
The Nautical Almanac 2023 For the Sun



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Acknowledgment and Credits

Dr. Enno Rodegerdts

The Nautical Almanac *Daily Pages* and Sun Almanacs found on our site were originally created from PyAlmanac written by the great Norwegian sailor Enno Rodegerdts. PyAlmanac used PyEphem to generate the almanacs and LaTeX provided 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 found in the following Daily Pages. Attending foremost to the accuracy of data and then formatting Mr. Bauer created SkyAlmanac which draws from Brandon Rhodes work *Ephem* and *Skyfield* and provides a clear arrangement of figures required 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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freely ye received, freely give

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 2019- *The American Practical Navigator*

https://TheNauticalAlmanac.com/2019_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

Epoch 2020 https://www.thenauticalalmanac.com/Pub_No_249_Epoch_2020.html

Epoch 2025 https://www.thenauticalalmanac.com/Pub_No_249_Epoch_2025.html

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

<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 "The AP latitude is chosen to be the nearest whole degree in latitude to the DR latitude." *from Bowditch 2019 Vol. 1 Chapter 19 section 1902 p. 310* Consider this to be 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. *See Bowditch 2019 Vol. 1 Chapter 19 section 1902 p. 310*

About LHA determination

Assumed Position longitude ($\alpha\lambda$) "The AP longitude is that nearest the DR longitude resulting in a whole degree of LHA for the observed body." *From Bowditch 2019 Vol. 1 Chapter 19 section 1902 p. 310*

In Western Longitudes *see Bowditch 2019 Vol. 1 Chapter 19 section 1905 p. 313*

LHA is the Local Hour Angle derived by subtracting your Assumed Longitude ($\alpha\lambda$) whole degree value from the whole degree **GHA** (Greenwich Hour Angle) value. If GHA is less than the $\alpha\lambda$ then the add 360° to it then subtract the $\alpha\lambda$. *Ignore the arc minutes of GHA and $\alpha\lambda$.*

Example when GHA is less than $\alpha\lambda$ **GHA**= $43^\circ 25.2'$ $\alpha\lambda$ = W $55^\circ 15.1'$

$$360^\circ + 43^\circ = 403^\circ \quad \text{Then....} 403^\circ - 55^\circ = 348^\circ \text{ (LHA)}$$

In Eastern Longitudes *see Bowditch 2019 Vol. 1 Chapter 19 section 1905 p. 313*

LHA, in Eastern Longitudes, is determined by adding the entire GHA figure (degrees and minutes) to the whole degree figure of the Assumed longitude ($\alpha\lambda$) *plus* the amount of arc minutes required to get to the next degree of the GHA. If the resulting LHA figure is greater than 360° then subtract 360° from the figure to obtain the LHA.

Example- **GHA**= $58^\circ 01.2'$ $\alpha\lambda$ = E $9^\circ 10.1'$ (ignore the 10.1')

Step 1- *get GHA degree difference;* $59^\circ - 58^\circ 01.2' = 0^\circ 58.8'$

Step 2- *add $\alpha\lambda$ degrees to difference found in step 1;* $9^\circ + 0^\circ 58.8' = 9^\circ 58.8'$ $\alpha\lambda$

Step 3- *get LHA;* $58^\circ 01.2' + 9^\circ 58.8' = 68^\circ$ (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

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

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

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

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 $0.96 \div \tan$ of (Ha)

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 λ figure will be used when plotting the LOP on the UPS.

In Eastern longitudes

In Eastern longitudes the λ is determined as follows;

