	08.3	0°48.3	74.3	120°04.1	12.9	239°59.0	57.4
14	252°05.0	48°48.7	09.5	15°48.9	74.7	135°06.4	12.9	255°01.6	57.4
15	267°07.4	63°48.3	10.7	30°49.6	75.1	150°08.8	12.9	270°04.2	57.4
16	282°09.9	78°47.8	11.8	45°50.2	75.5	165°11.2	12.9	285°06.7	57.5
17	297°12.4	93°47.3	13.0	60°50.8	75.9	180°13.6	12.9	300°09.3	57.5
18	312°14.8	108°46.9	S08°14.2	75°51.4	S20°16.4	195°16.0	N21°12.9	315°11.9	S03°57.5
19	327°17.3	123°46.4	15.3	90°52.0	76.8	210°18.4	12.9	330°14.5	57.6
20	342°19.8	138°45.9	16.5	105°52.6	77.2	225°20.7	12.9	345°17.0	57.6
21	357°22.2	153°45.5	17.7	120°53.2	77.6	240°23.1	12.9	0°19.6	57.6
22	12°24.7	168°45.0	18.9	135°53.8	78.0	255°25.5	12.9	15°22.1	57.7
23	27°27.1	183°44.6	20.0	150°54.5	78.4	270°27.9	12.9	30°24.7	57.7
Mer.pass.:21:10		v-0.5 d-1.2 m-3.8		v0.6 d-0.4 m1.5		v2.4 d-0.0 m-2.2		v2.6 d-0.0 m0.9	

Stars		SHA		Dec	
Alpheratz	357°33.8	29°14.2			
Ankaa	353°06.1	-42°10.0			
Schedar	349°29.8	56°41.0			
Diphda	348°46.3	-17°50.6			
Achernar	335°19.1	-57°06.3			
Hamal	327°50.1	23°35.2			
Polaris	313°12.8	89°22.4			
Acamar	315°10.8	-40°11.9			
Menkar	314°05.1	4°11.6			
Mirfak	304°26.8	49°57.2			
Aldebaran	290°38.6	16°33.8			
Rigel	281°03.0	-8°10.1			
Capella	280°20.6	46°01.4			
Bellatrix	278°21.9	6°22.5			
Elmath	278°00.8	28°37.8			
Alnilam	275°36.8	-1°11.0			
Betelgeuse	270°51.2	7°24.8			
Canopus	263°51.8	-52°42.2			
Sirius	258°25.5	-16°44.9			
Adhara	255°05.2	-29°00.2			
Procyon	244°50.1	5°09.6			
Pollux	243°16.4	27°57.8			
Avior	234°14.4	-59°35.1			
Suhail	222°45.9	-43°31.9			
Miaplacidus	221°38.3	-69°49.0			
Alphard	217°47.2	-8°46.1			
Regulus	207°37.9	11°50.5			
Dubhe	193°40.6	61°36.5			
Denebola	182°24.5	14°25.7			
Gienah	175°43.2	-17°41.0			
Acrux	173°00.0	-63°14.3			
Gacrux	171°61.5	-57°15.3			
Alioth	166°12.9	-55°49.1			
Spica	158°21.9	-11°17.7			
Alkaid	152°52.0	49°11.0			
Hadar	148°35.8	-60°29.8			
Menkent	147°57.3	-36°29.7			
Arcturus	145°47.7	19°02.9			
Rigel Kent.	139°40.1	-60°56.5			
Kochab	137°20.9	74°02.9			
Zuben'el	136°55.6	-16°08.9			
Alphecca	126°03.3	-26°37.7			
Antares	112°15.4	-26°29.3			
Atria	107°09.5	-69°04.5			
Sabik	102°02.3	-15°45.4			
Shaula	96°09.8	-37°07.4			
Rasalhague	95°58.2	12°32.6			
Eltanin	90°42.2	51°29.3			
Kaus Aest.	83°31.9	-34°22.4			
Vega	80°33.0	38°48.7			
Nunki	75°47.1	-26°15.9			
Altair	61°59.4	8°56.3			
Peacock	53°04.7	-56°39.3			
Deneb	49°25.4	45°22.6			
Enif	33°38.1	9°59.8			
Al Na'ir	27°31.9	-46°50.3			
Fomalhaut	15°13.6	-29°29.2			
Scheat	13°44.4	28°13.6			
Markab	13°29.1	15°20.8			

Oct 31		SHA	Mer.pass.
Fri	Venus	159°44.6	10:43
Mars	Jupiter	125°38.2	12:59
Saturn	Saturn	243°07.1	05:09
		2°50.1	21:07
Oct 01		SHA	Mer.pass.
Fri	Venus	158°34.7	10:44

Aries		Venus		Mars		Jupiter		Saturn	
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	42°29.6	198°44.1	S08°21.2	165°55.1	S20°18.9	285°30.3	N21°12.9	45°27.3	S03°57.7
1	57°32.1	213°43.6	22.4	180°55.7	19.3	300°32.7	12.8	60°29.8	57.8
2	72°34.5	228°43.2	23.5	195°56.3	19.5	315°35.1	12.8	75°32.4	57.8
3	87°37.0	243°42.7	•• 24.7	210°56.9	•• 20.1	330°37.5	•• 12.8	90°35.0	•• 57.9
4	102°39.5	258°42.2	25.9	225°57.5	20.5	345°39.9	12.8	105°37.5	57.9
5	117°41.9	273°41.8	27.1	240°58.1	20.9	0°42.2	12.8	120°40.1	57.9
6	132°44.4	288°41.3	S08°28.2	255°58.7	S20°21.3	15°44.6	N21°12.8	135°42.6	S03°58.0
7	147°46.9	303°40.8	29.4	270°59.3	21.8	30°47.0	12.8	150°45.2	58.0
8	162°49.3	318°40.4	30.6	285°59.9	22.2	45°49.4	12.8	165°47.8	58.0
9	177°51.8	333°39.9	•• 31.7	301°00.6	•• 22.6	60°51.8	•• 12.8	180°50.3	•• 58.1
10	192°54.2	348°39.4	32.9	316°01.2	23.0	75°54.2	12.8	195°52.9	58.1
11	207°56.7	3°39.0	34.1	331°01.8	23.4	90°56.6	12.8	210°55.5	58.1
12	222°59.2	18°38.5	S08°35.2	346°02.4	S20°23.8	105°59.0	N21°12.5	225°58.0	S03°58.2
13	238°01.6	33°38.0	36.4	1°03.0	24.2	121°01.4	12.8	241°00.6	58.2
14	253°04.1	48°37.5	37.6	16°03.6	24.6	136°03.8	12.8	256°03.1	58.2
15	268°06.6	63°37.1	•• 38.7	31°04.2	•• 25.0	151°06.2	•• 12.8	271°05.7	•• 58.3
16	283°09.0	78°36.6	39.9	46°04.8	25.5	166°08.6	12.8	286°08.3	58.3
17	298°11.5	93°36.1	41.1	61°05.4	25.9	181°10.9	12.7	301°10.8	58.4
18	313°14.0	108°35.7	S08°42.2	76°06.0	S20°26.3	196°13.3	N21°12.7	316°13.4	S03°58.4
19	328°16.4	123°35.2	43.4	91°06.6	26.7	211°15.7	12.7	331°16.0	58.4
20	343°18.9	138°34.7	44.6	106°07.2	27.1	226°18.1	12.7	346°18.5	58.5
21	358°21.4	153°34.3	•• 45.7	121°07.8	•• 27.5	241°20.5	•• 12.7	1°21.1	•• 58.5
22	13°23.8	168°33.8	46.9	136°08.4	27.9	256°22.9	12.7	16°23.6	58.5
23	28°26.3	183°33.3	48.1	151°09.0	28.3	271°25.3	12.7	31°26.2	58.6
Mer.pass.:21:07		v-0.5 d-1.2 m-3.8		v0.6 d-0.4 m1.5		v2.4 d-0.0 m-2.2		v2.6 d-0.0 m0.9	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	43°28.7	198°32.8	S08°49.2	166°09.6	S20°28.7	286°27.7	N21°12.7	46°28.8	S03°58.6
1	58°31.2	213°32.4	50.4	181°10.2	29.1	301°30.1	12.7	61°31.3	58.6
2	73°33.7	228°31.9	51.5	196°10.9	29.5	316°32.5	12.7	76°33.9	58.7
3	88°36.1	243°31.4	•• 52.7	211°11.5	•• 29.9	331°34.9	•• 12.7	91°36.4	•• 58.7
4	103°38.6	258°30.9	53.9	226°12.1	30.4	346°37.3	12.7	106°39.0	58.7
5	118°41.1	273°30.5	55.0	241°12.7	30.8	1°39.7	12.7	121°41.6	58.8
6	133°43.5	288°30.0	S08°56.2	256°13.3	S20°31.2	16°42.1	N21°12.7	136°44.1	S03°58.8
7	148°46.0	303°29.5	57.3	271°13.9	31.6	31°44.5	12.7	151°46.7	58.8
8	163°48.5	318°29.0	58.5	286°14.5	32.0	46°46.9	12.7	166°49.2	58.9
9	178°50.9	333°28.6	08°59.7	301°15.1	•• 32.4	61°49.3	•• 12.7	181°51.8	•• 58.9
10	193°53.4	348°28.1	09°00.8	316°15.7	32.8	76°51.7	12.6	196°54.4	58.9
11	208°55.9	3°27.6	02.0	331°16.3	33.2	91°54.1	12.6	211°56.9	59.0
12	223°58.3	18°27.1	S09°03.1	346°16.9	S20°33.6	106°56.5	N21°12.6	226°59.5	S03°59.0
13	239°00.8	33°26.7	04.3	1°17.5	34.0	121°58.9	12.6	242°02.0	59.0
14	254°03.2	48°26.2	05.5	16°18.1	34.4	137°01.3	12.6	257°04.6	59.1
15	269°05.7	63°25.7	•• 06.6	31°18.7	•• 34.8	152°03.7	•• 12.6	272°07.2	•• 59.1
16	284°08.2	78°25.7	07.8	46°19.3	35.2	167°06.1	12.6	287°09.7	59.1
17	299°10.6	93°24.8	08.9	61°19.9	35.6	182°08.5	12.6	302°12.3	59.2
18	314°13.1	108°24.3	S09°10.1	76°20.5	S20°36.0	197°10.9	N21°12.6	317°14.8	S03°59.2
19	329°15.6	123°23.8	11.3	91°21.1	36.4	212°13.3	12.6	332°17.4	59.2
20	344°18.0	138°23.3	12.4	106°21.7	36.8	227°15.7	12.6	347°20.0	59.3
21	359°20.5	153°22.8	•• 13.6	121°22.3	•• 37.2	242°18.1	•• 12.6	2°22.5	•• 59.3
22	14°23.6	168°22.4	14.7	136°22.9	37.6	257°20.5	12.6	17°25.1	59.3
23	29°25.4	183°21.9	15.9	151°23.5	38.0	272°22.9	12.6	32°27.6	59.4
Mer.pass.:21:03		v-0.5 d-1.2 m-3.8		v0.6 d-0.4 m1.5		v2.4 d-0.0 m-2.2		v2.6 d-0.0 m0.9	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	44°27.9	198°21.4	S09°17.0	166°24.1	S20°38.4	287°25.3	N21°12.6	47°30.2	S03°59.4
1	59°30.3	213°20.9	18.2	181°24.7	38.8	302°27.7	12.6	62°32.7	59.4
2	74°32.8	228°20.4	19.3	196°25.3	39.2	317°30.1	12.6	77°35.3	59.5
3	89°35.3	243°19.9	•• 20.5	211°25.9	•• 39.6	332°32.5	•• 12.6	92°37.9	•• 59.5
4	104°37.7	258°19.5	21.7	226°26.5	40.0	347°34.9	12.6	107°40.4	59.5
5	119°40.2	273°19.0	22.8	241°27.1	40.4	2°37.4	12.6	122°43.0	59.6
6	134°42.7	288°18.5	S09°24.0	256°27.6	S20°40.8	17°39.8	N21°12.6	137°45.5	S03°59.6
7	149°45.1	303°18.0	25.1	271°28.2	41.2	32°42.2	12.6	152°48.1	59.6
8	164°47.6	318°17.5	26.3	286°28.8	41.6	47°44.6	12.6	167°50.6	59.7
9	179°50.1	333°17.0	•• 27.4	301°29.4	•• 42.0	62°47.0	•• 12.5	182°53.2	•• 59.7
10	194°52.5	348°16.6	28.6	316°30.0	42.4	77°49.4	12.5	197°55.8	59.7
11	209°55.0	3°16.1	29.7	331°30.6	42.8	92°51.8	12.5	212°58.3	59.8
12	224°57.5	18°15.6	S09°30.9	346°31.2	S20°43.2	107°54.2	N21°12.5	228°00.9	S03°59.8
13	239°59.9	33°15.1	32.0	1°31.8	43.6	122°56.6	12.5	243°03.4	59.8
14	255°02.4	48°14.6	33.2	16°32.4	44.0	137°59.0	12.5	258°06.0	59.8
15	270°04.8	63°14.1	•• 34.3	31°33.0	•• 44.4	153°01.4	•• 12.5	273°08.5	•• 59.9
16	285°07.3	78°13.7	35.5	46°33.6	44.8	168°03.9	12.5	288°11.1	59.9
17	300°09.8	93°13.2	36.6	61°34.2	45.2	183°06.3	12.5	303°13.6	03°59.9
18	315°12.2	108°12.7	S09°37.8	76°34.8	S20°45.6	198°08.7	N21°12.5	318°16.2	S04°00.0
19	330°14.7	123°12.2	38.9	91°35.4	46.0	213°11.1	12.5	333°18.8	00.0
20	345°17.2	138°11.7	40.1	106°36.0	46.4	228°13.5	12.5	348°21.3	00.0
21	0°19.6	153°11.2	•• 41.2	121°36.6	•• 46.7	243°15.9	•• 12.5	3°23.9	•• 00.1
22	15°22.6	168°10.7	42.4	136°37.2	47.1	258°18.3	12.5	18°26.4	00.1
23	30°24.6	183°10.2	43.5	151°37.7	47.5	273°20.7	12.5	33°29.0	00.1
Mer.pass.:20:59		v-0.5 d-1.2 m-3.8		v0.6 d-0.4 m1.5		v2.4 d-0.0 m-2.2		v2.6 d-0.0 m0.9	

SHA	Dec
Alpheratz	357°33.8 29°14.2
Ankaa	353°06.1 -42°10.0
Schedar	349°29.8 56°41.0
Diphda	348°46.3 -17°50.6
Achernar	335°19.1 -57°06.3
Hamal	327°50.1 2°35.2
Polaris	313°12.4 89°22.4
Acamar	315°10.8 -40°11.9
Menkar	314°05.1 4°11.6
Mirfak	308°26.8 49°57.2
Aldebaran	290°38.6 16°33.7
Rigel	281°03.0 -8°10.1
Capella	280°20.5 46°01.4
Bellatrix	278°21.9 6°22.5
Elnath	278°00.7 28°37.8
Anilam	275°36.8 -1°11.0
Betelgeuse	270°51.1 7°24.8
Canopus	263°51.8 -52°42.2
Sirius	258°25.5 -16°44.9
Adhara	255°05.2 -29°02.7
Procyon	244°50.0 5°09.6
Pollux	243°16.4 27°57.8
Avior	234°14.4 -59°35.2
Suhail	222°45.9 -43°31.9
Miaplacidus	221°38.2 -69°49.0
Alphard	217°47.2 -8°46.1
Regulus	207°33.8 11°50.5
Dubhe	193°40.5 61°36.5
Denebola	182°24.5 14°25.7
Gienah	175°43.2 -17°41.0
Acrux	173°00.2 -63°14.3
Gacrux	171°51.4 -57°15.3
Alioth	166°12.9 55°49.1
Spica	158°21.9 -11°17.7
Alkaid	152°51.9 49°11.0
Hadar	148°35.8 -60°29.8
Menkent	147°57.3 -36°29.7
Arcturus	145°47.7 19°02.9
Rigel Cent.	139°40.1 -60°56.5
Kochab	137°21.0 74°02.9
Zuben'ubi	136°55.6 -16°08.9
Alphecca	126°03.5 26°37.7
Antares	112°15.4 -26°29.3
Atria	107°09.5 -69°04.5
Sabik	102°02.3 -15°45.4
Shaula	96°09.8 -37°07.4
Rasalhague	95°58.2 12°32.6
Eltanin	90°42.3 51°29.3
Kaus Aust.	83°31.9 -34°22.4
Vega	80°33.0 38°48.6
Nunki	75°47.1 -26°15.9
Altair	61°59.4 8°56.3
Peacock	53°04.8 -56°39.3
Deneb	49°25.4 45°22.6
Enif	33°38.1 9°59.8
Al Nair	27°31.9 -46°50.3
Fomalhaut	15°13.6 -29°29.2
Scheat	13°44.4 28°13.6
Markab	13°29.1 15°20.8

Alphard	217° 47.2	-8° 46.1
Regulus	207° 33.8	11° 50.5
Dubhe	193° 40.5	61° 36.5
Deneb	182° 24.5	14° 25.7
Gienah	175° 43.2	-17° 41.0
Acrux	173° 00.0	-63° 14.3

Gacrux	171° 51.4	-57° 15.3
Alioth	166° 12.9	55° 49.1
Spica	158° 21.9	-11° 17.7
Alkaid	152° 51.9	49° 11.0
Hadar	148° 35.8	-60° 29.8
Menkent	147° 57.3	36° 29.7

Arcturus	145° 47.7	19° 02.9
Rigel Kent.	139° 40.1	-60° 56.5
Kochab	137° 21.0	74° 02.9
Zuben'ubi	136° 55.6	-16° 08.9
Alphecca	126° 03.5	26° 37.2

Horizontal parallax	
Venus:	0.1
Mars:	0.1

h	Sun		Moon				
Mon	GHA	Dec	GHA	ν	Dec	d	HP
0	184°05.6	S15°04.3	38°30.2	11.3'	N03°27.1	17.3'	60.1'
1	199°05.6	05.1	53°00.5	11.2'	03°44.4	17.3'	60.1'
2	214°05.6	05.8	67°30.6	11.1'	04°01.6	17.3'	60.1'
3	229°05.6	•• 06.6	82°00.7	11.1'	04°18.9	17.3'	60.2'
4	244°05.6	07.4	96°30.8	11.0'	04°36.2	17.3'	60.2'
5	259°05.6	08.2	111°00.7	10.9'	04°53.4	17.3'	60.2'
6	274°05.6	S15°09.0	125°30.6	10.9'	N05°10.7	17.3'	60.3'
7	289°05.6	09.7	140°00.5	10.8'	05°27.9	17.2'	60.3'
8	304°05.6	10.5	154°30.3	10.7'	05°45.2	17.2'	60.3'
9	319°05.6	•• 11.3	169°00.0	10.7'	06°02.4	17.2'	60.4'
10	334°05.6	12.1	183°29.6	10.6'	06°19.6	17.2'	60.4'
11	349°05.6	12.8	197°59.1	10.5'	06°36.8	17.2'	60.4'
12	4°05.6	S15°13.6	212°28.6	10.4'	N06°54.0	17.2'	60.5'
13	19°05.6	14.4	226°58.0	10.4'	07°11.2	17.2'	60.5'
14	34°05.6	15.2	241°27.4	10.3'	07°28.3	17.1'	60.5'
15	49°05.6	•• 15.9	255°56.6	10.2'	07°45.4	17.1'	60.6'
16	64°05.6	16.7	270°25.8	10.1'	08°02.5	17.1'	60.6'
17	79°05.6	17.5	284°54.9	10.0'	08°19.6	17.0'	60.6'
18	94°05.6	S15°18.3	299°23.9	10.0'	N08°36.6	17.0'	60.7'
19	109°05.6	19.0	313°52.8	9.9'	08°53.6	17.0'	60.7'
20	124°05.6	19.8	328°21.6	9.8'	09°10.6	17.0'	60.7'
21	139°05.6	•• 20.6	342°50.4	9.7'	09°27.5	16.9'	60.7'
22	154°05.6	21.3	357°19.0	9.6'	09°44.4	16.9'	60.8'
23	169°05.6	22.1	11°47.6	9.5'	10°01.3	16.8'	60.8'
SD=16.1		d=0.8	S.D.=16.5				

	Aries			Venus			Mars			Jupiter			Saturn		
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	45°27.0	198°09.7	S09°44.7	166°38.3	S20°47.9	288°23.1	N21°12.5	48°31.5	S04°00.2						
1	60°29.5	213°09.3	45.8	181°38.9	48.3	303°25.6	12.5	63°34.1	00.2						
2	75°32.0	228°08.8	46.9	196°39.5	48.7	318°28.0	12.5	78°36.6	00.2						
3	90°34.4	243°08.3	•• 48.1	211°40.1	•• 49.1	333°30.4	•• 12.5	93°39.2	•• 00.3						
4	105°36.9	258°07.8	49.2	226°40.7	49.5	348°32.8	12.5	108°41.7	00.3						
5	120°39.3	273°07.3	50.4	241°41.3	49.9	3°35.2	12.5	123°44.3	00.3						
6	135°41.8	288°06.8	S09°51.5	256°41.9	S20°50.3	18°37.6	N21°12.5	138°46.8	S04°00.3						
7	150°44.3	303°06.3	52.7	271°42.5	50.7	33°40.0	12.5	153°49.4	00.4						
8	165°46.7	318°05.8	53.8	286°43.1	51.1	48°42.5	12.5	168°52.0	00.4						
9	180°49.2	333°05.3	•• 55.0	301°43.6	•• 51.4	63°44.9	•• 12.5	183°54.5	•• 00.4						
10	195°51.7	348°04.8	56.1	316°44.2	51.8	78°47.3	12.5	198°57.1	00.5						
11	210°54.1	3°04.3	57.2	331°44.8	52.2	93°49.7	12.5	213°59.6	00.5						
12	225°56.6	18°03.8	S09°58.4	346°45.4	S20°52.6	108°52.1	N21°12.5	229°02.2	S04°00.5						
13	240°59.1	33°03.4	09°59.5	1°46.0	53.0	123°54.6	12.5	244°04.7	00.6						
14	256°01.5	48°02.9	10°00.7	16°46.6	53.4	138°57.0	12.5	259°07.3	00.6						
15	271°04.0	63°02.4	•• 01.8	31°47.2	•• 53.8	153°59.4	•• 12.5	274°09.8	•• 00.6						
16	286°06.4	78°01.9	02.9	46°47.8	54.2	169°01.8	12.5	286°12.4	00.6						
17	301°08.9	93°01.4	04.1	61°48.3	54.6	184°04.2	12.5	304°14.9	00.7						
18	316°11.4	108°00.9	S10°05.2	76°48.9	S20°54.9	199°06.6	N21°12.5	319°17.5	S04°00.7						
19	331°13.8	123°00.4	06.4	91°49.5	55.3	214°09.1	12.5	334°20.0	00.7						
20	346°16.3	137°59.9	07.5	106°50.1	55.7	229°11.5	12.5	349°22.6	00.8						
21	1°18.8	152°59.4	•• 08.6	121°50.7	•• 56.1	244°13.9	•• 12.5	4°25.1	•• 00.8						
22	16°21.2	167°58.9	09.8	136°51.3	56.5	259°16.3	12.5	19°27.7	00.8						
23	31°23.7	182°58.4	10.9	151°51.9	56.9	274°18.8	12.5	34°30.2	00.9						
Mer.pass.:20:55			v-0.5 d-1.1 m-3.8			v0.6 d-0.4 m1.5			v2.4 d-0.0 m-2.2			v2.6 d-0.0 m0.9			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	46°26.2	197°57.9	S10°12.1	166°52.4	S20°57.3	289°21.2	N21°12.5	49°32.8	S04°00.9					
1	61°28.6	212°57.4	13.2	181°53.0	57.6	304°23.6	12.5	64°35.3	00.9					
2	76°31.1	227°56.9	14.3	196°53.6	58.0	319°26.0	12.4	79°37.9	00.9					
3	91°33.6	242°56.4	•• 15.5	211°54.2	•• 58.4	334°28.4	•• 12.4	94°40.4	•• 01.0					
4	106°36.0	257°55.9	16.6	226°54.8	58.8	349°30.9	12.4	109°43.0	01.0					
5	121°38.5	272°55.4	17.7	241°55.4	59.2	4°33.3	12.4	124°45.5	01.0					
6	136°40.9	287°54.9	S10°18.9	256°56.0	S20°59.6	19°35.7	N21°12.4	139°48.1	S04°01.1					
7	151°43.4	302°54.4	20.0	271°56.5	20°59.9	34°38.1	12.4	154°50.6	01.1					
8	166°45.9	317°53.9	21.1	286°57.1	21°00.3	49°40.6	12.4	169°53.2	01.1					
9	181°48.3	332°53.4	•• 22.3	301°57.7	•• 00.7	64°43.0	•• 12.4	184°55.7	•• 01.1					
10	196°50.8	347°52.9	23.4	316°58.3	01.1	79°45.4	12.4	199°58.3	01.2					
11	211°53.3	2°52.4	24.5	331°58.9	01.5	94°47.8	12.4	215°00.8	01.2					
12	226°55.7	17°51.9	S10°25.7	346°59.4	S21°01.9	109°50.3	N21°12.4	230°03.4	S04°01.2					
13	241°58.2	32°51.4	26.8	2°00.0	02.2	124°52.7	12.4	245°05.9	01.3					
14	257°00.7	47°50.9	27.9	17°00.6	02.6	139°55.1	12.4	260°08.5	01.3					
15	272°03.1	62°50.4	•• 29.1	32°01.2	•• 03.0	154°57.5	•• 12.4	275°11.0	•• 01.3					
16	287°05.6	77°49.9	30.2	47°01.8	03.4	170°00.0	12.4	290°13.6	01.3					
17	302°08.1	92°49.4	31.3	62°02.4	03.8	185°02.4	12.4	305°16.1	01.4					
18	317°10.5	107°48.9	S10°32.5	77°02.9	S21°04.1	200°04.8	N21°12.4	320°18.7	S04°01.4					
19	332°13.0	122°48.4	33.6	92°03.5	04.5	215°07.3	12.4	335°21.2	01.4					
20	347°15.4	137°47.8	34.7	107°04.1	04.9	230°09.7	12.4	350°23.8	01.5					
21	2°17.9	152°47.3	•• 35.8	122°04.7	•• 05.3	245°12.1	•• 12.4	5°26.3	•• 01.5					
22	17°20.4	167°46.8	37.0	137°05.2	05.7	260°14.5	12.4	20°28.9	01.5					
23	32°22.8	182°46.3	38.1	152°05.8	06.0	275°17.0	12.4	35°31.4	01.5					
Mer.pass.:20:51			v-0.5 d-1.1 m-3.8			v0.6 d-0.4 m1.5			v2.4 d-0.0 m-2.2			v2.6 d-0.0 m0.9		

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	47°25.3	197°45.8	S10°39.2	167°06.4	S21°06.4	290°19.4	N21°12.4	50°33.9	S04°01.6					
1	62°27.8	212°45.3	40.4	182°07.0	06.8	305°21.8	12.4	65°36.5	01.6					
2	77°30.2	227°44.8	41.5	197°07.6	07.2	320°24.3	12.4	80°39.0	01.6					
3	92°32.2	242°44.3	•• 42.6	212°08.1	•• 07.5	335°26.7	•• 12.4	95°41.6	•• 01.7					
4	107°35.2	257°43.8	43.7	227°08.7	07.9	350°29.1	12.4	110°44.1	01.7					
5	122°37.6	272°43.3	44.9	242°09.3	08.3	5°31.6	12.4	125°46.7	01.7					
6	137°40.1	287°42.8	S10°46.0	257°09.9	S21°08.7	20°34.0	N21°12.4	140°49.2	S04°01.7					
7	152°42.6	302°42.3	47.1	272°10.4	09.0	35°36.4	12.4	155°51.8	01.8					
8	167°45.0	317°41.7	48.2	287°11.0	09.4	50°38.9	12.4	170°54.3	01.8					
9	182°47.5	332°41.2	•• 49.4	302°11.6	•• 09.8	65°41.3	•• 12.4	185°56.9	•• 01.8					
10	197°49.9	347°40.7	50.5	317°12.2	10.2	80°43.7	12.4	200°59.4	01.8					
11	212°52.4	2°40.2	51.6	332°12.8	10.5	95°46.2	12.4	216°02.0	01.9					
12	227°54.9	17°39.7	S10°52.7	347°13.3	S21°10.9	110°48.6	N21°12.4	231°04.5	S04°01.9					
13	242°57.3	32°39.2	53.8	2°13.9	11.3	125°51.0	12.4	246°07.0	01.9					
14	257°59.8	47°38.7	55.0	17°14.5	11.7	140°53.5	12.4	261°09.6	02.0					
15	273°02.3	62°38.2	•• 56.1	32°15.1	•• 12.0	155°55.9	•• 12.5	276°12.1	•• 02.0					
16	288°04.7	77°37.6	57.2	47°15.6	12.4	170°58.3	12.5	291°14.7	02.0					
17	303°07.2	92°37.1	58.3	62°16.2	12.8	186°00.8	12.5	306°17.2	02.0					
18	318°09.7	107°36.6	S10°59.4	77°16.8	S21°13.2	201°03.2	N21°12.5	321°19.8	S04°02.1					
19	333°12.1	122°36.1	11°00.6	92°17.3	13.5	216°05.7	12.5	336°22.3	02.1					
20	348°14.6	137°35.6	01.7	107°17.9	13.9	231°08.1	12.5	351°24.9	02.1					
21	3°17.1	152°35.1	•• 02.8	122°18.5	•• 14.3	246°10.5	•• 12.5	6°27.4	•• 02.1					
22	18°19.5	167°34.6	03.9	137°19.1	14.6	261°13.0	12.5	21°29.9	02.2					
23	33°22.0	182°34.0	05.0	152°19.6	15.0	276°15.4	12.5	36°32.5	02.2					
Mer.pass.:20:47			v-0.5 d-1.1 m-3.8			v0.6 d-0.4 m1.4			v2.4 d0.0 m-2.2			v2.5 d-0.0 m0.9		

Stars		
SHA	Dec	
Alpheratz	357°33.8	29°14.2
Ankaa	353°06.1	-42°10.0
Schedar	349°29.8	56°41.0
Diphda	348°46.4	-17°50.6
Achernar	335°19.1	-57°06.4
Hamal	327°50.1	23°35.2
Polaris	313°11.7	89°22.4
Acamar	315°10.8	-40°12.0
Menkar	314°05.1	4°11.6
Mirfak	308°26.8	49°57.2
Aldebaran	290°38.5	16°33.7
Rigel	281°02.9	-8°10.2
Capella	280°20.5	46°01.4
Bellatrix	278°21.9	6°22.5
Elath	275°00.7	28°37.7
Anilam	275°36.8	-1°11.0
Betelgeuse	270°51.1	7°24.8
Canopus	263°51.7	-52°42.2
Sirius	258°25.5	-16°44.9
Adhara	255°05.1	-29°00.2
Procyon	244°50.0	5°09.6
Pollux	243°16.4	27°57.8
Avior	234°14.4	-59°35.2
Suhail	222°45.8	-43°31.9
Miaplacidus	221°38.2	-69°49.0
Alphard	217°47.1	-8°46.1
Regulus	207°33.8	11°50.5
Dubhe	193°40.5	61°36.5
Denebola	182°24.5	14°25.7
Gienah	175°43.2	-17°41.0
Acrux	172°59.9	-63°14.3
Gacrux	171°51.4	-57°15.3
Alioth	166°12.9	55°49.0
Spica	158°21.9	-11°17.7
Alkaid	152°51.9	49°11.0
Hadar	148°35.7	-60°29.7
Menkent	147°57.2	-36°29.7
Arcturus	145°47.6	19°02.9
Rigel Kent	139°40.1	-60°56.5
Kochab	137°21.0	74°02.9
Zuben'ubi	136°55.6	-16°08.9
Alphecca	126°03.5	26°37.7
Antares	112°15.4	-26°29.3
Atria	107°05.9	-69°04.5
Sabik	102°02.3	-15°45.4
Shaula	96°09.8	-37°07.4
Rasalhague	95°58.2	12°32.6
Eltanin	90°42.3	51°29.3
Kaus Aug.	83°31.9	34°22.4
Vega	80°33.0	38°48.6
Nunki	75°47.1	-26°15.9
Altair	61°59.4	8°56.3
Peacock	53°04.8	-56°39.3
Deneb	49°25.4	45°22.6
Enif	33°38.1	9°59.8
Al Na'ir	27°32.0	-46°50.3
Fomalhaut	15°13.6	-29°29.2
Scheat	13°44.4	28°13.6
Markab	13°29.1	15°20.8

Dubhe	193°40.5	61°36.5
Denebola	182°24.5	14°25.7
Gienah	175°43.2	-17°41.0
Acrux	172°59.9	-63°14.3
Gacrux	171°51.4	-57°15.3
Alieeth	166°12.9	55°49.0
Spica	158°21.9	-11°17.7
Alkaid	152°51.9	49°11.0
Hadar	148°35.7	-60°29.7
Menkent	147°57.2	-36°29.7
Arcturus	145°47.6	19°02.9
Rigel Kent	139°40.1	-60°56.5
Kochab	137°21.0	74°02.9
Zuben 'ubi	136°55.6	-16°08.9
Alphecca	126°03.5	26°37.7
Antares	112°15.4	-26°29.3
Atria	107°09.5	-69°04.5
Sabik	102°02.3	-15°45.4
Shaula	96°09.8	-37°07.4
Rasalhague	95°58.2	12°32.6
Eltanin	90°42.3	51°29.3
Kaus Aust	83°31.9	-34°22.4
Vega	80°33.0	38°48.6
Nunki	75°47.1	-26°15.9
Altair	61°59.4	8°56.3
Peacock	53°04.8	-56°39.3
Deneb	49°25.4	45°22.6
Enif	33°38.1	9°59.8
Al Na'ir	27°32.0	-46°50.3
Fomalhaut	15°13.6	-29°29.2
Scheat	13°44.4	28°13.6
Makrab	13°29.1	15°20.8

Aries		Venus		Mars		Jupiter		Saturn	
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	48°24.4	197°33.5	S11°06.2	167°20.2	S21°15.4	291°17.8	N21°12.5	51°35.0	S04°02.2
1	63°26.9	212°33.0	07.3	182°20.8	15.7	306°20.3	12.5	66°37.6	02.2
2	78°29.4	227°32.5	08.4	197°21.4	16.1	321°22.7	12.5	81°40.1	02.3
3	93°31.8	242°32.0	•• 09.5	212°21.9	•• 16.5	336°25.2	•• 12.5	96°42.7	•• 02.3
4	108°34.3	257°31.5	10.6	227°22.5	16.8	351°27.6	12.5	111°45.2	02.3
5	123°36.8	272°30.9	11.7	242°23.1	17.2	36°30.0	12.5	126°47.7	02.3
6	138°39.2	287°30.4	S11°12.8	257°23.6	S21°17.6	21°32.5	N21°12.5	141°50.3	S04°02.4
7	153°41.7	302°29.9	14.0	272°24.2	18.0	36°34.9	12.5	156°52.8	02.4
8	168°44.2	317°29.4	15.1	287°24.8	18.3	51°37.4	12.5	171°55.4	02.4
9	183°46.6	332°28.9	•• 16.2	302°25.3	•• 18.7	66°39.8	•• 12.5	186°57.9	•• 02.4
10	198°49.1	347°28.3	17.3	317°25.9	19.1	81°42.3	12.5	202°00.5	02.5
11	213°51.6	2°27.8	18.4	332°26.5	19.4	96°44.7	12.5	217°03.0	02.5
12	228°54.0	17°27.3	S11°19.5	347°27.1	S21°19.8	111°47.1	N21°12.5	232°05.5	S04°02.5
13	243°56.5	32°26.8	20.6	2°27.6	20.2	126°49.6	12.5	247°08.1	02.5
14	258°58.9	47°26.2	21.7	17°28.2	20.5	141°52.0	12.5	262°10.6	02.6
15	274°01.4	62°25.7	•• 22.9	32°28.8	•• 20.9	156°54.5	•• 12.5	277°13.2	•• 02.6
16	289°03.9	77°25.2	24.0	47°29.3	21.2	171°56.9	12.5	292°15.7	02.6
17	304°06.3	92°24.7	25.1	62°29.9	21.6	186°59.4	12.5	307°18.2	02.6
18	319°08.8	107°24.1	S11°26.2	77°30.5	S21°22.0	202°01.8	N21°12.5	322°20.8	S04°02.7
19	334°11.3	122°23.6	27.3	92°31.0	22.3	217°04.3	12.5	337°23.3	02.7
20	349°13.7	137°23.1	28.4	107°31.6	22.7	232°06.7	12.5	352°25.9	02.7
21	4°16.2	152°22.6	•• 29.5	122°32.2	•• 23.1	247°09.2	•• 12.5	7°28.4	•• 02.7
22	19°18.7	167°22.0	30.6	137°32.7	23.4	262°11.6	12.5	22°30.9	02.8
23	34°21.1	182°21.5	31.7	152°33.3	23.8	277°14.0	12.5	37°33.5	02.8
Mer.pass.:20:43		v-0.5 d-1.1 m-3.8		v0.6 d-0.4 m1.4		v2.4 d0.0 m-2.2		v2.5 d-0.0 m0.9	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	49°23.6	197°21.0	S11°32.8	167°33.9	S21°24.1	292°16.5	N21°12.5	52°36.0	S04°02.8
1	64°26.0	212°20.5	33.9	182°34.4	24.5	307°18.9	12.5	67°38.6	02.8
2	79°28.5	227°19.9	35.0	197°35.0	24.9	322°21.4	12.5	82°41.1	02.9
3	94°31.0	242°19.4	•• 36.1	212°35.6	•• 25.2	337°23.8	•• 12.5	97°43.6	•• 02.9
4	109°33.4	257°18.9	37.2	227°36.1	25.6	352°26.3	12.5	112°46.2	02.9
5	124°35.9	272°18.4	38.4	242°36.7	26.0	7°28.7	12.5	127°48.7	02.9
6	139°38.4	287°17.8	S11°39.5	257°37.2	S21°26.3	22°31.2	N21°12.5	142°51.3	S04°03.0
7	154°40.8	302°17.3	40.6	272°37.8	26.7	37°33.6	12.6	157°53.8	03.0
8	169°43.3	317°16.8	41.7	287°38.4	27.0	52°36.1	12.6	172°56.3	03.0
9	184°45.8	332°16.2	•• 42.8	302°38.9	•• 27.4	67°38.5	•• 12.6	187°58.9	•• 03.0
10	199°48.7	347°15.7	43.9	317°39.5	27.7	82°41.0	12.6	203°01.4	03.1
11	214°50.7	2°15.2	45.0	332°40.1	28.1	97°43.4	12.6	218°04.0	03.1
12	229°53.2	17°14.6	S11°46.1	347°40.6	S21°28.5	112°45.9	N21°12.6	233°06.5	S04°03.1
13	244°55.6	32°14.1	47.2	2°41.2	28.8	127°48.4	12.6	248°09.0	03.1
14	259°58.1	47°13.6	48.3	17°41.7	29.2	142°50.8	12.6	263°11.6	03.2
15	275°00.5	62°13.0	•• 49.4	32°42.3	•• 29.5	157°53.3	•• 12.6	278°14.1	•• 03.2
16	290°03.0	77°12.5	50.5	47°42.9	29.9	172°55.7	12.6	293°16.6	03.2
17	305°05.5	92°12.0	51.6	62°43.4	30.2	187°58.2	12.6	308°19.2	03.2
18	320°07.9	107°11.4	S11°52.7	77°44.0	S21°30.6	203°00.6	N21°12.6	323°21.7	S04°03.2
19	335°10.4	122°10.9	53.8	92°44.6	31.0	218°03.1	12.6	338°24.2	03.3
20	350°12.9	137°10.4	54.9	107°45.1	31.3	233°05.5	12.6	353°26.8	03.3
21	5°15.3	152°09.8	•• 55.9	122°45.7	•• 31.7	248°08.0	•• 12.6	8°29.3	•• 03.3
22	20°17.8	167°09.3	57.0	137°46.2	32.0	263°10.4	12.6	23°31.9	03.3
23	35°20.3	182°08.8	58.1	152°46.8	32.4	278°12.9	12.6	38°34.4	03.4
Mer.pass.:20:39		v-0.5 d-1.1 m-3.8		v0.6 d-0.4 m1.4		v2.4 d0.0 m-2.2		v2.5 d-0.0 m0.9	

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	50°22.7	197°08.2	S11°59.2	167°47.4	S21°32.7	293°15.4	N21°12.6	53°36.9	S04°03.4
1	65°25.2	212°07.7	12°00.3	182°47.9	33.1	308°17.8	12.6	68°39.5	03.4
2	80°27.7	227°07.1	01.4	197°48.5	33.4	323°20.3	12.6	83°42.0	03.4
3	95°30.1	242°06.6	•• 02.5	212°49.0	•• 33.8	338°22.7	•• 12.6	98°44.5	•• 03.4
4	110°32.6	257°06.1	03.6	227°49.6	34.1	353°25.2	12.6	113°47.1	03.5
5	125°35.0	272°05.5	04.7	242°50.1	34.5	8°27.6	12.6	128°49.6	03.5
6	140°37.5	287°05.0	S12°05.8	257°50.7	S21°34.8	23°30.1	N21°12.7	143°52.1	S04°03.5
7	155°40.0	302°04.4	06.9	272°51.3	35.2	38°32.6	12.7	158°54.7	03.5
8	170°42.4	317°03.9	08.0	287°51.8	35.6	53°35.0	12.7	173°57.2	03.6
9	185°44.9	332°03.4	•• 09.1	302°52.4	•• 35.9	68°37.5	•• 12.7	188°59.7	•• 03.6
10	200°47.4	347°02.8	10.2	317°52.9	36.3	83°39.9	12.7	204°02.3	03.6
11	215°49.8	2°02.3	11.2	332°53.5	36.6	98°42.4	12.7	219°04.8	03.6
12	230°52.3	17°01.7	S12°12.3	347°54.0	S21°37.0	113°44.9	N21°12.7	234°07.4	S04°03.6
13	245°54.8	32°01.2	13.4	2°54.6	37.3	128°47.3	12.7	249°09.9	03.7
14	260°57.2	47°00.7	14.5	17°55.2	37.7	143°49.8	12.7	264°12.4	03.7
15	275°59.7	62°00.1	•• 15.6	32°55.7	•• 38.0	158°52.2	•• 12.7	279°15.0	•• 03.7
16	291°02.2	76°59.6	16.7	47°56.3	38.3	173°54.7	12.7	294°17.5	03.7
17	306°04.6	91°59.0	17.8	62°56.8	38.7	188°57.2	12.7	309°20.0	03.8
18	321°07.1	106°58.5	S12°18.9	77°57.4	S21°39.0	203°59.6	N21°12.7	324°22.6	S04°03.8
19	336°09.5	121°57.9	19.9	92°57.9	39.4	219°02.1	12.7	339°25.2	03.8
20	351°12.0	136°57.4	21.0	107°58.5	39.7	234°04.6	12.7	354°27.6	03.8
21	6°14.5	151°56.8	•• 22.1	122°59.0	•• 40.1	247°07.0	•• 12.7	9°30.2	•• 03.8
22	21°16.9	166°56.3	23.2	137°59.6	40.4	264°09.5	12.7	24°32.7	03.9
23	36°19.4	181°55.7	24.3	153°00.1	40.8	279°12.0	12.8	39°35.2	03.9
Mer.pass.:20:35		v-0.5 d-1.1 m-3.8		v0.6 d-0.4 m1.4		v2.5 d0.0 m-2.2		v2.5 d-0.0 m1.0	

SHA	Dec
Alpheratz	357°33.8 29°14.2
Ankaa	353°06.1 -42°10.0
Schedar	349°29.8 56°41.0
Diphda	348°46.3 -17°50.6
Achernar	335°19.1 -57°06.4
Hamal	327°50.1 2°35.2
Polaris	313°11.2 89°22.4
Acamar	315°10.8 -40°12.0
Menkar	314°05.1 4°11.6
Mirfak	308°26.8 49°57.2
Aldebaran	290°38.5 16°33.7
Rigel	281°02.9 -8°10.2
Capella	280°20.5 46°01.4
Bellatrix	278°21.9 6°22.5
Elnath	278°00.7 28°37.8
Anilam	275°36.8 -1°11.0
Betelgeuse	270°51.1 7°24.8
Canopus	263°51.7 -52°42.3
Sirius	258°25.4 -16°44.9
Adhara	255°05.1 -29°00.2
Procyon	244°50.0 5°09.6
Pollux	243°16.3 27°57.8
Avior	234°14.3 -59°35.2
Suhail	222°45.8 -43°31.9
Miaplacidus	221°38.1 -69°49.0
Alphard	217°47.1 -8°46.1
Regulus	207°33.8 11°50.5
Dubhe	193°40.5 61°36.5
Denebola	182°24.5 14°25.7
Gienah	175°43.1 -17°41.0
Acrux	172°59.9 -63°14.3
Gacrux	171°51.4 -57°15.3
Alloth	166°12.8 55°49.0
Spica	158°21.9 -11°17.7
Alkaid	152°51.9 49°11.0
Hadar	148°35.7 -60°29.7
Menkent	147°57.2 -36°29.7
Arcturus	145°47.6 19°02.9
Rigil Cent	139°40.1 -60°56.4
Kochab	137°21.0 74°02.8
Zuben'ubi	136°55.6 -16°08.9
Alphecca	126°03.5 26°37.7
Antares	112°15.4 -26°29.3
Atria	107°09.5 -69°04.5
Sabik	102°02.3 -15°45.4
Shaula	96°09.8 -37°07.4
Rasalhague	95°58.2 12°32.6
Eltanin	90°42.3 51°29.3
Kaus Vega	83°31.9 -34°22.4
Aust. Altair	80°33.0 38°48.6
Nunki	75°47.1 -26°15.9
Altair	61°59.4 8°56.3
Peacock	53°04.8 -56°39.3
Deneb	49°25.4 45°22.6
Enif	33°38.1 9°59.8
Al Nair	27°32.0 -46°50.3
Fomalhaut	15°13.6 -29°29.2
Scheat	13°44.4 28°13.6
Markab	13°29.1 15°20.8

Nov 09 Sun	SHA	Mer.pass
Venus	149°09.1 10:50	
Mars	118°55.8 12:50	
Jupiter	242°53.4 04:34	
Saturn	3°10.4 20:30	
Nov 10 Mon	SHA	Mer.pass
Venus	147°57.4 10:51	
Mars	118°10.3 12:49	
Jupiter	242°52.9 04:30	
Saturn	3°12.4 20:26	
Nov 11 Tue	SHA	Mer.pass
Venus	146°55.5 10:52	
Mars	117°24.6 12:48	
Jupiter	242°52.6 04:26	
Saturn	3°14.2 20:22	

Horizontal parallax	
Venus:	0.1
Mars:	0.1

h	Sun			Moon			
Sun	GHA	Dec	GHA	ν	Dec	d	HP
0	184°02.2	S16°51.9	312°15.5	2.3'	N28°07.0	-2.6'	60.0'
1	199°02.1	52.7	326°36.9	2.4'	28°04.3	-2.8'	60.0'
2	214°02.1	53.4	340°58.4	2.5'	28°01.4	-3.0'	60.0'
3	229°02.0	•• 54.1	355°19.9	2.6'	27°58.3	-3.2'	59.9'
4	244°02.0	54.8	9°41.6	2.7'	27°55.0	-3.4'	59.9'
5	259°01.9	55.5	24°03.3	2.8'	27°51.5	-3.6'	59.8'
6	274°01.9	S16°56.2	38°25.2	2.9'	N27°47.8	-3.8'	59.8'
7	289°01.8	56.9	52°47.1	3.0'	27°43.9	-4.0'	59.8'
8	304°01.8	57.6	67°09.2	3.1'	27°39.8	-4.2'	59.7'
9	319°01.7	•• 58.3	81°31.3	3.2'	27°35.5	-4.4'	59.7'
10	334°01.6	59.1	95°53.6	3.3'	27°31.1	-4.6'	59.7'
11	349°01.6	16°59.8	110°15.9	3.4'	27°26.4	-4.7'	59.6'
12	4°01.5	S17°00.5	124°38.4	3.5'	N27°21.6	-4.9'	59.6'
13	19°01.5	01.2	139°01.0	3.6'	27°16.6	-5.1'	59.6'
14	34°01.4	01.9	153°23.6	3.7'	27°11.4	-5.3'	59.5'
15	49°01.4	•• 02.6	167°46.4	3.9'	27°06.0	-5.5'	59.5'
16	64°01.3	03.3	182°09.4	4.0'	27°00.5	-5.6'	59.4'
17	79°01.3	04.0	196°32.4	4.1'	26°54.7	-5.8'	59.4'
18	94°01.2	S17°04.7	210°55.6	4.2'	N26°48.8	-6.0'	59.4'
19	109°01.1	05.4	225°18.8	4.3'	26°42.8	-6.2'	59.3'
20	124°01.1	06.1	239°42.2	4.5'	26°36.5	-6.3'	59.3'
21	139°01.0	•• 06.8	254°05.8	4.6'	26°30.1	-6.5'	59.3'
22	154°01.0	07.5	268°29.4	4.7'	26°23.5	-6.7'	59.2'
23	169°00.9	08.2	282°53.2	4.8'	26°16.8	-6.8'	59.2'
SD=16.1			d=0.7		S.D.=16.2		

Aries				Venus				Mars				Jupiter				Saturn			
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec				
0	51°21.9	196°55.2	S12°25.4	168°00.7	S21°41.1	294°14.4	N21°12.8	54°37.7	S04°03.9										
1	66°24.3	211°54.7	26.4	183°01.2	41.5	309°16.9	12.8	69°40.3	03.9										
2	81°26.8	226°54.1	27.5	198°01.8	41.8	324°19.4	12.8	84°42.8	03.9										
3	96°29.3	241°53.6	•• 28.6	213°02.4	•• 42.2	339°21.8	•• 12.8	99°45.3	•• 04.0										
4	111°31.7	256°53.0	29.7	228°02.9	42.5	354°24.3	12.8	114°47.9	04.0										
5	126°34.2	271°52.5	30.8	243°03.5	42.8	9°26.8	12.8	129°50.4	04.0										
6	141°36.6	286°51.9	S12°31.8	258°04.0	S21°43.2	24°29.2	N21°12.8	144°52.9	S04°04.0										
7	156°39.1	301°51.4	32.9	273°04.6	43.5	39°31.7	12.8	159°55.5	04.0										
8	171°41.6	316°50.8	34.0	288°05.1	43.9	54°34.2	12.8	174°55.0	04.1										
9	186°44.0	331°50.3	•• 35.1	303°05.7	•• 44.2	69°36.6	•• 12.8	190°00.5	•• 04.1										
10	201°46.5	346°49.7	36.2	318°06.2	44.6	84°39.1	12.8	205°03.1	04.1										
11	216°49.0	1°49.1	37.2	333°06.8	44.9	99°41.6	12.8	220°05.6	04.1										
12	231°51.4	16°48.6	S12°38.3	348°07.3	S21°45.2	114°44.0	N21°12.8	235°08.1	S04°04.1										
13	246°53.9	31°48.0	39.4	3°07.9	45.6	129°46.5	12.8	250°10.7	04.2										
14	261°56.4	46°47.5	40.5	18°08.4	45.9	144°49.0	12.9	265°13.2	04.2										
15	276°58.8	61°46.9	•• 41.5	33°09.0	•• 46.3	159°51.5	•• 12.9	280°15.7	•• 04.2										
16	292°01.3	76°46.4	42.6	48°09.5	46.6	174°53.9	12.9	295°18.2	04.2										
17	307°03.8	91°45.8	43.7	63°10.1	46.9	189°56.4	12.9	310°20.8	04.2										
18	322°06.2	106°45.5	S12°44.8	78°10.6	S21°47.3	204°58.9	N21°12.9	325°23.3	S04°04.3										
19	337°07.8	121°44.7	45.8	93°11.2	47.6	220°01.3	12.9	340°25.8	04.3										
20	352°11.1	136°44.2	46.9	108°11.7	48.0	235°03.8	12.9	355°28.4	04.3										
21	7°13.6	151°43.6	•• 48.0	123°12.2	•• 48.3	250°06.3	•• 12.9	10°30.9	•• 04.3										
22	22°16.1	166°43.0	49.0	138°12.8	48.6	265°08.8	12.9	25°33.4	04.3										
23	37°18.5	181°42.5	50.1	153°13.3	49.0	280°11.2	12.9	40°35.9	04.4										
Mer.pass.:20:31			v-0.5 d-1.1 m-3.8			v0.6 d-0.3 m1.4			v2.5 d0.0 m-2.3			v2.5 d-0.0 m1.0							

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	52°21.0	196°41.9	S12°51.2	168°13.9	S21°49.3	295°13.7	N21°12.9	55°38.5	S04°04.4	
1	67°23.5	211°41.4	52.3	183°14.4	49.7	310°16.2	12.9	70°41.0	04.4	
2	82°25.9	226°40.8	53.3	198°15.0	50.0	325°18.7	12.9	85°43.5	04.4	
3	97°28.4	241°40.2	•• 54.4	213°15.5	•• 50.3	340°21.1	•• 13.0	100°46.1	•• 04.4	
4	112°30.9	256°39.7	55.5	228°16.1	50.7	355°23.6	13.0	115°48.6	04.5	
5	127°33.3	271°39.1	56.5	243°16.6	51.0	10°26.1	13.0	130°51.1	04.5	
6	142°35.8	286°38.6	S12°57.6	258°17.2	S21°51.3	25°28.6	N21°13.0	145°53.6	S04°04.5	
7	157°38.3	301°38.0	58.7	273°17.7	51.7	40°31.0	13.0	160°56.2	04.5	
8	172°40.7	316°37.4	12°59.7	288°18.2	52.0	55°33.5	13.0	175°58.7	04.5	
9	187°43.2	331°36.9	13°00.8	303°18.8	•• 52.3	70°36.0	•• 13.0	191°01.2	•• 04.6	
10	202°45.6	346°36.3	01.9	318°19.3	52.7	85°38.5	13.0	206°03.8	04.6	
11	217°48.1	1°35.8	02.9	333°19.9	53.0	100°40.9	13.0	221°06.3	04.6	
12	232°50.6	16°35.2	S13°04.0	348°20.4	S21°53.3	115°43.4	N21°13.0	236°08.8	S04°04.6	
13	247°53.0	31°34.6	05.0	3°21.0	53.7	130°45.9	13.0	251°11.3	04.6	
14	262°55.5	46°34.1	06.1	18°21.5	54.0	145°48.4	13.1	266°13.9	04.6	
15	277°58.0	61°33.5	•• 07.2	33°22.1	•• 54.3	160°50.9	•• 13.1	281°16.4	•• 04.7	
16	293°00.4	76°32.9	08.2	48°22.6	54.7	175°53.3	13.1	296°18.9	04.7	
17	308°02.9	91°32.4	09.3	63°23.1	55.0	190°55.8	13.1	311°21.4	04.7	
18	323°05.4	106°31.8	S13°10.4	78°23.7	S21°55.3	205°58.3	N21°13.1	326°24.0	S04°04.7	
19	338°07.8	121°31.2	11.4	93°24.2	55.7	221°00.8	13.1	341°26.5	04.7	
20	353°10.3	136°30.7	12.5	108°24.8	56.0	236°03.3	13.1	356°29.0	04.8	
21	8°12.7	151°30.1	•• 13.5	123°25.3	•• 56.3	251°05.7	•• 13.1	1°13.15	•• 04.8	
22	23°15.2	166°29.5	14.6	138°25.8	56.6	266°08.2	13.1	26°34.1	04.8	
23	38°17.7	181°29.0	15.6	153°26.4	57.0	281°10.7	13.1	41°36.6	04.8	
Mer.pass.:20:27			v-0.6 d-1.1 m-3.8		v0.5 d-0.3 m1.4		v2.5 d0.0 m-2.3		v2.5 d-0.0 m1.0	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	53°20.1	196°28.4	S13°16.7	168°26.9	S21°57.3	296°13.2	N21°13.1	56°39.1	S04°04.8					
1	68°22.6	211°27.8	17.8	183°27.5	57.6	311°15.7	13.2	71°41.6	04.8					
2	83°25.1	226°27.2	18.8	198°28.0	58.0	326°18.2	13.2	86°44.2	04.9					
3	98°27.5	241°26.7	•• 19.9	213°28.5	•• 58.3	341°20.6	•• 13.2	101°46.7	•• 04.9					
4	113°30.0	256°26.1	20.9	228°29.1	58.6	356°23.1	13.2	116°49.2	04.9					
5	128°32.5	271°25.5	22.0	243°29.6	58.9	11°25.6	13.2	131°51.7	04.9					
6	143°34.9	286°25.0	S13°23.0	258°30.2	S21°59.3	26°28.1	N21°13.2	146°54.3	S04°04.9					
7	158°37.4	301°24.4	24.1	273°30.7	59.6	41°30.6	13.2	161°56.8	04.9					
8	173°39.9	316°23.8	25.1	288°31.2	21°59.9	56°33.1	13.2	176°59.3	05.0					
9	188°42.3	331°23.2	•• 26.2	303°31.8	22°00.3	71°35.6	•• 13.2	192°01.8	•• 05.0					
10	203°44.8	346°22.7	27.2	318°32.3	00.6	86°38.0	13.2	207°04.4	05.0					
11	218°47.2	1°22.1	28.3	333°32.9	00.9	101°40.5	13.3	222°06.9	05.0					
12	233°49.7	16°21.5	S13°29.3	348°33.4	S22°01.2	116°43.0	N21°13.3	237°09.4	S04°05.0					
13	248°52.2	31°20.9	30.4	3°33.9	01.6	131°45.5	13.3	252°11.9	05.0					
14	263°54.6	46°20.4	31.4	18°34.5	01.9	146°48.0	13.3	267°14.4	05.1					
15	278°57.1	61°19.8	•• 32.5	33°35.0	•• 02.2	161°50.5	•• 13.3	282°17.0	•• 05.1					
16	293°59.6	76°19.2	33.5	48°35.5	02.5	176°53.0	13.3	297°19.5	05.1					
17	309°02.0	91°18.6	34.6	63°36.1	02.8	191°55.5	13.3	312°22.0	05.1					
18	324°04.5	106°18.1	S13°35.6	78°36.6	S22°03.2	206°58.0	N21°13.3	327°24.5	S04°05.1					
19	339°07.0	121°17.5	36.7	93°37.1	03.5	222°00.4	13.3	342°27.1	05.1					
20	354°09.4	136°16.9	37.7	108°37.7	03.8	237°02.9	13.3	357°29.6	05.2					
21	9°11.9	151°16.3	•• 38.8	123°38.2	•• 04.1	252°05.4	•• 13.4	12°32.1	•• 05.2					
22	24°14.3	166°15.7	39.8	138°38.7	04.5	267°07.9	13.4	27°34.6	05.2					
23	39°16.8	181°15.2	40.9	153°39.3	04.8	282°10.4	13.4	42°37.1	05.2					
Mer.pass.:20:23			v-0.6 d-1.1 m-3.8			v0.5 d-0.3 m1.4			v2.5 d0.0 m-2.3			v2.5 d-0.0 m1.0		

Stars			h			Sun			Moon		
	SHA	Dec	Wed	GHA	Dec	GHA	ν	Dec	d	HP	
Alpheratz	357°33.8	29°14.2	0	183°57.6	S17°42.0	271°02.5	11.3'	N18°04.2	-12.5'	57.3'	
Ankaa	353°06.2	-42°10.0	1	198°57.5	42.7	285°32.8	11.4'	17°51.6	-12.6'	57.3'	
Schedar	349°29.8	56°41.0	2	213°57.4	43.4	300°03.3	11.5'	17°39.0	-12.7'	57.2'	
Diphda	348°46.4	-17°50.6	3	228°57.3	•• 44.0	314°33.9	11.7'	17°26.3	-12.7'	57.2'	
Achernar	335°19.1	-57°06.4	4	243°57.3	44.7	329°04.6	11.8'	17°13.5	-12.8'	57.2'	
Hamal	327°50.1	23°35.2	5	258°57.2	45.4	343°35.5	11.9'	17°00.7	-12.9'	57.1'	
Polaris	313°11.1	89°22.4	6	273°57.1	S17°46.1	358°06.4	12.0'	N16°47.8	-12.9'	57.1'	
Acamar	315°10.8	-40°12.0	7	288°57.0	46.7	12°37.4	12.1'	16°34.8	-13.0'	57.1'	
Menkar	314°05.1	4°11.6	8	303°56.9	47.4	27°08.6	12.2'	16°21.8	-13.1'	57.0'	
Mirfak	308°26.8	49°57.3	9	318°56.9	•• 48.1	41°39.9	12.3'	16°08.7	-13.1'	57.0'	
Aldebaran	290°38.5	16°33.7	10	333°56.8	48.8	56°11.2	12.4'	15°55.5	-13.2'	57.0'	
Rigel	281°02.9	-8°10.2	11	348°56.7	49.4	70°42.7	12.5'	15°42.3	-13.2'	56.9'	
Capella	280°20.4	46°01.4	12	3°56.6	S17°50.1	85°14.3	12.6'	N15°29.0	-13.3'	56.9'	
Bellatrix	278°21.8	6°22.5	13	18°56.5	50.8	99°46.0	12.7'	15°15.7	-13.3'	56.9'	
Elnath	278°00.7	28°37.8	14	33°56.4	51.4	114°17.8	12.8'	15°02.3	-13.4'	56.8'	
Anilnam	275°36.7	-1°11.0	15	48°56.4	•• 52.1	128°49.7	12.9'	14°48.9	-13.5'	56.8'	
Betelgeuse	270°51.1	7°24.8	16	63°56.3	52.8	143°21.7	13.0'	14°35.4	-13.5'	56.8'	
Canopus	263°51.7	-52°42.3	17	78°56.2	53.4	157°53.7	13.1'	14°21.9	-13.6'	56.7'	
Sirius	258°25.4	-16°44.9	18	93°56.1	S17°54.1	172°25.9	13.2'	N14°08.3	-13.6'	56.7'	
Adhara	255°05.1	-29°00.2	19	108°56.0	54.8	186°58.2	13.3'	13°54.7	-13.6'	56.7'	
Procyon	244°50.0	5°09.6	20	123°55.9	55.4	201°30.6	13.4'	13°41.0	-13.7'	56.6'	
Pollux	243°16.3	27°57.7	21	138°55.9	•• 56.1	216°03.0	13.5'	13°27.3	-13.7'	56.6'	
Avior	234°14.3	-59°35.2	22	153°55.8	56.8	230°35.6	13.6'	13°13.6	-13.8'	56.6'	
Suhail	222°45.8	-43°31.9	23	168°55.7	57.4	245°08.2	13.7'	12°59.8	-13.8'	56.5'	
Miaplacidus	221°38.1	-69°49.0									
Alphard	217°47.1	-8°46.1									
			SD=16.1			d=-0.7			SD=15.5		

Aries			Venus			Mars			Jupiter			Saturn		
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	54°19.3	196°14.6	S13°41.9	168°39.8	S22°05.1	297°12.9	N21°13.4	57°39.7	S04°05.2					
1	69°21.7	211°14.0	42.9	183°40.4	05.4	312°15.4	13.4	72°42.2	05.2					
2	84°24.2	226°13.4	44.0	198°40.9	05.7	327°17.9	13.4	87°44.7	05.3					
3	99°26.7	241°12.8	· · 45.0	213°41.4	· · 06.1	342°20.4	· · 13.4	102°47.2	· · 05.3					
4	114°29.1	256°12.3	46.1	228°42.0	06.4	357°22.9	13.4	117°49.7	05.3					
5	129°31.6	271°11.7	47.1	243°42.5	06.7	12°25.4	13.4	132°52.3	05.3					
6	144°34.1	286°11.1	S13°48.1	258°43.0	S22°07.0	27°27.9	N21°13.5	147°54.8	S04°05.3					
7	159°36.5	301°10.5	49.2	273°43.6	07.3	42°30.4	13.5	162°57.3	05.3					
8	174°39.0	316°09.9	50.2	288°44.1	07.6	57°32.8	13.5	177°59.8	05.3					
9	189°41.5	331°09.3	· · 51.3	303°44.6	· · 08.0	72°35.3	· · 13.5	193°02.3	· · 05.4					
10	204°43.9	346°08.8	52.3	318°45.1	08.3	87°37.8	13.5	208°04.9	05.4					
11	219°46.4	1°08.2	53.3	333°45.7	08.6	102°40.3	13.5	223°07.4	05.4					
12	234°48.8	16°07.6	S13°54.4	348°46.2	S22°08.9	117°42.8	N21°13.5	238°09.9	S04°05.4					
13	249°51.3	31°07.0	55.4	3°46.7	09.2	132°45.3	13.5	253°12.4	05.4					
14	264°53.8	46°06.4	56.4	18°47.3	09.5	147°47.8	13.6	268°14.9	05.4					
15	279°56.2	61°05.8	· · 57.5	33°47.8	· · 09.9	162°50.3	· · 13.6	283°17.4	· · 05.4					
16	294°58.7	76°05.2	58.5	48°48.3	10.2	177°52.8	13.6	298°20.0	05.5					
17	310°01.2	91°04.6	S13°59.5	63°48.9	10.5	192°55.3	13.6	313°22.5	05.5					
18	325°03.6	106°04.1	S14°00.6	78°49.4	S22°10.8	207°57.8	N21°13.6	328°25.0	S04°05.5					
19	340°06.1	121°03.5	01.6	93°49.9	11.1	223°00.3	13.6	343°27.5	05.5					
20	355°08.6	136°02.9	02.6	108°50.4	11.4	238°02.8	13.6	358°30.0	05.5					
21	10°11'10"	151°12.3	· · 03.7	123°51.0	· · 11.7	253°05.3	· · 13.6	13°32.6	· · 05.5					
22	25°13'16"	166°01.7	04.7	138°51.5	12.1	268°07.8	13.6	28°35.1	05.5					
23	40°16.0	181°01.1	05.7	153°52.0	12.4	283°10.3	13.7	43°37.6	05.6					
Mer.pass.:20:19			v-0.6 d-1.0 m-3.8			v0.5 d-0.3 m1.4			v2.5 d0.0 m-2.3			v2.5 d-0.0 m1.0		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	55°18.4	196°00.5	S14°06.8	168°52.6	S22°12.7	298°12.8	N21°13.7	58°40.1	S04°05.6	
1	70°20.9	210°59.9	07.8	183°53.1	13.0	313°15.3	13.7	73°42.6	05.6	
2	85°23.3	225°59.3	08.8	198°53.6	13.3	328°17.8	13.7	88°45.1	05.6	
3	100°25.8	240°58.7	· · 09.8	213°54.1	· · 13.6	343°20.3	· · 13.7	103°47.7	· · 05.6	
4	115°28.3	255°58.1	10.9	228°54.7	13.9	358°22.8	13.7	118°50.2	05.6	
5	130°30.7	270°57.5	11.9	243°55.2	14.2	13°25.3	13.7	133°52.7	05.6	
6	145°33.2	285°57.0	S14°12.9	258°55.7	S22°14.5	28°27.8	N21°13.7	148°55.2	S04°05.7	
7	160°35.7	300°56.4	13.9	273°56.3	14.9	43°30.3	13.8	163°57.7	05.7	
8	175°38.1	315°55.8	15.0	288°56.8	15.2	58°32.8	13.8	179°00.2	05.7	
9	190°40.6	330°55.2	· · 16.0	303°57.3	· · 15.5	73°35.3	· · 13.8	194°02.8	· · 05.7	
10	205°43.1	345°54.6	17.0	318°57.8	15.8	88°37.8	13.8	209°05.3	05.7	
11	220°45.5	0°54.0	18.0	333°58.4	16.1	103°40.3	13.8	224°07.8	05.7	
12	235°48.0	15°53.4	S14°19.1	348°58.9	S22°16.4	118°42.9	N21°13.8	239°10.3	S04°05.7	
13	250°50.4	30°52.8	20.1	3°59.4	16.7	133°45.4	13.8	254°12.8	05.8	
14	265°52.9	45°52.2	21.1	18°59.9	17.0	148°47.9	13.9	269°15.3	05.8	
15	280°55.4	60°51.6	· · 22.1	34°00.5	· · 17.3	163°50.4	· · 13.9	284°17.8	· · 05.8	
16	295°57.8	75°51.0	23.1	49°01.0	17.6	178°52.9	13.9	299°20.4	05.8	
17	311°00.3	90°50.4	24.2	64°01.5	17.9	193°55.4	13.9	314°22.9	05.8	
18	326°02.8	105°49.8	S14°25.2	79°02.0	S22°18.2	208°57.9	N21°13.9	329°25.4	S04°05.8	
19	341°05.2	120°49.2	26.2	94°02.5	18.5	224°00.4	13.9	344°27.9	05.8	
20	356°07.7	135°48.6	27.2	109°03.1	18.8	239°02.9	13.9	359°30.4	05.8	
21	11°10'12"	150°48.0	· · 28.2	124°03.6	· · 19.1	254°05.4	· · 14.0	14°32.9	· · 05.9	
22	26°12'6"	165°47.4	29.2	139°04.1	19.4	269°07.9	14.0	29°35.4	05.9	
23	41°15.1	180°46.8	30.3	154°04.6	19.8	284°10.4	14.0	44°38.0	05.9	
Mer.pass.:20:15			v-0.6 d-1.0 m-3.8		v0.5 d-0.3 m1.4		v2.5 d0.0 m-2.3		v2.5 d-0.0 m1.0	

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	56°17.6	195°46.2	S14°31.3	169°05.2	S22°20.1	299°12.9	N21°14.0	59°40.5	S04°05.9	
1	71°20.0	210°45.6	32.3	184°05.7	20.4	314°15.5	14.0	74°43.0	05.9	
2	86°22.5	225°45.0	33.3	199°06.2	20.7	329°18.0	14.0	89°45.5	05.9	
3	101°24.9	240°44.3	· · 34.3	214°06.7	· · 21.0	344°20.5	· · 14.0	104°48.0	· · 05.9	
4	116°27.4	255°43.7	35.3	229°07.2	21.3	359°23.0	14.0	119°50.5	05.9	
5	131°29.0	270°43.1	36.3	244°07.8	21.6	14°25.5	14.1	134°53.0	05.9	
6	146°32.3	285°42.5	S14°37.3	259°08.3	S22°21.9	29°28.0	N21°14.1	149°55.5	S04°06.0	
7	161°34.8	300°41.9	38.4	274°08.8	22.2	44°30.5	14.1	164°58.1	06.0	
8	176°37.3	315°41.3	39.4	289°09.3	22.5	59°33.0	14.1	180°00.6	06.0	
9	191°39.7	330°40.7	· · 40.4	304°09.8	· · 22.8	74°35.5	· · 14.1	195°03.1	· · 06.0	
10	206°42.2	345°40.1	41.4	319°10.4	23.1	89°38.1	14.1	210°05.6	06.0	
11	221°44.7	0°39.5	42.4	334°10.9	23.4	104°40.6	14.2	225°08.1	06.0	
12	236°47.1	15°38.9	S14°43.4	349°11.4	S22°23.7	119°43.1	N21°14.2	240°10.6	S04°06.1	
13	251°49.6	30°38.3	44.4	4°11.9	24.0	134°45.6	14.2	255°13.1	06.0	
14	266°52.0	45°37.7	45.4	19°12.4	24.3	149°48.1	14.2	270°15.6	06.1	
15	281°54.5	60°37.0	· · 46.4	34°13.0	· · 24.6	164°50.6	· · 14.2	285°18.1	· · 06.1	
16	296°57.0	75°36.4	47.4	49°13.5	24.9	179°53.1	14.2	300°20.7	06.1	
17	311°59.4	90°35.8	48.4	64°14.0	25.2	194°55.7	14.2	315°23.2	06.1	
18	327°01.9	105°35.2	S14°49.4	79°14.5	S22°25.4	209°58.2	N21°14.3	330°25.7	S04°06.1	
19	342°04.4	120°34.6	50.4	94°15.0	25.7	225°00.7	14.3	345°28.2	06.1	
20	357°06.8	135°34.0	51.4	109°15.5	26.0	240°03.2	14.3	0°30.7	06.1	
21	12°09.3	150°33.4	· · 52.4	124°16.1	· · 26.3	255°05.7	· · 14.3	15°33.2	· · 06.1	
22	27°11.8	165°32.8	53.4	139°16.6	26.6	270°08.2	14.3	30°35.7	06.1	
23	42°14.2	180°32.1	54.4	154°17.1	26.9	285°10.8	14.3	45°38.2	06.1	
Mer.pass.:20:12			v-0.6 d-1.0 m-3.8		v0.5 d-0.3 m1.4		v2.5 d0.0 m-2.3		v2.5 d-0.0 m1.0	

SHA	Dec
Alpheratz	357°33.8 29°14.2
Ankaa	353°06.2 -42°10.0
Schedar	349°29.9 56°41.0
Diphda	348°46.4 -17°50.7
Achernar	335°19.1 -57°06.4
Hamal	327°50.1 23°35.2
Polaris	313°11.0 89°22.4
Acamar	315°10.8 -40°12.0
Menkar	314°05.1 4°11.6
Mirfak	308°26.8 49°57.3
Aldebaran	290°38.5 16°33.7
Rigel	281°02.9 -8°10.2
Capella	280°20.4 46°01.4
Bellatrix	278°21.8 6°22.5
Elnath	278°00.7 28°37.8
Anilnail	275°36.7 -1°11.0
Betelgeuse	270°51.1 7°24.8
Canopus	263°51.7 -52°42.3
Sirius	258°25.4 -16°44.9
Adhara	255°05.1 -29°00.2
Procyon	244°49.9 5°09.6
Pollux	243°16.3 27°57.7
Avior	234°14.2 -59°35.2
Suhail	222°45.7 -43°31.9
Miaplacidus	221°38.0 -69°49.0

Alphard	217°47.1 -8°46.1
Regulus	207°37.7 11°50.4
Dubhe	193°40.4 61°36.4
Denebola	182°24.4 14°25.6
Gienah	175°43.1 -17°41.0
Acrux	172°59.8 -63°14.3
Gacrux	171°51.3 -57°15.2
Alioth	166°12.8 55°49.0
Spiha	158°21.9 -11°17.7
Alkaid	152°51.9 49°10.9
Hadar	148°35.7 -60°29.7
Menkent	147°57.2 -36°29.7
Arcturus	145°47.6 19°02.9
Rigil Cent	139°40.0 -60°56.4
Kochab	137°21.0 74°02.8
Zuben'ubi	136°55.6 -16°08.9
Alphecca	126°03.5 26°37.7
Antares	112°15.4 -26°29.3
Atria	107°09.5 -69°04.3
Sabik	102°02.3 -15°45.4
Shaula	96°09.8 -37°07.4
Rasalhague	95°58.2 12°32.5
Eltanin	90°42.3 51°29.3
Kaus Aug.	83°31.9 -34°22.4
Vega	80°33.1 38°48.6
Nunki	75°47.2 -26°15.9
Altair	61°59.5 8°56.3
Peacock	53°04.8 -56°39.3
Deneb	49°25.5 45°22.6
Enif	33°38.1 9°59.8
Al Na'ir	27°32.0 -46°50.3
Fomalhaut	15°13.6 -29°29.2
Scheat	13°44.4 28°13.6
Markab	13°29.1 15°20.8

Nov 15 Sat	SHA	Mer.pass
Venus	141°55.3	10:55
Mars	114°20.5	12:45
Jupiter	242°53.6	04:10
Saturn	3°20.4	20:06

	Aries			Venus			Mars			Jupiter			Saturn		
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	57°16.7	195°31.5	S14°55.4	169°17.6	S22°27.2	300°13.3	N21°14.3	60°40.7	S04°06.2	315°15.8	14.4	75°43.2	06.2	330°18.3	14.4
1	72°19.2	210°30.9	56.4	184°18.1	27.5	315°15.8	14.4	90°45.7	06.2	105°48.4	•• 06.2	120°50.8	06.2	135°53.3	06.2
2	87°21.6	225°30.3	57.4	199°18.6	27.8	330°18.3	14.4	120°50.8	06.2	150°55.8	S04°06.2	165°58.3	06.2	181°00.8	06.2
3	102°24.1	240°29.7	•• 58.4	214°19.2	•• 28.1	345°20.8	•• 14.4	165°58.3	•• 06.2	181°00.8	06.2	199°38.9	06.2	214°19.2	•• 28.1
4	117°26.5	255°29.1	14°59.4	229°19.7	28.4	0°23.4	14.4	214°19.2	•• 28.1	229°19.7	28.4	229°19.7	28.4	244°20.2	28.7
5	132°29.0	270°28.4	15°00.4	244°20.2	28.7	15°25.9	14.4	244°20.2	28.7	259°20.7	S22°29.0	274°21.2	29.3	274°21.2	29.3
6	147°31.5	285°27.8	S15°01.4	259°20.7	S22°29.0	30°28.4	N21°14.4	274°21.2	29.3	30°28.4	N21°14.4	274°21.2	29.3	30°28.4	N21°14.4
7	162°33.9	300°27.2	02.4	274°21.2	29.3	45°30.9	14.5	274°21.2	29.3	45°30.9	14.5	274°21.2	29.3	45°30.9	14.5
8	177°36.4	315°26.6	03.4	289°21.7	29.6	60°33.4	14.5	289°21.7	29.6	60°33.4	14.5	289°21.7	29.6	60°33.4	14.5
9	192°38.9	330°26.0	•• 04.4	304°22.2	•• 29.9	75°36.0	•• 14.5	304°22.2	•• 29.9	75°36.0	•• 14.5	304°22.2	•• 29.9	75°36.0	•• 14.5
10	207°41.3	345°25.3	05.4	319°22.8	30.1	90°38.5	14.5	319°22.8	30.1	90°38.5	14.5	319°22.8	30.1	90°38.5	14.5
11	222°43.8	0°24.7	06.4	334°23.3	30.4	105°41.0	14.5	334°23.3	30.4	105°41.0	14.5	334°23.3	30.4	105°41.0	14.5
12	237°46.3	15°24.1	S15°07.3	349°23.8	S22°30.7	120°43.5	N21°14.5	237°46.3	15°24.1	S15°07.3	349°23.8	237°46.3	15°24.1	S15°07.3	349°23.8
13	252°48.7	30°23.5	08.3	4°24.3	31.0	135°46.1	14.6	4°24.3	31.0	135°46.1	14.6	4°24.3	31.0	135°46.1	14.6
14	267°51.2	45°22.9	09.3	19°24.8	31.3	150°48.6	14.6	19°24.8	31.3	150°48.6	14.6	19°24.8	31.3	150°48.6	14.6
15	282°53.6	60°22.2	•• 10.3	34°25.3	•• 31.6	165°51.1	•• 14.6	34°25.3	•• 31.6	165°51.1	•• 14.6	34°25.3	•• 31.6	165°51.1	•• 14.6
16	297°56.1	75°21.6	11.3	49°25.8	31.9	180°53.6	14.6	49°25.8	31.9	180°53.6	14.6	49°25.8	31.9	180°53.6	14.6
17	312°58.6	90°21.0	12.3	64°26.4	32.2	195°56.2	14.6	64°26.4	32.2	195°56.2	14.6	64°26.4	32.2	195°56.2	14.6
18	328°01.0	105°20.4	S15°13.3	79°26.4	S22°32.5	210°58.7	N21°14.6	79°26.4	S22°32.5	210°58.7	N21°14.6	79°26.4	S22°32.5	210°58.7	N21°14.6
19	343°03.5	120°19.7	14.3	94°27.9	32.7	226°01.2	14.7	94°27.9	32.7	226°01.2	14.7	94°27.9	32.7	226°01.2	14.7
20	358°06.0	135°19.1	15.2	109°27.9	33.0	241°03.7	14.7	109°27.9	33.0	241°03.7	14.7	109°27.9	33.0	241°03.7	14.7
21	13°08.4	150°18.5	•• 16.2	124°28.4	•• 33.3	256°06.3	•• 14.7	124°28.4	•• 33.3	256°06.3	•• 14.7	124°28.4	•• 33.3	256°06.3	•• 14.7
22	28°10.9	165°17.9	17.2	139°28.9	33.6	271°08.8	14.7	139°28.9	33.6	271°08.8	14.7	139°28.9	33.6	271°08.8	14.7
23	43°13.4	180°17.2	18.2	154°29.4	33.9	286°11.3	14.7	154°29.4	33.9	286°11.3	14.7	154°29.4	33.9	286°11.3	14.7
Mer.pass.:20:08			v-0.6 d-1.0 m-3.8	v0.5 d-0.3 m1.4			v2.5 d0.0 m-2.3	v2.5 d-0.0 m1.0							

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec			
0	58°15.8	195°16.6	S15°19.2	169°29.9	S22°34.2	301°13.8	N21°14.7	61°40.9	S04°06.4			
1	73°18.3	210°16.0	20.2	184°30.4	34.5	316°16.4	14.8	76°43.4	06.4			
2	88°20.8	225°15.4	21.1	199°30.9	34.7	331°18.9	14.8	91°45.9	06.4			
3	103°23.2	240°14.7	•• 22.1	214°31.5	•• 35.0	346°21.4	•• 14.8	106°48.4	•• 06.4			
4	118°25.7	255°14.1	23.1	229°32.0	35.3	1°23.9	14.8	121°50.9	06.4			
5	133°28.1	270°13.5	24.1	244°32.5	35.6	16°26.5	14.8	136°53.4	06.4			
6	148°30.6	285°12.8	S15°25.1	259°33.0	S22°35.9	31°29.0	N21°14.8	151°55.9	S04°06.4			
7	163°33.1	300°12.2	26.0	274°33.5	36.2	46°31.5	14.9	166°58.4	06.4			
8	178°35.5	315°11.6	27.0	289°34.0	36.4	61°34.1	14.9	182°00.9	06.4			
9	193°38.0	330°10.9	•• 28.0	304°34.5	•• 36.7	76°36.6	•• 14.9	197°03.4	•• 06.5			
10	208°40.5	345°10.3	29.0	319°35.0	37.0	91°39.1	14.9	212°05.9	06.5			
11	223°42.9	0°09.7	29.9	334°35.5	37.3	106°41.7	14.9	227°08.4	06.5			
12	238°45.4	15°09.0	S15°30.9	349°36.0	S22°37.6	121°44.2	N21°15.0	242°10.9	S04°06.5			
13	253°47.9	30°08.4	31.9	4°36.5	37.8	136°46.7	15.0	257°13.4	06.5			
14	268°50.3	45°07.8	32.9	19°37.0	38.1	151°49.3	15.0	272°15.9	06.5			
15	283°52.8	60°07.1	•• 33.8	34°37.6	•• 38.4	166°51.8	•• 15.0	287°18.5	•• 06.5			
16	298°55.3	75°06.5	34.8	49°38.1	38.7	181°54.3	15.0	302°21.0	06.5			
17	313°57.7	90°05.9	35.8	64°38.6	39.0	196°56.9	15.0	317°23.5	06.5			
18	329°00.2	105°05.2	S15°36.8	79°39.1	S22°39.2	211°59.4	N21°15.1	332°26.0	S04°06.5			
19	344°02.6	120°04.6	37.7	94°39.6	39.5	227°01.9	15.1	347°28.5	06.5			
20	359°05.1	135°04.0	38.7	109°40.1	39.8	242°04.5	15.1	2°31.0	06.5			
21	14°07.6	150°03.3	•• 39.7	124°40.6	•• 40.1	257°07.0	•• 15.1	17°33.5	•• 06.5			
22	29°10.0	165°02.7	40.6	139°41.1	40.4	272°09.5	15.1	32°36.0	06.6			
23	44°12.5	180°02.0	41.6	154°41.6	40.6	287°12.1	15.2	47°38.5	06.6			
Mer.pass.:20:04			v-0.6 d-1.0 m-3.8	v0.5 d-0.3 m1.4			v2.5 d0.0 m-2.3			v2.5 d-0.0 m1.0		

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	59°15.0	195°01.4	S15°42.6	169°42.1	S22°40.9	302°14.6	N21°15.2	62°41.0	S04°06.6	
1	74°17.4	210°00.8	43.5	184°42.6	41.2	317°17.1	15.2	77°43.5	06.6	
2	89°19.9	225°00.1	44.5	199°43.1	41.5	332°19.7	15.2	92°46.0	06.6	
3	104°22.4	239°59.5	•• 45.5	214°43.6	•• 41.7	347°22.2	•• 15.2	107°48.5	•• 06.6	
4	119°24.8	254°58.8	46.4	229°44.1	42.0	2°24.7	15.2	122°51.0	06.6	
5	134°27.3	269°58.2	47.4	244°44.6	42.3	17°27.3	15.3	137°53.5	06.6	
6	149°29.8	284°57.6	S15°48.3	259°45.1	S22°42.6	32°29.8	N21°15.3	152°56.0	S04°06.6	
7	164°32.2	299°56.9	49.3	274°45.6	42.8	47°32.4	15.3	167°58.5	06.6	
8	179°34.7	314°56.3	50.3	289°46.1	43.1	62°34.9	15.3	183°01.0	06.6	
9	194°37.1	329°55.6	•• 51.2	304°46.6	•• 43.4	77°37.4	•• 15.3	198°03.5	•• 06.6	
10	209°39.6	344°55.0	52.2	319°47.1	43.7	92°40.0	15.4	213°06.0	06.6	
11	224°42.1	359°54.3	53.1	334°47.6	43.9	107°42.5	15.4	228°08.5	06.6	
12	239°44.5	14°53.7	S15°54.1	349°48.1	S22°44.2	122°45.1	N21°15.4	243°11.0	S04°06.6	
13	254°47.0	29°53.0	55.1	4°48.6	44.5	137°47.6	15.4	258°13.5	06.6	
14	269°49.5	44°52.4	56.0	19°49.1	44.7	152°50.1	15.4	273°16.0	06.7	
15	284°51.9	59°51.8	•• 57.0	34°49.6	•• 45.0	167°52.7	•• 15.5	288°18.5	•• 06.7	
16	299°54.4	74°51.1	57.9	49°50.1	45.3	182°55.2	15.5	303°21.0	06.7	
17	314°56.9	89°50.5	58.9	64°50.6	45.5	197°57.8	15.5	318°23.5	06.7	
18	329°59.3	104°49.8	S15°59.8	79°51.1	S22°45.8	213°00.3	N21°15.5	333°26.0	S04°06.7	
19	345°01.8	119°49.2	16°00.8	94°51.6	46.1	228°02.9	15.5	348°28.5	06.7	
20	0°04.3	134°48.5	01.7	109°52.1	46.4	243°05.4	15.6	3°31.0	06.7	
21	15°06.7	149°47.9	•• 02.7	124°52.6	•• 46.6	258°07.9	•• 15.6	18°33.4	•• 06.7	
22	30°09.2	164°47.2	03.6	139°53.1	46.9	273°10.5	15.6	33°35.9	06.7	
23	45°11.6	179°46.6	04.6	154°53.6	47.2	288°13.0	15.6	48°38.4	06.7	
Mer.pass.:20:00			v-0.6 d-1.0 m-3.8		v0.5 d-0.3 m1.4		v2.5 d0.0 m-2.3		v2.5 d-0.0 m1.0	

	SHA	Dec
Alpheratz	357°33.9	29°14.2
Ankaa	353°06.2	-42°10.0
Schedar	349°29.9	56°41.0
Diphda	348°46.4	-17°50.7
Achernar	335°19.1	-57°06.4
Hamal	327°50.1	23°35.2
Polaris	313°10.9	89°22.5
Acamar	315°10.8	-40°12.0
Menkar	314°05.1	4°11.6
Mirfak	308°26.7	49°57.3
Aldebaran	290°38.5	16°33.7
Rigel	281°02.9	-8°10.2
Capella	280°20.4	46°01.4
Bellatrix	278°21.8	6°22.5
Elnath	278°00.6	28°37.8
Anilam	275°36.7	-1°11.0
Betelgeuse	270°51.0	7°24.8
Canopus	263°51.6	-52°42.3
Sirius	258°25.4	-16°44.9
Adhara	255°05.1	-29°00.2
Procyon	244°49.9	5°09.6
Pollux	243°16.3	27°57.7
Avior	234°14.2	-59°35.2
Suhail	222°45.7	-43°31.9
Miaplacidus	221°38.0	-69°49.0
Alphard	217°47.0	-8°46.1
Regulus	207°37.7	11°50.4
Dubhe	193°40.3	61°36.4
Denebola	182°24.4	14°25.6
Gienah	175°43.1	-17°41.0
Acrux	172°59.8	-63°14.3
Gacrux	171°51.3	-57°15.2
Alloth	166°12.8	55°49.0
Spica	158°21.8	-11°17.7
Alkaid	152°51.9	49°10.9
Hadar	148°35.6	-60°29

	Aries		Venus		Mars		Jupiter		Saturn	
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	60°14.1	194°45.9	S16°05.5	169°54.1	S22°47.4	303°15.6	N21°15.6	63°40.9	S04°06.7	
1	75°16.6	209°45.3	06.5	184°54.6	47.7	318°18.1	15.7	78°43.4	06.7	
2	90°19.0	224°44.6	07.4	199°55.1	48.0	333°20.7	15.7	93°45.9	06.7	
3	105°21.5	239°43.9	•• 08.4	214°55.6	•• 48.2	348°23.2	•• 15.7	108°48.4	•• 06.7	
4	120°24.0	254°43.3	09.3	229°56.1	48.5	3°25.8	15.7	123°50.9	06.7	
5	135°26.4	269°42.6	10.3	244°56.6	48.8	18°28.3	15.7	138°53.4	06.7	
6	150°28.9	284°42.0	S16°11.2	259°57.1	S22°49.0	33°30.8	N21°15.8	153°55.9	S04°06.7	
7	165°31.4	299°41.3	12.2	274°57.6	49.3	48°33.4	15.8	168°58.4	06.7	
8	180°33.8	314°40.7	13.1	289°58.1	49.6	63°35.9	15.8	184°00.9	06.7	
9	195°36.3	329°40.0	•• 14.0	304°58.6	•• 49.8	78°38.5	•• 15.8	199°03.4	•• 06.7	
10	210°38.7	344°39.4	15.0	319°59.1	50.1	93°41.0	15.8	214°05.9	06.7	
11	225°41.2	359°38.7	15.9	334°59.6	50.3	108°43.6	15.9	229°08.4	06.8	
12	240°43.7	14°38.0	S16°16.9	350°00.1	S22°50.6	123°46.1	N21°15.9	244°10.9	S04°06.8	
13	255°46.1	29°37.4	17.8	5°00.6	50.9	138°48.7	15.9	259°13.4	06.8	
14	270°48.6	44°36.7	18.7	20°01.1	51.1	153°51.2	15.9	274°15.9	06.8	
15	285°51.1	59°36.1	•• 19.7	35°01.6	•• 51.4	168°53.8	•• 15.9	289°18.4	•• 06.8	
16	300°53.5	74°35.4	20.6	50°02.1	51.6	183°56.3	16.0	304°20.9	06.8	
17	315°56.0	89°34.7	21.6	65°02.6	51.9	198°58.9	16.0	319°23.4	06.8	
18	330°58.5	104°34.1	S16°22.5	80°03.1	S22°52.2	214°01.4	N21°16.0	334°25.9	S04°06.8	
19	346°00.9	119°33.4	23.4	95°03.6	52.4	229°04.0	16.0	349°04.0	06.8	
20	1°03.4	134°32.8	24.4	110°04.1	52.7	244°06.5	16.1	4°30.8	06.8	
21	16°05.9	149°32.1	•• 25.3	125°04.6	•• 52.9	259°09.1	•• 16.1	19°33.3	•• 06.8	
22	31°08.3	164°31.4	26.2	140°05.1	53.2	274°11.6	16.1	34°35.8	06.8	
23	46°10.8	179°30.8	27.2	155°05.5	53.5	289°14.2	16.1	49°38.3	06.8	
Mer.pass.:19:56		v-0.7 d-0.9 m-3.8			v0.5 d-0.3 m1.4		v2.5 d0.0 m-2.3		v2.5 d-0.0 m1.0	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	61°13.2	194°30.1	S16°28.1	170°06.0	S22°53.7	304°16.8	N21°16.1	64°40.8	S04°06.8					
1	76°15.7	209°29.4	29.0	185°06.5	54.0	319°19.3	16.2	79°43.3	06.8					
2	91°18.2	224°28.8	30.0	200°07.0	54.2	334°21.9	16.2	94°45.8	06.8					
3	106°20.6	239°28.1	•• 30.9	215°07.5	•• 54.5	349°24.4	•• 16.2	109°48.3	•• 06.8					
4	121°23.1	254°27.5	31.8	230°08.0	54.8	4°27.0	16.2	124°50.8	06.8					
5	136°25.6	269°26.8	32.7	245°08.5	55.0	19°29.5	16.3	139°53.3	06.8					
6	151°28.0	284°26.1	S16°33.7	260°09.0	S22°55.3	34°32.1	N21°16.3	154°55.8	S04°06.8					
7	166°30.5	299°25.5	34.6	275°09.5	55.5	49°34.6	16.3	169°58.3	06.8					
8	181°33.0	314°24.8	35.5	290°10.0	55.8	64°37.2	16.3	185°00.8	06.8					
9	196°35.4	329°24.1	•• 36.4	305°10.5	•• 56.0	79°39.8	•• 16.3	200°03.2	•• 06.8					
10	211°37.9	344°23.4	37.4	320°11.0	56.3	94°42.3	16.4	215°05.7	06.8					
11	226°40.4	359°22.8	38.3	335°11.5	56.5	109°44.9	16.4	230°08.2	06.8					
12	241°42.8	14°22.1	S16°39.2	350°11.9	S22°56.8	124°47.4	N21°16.4	245°10.7	S04°06.8					
13	256°45.3	29°21.4	40.1	5°12.4	57.0	139°50.0	16.4	260°13.2	06.8					
14	271°47.7	44°20.8	41.1	20°12.9	57.3	154°52.5	16.5	275°15.7	06.8					
15	286°50.2	59°20.1	•• 42.0	35°13.4	•• 57.5	169°55.1	•• 16.5	290°18.2	•• 06.8					
16	301°52.7	74°19.4	42.9	50°13.9	57.8	184°57.7	16.5	305°20.7	06.8					
17	316°55.1	89°18.7	43.8	65°14.4	58.0	200°00.2	16.5	320°23.2	06.8					
18	331°57.6	104°18.1	S16°44.7	80°14.9	S22°58.3	215°02.8	N21°16.5	335°25.7	S04°06.8					
19	347°00.1	119°17.4	45.6	95°15.4	58.6	230°05.3	16.6	350°28.2	06.8					
20	2°02.5	134°16.7	46.6	110°15.9	58.8	245°07.9	•• 16.6	5°30.6	06.8					
21	17°05.0	149°16.1	•• 47.5	125°16.3	•• 59.1	260°10.5	•• 16.6	20°33.1	•• 06.8					
22	32°07.5	164°15.4	48.4	140°16.8	59.3	275°13.0	16.6	35°35.6	06.8					
23	47°09.9	179°14.7	49.3	155°17.3	59.5	290°15.6	16.7	50°38.1	06.8					
Mer.pass.:19:52			v-0.7 d-0.9 m-3.8			v0.5 d-0.3 m1.4			v2.6 d0.0 m-2.3			v2.5 d-0.0 m1.0		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	62°12.4	194°14.0	S16°50.2	170°17.8	S22°59.8	305°18.1	N21°16.7	65°40.6	S04°06.8		
1	77°14.9	209°13.3	51.1	185°18.3	23°00.0	320°20.7	16.7	80°43.1	06.8		
2	92°17.3	224°12.7	52.0	200°18.8	00.3	335°23.3	16.7	95°45.6	06.8		
3	107°19.8	239°12.0	•• 53.0	215°19.3	•• 00.5	350°25.8	•• 16.7	110°48.1	•• 06.9		
4	122°22.2	254°11.3	53.9	230°19.8	00.8	5°28.4	16.8	125°50.6	06.9		
5	137°24.7	269°10.6	54.8	245°20.2	01.0	20°31.0	16.8	140°53.0	06.9		
6	152°27.2	284°10.0	S16°55.7	260°20.7	S23°01.3	35°33.5	N21°16.8	155°55.5	S04°06.9		
7	167°29.6	299°09.3	56.6	275°21.2	01.5	50°36.1	16.8	170°58.0	06.9		
8	182°32.1	314°08.6	57.5	290°21.7	01.8	65°38.7	16.9	186°00.5	06.9		
9	197°34.6	329°07.9	•• 58.4	305°22.2	•• 02.0	80°41.2	•• 16.9	201°03.0	•• 06.9		
10	212°37.0	344°07.2	16°59.3	320°22.7	02.3	95°43.8	16.9	216°05.5	06.9		
11	227°39.5	359°06.6	17°00.2	335°23.2	02.5	110°46.4	16.9	231°08.0	06.9		
12	242°42.0	14°05.9	S17°01.1	350°23.6	S23°02.8	125°48.9	N21°17.0	246°10.5	S04°06.9		
13	257°44.4	29°05.2	02.0	5°24.1	03.0	140°51.5	17.0	261°12.9	06.9		
14	272°46.9	44°04.5	02.9	20°24.6	03.2	155°54.1	17.0	276°15.4	06.9		
15	287°49.4	59°03.8	•• 03.8	35°25.1	•• 03.5	170°56.6	•• 17.0	291°17.9	•• 06.9		
16	302°51.8	74°03.1	04.7	50°25.6	03.7	185°59.2	17.1	306°20.4	06.9		
17	317°54.3	89°02.4	05.6	65°26.1	04.0	201°01.8	17.1	321°22.9	06.9		
18	332°56.7	104°01.8	S17°06.5	80°26.6	S23°04.2	216°04.3	N21°17.1	336°25.4	S04°06.9		
19	347°59.2	119°01.1	07.4	95°27.0	04.2	231°06.9	17.1	351°27.9	06.9		
20	3°01.7	134°00.4	08.3	110°27.5	04.7	246°09.5	•• 17.2	6°30.3	06.9		
21	18°04.1	148°59.7	•• 09.2	125°28.0	•• 04.9	261°12.0	•• 17.2	21°32.8	•• 06.9		
22	33°06.6	163°59.0	10.1	140°28.5	05.2	276°14.6	17.2	36°35.3	06.9		
23	48°09.1	178°58.3	11.0	155°29.0	05.4	291°17.2	17.2	51°37.8	06.9		
Mer.pass.:19:48			v-0.7 d-0.9 m-3.8			v2.6 d0.0 m-2.3			v2.5 d-0.0 m1.0		

Stars		
	SHA	Dec
Alpheratz	357° 33.9	29° 14.2
Ankaa	353° 06.2	-42° 10.0
Schedar	349° 29.9	56° 41.0
Diphda	348° 46.4	-17° 50.7
Achernar	335° 19.2	-57° 06.4
Hamal	327° 50.1	23° 35.2
Polaris	313° 10.7	89° 22.5
Acamar	315° 10.8	-40° 12.0
Menkar	314° 05.1	4° 11.6
Mirfak	308° 26.7	49° 57.3
Aldebaran	290° 38.5	16° 33.7
Rigel	281° 02.9	-8° 10.2
Capella	280° 20.4	46° 01.4
Bellatrix	278° 21.8	6° 22.5
Elnath	278° 00.6	28° 37.8
Anilam	275° 36.7	-1° 11.0
Betelgeuse	270° 51.0	7° 24.8
Canopus	263° 51.6	-52° 42.3
Sirius	258° 25.3	-16° 45.0
Adhara	255° 05.0	-29° 00.2
Procyon	244° 49.9	5° 09.6
Pollux	243° 16.2	27° 57.7
Avior	234° 14.2	-59° 35.2
Suhail	222° 45.7	-43° 31.9
Miaplacidus	221° 37.9	-69° 49.0
Alphard	217° 47.0	-8° 46.1

Aries				Venus				Mars				Jupiter				Saturn			
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	63°11.5	193°57.6	S17°11.9	170°29.5	S23°05.6	306°19.7	N21°17.3	66°40.3	S04°06.9										
1	78°14.0	208°56.9	12.8	185°29.9	05.9	321°22.3	17.3	81°42.8	06.9										
2	93°16.5	223°56.3	13.7	200°30.4	06.1	336°24.9	17.3	96°45.3	06.9										
3	108°18.9	238°55.6	•• 14.6	215°30.9	•• 06.4	351°27.5	•• 17.3	111°47.7	•• 06.9										
4	123°21.4	253°54.9	15.5	230°31.4	06.6	6°30.0	17.4	126°50.2	06.9										
5	138°23.8	268°54.2	16.4	245°31.9	06.8	21°32.6	17.4	141°52.7	06.9										
6	153°26.3	283°53.5	S17°17.2	260°32.3	S23°07.1	36°35.2	N21°17.4	156°55.2	S04°06.8										
7	168°28.8	298°52.8	18.1	275°32.8	07.3	51°37.8	17.4	171°57.7	06.8										
8	183°31.2	313°52.1	19.0	290°33.3	07.5	66°40.3	17.5	187°00.2	06.8										
9	198°33.7	328°51.4	•• 19.9	305°33.8	•• 07.8	81°42.9	•• 17.5	202°02.6	•• 06.8										
10	213°36.2	343°50.7	20.8	320°34.3	08.0	96°45.5	17.5	217°05.1	06.8										
11	228°38.6	358°50.0	21.7	335°34.7	08.3	111°48.0	17.5	232°07.6	06.8										
12	243°41.1	13°49.3	S17°22.6	350°35.2	S23°08.5	126°50.6	N21°17.6	247°10.1	S04°06.8										
13	258°43.6	28°48.6	23.5	5°35.7	08.7	141°53.2	17.6	262°12.6	06.8										
14	273°46.7	43°47.9	24.3	20°36.2	09.0	156°55.8	17.6	277°15.1	06.8										
15	288°48.5	58°47.2	•• 25.2	35°36.7	•• 09.2	171°58.4	•• 17.6	292°17.5	•• 06.8										
16	303°51.0	73°46.5	26.1	50°37.1	09.4	187°00.9	17.7	307°20.0	06.8										
17	318°53.4	88°45.8	27.0	65°37.6	09.7	202°03.5	17.7	322°22.5	06.8										
18	333°55.9	103°45.2	S17°27.9	80°38.1	S23°09.9	217°06.1	N21°17.7	337°25.0	S04°06.8										
19	348°58.3	118°44.5	28.7	95°38.6	10.1	232°08.7	17.7	352°27.5	06.8										
20	4°00.8	133°43.8	29.6	110°39.1	10.3	247°11.2	17.8	7°29.9	06.8										
21	19°03.3	148°43.1	•• 30.5	125°39.5	•• 10.6	262°13.8	•• 17.8	22°32.4	•• 06.8										
22	34°05.7	163°42.4	31.4	140°40.0	10.8	277°16.4	17.8	37°34.9	06.8										
23	49°08.2	178°41.7	32.2	155°40.5	11.0	292°19.0	17.8	52°37.4	06.8										
Mer.pass.:19:44				v-0.7 d-0.9 m-3.8				v0.5 d-0.2 m1.4				v2.6 d0.0 m-2.3				v2.5 d0.0 m1.0			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	64°10.7	193°41.0	S17°33.1	170°41.0	S23°11.3	307°21.6	N21°17.9	67°39.9	S04°06.8										
1	79°13.1	208°40.2	34.0	185°41.4	11.5	322°24.1	17.9	82°42.3	06.8										
2	94°15.6	223°39.5	34.9	200°41.9	11.7	337°26.7	17.9	97°44.8	06.8										
3	109°18.1	238°38.8	•• 35.7	215°42.4	•• 12.0	352°29.3	•• 17.9	112°47.3	•• 06.8										
4	124°20.5	253°38.1	36.6	230°42.9	12.2	7°31.9	18.0	127°49.8	06.8										
5	139°23.0	268°37.4	37.5	245°43.4	12.4	22°34.5	18.0	142°52.3	06.8										
6	154°25.5	283°36.7	S17°38.4	260°43.8	S23°12.6	37°37.0	N21°18.0	157°54.7	S04°06.8										
7	169°27.9	298°36.0	39.2	275°44.3	12.9	52°39.6	18.0	172°57.2	06.8										
8	184°30.4	313°35.3	40.1	290°44.8	13.1	67°42.2	18.1	178°57.7	06.8										
9	199°32.8	328°34.6	•• 41.0	305°45.3	•• 13.3	82°44.8	•• 18.1	203°02.2	•• 06.8										
10	214°35.3	343°33.9	41.8	320°45.7	13.5	97°47.4	18.1	218°04.7	06.8										
11	229°37.8	358°33.2	42.7	335°46.2	13.8	112°50.0	18.2	233°07.1	06.8										
12	244°40.2	13°32.5	S17°43.6	350°46.7	S23°14.0	127°52.5	N21°18.2	248°09.6	S04°06.8										
13	259°42.7	28°31.8	44.4	5°47.2	14.2	142°55.1	18.2	263°12.1	06.8										
14	274°45.2	43°31.1	45.3	20°47.6	14.4	157°57.7	18.2	278°14.6	06.8										
15	289°47.6	58°30.4	•• 46.2	35°48.1	•• 14.7	173°00.3	•• 18.3	293°17.1	•• 06.8										
16	304°50.1	73°29.7	47.0	50°48.6	14.9	188°02.9	18.3	308°19.5	06.8										
17	319°52.6	88°29.0	47.9	65°49.0	15.1	203°05.5	18.3	323°22.0	06.8										
18	334°55.0	103°28.2	S17°48.7	80°49.5	S23°15.3	218°08.0	N21°18.3	338°24.5	S04°06.8										
19	349°57.5	118°27.5	49.6	95°50.0	15.6	233°10.6	18.4	353°27.0	06.8										
20	5°00.0	133°26.8	50.5	110°50.5	15.8	248°13.2	18.4	8°29.4	06.8										
21	20°02.4	148°26.1	•• 51.3	125°50.9	•• 16.0	263°15.8	•• 18.4	23°31.9	•• 06.7										
22	35°04.9	163°25.4	52.2	140°51.4	16.2	278°18.4	18.5	38°34.4	06.7										
23	50°07.3	178°24.7	53.0	155°51.9	16.4	293°21.0	18.5	53°36.9	06.7										
Mer.pass.:19:40				v-0.7 d-0.9 m-3.8				v0.5 d-0.2 m1.4				v2.6 d0.0 m-2.4				v2.5 d0.0 m1.0			

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	65°09.8	193°24.0	S17°53.9	170°52.4	S23°16.7	308°23.6	N21°18.5	68°39.4	S04°06.7										
1	80°12.3	208°23.3	54.7	185°52.8	16.9	323°26.2	18.5	83°41.8	06.7										
2	95°14.7	223°22.5	55.6	200°53.3	17.1	338°28.7	18.6	98°44.3	06.7										
3	110°17.2	238°21.8	•• 56.4	215°53.8	•• 17.3	353°31.3	•• 18.6	113°46.8	•• 06.7										
4	125°19.7	253°21.1	57.3	230°54.2	17.5	8°33.9	18.6	128°49.3	06.7										
5	140°22.1	268°20.4	58.1	245°54.7	17.8	23°36.5	18.6	143°51.7	06.7										
6	155°24.6	283°19.7	S17°59.0	260°55.2	S23°18.0	38°39.1	N21°18.7	158°54.2	S04°06.7										
7	170°27.1	298°19.0	17°59.8	275°55.7	18.2	53°41.7	18.7	173°56.7	06.7										
8	185°29.5	313°18.2	18°00.7	290°56.1	18.4	68°44.3	18.7	188°59.2	06.7										
9	200°32.0	328°17.5	•• 01.5	305°56.6	•• 18.6	83°46.9	•• 18.8	204°01.6	•• 06.7										
10	215°34.4	343°16.8	02.4	320°57.1	18.8	98°49.5	18.8	219°04.1	06.7										
11	230°36.9	358°16.1	03.2	335°57.5	19.1	113°52.1	18.8	234°06.6	06.7										
12	245°39.4	13°15.4	S18°04.1	350°58.0	S23°19.3	128°54.6	N21°18.8	249°09.1	S04°06.7										
13	260°41.8	28°14.6	04.9	5°58.5	19.5	143°57.2	18.9	264°11.5	06.7										
14	275°44.3	43°13.9	05.8	20°58.9	19.7	158°59.8	18.9	279°14.0	06.7										
15	290°46.8	58°13.2	•• 06.6	35°59.4	•• 19.9	174°02.4	•• 18.9	294°16.5	•• 06.7										
16	305°49.2	73°12.5	07.4	50°59.9	20.1	189°05.0	19.0	309°19.0	06.7										
17	320°51.7	88°11.8	08.3	66°00.4	20.3	204°07.6	19.0	324°21.4	06.7										
18	335°54.2	103°11.0	S18°09.1	81°00.8	S23°20.5	219°10.2	N21°19.0	339°23.9	S04°06.6										
19	350°56.6	118°10.3	10.0	96°01.3	20.8	234°12.8	19.0	354°26.4	06.6										
20	5°59.1	133°09.6	10.8	111°01.8	21.0	249°15.4	19.1	9°28.8	06.6										
21	21°01.6	148°08.9	•• 11.6	126°02.2	•• 21.2	264°18.0	•• 19.1	24°31.3	•• 06.6										
22	36°04.0	163°08.1	12.5	141°02.7	21.4	279°20.6	19.1	39°33.8	06.6										
23	51°06.5	178°07.4	13.3	156°03.2	21.6	294°23.2	19.2	54°36.3	06.6										
Mer.pass.:19:36				v-0.7 d-0.9 m-3.8				v0.5 d-0.2 m1.4				v2.6 d0.0 m-2.4				v2.5 d0.0 m1.1			

SHA	Dec
Alpheratz	357°33.9 29°14.2
Ankaa	353°06.2 -42°10.0
Schedar	349°29.9 56°41.1
Diphda	348°46.4 -17°50.7
Achernar	335°19.2 -57°06.4
Hamal	327°50.1 23°35.2
Polaris	313°10.7 89°22.5
Acamar	315°10.8 -40°12.0
Menkar	314°05.1 4°11.6
Mirfak	308°26.7 49°57.3
Aldebaran	290°38.4 16°33.7
Rigel	281°02.9 -8°10.2
Capella	280°20.4 46°01.4
Bellatrix	278°21.8 6°22.5
Elnath	278°00.6 28°37.8
Anilam	275°36.7 -1°11.0
Betelgeuse	270°51.0 7°24.8
Canopus	263°51.6 -52°42.3
Sirius	258°25.3 -16°45.0
Adhara	255°05.0 -29°00.2
Procyon	244°49.9 5°09.6
Pollux	243°16.2 27°57.7
Avior	234°14.1 -59°35.2
Shuhail	222°45.7 -43°31.9
Miaplacidus	221°37.9 -69°49.0
Alphard	217°47.0 -8°46.1
Regulus	207°33.7 11°50.4
Dubhe	193°40.3 61°36.4
Denebola	182°24.4 14°25.6
Gienah	175°43.0 -17°41.0
Acrux	172°59.7 63°14.3
Gacrux	171°51.2 -57°15.2
Alioth	166°12.7 55°48.9
Apioth	158°21.8 -11°17.7
Spica	152°51.8 49°10.9
Alkaid	148°35.6 -60°29.7
Hadar	147°57.1 -36°29.7
Menkent	145°47.6 19°02.8
Arcturus	139°40.0 -60°56.4
Rigil Kent	137°20.9 74°02.7
Kochab	136°55.6 -16°08.9
Zuben'ubi	126°03.5 26°37.6
Alphecca	112°15.3 -26°29.3
Antares	107°09.5 -69°04.4
Atria	102°02.3 -15°45.4
Sabik	96°09.8 -37°07.4
Shaula	95°58.2 12°32.5
Rasalhague	90°42.3 51°29.2
Eltanin	83°31.9 34°22.4
Kaus Aug.	80°33.1 38°48.6
Vega	75°47.2 -26°15.9
Nunki	61°59.5 8°56.3
Altair	53°04.9 -56°39.3
Peacock	49°25.5 45°22.6
Deneb	33°

	Aries			Venus			Mars			Jupiter			Saturn		
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	66°08.9	193°06.7	S18°14.1	171°03.6	S23°21.8	309°25.8	N21°19.2	69°38.7	S04°06.6						
1	81°11.4	208°06.0	15.0	186°04.1	22.0	324°28.4	19.2	84°41.2	06.6						
2	96°13.9	223°05.2	15.8	201°04.6	22.2	339°31.0	19.2	99°43.7	06.6						
3	111°16.3	238°04.5	•• 16.6	216°05.0	•• 22.4	354°33.6	•• 19.3	114°46.2	•• 06.6						
4	126°18.8	253°03.8	17.5	231°05.5	22.7	9°36.2	19.3	129°48.6	06.6						
5	141°21.3	268°03.0	18.3	246°06.0	22.9	24°38.8	19.3	144°51.1	06.6						
6	156°23.7	283°02.3	S18°19.1	261°06.4	S23°23.1	39°41.4	N21°19.4	159°53.6	S04°06.6						
7	171°26.2	298°01.6	20.0	276°06.9	23.3	54°44.0	19.4	174°56.0	06.6						
8	186°28.7	313°00.9	20.8	291°07.4	23.5	69°46.6	19.4	189°58.5	06.6						
9	201°31.1	328°00.1	•• 21.6	306°07.8	•• 23.7	84°49.2	•• 19.4	205°01.0	•• 06.6						
10	216°33.6	342°59.4	22.4	321°08.3	23.9	99°51.8	19.5	220°03.5	06.5						
11	231°36.1	357°58.7	23.3	336°08.8	24.1	114°54.4	19.5	235°05.9	06.5						
12	246°38.5	12°59.9	S18°24.1	351°09.2	S23°24.3	129°57.0	N21°19.5	250°08.4	S04°06.5						
13	261°41.0	27°57.2	24.9	6°09.7	24.5	144°59.6	19.6	265°10.9	06.5						
14	276°43.4	42°56.5	25.7	21°10.1	24.7	160°02.2	19.6	280°13.3	06.5						
15	291°45.9	57°55.7	•• 26.6	36°10.6	•• 24.9	175°04.8	•• 19.6	295°15.8	•• 06.5						
16	306°48.4	72°55.0	27.4	51°11.1	25.1	190°07.4	19.7	310°18.3	06.5						
17	321°50.8	87°54.3	28.2	66°11.5	25.3	205°10.0	19.7	325°20.7	06.5						
18	336°53.3	102°53.5	S18°29.0	81°12.0	S23°25.5	220°12.6	N21°19.7	340°23.2	S04°06.5						
19	351°55.8	117°52.8	29.8	96°12.5	25.7	235°15.2	19.7	355°25.9	06.5						
20	6°58.2	132°52.0	30.7	111°12.9	25.9	250°17.8	19.8	10°28.2	06.5						
21	22°00.7	147°51.3	•• 31.5	126°13.4	•• 26.1	265°20.4	•• 19.8	25°30.6	•• 06.5						
22	37°03.2	162°50.6	32.3	141°13.9	26.3	280°23.0	19.8	40°33.1	06.5						
23	52°05.6	177°49.8	33.1	156°14.3	26.5	295°25.6	19.9	55°35.6	06.5						
Mer.pass.:19:32			v-0.7 d-0.8 m-3.8			v0.5 d-0.2 m1.4			v2.6 d0.0 m-2.4			v2.5 d0.0 m1.1			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	67°08.1	192°49.1	S18°33.9	171°14.8	S23°26.7	310°28.2	N21°19.9	70°38.0	S04°06.4					
1	82°10.5	207°48.4	34.7	186°15.2	26.9	325°30.8	19.9	85°40.5	06.4					
2	97°13.0	222°47.6	35.5	201°15.7	27.1	340°33.4	20.0	100°43.0	06.4					
3	112°15.5	237°46.9	•• 36.4	216°16.2	•• 27.3	355°36.0	•• 20.0	115°45.4	•• 06.4					
4	127°17.9	252°46.1	37.2	231°16.6	27.5	10°38.6	20.0	130°47.9	06.4					
5	142°20.4	267°45.4	38.0	246°17.1	27.7	25°41.2	20.1	145°50.4	06.4					
6	157°22.9	282°44.7	S18°38.8	261°17.6	S23°27.9	40°43.8	N21°20.1	160°52.8	S04°06.4					
7	172°25.3	297°43.9	39.6	276°18.0	28.1	55°46.4	20.1	175°55.3	06.4					
8	187°27.8	312°43.2	40.4	291°18.5	28.3	70°49.1	20.1	190°57.8	06.4					
9	202°30.3	327°42.4	•• 41.2	306°18.9	•• 28.5	85°51.7	•• 20.2	206°00.2	•• 06.4					
10	217°32.7	342°41.7	42.0	321°19.4	28.7	100°54.3	20.2	221°02.7	06.4					
11	232°35.2	357°40.9	42.8	336°19.9	28.9	115°56.9	20.2	236°05.2	06.4					
12	247°37.7	12°40.2	S18°43.6	351°20.3	S23°29.1	130°59.5	N21°20.3	251°07.6	S04°06.3					
13	262°40.1	27°39.4	44.4	6°20.8	29.3	146°02.1	20.3	266°10.1	06.3					
14	277°42.6	42°38.7	45.2	21°21.2	29.5	161°04.7	20.3	281°12.6	06.3					
15	292°45.0	57°38.0	•• 46.0	36°21.7	•• 29.7	176°07.3	•• 20.4	296°15.0	•• 06.3					
16	307°47.5	72°37.2	46.8	51°22.2	29.9	191°09.9	20.4	311°17.5	06.3					
17	322°50.0	87°36.5	47.6	66°22.6	30.1	206°12.5	20.4	326°20.0	06.3					
18	337°52.4	102°35.7	S18°48.4	81°23.1	S23°30.3	221°15.1	N21°20.5	341°22.4	S04°06.3					
19	352°54.9	117°35.0	49.2	96°23.5	30.5	236°17.8	20.5	356°24.9	06.3					
20	7°57.4	132°34.2	50.0	111°24.0	30.7	251°20.4	20.5	11°27.4	06.3					
21	22°59.8	147°33.5	•• 50.8	126°24.4	•• 30.9	266°23.0	•• 20.5	26°29.8	•• 06.3					
22	38°02.3	162°32.7	51.6	141°24.9	31.0	281°25.6	20.6	41°32.3	06.3					
23	53°04.8	177°32.0	52.4	156°25.4	31.2	296°28.2	20.6	56°34.8	06.2					
Mer.pass.:19:28			v-0.7 d-0.8 m-3.8			v0.5 d-0.2 m1.4			v2.6 d0.0 m-2.4			v2.5 d0.0 m1.1		

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	68°07.2	192°31.2	S18°53.2	171°25.8	S23°31.4	311°30.8	N21°20.6	71°37.2	S04°06.2					
1	83°09.7	207°30.5	54.0	186°26.3	31.6	326°33.4	20.7	86°39.7	06.2					
2	98°12.2	222°29.7	54.8	201°26.7	31.8	341°36.0	20.7	101°42.1	06.2					
3	113°14.6	237°29.0	•• 55.6	216°27.2	•• 32.0	356°38.7	•• 20.7	116°44.6	•• 06.2					
4	128°17.1	252°28.2	56.4	231°27.6	32.2	11°41.3	20.8	131°47.1	06.2					
5	143°19.5	267°27.5	57.1	246°28.1	32.4	26°43.9	20.8	146°49.5	06.2					
6	158°22.0	282°26.7	S18°57.9	261°28.6	S23°32.6	41°46.5	N21°20.8	161°52.0	S04°06.2					
7	173°24.5	297°25.9	58.7	276°29.0	32.7	56°49.1	20.9	176°54.5	06.2					
8	188°26.9	312°25.2	18°59.5	291°29.5	32.9	71°51.7	20.9	191°56.9	06.2					
9	203°29.4	327°24.4	19°00.3	306°29.9	•• 33.1	86°54.4	•• 20.9	206°59.4	•• 06.1					
10	218°31.9	342°23.7	01.1	321°30.4	33.3	101°57.0	21.0	222°01.9	06.1					
11	233°34.3	357°22.9	01.8	336°30.8	33.5	116°59.6	21.0	237°04.3	06.1					
12	248°36.8	12°22.2	S19°02.6	351°31.3	S23°33.7	132°02.2	N21°21.0	252°06.8	S04°06.1					
13	263°39.3	27°21.4	03.4	6°31.7	33.9	147°04.8	21.1	267°09.2	06.1					
14	278°41.7	42°20.6	04.2	21°32.2	34.0	162°07.4	21.1	282°11.7	06.1					
15	293°44.2	57°19.9	•• 05.0	36°32.7	•• 34.2	177°10.1	•• 21.1	297°14.2	•• 06.1					
16	308°46.6	72°19.1	05.7	51°33.1	34.4	192°12.7	21.2	312°16.6	06.1					
17	323°49.1	87°18.4	06.5	66°33.6	34.6	207°15.3	21.2	327°19.1	06.1					
18	338°51.6	102°17.6	S19°07.3	81°34.0	S23°34.8	222°17.9	N21°21.2	342°21.5	S04°06.0					
19	353°54.0	117°16.9	08.1	96°34.5	35.0	237°20.5	21.3	357°24.0	06.0					
20	8°56.5	132°16.1	08.8	111°34.9	35.1	252°23.2	21.3	12°26.5	06.0					
21	23°59.0	147°15.3	•• 09.6	126°35.4	•• 35.3	267°25.8	•• 21.3	27°28.9	•• 06.0					
22	39°01.4	162°14.6	10.4	141°35.8	35.5	282°28.4	21.4	42°31.4	06.0					
23	54°03.9	177°13.8	11.2	156°36.3	35.7	297°31.0	21.4	57°33.8	06.0					
Mer.pass.:19:24			v-0.8 d-0.8 m-3.8			v0.5 d-0.2 m1.4			v2.6 d0.0 m-2.4			v2.5 d0.0 m1.1		

Stars		
SHA	Dec	
Alpheratz	357°33.9	29°14.2
Ankaa	353°06.2	-42°10.0
Schedar	349°29.9	56°41.1
Diphda	348°46.4	-17°50.7
Achernar	335°19.2	-57°06.4
Hamal	327°50.1	23°35.2
Polaris	313°11.0	89°22.5
Acamar	315°10.8	-40°12.0
Menkar	314°05.1	4°11.6
Mirfak	308°26.7	49°57.3
Aldebaran	290°38.4	16°33.7
Rigel	281°02.8	-8°10.2
Capella	280°20.3	46°01.4
Bellatrix	278°21.8	6°22.4
Elath	278°00.6	28°37.8
Anilam	275°36.7	-1°11.0
Betelgeuse	270°51.0	7°24.8
Canopus	263°51.6	-52°42.3
Sirius	258°25.3	-16°45.0
Adhara	255°05.0	-29°00.3
Procyon	244°49.9	5°09.5
Pollux	243°16.2	27°57.7
Avior	234°14.1	-59°35.2
Suhail	222°45.6	-43°32.0
Miaplacidus	221°37.8	-69°49.1
Alphard	217°47.0	-8°46.2
Regulus	207°33.6	11°50.4
Dubhe	193°40.2	61°36.4
Denebola	182°24.3	14°25.6
Gienah	175°43.0	-17°41.0
Acrux	172°59.7	-63°14.3
Gacrux	171°51.2	-57°15.2
Alioth	166°12.7	55°48.9
Spica	158°21.8	-11°17.7
Alkaid	152°51.8	49°10.9
Hadar	148°35.5	-60°29.7
Menkent	147°57.1	-36°29.7
Arcturus	145°47.5	19°02.8
Rigil Kent	139°39.9	-60°56.4
Kochab	137°20.9	74°02.7
Zuben'ubi	136°55.5	-16°08.9
Alphecca	126°03.5	26°37.6
Antares	112°15.3	-26°29.3
Atria	107°09.5	-69°04.4
Sabik	102°02.3	-15°45.4
Shaula	96°09.8	-37°07.4
Rasalhague	95°58.2	12°32.5
Eltanin	90°42.4	51°29.2
Kaus Aust.	83°31.9	-34°22.4
Vega	80°33.1	38°48.6
Nunki	75°47.2	-26°15.9
Altair	61°59.5	8°56.3
Peacock	53°04.9	-56°33.9
Deneb	49°25.5	45°22.6
Enif	33°38.2	9°59.7
Al Na'ir	27°32.1	-46°50.3
Fomalhaut	15°13.7	-29°29.2
Scheat	13°44.5	28°13.6
Markab	13°29.1	15°20.8

Dubhe	193°40.2	61°36.4
Denebola	182°24.3	14°25.6
Gienah	175°43.0	-17°41.0
Acrux	172°59.7	-63°14.3
Gacrux	171°51.2	-57°15.2
Alioth	166°12.7	-55°48.9
Spica	158°21.8	-11°17.7
Alkaid	152°51.8	49°10.9
Hadar	148°35.5	-60°29.7
Menkent	147°57.1	-36°29.7
Arcturus	145°47.9	19°02.8
Rigel Kent	139°39.9	-60°56.4
Kochab	137°20.9	74°02.7
Zuben ubi	136°55.5	-16°08.9
Alphecca	126°03.5	26°37.6
Antares	112°15.3	-26°29.3
Atria	107°09.5	-69°04.4
Sabik	102°02.3	-15°45.4
Shaula	96°09.8	-37°07.4
Rasalhague	95°58.2	12°32.5
Eltanin	90°42.4	51°29.2
Kaus Aust.	83°31.9	-34°22.4
Vega	80°33.1	38°48.6
Nunki	75°47.2	-26°15.9
Altair	61°59.5	8°56.3
Peacock	53°04.9	-56°39.3
Deneb	49°25.5	45°22.6
Enif	33°38.2	9°59.7
Al Na'ir	27°32.1	-46°50.3
Fomalhaut	15°13.7	-29°29.2
Scheat	13°44.5	28°13.6
Makab	13°29.1	15°20.8

Aries				Venus				Mars				Jupiter				Saturn			
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	69°06.4	192°13.0	S19°11.9	171°36.7	S23°35.9	312°33.6	N21°21.4	72°36.3	S04°06.0										
1	84°08.8	207°12.3	12.7	186°37.2	36.1	327°36.3	21.5	87°38.8	06.0										
2	99°11.3	222°11.5	13.5	201°37.6	36.2	342°38.9	21.5	102°41.2	06.0										
3	114°13.8	237°10.7	•• 14.2	216°38.1	•• 36.4	357°41.5	•• 21.5	117°43.7	•• 05.9										
4	129°16.2	252°10.0	15.0	231°38.6	36.6	12°44.1	21.6	132°46.1	05.9										
5	144°18.7	267°09.2	15.8	246°39.0	36.8	27°46.7	21.6	147°48.6	05.9										
6	159°21.1	282°08.4	S19°16.5	261°39.5	S23°36.9	42°49.4	N21°21.6	162°51.1	S04°05.9										
7	174°23.6	297°07.7	17.3	276°39.9	37.1	57°52.0	21.7	177°53.5	05.9										
8	189°26.1	312°06.9	18.1	291°40.4	37.3	72°54.6	21.7	192°56.0	05.9										
9	204°28.5	327°06.1	•• 18.8	306°40.8	•• 37.5	87°57.2	•• 21.7	207°58.4	•• 05.9										
10	219°31.0	342°05.4	19.6	321°41.3	37.7	102°59.9	21.8	223°00.9	05.9										
11	234°33.5	357°04.6	20.4	336°41.7	37.8	118°02.5	21.8	238°03.4	05.9										
12	249°35.9	12°03.8	S19°21.1	351°42.2	S23°38.0	133°05.1	N21°21.8	253°05.8	S04°05.8										
13	264°38.4	27°03.1	21.9	6°42.6	38.2	148°07.7	21.9	268°08.3	05.8										
14	279°40.9	42°02.3	22.6	21°43.1	38.4	163°10.4	21.9	283°10.7	05.8										
15	294°43.5	57°01.5	•• 23.4	36°43.5	•• 38.5	178°13.0	•• 21.9	298°13.2	•• 05.8										
16	309°45.8	72°00.8	24.1	51°44.0	38.7	193°15.6	22.0	313°15.6	05.8										
17	324°48.2	87°00.0	24.9	66°44.4	38.9	208°18.3	22.0	328°18.1	05.8										
18	339°50.7	101°59.2	S19°25.6	81°44.9	S23°39.0	223°20.9	N21°22.0	343°20.6	S04°05.8										
19	354°53.2	116°58.4	26.4	96°45.3	39.2	238°23.5	22.1	358°23.0	05.8										
20	9°55.6	131°57.7	27.2	111°45.8	39.4	253°26.1	22.1	13°25.5	05.7										
21	24°58.1	146°56.9	•• 27.9	126°46.2	•• 39.6	268°28.8	•• 22.1	28°27.9	•• 05.7										
22	40°00.6	161°56.1	28.7	141°46.7	39.7	283°31.4	22.2	43°30.4	05.7										
23	55°03.0	176°55.3	29.4	156°47.1	39.9	298°34.0	22.2	58°32.8	05.7										
Mer.pass.:19:20				v-0.8 d-0.8 m-3.8				v0.5 d-0.2 m1.4				v2.6 d0.0 m-2.4				v2.5 d0.0 m1.1			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	75°05.5	191°54.6	S19°30.1	171°47.6	S23°40.1	313°36.7	N21°22.2	73°35.3	S04°05.7										
1	80°08.0	206°53.8	30.9	186°48.0	40.2	328°39.3	22.3	88°37.8	05.7										
2	100°10.4	221°53.0	31.6	201°48.5	40.4	343°41.9	22.3	103°40.2	05.7										
3	115°12.9	236°52.2	•• 32.4	216°48.9	•• 40.6	358°44.5	•• 22.3	118°42.7	•• 05.6										
4	130°15.4	251°51.5	33.1	231°49.4	40.8	13°47.2	22.4	133°45.1	05.6										
5	145°17.8	266°50.7	33.9	246°49.8	40.9	28°49.8	22.4	148°47.6	05.6										
6	160°20.3	281°49.9	S19°34.6	261°50.2	S23°41.1	43°52.4	N21°22.4	163°50.0	S04°05.6										
7	175°22.7	296°49.1	35.4	276°50.7	41.3	58°55.1	22.5	178°52.5	05.6										
8	190°25.2	311°48.3	36.1	291°51.1	41.4	73°57.7	22.5	193°54.9	05.6										
9	205°27.7	326°47.6	•• 36.8	306°51.6	•• 41.6	89°00.3	•• 22.5	208°57.4	•• 05.6										
10	220°30.1	341°46.8	37.6	321°52.0	41.8	104°03.0	22.6	223°59.9	05.5										
11	235°32.6	356°46.0	38.3	336°52.5	41.9	119°05.6	22.6	239°02.3	05.5										
12	250°35.1	11°45.2	S19°39.1	351°52.9	S23°42.1	134°08.2	N21°22.6	254°04.8	S04°05.5										
13	265°37.5	26°44.4	39.8	6°53.4	42.3	149°10.9	22.7	269°07.2	05.5										
14	280°40.0	41°43.7	40.5	21°53.8	42.4	164°13.5	22.7	284°09.7	05.5										
15	295°42.5	56°42.9	•• 41.3	36°54.3	•• 42.6	179°16.1	•• 22.8	299°12.1	•• 05.5										
16	310°44.9	71°42.1	42.0	51°54.7	42.7	194°18.8	22.8	314°14.6	05.5										
17	325°47.4	86°41.3	42.7	66°55.2	42.9	209°21.4	22.8	329°17.0	05.4										
18	340°49.9	101°40.5	S19°43.5	81°55.6	S23°43.1	224°24.0	N21°22.9	344°19.5	S04°05.4										
19	355°52.3	116°39.7	44.2	96°56.0	43.2	239°26.7	22.9	359°21.9	05.4										
20	10°54.8	131°39.0	44.9	111°56.5	43.4	254°29.3	22.9	14°24.4	05.4										
21	25°57.2	146°38.2	•• 45.6	126°56.9	•• 43.6	269°31.9	•• 23.0	29°26.8	•• 05.4										
22	40°59.7	161°37.4	46.4	141°57.4	43.7	284°34.6	23.0	44°29.3	05.4										
23	56°02.2	176°36.6	47.1	156°57.8	43.9	299°37.2	23.0	59°31.7	05.4										
Mer.pass.:19:16				v-0.8 d-0.7 m-3.8				v0.4 d-0.2 m1.4				v2.6 d0.0 m-2.4				v2.5 d0.0 m1.1			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	71°04.6	191°35.8	S19°47.8	171°58.3	S23°44.0	314°39.9	N21°23.1	74°34.2	S04°05.3	
1	86°07.1	206°35.0	48.5	186°58.7	44.2	329°42.5	23.1	89°36.6	05.3	
2	101°09.6	221°34.2	49.3	201°59.2	44.4	344°45.1	23.1	104°39.1	05.3	
3	116°12.0	236°33.4	•• 50.0	216°59.6	•• 44.5	359°47.8	•• 23.2	119°41.5	•• 05.3	
4	131°14.5	251°32.6	50.7	232°00.0	44.7	14°50.4	23.2	134°44.0	05.3	
5	146°17.0	266°31.9	51.4	247°00.5	44.8	29°53.1	23.2	149°46.4	05.3	
6	161°19.4	281°31.1	S19°52.1	262°00.9	S23°45.0	44°55.7	N21°23.3	164°48.9	S04°05.3	
7	176°21.9	296°30.3	52.9	277°01.4	45.2	59°58.3	23.3	179°51.4	05.2	
8	191°24.3	311°29.5	53.6	292°01.8	45.3	75°01.0	23.4	194°53.8	05.2	
9	206°26.8	326°28.7	•• 54.3	307°02.3	•• 45.5	90°03.6	•• 23.4	209°56.3	•• 05.2	
10	221°29.3	341°27.9	55.0	322°02.7	45.6	105°06.3	23.4	224°58.7	05.2	
11	236°31.7	356°27.1	55.7	337°03.1	45.8	120°08.9	23.5	240°01.2	05.2	
12	251°34.2	11°26.3	S19°56.4	352°03.6	S23°45.9	135°11.5	N21°23.5	255°03.6	S04°05.2	
13	266°36.7	26°25.5	57.2	7°04.0	46.1	150°14.2	23.5	270°06.1	05.1	
14	281°39.1	41°24.7	57.9	22°04.5	46.2	165°16.8	23.6	285°08.5	05.1	
15	296°41.6	56°23.9	•• 58.6	37°04.9	•• 46.4	180°19.5	•• 23.6	300°11.0	•• 05.1	
16	311°44.1	71°23.1	19°59.3	52°05.4	46.5	195°22.1	23.6	315°13.4	05.1	
17	326°46.5	86°22.3	20°00.0	67°05.8	46.7	210°24.8	23.7	330°15.8	05.1	
18	341°49.0	101°21.5	S20°00.7	82°06.2	S23°46.9	225°27.4	N21°23.7	345°18.3	S04°05.1	
19	356°51.5	116°20.7	01.4	97°06.7	47.0	240°30.0	23.8	0°20.7	05.0	
20	11°53.9	131°19.9	02.1	112°07.1	47.2	255°32.7	23.8	15°23.2	05.0	
21	26°56.4	146°19.1	•• 02.8	127°07.6	•• 47.3	270°35.3	•• 23.8	30°25.6	•• 05.0	
22	41°58.8	161°18.3	03.5	142°08.0	47.5	285°38.0	23.9	45°28.1	05.0	
23	57°01.3	176°17.5	04.2	157°08.4	47.6	300°40.6	23.9	60°30.5	05.0	
Mer.pass.:19:13			v-0.8 d-0.7 m-3.8		v0.4 d-0.2 m1.4		v2.6 d0.0 m-2.4		v2.5 d0.0 m1.1	

SHA	Dec
Alphertz	357°33.9 29°14.2
Ankaa	353°06.2 -42°10.0
Schedar	349°29.9 56°41.1
Diphda	348°46.4 -17°50.7
Achernar	335°19.2 -57°06.5
Hamal	327°50.1 23°35.2
Polaris	313°11.4 89°22.5
Acamar	315°10.8 -40°12.1
Menkar	314°05.1 4°11.6
Mirfak	308°26.7 49°57.3
Aldebaran	290°38.4 16°33.7
Rigel	281°02.8 -8°10.2
Capella	280°20.3 46°01.4
Bellatrix	278°21.8 6°22.4
Elnath	278°00.6 28°37.8
Anilnail	275°36.7 -1°11.1
Betelgeuse	270°51.0 7°24.8
Canopus	263°51.6 -52°42.4
Sirius	258°25.3 -16°45.0
Adhara	255°05.0 -29°00.3
Procyon	244°49.8 5°09.5
Pollux	243°16.2 27°57.7
Avior	234°14.1 -59°35.2
Shuhail	222°45.6 -43°32.0
Miaplacidus	221°37.8 -69°49.1
Alphard	217°46.9 -8°46.2
Regulus	207°33.6 11°50.4
Dubhe	193°40.2 61°36.4
Denebola	182°24.3 14°25.6
Gienah	175°43.0 17°41.0
Acrux	172°59.6 -63°14.3
Gacrux	171°51.1 -57°15.2
Alioth	166°12.6 55°48.9
Spica	158°21.8 -11°17.7
Alkaid	152°51.8 49°10.8
Hadar	148°35.5 -60°29.7
Menkent	147°57.1 -36°29.7
Arcturus	145°47.5 19°02.8
Rigil Kent	139°39.9 -60°56.4
Kochab	137°20.9 74°02.7
Zuben'ubi	136°55.5 -16°08.9
Alphecca	126°03.5 26°37.6
Antares	112°15.3 -26°29.3
Atria	107°09.5 -69°04.4
Sabik	102°02.3 -15°45.4
Shaula	96°09.8 -37°07.4
Rasalhague	95°58.2 12°32.5
Eltanin	90°42.4 51°29.2
Kaus Aust.	83°31.9 -34°22.4
Vega	80°33.1 38°48.6
Nunki	75°47.2 -26°15.9
Altair	61°59.5 8°56.3
Peacock	53°04.9 -56°39.3
Deneb	49°25.6 45°22.6

Aries		Venus		Mars		Jupiter		Saturn	
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	72°03.8	191°16.7	S20°04.9	172°08.9	S23°47.8	315°43.3	N21°23.9	75°33.0	S04°05.0
1	87°06.2	206°15.9	05.6	187°09.3	47.9	330°45.9	24.0	90°35.4	04.9
2	102°08.7	221°15.1	06.3	202°09.8	48.1	345°48.6	24.0	105°37.9	04.9
3	117°11.2	236°14.3	•• 07.0	217°10.2	48.2	0°51.2	•• 24.1	120°40.3	•• 04.9
4	132°13.8	251°13.5	07.7	232°10.6	48.4	15°53.8	24.1	135°42.8	04.9
5	147°16.1	266°12.7	08.4	247°11.1	48.5	30°56.5	24.1	150°45.2	04.9
6	162°18.6	281°11.9	S20°09.1	262°11.5	S23°48.6	45°59.1	N21°24.2	165°47.7	S04°04.9
7	177°21.0	296°11.1	09.8	277°11.9	48.8	61°01.8	24.2	180°50.1	04.8
8	192°23.5	311°10.3	10.5	292°12.4	48.9	76°04.4	24.2	195°52.6	04.8
9	207°26.0	326°09.5	•• 11.2	307°12.8	•• 49.1	91°07.1	•• 24.3	210°55.0	•• 04.8
10	222°28.4	341°08.7	11.9	322°13.3	49.2	106°09.7	24.3	225°57.5	04.8
11	237°30.9	356°07.9	12.6	337°13.7	49.4	121°12.4	24.3	240°59.9	04.8
12	252°33.5	11°07.1	S20°13.3	352°14.1	S23°49.5	136°15.0	N21°24.4	256°02.3	S04°04.8
13	267°35.8	26°06.3	14.0	7°14.6	49.7	151°17.7	24.4	271°04.8	04.7
14	282°38.3	41°05.5	14.6	22°15.0	49.8	166°20.3	24.5	286°07.2	04.7
15	297°40.7	56°04.7	•• 15.3	37°15.5	•• 50.0	181°23.0	•• 24.5	301°09.7	•• 04.7
16	312°43.2	71°03.9	16.0	52°15.9	50.1	196°25.6	24.5	316°12.1	04.7
17	327°45.7	86°03.1	16.7	67°16.3	50.2	211°28.3	24.6	331°14.6	04.7
18	342°48.1	101°02.3	S20°17.4	82°16.8	S23°50.4	226°30.9	N21°24.6	346°17.0	S04°04.6
19	357°50.6	116°01.5	18.1	97°17.2	50.5	241°33.6	24.7	1°19.5	04.6
20	27°53.1	131°00.7	18.8	112°17.6	50.7	256°36.2	•• 24.7	16°21.9	04.6
21	27°55.5	145°59.8	•• 19.4	127°18.1	•• 50.8	271°38.9	•• 24.7	31°24.4	•• 04.6
22	42°58.0	160°59.0	20.1	142°18.5	51.0	286°41.5	24.8	46°26.8	04.6
23	58°00.5	175°58.2	20.8	157°18.9	51.1	301°44.2	24.8	61°29.2	04.6
Mer.pass.:19:09		v-0.8 d-0.7 m-3.8		v0.4 d-0.1 m1.4		v2.6 d0.0 m-2.4		v2.4 d0.0 m1.1	

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	73°02.9	190°57.4	S20°21.5	172°19.4	S23°51.2	316°46.9	N21°24.8	76°31.7	S04°04.5
1	88°05.4	205°56.6	22.1	187°19.8	51.4	331°49.5	24.9	91°34.1	04.5
2	103°07.8	220°55.8	22.8	202°20.2	51.5	346°52.2	24.9	106°36.6	04.5
3	118°10.3	235°55.0	•• 23.5	217°20.7	•• 51.6	1°54.8	•• 25.0	121°39.0	•• 04.5
4	133°12.8	250°54.2	24.2	232°21.1	51.8	16°57.5	25.0	136°41.5	04.5
5	148°15.2	265°53.3	24.8	247°21.6	51.9	32°00.1	25.0	151°43.9	04.4
6	163°17.7	280°52.5	S20°25.5	262°22.0	S23°52.1	47°02.8	N21°25.1	166°46.3	S04°04.4
7	178°20.2	295°51.7	26.2	277°22.4	52.2	62°05.4	25.1	181°48.8	04.4
8	193°22.6	310°50.9	26.9	292°22.9	52.3	77°08.1	25.1	196°51.2	04.4
9	208°25.1	325°50.1	•• 27.5	307°23.3	•• 52.5	92°10.7	•• 25.2	211°53.7	•• 04.4
10	223°27.6	340°49.3	28.2	322°23.7	52.6	107°13.4	25.2	226°56.1	04.3
11	238°30.0	355°48.5	28.9	337°24.2	52.7	122°16.1	25.3	241°58.6	04.3
12	253°32.5	10°47.6	S20°29.5	352°24.6	S23°52.9	137°18.7	N21°25.3	257°01.0	S04°04.3
13	268°34.9	25°46.8	30.2	7°25.0	53.0	152°21.4	25.3	272°03.4	04.3
14	283°37.4	40°46.0	30.9	22°25.5	53.1	167°24.0	25.4	287°05.9	04.3
15	298°39.9	55°45.2	•• 31.5	37°25.9	•• 53.3	182°26.7	•• 25.4	302°08.3	•• 04.2
16	313°42.3	70°44.4	32.2	52°26.3	53.4	197°29.4	25.5	317°10.8	04.2
17	328°44.8	85°43.5	32.8	67°26.8	53.5	212°32.0	25.5	332°13.2	04.2
18	343°47.3	100°42.7	S20°33.5	82°27.2	S23°53.7	227°34.7	N21°25.5	347°15.6	S04°04.2
19	358°49.7	115°41.9	34.2	97°27.6	53.8	242°37.3	25.6	2°18.1	04.2
20	13°52.2	130°41.1	34.8	112°28.1	53.9	257°40.0	25.6	17°20.5	04.1
21	28°54.7	145°40.3	•• 35.5	127°28.5	•• 54.1	272°42.6	•• 25.7	32°23.0	•• 04.1
22	43°57.1	160°39.4	36.1	142°28.9	54.2	287°45.3	25.7	47°25.4	04.1
23	58°59.6	175°38.6	36.8	157°29.4	54.3	302°48.0	25.7	62°27.8	04.1
Mer.pass.:19:05		v-0.8 d-0.7 m-3.8		v0.4 d-0.1 m1.4		v2.7 d0.0 m-2.4		v2.4 d0.0 m1.1	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	74°02.1	190°37.8	S20°37.4	172°29.8	S23°54.5	317°50.6	N21°25.8	77°30.3	S04°04.1
1	89°04.5	205°37.0	38.1	187°30.2	54.6	332°53.3	25.8	92°32.7	04.0
2	104°07.0	220°36.1	38.7	202°30.6	54.7	347°56.0	25.8	107°35.2	04.0
3	119°09.4	235°35.3	•• 39.4	217°31.1	•• 54.8	2°58.6	•• 25.9	122°37.6	•• 04.0
4	134°11.9	250°34.5	40.0	232°31.5	55.0	18°01.3	25.9	137°40.0	04.0
5	149°14.4	265°33.7	40.7	247°31.9	55.1	33°03.9	26.0	152°42.5	04.0
6	164°16.8	280°32.8	S20°41.3	262°32.4	S23°55.2	48°06.6	N21°26.0	167°44.9	S04°03.9
7	179°19.3	295°32.0	42.0	277°32.8	55.3	63°09.3	26.0	182°47.4	03.9
8	194°21.8	310°31.2	42.6	292°33.2	55.5	78°11.9	26.1	197°49.8	03.9
9	209°24.2	325°30.4	•• 43.3	307°33.7	•• 55.6	93°14.6	•• 26.1	212°52.2	•• 03.9
10	224°26.7	340°29.5	43.9	322°34.1	55.7	108°17.3	26.2	227°54.7	03.9
11	239°29.2	355°28.7	44.6	337°34.5	55.8	123°19.9	26.2	242°57.1	03.8
12	254°31.6	10°27.9	S20°45.2	352°35.0	S23°56.0	138°22.6	N21°26.2	257°59.5	S04°03.8
13	269°34.1	25°27.0	45.8	7°35.4	56.1	153°25.3	26.3	273°02.0	03.8
14	284°36.6	40°26.2	46.5	22°35.8	56.2	168°27.9	26.3	288°04.4	03.8
15	299°39.0	55°25.4	•• 47.1	37°36.2	•• 56.3	183°30.6	•• 26.4	303°06.9	•• 03.7
16	314°41.5	70°24.6	47.8	52°36.7	56.5	198°33.3	26.4	318°09.3	03.7
17	329°43.9	85°23.7	48.4	67°37.1	56.6	213°35.9	26.4	333°11.7	03.7
18	344°46.4	100°22.9	S20°49.0	82°37.5	S23°56.7	228°38.6	N21°26.5	348°14.2	S04°03.7
19	359°48.9	115°22.1	49.7	97°38.0	56.8	243°41.3	26.5	3°16.6	03.7
20	14°51.3	130°21.2	50.3	112°38.4	57.0	258°43.9	26.6	18°19.0	03.6
21	29°53.8	145°20.4	•• 50.9	127°38.8	•• 57.1	273°46.6	•• 26.6	33°21.5	•• 03.6
22	44°56.3	160°19.6	51.6	142°39.2	57.2	288°49.3	26.6	48°23.9	03.6
23	59°58.7	175°18.7	52.2	157°39.7	57.3	303°51.9	26.7	63°26.3	03.6
Mer.pass.:19:01		v-0.8 d-0.7 m-3.8		v0.4 d-0.1 m1.4		v2.7 d0.0 m-2.4		v2.4 d0.0 m1.1	

SHA		Dec
Alpheratz	357°33.9	29°14.2
Ankaa	353°06.2	-42°10.1
Schedar	349°29.9	56°41.1
Diphda	348°46.4	-17°50.7
Achernar	335°19.2	-57°06.5
Hamal	327°50.1	23°35.3
Polaris	313°11.4	89°22.5
Acamar	315°10.8	-40°12.1
Menkar	314°05.1	4°11.6
Mirfak	308°26.7	49°57.3
Aldebaran	290°38.4	16°33.7
Rigel	281°02.8	-8°10.2
Capella	280°20.3	46°01.4
Bellatrix	278°21.8	6°22.4
Elnath	278°00.6	28°37.8
Anilam	275°36.7	-1°11.1
Betelgeuse	270°51.0	7°24.4
Canopus	263°51.5	-52°42.4
Sirius	258°25.3	-16°45.0
Adhara	255°05.0	-29°00.3
Procyon	244°49.8	5°09.5
Pollux	243°16.1	27°57.7
Avior	234°14.0	-59°35.3
Shuail	222°45.6	-43°32.0
Miaplacidus	221°37.7	-69°49.1
Alphard	217°46.9	-8°46.2
Regulus	207°33.6	11°50.4
Dubhe	193°40.1	61°36.4
Denebola	182°24.3	14°25.6
Gienah	175°43.0	-17°41.0
Acrux	172°59.6	-63°14.3
Gacrux	171°51.1	-57°15.2
Alioth	166°12.6	55°48.9
Spica	158°21.7	-11°17.7
Alkaid	152°51.8	49°10.8
Hadar	148°35.5	-60°29.7
Menkent	147°57.1	-36°29.7
Arcturus	145°47.5	19°02.8
Rigil Kent.	139°39.9	-60°56.4
Kochab	137°20.9	74°02.7
Zuben'ubi	136°55.5	-16°08.9
Alphecca	126°03.5	26°37.6
Antares	112°15.3	-26°29.3
Atria	107°09.5	-69°04.4
Sabik	102°02.3	-15°45.4
Shaula	96°09.8	-37°07.3
Rasalhague	95°58.2	12°32.5
Eltanin	90°42.4	51°29.2
Kaus Aust.	83°31.9	-34°22.4
Vega	80°33.1	38°48.5
Nunki	75°47.2	-26°15.9
Altair	61°59.5	8°56.3
Peacock	53°04.9	-56°39.3
Deneb	49°25.6	45°22.6
Enif	33°38.2	9°59.7
Al Na'ir	27°32.1	-46°50.3
Fomalhaut	15°13.7	-29°29.2
Scheat	13°44.5	28°13.6
Markab	13°29.2	15°20.8

SHA		Mer.pass.
Venus	119°13.0	11:15
Mars	100°05.1	12:31
Jupiter	243°39.5	02:57
Saturn	3°29.2	18:55
Dec 03 Wed		
Venus	119°13.0	11:15
Mars	100°05.1	12:31
Jupiter	243°39.5	02:57
Saturn	3°29.2	18:55
Dec 04 Thu		
Venus	117°54.5	11:17
Mars	99°16.5	12:30
Jupiter	243°43.9	02:52
Saturn	3°28.8	18:51
Dec 05 Fri		
Venus	116°35.7	11:18
Mars	98°27.7	12:30
Jupiter	243°48.6	02:48
Saturn	3°28.2	18:47
Horizontal parallax		
Venus:	0.1	
Mars:	0.1	

Sun			Moon				
Wed	GHA	Dec	GHA	ν	Dec	d	HP
0	182°33.8	S22°06.0	32°54.9	5.9°	N19°48.9	13.3'	61.1'
1	197°33.5	06.0	47°19.7	5.8°	20°02.1	13.2'	61.1'
2	212°33.3	06.8	61°44.4	5.7°	20°15.2	13.0'	61.1'
3	227°33.0	· · 07.1	76°09.0	5.5°	20°28.2	12.9'	61.1'
4	242°32.8	07.5	90°33.5	5.4°	20°41.0	12.8'	61.1'
5	257°32.5	07.8	104°57.8	5.3°	20°53.7	12.6'	61.2'
6	272°32.3	S22°08.2	119°22.0	5.1°	N21°06.3	12.5'	61.2'
7	287°32.0	08.5	133°46.1	5.0°	21°18.7	12.4'	61.2'
8	302°31.8	08.8	148°10.0	4.9°	21°31.0	12.2'	61.2'
9	317°31.5	· · 09.2	162°33.8	4.7°	21°43.2	12.1'	61.2'
10	332°31.3	09.5	176°57.5	4.6°	21°55.2	11.9'	61.2'
11	347°31.1	09.9	191°21.1	4.5°	22°07.1	11.8'	61.2'
12	2°30.8	S22°10.2	205°44.5	4.4°	N22°18.8	11.6'	61.3'
13	17°30.6	10.6	220°07.8	4.2°	22°30.3	11.5'	61.3'
14	32°30.3	10.9	234°30.9	4.1°	22°41.8	11.3'	61.3'
15	47°30.1	· · 11.3	248°54.0	4.0°	22°53.0	11.2'	61.3'
16	62°29.8	11.6	263°16.9	3.9°	23°04.1	11.0'	61.3'
17	77°29.6	11.9	277°39.7	3.7°	23°15.0	10.9'	61.3'
18	92°29.3	S22°12.3	292°02.3	3.6°	N23°25.8	10.7'	61.3'
19	107°29.1	12.6	306°24.9	3.5°	23°36.4	10.5'	61.3'
20	122°28.8	· · 13.0	320°47.3	3.4°	23°46.9	10.4'	61.3'
21	137°28.6	· · 13.3	335°09.6	3.2°	23°57.1	10.2'	61.4'
22	152°28.3	13.6	349°31.8	3.1°	24°07.2	10.0'	61.4'
23	167°28.1	14.0	3°53.9	3.0°	24°17.2	9.8'	61.4'
SD = 16.2' d = 0.4'			S.D. = 16.7'				

Aries				Venus				Mars				Jupiter				Saturn			
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	75°01.2	190°17.9	S20°52.8	172°40.1	S23°57.4	318°54.6	N21°26.7	78°28.8	S04°03.5	1	90°03.7	205°17.1	53.4	187°40.5	57.5	333°57.3	26.8	93°31.2	03.5
2	105°06.1	220°16.2	54.1	202°41.0	57.7	348°59.9	26.8	108°33.6	03.5	3	120°08.6	235°15.4	•• 54.7	217°41.4	•• 57.8	4°02.6	•• 26.8	123°36.1	•• 03.5
4	135°11.1	250°14.5	55.3	232°41.8	57.9	19°05.3	26.9	138°38.5	03.5	5	150°13.5	265°13.7	55.9	247°42.2	58.0	34°07.9	26.9	153°41.0	03.5
6	165°16.0	280°12.9	S20°56.6	262°42.7	S23°58.1	49°10.6	N21°27.0	168°43.4	S04°03.4	7	180°18.4	295°12.0	57.2	277°43.1	58.3	64°13.3	27.0	183°45.8	03.4
8	195°20.9	310°11.2	57.8	292°43.5	58.4	79°16.0	27.1	198°48.3	03.4	9	210°23.4	325°10.4	•• 58.4	307°43.9	•• 58.6	94°18.6	•• 27.1	213°50.7	•• 03.3
10	225°25.8	340°09.5	59.0	322°44.4	58.5	109°21.3	27.1	228°53.1	03.3	11	240°28.3	355°08.7	20°59.7	337°44.8	58.7	124°24.0	27.2	243°55.6	03.3
12	255°30.8	10°07.8	S21°00.3	352°45.2	S23°58.8	139°26.6	N21°27.2	258°58.0	S04°03.3	13	270°33.2	25°07.0	00.9	7°45.6	58.9	154°29.3	27.3	274°00.4	03.2
14	285°35.7	40°06.2	01.5	22°46.1	59.1	169°32.0	27.3	289°02.9	03.2	15	300°38.2	55°05.3	•• 02.1	37°46.5	•• 59.2	184°34.7	•• 27.3	304°05.3	•• 03.2
16	315°40.6	70°04.5	02.7	52°46.9	59.3	199°37.3	27.4	319°07.7	03.2	17	330°43.1	85°03.6	03.3	67°47.3	59.4	214°40.0	27.4	334°10.2	03.2
18	345°45.6	100°02.8	S21°04.0	82°47.8	S23°59.5	229°42.7	N21°27.5	349°12.6	S04°03.1	19	0°48.0	115°01.9	04.6	97°48.2	59.6	244°45.4	27.5	4°15.0	03.1
20	15°50.0	130°01.1	05.2	112°48.6	59.7	259°48.0	27.5	19°17.4	03.1	21	30°52.9	145°00.3	•• 05.8	127°49.0	•• 59.8	274°50.7	•• 27.6	34°19.9	•• 03.1
22	45°55.4	159°59.4	06.4	142°49.5	23°59.9	289°53.4	27.6	49°22.3	03.0	23	60°57.9	174°58.6	07.0	157°49.9	24°00.0	304°56.1	27.7	64°24.7	03.0
Mer.pass.:18:57				v-0.8 d-0.6 m-3.8				v0.4 d-0.1 m1.4				v2.7 d0.0 m-2.4				v2.4 d0.0 m1.1			

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	76°00.3	189°57.7	S21°07.6	172°50.3	S24°00.2	319°58.7	N21°27.7	79°27.2	S04°03.0										
1	91°02.8	204°56.9	08.2	187°50.7	00.3	335°01.4	27.8	94°29.6	03.0										
2	106°05.7	219°56.0	08.8	202°51.2	00.4	350°04.1	27.8	109°32.0	02.9										
3	121°07.7	234°55.2	•• 09.4	217°51.6	•• 00.5	5°06.8	•• 27.8	124°34.5	•• 02.9										
4	136°10.2	249°54.3	10.0	232°52.0	00.6	20°09.5	27.9	139°36.9	02.9										
5	151°12.7	264°53.5	10.6	247°52.4	00.7	35°12.1	27.9	154°39.3	02.9										
6	166°15.1	279°52.6	S21°11.2	262°52.9	S24°00.8	50°14.8	N21°28.0	169°41.8	S04°02.8										
7	181°17.6	294°51.8	11.8	277°53.3	00.9	65°17.5	28.0	184°44.2	02.8										
8	196°20.1	309°50.9	12.4	292°53.7	01.0	80°20.2	28.0	190°46.6	02.8										
9	211°22.5	324°50.1	•• 13.0	307°54.1	•• 01.1	95°22.8	•• 28.1	214°49.1	•• 02.8										
10	226°25.0	339°49.2	13.6	322°54.5	01.2	110°25.5	28.1	229°51.5	02.7										
11	241°27.4	354°48.4	14.2	337°55.0	01.3	125°28.2	28.2	244°53.9	02.7										
12	256°29.9	9°47.5	S21°14.7	352°55.4	S24°01.4	140°30.9	N21°28.2	259°56.3	S04°02.7										
13	271°32.4	24°46.7	15.3	7°55.8	01.5	155°33.6	28.3	274°58.8	02.7										
14	286°34.8	39°45.8	15.9	22°56.2	01.6	170°36.2	28.3	290°01.2	02.6										
15	301°37.3	54°45.0	•• 16.5	37°56.7	•• 01.7	185°38.9	•• 28.3	305°03.6	•• 02.6										
16	316°39.8	69°44.1	17.1	52°57.1	01.8	200°41.6	28.4	320°06.1	02.6										
17	331°42.2	84°43.3	17.7	67°57.5	01.9	215°44.3	28.4	335°08.5	02.6										
18	346°44.7	99°42.4	S21°18.3	82°57.9	S24°02.0	230°47.0	N21°28.5	350°10.9	S04°02.5										
19	1°47.2	114°41.6	18.9	97°58.3	02.1	245°49.7	28.5	5°13.3	02.5										
20	16°49.6	129°40.7	19.4	112°58.8	02.2	260°52.3	28.6	20°15.8	02.5										
21	31°52.1	144°39.9	•• 20.0	127°59.2	•• 02.3	275°55.0	•• 28.6	35°18.2	•• 02.5										
22	46°54.6	159°39.0	20.6	142°59.6	02.4	290°57.7	28.6	50°20.6	02.4										
23	61°57.0	174°38.1	21.2	158°00.0	02.5	306°00.4	28.7	65°23.1	02.4										
Mer.pass.:18:53				v-0.8 d-0.6 m-3.8				v0.4 d-0.1 m1.3				v2.7 d0.0 m-2.4				v2.4 d0.0 m1.1			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec										
0	76°59.5	189°37.3	S21°21.8	173°00.4	S24°02.6	321°03.1	N21°28.7	80°25.5	S04°02.4										
1	92°01.9	204°36.4	22.3	188°00.9	02.7	336°05.8	28.8	95°27.9	02.4										
2	107°04.4	219°35.6	22.9	203°01.3	02.8	351°08.4	28.8	110°30.3	02.3										
3	122°06.9	234°34.7	•• 23.5	218°01.7	•• 02.9	6°11.1	•• 28.9	125°32.8	•• 02.3										
4	137°09.3	249°33.9	24.1	233°02.1	03.0	21°13.8	28.9	140°35.2	02.3										
5	152°11.8	264°33.0	24.6	248°02.5	03.1	36°16.5	28.9	155°37.6	02.3										
6	167°14.3	279°32.1	S21°25.2	263°03.0	S24°03.2	51°19.2	N21°29.0	170°40.0	S04°02.2										
7	182°16.7	294°31.3	25.8	278°03.4	03.3	66°21.9	29.0	185°42.5	02.2										
8	197°19.2	309°30.4	26.3	293°03.8	03.4	81°24.6	29.1	200°44.9	02.2										
9	212°21.7	324°29.6	•• 26.9	308°04.2	•• 03.5	96°27.2	•• 29.1	215°47.3	•• 02.2										
10	227°24.1	339°28.7	27.5	323°04.6	03.6	111°29.9	29.2	230°49.7	02.1										
11	242°26.6	354°27.0	28.0	338°05.1	03.7	126°32.6	29.2	245°52.2	02.1										
12	257°29.1	9°27.0	S21°28.6	353°05.5	S24°03.8	141°35.3	N21°29.2	260°54.6	S04°02.1										
13	272°31.5	24°26.1	29.2	8°05.9	03.9	156°38.0	29.3	275°57.0	02.0										
14	287°34.0	39°25.2	29.7	23°06.3	04.0	171°40.7	29.3	290°59.4	02.0										
15	302°36.4	54°24.4	•• 30.3	38°06.7	•• 04.0	186°43.4	•• 29.4	306°01.9	•• 02.0										
16	317°38.9	69°23.5	30.9	53°07.1	04.1	201°46.1	29.4	321°04.3	02.0										
17	332°41.4	84°22.7	31.4	68°07.6	04.2	216°48.7	29.5	336°06.7	01.9										
18	347°43.8	99°21.8	S21°32.0	83°08.0	S24°04.3	231°51.4	N21°29.5	351°09.1	S04°01.9										
19	2°46.3	114°20.9	32.5	98°08.4	04.3	246°54.1	29.5	6°11.6	01.9										
20	17°48.8	129°20.1	33.1	113°08.8	04.5	261°56.8	29.6	21°14.0	01.9										
21	32°51.2	144°19.2	•• 33.6	128°09.2	•• 04.6	276°59.5	•• 29.6	36°16.4	•• 01.8										
22	47°53.7	159°18.3	34.2	143°09.6	04.7	292°02.2	29.7	51°18.8	01.8										
23	62°56.2	174°17.5	34.7	158°10.1	04.8	307°04.9	29.7	66°21.3	01.8										
Mer.pass.:18:49				v-0.9 d-0.6 m-3.8				v0.4 d-0.1 m1.3				v2.7 d0.0 m-2.4				v2.4 d0.0 m1.1			

SHA	Dec
Alpheratz	357°33.9 29°14.2
Ankaa	353°06.2 -42°10.1
Schedar	349°29.9 56°41.1
Diphda	348°46.4 -17°50.7
Achernar	335°19.2 -57°06.5
Hamal	327°50.1 23°35.3
Polaris	313°11.6 89°22.6
Acamar	315°10.8 -40°12.1
Menkar	314°05.1 4°11.6
Mirfak	308°26.7 49°57.3
Aldebaran	290°38.4 16°33.7
Rigel	281°02.8 -8°10.2
Capella	280°20.3 46°01.4
Bellatrix	278°21.7 6°22.4
Elnath	278°00.5 28°37.8
Anilam	275°36.6 -1°11.1
Betelgeuse	270°50.9 7°24.1
Canopus	263°51.5 -52°42.4
Sirius	258°25.3 -16°45.0
Adhara	255°04.9 -29°00.3
Procyon	244°49.8 5°09.5
Pollux	243°16.1 27°57.7
Avior	234°14.0 -59°35.3
Shuhail	222°45.5 -43°32.0
Miaplacidus	221°37.7 -69°49.1
Alphard	217°46.9 -8°46.2
Regulus	207°33.6 11°50.4
Dubhe	193°40.1 61°36.4
Denebola	182°24.3 14°25.5
Gienah	175°42.9 -17°41.1
Acrux	172°59.5 -63°14.3
Gacrux	171°51.1 -57°15.2
Alieha	166°12.6 55°48.9
Spica	158°21.7 -11°17.7
Alkaid	152°51.7 49°10.8
Hadar	148°35.4 -60°29.7
Menkent	147°57.0 -36°29.7
Arcturus	145°47.5 19°02.8
Rigil Cent	139°39.8 -60°56.4
Kochab	137°20.8 74°02.7
Zuben'ubi	136°55.5 -16°08.9
Alphecca	126°03.5 26°37.6
Antares	112°15.3 -26°29.3
Atria	107°09.4 -69°04.4
Sabik	102°02.3 -15°45.4
Shaula	96°09.8 -37°07.3
Rasalhague	95°58.2 12°32.5
Eltanin	90°42.4 51°29.1
Kaus Aust.	83°31.9 -34°22.4
Vega	80°33.1 38°48.5
Nunki	75°47.2 -26°15.9
Altair	61°59.5 8°56.3
Peacock	53°04.9 -56°39.3
Deneb	49°25.6 45°22.6
Enif	33°38.2 9°59.7
Al Na'ir	27°32.1 -46°50.3
Fomalhaut	15°13.7 -29°29.2
Scheat	13°44.5 28°13.6
Markab	13°29.2 15°20.8