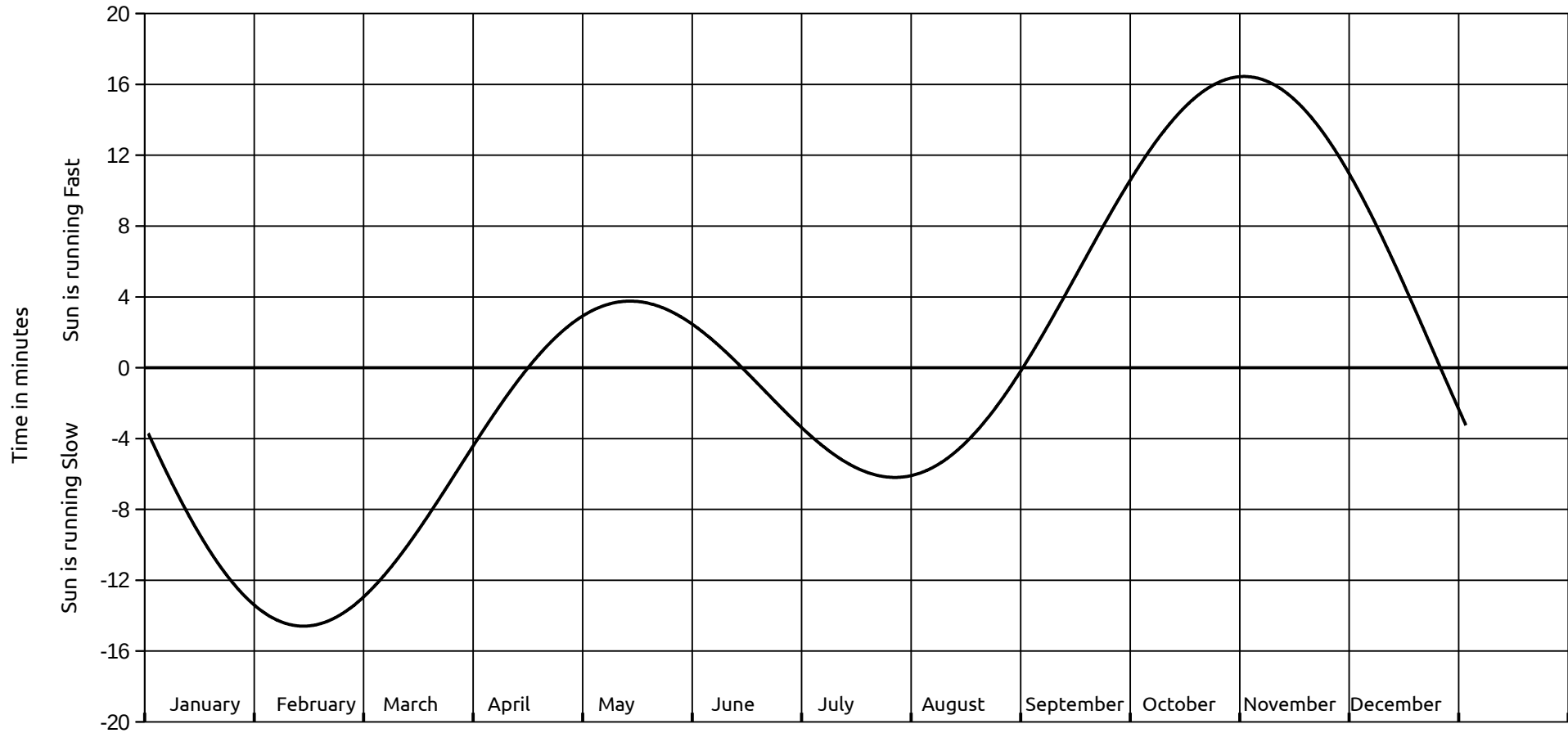
DR longitude + (0°60' *minus* GHA minutes of arc)

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



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Equation of Time *for the Sun*