Dubhe	193°40.1	61°36.4
Denebola	182°24.3	14°25.5
Gienah	175°42.9	-17°41.1
Acrux	172°59.5	-63°14.3
Gacrux	171°51.1	-57°15.2
Alioth	166°12.6	55°48.9
Spica	158°21.7	-11°17.7
Alkaid	152°51.7	49°10.8
Hadar	148°35.4	-60°29.7
Menkent	147°57.0	-36°29.7
Arcturus	145°47.5	19°02.8
Rigel Kent	139°39.8	-60°56.4
Kochab	137°20.8	74°02.7
Zuben uli	136°55.5	-16°08.9
Alphecca	126°03.5	26°37.6
Antares	112°15.3	-26°29.3
Atria	107°09.4	-69°04.4
Sabik	102°02.3	-15°45.4
Shaula	96°09.8	-37°07.3
Rasalhague	95°58.2	12°32.5
Eltanin	90°42.4	51°19.1
Kaus Aust.	83°31.9	-34°22.4
Vega	80°33.1	38°48.5
Nunki	75°47.2	-26°15.9
Altair	61°59.5	8°56.3
Peacock	53°04.9	-56°39.3
Deneb	49°25.6	45°22.6
Enif	33°38.2	9°59.7
Al Na'ir	27°32.1	-46°50.3
Fomalhaut	15°13.7	-29°29.2
Scheat	13°44.5	28°13.6
Markab	13°29.2	15°20.8

Horizontal parallax	
Venus:	0.1
Mars:	0.1

Sun				Moon				
Sat	GHA	Dec		GHA	ν	Dec	d	HP
0	182°15.5	S22°29.5		346°22.7	0.6'	N28°15.3	-0.5'	61.0'
1	197°15.3	29.8		0°42.3	0.7'	28°14.0	-0.7'	61.0'
2	212°15.0	30.1		15°02.0	0.7'	28°13.8	-1.0'	61.0'
3	227°14.7	.. 30.4		29°21.8	0.8'	28°12.8	-1.2'	61.0'
4	242°14.5	30.7		43°41.6	0.8'	28°11.5	-1.4'	60.9'
5	257°14.2	31.0		58°01.4	0.9'	28°10.0	-1.6'	60.9'
6	272°13.9	S22°31.3		72°21.3	0.9'	N28°08.3	-1.8'	60.9'
7	287°13.7	31.6		86°41.3	1.0'	28°06.3	-2.0'	60.9'
8	302°13.4	31.9		101°01.3	1.1'	28°04.2	-2.3'	60.8'
9	317°13.2	.. 32.2		115°21.4	1.1'	28°01.8	-2.5'	60.8'
10	332°12.9	32.5		129°41.6	1.2'	27°59.2	-2.7'	60.8'
11	347°12.6	32.8		144°01.8	1.3'	27°56.4	-2.9'	60.8'
12	2°12.4	S22°33.1		158°22.1	1.4'	N27°53.4	-3.1'	60.7'
13	17°12.1	33.3		172°42.5	1.4'	27°50.2	-3.3'	60.7'
14	32°11.8	33.6		187°03.0	1.5'	27°46.7	-3.5'	60.7'
15	47°11.6	.. 33.9		201°23.6	1.6'	27°43.1	-3.7'	60.7'
16	62°11.3	34.2		215°44.2	1.7'	27°39.3	-3.9'	60.6'
17	77°11.0	34.5		230°05.0	1.8'	27°35.2	-4.2'	60.6'
18	92°10.8	S22°34.8		244°25.8	1.9'	N27°30.9	-4.4'	60.6'
19	107°10.5	35.1		258°46.7	2.0'	27°26.5	-4.6'	60.5'
20	122°10.2	.. 35.4		273°07.8	2.1'	27°21.8	-4.8'	60.5'
21	137°10.0	.. 35.6		287°28.9	2.2'	27°17.0	-5.0'	60.5'
22	152°09.7	35.9		301°50.2	2.3'	27°11.9	-5.2'	60.4'
23	167°09.4	36.2		316°11.5	2.4'	27°06.7	-5.3'	60.4'
SD=16.2 d=-0.3				S.D.=16.6				

	Aries	Venus		Mars		Jupiter		Saturn		
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	77°58.6	189°16.6	S21°35.3	173°10.5	S24°04.8	322°07.6	N21°29.8	81°23.7	S04°01.8	
1	93°01.1	204°15.7	35.8	188°10.9	04.9	337°10.3	29.8	96°26.1	01.7	
2	108°03.5	219°14.9	36.4	203°11.3	05.0	352°13.0	29.9	111°28.5	01.7	
3	123°06.0	234°14.0	•• 36.9	218°11.7	•• 05.1	7°15.7	•• 29.9	126°31.0	•• 01.7	
4	138°08.5	249°13.1	37.5	233°12.1	05.2	22°18.3	29.9	141°33.4	01.6	
5	153°10.9	264°12.2	38.0	248°12.6	05.3	37°21.0	30.0	156°35.8	01.6	
6	168°13.4	279°11.4	S21°38.6	263°13.0	S24°05.4	52°23.7	N21°30.0	171°38.2	S04°01.6	
7	183°15.9	294°10.5	39.1	278°13.4	05.4	67°26.4	30.1	186°40.6	01.6	
8	198°18.3	309°09.6	39.7	293°13.8	05.5	82°29.1	30.1	201°43.1	01.5	
9	213°20.8	324°08.8	•• 40.2	308°14.2	•• 05.6	97°31.8	•• 30.2	216°45.5	•• 01.5	
10	228°23.3	339°07.9	40.8	323°14.6	05.7	112°34.5	30.2	231°47.9	01.5	
11	243°25.7	354°07.0	41.3	338°15.1	05.8	127°37.2	30.3	246°50.3	01.4	
12	258°28.2	•• 06.2	S21°41.8	353°15.5	S24°05.9	142°39.9	N21°30.3	261°52.7	S04°01.4	
13	273°30.7	24°05.3	42.4	8°15.9	05.9	157°42.6	30.3	276°55.2	01.4	
14	288°33.1	39°04.4	42.9	23°16.3	06.0	172°45.3	30.4	291°57.6	01.4	
15	303°35.6	54°03.5	•• 43.4	38°16.7	•• 06.1	187°48.0	•• 30.4	307°00.0	•• 01.3	
16	318°38.0	69°02.7	44.0	53°17.1	06.2	202°50.7	30.5	322°02.4	01.3	
17	333°40.5	84°01.8	44.5	68°17.5	06.3	217°53.4	30.5	337°04.8	01.3	
18	348°43.0	99°00.9	S21°45.0	83°18.0	S24°06.3	232°56.1	N21°30.6	352°07.3	S04°01.2	
19	3°45.4	114°00.9	45.6	98°18.4	06.4	247°58.8	30.6	7°09.7	01.2	
20	18°47.9	128°59.2	46.1	113°18.8	06.5	263°01.5	30.7	22°12.1	01.2	
21	33°50.4	143°58.3	•• 46.6	128°19.2	•• 06.6	278°04.2	•• 30.7	37°14.5	•• 01.2	
22	48°52.8	158°57.4	47.2	143°19.6	06.7	293°06.9	30.7	52°16.9	01.1	
23	63°55.3	173°56.5	47.7	158°20.0	06.7	308°09.6	30.8	67°19.4	01.1	
Mer.pass.:18:45			v-0.9 d-0.6 m-3.8		v0.4 d-0.1 m1.3		v2.7 d0.0 m-2.4		v2.4 d0.0 m1.1	

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	78°57.8	188°55.6	S21°48.2	173°20.4	S24°06.8	323°12.3	N21°30.8	82°21.8	S04°01.1					
1	94°00.2	203°54.8	48.7	188°20.9	06.9	338°15.0	30.9	97°24.2	01.0					
2	109°02.7	218°53.9	49.3	203°21.3	07.0	353°17.7	30.9	112°26.6	01.0					
3	124°05.2	233°53.0	.. 49.8	218°21.7	.. 07.0	8°20.4	.. 31.0	127°29.0	.. 01.0					
4	139°07.6	248°52.1	50.3	233°22.1	07.1	23°23.1	31.0	142°31.5	01.0					
5	154°10.1	263°51.3	50.8	248°22.5	07.2	38°25.8	31.1	157°33.9	00.9					
6	169°12.5	278°50.4	S21°51.3	263°22.9	S24°07.3	53°28.5	N21°31.1	172°36.3	S04°00.9					
7	184°15.0	293°49.5	51.9	278°23.3	07.3	68°31.2	31.1	187°38.7	00.9					
8	199°17.5	308°48.6	52.4	293°23.7	07.4	83°33.9	31.2	202°41.1	00.8					
9	214°19.9	323°47.7	.. 52.9	308°24.1	.. 07.5	98°36.6	.. 31.2	217°43.6	.. 00.8					
10	229°22.4	338°46.8	53.4	323°24.6	07.5	113°39.3	31.3	232°46.0	00.8					
11	244°24.9	353°46.0	53.9	338°25.0	07.6	128°42.0	31.3	247°48.4	00.7					
12	259°27.3	8°45.1	S21°54.4	353°25.4	S24°07.7	143°44.7	N21°31.4	262°50.8	S04°00.7					
13	274°29.8	23°44.2	54.9	8°25.8	07.8	158°47.4	31.4	277°53.2	00.7					
14	289°32.3	38°43.3	55.4	23°26.2	07.8	173°50.1	31.5	292°55.6	00.7					
15	304°34.7	53°42.4	.. 56.0	38°26.6	.. 07.9	188°52.8	.. 31.5	307°58.1	.. 00.6					
16	319°37.2	68°41.6	56.5	53°27.0	08.0	203°55.5	31.6	323°00.5	00.6					
17	334°39.7	83°40.7	57.0	68°27.4	08.0	218°58.2	31.6	338°02.9	00.6					
18	349°42.1	98°39.8	S21°57.5	83°27.9	S24°08.1	234°00.9	N21°31.6	353°05.3	S04°00.5					
19	4°44.6	113°38.9	58.0	98°28.3	08.2	249°03.6	31.7	8°07.7	00.5					
20	19°47.0	128°38.0	58.5	113°28.7	08.2	264°06.3	31.7	23°10.1	00.5					
21	34°49.5	143°37.1	.. 59.0	128°29.1	.. 08.3	279°09.0	.. 31.8	38°12.5	.. 00.4					
22	49°52.0	158°36.2	21°59.5	143°29.5	08.4	294°11.7	31.8	53°15.0	00.4					
23	64°54.4	173°35.3	22°00.0	158°29.9	08.4	309°14.4	31.9	68°17.4	00.4					
Mer.pass.:18:41			v-0.9 d-0.5 m-3.8			v0.4 d-0.1 m1.3			v2.7 d0.0 m-2.4			v2.4 d0.0 m1.1		

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	79°56.9	188°34.5	S22°00.5	173°30.3	S24°08.5	324°17.1	N21°31.9	83°19.8	S04°00.3					
1	94°59.4	203°33.6	01.0	188°30.7	08.6	339°19.8	32.0	98°22.2	00.3					
2	110°01.8	218°32.7	01.5	203°31.1	08.6	354°22.5	32.0	113°24.6	00.3					
3	125°04.3	233°31.8	.. 02.0	218°31.5	.. 08.7	9°25.2	.. 32.1	128°27.0	.. 00.3					
4	140°06.8	248°30.9	02.5	233°32.0	08.8	24°27.9	32.1	143°29.5	00.2					
5	155°09.2	263°30.0	02.9	248°32.4	08.8	39°30.6	32.2	158°31.9	00.2					
6	170°11.7	278°29.1	S22°03.4	263°32.8	S24°08.9	54°33.4	N21°32.2	173°34.3	S04°00.2					
7	185°14.1	293°28.2	03.9	278°33.2	09.0	69°36.1	32.2	188°36.7	00.1					
8	200°16.6	308°27.3	04.4	293°33.6	09.0	84°38.8	32.3	203°39.1	00.1					
9	215°19.1	323°26.5	.. 04.9	308°34.0	.. 09.1	99°41.5	.. 32.3	218°41.5	.. 00.1					
10	230°21.5	338°25.6	05.4	323°34.4	09.1	114°44.2	32.4	233°43.9	00.0					
11	245°24.0	353°24.7	05.9	338°34.8	09.2	129°46.9	32.4	248°46.3	00.0					
12	260°26.5	8°23.8	S22°06.4	353°35.2	S24°09.3	144°49.6	N21°32.5	263°48.8	S04°00.0					
13	275°28.9	23°22.9	06.8	8°35.6	09.3	159°52.3	32.5	278°51.2	03°59.9					
14	290°31.4	38°22.0	07.3	23°36.0	09.4	174°55.0	32.6	293°53.6	59.9					
15	305°33.9	53°21.1	.. 07.8	38°36.4	.. 09.4	189°57.7	.. 32.6	308°56.0	.. 59.9					
16	320°36.3	68°20.2	08.3	53°36.9	09.5	205°00.4	32.7	323°58.4	59.8					
17	335°38.8	83°19.3	08.8	68°37.3	09.6	220°03.2	32.7	339°00.8	59.8					
18	350°41.3	98°18.4	S22°09.3	83°37.7	S24°09.6	235°05.9	N21°32.8	354°03.8	S03°59.8					
19	5°43.7	113°17.5	09.7	98°38.1	09.7	250°08.6	32.8	9°05.6	59.7					
20	20°46.2	128°16.6	10.2	113°38.5	09.7	265°11.3	32.9	24°08.1	59.7					
21	35°48.6	143°15.7	.. 10.7	128°38.9	.. 09.8	280°14.0	.. 32.9	39°10.5	.. 59.7					
22	50°51.1	158°14.8	11.1	143°39.3	09.8	295°16.7	32.9	54°12.9	59.6					
23	65°53.6	173°13.9	11.6	158°39.7	09.9	310°19.4	33.0	69°15.3	59.6					
Mer.pass.:18:37			v-0.9 d-0.5 m-3.8			v0.4 d-0.1 m1.3			v2.7 d0.0 m-2.4			v2.4 d0.0 m1.1		

Stars		
	SHA	Dec
Alpheratz	357°33.9	29°14.2
Ankaa	353°06.3	-42°10.1
Schedar	349°30.0	56°41.1
Diphda	348°46.4	-17°50.7
Achernar	335°19.2	-57°06.5
Hamal	327°50.1	23°35.3
Polaris	313°12.1	89°22.6
Acamar	315°10.8	-40°12.1
Menkar	314°05.1	4°11.6
Mirfak	308°26.7	49°57.3
Aldebaran	290°38.4	16°33.7
Rigel	281°02.8	-8°10.2
Capella	280°20.3	46°01.4
Bellatrix	278°21.7	6°22.4
Elnath	278°00.5	28°37.8
Anilam	275°36.6	-1°11.1
Betelgeuse	270°50.9	7°24.7
Canopus	263°51.5	-52°42.4
Sirius	258°25.2	-16°45.0
Adhara	255°04.9	-29°00.3
Procyon	244°49.8	5°09.5
Pollux	243°16.1	27°57.7
Avior	234°14.0	-59°35.3
Suhail	222°45.5	-43°32.0
Miaplacidus	221°37.6	-69°49.1
Alphard	217°46.9	-8°46.2

Aries			Venus			Mars			Jupiter			Saturn		
Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	80°56.0	188°13.0	S22°12.1	173°40.1	S24°10.0	325°22.1	N21°33.0	84°17.7	S03°59.6					
1	95°58.5	203°12.1	12.6	188°40.5	10.0	340°24.9	33.1	99°20.1	59.5					
2	111°01.0	218°11.2	13.0	203°40.9	10.1	355°27.6	33.1	114°22.5	59.5					
3	126°03.4	233°10.3	•• 13.5	218°41.3	•• 10.1	370°30.3	•• 33.2	129°24.9	•• 59.5					
4	141°05.9	248°09.5	14.0	233°41.7	10.2	25°33.0	33.2	144°27.3	59.4					
5	156°08.4	263°08.6	14.4	248°42.1	10.2	40°35.7	33.3	159°29.8	59.4					
6	171°10.8	278°07.7	S22°14.9	263°42.5	S24°10.3	55°38.4	N21°33.3	174°32.2	S03°59.4					
7	186°13.3	293°06.8	15.4	278°43.0	10.3	70°41.1	33.4	189°34.6	59.3					
8	201°15.7	308°05.9	15.8	293°43.4	10.4	85°43.9	33.4	204°37.0	59.3					
9	216°18.2	323°05.0	•• 16.3	308°43.8	•• 10.4	100°46.6	•• 33.5	219°39.4	•• 59.3					
10	231°20.7	338°04.1	16.7	323°44.2	10.5	115°49.3	33.5	234°41.8	59.2					
11	246°23.1	353°03.2	17.2	338°44.6	10.5	130°52.0	33.6	249°44.2	59.2					
12	261°25.6	8°02.2	S22°17.7	353°45.0	S24°10.6	145°54.7	N21°33.6	264°46.6	S03°59.2					
13	276°28.1	23°01.3	18.1	8°45.4	10.6	160°57.4	33.7	279°49.0	59.1					
14	291°30.5	38°00.4	18.6	23°45.8	10.7	176°00.1	33.7	294°51.4	59.1					
15	306°33.0	52°59.5	•• 19.0	38°46.2	•• 10.7	191°02.9	•• 33.7	309°53.8	•• 59.1					
16	321°35.5	67°58.6	19.5	53°46.6	10.8	206°05.6	33.8	324°56.3	59.0					
17	336°37.9	82°57.7	19.9	68°47.0	10.8	221°08.3	33.8	339°58.7	59.0					
18	351°40.9	97°56.8	S22°20.4	83°47.4	S24°10.9	236°11.0	N21°33.9	355°01.1	S03°59.0					
19	6°42.9	112°55.9	20.8	98°47.8	10.9	251°13.7	33.9	10°03.5	58.9					
20	21°45.3	127°55.0	21.3	113°48.2	•• 11.0	266°16.5	•• 34.0	25°05.9	58.9					
21	36°47.8	142°54.1	•• 21.7	128°48.6	•• 11.0	281°19.2	•• 34.0	25°08.3	•• 58.9					
22	51°50.2	157°53.2	22.2	143°49.0	11.1	296°21.9	34.1	55°10.7	58.8					
23	66°52.7	172°52.3	22.6	158°49.4	11.1	311°24.6	34.1	70°13.1	58.8					
Mer.pass.:18:33			v-0.9 d-0.5 m-3.8			v0.4 d-0.1 m1.3			v2.7 d0.0 m-2.4			v2.4 d0.0 m1.1		

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	81°55.2	187°51.4	S22°23.0	173°49.8	S24°11.1	326°27.3	N21°34.2	85°15.5	S03°58.8					
1	96°57.6	202°50.5	23.5	188°50.2	11.2	341°30.0	34.2	100°17.9	58.7					
2	112°00.1	217°49.6	23.9	203°50.6	11.2	356°32.8	34.3	115°20.3	58.7					
3	127°02.6	232°48.7	•• 24.4	218°51.0	•• 11.3	371°35.5	•• 34.3	130°27.7	•• 58.7					
4	142°05.0	247°47.8	24.8	233°51.4	11.3	26°38.2	34.4	145°25.1	58.6					
5	157°07.5	262°46.9	25.2	248°51.9	11.4	41°40.9	34.4	160°27.5	58.6					
6	172°10.0	277°46.0	S22°25.7	263°52.3	S24°11.4	56°43.7	N21°34.5	175°30.0	S03°58.6					
7	187°12.4	292°45.0	26.1	278°52.7	11.4	71°46.4	34.5	190°32.4	58.5					
8	202°14.9	307°44.1	26.6	293°53.1	11.5	86°49.1	34.6	205°34.8	58.5					
9	217°17.4	322°43.2	•• 27.0	308°53.5	•• 11.5	101°51.8	•• 34.6	220°37.2	•• 58.5					
10	232°19.8	337°42.3	27.4	323°53.9	11.6	116°54.5	34.7	235°39.6	58.4					
11	247°22.3	352°41.4	27.8	338°54.3	11.6	131°57.3	34.7	250°42.0	58.4					
12	262°24.7	7°40.5	S22°28.3	353°54.7	S24°11.6	147°00.0	N21°34.8	265°44.4	S03°58.4					
13	277°27.2	22°39.6	28.7	8°55.1	11.7	162°02.7	34.8	280°46.8	58.3					
14	292°29.7	37°38.7	29.1	23°55.5	11.7	177°05.4	34.8	295°49.2	58.3					
15	307°32.1	52°37.8	•• 29.6	38°55.9	•• 11.8	192°08.2	•• 34.9	310°51.6	•• 58.2					
16	322°34.6	67°36.9	30.0	53°56.3	11.8	207°10.9	34.9	325°54.0	58.2					
17	337°37.1	82°35.9	30.4	68°56.7	11.8	222°13.6	35.0	340°56.4	58.2					
18	352°39.5	97°35.0	S22°30.8	83°57.1	S24°11.9	237°16.3	N21°35.0	355°58.8	S03°58.1					
19	7°42.0	112°34.1	31.3	98°57.5	11.9	252°19.1	35.1	11°01.2	58.1					
20	22°44.5	127°33.2	31.7	113°57.9	11.9	267°21.8	35.1	26°03.6	58.1					
21	37°46.9	142°32.3	•• 32.1	128°58.3	•• 12.0	282°24.5	•• 35.2	41°06.0	•• 58.0					
22	52°49.4	157°31.4	32.5	143°58.7	12.0	297°27.2	35.2	56°08.4	58.0					
23	67°51.8	172°30.5	32.9	158°59.1	12.0	312°30.0	35.3	71°10.8	58.0					
Mer.pass.:18:29			v-0.9 d-0.4 m-3.8			v0.4 d-0.0 m1.3			v2.7 d0.0 m-2.5			v2.4 d0.0 m1.1		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	82°54.3	187°29.5	S22°33.3	173°59.5	S24°12.1	327°32.7	N21°35.3	86°13.2	S03°57.9					
1	97°56.8	202°28.6	33.8	188°59.9	12.1	342°35.4	35.4	101°15.6	57.9					
2	112°59.2	217°27.7	34.2	204°00.3	12.1	357°38.1	35.4	116°18.0	57.8					
3	128°01.7	232°26.8	•• 34.6	219°00.7	•• 12.2	372°40.9	•• 35.5	131°20.4	•• 57.8					
4	143°04.2	247°25.9	35.0	234°01.1	12.2	27°43.6	35.5	146°22.8	57.8					
5	158°06.6	262°25.0	35.4	249°01.5	12.2	42°46.3	35.6	161°25.2	57.7					
6	173°09.1	277°24.1	S22°35.8	264°01.9	S24°12.3	57°49.0	N21°35.6	176°27.6	S03°57.7					
7	188°11.6	292°23.1	36.2	279°02.3	12.3	72°51.8	35.7	191°30.0	57.7					
8	203°14.0	307°22.2	36.6	294°02.7	12.3	87°54.5	35.7	206°32.4	57.6					
9	218°16.5	322°21.3	•• 37.0	309°03.1	•• 12.3	102°57.2	•• 35.8	221°34.9	•• 57.6					
10	233°19.0	337°20.4	37.4	324°03.5	12.4	118°00.0	35.8	236°37.3	57.6					
11	248°21.4	352°19.5	37.8	339°03.9	12.4	133°02.7	35.9	251°39.7	57.5					
12	263°23.9	7°18.5	S22°38.2	354°04.3	S24°12.4	148°05.4	N21°35.9	266°42.1	S03°57.5					
13	278°26.3	22°17.6	38.6	9°04.7	12.5	163°08.1	36.0	281°44.5	57.4					
14	293°28.8	37°16.7	39.0	24°05.1	12.5	178°10.9	36.0	296°46.9	57.4					
15	308°31.3	52°15.8	•• 39.4	39°05.5	•• 12.5	193°13.6	•• 36.1	311°49.3	•• 57.4					
16	323°33.7	67°14.9	39.8	54°05.9	12.5	208°16.3	36.1	326°51.7	57.3					
17	338°36.2	82°13.9	40.2	69°06.3	12.6	223°19.1	36.2	341°54.1	57.3					
18	353°38.7	97°13.0	S22°40.6	84°06.7	S24°12.6	238°21.8	N21°36.2	356°56.5	S03°57.3					
19	8°41.1	112°12.1	41.0	99°07.1	12.6	253°24.5	36.3	11°58.9	57.2					
20	23°43.6	127°11.2	41.4	114°07.5	12.6	268°27.3	36.3	27°01.3	57.2					
21	38°46.1	142°10.3	•• 41.8	129°07.9	•• 12.7	283°30.0	•• 36.4	42°03.7	•• 57.1					
22	53°48.5	157°09.3	42.2	144°08.3	12.7	298°32.7	36.4	57°06.1	57.1					
23	68°51.0	172°08.4	42.6	159°08.7	12.7	313°35.5	36.5	72°08.5	57.1					
Mer.pass.:18:25			v-0.9 d-0.4 m-3.8			v0.4 d-0.0 m1.3			v2.7 d0.0 m-2.5			v2.4 d0.0 m1.1		

Stars		
SHA	Dec	
Alpheratz	357°33.9	29°14.2
Aankaa	353°06.3	-42°10.1
Schedar	349°30.0	56°41.1
Diphda	348°46.4	-17°50.7
Achernar	335°19.3	-57°06.5
Hamal	327°50.1	23°35.3
Polaris	313°12.8	89°22.6
Acamar	315°10.8	-40°12.1
Menkar	314°05.1	4°11.6
Mirfak	308°26.7	49°57.4
Aldebaran	290°38.4	16°33.7
Rigel	281°02.8	-8°10.3
Capella	280°20.3	46°01.5
Bellatrix	278°21.7	6°22.4
Elnath	275°05.5	28°37.8
Anilam	270°36.6	-1°11.1
Betelgeuse	275°56.9	7°24.3
Canopus	263°51.5	-52°42.4
Sirius	258°25.2	-16°45.0
Adhara	255°04.9	-29°00.3
Procyon	244°49.8	5°09.5
Pollux	234°16.1	27°57.7
Avior	243°13.9	-59°35.3
Suhail	222°45.5	-43°32.0
Miaplacidus	221°37.6	-69°49.1
Alphard	217°46.8	-8°46.2
Regulus	207°35.8	11°50.4
Dubhe	193°40.0	61°36.3
Denebola	182°24.2	14°25.5
Gienah	175°42.9	-17°41.1
Acrux	172°59.5	-63°14.3
Gacrux	171°61.0	-57°15.2
Alioth	166°12.5	-55°48.8
Spica	158°21.7	-11°17.8
Alkaid	152°51.5	49°10.8
Hadar	148°35.4	-60°29.7
Menkent	147°57.0	-36°29.7
Arcturus	145°47.5	19°02.7
Rigel Kent.	139°39.8	-60°56.4
Kochab	137°20.8	74°02.6
Zuben'ubi	136°55.5	-16°08.9
Alphecca	126°03.8	26°37.5
Antares	112°05.3	-26°29.3
Atria	107°09.4	-69°04.4
Sabik	102°02.3	-15°45.4
Shaula	96°09.8	-37°07.3
Rasalhague	95°58.2	12°32.5
Eltanin	90°42.4	51°29.1
Kaus Aest.	83°31.9	-34°22.4
Vega	80°33.1	38°48.5
Nunki	75°47.2	-26°15.9
Altair	61°59.5	8°56.3
Peacock	53°05.0	-56°39.9
Deneb	49°25.6	45°22.6
Enif	33°38.2	9°59.7
Al Na'ir	27°32.1	-46°50.3
Fomalhaut	15°13.7	-29°29.2
Scheat	13°44.5	28°13.6
Markab	13°29.2	15°20.8

Dubhe	193°40.0	61°36.3
Denebola	182°24.2	14°25.5
Gienah	175°42.9	-17°41.1
Acrux	172°59.5	-63°14.3
Gacrux	171°51.0	-57°15.2
Alioth	166°12.5	55°48.8
Spica	158°21.7	-11°17.8
Alkaid	152°51.7	49°10.8
Hadar	148°35.4	-60°29.7
Menkent	147°57.0	-36°29.7
Arcturus	145°47.5	19°02.7
Rigel Kent.	139°39.8	-60°56.4
Kochab	137°20.8	74°02.6
Zuben'ubi	136°55.5	-16°08.9
Alphecca	126°03.4	-26°37.5
Antares	112°15.3	-26°29.3
Atria	107°09.4	-69°04.4
Sabik	102°02.3	-15°45.4
Shaula	96°09.8	-37°07.3
Rasalhague	95°58.2	12°32.5
Eltanin	90°42.4	51°19.7
Kaus Aust.	83°31.9	-34°22.1
Vega	80°33.1	38°48.5
Nunki	75°47.2	-26°15.9
Altair	61°59.5	8°56.3
Peacock	53°05.0	-56°39.3
Deneb	49°25.6	45°22.6
Enif	33°38.2	9°50.7

	Aries			Venus			Mars			Jupiter			Saturn		
Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	83°53.4	187°07.5	S22°42.9	174°09.1	S24°12.7	328°38.2	N21°36.5	87°10.9	S03°57.0						
1	98°55.9	202°06.6	43.3	189°09.5	12.8	343°40.9	36.6	102°13.2	57.0						
2	113°58.4	217°05.6	43.7	204°09.9	12.8	358°43.7	36.6	117°15.6	57.0						
3	129°00.8	232°04.7	•• 44.1	219°10.3	•• 12.8	13°46.4	•• 36.7	132°18.0	•• 56.9						
4	144°03.8	247°03.8	44.5	234°10.7	12.8	28°49.1	36.7	147°20.4	56.9						
5	159°05.5	262°02.9	44.9	249°11.1	12.8	43°51.9	36.8	162°22.8	56.8						
6	174°08.2	277°01.9	S22°45.2	264°11.5	S24°12.9	58°54.6	N21°36.8	177°25.2	S03°56.8						
7	189°10.7	292°01.0	45.6	279°11.9	12.9	73°57.3	36.9	192°27.6	56.8						
8	204°13.2	307°00.1	46.0	294°12.3	12.9	89°00.1	36.9	207°30.0	56.7						
9	219°15.6	321°59.2	•• 46.4	309°12.7	•• 12.9	104°02.8	•• 37.0	222°32.4	•• 56.7						
10	234°18.1	336°58.2	46.8	324°13.1	12.9	119°05.5	37.0	237°34.8	56.6						
11	249°20.6	351°57.3	47.1	339°13.5	12.9	134°08.3	37.1	252°37.2	56.6						
12	264°23.0	366°54.6	S22°47.5	354°13.8	S24°13.0	149°11.0	N21°37.1	267°39.6	S03°56.6						
13	279°25.5	21°55.5	47.9	9°14.2	13.0	164°13.7	37.2	282°42.0	56.5						
14	294°27.9	36°54.5	48.2	24°14.6	13.0	179°16.5	37.2	297°44.4	56.5						
15	309°30.4	51°53.6	•• 48.6	39°15.0	•• 13.0	194°19.2	•• 37.3	312°46.8	•• 56.5						
16	324°32.9	66°52.7	49.0	54°15.4	13.0	209°21.9	37.3	327°49.2	56.4						
17	339°35.3	81°51.8	49.3	69°15.8	13.0	224°24.7	37.4	342°51.6	56.4						
18	354°37.8	96°50.8	S22°49.7	84°16.2	S24°13.1	239°27.4	N21°37.4	357°54.0	S03°56.3						
19	9°40.3	111°49.9	50.1	99°16.6	13.1	254°30.2	37.5	12°56.4	56.3						
20	24°42.7	126°49.0	50.4	114°17.0	13.1	269°32.9	37.5	27°58.8	56.3						
21	39°45.2	141°48.0	•• 50.8	129°17.4	•• 13.1	284°35.6	•• 37.6	43°01.2	•• 56.2						
22	54°47.7	156°47.1	51.2	144°17.8	13.1	299°38.4	37.6	58°03.6	56.2						
23	69°50.1	171°46.2	51.5	159°18.2	13.1	314°41.1	37.7	73°06.0	56.1						
Mer.pass.:18:21			v-0.9 d-0.4 m-3.8			v0.4 d-0.0 m1.3			v2.7 d0.0 m-2.5			v2.4 d0.0 m1.1			

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	84°52.6	186°45.2	S22°51.9	174°18.6	S24°13.1	329°43.9	N21°37.7	88°08.4	S03°56.1						
1	99°55.1	201°44.3	52.2	189°19.0	13.1	344°46.6	37.8	103°10.8	56.1						
2	114°57.5	216°43.4	52.6	204°19.4	13.1	359°49.3	37.8	118°13.2	56.0						
3	130°00.0	231°42.5	•• 52.9	219°19.8	•• 13.2	14°52.1	•• 37.9	133°15.6	•• 56.0						
4	145°02.4	246°41.5	53.3	234°20.2	13.2	29°54.8	37.9	148°17.9	55.9						
5	160°04.9	261°40.6	53.6	249°20.6	13.2	44°57.6	38.0	163°20.3	55.9						
6	175°07.4	276°39.7	S22°54.0	264°21.0	S24°13.2	60°00.3	N21°38.0	178°22.7	S03°55.9						
7	190°09.8	291°38.7	54.3	279°21.4	13.2	75°03.0	38.1	193°25.1	55.8						
8	205°12.3	306°37.8	54.7	294°21.8	13.2	90°05.8	38.1	208°27.4	55.8						
9	220°14.8	321°36.9	•• 55.0	309°22.2	•• 13.2	105°08.5	•• 38.2	223°29.9	•• 55.7						
10	235°17.2	336°35.9	55.4	324°22.6	13.2	120°11.3	38.2	238°32.3	55.7						
11	250°19.7	351°35.0	55.7	339°23.0	13.2	135°14.0	38.3	253°34.7	55.7						
12	265°22.2	366°34.1	S22°56.1	354°23.3	S24°13.2	150°16.7	N21°38.3	268°37.1	S03°55.6						
13	280°24.6	21°33.1	56.4	9°23.7	13.2	165°19.5	38.4	283°39.5	55.6						
14	295°27.1	36°32.2	56.8	24°24.1	13.2	180°22.2	38.4	298°41.9	55.5						
15	310°29.6	51°31.3	•• 57.1	39°24.5	•• 13.2	195°25.0	•• 38.5	313°44.3	•• 55.5						
16	325°32.0	66°30.3	57.4	54°24.9	13.2	210°27.7	38.5	328°46.7	55.5						
17	340°34.5	81°29.4	57.8	69°25.3	13.3	225°30.5	38.6	343°49.1	55.4						
18	355°36.9	96°28.5	S22°58.1	84°25.7	S24°13.3	240°33.2	N21°38.6	358°51.4	S03°55.4						
19	10°39.4	111°27.5	58.5	99°26.1	13.3	255°35.9	38.7	13°53.8	55.3						
20	25°41.9	126°26.6	58.8	114°26.5	13.3	270°38.7	•• 38.7	28°56.2	55.3						
21	40°44.3	141°25.6	•• 59.1	129°26.9	•• 13.3	285°41.4	•• 38.8	43°58.6	•• 55.2						
22	55°46.8	156°24.7	59.5	144°27.3	13.3	300°44.2	38.8	59°01.0	55.2						
23	70°49.3	171°23.8	59.8	159°27.7	13.3	315°46.9	38.9	74°03.4	55.2						
Mer.pass.:18:17			v-0.9 d-0.4 m-3.8			v0.4 d-0.0 m1.3			v2.7 d0.1 m-2.5			v2.4 d0.0 m1.1			

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	85°51.7	186°22.8	S23°00.1	174°28.1	S24°13.3	330°49.7	N21°38.9	89°05.8	S03°55.1						
1	100°54.2	201°21.9	00.4	189°28.5	13.3	345°52.4	39.0	104°08.2	55.1						
2	115°56.7	216°21.0	00.8	204°28.9	13.3	0°55.2	39.0	119°10.6	55.0						
3	130°59.1	231°20.0	•• 01.1	219°29.3	•• 13.3	15°57.9	•• 39.1	134°13.0	•• 55.0						
4	146°01.6	246°19.1	01.4	234°29.6	13.3	31°00.6	39.1	149°15.4	55.0						
5	161°04.0	261°18.1	01.7	249°30.0	13.3	46°03.4	39.2	164°17.7	54.9						
6	176°06.5	276°17.2	S23°02.1	264°30.4	S24°13.3	61°06.1	N21°39.2	179°20.1	S03°54.9						
7	191°09.0	291°16.3	02.4	279°30.8	13.3	76°08.9	39.3	194°22.5	54.8						
8	206°11.4	306°15.3	02.7	294°31.2	13.2	91°11.6	39.3	209°24.9	54.8						
9	221°13.9	321°14.4	•• 03.0	309°31.6	•• 13.2	106°14.4	•• 39.4	224°27.3	•• 54.7						
10	236°16.4	336°13.4	03.3	324°32.0	13.3	121°17.1	39.4	239°29.7	54.7						
11	251°18.8	351°12.5	03.7	339°32.4	13.2	136°19.9	39.5	254°32.1	54.7						
12	266°21.3	366°11.6	S23°04.0	354°32.8	S24°13.2	151°22.6	N21°39.5	269°34.5	S03°54.6						
13	281°23.8	21°10.7	04.3	9°33.2	13.2	166°25.4	39.6	284°36.9	54.6						
14	296°26.2	36°10.6	04.6	24°33.6	13.2	181°28.1	39.7	299°39.3	54.5						
15	311°28.7	51°08.7	•• 04.9	39°34.0	•• 13.2	196°30.9	•• 39.7	314°41.6	•• 54.5						
16	326°32.1	66°07.2	05.2	54°34.4	13.2	211°33.6	39.8	329°44.0	54.5						
17	341°33.6	81°06.9	05.5	69°34.7	13.2	226°36.4	39.8	344°46.4	54.4						
18	356°36.1	96°05.9	S23°05.8	84°35.1	S24°13.2	241°39.1	N21°39.9	359°48.8	S03°54.4						
19	11°38.5	111°05.0	06.1	99°35.5	13.2	256°41.9	39.9	14°51.2	54.3						
20	26°41.0	126°04.0	06.4	114°35.9	13.2	271°44.6	40.0	29°53.6	54.2						
21	41°43.5	141°03.1	•• 06.7	129°36.3	•• 13.2	286°47.4	•• 40.0	44°56.0	•• 54.3						
22	56°45.9	156°02.1	07.0	144°36.7	13.2	301°50.1	40.1	59°58.4	54.2						
23	71°48.4	171°01.2	07.3	159°37.1	13.1	316°52.9	40.1	75°00.7	54.2						
Mer.pass.:18:14			v-0.9 d-0.3 m-3.8			v0.4 d0.0 m1.3			v2.7 d0.1 m-2.5			v2.4 d0.0 m1.1			

Stars		
	SHA	Dec
Alpheratz	357°33.9	29°14.2
Ankaa	353°06.3	-42°10.1
Schedar	349°30.0	56°41.1
Diphda	348°46.4	-17°50.7
Achernar	335°19.3	-57°06.5
Hamal	327°50.1	23°35.3
Polaris	313°13.4	89°22.6
Acamar	315°10.8	-40°12.1
Menkar	314°05.1	4°11.5
Mirfak	308°26.7	49°57.4
Aldebaran	290°38.4	16°33.7
Rigel	281°02.8	-8°10.3
Capella	280°20.3	46°01.5
Bellatrix	278°21.7	6°22.4
Elnath	278°00.5	28°37.8
Anilam	275°36.6	-1°11.1
Betelgeuse	270°50.9	7°24.7
Canopus	263°51.5	-52°42.5
Sirius	258°25.2	-16°45.0
Adhara	255°04.9	-29°00.3
Procyon	244°49.7	5°09.5
Pollux	243°16.0	27°57.7
Avior	234°13.9	-59°35.3
Shuhail	222°45.5	-43°32.0
Miaplacidus	221°37.5	-69°49.1

Aries		Venus		Mars		Jupiter		Saturn	
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	86°50.9	186°00.2	S23°07.6	174°37.5	S24°13.1	331°55.6	N21°40.2	90°03.1	S03°54.1
1	101°53.3	200°59.3	07.9	189°37.9	13.1	346°58.4	40.2	105°05.5	54.1
2	116°55.8	215°58.4	08.2	204°38.3	13.1	2°01.1	40.3	120°07.9	54.0
3	131°58.3	230°57.4	•• 08.5	219°38.7	•• 13.1	17°03.9	•• 40.3	135°10.3	•• 54.0
4	147°00.7	245°56.5	08.8	234°39.1	13.1	32°06.6	40.4	150°12.7	53.9
5	162°03.2	260°55.5	09.1	249°39.4	13.1	47°09.4	40.4	165°15.1	53.9
6	177°05.7	275°54.6	S23°09.4	264°39.8	S24°13.1	62°12.1	N21°40.5	180°17.4	S03°53.8
7	192°08.1	290°53.6	09.7	279°40.2	13.0	77°14.9	40.5	195°19.8	53.8
8	207°10.6	305°52.7	10.0	294°40.6	13.0	92°17.6	40.6	210°22.2	53.8
9	222°13.0	320°51.7	•• 10.3	309°41.0	•• 13.0	107°20.4	•• 40.6	225°24.6	•• 53.7
10	237°15.5	335°50.8	10.6	324°41.4	13.0	122°23.1	40.7	240°27.0	53.7
11	252°18.0	350°49.8	10.9	339°41.8	13.0	137°25.9	40.7	255°29.4	53.6
12	267°20.4	5°48.9	S23°11.2	354°42.2	S24°13.0	152°28.7	N21°40.8	270°31.8	S03°53.6
13	282°22.9	20°48.0	11.4	9°42.6	12.9	167°31.4	40.8	285°34.1	53.5
14	297°25.4	35°47.0	11.7	24°43.0	12.9	182°34.2	40.9	300°36.5	53.5
15	312°27.8	50°46.1	•• 12.0	39°43.3	•• 12.9	197°36.9	•• 41.0	315°38.9	•• 53.5
16	327°30.3	65°45.1	12.3	54°43.7	12.9	212°39.7	41.0	330°41.3	53.4
17	342°32.8	80°44.2	12.6	69°44.1	12.9	227°42.4	41.1	345°43.7	53.4
18	357°35.2	95°43.2	S23°12.8	84°44.5	S24°12.9	242°45.2	N21°41.1	0°46.1	S03°53.3
19	12°37.7	110°42.3	13.1	99°44.9	12.8	257°47.9	41.2	15°48.4	53.3
20	27°40.2	125°41.3	13.4	114°45.3	12.8	272°50.7	41.2	30°50.8	53.2
21	42°42.6	140°40.4	•• 13.7	129°45.7	•• 12.8	287°53.5	•• 41.3	45°53.2	•• 53.2
22	57°45.1	155°39.4	13.9	144°46.1	12.8	302°56.2	41.3	60°55.6	53.1
23	72°47.7	170°38.5	14.2	159°46.5	12.8	317°59.0	41.4	75°58.0	53.1
Mer.pass.:18:10		v-0.9 d-0.3 m-3.8		v0.4 d0.0 m1.3		v2.8 d0.1 m-2.5		v2.4 d0.0 m1.1	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	87°50.0	185°37.5	S23°14.5	174°46.9	S24°12.7	333°01.7	N21°41.4	91°00.4	S03°53.1
1	102°52.5	200°36.6	14.7	189°47.2	12.7	348°04.5	41.5	106°05.9	53.0
2	117°54.9	215°35.6	15.0	204°47.0	12.7	3°07.2	41.5	121°05.1	53.0
3	132°57.4	230°34.7	•• 15.3	219°48.0	•• 12.7	18°10.0	•• 41.6	136°07.5	•• 52.9
4	147°59.9	245°33.7	15.5	234°48.4	12.6	33°12.8	41.6	151°09.9	52.9
5	163°02.3	260°32.8	15.8	249°48.8	12.6	48°15.5	41.7	166°12.3	52.8
6	178°04.8	275°31.8	S23°16.1	264°49.2	S24°12.6	63°18.3	N21°41.7	181°14.7	S03°52.8
7	193°07.3	290°30.9	16.3	279°49.6	12.6	78°21.0	41.8	196°17.0	52.7
8	208°09.7	305°29.9	16.6	294°50.0	12.5	93°23.8	41.8	211°19.4	52.7
9	223°12.2	320°29.0	•• 16.9	309°50.4	•• 12.5	108°26.5	•• 41.9	226°21.8	•• 52.6
10	238°14.7	335°28.0	17.1	324°50.7	12.5	123°29.3	42.0	241°24.9	52.6
11	253°17.1	350°27.1	17.4	339°51.1	12.4	138°32.1	42.0	256°26.6	52.6
12	268°19.6	5°26.1	S23°17.6	354°51.5	S24°12.5	153°34.8	N21°42.1	271°28.9	S03°52.5
13	283°22.0	20°25.2	17.9	9°51.9	12.4	168°37.6	42.1	286°31.3	52.5
14	298°24.5	35°24.2	18.1	24°52.3	12.4	183°40.3	42.2	301°33.7	52.4
15	313°27.0	50°23.2	•• 18.4	39°52.7	•• 12.3	198°43.1	•• 42.2	316°36.1	•• 52.4
16	328°29.4	65°22.3	18.6	54°53.1	12.3	213°45.9	42.3	331°38.5	52.3
17	343°31.9	80°21.3	18.9	69°53.5	12.3	228°48.6	42.3	346°40.8	52.3
18	358°34.4	95°20.4	S23°19.1	84°53.8	S24°12.3	243°51.4	N21°42.4	1°43.2	S03°52.2
19	13°36.8	110°19.4	19.4	99°54.2	12.2	258°54.1	42.4	16°45.2	52.2
20	28°39.3	125°18.5	19.6	114°54.6	12.2	273°56.9	42.5	31°48.0	52.1
21	43°41.8	140°17.5	•• 19.9	129°55.0	•• 12.2	288°59.7	•• 42.5	46°50.5	•• 52.1
22	58°44.2	155°16.6	20.1	144°55.4	12.1	304°02.4	42.6	61°52.7	52.0
23	73°46.7	170°15.6	20.4	159°55.8	12.1	319°05.2	42.6	76°55.1	52.0
Mer.pass.:18:06		v-1.0 d-0.3 m-3.8		v0.4 d0.0 m1.3		v2.8 d0.1 m-2.5		v2.4 d0.0 m1.1	

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	88°49.1	185°14.7	S23°20.6	174°56.2	S24°12.1	334°08.0	N21°42.7	91°57.5	S03°52.0
1	103°51.6	200°13.7	20.8	189°56.6	12.0	349°10.7	42.7	106°59.9	51.9
2	118°54.1	215°12.7	21.1	204°56.9	12.0	4°13.5	42.8	122°02.3	51.9
3	133°56.5	230°11.8	•• 21.3	219°57.3	•• 12.0	19°16.2	•• 42.9	137°04.6	•• 51.8
4	148°59.0	245°10.8	21.6	234°57.7	11.9	34°19.0	42.9	152°07.0	51.8
5	164°01.5	260°09.9	21.8	249°58.1	11.9	49°21.8	43.0	167°09.4	51.7
6	179°03.9	275°08.9	S23°22.0	264°58.5	S24°11.9	64°24.5	N21°43.0	182°11.8	S03°51.7
7	194°06.4	290°08.0	22.3	279°58.9	11.8	79°27.3	43.1	197°14.1	51.6
8	209°08.9	305°07.0	22.5	294°59.3	11.8	94°30.1	43.1	212°16.5	51.6
9	224°11.3	320°06.0	•• 22.7	309°59.7	•• 11.8	109°32.8	•• 43.2	227°18.9	•• 51.5
10	239°13.8	335°05.1	22.9	325°00.0	11.7	124°35.6	43.2	242°21.3	51.5
11	254°16.3	350°04.1	23.2	340°00.4	11.7	139°38.4	43.3	257°23.7	51.4
12	269°18.7	5°03.2	S23°23.4	355°00.8	S24°11.6	154°41.1	N21°43.3	272°26.0	S03°51.4
13	284°21.2	20°02.2	23.6	10°01.2	11.6	169°43.9	43.4	287°28.4	51.3
14	299°23.6	35°01.3	23.8	25°01.6	11.6	184°46.7	43.4	302°30.8	51.3
15	314°26.1	50°00.3	•• 24.1	40°02.0	•• 11.5	199°49.4	•• 43.5	317°33.2	•• 51.2
16	329°28.6	64°59.3	24.3	55°02.4	11.5	214°52.2	43.5	332°35.5	51.2
17	344°31.0	79°58.4	24.5	70°02.7	11.4	229°55.0	43.6	347°37.9	51.2
18	359°33.5	94°57.4	S23°24.7	85°03.1	S24°11.4	244°57.7	N21°43.7	2°40.3	S03°51.1
19	14°36.0	109°56.5	24.9	100°03.5	11.4	260°00.5	43.7	17°42.7	51.1
20	29°38.4	124°55.5	25.2	115°03.9	11.3	275°03.3	43.8	32°45.0	51.0
21	44°40.9	139°54.6	•• 25.4	130°04.3	•• 11.3	290°06.0	•• 43.8	47°47.4	•• 51.0
22	59°43.4	154°53.6	25.6	145°04.7	11.2	305°08.8	43.9	62°49.8	50.9
23	74°45.8	169°52.6	25.8	160°05.1	11.2	320°11.6	43.9	77°52.2	50.9
Mer.pass.:18:02		v-1.0 d-0.2 m-3.8		v0.4 d0.0 m1.3		v2.8 d0.1 m-2.5		v2.4 d0.0 m1.1	

Stars		SHA	Dec
Alpheratz	357°33.9	29°14.2	
Ankaa	353°06.3	-42°10.1	
Schedar	349°30.0	56°41.1	
Diphda	348°46.4	-17°50.7	
Achernar	335°19.3	-57°06.5	
Hamal	327°50.1	23°35.3	
Polaris	313°13.9	89°22.6	
Acamar	315°10.8	-40°12.1	
Menkar	314°05.1	4°11.5	
Mirfak	308°26.7	49°57.4	
Aldebaran	290°38.4	16°33.7	
Rigel	281°02.8	-8°10.3	
Capella	280°20.2	46°01.5	
Bellatrix	278°21.7	6°22.4	
Elath	275°05.5	28°37.8	
Anilam	275°36.6	-1°11.1	
Betelgeuse	270°50.9	7°24.7	
Canopus	263°51.5	-52°42.5	
Sirius	258°25.2	-16°45.1	
Adhara	255°04.9	-29°00.4	
Procyon	244°49.7	5°09.5	
Pollux	243°16.0	27°57.7	
Avior	234°13.9	-59°35.3	
Suhail	222°45.4	-43°32.1	
Miaplacidus	221°37.5	-69°49.1	
Alphard	217°46.8	-8°46.2	
Regulus	207°33.5	11°50.3	
Dubhe	193°39.9	61°36.3	
Denebola	182°24.2	14°25.5	
Gienah	175°42.8	-17°41.1	
Acrux	172°59.4	-63°14.3	
Gacrux	171°50.9	-57°15.3	
Alioth	166°12.4	-55°48.8	
Spica	158°21.6	-11°17.8	
Alkaid	152°51.6	49°10.7	
Hadar	148°35.3	-60°29.7	
Merket	147°56.9	-36°29.7	
Antares	145°47.4	19°02.7	
Rigil Kent	139°39.7	-60°56.3	
Kochab	137°20.7	74°02.6	
Zuben'ubi	136°55.4	-16°08.9	
Alphecca	126°03.4	26°37.5	
Antares	112°15.2	-26°29.3	
Atria	107°09.3	-69°04.3	
Sabik	102°02.2	-15°45.4	
Shaula	96°09.7	-37°07.3	
Rasalhague	95°58.2	12°32.4	
Eltanin	90°42.4	51°29.1	
Kaus Aug.	83°31.9	-34°22.3	
Vega	80°33.1	38°48.5	
Nunki	75°47.2	-26°15.9	
Altair	61°59.5	8°56.2	
Peacock	53°05.0	-56°39.2	
Deneb	49°25.6	45°22.5	
Enif	33°38.2	9°59.7	
Al Na'ir	27°32.2	-46°50.3	
Fomalhaut	15°13.7	-29°29.2	
Scheat	13°44.5	28°13.6	
Markab	13°29.2	15°20.8	

Dec 18 Thu		SHA	Mer-pass.
Venus	99°09.4	11:37	
Mars	87°46.6	12:21	
Jupiter	245°04.8	01:52	
Saturn	3°12.3	17:57	
Dec 19 Fri		SHA	Mer-pass.
Venus	97°47.5	11:38	
Mars	86°56.8	12:21	
Jupiter	245°11.7	01:48	
Saturn	3°10.4	17:53	
Dec 20 Sat		SHA	Mer-pass.
Venus	96°25.5	11:40	
Mars	86°07.0	12:20	
Jupiter	245°18.8	01:43	
Saturn	3°08.3	17:49	

Horizontal parallax		Mer-pass.
Venus:	0.1	
Mars:	0.1	

Aries			Venus			Mars			Jupiter			Saturn																						
Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec																					
0	89°48.3	184°51.7	S23°26.0	175°05.4	S24°11.1	335°14.3	N21°44.0	92°54.5	S03°50.8	190°58.8	11.1	350°17.1	44.0	107°56.9	50.8																			
1	104°50.8	199°50.7	26.2	190°05.8	11.1	350°17.1	44.0	107°56.9	50.8	219°53.2	214°49.8	26.4	205°06.2	11.0	122°59.3	50.7																		
2	119°53.2	214°49.8	26.4	205°06.2	11.0	5°19.9	44.1	122°59.3	50.7	134°55.7	229°48.8	26.6	220°06.6	11.0	138°01.7	50.7																		
3	134°55.7	229°48.8	26.6	220°06.6	11.0	20°22.6	44.1	138°01.7	50.7	149°58.1	244°47.8	26.8	235°07.0	11.0	153°04.0	50.6																		
4	149°58.1	244°47.8	26.8	235°07.0	11.0	35°25.4	44.2	153°04.0	50.6	165°00.6	259°46.9	27.0	250°07.4	10.9	168°06.4	50.6																		
5	165°00.6	259°46.9	27.0	250°07.4	10.9	50°28.2	44.2	168°06.4	50.6	180°03.1	274°45.9	S23°27.2	265°07.8	S24°10.9	65°30.9	N21°44.3	183°08.8	S03°50.5																
6	180°03.1	274°45.9	S23°27.2	265°07.8	S24°10.9	65°30.9	N21°44.3	183°08.8	S03°50.5	195°05.5	289°44.9	27.4	280°08.1	10.8	98°33.7	44.4	198°11.2	50.5																
7	195°05.5	289°44.9	27.4	280°08.1	10.8	80°33.7	44.4	198°11.2	50.5	210°08.0	304°44.0	27.6	295°08.5	10.8	95°36.5	44.4	213°13.5	50.4																
8	210°08.0	304°44.0	27.6	295°08.5	10.8	95°36.5	44.4	213°13.5	50.4	225°10.5	319°43.0	27.8	310°08.9	10.7	110°39.2	44.5	228°15.9	50.4																
9	225°10.5	319°43.0	27.8	310°08.9	10.7	110°39.2	44.5	228°15.9	50.4	240°12.9	334°42.1	28.0	325°09.3	10.7	125°42.0	44.5	243°18.3	50.3																
10	240°12.9	334°42.1	28.0	325°09.3	10.7	125°42.0	44.5	243°18.3	50.3	255°15.4	349°41.1	28.2	340°09.7	10.6	140°44.8	44.6	258°20.7	50.3																
11	255°15.4	349°41.1	28.2	340°09.7	10.6	140°44.8	44.6	258°20.7	50.3	270°17.9	44°40.1	S23°28.4	355°10.1	S24°10.6	155°47.5	N21°44.6	273°23.0	S03°50.2																
12	270°17.9	44°40.1	S23°28.4	355°10.1	S24°10.6	155°47.5	N21°44.6	273°23.0	S03°50.2	285°20.3	19°39.2	28.6	10°10.5	10.5	170°50.3	44.7	288°25.4	50.2																
13	285°20.3	19°39.2	28.6	10°10.5	10.5	170°50.3	44.7	288°25.4	50.2	300°22.8	34°38.2	28.8	25°10.8	10.5	185°53.1	44.7	303°27.8	50.1																
14	300°22.8	34°38.2	28.8	25°10.8	10.5	185°53.1	44.7	303°27.8	50.1	315°25.3	49°37.3	29.0	40°11.2	10.4	200°55.9	44.8	318°30.1	50.1																
15	315°25.3	49°37.3	29.0	40°11.2	10.4	200°55.9	44.8	318°30.1	50.1	330°27.7	64°36.3	29.2	55°11.6	10.4	215°58.6	44.8	333°32.5	50.0																
16	330°27.7	64°36.3	29.2	55°11.6	10.4	215°58.6	44.8	333°32.5	50.0	345°30.2	79°35.3	29.4	70°12.0	10.3	231°01.4	44.9	348°34.9	50.0																
17	345°30.2	79°35.3	29.4	70°12.0	10.3	231°01.4	44.9	348°34.9	50.0	0°32.6	94°34.4	S23°29.6	85°12.4	S24°10.3	246°04.2	N21°45.0	3°37.3	S03°49.9																
18	0°32.6	94°34.4	S23°29.6	85°12.4	S24°10.3	246°04.2	N21°45.0	3°37.3	S03°49.9	15°35.1	109°33.4	29.8	100°12.8	10.2	261°06.9	45.0	18°39.6	49.9																
19	15°35.1	109°33.4	29.8	100°12.8	10.2	261°06.9	45.0	18°39.6	49.9	30°37.6	124°32.4	30.0	115°13.2	10.2	276°09.7	45.1	33°42.0	49.8																
20	30°37.6	124°32.4	30.0	115°13.2	10.2	276°09.7	45.1	33°42.0	49.8	45°40.0	139°31.5	30.1	130°13.5	10.1	291°12.5	45.1	48°44.4	49.8																
21	45°40.0	139°31.5	30.1	130°13.5	10.1	291°12.5	45.1	48°44.4	49.8	60°42.5	154°30.5	30.3	145°13.9	10.1	306°15.3	45.2	63°46.7	49.7																
22	60°42.5	154°30.5	30.3	145°13.9	10.1	306°15.3	45.2	63°46.7	49.7	75°45.0	169°29.5	30.5	160°14.3	10.0	321°18.0	45.2	78°49.1	49.7																
23	75°45.0	169°29.5	30.5	160°14.3	10.0	321°18.0	45.2	78°49.1	49.7	Mer.pass.:17:58					v-1.0 d-0.2 m-3.8					v0.4 d0.0 m1.3					v2.8 d0.1 m-2.5					v2.4 d0.0 m1.1				

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	90°47.4	184°28.6	S23°30.7	175°14.7	S24°09.9	336°20.8	N21°45.3	93°51.5	S03°49.6					
1	105°49.9	199°27.6	30.9	190°15.1	09.9	351°23.6	45.3	108°53.9	49.6					
2	120°52.4	214°26.7	31.0	205°15.5	09.8	6°26.4	45.4	123°56.2	49.5					
3	135°54.8	229°25.7	31.2	220°15.8	09.8	21°29.1	45.4	138°58.6	49.5					
4	150°57.3	244°24.7	31.4	235°16.2	09.7	36°31.9	45.5	154°01.0	49.4					
5	165°59.8	259°23.8	31.6	250°16.6	09.7	51°34.7	45.5	169°03.3	49.4					
6	181°02.2	274°22.8	S23°31.8	265°17.0	S24°09.6	66°37.5	N21°45.6	184°05.7	S03°49.3					
7	196°04.7	289°21.8	31.9	280°17.4	09.5	81°40.2	45.7	199°08.1	49.3					
8	211°07.1	304°20.9	32.1	295°17.8	09.5	96°43.0	45.7	214°10.5	49.2					
9	226°09.6	319°19.9	32.3	310°18.1	09.4	111°45.8	45.8	229°12.8	49.2					
10	241°12.1	334°18.9	32.4	325°18.5	09.4	126°48.5	45.8	244°15.2	49.1					
11	256°14.5	349°18.0	32.6	340°18.9	09.3	141°51.3	45.9	259°17.6	49.1					
12	271°17.0	4°17.0	S23°32.8	355°19.3	S24°09.2	156°54.1	N21°45.9	273°19.9	S03°49.0					
13	286°19.5	19°16.0	32.9	10°19.7	09.2	171°56.9	46.0	289°22.3	49.0					
14	301°21.9	34°15.1	33.1	25°20.1	09.1	186°59.7	46.0	304°24.7	48.9					
15	316°24.4	49°14.1	33.3	40°20.4	09.1	202°02.4	46.1	319°27.0	48.9					
16	331°26.9	64°13.1	33.4	55°20.8	09.0	217°05.2	46.2	334°29.4	48.8					
17	346°29.3	79°12.2	33.6	70°21.2	08.9	232°08.0	46.2	349°31.8	48.8					
18	1°31.8	94°11.2	S23°33.7	85°21.6	S24°08.9	247°10.8	N21°46.3	4°34.1	S03°48.7					
19	16°34.2	109°10.2	33.9	100°22.0	08.8	262°13.5	46.3	19°36.5	48.7					
20	31°36.7	124°09.3	34.0	115°22.4	08.7	277°16.3	46.4	34°38.9	48.6					
21	46°39.2	139°08.3	34.2	130°22.7	08.7	292°19.1	46.4	49°41.2	48.6					
22	61°41.6	154°07.3	34.4	145°23.1	08.6	307°21.9	46.5	64°43.6	48.5					
23	76°44.1	169°06.4	34.5	160°23.5	08.5	322°24.6	46.5	79°46.0	48.5					
Mer.pass.:17:54			v-1.0 d-0.2 m-3.8			v0.4 d0.1 m1.3			v2.8 d0.1 m-2.5			v2.4 d0.0 m1.1		

Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec		
0	91°46.6	184°05.4	S23°34.7	175°23.9	S24°08.5	337°27.4	N21°46.6	94°48.3	S03°48.4		
1	106°49.0	199°04.4	34.8	190°24.3	08.4	352°30.2	46.6	109°50.7	48.4		
2	121°51.5	214°03.5	35.0	205°24.7	08.3	7°33.0	46.7	124°53.1	48.3		
3	136°54.0	229°02.5	35.1	220°25.0	08.3	22°35.8	46.8	139°55.4	48.3		
4	151°56.4	244°01.5	35.2	235°25.4	08.2	37°38.5	46.8	154°57.8	48.2		
5	166°58.9	259°00.6	35.4	250°25.8	08.1	52°41.3	46.9	170°00.2	48.2		
6	182°01.4	273°59.6	S23°35.5	265°26.2	S24°08.1	67°44.1	N21°46.9	185°02.5	S03°48.1		
7	197°03.8	288°58.6	35.7	280°26.6	08.0	82°46.9	47.0	200°04.9	48.1		
8	212°06.3	303°57.6	35.8	295°27.0	07.9	97°49.6	47.0	215°07.3	48.0		
9	227°08.7	318°56.7	36.0	310°27.3	07.9	112°52.4	47.1	230°09.6	48.0		
10	242°11.2	333°55.7	36.1	325°27.7	07.8	127°55.2	47.1	245°12.0	47.9		
11	257°13.7	348°54.8	36.2	340°28.1	07.7	142°58.0	47.2	260°14.4	47.9		
12	272°16.1	3°53.8	S23°36.4	355°28.5	S24°07.6	158°00.8	N21°47.2	275°16.7	S03°47.8		
13	287°18.6	18°52.8	36.5	10°28.9	07.6	173°03.5	47.3	290°19.1	47.8		
14	302°21.1	33°51.9	36.6	25°29.3	07.5	188°06.3	47.4	305°21.5	47.7		
15	317°23.5	48°50.9	36.8	40°29.6	07.4	203°09.1	47.4	320°23.8	47.6		
16	332°26.0	63°49.9	36.9	55°30.0	07.3	218°11.9	47.5	335°26.2	47.6		
17	347°28.5	78°48.9	37.0	70°30.4	07.3	233°14.7	47.5	350°28.6	47.5		
18	2°30.9	93°48.0	S23°37.1	85°30.8	S24°07.2	248°17.5	N21°47.6	5°30.9	S03°47.5		
19	17°33.4	108°47.0	37.3	100°31.2	07.1	263°20.2	47.6	20°33.3	47.4		
20	32°35.9	123°46.0	37.4	115°31.6	07.0	278°23.0	47.7	35°35.7	47.4		
21	47°38.3	138°45.1	37.5	130°31.9	07.0	293°25.8	47.7	50°38.0	47.3		
22	62°40.8	153°44.1	37.6	145°32.3	06.9	308°28.6	47.8	65°40.4	47.3		
23	77°43.2	168°43.1	37.8	160°32.7	06.8	323°31.4	47.9	80°42.7	47.2		
Mer.pass.:17:50			v-1.0 d-0.1 m-3.8			v2.8 d0.1 m-2.5			v2.4 d0.1 m1.1		

Stars		
	SHA	Dec
Alpheratz	357°33.9	29°14.2
Ankaa	353°06.3	-42°10.1
Schedar	349°30.0	56°41.1
Diphda	348°46.4	-17°50.7
Achernar	335°19.3	-57°06.5
Hamal	327°50.1	23°35.3
Polaris	313°14.6	89°22.6
Acamar	315°10.9	-40°12.1
Menkar	314°05.1	4°11.5
Mirfak	308°26.7	49°57.4
Aldebaran	290°38.4	16°33.7
Rigel	281°02.8	-8°10.3
Capella	280°20.2	46°01.5
Bellatrix	278°21.7	6°22.4
Elnath	278°00.5	28°37.8
Anilam	275°36.6	-1°11.1
Betelgeuse	270°50.9	7°24.7
Canopus	263°51.5	-52°42.5
Sirius	258°25.2	-16°45.1
Adhara	255°04.9	-29°00.4
Procyon	244°49.7	5°09.5
Pollux	243°16.0	27°57.7
Avior	234°13.9	-59°35.4
Suhail	222°45.4	-43°32.1
Miaplacidus	221°37.5	-69°49.2
Alphard	217°46.8	-8°46.2
Regulus	207°33.4	11°50.3
Dubhe	193°39.9	61°36.3
Denebola	182°24.1	14°25.5
Gienah	175°42.8	-17°41.1
Acrux	172°59.3	66°14.3
Gacrux	171°50.9	-57°15.3
Alioth	166°52.4	55°48.8
Spica	158°21.6	-11°17.8
Alkaid	152°51.6	49°10.7
Hadar	148°35.2	-60°29.7
Menkent	147°56.9	-36°29.7
Arcturus	145°47.4	19°02.7
Rigel Kent.	139°39.7	-60°56.3
Kochab	137°20.6	74°02.6
Zuben'ubi	136°55.4	-16°08.9
Alphecca	126°03.4	26°37.5
Antares	112°15.2	-26°29.3
Atria	107°09.3	-69°04.3
Sabik	102°02.2	-15°45.4
Shaula		

Aries			Venus			Mars			Jupiter			Saturn		
Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	92°45.7	183°42.2	S23°37.9	175°33.1	S24°06.7	338°34.1	N21°47.9	95°45.1	S03°47.2					
1	107°48.2	198°41.2		38.0	190°33.5	06.7	353°36.9	48.0	110°47.5	47.1				
2	122°50.6	213°40.2	38.1	205°33.8	06.6	8°39.7	48.0	125°49.8	47.1					
3	137°53.1	228°39.2	•• 38.2	220°34.2	•• 06.5	23°42.5	•• 48.1	140°52.2	•• 47.0					
4	152°55.6	243°38.3	38.4	235°34.6	06.4	38°45.3	48.1	155°54.6	47.0					
5	167°58.0	258°37.3	38.5	250°35.0	06.3	53°48.1	48.2	170°56.9	46.9					
6	183°00.5	273°36.3	S23°38.6	265°35.4	S24°06.3	68°50.8	N21°48.2	185°59.3	S03°46.9					
7	198°03.0	288°35.4	38.7	280°35.8	06.2	83°53.6	48.3	201°01.6	46.8					
8	213°05.4	303°34.4	38.8	295°36.1	06.1	98°56.4	48.4	216°04.0	46.7					
9	228°07.9	318°33.4	•• 38.9	310°36.5	•• 06.0	113°59.2	•• 48.4	231°06.4	•• 46.7					
10	243°10.4	333°32.4	39.0	325°36.9	05.9	129°02.0	48.5	246°08.7	46.6					
11	258°12.8	348°31.5	39.1	340°37.3	05.9	144°04.8	48.5	261°11.1	46.6					
12	273°15.3	3°30.5	S23°39.2	355°37.7	S24°05.8	159°07.5	N21°48.6	276°13.5	S03°46.5					
13	288°17.7	18°29.5	39.3	10°38.0	05.7	174°10.3	48.6	291°15.8	46.5					
14	303°20.2	33°28.6	39.4	25°38.4	05.6	189°13.1	48.7	306°18.2	46.4					
15	318°22.7	48°27.6	•• 39.5	40°38.8	•• 05.5	204°15.9	•• 48.7	321°20.5	•• 46.4					
16	333°25.1	63°26.6	39.6	55°39.2	05.4	219°18.7	48.8	336°22.9	46.3					
17	348°27.6	78°25.7	39.7	70°39.6	05.4	234°21.5	48.9	351°25.3	46.3					
18	3°30.1	93°24.7	S23°39.8	85°40.0	S24°05.3	249°24.3	N21°48.9	6°27.6	S03°46.2					
19	18°32.5	108°23.7	39.9	100°40.3	05.2	264°27.0	49.0	21°30.0	46.2					
20	33°35.0	123°22.7	40.0	115°40.7	05.1	279°29.8	49.0	36°32.3	46.1					
21	48°37.5	138°21.8	•• 40.1	130°41.1	•• 05.0	294°32.6	•• 49.1	51°34.7	•• 46.0					
22	63°39.9	153°20.8	40.2	145°41.5	04.9	309°35.4	49.1	66°37.1	46.0					
23	78°42.4	168°19.8	40.3	160°41.9	04.8	324°38.2	49.2	81°39.4	45.9					
Mer.pass.:17:46			v-1.0 d-0.1 m-3.8			v0.4 d0.1 m1.3			v2.8 d0.1 m-2.5			v2.4 d0.1 m1.1		

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	93°44.8	183°18.8	S23°40.4	175°42.2	S24°04.7	339°41.0	N21°49.2	96°41.8	S03°45.9	357°34.0	29°14.2	110°47.5	47.1	190°33.5	06.7
1	108°47.3	198°17.9	40.5	190°42.6	04.6	354°43.8	49.3	111°44.1	45.8	125°49.8	47.1	125°49.8	47.1	125°49.8	47.1
2	123°49.8	213°16.9	40.6	205°43.0	04.5	9°46.6	49.4	126°46.5	45.7	126°46.5	45.7	126°46.5	45.7	126°46.5	45.7
3	138°52.2	228°15.9	•• 40.7	220°43.4	•• 04.6	24°49.3	•• 49.4	141°48.9	•• 45.8	141°48.9	•• 45.8	141°48.9	•• 45.8	141°48.9	•• 45.8
4	153°54.2	243°15.0	40.7	235°43.8	04.4	39°52.1	49.5	156°51.2	45.7	156°51.2	45.7	156°51.2	45.7	156°51.2	45.7
5	168°57.2	258°14.0	40.8	250°44.1	04.3	54°54.9	49.5	171°53.6	45.6	171°53.6	45.6	171°53.6	45.6	171°53.6	45.6
6	183°59.6	273°13.0	S23°40.9	265°44.5	S24°04.2	69°57.7	N21°49.6	186°55.9	S03°45.6	313°15.6	89°22.7	313°15.6	89°22.7	313°15.6	89°22.7
7	199°02.1	288°12.0	41.0	280°44.9	04.1	85°00.5	49.6	201°58.3	45.5	201°58.3	45.5	201°58.3	45.5	201°58.3	45.5
8	214°04.6	303°11.1	41.1	295°45.3	04.0	100°03.3	49.7	217°00.7	45.4	217°00.7	45.4	217°00.7	45.4	217°00.7	45.4
9	229°07.0	318°10.1	•• 41.1	310°45.7	•• 03.9	115°06.1	•• 49.7	232°03.0	•• 45.4	232°03.0	•• 45.4	232°03.0	•• 45.4	232°03.0	•• 45.4
10	244°09.5	333°09.1	41.2	325°46.0	03.8	130°08.9	49.8	247°05.4	45.3	247°05.4	45.3	247°05.4	45.3	247°05.4	45.3
11	259°12.0	348°08.1	41.3	340°46.4	03.7	145°11.6	49.9	262°07.7	45.3	262°07.7	45.3	262°07.7	45.3	262°07.7	45.3
12	274°14.4	3°07.2	S23°41.3	355°46.8	S24°03.6	160°14.4	N21°49.9	277°10.1	S03°45.2	307°21.5	13.3°	S16°36.9	12.5°	56°01.0	56.0°
13	289°16.9	18°06.2	41.4	10°47.2	03.5	175°17.2	50.0	292°12.4	45.2	292°12.4	45.2	292°12.4	45.2	292°12.4	45.2
14	304°19.3	33°05.2	41.5	25°47.6	03.4	190°20.0	50.0	307°14.8	45.1	307°14.8	45.1	307°14.8	45.1	307°14.8	45.1
15	319°21.8	48°04.3	•• 41.6	40°48.0	•• 03.4	205°22.8	•• 50.1	322°17.2	•• 45.1	322°17.2	•• 45.1	322°17.2	•• 45.1	322°17.2	•• 45.1
16	334°24.3	63°03.3	41.7	55°48.3	03.3	220°25.6	50.1	337°19.5	45.0	337°19.5	45.0	337°19.5	45.0	337°19.5	45.0
17	349°26.7	78°02.3	41.7	70°48.7	03.2	235°28.4	50.2	352°21.9	44.9	352°21.9	44.9	352°21.9	44.9	352°21.9	44.9
18	4°29.2	93°01.3	S23°41.8	85°49.1	S24°03.1	250°31.2	N21°50.3	7°24.2	S03°44.9	313°15.6	89°22.7	313°15.6	89°22.7	313°15.6	89°22.7
19	19°31.7	108°00.4	41.9	100°49.5	03.0	265°34.0	50.3	22°26.4	44.8	22°26.4	44.8	22°26.4	44.8	22°26.4	44.8
20	34°34.1	122°59.4	41.9	115°49.9	02.9	280°36.7	50.4	37°28.9	44.8	37°28.9	44.8	37°28.9	44.8	37°28.9	44.8
21	49°36.6	137°58.4	•• 42.0	130°50.2	•• 02.8	295°39.5	•• 50.4	52°31.3	•• 44.7	52°31.3	•• 44.7	52°31.3	•• 44.7	52°31.3	•• 44.7
22	64°39.1	152°57.4	42.0	145°50.6	02.7	310°42.3	50.5	67°33.6	44.7	67°33.6	44.7	67°33.6	44.7	67°33.6	44.7
23	79°41.5	167°56.5	42.1	160°51.0	02.6	325°45.1	50.5	82°36.0	44.6	82°36.0	44.6	82°36.0	44.6	82°36.0	44.6
Mer.pass.:17:42			v-1.0 d-0.1 m-3.8			v0.4 d0.1 m1.3			v2.8 d0.1 m-2.5			v2.4 d0.1 m1.1			

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	94°44.0	182°55.5	S23°42.2	175°51.4	S24°02.5	340°47.9	N21°50.6	97°38.4	S03°44.5
1	109°46.5	197°54.5	42.2	190°51.8	02.4	355°50.7	50.6	112°40.7	44.5
2	124°48.9	212°53.6	42.3	205°52.1	02.3	10°53.5	50.7	127°43.1	44.4
3	139°51.4	227°52.6	•• 42.3	220°52.5	•• 02.2	25°56.3	•• 50.8	142°45.4	•• 44.4
4	154°53.8	242°51.6	42.4	235°52.9	02.1	40°59.1	50.8	157°47.8	44.3
5	169°56.3	257°50.6	42.4	250°53.3	02.0	56°01.9	50.9	172°50.1	44.3
6	184°58.8	272°49.7	S23°42.5	265°53.7	S24°01.9	71°04.7	N21°50.9	187°52.5	S03°44.2
7	200°01.2	287°48.7	42.5	280°54.0	01.8	86°07.5	51.0	202°54.8	44.2
8	215°03.7	302°47.7	42.6	295°54.4	01.7	101°10.2	51.0	217°57.2	44.1
9	230°06.2	317°46.7	•• 42.6	310°54.8	•• 01.5	116°13.0	•• 51.1	232°59.6	•• 44.0
10	245°08.6	332°45.8	42.7	325°55.2	01.4	131°15.8	51.1	248°01.9	44.0
11	260°11.1	347°44.8	42.7	340°55.6	01.3	146°18.6	51.2	263°04.3	43.9
12	275°13.6	2°43.8	S23°42.8	355°55.9	S24°01.2	161°21.4	N21°51.3	278°06.6	S03°43.9
13	290°16.0	17°42.8	42.8	10°56.3	01.1	176°24.2	51.3	293°09.0	43.8
14	305°18.5	32°41.9	42.9	25°56.7	01.0	191°27.0	51.4	308°11.3	43.8
15	320°20.9	47°40.9	•• 42.9	40°57.1	•• 00.9	206°29.8	•• 51.4	323°13.7	•• 43.7
16	335°23.4	62°39.9	42.9	55°57.5	00.8	221°32.6	51.5	338°16.0	43.6
17	350°25.9	77°38.9	43.0	70°57.8	00.7	236°35.4	51.5	353°18.4	43.6
18	5°28.3	92°38.0	S23°43.0	85°58.2	S24°00.6	251°38.2	N21°51.6	8°20.7	S03°43.5
19	20°30.8	107°37.0	43.0	100°58.6	00.5	266°41.0	51.7	23°23.1	43.5
20	35°33.3	122°36.0	43.1	115°59.0	00.4	281°43.8	51.7	38°25.4	43.4
21	50°35.7	137°35.0	•• 43.1	130°59.4	•• 00.3	296°46.6	•• 51.8	53°27.8	•• 43.4
22	65°38.2	152°34.1	43.1	145°59.7	00.1	311°49.4	51.8	68°30.1	43.3
23	80°40.7	167°33.1	43.2	161°00.1	00.0	326°52.2	51.9	83°32.5	43.2
Mer.pass:17:38		v-1.0 d-0.1 m-3.8		v0.4 d0.1 m1.3		v2.8 d0.1 m2.5		v2.4 d0.1 m1.2	

Aries			Venus			Mars			Jupiter			Saturn		
Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	
0	95°43.1	182°32.1	S23°43.2	176°00.5	S23°59.9	341°54.9	N21°51.9	98°34.8	S03°43.2					
1	110°45.6	197°31.1	43.2	191°00.9	59.8	356°57.7	52.0	113°37.2	43.1					
2	125°48.1	212°30.2	43.3	206°01.3	59.7	12°00.5	52.0	128°39.6	43.1					
3	140°50.5	227°29.2	•• 43.3	221°01.6	•• 59.6	27°03.3	•• 52.1	143°41.9	•• 43.0					
4	155°53.0	242°28.2	43.3	236°02.0	59.5	42°06.1	52.2	158°44.3	43.0					
5	170°55.4	257°27.3	43.3	251°02.4	59.4	57°08.9	52.2	173°46.6	42.9					
6	185°57.9	272°26.3	S23°43.3	266°02.8	S23°59.3	72°11.7	N21°52.3	188°49.0	S03°42.8					
7	201°00.4	287°25.3	43.4	281°03.2	59.1	87°14.5	52.3	203°51.3	42.8					
8	216°02.8	302°24.3	43.4	296°03.5	59.0	102°17.3	52.4	218°53.7	42.7					
9	231°05.3	317°23.4	•• 43.4	311°03.9	•• 58.9	117°20.1	•• 52.4	233°56.0	•• 42.7					
10	246°07.8	332°22.4	43.4	326°04.3	58.8	132°22.9	52.5	248°58.4	42.6					
11	261°10.2	347°21.4	43.4	341°04.7	58.7	147°25.7	52.6	264°00.7	42.5					
12	276°12.7	2°20.4	S23°43.4	356°05.1	S23°58.6	162°28.5	N21°52.6	279°03.1	S03°42.5					
13	291°15.2	17°19.5	43.5	11°05.4	58.4	177°31.3	52.7	294°05.4	42.4					
14	306°17.6	32°18.5	43.5	26°05.8	58.3	192°34.1	52.7	309°07.8	42.4					
15	321°20.1	47°17.5	•• 43.5	41°06.2	•• 58.2	207°36.9	•• 52.8	324°10.1	•• 42.3					
16	336°22.5	62°16.5	43.5	56°06.6	58.1	222°39.7	52.8	339°12.5	42.2					
17	351°25.0	77°15.6	43.5	71°07.0	58.0	237°42.5	52.9	354°14.8	42.2					
18	6°27.5	92°14.6	S23°43.5	86°07.3	S23°57.8	252°45.3	N21°53.0	9°17.2	S03°42.1					
19	21°29.9	107°13.6	43.5	101°07.7	57.8	267°48.1	53.0	24°19.5	42.1					
20	36°32.4	122°12.6	43.5	116°08.1	57.6	282°50.9	53.1	39°21.9	42.0					
21	51°34.9	137°11.7	•• 43.5	131°08.5	•• 57.5	297°53.7	•• 53.1	54°24.2	•• 42.0					
22	66°37.3	152°10.7	43.5	146°08.9	57.4	312°56.5	53.2	69°26.6	41.9					
23	81°39.8	167°09.7	43.5	161°09.2	57.2	327°59.3	53.2	84°28.9	41.8					
Mer.pass.:17:34			v-1.0 d-0.0 m-3.8			v0.4 d0.1 m1.3			v2.8 d0.1 m-2.5			v2.4 d0.1 m1.2		

Sun	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	96°42.3	182°08.7	S23°43.5	176°09.6	S23°57.1	343°02.1	N21°53.3	99°31.2	S03°41.8						
1	111°44.7	197°07.8	43.5	191°10.0	57.0	358°04.9	53.3	114°33.6	41.7						
2	126°47.2	212°06.8	43.5	206°10.4	56.9	13°07.7	53.4	129°35.9	41.7						
3	141°49.7	227°05.8	•• 43.5	221°10.8	•• 56.7	28°10.5	•• 53.5	144°38.3	•• 41.6						
4	156°52.1	242°04.8	43.5	236°11.1	56.6	43°13.3	53.5	159°40.6	41.5						
5	171°54.6	257°03.9	43.5	251°11.5	56.5	58°16.1	53.6	174°43.0	41.5						
6	186°57.0	272°02.9	S23°43.5	266°11.9	S23°56.4	73°18.9	N21°53.6	189°45.3	S03°41.4						
7	201°59.5	287°01.9	43.5	281°12.3	56.2	88°21.7	53.7	204°47.7	41.4						
8	217°02.0	302°09.9	43.4	296°12.7	56.1	103°24.5	53.7	219°50.0	41.3						
9	232°04.4	317°00.0	•• 43.4	311°13.0	•• 56.0	118°27.3	•• 53.8	234°52.4	•• 41.2						
10	247°06.9	331°59.0	43.4	326°13.4	55.9	133°30.1	53.9	249°54.7	41.2						
11	262°09.4	346°58.0	43.4	341°13.8	55.7	148°32.9	53.9	264°57.1	41.1						
12	277°11.8	1°57.0	S23°43.4	356°14.2	S23°55.6	163°35.7	N21°54.0	279°59.4	S03°41.1						
13	292°14.3	16°56.1	43.4	11°14.5	55.5	178°38.5	54.0	295°01.8	41.0						
14	307°16.8	31°55.1	43.3	26°14.9	55.4	193°41.3	54.1	310°04.1	40.9						
15	322°19.2	46°54.1	•• 43.3	41°15.3	•• 55.2	208°44.1	•• 54.1	325°06.5	•• 40.9						
16	337°21.7	61°53.2	43.3	56°15.7	55.1	223°46.9	54.2	340°08.8	40.8						
17	352°24.2	76°52.2	43.3	71°16.1	55.0	238°49.7	54.3	355°11.1	40.8						
18	7°26.6	91°51.2	S23°43.2	86°16.4	S23°54.8	253°52.5	N21°54.3	10°13.5	S03°40.7						
19	22°29.1	106°50.2	43.2	101°16.8	54.7	268°55.3	54.4	25°15.8	40.6						
20	37°31.5	121°49.3	43.2	116°17.2	54.6	283°58.1	•• 54.4	40°18.2	40.6						
21	52°34.0	136°48.3	•• 43.2	131°17.6	•• 54.4	299°00.9	•• 54.5	55°20.5	•• 40.5						
22	67°36.5	151°47.3	43.1	146°18.0	54.3	314°03.7	54.5	70°22.9	40.5						
23	82°38.9	166°46.3	43.1	161°18.3	54.2	329°06.5	54.6	85°25.2	40.4						
Mer.pass.:17:30			v-1.0 d0.0 m-3.8			v0.4 d0.1 m1.3			v2.8 d0.1 m-2.5			v2.3 d0.1 m1.2			

Mon	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	97°41.4	181°45.4	S23°43.1	176°18.7	S23°54.0	344°09.3	N21°54.7	100°27.6	S03°40.3						
1	112°43.9	196°44.4	43.0	191°19.1	53.9	359°12.1	54.7	115°29.9	40.3						
2	127°46.3	211°43.4	43.0	206°19.5	53.8	14°14.9	54.8	130°32.2	40.2						
3	142°48.8	226°42.4	•• 43.0	221°19.9	•• 53.6	29°17.7	•• 54.8	145°34.6	•• 40.2						
4	157°51.3	241°41.5	42.9	236°20.2	53.5	44°20.5	54.9	160°36.9	40.1						
5	172°53.7	256°40.5	42.9	251°20.6	53.4	59°23.3	54.9	175°39.3	40.0						
6	187°56.2	271°39.5	S23°42.8	266°21.0	S23°53.2	74°26.1	N21°55.0	190°41.6	S03°40.0						
7	202°58.6	286°38.5	42.8	281°21.4	53.1	89°28.9	55.0	205°44.0	39.9						
8	218°01.1	301°37.6	42.8	296°21.8	53.0	104°31.7	55.1	220°46.3	39.8						
9	233°03.6	316°36.6	•• 42.7	311°22.1	•• 52.8	119°34.5	•• 55.2	235°48.7	•• 39.8						
10	248°06.0	331°35.6	42.7	326°22.5	52.7	134°37.3	55.2	250°51.0	39.7						
11	263°08.5	346°33.7	42.6	341°22.9	52.5	149°40.1	55.3	265°53.3	39.7						
12	278°11.0	1°33.7	S23°42.6	356°23.4	S23°52.4	164°42.9	N21°55.3	280°55.7	S03°39.7						
13	293°13.4	16°32.7	42.5	11°23.7	52.3	179°45.7	55.4	295°58.0	39.5						
14	308°15.9	31°31.7	42.5	26°24.0	52.1	194°48.5	55.4	311°00.4	39.5						
15	323°18.4	46°30.8	•• 42.4	41°24.4	•• 52.0	209°51.3	•• 55.5	326°02.7	•• 39.4						
16	338°20.8	61°29.8	42.4	56°24.8	51.8	224°54.1	55.6	341°05.0	39.4						
17	353°23.3	76°28.8	42.3	71°25.2	51.7	239°56.9	55.6	356°07.4	39.3						
18	8°25.8	91°27.8	S23°42.3	86°25.6	S23°51.6	254°59.7	N21°55.7	11°09.7	S03°39.2						
19	23°28.2	106°26.9	42.2	101°25.9	51.4	270°02.5	55.7	26°12.1	39.2						
20	38°30.7	121°25.9	42.1	116°26.3	51.3	285°05.3	55.8	41°14.4	39.1						
21	53°33.1	136°24.9	•• 42.1	131°26.7	•• 51.1	300°08.2	•• 55.8	56°16.8	•• 39.0						
22	68°35.6	151°24.0	42.0	146°27.1	51.0	315°11.0	55.9	71°19.1	39.0						
23	83°38.1	166°23.0	42.0	161°27.4	50.8	330°13.8	56.0	86°21.4	38.9						
Mer.pass.:17:26			v-1.0 d0.0 m-3.8			v0.4 d0.1 m1.3			v2.8 d0.1 m-2.5			v2.3 d0.1 m1.2			

Stars	SHA	Dec
Alpheratz	357°34.0	29°14.2
Ankaa	353°06.3	-42°10.1
Schedar	349°30.1	56°41.1
Diphda	348°46.5	-17°50.7
Achernar	335°19.4	-57°06.5
Hamal	327°50.1	23°35.3
Polaris	313°16.7	89°22.7
Acamar	315°10.9	-40°12.2
Menkar	314°05.1	4°11.5
Mirfak	308°26.7	49°57.4
Aldebaran	290°38.4	16°33.7
Rigel	281°02.8	-8°10.3
Capella	280°20.2	46°01.5
Bellatrix	278°21.7	6°22.4
Elnath	278°00.5	28°37.8
Anilnail	275°36.6	-1°11.1
Betelgeuse	270°50.9	7°24.7
Canopus	263°51.5	-52°42.5
Sirius	258°25.2	-16°45.1
Adhara	255°04.8	-29°00.4
Procyon	244°49.7	5°09.5
Pollux	243°16.0	27°57.7
Avior	234°13.8	-59°35.4
Suhail	222°45.4	-43°32.1
Miaplacidus	221°37.4	-69°49.2

	Aries			Venus			Mars			Jupiter			Saturn		
Tue	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	98°40.5	181°22.0	S23°41.9	176°27.8	S23°50.7	345°16.6	N21°56.0	101°23.8	S03°38.9						
1	113°43.0	196°21.0	41.8	191°28.2	50.6	0°19.4	56.1	116°26.1	38.8						
2	128°45.5	211°20.1	41.8	206°28.6	50.4	15°22.2	56.1	131°28.5	38.7						
3	143°47.9	226°19.1	.. 41.7	221°29.0	.. 50.3	30°25.0	.. 56.2	146°30.8	.. 38.7						
4	158°50.4	241°18.1	41.6	236°29.3	50.1	45°27.8	56.2	161°33.1	38.6						
5	173°52.9	256°17.1	41.6	251°29.7	50.0	60°30.6	56.3	176°35.5	38.5						
6	188°55.3	271°16.2	S23°41.5	266°30.1	S23°49.8	75°33.4	N21°56.4	191°37.8	S03°38.5						
7	203°57.8	286°15.2	41.4	281°30.5	49.7	90°36.2	56.4	206°40.2	38.4						
8	219°00.3	301°14.2	41.3	296°30.9	49.5	105°39.0	.. 56.5	221°42.5	.. 38.4						
9	234°02.7	316°13.3	.. 41.3	311°31.2	.. 49.4	120°41.8	.. 56.5	236°44.8	.. 38.3						
10	249°05.2	331°12.3	41.2	326°31.6	49.2	135°44.6	56.6	251°47.2	38.2						
11	264°07.6	346°11.3	41.1	341°32.0	49.1	150°47.4	56.6	266°49.5	38.2						
12	279°10.1	1°10.3	S23°41.0	356°32.4	S23°48.9	165°50.2	N21°56.7	281°51.9	S03°38.1						
13	294°12.6	16°09.4	41.0	11°32.8	48.8	180°53.0	56.8	296°54.2	38.0						
14	309°15.0	31°08.4	40.9	26°33.1	48.6	195°55.9	56.8	311°56.5	38.0						
15	324°17.5	46°07.4	.. 40.8	41°33.5	.. 48.5	210°58.7	.. 56.9	326°58.9	.. 37.9						
16	339°20.0	61°06.5	40.7	56°33.9	48.3	226°01.5	56.9	342°01.2	37.8						
17	354°22.4	76°05.5	40.6	71°34.3	48.2	241°04.3	57.0	357°03.5	37.8						
18	9°24.9	91°04.5	S23°40.5	86°34.7	S23°48.0	256°07.1	N21°57.0	12°05.9	S03°37.7						
19	24°27.4	106°03.5	40.4	101°35.0	47.9	271°09.9	57.1	27°08.2	37.7						
20	39°29.8	121°02.6	40.4	116°35.4	47.6	286°12.7	.. 57.2	42°10.6	.. 37.6						
21	54°32.3	136°01.6	.. 40.3	131°35.8	.. 47.5	301°15.5	.. 57.2	57°12.9	.. 37.5						
22	69°34.8	151°00.6	40.2	146°36.2	47.4	316°18.3	57.3	72°15.2	37.5						
23	84°37.2	165°59.7	40.1	161°36.6	47.2	331°21.1	57.3	87°17.6	37.4						
Mer.pass.:17:22			v-1.0 d0.1 m-3.8			v0.4 d0.1 m1.3			v2.8 d0.1 m-2.5			v2.3 d0.1 m1.2			

Wed	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	99°39.7	180°58.7	S23°40.0	176°36.9	S23°47.1	346°23.9	N21°57.4	102°19.9	S03°37.3					
1	114°42.1	195°57.7	39.9	191°37.3	46.9	1°26.7	57.4	117°22.3	37.3					
2	129°44.6	210°56.8	39.8	206°37.7	46.8	16°29.5	57.5	132°24.6	37.2					
3	144°47.1	225°55.8	.. 39.7	221°38.1	.. 46.6	31°32.4	.. 57.6	147°26.9	.. 37.1					
4	159°49.5	240°54.8	39.6	236°38.5	46.5	46°35.2	57.6	162°29.3	37.1					
5	174°52.0	255°53.8	39.5	251°38.8	46.3	61°38.0	57.7	177°31.6	37.0					
6	189°54.5	270°52.9	S23°39.4	266°39.2	S23°46.1	76°40.8	N21°57.7	192°33.9	S03°37.0					
7	204°56.9	285°51.9	39.3	281°39.6	46.0	91°43.6	57.8	207°36.3	36.9					
8	219°59.4	300°50.9	39.2	296°40.0	45.8	106°46.4	57.8	222°38.6	36.8					
9	235°01.9	315°50.0	.. 39.1	311°40.3	.. 45.7	121°49.2	.. 57.9	237°40.9	.. 36.8					
10	250°04.3	330°49.0	39.0	326°40.7	45.5	136°52.0	58.0	252°43.3	36.7					
11	265°06.8	345°48.0	38.9	341°41.1	45.3	151°54.8	58.0	267°45.6	36.6					
12	280°09.2	0°47.1	S23°38.8	356°41.5	S23°45.2	166°57.6	N21°58.1	282°47.9	S03°36.6					
13	295°11.7	15°46.1	38.6	11°41.9	45.0	182°00.4	58.1	297°50.3	36.5					
14	310°14.2	30°45.1	38.5	26°42.2	44.9	197°03.3	58.2	312°52.6	36.4					
15	325°16.6	45°44.1	.. 38.4	41°42.6	.. 44.7	212°06.1	.. 58.2	327°55.0	.. 36.4					
16	340°19.1	60°43.2	38.3	56°43.0	44.5	227°08.9	58.3	342°57.3	36.3					
17	355°21.6	75°42.2	38.2	71°43.4	44.4	242°11.7	58.3	357°59.6	36.2					
18	10°24.0	90°41.2	S23°38.1	86°43.8	S23°44.2	257°14.5	N21°58.4	13°02.0	S03°36.2					
19	25°26.5	105°40.3	38.0	101°44.1	44.0	272°17.3	58.5	28°04.3	36.1					
20	40°29.0	120°39.3	37.8	116°44.5	43.9	287°20.1	58.5	43°06.6	36.0					
21	55°31.4	135°38.3	.. 37.7	131°44.9	.. 43.7	302°22.9	.. 58.6	58°09.0	.. 36.0					
22	70°33.9	150°37.4	37.6	146°45.3	43.5	317°25.7	58.6	73°11.3	35.9					
23	85°36.4	165°36.4	37.5	161°45.7	43.4	332°28.5	58.7	88°13.6	35.8					
Mer.pass.:17:19			v-1.0 d0.1 m-3.8			v0.4 d0.2 m1.3			v2.8 d0.1 m-2.5			v2.3 d0.1 m1.2		

Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec					
0	100°38.8	180°35.4	S23°37.3	176°46.0	S23°43.2	347°31.4	N21°58.7	103°16.0	S03°35.8					
1	115°41.3	195°34.5	37.2	191°46.4	43.0	2°34.2	58.8	118°18.3	35.7					
2	130°43.7	210°33.5	37.1	206°46.8	42.9	17°37.0	58.9	133°20.6	35.7					
3	145°46.2	225°32.5	· · 37.0	221°47.2	· · 42.7	32°39.8	· · 58.9	148°23.0	· · 35.6					
4	160°48.7	240°31.6	36.8	236°47.6	42.5	47°42.6	59.0	163°25.3	35.5					
5	175°51.1	255°30.6	36.7	251°47.9	42.4	62°45.4	59.0	178°27.6	35.5					
6	190°53.6	270°29.6	S23°36.6	266°48.3	S23°42.2	77°48.2	N21°59.1	193°30.0	S03°35.4					
7	205°56.1	285°28.7	36.4	281°48.7	42.0	92°51.0	59.1	208°32.3	35.3					
8	220°58.5	300°27.7	36.3	296°49.1	41.8	107°53.8	59.2	223°34.6	35.3					
9	236°01.0	315°26.7	· · 36.2	311°49.5	· · 41.7	122°56.7	· · 59.3	238°37.0	· · 35.2					
10	251°03.5	330°25.8	36.0	326°49.8	41.5	137°59.5	59.3	253°39.3	35.1					
11	266°05.9	345°24.8	35.9	341°50.2	41.3	153°02.3	59.4	268°41.6	35.1					
12	281°08.4	0°23.8	S23°35.7	356°50.6	S23°41.2	168°05.1	N21°59.4	283°44.0	S03°35.0					
13	296°10.9	15°22.9	35.6	11°51.0	41.0	183°07.9	59.5	298°46.3	34.9					
14	311°13.3	30°21.9	35.5	26°51.4	40.8	198°10.7	59.5	313°48.6	34.9					
15	326°15.8	45°20.9	· · 35.3	41°51.7	· · 40.6	213°13.5	· · 59.6	328°50.9	· · 34.8					
16	341°18.2	60°20.0	35.2	56°52.1	40.5	228°16.3	59.7	343°53.3	34.7					
17	356°20.7	75°19.0	35.0	71°52.5	40.3	243°19.2	59.4	358°55.6	34.7					
18	11°23.2	90°18.0	S23°34.9	86°52.9	S23°40.1	258°22.0	N21°59.8	13°57.9	S03°34.6					
19	26°25.6	105°17.1	34.7	101°53.3	39.9	273°24.8	59.8	29°00.3	34.5					
20	41°28.1	120°16.1	34.6	116°53.6	39.6	288°27.6	59.9	44°02.6	34.5					
21	56°30.6	135°15.1	· · 34.4	131°54.0	· · 39.8	303°30.4	21°59.9	59°04.9	· · 34.4					
22	71°33.0	150°14.2	34.3	146°54.4	39.4	318°33.2	22°00.0	74°07.3	34.3					
23	86°35.5	165°13.2	34.1	161°54.8	39.2	333°36.0	00.1	89°09.6	34.3					
Mer.pass.:17:15			v-1.0 d0.1 m-3.8			v0.4 d0.2 m1.3			v2.8 d0.1 m-2.5			v2.3 d0.1 m1.2		

	SHA	Dec
Alpheratz	357°34.0	29°14.2
Ankaa	353°06.4	-42°10.1
Schedar	349°30.1	56°41.1
Diphda	348°46.5	-17°50.7
Achernar	335°19.4	-57°06.5
Hamal	327°50.1	23°35.3
Polaris	313°17.5	89°22.7
Acamar	315°10.9	-40°12.2
Menkar	314°05.1	4°11.5
Mirfak	308°26.7	49°57.4
Aldebaran	290°38.4	16°33.7
Rigel	281°02.8	-8°10.3
Capella	280°20.2	46°01.5
Bellatrix	278°21.7	6°22.4
Elnath	278°00.5	28°37.8
Anilam	275°36.6	-1°11.1
Betelgeuse	270°50.9	7°24.7
Canopus	263°51.5	-52°42.5
Sirius	258°25.2	-16°45.1
Adhara	255°04.8	-29°00.4
Procyon	244°49.7	5°09.5
Pollux	243°15.9	27°57.7
Avior	234°13.8	-59°35.4
Shuhail	222°45.4	-43°32.1
Miaplacidus	221°37.4	-69°49.2
Alphard	217°46.7	-8°46.3
Regulus	207°33.4	11°50.3
Dubhe	193°39.7	61°36.3
Denebola	182°24.1	14°25.5
Gienah	175°42.7	-17°41.1
Acrux	172°59.2	-63°14.3
Gacrux	171°50.7	-57°15.3
Alioth	166°12.3	-55°48.8
Spica	158°21.5	-11°17.8
Alkaid	152°51.5	49°10.7
Hadar	148°35.1	-60°29.7
Menkent	147°56.8	-36°29.7
Arcturus	145°47.3	19°02.7
Rigil Kent.	139°39.5	-60°56.3
Kochab	137°20.5	74°02.5
Zuben'ubi	136°55.3	-16°09.0
Alphecca	126°03.3	26°37.5
Antares	112°15.2	-26°29.3
Atria	107°09.2	-69°04.3
Sabik	102°02.2	-15°45.4
Shaula	96°09.7	-37°07.3
Rasalhague	95°58.1	12°32.4
Eltanin	90°42.3	51°29.0
Kaus Aust.	83°31.9	-34°22.3
Vega	80°33.1	38°48.4
Nunki	75°47.1	-26°15.9
Altair	81°59.5	8°56.2
Peacock	53°05.0	-56°39.2
Deneb	49°25.7	45°22.5
Enif	33°38.2	9°59.7
Al Na'ir	27°32.2	-46°50.3
Fomalhaut	15°13.8	-29°29.2
Scheat	13°44.6	28°13.6
Markab	13°29.2	15°20.8

Dec 30 Tue	SHA	Mer.pass
Venus	82°41.5	11:55
Mars	77°47.3	12:14
Jupiter	246°36.0	00:59
Saturn	2°43.2	17:12
Dec 31 Wed	SHA	Mer.pass
Venus	81°19.0	11

Increments and Corrections

m 0	Sun Plan.	Aries	Moon	v and d corr			m 1	Sun Plan.	Aries	Moon	v and d corr			m 2	Sun Plan.	Aries	Moon	v and d corr		
0	0°00.0	0°00.0	0°00.0	0.0 - 0.0	6.0 - 0.1	12.0 - 0.1	0	0°15.0	0°15.0	0°14.3	0.0 - 0.0	6.0 - 0.2	12.0 - 0.3	0	0°30.0	0°30.1	0°28.6	0.0 - 0.0	6.0 - 0.3	12.0 - 0.5
1	0°00.3	0°00.3	0°00.2	0.1 - 0.0	6.1 - 0.1	12.1 - 0.1	1	0°15.3	0°15.3	0°14.6	0.1 - 0.0	6.1 - 0.2	12.1 - 0.3	1	0°30.3	0°30.3	0°28.9	0.1 - 0.0	6.1 - 0.3	12.1 - 0.5
2	0°00.5	0°00.5	0°00.5	0.2 - 0.0	6.2 - 0.1	12.2 - 0.1	2	0°15.5	0°15.5	0°14.8	0.2 - 0.0	6.2 - 0.2	12.2 - 0.3	2	0°30.5	0°30.6	0°29.1	0.2 - 0.0	6.2 - 0.3	12.2 - 0.5
3	0°00.8	0°00.8	0°00.7	0.3 - 0.0	6.3 - 0.1	12.3 - 0.1	3	0°15.8	0°15.8	0°15.0	0.3 - 0.0	6.3 - 0.2	12.3 - 0.3	3	0°30.7	0°30.8	0°29.3	0.3 - 0.0	6.3 - 0.3	12.3 - 0.5
4	0°01.0	0°01.0	0°01.0	0.4 - 0.0	6.4 - 0.1	12.4 - 0.1	4	0°16.0	0°16.0	0°15.3	0.4 - 0.0	6.4 - 0.2	12.4 - 0.3	4	0°31.0	0°31.1	0°29.6	0.4 - 0.0	6.4 - 0.3	12.4 - 0.5
5	0°01.3	0°01.3	0°01.2	0.5 - 0.0	6.5 - 0.1	12.5 - 0.1	5	0°16.3	0°16.3	0°15.5	0.5 - 0.0	6.5 - 0.2	12.5 - 0.3	5	0°31.3	0°31.3	0°29.8	0.5 - 0.0	6.5 - 0.3	12.5 - 0.5
6	0°01.5	0°01.5	0°01.4	0.6 - 0.0	6.6 - 0.1	12.6 - 0.1	6	0°16.5	0°16.5	0°15.7	0.6 - 0.0	6.6 - 0.2	12.6 - 0.3	6	0°31.5	0°31.6	0°30.1	0.6 - 0.0	6.6 - 0.3	12.6 - 0.5
7	0°01.8	0°01.8	0°01.7	0.7 - 0.0	6.7 - 0.1	12.7 - 0.1	7	0°16.8	0°16.8	0°16.0	0.7 - 0.0	6.7 - 0.2	12.7 - 0.3	7	0°31.8	0°31.8	0°30.3	0.7 - 0.0	6.7 - 0.3	12.7 - 0.5
8	0°02.0	0°02.0	0°01.9	0.8 - 0.0	6.8 - 0.1	12.8 - 0.1	8	0°17.0	0°17.0	0°16.2	0.8 - 0.0	6.8 - 0.2	12.8 - 0.3	8	0°32.0	0°32.1	0°30.5	0.8 - 0.0	6.8 - 0.3	12.8 - 0.5
9	0°02.3	0°02.3	0°02.1	0.9 - 0.0	6.9 - 0.1	12.9 - 0.1	9	0°17.3	0°17.3	0°16.5	0.9 - 0.0	6.9 - 0.2	12.9 - 0.3	9	0°32.3	0°32.3	0°30.8	0.9 - 0.0	6.9 - 0.3	12.9 - 0.5
10	0°02.5	0°02.5	0°02.4	1.0 - 0.0	7.0 - 0.1	13.0 - 0.1	10	0°17.5	0°17.5	0°16.7	1.0 - 0.0	7.0 - 0.2	13.0 - 0.3	10	0°32.5	0°32.6	0°31.0	1.0 - 0.0	7.0 - 0.3	13.0 - 0.5
11	0°02.8	0°02.8	0°02.6	1.1 - 0.0	7.1 - 0.1	13.1 - 0.1	11	0°17.8	0°17.8	0°16.9	1.1 - 0.0	7.1 - 0.2	13.1 - 0.3	11	0°32.8	0°32.8	0°31.3	1.1 - 0.0	7.1 - 0.3	13.1 - 0.5
12	0°03.0	0°03.0	0°02.9	1.2 - 0.0	7.2 - 0.1	13.2 - 0.1	12	0°18.0	0°18.0	0°17.2	1.2 - 0.0	7.2 - 0.2	13.2 - 0.3	12	0°33.0	0°33.1	0°31.5	1.2 - 0.1	7.2 - 0.3	13.2 - 0.5
13	0°03.3	0°03.3	0°03.1	1.3 - 0.0	7.3 - 0.1	13.3 - 0.1	13	0°18.3	0°18.3	0°17.4	1.3 - 0.0	7.3 - 0.2	13.3 - 0.3	13	0°33.3	0°33.3	0°31.7	1.3 - 0.1	7.3 - 0.3	13.3 - 0.6
14	0°03.5	0°03.5	0°03.3	1.4 - 0.0	7.4 - 0.1	13.4 - 0.1	14	0°18.5	0°18.6	0°17.7	1.4 - 0.0	7.4 - 0.2	13.4 - 0.3	14	0°33.5	0°33.6	0°32.0	1.4 - 0.1	7.4 - 0.3	13.4 - 0.6
15	0°03.8	0°03.8	0°03.6	1.5 - 0.0	7.5 - 0.1	13.5 - 0.1	15	0°18.8	0°18.8	0°17.9	1.5 - 0.0	7.5 - 0.2	13.5 - 0.3	15	0°33.8	0°33.8	0°32.2	1.5 - 0.1	7.5 - 0.3	13.5 - 0.6
16	0°04.0	0°04.0	0°03.8	1.6 - 0.0	7.6 - 0.1	13.6 - 0.1	16	0°19.0	0°19.1	0°18.1	1.6 - 0.0	7.6 - 0.2	13.6 - 0.3	16	0°34.0	0°34.1	0°32.5	1.6 - 0.1	7.6 - 0.3	13.6 - 0.6
17	0°04.3	0°04.3	0°04.1	1.7 - 0.0	7.7 - 0.1	13.7 - 0.1	17	0°19.3	0°19.3	0°18.4	1.7 - 0.0	7.7 - 0.2	13.7 - 0.3	17	0°34.3	0°34.3	0°32.7	1.7 - 0.1	7.7 - 0.3	13.7 - 0.6
18	0°04.5	0°04.5	0°04.3	1.8 - 0.0	7.8 - 0.1	13.8 - 0.1	18	0°19.5	0°19.6	0°18.6	1.8 - 0.0	7.8 - 0.2	13.8 - 0.3	18	0°34.5	0°34.6	0°32.9	1.8 - 0.1	7.8 - 0.3	13.8 - 0.6
19	0°04.8	0°04.8	0°04.5	1.9 - 0.0	7.9 - 0.1	13.9 - 0.1	19	0°19.8	0°19.8	0°18.9	1.9 - 0.0	7.9 - 0.2	13.9 - 0.3	19	0°34.8	0°34.8	0°33.2	1.9 - 0.1	7.9 - 0.3	13.9 - 0.6
20	0°05.0	0°05.0	0°04.8	2.0 - 0.0	8.0 - 0.1	14.0 - 0.1	20	0°20.0	0°20.1	0°19.1	2.0 - 0.1	8.0 - 0.2	14.0 - 0.4	20	0°35.0	0°35.1	0°33.4	2.0 - 0.1	8.0 - 0.3	14.0 - 0.6
21	0°05.3	0°05.3	0°05.0	2.1 - 0.0	8.1 - 0.1	14.1 - 0.1	21	0°20.3	0°20.3	0°19.3	2.1 - 0.1	8.1 - 0.2	14.1 - 0.4	21	0°35.3	0°35.3	0°33.6	2.1 - 0.1	8.1 - 0.3	14.1 - 0.6
22	0°05.5	0°05.5	0°05.2	2.2 - 0.0	8.2 - 0.1	14.2 - 0.1	22	0°20.5	0°20.6	0°19.6	2.2 - 0.1	8.2 - 0.2	14.2 - 0.4	22	0°35.5	0°35.6	0°33.9	2.2 - 0.1	8.2 - 0.3	14.2 - 0.6
23	0°05.8	0°05.8	0°05.5	2.3 - 0.0	8.3 - 0.1	14.3 - 0.1	23	0°20.8	0°20.8	0°19.8	2.3 - 0.1	8.3 - 0.2	14.3 - 0.4	23	0°35.8	0°35.8	0°34.1	2.3 - 0.1	8.3 - 0.3	14.3 - 0.6
24	0°06.0	0°06.0	0°05.7	2.4 - 0.0	8.4 - 0.1	14.4 - 0.1	24	0°21.0	0°21.1	0°20.0	2.4 - 0.1	8.4 - 0.2	14.4 - 0.4	24	0°36.0	0°36.1	0°34.4	2.4 - 0.1	8.4 - 0.3	14.4 - 0.6
25	0°06.3	0°06.3	0°06.0	2.5 - 0.0	8.5 - 0.1	14.5 - 0.1	25	0°21.3	0°21.3	0°20.3	2.5 - 0.1	8.5 - 0.2	14.5 - 0.4	25	0°36.3	0°36.3	0°34.6	2.5 - 0.1	8.5 - 0.4	14.5 - 0.6
26	0°06.5	0°06.5	0°06.2	2.6 - 0.0	8.6 - 0.1	14.6 - 0.1	26	0°21.5	0°21.6	0°20.5	2.6 - 0.1	8.6 - 0.2	14.6 - 0.4	26	0°36.5	0°36.6	0°34.8	2.6 - 0.1	8.6 - 0.4	14.6 - 0.6
27	0°06.8	0°06.8	0°06.4	2.7 - 0.0	8.7 - 0.1	14.7 - 0.1	27	0°21.8	0°21.8	0°20.8	2.7 - 0.1	8.7 - 0.2	14.7 - 0.4	27	0°36.8	0°36.9	0°35.1	2.7 - 0.1	8.7 - 0.4	14.7 - 0.6
28	0°07.0	0°07.0	0°06.7	2.8 - 0.0	8.8 - 0.1	14.8 - 0.1	28	0°22.0	0°22.1	0°21.0	2.8 - 0.1	8.8 - 0.2	14.8 - 0.4	28	0°37.0	0°37.1	0°35.3	2.8 - 0.1	8.8 - 0.4	14.8 - 0.6
29	0°07.3	0°07.3	0°06.9	2.9 - 0.0	8.9 - 0.1	14.9 - 0.1	29	0°22.3	0°22.3	0°21.2	2.9 - 0.1	8.9 - 0.2	14.9 - 0.4	29	0°37.3	0°37.4	0°35.6	2.9 - 0.1	8.9 - 0.4	14.9 - 0.6
30	0°07.5	0°07.5	0°07.2	3.0 - 0.0	9.0 - 0.1	15.0 - 0.1	30	0°22.5	0°22.6	0°21.5	3.0 - 0.1	9.0 - 0.2	15.0 - 0.4	30	0°37.5	0°37.6	0°35.8	3.0 - 0.1	9.0 - 0.4	15.0 - 0.6
31	0°07.8	0°07.8	0°07.4	3.1 - 0.0	9.1 - 0.1	15.1 - 0.1	31	0°22.8	0°22.8	0°21.7	3.1 - 0.1	9.1 - 0.2	15.1 - 0.4	31	0°37.8	0°37.9	0°36.0	3.1 - 0.1	9.1 - 0.4	15.1 - 0.6
32	0°08.0	0°08.0	0°07.6	3.2 - 0.0	9.2 - 0.1	15.2 - 0.1	32	0°23.0	0°23.1	0°22.0	3.2 - 0.1	9.2 - 0.2	15.2 - 0.4	32	0°38.0	0°38.1	0°36.3	3.2 - 0.1	9.2 - 0.4	15.2 - 0.6
33	0°08.3	0°08.3	0°07.9	3.3 - 0.0	9.3 - 0.1	15.3 - 0.1	33	0°23.3	0°23.3	0°22.2	3.3 - 0.1	9.3 - 0.2	15.3 - 0.4	33	0°38.3	0°38.4	0°36.5	3.3 - 0.1	9.3 - 0.4	15.3 - 0.6
34	0°08.5	0°08.5	0°08.1	3.4 - 0.0	9.4 - 0.1	15.4 - 0.1	34	0°23.5	0°23.6	0°22.4	3.4 - 0.1	9.4 - 0.2	15.4 - 0.4	34	0°38.5	0°38.6	0°36.7	3.4 - 0.1	9.4 - 0.4	15.4 - 0.6
35	0°08.8	0°08.8	0°08.4	3.5 - 0.0	9.5 - 0.1	15.5 - 0.1	35	0°23.8	0°23.8	0°22.7	3.5 - 0.1	9.5 - 0.2	15.5 - 0.4	35	0°38.8	0°38.9	0°37.0	3.5 - 0.1	9.5 - 0.4	15.5 - 0.6
36	0°09.0	0°09.0	0°08.6	3.6 - 0.0	9.6 - 0.1	15.6 - 0.1	36	0°24.0	0°24.1	0°22.9	3.6 - 0.1	9.6 - 0.2	15.6 - 0.4	36	0°39.0	0°39.1	0°37.2	3.6 - 0.1	9.6 - 0.4	15.6 - 0.6
37	0°09.3	0°09.3	0°08.8	3.7 - 0.0	9.7 - 0.1	15.7 - 0.1	37	0°24.3	0°24.3	0°23.1	3.7 - 0.1	9.7 - 0.2	15.7 - 0.4	37	0°39.3	0°39.4	0°37.5	3.7 - 0.2	9.7 - 0.4	15.7 - 0.7
38	0°09.5	0°09.5	0°09.1	3.8 - 0.0	9.8 - 0.1	15.8 - 0.1	38	0°24.5	0°24.6	0°23.4	3.8 - 0.1	9.8 - 0.2	15.8 - 0.4	38	0°39.5	0°39.6	0°37.7	3.8 - 0.2	9.8 - 0.4	15.8 - 0.7
39	0°09.8	0°09.8	0°09.3	3.9 - 0.0	9.9 - 0.1	15.9 - 0.1	39	0°24.8	0°24.8	0°23.6	3.9 - 0.1	9.9 - 0.2	15.9 - 0.4	39	0°39.8	0°39.9	0°37.9	3.9 - 0.2	9.9 - 0.4	15.9 - 0.7
40	0°10.0	0°10.0	0°09.5	4.0 - 0.0	10.0 - 0.1	16.0 - 0.1	40	0°25.0	0°25.1	0°23.9	4.0 - 0.1	10.0 - 0.3	16.0 - 0.4	40	0°40.0	0°40.1	0°38.2	4.0 - 0.2	10.0 - 0.4	16.0 - 0.7
41	0°10.3	0°10.3	0°09.8	4.1 - 0.0	10.1 - 0.1	16.1 - 0.1	41	0°25.3	0°25.3	0°24.1	4.1 - 0.1	10.1 - 0.3	16.1 - 0.4	41	0°40.3	0°40.4	0°38.4	4.1 - 0.2	10.1 - 0.4	16.1 - 0.7
42	0°10.5	0°10.5	0°10.0	4.2 - 0.0	10.2 - 0.1	16.2 - 0.1	42	0°25.5	0°25.6	0°24.3	4.2 - 0.1	10.2 - 0.3	16.2 - 0.4	42	0°40.5	0°40.6	0°38.7	4.2 - 0.2	10.2 - 0.4	16.2 - 0.7
43	0°10.8	0°10.8	0°10.3	4.3 - 0.0	10.3 - 0.1	16.3 - 0.1	43	0°25.8	0°25.8	0°24.6	4.3 - 0.1	10.3 - 0.3	16.3 - 0.4	43	0°40.8	0°40.9	0°38.9	4.3 - 0.2	10.3 - 0.4	16.3 - 0.7
44	0°11.0	0°11.0	0°10.5	4.4 - 0.0	10.4 - 0.1	16.4 - 0.1	44	0°26.0	0°26.1	0°24.8	4.4 - 0.1	10.4 - 0.3	16.4 - 0.4	44	0°41.0	0°41.1	0°39.1	4.4 - 0.2	10.4 - 0.4	16.4 - 0.7
45	0°11.3	0°11.3	0°10.7	4.5 - 0.0	10.5 - 0.1	16.5 - 0.1	45	0°26.3	0°26.3	0°25.1	4.5 - 0.1	10.5 - 0.3	16.5 - 0.4	45	0°41.3	0°41.4	0°39.4	4.5 - 0.2	10.5 - 0.4	16.5 - 0.7
46	0°11.5	0°11.5	0°11.0	4.6 - 0.0	10.6 - 0.1	16.6 - 0.1	46	0°26.5	0°26.6	0°25.3	4.6 - 0.1	10.6 - 0.3	16.6 - 0.4	46	0°41.5	0°41.6	0°39.6	4.6 - 0.2	10.6 - 0.4	16.6 - 0.7
47	0°11.8	0°11.8	0°11.2	4.7 - 0.0	10.7 - 0.1	16.7 - 0.1	47	0°26.8	0°26.8	0°25.5	4.7 - 0.1	10.7 - 0.3	16.7 - 0.4	47	0°41.8	0°41.9	0°39.8	4.7 - 0.2	10.7 - 0.4	16.7 - 0.7
48	0°12.0	0°12.0	0°11.5	4.8 - 0.0	10.8 - 0.1	16.8 - 0.1	48	0°27.0	0°27.1	0°25.8	4.8 - 0.1	10.8 - 0.3	16.8 - 0.4	48	0°42.0	0°42.1	0°40.1	4.8 - 0.2	10.8 - 0.5	16.8 - 0.7
49	0°12.3	0°12.3	0°11.7	4.9 - 0.0	10.9 - 0.1	16.9 - 0.1	49	0°27.3	0°27.3											

Increments and Corrections

m 3	Sun Plan.	Aries	Moon	v and d corr			m 4	Sun Plan.	Aries	Moon	v and d corr			m 5	Sun Plan.	Aries	Moon	v and d corr		
0	0°45.0	0°45.1	0°43.0	0.0 - 0.0	6.0 - 0.3	12.0 - 0.7	0	1°00.0	1°00.2	0°57.3	0.0 - 0.0	6.0 - 0.4	12.0 - 0.9	0	1°15.0	1°15.2	1°11.6	0.0 - 0.0	6.0 - 0.5	12.0 - 1.1
1	0°45.3	0°45.4	0°43.2	0.1 - 0.0	6.1 - 0.4	12.1 - 0.7	1	1°00.2	1°00.4	0°57.5	0.1 - 0.0	6.1 - 0.5	12.1 - 0.9	1	1°15.3	1°15.5	1°11.8	0.1 - 0.0	6.1 - 0.6	12.1 - 1.1
2	0°45.5	0°45.6	0°43.4	0.2 - 0.0	6.2 - 0.4	12.2 - 0.7	2	1°00.5	1°00.7	0°57.7	0.2 - 0.0	6.2 - 0.5	12.2 - 0.9	2	1°15.5	1°15.7	1°12.1	0.2 - 0.0	6.2 - 0.6	12.2 - 1.1
3	0°45.8	0°45.9	0°43.7	0.3 - 0.0	6.3 - 0.4	12.3 - 0.7	3	1°00.7	1°00.9	0°58.0	0.3 - 0.0	6.3 - 0.5	12.3 - 0.9	3	1°15.7	1°16.0	1°12.3	0.3 - 0.0	6.3 - 0.6	12.3 - 1.1
4	0°46.0	0°46.1	0°43.9	0.4 - 0.0	6.4 - 0.4	12.4 - 0.7	4	1°01.0	1°01.2	0°58.2	0.4 - 0.0	6.4 - 0.5	12.4 - 0.9	4	1°16.0	1°16.2	1°12.5	0.4 - 0.0	6.4 - 0.6	12.4 - 1.1
5	0°46.3	0°46.4	0°44.1	0.5 - 0.0	6.5 - 0.4	12.5 - 0.7	5	1°01.2	1°01.4	0°58.5	0.5 - 0.0	6.5 - 0.5	12.5 - 0.9	5	1°16.2	1°16.5	1°12.8	0.5 - 0.0	6.5 - 0.6	12.5 - 1.1
6	0°46.5	0°46.6	0°44.4	0.6 - 0.0	6.6 - 0.4	12.6 - 0.7	6	1°01.5	1°01.7	0°58.7	0.6 - 0.0	6.6 - 0.5	12.6 - 0.9	6	1°16.5	1°16.7	1°13.0	0.6 - 0.1	6.6 - 0.6	12.6 - 1.2
7	0°46.8	0°46.9	0°44.6	0.7 - 0.0	6.7 - 0.4	12.7 - 0.7	7	1°01.7	1°01.9	0°58.9	0.7 - 0.1	6.7 - 0.5	12.7 - 1.0	7	1°16.7	1°17.0	1°13.3	0.7 - 0.1	6.7 - 0.6	12.7 - 1.2
8	0°47.0	0°47.1	0°44.9	0.8 - 0.0	6.8 - 0.4	12.8 - 0.7	8	1°02.0	1°02.2	0°59.2	0.8 - 0.1	6.8 - 0.5	12.8 - 1.0	8	1°17.0	1°17.2	1°13.5	0.8 - 0.1	6.8 - 0.6	12.8 - 1.2
9	0°47.3	0°47.4	0°45.1	0.9 - 0.1	6.9 - 0.4	12.9 - 0.8	9	1°02.3	1°02.4	0°59.4	0.9 - 0.1	6.9 - 0.5	12.9 - 1.0	9	1°17.3	1°17.5	1°13.7	0.9 - 0.1	6.9 - 0.6	12.9 - 1.2
10	0°47.5	0°47.6	0°45.3	1.0 - 0.1	7.0 - 0.4	13.0 - 0.8	10	1°02.5	1°02.7	0°59.7	1.0 - 0.1	7.0 - 0.5	13.0 - 1.0	10	1°17.5	1°17.7	1°14.0	1.0 - 0.1	7.0 - 0.6	13.0 - 1.2
11	0°47.8	0°47.9	0°45.6	1.1 - 0.1	7.1 - 0.4	13.1 - 0.8	11	1°02.8	1°02.9	0°59.9	1.1 - 0.1	7.1 - 0.5	13.1 - 1.0	11	1°17.8	1°18.0	1°14.2	1.1 - 0.1	7.1 - 0.7	13.1 - 1.2
12	0°48.0	0°48.1	0°45.8	1.2 - 0.1	7.2 - 0.4	13.2 - 0.8	12	1°03.0	1°03.2	1°00.1	1.2 - 0.1	7.2 - 0.5	13.2 - 1.0	12	1°18.0	1°18.2	1°14.4	1.2 - 0.1	7.2 - 0.7	13.2 - 1.2
13	0°48.3	0°48.4	0°46.1	1.3 - 0.1	7.3 - 0.4	13.3 - 0.8	13	1°03.3	1°03.4	1°00.4	1.3 - 0.1	7.3 - 0.5	13.3 - 1.0	13	1°18.3	1°18.5	1°14.7	1.3 - 0.1	7.3 - 0.7	13.3 - 1.2
14	0°48.5	0°48.6	0°46.3	1.4 - 0.1	7.4 - 0.4	13.4 - 0.8	14	1°03.5	1°03.7	1°00.6	1.4 - 0.1	7.4 - 0.6	13.4 - 1.0	14	1°18.5	1°18.7	1°14.9	1.4 - 0.1	7.4 - 0.7	13.4 - 1.2
15	0°48.8	0°48.9	0°46.5	1.5 - 0.1	7.5 - 0.4	13.5 - 0.8	15	1°03.8	1°03.9	1°00.8	1.5 - 0.1	7.5 - 0.6	13.5 - 1.0	15	1°18.8	1°19.0	1°15.2	1.5 - 0.1	7.5 - 0.7	13.5 - 1.2
16	0°49.0	0°49.1	0°46.8	1.6 - 0.1	7.6 - 0.4	13.6 - 0.8	16	1°04.0	1°04.2	1°01.1	1.6 - 0.1	7.6 - 0.6	13.6 - 1.0	16	1°19.0	1°19.2	1°15.4	1.6 - 0.1	7.6 - 0.7	13.6 - 1.2
17	0°49.3	0°49.4	0°47.0	1.7 - 0.1	7.7 - 0.4	13.7 - 0.8	17	1°04.2	1°04.4	1°01.3	1.7 - 0.1	7.7 - 0.6	13.7 - 1.0	17	1°19.3	1°19.5	1°15.6	1.7 - 0.2	7.7 - 0.7	13.7 - 1.3
18	0°49.5	0°49.6	0°47.2	1.8 - 0.1	7.8 - 0.5	13.8 - 0.8	18	1°04.5	1°04.7	1°01.6	1.8 - 0.1	7.8 - 0.6	13.8 - 1.0	18	1°19.5	1°19.7	1°15.9	1.8 - 0.2	7.8 - 0.7	13.8 - 1.3
19	0°49.8	0°49.9	0°47.5	1.9 - 0.1	7.9 - 0.5	13.9 - 0.8	19	1°04.7	1°04.9	1°01.8	1.9 - 0.1	7.9 - 0.6	13.9 - 1.0	19	1°19.7	1°20.0	1°16.1	1.9 - 0.2	7.9 - 0.7	13.9 - 1.3
20	0°50.0	0°50.1	0°47.7	2.0 - 0.1	8.0 - 0.5	14.0 - 0.8	20	1°05.0	1°05.2	1°02.0	2.0 - 0.1	8.0 - 0.6	14.0 - 1.1	20	1°20.0	1°20.2	1°16.4	2.0 - 0.2	8.0 - 0.7	14.0 - 1.3
21	0°50.3	0°50.4	0°48.0	2.1 - 0.1	8.1 - 0.5	14.1 - 0.8	21	1°05.2	1°05.4	1°02.3	2.1 - 0.2	8.1 - 0.6	14.1 - 1.1	21	1°20.2	1°20.5	1°16.6	2.1 - 0.2	8.1 - 0.7	14.1 - 1.3
22	0°50.5	0°50.6	0°48.2	2.2 - 0.1	8.2 - 0.5	14.2 - 0.8	22	1°05.5	1°05.7	1°02.5	2.2 - 0.2	8.2 - 0.6	14.2 - 1.1	22	1°20.5	1°20.7	1°16.8	2.2 - 0.2	8.2 - 0.8	14.2 - 1.3
23	0°50.8	0°50.9	0°48.4	2.3 - 0.1	8.3 - 0.5	14.3 - 0.8	23	1°05.8	1°05.9	1°02.8	2.3 - 0.2	8.3 - 0.6	14.3 - 1.1	23	1°20.8	1°21.0	1°17.1	2.3 - 0.2	8.3 - 0.8	14.3 - 1.3
24	0°51.0	0°51.1	0°48.7	2.4 - 0.1	8.4 - 0.5	14.4 - 0.8	24	1°06.0	1°06.2	1°03.0	2.4 - 0.2	8.4 - 0.6	14.4 - 1.1	24	1°21.0	1°21.2	1°17.3	2.4 - 0.2	8.4 - 0.8	14.4 - 1.3
25	0°51.3	0°51.4	0°48.9	2.5 - 0.1	8.5 - 0.5	14.5 - 0.8	25	1°06.3	1°06.4	1°03.2	2.5 - 0.2	8.5 - 0.6	14.5 - 1.1	25	1°21.3	1°21.5	1°17.5	2.5 - 0.2	8.5 - 0.8	14.5 - 1.3
26	0°51.5	0°51.6	0°49.2	2.6 - 0.2	8.6 - 0.5	14.6 - 0.9	26	1°06.5	1°06.7	1°03.5	2.6 - 0.2	8.6 - 0.6	14.6 - 1.1	26	1°21.5	1°21.7	1°17.8	2.6 - 0.2	8.6 - 0.8	14.6 - 1.3
27	0°51.8	0°51.9	0°49.4	2.7 - 0.2	8.7 - 0.5	14.7 - 0.9	27	1°06.8	1°06.9	1°03.7	2.7 - 0.2	8.7 - 0.7	14.7 - 1.1	27	1°21.8	1°22.0	1°18.0	2.7 - 0.2	8.7 - 0.8	14.7 - 1.3
28	0°52.0	0°52.1	0°49.6	2.8 - 0.2	8.8 - 0.5	14.8 - 0.9	28	1°07.0	1°07.2	1°03.9	2.8 - 0.2	8.8 - 0.7	14.8 - 1.1	28	1°22.0	1°22.2	1°18.3	2.8 - 0.3	8.8 - 0.8	14.8 - 1.4
29	0°52.3	0°52.4	0°49.9	2.9 - 0.2	8.9 - 0.5	14.9 - 0.9	29	1°07.3	1°07.4	1°04.2	2.9 - 0.2	8.9 - 0.7	14.9 - 1.1	29	1°22.3	1°22.5	1°18.5	2.9 - 0.3	8.9 - 0.8	14.9 - 1.4
30	0°52.5	0°52.6	0°50.1	3.0 - 0.2	9.0 - 0.5	15.0 - 0.9	30	1°07.5	1°07.7	1°04.4	3.0 - 0.2	9.0 - 0.7	15.0 - 1.1	30	1°22.5	1°22.7	1°18.7	3.0 - 0.3	9.0 - 0.8	15.0 - 1.4
31	0°52.8	0°52.9	0°50.3	3.1 - 0.2	9.1 - 0.5	15.1 - 0.9	31	1°07.7	1°07.9	1°04.7	3.1 - 0.2	9.1 - 0.7	15.1 - 1.1	31	1°22.8	1°23.0	1°19.0	3.1 - 0.3	9.1 - 0.8	15.1 - 1.4
32	0°53.0	0°53.1	0°50.6	3.2 - 0.2	9.2 - 0.5	15.2 - 0.9	32	1°08.0	1°08.2	1°04.9	3.2 - 0.2	9.2 - 0.7	15.2 - 1.1	32	1°23.0	1°23.2	1°19.2	3.2 - 0.3	9.2 - 0.8	15.2 - 1.4
33	0°53.3	0°53.4	0°50.8	3.3 - 0.2	9.3 - 0.5	15.3 - 0.9	33	1°08.2	1°08.4	1°05.1	3.3 - 0.2	9.3 - 0.7	15.3 - 1.1	33	1°23.2	1°23.5	1°19.5	3.3 - 0.3	9.3 - 0.9	15.3 - 1.4
34	0°53.5	0°53.6	0°51.1	3.4 - 0.2	9.4 - 0.5	15.4 - 0.9	34	1°08.5	1°08.7	1°05.4	3.4 - 0.3	9.4 - 0.7	15.4 - 1.2	34	1°23.5	1°23.7	1°19.7	3.4 - 0.3	9.4 - 0.9	15.4 - 1.4
35	0°53.8	0°53.9	0°51.3	3.5 - 0.2	9.5 - 0.6	15.5 - 0.9	35	1°08.7	1°08.9	1°05.6	3.5 - 0.3	9.5 - 0.7	15.5 - 1.2	35	1°23.7	1°24.0	1°19.9	3.5 - 0.3	9.5 - 0.9	15.5 - 1.4
36	0°54.0	0°54.1	0°51.5	3.6 - 0.2	9.6 - 0.6	15.6 - 0.9	36	1°09.0	1°09.2	1°05.9	3.6 - 0.3	9.6 - 0.7	15.6 - 1.2	36	1°24.0	1°24.2	1°20.2	3.6 - 0.3	9.6 - 0.9	15.6 - 1.4
37	0°54.3	0°54.4	0°51.8	3.7 - 0.2	9.7 - 0.6	15.7 - 0.9	37	1°09.3	1°09.4	1°06.1	3.7 - 0.3	9.7 - 0.7	15.7 - 1.2	37	1°24.3	1°24.5	1°20.4	3.7 - 0.3	9.7 - 0.9	15.7 - 1.4
38	0°54.5	0°54.6	0°52.0	3.8 - 0.2	9.8 - 0.6	15.8 - 0.9	38	1°09.5	1°09.7	1°06.3	3.8 - 0.3	9.8 - 0.7	15.8 - 1.2	38	1°24.5	1°24.7	1°20.7	3.8 - 0.3	9.8 - 0.9	15.8 - 1.4
39	0°54.8	0°54.9	0°52.3	3.9 - 0.2	9.9 - 0.6	15.9 - 0.9	39	1°09.8	1°09.9	1°06.6	3.9 - 0.3	9.9 - 0.7	15.9 - 1.2	39	1°24.8	1°25.0	1°20.9	3.9 - 0.4	9.9 - 0.9	15.9 - 1.5
40	0°55.0	0°55.2	0°52.5	4.0 - 0.2	10.0 - 0.6	16.0 - 0.9	40	1°10.0	1°10.2	1°06.8	4.0 - 0.3	10.0 - 0.8	16.0 - 1.2	40	1°25.0	1°25.2	1°21.1	4.0 - 0.4	10.0 - 0.9	16.0 - 1.5
41	0°55.3	0°55.4	0°52.7	4.1 - 0.2	10.1 - 0.6	16.1 - 0.9	41	1°10.3	1°10.4	1°07.0	4.1 - 0.3	10.1 - 0.8	16.1 - 1.2	41	1°25.3	1°25.5	1°21.4	4.1 - 0.4	10.1 - 0.9	16.1 - 1.5
42	0°55.5	0°55.7	0°53.0	4.2 - 0.2	10.2 - 0.6	16.2 - 0.9	42	1°10.5	1°10.7	1°07.3	4.2 - 0.3	10.2 - 0.8	16.2 - 1.2	42	1°25.5	1°25.7	1°21.6	4.2 - 0.4	10.2 - 0.9	16.2 - 1.5
43	0°55.8	0°55.9	0°53.2	4.3 - 0.3	10.3 - 0.6	16.3 - 1.0	43	1°10.8	1°10.9	1°07.5	4.3 - 0.3	10.3 - 0.8	16.3 - 1.2	43	1°25.8	1°26.0	1°21.8	4.3 - 0.4	10.3 - 0.9	16.3 - 1.5
44	0°56.0	0°56.2	0°53.4	4.4 - 0.3	10.4 - 0.6	16.4 - 1.0	44	1°11.0	1°11.2	1°07.8	4.4 - 0.3	10.4 - 0.8	16.4 - 1.2	44	1°26.0	1°26.2	1°22.1	4.4 - 0.4	10.4 - 1.0	16.4 - 1.5
45	0°56.3	0°56.4	0°53.7	4.5 - 0.3	10.5 - 0.6	16.5 - 1.0	45	1°11.3	1°11.4	1°08.0	4.5 - 0.3	10.5 - 0.8	16.5 - 1.2	45	1°26.3	1°26.5	1°22.3	4.5 - 0.4	10.5 - 1.0	16.5 - 1.5
46	0°56.5	0°56.7	0°53.9	4.6 - 0.3	10.6 - 0.6	16.6 - 1.0	46	1°11.5	1°11.7	1°08.2	4.6 - 0.3	10.6 - 0.8	16.6 - 1.2	46	1°26.5	1°26.7	1°22.6	4.6 - 0.4	10.6 - 1.0	16.6 - 1.5
47	0°56.8	0°56.9	0°54.2	4.7 - 0.3	10.7 - 0.6	16.7 - 1.0	47	1°11.7	1°11.9	1°08.5	4.7 - 0.4	10.7 - 0.8	16.7 - 1.3	47	1°26.8	1°27.0	1°22.8	4.7 - 0.4	10.7 - 1.0	16.7 - 1.5
48	0°57.0	0°57.2	0°54.4	4.8 - 0.3	10.8 - 0.6	16.8 - 1.0	48	1°12.0	1°12.2	1°08.7	4.8 - 0.4	10.8 - 0.8	16.8 - 1.3	48	1°27.0	1°27.2	1°23.0	4.8 - 0.4	10.8 - 1.0	16.8 - 1.5
49	0°57.3	0°57.4	0°54.6	4.9 - 0.3	10.9 - 0.6	16.9 - 1.0	49	1°12.2	1°1											

Increments and Corrections

m 6	Sun Plan.	Aries	Moon	v and d corr			m 7	Sun Plan.	Aries	Moon	v and d corr			m 8	Sun Plan.	Aries	Moon	v and d corr		
0	1°30.0	1°30.2	1°25.9	0.0 - 0.0	6.0 - 0.7	12.0 - 1.3	0	1°45.0	1°45.3	1°40.2	0.0 - 0.0	6.0 - 0.8	12.0 - 1.5	0	2°00.0	2°00.3	1°54.5	0.0 - 0.0	6.0 - 0.8	12.0 - 1.7
1	1°30.3	1°30.5	1°26.1	0.1 - 0.0	6.1 - 0.7	12.1 - 1.3	1	1°45.3	1°45.5	1°40.5	0.1 - 0.0	6.1 - 0.8	12.1 - 1.5	1	2°00.3	2°00.6	1°54.8	0.1 - 0.0	6.1 - 0.9	12.1 - 1.7
2	1°30.5	1°30.7	1°26.4	0.2 - 0.0	6.2 - 0.7	12.2 - 1.3	2	1°45.5	1°45.8	1°40.7	0.2 - 0.0	6.2 - 0.8	12.2 - 1.5	2	2°00.5	2°00.8	1°55.0	0.2 - 0.0	6.2 - 0.9	12.2 - 1.7
3	1°30.7	1°31.0	1°26.6	0.3 - 0.0	6.3 - 0.7	12.3 - 1.3	3	1°45.8	1°46.0	1°40.9	0.3 - 0.0	6.3 - 0.8	12.3 - 1.5	3	2°00.8	2°01.1	1°55.2	0.3 - 0.0	6.3 - 0.9	12.3 - 1.7
4	1°31.0	1°31.2	1°26.9	0.4 - 0.0	6.4 - 0.7	12.4 - 1.3	4	1°46.0	1°46.3	1°41.2	0.4 - 0.1	6.4 - 0.8	12.4 - 1.6	4	2°01.0	2°01.3	1°55.5	0.4 - 0.1	6.4 - 0.9	12.4 - 1.8
5	1°31.2	1°31.5	1°27.1	0.5 - 0.1	6.5 - 0.7	12.5 - 1.4	5	1°46.2	1°46.5	1°41.4	0.5 - 0.1	6.5 - 0.8	12.5 - 1.6	5	2°01.3	2°01.6	1°55.7	0.5 - 0.1	6.5 - 0.9	12.5 - 1.8
6	1°31.5	1°31.8	1°27.3	0.6 - 0.1	6.6 - 0.7	12.6 - 1.4	6	1°46.5	1°46.8	1°41.6	0.6 - 0.1	6.6 - 0.8	12.6 - 1.6	6	2°01.5	2°01.8	1°56.0	0.6 - 0.1	6.6 - 0.9	12.6 - 1.8
7	1°31.7	1°32.0	1°27.6	0.7 - 0.1	6.7 - 0.7	12.7 - 1.4	7	1°46.7	1°47.0	1°41.9	0.7 - 0.1	6.7 - 0.8	12.7 - 1.6	7	2°01.8	2°02.1	1°56.2	0.7 - 0.1	6.7 - 0.9	12.7 - 1.8
8	1°32.0	1°32.3	1°27.8	0.8 - 0.1	6.8 - 0.7	12.8 - 1.4	8	1°47.0	1°47.3	1°42.1	0.8 - 0.1	6.8 - 0.8	12.8 - 1.6	8	2°02.0	2°02.3	1°56.4	0.8 - 0.1	6.8 - 1.0	12.8 - 1.8
9	1°32.3	1°32.5	1°28.0	0.9 - 0.1	6.9 - 0.7	12.9 - 1.4	9	1°47.3	1°47.5	1°42.4	0.9 - 0.1	6.9 - 0.9	12.9 - 1.6	9	2°02.3	2°02.6	1°56.7	0.9 - 0.1	6.9 - 1.0	12.9 - 1.8
10	1°32.5	1°32.8	1°28.3	1.0 - 0.1	7.0 - 0.8	13.0 - 1.4	10	1°47.5	1°47.8	1°42.6	1.0 - 0.1	7.0 - 0.9	13.0 - 1.6	10	2°02.5	2°02.8	1°56.9	1.0 - 0.1	7.0 - 1.0	13.0 - 1.8
11	1°32.8	1°33.0	1°28.5	1.1 - 0.1	7.1 - 0.8	13.1 - 1.4	11	1°47.8	1°48.0	1°42.8	1.1 - 0.1	7.1 - 0.9	13.1 - 1.6	11	2°02.8	2°03.1	1°57.2	1.1 - 0.2	7.1 - 1.0	13.1 - 1.9
12	1°33.0	1°33.3	1°28.8	1.2 - 0.1	7.2 - 0.8	13.2 - 1.4	12	1°48.0	1°48.3	1°43.1	1.2 - 0.2	7.2 - 0.9	13.2 - 1.6	12	2°03.0	2°03.3	1°57.4	1.2 - 0.2	7.2 - 1.0	13.2 - 1.9
13	1°33.3	1°33.5	1°29.0	1.3 - 0.1	7.3 - 0.8	13.3 - 1.4	13	1°48.3	1°48.5	1°43.3	1.3 - 0.2	7.3 - 0.9	13.3 - 1.7	13	2°03.3	2°03.6	1°57.6	1.3 - 0.2	7.3 - 1.0	13.3 - 1.9
14	1°33.5	1°33.8	1°29.2	1.4 - 0.2	7.4 - 0.8	13.4 - 1.5	14	1°48.5	1°48.8	1°43.6	1.4 - 0.2	7.4 - 0.9	13.4 - 1.7	14	2°03.5	2°03.8	1°57.9	1.4 - 0.2	7.4 - 1.0	13.4 - 1.9
15	1°33.8	1°34.0	1°29.5	1.5 - 0.2	7.5 - 0.8	13.5 - 1.5	15	1°48.8	1°49.0	1°43.8	1.5 - 0.2	7.5 - 0.9	13.5 - 1.7	15	2°03.8	2°04.1	1°58.1	1.5 - 0.2	7.5 - 1.1	13.5 - 1.9
16	1°34.0	1°34.3	1°29.7	1.6 - 0.2	7.6 - 0.8	13.6 - 1.5	16	1°49.0	1°49.3	1°44.0	1.6 - 0.2	7.6 - 0.9	13.6 - 1.7	16	2°04.0	2°04.3	1°58.4	1.6 - 0.2	7.6 - 1.1	13.6 - 1.9
17	1°34.3	1°34.5	1°30.0	1.7 - 0.2	7.7 - 0.8	13.7 - 1.5	17	1°49.3	1°49.5	1°44.3	1.7 - 0.2	7.7 - 1.0	13.7 - 1.7	17	2°04.2	2°04.6	1°58.6	1.7 - 0.2	7.7 - 1.1	13.7 - 1.9
18	1°34.5	1°34.8	1°30.2	1.8 - 0.2	7.8 - 0.8	13.8 - 1.5	18	1°49.5	1°49.8	1°44.5	1.8 - 0.2	7.8 - 1.0	13.8 - 1.7	18	2°04.5	2°04.8	1°58.8	1.8 - 0.3	7.8 - 1.1	13.8 - 2.0
19	1°34.8	1°35.0	1°30.4	1.9 - 0.2	7.9 - 0.9	13.9 - 1.5	19	1°49.8	1°50.0	1°44.8	1.9 - 0.2	7.9 - 1.0	13.9 - 1.7	19	2°04.7	2°05.1	1°59.1	1.9 - 0.3	7.9 - 1.1	13.9 - 2.0
20	1°35.0	1°35.3	1°30.7	2.0 - 0.2	8.0 - 0.9	14.0 - 1.5	20	1°50.0	1°50.3	1°45.0	2.0 - 0.3	8.0 - 1.0	14.0 - 1.8	20	2°05.0	2°05.3	1°59.3	2.0 - 0.3	8.0 - 1.1	14.0 - 2.0
21	1°35.2	1°35.5	1°30.9	2.1 - 0.2	8.1 - 0.9	14.1 - 1.5	21	1°50.2	1°50.6	1°45.2	2.1 - 0.3	8.1 - 1.0	14.1 - 1.8	21	2°05.2	2°05.6	1°59.5	2.1 - 0.3	8.1 - 1.1	14.1 - 2.0
22	1°35.5	1°35.8	1°31.1	2.2 - 0.2	8.2 - 0.9	14.2 - 1.5	22	1°50.5	1°50.8	1°45.5	2.2 - 0.3	8.2 - 1.0	14.2 - 1.8	22	2°05.5	2°05.8	1°59.8	2.2 - 0.3	8.2 - 1.2	14.2 - 2.0
23	1°35.8	1°36.0	1°31.4	2.3 - 0.2	8.3 - 0.9	14.3 - 1.5	23	1°50.8	1°51.1	1°45.7	2.3 - 0.3	8.3 - 1.0	14.3 - 1.8	23	2°05.7	2°06.1	2°00.0	2.3 - 0.3	8.3 - 1.2	14.3 - 2.0
24	1°36.0	1°36.3	1°31.6	2.4 - 0.3	8.4 - 0.9	14.4 - 1.6	24	1°51.0	1°51.3	1°45.9	2.4 - 0.3	8.4 - 1.1	14.4 - 1.8	24	2°06.0	2°06.3	2°00.3	2.4 - 0.3	8.4 - 1.2	14.4 - 2.0
25	1°36.3	1°36.5	1°31.9	2.5 - 0.3	8.5 - 0.9	14.5 - 1.6	25	1°51.3	1°51.6	1°46.2	2.5 - 0.3	8.5 - 1.1	14.5 - 1.8	25	2°06.2	2°06.6	2°00.5	2.5 - 0.4	8.5 - 1.2	14.5 - 2.1
26	1°36.5	1°36.8	1°32.1	2.6 - 0.3	8.6 - 0.9	14.6 - 1.6	26	1°51.5	1°51.8	1°46.4	2.6 - 0.3	8.6 - 1.1	14.6 - 1.8	26	2°06.5	2°06.8	2°00.7	2.6 - 0.4	8.6 - 1.2	14.6 - 2.1
27	1°36.8	1°37.0	1°32.3	2.7 - 0.3	8.7 - 0.9	14.7 - 1.6	27	1°51.8	1°52.1	1°46.7	2.7 - 0.3	8.7 - 1.1	14.7 - 1.8	27	2°06.7	2°07.1	2°01.0	2.7 - 0.4	8.7 - 1.2	14.7 - 2.1
28	1°37.0	1°37.3	1°32.6	2.8 - 0.3	8.8 - 1.0	14.8 - 1.6	28	1°52.0	1°52.3	1°46.9	2.8 - 0.4	8.8 - 1.1	14.8 - 1.9	28	2°07.0	2°07.3	2°01.2	2.8 - 0.4	8.8 - 1.2	14.8 - 2.1
29	1°37.3	1°37.5	1°32.8	2.9 - 0.3	8.9 - 1.0	14.9 - 1.6	29	1°52.3	1°52.6	1°47.1	2.9 - 0.4	8.9 - 1.1	14.9 - 1.9	29	2°07.2	2°07.6	2°01.5	2.9 - 0.4	8.9 - 1.3	14.9 - 2.1
30	1°37.5	1°37.8	1°33.1	3.0 - 0.3	9.0 - 1.0	15.0 - 1.6	30	1°52.5	1°52.8	1°47.4	3.0 - 0.4	9.0 - 1.1	15.0 - 1.9	30	2°07.5	2°07.8	2°01.7	3.0 - 0.4	9.0 - 1.3	15.0 - 2.1
31	1°37.8	1°38.0	1°33.3	3.1 - 0.3	9.1 - 1.0	15.1 - 1.6	31	1°52.7	1°53.1	1°47.6	3.1 - 0.4	9.1 - 1.1	15.1 - 1.9	31	2°07.8	2°08.1	2°01.9	3.1 - 0.4	9.1 - 1.3	15.1 - 2.1
32	1°38.0	1°38.3	1°33.5	3.2 - 0.3	9.2 - 1.0	15.2 - 1.6	32	1°53.0	1°53.3	1°47.9	3.2 - 0.4	9.2 - 1.1	15.2 - 1.9	32	2°08.0	2°08.3	2°02.2	3.2 - 0.5	9.2 - 1.3	15.2 - 2.2
33	1°38.3	1°38.5	1°33.8	3.3 - 0.4	9.3 - 1.0	15.3 - 1.7	33	1°53.3	1°53.6	1°48.1	3.3 - 0.4	9.3 - 1.2	15.3 - 1.9	33	2°08.3	2°08.6	2°02.4	3.3 - 0.5	9.3 - 1.3	15.3 - 2.2
34	1°38.5	1°38.8	1°34.0	3.4 - 0.4	9.4 - 1.0	15.4 - 1.7	34	1°53.5	1°53.8	1°48.3	3.4 - 0.4	9.4 - 1.2	15.4 - 1.9	34	2°08.5	2°08.9	2°02.6	3.4 - 0.5	9.4 - 1.3	15.4 - 2.2
35	1°38.7	1°39.0	1°34.3	3.5 - 0.4	9.5 - 1.0	15.5 - 1.7	35	1°53.7	1°54.1	1°48.6	3.5 - 0.4	9.5 - 1.2	15.5 - 1.9	35	2°08.8	2°09.1	2°02.9	3.5 - 0.5	9.5 - 1.3	15.5 - 2.2
36	1°39.0	1°39.3	1°34.5	3.6 - 0.4	9.6 - 1.0	15.6 - 1.7	36	1°54.0	1°54.3	1°48.8	3.6 - 0.5	9.6 - 1.2	15.6 - 1.9	36	2°09.0	2°09.4	2°03.1	3.6 - 0.5	9.6 - 1.4	15.6 - 2.2
37	1°39.3	1°39.5	1°34.7	3.7 - 0.4	9.7 - 1.1	15.7 - 1.7	37	1°54.2	1°54.6	1°49.0	3.7 - 0.5	9.7 - 1.2	15.7 - 2.0	37	2°09.3	2°09.6	2°03.4	3.7 - 0.5	9.7 - 1.4	15.7 - 2.2
38	1°39.5	1°39.8	1°35.0	3.8 - 0.4	9.8 - 1.1	15.8 - 1.7	38	1°54.5	1°54.8	1°49.3	3.8 - 0.5	9.8 - 1.2	15.8 - 2.0	38	2°09.5	2°09.9	2°03.6	3.8 - 0.5	9.8 - 1.4	15.8 - 2.2
39	1°39.8	1°40.0	1°35.2	3.9 - 0.4	9.9 - 1.1	15.9 - 1.7	39	1°54.8	1°55.1	1°49.5	3.9 - 0.5	9.9 - 1.2	15.9 - 2.0	39	2°09.8	2°10.1	2°03.8	3.9 - 0.6	9.9 - 1.4	15.9 - 2.3
40	1°40.0	1°40.3	1°35.4	4.0 - 0.4	10.0 - 1.1	16.0 - 1.7	40	1°55.0	1°55.3	1°49.8	4.0 - 0.5	10.0 - 1.3	16.0 - 2.0	40	2°10.0	2°10.4	2°04.1	4.0 - 0.6	10.0 - 1.4	16.0 - 2.3
41	1°40.3	1°40.5	1°35.7	4.1 - 0.4	10.1 - 1.1	16.1 - 1.7	41	1°55.3	1°55.6	1°50.0	4.1 - 0.5	10.1 - 1.3	16.1 - 2.0	41	2°10.3	2°10.6	2°04.3	4.1 - 0.6	10.1 - 1.4	16.1 - 2.3
42	1°40.5	1°40.8	1°35.9	4.2 - 0.5	10.2 - 1.1	16.2 - 1.8	42	1°55.5	1°55.8	1°50.2	4.2 - 0.5	10.2 - 1.3	16.2 - 2.0	42	2°10.5	2°10.9	2°04.6	4.2 - 0.6	10.2 - 1.4	16.2 - 2.3
43	1°40.8	1°41.0	1°36.2	4.3 - 0.5	10.3 - 1.1	16.3 - 1.8	43	1°55.8	1°56.1	1°50.5	4.3 - 0.5	10.3 - 1.3	16.3 - 2.0	43	2°10.8	2°11.1	2°04.8	4.3 - 0.6	10.3 - 1.5	16.3 - 2.3
44	1°41.0	1°41.3	1°36.4	4.4 - 0.5	10.4 - 1.1	16.4 - 1.8	44	1°56.0	1°56.3	1°50.7	4.4 - 0.6	10.4 - 1.3	16.4 - 2.0	44	2°11.0	2°11.4	2°05.0	4.4 - 0.6	10.4 - 1.5	16.4 - 2.3
45	1°41.3	1°41.5	1°36.6	4.5 - 0.5	10.5 - 1.1	16.5 - 1.8	45	1°56.3	1°56.6	1°51.0	4.5 - 0.6	10.5 - 1.3	16.5 - 2.1	45	2°11.3	2°11.6	2°05.3	4.5 - 0.6	10.5 - 1.5	16.5 - 2.3
46	1°41.5	1°41.8	1°36.9	4.6 - 0.5	10.6 - 1.1	16.6 - 1.8	46	1°56.5	1°56.8	1°51.2	4.6 - 0.6	10.6 - 1.3	16.6 - 2.1	46	2°11.5	2°11.9	2°05.5	4.6 - 0.7	10.6 - 1.5	16.6 - 2.4
47	1°41.8	1°42.0	1°37.1	4.7 - 0.5	10.7 - 1.2	16.7 - 1.8	47	1°56.7	1°57.1	1°51.4	4.7 - 0.6	10.7 - 1.3	16.7 - 2.1	47	2°11.7	2°12.1	2°05.7	4.7 - 0.7	10.7 - 1.5	16.7 - 2.4
48	1°42.0	1°42.3	1°37.4	4.8 - 0.5	10.8 - 1.2	16.8 - 1.8	48	1°57.0	1°57.3	1°51.7	4.8 - 0.6	10.8 - 1.4	16.8 - 2.1	48	2°12.0	2°12.4	2°06.0	4.8 - 0.7	10.8 - 1.5	16.8 - 2.4
49	1°42.3	1°42.5	1°37.6	4.9 - 0.5	10.9 - 1.2	16.9 - 1.8	49	1°57.3	1°5											

Increments and Corrections

m 9	Sun Plan.	Aries	Moon	v and d corr		
0	2°15.0	2°15.4	2°08.8	0.0 - 0.0	6.0 - 0.9	12.0 - 1.9
1	2°15.3	2°15.6	2°09.1	0.1 - 0.0	6.1 - 1.0	12.1 - 1.9
2	2°15.5	2°15.9	2°09.3	0.2 - 0.0	6.2 - 1.0	12.2 - 1.9
3	2°15.8	2°16.1	2°09.6	0.3 - 0.0	6.3 - 1.0	12.3 - 1.9
4	2°16.0	2°16.4	2°09.8	0.4 - 0.1	6.4 - 1.0	12.4 - 2.0
5	2°16.3	2°16.6	2°10.0	0.5 - 0.1	6.5 - 1.0	12.5 - 2.0
6	2°16.5	2°16.9	2°10.3	0.6 - 0.1	6.6 - 1.0	12.6 - 2.0
7	2°16.8	2°17.1	2°10.5	0.7 - 0.1	6.7 - 1.1	12.7 - 2.0
8	2°17.0	2°17.4	2°10.8	0.8 - 0.1	6.8 - 1.1	12.8 - 2.0
9	2°17.3	2°17.6	2°11.0	0.9 - 0.1	6.9 - 1.1	12.9 - 2.0
10	2°17.5	2°17.9	2°11.2	1.0 - 0.2	7.0 - 1.1	13.0 - 2.1
11	2°17.8	2°18.1	2°11.5	1.1 - 0.2	7.1 - 1.1	13.1 - 2.1
12	2°18.0	2°18.4	2°11.7	1.2 - 0.2	7.2 - 1.1	13.2 - 2.1
13	2°18.3	2°18.6	2°12.0	1.3 - 0.2	7.3 - 1.2	13.3 - 2.1
14	2°18.5	2°18.9	2°12.2	1.4 - 0.2	7.4 - 1.2	13.4 - 2.1
15	2°18.8	2°19.1	2°12.4	1.5 - 0.2	7.5 - 1.2	13.5 - 2.1
16	2°19.0	2°19.4	2°12.7	1.6 - 0.3	7.6 - 1.2	13.6 - 2.2
17	2°19.3	2°19.6	2°12.9	1.7 - 0.3	7.7 - 1.2	13.7 - 2.2
18	2°19.5	2°19.9	2°13.1	1.8 - 0.3	7.8 - 1.2	13.8 - 2.2
19	2°19.7	2°20.1	2°13.4	1.9 - 0.3	7.9 - 1.3	13.9 - 2.2
20	2°20.0	2°20.4	2°13.6	2.0 - 0.3	8.0 - 1.3	14.0 - 2.2
21	2°20.2	2°20.6	2°13.9	2.1 - 0.3	8.1 - 1.3	14.1 - 2.2
22	2°20.5	2°20.9	2°14.1	2.2 - 0.3	8.2 - 1.3	14.2 - 2.2
23	2°20.7	2°21.1	2°14.3	2.3 - 0.4	8.3 - 1.3	14.3 - 2.3
24	2°21.0	2°21.4	2°14.6	2.4 - 0.4	8.4 - 1.3	14.4 - 2.3
25	2°21.2	2°21.6	2°14.8	2.5 - 0.4	8.5 - 1.3	14.5 - 2.3
26	2°21.5	2°21.9	2°15.1	2.6 - 0.4	8.6 - 1.4	14.6 - 2.3
27	2°21.7	2°22.1	2°15.3	2.7 - 0.4	8.7 - 1.4	14.7 - 2.3
28	2°22.0	2°22.4	2°15.5	2.8 - 0.4	8.8 - 1.4	14.8 - 2.3
29	2°22.2	2°22.6	2°15.8	2.9 - 0.5	8.9 - 1.4	14.9 - 2.4
30	2°22.5	2°22.9	2°16.0	3.0 - 0.5	9.0 - 1.4	15.0 - 2.4
31	2°22.8	2°23.1	2°16.2	3.1 - 0.5	9.1 - 1.4	15.1 - 2.4
32	2°23.0	2°23.4	2°16.5	3.2 - 0.5	9.2 - 1.5	15.2 - 2.4
33	2°23.3	2°23.6	2°16.7	3.3 - 0.5	9.3 - 1.5	15.3 - 2.4
34	2°23.5	2°23.9	2°17.0	3.4 - 0.5	9.4 - 1.5	15.4 - 2.4
35	2°23.8	2°24.1	2°17.2	3.5 - 0.6	9.5 - 1.5	15.5 - 2.5
36	2°24.0	2°24.4	2°17.4	3.6 - 0.6	9.6 - 1.5	15.6 - 2.5
37	2°24.3	2°24.6	2°17.7	3.7 - 0.6	9.7 - 1.5	15.7 - 2.5
38	2°24.5	2°24.9	2°17.9	3.8 - 0.6	9.8 - 1.6	15.8 - 2.5
39	2°24.8	2°25.1	2°18.2	3.9 - 0.6	9.9 - 1.6	15.9 - 2.5
40	2°25.0	2°25.4	2°18.4	4.0 - 0.6	10.0 - 1.6	16.0 - 2.5
41	2°25.3	2°25.6	2°18.6	4.1 - 0.6	10.1 - 1.6	16.1 - 2.5
42	2°25.5	2°25.9	2°18.9	4.2 - 0.7	10.2 - 1.6	16.2 - 2.6
43	2°25.8	2°26.1	2°19.1	4.3 - 0.7	10.3 - 1.6	16.3 - 2.6
44	2°26.0	2°26.4	2°19.3	4.4 - 0.7	10.4 - 1.6	16.4 - 2.6
45	2°26.3	2°26.6	2°19.6	4.5 - 0.7	10.5 - 1.7	16.5 - 2.6
46	2°26.5	2°26.9	2°19.8	4.6 - 0.7	10.6 - 1.7	16.6 - 2.6
47	2°26.8	2°27.2	2°20.1	4.7 - 0.7	10.7 - 1.7	16.7 - 2.6
48	2°27.0	2°27.4	2°20.3	4.8 - 0.8	10.8 - 1.7	16.8 - 2.7
49	2°27.2	2°27.7	2°20.5	4.9 - 0.8	10.9 - 1.7	16.9 - 2.7
50	2°27.5	2°27.9	2°20.8	5.0 - 0.8	11.0 - 1.7	17.0 - 2.7
51	2°27.7	2°28.2	2°21.0	5.1 - 0.8	11.1 - 1.8	17.1 - 2.7
52	2°28.0	2°28.4	2°21.3	5.2 - 0.8	11.2 - 1.8	17.2 - 2.7
53	2°28.2	2°28.7	2°21.5	5.3 - 0.8	11.3 - 1.8	17.3 - 2.7
54	2°28.5	2°28.9	2°21.7	5.4 - 0.9	11.4 - 1.8	17.4 - 2.8
55	2°28.7	2°29.2	2°22.0	5.5 - 0.9	11.5 - 1.8	17.5 - 2.8
56	2°29.0	2°29.4	2°22.2	5.6 - 0.9	11.6 - 1.8	17.6 - 2.8
57	2°29.2	2°29.7	2°22.5	5.7 - 0.9	11.7 - 1.9	17.7 - 2.8
58	2°29.5	2°29.9	2°22.7	5.8 - 0.9	11.8 - 1.9	17.8 - 2.8
59	2°29.7	2°30.2	2°22.9	5.9 - 0.9	11.9 - 1.9	17.9 - 2.8

m 10	Sun Plan.	Aries	Moon	v and d corr		
0	2°30.0	2°30.4	2°23.2	0.0 - 0.0	6.0 - 1.0	12.0 - 2.1
1	2°30.3	2°30.7	2°23.4	0.1 - 0.0	6.1 - 1.1	12.1 - 2.1
2	2°30.5	2°30.9	2°23.6	0.2 - 0.0	6.2 - 1.1	12.2 - 2.1
3	2°30.8	2°31.2	2°23.9	0.3 - 0.1	6.3 - 1.1	12.3 - 2.2
4	2°31.0	2°31.4	2°24.1	0.4 - 0.1	6.4 - 1.1	12.4 - 2.2
5	2°31.3	2°31.7	2°24.4	0.5 - 0.1	6.5 - 1.1	12.5 - 2.2
6	2°31.5	2°31.9	2°24.6	0.6 - 0.1	6.6 - 1.2	12.6 - 2.2
7	2°31.8	2°32.2	2°24.8	0.7 - 0.1	6.7 - 1.2	12.7 - 2.2
8	2°32.0	2°32.4	2°25.1	0.8 - 0.1	6.8 - 1.2	12.8 - 2.2
9	2°32.3	2°32.7	2°25.3	0.9 - 0.2	6.9 - 1.2	12.9 - 2.3
10	2°32.5	2°32.9	2°25.6	1.0 - 0.2	7.0 - 1.2	13.0 - 2.3
11	2°32.8	2°33.2	2°25.8	1.1 - 0.2	7.1 - 1.2	13.1 - 2.3
12	2°33.0	2°33.4	2°26.0	1.2 - 0.2	7.2 - 1.3	13.2 - 2.3
13	2°33.3	2°33.7	2°26.3	1.3 - 0.2	7.3 - 1.3	13.3 - 2.3
14	2°33.5	2°33.9	2°26.5	1.4 - 0.2	7.4 - 1.3	13.4 - 2.3
15	2°33.8	2°34.2	2°26.7	1.5 - 0.3	7.5 - 1.3	13.5 - 2.4
16	2°34.0	2°34.4	2°27.0	1.6 - 0.3	7.6 - 1.3	13.6 - 2.4
17	2°34.3	2°34.7	2°27.2	1.7 - 0.3	7.7 - 1.3	13.7 - 2.4
18	2°34.5	2°34.9	2°27.5	1.8 - 0.3	7.8 - 1.4	13.8 - 2.4
19	2°34.8	2°35.2	2°27.7	1.9 - 0.3	7.9 - 1.4	13.9 - 2.4
20	2°35.0	2°35.4	2°27.9	2.0 - 0.3	8.0 - 1.4	14.0 - 2.4
21	2°35.2	2°35.7	2°28.2	2.1 - 0.4	8.1 - 1.4	14.1 - 2.5
22	2°35.5	2°35.9	2°28.4	2.2 - 0.4	8.2 - 1.4	14.2 - 2.5
23	2°35.7	2°36.2	2°28.7	2.3 - 0.4	8.3 - 1.5	14.3 - 2.5
24	2°36.0	2°36.4	2°28.9	2.4 - 0.4	8.4 - 1.5	14.4 - 2.5
25	2°36.2	2°36.7	2°29.1	2.5 - 0.4	8.5 - 1.5	14.5 - 2.5
26	2°36.5	2°36.9	2°29.4	2.6 - 0.5	8.6 - 1.5	14.6 - 2.6
27	2°36.7	2°37.2	2°29.6	2.7 - 0.5	8.7 - 1.5	14.7 - 2.6
28	2°37.0	2°37.4	2°29.8	2.8 - 0.5	8.8 - 1.5	14.8 - 2.6
29	2°37.2	2°37.7	2°30.1	2.9 - 0.5	8.9 - 1.6	14.9 - 2.6
30	2°37.5	2°37.9	2°30.3	3.0 - 0.5	9.0 - 1.6	15.0 - 2.6
31	2°37.8	2°38.2	2°30.6	3.1 - 0.5	9.1 - 1.6	15.1 - 2.6
32	2°38.0	2°38.4	2°30.8	3.2 - 0.6	9.2 - 1.6	15.2 - 2.7
33	2°38.3	2°38.7	2°31.0	3.3 - 0.6	9.3 - 1.6	15.3 - 2.7
34	2°38.5	2°38.9	2°31.3	3.4 - 0.6	9.4 - 1.6	15.4 - 2.7
35	2°38.8	2°39.2	2°31.5	3.5 - 0.6	9.5 - 1.7	15.5 - 2.7
36	2°39.0	2°39.4	2°31.8	3.6 - 0.6	9.6 - 1.7	15.6 - 2.7
37	2°39.3	2°39.7	2°32.0	3.7 - 0.6	9.7 - 1.7	15.7 - 2.7
38	2°39.5	2°39.9	2°32.2	3.8 - 0.7	9.8 - 1.7	15.8 - 2.8
39	2°39.8	2°40.2	2°32.5	3.9 - 0.7	9.9 - 1.7	15.9 - 2.8
40	2°40.0	2°40.4	2°32.7	4.0 - 0.7	10.0 - 1.8	16.0 - 2.8
41	2°40.3	2°40.7	2°32.9	4.1 - 0.7	10.1 - 1.8	16.1 - 2.8
42	2°40.5	2°40.9	2°33.2	4.2 - 0.7	10.2 - 1.8	16.2 - 2.8
43	2°40.8	2°41.2	2°33.4	4.3 - 0.8	10.3 - 1.8	16.3 - 2.9
44	2°41.0	2°41.4	2°33.7	4.4 - 0.8	10.4 - 1.8	16.4 - 2.9
45	2°41.3	2°41.7	2°33.9	4.5 - 0.8	10.5 - 1.8	16.5 - 2.9
46	2°41.5	2°41.9	2°34.1	4.6 - 0.8	10.6 - 1.9	16.6 - 2.9
47	2°41.8	2°42.2	2°34.4	4.7 - 0.8	10.7 - 1.9	16.7 - 2.9
48	2°42.0	2°42.4	2°34.6	4.8 - 0.8	10.8 - 1.9	16.8 - 2.9
49	2°42.3	2°42.7	2°34.9	4.9 - 0.9	10.9 - 1.9	16.9 - 3.0
50	2°42.5	2°42.9	2°35.1	5.0 - 0.9	11.0 - 1.9	17.0 - 3.0
51	2°42.7	2°43.2	2°35.3	5.1 - 0.9	11.1 - 1.9	17.1 - 3.0
52	2°43.0	2°43.4	2°35.6	5.2 - 0.9	11.2 - 2.0	17.2 - 3.0
53	2°43.2	2°43.7	2°35.8	5.3 - 0.9	11.3 - 2.0	17.3 - 3.0
54	2°43.5	2°43.9	2°36.1	5.4 - 0.9	11.4 - 2.0	17.4 - 3.0
55	2°43.7	2°44.2	2°36.3	5.5 - 1.0	11.5 - 2.0	17.5 - 3.1
56	2°44.0	2°44.4	2°36.5	5.6 - 1.0	11.6 - 2.0	17.6 - 3.1
57	2°44.2	2°44.7	2°36.8	5.7 - 1.0	11.7 - 2.0	17.7 - 3.1
58	2°44.5	2°44.9	2°37.0	5.8 - 1.0	11.8 - 2.1	17.8 - 3.1
59	2°44.7	2°45.2	2°37.2	5.9 - 1.0	11.9 - 2.1	17.9 - 3.1

m	Sun Plan.	Aries	Moon	v and d corr		
11						
0	2°45.0	2°45.5	2°37.5	0.0 - 0.0	6.0 - 1.2	12.0 - 2.3
1	2°45.3	2°45.7	2°37.7	0.1 - 0.0	6.1 - 1.2	12.1 - 2.3
2	2°45.5	2°46.0	2°38.0	0.2 - 0.0	6.2 - 1.2	12.2 - 2.3
3	2°45.8	2°46.2	2°38.2	0.3 - 0.1	6.3 - 1.2	12.3 - 2.4
4	2°46.0	2°46.5	2°38.4	0.4 - 0.1	6.4 - 1.2	12.4 - 2.4
5	2°46.3	2°46.7	2°38.7	0.5 - 0.1	6.5 - 1.2	12.5 - 2.4
6	2°46.5	2°47.0	2°38.9	0.6 - 0.1	6.6 - 1.3	12.6 - 2.4
7	2°46.8	2°47.2	2°39.2	0.7 - 0.1	6.7 - 1.3	12.7 - 2.4
8	2°47.0	2°47.5	2°39.4	0.8 - 0.2	6.8 - 1.3	12.8 - 2.5
9	2°47.3	2°47.7	2°39.6	0.9 - 0.2	6.9 - 1.3	12.9 - 2.5
10	2°47.5	2°48.0	2°39.9	1.0 - 0.2	7.0 - 1.3	13.0 - 2.5
11	2°47.8	2°48.2	2°40.1	1.1 - 0.2	7.1 - 1.4	13.1 - 2.5
12	2°48.0	2°48.5	2°40.3	1.2 - 0.2	7.2 - 1.4	13.2 - 2.5
13	2°48.3	2°48.7	2°40.6	1.3 - 0.2	7.3 - 1.4	13.3 - 2.5
14	2°48.5	2°49.0	2°40.8	1.4 - 0.3	7.4 - 1.4	13.4 - 2.6
15	2°48.8	2°49.2	2°41.1	1.5 - 0.3	7.5 - 1.4	13.5 - 2.6
16	2°49.0	2°49.5	2°41.3	1.6 - 0.3	7.6 - 1.5	13.6 - 2.6
17	2°49.3	2°49.7	2°41.5	1.7 - 0.3	7.7 - 1.5	13.7 - 2.6
18	2°49.5	2°50.0	2°41.8	1.8 - 0.3	7.8 - 1.5	13.8 - 2.6
19	2°49.8	2°50.2	2°42.0	1.9 - 0.4	7.9 - 1.5	13.9 - 2.7
20	2°50.0	2°50.5	2°42.3	2.0 - 0.4	8.0 - 1.5	14.0 - 2.7
21	2°50.2	2°50.7	2°42.5	2.1 - 0.4	8.1 - 1.6	14.1 - 2.7
22	2°50.5	2°51.0	2°42.7	2.2 - 0.4	8.2 - 1.6	14.2 - 2.7
23	2°50.7	2°51.2	2°43.0	2.3 - 0.4	8.3 - 1.6	14.3 - 2.7
24	2°51.0	2°51.5	2°43.2	2.4 - 0.5	8.4 - 1.6	14.4 - 2.8
25	2°51.2	2°51.7	2°43.4	2.5 - 0.5	8.5 - 1.6	14.5 - 2.8
26	2°51.5	2°52.0	2°43.7	2.6 - 0.5	8.6 - 1.6	14.6 - 2.8
27	2°51.7	2°52.2	2°43.9	2.7 - 0.5	8.7 - 1.7	14.7 - 2.8
28	2°52.0	2°52.5	2°44.2	2.8 - 0.5	8.8 - 1.7	14.8 - 2.8
29	2°52.2	2°52.7	2°44.4	2.9 - 0.6	8.9 - 1.7	14.9 - 2.9
30	2°52.5	2°53.0	2°44.6	3.0 - 0.6	9.0 - 1.7	15.0 - 2.9
31	2°52.8	2°53.2	2°44.9	3.1 - 0.6	9.1 - 1.7	15.1 - 2.9
32	2°53.0	2°53.5	2°45.1	3.2 - 0.6	9.2 - 1.8	15.2 - 2.9
33	2°53.3	2°53.7	2°45.4	3.3 - 0.6	9.3 - 1.8	15.3 - 2.9
34	2°53.5	2°54.0	2°45.6	3.4 - 0.7	9.4 - 1.8	15.4 - 3.0
35	2°53.8	2°54.2	2°45.8	3.5 - 0.7	9.5 - 1.8	15.5 - 3.0
36	2°54.0	2°54.5	2°46.1	3.6 - 0.7	9.6 - 1.8	15.6 - 3.0
37	2°54.3	2°54.7	2°46.3	3.7 - 0.7	9.7 - 1.9	15.7 - 3.0
38	2°54.5	2°55.0	2°46.6	3.8 - 0.7	9.8 - 1.9	15.8 - 3.0
39	2°54.8	2°55.2	2°46.8	3.9 - 0.7	9.9 - 1.9	15.9 - 3.0
40	2°55.0	2°55.5	2°47.0	4.0 - 0.8	10.0 - 1.9	16.0 - 3.1
41	2°55.3	2°55.7	2°47.3	4.1 - 0.8	10.1 - 1.9	16.1 - 3.1
42	2°55.5	2°56.0	2°47.5	4.2 - 0.8	10.2 - 2.0	16.2 - 3.1
43	2°55.8	2°56.2	2°47.7	4.3 - 0.8	10.3 - 2.0	16.3 - 3.1
44	2°56.0	2°56.5	2°48.0	4.4 - 0.8	10.4 - 2.0	16.4 - 3.1
45	2°56.3	2°56.7	2°48.2	4.5 - 0.9	10.5 - 2.0	16.5 - 3.2
46	2°56.5	2°57.0	2°48.5	4.6 - 0.9	10.6 - 2.0	16.6 - 3.2
47	2°56.8	2°57.2	2°48.7	4.7 - 0.9	10.7 - 2.1	16.7 - 3.2
48	2°57.0	2°57.5	2°48.9	4.8 - 0.9	10.8 - 2.1	16.8 - 3.2
49	2°57.3	2°57.7	2°49.2	4.9 - 0.9	10.9 - 2.1	16.9 - 3.2
50	2°57.5	2°58.0	2°49.4	5.0 - 1.0	11.0 - 2.1	17.0 - 3.3
51	2°57.7	2°58.2	2°49.7	5.1 - 1.0	11.1 - 2.1	17.1 - 3.3
52	2°58.0	2°58.5	2°49.9	5.2 - 1.0	11.2 - 2.1	17.2 - 3.3
53	2°58.2	2°58.7	2°50.1	5.3 - 1.0	11.3 - 2.2	17.3 - 3.3
54	2°58.5	2°59.0	2°50.4	5.4 - 1.0	11.4 - 2.2	17.4 - 3.3
55	2°58.7	2°59.2	2°50.6	5.5 - 1.1	11.5 - 2.2	17.5 - 3.4
56	2°59.0	2°59.5	2°50.8	5.6 - 1.1	11.6 - 2.2	17.6 - 3.4
57	2°59.2	2°59.7	2°51.1	5.7 - 1.1	11.7 - 2.2	17.7 - 3.4
58	2°59.5	3°00.0	2°51.3	5.8 - 1.1	11.8 - 2.3	17.8 - 3.4
59	2°59.7	3°00.2	2°51.6	5.9 - 1.1	11.9 - 2.3	17.9 - 3.4