01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec	13	GHA	Dec
0	179°12.1	S23°02.4	0	178°51.2	S22°46.2	0	178°31.2	S22°25.9	0	178°12.2	S22°01.6	0	177°54.5	S21°33.5
1	194°11.8	02.2	1	193°50.9	45.9	1	193°30.9	25.6	1	193°12.0	01.3	1	192°54.3	33.1
2	209°11.5	02.0	2	208°50.6	45.7	2	208°30.7	25.3	2	208°11.7	00.9	2	207°54.0	32.7
3	224°11.3	.. 01.8	3	223°50.4	.. 45.4	3	223°30.4	.. 25.0	3	223°11.5	.. 00.5	3	222°53.8	.. 32.3
4	239°11.0	01.6	4	238°50.1	45.1	4	238°30.1	24.6	4	238°11.2	22°00.2	4	237°53.6	31.8
5	254°10.7	01.4	5	253°49.8	44.9	5	253°29.8	24.3	5	253°11.0	21°59.8	5	252°53.3	31.4
6	269°10.4	S23°01.2	6	268°49.5	S22°44.6	6	268°29.6	S22°24.0	6	268°10.7	S21°59.4	6	267°53.1	S21°31.0
7	284°10.1	01.0	7	283°49.2	44.4	7	283°29.3	23.7	7	283°10.5	59.7	7	282°52.9	30.6
8	299°09.8	00.8	8	298°48.9	44.1	8	298°29.0	23.4	8	298°10.2	58.7	8	297°52.6	30.2
9	314°09.5	.. 00.6	9	313°48.7	.. 43.9	9	313°28.8	.. 23.1	9	313°10.0	.. 58.3	9	312°52.4	.. 29.7
10	329°09.2	00.4	10	328°48.4	43.6	10	328°28.5	22.8	10	328°09.7	58.0	10	327°52.2	29.3
11	344°08.9	00.2	11	343°48.1	43.3	11	343°28.2	22.4	11	343°09.5	57.6	11	342°51.9	28.9
12	359°08.6	S23°00.0	12	358°47.8	S22°43.1	12	358°28.0	S22°22.1	12	358°09.2	S21°57.2	12	357°51.7	S21°28.5
13	14°08.3	22°59.8	13	13°47.5	42.8	13	13°27.7	21.8	13	13°09.0	56.8	13	12°51.5	28.0
14	29°08.0	59.6	14	28°47.2	42.5	14	28°27.4	21.5	14	28°08.7	56.5	14	27°51.2	27.6
15	44°07.7	.. 59.3	15	43°47.0	.. 42.3	15	43°27.2	.. 21.2	15	43°08.4	.. 56.1	15	42°51.0	.. 27.2
16	59°07.4	59.1	16	58°46.7	42.0	16	58°26.9	20.8	16	58°08.2	55.7	16	57°50.8	26.8
17	74°07.1	58.9	17	73°46.4	41.7	17	73°26.6	20.5	17	73°07.9	55.3	17	72°50.5	26.3
18	89°06.8	S22°58.7	18	88°46.1	S22°41.5	18	88°26.4	S22°20.2	18	88°07.7	S21°55.0	18	87°50.3	S21°25.9
19	104°06.5	58.5	19	103°45.8	41.2	19	103°26.1	19.9	19	103°07.4	54.6	19	102°50.1	25.5
20	119°06.2	58.3	20	118°45.6	40.9	20	118°25.8	19.5	20	118°07.2	54.2	20	117°49.8	25.0
21	134°06.0	.. 58.1	21	133°45.3	.. 40.7	21	133°25.6	.. 19.2	21	133°06.9	.. 53.8	21	132°49.6	.. 24.6
22	149°05.7	57.9	22	148°45.0	40.4	22	148°25.3	18.9	22	148°06.7	53.5	22	147°49.4	24.2
23	164°05.4	57.6	23	163°44.7	40.1	23	163°25.0	18.6	23	163°06.4	53.1	23	162°49.1	23.7
		SD=16.3' d=-0.2'			SD=16.3' d=-0.3'			SD=16.3' d=-0.3'			SD=16.3' d=-0.4'			SD=16.3' d=-0.4'