Increments and Corrections

m 12	Sun Plan.	Aries	Moon	v and d corr		
0	3°00.0	3°00.5	2°51.8	0.0 - 0.0	6.0 - 1.3	12.0 - 2.5
1	3°00.3	3°00.7	2°52.0	0.1 - 0.0	6.1 - 1.3	12.1 - 2.5
2	3°00.5	3°01.0	2°52.3	0.2 - 0.0	6.2 - 1.3	12.2 - 2.5
3	3°00.8	3°01.2	2°52.5	0.3 - 0.1	6.3 - 1.3	12.3 - 2.6
4	3°01.0	3°01.5	2°52.8	0.4 - 0.1	6.4 - 1.3	12.4 - 2.6
5	3°01.3	3°01.7	2°53.0	0.5 - 0.1	6.5 - 1.4	12.5 - 2.6
6	3°01.5	3°02.0	2°53.2	0.6 - 0.1	6.6 - 1.4	12.6 - 2.6
7	3°01.8	3°02.2	2°53.5	0.7 - 0.1	6.7 - 1.4	12.7 - 2.6
8	3°02.0	3°02.5	2°53.7	0.8 - 0.2	6.8 - 1.4	12.8 - 2.7
9	3°02.3	3°02.7	2°53.9	0.9 - 0.2	6.9 - 1.4	12.9 - 2.7
10	3°02.5	3°03.0	2°54.2	1.0 - 0.2	7.0 - 1.5	13.0 - 2.7
11	3°02.8	3°03.2	2°54.4	1.1 - 0.2	7.1 - 1.5	13.1 - 2.7
12	3°03.0	3°03.5	2°54.7	1.2 - 0.3	7.2 - 1.5	13.2 - 2.8
13	3°03.3	3°03.8	2°54.9	1.3 - 0.3	7.3 - 1.5	13.3 - 2.8
14	3°03.5	3°04.0	2°55.1	1.4 - 0.3	7.4 - 1.5	13.4 - 2.8
15	3°03.8	3°04.3	2°55.4	1.5 - 0.3	7.5 - 1.6	13.5 - 2.8
16	3°04.0	3°04.5	2°55.6	1.6 - 0.3	7.6 - 1.6	13.6 - 2.8
17	3°04.2	3°04.8	2°55.9	1.7 - 0.4	7.7 - 1.6	13.7 - 2.9
18	3°04.5	3°05.0	2°56.1	1.8 - 0.4	7.8 - 1.6	13.8 - 2.9
19	3°04.7	3°05.3	2°56.3	1.9 - 0.4	7.9 - 1.6	13.9 - 2.9
20	3°05.0	3°05.5	2°56.6	2.0 - 0.4	8.0 - 1.7	14.0 - 2.9
21	3°05.2	3°05.8	2°56.8	2.1 - 0.4	8.1 - 1.7	14.1 - 2.9
22	3°05.5	3°06.0	2°57.0	2.2 - 0.5	8.2 - 1.7	14.2 - 3.0
23	3°05.7	3°06.3	2°57.3	2.3 - 0.5	8.3 - 1.7	14.3 - 3.0
24	3°06.0	3°06.5	2°57.5	2.4 - 0.5	8.4 - 1.8	14.4 - 3.0
25	3°06.2	3°06.8	2°57.8	2.5 - 0.5	8.5 - 1.8	14.5 - 3.0
26	3°06.5	3°07.0	2°58.0	2.6 - 0.5	8.6 - 1.8	14.6 - 3.0
27	3°06.7	3°07.3	2°58.2	2.7 - 0.6	8.7 - 1.8	14.7 - 3.1
28	3°07.0	3°07.5	2°58.5	2.8 - 0.6	8.8 - 1.8	14.8 - 3.1
29	3°07.2	3°07.8	2°58.7	2.9 - 0.6	8.9 - 1.9	14.9 - 3.1
30	3°07.5	3°08.0	2°59.0	3.0 - 0.6	9.0 - 1.9	15.0 - 3.1
31	3°07.8	3°08.3	2°59.2	3.1 - 0.6	9.1 - 1.9	15.1 - 3.1
32	3°08.0	3°08.5	2°59.4	3.2 - 0.7	9.2 - 1.9	15.2 - 3.2
33	3°08.3	3°08.8	2°59.7	3.3 - 0.7	9.3 - 1.9	15.3 - 3.2
34	3°08.5	3°09.0	2°59.9	3.4 - 0.7	9.4 - 2.0	15.4 - 3.2
35	3°08.8	3°09.3	3°00.2	3.5 - 0.7	9.5 - 2.0	15.5 - 3.2
36	3°09.0	3°09.5	3°00.4	3.6 - 0.8	9.6 - 2.0	15.6 - 3.3
37	3°09.3	3°09.8	3°00.6	3.7 - 0.8	9.7 - 2.0	15.7 - 3.3
38	3°09.5	3°10.0	3°00.9	3.8 - 0.8	9.8 - 2.0	15.8 - 3.3
39	3°09.8	3°10.3	3°01.1	3.9 - 0.8	9.9 - 2.1	15.9 - 3.3
40	3°10.0	3°10.5	3°01.3	4.0 - 0.8	10.0 - 2.1	16.0 - 3.3
41	3°10.3	3°10.8	3°01.6	4.1 - 0.9	10.1 - 2.1	16.1 - 3.4
42	3°10.5	3°11.0	3°01.8	4.2 - 0.9	10.2 - 2.1	16.2 - 3.4
43	3°10.8	3°11.3	3°02.1	4.3 - 0.9	10.3 - 2.1	16.3 - 3.4
44	3°11.0	3°11.5	3°02.3	4.4 - 0.9	10.4 - 2.2	16.4 - 3.4
45	3°11.3	3°11.8	3°02.5	4.5 - 0.9	10.5 - 2.2	16.5 - 3.4
46	3°11.5	3°12.0	3°02.8	4.6 - 1.0	10.6 - 2.2	16.6 - 3.5
47	3°11.7	3°12.3	3°03.0	4.7 - 1.0	10.7 - 2.2	16.7 - 3.5
48	3°12.0	3°12.5	3°03.3	4.8 - 1.0	10.8 - 2.3	16.8 - 3.5
49	3°12.2	3°12.8	3°03.5	4.9 - 1.0	10.9 - 2.3	16.9 - 3.5
50	3°12.5	3°13.0	3°03.7	5.0 - 1.0	11.0 - 2.3	17.0 - 3.5
51	3°12.7	3°13.3	3°04.0	5.1 - 1.1	11.1 - 2.3	17.1 - 3.6
52	3°13.0	3°13.5	3°04.2	5.2 - 1.1	11.2 - 2.3	17.2 - 3.6
53	3°13.2	3°13.8	3°04.4	5.3 - 1.1	11.3 - 2.4	17.3 - 3.6
54	3°13.5	3°14.0	3°04.7	5.4 - 1.1	11.4 - 2.4	17.4 - 3.6
55	3°13.7	3°14.3	3°04.9	5.5 - 1.1	11.5 - 2.4	17.5 - 3.6
56	3°14.0	3°14.5	3°05.2	5.6 - 1.2	11.6 - 2.4	17.6 - 3.7
57	3°14.2	3°14.8	3°05.4	5.7 - 1.2	11.7 - 2.4	17.7 - 3.7
58	3°14.5	3°15.0	3°05.6	5.8 - 1.2	11.8 - 2.5	17.8 - 3.7
59	3°14.7	3°15.3	3°05.9	5.9 - 1.2	11.9 - 2.5	17.9 - 3.7

m 13	Sun Plan.	Aries	Moon	v and d corr		
0	3°15.0	3°15.5	3°06.1	0.0 - 0.0	6.0 - 1.4	12.0 - 2.7
1	3°15.3	3°15.8	3°06.4	0.1 - 0.0	6.1 - 1.4	12.1 - 2.7
2	3°15.5	3°16.0	3°06.6	0.2 - 0.0	6.2 - 1.4	12.2 - 2.7
3	3°15.8	3°16.3	3°06.8	0.3 - 0.1	6.3 - 1.4	12.3 - 2.8
4	3°16.0	3°16.5	3°07.1	0.4 - 0.1	6.4 - 1.4	12.4 - 2.8
5	3°16.3	3°16.8	3°07.3	0.5 - 0.1	6.5 - 1.5	12.5 - 2.8
6	3°16.5	3°17.0	3°07.5	0.6 - 0.1	6.6 - 1.5	12.6 - 2.8
7	3°16.8	3°17.3	3°07.8	0.7 - 0.2	6.7 - 1.5	12.7 - 2.9
8	3°17.0	3°17.5	3°08.0	0.8 - 0.2	6.8 - 1.5	12.8 - 2.9
9	3°17.3	3°17.8	3°08.3	0.9 - 0.2	6.9 - 1.6	12.9 - 2.9
10	3°17.5	3°18.0	3°08.5	1.0 - 0.2	7.0 - 1.6	13.0 - 2.9
11	3°17.8	3°18.3	3°08.7	1.1 - 0.2	7.1 - 1.6	13.1 - 2.9
12	3°18.0	3°18.5	3°09.0	1.2 - 0.3	7.2 - 1.6	13.2 - 3.0
13	3°18.3	3°18.8	3°09.2	1.3 - 0.3	7.3 - 1.6	13.3 - 3.0
14	3°18.5	3°19.0	3°09.5	1.4 - 0.3	7.4 - 1.7	13.4 - 3.0
15	3°18.8	3°19.3	3°09.7	1.5 - 0.3	7.5 - 1.7	13.5 - 3.0
16	3°19.0	3°19.5	3°09.9	1.6 - 0.4	7.6 - 1.7	13.6 - 3.1
17	3°19.3	3°19.8	3°10.2	1.7 - 0.4	7.7 - 1.7	13.7 - 3.1
18	3°19.5	3°20.0	3°10.4	1.8 - 0.4	7.8 - 1.8	13.8 - 3.1
19	3°19.7	3°20.3	3°10.7	1.9 - 0.4	7.9 - 1.8	13.9 - 3.1
20	3°20.0	3°20.5	3°10.9	2.0 - 0.5	8.0 - 1.8	14.0 - 3.1
21	3°20.2	3°20.8	3°11.1	2.1 - 0.5	8.1 - 1.8	14.1 - 3.2
22	3°20.5	3°21.0	3°11.4	2.2 - 0.5	8.2 - 1.8	14.2 - 3.2
23	3°20.7	3°21.3	3°11.6	2.3 - 0.5	8.3 - 1.9	14.3 - 3.2
24	3°21.0	3°21.5	3°11.8	2.4 - 0.5	8.4 - 1.9	14.4 - 3.2
25	3°21.2	3°21.8	3°12.1	2.5 - 0.6	8.5 - 1.9	14.5 - 3.3
26	3°21.5	3°22.1	3°12.3	2.6 - 0.6	8.6 - 1.9	14.6 - 3.3
27	3°21.7	3°22.3	3°12.6	2.7 - 0.6	8.7 - 2.0	14.7 - 3.3
28	3°22.0	3°22.6	3°12.8	2.8 - 0.6	8.8 - 2.0	14.8 - 3.3
29	3°22.2	3°22.8	3°13.0	2.9 - 0.7	8.9 - 2.0	14.9 - 3.4
30	3°22.5	3°23.1	3°13.3	3.0 - 0.7	9.0 - 2.0	15.0 - 3.4
31	3°22.8	3°23.3	3°13.5	3.1 - 0.7	9.1 - 2.0	15.1 - 3.4
32	3°23.0	3°23.6	3°13.8	3.2 - 0.7	9.2 - 2.1	15.2 - 3.4
33	3°23.3	3°23.8	3°14.0	3.3 - 0.7	9.3 - 2.1	15.3 - 3.4
34	3°23.5	3°24.1	3°14.2	3.4 - 0.8	9.4 - 2.1	15.4 - 3.5
35	3°23.8	3°24.3	3°14.5	3.5 - 0.8	9.5 - 2.1	15.5 - 3.5
36	3°24.0	3°24.6	3°14.7	3.6 - 0.8	9.6 - 2.2	15.6 - 3.5
37	3°24.3	3°24.8	3°14.9	3.7 - 0.8	9.7 - 2.2	15.7 - 3.5
38	3°24.5	3°25.1	3°15.2	3.8 - 0.9	9.8 - 2.2	15.8 - 3.6
39	3°24.8	3°25.3	3°15.4	3.9 - 0.9	9.9 - 2.2	15.9 - 3.6
40	3°25.0	3°25.6	3°15.7	4.0 - 0.9	10.0 - 2.3	16.0 - 3.6
41	3°25.3	3°25.8	3°15.9	4.1 - 0.9	10.1 - 2.3	16.1 - 3.6
42	3°25.5	3°26.1	3°16.1	4.2 - 0.9	10.2 - 2.3	16.2 - 3.6
43	3°25.8	3°26.3	3°16.4	4.3 - 1.0	10.3 - 2.3	16.3 - 3.7
44	3°26.0	3°26.6	3°16.6	4.4 - 1.0	10.4 - 2.3	16.4 - 3.7
45	3°26.3	3°26.8	3°16.9	4.5 - 1.0	10.5 - 2.4	16.5 - 3.7
46	3°26.5	3°27.1	3°17.1	4.6 - 1.0	10.6 - 2.4	16.6 - 3.7
47	3°26.8	3°27.3	3°17.3	4.7 - 1.1	10.7 - 2.4	16.7 - 3.8
48	3°27.0	3°27.6	3°17.6	4.8 - 1.1	10.8 - 2.4	16.8 - 3.8
49	3°27.2	3°27.8	3°17.8	4.9 - 1.1	10.9 - 2.5	16.9 - 3.8
50	3°27.5	3°28.1	3°18.0	5.0 - 1.1	11.0 - 2.5	17.0 - 3.8
51	3°27.7	3°28.3	3°18.3	5.1 - 1.1	11.1 - 2.5	17.1 - 3.8
52	3°28.0	3°28.6	3°18.5	5.2 - 1.2	11.2 - 2.5	17.2 - 3.9
53	3°28.2	3°28.8	3°18.8	5.3 - 1.2	11.3 - 2.5	17.3 - 3.9
54	3°28.5	3°29.1	3°19.0	5.4 - 1.2	11.4 - 2.6	17.4 - 3.9
55	3°28.7	3°29.3	3°19.2	5.5 - 1.2	11.5 - 2.6	17.5 - 3.9
56	3°29.0	3°29.6	3°19.5	5.6 - 1.3	11.6 - 2.6	17.6 - 4.0
57	3°29.2	3°29.8	3°19.7	5.7 - 1.3	11.7 - 2.6	17.7 - 4.0
58	3°29.5	3°30.1	3°20.0	5.8 - 1.3	11.8 - 2.7	17.8 - 4.0
59	3°29.7	3°30.3	3°20.2	5.9 - 1.3	11.9 - 2.7	17.9 - 4.0

m	Sun Plan.	Aries	Moon	v and d corr		
14						
0	3°30.0	3°30.6	3°20.4	0.0 - 0.0	6.0 - 1.4	12.0 - 2.9
1	3°30.3	3°30.8	3°20.7	0.1 - 0.0	6.1 - 1.5	12.1 - 2.9
2	3°30.5	3°31.1	3°20.9	0.2 - 0.0	6.2 - 1.5	12.2 - 2.9
3	3°30.8	3°31.3	3°21.1	0.3 - 0.1	6.3 - 1.5	12.3 - 3.0
4	3°31.0	3°31.6	3°21.4	0.4 - 0.1	6.4 - 1.5	12.4 - 3.0
5	3°31.3	3°31.8	3°21.6	0.5 - 0.1	6.5 - 1.6	12.5 - 3.0
6	3°31.5	3°32.1	3°21.9	0.6 - 0.1	6.6 - 1.6	12.6 - 3.0
7	3°31.8	3°32.3	3°22.1	0.7 - 0.2	6.7 - 1.6	12.7 - 3.1
8	3°32.0	3°32.6	3°22.3	0.8 - 0.2	6.8 - 1.6	12.8 - 3.1
9	3°32.3	3°32.8	3°22.6	0.9 - 0.2	6.9 - 1.7	12.9 - 3.1
10	3°32.5	3°33.1	3°22.8	1.0 - 0.2	7.0 - 1.7	13.0 - 3.1
11	3°32.8	3°33.3	3°23.1	1.1 - 0.3	7.1 - 1.7	13.1 - 3.2
12	3°33.0	3°33.6	3°23.3	1.2 - 0.3	7.2 - 1.7	13.2 - 3.2
13	3°33.3	3°33.8	3°23.5	1.3 - 0.3	7.3 - 1.8	13.3 - 3.2
14	3°33.5	3°34.1	3°23.8	1.4 - 0.3	7.4 - 1.8	13.4 - 3.2
15	3°33.8	3°34.3	3°24.0	1.5 - 0.4	7.5 - 1.8	13.5 - 3.3
16	3°34.0	3°34.6	3°24.3	1.6 - 0.4	7.6 - 1.8	13.6 - 3.3
17	3°34.3	3°34.8	3°24.5	1.7 - 0.4	7.7 - 1.9	13.7 - 3.3
18	3°34.5	3°35.1	3°24.7	1.8 - 0.4	7.8 - 1.9	13.8 - 3.3
19	3°34.8	3°35.3	3°25.0	1.9 - 0.5	7.9 - 1.9	13.9 - 3.4
20	3°35.0	3°35.6	3°25.2	2.0 - 0.5	8.0 - 1.9	14.0 - 3.4
21	3°35.2	3°35.8	3°25.4	2.1 - 0.5	8.1 - 2.0	14.1 - 3.4
22	3°35.5	3°36.1	3°25.7	2.2 - 0.5	8.2 - 2.0	14.2 - 3.4
23	3°35.7	3°36.3	3°25.9	2.3 - 0.6	8.3 - 2.0	14.3 - 3.5
24	3°36.0	3°36.6	3°26.2	2.4 - 0.6	8.4 - 2.0	14.4 - 3.5
25	3°36.2	3°36.8	3°26.4	2.5 - 0.6	8.5 - 2.1	14.5 - 3.5
26	3°36.5	3°37.1	3°26.6	2.6 - 0.6	8.6 - 2.1	14.6 - 3.5
27	3°36.7	3°37.3	3°26.9	2.7 - 0.7	8.7 - 2.1	14.7 - 3.6
28	3°37.0	3°37.6	3°27.1	2.8 - 0.7	8.8 - 2.1	14.8 - 3.6
29	3°37.2	3°37.8	3°27.4	2.9 - 0.7	8.9 - 2.2	14.9 - 3.6
30	3°37.5	3°38.1	3°27.6	3.0 - 0.7	9.0 - 2.2	15.0 - 3.6
31	3°37.8	3°38.3	3°27.8	3.1 - 0.7	9.1 - 2.2	15.1 - 3.6
32	3°38.0	3°38.6	3°28.1	3.2 - 0.8	9.2 - 2.2	15.2 - 3.7
33	3°38.3	3°38.8	3°28.3	3.3 - 0.8	9.3 - 2.2	15.3 - 3.7
34	3°38.5	3°39.1	3°28.5	3.4 - 0.8	9.4 - 2.3	15.4 - 3.7
35	3°38.8	3°39.3	3°28.8	3.5 - 0.8	9.5 - 2.3	15.5 - 3.7
36	3°39.0	3°39.6	3°29.0	3.6 - 0.9	9.6 - 2.3	15.6 - 3.8
37	3°39.3	3°39.8	3°29.3	3.7 - 0.9	9.7 - 2.3	15.7 - 3.8
38	3°39.5	3°40.1	3°29.5	3.8 - 0.9	9.8 - 2.4	15.8 - 3.8
39	3°39.8	3°40.4	3°29.7	3.9 - 0.9	9.9 - 2.4	15.9 - 3.8
40	3°40.0	3°40.6	3°30.0	4.0 - 1.0	10.0 - 2.4	16.0 - 3.9
41	3°40.3	3°40.9	3°30.2	4.1 - 1.0	10.1 - 2.4	16.1 - 3.9
42	3°40.5	3°41.1	3°30.5	4.2 - 1.0	10.2 - 2.5	16.2 - 3.9
43	3°40.8	3°41.4	3°30.7	4.3 - 1.0	10.3 - 2.5	16.3 - 3.9
44	3°41.0	3°41.6	3°30.9	4.4 - 1.1	10.4 - 2.5	16.4 - 4.0
45	3°41.3	3°41.9	3°31.2	4.5 - 1.1	10.5 - 2.5	16.5 - 4.0
46	3°41.5	3°42.1	3°31.4	4.6 - 1.1	10.6 - 2.6	16.6 - 4.0
47	3°41.8	3°42.4	3°31.6	4.7 - 1.1	10.7 - 2.6	16.7 - 4.0
48	3°42.0	3°42.6	3°31.9	4.8 - 1.2	10.8 - 2.6	16.8 - 4.1
49	3°42.3	3°42.9	3°32.1	4.9 - 1.2	10.9 - 2.6	16.9 - 4.1
50	3°42.5	3°43.1	3°32.4	5.0 - 1.2	11.0 - 2.7	17.0 - 4.1
51	3°42.7	3°43.4	3°32.6	5.1 - 1.2	11.1 - 2.7	17.1 - 4.1
52	3°43.0	3°43.6	3°32.8	5.2 - 1.3	11.2 - 2.7	17.2 - 4.2
53	3°43.2	3°43.9	3°33.1	5.3 - 1.3	11.3 - 2.7	17.3 - 4.2
54	3°43.5	3°44.1	3°33.3	5.4 - 1.3	11.4 - 2.8	17.4 - 4.2
55	3°43.7	3°44.4	3°33.6	5.5 - 1.3	11.5 - 2.8	17.5 - 4.2
56	3°44.0	3°44.6	3°33.8	5.6 - 1.4	11.6 - 2.8	17.6 - 4.3
57	3°44.2	3°44.9	3°34.0	5.7 - 1.4	11.7 - 2.8	17.7 - 4.3
58	3°44.5	3°45.1	3°34.3	5.8 - 1.4	11.8 - 2.9	17.8 - 4.3
59	3°44.7	3°45.4	3°34.5	5.9 - 1.4	11.9 - 2.9	17.9 - 4.3

Increments and Corrections

m	Sun	Aries	Moon	v and d corr			m	Sun	Aries	Moon	v and d corr			m	Sun	Aries	Moon	v and d corr		
15	Plan.						16	Plan.						17	Plan.					
0	3°45.0	3°45.6	3°34.8	0.0 - 0.0	6.0 - 1.6	12.0 - 3.1	0	4°00.0	4°00.7	3°49.1	0.0 - 0.0	6.0 - 1.7	12.0 - 3.3	0	4°15.0	4°15.7	4°03.4	0.0 - 0.0	6.0 - 1.8	12.0 - 3.5
1	3°45.2	3°45.9	3°35.0	0.1 - 0.0	6.1 - 1.6	12.1 - 3.1	1	4°00.2	4°00.9	3°49.3	0.1 - 0.0	6.1 - 1.7	12.1 - 3.3	1	4°15.2	4°15.9	4°03.6	0.1 - 0.0	6.1 - 1.8	12.1 - 3.5
2	3°45.5	3°46.1	3°35.2	0.2 - 0.1	6.2 - 1.6	12.2 - 3.2	2	4°00.5	4°01.2	3°49.5	0.2 - 0.1	6.2 - 1.7	12.2 - 3.4	2	4°15.5	4°16.2	4°03.9	0.2 - 0.1	6.2 - 1.8	12.2 - 3.6
3	3°45.8	3°46.4	3°35.5	0.3 - 0.1	6.3 - 1.6	12.3 - 3.2	3	4°00.8	4°01.4	3°49.8	0.3 - 0.1	6.3 - 1.7	12.3 - 3.4	3	4°15.8	4°16.4	4°04.1	0.3 - 0.1	6.3 - 1.8	12.3 - 3.6
4	3°46.0	3°46.6	3°35.7	0.4 - 0.1	6.4 - 1.7	12.4 - 3.2	4	4°01.0	4°01.7	3°50.0	0.4 - 0.1	6.4 - 1.8	12.4 - 3.4	4	4°16.0	4°16.7	4°04.3	0.4 - 0.1	6.4 - 1.9	12.4 - 3.6
5	3°46.2	3°46.9	3°35.9	0.5 - 0.1	6.5 - 1.7	12.5 - 3.2	5	4°01.2	4°01.9	3°50.3	0.5 - 0.1	6.5 - 1.8	12.5 - 3.4	5	4°16.2	4°17.0	4°04.6	0.5 - 0.1	6.5 - 1.9	12.5 - 3.6
6	3°46.5	3°47.1	3°36.2	0.6 - 0.2	6.6 - 1.7	12.6 - 3.3	6	4°01.5	4°02.2	3°50.5	0.6 - 0.2	6.6 - 1.8	12.6 - 3.5	6	4°16.5	4°17.2	4°04.8	0.6 - 0.2	6.6 - 1.9	12.6 - 3.7
7	3°46.8	3°47.4	3°36.4	0.7 - 0.2	6.7 - 1.7	12.7 - 3.3	7	4°01.8	4°02.4	3°50.7	0.7 - 0.2	6.7 - 1.8	12.7 - 3.5	7	4°16.8	4°17.5	4°05.1	0.7 - 0.2	6.7 - 2.0	12.7 - 3.7
8	3°47.0	3°47.6	3°36.7	0.8 - 0.2	6.8 - 1.8	12.8 - 3.3	8	4°02.0	4°02.7	3°51.0	0.8 - 0.2	6.8 - 1.9	12.8 - 3.5	8	4°17.0	4°17.7	4°05.3	0.8 - 0.2	6.8 - 2.0	12.8 - 3.7
9	3°47.3	3°47.9	3°36.9	0.9 - 0.2	6.9 - 1.8	12.9 - 3.3	9	4°02.2	4°02.9	3°51.2	0.9 - 0.2	6.9 - 1.9	12.9 - 3.5	9	4°17.2	4°18.0	4°05.5	0.9 - 0.3	6.9 - 2.0	12.9 - 3.8
10	3°47.5	3°48.1	3°37.1	1.0 - 0.3	7.0 - 1.8	13.0 - 3.4	10	4°02.5	4°03.2	3°51.5	1.0 - 0.3	7.0 - 1.9	13.0 - 3.6	10	4°17.5	4°18.2	4°05.8	1.0 - 0.3	7.0 - 2.0	13.0 - 3.8
11	3°47.7	3°48.4	3°37.4	1.1 - 0.3	7.1 - 1.8	13.1 - 3.4	11	4°02.8	4°03.4	3°51.7	1.1 - 0.3	7.1 - 2.0	13.1 - 3.6	11	4°17.8	4°18.5	4°06.0	1.1 - 0.3	7.1 - 2.1	13.1 - 3.8
12	3°48.0	3°48.6	3°37.6	1.2 - 0.3	7.2 - 1.9	13.2 - 3.4	12	4°03.0	4°03.7	3°51.9	1.2 - 0.3	7.2 - 2.0	13.2 - 3.6	12	4°18.0	4°18.7	4°06.2	1.2 - 0.4	7.2 - 2.1	13.2 - 3.9
13	3°48.3	3°48.9	3°37.9	1.3 - 0.3	7.3 - 1.9	13.3 - 3.4	13	4°03.2	4°03.9	3°52.2	1.3 - 0.4	7.3 - 2.0	13.3 - 3.7	13	4°18.2	4°19.0	4°06.5	1.3 - 0.4	7.3 - 2.1	13.3 - 3.9
14	3°48.5	3°49.1	3°38.1	1.4 - 0.4	7.4 - 1.9	13.4 - 3.5	14	4°03.5	4°04.2	3°52.4	1.4 - 0.4	7.4 - 2.0	13.4 - 3.7	14	4°18.5	4°19.2	4°06.7	1.4 - 0.4	7.4 - 2.2	13.4 - 3.9
15	3°48.8	3°49.4	3°38.3	1.5 - 0.4	7.5 - 1.9	13.5 - 3.5	15	4°03.8	4°04.4	3°52.6	1.5 - 0.4	7.5 - 2.1	13.5 - 3.7	15	4°18.8	4°19.5	4°07.0	1.5 - 0.4	7.5 - 2.2	13.5 - 3.9
16	3°49.0	3°49.6	3°38.6	1.6 - 0.4	7.6 - 2.0	13.6 - 3.5	16	4°04.0	4°04.7	3°52.9	1.6 - 0.4	7.6 - 2.1	13.6 - 3.7	16	4°19.0	4°19.7	4°07.2	1.6 - 0.5	7.6 - 2.2	13.6 - 4.0
17	3°49.3	3°49.9	3°38.8	1.7 - 0.4	7.7 - 2.0	13.7 - 3.5	17	4°04.3	4°04.9	3°53.1	1.7 - 0.5	7.7 - 2.1	13.7 - 3.8	17	4°19.3	4°20.0	4°07.4	1.7 - 0.5	7.7 - 2.2	13.7 - 4.0
18	3°49.5	3°50.1	3°39.0	1.8 - 0.5	7.8 - 2.0	13.8 - 3.6	18	4°04.5	4°05.2	3°53.4	1.8 - 0.5	7.8 - 2.1	13.8 - 3.8	18	4°19.5	4°20.2	4°07.7	1.8 - 0.5	7.8 - 2.3	13.8 - 4.0
19	3°49.8	3°50.4	3°39.3	1.9 - 0.5	7.9 - 2.0	13.9 - 3.6	19	4°04.7	4°05.4	3°53.6	1.9 - 0.5	7.9 - 2.2	13.9 - 3.8	19	4°19.7	4°20.5	4°07.9	1.9 - 0.6	7.9 - 2.3	13.9 - 4.1
20	3°50.0	3°50.6	3°39.5	2.0 - 0.5	8.0 - 2.1	14.0 - 3.6	20	4°05.0	4°05.7	3°53.8	2.0 - 0.6	8.0 - 2.2	14.0 - 3.9	20	4°20.0	4°20.7	4°08.2	2.0 - 0.6	8.0 - 2.3	14.0 - 4.1
21	3°50.2	3°50.9	3°39.8	2.1 - 0.5	8.1 - 2.1	14.1 - 3.6	21	4°05.3	4°05.9	3°54.1	2.1 - 0.6	8.1 - 2.2	14.1 - 3.9	21	4°20.3	4°21.0	4°08.4	2.1 - 0.6	8.1 - 2.4	14.1 - 4.1
22	3°50.5	3°51.1	3°40.0	2.2 - 0.6	8.2 - 2.1	14.2 - 3.7	22	4°05.5	4°06.2	3°54.3	2.2 - 0.6	8.2 - 2.3	14.2 - 3.9	22	4°20.5	4°21.2	4°08.6	2.2 - 0.6	8.2 - 2.4	14.2 - 4.1
23	3°50.7	3°51.4	3°40.2	2.3 - 0.6	8.3 - 2.1	14.3 - 3.7	23	4°05.7	4°06.4	3°54.6	2.3 - 0.6	8.3 - 2.3	14.3 - 3.9	23	4°20.7	4°21.5	4°08.9	2.3 - 0.7	8.3 - 2.4	14.3 - 4.2
24	3°51.0	3°51.6	3°40.5	2.4 - 0.6	8.4 - 2.2	14.4 - 3.7	24	4°06.0	4°06.7	3°54.8	2.4 - 0.7	8.4 - 2.3	14.4 - 4.0	24	4°21.0	4°21.7	4°09.1	2.4 - 0.7	8.4 - 2.5	14.4 - 4.2
25	3°51.2	3°51.9	3°40.7	2.5 - 0.6	8.5 - 2.2	14.5 - 3.7	25	4°06.3	4°06.9	3°55.0	2.5 - 0.7	8.5 - 2.3	14.5 - 4.0	25	4°21.3	4°22.0	4°09.3	2.5 - 0.7	8.5 - 2.5	14.5 - 4.2
26	3°51.5	3°52.1	3°41.0	2.6 - 0.7	8.6 - 2.2	14.6 - 3.8	26	4°06.5	4°07.2	3°55.3	2.6 - 0.7	8.6 - 2.4	14.6 - 4.0	26	4°21.5	4°22.2	4°09.6	2.6 - 0.8	8.6 - 2.5	14.6 - 4.3
27	3°51.8	3°52.4	3°41.2	2.7 - 0.7	8.7 - 2.2	14.7 - 3.8	27	4°06.7	4°07.4	3°55.5	2.7 - 0.7	8.7 - 2.4	14.7 - 4.0	27	4°21.7	4°22.5	4°09.8	2.7 - 0.8	8.7 - 2.5	14.7 - 4.3
28	3°52.0	3°52.6	3°41.4	2.8 - 0.7	8.8 - 2.3	14.8 - 3.8	28	4°07.0	4°07.7	3°55.7	2.8 - 0.8	8.8 - 2.4	14.8 - 4.1	28	4°22.0	4°22.7	4°10.1	2.8 - 0.8	8.8 - 2.6	14.8 - 4.3
29	3°52.2	3°52.9	3°41.7	2.9 - 0.7	8.9 - 2.3	14.9 - 3.8	29	4°07.3	4°07.9	3°56.0	2.9 - 0.8	8.9 - 2.4	14.9 - 4.1	29	4°22.3	4°23.0	4°10.3	2.9 - 0.8	8.9 - 2.6	14.9 - 4.3
30	3°52.5	3°53.1	3°41.9	3.0 - 0.8	9.0 - 2.3	15.0 - 3.9	30	4°07.5	4°08.2	3°56.2	3.0 - 0.8	9.0 - 2.5	15.0 - 4.1	30	4°22.5	4°23.2	4°10.5	3.0 - 0.9	9.0 - 2.6	15.0 - 4.4
31	3°52.8	3°53.4	3°42.1	3.1 - 0.8	9.1 - 2.4	15.1 - 3.9	31	4°07.7	4°08.4	3°56.5	3.1 - 0.9	9.1 - 2.5	15.1 - 4.2	31	4°22.7	4°23.5	4°10.8	3.1 - 0.9	9.1 - 2.7	15.1 - 4.4
32	3°53.0	3°53.6	3°42.4	3.2 - 0.8	9.2 - 2.4	15.2 - 3.9	32	4°08.0	4°08.7	3°56.7	3.2 - 0.9	9.2 - 2.5	15.2 - 4.2	32	4°23.0	4°23.7	4°11.0	3.2 - 0.9	9.2 - 2.7	15.2 - 4.4
33	3°53.2	3°53.9	3°42.6	3.3 - 0.9	9.3 - 2.4	15.3 - 4.0	33	4°08.3	4°08.9	3°56.9	3.3 - 0.9	9.3 - 2.6	15.3 - 4.2	33	4°23.3	4°24.0	4°11.3	3.3 - 1.0	9.3 - 2.7	15.3 - 4.5
34	3°53.5	3°54.1	3°42.9	3.4 - 0.9	9.4 - 2.4	15.4 - 4.0	34	4°08.5	4°09.2	3°57.2	3.4 - 0.9	9.4 - 2.6	15.4 - 4.2	34	4°23.5	4°24.2	4°11.5	3.4 - 1.0	9.4 - 2.7	15.4 - 4.5
35	3°53.8	3°54.4	3°43.1	3.5 - 0.9	9.5 - 2.5	15.5 - 4.0	35	4°08.7	4°09.4	3°57.4	3.5 - 1.0	9.5 - 2.6	15.5 - 4.3	35	4°23.7	4°24.5	4°11.7	3.5 - 1.0	9.5 - 2.8	15.5 - 4.5
36	3°54.0	3°54.6	3°43.3	3.6 - 0.9	9.6 - 2.5	15.6 - 4.0	36	4°09.0	4°09.7	3°57.7	3.6 - 1.0	9.6 - 2.6	15.6 - 4.3	36	4°24.0	4°24.7	4°12.0	3.6 - 1.1	9.6 - 2.8	15.6 - 4.5
37	3°54.3	3°54.9	3°43.6	3.7 - 1.0	9.7 - 2.5	15.7 - 4.1	37	4°09.3	4°09.9	3°57.9	3.7 - 1.0	9.7 - 2.7	15.7 - 4.3	37	4°24.3	4°25.0	4°12.2	3.7 - 1.1	9.7 - 2.8	15.7 - 4.6
38	3°54.5	3°55.1	3°43.8	3.8 - 1.0	9.8 - 2.5	15.8 - 4.1	38	4°09.5	4°10.2	3°58.1	3.8 - 1.0	9.8 - 2.7	15.8 - 4.3	38	4°24.5	4°25.2	4°12.5	3.8 - 1.1	9.8 - 2.9	15.8 - 4.6
39	3°54.8	3°55.4	3°44.1	3.9 - 1.0	9.9 - 2.6	15.9 - 4.1	39	4°09.7	4°10.4	3°58.4	3.9 - 1.1	9.9 - 2.7	15.9 - 4.4	39	4°24.7	4°25.5	4°12.7	3.9 - 1.1	9.9 - 2.9	15.9 - 4.6
40	3°55.0	3°55.6	3°44.3	4.0 - 1.0	10.0 - 2.6	16.0 - 4.1	40	4°10.0	4°10.7	3°58.6	4.0 - 1.1	10.0 - 2.8	16.0 - 4.4	40	4°25.0	4°25.7	4°12.9	4.0 - 1.2	10.0 - 2.9	16.0 - 4.7
41	3°55.3	3°55.9	3°44.5	4.1 - 1.1	10.1 - 2.6	16.1 - 4.2	41	4°10.3	4°10.9	3°58.8	4.1 - 1.1	10.1 - 2.8	16.1 - 4.4	41	4°25.3	4°26.0	4°13.2	4.1 - 1.2	10.1 - 2.9	16.1 - 4.7
42	3°55.5	3°56.1	3°44.8	4.2 - 1.1	10.2 - 2.6	16.2 - 4.2	42	4°10.5	4°11.2	3°59.1	4.2 - 1.2	10.2 - 2.8	16.2 - 4.5	42	4°25.5	4°26.2	4°13.4	4.2 - 1.2	10.2 - 3.0	16.2 - 4.7
43	3°55.7	3°56.4	3°45.0	4.3 - 1.1	10.3 - 2.7	16.3 - 4.2	43	4°10.7	4°11.4	3°59.3	4.3 - 1.2	10.3 - 2.8	16.3 - 4.5	43	4°25.7	4°26.5	4°13.6	4.3 - 1.3	10.3 - 3.0	16.3 - 4.8
44	3°56.0	3°56.6	3°45.2	4.4 - 1.1	10.4 - 2.7	16.4 - 4.2	44	4°11.0	4°11.7	3°59.6	4.4 - 1.2	10.4 - 2.9	16.4 - 4.5	44	4°26.0	4°26.7	4°13.9	4.4 - 1.3	10.4 - 3.0	16.4 - 4.8
45	3°56.3	3°56.9	3°45.5	4.5 - 1.2	10.5 - 2.7	16.5 - 4.3	45	4°11.3	4°11.9	3°59.8	4.5 - 1.2	10.5 - 2.9	16.5 - 4.5	45	4°26.3	4°27.0	4°14.1	4.5 - 1.3	10.5 - 3.1	16.5 - 4.8
46	3°56.5	3°57.1	3°45.7	4.6 - 1.2	10.6 - 2.7	16.6 - 4.3	46	4°11.5	4°12.2	4°00.0	4.6 - 1.3	10.6 - 2.9	16.6 - 4.6	46	4°26.5	4°27.2	4°14.4	4.6 - 1.3	10.6 - 3.1	16.6 - 4.8
47	3°56.8	3°57.4	3°46.0	4.7 - 1.2	10.7 - 2.8	16.7 - 4.3	47	4°11.8	4°12.4	4°00.3	4.7 - 1.3	10.7 - 2.9	16.7 - 4.6	47	4°26.8	4°27.5	4°14.6	4.7 - 1.4	10.7 - 3.1	16.7 - 4.9
48	3°57.0	3°57.6	3°46.2	4.8 - 1.2	10.8 - 2.8	16.8 - 4.3	48	4°12.0	4°12.7	4°00.5	4.8 - 1.3	10.8 - 3.0	16.8 - 4.6	48	4°27.0	4°27.7	4°14.8	4.8 - 1.4	10.8 - 3.2	16.8 - 4.9
49	3°57.3	3°57																		

Increments and Corrections

m 18	Sun Plan.	Aries	Moon	v and d corr			m 19	Sun Plan.	Aries	Moon	v and d corr			m 20	Sun Plan.	Aries	Moon	v and d corr		
0	4°30.0	4°30.7	4°17.7	0.0 - 0.0	6.0 - 1.9	12.0 - 3.7	0	4°45.0	4°45.8	4°32.0	0.0 - 0.0	6.0 - 2.0	12.0 - 3.9	0	5°00.0	5°00.8	4°46.3	0.0 - 0.0	6.0 - 2.0	12.0 - 4.1
1	4°30.2	4°31.0	4°17.9	0.1 - 0.0	6.1 - 1.9	12.1 - 3.7	1	4°45.2	4°46.0	4°32.3	0.1 - 0.0	6.1 - 2.0	12.1 - 3.9	1	5°00.2	5°01.1	4°46.6	0.1 - 0.0	6.1 - 2.1	12.1 - 4.1
2	4°30.5	4°31.2	4°18.2	0.2 - 0.1	6.2 - 1.9	12.2 - 3.8	2	4°45.5	4°46.3	4°32.5	0.2 - 0.1	6.2 - 2.0	12.2 - 4.0	2	5°00.5	5°01.3	4°46.8	0.2 - 0.1	6.2 - 2.1	12.2 - 4.2
3	4°30.8	4°31.5	4°18.4	0.3 - 0.1	6.3 - 1.9	12.3 - 3.8	3	4°45.8	4°46.5	4°32.7	0.3 - 0.1	6.3 - 2.0	12.3 - 4.0	3	5°00.8	5°01.6	4°47.0	0.3 - 0.1	6.3 - 2.2	12.3 - 4.2
4	4°31.0	4°31.7	4°18.7	0.4 - 0.1	6.4 - 2.0	12.4 - 3.8	4	4°46.0	4°46.8	4°33.0	0.4 - 0.1	6.4 - 2.1	12.4 - 4.0	4	5°01.0	5°01.8	4°47.3	0.4 - 0.1	6.4 - 2.2	12.4 - 4.2
5	4°31.2	4°32.0	4°18.9	0.5 - 0.2	6.5 - 2.0	12.5 - 3.9	5	4°46.2	4°47.0	4°33.2	0.5 - 0.2	6.5 - 2.1	12.5 - 4.1	5	5°01.2	5°02.1	4°47.5	0.5 - 0.2	6.5 - 2.2	12.5 - 4.3
6	4°31.5	4°32.2	4°19.1	0.6 - 0.2	6.6 - 2.0	12.6 - 3.9	6	4°46.5	4°47.3	4°33.4	0.6 - 0.2	6.6 - 2.1	12.6 - 4.1	6	5°01.5	5°02.3	4°47.8	0.6 - 0.2	6.6 - 2.3	12.6 - 4.3
7	4°31.8	4°32.5	4°19.4	0.7 - 0.2	6.7 - 2.1	12.7 - 3.9	7	4°46.8	4°47.5	4°33.7	0.7 - 0.2	6.7 - 2.2	12.7 - 4.1	7	5°01.8	5°02.6	4°48.0	0.7 - 0.2	6.7 - 2.3	12.7 - 4.3
8	4°32.0	4°32.7	4°19.6	0.8 - 0.2	6.8 - 2.1	12.8 - 3.9	8	4°47.0	4°47.8	4°33.9	0.8 - 0.3	6.8 - 2.2	12.8 - 4.2	8	5°02.0	5°02.8	4°48.2	0.8 - 0.3	6.8 - 2.3	12.8 - 4.4
9	4°32.2	4°33.0	4°19.8	0.9 - 0.3	6.9 - 2.1	12.9 - 4.0	9	4°47.2	4°48.0	4°34.2	0.9 - 0.3	6.9 - 2.2	12.9 - 4.2	9	5°02.2	5°03.1	4°48.5	0.9 - 0.3	6.9 - 2.4	12.9 - 4.4
10	4°32.5	4°33.2	4°20.1	1.0 - 0.3	7.0 - 2.2	13.0 - 4.0	10	4°47.5	4°48.3	4°34.4	1.0 - 0.3	7.0 - 2.3	13.0 - 4.2	10	5°02.5	5°03.3	4°48.7	1.0 - 0.3	7.0 - 2.4	13.0 - 4.4
11	4°32.8	4°33.5	4°20.3	1.1 - 0.3	7.1 - 2.2	13.1 - 4.0	11	4°47.8	4°48.5	4°34.6	1.1 - 0.4	7.1 - 2.3	13.1 - 4.3	11	5°02.8	5°03.6	4°49.0	1.1 - 0.4	7.1 - 2.4	13.1 - 4.5
12	4°33.0	4°33.7	4°20.6	1.2 - 0.4	7.2 - 2.2	13.2 - 4.1	12	4°48.0	4°48.8	4°34.9	1.2 - 0.4	7.2 - 2.3	13.2 - 4.3	12	5°03.0	5°03.8	4°49.2	1.2 - 0.4	7.2 - 2.5	13.2 - 4.5
13	4°33.2	4°34.0	4°20.8	1.3 - 0.4	7.3 - 2.3	13.3 - 4.1	13	4°48.2	4°49.0	4°35.1	1.3 - 0.4	7.3 - 2.4	13.3 - 4.3	13	5°03.2	5°04.1	4°49.4	1.3 - 0.4	7.3 - 2.5	13.3 - 4.5
14	4°33.5	4°34.2	4°21.0	1.4 - 0.4	7.4 - 2.3	13.4 - 4.1	14	4°48.5	4°49.3	4°35.4	1.4 - 0.5	7.4 - 2.4	13.4 - 4.4	14	5°03.5	5°04.3	4°49.7	1.4 - 0.5	7.4 - 2.5	13.4 - 4.6
15	4°33.8	4°34.5	4°21.3	1.5 - 0.5	7.5 - 2.3	13.5 - 4.2	15	4°48.8	4°49.5	4°35.6	1.5 - 0.5	7.5 - 2.4	13.5 - 4.4	15	5°03.8	5°04.6	4°49.9	1.5 - 0.5	7.5 - 2.6	13.5 - 4.6
16	4°34.0	4°34.7	4°21.5	1.6 - 0.5	7.6 - 2.3	13.6 - 4.2	16	4°49.0	4°49.8	4°35.8	1.6 - 0.5	7.6 - 2.5	13.6 - 4.4	16	5°04.0	5°04.8	4°50.2	1.6 - 0.5	7.6 - 2.6	13.6 - 4.6
17	4°34.3	4°35.0	4°21.8	1.7 - 0.5	7.7 - 2.4	13.7 - 4.2	17	4°49.3	4°50.0	4°36.1	1.7 - 0.6	7.7 - 2.5	13.7 - 4.5	17	5°04.3	5°05.1	4°50.4	1.7 - 0.6	7.7 - 2.6	13.7 - 4.7
18	4°34.5	4°35.3	4°22.0	1.8 - 0.6	7.8 - 2.4	13.8 - 4.3	18	4°49.5	4°50.3	4°36.3	1.8 - 0.6	7.8 - 2.5	13.8 - 4.5	18	5°04.5	5°05.3	4°50.6	1.8 - 0.6	7.8 - 2.7	13.8 - 4.7
19	4°34.8	4°35.5	4°22.2	1.9 - 0.6	7.9 - 2.4	13.9 - 4.3	19	4°49.8	4°50.5	4°36.6	1.9 - 0.6	7.9 - 2.6	13.9 - 4.5	19	5°04.7	5°05.6	4°50.9	1.9 - 0.6	7.9 - 2.7	13.9 - 4.7
20	4°35.0	4°35.8	4°22.5	2.0 - 0.6	8.0 - 2.5	14.0 - 4.3	20	4°50.0	4°50.8	4°36.8	2.0 - 0.7	8.0 - 2.6	14.0 - 4.5	20	5°05.0	5°05.8	4°51.1	2.0 - 0.7	8.0 - 2.7	14.0 - 4.8
21	4°35.3	4°36.0	4°22.7	2.1 - 0.6	8.1 - 2.5	14.1 - 4.3	21	4°50.3	4°51.0	4°37.0	2.1 - 0.7	8.1 - 2.6	14.1 - 4.6	21	5°05.3	5°06.1	4°51.3	2.1 - 0.7	8.1 - 2.8	14.1 - 4.8
22	4°35.5	4°36.3	4°22.9	2.2 - 0.7	8.2 - 2.5	14.2 - 4.4	22	4°50.5	4°51.3	4°37.3	2.2 - 0.7	8.2 - 2.7	14.2 - 4.6	22	5°05.5	5°06.3	4°51.6	2.2 - 0.8	8.2 - 2.8	14.2 - 4.9
23	4°35.7	4°36.5	4°23.2	2.3 - 0.7	8.3 - 2.6	14.3 - 4.4	23	4°50.7	4°51.5	4°37.5	2.3 - 0.7	8.3 - 2.7	14.3 - 4.6	23	5°05.7	5°06.6	4°51.8	2.3 - 0.8	8.3 - 2.8	14.3 - 4.9
24	4°36.0	4°36.8	4°23.4	2.4 - 0.7	8.4 - 2.6	14.4 - 4.4	24	4°51.0	4°51.8	4°37.7	2.4 - 0.8	8.4 - 2.7	14.4 - 4.7	24	5°06.0	5°06.8	4°52.1	2.4 - 0.8	8.4 - 2.9	14.4 - 4.9
25	4°36.3	4°37.0	4°23.7	2.5 - 0.8	8.5 - 2.6	14.5 - 4.5	25	4°51.3	4°52.0	4°38.0	2.5 - 0.8	8.5 - 2.8	14.5 - 4.7	25	5°06.3	5°07.1	4°52.3	2.5 - 0.9	8.5 - 2.9	14.5 - 5.0
26	4°36.5	4°37.3	4°23.9	2.6 - 0.8	8.6 - 2.7	14.6 - 4.5	26	4°51.5	4°52.3	4°38.2	2.6 - 0.8	8.6 - 2.8	14.6 - 4.7	26	5°06.5	5°07.3	4°52.5	2.6 - 0.9	8.6 - 2.9	14.6 - 5.0
27	4°36.7	4°37.5	4°24.1	2.7 - 0.8	8.7 - 2.7	14.7 - 4.5	27	4°51.7	4°52.5	4°38.5	2.7 - 0.9	8.7 - 2.8	14.7 - 4.8	27	5°06.7	5°07.6	4°52.8	2.7 - 0.9	8.7 - 3.0	14.7 - 5.0
28	4°37.0	4°37.8	4°24.4	2.8 - 0.9	8.8 - 2.7	14.8 - 4.6	28	4°52.0	4°52.8	4°38.7	2.8 - 0.9	8.8 - 2.9	14.8 - 4.8	28	5°07.0	5°07.8	4°53.0	2.8 - 1.0	8.8 - 3.0	14.8 - 5.1
29	4°37.3	4°38.0	4°24.6	2.9 - 0.9	8.9 - 2.7	14.9 - 4.6	29	4°52.3	4°53.0	4°38.9	2.9 - 0.9	8.9 - 2.9	14.9 - 4.8	29	5°07.3	5°08.1	4°53.3	2.9 - 1.0	8.9 - 3.0	14.9 - 5.1
30	4°37.5	4°38.3	4°24.9	3.0 - 0.9	9.0 - 2.8	15.0 - 4.6	30	4°52.5	4°53.3	4°39.2	3.0 - 1.0	9.0 - 2.9	15.0 - 4.9	30	5°07.5	5°08.3	4°53.5	3.0 - 1.0	9.0 - 3.1	15.0 - 5.1
31	4°37.7	4°38.5	4°25.1	3.1 - 1.0	9.1 - 2.8	15.1 - 4.7	31	4°52.7	4°53.6	4°39.4	3.1 - 1.0	9.1 - 3.0	15.1 - 4.9	31	5°07.7	5°08.6	4°53.7	3.1 - 1.1	9.1 - 3.1	15.1 - 5.2
32	4°38.0	4°38.8	4°25.3	3.2 - 1.0	9.2 - 2.8	15.2 - 4.7	32	4°53.0	4°53.8	4°39.7	3.2 - 1.0	9.2 - 3.0	15.2 - 4.9	32	5°08.0	5°08.8	4°54.0	3.2 - 1.1	9.2 - 3.1	15.2 - 5.2
33	4°38.3	4°39.0	4°25.6	3.3 - 1.0	9.3 - 2.9	15.3 - 4.7	33	4°53.3	4°54.1	4°39.9	3.3 - 1.1	9.3 - 3.0	15.3 - 5.0	33	5°08.3	5°09.1	4°54.2	3.3 - 1.1	9.3 - 3.2	15.3 - 5.2
34	4°38.5	4°39.3	4°25.8	3.4 - 1.0	9.4 - 2.9	15.4 - 4.7	34	4°53.5	4°54.3	4°40.1	3.4 - 1.1	9.4 - 3.1	15.4 - 5.0	34	5°08.5	5°09.3	4°54.4	3.4 - 1.2	9.4 - 3.2	15.4 - 5.3
35	4°38.7	4°39.5	4°26.1	3.5 - 1.1	9.5 - 2.9	15.5 - 4.8	35	4°53.7	4°54.6	4°40.4	3.5 - 1.1	9.5 - 3.1	15.5 - 5.0	35	5°08.7	5°09.6	4°54.7	3.5 - 1.2	9.5 - 3.2	15.5 - 5.3
36	4°39.0	4°39.8	4°26.3	3.6 - 1.1	9.6 - 3.0	15.6 - 4.8	36	4°54.0	4°54.8	4°40.6	3.6 - 1.2	9.6 - 3.1	15.6 - 5.1	36	5°09.0	5°09.8	4°54.9	3.6 - 1.2	9.6 - 3.3	15.6 - 5.3
37	4°39.3	4°40.0	4°26.5	3.7 - 1.1	9.7 - 3.0	15.7 - 4.8	37	4°54.3	4°55.1	4°40.8	3.7 - 1.2	9.7 - 3.2	15.7 - 5.1	37	5°09.3	5°10.1	4°55.2	3.7 - 1.3	9.7 - 3.3	15.7 - 5.4
38	4°39.5	4°40.3	4°26.8	3.8 - 1.2	9.8 - 3.0	15.8 - 4.9	38	4°54.5	4°55.3	4°41.1	3.8 - 1.2	9.8 - 3.2	15.8 - 5.1	38	5°09.5	5°10.3	4°55.4	3.8 - 1.3	9.8 - 3.3	15.8 - 5.4
39	4°39.7	4°40.5	4°27.0	3.9 - 1.2	9.9 - 3.1	15.9 - 4.9	39	4°54.7	4°55.6	4°41.3	3.9 - 1.3	9.9 - 3.2	15.9 - 5.2	39	5°09.7	5°10.6	4°55.6	3.9 - 1.3	9.9 - 3.4	15.9 - 5.4
40	4°40.0	4°40.8	4°27.2	4.0 - 1.2	10.0 - 3.1	16.0 - 4.9	40	4°55.0	4°55.8	4°41.6	4.0 - 1.3	10.0 - 3.3	16.0 - 5.2	40	5°10.0	5°10.8	4°55.9	4.0 - 1.4	10.0 - 3.4	16.0 - 5.5
41	4°40.3	4°41.0	4°27.5	4.1 - 1.3	10.1 - 3.1	16.1 - 5.0	41	4°55.3	4°56.1	4°41.8	4.1 - 1.3	10.1 - 3.3	16.1 - 5.2	41	5°10.3	5°11.1	4°56.1	4.1 - 1.4	10.1 - 3.5	16.1 - 5.5
42	4°40.5	4°41.3	4°27.7	4.2 - 1.3	10.2 - 3.1	16.2 - 5.0	42	4°55.5	4°56.3	4°42.0	4.2 - 1.4	10.2 - 3.3	16.2 - 5.3	42	5°10.5	5°11.3	4°56.4	4.2 - 1.4	10.2 - 3.5	16.2 - 5.5
43	4°40.7	4°41.5	4°28.0	4.3 - 1.3	10.3 - 3.2	16.3 - 5.0	43	4°55.7	4°56.6	4°42.3	4.3 - 1.4	10.3 - 3.3	16.3 - 5.3	43	5°10.7	5°11.6	4°56.6	4.3 - 1.5	10.3 - 3.5	16.3 - 5.6
44	4°41.0	4°41.8	4°28.2	4.4 - 1.4	10.4 - 3.2	16.4 - 5.1	44	4°56.0	4°56.8	4°42.5	4.4 - 1.4	10.4 - 3.4	16.4 - 5.3	44	5°11.0	5°11.9	4°56.8	4.4 - 1.5	10.4 - 3.6	16.4 - 5.6
45	4°41.3	4°42.0	4°28.4	4.5 - 1.4	10.5 - 3.2	16.5 - 5.1	45	4°56.3	4°57.1	4°42.8	4.5 - 1.5	10.5 - 3.4	16.5 - 5.4	45	5°11.3	5°12.1	4°57.1	4.5 - 1.5	10.5 - 3.6	16.5 - 5.6
46	4°41.5	4°42.3	4°28.7	4.6 - 1.4	10.6 - 3.3	16.6 - 5.1	46	4°56.5	4°57.3	4°43.0	4.6 - 1.5	10.6 - 3.4	16.6 - 5.4	46	5°11.5	5°12.4	4°57.3	4.6 - 1.6	10.6 - 3.6	16.6 - 5.7
47	4°41.8	4°42.5	4°28.9	4.7 - 1.4	10.7 - 3.3	16.7 - 5.1	47	4°56.8	4°57.6	4°43.2	4.7 - 1.5	10.7 - 3.5	16.7 - 5.4	47	5°11.8	5°12.6	4°57.5	4.7 - 1.6	10.7 - 3.7	16.7 - 5.7
48	4°42.0	4°42.8	4°29.2	4.8 - 1.5	10.8 - 3.3	16.8 - 5.2	48	4°57.0	4°57.8	4°43.5	4.8 - 1.6	10.8 - 3.5	16.8 - 5.5	48	5°12.0	5°12.9	4°57.8	4.8 - 1.6	10.8 - 3.7	16.8 - 5.7
49	4°42.3	4°43.0	4°29.4	4.9 - 1.5	10.9 - 3.4	16.9 - 5.2	49	4°57.3												

Increments and Corrections

m 21	Sun Plan.	Aries	Moon	v and d corr		
0	5°15.0	5°15.9	5°00.6	0.0 - 0.0	6.0 - 2.1	12.0 - 4.3
1	5°15.2	5°16.1	5°00.9	0.1 - 0.0	6.1 - 2.2	12.1 - 4.3
2	5°15.5	5°16.4	5°01.1	0.2 - 0.1	6.2 - 2.2	12.2 - 4.4
3	5°15.8	5°16.6	5°01.4	0.3 - 0.1	6.3 - 2.3	12.3 - 4.4
4	5°16.0	5°16.9	5°01.6	0.4 - 0.1	6.4 - 2.3	12.4 - 4.4
5	5°16.2	5°17.1	5°01.8	0.5 - 0.2	6.5 - 2.3	12.5 - 4.5
6	5°16.5	5°17.4	5°02.1	0.6 - 0.2	6.6 - 2.4	12.6 - 4.5
7	5°16.8	5°17.6	5°02.3	0.7 - 0.3	6.7 - 2.4	12.7 - 4.6
8	5°17.0	5°17.9	5°02.6	0.8 - 0.3	6.8 - 2.4	12.8 - 4.6
9	5°17.2	5°18.1	5°02.8	0.9 - 0.3	6.9 - 2.5	12.9 - 4.6
10	5°17.5	5°18.4	5°03.0	1.0 - 0.4	7.0 - 2.5	13.0 - 4.7
11	5°17.8	5°18.6	5°03.3	1.1 - 0.4	7.1 - 2.5	13.1 - 4.7
12	5°18.0	5°18.9	5°03.5	1.2 - 0.4	7.2 - 2.6	13.2 - 4.7
13	5°18.2	5°19.1	5°03.8	1.3 - 0.5	7.3 - 2.6	13.3 - 4.8
14	5°18.5	5°19.4	5°04.0	1.4 - 0.5	7.4 - 2.7	13.4 - 4.8
15	5°18.8	5°19.6	5°04.2	1.5 - 0.5	7.5 - 2.7	13.5 - 4.8
16	5°19.0	5°19.9	5°04.5	1.6 - 0.6	7.6 - 2.7	13.6 - 4.9
17	5°19.3	5°20.1	5°04.7	1.7 - 0.6	7.7 - 2.8	13.7 - 4.9
18	5°19.5	5°20.4	5°04.9	1.8 - 0.6	7.8 - 2.8	13.8 - 4.9
19	5°19.7	5°20.6	5°05.2	1.9 - 0.7	7.9 - 2.8	13.9 - 5.0
20	5°20.0	5°20.9	5°05.4	2.0 - 0.7	8.0 - 2.9	14.0 - 5.0
21	5°20.3	5°21.1	5°05.7	2.1 - 0.8	8.1 - 2.9	14.1 - 5.1
22	5°20.5	5°21.4	5°05.9	2.2 - 0.8	8.2 - 2.9	14.2 - 5.1
23	5°20.7	5°21.6	5°06.1	2.3 - 0.8	8.3 - 3.0	14.3 - 5.1
24	5°21.0	5°21.9	5°06.4	2.4 - 0.9	8.4 - 3.0	14.4 - 5.2
25	5°21.3	5°22.1	5°06.6	2.5 - 0.9	8.5 - 3.0	14.5 - 5.2
26	5°21.5	5°22.4	5°06.9	2.6 - 0.9	8.6 - 3.1	14.6 - 5.2
27	5°21.7	5°22.6	5°07.1	2.7 - 1.0	8.7 - 3.1	14.7 - 5.3
28	5°22.0	5°22.9	5°07.3	2.8 - 1.0	8.8 - 3.2	14.8 - 5.3
29	5°22.3	5°23.1	5°07.6	2.9 - 1.0	8.9 - 3.2	14.9 - 5.3
30	5°22.5	5°23.4	5°07.8	3.0 - 1.1	9.0 - 3.2	15.0 - 5.4
31	5°22.7	5°23.6	5°08.0	3.1 - 1.1	9.1 - 3.3	15.1 - 5.4
32	5°23.0	5°23.9	5°08.3	3.2 - 1.1	9.2 - 3.3	15.2 - 5.4
33	5°23.3	5°24.1	5°08.5	3.3 - 1.2	9.3 - 3.3	15.3 - 5.5
34	5°23.5	5°24.4	5°08.8	3.4 - 1.2	9.4 - 3.4	15.4 - 5.5
35	5°23.7	5°24.6	5°09.0	3.5 - 1.3	9.5 - 3.4	15.5 - 5.6
36	5°24.0	5°24.9	5°09.2	3.6 - 1.3	9.6 - 3.4	15.6 - 5.6
37	5°24.3	5°25.1	5°09.5	3.7 - 1.3	9.7 - 3.5	15.7 - 5.6
38	5°24.5	5°25.4	5°09.7	3.8 - 1.4	9.8 - 3.5	15.8 - 5.7
39	5°24.7	5°25.6	5°10.0	3.9 - 1.4	9.9 - 3.5	15.9 - 5.7
40	5°25.0	5°25.9	5°10.2	4.0 - 1.4	10.0 - 3.6	16.0 - 5.7
41	5°25.3	5°26.1	5°10.4	4.1 - 1.5	10.1 - 3.6	16.1 - 5.8
42	5°25.5	5°26.4	5°10.7	4.2 - 1.5	10.2 - 3.7	16.2 - 5.8
43	5°25.7	5°26.6	5°10.9	4.3 - 1.5	10.3 - 3.7	16.3 - 5.8
44	5°26.0	5°26.9	5°11.1	4.4 - 1.6	10.4 - 3.7	16.4 - 5.9
45	5°26.3	5°27.1	5°11.4	4.5 - 1.6	10.5 - 3.8	16.5 - 5.9
46	5°26.5	5°27.4	5°11.6	4.6 - 1.6	10.6 - 3.8	16.6 - 5.9
47	5°26.8	5°27.6	5°11.9	4.7 - 1.7	10.7 - 3.8	16.7 - 6.0
48	5°27.0	5°27.9	5°12.1	4.8 - 1.7	10.8 - 3.9	16.8 - 6.0
49	5°27.2	5°28.1	5°12.3	4.9 - 1.8	10.9 - 3.9	16.9 - 6.1
50	5°27.5	5°28.4	5°12.6	5.0 - 1.8	11.0 - 3.9	17.0 - 6.1
51	5°27.8	5°28.6	5°12.8	5.1 - 1.8	11.1 - 4.0	17.1 - 6.1
52	5°28.0	5°28.9	5°13.1	5.2 - 1.9	11.2 - 4.0	17.2 - 6.2
53	5°28.2	5°29.1	5°13.3	5.3 - 1.9	11.3 - 4.0	17.3 - 6.2
54	5°28.5	5°29.4	5°13.5	5.4 - 1.9	11.4 - 4.1	17.4 - 6.2
55	5°28.8	5°29.6	5°13.8	5.5 - 2.0	11.5 - 4.1	17.5 - 6.3
56	5°29.0	5°29.9	5°14.0	5.6 - 2.0	11.6 - 4.2	17.6 - 6.3
57	5°29.2	5°30.1	5°14.3	5.7 - 2.0	11.7 - 4.2	17.7 - 6.3
58	5°29.5	5°30.4	5°14.5	5.8 - 2.1	11.8 - 4.2	17.8 - 6.4
59	5°29.8	5°30.7	5°14.7	5.9 - 2.1	11.9 - 4.3	17.9 - 6.4

m 22	Sun Plan.	Aries	Moon	v and d corr		
0	5°30.0	5°30.9	5°15.0	0.0 - 0.0	6.0 - 2.3	12.0 - 4.5
1	5°30.2	5°31.2	5°15.2	0.1 - 0.0	6.1 - 2.3	12.1 - 4.5
2	5°30.5	5°31.4	5°15.4	0.2 - 0.1	6.2 - 2.3	12.2 - 4.6
3	5°30.8	5°31.7	5°15.7	0.3 - 0.1	6.3 - 2.4	12.3 - 4.6
4	5°31.0	5°31.9	5°15.9	0.4 - 0.2	6.4 - 2.4	12.4 - 4.7
5	5°31.2	5°32.2	5°16.2	0.5 - 0.2	6.5 - 2.4	12.5 - 4.7
6	5°31.5	5°32.4	5°16.4	0.6 - 0.2	6.6 - 2.5	12.6 - 4.7
7	5°31.8	5°32.7	5°16.6	0.7 - 0.3	6.7 - 2.5	12.7 - 4.8
8	5°32.0	5°32.9	5°16.9	0.8 - 0.3	6.8 - 2.5	12.8 - 4.8
9	5°32.2	5°33.2	5°17.1	0.9 - 0.3	6.9 - 2.6	12.9 - 4.8
10	5°32.5	5°33.4	5°17.4	1.0 - 0.4	7.0 - 2.6	13.0 - 4.9
11	5°32.8	5°33.7	5°17.6	1.1 - 0.4	7.1 - 2.7	13.1 - 4.9
12	5°33.0	5°33.9	5°17.8	1.2 - 0.5	7.2 - 2.7	13.2 - 4.9
13	5°33.2	5°34.2	5°18.1	1.3 - 0.5	7.3 - 2.7	13.3 - 5.0
14	5°33.5	5°34.4	5°18.3	1.4 - 0.5	7.4 - 2.8	13.4 - 5.0
15	5°33.8	5°34.7	5°18.5	1.5 - 0.6	7.5 - 2.8	13.5 - 5.1
16	5°34.0	5°34.9	5°18.8	1.6 - 0.6	7.6 - 2.8	13.6 - 5.1
17	5°34.3	5°35.2	5°19.0	1.7 - 0.6	7.7 - 2.9	13.7 - 5.1
18	5°34.5	5°35.4	5°19.3	1.8 - 0.7	7.8 - 2.9	13.8 - 5.2
19	5°34.8	5°35.7	5°19.5	1.9 - 0.7	7.9 - 3.0	13.9 - 5.2
20	5°35.0	5°35.9	5°19.7	2.0 - 0.8	8.0 - 3.0	14.0 - 5.3
21	5°35.3	5°36.2	5°20.0	2.1 - 0.8	8.1 - 3.0	14.1 - 5.3
22	5°35.5	5°36.4	5°20.2	2.2 - 0.8	8.2 - 3.1	14.2 - 5.3
23	5°35.7	5°36.7	5°20.5	2.3 - 0.9	8.3 - 3.1	14.3 - 5.4
24	5°36.0	5°36.9	5°20.7	2.4 - 0.9	8.4 - 3.2	14.4 - 5.4
25	5°36.3	5°37.2	5°20.9	2.5 - 0.9	8.5 - 3.2	14.5 - 5.4
26	5°36.5	5°37.4	5°21.2	2.6 - 1.0	8.6 - 3.2	14.6 - 5.5
27	5°36.7	5°37.7	5°21.4	2.7 - 1.0	8.7 - 3.3	14.7 - 5.5
28	5°37.0	5°37.9	5°21.6	2.8 - 1.1	8.8 - 3.3	14.8 - 5.6
29	5°37.3	5°38.2	5°21.9	2.9 - 1.1	8.9 - 3.3	14.9 - 5.6
30	5°37.5	5°38.4	5°22.1	3.0 - 1.1	9.0 - 3.4	15.0 - 5.6
31	5°37.7	5°38.7	5°22.4	3.1 - 1.2	9.1 - 3.4	15.1 - 5.7
32	5°38.0	5°38.9	5°22.6	3.2 - 1.2	9.2 - 3.4	15.2 - 5.7
33	5°38.3	5°39.2	5°22.8	3.3 - 1.2	9.3 - 3.5	15.3 - 5.7
34	5°38.5	5°39.4	5°23.1	3.4 - 1.3	9.4 - 3.5	15.4 - 5.8
35	5°38.7	5°39.7	5°23.3	3.5 - 1.3	9.5 - 3.6	15.5 - 5.8
36	5°39.0	5°39.9	5°23.6	3.6 - 1.4	9.6 - 3.6	15.6 - 5.8
37	5°39.3	5°40.2	5°23.8	3.7 - 1.4	9.7 - 3.6	15.7 - 5.9
38	5°39.5	5°40.4	5°24.0	3.8 - 1.4	9.8 - 3.7	15.8 - 5.9
39	5°39.7	5°40.7	5°24.3	3.9 - 1.5	9.9 - 3.7	15.9 - 6.0
40	5°40.0	5°40.9	5°24.5	4.0 - 1.5	10.0 - 3.8	16.0 - 6.0
41	5°40.3	5°41.2	5°24.7	4.1 - 1.5	10.1 - 3.8	16.1 - 6.0
42	5°40.5	5°41.4	5°25.0	4.2 - 1.6	10.2 - 3.8	16.2 - 6.1
43	5°40.7	5°41.7	5°25.2	4.3 - 1.6	10.3 - 3.9	16.3 - 6.1
44	5°41.0	5°41.9	5°25.5	4.4 - 1.7	10.4 - 3.9	16.4 - 6.1
45	5°41.3	5°42.2	5°25.7	4.5 - 1.7	10.5 - 3.9	16.5 - 6.2
46	5°41.5	5°42.4	5°25.9	4.6 - 1.7	10.6 - 4.0	16.6 - 6.2
47	5°41.8	5°42.7	5°26.2	4.7 - 1.8	10.7 - 4.0	16.7 - 6.3
48	5°42.0	5°42.9	5°26.4	4.8 - 1.8	10.8 - 4.1	16.8 - 6.3
49	5°42.3	5°43.2	5°26.7	4.9 - 1.8	10.9 - 4.1	16.9 - 6.3
50	5°42.5	5°43.4	5°26.9	5.0 - 1.9	11.0 - 4.1	17.0 - 6.4
51	5°42.8	5°43.7	5°27.1	5.1 - 1.9	11.1 - 4.2	17.1 - 6.4
52	5°43.0	5°43.9	5°27.4	5.2 - 2.0	11.2 - 4.2	17.2 - 6.4
53	5°43.2	5°44.2	5°27.6	5.3 - 2.0	11.3 - 4.2	17.3 - 6.5
54	5°43.5	5°44.4	5°27.9	5.4 - 2.0	11.4 - 4.3	17.4 - 6.5
55	5°43.8	5°44.7	5°28.1	5.5 - 2.1	11.5 - 4.3	17.5 - 6.6
56	5°44.0	5°44.9	5°28.3	5.6 - 2.1	11.6 - 4.4	17.6 - 6.6
57	5°44.2	5°45.2	5°28.6	5.7 - 2.1	11.7 - 4.4	17.7 - 6.6
58	5°44.5	5°45.4	5°28.8	5.8 - 2.2	11.8 - 4.4	17.8 - 6.7
59	5°44.8	5°45.7	5°29.0	5.9 - 2.2	11.9 - 4.5	17.9 - 6.7

m	Sun Plan.	Aries	Moon	v and d corr		
23						
0	5°45.0	5°45.9	5°29.3	0.0 - 0.0	6.0 - 2.4	12.0 - 4.7
1	5°45.2	5°46.2	5°29.5	0.1 - 0.0	6.1 - 2.4	12.1 - 4.7
2	5°45.5	5°46.4	5°29.8	0.2 - 0.1	6.2 - 2.4	12.2 - 4.8
3	5°45.8	5°46.7	5°30.0	0.3 - 0.1	6.3 - 2.5	12.3 - 4.8
4	5°46.0	5°46.9	5°30.2	0.4 - 0.2	6.4 - 2.5	12.4 - 4.9
5	5°46.2	5°47.2	5°30.5	0.5 - 0.2	6.5 - 2.5	12.5 - 4.9
6	5°46.5	5°47.4	5°30.7	0.6 - 0.2	6.6 - 2.6	12.6 - 4.9
7	5°46.8	5°47.7	5°31.0	0.7 - 0.3	6.7 - 2.6	12.7 - 5.0
8	5°47.0	5°47.9	5°31.2	0.8 - 0.3	6.8 - 2.7	12.8 - 5.0
9	5°47.2	5°48.2	5°31.4	0.9 - 0.4	6.9 - 2.7	12.9 - 5.1
10	5°47.5	5°48.4	5°31.7	1.0 - 0.4	7.0 - 2.7	13.0 - 5.1
11	5°47.8	5°48.7	5°31.9	1.1 - 0.4	7.1 - 2.8	13.1 - 5.1
12	5°48.0	5°49.0	5°32.1	1.2 - 0.5	7.2 - 2.8	13.2 - 5.2
13	5°48.2	5°49.2	5°32.4	1.3 - 0.5	7.3 - 2.9	13.3 - 5.2
14	5°48.5	5°49.5	5°32.6	1.4 - 0.5	7.4 - 2.9	13.4 - 5.2
15	5°48.8	5°49.7	5°32.9	1.5 - 0.6	7.5 - 2.9	13.5 - 5.3
16	5°49.0	5°50.0	5°33.1	1.6 - 0.6	7.6 - 3.0	13.6 - 5.3
17	5°49.3	5°50.2	5°33.3	1.7 - 0.7	7.7 - 3.0	13.7 - 5.4
18	5°49.5	5°50.5	5°33.6	1.8 - 0.7	7.8 - 3.1	13.8 - 5.4
19	5°49.8	5°50.7	5°33.8	1.9 - 0.7	7.9 - 3.1	13.9 - 5.4
20	5°50.0	5°51.0	5°34.1	2.0 - 0.8	8.0 - 3.1	14.0 - 5.5
21	5°50.3	5°51.2	5°34.3	2.1 - 0.8	8.1 - 3.2	14.1 - 5.5
22	5°50.5	5°51.5	5°34.5	2.2 - 0.9	8.2 - 3.2	14.2 - 5.6
23	5°50.7	5°51.7	5°34.8	2.3 - 0.9	8.3 - 3.3	14.3 - 5.6
24	5°51.0	5°52.0	5°35.0	2.4 - 0.9	8.4 - 3.3	14.4 - 5.6
25	5°51.3	5°52.2	5°35.2	2.5 - 1.0	8.5 - 3.3	14.5 - 5.7
26	5°51.5	5°52.5	5°35.5	2.6 - 1.0	8.6 - 3.4	14.6 - 5.7
27	5°51.7	5°52.7	5°35.7	2.7 - 1.1	8.7 - 3.4	14.7 - 5.8
28	5°52.0	5°53.0	5°36.0	2.8 - 1.1	8.8 - 3.4	14.8 - 5.8
29	5°52.3	5°53.2	5°36.2	2.9 - 1.1	8.9 - 3.5	14.9 - 5.8
30	5°52.5	5°53.5	5°36.4	3.0 - 1.2	9.0 - 3.5	15.0 - 5.9
31	5°52.7	5°53.7	5°36.7	3.1 - 1.2	9.1 - 3.6	15.1 - 5.9
32	5°53.0	5°54.0	5°36.9	3.2 - 1.3	9.2 - 3.6	15.2 - 6.0
33	5°53.3	5°54.2	5°37.2	3.3 - 1.3	9.3 - 3.6	15.3 - 6.0
34	5°53.5	5°54.5	5°37.4	3.4 - 1.3	9.4 - 3.7	15.4 - 6.0
35	5°53.7	5°54.7	5°37.6	3.5 - 1.4	9.5 - 3.7	15.5 - 6.1
36	5°54.0	5°55.0	5°37.9	3.6 - 1.4	9.6 - 3.8	15.6 - 6.1
37	5°54.3	5°55.2	5°38.1	3.7 - 1.4	9.7 - 3.8	15.7 - 6.1
38	5°54.5	5°55.5	5°38.4	3.8 - 1.5	9.8 - 3.8	15.8 - 6.2
39	5°54.7	5°55.7	5°38.6	3.9 - 1.5	9.9 - 3.9	15.9 - 6.2
40	5°55.0	5°56.0	5°38.8	4.0 - 1.6	10.0 - 3.9	16.0 - 6.3
41	5°55.3	5°56.2	5°39.1	4.1 - 1.6	10.1 - 4.0	16.1 - 6.3
42	5°55.5	5°56.5	5°39.3	4.2 - 1.6	10.2 - 4.0	16.2 - 6.3
43	5°55.7	5°56.7	5°39.5	4.3 - 1.7	10.3 - 4.0	16.3 - 6.4
44	5°56.0	5°57.0	5°39.8	4.4 - 1.7	10.4 - 4.1	16.4 - 6.4
45	5°56.3	5°57.2	5°40.0	4.5 - 1.8	10.5 - 4.1	16.5 - 6.5
46	5°56.5	5°57.5	5°40.3	4.6 - 1.8	10.6 - 4.2	16.6 - 6.5
47	5°56.8	5°57.7	5°40.5	4.7 - 1.8	10.7 - 4.2	16.7 - 6.5
48	5°57.0	5°58.0	5°40.7	4.8 - 1.9	10.8 - 4.2	16.8 - 6.6
49	5°57.3	5°58.2	5°41.0	4.9 - 1.9	10.9 - 4.3	16.9 - 6.6
50	5°57.5	5°58.5	5°41.2	5.0 - 2.0	11.0 - 4.3	17.0 - 6.7
51	5°57.8	5°58.7	5°41.5	5.1 - 2.0	11.1 - 4.3	17.1 - 6.7
52	5°58.0	5°59.0	5°41.7	5.2 - 2.0	11.2 - 4.4	17.2 - 6.7
53	5°58.2	5°59.2	5°41.9	5.3 - 2.1	11.3 - 4.4	17.3 - 6.8
54	5°58.5	5°59.5	5°42.2	5.4 - 2.1	11.4 - 4.5	17.4 - 6.8
55	5°58.8	5°59.7	5°42.4	5.5 - 2.2	11.5 - 4.5	17.5 - 6.9
56	5°59.0	6°00.0	5°42.6	5.6 - 2.2	11.6 - 4.5	17.6 - 6.9
57	5°59.2	6°00.2	5°42.9	5.7 - 2.2	11.7 - 4.6	17.7 - 6.9
58	5°59.5	6°00.5	5°43.1	5.8 - 2.3	11.8 - 4.6	17.8 - 7.0
59	5°59.8	6°00.7	5°43.4	5.9 - 2.3	11.9 - 4.7	17.9 - 7.0

Increments and Corrections

m 24	Sun Plan.	Aries	Moon	v and d corr			m 25	Sun Plan.	Aries	Moon	v and d corr			m 26	Sun Plan.	Aries	Moon	v and d corr		
0	6°00.0	6°01.0	5°43.6	0.0 - 0.0	6.0 - 2.5	12.0 - 4.9	0	6°15.0	6°16.0	5°57.9	0.0 - 0.0	6.0 - 2.5	12.0 - 5.1	0	6°30.0	6°31.1	6°12.2	0.0 - 0.0	6.0 - 2.6	12.0 - 5.3
1	6°00.2	6°01.2	5°43.8	0.1 - 0.0	6.1 - 2.5	12.1 - 4.9	1	6°15.2	6°16.3	5°58.2	0.1 - 0.0	6.1 - 2.6	12.1 - 5.1	1	6°30.2	6°31.3	6°12.5	0.1 - 0.0	6.1 - 2.7	12.1 - 5.3
2	6°00.5	6°01.5	5°44.1	0.2 - 0.1	6.2 - 2.5	12.2 - 5.0	2	6°15.5	6°16.5	5°58.4	0.2 - 0.1	6.2 - 2.6	12.2 - 5.2	2	6°30.5	6°31.6	6°12.7	0.2 - 0.1	6.2 - 2.7	12.2 - 5.4
3	6°00.8	6°01.7	5°44.3	0.3 - 0.1	6.3 - 2.6	12.3 - 5.0	3	6°15.8	6°16.8	5°58.6	0.3 - 0.1	6.3 - 2.7	12.3 - 5.2	3	6°30.8	6°31.8	6°12.9	0.3 - 0.1	6.3 - 2.8	12.3 - 5.4
4	6°01.0	6°02.0	5°44.6	0.4 - 0.2	6.4 - 2.6	12.4 - 5.1	4	6°16.0	6°17.0	5°58.9	0.4 - 0.2	6.4 - 2.7	12.4 - 5.3	4	6°31.0	6°32.1	6°13.2	0.4 - 0.2	6.4 - 2.8	12.4 - 5.5
5	6°01.2	6°02.2	5°44.8	0.5 - 0.2	6.5 - 2.7	12.5 - 5.1	5	6°16.2	6°17.3	5°59.1	0.5 - 0.2	6.5 - 2.8	12.5 - 5.3	5	6°31.2	6°32.3	6°13.4	0.5 - 0.2	6.5 - 2.9	12.5 - 5.5
6	6°01.5	6°02.5	5°45.0	0.6 - 0.2	6.6 - 2.7	12.6 - 5.1	6	6°16.5	6°17.5	5°59.3	0.6 - 0.3	6.6 - 2.8	12.6 - 5.4	6	6°31.5	6°32.6	6°13.7	0.6 - 0.3	6.6 - 2.9	12.6 - 5.6
7	6°01.8	6°02.7	5°45.3	0.7 - 0.3	6.7 - 2.7	12.7 - 5.2	7	6°16.8	6°17.8	5°59.6	0.7 - 0.3	6.7 - 2.8	12.7 - 5.4	7	6°31.8	6°32.8	6°13.9	0.7 - 0.3	6.7 - 3.0	12.7 - 5.6
8	6°02.0	6°03.0	5°45.5	0.8 - 0.3	6.8 - 2.8	12.8 - 5.2	8	6°17.0	6°18.0	5°59.8	0.8 - 0.3	6.8 - 2.9	12.8 - 5.4	8	6°32.0	6°33.1	6°14.1	0.8 - 0.4	6.8 - 3.0	12.8 - 5.7
9	6°02.2	6°03.2	5°45.7	0.9 - 0.4	6.9 - 2.8	12.9 - 5.3	9	6°17.2	6°18.3	6°00.1	0.9 - 0.4	6.9 - 2.9	12.9 - 5.5	9	6°32.2	6°33.3	6°14.4	0.9 - 0.4	6.9 - 3.0	12.9 - 5.7
10	6°02.5	6°03.5	5°46.0	1.0 - 0.4	7.0 - 2.9	13.0 - 5.3	10	6°17.5	6°18.5	6°00.3	1.0 - 0.4	7.0 - 3.0	13.0 - 5.5	10	6°32.5	6°33.6	6°14.6	1.0 - 0.4	7.0 - 3.1	13.0 - 5.7
11	6°02.8	6°03.7	5°46.2	1.1 - 0.4	7.1 - 2.9	13.1 - 5.3	11	6°17.8	6°18.8	6°00.5	1.1 - 0.5	7.1 - 3.0	13.1 - 5.6	11	6°32.8	6°33.8	6°14.9	1.1 - 0.5	7.1 - 3.1	13.1 - 5.8
12	6°03.0	6°04.0	5°46.5	1.2 - 0.5	7.2 - 2.9	13.2 - 5.4	12	6°18.0	6°19.0	6°00.8	1.2 - 0.5	7.2 - 3.1	13.2 - 5.6	12	6°33.0	6°34.1	6°15.1	1.2 - 0.5	7.2 - 3.2	13.2 - 5.8
13	6°03.2	6°04.2	5°46.7	1.3 - 0.5	7.3 - 3.0	13.3 - 5.4	13	6°18.2	6°19.3	6°01.0	1.3 - 0.6	7.3 - 3.1	13.3 - 5.7	13	6°33.2	6°34.3	6°15.3	1.3 - 0.6	7.3 - 3.2	13.3 - 5.9
14	6°03.5	6°04.5	5°46.9	1.4 - 0.6	7.4 - 3.0	13.4 - 5.5	14	6°18.5	6°19.5	6°01.3	1.4 - 0.6	7.4 - 3.1	13.4 - 5.7	14	6°33.5	6°34.6	6°15.6	1.4 - 0.6	7.4 - 3.3	13.4 - 5.9
15	6°03.8	6°04.7	5°47.2	1.5 - 0.6	7.5 - 3.1	13.5 - 5.5	15	6°18.8	6°19.8	6°01.5	1.5 - 0.6	7.5 - 3.2	13.5 - 5.7	15	6°33.8	6°34.8	6°15.8	1.5 - 0.7	7.5 - 3.3	13.5 - 6.0
16	6°04.0	6°05.0	5°47.4	1.6 - 0.7	7.6 - 3.1	13.6 - 5.6	16	6°19.0	6°20.0	6°01.7	1.6 - 0.7	7.6 - 3.2	13.6 - 5.8	16	6°34.0	6°35.1	6°16.1	1.6 - 0.7	7.6 - 3.4	13.6 - 6.0
17	6°04.3	6°05.2	5°47.7	1.7 - 0.7	7.7 - 3.1	13.7 - 5.6	17	6°19.3	6°20.3	6°02.0	1.7 - 0.7	7.7 - 3.3	13.7 - 5.8	17	6°34.3	6°35.3	6°16.3	1.7 - 0.8	7.7 - 3.4	13.7 - 6.1
18	6°04.5	6°05.5	5°47.9	1.8 - 0.7	7.8 - 3.2	13.8 - 5.6	18	6°19.5	6°20.5	6°02.2	1.8 - 0.8	7.8 - 3.3	13.8 - 5.9	18	6°34.5	6°35.6	6°16.5	1.8 - 0.8	7.8 - 3.4	13.8 - 6.1
19	6°04.7	6°05.7	5°48.1	1.9 - 0.8	7.9 - 3.2	13.9 - 5.7	19	6°19.7	6°20.8	6°02.5	1.9 - 0.8	7.9 - 3.4	13.9 - 5.9	19	6°34.8	6°35.8	6°16.8	1.9 - 0.8	7.9 - 3.5	13.9 - 6.1
20	6°05.0	6°06.0	5°48.4	2.0 - 0.8	8.0 - 3.3	14.0 - 5.7	20	6°20.0	6°21.0	6°02.7	2.0 - 0.8	8.0 - 3.4	14.0 - 6.0	20	6°35.0	6°36.1	6°17.0	2.0 - 0.9	8.0 - 3.5	14.0 - 6.2
21	6°05.3	6°06.2	5°48.6	2.1 - 0.9	8.1 - 3.3	14.1 - 5.8	21	6°20.3	6°21.3	6°02.9	2.1 - 0.9	8.1 - 3.4	14.1 - 6.0	21	6°35.3	6°36.3	6°17.2	2.1 - 0.9	8.1 - 3.6	14.1 - 6.2
22	6°05.5	6°06.5	5°48.8	2.2 - 0.9	8.2 - 3.3	14.2 - 5.8	22	6°20.5	6°21.5	6°03.2	2.2 - 0.9	8.2 - 3.5	14.2 - 6.0	22	6°35.5	6°36.6	6°17.5	2.2 - 1.0	8.2 - 3.6	14.2 - 6.3
23	6°05.7	6°06.7	5°49.1	2.3 - 0.9	8.3 - 3.4	14.3 - 5.8	23	6°20.7	6°21.8	6°03.4	2.3 - 1.0	8.3 - 3.5	14.3 - 6.1	23	6°35.7	6°36.8	6°17.7	2.3 - 1.0	8.3 - 3.7	14.3 - 6.3
24	6°06.0	6°07.0	5°49.3	2.4 - 1.0	8.4 - 3.4	14.4 - 5.9	24	6°21.0	6°22.0	6°03.6	2.4 - 1.0	8.4 - 3.6	14.4 - 6.1	24	6°36.0	6°37.1	6°18.0	2.4 - 1.1	8.4 - 3.7	14.4 - 6.4
25	6°06.3	6°07.3	5°49.6	2.5 - 1.0	8.5 - 3.5	14.5 - 5.9	25	6°21.3	6°22.3	6°03.9	2.5 - 1.1	8.5 - 3.6	14.5 - 6.2	25	6°36.3	6°37.3	6°18.2	2.5 - 1.1	8.5 - 3.8	14.5 - 6.4
26	6°06.5	6°07.5	5°49.8	2.6 - 1.1	8.6 - 3.5	14.6 - 6.0	26	6°21.5	6°22.5	6°04.1	2.6 - 1.1	8.6 - 3.7	14.6 - 6.2	26	6°36.5	6°37.6	6°18.4	2.6 - 1.1	8.6 - 3.8	14.6 - 6.4
27	6°06.7	6°07.8	5°50.0	2.7 - 1.1	8.7 - 3.6	14.7 - 6.0	27	6°21.7	6°22.8	6°04.4	2.7 - 1.1	8.7 - 3.7	14.7 - 6.2	27	6°36.7	6°37.8	6°18.7	2.7 - 1.2	8.7 - 3.8	14.7 - 6.5
28	6°07.0	6°08.0	5°50.3	2.8 - 1.1	8.8 - 3.6	14.8 - 6.0	28	6°22.0	6°23.0	6°04.6	2.8 - 1.2	8.8 - 3.7	14.8 - 6.3	28	6°37.0	6°38.1	6°18.9	2.8 - 1.2	8.8 - 3.9	14.8 - 6.5
29	6°07.3	6°08.3	5°50.5	2.9 - 1.2	8.9 - 3.6	14.9 - 6.1	29	6°22.3	6°23.3	6°04.8	2.9 - 1.2	8.9 - 3.8	14.9 - 6.3	29	6°37.3	6°38.3	6°19.2	2.9 - 1.3	8.9 - 3.9	14.9 - 6.6
30	6°07.5	6°08.5	5°50.8	3.0 - 1.2	9.0 - 3.7	15.0 - 6.1	30	6°22.5	6°23.5	6°05.1	3.0 - 1.3	9.0 - 3.8	15.0 - 6.4	30	6°37.5	6°38.6	6°19.4	3.0 - 1.3	9.0 - 4.0	15.0 - 6.6
31	6°07.7	6°08.8	5°51.0	3.1 - 1.3	9.1 - 3.7	15.1 - 6.2	31	6°22.7	6°23.8	6°05.3	3.1 - 1.3	9.1 - 3.9	15.1 - 6.4	31	6°37.7	6°38.8	6°19.6	3.1 - 1.4	9.1 - 4.0	15.1 - 6.7
32	6°08.0	6°09.0	5°51.2	3.2 - 1.3	9.2 - 3.8	15.2 - 6.2	32	6°23.0	6°24.0	6°05.6	3.2 - 1.4	9.2 - 3.9	15.2 - 6.5	32	6°38.0	6°39.1	6°19.9	3.2 - 1.4	9.2 - 4.1	15.2 - 6.7
33	6°08.3	6°09.3	5°51.5	3.3 - 1.3	9.3 - 3.8	15.3 - 6.2	33	6°23.3	6°24.3	6°05.8	3.3 - 1.4	9.3 - 4.0	15.3 - 6.5	33	6°38.3	6°39.3	6°20.1	3.3 - 1.5	9.3 - 4.1	15.3 - 6.8
34	6°08.5	6°09.5	5°51.7	3.4 - 1.4	9.4 - 3.8	15.4 - 6.3	34	6°23.5	6°24.5	6°06.0	3.4 - 1.4	9.4 - 4.0	15.4 - 6.5	34	6°38.5	6°39.6	6°20.3	3.4 - 1.5	9.4 - 4.2	15.4 - 6.8
35	6°08.7	6°09.8	5°52.0	3.5 - 1.4	9.5 - 3.9	15.5 - 6.3	35	6°23.7	6°24.8	6°06.3	3.5 - 1.5	9.5 - 4.0	15.5 - 6.6	35	6°38.7	6°39.8	6°20.6	3.5 - 1.5	9.5 - 4.2	15.5 - 6.8
36	6°09.0	6°10.0	5°52.2	3.6 - 1.5	9.6 - 3.9	15.6 - 6.4	36	6°24.0	6°25.0	6°06.5	3.6 - 1.5	9.6 - 4.1	15.6 - 6.6	36	6°39.0	6°40.1	6°20.8	3.6 - 1.6	9.6 - 4.2	15.6 - 6.9
37	6°09.3	6°10.3	5°52.4	3.7 - 1.5	9.7 - 4.0	15.7 - 6.4	37	6°24.3	6°25.3	6°06.7	3.7 - 1.6	9.7 - 4.1	15.7 - 6.7	37	6°39.3	6°40.3	6°21.1	3.7 - 1.6	9.7 - 4.3	15.7 - 6.9
38	6°09.5	6°10.5	5°52.7	3.8 - 1.6	9.8 - 4.0	15.8 - 6.5	38	6°24.5	6°25.6	6°07.0	3.8 - 1.6	9.8 - 4.2	15.8 - 6.7	38	6°39.5	6°40.6	6°21.3	3.8 - 1.7	9.8 - 4.3	15.8 - 7.0
39	6°09.7	6°10.8	5°52.9	3.9 - 1.6	9.9 - 4.0	15.9 - 6.5	39	6°24.7	6°25.8	6°07.2	3.9 - 1.7	9.9 - 4.2	15.9 - 6.8	39	6°39.7	6°40.8	6°21.5	3.9 - 1.7	9.9 - 4.4	15.9 - 7.0
40	6°10.0	6°11.0	5°53.1	4.0 - 1.6	10.0 - 4.1	16.0 - 6.5	40	6°25.0	6°26.1	6°07.5	4.0 - 1.7	10.0 - 4.3	16.0 - 6.8	40	6°40.0	6°41.1	6°21.8	4.0 - 1.8	10.0 - 4.4	16.0 - 7.1
41	6°10.3	6°11.3	5°53.4	4.1 - 1.7	10.1 - 4.1	16.1 - 6.6	41	6°25.3	6°26.3	6°07.7	4.1 - 1.7	10.1 - 4.3	16.1 - 6.8	41	6°40.3	6°41.3	6°22.0	4.1 - 1.8	10.1 - 4.5	16.1 - 7.1
42	6°10.5	6°11.5	5°53.6	4.2 - 1.7	10.2 - 4.2	16.2 - 6.6	42	6°25.5	6°26.6	6°07.9	4.2 - 1.8	10.2 - 4.3	16.2 - 6.9	42	6°40.5	6°41.6	6°22.3	4.2 - 1.9	10.2 - 4.5	16.2 - 7.2
43	6°10.7	6°11.8	5°53.9	4.3 - 1.8	10.3 - 4.2	16.3 - 6.7	43	6°25.7	6°26.8	6°08.2	4.3 - 1.8	10.3 - 4.4	16.3 - 6.9	43	6°40.7	6°41.8	6°22.5	4.3 - 1.9	10.3 - 4.5	16.3 - 7.2
44	6°11.0	6°12.0	5°54.1	4.4 - 1.8	10.4 - 4.2	16.4 - 6.7	44	6°26.0	6°27.1	6°08.4	4.4 - 1.9	10.4 - 4.4	16.4 - 7.0	44	6°41.0	6°42.1	6°22.7	4.4 - 1.9	10.4 - 4.6	16.4 - 7.2
45	6°11.3	6°12.3	5°54.3	4.5 - 1.8	10.5 - 4.3	16.5 - 6.7	45	6°26.3	6°27.3	6°08.7	4.5 - 1.9	10.5 - 4.5	16.5 - 7.0	45	6°41.3	6°42.3	6°23.0	4.5 - 2.0	10.5 - 4.6	16.5 - 7.3
46	6°11.5	6°12.5	5°54.6	4.6 - 1.9	10.6 - 4.3	16.6 - 6.8	46	6°26.5	6°27.6	6°08.9	4.6 - 2.0	10.6 - 4.5	16.6 - 7.1	46	6°41.5	6°42.6	6°23.2	4.6 - 2.0	10.6 - 4.7	16.6 - 7.3
47	6°11.8	6°12.8	5°54.8	4.7 - 1.9	10.7 - 4.4	16.7 - 6.8	47	6°26.8	6°27.8	6°09.1	4.7 - 2.0	10.7 - 4.5	16.7 - 7.1	47	6°41.8	6°42.8	6°23.4	4.7 - 2.1	10.7 - 4.7	16.7 - 7.4
48	6°12.0	6°13.0	5°55.1	4.8 - 2.0	10.8 - 4.4	16.8 - 6.9	48	6°27.0	6°28.1	6°09.4	4.8 - 2.0	10.8 - 4.6	16.8 - 7.1	48	6°42.0	6°43.1	6°23.7	4.8 - 2.1	10.8 - 4.8	16.8 - 7.4
49	6°12.2	6°13.3	5°55.3	4.9 - 2.0	10.9 - 4.5	16.9 - 6.9	49	6°27.2												

Increments and Corrections

m 27	Sun Plan.	Aries	Moon	v and d corr			m 28	Sun Plan.	Aries	Moon	v and d corr			m 29	Sun Plan.	Aries	Moon	v and d corr		
0	6°45.0	6°46.1	6°26.5	0.0 - 0.0	6.0 - 2.8	12.0 - 5.5	0	7°00.0	7°01.1	6°40.9	0.0 - 0.0	6.0 - 2.8	12.0 - 5.7	0	7°15.0	7°16.2	6°55.2	0.0 - 0.0	6.0 - 2.9	12.0 - 5.9
1	6°45.2	6°46.4	6°26.8	0.1 - 0.0	6.1 - 2.8	12.1 - 5.5	1	7°00.2	7°01.4	6°41.1	0.1 - 0.0	6.1 - 2.9	12.1 - 5.7	1	7°15.2	7°16.4	6°55.4	0.1 - 0.0	6.1 - 3.0	12.1 - 5.9
2	6°45.5	6°46.6	6°27.0	0.2 - 0.1	6.2 - 2.8	12.2 - 5.6	2	7°00.5	7°01.6	6°41.3	0.2 - 0.1	6.2 - 2.9	12.2 - 5.8	2	7°15.5	7°16.7	6°55.7	0.2 - 0.1	6.2 - 3.0	12.2 - 6.0
3	6°45.8	6°46.9	6°27.3	0.3 - 0.1	6.3 - 2.9	12.3 - 5.6	3	7°00.8	7°01.9	6°41.6	0.3 - 0.1	6.3 - 3.0	12.3 - 5.8	3	7°15.8	7°16.9	6°55.9	0.3 - 0.1	6.3 - 3.1	12.3 - 6.0
4	6°46.0	6°47.1	6°27.5	0.4 - 0.2	6.4 - 2.9	12.4 - 5.7	4	7°01.0	7°02.2	6°41.8	0.4 - 0.2	6.4 - 3.0	12.4 - 5.9	4	7°16.0	7°17.2	6°56.1	0.4 - 0.2	6.4 - 3.1	12.4 - 6.1
5	6°46.2	6°47.4	6°27.7	0.5 - 0.2	6.5 - 3.0	12.5 - 5.7	5	7°01.2	7°02.4	6°42.1	0.5 - 0.2	6.5 - 3.1	12.5 - 5.9	5	7°16.2	7°17.4	6°56.4	0.5 - 0.2	6.5 - 3.2	12.5 - 6.1
6	6°46.5	6°47.6	6°28.0	0.6 - 0.3	6.6 - 3.0	12.6 - 5.8	6	7°01.5	7°02.7	6°42.3	0.6 - 0.3	6.6 - 3.1	12.6 - 6.0	6	7°16.5	7°17.7	6°56.6	0.6 - 0.3	6.6 - 3.2	12.6 - 6.2
7	6°46.8	6°47.9	6°28.2	0.7 - 0.3	6.7 - 3.1	12.7 - 5.8	7	7°01.8	7°02.9	6°42.5	0.7 - 0.3	6.7 - 3.2	12.7 - 6.0	7	7°16.8	7°17.9	6°56.9	0.7 - 0.3	6.7 - 3.3	12.7 - 6.2
8	6°47.0	6°48.1	6°28.5	0.8 - 0.4	6.8 - 3.1	12.8 - 5.9	8	7°02.0	7°03.2	6°42.8	0.8 - 0.4	6.8 - 3.2	12.8 - 6.1	8	7°17.0	7°18.2	6°57.1	0.8 - 0.4	6.8 - 3.3	12.8 - 6.3
9	6°47.2	6°48.4	6°28.7	0.9 - 0.4	6.9 - 3.2	12.9 - 5.9	9	7°02.2	7°03.4	6°43.0	0.9 - 0.4	6.9 - 3.3	12.9 - 6.1	9	7°17.2	7°18.4	6°57.3	0.9 - 0.4	6.9 - 3.4	12.9 - 6.3
10	6°47.5	6°48.6	6°28.9	1.0 - 0.5	7.0 - 3.2	13.0 - 6.0	10	7°02.5	7°03.7	6°43.3	1.0 - 0.5	7.0 - 3.3	13.0 - 6.2	10	7°17.5	7°18.7	6°57.6	1.0 - 0.5	7.0 - 3.4	13.0 - 6.4
11	6°47.8	6°48.9	6°29.2	1.1 - 0.5	7.1 - 3.3	13.1 - 6.0	11	7°02.8	7°03.9	6°43.5	1.1 - 0.5	7.1 - 3.4	13.1 - 6.2	11	7°17.8	7°18.9	6°57.8	1.1 - 0.5	7.1 - 3.5	13.1 - 6.4
12	6°48.0	6°49.1	6°29.4	1.2 - 0.6	7.2 - 3.3	13.2 - 6.0	12	7°03.0	7°04.2	6°43.7	1.2 - 0.6	7.2 - 3.4	13.2 - 6.3	12	7°18.0	7°19.2	6°58.0	1.2 - 0.6	7.2 - 3.5	13.2 - 6.5
13	6°48.2	6°49.4	6°29.7	1.3 - 0.6	7.3 - 3.3	13.3 - 6.1	13	7°03.2	7°04.4	6°44.0	1.3 - 0.6	7.3 - 3.5	13.3 - 6.3	13	7°18.2	7°19.4	6°58.3	1.3 - 0.6	7.3 - 3.6	13.3 - 6.5
14	6°48.5	6°49.6	6°29.9	1.4 - 0.6	7.4 - 3.4	13.4 - 6.1	14	7°03.5	7°04.7	6°44.2	1.4 - 0.7	7.4 - 3.5	13.4 - 6.4	14	7°18.5	7°19.7	6°58.5	1.4 - 0.7	7.4 - 3.6	13.4 - 6.6
15	6°48.8	6°49.9	6°30.1	1.5 - 0.7	7.5 - 3.4	13.5 - 6.2	15	7°03.8	7°04.9	6°44.4	1.5 - 0.7	7.5 - 3.6	13.5 - 6.4	15	7°18.8	7°19.9	6°58.8	1.5 - 0.7	7.5 - 3.7	13.5 - 6.6
16	6°49.0	6°50.1	6°30.4	1.6 - 0.7	7.6 - 3.5	13.6 - 6.2	16	7°04.0	7°05.2	6°44.7	1.6 - 0.8	7.6 - 3.6	13.6 - 6.5	16	7°19.0	7°20.2	6°59.0	1.6 - 0.8	7.6 - 3.7	13.6 - 6.7
17	6°49.3	6°50.4	6°30.6	1.7 - 0.8	7.7 - 3.5	13.7 - 6.3	17	7°04.3	7°05.4	6°44.9	1.7 - 0.8	7.7 - 3.7	13.7 - 6.5	17	7°19.3	7°20.5	6°59.2	1.7 - 0.8	7.7 - 3.8	13.7 - 6.7
18	6°49.5	6°50.6	6°30.8	1.8 - 0.8	7.8 - 3.6	13.8 - 6.3	18	7°04.5	7°05.7	6°45.2	1.8 - 0.9	7.8 - 3.7	13.8 - 6.6	18	7°19.5	7°20.7	6°59.5	1.8 - 0.9	7.8 - 3.8	13.8 - 6.8
19	6°49.8	6°50.9	6°31.1	1.9 - 0.9	7.9 - 3.6	13.9 - 6.4	19	7°04.7	7°05.9	6°45.4	1.9 - 0.9	7.9 - 3.8	13.9 - 6.6	19	7°19.7	7°21.0	6°59.7	1.9 - 0.9	7.9 - 3.9	13.9 - 6.8
20	6°50.0	6°51.1	6°31.3	2.0 - 0.9	8.0 - 3.7	14.0 - 6.4	20	7°05.0	7°06.2	6°45.6	2.0 - 0.9	8.0 - 3.8	14.0 - 6.6	20	7°20.0	7°21.2	7°00.0	2.0 - 1.0	8.0 - 3.9	14.0 - 6.9
21	6°50.3	6°51.4	6°31.6	2.1 - 1.0	8.1 - 3.7	14.1 - 6.5	21	7°05.3	7°06.4	6°45.9	2.1 - 1.0	8.1 - 3.8	14.1 - 6.7	21	7°20.3	7°21.5	7°00.2	2.1 - 1.0	8.1 - 4.0	14.1 - 6.9
22	6°50.5	6°51.6	6°31.8	2.2 - 1.0	8.2 - 3.8	14.2 - 6.5	22	7°05.5	7°06.7	6°46.1	2.2 - 1.0	8.2 - 3.9	14.2 - 6.7	22	7°20.5	7°21.7	7°00.4	2.2 - 1.1	8.2 - 4.0	14.2 - 7.0
23	6°50.7	6°51.9	6°32.0	2.3 - 1.1	8.3 - 3.8	14.3 - 6.6	23	7°05.7	7°06.9	6°46.4	2.3 - 1.1	8.3 - 3.9	14.3 - 6.8	23	7°20.7	7°22.0	7°00.7	2.3 - 1.1	8.3 - 4.1	14.3 - 7.0
24	6°51.0	6°52.1	6°32.3	2.4 - 1.1	8.4 - 3.9	14.4 - 6.6	24	7°06.0	7°07.2	6°46.6	2.4 - 1.1	8.4 - 4.0	14.4 - 6.8	24	7°21.0	7°22.2	7°00.9	2.4 - 1.2	8.4 - 4.1	14.4 - 7.1
25	6°51.3	6°52.4	6°32.5	2.5 - 1.1	8.5 - 3.9	14.5 - 6.6	25	7°06.3	7°07.4	6°46.8	2.5 - 1.2	8.5 - 4.0	14.5 - 6.9	25	7°21.3	7°22.5	7°01.1	2.5 - 1.2	8.5 - 4.2	14.5 - 7.1
26	6°51.5	6°52.6	6°32.8	2.6 - 1.2	8.6 - 3.9	14.6 - 6.7	26	7°06.5	7°07.7	6°47.1	2.6 - 1.2	8.6 - 4.1	14.6 - 6.9	26	7°21.5	7°22.7	7°01.4	2.6 - 1.3	8.6 - 4.2	14.6 - 7.2
27	6°51.7	6°52.9	6°33.0	2.7 - 1.2	8.7 - 4.0	14.7 - 6.7	27	7°06.7	7°07.9	6°47.3	2.7 - 1.3	8.7 - 4.1	14.7 - 7.0	27	7°21.7	7°23.0	7°01.6	2.7 - 1.3	8.7 - 4.3	14.7 - 7.2
28	6°52.0	6°53.1	6°33.2	2.8 - 1.3	8.8 - 4.0	14.8 - 6.8	28	7°07.0	7°08.2	6°47.5	2.8 - 1.3	8.8 - 4.2	14.8 - 7.0	28	7°22.0	7°23.2	7°01.9	2.8 - 1.4	8.8 - 4.3	14.8 - 7.3
29	6°52.3	6°53.4	6°33.5	2.9 - 1.3	8.9 - 4.1	14.9 - 6.8	29	7°07.3	7°08.4	6°47.8	2.9 - 1.4	8.9 - 4.2	14.9 - 7.1	29	7°22.3	7°23.5	7°02.1	2.9 - 1.4	8.9 - 4.4	14.9 - 7.3
30	6°52.5	6°53.6	6°33.7	3.0 - 1.4	9.0 - 4.1	15.0 - 6.9	30	7°07.5	7°08.7	6°48.0	3.0 - 1.4	9.0 - 4.3	15.0 - 7.1	30	7°22.5	7°23.7	7°02.3	3.0 - 1.5	9.0 - 4.4	15.0 - 7.4
31	6°52.7	6°53.9	6°33.9	3.1 - 1.4	9.1 - 4.2	15.1 - 6.9	31	7°07.7	7°08.9	6°48.3	3.1 - 1.5	9.1 - 4.3	15.1 - 7.2	31	7°22.7	7°24.0	7°02.6	3.1 - 1.5	9.1 - 4.5	15.1 - 7.4
32	6°53.0	6°54.1	6°34.2	3.2 - 1.5	9.2 - 4.2	15.2 - 7.0	32	7°08.0	7°09.2	6°48.5	3.2 - 1.5	9.2 - 4.4	15.2 - 7.2	32	7°23.0	7°24.2	7°02.8	3.2 - 1.6	9.2 - 4.5	15.2 - 7.5
33	6°53.3	6°54.4	6°34.4	3.3 - 1.5	9.3 - 4.3	15.3 - 7.0	33	7°08.3	7°09.4	6°48.7	3.3 - 1.6	9.3 - 4.4	15.3 - 7.3	33	7°23.3	7°24.5	7°03.1	3.3 - 1.6	9.3 - 4.6	15.3 - 7.5
34	6°53.5	6°54.6	6°34.7	3.4 - 1.6	9.4 - 4.3	15.4 - 7.1	34	7°08.5	7°09.7	6°49.0	3.4 - 1.6	9.4 - 4.5	15.4 - 7.3	34	7°23.5	7°24.7	7°03.3	3.4 - 1.7	9.4 - 4.6	15.4 - 7.6
35	6°53.7	6°54.9	6°34.9	3.5 - 1.6	9.5 - 4.4	15.5 - 7.1	35	7°08.7	7°09.9	6°49.2	3.5 - 1.7	9.5 - 4.5	15.5 - 7.4	35	7°23.7	7°25.0	7°03.5	3.5 - 1.7	9.5 - 4.7	15.5 - 7.6
36	6°54.0	6°55.1	6°35.1	3.6 - 1.6	9.6 - 4.4	15.6 - 7.1	36	7°09.0	7°10.2	6°49.5	3.6 - 1.7	9.6 - 4.6	15.6 - 7.4	36	7°24.0	7°25.2	7°03.8	3.6 - 1.8	9.6 - 4.7	15.6 - 7.7
37	6°54.3	6°55.4	6°35.4	3.7 - 1.7	9.7 - 4.4	15.7 - 7.2	37	7°09.3	7°10.4	6°49.7	3.7 - 1.8	9.7 - 4.6	15.7 - 7.5	37	7°24.3	7°25.5	7°04.0	3.7 - 1.8	9.7 - 4.8	15.7 - 7.7
38	6°54.5	6°55.6	6°35.6	3.8 - 1.7	9.8 - 4.5	15.8 - 7.2	38	7°09.5	7°10.7	6°49.9	3.8 - 1.8	9.8 - 4.7	15.8 - 7.5	38	7°24.5	7°25.7	7°04.3	3.8 - 1.9	9.8 - 4.8	15.8 - 7.8
39	6°54.7	6°55.9	6°35.9	3.9 - 1.8	9.9 - 4.5	15.9 - 7.3	39	7°09.7	7°10.9	6°50.2	3.9 - 1.9	9.9 - 4.7	15.9 - 7.6	39	7°24.7	7°26.0	7°04.5	3.9 - 1.9	9.9 - 4.9	15.9 - 7.8
40	6°55.0	6°56.1	6°36.1	4.0 - 1.8	10.0 - 4.6	16.0 - 7.3	40	7°10.0	7°11.2	6°50.4	4.0 - 1.9	10.0 - 4.8	16.0 - 7.6	40	7°25.0	7°26.2	7°04.7	4.0 - 2.0	10.0 - 4.9	16.0 - 7.9
41	6°55.3	6°56.4	6°36.3	4.1 - 1.9	10.1 - 4.6	16.1 - 7.4	41	7°10.3	7°11.4	6°50.6	4.1 - 1.9	10.1 - 4.8	16.1 - 7.6	41	7°25.3	7°26.5	7°05.0	4.1 - 2.0	10.1 - 5.0	16.1 - 7.9
42	6°55.5	6°56.6	6°36.6	4.2 - 1.9	10.2 - 4.7	16.2 - 7.4	42	7°10.5	7°11.7	6°50.9	4.2 - 2.0	10.2 - 4.8	16.2 - 7.7	42	7°25.5	7°26.7	7°05.2	4.2 - 2.1	10.2 - 5.0	16.2 - 8.0
43	6°55.7	6°56.9	6°36.8	4.3 - 2.0	10.3 - 4.7	16.3 - 7.5	43	7°10.7	7°11.9	6°51.1	4.3 - 2.0	10.3 - 4.9	16.3 - 7.7	43	7°25.7	7°27.0	7°05.4	4.3 - 2.1	10.3 - 5.1	16.3 - 8.0
44	6°56.0	6°57.1	6°37.0	4.4 - 2.0	10.4 - 4.8	16.4 - 7.5	44	7°11.0	7°12.2	6°51.4	4.4 - 2.1	10.4 - 4.9	16.4 - 7.8	44	7°26.0	7°27.2	7°05.7	4.4 - 2.2	10.4 - 5.1	16.4 - 8.1
45	6°56.3	6°57.4	6°37.3	4.5 - 2.1	10.5 - 4.8	16.5 - 7.6	45	7°11.3	7°12.4	6°51.6	4.5 - 2.1	10.5 - 5.0	16.5 - 7.8	45	7°26.3	7°27.5	7°05.9	4.5 - 2.2	10.5 - 5.2	16.5 - 8.1
46	6°56.5	6°57.6	6°37.5	4.6 - 2.1	10.6 - 4.9	16.6 - 7.6	46	7°11.5	7°12.7	6°51.8	4.6 - 2.2	10.6 - 5.0	16.6 - 7.9	46	7°26.5	7°27.7	7°06.2	4.6 - 2.3	10.6 - 5.2	16.6 - 8.2
47	6°56.8	6°57.9	6°37.8	4.7 - 2.2	10.7 - 4.9	16.7 - 7.7	47	7°11.8	7°12.9	6°52.1	4.7 - 2.2	10.7 - 5.1	16.7 - 7.9	47	7°26.8	7°28.0	7°06.4	4.7 - 2.3	10.7 - 5.3	16.7 - 8.2
48	6°57.0	6°58.1	6°38.0	4.8 - 2.2	10.8 - 5.0	16.8 - 7.7	48	7°12.0	7°13.2	6°52.3	4.8 - 2.3	10.8 - 5.1	16.8 - 8.0	48	7°27.0	7°28.2	7°06.6	4.8 - 2.4	10.8 - 5.3	16.8 - 8.3
49	6°57.3	6°58.4	6°38.2	4.9 - 2.2	10.9 - 5.0	16.9 - 7.7	49	7°12.2	7°13.4</											

Increments and Corrections

m	Sun	Aries	Moon	v and d corr			m	Sun	Aries	Moon	v and d corr			m	Sun	Aries	Moon	v and d corr		
30	Plan.						31	Plan.						32	Plan.					
0	7°30.0	7°31.2	7°09.5	0.0 - 0.0	6.0 - 3.0	12.0 - 6.1	0	7°45.0	7°46.3	7°23.8	0.0 - 0.0	6.0 - 3.2	12.0 - 6.3	0	8°00.0	8°01.3	7°38.1	0.0 - 0.0	6.0 - 3.3	12.0 - 6.5
1	7°30.2	7°31.5	7°09.7	0.1 - 0.1	6.1 - 3.1	12.1 - 6.2	1	7°45.2	7°46.5	7°24.1	0.1 - 0.1	6.1 - 3.2	12.1 - 6.4	1	8°00.2	8°01.6	7°38.4	0.1 - 0.1	6.1 - 3.3	12.1 - 6.6
2	7°30.5	7°31.7	7°10.0	0.2 - 0.1	6.2 - 3.2	12.2 - 6.2	2	7°45.5	7°46.8	7°24.3	0.2 - 0.1	6.2 - 3.3	12.2 - 6.4	2	8°00.5	8°01.8	7°38.6	0.2 - 0.1	6.2 - 3.4	12.2 - 6.6
3	7°30.8	7°32.0	7°10.2	0.3 - 0.2	6.3 - 3.2	12.3 - 6.3	3	7°45.7	7°47.0	7°24.5	0.3 - 0.2	6.3 - 3.3	12.3 - 6.5	3	8°00.7	8°02.1	7°38.8	0.3 - 0.2	6.3 - 3.4	12.3 - 6.7
4	7°31.0	7°32.2	7°10.5	0.4 - 0.2	6.4 - 3.3	12.4 - 6.3	4	7°46.0	7°47.3	7°24.8	0.4 - 0.2	6.4 - 3.4	12.4 - 6.5	4	8°01.0	8°02.3	7°39.1	0.4 - 0.2	6.4 - 3.5	12.4 - 6.7
5	7°31.2	7°32.5	7°10.7	0.5 - 0.3	6.5 - 3.3	12.5 - 6.4	5	7°46.2	7°47.5	7°25.0	0.5 - 0.3	6.5 - 3.4	12.5 - 6.6	5	8°01.3	8°02.6	7°39.3	0.5 - 0.3	6.5 - 3.5	12.5 - 6.8
6	7°31.5	7°32.7	7°10.9	0.6 - 0.3	6.6 - 3.4	12.6 - 6.4	6	7°46.5	7°47.8	7°25.2	0.6 - 0.3	6.6 - 3.5	12.6 - 6.6	6	8°01.5	8°02.8	7°39.6	0.6 - 0.3	6.6 - 3.6	12.6 - 6.8
7	7°31.7	7°33.0	7°11.2	0.7 - 0.4	6.7 - 3.4	12.7 - 6.5	7	7°46.8	7°48.0	7°25.5	0.7 - 0.4	6.7 - 3.5	12.7 - 6.7	7	8°01.8	8°03.1	7°39.8	0.7 - 0.4	6.7 - 3.6	12.7 - 6.9
8	7°32.0	7°33.2	7°11.4	0.8 - 0.4	6.8 - 3.5	12.8 - 6.5	8	7°47.0	7°48.3	7°25.7	0.8 - 0.4	6.8 - 3.6	12.8 - 6.7	8	8°02.0	8°03.3	7°40.0	0.8 - 0.4	6.8 - 3.7	12.8 - 6.9
9	7°32.2	7°33.5	7°11.6	0.9 - 0.5	6.9 - 3.5	12.9 - 6.6	9	7°47.2	7°48.5	7°26.0	0.9 - 0.5	6.9 - 3.6	12.9 - 6.8	9	8°02.2	8°03.6	7°40.3	0.9 - 0.5	6.9 - 3.7	12.9 - 7.0
10	7°32.5	7°33.7	7°11.9	1.0 - 0.5	7.0 - 3.6	13.0 - 6.6	10	7°47.5	7°48.8	7°26.2	1.0 - 0.5	7.0 - 3.7	13.0 - 6.8	10	8°02.5	8°03.8	7°40.5	1.0 - 0.5	7.0 - 3.8	13.0 - 7.0
11	7°32.8	7°34.0	7°12.1	1.1 - 0.6	7.1 - 3.6	13.1 - 6.7	11	7°47.7	7°49.0	7°26.4	1.1 - 0.6	7.1 - 3.7	13.1 - 6.9	11	8°02.7	8°04.1	7°40.8	1.1 - 0.6	7.1 - 3.8	13.1 - 7.1
12	7°33.0	7°34.2	7°12.4	1.2 - 0.6	7.2 - 3.7	13.2 - 6.7	12	7°48.0	7°49.3	7°26.7	1.2 - 0.6	7.2 - 3.8	13.2 - 6.9	12	8°03.0	8°04.3	7°41.0	1.2 - 0.7	7.2 - 3.9	13.2 - 7.1
13	7°33.3	7°34.5	7°12.6	1.3 - 0.7	7.3 - 3.7	13.3 - 6.8	13	7°48.2	7°49.5	7°26.9	1.3 - 0.7	7.3 - 3.8	13.3 - 7.0	13	8°03.3	8°04.6	7°41.2	1.3 - 0.7	7.3 - 4.0	13.3 - 7.2
14	7°33.5	7°34.7	7°12.8	1.4 - 0.7	7.4 - 3.8	13.4 - 6.8	14	7°48.5	7°49.8	7°27.2	1.4 - 0.7	7.4 - 3.9	13.4 - 7.0	14	8°03.5	8°04.8	7°41.5	1.4 - 0.8	7.4 - 4.0	13.4 - 7.3
15	7°33.8	7°35.0	7°13.1	1.5 - 0.8	7.5 - 3.8	13.5 - 6.9	15	7°48.8	7°50.0	7°27.4	1.5 - 0.8	7.5 - 3.9	13.5 - 7.1	15	8°03.8	8°05.1	7°41.7	1.5 - 0.8	7.5 - 4.1	13.5 - 7.3
16	7°34.0	7°35.2	7°13.3	1.6 - 0.8	7.6 - 3.9	13.6 - 6.9	16	7°49.0	7°50.3	7°27.6	1.6 - 0.8	7.6 - 4.0	13.6 - 7.1	16	8°04.0	8°05.3	7°42.0	1.6 - 0.9	7.6 - 4.1	13.6 - 7.4
17	7°34.3	7°35.5	7°13.6	1.7 - 0.9	7.7 - 3.9	13.7 - 7.0	17	7°49.3	7°50.5	7°27.9	1.7 - 0.9	7.7 - 4.0	13.7 - 7.2	17	8°04.2	8°05.6	7°42.2	1.7 - 0.9	7.7 - 4.2	13.7 - 7.4
18	7°34.5	7°35.7	7°13.8	1.8 - 0.9	7.8 - 4.0	13.8 - 7.0	18	7°49.5	7°50.8	7°28.1	1.8 - 0.9	7.8 - 4.1	13.8 - 7.2	18	8°04.5	8°05.8	7°42.4	1.8 - 1.0	7.8 - 4.2	13.8 - 7.5
19	7°34.8	7°36.0	7°14.0	1.9 - 1.0	7.9 - 4.0	13.9 - 7.1	19	7°49.8	7°51.0	7°28.4	1.9 - 1.0	7.9 - 4.1	13.9 - 7.3	19	8°04.8	8°06.1	7°42.7	1.9 - 1.0	7.9 - 4.3	13.9 - 7.5
20	7°35.0	7°36.2	7°14.3	2.0 - 1.0	8.0 - 4.1	14.0 - 7.1	20	7°50.0	7°51.3	7°28.6	2.0 - 1.1	8.0 - 4.2	14.0 - 7.4	20	8°05.0	8°06.3	7°42.9	2.0 - 1.1	8.0 - 4.3	14.0 - 7.6
21	7°35.3	7°36.5	7°14.5	2.1 - 1.1	8.1 - 4.1	14.1 - 7.2	21	7°50.3	7°51.5	7°28.8	2.1 - 1.1	8.1 - 4.3	14.1 - 7.4	21	8°05.3	8°06.6	7°43.1	2.1 - 1.1	8.1 - 4.4	14.1 - 7.6
22	7°35.5	7°36.7	7°14.7	2.2 - 1.1	8.2 - 4.2	14.2 - 7.2	22	7°50.5	7°51.8	7°29.1	2.2 - 1.2	8.2 - 4.3	14.2 - 7.5	22	8°05.5	8°06.8	7°43.4	2.2 - 1.2	8.2 - 4.4	14.2 - 7.7
23	7°35.7	7°37.0	7°15.0	2.3 - 1.2	8.3 - 4.2	14.3 - 7.3	23	7°50.7	7°52.0	7°29.3	2.3 - 1.2	8.3 - 4.4	14.3 - 7.5	23	8°05.7	8°07.1	7°43.6	2.3 - 1.2	8.3 - 4.5	14.3 - 7.7
24	7°36.0	7°37.2	7°15.2	2.4 - 1.2	8.4 - 4.3	14.4 - 7.3	24	7°51.0	7°52.3	7°29.5	2.4 - 1.3	8.4 - 4.4	14.4 - 7.6	24	8°06.0	8°07.3	7°43.9	2.4 - 1.3	8.4 - 4.5	14.4 - 7.8
25	7°36.2	7°37.5	7°15.5	2.5 - 1.3	8.5 - 4.3	14.5 - 7.4	25	7°51.3	7°52.5	7°29.8	2.5 - 1.3	8.5 - 4.5	14.5 - 7.6	25	8°06.2	8°07.6	7°44.1	2.5 - 1.4	8.5 - 4.6	14.5 - 7.9
26	7°36.5	7°37.7	7°15.7	2.6 - 1.3	8.6 - 4.4	14.6 - 7.4	26	7°51.5	7°52.8	7°30.0	2.6 - 1.4	8.6 - 4.5	14.6 - 7.7	26	8°06.5	8°07.8	7°44.3	2.6 - 1.4	8.6 - 4.7	14.6 - 7.9
27	7°36.7	7°38.0	7°15.9	2.7 - 1.4	8.7 - 4.4	14.7 - 7.5	27	7°51.7	7°53.0	7°30.3	2.7 - 1.4	8.7 - 4.6	14.7 - 7.7	27	8°06.8	8°08.1	7°44.6	2.7 - 1.5	8.7 - 4.7	14.7 - 8.0
28	7°37.0	7°38.2	7°16.2	2.8 - 1.4	8.8 - 4.5	14.8 - 7.5	28	7°52.0	7°53.3	7°30.5	2.8 - 1.5	8.8 - 4.6	14.8 - 7.8	28	8°07.0	8°08.3	7°44.8	2.8 - 1.5	8.8 - 4.8	14.8 - 8.0
29	7°37.3	7°38.5	7°16.4	2.9 - 1.5	8.9 - 4.5	14.9 - 7.6	29	7°52.2	7°53.5	7°30.7	2.9 - 1.5	8.9 - 4.7	14.9 - 7.8	29	8°07.3	8°08.6	7°45.1	2.9 - 1.6	8.9 - 4.8	14.9 - 8.1
30	7°37.5	7°38.8	7°16.7	3.0 - 1.5	9.0 - 4.6	15.0 - 7.6	30	7°52.5	7°53.8	7°31.0	3.0 - 1.6	9.0 - 4.7	15.0 - 7.9	30	8°07.5	8°08.8	7°45.3	3.0 - 1.6	9.0 - 4.9	15.0 - 8.1
31	7°37.7	7°39.0	7°16.9	3.1 - 1.6	9.1 - 4.6	15.1 - 7.7	31	7°52.7	7°54.0	7°31.2	3.1 - 1.6	9.1 - 4.8	15.1 - 7.9	31	8°07.7	8°09.1	7°45.5	3.1 - 1.7	9.1 - 4.9	15.1 - 8.2
32	7°38.0	7°39.3	7°17.1	3.2 - 1.6	9.2 - 4.7	15.2 - 7.7	32	7°53.0	7°54.3	7°31.5	3.2 - 1.7	9.2 - 4.8	15.2 - 8.0	32	8°08.0	8°09.3	7°45.8	3.2 - 1.7	9.2 - 5.0	15.2 - 8.2
33	7°38.3	7°39.5	7°17.4	3.3 - 1.7	9.3 - 4.7	15.3 - 7.8	33	7°53.3	7°54.5	7°31.7	3.3 - 1.7	9.3 - 4.9	15.3 - 8.0	33	8°08.2	8°09.6	7°46.0	3.3 - 1.8	9.3 - 5.0	15.3 - 8.3
34	7°38.5	7°39.8	7°17.6	3.4 - 1.7	9.4 - 4.8	15.4 - 7.8	34	7°53.5	7°54.8	7°31.9	3.4 - 1.8	9.4 - 4.9	15.4 - 8.1	34	8°08.5	8°09.8	7°46.2	3.4 - 1.8	9.4 - 5.1	15.4 - 8.3
35	7°38.7	7°40.0	7°17.9	3.5 - 1.8	9.5 - 4.8	15.5 - 7.9	35	7°53.8	7°55.0	7°32.2	3.5 - 1.8	9.5 - 5.0	15.5 - 8.1	35	8°08.8	8°10.1	7°46.5	3.5 - 1.9	9.5 - 5.1	15.5 - 8.4
36	7°39.0	7°40.3	7°18.1	3.6 - 1.8	9.6 - 4.9	15.6 - 7.9	36	7°54.0	7°55.3	7°32.4	3.6 - 1.9	9.6 - 5.0	15.6 - 8.2	36	8°09.0	8°10.3	7°46.7	3.6 - 1.9	9.6 - 5.2	15.6 - 8.4
37	7°39.3	7°40.5	7°18.3	3.7 - 1.9	9.7 - 4.9	15.7 - 8.0	37	7°54.3	7°55.5	7°32.6	3.7 - 1.9	9.7 - 5.1	15.7 - 8.2	37	8°09.3	8°10.6	7°47.0	3.7 - 2.0	9.7 - 5.3	15.7 - 8.5
38	7°39.5	7°40.8	7°18.6	3.8 - 1.9	9.8 - 5.0	15.8 - 8.0	38	7°54.5	7°55.8	7°32.9	3.8 - 2.0	9.8 - 5.1	15.8 - 8.3	38	8°09.5	8°10.8	7°47.2	3.8 - 2.1	9.8 - 5.3	15.8 - 8.6
39	7°39.8	7°41.0	7°18.8	3.9 - 2.0	9.9 - 5.0	15.9 - 8.1	39	7°54.7	7°56.0	7°33.1	3.9 - 2.0	9.9 - 5.2	15.9 - 8.3	39	8°09.7	8°11.1	7°47.4	3.9 - 2.1	9.9 - 5.4	15.9 - 8.6
40	7°40.0	7°41.3	7°19.0	4.0 - 2.0	10.0 - 5.1	16.0 - 8.1	40	7°55.0	7°56.3	7°33.4	4.0 - 2.1	10.0 - 5.3	16.0 - 8.4	40	8°10.0	8°11.3	7°47.7	4.0 - 2.2	10.0 - 5.4	16.0 - 8.7
41	7°40.3	7°41.5	7°19.3	4.1 - 2.1	10.1 - 5.1	16.1 - 8.2	41	7°55.3	7°56.5	7°33.6	4.1 - 2.2	10.1 - 5.3	16.1 - 8.5	41	8°10.2	8°11.6	7°47.9	4.1 - 2.2	10.1 - 5.5	16.1 - 8.7
42	7°40.5	7°41.8	7°19.5	4.2 - 2.1	10.2 - 5.2	16.2 - 8.2	42	7°55.5	7°56.8	7°33.8	4.2 - 2.2	10.2 - 5.4	16.2 - 8.5	42	8°10.5	8°11.8	7°48.2	4.2 - 2.3	10.2 - 5.5	16.2 - 8.8
43	7°40.7	7°42.0	7°19.8	4.3 - 2.2	10.3 - 5.2	16.3 - 8.3	43	7°55.7	7°57.1	7°34.1	4.3 - 2.3	10.3 - 5.4	16.3 - 8.6	43	8°10.8	8°12.1	7°48.4	4.3 - 2.3	10.3 - 5.6	16.3 - 8.8
44	7°41.0	7°42.3	7°20.0	4.4 - 2.2	10.4 - 5.3	16.4 - 8.3	44	7°56.0	7°57.3	7°34.3	4.4 - 2.3	10.4 - 5.5	16.4 - 8.6	44	8°11.0	8°12.3	7°48.6	4.4 - 2.4	10.4 - 5.6	16.4 - 8.9
45	7°41.2	7°42.5	7°20.2	4.5 - 2.3	10.5 - 5.3	16.5 - 8.4	45	7°56.3	7°57.6	7°34.6	4.5 - 2.4	10.5 - 5.5	16.5 - 8.7	45	8°11.3	8°12.6	7°48.9	4.5 - 2.4	10.5 - 5.7	16.5 - 8.9
46	7°41.5	7°42.8	7°20.5	4.6 - 2.3	10.6 - 5.4	16.6 - 8.4	46	7°56.5	7°57.8	7°34.8	4.6 - 2.4	10.6 - 5.6	16.6 - 8.7	46	8°11.5	8°12.8	7°49.1	4.6 - 2.5	10.6 - 5.7	16.6 - 9.0
47	7°41.8	7°43.0	7°20.7	4.7 - 2.4	10.7 - 5.4	16.7 - 8.5	47	7°56.7	7°58.1	7°35.0	4.7 - 2.5	10.7 - 5.6	16.7 - 8.8	47	8°11.7	8°13.1	7°49.3	4.7 - 2.5	10.7 - 5.8	16.7 - 9.0
48	7°42.0	7°43.3	7°21.0	4.8 - 2.4	10.8 - 5.5	16.8 - 8.5	48	7°57.0	7°58.3	7°35.3	4.8 - 2.5	10.8 - 5.7	16.8 - 8.8	48	8°12.0	8°13.3	7°49.6	4.8 - 2.6	10.8 - 5.8	16.8 - 9.1
49	7°42.3	7°																		

Increments and Corrections

m	Sun	Aries	Moon	v and d corr		
33	Plan.					
0	8°15.0	8°16.4	7°52.5	0.0 - 0.0	6.0 - 3.4	12.0 - 6.7
1	8°15.2	8°16.6	7°52.7	0.1 - 0.1	6.1 - 3.4	12.1 - 6.8
2	8°15.5	8°16.9	7°52.9	0.2 - 0.1	6.2 - 3.5	12.2 - 6.8
3	8°15.7	8°17.1	7°53.2	0.3 - 0.2	6.3 - 3.5	12.3 - 6.9
4	8°16.0	8°17.4	7°53.4	0.4 - 0.2	6.4 - 3.6	12.4 - 6.9
5	8°16.3	8°17.6	7°53.6	0.5 - 0.3	6.5 - 3.6	12.5 - 7.0
6	8°16.5	8°17.9	7°53.9	0.6 - 0.3	6.6 - 3.7	12.6 - 7.0
7	8°16.8	8°18.1	7°54.1	0.7 - 0.4	6.7 - 3.7	12.7 - 7.1
8	8°17.0	8°18.4	7°54.4	0.8 - 0.4	6.8 - 3.8	12.8 - 7.1
9	8°17.2	8°18.6	7°54.6	0.9 - 0.5	6.9 - 3.9	12.9 - 7.2
10	8°17.5	8°18.9	7°54.8	1.0 - 0.6	7.0 - 3.9	13.0 - 7.3
11	8°17.7	8°19.1	7°55.1	1.1 - 0.6	7.1 - 4.0	13.1 - 7.3
12	8°18.0	8°19.4	7°55.3	1.2 - 0.7	7.2 - 4.0	13.2 - 7.4
13	8°18.3	8°19.6	7°55.6	1.3 - 0.7	7.3 - 4.1	13.3 - 7.4
14	8°18.5	8°19.9	7°55.8	1.4 - 0.8	7.4 - 4.1	13.4 - 7.5
15	8°18.8	8°20.1	7°56.0	1.5 - 0.8	7.5 - 4.2	13.5 - 7.5
16	8°19.0	8°20.4	7°56.3	1.6 - 0.9	7.6 - 4.2	13.6 - 7.6
17	8°19.2	8°20.6	7°56.5	1.7 - 0.9	7.7 - 4.3	13.7 - 7.6
18	8°19.5	8°20.9	7°56.7	1.8 - 1.0	7.8 - 4.4	13.8 - 7.7
19	8°19.8	8°21.1	7°57.0	1.9 - 1.1	7.9 - 4.4	13.9 - 7.8
20	8°20.0	8°21.4	7°57.2	2.0 - 1.1	8.0 - 4.5	14.0 - 7.8
21	8°20.3	8°21.6	7°57.5	2.1 - 1.2	8.1 - 4.5	14.1 - 7.9
22	8°20.5	8°21.9	7°57.7	2.2 - 1.2	8.2 - 4.6	14.2 - 7.9
23	8°20.7	8°22.1	7°57.9	2.3 - 1.3	8.3 - 4.6	14.3 - 8.0
24	8°21.0	8°22.4	7°58.2	2.4 - 1.3	8.4 - 4.7	14.4 - 8.0
25	8°21.2	8°22.6	7°58.4	2.5 - 1.4	8.5 - 4.7	14.5 - 8.1
26	8°21.5	8°22.9	7°58.7	2.6 - 1.5	8.6 - 4.8	14.6 - 8.2
27	8°21.8	8°23.1	7°58.9	2.7 - 1.5	8.7 - 4.9	14.7 - 8.2
28	8°22.0	8°23.4	7°59.1	2.8 - 1.6	8.8 - 4.9	14.8 - 8.3
29	8°22.3	8°23.6	7°59.4	2.9 - 1.6	8.9 - 5.0	14.9 - 8.3
30	8°22.5	8°23.9	7°59.6	3.0 - 1.7	9.0 - 5.0	15.0 - 8.4
31	8°22.7	8°24.1	7°59.8	3.1 - 1.7	9.1 - 5.1	15.1 - 8.4
32	8°23.0	8°24.4	8°00.1	3.2 - 1.8	9.2 - 5.1	15.2 - 8.5
33	8°23.2	8°24.6	8°00.3	3.3 - 1.8	9.3 - 5.2	15.3 - 8.5
34	8°23.5	8°24.9	8°00.6	3.4 - 1.9	9.4 - 5.2	15.4 - 8.6
35	8°23.8	8°25.1	8°00.8	3.5 - 2.0	9.5 - 5.3	15.5 - 8.7
36	8°24.0	8°25.4	8°01.0	3.6 - 2.0	9.6 - 5.4	15.6 - 8.7
37	8°24.3	8°25.6	8°01.3	3.7 - 2.1	9.7 - 5.4	15.7 - 8.8
38	8°24.5	8°25.9	8°01.5	3.8 - 2.1	9.8 - 5.5	15.8 - 8.8
39	8°24.7	8°26.1	8°01.8	3.9 - 2.2	9.9 - 5.5	15.9 - 8.9
40	8°25.0	8°26.4	8°02.0	4.0 - 2.2	10.0 - 5.6	16.0 - 8.9
41	8°25.2	8°26.6	8°02.2	4.1 - 2.3	10.1 - 5.6	16.1 - 9.0
42	8°25.5	8°26.9	8°02.5	4.2 - 2.3	10.2 - 5.7	16.2 - 9.0
43	8°25.8	8°27.1	8°02.7	4.3 - 2.4	10.3 - 5.8	16.3 - 9.1
44	8°26.0	8°27.4	8°02.9	4.4 - 2.5	10.4 - 5.8	16.4 - 9.2
45	8°26.3	8°27.6	8°03.2	4.5 - 2.5	10.5 - 5.9	16.5 - 9.2
46	8°26.5	8°27.9	8°03.4	4.6 - 2.6	10.6 - 5.9	16.6 - 9.3
47	8°26.7	8°28.1	8°03.7	4.7 - 2.6	10.7 - 6.0	16.7 - 9.3
48	8°27.0	8°28.4	8°03.9	4.8 - 2.7	10.8 - 6.0	16.8 - 9.4
49	8°27.3	8°28.6	8°04.1	4.9 - 2.7	10.9 - 6.1	16.9 - 9.4
50	8°27.5	8°28.9	8°04.4	5.0 - 2.8	11.0 - 6.1	17.0 - 9.5
51	8°27.8	8°29.1	8°04.6	5.1 - 2.8	11.1 - 6.2	17.1 - 9.5
52	8°28.0	8°29.4	8°04.9	5.2 - 2.9	11.2 - 6.3	17.2 - 9.6
53	8°28.2	8°29.6	8°05.1	5.3 - 3.0	11.3 - 6.3	17.3 - 9.7
54	8°28.5	8°29.9	8°05.3	5.4 - 3.0	11.4 - 6.4	17.4 - 9.7
55	8°28.7	8°30.1	8°05.6	5.5 - 3.1	11.5 - 6.4	17.5 - 9.8
56	8°29.0	8°30.4	8°05.8	5.6 - 3.1	11.6 - 6.5	17.6 - 9.8
57	8°29.3	8°30.6	8°06.1	5.7 - 3.2	11.7 - 6.5	17.7 - 9.9
58	8°29.5	8°30.9	8°06.3	5.8 - 3.2	11.8 - 6.6	17.8 - 9.9
59	8°29.8	8°31.1	8°06.5	5.9 - 3.3	11.9 - 6.6	17.9 - 10.0

m	Sun	Aries	Moon	v and d corr		
34	Plan.					
0	8°30.0	8°31.4	8°06.8	0.0 - 0.0	6.0 - 3.4	12.0 - 6.9
1	8°30.2	8°31.6	8°07.0	0.1 - 0.1	6.1 - 3.5	12.1 - 7.0
2	8°30.5	8°31.9	8°07.2	0.2 - 0.1	6.2 - 3.6	12.2 - 7.0
3	8°30.7	8°32.1	8°07.5	0.3 - 0.2	6.3 - 3.6	12.3 - 7.1
4	8°31.0	8°32.4	8°07.7	0.4 - 0.2	6.4 - 3.7	12.4 - 7.1
5	8°31.3	8°32.6	8°08.0	0.5 - 0.3	6.5 - 3.7	12.5 - 7.2
6	8°31.5	8°32.9	8°08.2	0.6 - 0.3	6.6 - 3.8	12.6 - 7.2
7	8°31.8	8°33.1	8°08.4	0.7 - 0.4	6.7 - 3.9	12.7 - 7.3
8	8°32.0	8°33.4	8°08.7	0.8 - 0.5	6.8 - 3.9	12.8 - 7.4
9	8°32.2	8°33.7	8°08.9	0.9 - 0.5	6.9 - 4.0	12.9 - 7.4
10	8°32.5	8°33.9	8°09.2	1.0 - 0.6	7.0 - 4.0	13.0 - 7.5
11	8°32.7	8°34.2	8°09.4	1.1 - 0.6	7.1 - 4.1	13.1 - 7.5
12	8°33.0	8°34.4	8°09.6	1.2 - 0.7	7.2 - 4.1	13.2 - 7.6
13	8°33.3	8°34.7	8°09.9	1.3 - 0.7	7.3 - 4.2	13.3 - 7.6
14	8°33.5	8°34.9	8°10.1	1.4 - 0.8	7.4 - 4.3	13.4 - 7.7
15	8°33.8	8°35.2	8°10.3	1.5 - 0.9	7.5 - 4.3	13.5 - 7.8
16	8°34.0	8°35.4	8°10.6	1.6 - 0.9	7.6 - 4.4	13.6 - 7.8
17	8°34.2	8°35.7	8°10.8	1.7 - 1.0	7.7 - 4.4	13.7 - 7.9
18	8°34.5	8°35.9	8°11.1	1.8 - 1.0	7.8 - 4.5	13.8 - 7.9
19	8°34.8	8°36.2	8°11.3	1.9 - 1.1	7.9 - 4.5	13.9 - 8.0
20	8°35.0	8°36.4	8°11.5	2.0 - 1.1	8.0 - 4.6	14.0 - 8.0
21	8°35.3	8°36.7	8°11.8	2.1 - 1.2	8.1 - 4.7	14.1 - 8.1
22	8°35.5	8°36.9	8°12.0	2.2 - 1.3	8.2 - 4.7	14.2 - 8.2
23	8°35.7	8°37.2	8°12.3	2.3 - 1.3	8.3 - 4.8	14.3 - 8.2
24	8°36.0	8°37.4	8°12.5	2.4 - 1.4	8.4 - 4.8	14.4 - 8.3
25	8°36.2	8°37.7	8°12.7	2.5 - 1.4	8.5 - 4.9	14.5 - 8.3
26	8°36.5	8°37.9	8°13.0	2.6 - 1.5	8.6 - 4.9	14.6 - 8.4
27	8°36.8	8°38.2	8°13.2	2.7 - 1.6	8.7 - 5.0	14.7 - 8.5
28	8°37.0	8°38.4	8°13.4	2.8 - 1.6	8.8 - 5.1	14.8 - 8.5
29	8°37.3	8°38.7	8°13.7	2.9 - 1.7	8.9 - 5.1	14.9 - 8.6
30	8°37.5	8°38.9	8°13.9	3.0 - 1.7	9.0 - 5.2	15.0 - 8.6
31	8°37.7	8°39.2	8°14.2	3.1 - 1.8	9.1 - 5.2	15.1 - 8.7
32	8°38.0	8°39.4	8°14.4	3.2 - 1.8	9.2 - 5.3	15.2 - 8.7
33	8°38.2	8°39.7	8°14.6	3.3 - 1.9	9.3 - 5.3	15.3 - 8.8
34	8°38.5	8°39.9	8°14.9	3.4 - 2.0	9.4 - 5.4	15.4 - 8.9
35	8°38.8	8°40.2	8°15.1	3.5 - 2.0	9.5 - 5.5	15.5 - 8.9
36	8°39.0	8°40.4	8°15.4	3.6 - 2.1	9.6 - 5.5	15.6 - 9.0
37	8°39.3	8°40.7	8°15.6	3.7 - 2.1	9.7 - 5.6	15.7 - 9.0
38	8°39.5	8°40.9	8°15.8	3.8 - 2.2	9.8 - 5.6	15.8 - 9.1
39	8°39.7	8°41.2	8°16.1	3.9 - 2.2	9.9 - 5.7	15.9 - 9.1
40	8°40.0	8°41.4	8°16.3	4.0 - 2.3	10.0 - 5.8	16.0 - 9.2
41	8°40.2	8°41.7	8°16.5	4.1 - 2.4	10.1 - 5.8	16.1 - 9.3
42	8°40.5	8°41.9	8°16.8	4.2 - 2.4	10.2 - 5.9	16.2 - 9.3
43	8°40.8	8°42.2	8°17.0	4.3 - 2.5	10.3 - 5.9	16.3 - 9.4
44	8°41.0	8°42.4	8°17.3	4.4 - 2.5	10.4 - 6.0	16.4 - 9.4
45	8°41.3	8°42.7	8°17.5	4.5 - 2.6	10.5 - 6.0	16.5 - 9.5
46	8°41.5	8°42.9	8°17.7	4.6 - 2.6	10.6 - 6.1	16.6 - 9.5
47	8°41.7	8°43.2	8°18.0	4.7 - 2.7	10.7 - 6.2	16.7 - 9.6
48	8°42.0	8°43.4	8°18.2	4.8 - 2.8	10.8 - 6.2	16.8 - 9.7
49	8°42.3	8°43.7	8°18.5	4.9 - 2.8	10.9 - 6.3	16.9 - 9.7
50	8°42.5	8°43.9	8°18.7	5.0 - 2.9	11.0 - 6.3	17.0 - 9.8
51	8°42.8	8°44.2	8°18.9	5.1 - 2.9	11.1 - 6.4	17.1 - 9.8
52	8°43.0	8°44.4	8°19.2	5.2 - 3.0	11.2 - 6.4	17.2 - 9.9
53	8°43.2	8°44.7	8°19.4	5.3 - 3.0	11.3 - 6.5	17.3 - 9.9
54	8°43.5	8°44.9	8°19.7	5.4 - 3.1	11.4 - 6.6	17.4 - 10.0
55	8°43.7	8°45.2	8°19.9	5.5 - 3.2	11.5 - 6.6	17.5 - 10.1
56	8°44.0	8°45.4	8°20.1	5.6 - 3.2	11.6 - 6.7	17.6 - 10.1
57	8°44.3	8°45.7	8°20.4	5.7 - 3.3	11.7 - 6.7	17.7 - 10.2
58	8°44.5	8°45.9	8°20.6	5.8 - 3.3	11.8 - 6.8	17.8 - 10.2
59	8°44.8	8°46.2	8°20.8	5.9 - 3.4	11.9 - 6.8	17.9 - 10.3

m	Sun	Aries	Moon	v and d corr		
35	Plan.					
0	8°45.0	8°46.4	8°21.1	0.0 - 0.0	6.0 - 3.5	12.0 - 7.1
1	8°45.2	8°46.7	8°21.3	0.1 - 0.1	6.1 - 3.6	12.1 - 7.2
2	8°45.5	8°46.9	8°21.6	0.2 - 0.1	6.2 - 3.7	12.2 - 7.2
3	8°45.7	8°47.2	8°21.8	0.3 - 0.2	6.3 - 3.7	12.3 - 7.3
4	8°46.0	8°47.4	8°22.0	0.4 - 0.2	6.4 - 3.8	12.4 - 7.3
5	8°46.3	8°47.7	8°22.3	0.5 - 0.3	6.5 - 3.8	12.5 - 7.4
6	8°46.5	8°47.9	8°22.5	0.6 - 0.4	6.6 - 3.9	12.6 - 7.5
7	8°46.8	8°48.2	8°22.8	0.7 - 0.4	6.7 - 4.0	12.7 - 7.5
8	8°47.0	8°48.4	8°23.0	0.8 - 0.5	6.8 - 4.0	12.8 - 7.6
9	8°47.2	8°48.7	8°23.2	0.9 - 0.5	6.9 - 4.1	12.9 - 7.6
10	8°47.5	8°48.9	8°23.5	1.0 - 0.6	7.0 - 4.1	13.0 - 7.7
11	8°47.7	8°49.2	8°23.7	1.1 - 0.7	7.1 - 4.2	13.1 - 7.8
12	8°48.0	8°49.4	8°23.9	1.2 - 0.7	7.2 - 4.3	13.2 - 7.8
13	8°48.3	8°49.7	8°24.2	1.3 - 0.8	7.3 - 4.3	13.3 - 7.9
14	8°48.5	8°49.9	8°24.4	1.4 - 0.8	7.4 - 4.4	13.4 - 7.9
15	8°48.8	8°50.2	8°24.7	1.5 - 0.9	7.5 - 4.4	13.5 - 8.0
16	8°49.0	8°50.4	8°24.9	1.6 - 0.9	7.6 - 4.5	13.6 - 8.0
17	8°49.2	8°50.7	8°25.1	1.7 - 1.0	7.7 - 4.6	13.7 - 8.1
18	8°49.5	8°50.9	8°25.4	1.8 - 1.1	7.8 - 4.6	13.8 - 8.2
19	8°49.8	8°51.2	8°25.6	1.9 - 1.1	7.9 - 4.7	13.9 - 8.2
20	8°50.0	8°51.4	8°25.9	2.0 - 1.2	8.0 - 4.7	14.0 - 8.3
21	8°50.3	8°51.7	8°26.1	2.1 - 1.2	8.1 - 4.8	14.1 - 8.3
22	8°50.5	8°52.0	8°26.3	2.2 - 1.3	8.2 - 4.9	14.2 - 8.4
23	8°50.7	8°52.2	8°26.6	2.3 - 1.4	8.3 - 4.9	14.3 - 8.5
24	8°51.0	8°52.5	8°26.8	2.4 - 1.4	8.4 - 5.0	14.4 - 8.5
25	8°51.2	8°52.7	8°27.0	2.5 - 1.5	8.5 - 5.0	14.5 - 8.6
26	8°51.5	8°53.0	8°27.3	2.6 - 1.5	8.6 - 5.1	14.6 - 8.6
27	8°51.8	8°53.2	8°27.5	2.7 - 1.6	8.7 - 5.1	14.7 - 8.7
28	8°52.0	8°53.5	8°27.8	2.8 - 1.7	8.8 - 5.2	14.8 - 8.8
29	8°52.3	8°53.7	8°28.0	2.9 - 1.7	8.9 - 5.3	14.9 - 8.8
30	8°52.5	8°54.0	8°28.2	3.0 - 1.8	9.0 - 5.3	15.0 - 8.9
31	8°52.7	8°54.2	8°28.5	3.1 - 1.8	9.1 - 5.4	15.1 - 8.9
32	8°53.0	8°54.5	8°28.7	3.2 - 1.9	9.2 - 5.4	15.2 - 9.0
33	8°53.2	8°54.7	8°29.0	3.3 - 2.0	9.3 - 5.5	15.3 - 9.1
34	8°53.5	8°55.0	8°29.2	3.4 - 2.0	9.4 - 5.6	15.4 - 9.1
35	8°53.8	8°55.2	8°29.4	3.5 - 2.1	9.5 - 5.6	15.5 - 9.2
36	8°54.0	8°55.5	8°29.7	3.6 - 2.1	9.6 - 5.7	15.6 - 9.2
37	8°54.3	8°55.7	8°29.9	3.7 - 2.2	9.7 - 5.7	15.7 - 9.3
38	8°54.5	8°56.0	8°30.2	3.8 - 2.2	9.8 - 5.8	15.8 - 9.3
39	8°54.7	8°56.2	8°30.4	3.9 - 2.3	9.9 - 5.9	15.9 - 9.4
40	8°55.0	8°56.5	8°30.6	4.0 - 2.4	10.0 - 5.9	16.0 - 9.5
41	8°55.2	8°56.7	8°30.9	4.1 - 2.4	10.1 - 6.0	16.1 - 9.5
42	8°55.5	8°57.0	8°31.1	4.2 - 2.5	10.2 - 6.0	16.2 - 9.6
43	8°55.8	8°57.2	8°31.3	4.3 - 2.5	10.3 - 6.1	16.3 - 9.6
44	8°56.0	8°57.5	8°31.6	4.4 - 2.6	10.4 - 6.2	16.4 - 9.7
45	8°56.3	8°57.7	8°31.8	4.5 - 2.7	10.5 - 6.2	16.5 - 9.8
46	8°56.5	8°58.0	8°32.1	4.6 - 2.7	10.6 - 6.3	16.6 - 9.8
47	8°56.7	8°58.2	8°32.3	4.7 - 2.8	10.7 - 6.3	16.7 - 9.9
48	8°57.0	8°58.5	8°32.5	4.8 - 2.8	10.8 - 6.4	16.8 - 9.9
49	8°57.3	8°58.7	8°32.8	4.9 - 2.9	10.9 - 6.4	16.9 - 10.0
50	8°57.5	8°59.0	8°33.0	5.0 - 3.0	11.0 - 6.5	17.0 - 10.1
51	8°57.8	8°59.2	8°33.3	5.1 - 3.0	11.1 - 6.6	17.1 - 10.1
52	8°58.0	8°59.5	8°33.5	5.2 - 3.1	11.2 - 6.6	17.2 - 10.2
53	8°58.2	8°59.7	8°33.7	5.3 - 3.1	11.3 - 6.7	17.3 - 10.2
54	8°58.5	9°00.0	8°34.0	5.4 - 3.2	11.4 - 6.7	17.4 - 10.3
55	8°58.7	9°00.2	8°34.2	5.5 - 3.3	11.5 - 6.8	17.5 - 10.4
56	8°59.0	9°00.5	8°34.4	5.6 - 3.3	11.6 - 6.9	17.6 - 10.4
57	8°59.3	9°00.7	8°34.7	5.7 - 3.4	11.7 - 6.9	17.7 - 10.5
58	8°59.5	9°01.0	8°34.9	5.8 - 3.4	11.8 - 7.0	17.8 - 10.5
59	8°59.8	9°01.2	8°35.2	5.9 - 3.5	11.9 - 7.0	17.9 - 10.6