02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec	14	GHA	Dec
0	179°05.1	S22°57.4	0	178°44.4	S22°39.9	0	178°24.8	S22°18.2	0	178°06.2	S21°52.7	0	177°48.9	S21°23.3
1	194°04.8	57.2	1	193°44.2	39.6	1	193°24.5	17.9	1	193°05.9	52.3	1	192°48.7	22.9
2	209°04.5	57.0	2	208°43.9	39.3	2	208°24.2	17.6	2	208°05.7	51.9	2	207°48.4	22.4
3	224°04.2	.. 56.8	3	223°43.6	.. 39.0	3	223°24.0	.. 17.3	3	223°05.4	.. 51.5	3	222°48.2	.. 22.0
4	239°03.9	56.6	4	238°43.3	38.8	4	238°23.7	16.9	4	238°05.2	51.2	4	237°48.0	21.6
5	254°03.6	56.3	5	253°43.0	38.5	5	253°23.4	16.6	5	253°05.0	50.8	5	252°47.8	21.1
6	269°03.3	S22°56.1	6	268°42.8	S22°38.2	6	268°23.2	S22°16.3	6	268°04.7	S21°50.4	6	267°47.5	S21°20.7
7	284°03.0	55.9	7	283°42.5	37.9	7	283°22.9	15.9	7	283°04.5	50.0	7	282°47.3	20.3
8	299°02.7	55.7	8	298°42.2	37.6	8	298°22.6	15.6	8	298°04.2	49.6	8	297°47.1	19.8
9	314°02.4	.. 55.5	9	313°41.9	.. 37.4	9	313°22.4	.. 15.3	9	313°04.0	.. 49.2	9	312°46.8	.. 19.4
10	329°02.2	55.2	10	328°41.6	37.1	10	328°22.1	14.9	10	328°03.7	48.8	10	327°46.6	18.9
11	344°01.9	55.0	11	343°41.4	36.8	11	343°21.8	14.6	11	343°03.5	48.4	11	342°46.4	18.5
12	359°01.6	S22°54.8	12	358°41.1	S22°36.5	12	358°21.6	S22°14.3	12	358°03.2	S21°48.1	12	357°46.2	S21°18.0
13	14°01.3	54.6	13	13°40.8	36.2	13	13°21.3	13.9	13	13°03.0	47.7	13	12°45.9	17.6
14	29°01.0	54.3	14	28°40.5	36.0	14	28°21.1	13.6	14	28°02.7	47.3	14	27°45.7	17.2
15	44°00.7	.. 54.1	15	43°40.3	.. 35.7	15	43°20.8	.. 13.2	15	43°02.5	.. 46.9	15	42°45.5	.. 16.7
16	59°00.4	53.9	16	58°40.0	35.4	16	58°20.5	12.9	16	58°02.2	46.5	16	57°45.2	16.3
17	74°00.1	53.7	17	73°39.7	35.1	17	73°20.3	12.6	17	73°02.0	46.1	17	72°45.0	15.8
18	89°59.8	S22°53.4	18	88°39.4	S22°34.8	18	88°20.0	S22°12.2	18	88°01.7	S21°45.7	18	87°44.8	S21°15.4
19	103°59.5	53.2	19	103°39.1	34.5	19	103°19.7	11.9	19	103°01.5	45.3	19	102°44.6	14.9
20	118°59.3	53.0	20	118°38.9	34.2	20	118°19.5	11.5	20	118°01.3	44.9	20	117°44.3	14.5
21	133°59.0	.. 52.7	21	133°38.6	.. 34.0	21	133°19.2	.. 11.2	21	133°01.0	.. 44.5	21	132°44.1	.. 14.0
22	148°58.7	52.5	22	148°38.3	33.7	22	148°19.0	10.8	22	148°00.8	44.1	22	147°43.9	13.6
23	163°58.4	52.3	23	163°38.0	33.4	23	163°18.7	10.5	23	163°00.5	43.7	23	162°43.7	13.1
		SD=16.3' d=-0.2'			SD=16.3' d=-0.3'			SD=16.3' d=-0.3'			SD=16.3' d=-0.4'			SD=16.3' d=-0.4'