Increments and Corrections

m	Sun	Aries	Moon	v and d corr			m	Sun	Aries	Moon	v and d corr			m	Sun	Aries	Moon	v and d corr		
36	Plan.						37	Plan.						38	Plan.					
0	9°00.0	9°01.5	8°35.4	0.0 - 0.0	6.0 - 3.6	12.0 - 7.3	0	9°15.0	9°16.5	8°49.7	0.0 - 0.0	6.0 - 3.8	12.0 - 7.5	0	9°30.0	9°31.6	9°04.0	0.0 - 0.0	6.0 - 3.9	12.0 - 7.7
1	9°00.2	9°01.7	8°35.6	0.1 - 0.1	6.1 - 3.7	12.1 - 7.4	1	9°15.2	9°16.8	8°50.0	0.1 - 0.1	6.1 - 3.8	12.1 - 7.6	1	9°30.2	9°31.8	9°04.3	0.1 - 0.1	6.1 - 3.9	12.1 - 7.8
2	9°00.5	9°02.0	8°35.9	0.2 - 0.1	6.2 - 3.8	12.2 - 7.4	2	9°15.5	9°17.0	8°50.2	0.2 - 0.1	6.2 - 3.9	12.2 - 7.6	2	9°30.5	9°32.1	9°04.5	0.2 - 0.1	6.2 - 4.0	12.2 - 7.8
3	9°00.7	9°02.2	8°36.1	0.3 - 0.2	6.3 - 3.8	12.3 - 7.5	3	9°15.7	9°17.3	8°50.4	0.3 - 0.2	6.3 - 3.9	12.3 - 7.7	3	9°30.7	9°32.3	9°04.7	0.3 - 0.2	6.3 - 4.0	12.3 - 7.9
4	9°01.0	9°02.5	8°36.4	0.4 - 0.2	6.4 - 3.9	12.4 - 7.5	4	9°16.0	9°17.5	8°50.7	0.4 - 0.3	6.4 - 4.0	12.4 - 7.8	4	9°31.0	9°32.6	9°05.0	0.4 - 0.3	6.4 - 4.1	12.4 - 8.0
5	9°01.3	9°02.7	8°36.6	0.5 - 0.3	6.5 - 4.0	12.5 - 7.6	5	9°16.3	9°17.8	8°50.9	0.5 - 0.3	6.5 - 4.1	12.5 - 7.8	5	9°31.3	9°32.8	9°05.2	0.5 - 0.3	6.5 - 4.2	12.5 - 8.0
6	9°01.5	9°03.0	8°36.8	0.6 - 0.4	6.6 - 4.0	12.6 - 7.7	6	9°16.5	9°18.0	8°51.1	0.6 - 0.4	6.6 - 4.1	12.6 - 7.9	6	9°31.5	9°33.1	9°05.5	0.6 - 0.4	6.6 - 4.2	12.6 - 8.1
7	9°01.8	9°03.2	8°37.1	0.7 - 0.4	6.7 - 4.1	12.7 - 7.7	7	9°16.8	9°18.3	8°51.4	0.7 - 0.4	6.7 - 4.2	12.7 - 7.9	7	9°31.8	9°33.3	9°05.7	0.7 - 0.4	6.7 - 4.3	12.7 - 8.1
8	9°02.0	9°03.5	8°37.3	0.8 - 0.5	6.8 - 4.1	12.8 - 7.8	8	9°17.0	9°18.5	8°51.6	0.8 - 0.5	6.8 - 4.3	12.8 - 8.0	8	9°32.0	9°33.6	9°05.9	0.8 - 0.5	6.8 - 4.4	12.8 - 8.2
9	9°02.2	9°03.7	8°37.5	0.9 - 0.5	6.9 - 4.2	12.9 - 7.8	9	9°17.2	9°18.8	8°51.9	0.9 - 0.6	6.9 - 4.3	12.9 - 8.1	9	9°32.2	9°33.8	9°06.2	0.9 - 0.6	6.9 - 4.4	12.9 - 8.3
10	9°02.5	9°04.0	8°37.8	1.0 - 0.6	7.0 - 4.3	13.0 - 7.9	10	9°17.5	9°19.0	8°52.1	1.0 - 0.6	7.0 - 4.4	13.0 - 8.1	10	9°32.5	9°34.1	9°06.4	1.0 - 0.6	7.0 - 4.5	13.0 - 8.3
11	9°02.7	9°04.2	8°38.0	1.1 - 0.7	7.1 - 4.3	13.1 - 8.0	11	9°17.7	9°19.3	8°52.3	1.1 - 0.7	7.1 - 4.4	13.1 - 8.2	11	9°32.7	9°34.3	9°06.7	1.1 - 0.7	7.1 - 4.6	13.1 - 8.4
12	9°03.0	9°04.5	8°38.3	1.2 - 0.7	7.2 - 4.4	13.2 - 8.0	12	9°18.0	9°19.5	8°52.6	1.2 - 0.8	7.2 - 4.5	13.2 - 8.3	12	9°33.0	9°34.6	9°06.9	1.2 - 0.8	7.2 - 4.6	13.2 - 8.5
13	9°03.3	9°04.7	8°38.5	1.3 - 0.8	7.3 - 4.4	13.3 - 8.1	13	9°18.3	9°19.8	8°52.8	1.3 - 0.8	7.3 - 4.6	13.3 - 8.3	13	9°33.3	9°34.8	9°07.1	1.3 - 0.8	7.3 - 4.7	13.3 - 8.5
14	9°03.5	9°05.0	8°38.7	1.4 - 0.9	7.4 - 4.5	13.4 - 8.2	14	9°18.5	9°20.0	8°53.1	1.4 - 0.9	7.4 - 4.6	13.4 - 8.4	14	9°33.5	9°35.1	9°07.4	1.4 - 0.9	7.4 - 4.7	13.4 - 8.6
15	9°03.8	9°05.2	8°39.0	1.5 - 0.9	7.5 - 4.6	13.5 - 8.2	15	9°18.8	9°20.3	8°53.3	1.5 - 0.9	7.5 - 4.7	13.5 - 8.4	15	9°33.8	9°35.3	9°07.6	1.5 - 1.0	7.5 - 4.8	13.5 - 8.7
16	9°04.0	9°05.5	8°39.2	1.6 - 1.0	7.6 - 4.6	13.6 - 8.3	16	9°19.0	9°20.5	8°53.5	1.6 - 1.0	7.6 - 4.8	13.6 - 8.5	16	9°34.0	9°35.6	9°07.9	1.6 - 1.0	7.6 - 4.9	13.6 - 8.7
17	9°04.2	9°05.7	8°39.5	1.7 - 1.0	7.7 - 4.7	13.7 - 8.3	17	9°19.2	9°20.8	8°53.8	1.7 - 1.1	7.7 - 4.8	13.7 - 8.6	17	9°34.2	9°35.8	9°08.1	1.7 - 1.1	7.7 - 4.9	13.7 - 8.8
18	9°04.5	9°06.0	8°39.7	1.8 - 1.1	7.8 - 4.7	13.8 - 8.4	18	9°19.5	9°21.0	8°54.0	1.8 - 1.1	7.8 - 4.9	13.8 - 8.6	18	9°34.5	9°36.1	9°08.3	1.8 - 1.2	7.8 - 5.0	13.8 - 8.9
19	9°04.8	9°06.2	8°39.9	1.9 - 1.2	7.9 - 4.8	13.9 - 8.5	19	9°19.8	9°21.3	8°54.3	1.9 - 1.2	7.9 - 4.9	13.9 - 8.7	19	9°34.8	9°36.3	9°08.6	1.9 - 1.2	7.9 - 5.1	13.9 - 8.9
20	9°05.0	9°06.5	8°40.2	2.0 - 1.2	8.0 - 4.9	14.0 - 8.5	20	9°20.0	9°21.5	8°54.5	2.0 - 1.3	8.0 - 5.0	14.0 - 8.8	20	9°35.0	9°36.6	9°08.8	2.0 - 1.3	8.0 - 5.1	14.0 - 9.0
21	9°05.3	9°06.7	8°40.4	2.1 - 1.3	8.1 - 4.9	14.1 - 8.6	21	9°20.3	9°21.8	8°54.7	2.1 - 1.3	8.1 - 5.1	14.1 - 8.8	21	9°35.3	9°36.8	9°09.0	2.1 - 1.3	8.1 - 5.2	14.1 - 9.0
22	9°05.5	9°07.0	8°40.6	2.2 - 1.3	8.2 - 5.0	14.2 - 8.6	22	9°20.5	9°22.0	8°55.0	2.2 - 1.4	8.2 - 5.1	14.2 - 8.9	22	9°35.5	9°37.1	9°09.3	2.2 - 1.4	8.2 - 5.3	14.2 - 9.1
23	9°05.7	9°07.2	8°40.9	2.3 - 1.4	8.3 - 5.0	14.3 - 8.7	23	9°20.7	9°22.3	8°55.2	2.3 - 1.4	8.3 - 5.2	14.3 - 8.9	23	9°35.7	9°37.3	9°09.5	2.3 - 1.5	8.3 - 5.3	14.3 - 9.2
24	9°06.0	9°07.5	8°41.1	2.4 - 1.5	8.4 - 5.1	14.4 - 8.8	24	9°21.0	9°22.5	8°55.4	2.4 - 1.5	8.4 - 5.3	14.4 - 9.0	24	9°36.0	9°37.6	9°09.8	2.4 - 1.5	8.4 - 5.4	14.4 - 9.2
25	9°06.2	9°07.7	8°41.4	2.5 - 1.5	8.5 - 5.2	14.5 - 8.8	25	9°21.2	9°22.8	8°55.7	2.5 - 1.6	8.5 - 5.3	14.5 - 9.1	25	9°36.2	9°37.8	9°10.0	2.5 - 1.6	8.5 - 5.5	14.5 - 9.3
26	9°06.5	9°08.0	8°41.6	2.6 - 1.6	8.6 - 5.2	14.6 - 8.9	26	9°21.5	9°23.0	8°55.9	2.6 - 1.6	8.6 - 5.4	14.6 - 9.1	26	9°36.5	9°38.1	9°10.2	2.6 - 1.7	8.6 - 5.5	14.6 - 9.4
27	9°06.8	9°08.2	8°41.8	2.7 - 1.6	8.7 - 5.3	14.7 - 8.9	27	9°21.8	9°23.3	8°56.2	2.7 - 1.7	8.7 - 5.4	14.7 - 9.2	27	9°36.8	9°38.3	9°10.5	2.7 - 1.7	8.7 - 5.6	14.7 - 9.4
28	9°07.0	9°08.5	8°42.1	2.8 - 1.7	8.8 - 5.4	14.8 - 9.0	28	9°22.0	9°23.5	8°56.4	2.8 - 1.8	8.8 - 5.5	14.8 - 9.3	28	9°37.0	9°38.6	9°10.7	2.8 - 1.8	8.8 - 5.6	14.8 - 9.5
29	9°07.3	9°08.7	8°42.3	2.9 - 1.8	8.9 - 5.4	14.9 - 9.1	29	9°22.3	9°23.8	8°56.6	2.9 - 1.8	8.9 - 5.6	14.9 - 9.3	29	9°37.3	9°38.8	9°11.0	2.9 - 1.9	8.9 - 5.7	14.9 - 9.6
30	9°07.5	9°09.0	8°42.6	3.0 - 1.8	9.0 - 5.5	15.0 - 9.1	30	9°22.5	9°24.0	8°56.9	3.0 - 1.9	9.0 - 5.6	15.0 - 9.4	30	9°37.5	9°39.1	9°11.2	3.0 - 1.9	9.0 - 5.8	15.0 - 9.6
31	9°07.7	9°09.2	8°42.8	3.1 - 1.9	9.1 - 5.5	15.1 - 9.2	31	9°22.7	9°24.3	8°57.1	3.1 - 1.9	9.1 - 5.7	15.1 - 9.4	31	9°37.7	9°39.3	9°11.4	3.1 - 2.0	9.1 - 5.8	15.1 - 9.7
32	9°08.0	9°09.5	8°43.0	3.2 - 1.9	9.2 - 5.6	15.2 - 9.2	32	9°23.0	9°24.5	8°57.4	3.2 - 2.0	9.2 - 5.8	15.2 - 9.5	32	9°38.0	9°39.6	9°11.7	3.2 - 2.1	9.2 - 5.9	15.2 - 9.8
33	9°08.2	9°09.7	8°43.3	3.3 - 2.0	9.3 - 5.7	15.3 - 9.3	33	9°23.2	9°24.8	8°57.6	3.3 - 2.1	9.3 - 5.8	15.3 - 9.6	33	9°38.2	9°39.8	9°11.9	3.3 - 2.1	9.3 - 6.0	15.3 - 9.8
34	9°08.5	9°10.0	8°43.5	3.4 - 2.1	9.4 - 5.7	15.4 - 9.4	34	9°23.5	9°25.0	8°57.8	3.4 - 2.1	9.4 - 5.9	15.4 - 9.6	34	9°38.5	9°40.1	9°12.1	3.4 - 2.2	9.4 - 6.0	15.4 - 9.9
35	9°08.8	9°10.2	8°43.8	3.5 - 2.1	9.5 - 5.8	15.5 - 9.4	35	9°23.8	9°25.3	8°58.1	3.5 - 2.2	9.5 - 5.9	15.5 - 9.7	35	9°38.8	9°40.3	9°12.4	3.5 - 2.2	9.5 - 6.1	15.5 - 9.9
36	9°09.0	9°10.5	8°44.0	3.6 - 2.2	9.6 - 5.8	15.6 - 9.5	36	9°24.0	9°25.5	8°58.3	3.6 - 2.3	9.6 - 6.0	15.6 - 9.8	36	9°39.0	9°40.6	9°12.6	3.6 - 2.3	9.6 - 6.2	15.6 - 10.0
37	9°09.3	9°10.8	8°44.2	3.7 - 2.3	9.7 - 5.9	15.7 - 9.6	37	9°24.3	9°25.8	8°58.5	3.7 - 2.3	9.7 - 6.1	15.7 - 9.8	37	9°39.3	9°40.8	9°12.9	3.7 - 2.4	9.7 - 6.2	15.7 - 10.1
38	9°09.5	9°11.0	8°44.5	3.8 - 2.3	9.8 - 6.0	15.8 - 9.6	38	9°24.5	9°26.0	8°58.8	3.8 - 2.4	9.8 - 6.1	15.8 - 9.9	38	9°39.5	9°41.1	9°13.1	3.8 - 2.4	9.8 - 6.3	15.8 - 10.1
39	9°09.7	9°11.3	8°44.7	3.9 - 2.4	9.9 - 6.0	15.9 - 9.7	39	9°24.7	9°26.3	8°59.0	3.9 - 2.4	9.9 - 6.2	15.9 - 9.9	39	9°39.7	9°41.3	9°13.3	3.9 - 2.5	9.9 - 6.4	15.9 - 10.2
40	9°10.0	9°11.5	8°44.9	4.0 - 2.4	10.0 - 6.1	16.0 - 9.7	40	9°25.0	9°26.5	8°59.3	4.0 - 2.5	10.0 - 6.3	16.0 - 10.0	40	9°40.0	9°41.6	9°13.6	4.0 - 2.6	10.0 - 6.4	16.0 - 10.3
41	9°10.2	9°11.8	8°45.2	4.1 - 2.5	10.1 - 6.1	16.1 - 9.8	41	9°25.2	9°26.8	8°59.5	4.1 - 2.6	10.1 - 6.3	16.1 - 10.1	41	9°40.2	9°41.8	9°13.8	4.1 - 2.6	10.1 - 6.5	16.1 - 10.3
42	9°10.5	9°12.0	8°45.4	4.2 - 2.6	10.2 - 6.2	16.2 - 9.9	42	9°25.5	9°27.0	8°59.7	4.2 - 2.6	10.2 - 6.4	16.2 - 10.1	42	9°40.5	9°42.1	9°14.1	4.2 - 2.7	10.2 - 6.5	16.2 - 10.4
43	9°10.8	9°12.3	8°45.7	4.3 - 2.6	10.3 - 6.3	16.3 - 9.9	43	9°25.8	9°27.3	9°00.0	4.3 - 2.7	10.3 - 6.4	16.3 - 10.2	43	9°40.8	9°42.3	9°14.3	4.3 - 2.8	10.3 - 6.6	16.3 - 10.5
44	9°11.0	9°12.5	8°45.9	4.4 - 2.7	10.4 - 6.3	16.4 - 10.0	44	9°26.0	9°27.5	9°00.2	4.4 - 2.8	10.4 - 6.5	16.4 - 10.3	44	9°41.0	9°42.6	9°14.5	4.4 - 2.8	10.4 - 6.7	16.4 - 10.5
45	9°11.3	9°12.8	8°46.1	4.5 - 2.7	10.5 - 6.4	16.5 - 10.0	45	9°26.3	9°27.8	9°00.5	4.5 - 2.8	10.5 - 6.6	16.5 - 10.3	45	9°41.3	9°42.8	9°14.8	4.5 - 2.9	10.5 - 6.7	16.5 - 10.6
46	9°11.5	9°13.0	8°46.4	4.6 - 2.8	10.6 - 6.4	16.6 - 10.1	46	9°26.5	9°28.0	9°00.7	4.6 - 2.9	10.6 - 6.6	16.6 - 10.4	46	9°41.5	9°43.1	9°15.0	4.6 - 3.0	10.6 - 6.8	16.6 - 10.7
47	9°11.7	9°13.3	8°46.6	4.7 - 2.9	10.7 - 6.5	16.7 - 10.2	47	9°26.7	9°28.3	9°00.9	4.7 - 2.9	10.7 - 6.7	16.7 - 10.4	47	9°41.7	9°43.3	9°15.2	4.7 - 3.0	10.7 - 6.9	16.7 - 10.7
48	9°12.0	9°13.5	8°46.9	4.8 - 2.9	10.8 - 6.6	16.8 - 10.2	48	9°27.0	9°28.5	9°01.2	4.8 - 3.0	10.8 - 6.8	16.8 - 10.5	48	9°42.0	9°43.6	9°15.5	4.8 - 3.1	10.8 - 6.9	16.8 - 10.8

Increments and Corrections

m	Sun	Aries	Moon	v and d corr		
39	Plan.					
0	9°45.0	9°46.6	9°18.4	0.0 - 0.0	6.0 - 4.0	12.0 - 7.9
1	9°45.2	9°46.8	9°18.6	0.1 - 0.1	6.1 - 4.0	12.1 - 8.0
2	9°45.5	9°47.1	9°18.8	0.2 - 0.1	6.2 - 4.1	12.2 - 8.0
3	9°45.7	9°47.4	9°19.1	0.3 - 0.2	6.3 - 4.1	12.3 - 8.1
4	9°46.0	9°47.6	9°19.3	0.4 - 0.3	6.4 - 4.2	12.4 - 8.2
5	9°46.3	9°47.9	9°19.5	0.5 - 0.3	6.5 - 4.3	12.5 - 8.2
6	9°46.5	9°48.1	9°19.8	0.6 - 0.4	6.6 - 4.3	12.6 - 8.3
7	9°46.8	9°48.4	9°20.0	0.7 - 0.5	6.7 - 4.4	12.7 - 8.4
8	9°47.0	9°48.6	9°20.3	0.8 - 0.5	6.8 - 4.5	12.8 - 8.4
9	9°47.2	9°48.9	9°20.5	0.9 - 0.6	6.9 - 4.5	12.9 - 8.5
10	9°47.5	9°49.1	9°20.7	1.0 - 0.7	7.0 - 4.6	13.0 - 8.6
11	9°47.7	9°49.4	9°21.0	1.1 - 0.7	7.1 - 4.7	13.1 - 8.6
12	9°48.0	9°49.6	9°21.2	1.2 - 0.8	7.2 - 4.7	13.2 - 8.7
13	9°48.3	9°49.9	9°21.5	1.3 - 0.9	7.3 - 4.8	13.3 - 8.8
14	9°48.5	9°50.1	9°21.7	1.4 - 0.9	7.4 - 4.9	13.4 - 8.8
15	9°48.8	9°50.4	9°21.9	1.5 - 1.0	7.5 - 4.9	13.5 - 8.9
16	9°49.0	9°50.6	9°22.2	1.6 - 1.1	7.6 - 5.0	13.6 - 9.0
17	9°49.2	9°50.9	9°22.4	1.7 - 1.1	7.7 - 5.1	13.7 - 9.0
18	9°49.5	9°51.1	9°22.6	1.8 - 1.2	7.8 - 5.1	13.8 - 9.1
19	9°49.8	9°51.4	9°22.9	1.9 - 1.3	7.9 - 5.2	13.9 - 9.2
20	9°50.0	9°51.6	9°23.1	2.0 - 1.3	8.0 - 5.3	14.0 - 9.2
21	9°50.3	9°51.9	9°23.4	2.1 - 1.4	8.1 - 5.3	14.1 - 9.3
22	9°50.5	9°52.1	9°23.6	2.2 - 1.4	8.2 - 5.4	14.2 - 9.3
23	9°50.7	9°52.4	9°23.8	2.3 - 1.5	8.3 - 5.5	14.3 - 9.4
24	9°51.0	9°52.6	9°24.1	2.4 - 1.6	8.4 - 5.5	14.4 - 9.5
25	9°51.2	9°52.9	9°24.3	2.5 - 1.6	8.5 - 5.6	14.5 - 9.5
26	9°51.5	9°53.1	9°24.6	2.6 - 1.7	8.6 - 5.7	14.6 - 9.6
27	9°51.8	9°53.4	9°24.8	2.7 - 1.8	8.7 - 5.7	14.7 - 9.7
28	9°52.0	9°53.6	9°25.0	2.8 - 1.8	8.8 - 5.8	14.8 - 9.7
29	9°52.3	9°53.9	9°25.3	2.9 - 1.9	8.9 - 5.9	14.9 - 9.8
30	9°52.5	9°54.1	9°25.5	3.0 - 2.0	9.0 - 5.9	15.0 - 9.9
31	9°52.7	9°54.4	9°25.7	3.1 - 2.0	9.1 - 6.0	15.1 - 9.9
32	9°53.0	9°54.6	9°26.0	3.2 - 2.1	9.2 - 6.1	15.2 - 10.0
33	9°53.2	9°54.9	9°26.2	3.3 - 2.2	9.3 - 6.1	15.3 - 10.1
34	9°53.5	9°55.1	9°26.5	3.4 - 2.2	9.4 - 6.2	15.4 - 10.1
35	9°53.8	9°55.4	9°26.7	3.5 - 2.3	9.5 - 6.3	15.5 - 10.2
36	9°54.0	9°55.6	9°26.9	3.6 - 2.4	9.6 - 6.3	15.6 - 10.3
37	9°54.3	9°55.9	9°27.2	3.7 - 2.4	9.7 - 6.4	15.7 - 10.3
38	9°54.5	9°56.1	9°27.4	3.8 - 2.5	9.8 - 6.5	15.8 - 10.4
39	9°54.7	9°56.4	9°27.7	3.9 - 2.6	9.9 - 6.5	15.9 - 10.5
40	9°55.0	9°56.6	9°27.9	4.0 - 2.6	10.0 - 6.6	16.0 - 10.5
41	9°55.2	9°56.9	9°28.1	4.1 - 2.7	10.1 - 6.6	16.1 - 10.6
42	9°55.5	9°57.1	9°28.4	4.2 - 2.8	10.2 - 6.7	16.2 - 10.7
43	9°55.8	9°57.4	9°28.6	4.3 - 2.8	10.3 - 6.8	16.3 - 10.7
44	9°56.0	9°57.6	9°28.8	4.4 - 2.9	10.4 - 6.8	16.4 - 10.8
45	9°56.3	9°57.9	9°29.1	4.5 - 3.0	10.5 - 6.9	16.5 - 10.9
46	9°56.5	9°58.1	9°29.3	4.6 - 3.0	10.6 - 7.0	16.6 - 10.9
47	9°56.7	9°58.4	9°29.6	4.7 - 3.1	10.7 - 7.0	16.7 - 11.0
48	9°57.0	9°58.6	9°29.8	4.8 - 3.2	10.8 - 7.1	16.8 - 11.1
49	9°57.3	9°58.9	9°30.0	4.9 - 3.2	10.9 - 7.2	16.9 - 11.1
50	9°57.5	9°59.1	9°30.3	5.0 - 3.3	11.0 - 7.2	17.0 - 11.2
51	9°57.8	9°59.4	9°30.5	5.1 - 3.4	11.1 - 7.3	17.1 - 11.3
52	9°58.0	9°59.6	9°30.8	5.2 - 3.4	11.2 - 7.4	17.2 - 11.3
53	9°58.2	9°59.9	9°31.0	5.3 - 3.5	11.3 - 7.4	17.3 - 11.4
54	9°58.5	10°00.1	9°31.2	5.4 - 3.6	11.4 - 7.5	17.4 - 11.5
55	9°58.7	10°00.4	9°31.5	5.5 - 3.6	11.5 - 7.6	17.5 - 11.5
56	9°59.0	10°00.6	9°31.7	5.6 - 3.7	11.6 - 7.6	17.6 - 11.6
57	9°59.3	10°00.9	9°32.0	5.7 - 3.8	11.7 - 7.7	17.7 - 11.7
58	9°59.5	10°01.1	9°32.2	5.8 - 3.8	11.8 - 7.8	17.8 - 11.7
59	9°59.8	10°01.4	9°32.4	5.9 - 3.9	11.9 - 7.8	17.9 - 11.8

m	Sun	Aries	Moon	v and d corr		
40	Plan.					
0	10°00.0	10°01.6	9°32.7	0.0 - 0.0	6.0 - 4.1	12.0 - 8.1
1	10°00.2	10°01.9	9°32.9	0.1 - 0.1	6.1 - 4.1	12.1 - 8.2
2	10°00.5	10°02.1	9°33.1	0.2 - 0.1	6.2 - 4.2	12.2 - 8.2
3	10°00.7	10°02.4	9°33.4	0.3 - 0.2	6.3 - 4.3	12.3 - 8.3
4	10°01.0	10°02.6	9°33.6	0.4 - 0.3	6.4 - 4.3	12.4 - 8.4
5	10°01.3	10°02.9	9°33.9	0.5 - 0.3	6.5 - 4.4	12.5 - 8.4
6	10°01.5	10°03.1	9°34.1	0.6 - 0.4	6.6 - 4.5	12.6 - 8.5
7	10°01.8	10°03.4	9°34.3	0.7 - 0.5	6.7 - 4.5	12.7 - 8.6
8	10°02.0	10°03.6	9°34.6	0.8 - 0.5	6.8 - 4.6	12.8 - 8.6
9	10°02.2	10°03.9	9°34.8	0.9 - 0.6	6.9 - 4.7	12.9 - 8.7
10	10°02.5	10°04.1	9°35.1	1.0 - 0.7	7.0 - 4.7	13.0 - 8.8
11	10°02.7	10°04.4	9°35.3	1.1 - 0.7	7.1 - 4.8	13.1 - 8.8
12	10°03.0	10°04.6	9°35.5	1.2 - 0.8	7.2 - 4.9	13.2 - 8.9
13	10°03.3	10°04.9	9°35.8	1.3 - 0.9	7.3 - 4.9	13.3 - 9.0
14	10°03.5	10°05.1	9°36.0	1.4 - 0.9	7.4 - 5.0	13.4 - 9.0
15	10°03.8	10°05.4	9°36.2	1.5 - 1.0	7.5 - 5.1	13.5 - 9.1
16	10°04.0	10°05.7	9°36.5	1.6 - 1.1	7.6 - 5.1	13.6 - 9.2
17	10°04.2	10°05.9	9°36.7	1.7 - 1.1	7.7 - 5.2	13.7 - 9.2
18	10°04.5	10°06.2	9°37.0	1.8 - 1.2	7.8 - 5.3	13.8 - 9.3
19	10°04.8	10°06.4	9°37.2	1.9 - 1.3	7.9 - 5.3	13.9 - 9.4
20	10°05.0	10°06.7	9°37.4	2.0 - 1.4	8.0 - 5.4	14.0 - 9.5
21	10°05.3	10°06.9	9°37.7	2.1 - 1.4	8.1 - 5.5	14.1 - 9.5
22	10°05.5	10°07.2	9°37.9	2.2 - 1.5	8.2 - 5.5	14.2 - 9.6
23	10°05.7	10°07.4	9°38.2	2.3 - 1.6	8.3 - 5.6	14.3 - 9.7
24	10°06.0	10°07.7	9°38.4	2.4 - 1.6	8.4 - 5.7	14.4 - 9.7
25	10°06.2	10°07.9	9°38.6	2.5 - 1.7	8.5 - 5.7	14.5 - 9.8
26	10°06.5	10°08.2	9°38.9	2.6 - 1.8	8.6 - 5.8	14.6 - 9.9
27	10°06.8	10°08.4	9°39.1	2.7 - 1.8	8.7 - 5.9	14.7 - 9.9
28	10°07.0	10°08.7	9°39.3	2.8 - 1.9	8.8 - 5.9	14.8 - 10.0
29	10°07.3	10°08.9	9°39.6	2.9 - 2.0	8.9 - 6.0	14.9 - 10.1
30	10°07.5	10°09.2	9°39.8	3.0 - 2.0	9.0 - 6.1	15.0 - 10.1
31	10°07.7	10°09.4	9°40.1	3.1 - 2.1	9.1 - 6.1	15.1 - 10.2
32	10°08.0	10°09.7	9°40.3	3.2 - 2.2	9.2 - 6.2	15.2 - 10.3
33	10°08.2	10°09.9	9°40.5	3.3 - 2.2	9.3 - 6.3	15.3 - 10.3
34	10°08.5	10°10.2	9°40.8	3.4 - 2.3	9.4 - 6.3	15.4 - 10.4
35	10°08.8	10°10.4	9°41.0	3.5 - 2.4	9.5 - 6.4	15.5 - 10.5
36	10°09.0	10°10.7	9°41.3	3.6 - 2.4	9.6 - 6.5	15.6 - 10.5
37	10°09.3	10°10.9	9°41.5	3.7 - 2.5	9.7 - 6.5	15.7 - 10.6
38	10°09.5	10°11.2	9°41.7	3.8 - 2.6	9.8 - 6.6	15.8 - 10.7
39	10°09.7	10°11.4	9°42.0	3.9 - 2.6	9.9 - 6.7	15.9 - 10.7
40	10°10.0	10°11.7	9°42.2	4.0 - 2.7	10.0 - 6.8	16.0 - 10.8
41	10°10.2	10°11.9	9°42.4	4.1 - 2.8	10.1 - 6.8	16.1 - 10.9
42	10°10.5	10°12.2	9°42.7	4.2 - 2.8	10.2 - 6.9	16.2 - 10.9
43	10°10.8	10°12.4	9°42.9	4.3 - 2.9	10.3 - 7.0	16.3 - 11.0
44	10°11.0	10°12.7	9°43.2	4.4 - 3.0	10.4 - 7.0	16.4 - 11.1
45	10°11.3	10°12.9	9°43.4	4.5 - 3.0	10.5 - 7.1	16.5 - 11.1
46	10°11.5	10°13.2	9°43.6	4.6 - 3.1	10.6 - 7.2	16.6 - 11.2
47	10°11.7	10°13.4	9°43.9	4.7 - 3.2	10.7 - 7.2	16.7 - 11.3
48	10°12.0	10°13.7	9°44.1	4.8 - 3.2	10.8 - 7.3	16.8 - 11.3
49	10°12.3	10°13.9	9°44.4	4.9 - 3.3	10.9 - 7.4	16.9 - 11.4
50	10°12.5	10°14.2	9°44.6	5.0 - 3.4	11.0 - 7.4	17.0 - 11.5
51	10°12.8	10°14.4	9°44.8	5.1 - 3.4	11.1 - 7.5	17.1 - 11.5
52	10°13.0	10°14.7	9°45.1	5.2 - 3.5	11.2 - 7.6	17.2 - 11.6
53	10°13.2	10°14.9	9°45.3	5.3 - 3.6	11.3 - 7.6	17.3 - 11.7
54	10°13.5	10°15.2	9°45.6	5.4 - 3.6	11.4 - 7.7	17.4 - 11.7
55	10°13.7	10°15.4	9°45.8	5.5 - 3.7	11.5 - 7.8	17.5 - 11.8
56	10°14.0	10°15.7	9°46.0	5.6 - 3.8	11.6 - 7.8	17.6 - 11.9
57	10°14.3	10°15.9	9°46.3	5.7 - 3.8	11.7 - 7.9	17.7 - 11.9
58	10°14.5	10°16.2	9°46.5	5.8 - 3.9	11.8 - 8.0	17.8 - 12.0
59	10°14.8	10°16.4	9°46.7	5.9 - 4.0	11.9 - 8.0	17.9 - 12.1

m	Sun	Aries	Moon	v and d corr		
41	Plan.					
0	10°15.0	10°16.7	9°47.0	0.0 - 0.0	6.0 - 4.2	12.0 - 8.3
1	10°15.2	10°16.9	9°47.2	0.1 - 0.1	6.1 - 4.2	12.1 - 8.4
2	10°15.5	10°17.2	9°47.5	0.2 - 0.1	6.2 - 4.3	12.2 - 8.4
3	10°15.7	10°17.4	9°47.7	0.3 - 0.2	6.3 - 4.4	12.3 - 8.5
4	10°16.0	10°17.7	9°47.9	0.4 - 0.3	6.4 - 4.4	12.4 - 8.6
5	10°16.3	10°17.9	9°48.2	0.5 - 0.3	6.5 - 4.5	12.5 - 8.6
6	10°16.5	10°18.2	9°48.4	0.6 - 0.4	6.6 - 4.6	12.6 - 8.7
7	10°16.8	10°18.4	9°48.7	0.7 - 0.5	6.7 - 4.6	12.7 - 8.8
8	10°17.0	10°18.7	9°48.9	0.8 - 0.6	6.8 - 4.7	12.8 - 8.9
9	10°17.2	10°18.9	9°49.1	0.9 - 0.6	6.9 - 4.8	12.9 - 8.9
10	10°17.5	10°19.2	9°49.4	1.0 - 0.7	7.0 - 4.8	13.0 - 9.0
11	10°17.7	10°19.4	9°49.6	1.1 - 0.8	7.1 - 4.9	13.1 - 9.1
12	10°18.0	10°19.7	9°49.8	1.2 - 0.8	7.2 - 5.0	13.2 - 9.1
13	10°18.3	10°19.9	9°50.1	1.3 - 0.9	7.3 - 5.0	13.3 - 9.2
14	10°18.5	10°20.2	9°50.3	1.4 - 1.0	7.4 - 5.1	13.4 - 9.3
15	10°18.8	10°20.4	9°50.6	1.5 - 1.0	7.5 - 5.2	13.5 - 9.3
16	10°19.0	10°20.7	9°50.8	1.6 - 1.1	7.6 - 5.3	13.6 - 9.4
17	10°19.2	10°20.9	9°51.0	1.7 - 1.2	7.7 - 5.3	13.7 - 9.5
18	10°19.5	10°21.2	9°51.3	1.8 - 1.2	7.8 - 5.4	13.8 - 9.5
19	10°19.8	10°21.4	9°51.5	1.9 - 1.3	7.9 - 5.5	13.9 - 9.6
20	10°20.0	10°21.7	9°51.8	2.0 - 1.4	8.0 - 5.5	14.0 - 9.7
21	10°20.3	10°21.9	9°52.0	2.1 - 1.5	8.1 - 5.6	14.1 - 9.8
22	10°20.5	10°22.2	9°52.2	2.2 - 1.5	8.2 - 5.7	14.2 - 9.8
23	10°20.7	10°22.4	9°52.5	2.3 - 1.6	8.3 - 5.7	14.3 - 9.9
24	10°21.0	10°22.7	9°52.7	2.4 - 1.7	8.4 - 5.8	14.4 - 10.0
25	10°21.2	10°22.9	9°52.9	2.5 - 1.7	8.5 - 5.9	14.5 - 10.0
26	10°21.5	10°23.2	9°53.2	2.6 - 1.8	8.6 - 5.9	14.6 - 10.1
27	10°21.8	10°23.4	9°53.4	2.7 - 1.9	8.7 - 6.0	14.7 - 10.2
28	10°22.0	10°23.7	9°53.7	2.8 - 1.9	8.8 - 6.1	14.8 - 10.2
29	10°22.3	10°24.0	9°53.9	2.9 - 2.0	8.9 - 6.2	14.9 - 10.3
30	10°22.5	10°24.2	9°54.1	3.0 - 2.1	9.0 - 6.2	15.0 - 10.4
31	10°22.7	10°24.5	9°54.4	3.1 - 2.1	9.1 - 6.3	15.1 - 10.4
32	10°23.0	10°24.7	9°54.6	3.2 - 2.2	9.2 - 6.4	15.2 - 10.5
33	10°23.2	10°25.0	9°54.9	3.3 - 2.3	9.3 - 6.4	15.3 - 10.6
34	10°23.5	10°25.2	9°55.1	3.4 - 2.4	9.4 - 6.5	15.4 - 10.7
35	10°23.8	10°25.5	9°55.3	3.5 - 2.4	9.5 - 6.6	15.5 - 10.7
36	10°24.0	10°25.7	9°55.6	3.6 - 2.5	9.6 - 6.6	15.6 - 10.8
37	10°24.3	10°26.0	9°55.8	3.7 - 2.6	9.7 - 6.7	15.7 - 10.9
38	10°24.5	10°26.2	9°56.1	3.8 - 2.6	9.8 - 6.8	15.8 - 10.9
39	10°24.7	10°26.5	9°56.3	3.9 - 2.7	9.9 - 6.8	15.9 - 11.0
40	10°25.0	10°26.7	9°56.6	4.0 - 2.8	10.0 - 6.9	16.0 - 11.1
41	10°25.2	10°27.0	9°56.8	4.1 - 2.8	10.1 - 7.0	16.1 - 11.1
42	10°25.5	10°27.2	9°57.0	4.2 - 2.9	10.2 - 7.1	16.2 - 11.2
43	10°25.8	10°27.5	9°57.2	4.3 - 3.0	10.3 - 7.1	16.3 - 11.3
44	10°26.0	10°27.7	9°57.5	4.4 - 3.0	10.4 - 7.2	16.4 - 11.3
45	10°26.3	10°28.0	9°57.7	4.5 - 3.1	10.5 - 7.3	16.5 - 11.4
46	10°26.5	10°28.2	9°58.0	4.6 - 3.2	10.6 - 7.3	16.6 - 11.5
47	10°26.7	10°28.5	9°58.2	4.7 - 3.3	10.7 - 7.4	16.7 - 11.6
48	10°27.0	10°28.7	9°58.4	4.8 - 3.3	10.8 - 7.5	16.8 - 11.6
49	10°27.3	10°29.0	9°58.7	4.9 - 3.4	10.9 - 7.5	16.9 - 11.7
50	10°27.5	10°29.2	9°58.9	5.0 - 3.5	11.0 - 7.6	17.0 - 11.8
51	10°27.8	10°29.5	9°59.2	5.1 - 3.5	11.1 - 7.7	17.1 - 11.8
52	10°28.0	10°29.7	9°59.4	5.2 - 3.6	11.2 - 7.7	17.2 - 11.9
53	10°28.2	10°30.0	9°59.6	5.3 - 3.7	11.3 - 7.8	17.3 - 12.0
54	10°28.5	10°30.2	9°59.9	5.4 - 3.7	11.4 - 7.9	17.4 - 12.0
55	10°28.7	10°30.5	10°00.1	5.5 - 3.8	11.5 - 8.0	17.5 - 12.1
56	10°29.0	10°30.7	10°00.3	5.6 - 3.9	11.6 - 8.0	17.6 - 12.2
57	10°29.3	10°31.0	10°00.6	5.7 - 3.9	11.7 - 8.1	17.7 - 12.2
58	10°29.5	10°31.2	10°00.8	5.8 - 4.0	11.8 - 8.2	17.8 - 12.3
59	10°29.8	10°31.5	10°01.1	5.9 - 4.1	11.9 - 8.2	17.9 - 12.4

Increments and Corrections

m	Sun	Aries	Moon	v and d corr		
42	Plan.					
0	10°30.0	10°31.7	10°01.3	0.0 - 0.0	6.0 - 4.3	12.0 - 8.5
1	10°30.2	10°32.0	10°01.5	0.1 - 0.1	6.1 - 4.3	12.1 - 8.6
2	10°30.5	10°32.2	10°01.8	0.2 - 0.1	6.2 - 4.4	12.2 - 8.6
3	10°30.7	10°32.5	10°02.0	0.3 - 0.2	6.3 - 4.5	12.3 - 8.7
4	10°31.0	10°32.7	10°02.3	0.4 - 0.3	6.4 - 4.5	12.4 - 8.8
5	10°31.3	10°33.0	10°02.5	0.5 - 0.4	6.5 - 4.6	12.5 - 8.9
6	10°31.5	10°33.2	10°02.7	0.6 - 0.4	6.6 - 4.7	12.6 - 8.9
7	10°31.8	10°33.5	10°03.0	0.7 - 0.5	6.7 - 4.7	12.7 - 9.0
8	10°32.0	10°33.7	10°03.2	0.8 - 0.6	6.8 - 4.8	12.8 - 9.1
9	10°32.2	10°34.0	10°03.4	0.9 - 0.6	6.9 - 4.9	12.9 - 9.1
10	10°32.5	10°34.2	10°03.7	1.0 - 0.7	7.0 - 5.0	13.0 - 9.2
11	10°32.7	10°34.5	10°03.9	1.1 - 0.8	7.1 - 5.0	13.1 - 9.3
12	10°33.0	10°34.7	10°04.2	1.2 - 0.9	7.2 - 5.1	13.2 - 9.3
13	10°33.3	10°35.0	10°04.4	1.3 - 0.9	7.3 - 5.2	13.3 - 9.4
14	10°33.5	10°35.2	10°04.6	1.4 - 1.0	7.4 - 5.2	13.4 - 9.5
15	10°33.8	10°35.5	10°04.9	1.5 - 1.1	7.5 - 5.3	13.5 - 9.6
16	10°34.0	10°35.7	10°05.1	1.6 - 1.1	7.6 - 5.4	13.6 - 9.6
17	10°34.2	10°36.0	10°05.4	1.7 - 1.2	7.7 - 5.5	13.7 - 9.7
18	10°34.5	10°36.2	10°05.6	1.8 - 1.3	7.8 - 5.5	13.8 - 9.8
19	10°34.8	10°36.5	10°05.8	1.9 - 1.3	7.9 - 5.6	13.9 - 9.8
20	10°35.0	10°36.7	10°06.1	2.0 - 1.4	8.0 - 5.7	14.0 - 9.9
21	10°35.3	10°37.0	10°06.3	2.1 - 1.5	8.1 - 5.7	14.1 - 10.0
22	10°35.5	10°37.2	10°06.5	2.2 - 1.6	8.2 - 5.8	14.2 - 10.1
23	10°35.7	10°37.5	10°06.8	2.3 - 1.6	8.3 - 5.9	14.3 - 10.1
24	10°36.0	10°37.7	10°07.0	2.4 - 1.7	8.4 - 6.0	14.4 - 10.2
25	10°36.2	10°38.0	10°07.3	2.5 - 1.8	8.5 - 6.0	14.5 - 10.3
26	10°36.5	10°38.2	10°07.5	2.6 - 1.8	8.6 - 6.1	14.6 - 10.3
27	10°36.8	10°38.5	10°07.7	2.7 - 1.9	8.7 - 6.2	14.7 - 10.4
28	10°37.0	10°38.7	10°08.0	2.8 - 2.0	8.8 - 6.2	14.8 - 10.5
29	10°37.3	10°39.0	10°08.2	2.9 - 2.1	8.9 - 6.3	14.9 - 10.6
30	10°37.5	10°39.2	10°08.5	3.0 - 2.1	9.0 - 6.4	15.0 - 10.6
31	10°37.7	10°39.5	10°08.7	3.1 - 2.2	9.1 - 6.4	15.1 - 10.7
32	10°38.0	10°39.7	10°08.9	3.2 - 2.3	9.2 - 6.5	15.2 - 10.8
33	10°38.2	10°40.0	10°09.2	3.3 - 2.3	9.3 - 6.6	15.3 - 10.8
34	10°38.5	10°40.2	10°09.4	3.4 - 2.4	9.4 - 6.7	15.4 - 10.9
35	10°38.8	10°40.5	10°09.7	3.5 - 2.5	9.5 - 6.7	15.5 - 11.0
36	10°39.0	10°40.7	10°09.9	3.6 - 2.6	9.6 - 6.8	15.6 - 11.1
37	10°39.3	10°41.0	10°10.1	3.7 - 2.6	9.7 - 6.9	15.7 - 11.1
38	10°39.5	10°41.2	10°10.4	3.8 - 2.7	9.8 - 6.9	15.8 - 11.2
39	10°39.7	10°41.5	10°10.6	3.9 - 2.8	9.9 - 7.0	15.9 - 11.3
40	10°40.0	10°41.7	10°10.8	4.0 - 2.8	10.0 - 7.1	16.0 - 11.3
41	10°40.2	10°42.0	10°11.1	4.1 - 2.9	10.1 - 7.2	16.1 - 11.4
42	10°40.5	10°42.3	10°11.3	4.2 - 3.0	10.2 - 7.2	16.2 - 11.5
43	10°40.8	10°42.5	10°11.6	4.3 - 3.0	10.3 - 7.3	16.3 - 11.5
44	10°41.0	10°42.8	10°11.8	4.4 - 3.1	10.4 - 7.4	16.4 - 11.6
45	10°41.3	10°43.0	10°12.0	4.5 - 3.2	10.5 - 7.4	16.5 - 11.7
46	10°41.5	10°43.3	10°12.3	4.6 - 3.3	10.6 - 7.5	16.6 - 11.8
47	10°41.7	10°43.5	10°12.5	4.7 - 3.3	10.7 - 7.6	16.7 - 11.8
48	10°42.0	10°43.8	10°12.8	4.8 - 3.4	10.8 - 7.7	16.8 - 11.9
49	10°42.3	10°44.0	10°13.0	4.9 - 3.5	10.9 - 7.7	16.9 - 12.0
50	10°42.5	10°44.3	10°13.2	5.0 - 3.5	11.0 - 7.8	17.0 - 12.0
51	10°42.8	10°44.5	10°13.5	5.1 - 3.6	11.1 - 7.9	17.1 - 12.1
52	10°43.0	10°44.8	10°13.7	5.2 - 3.7	11.2 - 7.9	17.2 - 12.2
53	10°43.2	10°45.0	10°13.9	5.3 - 3.8	11.3 - 8.0	17.3 - 12.3
54	10°43.5	10°45.3	10°14.2	5.4 - 3.8	11.4 - 8.1	17.4 - 12.3
55	10°43.7	10°45.5	10°14.4	5.5 - 3.9	11.5 - 8.1	17.5 - 12.4
56	10°44.0	10°45.8	10°14.7	5.6 - 4.0	11.6 - 8.2	17.6 - 12.5
57	10°44.3	10°46.0	10°14.9	5.7 - 4.0	11.7 - 8.3	17.7 - 12.5
58	10°44.5	10°46.3	10°15.1	5.8 - 4.1	11.8 - 8.4	17.8 - 12.6
59	10°44.8	10°46.5	10°15.4	5.9 - 4.2	11.9 - 8.4	17.9 - 12.7

m	Sun	Aries	Moon	v and d corr		
43	Plan.					
0	10°45.0	10°46.8	10°15.6	0.0 - 0.0	6.0 - 4.3	12.0 - 8.7
1	10°45.2	10°47.0	10°15.9	0.1 - 0.1	6.1 - 4.4	12.1 - 8.8
2	10°45.5	10°47.3	10°16.1	0.2 - 0.1	6.2 - 4.5	12.2 - 8.8
3	10°45.7	10°47.5	10°16.3	0.3 - 0.2	6.3 - 4.6	12.3 - 8.9
4	10°46.0	10°47.8	10°16.6	0.4 - 0.3	6.4 - 4.6	12.4 - 9.0
5	10°46.3	10°48.0	10°16.8	0.5 - 0.4	6.5 - 4.7	12.5 - 9.1
6	10°46.5	10°48.3	10°17.0	0.6 - 0.4	6.6 - 4.8	12.6 - 9.1
7	10°46.8	10°48.5	10°17.3	0.7 - 0.5	6.7 - 4.9	12.7 - 9.2
8	10°47.0	10°48.8	10°17.5	0.8 - 0.6	6.8 - 4.9	12.8 - 9.3
9	10°47.2	10°49.0	10°17.8	0.9 - 0.7	6.9 - 5.0	12.9 - 9.4
10	10°47.5	10°49.3	10°18.0	1.0 - 0.7	7.0 - 5.1	13.0 - 9.4
11	10°47.7	10°49.5	10°18.2	1.1 - 0.8	7.1 - 5.1	13.1 - 9.5
12	10°48.0	10°49.8	10°18.5	1.2 - 0.9	7.2 - 5.2	13.2 - 9.6
13	10°48.3	10°50.0	10°18.7	1.3 - 0.9	7.3 - 5.3	13.3 - 9.6
14	10°48.5	10°50.3	10°19.0	1.4 - 1.0	7.4 - 5.4	13.4 - 9.7
15	10°48.8	10°50.5	10°19.2	1.5 - 1.1	7.5 - 5.4	13.5 - 9.8
16	10°49.0	10°50.8	10°19.4	1.6 - 1.2	7.6 - 5.5	13.6 - 9.9
17	10°49.2	10°51.0	10°19.7	1.7 - 1.2	7.7 - 5.6	13.7 - 9.9
18	10°49.5	10°51.3	10°19.9	1.8 - 1.3	7.8 - 5.7	13.8 - 10.0
19	10°49.8	10°51.5	10°20.2	1.9 - 1.4	7.9 - 5.7	13.9 - 10.1
20	10°50.0	10°51.8	10°20.4	2.0 - 1.4	8.0 - 5.8	14.0 - 10.2
21	10°50.3	10°52.0	10°20.6	2.1 - 1.5	8.1 - 5.9	14.1 - 10.2
22	10°50.5	10°52.3	10°20.9	2.2 - 1.6	8.2 - 5.9	14.2 - 10.3
23	10°50.7	10°52.5	10°21.1	2.3 - 1.7	8.3 - 6.0	14.3 - 10.4
24	10°51.0	10°52.8	10°21.3	2.4 - 1.7	8.4 - 6.1	14.4 - 10.4
25	10°51.2	10°53.0	10°21.6	2.5 - 1.8	8.5 - 6.2	14.5 - 10.5
26	10°51.5	10°53.3	10°21.8	2.6 - 1.9	8.6 - 6.2	14.6 - 10.6
27	10°51.8	10°53.5	10°22.1	2.7 - 2.0	8.7 - 6.3	14.7 - 10.7
28	10°52.0	10°53.8	10°22.3	2.8 - 2.0	8.8 - 6.4	14.8 - 10.7
29	10°52.3	10°54.0	10°22.5	2.9 - 2.1	8.9 - 6.5	14.9 - 10.8
30	10°52.5	10°54.3	10°22.8	3.0 - 2.2	9.0 - 6.5	15.0 - 10.9
31	10°52.7	10°54.5	10°23.0	3.1 - 2.2	9.1 - 6.6	15.1 - 10.9
32	10°53.0	10°54.8	10°23.3	3.2 - 2.3	9.2 - 6.7	15.2 - 11.0
33	10°53.2	10°55.0	10°23.5	3.3 - 2.4	9.3 - 6.7	15.3 - 11.1
34	10°53.5	10°55.3	10°23.7	3.4 - 2.5	9.4 - 6.8	15.4 - 11.2
35	10°53.8	10°55.5	10°24.0	3.5 - 2.5	9.5 - 6.9	15.5 - 11.2
36	10°54.0	10°55.8	10°24.2	3.6 - 2.6	9.6 - 7.0	15.6 - 11.3
37	10°54.3	10°56.0	10°24.4	3.7 - 2.7	9.7 - 7.0	15.7 - 11.4
38	10°54.5	10°56.3	10°24.7	3.8 - 2.8	9.8 - 7.1	15.8 - 11.5
39	10°54.7	10°56.5	10°24.9	3.9 - 2.8	9.9 - 7.2	15.9 - 11.5
40	10°55.0	10°56.8	10°25.2	4.0 - 2.9	10.0 - 7.3	16.0 - 11.6
41	10°55.2	10°57.0	10°25.4	4.1 - 3.0	10.1 - 7.3	16.1 - 11.7
42	10°55.5	10°57.3	10°25.6	4.2 - 3.0	10.2 - 7.4	16.2 - 11.7
43	10°55.8	10°57.5	10°25.9	4.3 - 3.1	10.3 - 7.5	16.3 - 11.8
44	10°56.0	10°57.8	10°26.1	4.4 - 3.2	10.4 - 7.5	16.4 - 11.9
45	10°56.3	10°58.0	10°26.4	4.5 - 3.3	10.5 - 7.6	16.5 - 12.0
46	10°56.5	10°58.3	10°26.6	4.6 - 3.3	10.6 - 7.7	16.6 - 12.0
47	10°56.7	10°58.5	10°26.8	4.7 - 3.4	10.7 - 7.8	16.7 - 12.1
48	10°57.0	10°58.8	10°27.1	4.8 - 3.5	10.8 - 7.8	16.8 - 12.2
49	10°57.3	10°59.0	10°27.3	4.9 - 3.6	10.9 - 7.9	16.9 - 12.3
50	10°57.5	10°59.3	10°27.5	5.0 - 3.6	11.0 - 8.0	17.0 - 12.3
51	10°57.8	10°59.5	10°27.8	5.1 - 3.7	11.1 - 8.0	17.1 - 12.4
52	10°58.0	10°59.8	10°28.0	5.2 - 3.8	11.2 - 8.1	17.2 - 12.5
53	10°58.2	11°00.0	10°28.3	5.3 - 3.8	11.3 - 8.2	17.3 - 12.5
54	10°58.5	11°00.3	10°28.5	5.4 - 3.9	11.4 - 8.3	17.4 - 12.6
55	10°58.7	11°00.6	10°28.7	5.5 - 4.0	11.5 - 8.3	17.5 - 12.7
56	10°59.0	11°00.8	10°29.0	5.6 - 4.1	11.6 - 8.4	17.6 - 12.8
57	10°59.3	11°01.1	10°29.2	5.7 - 4.1	11.7 - 8.5	17.7 - 12.8
58	10°59.5	11°01.3	10°29.5	5.8 - 4.2	11.8 - 8.6	17.8 - 12.9
59	10°59.8	11°01.6	10°29.7	5.9 - 4.3	11.9 - 8.6	17.9 - 13.0

m	Sun	Aries	Moon	v and d corr		
44	Plan.					
0	11°00.0	11°01.8	10°29.9	0.0 - 0.0	6.0 - 4.5	12.0 - 8.9
1	11°00.2	11°02.1	10°30.2	0.1 - 0.1	6.1 - 4.5	12.1 - 9.0
2	11°00.5	11°02.3	10°30.4	0.2 - 0.1	6.2 - 4.6	12.2 - 9.0
3	11°00.7	11°02.6	10°30.6	0.3 - 0.2	6.3 - 4.7	12.3 - 9.1
4	11°01.0	11°02.8	10°30.9	0.4 - 0.3	6.4 - 4.7	12.4 - 9.2
5	11°01.3	11°03.1	10°31.1	0.5 - 0.4	6.5 - 4.8	12.5 - 9.3
6	11°01.5	11°03.3	10°31.4	0.6 - 0.4	6.6 - 4.9	12.6 - 9.3
7	11°01.8	11°03.6	10°31.6	0.7 - 0.5	6.7 - 5.0	12.7 - 9.4
8	11°02.0	11°03.8	10°31.8	0.8 - 0.6	6.8 - 5.0	12.8 - 9.5
9	11°02.2	11°04.1	10°32.1	0.9 - 0.7	6.9 - 5.1	12.9 - 9.6
10	11°02.5	11°04.3	10°32.3	1.0 - 0.7	7.0 - 5.2	13.0 - 9.6
11	11°02.7	11°04.6	10°32.6	1.1 - 0.8	7.1 - 5.3	13.1 - 9.7
12	11°03.0	11°04.8	10°32.8	1.2 - 0.9	7.2 - 5.3	13.2 - 9.8
13	11°03.3	11°05.1	10°33.0	1.3 - 1.0	7.3 - 5.4	13.3 - 9.9
14	11°03.5	11°05.3	10°33.3	1.4 - 1.0	7.4 - 5.5	13.4 - 9.9
15	11°03.8	11°05.6	10°33.5	1.5 - 1.1	7.5 - 5.6	13.5 - 10.0
16	11°04.0	11°05.8	10°33.8	1.6 - 1.2	7.6 - 5.6	13.6 - 10.1
17	11°04.2	11°06.1	10°34.0	1.7 - 1.3	7.7 - 5.7	13.7 - 10.2
18	11°04.5	11°06.3	10°34.2	1.8 - 1.3	7.8 - 5.8	13.8 - 10.2
19	11°04.8	11°06.6	10°34.5	1.9 - 1.4	7.9 - 5.9	13.9 - 10.3
20	11°05.0	11°06.8	10°34.7	2.0 - 1.5	8.0 - 5.9	14.0 - 10.4
21	11°05.3	11°07.1	10°34.9	2.1 - 1.6	8.1 - 6.0	14.1 - 10.5
22	11°05.5	11°07.3	10°35.2	2.2 - 1.6	8.2 - 6.1	14.2 - 10.5
23	11°05.7	11°07.6	10°35.4	2.3 - 1.7	8.3 - 6.2	14.3 - 10.6
24	11°06.0	11°07.8	10°35.7	2.4 - 1.8	8.4 - 6.2	14.4 - 10.7
25	11°06.2	11°08.1	10°35.9	2.5 - 1.9	8.5 - 6.3	14.5 - 10.8
26	11°06.5	11°08.3	10°36.1	2.6 - 1.9	8.6 - 6.4	14.6 - 10.8
27	11°06.8	11°08.6	10°36.4	2.7 - 2.0	8.7 - 6.5	14.7 - 10.9
28	11°07.0	11°08.8	10°36.6	2.8 - 2.1	8.8 - 6.5	14.8 - 11.0
29	11°07.3	11°09.1	10°36.9	2.9 - 2.2	8.9 - 6.6	14.9 - 11.1
30	11°07.5	11°09.3	10°37.1	3.0 - 2.2	9.0 - 6.7	15.0 - 11.1
31	11°07.7	11°09.6	10°37.3	3.1 - 2.3	9.1 - 6.7	15.1 - 11.2
32	11°08.0	11°09.8	10°37.6	3.2 - 2.4	9.2 - 6.8	15.2 - 11.3
33	11°08.2	11°10.1	10°37.8	3.3 - 2.4	9.3 - 6.9	15.3 - 11.3
34	11°08.5	11°10.3	10°38.0	3.4 - 2.5	9.4 - 7.0	15.4 - 11.4
35	11°08.8	11°10.6	10°38.3	3.5 - 2.6	9.5 - 7.0	15.5 - 11.5
36	11°09.0	11°10.8	10°38.5	3.6 - 2.7	9.6 - 7.1	15.6 - 11.6
37	11°09.3	11°11.1	10°38.8	3.7 - 2.7	9.7 - 7.2	15.7 - 11.6
38	11°09.5	11°11.3	10°39.0	3.8 - 2.8	9.8 - 7.3	15.8 - 11.7
39	11°09.7	11°11.6	10°39.2	3.9 - 2.9	9.9 - 7.3	15.9 - 11.8
40	11°10.0	11°11.8	10°39.5	4.0 - 3.0	10.0 - 7.4	16.0 - 11.9
41	11°10.2	11°12.1	10°39.7	4.1 - 3.0	10.1 - 7.5	16.1 - 11.9
42	11°10.5	11°12.3	10°40.0	4.2 - 3.1	10.2 - 7.6	16.2 - 12.0
43	11°10.8	11°12.6	10°40.2	4.3 - 3.2	10.3 - 7.6	16.3 - 12.1
44	11°11.0	11°12.8	10°40.4	4.4 - 3.3	10.4 - 7.7	16.4 - 12.2
45	11°11.3	11°13.1	10°40.7	4.5 - 3.3	10.5 - 7.8	16.5 - 12.2
46	11°11.5	11°13.3	10°40.9	4.6 - 3.4	10.6 - 7.9	16.6 - 12.3
47	11°11.7	11°13.6	10°41.1	4.7 - 3.5	10.7 - 7.9	16.7 - 12.4
48	11°12.0	11°13.8	10°41.4	4.8 - 3.6	10.8 - 8.0	16.8 - 12.5
49	11°12.3	11°14.1	10°41.6	4.9 - 3.6	10.9 - 8.1	16.9 - 12.5
50	11°12.5	11°14.3	10°41.9	5.0 - 3.7	11.0 - 8.2	17.0 - 12.6
51	11°12.8	11°14.6	10°42.1	5.1 - 3.8	11.1 - 8.2	17.1 - 12.7
52	11°13.0	11°14.8	10°42.3	5.2 - 3.9	11.2 - 8.3	17.2 - 12.8
53	11°13.2	11°15.1	10°42.6	5.3 - 3.9	11.3 - 8.4	17.3 - 12.8
54	11°13.5	11°15.3	10°42.8	5.4 - 4.0	11.4 - 8.5	17.4 - 12.9
55	11°13.7	11°15.6	10°43.1	5.5 - 4.1	11.5 - 8.5	17.5 - 13.0
56	11°14.0	11°15.8	10°43.3	5.6 - 4.2	11.6 - 8.6	17.6 - 13.1
57	11°14.3	11°16.1	10°43.5	5.7 - 4.2	11.7 - 8.7	17.7 - 13.1
58	11°14.5	11°16.3	10°43.8	5.8 - 4.3	11.8 - 8.8	17.8 - 13.2
59	11°14.8	11°16.6	10°44.0	5.9 - 4.4	11.9 - 8.8	17.9 - 13.3

Increments and Corrections

m	Sun	Aries	Moon	v and d corr			m	Sun	Aries	Moon	v and d corr			m	Sun	Aries	Moon	v and d corr		
45	Plan.						46	Plan.						47	Plan.					
0	11°15.0	11°16.8	10°44.3	0.0 - 0.0	6.0 - 4.5	12.0 - 9.1	0	11°30.0	11°31.9	10°58.6	0.0 - 0.0	6.0 - 4.7	12.0 - 9.3	0	11°45.0	11°46.9	11°12.9	0.0 - 0.0	6.0 - 4.8	12.0 - 9.5
1	11°15.2	11°17.1	10°44.5	0.1 - 0.1	6.1 - 4.6	12.1 - 9.2	1	11°30.2	11°32.1	10°58.8	0.1 - 0.1	6.1 - 4.7	12.1 - 9.4	1	11°45.2	11°47.2	11°13.1	0.1 - 0.1	6.1 - 4.8	12.1 - 9.6
2	11°15.5	11°17.3	10°44.7	0.2 - 0.2	6.2 - 4.7	12.2 - 9.3	2	11°30.5	11°32.4	10°59.0	0.2 - 0.2	6.2 - 4.8	12.2 - 9.5	2	11°45.5	11°47.4	11°13.4	0.2 - 0.2	6.2 - 4.9	12.2 - 9.7
3	11°15.7	11°17.6	10°45.0	0.3 - 0.2	6.3 - 4.8	12.3 - 9.3	3	11°30.7	11°32.6	10°59.3	0.3 - 0.2	6.3 - 4.9	12.3 - 9.5	3	11°45.7	11°47.7	11°13.6	0.3 - 0.2	6.3 - 5.0	12.3 - 9.7
4	11°16.0	11°17.8	10°45.2	0.4 - 0.3	6.4 - 4.9	12.4 - 9.4	4	11°31.0	11°32.9	10°59.5	0.4 - 0.3	6.4 - 5.0	12.4 - 9.6	4	11°46.0	11°47.9	11°13.8	0.4 - 0.3	6.4 - 5.1	12.4 - 9.8
5	11°16.3	11°18.1	10°45.4	0.5 - 0.4	6.5 - 4.9	12.5 - 9.5	5	11°31.3	11°33.1	10°59.8	0.5 - 0.4	6.5 - 5.0	12.5 - 9.7	5	11°46.3	11°48.2	11°14.1	0.5 - 0.4	6.5 - 5.1	12.5 - 9.9
6	11°16.5	11°18.3	10°45.7	0.6 - 0.5	6.6 - 5.0	12.6 - 9.6	6	11°31.5	11°33.4	11°00.0	0.6 - 0.5	6.6 - 5.1	12.6 - 9.8	6	11°46.5	11°48.4	11°14.3	0.6 - 0.5	6.6 - 5.2	12.6 - 10.0
7	11°16.8	11°18.6	10°45.9	0.7 - 0.5	6.7 - 5.1	12.7 - 9.6	7	11°31.8	11°33.6	11°00.2	0.7 - 0.5	6.7 - 5.2	12.7 - 9.8	7	11°46.8	11°48.7	11°14.6	0.7 - 0.6	6.7 - 5.3	12.7 - 10.1
8	11°17.0	11°18.9	10°46.2	0.8 - 0.6	6.8 - 5.2	12.8 - 9.7	8	11°32.0	11°33.9	11°00.5	0.8 - 0.6	6.8 - 5.3	12.8 - 9.9	8	11°47.0	11°48.9	11°14.8	0.8 - 0.6	6.8 - 5.4	12.8 - 10.1
9	11°17.2	11°19.1	10°46.4	0.9 - 0.7	6.9 - 5.2	12.9 - 9.8	9	11°32.2	11°34.1	11°00.7	0.9 - 0.7	6.9 - 5.3	12.9 - 10.0	9	11°47.2	11°49.2	11°15.0	0.9 - 0.7	6.9 - 5.5	12.9 - 10.2
10	11°17.5	11°19.4	10°46.6	1.0 - 0.8	7.0 - 5.3	13.0 - 9.9	10	11°32.5	11°34.4	11°01.0	1.0 - 0.8	7.0 - 5.4	13.0 - 10.1	10	11°47.5	11°49.4	11°15.3	1.0 - 0.8	7.0 - 5.5	13.0 - 10.3
11	11°17.7	11°19.6	10°46.9	1.1 - 0.8	7.1 - 5.4	13.1 - 9.9	11	11°32.7	11°34.6	11°01.2	1.1 - 0.9	7.1 - 5.5	13.1 - 10.2	11	11°47.7	11°49.7	11°15.5	1.1 - 0.9	7.1 - 5.6	13.1 - 10.4
12	11°18.0	11°19.9	10°47.1	1.2 - 0.9	7.2 - 5.5	13.2 - 10.0	12	11°33.0	11°34.9	11°01.4	1.2 - 0.9	7.2 - 5.6	13.2 - 10.2	12	11°48.0	11°49.9	11°15.7	1.2 - 1.0	7.2 - 5.7	13.2 - 10.4
13	11°18.3	11°20.1	10°47.4	1.3 - 1.0	7.3 - 5.5	13.3 - 10.1	13	11°33.3	11°35.1	11°01.7	1.3 - 1.0	7.3 - 5.7	13.3 - 10.3	13	11°48.3	11°50.2	11°16.0	1.3 - 1.0	7.3 - 5.8	13.3 - 10.5
14	11°18.5	11°20.4	10°47.6	1.4 - 1.1	7.4 - 5.6	13.4 - 10.2	14	11°33.5	11°35.4	11°01.9	1.4 - 1.1	7.4 - 5.7	13.4 - 10.4	14	11°48.5	11°50.4	11°16.2	1.4 - 1.1	7.4 - 5.9	13.4 - 10.6
15	11°18.8	11°20.6	10°47.8	1.5 - 1.1	7.5 - 5.7	13.5 - 10.2	15	11°33.8	11°35.6	11°02.1	1.5 - 1.2	7.5 - 5.8	13.5 - 10.5	15	11°48.8	11°50.7	11°16.5	1.5 - 1.2	7.5 - 5.9	13.5 - 10.7
16	11°19.0	11°20.9	10°48.1	1.6 - 1.2	7.6 - 5.8	13.6 - 10.3	16	11°34.0	11°35.9	11°02.4	1.6 - 1.2	7.6 - 5.9	13.6 - 10.5	16	11°49.0	11°50.9	11°16.7	1.6 - 1.3	7.6 - 6.0	13.6 - 10.8
17	11°19.2	11°21.1	10°48.3	1.7 - 1.3	7.7 - 5.8	13.7 - 10.4	17	11°34.2	11°36.1	11°02.6	1.7 - 1.3	7.7 - 6.0	13.7 - 10.6	17	11°49.2	11°51.2	11°16.9	1.7 - 1.3	7.7 - 6.1	13.7 - 10.8
18	11°19.5	11°21.4	10°48.5	1.8 - 1.4	7.8 - 5.9	13.8 - 10.5	18	11°34.5	11°36.4	11°02.9	1.8 - 1.4	7.8 - 6.0	13.8 - 10.7	18	11°49.5	11°51.4	11°17.2	1.8 - 1.4	7.8 - 6.2	13.8 - 10.9
19	11°19.8	11°21.6	10°48.8	1.9 - 1.4	7.9 - 6.0	13.9 - 10.5	19	11°34.8	11°36.6	11°03.1	1.9 - 1.5	7.9 - 6.1	13.9 - 10.8	19	11°49.8	11°51.7	11°17.4	1.9 - 1.5	7.9 - 6.3	13.9 - 11.0
20	11°20.0	11°21.9	10°49.0	2.0 - 1.5	8.0 - 6.1	14.0 - 10.6	20	11°35.0	11°36.9	11°03.3	2.0 - 1.6	8.0 - 6.2	14.0 - 10.8	20	11°50.0	11°51.9	11°17.7	2.0 - 1.6	8.0 - 6.3	14.0 - 11.1
21	11°20.3	11°22.1	10°49.3	2.1 - 1.6	8.1 - 6.1	14.1 - 10.7	21	11°35.3	11°37.2	11°03.6	2.1 - 1.6	8.1 - 6.3	14.1 - 10.9	21	11°50.3	11°52.2	11°17.9	2.1 - 1.7	8.1 - 6.4	14.1 - 11.2
22	11°20.5	11°22.4	10°49.5	2.2 - 1.7	8.2 - 6.2	14.2 - 10.8	22	11°35.5	11°37.4	11°03.8	2.2 - 1.7	8.2 - 6.4	14.2 - 11.0	22	11°50.5	11°52.4	11°18.1	2.2 - 1.7	8.2 - 6.5	14.2 - 11.2
23	11°20.7	11°22.6	10°49.7	2.3 - 1.7	8.3 - 6.3	14.3 - 10.8	23	11°35.7	11°37.7	11°04.1	2.3 - 1.8	8.3 - 6.4	14.3 - 11.1	23	11°50.7	11°52.7	11°18.4	2.3 - 1.8	8.3 - 6.6	14.3 - 11.3
24	11°21.0	11°22.9	10°50.0	2.4 - 1.8	8.4 - 6.4	14.4 - 10.9	24	11°36.0	11°37.9	11°04.3	2.4 - 1.9	8.4 - 6.5	14.4 - 11.2	24	11°51.0	11°52.9	11°18.6	2.4 - 1.9	8.4 - 6.7	14.4 - 11.4
25	11°21.2	11°23.1	10°50.2	2.5 - 1.9	8.5 - 6.4	14.5 - 11.0	25	11°36.2	11°38.2	11°04.5	2.5 - 1.9	8.5 - 6.6	14.5 - 11.2	25	11°51.2	11°53.2	11°18.8	2.5 - 2.0	8.5 - 6.7	14.5 - 11.5
26	11°21.5	11°23.4	10°50.5	2.6 - 2.0	8.6 - 6.5	14.6 - 11.1	26	11°36.5	11°38.4	11°04.8	2.6 - 2.0	8.6 - 6.7	14.6 - 11.3	26	11°51.5	11°53.4	11°19.1	2.6 - 2.1	8.6 - 6.8	14.6 - 11.6
27	11°21.8	11°23.6	10°50.7	2.7 - 2.0	8.7 - 6.6	14.7 - 11.1	27	11°36.8	11°38.7	11°05.0	2.7 - 2.1	8.7 - 6.7	14.7 - 11.4	27	11°51.8	11°53.7	11°19.3	2.7 - 2.1	8.7 - 6.9	14.7 - 11.6
28	11°22.0	11°23.9	10°50.9	2.8 - 2.1	8.8 - 6.7	14.8 - 11.2	28	11°37.0	11°38.9	11°05.2	2.8 - 2.2	8.8 - 6.8	14.8 - 11.5	28	11°52.0	11°53.9	11°19.6	2.8 - 2.2	8.8 - 7.0	14.8 - 11.7
29	11°22.3	11°24.1	10°51.2	2.9 - 2.2	8.9 - 6.7	14.9 - 11.3	29	11°37.3	11°39.2	11°05.5	2.9 - 2.2	8.9 - 6.9	14.9 - 11.5	29	11°52.3	11°54.2	11°19.8	2.9 - 2.3	8.9 - 7.0	14.9 - 11.8
30	11°22.5	11°24.4	10°51.4	3.0 - 2.3	9.0 - 6.8	15.0 - 11.4	30	11°37.5	11°39.4	11°05.7	3.0 - 2.3	9.0 - 7.0	15.0 - 11.6	30	11°52.5	11°54.4	11°20.0	3.0 - 2.4	9.0 - 7.1	15.0 - 11.9
31	11°22.7	11°24.6	10°51.6	3.1 - 2.4	9.1 - 6.9	15.1 - 11.5	31	11°37.7	11°39.7	11°06.0	3.1 - 2.4	9.1 - 7.1	15.1 - 11.7	31	11°52.7	11°54.7	11°20.3	3.1 - 2.5	9.1 - 7.2	15.1 - 12.0
32	11°23.0	11°24.9	10°51.9	3.2 - 2.4	9.2 - 7.0	15.2 - 11.5	32	11°38.0	11°39.9	11°06.2	3.2 - 2.5	9.2 - 7.1	15.2 - 11.8	32	11°53.0	11°54.9	11°20.5	3.2 - 2.5	9.2 - 7.3	15.2 - 12.0
33	11°23.2	11°25.1	10°52.1	3.3 - 2.5	9.3 - 7.1	15.3 - 11.6	33	11°38.2	11°40.2	11°06.4	3.3 - 2.6	9.3 - 7.2	15.3 - 11.9	33	11°53.2	11°55.2	11°20.8	3.3 - 2.6	9.3 - 7.4	15.3 - 12.1
34	11°23.5	11°25.4	10°52.4	3.4 - 2.6	9.4 - 7.1	15.4 - 11.7	34	11°38.5	11°40.4	11°06.7	3.4 - 2.6	9.4 - 7.3	15.4 - 11.9	34	11°53.5	11°55.5	11°21.0	3.4 - 2.7	9.4 - 7.4	15.4 - 12.2
35	11°23.8	11°25.6	10°52.6	3.5 - 2.7	9.5 - 7.2	15.5 - 11.8	35	11°38.8	11°40.7	11°06.9	3.5 - 2.7	9.5 - 7.4	15.5 - 12.0	35	11°53.8	11°55.7	11°21.2	3.5 - 2.8	9.5 - 7.5	15.5 - 12.3
36	11°24.0	11°25.9	10°52.8	3.6 - 2.7	9.6 - 7.3	15.6 - 11.8	36	11°39.0	11°40.9	11°07.2	3.6 - 2.8	9.6 - 7.4	15.6 - 12.1	36	11°54.0	11°56.0	11°21.5	3.6 - 2.9	9.6 - 7.6	15.6 - 12.3
37	11°24.3	11°26.1	10°53.1	3.7 - 2.8	9.7 - 7.4	15.7 - 11.9	37	11°39.3	11°41.2	11°07.4	3.7 - 2.9	9.7 - 7.5	15.7 - 12.2	37	11°54.3	11°56.2	11°21.7	3.7 - 2.9	9.7 - 7.7	15.7 - 12.4
38	11°24.5	11°26.4	10°53.3	3.8 - 2.9	9.8 - 7.4	15.8 - 12.0	38	11°39.5	11°41.4	11°07.6	3.8 - 2.9	9.8 - 7.6	15.8 - 12.2	38	11°54.5	11°56.5	11°22.0	3.8 - 3.0	9.8 - 7.8	15.8 - 12.5
39	11°24.7	11°26.6	10°53.6	3.9 - 3.0	9.9 - 7.5	15.9 - 12.1	39	11°39.7	11°41.7	11°07.9	3.9 - 3.0	9.9 - 7.7	15.9 - 12.3	39	11°54.7	11°56.7	11°22.2	3.9 - 3.1	9.9 - 7.8	15.9 - 12.6
40	11°25.0	11°26.9	10°53.8	4.0 - 3.0	10.0 - 7.6	16.0 - 12.1	40	11°40.0	11°41.9	11°08.1	4.0 - 3.1	10.0 - 7.8	16.0 - 12.4	40	11°55.0	11°57.0	11°22.4	4.0 - 3.2	10.0 - 7.9	16.0 - 12.7
41	11°25.2	11°27.1	10°54.0	4.1 - 3.1	10.1 - 7.7	16.1 - 12.2	41	11°40.2	11°42.2	11°08.3	4.1 - 3.2	10.1 - 7.8	16.1 - 12.5	41	11°55.2	11°57.2	11°22.7	4.1 - 3.2	10.1 - 8.0	16.1 - 12.7
42	11°25.5	11°27.4	10°54.3	4.2 - 3.2	10.2 - 7.7	16.2 - 12.3	42	11°40.5	11°42.4	11°08.6	4.2 - 3.3	10.2 - 7.9	16.2 - 12.6	42	11°55.5	11°57.5	11°22.9	4.2 - 3.3	10.2 - 8.1	16.2 - 12.8
43	11°25.8	11°27.6	10°54.5	4.3 - 3.3	10.3 - 7.8	16.3 - 12.4	43	11°40.8	11°42.7	11°08.8	4.3 - 3.3	10.3 - 8.0	16.3 - 12.6	43	11°55.8	11°57.7	11°23.1	4.3 - 3.4	10.3 - 8.2	16.3 - 12.9
44	11°26.0	11°27.9	10°54.7	4.4 - 3.3	10.4 - 7.9	16.4 - 12.4	44	11°41.0	11°42.9	11°09.1	4.4 - 3.4	10.4 - 8.1	16.4 - 12.7	44	11°56.0	11°58.0	11°23.4	4.4 - 3.5	10.4 - 8.2	16.4 - 13.0
45	11°26.3	11°28.1	10°55.0	4.5 - 3.4	10.5 - 8.0	16.5 - 12.5	45	11°41.3	11°43.2	11°09.3	4.5 - 3.5	10.5 - 8.1	16.5 - 12.8	45	11°56.3	11°58.2	11°23.6	4.5 - 3.6	10.5 - 8.3	16.5 - 13.1
46	11°26.5	11°28.4	10°55.2	4.6 - 3.5	10.6 - 8.0	16.6 - 12.6	46	11°41.5	11°43.4	11°09.5	4.6 - 3.6	10.6 - 8.2	16.6 - 12.9	46	11°56.5	11°58.5	11°23.9	4.6 - 3.6	10.6 - 8.	

Increments and Corrections

m	Sun	Aries	Moon	v and d corr		
48	Plan.					
0	12°00.0	12°02.0	11°27.2	0.0 - 0.0	6.0 - 4.8	12.0 - 9.7
1	12°00.2	12°02.2	11°27.4	0.1 - 0.1	6.1 - 4.9	12.1 - 9.8
2	12°00.5	12°02.5	11°27.7	0.2 - 0.2	6.2 - 5.0	12.2 - 9.9
3	12°00.7	12°02.7	11°27.9	0.3 - 0.2	6.3 - 5.1	12.3 - 9.9
4	12°01.0	12°03.0	11°28.2	0.4 - 0.3	6.4 - 5.2	12.4 - 10.0
5	12°01.3	12°03.2	11°28.4	0.5 - 0.4	6.5 - 5.3	12.5 - 10.1
6	12°01.5	12°03.5	11°28.6	0.6 - 0.5	6.6 - 5.3	12.6 - 10.2
7	12°01.8	12°03.7	11°28.9	0.7 - 0.6	6.7 - 5.4	12.7 - 10.3
8	12°02.0	12°04.0	11°29.1	0.8 - 0.6	6.8 - 5.5	12.8 - 10.3
9	12°02.2	12°04.2	11°29.3	0.9 - 0.7	6.9 - 5.6	12.9 - 10.4
10	12°02.5	12°04.5	11°29.6	1.0 - 0.8	7.0 - 5.7	13.0 - 10.5
11	12°02.7	12°04.7	11°29.8	1.1 - 0.9	7.1 - 5.7	13.1 - 10.6
12	12°03.0	12°05.0	11°30.1	1.2 - 1.0	7.2 - 5.8	13.2 - 10.7
13	12°03.3	12°05.2	11°30.3	1.3 - 1.1	7.3 - 5.9	13.3 - 10.8
14	12°03.5	12°05.5	11°30.5	1.4 - 1.1	7.4 - 6.0	13.4 - 10.8
15	12°03.8	12°05.7	11°30.8	1.5 - 1.2	7.5 - 6.1	13.5 - 10.9
16	12°04.0	12°06.0	11°31.0	1.6 - 1.3	7.6 - 6.1	13.6 - 11.0
17	12°04.2	12°06.2	11°31.3	1.7 - 1.4	7.7 - 6.2	13.7 - 11.1
18	12°04.5	12°06.5	11°31.5	1.8 - 1.5	7.8 - 6.3	13.8 - 11.2
19	12°04.8	12°06.7	11°31.7	1.9 - 1.5	7.9 - 6.4	13.9 - 11.2
20	12°05.0	12°07.0	11°32.0	2.0 - 1.6	8.0 - 6.5	14.0 - 11.3
21	12°05.3	12°07.2	11°32.2	2.1 - 1.7	8.1 - 6.5	14.1 - 11.4
22	12°05.5	12°07.5	11°32.4	2.2 - 1.8	8.2 - 6.6	14.2 - 11.5
23	12°05.7	12°07.7	11°32.7	2.3 - 1.9	8.3 - 6.7	14.3 - 11.6
24	12°06.0	12°08.0	11°32.9	2.4 - 1.9	8.4 - 6.8	14.4 - 11.6
25	12°06.2	12°08.2	11°33.2	2.5 - 2.0	8.5 - 6.9	14.5 - 11.7
26	12°06.5	12°08.5	11°33.4	2.6 - 2.1	8.6 - 7.0	14.6 - 11.8
27	12°06.8	12°08.7	11°33.6	2.7 - 2.2	8.7 - 7.0	14.7 - 11.9
28	12°07.0	12°09.0	11°33.9	2.8 - 2.3	8.8 - 7.1	14.8 - 12.0
29	12°07.3	12°09.2	11°34.1	2.9 - 2.3	8.9 - 7.2	14.9 - 12.0
30	12°07.5	12°09.5	11°34.4	3.0 - 2.4	9.0 - 7.3	15.0 - 12.1
31	12°07.7	12°09.7	11°34.6	3.1 - 2.5	9.1 - 7.4	15.1 - 12.2
32	12°08.0	12°10.0	11°34.8	3.2 - 2.6	9.2 - 7.4	15.2 - 12.3
33	12°08.2	12°10.2	11°35.1	3.3 - 2.7	9.3 - 7.5	15.3 - 12.4
34	12°08.5	12°10.5	11°35.3	3.4 - 2.7	9.4 - 7.6	15.4 - 12.4
35	12°08.8	12°10.7	11°35.6	3.5 - 2.8	9.5 - 7.7	15.5 - 12.5
36	12°09.0	12°11.0	11°35.8	3.6 - 2.9	9.6 - 7.8	15.6 - 12.6
37	12°09.3	12°11.2	11°36.0	3.7 - 3.0	9.7 - 7.8	15.7 - 12.7
38	12°09.5	12°11.5	11°36.3	3.8 - 3.1	9.8 - 7.9	15.8 - 12.8
39	12°09.7	12°11.7	11°36.5	3.9 - 3.2	9.9 - 8.0	15.9 - 12.9
40	12°10.0	12°12.0	11°36.7	4.0 - 3.2	10.0 - 8.1	16.0 - 12.9
41	12°10.2	12°12.2	11°37.0	4.1 - 3.3	10.1 - 8.2	16.1 - 13.0
42	12°10.5	12°12.5	11°37.2	4.2 - 3.4	10.2 - 8.2	16.2 - 13.1
43	12°10.8	12°12.7	11°37.5	4.3 - 3.5	10.3 - 8.3	16.3 - 13.2
44	12°11.0	12°13.0	11°37.7	4.4 - 3.6	10.4 - 8.4	16.4 - 13.3
45	12°11.3	12°13.2	11°37.9	4.5 - 3.6	10.5 - 8.5	16.5 - 13.3
46	12°11.5	12°13.5	11°38.2	4.6 - 3.7	10.6 - 8.6	16.6 - 13.4
47	12°11.7	12°13.8	11°38.4	4.7 - 3.8	10.7 - 8.6	16.7 - 13.5
48	12°12.0	12°14.0	11°38.7	4.8 - 3.9	10.8 - 8.7	16.8 - 13.6
49	12°12.3	12°14.3	11°38.9	4.9 - 4.0	10.9 - 8.8	16.9 - 13.7
50	12°12.5	12°14.5	11°39.1	5.0 - 4.0	11.0 - 8.9	17.0 - 13.7
51	12°12.8	12°14.8	11°39.4	5.1 - 4.1	11.1 - 9.0	17.1 - 13.8
52	12°13.0	12°15.0	11°39.6	5.2 - 4.2	11.2 - 9.1	17.2 - 13.9
53	12°13.2	12°15.3	11°39.8	5.3 - 4.3	11.3 - 9.1	17.3 - 14.0
54	12°13.5	12°15.5	11°40.1	5.4 - 4.4	11.4 - 9.2	17.4 - 14.1
55	12°13.7	12°15.8	11°40.3	5.5 - 4.4	11.5 - 9.3	17.5 - 14.1
56	12°14.0	12°16.0	11°40.6	5.6 - 4.5	11.6 - 9.4	17.6 - 14.2
57	12°14.3	12°16.3	11°40.8	5.7 - 4.6	11.7 - 9.5	17.7 - 14.3
58	12°14.5	12°16.5	11°41.0	5.8 - 4.7	11.8 - 9.5	17.8 - 14.4
59	12°14.8	12°16.8	11°41.3	5.9 - 4.8	11.9 - 9.6	17.9 - 14.5

m	Sun	Aries	Moon	v and d corr		
49	Plan.					
0	12°15.0	12°17.0	11°41.5	0.0 - 0.0	6.0 - 4.9	12.0 - 9.9
1	12°15.2	12°17.3	11°41.8	0.1 - 0.1	6.1 - 5.0	12.1 - 10.0
2	12°15.5	12°17.5	11°42.0	0.2 - 0.2	6.2 - 5.1	12.2 - 10.1
3	12°15.7	12°17.8	11°42.2	0.3 - 0.2	6.3 - 5.2	12.3 - 10.1
4	12°16.0	12°18.0	11°42.5	0.4 - 0.3	6.4 - 5.3	12.4 - 10.2
5	12°16.3	12°18.3	11°42.7	0.5 - 0.4	6.5 - 5.4	12.5 - 10.3
6	12°16.5	12°18.5	11°42.9	0.6 - 0.5	6.6 - 5.4	12.6 - 10.4
7	12°16.8	12°18.8	11°43.2	0.7 - 0.6	6.7 - 5.5	12.7 - 10.5
8	12°17.0	12°19.0	11°43.4	0.8 - 0.7	6.8 - 5.6	12.8 - 10.6
9	12°17.2	12°19.3	11°43.7	0.9 - 0.7	6.9 - 5.7	12.9 - 10.6
10	12°17.5	12°19.5	11°43.9	1.0 - 0.8	7.0 - 5.8	13.0 - 10.7
11	12°17.7	12°19.8	11°44.1	1.1 - 0.9	7.1 - 5.9	13.1 - 10.8
12	12°18.0	12°20.0	11°44.4	1.2 - 1.0	7.2 - 5.9	13.2 - 10.9
13	12°18.3	12°20.3	11°44.6	1.3 - 1.1	7.3 - 6.0	13.3 - 11.0
14	12°18.5	12°20.5	11°44.9	1.4 - 1.2	7.4 - 6.1	13.4 - 11.1
15	12°18.8	12°20.8	11°45.1	1.5 - 1.2	7.5 - 6.2	13.5 - 11.1
16	12°19.0	12°21.0	11°45.3	1.6 - 1.3	7.6 - 6.3	13.6 - 11.2
17	12°19.2	12°21.3	11°45.6	1.7 - 1.4	7.7 - 6.4	13.7 - 11.3
18	12°19.5	12°21.5	11°45.8	1.8 - 1.5	7.8 - 6.4	13.8 - 11.4
19	12°19.8	12°21.8	11°46.1	1.9 - 1.6	7.9 - 6.5	13.9 - 11.5
20	12°20.0	12°22.0	11°46.3	2.0 - 1.6	8.0 - 6.6	14.0 - 11.5
21	12°20.3	12°22.3	11°46.5	2.1 - 1.7	8.1 - 6.7	14.1 - 11.6
22	12°20.5	12°22.5	11°46.8	2.2 - 1.8	8.2 - 6.8	14.2 - 11.7
23	12°20.7	12°22.8	11°47.0	2.3 - 1.9	8.3 - 6.8	14.3 - 11.8
24	12°21.0	12°23.0	11°47.2	2.4 - 2.0	8.4 - 6.9	14.4 - 11.9
25	12°21.2	12°23.3	11°47.5	2.5 - 2.1	8.5 - 7.0	14.5 - 12.0
26	12°21.5	12°23.5	11°47.7	2.6 - 2.1	8.6 - 7.1	14.6 - 12.0
27	12°21.8	12°23.8	11°48.0	2.7 - 2.2	8.7 - 7.2	14.7 - 12.1
28	12°22.0	12°24.0	11°48.2	2.8 - 2.3	8.8 - 7.3	14.8 - 12.2
29	12°22.3	12°24.3	11°48.4	2.9 - 2.4	8.9 - 7.3	14.9 - 12.3
30	12°22.5	12°24.5	11°48.7	3.0 - 2.5	9.0 - 7.4	15.0 - 12.4
31	12°22.7	12°24.8	11°48.9	3.1 - 2.6	9.1 - 7.5	15.1 - 12.5
32	12°23.0	12°25.0	11°49.2	3.2 - 2.6	9.2 - 7.6	15.2 - 12.5
33	12°23.2	12°25.3	11°49.4	3.3 - 2.7	9.3 - 7.7	15.3 - 12.6
34	12°23.5	12°25.5	11°49.6	3.4 - 2.8	9.4 - 7.8	15.4 - 12.7
35	12°23.8	12°25.8	11°49.9	3.5 - 2.9	9.5 - 7.8	15.5 - 12.8
36	12°24.0	12°26.0	11°50.1	3.6 - 3.0	9.6 - 7.9	15.6 - 12.9
37	12°24.3	12°26.3	11°50.3	3.7 - 3.1	9.7 - 8.0	15.7 - 13.0
38	12°24.5	12°26.5	11°50.6	3.8 - 3.1	9.8 - 8.1	15.8 - 13.0
39	12°24.7	12°26.8	11°50.8	3.9 - 3.2	9.9 - 8.2	15.9 - 13.1
40	12°25.0	12°27.0	11°51.1	4.0 - 3.3	10.0 - 8.3	16.0 - 13.2
41	12°25.2	12°27.3	11°51.3	4.1 - 3.4	10.1 - 8.3	16.1 - 13.3
42	12°25.5	12°27.5	11°51.5	4.2 - 3.5	10.2 - 8.4	16.2 - 13.4
43	12°25.8	12°27.8	11°51.8	4.3 - 3.5	10.3 - 8.5	16.3 - 13.4
44	12°26.0	12°28.0	11°52.0	4.4 - 3.6	10.4 - 8.6	16.4 - 13.5
45	12°26.3	12°28.3	11°52.3	4.5 - 3.7	10.5 - 8.7	16.5 - 13.6
46	12°26.5	12°28.5	11°52.5	4.6 - 3.8	10.6 - 8.7	16.6 - 13.7
47	12°26.7	12°28.8	11°52.7	4.7 - 3.9	10.7 - 8.8	16.7 - 13.8
48	12°27.0	12°29.0	11°53.0	4.8 - 4.0	10.8 - 8.9	16.8 - 13.9
49	12°27.3	12°29.3	11°53.2	4.9 - 4.0	10.9 - 9.0	16.9 - 13.9
50	12°27.5	12°29.5	11°53.4	5.0 - 4.1	11.0 - 9.1	17.0 - 14.0
51	12°27.8	12°29.8	11°53.7	5.1 - 4.2	11.1 - 9.2	17.1 - 14.1
52	12°28.0	12°30.0	11°53.9	5.2 - 4.3	11.2 - 9.2	17.2 - 14.2
53	12°28.2	12°30.3	11°54.2	5.3 - 4.4	11.3 - 9.3	17.3 - 14.3
54	12°28.5	12°30.5	11°54.4	5.4 - 4.5	11.4 - 9.4	17.4 - 14.4
55	12°28.7	12°30.8	11°54.6	5.5 - 4.5	11.5 - 9.5	17.5 - 14.4
56	12°29.0	12°31.0	11°54.9	5.6 - 4.6	11.6 - 9.6	17.6 - 14.5
57	12°29.3	12°31.3	11°55.1	5.7 - 4.7	11.7 - 9.7	17.7 - 14.6
58	12°29.5	12°31.5	11°55.4	5.8 - 4.8	11.8 - 9.7	17.8 - 14.7
59	12°29.8	12°31.8	11°55.6	5.9 - 4.9	11.9 - 9.8	17.9 - 14.8

m	Sun	Aries	Moon	v and d corr		
50	Plan.					
0	12°30.0	12°32.1	11°55.8	0.0 - 0.0	6.0 - 5.0	12.0 - 10.1
1	12°30.2	12°32.3	11°56.1	0.1 - 0.1	6.1 - 5.1	12.1 - 10.2
2	12°30.5	12°32.6	11°56.3	0.2 - 0.2	6.2 - 5.2	12.2 - 10.3
3	12°30.7	12°32.8	11°56.5	0.3 - 0.3	6.3 - 5.3	12.3 - 10.4
4	12°31.0	12°33.1	11°56.8	0.4 - 0.3	6.4 - 5.4	12.4 - 10.4
5	12°31.3	12°33.3	11°57.0	0.5 - 0.4	6.5 - 5.5	12.5 - 10.5
6	12°31.5	12°33.6	11°57.3	0.6 - 0.5	6.6 - 5.6	12.6 - 10.6
7	12°31.8	12°33.8	11°57.5	0.7 - 0.6	6.7 - 5.6	12.7 - 10.7
8	12°32.0	12°34.1	11°57.7	0.8 - 0.7	6.8 - 5.7	12.8 - 10.8
9	12°32.2	12°34.3	11°58.0	0.9 - 0.8	6.9 - 5.8	12.9 - 10.9
10	12°32.5	12°34.6	11°58.2	1.0 - 0.8	7.0 - 5.9	13.0 - 10.9
11	12°32.7	12°34.8	11°58.5	1.1 - 0.9	7.1 - 6.0	13.1 - 11.0
12	12°33.0	12°35.1	11°58.7	1.2 - 1.0	7.2 - 6.1	13.2 - 11.1
13	12°33.3	12°35.3	11°58.9	1.3 - 1.1	7.3 - 6.1	13.3 - 11

Increments and Corrections

m	Sun	Aries	Moon	v and d corr		
51	Plan.					
0	12°45.0	12°47.1	12°10.1	0.0 - 0.0	6.0 - 5.1	12.0 - 10.3
1	12°45.2	12°47.3	12°10.4	0.1 - 0.1	6.1 - 5.2	12.1 - 10.4
2	12°45.5	12°47.6	12°10.6	0.2 - 0.2	6.2 - 5.3	12.2 - 10.5
3	12°45.7	12°47.8	12°10.9	0.3 - 0.3	6.3 - 5.4	12.3 - 10.6
4	12°46.0	12°48.1	12°11.1	0.4 - 0.3	6.4 - 5.5	12.4 - 10.6
5	12°46.3	12°48.3	12°11.3	0.5 - 0.4	6.5 - 5.6	12.5 - 10.7
6	12°46.5	12°48.6	12°11.6	0.6 - 0.5	6.6 - 5.7	12.6 - 10.8
7	12°46.8	12°48.8	12°11.8	0.7 - 0.6	6.7 - 5.8	12.7 - 10.9
8	12°47.0	12°49.1	12°12.1	0.8 - 0.7	6.8 - 5.8	12.8 - 11.0
9	12°47.2	12°49.3	12°12.3	0.9 - 0.8	6.9 - 5.9	12.9 - 11.1
10	12°47.5	12°49.6	12°12.5	1.0 - 0.9	7.0 - 6.0	13.0 - 11.2
11	12°47.7	12°49.8	12°12.8	1.1 - 0.9	7.1 - 6.1	13.1 - 11.2
12	12°48.0	12°50.1	12°13.0	1.2 - 1.0	7.2 - 6.2	13.2 - 11.3
13	12°48.3	12°50.3	12°13.3	1.3 - 1.1	7.3 - 6.3	13.3 - 11.4
14	12°48.5	12°50.6	12°13.5	1.4 - 1.2	7.4 - 6.4	13.4 - 11.5
15	12°48.8	12°50.9	12°13.7	1.5 - 1.3	7.5 - 6.4	13.5 - 11.6
16	12°49.0	12°51.1	12°14.0	1.6 - 1.4	7.6 - 6.5	13.6 - 11.7
17	12°49.2	12°51.4	12°14.2	1.7 - 1.5	7.7 - 6.6	13.7 - 11.8
18	12°49.5	12°51.6	12°14.4	1.8 - 1.5	7.8 - 6.7	13.8 - 11.8
19	12°49.8	12°51.9	12°14.7	1.9 - 1.6	7.9 - 6.8	13.9 - 11.9
20	12°50.0	12°52.1	12°14.9	2.0 - 1.7	8.0 - 6.9	14.0 - 12.0
21	12°50.3	12°52.4	12°15.2	2.1 - 1.8	8.1 - 7.0	14.1 - 12.1
22	12°50.5	12°52.6	12°15.4	2.2 - 1.9	8.2 - 7.0	14.2 - 12.2
23	12°50.7	12°52.9	12°15.6	2.3 - 2.0	8.3 - 7.1	14.3 - 12.3
24	12°51.0	12°53.1	12°15.9	2.4 - 2.1	8.4 - 7.2	14.4 - 12.4
25	12°51.2	12°53.4	12°16.1	2.5 - 2.1	8.5 - 7.3	14.5 - 12.4
26	12°51.5	12°53.6	12°16.4	2.6 - 2.2	8.6 - 7.4	14.6 - 12.5
27	12°51.8	12°53.9	12°16.6	2.7 - 2.3	8.7 - 7.5	14.7 - 12.6
28	12°52.0	12°54.1	12°16.8	2.8 - 2.4	8.8 - 7.6	14.8 - 12.7
29	12°52.3	12°54.4	12°17.1	2.9 - 2.5	8.9 - 7.6	14.9 - 12.8
30	12°52.5	12°54.6	12°17.3	3.0 - 2.6	9.0 - 7.7	15.0 - 12.9
31	12°52.7	12°54.9	12°17.5	3.1 - 2.7	9.1 - 7.8	15.1 - 13.0
32	12°53.0	12°55.1	12°17.8	3.2 - 2.7	9.2 - 7.9	15.2 - 13.0
33	12°53.2	12°55.4	12°18.0	3.3 - 2.8	9.3 - 8.0	15.3 - 13.1
34	12°53.5	12°55.6	12°18.3	3.4 - 2.9	9.4 - 8.1	15.4 - 13.2
35	12°53.8	12°55.9	12°18.5	3.5 - 3.0	9.5 - 8.2	15.5 - 13.3
36	12°54.0	12°56.1	12°18.7	3.6 - 3.1	9.6 - 8.2	15.6 - 13.4
37	12°54.3	12°56.4	12°19.0	3.7 - 3.2	9.7 - 8.3	15.7 - 13.5
38	12°54.5	12°56.6	12°19.2	3.8 - 3.3	9.8 - 8.4	15.8 - 13.6
39	12°54.7	12°56.9	12°19.5	3.9 - 3.3	9.9 - 8.5	15.9 - 13.6
40	12°55.0	12°57.1	12°19.7	4.0 - 3.4	10.0 - 8.6	16.0 - 13.7
41	12°55.2	12°57.4	12°19.9	4.1 - 3.5	10.1 - 8.7	16.1 - 13.8
42	12°55.5	12°57.6	12°20.2	4.2 - 3.6	10.2 - 8.8	16.2 - 13.9
43	12°55.8	12°57.9	12°20.4	4.3 - 3.7	10.3 - 8.8	16.3 - 14.0
44	12°56.0	12°58.1	12°20.6	4.4 - 3.8	10.4 - 8.9	16.4 - 14.1
45	12°56.3	12°58.4	12°20.9	4.5 - 3.9	10.5 - 9.0	16.5 - 14.2
46	12°56.5	12°58.6	12°21.1	4.6 - 3.9	10.6 - 9.1	16.6 - 14.2
47	12°56.7	12°58.9	12°21.4	4.7 - 4.0	10.7 - 9.2	16.7 - 14.3
48	12°57.0	12°59.1	12°21.6	4.8 - 4.1	10.8 - 9.3	16.8 - 14.4
49	12°57.3	12°59.4	12°21.8	4.9 - 4.2	10.9 - 9.4	16.9 - 14.5
50	12°57.5	12°59.6	12°22.1	5.0 - 4.3	11.0 - 9.4	17.0 - 14.6
51	12°57.8	12°59.9	12°22.3	5.1 - 4.4	11.1 - 9.5	17.1 - 14.7
52	12°58.0	13°00.1	12°22.6	5.2 - 4.5	11.2 - 9.6	17.2 - 14.8
53	12°58.2	13°00.4	12°22.8	5.3 - 4.5	11.3 - 9.7	17.3 - 14.8
54	12°58.5	13°00.6	12°23.0	5.4 - 4.6	11.4 - 9.8	17.4 - 14.9
55	12°58.7	13°00.9	12°23.3	5.5 - 4.7	11.5 - 9.9	17.5 - 15.0
56	12°59.0	13°01.1	12°23.5	5.6 - 4.8	11.6 - 10.0	17.6 - 15.1
57	12°59.3	13°01.4	12°23.8	5.7 - 4.9	11.7 - 10.0	17.7 - 15.2
58	12°59.5	13°01.6	12°24.0	5.8 - 5.0	11.8 - 10.1	17.8 - 15.3
59	12°59.8	13°01.9	12°24.2	5.9 - 5.1	11.9 - 10.2	17.9 - 15.4

m	Sun	Aries	Moon	v and d corr		
52	Plan.					
0	13°00.0	13°02.1	12°24.5	0.0 - 0.0	6.0 - 5.3	12.0 - 10.5
1	13°00.2	13°02.4	12°24.7	0.1 - 0.1	6.1 - 5.3	12.1 - 10.6
2	13°00.5	13°02.6	12°24.9	0.2 - 0.2	6.2 - 5.4	12.2 - 10.7
3	13°00.7	13°02.9	12°25.2	0.3 - 0.3	6.3 - 5.5	12.3 - 10.8
4	13°01.0	13°03.1	12°25.4	0.4 - 0.4	6.4 - 5.6	12.4 - 10.8
5	13°01.3	13°03.4	12°25.7	0.5 - 0.4	6.5 - 5.7	12.5 - 10.9
6	13°01.5	13°03.6	12°25.9	0.6 - 0.5	6.6 - 5.8	12.6 - 11.0
7	13°01.8	13°03.9	12°26.1	0.7 - 0.6	6.7 - 5.9	12.7 - 11.1
8	13°02.0	13°04.1	12°26.4	0.8 - 0.7	6.8 - 6.0	12.8 - 11.2
9	13°02.2	13°04.4	12°26.6	0.9 - 0.8	6.9 - 6.0	12.9 - 11.3
10	13°02.5	13°04.6	12°26.9	1.0 - 0.9	7.0 - 6.1	13.0 - 11.4
11	13°02.7	13°04.9	12°27.1	1.1 - 1.0	7.1 - 6.2	13.1 - 11.5
12	13°03.0	13°05.1	12°27.3	1.2 - 1.1	7.2 - 6.3	13.2 - 11.5
13	13°03.3	13°05.4	12°27.6	1.3 - 1.1	7.3 - 6.4	13.3 - 11.6
14	13°03.5	13°05.6	12°27.8	1.4 - 1.2	7.4 - 6.5	13.4 - 11.7
15	13°03.8	13°05.9	12°28.0	1.5 - 1.3	7.5 - 6.6	13.5 - 11.8
16	13°04.0	13°06.1	12°28.3	1.6 - 1.4	7.6 - 6.6	13.6 - 11.9
17	13°04.2	13°06.4	12°28.5	1.7 - 1.5	7.7 - 6.7	13.7 - 12.0
18	13°04.5	13°06.6	12°28.8	1.8 - 1.6	7.8 - 6.8	13.8 - 12.1
19	13°04.8	13°06.9	12°29.0	1.9 - 1.7	7.9 - 6.9	13.9 - 12.2
20	13°05.0	13°07.1	12°29.2	2.0 - 1.8	8.0 - 7.0	14.0 - 12.3
21	13°05.3	13°07.4	12°29.5	2.1 - 1.8	8.1 - 7.1	14.1 - 12.3
22	13°05.5	13°07.6	12°29.7	2.2 - 1.9	8.2 - 7.2	14.2 - 12.4
23	13°05.7	13°07.9	12°30.0	2.3 - 2.0	8.3 - 7.3	14.3 - 12.5
24	13°06.0	13°08.1	12°30.2	2.4 - 2.1	8.4 - 7.4	14.4 - 12.6
25	13°06.2	13°08.4	12°30.4	2.5 - 2.2	8.5 - 7.4	14.5 - 12.7
26	13°06.5	13°08.6	12°30.7	2.6 - 2.3	8.6 - 7.5	14.6 - 12.8
27	13°06.8	13°08.9	12°30.9	2.7 - 2.4	8.7 - 7.6	14.7 - 12.9
28	13°07.0	13°09.2	12°31.1	2.8 - 2.5	8.8 - 7.7	14.8 - 13.0
29	13°07.3	13°09.4	12°31.4	2.9 - 2.5	8.9 - 7.8	14.9 - 13.0
30	13°07.5	13°09.7	12°31.6	3.0 - 2.6	9.0 - 7.9	15.0 - 13.1
31	13°07.7	13°09.9	12°31.9	3.1 - 2.7	9.1 - 8.0	15.1 - 13.2
32	13°08.0	13°10.2	12°32.1	3.2 - 2.8	9.2 - 8.0	15.2 - 13.3
33	13°08.2	13°10.4	12°32.3	3.3 - 2.9	9.3 - 8.1	15.3 - 13.4
34	13°08.5	13°10.7	12°32.6	3.4 - 3.0	9.4 - 8.2	15.4 - 13.5
35	13°08.8	13°10.9	12°32.8	3.5 - 3.1	9.5 - 8.3	15.5 - 13.6
36	13°09.0	13°11.2	12°33.1	3.6 - 3.1	9.6 - 8.4	15.6 - 13.7
37	13°09.3	13°11.4	12°33.3	3.7 - 3.2	9.7 - 8.5	15.7 - 13.7
38	13°09.5	13°11.7	12°33.5	3.8 - 3.3	9.8 - 8.6	15.8 - 13.8
39	13°09.7	13°11.9	12°33.8	3.9 - 3.4	9.9 - 8.7	15.9 - 13.9
40	13°10.0	13°12.2	12°34.0	4.0 - 3.5	10.0 - 8.8	16.0 - 14.0
41	13°10.2	13°12.4	12°34.2	4.1 - 3.6	10.1 - 8.8	16.1 - 14.1
42	13°10.5	13°12.7	12°34.5	4.2 - 3.7	10.2 - 8.9	16.2 - 14.2
43	13°10.8	13°12.9	12°34.7	4.3 - 3.8	10.3 - 9.0	16.3 - 14.3
44	13°11.0	13°13.2	12°35.0	4.4 - 3.9	10.4 - 9.1	16.4 - 14.3
45	13°11.3	13°13.4	12°35.2	4.5 - 3.9	10.5 - 9.2	16.5 - 14.4
46	13°11.5	13°13.7	12°35.4	4.6 - 4.0	10.6 - 9.3	16.6 - 14.5
47	13°11.7	13°13.9	12°35.7	4.7 - 4.1	10.7 - 9.4	16.7 - 14.6
48	13°12.0	13°14.2	12°35.9	4.8 - 4.2	10.8 - 9.5	16.8 - 14.7
49	13°12.3	13°14.4	12°36.2	4.9 - 4.3	10.9 - 9.5	16.9 - 14.8
50	13°12.5	13°14.7	12°36.4	5.0 - 4.4	11.0 - 9.6	17.0 - 14.9
51	13°12.8	13°14.9	12°36.6	5.1 - 4.5	11.1 - 9.7	17.1 - 15.0
52	13°13.0	13°15.2	12°36.9	5.2 - 4.5	11.2 - 9.8	17.2 - 15.0
53	13°13.2	13°15.4	12°37.1	5.3 - 4.6	11.3 - 9.9	17.3 - 15.1
54	13°13.5	13°15.7	12°37.4	5.4 - 4.7	11.4 - 10.0	17.4 - 15.2
55	13°13.7	13°15.9	12°37.6	5.5 - 4.8	11.5 - 10.1	17.5 - 15.3
56	13°14.0	13°16.2	12°37.8	5.6 - 4.9	11.6 - 10.2	17.6 - 15.4
57	13°14.3	13°16.4	12°38.1	5.7 - 5.0	11.7 - 10.2	17.7 - 15.5
58	13°14.5	13°16.7	12°38.3	5.8 - 5.1	11.8 - 10.3	17.8 - 15.6
59	13°14.8	13°16.9	12°38.5	5.9 - 5.2	11.9 - 10.4	17.9 - 15.7

m	Sun	Aries	Moon	v and d corr		
53	Plan.					
0	13°15.0	13°17.2	12°38.8	0.0 - 0.0	6.0 - 5.4	12.0 - 10.7
1	13°15.2	13°17.4	12°39.0	0.1 - 0.1	6.1 - 5.4	12.1 - 10.8
2	13°15.5	13°17.7	12°39.3	0.2 - 0.2	6.2 - 5.5	12.2 - 10.9
3	13°15.7	13°17.9	12°39.5	0.3 - 0.3	6.3 - 5.6	12.3 - 11.0
4	13°16.0	13°18.2	12°39.7	0.4 - 0.4	6.4 - 5.7	12.4 - 11.1
5	13°16.3	13°18.4	12°40.0	0.5 - 0.4	6.5 - 5.8	12.5 - 11.1
6	13°16.5	13°18.7	12°40.2	0.6 - 0.5	6.6 - 5.9	12.6 - 11.2
7	13°16.8	13°18.9	12°40.5	0.7 - 0.6	6.7 - 6.0	12.7 - 11.3
8	13°17.0	13°19.2	12°40.7	0.8 - 0.7	6.8 - 6.1	12.8 - 11.4
9	13°17.2	13°19.4	12°40.9	0.9 - 0.8	6.9 - 6.2	12.9 - 11.5
10	13°17.5	13°19.7	12°41.2	1.0 - 0.9	7.0 - 6.2	13.0 - 11.6
11	13°17.7	13°19.9	12°41.4	1.1 - 1.0	7.1 - 6.3	13.1 - 11.7
12	13°18.0	13°20.2	12°41.6	1.2 - 1.1	7.2 - 6.4	13.2 - 11.8
13	13°18.3	13°20.4	12°41.9	1.3 - 1.2	7.3 - 6.5	13.3 - 11.9
14	13°18.5	13°20.7	12°42.1	1.4 - 1.2	7.4 - 6.6	13.4 - 11.9
15	13°18.8	13°20.9	12°42.4	1.5 - 1.3	7.5 - 6.7	13.5 - 12.0
16	13°19.0	13°21.2	12°42.6	1.6 - 1.4	7.6 - 6.8	13.6 - 12.1
17	13°19.2	13°21.4	12°42.8	1.7 - 1.5	7.7 - 6.9	13.7 - 12.2
18	13°19.5	13°21.7	12°43.1	1.8 - 1.6	7.8 - 7.0	13.8 - 12.3
19	13°19.8	13°21.9	12°43.3	1.9 - 1.7	7.9 - 7.0	13.9 - 12.4
20	13°20.0	13°22.2	12°43.6	2.0 - 1.8	8.0 - 7.1	14.0 - 12.5
21	13°20.3	13°22.4	12°43.8	2.1 - 1.9	8.1 - 7.2	14.1 - 12.6
22	13°20.5	13°22.7	12°44.0	2.2 - 2.0	8.2 - 7.3	14.2 - 12.7
23	13°20.7	13°22.9	12°44.3	2.3 - 2.1	8.3 - 7.4	14.3 - 12.8
24	13°21.0	13°23.2	12°44.5	2.4 - 2.1	8.4 - 7.5	14.4 - 12.8
25	13°21.2	13°23.4	12°44.7	2.5 - 2.2	8.5 - 7.6	14.5 - 12.9
26	13°21.5	13°23.7	12°45.0	2.6 - 2.3	8.6 - 7.7	14.6 - 13.0
27	13°21.8	13°23.9	12°45.2	2.7 - 2.4	8.7 - 7.8	14.7 - 13.1
28	13°22.0	13°24.2	12°45.5	2.8 - 2.5	8.8 - 7.8	14.8 - 13.2
29	13°22.3	13°24.4	12°45.7	2.9 - 2.6	8.9 - 7.9	14.9 - 13.3
30	13°22.5	13°24.7	12°45.9	3.0 - 2.7	9.0 - 8.0	15.0 - 13.4
31	13°22.7	13°24.9	12°46.2	3.1 - 2.8	9.1 - 8.1	15.1 - 13.5
32	13°23.0	13°25.2	12°46.4	3.2 - 2.9	9.2 - 8.2	15.2 - 13.6
33	13°23.2	13°25.4	12°46.7	3.3 - 2.9	9.3 - 8.3	15.3 - 13.6
34	13°23.5	13°25.7	12°46.9	3.4 - 3.0	9.4 - 8.4	15.4 - 13.7
35	13°23.8	13°25.9	12°47.1	3.5 - 3.1	9.5 - 8.5	15.5 - 13.8
36	13°24.0	13°26.2	12°47.4	3.6 - 3.2	9.6 - 8.6	15.6 - 13.9
37	13°24.3	13°26.4	12°47.6	3.7 - 3.3	9.7 - 8.6	15.7 - 14.0
38	13°24.5	13°26.7	12°47.9	3.8 - 3.4	9.8 - 8.7	15.8 - 14.1
39	13°24.7	13°26.9	12°48.1	3.9 - 3.5	9.9 - 8.8	15.9 - 14.2
40	13°25.0	13°27.2	12°48.3	4.0 - 3.6	10.0 - 8.9	16.0 - 14.3
41	13°25.2	13°27.5	12°48.6	4.1 - 3.7	10.1 - 9.0	16.1 - 14.4
42	13°25.5	13°27.7	12°48.8	4.2 - 3.7	10.2 - 9.1	16.2 - 14.4
43	13°25.8	13°28.0	12°49.0	4.3 - 3.8	10.3 - 9.2	16.3 - 14.5
44	13°26.0	13°28.2	12°49.3	4.4 - 3.9	10.4 - 9.3	16.4 - 14.6
45	13°26.3	13°28.5	12°49.5	4.5 - 4.0	10.5 - 9.4	16.5 - 14.7
46	13°26.5	13°28.7	12°49.8	4.6 - 4.1	10.6 - 9.5	16.6 - 14.8
47	13°26.7	13°29.0	12°50.0	4.7 - 4.2	10.7 - 9.5	16.7 - 14.9
48	13°27.0	13°29.2	12°50.2	4.8 - 4.3	10.8 - 9.6	16.8 - 15.0
49	13°27.3	13°29.5	12°50.5	4.9 - 4.4	10.9 - 9.7	16.9 - 15.1
50	13°27.5	13°29.7	12°50.7	5.0 - 4.5	11.0 - 9.8	17.0 - 15.2
51	13°27.8	13°30.0	12°51.0	5.1 - 4.5	11.1 - 9.9	17.1 - 15.2
52	13°28.0	13°30.2	12°51.2	5.2 - 4.6	11.2 - 10.0	17.2 - 15.3
53	13°28.2	13°30.5	12°51.4	5.3 - 4.7	11.3 - 10.1	17.3 - 15.4
54	13°28.5	13°30.7	12°51.7	5.4 - 4.8	11.4 - 10.2	17.4 - 15.5
55	13°28.7	13°31.0	12°51.9	5.5 - 4.9	11.5 - 10.3	17.5 - 15.6
56	13°29.0	13°31.2	12°52.1	5.6 - 5.0	11.6 - 10.3	17.6 - 15.7
57	13°29.3	13°31.5	12°52.4	5.7 - 5.1	11.7 - 10.4	17.7 - 15.8
58	13°29.5	13°31.7	12°52.6	5.8 - 5.2	11.8 - 10.5	17.8 - 15.9
59	13°29.8	13°32.0	12°52.9	5.9 - 5.3	11.9 - 10.6	17.9 - 16.0

Increments and Corrections

m	Sun	Aries	Moon	v and d corr		
54	Plan.					
0	13°30.0	13°32.2	12°53.1	0.0 - 0.0	6.0 - 5.5	12.0 - 10.9
1	13°30.2	13°32.5	12°53.3	0.1 - 0.1	6.1 - 5.5	12.1 - 11.0
2	13°30.5	13°32.7	12°53.6	0.2 - 0.2	6.2 - 5.6	12.2 - 11.1
3	13°30.7	13°33.0	12°53.8	0.3 - 0.3	6.3 - 5.7	12.3 - 11.2
4	13°31.0	13°33.2	12°54.1	0.4 - 0.4	6.4 - 5.8	12.4 - 11.3
5	13°31.3	13°33.5	12°54.3	0.5 - 0.5	6.5 - 5.9	12.5 - 11.4
6	13°31.5	13°33.7	12°54.5	0.6 - 0.5	6.6 - 6.0	12.6 - 11.4
7	13°31.8	13°34.0	12°54.8	0.7 - 0.6	6.7 - 6.1	12.7 - 11.5
8	13°32.0	13°34.2	12°55.0	0.8 - 0.7	6.8 - 6.2	12.8 - 11.6
9	13°32.2	13°34.5	12°55.2	0.9 - 0.8	6.9 - 6.3	12.9 - 11.7
10	13°32.5	13°34.7	12°55.5	1.0 - 0.9	7.0 - 6.4	13.0 - 11.8
11	13°32.7	13°35.0	12°55.7	1.1 - 1.0	7.1 - 6.4	13.1 - 11.9
12	13°33.0	13°35.2	12°56.0	1.2 - 1.1	7.2 - 6.5	13.2 - 12.0
13	13°33.3	13°35.5	12°56.2	1.3 - 1.2	7.3 - 6.6	13.3 - 12.1
14	13°33.5	13°35.7	12°56.4	1.4 - 1.3	7.4 - 6.7	13.4 - 12.2
15	13°33.8	13°36.0	12°56.7	1.5 - 1.4	7.5 - 6.8	13.5 - 12.3
16	13°34.0	13°36.2	12°56.9	1.6 - 1.5	7.6 - 6.9	13.6 - 12.4
17	13°34.2	13°36.5	12°57.2	1.7 - 1.5	7.7 - 7.0	13.7 - 12.4
18	13°34.5	13°36.7	12°57.4	1.8 - 1.6	7.8 - 7.1	13.8 - 12.5
19	13°34.8	13°37.0	12°57.6	1.9 - 1.7	7.9 - 7.2	13.9 - 12.6
20	13°35.0	13°37.2	12°57.9	2.0 - 1.8	8.0 - 7.3	14.0 - 12.7
21	13°35.3	13°37.5	12°58.1	2.1 - 1.9	8.1 - 7.4	14.1 - 12.8
22	13°35.5	13°37.7	12°58.3	2.2 - 2.0	8.2 - 7.4	14.2 - 12.9
23	13°35.7	13°38.0	12°58.6	2.3 - 2.1	8.3 - 7.5	14.3 - 13.0
24	13°36.0	13°38.2	12°58.8	2.4 - 2.2	8.4 - 7.6	14.4 - 13.1
25	13°36.2	13°38.5	12°59.1	2.5 - 2.3	8.5 - 7.7	14.5 - 13.2
26	13°36.5	13°38.7	12°59.3	2.6 - 2.4	8.6 - 7.8	14.6 - 13.3
27	13°36.8	13°39.0	12°59.5	2.7 - 2.5	8.7 - 7.9	14.7 - 13.4
28	13°37.0	13°39.2	12°59.8	2.8 - 2.5	8.8 - 8.0	14.8 - 13.4
29	13°37.3	13°39.5	13°00.0	2.9 - 2.6	8.9 - 8.1	14.9 - 13.5
30	13°37.5	13°39.7	13°00.3	3.0 - 2.7	9.0 - 8.2	15.0 - 13.6
31	13°37.7	13°40.0	13°00.5	3.1 - 2.8	9.1 - 8.3	15.1 - 13.7
32	13°38.0	13°40.2	13°00.7	3.2 - 2.9	9.2 - 8.4	15.2 - 13.8
33	13°38.2	13°40.5	13°01.0	3.3 - 3.0	9.3 - 8.4	15.3 - 13.9
34	13°38.5	13°40.7	13°01.2	3.4 - 3.1	9.4 - 8.5	15.4 - 14.0
35	13°38.8	13°41.0	13°01.5	3.5 - 3.2	9.5 - 8.6	15.5 - 14.1
36	13°39.0	13°41.2	13°01.7	3.6 - 3.3	9.6 - 8.7	15.6 - 14.2
37	13°39.3	13°41.5	13°01.9	3.7 - 3.4	9.7 - 8.8	15.7 - 14.3
38	13°39.5	13°41.7	13°02.2	3.8 - 3.5	9.8 - 8.9	15.8 - 14.4
39	13°39.7	13°42.0	13°02.4	3.9 - 3.5	9.9 - 9.0	15.9 - 14.4
40	13°40.0	13°42.2	13°02.6	4.0 - 3.6	10.0 - 9.1	16.0 - 14.5
41	13°40.2	13°42.5	13°02.9	4.1 - 3.7	10.1 - 9.2	16.1 - 14.6
42	13°40.5	13°42.7	13°03.1	4.2 - 3.8	10.2 - 9.3	16.2 - 14.7
43	13°40.8	13°43.0	13°03.4	4.3 - 3.9	10.3 - 9.4	16.3 - 14.8
44	13°41.0	13°43.2	13°03.6	4.4 - 4.0	10.4 - 9.4	16.4 - 14.9
45	13°41.3	13°43.5	13°03.8	4.5 - 4.1	10.5 - 9.5	16.5 - 15.0
46	13°41.5	13°43.7	13°04.1	4.6 - 4.2	10.6 - 9.6	16.6 - 15.1
47	13°41.7	13°44.0	13°04.3	4.7 - 4.3	10.7 - 9.7	16.7 - 15.2
48	13°42.0	13°44.2	13°04.6	4.8 - 4.4	10.8 - 9.8	16.8 - 15.3
49	13°42.3	13°44.5	13°04.8	4.9 - 4.5	10.9 - 9.9	16.9 - 15.4
50	13°42.5	13°44.7	13°05.0	5.0 - 4.5	11.0 - 10.0	17.0 - 15.4
51	13°42.8	13°45.0	13°05.3	5.1 - 4.6	11.1 - 10.1	17.1 - 15.5
52	13°43.0	13°45.2	13°05.5	5.2 - 4.7	11.2 - 10.2	17.2 - 15.6
53	13°43.2	13°45.5	13°05.7	5.3 - 4.8	11.3 - 10.3	17.3 - 15.7
54	13°43.5	13°45.8	13°06.0	5.4 - 4.9	11.4 - 10.4	17.4 - 15.8
55	13°43.7	13°46.0	13°06.2	5.5 - 5.0	11.5 - 10.4	17.5 - 15.9
56	13°44.0	13°46.3	13°06.5	5.6 - 5.1	11.6 - 10.5	17.6 - 16.0
57	13°44.3	13°46.5	13°06.7	5.7 - 5.2	11.7 - 10.6	17.7 - 16.1
58	13°44.5	13°46.8	13°06.9	5.8 - 5.3	11.8 - 10.7	17.8 - 16.2
59	13°44.8	13°47.0	13°07.2	5.9 - 5.4	11.9 - 10.8	17.9 - 16.3

m	Sun	Aries	Moon	v and d corr		
55	Plan.					
0	13°45.0	13°47.3	13°07.4	0.0 - 0.0	6.0 - 5.6	12.0 - 11.1
1	13°45.2	13°47.5	13°07.7	0.1 - 0.1	6.1 - 5.6	12.1 - 11.2
2	13°45.5	13°47.8	13°07.9	0.2 - 0.2	6.2 - 5.7	12.2 - 11.3
3	13°45.7	13°48.0	13°08.1	0.3 - 0.3	6.3 - 5.8	12.3 - 11.4
4	13°46.0	13°48.3	13°08.4	0.4 - 0.4	6.4 - 5.9	12.4 - 11.5
5	13°46.3	13°48.5	13°08.6	0.5 - 0.5	6.5 - 6.0	12.5 - 11.6
6	13°46.5	13°48.8	13°08.8	0.6 - 0.6	6.6 - 6.1	12.6 - 11.7
7	13°46.8	13°49.0	13°09.1	0.7 - 0.6	6.7 - 6.2	12.7 - 11.7
8	13°47.0	13°49.3	13°09.3	0.8 - 0.7	6.8 - 6.3	12.8 - 11.8
9	13°47.2	13°49.5	13°09.6	0.9 - 0.8	6.9 - 6.4	12.9 - 11.9
10	13°47.5	13°49.8	13°09.8	1.0 - 0.9	7.0 - 6.5	13.0 - 12.0
11	13°47.7	13°50.0	13°10.0	1.1 - 1.0	7.1 - 6.6	13.1 - 12.1
12	13°48.0	13°50.3	13°10.3	1.2 - 1.1	7.2 - 6.7	13.2 - 12.2
13	13°48.3	13°50.5	13°10.5	1.3 - 1.2	7.3 - 6.8	13.3 - 12.3
14	13°48.5	13°50.8	13°10.8	1.4 - 1.3	7.4 - 6.8	13.4 - 12.4
15	13°48.8	13°51.0	13°11.0	1.5 - 1.4	7.5 - 6.9	13.5 - 12.5
16	13°49.0	13°51.3	13°11.2	1.6 - 1.5	7.6 - 7.0	13.6 - 12.6
17	13°49.2	13°51.5	13°11.5	1.7 - 1.6	7.7 - 7.1	13.7 - 12.7
18	13°49.5	13°51.8	13°11.7	1.8 - 1.7	7.8 - 7.2	13.8 - 12.8
19	13°49.8	13°52.0	13°12.0	1.9 - 1.8	7.9 - 7.3	13.9 - 12.9
20	13°50.0	13°52.3	13°12.2	2.0 - 1.9	8.0 - 7.4	14.0 - 13.0
21	13°50.3	13°52.5	13°12.4	2.1 - 1.9	8.1 - 7.5	14.1 - 13.0
22	13°50.5	13°52.8	13°12.7	2.2 - 2.0	8.2 - 7.6	14.2 - 13.1
23	13°50.7	13°53.0	13°12.9	2.3 - 2.1	8.3 - 7.7	14.3 - 13.2
24	13°51.0	13°53.3	13°13.1	2.4 - 2.2	8.4 - 7.8	14.4 - 13.3
25	13°51.2	13°53.5	13°13.4	2.5 - 2.3	8.5 - 7.9	14.5 - 13.4
26	13°51.5	13°53.8	13°13.6	2.6 - 2.4	8.6 - 8.0	14.6 - 13.5
27	13°51.8	13°54.0	13°13.9	2.7 - 2.5	8.7 - 8.0	14.7 - 13.6
28	13°52.0	13°54.3	13°14.1	2.8 - 2.6	8.8 - 8.1	14.8 - 13.7
29	13°52.3	13°54.5	13°14.3	2.9 - 2.7	8.9 - 8.2	14.9 - 13.8
30	13°52.5	13°54.8	13°14.6	3.0 - 2.8	9.0 - 8.3	15.0 - 13.9
31	13°52.7	13°55.0	13°14.8	3.1 - 2.9	9.1 - 8.4	15.1 - 14.0
32	13°53.0	13°55.3	13°15.1	3.2 - 3.0	9.2 - 8.5	15.2 - 14.1
33	13°53.2	13°55.5	13°15.3	3.3 - 3.1	9.3 - 8.6	15.3 - 14.2
34	13°53.5	13°55.8	13°15.5	3.4 - 3.1	9.4 - 8.7	15.4 - 14.2
35	13°53.8	13°56.0	13°15.8	3.5 - 3.2	9.5 - 8.8	15.5 - 14.3
36	13°54.0	13°56.3	13°16.0	3.6 - 3.3	9.6 - 8.9	15.6 - 14.4
37	13°54.3	13°56.5	13°16.2	3.7 - 3.4	9.7 - 9.0	15.7 - 14.5
38	13°54.5	13°56.8	13°16.5	3.8 - 3.5	9.8 - 9.1	15.8 - 14.6
39	13°54.7	13°57.0	13°16.7	3.9 - 3.6	9.9 - 9.2	15.9 - 14.7
40	13°55.0	13°57.3	13°17.0	4.0 - 3.7	10.0 - 9.3	16.0 - 14.8
41	13°55.2	13°57.5	13°17.2	4.1 - 3.8	10.1 - 9.3	16.1 - 14.9
42	13°55.5	13°57.8	13°17.4	4.2 - 3.9	10.2 - 9.4	16.2 - 15.0
43	13°55.8	13°58.0	13°17.7	4.3 - 4.0	10.3 - 9.5	16.3 - 15.1
44	13°56.0	13°58.3	13°17.9	4.4 - 4.1	10.4 - 9.6	16.4 - 15.2
45	13°56.3	13°58.5	13°18.2	4.5 - 4.2	10.5 - 9.7	16.5 - 15.3
46	13°56.5	13°58.8	13°18.4	4.6 - 4.3	10.6 - 9.8	16.6 - 15.4
47	13°56.7	13°59.0	13°18.6	4.7 - 4.3	10.7 - 9.9	16.7 - 15.4
48	13°57.0	13°59.3	13°18.9	4.8 - 4.4	10.8 - 10.0	16.8 - 15.5
49	13°57.3	13°59.5	13°19.1	4.9 - 4.5	10.9 - 10.1	16.9 - 15.6
50	13°57.5	13°59.8	13°19.3	5.0 - 4.6	11.0 - 10.2	17.0 - 15.7
51	13°57.8	14°00.0	13°19.6	5.1 - 4.7	11.1 - 10.3	17.1 - 15.8
52	13°58.0	14°00.3	13°19.8	5.2 - 4.8	11.2 - 10.4	17.2 - 15.9
53	13°58.2	14°00.5	13°20.1	5.3 - 4.9	11.3 - 10.5	17.3 - 16.0
54	13°58.5	14°00.8	13°20.3	5.4 - 5.0	11.4 - 10.5	17.4 - 16.1
55	13°58.7	14°01.0	13°20.5	5.5 - 5.1	11.5 - 10.6	17.5 - 16.2
56	13°59.0	14°01.3	13°20.8	5.6 - 5.2	11.6 - 10.7	17.6 - 16.3
57	13°59.3	14°01.5	13°21.0	5.7 - 5.3	11.7 - 10.8	17.7 - 16.4
58	13°59.5	14°01.8	13°21.3	5.8 - 5.4	11.8 - 10.9	17.8 - 16.5
59	13°59.8	14°02.0	13°21.5	5.9 - 5.5	11.9 - 11.0	17.9 - 16.6

m	Sun	Aries	Moon	v and d corr		
56	Plan.					
0	14°00.0	14°02.3	13°21.7	0.0 - 0.0	6.0 - 5.7	12.0 - 11.3
1	14°00.2	14°02.5	13°22.0	0.1 - 0.1	6.1 - 5.7	12.1 - 11.4
2	14°00.5	14°02.8	13°22.2	0.2 - 0.2	6.2 - 5.8	12.2 - 11.5
3	14°00.7	14°03.0	13°22.4	0.3 - 0.3	6.3 - 5.9	12.3 - 11.6
4	14°01.0	14°03.3	13°22.7	0.4 - 0.4	6.4 - 6.0	12.4 - 11.7
5	14°01.3	14°03.5	13°22.9	0.5 - 0.5	6.5 - 6.1	12.5 - 11.8
6	14°01.5	14°03.8	13°23.2	0.6 - 0.6	6.6 - 6.2	12.6 - 11.9
7	14°01.8	14°04.1	13°23.4	0.7 - 0.7	6.7 - 6.3	12.7 - 12.0
8	14°02.0	14°04.3	13°23.6	0.8 - 0.8	6.8 - 6.4	12.8 - 12.1
9	14°02.2	14°04.6	13°23.9	0.9 - 0.8	6.9 - 6.5	12.9 - 12.1
10	14°02.5	14°04.8	13°24.1	1.0 - 0.9	7.0 - 6.6	13.0 - 12.2
11	14°02.7	14°05.1	13°24.4	1.1 - 1.0	7.1 - 6.7	13.1 - 12.3
12	14°03.0	14°05.3	13°24.6	1.2 - 1.1	7.2 - 6.8	13.2 - 12.4
13	14°03.3	14°05.6	13°24.8	1.3 - 1.2	7.3 - 6.9	13.3 - 12.5
14	14°03.5	14°05.8	13°25.1	1.4 - 1.3	7.4 - 7.0	13.4 - 12.6
15	14°03.8	14°06.1	13°25.3	1.5 - 1.4	7.5 - 7.1	13.5 - 12.7
16	14°04.0	14°06.3	13°25.6	1.6 - 1.5	7.6 - 7.2	13.6 - 12.8
17	14°04.2	14°06.6	13°25.8	1.7 - 1.6	7.7 - 7.3	13.7 - 12.9
18	14°04.5	14°06.8	13°26.0	1.8 - 1.7	7.8 - 7.3	13.8 - 13.0
19	14°04.8	14°07.1	13°26.3	1.9 - 1.8	7.9 - 7.4	13.9 - 13.1
20	14°05.0	14°07.3	13°26.5	2.0 - 1.9	8.0 - 7.5	14.0 - 13.2
21	14°05.3	14°07.6	13°26.7	2.1 - 2.0	8.1 - 7.6	14.1 - 13.3
22	14°05.5	14°07.8	13°27.0	2.2 - 2.1	8.2 - 7.7	14.2 - 13.4
23	14°05.7	14°08.1	13°27.2	2.3 - 2.2	8.3 - 7.8	14.3 - 13.5
24	14°06.0	14°08.3	13°27.5	2.4 - 2.3	8.4 - 7.9	14.4 - 13.6
25	14°06.2	14°08.6	13°27.7	2.5 - 2.4	8.5 - 8.0	14.5 - 13.7
26	14°06.5	14°08.8	13°27.9	2.6 - 2.4	8.6 - 8.1	14.6 - 13.7
27	14°06.8	14°09.1	13°28.2	2.7 - 2.5	8.7 - 8.2	14.7 - 13.8
28	14°07.0	14°09.3	13°28.4	2.8 - 2.6	8.8 - 8.3	14.8 - 13.9
29	14°07.3	14°09.6	13°28.7	2.9 - 2.7	8.9 - 8.4	14.9 - 14.0
30	14°07.5	14°09.8	13°28.9	3.0 - 2.8	9.0 - 8.5	15.0 - 14.1
31	14°07.7	14°10.1	13°29.1	3.1 - 2.9	9.1 - 8.6	15.1 - 14.2
32	14°08.0	14°10.3	13°29.4	3.2 - 3.0	9.2 - 8.7	15.2 - 14.3
33	14°08.2	14°10.6	13°29.6	3.3 - 3.1	9.3 - 8.8	15.3 - 14.4
34	14°08.5	14°10.8	13°29.8	3.4 - 3.2	9.4 - 8.9	15.4 - 14.5
35	14°08.8	14°11.1	13°30.1	3.5 - 3.3	9.5 - 8.9	15.5 - 14.6
36	14°09.0	14°11.3	13°30.3	3.6 - 3.4	9.6 - 9.0	15.6 - 14.7
37	14°09.3	14°11.6	13°30.6	3.7 - 3.5	9.7 - 9.1	15.7 - 14.8
38	14°09.5	14°11.8	13°30.8	3.8 - 3.6	9.8 - 9.2	15.8 - 14.9
39	14°09.7	14°12.1	13°31.0	3.9 - 3.7	9.9 - 9.3	15.9 - 15.0
40	14°10.0	14°12.3	13°31.3	4.0 - 3.8	10.0 - 9.4	16.0 - 15.1
41	14°10.2	14°12.6	13°31.5	4.1 - 3.9	10.1 - 9.5	16.1 - 15.2
42	14°10.5	14°12.8	13°31.8	4.2 - 4.0	10.2 - 9.6	16.2 - 15.3
43	14°10.8	14°13.1	13°32.0	4.3 - 4.0	10.3 - 9.7	16.3 - 15.3
44	14°11.0	14°13.3	13°32.2	4.4 - 4.1	10.4 - 9.8	16.4 - 15.4
45	14°11.3	14°13.6	13°32.5	4.5 - 4.2	10.5 - 9.9	16.5 - 15.5
46	14°11.5	14°13.8	13°32.7	4.6 - 4.3	10.6 - 10.0	16.6 - 15.6
47	14°11.7	14°14.1	13°32.9	4.7 - 4.4	10.7 - 10.1	16.7 - 15.7
48	14°12.0	14°14.3	13°33.2	4.8 - 4.5	10.8 - 10.2	16.8 - 15.8
49	14°12.3	14°14.6	13°33.4	4.9 - 4.6	10.9 - 10.3	16.9 - 15.9
50	14°12.5	14°14.8	13°33.7	5.0 - 4.7	11.0 - 10.4	17.0 - 16.0
51	14°12.8	14°15.1	13°33.9	5.1 - 4.8	11.1 - 10.5	17.1 - 16.1
52	14°13.0	14°15.3	13°34.1	5.2 - 4.9	11.2 - 10.5	17.2 - 16.2
53	14°13.2	14°15.6	13°34.4	5.3 - 5.0	11.3 - 10.6	17.3 - 16.3
54	14°13.5	14°15.8	13°34.6	5.4 - 5.1	11.4 - 10.7	17.4 - 16.4
55	14°13.7	14°16.1	13°34.9	5.5 - 5.2	11.5 - 10.8	17.5 - 16.5
56	14°14.0	14°16.3	13°35.1	5.6 - 5.3	11.6 - 10.9	17.6 - 16.6
57	14°14.3	14°16.6	13°35.3	5.7 - 5.4	11.7 - 11.0	17.7 - 16.7
58	14°14.5	14°16.8	13°35.6	5.8 - 5.5	11.8 - 11.1	17.8 - 16.8
59	14°14.8	14°17.1	13°35.8	5.9 - 5.6	11.9 - 11.2	17.9 - 16.9

Increments and Corrections

m	Sun	Aries	Moon	v and d corr			m	Sun	Aries	Moon	v and d corr			m	Sun	Aries	Moon	v and d corr		
57	Plan.						58	Plan.						59	Plan.					
0	14°15.0	14°17.3	13°36.0	0.0 - 0.0	6.0 - 5.8	12.0 - 11.5	0	14°30.0	14°32.4	13°50.4	0.0 - 0.0	6.0 - 5.8	12.0 - 11.7	0	14°45.0	14°47.4	14°04.7	0.0 - 0.0	6.0 - 6.0	12.0 - 11.9
1	14°15.2	14°17.6	13°36.3	0.1 - 0.1	6.1 - 5.8	12.1 - 11.6	1	14°30.2	14°32.6	13°50.6	0.1 - 0.1	6.1 - 5.9	12.1 - 11.8	1	14°45.2	14°47.7	14°04.9	0.1 - 0.1	6.1 - 6.0	12.1 - 12.0
2	14°15.5	14°17.8	13°36.5	0.2 - 0.2	6.2 - 5.9	12.2 - 11.7	2	14°30.5	14°32.9	13°50.8	0.2 - 0.2	6.2 - 6.0	12.2 - 11.9	2	14°45.5	14°47.9	14°05.2	0.2 - 0.2	6.2 - 6.1	12.2 - 12.1
3	14°15.7	14°18.1	13°36.8	0.3 - 0.3	6.3 - 6.0	12.3 - 11.8	3	14°30.7	14°33.1	13°51.1	0.3 - 0.3	6.3 - 6.1	12.3 - 12.0	3	14°45.7	14°48.2	14°05.4	0.3 - 0.3	6.3 - 6.2	12.3 - 12.2
4	14°16.0	14°18.3	13°37.0	0.4 - 0.4	6.4 - 6.1	12.4 - 11.9	4	14°31.0	14°33.4	13°51.3	0.4 - 0.4	6.4 - 6.2	12.4 - 12.1	4	14°46.0	14°48.4	14°05.6	0.4 - 0.4	6.4 - 6.3	12.4 - 12.3
5	14°16.3	14°18.6	13°37.2	0.5 - 0.5	6.5 - 6.2	12.5 - 12.0	5	14°31.3	14°33.6	13°51.6	0.5 - 0.5	6.5 - 6.3	12.5 - 12.2	5	14°46.3	14°48.7	14°05.9	0.5 - 0.5	6.5 - 6.4	12.5 - 12.4
6	14°16.5	14°18.8	13°37.5	0.6 - 0.6	6.6 - 6.3	12.6 - 12.1	6	14°31.5	14°33.9	13°51.8	0.6 - 0.6	6.6 - 6.4	12.6 - 12.3	6	14°46.5	14°48.9	14°06.1	0.6 - 0.6	6.6 - 6.5	12.6 - 12.5
7	14°16.8	14°19.1	13°37.7	0.7 - 0.7	6.7 - 6.4	12.7 - 12.2	7	14°31.8	14°34.1	13°52.0	0.7 - 0.7	6.7 - 6.5	12.7 - 12.4	7	14°46.8	14°49.2	14°06.4	0.7 - 0.7	6.7 - 6.6	12.7 - 12.6
8	14°17.0	14°19.3	13°38.0	0.8 - 0.8	6.8 - 6.5	12.8 - 12.3	8	14°32.0	14°34.4	13°52.3	0.8 - 0.8	6.8 - 6.6	12.8 - 12.5	8	14°47.0	14°49.4	14°06.6	0.8 - 0.8	6.8 - 6.7	12.8 - 12.7
9	14°17.2	14°19.6	13°38.2	0.9 - 0.9	6.9 - 6.6	12.9 - 12.4	9	14°32.2	14°34.6	13°52.5	0.9 - 0.9	6.9 - 6.7	12.9 - 12.6	9	14°47.2	14°49.7	14°06.8	0.9 - 0.9	6.9 - 6.8	12.9 - 12.8
10	14°17.5	14°19.8	13°38.4	1.0 - 1.0	7.0 - 6.7	13.0 - 12.5	10	14°32.5	14°34.9	13°52.8	1.0 - 1.0	7.0 - 6.8	13.0 - 12.7	10	14°47.5	14°49.9	14°07.1	1.0 - 1.0	7.0 - 6.9	13.0 - 12.9
11	14°17.7	14°20.1	13°38.7	1.1 - 1.1	7.1 - 6.8	13.1 - 12.6	11	14°32.7	14°35.1	13°53.0	1.1 - 1.1	7.1 - 6.9	13.1 - 12.8	11	14°47.7	14°50.2	14°07.3	1.1 - 1.1	7.1 - 7.0	13.1 - 13.0
12	14°18.0	14°20.3	13°38.9	1.2 - 1.2	7.2 - 6.9	13.2 - 12.7	12	14°33.0	14°35.4	13°53.2	1.2 - 1.2	7.2 - 7.0	13.2 - 12.9	12	14°48.0	14°50.4	14°07.5	1.2 - 1.2	7.2 - 7.1	13.2 - 13.1
13	14°18.3	14°20.6	13°39.2	1.3 - 1.2	7.3 - 7.0	13.3 - 12.7	13	14°33.3	14°35.6	13°53.5	1.3 - 1.3	7.3 - 7.1	13.3 - 13.0	13	14°48.3	14°50.7	14°07.8	1.3 - 1.3	7.3 - 7.2	13.3 - 13.2
14	14°18.5	14°20.8	13°39.4	1.4 - 1.3	7.4 - 7.1	13.4 - 12.8	14	14°33.5	14°35.9	13°53.7	1.4 - 1.4	7.4 - 7.2	13.4 - 13.1	14	14°48.5	14°50.9	14°08.0	1.4 - 1.4	7.4 - 7.3	13.4 - 13.3
15	14°18.8	14°21.1	13°39.6	1.5 - 1.4	7.5 - 7.2	13.5 - 12.9	15	14°33.8	14°36.1	13°53.9	1.5 - 1.5	7.5 - 7.3	13.5 - 13.2	15	14°48.8	14°51.2	14°08.3	1.5 - 1.5	7.5 - 7.4	13.5 - 13.4
16	14°19.0	14°21.3	13°39.9	1.6 - 1.5	7.6 - 7.3	13.6 - 13.0	16	14°34.0	14°36.4	13°54.2	1.6 - 1.6	7.6 - 7.4	13.6 - 13.3	16	14°49.0	14°51.4	14°08.5	1.6 - 1.6	7.6 - 7.5	13.6 - 13.5
17	14°19.2	14°21.6	13°40.1	1.7 - 1.6	7.7 - 7.4	13.7 - 13.1	17	14°34.2	14°36.6	13°54.4	1.7 - 1.7	7.7 - 7.5	13.7 - 13.4	17	14°49.2	14°51.7	14°08.7	1.7 - 1.7	7.7 - 7.6	13.7 - 13.6
18	14°19.5	14°21.8	13°40.3	1.8 - 1.7	7.8 - 7.5	13.8 - 13.2	18	14°34.5	14°36.9	13°54.7	1.8 - 1.8	7.8 - 7.6	13.8 - 13.5	18	14°49.5	14°51.9	14°09.0	1.8 - 1.8	7.8 - 7.7	13.8 - 13.7
19	14°19.8	14°22.1	13°40.6	1.9 - 1.8	7.9 - 7.6	13.9 - 13.3	19	14°34.8	14°37.1	13°54.9	1.9 - 1.9	7.9 - 7.7	13.9 - 13.6	19	14°49.8	14°52.2	14°09.2	1.9 - 1.9	7.9 - 7.8	13.9 - 13.8
20	14°20.0	14°22.4	13°40.8	2.0 - 1.9	8.0 - 7.7	14.0 - 13.4	20	14°35.0	14°37.4	13°55.1	2.0 - 1.9	8.0 - 7.8	14.0 - 13.7	20	14°50.0	14°52.4	14°09.5	2.0 - 2.0	8.0 - 7.9	14.0 - 13.9
21	14°20.3	14°22.6	13°41.1	2.1 - 2.0	8.1 - 7.8	14.1 - 13.5	21	14°35.3	14°37.6	13°55.4	2.1 - 2.0	8.1 - 7.9	14.1 - 13.7	21	14°50.3	14°52.7	14°09.7	2.1 - 2.1	8.1 - 8.0	14.1 - 14.0
22	14°20.5	14°22.9	13°41.3	2.2 - 2.1	8.2 - 7.9	14.2 - 13.6	22	14°35.5	14°37.9	13°55.6	2.2 - 2.1	8.2 - 8.0	14.2 - 13.8	22	14°50.5	14°52.9	14°09.9	2.2 - 2.2	8.2 - 8.1	14.2 - 14.1
23	14°20.7	14°23.1	13°41.5	2.3 - 2.2	8.3 - 8.0	14.3 - 13.7	23	14°35.7	14°38.1	13°55.9	2.3 - 2.2	8.3 - 8.1	14.3 - 13.9	23	14°50.7	14°53.2	14°10.2	2.3 - 2.3	8.3 - 8.2	14.3 - 14.2
24	14°21.0	14°23.4	13°41.8	2.4 - 2.3	8.4 - 8.1	14.4 - 13.8	24	14°36.0	14°38.4	13°56.1	2.4 - 2.3	8.4 - 8.2	14.4 - 14.0	24	14°51.0	14°53.4	14°10.4	2.4 - 2.4	8.4 - 8.3	14.4 - 14.3
25	14°21.2	14°23.6	13°42.0	2.5 - 2.4	8.5 - 8.1	14.5 - 13.9	25	14°36.2	14°38.6	13°56.3	2.5 - 2.4	8.5 - 8.3	14.5 - 14.1	25	14°51.2	14°53.7	14°10.6	2.5 - 2.5	8.5 - 8.4	14.5 - 14.4
26	14°21.5	14°23.9	13°42.3	2.6 - 2.5	8.6 - 8.2	14.6 - 14.0	26	14°36.5	14°38.9	13°56.6	2.6 - 2.5	8.6 - 8.4	14.6 - 14.2	26	14°51.5	14°53.9	14°10.9	2.6 - 2.6	8.6 - 8.5	14.6 - 14.5
27	14°21.8	14°24.1	13°42.5	2.7 - 2.6	8.7 - 8.3	14.7 - 14.1	27	14°36.8	14°39.1	13°56.8	2.7 - 2.6	8.7 - 8.5	14.7 - 14.3	27	14°51.8	14°54.2	14°11.1	2.7 - 2.7	8.7 - 8.6	14.7 - 14.6
28	14°22.0	14°24.4	13°42.7	2.8 - 2.7	8.8 - 8.4	14.8 - 14.2	28	14°37.0	14°39.4	13°57.0	2.8 - 2.7	8.8 - 8.6	14.8 - 14.4	28	14°52.0	14°54.4	14°11.4	2.8 - 2.8	8.8 - 8.7	14.8 - 14.7
29	14°22.3	14°24.6	13°43.0	2.9 - 2.8	8.9 - 8.5	14.9 - 14.3	29	14°37.3	14°39.6	13°57.3	2.9 - 2.8	8.9 - 8.7	14.9 - 14.5	29	14°52.3	14°54.7	14°11.6	2.9 - 2.9	8.9 - 8.8	14.9 - 14.8
30	14°22.5	14°24.9	13°43.2	3.0 - 2.9	9.0 - 8.6	15.0 - 14.4	30	14°37.5	14°39.9	13°57.5	3.0 - 2.9	9.0 - 8.8	15.0 - 14.6	30	14°52.5	14°54.9	14°11.8	3.0 - 3.0	9.0 - 8.9	15.0 - 14.9
31	14°22.7	14°25.1	13°43.4	3.1 - 3.0	9.1 - 8.7	15.1 - 14.5	31	14°37.7	14°40.1	13°57.8	3.1 - 3.0	9.1 - 8.9	15.1 - 14.7	31	14°52.7	14°55.2	14°12.1	3.1 - 3.1	9.1 - 9.0	15.1 - 15.0
32	14°23.0	14°25.4	13°43.7	3.2 - 3.1	9.2 - 8.8	15.2 - 14.6	32	14°38.0	14°40.4	13°58.0	3.2 - 3.1	9.2 - 9.0	15.2 - 14.8	32	14°53.0	14°55.4	14°12.3	3.2 - 3.2	9.2 - 9.1	15.2 - 15.1
33	14°23.2	14°25.6	13°43.9	3.3 - 3.2	9.3 - 8.9	15.3 - 14.7	33	14°38.2	14°40.7	13°58.2	3.3 - 3.2	9.3 - 9.1	15.3 - 14.9	33	14°53.2	14°55.7	14°12.6	3.3 - 3.3	9.3 - 9.2	15.3 - 15.2
34	14°23.5	14°25.9	13°44.2	3.4 - 3.3	9.4 - 9.0	15.4 - 14.8	34	14°38.5	14°40.9	13°58.5	3.4 - 3.3	9.4 - 9.2	15.4 - 15.0	34	14°53.5	14°55.9	14°12.8	3.4 - 3.4	9.4 - 9.3	15.4 - 15.3
35	14°23.8	14°26.1	13°44.4	3.5 - 3.4	9.5 - 9.1	15.5 - 14.9	35	14°38.8	14°41.2	13°58.7	3.5 - 3.4	9.5 - 9.3	15.5 - 15.1	35	14°53.8	14°56.2	14°13.0	3.5 - 3.5	9.5 - 9.4	15.5 - 15.4
36	14°24.0	14°26.4	13°44.6	3.6 - 3.5	9.6 - 9.2	15.6 - 15.0	36	14°39.0	14°41.4	13°59.0	3.6 - 3.5	9.6 - 9.4	15.6 - 15.2	36	14°54.0	14°56.4	14°13.3	3.6 - 3.6	9.6 - 9.5	15.6 - 15.5
37	14°24.3	14°26.6	13°44.9	3.7 - 3.5	9.7 - 9.3	15.7 - 15.0	37	14°39.3	14°41.7	13°59.2	3.7 - 3.6	9.7 - 9.5	15.7 - 15.3	37	14°54.3	14°56.7	14°13.5	3.7 - 3.7	9.7 - 9.6	15.7 - 15.6
38	14°24.5	14°26.9	13°45.1	3.8 - 3.6	9.8 - 9.4	15.8 - 15.1	38	14°39.5	14°41.9	13°59.4	3.8 - 3.7	9.8 - 9.6	15.8 - 15.4	38	14°54.5	14°56.9	14°13.8	3.8 - 3.8	9.8 - 9.7	15.8 - 15.7
39	14°24.7	14°27.1	13°45.4	3.9 - 3.7	9.9 - 9.5	15.9 - 15.2	39	14°39.7	14°42.2	13°59.7	3.9 - 3.8	9.9 - 9.7	15.9 - 15.5	39	14°54.7	14°57.2	14°14.0	3.9 - 3.9	9.9 - 9.8	15.9 - 15.8
40	14°25.0	14°27.4	13°45.6	4.0 - 3.8	10.0 - 9.6	16.0 - 15.3	40	14°40.0	14°42.4	13°59.9	4.0 - 3.9	10.0 - 9.8	16.0 - 15.6	40	14°55.0	14°57.4	14°14.2	4.0 - 4.0	10.0 - 9.9	16.0 - 15.9
41	14°25.2	14°27.6	13°45.8	4.1 - 3.9	10.1 - 9.7	16.1 - 15.4	41	14°40.2	14°42.7	14°00.1	4.1 - 4.0	10.1 - 9.8	16.1 - 15.7	41	14°55.2	14°57.7	14°14.5	4.1 - 4.1	10.1 - 10.0	16.1 - 16.0
42	14°25.5	14°27.9	13°46.1	4.2 - 4.0	10.2 - 9.8	16.2 - 15.5	42	14°40.5	14°42.9	14°00.4	4.2 - 4.1	10.2 - 9.9	16.2 - 15.8	42	14°55.5	14°57.9	14°14.7	4.2 - 4.2	10.2 - 10.1	16.2 - 16.1
43	14°25.8	14°28.1	13°46.3	4.3 - 4.1	10.3 - 9.9	16.3 - 15.6	43	14°40.8	14°43.2	14°00.6	4.3 - 4.2	10.3 - 10.0	16.3 - 15.9	43	14°55.8	14°58.2	14°14.9	4.3 - 4.3	10.3 - 10.2	16.3 - 16.2
44	14°26.0	14°28.4	13°46.5	4.4 - 4.2	10.4 - 10.0	16.4 - 15.7	44	14°41.0	14°43.4	14°00.9	4.4 - 4.3	10.4 - 10.1	16.4 - 16.0	44	14°56.0	14°58.4	14°15.2	4.4 - 4.4	10.4 - 10.3	16.4 - 16.3
45	14°26.3	14°28.6	13°46.8	4.5 - 4.3	10.5 - 10.1	16.5 - 15.8	45	14°41.3	14°43.7	14°01.1	4.5 - 4.4	10.5 - 10.2	16.5 - 16.1	45	14°56.3	14°58.7	14°15.4	4.5 - 4.5	10.5 - 10.4	16.5 - 16.4
46	14°26.5	14°28.9	13°47.0	4.6 - 4.4	10.6 - 10.2	16.6 - 15.9	46	14°41.5	14°43.9	14°01.3	4.6 - 4.5	10.6 - 10.3	16.6 - 16.2	46	14°56.5	14°59.				

Increments and Corrections

Refract.		Parallax of the Moon																			DIP			
H_a	ref	H_a	0-5°	5-10°	10-15°	15-20°	20-25°	25-30°	30-35°	35-40°	40-45°	45-50°	50-55°	55-60°	60-65°	65-70°	70-75°	75-80°	80-85°	85-90°	m	dip	ft	
5°	9.9		0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	1	1.8	3.2	
5.5°	9.1	0	54.0	53.8	53.2	52.2	50.7	48.9	46.8	44.2	41.4	38.2	34.7	31.0	27.0	22.8	18.5	14.0	9.4	4.7	1.5	2.2	4.9	
6.0°	8.5	10	54.0	53.8	53.2	52.1	50.7	48.9	46.7	44.1	41.3	38.1	34.6	30.8	26.9	22.7	18.3	13.8	9.2	4.5	2.0	2.5	6.5	
6.5°	7.9	20	54.0	53.8	53.1	52.1	50.6	48.8	46.6	44.1	41.2	38.0	34.5	30.7	26.7	22.5	18.2	13.7	9.1	4.4	2.5	2.8	8.1	
7.0°	7.5	30	54.0	53.8	53.1	52.0	50.6	48.7	46.5	44.0	41.1	37.8	34.3	30.6	26.6	22.4	18.0	13.5	8.9	4.2	3.0	3.0	9.7	
7.5°	7.0	40	54.0	53.7	53.1	52.0	50.5	48.7	46.4	43.9	41.0	37.7	34.2	30.5	26.5	22.3	17.9	13.4	8.8	4.1	3.5	3.3	11.3	
8.0°	6.6	50	54.0	53.7	53.0	52.0	50.5	48.6	46.4	43.8	40.9	37.6	34.1	30.3	26.3	22.1	17.7	13.2	8.6	3.9	4.0	3.5	13.0	
8.5°	6.3		1°	6°	11°	16°	21°	26°	31°	36°	41°	46°	51°	56°	61°	66°	71°	76°	81°	86°	4.5	3.7	14.6	
9.0°	5.9	0	54.0	53.7	53.0	51.9	50.4	48.5	46.3	43.7	40.8	37.5	34.0	30.2	26.2	22.0	17.6	13.1	8.4	3.8	5.0	3.9	16.2	
9.5°	5.7	10	54.0	53.7	53.0	51.9	50.4	48.5	46.2	43.6	40.7	37.4	33.9	30.1	26.0	21.8	17.4	12.9	8.3	3.6	5.5	4.1	17.8	
10.0°	5.4	20	54.0	53.7	52.9	51.8	50.3	48.4	46.1	43.5	40.5	37.3	33.7	29.9	25.9	21.7	17.3	12.8	8.1	3.5	6.0	4.3	19.5	
10.5°	5.1	30	54.0	53.7	52.9	51.8	50.2	48.3	46.0	43.4	40.4	37.2	33.6	29.8	25.8	21.5	17.1	12.6	8.0	3.3	6.5	4.5	21.1	
11.0°	4.9	40	54.0	53.6	52.9	51.7	50.2	48.3	46.0	43.3	40.3	37.1	33.5	29.7	25.6	21.4	17.0	12.5	7.8	3.1	7.0	4.7	22.7	
11.5°	4.7	50	54.0	53.6	52.9	51.7	50.1	48.2	45.9	43.2	40.2	36.9	33.4	29.5	25.5	21.2	16.8	12.3	7.7	3.0	7.5	4.8	24.3	
12.0°	4.5		2°	7°	12°	17°	22°	27°	32°	37°	42°	47°	52°	57°	62°	67°	72°	77°	82°	87°	8.0	5.0	25.9	
12.5°	4.4	0	54.0	53.6	52.8	51.6	50.1	48.1	45.8	43.1	40.1	36.8	33.2	29.4	25.4	21.1	16.7	12.1	7.5	2.8	8.5	5.1	27.6	
13.0°	4.2	10	54.0	53.6	52.8	51.6	50.0	48.0	45.7	43.0	40.0	36.7	33.1	29.3	25.2	21.0	16.5	12.0	7.4	2.7	9.0	5.3	29.2	
13.5°	4.0	20	54.0	53.6	52.8	51.5	49.9	48.0	45.6	42.9	39.9	36.6	33.0	29.1	25.1	20.8	16.4	11.8	7.2	2.5	9.5	5.4	30.8	
14.0°	3.9	30	53.9	53.5	52.7	51.5	49.9	47.9	45.5	42.8	39.8	36.5	32.9	29.0	24.9	20.7	16.2	11.7	7.0	2.4	10.0	5.6	32.4	
14.5°	3.8	40	53.9	53.5	52.7	51.5	49.8	47.8	45.5	42.7	39.7	36.4	32.7	28.9	24.8	20.5	16.1	11.5	6.9	2.2	10.5	5.7	34.0	
15.0°	3.6	50	53.9	53.5	52.7	51.4	49.8	47.8	45.4	42.6	39.6	36.2	32.6	28.7	24.7	20.4	15.9	11.4	6.7	2.0	11.0	5.8	35.7	
15.5°	3.5		3°	8°	13°	18°	23°	28°	33°	38°	43°	48°	53°	58°	63°	68°	73°	78°	83°	88°	11.5	6.0	37.3	
16.0°	3.4	0	53.9	53.5	52.6	51.4	49.7	47.7	45.3	42.6	39.5	36.1	32.5	28.6	24.5	20.2	15.8	11.2	6.6	1.9	12.0	6.1	38.9	
16.5°	3.3	10	53.9	53.5	52.6	51.3	49.6	47.6	45.2	42.5	39.4	36.0	32.4	28.5	24.4	20.1	15.6	11.1	6.4	1.7	12.5	6.2	40.5	
17.0°	3.2	20	53.9	53.4	52.5	51.3	49.6	47.5	45.1	42.4	39.3	35.9	32.2	28.3	24.2	19.9	15.5	10.9	6.3	1.6	13.0	6.3	42.2	
17.5°	3.1	30	53.9	53.4	52.5	51.2	49.5	47.5	45.0	42.3	39.2	35.8	32.1	28.2	24.1	19.8	15.3	10.8	6.1	1.4	13.5	6.5	43.8	
18.0°	3.0	40	53.9	53.4	52.5	51.2	49.5	47.4	44.9	42.2	39.1	35.7	32.0	28.1	24.0	19.6	15.2	10.6	6.0	1.3	14.0	6.6	45.4	
18.5°	2.9	50	53.9	53.4	52.4	51.1	49.4	47.3	44.9	42.1	39.0	35.5	31.9	27.9	23.8	19.5	15.0	10.5	5.8	1.1	14.5	6.7	47.0	
19.0°	2.9		4°	9°	14°	19°	24°	29°	34°	39°	44°	49°	54°	59°	64°	69°	74°	79°	84°	89°	15.0	6.8	48.6	
19.5°	2.8	0	53.9	53.3	52.4	51.1	49.3	47.2	44.8	42.0	38.8	35.4	31.7	27.8	23.7	19.4	14.9	10.3	5.6	0.9	15.5	6.9	50.3	
20.0°	2.7	10	53.9	53.3	52.4	51.0	49.3	47.2	44.7	41.9	38.7	35.3	31.6	27.7	23.5	19.2	14.7	10.1	5.5	0.8	16.0	7.0	51.9	
21.0°	2.6	20	53.8	53.3	52.3	51.0	49.2	47.1	44.6	41.8	38.6	35.2	31.5	27.5	23.4	19.1	14.6	10.0	5.3	0.6	16.5	7.1	53.5	
22.0°	2.4	30	53.8	53.3	52.3	50.9	49.1	47.0	44.5	41.7	38.5	35.1	31.4	27.4	23.2	18.9	14.4	9.8	5.2	0.5	17.0	7.2	55.1	
23.0°	2.3	40	53.8	53.2	52.2	50.8	49.1	46.9	44.4	41.6	38.4	35.0	31.2	27.3	23.1	18.8	14.3	9.7	5.0	0.3	17.5	7.4	56.7	
24.0°	2.2	50	53.8	53.2	52.2	50.8	49.0	46.8	44.3	41.5	38.3	34.8	31.1	27.1	23.0	18.6	14.1	9.5	4.9	0.2	18.0	7.5	58.4	
25.0°	2.1		correction for HP per column																			18.5	7.6	60.0
26.0°	2.0	HP	54.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	19.0	7.7	61.6	
27.0°	1.9	54.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.0	19.5	7.8	63.2	
28.0°	1.9	54.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.5	0.5	0.4	0.3	0.3	0.2	0.1	0.0	20.0	7.9	64.9	
29.0°	1.8	55.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.8	0.7	0.6	0.6	0.5	0.4	0.3	0.2	0.1	20.5	8.0	66.5	
30.0°	1.7	55.5	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.3	0.2	0.1	21.0	8.1	68.1	
31.0°	1.7	55.8	1.8	1.8	1.8	1.7	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.8	0.7	0.5	0.4	0.2	0.1	21.5	8.2	69.7	
32.0°	1.6	56.1	2.1	2.1	2.1	2.0	1.9	1.9	1.8	1.7	1.5	1.4	1.3	1.1	1.0	0.8	0.6	0.5	0.3	0.1	22.0	8.2	71.3	
33.0°	1.5	56.4	2.4	2.4	2.3	2.3	2.2	2.1	2.0	1.9	1.8	1.6	1.5	1.3	1.1	0.9	0.7	0.5	0.3	0.1	22.5	8.3	73.0	
34.0°	1.5	56.7	2.7	2.7	2.6	2.6	2.5	2.4	2.3	2.1	2.0	1.8	1.6	1.5	1.2	1.0	0.8	0.6	0.4	0.1	23.0	8.4	74.6	
35.0°	1.4	57.0	3.0	3.0	2.9	2.9	2.8	2.7	2.5	2.4	2.2	2.0	1.8	1.6	1.4	1.1	0.9	0.6	0.4	0.1	23.5	8.5	76.2	
36.0°	1.4	57.3	3.3	3.3	3.2	3.1	3.0	2.9	2.8	2.6	2.4	2.2	2.0	1.8	1.5	1.3	1.0	0.7	0.4	0.1	24.0	8.6	77.8	
37.0°	1.3	57.6	3.6	3.6	3.5	3.4	3.3	3.2	3.0	2.9	2.7	2.4	2.2	1.9	1.7	1.4	1.1	0.8	0.5	0.2	24.5	8.7	79.4	
38.0°	1.3	57.9	3.9	3.9	3.8	3.7	3.6	3.5	3.3	3.1	2.9	2.6	2.4	2.1	1.8	1.5	1.2	0.8	0.5					