03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	12	GHA	Dec	15	GHA	Dec
0	178°58.1	S22°52.0	0	178°37.8	S22°33.1	0	178°18.4	S22°10.2	0	178°00.3	S21°43.3	0	177°43.4	S21°12.7
1	193°57.8	51.8	1	193°37.5	32.8	1	193°18.2	09.8	1	193°00.0	42.9	1	192°43.2	12.2
2	208°57.5	51.6	2	208°37.2	32.5	2	208°17.9	09.5	2	207°59.8	42.5	2	207°43.0	11.8
3	223°57.2	.. 51.3	3	223°36.9	.. 32.2	3	223°17.7	.. 09.1	3	222°59.6	.. 42.1	3	222°42.8	.. 11.3
4	238°56.9	51.1	4	238°36.7	31.9	4	238°17.4	08.8	4	237°59.3	41.7	4	237°42.5	10.9
5	253°56.7	50.8	5	253°36.4	31.6	5	253°17.1	08.4	5	252°59.1	41.3	5	252°42.3	10.4
6	268°56.4	S22°50.6	6	268°36.1	S22°31.3	6	268°16.9	S22°08.1	6	267°58.8	S21°40.9	6	267°42.1	S21°10.0
7	283°56.1	50.4	7	283°35.8	31.0	7	283°16.6	07.7	7	282°58.6	40.5	7	282°41.9	09.5
8	298°55.8	50.1	8	298°35.6	30.7	8	298°16.4	07.4	8	297°58.3	40.1	8	297°41.7	09.0
9	313°55.5	.. 49.9	9	313°35.3	.. 30.4	9	313°16.1	.. 07.0	9	312°58.1	.. 39.7	9	312°41.4	.. 08.6
10	328°55.2	49.6	10	328°35.0	30.1	10	328°15.8	06.7	10	327°57.9	39.3	10	327°41.2	08.1
11	343°54.9	49.4	11	343°34.7	29.8	11	343°15.6	06.3	11	342°57.6	38.9	11	342°41.0	07.7
12	358°54.6	S22°49.2	12	358°34.5	S22°29.5	12	358°15.3	S22°06.0	12	357°57.4	S21°38.5	12	357°40.8	S21°07.2
13	13°54.4	48.9	13	13°34.2	29.2	13	13°15.1	05.6	13	12°57.1	38.1	13	12°40.6	06.8
14	28°54.1	48.7	14	28°33.9	28.9	14	28°14.8	05.2	14	27°56.9	37.7	14	27°40.3	06.3
15	43°53.8	.. 48.4	15	43°33.6	.. 28.6	15	43°14.6	.. 04.9	15	42°56.7	.. 37.2	15	42°40.1	.. 05.8
16	58°53.5	48.2	16	58°33.4	28.3	16	58°14.3	04.5	16	57°56.4	36.8	16	57°39.9	05.4
17	73°53.2	47.9	17	73°33.1	28.0	17	73°14.0	04.2	17	72°56.2	36.4	17	72°39.7	04.9
18	88°52.9	S22°47.7	18	88°32.8	S22°27.7	18	88°13.8	S22°03.8	18	87°55.9	S21°36.0	18	87°39.5	S21°04.4
19	103°52.6	47.4	19	103°32.6	27.4	19	103°13.5	03.4	19	102°55.7	35.6	19	102°39.2	04.0
20	118°52.4	47.2	20	118°32.3	27.1	20	118°13.3	03.1	20	117°55.5	35.2	20	117°39.0	03.5
21	133°52.1	.. 46.9	21	133°32.0	.. 26.8	21	133°13.0	.. 02.7	21	132°55.2	.. 34.8	21	132°38.8	.. 03.0
22	148°51.8	46.7	22	148°31.7	26.5	22	148°12.8	02.4	22	147°55.0	34.4	22	147°38.6	02.6
23	163°51.5	46.4	23	163°31.5	26.2	23	163°12.5	02.0	23	162°54.8	33.9	23	162°38.4	02.1
		SD=16.3' d=-0.2'			SD=16.3' d=-0.3'			SD=16.3' d=-0.3'			SD=16.3' d=-0.4'			SD=16.3' d=-0.5'

16	GHA	Dec	19	GHA	Dec	22	GHA	Dec	25	GHA	Dec	28	GHA	Dec
0	177°38.1	S21°01.6	0	177°23.2	S20°26.1	0	177°09.9	S19°47.2	0	176°58.4	S19°04.9	0	176°48.6	S18°19.4
1	192°37.9	01.2	1	192°23.0	25.6	1	192°09.8	46.6	1	191°58.2	04.3	1	191°48.5	18.8
2	207°37.7	00.7	2	207°22.9	25.1	2	207°09.6	46.0	2	206°58.1	03.6	2	206°48.4	18.1
3	222°37.5	21°00.2	3	222°22.7	24.6	3	222°09.4	45.5	3	221°57.9	03.0	3	221°48.2	17.5
4	237°37.3	20°59.8	4	237°22.5	24.1	4	237°09.3	44.9	4	236°57.8	02.4	4	236°48.1	16.8
5	252°37.1	59.3	5	252°22.3	23.5	5	252°09.1	44.3	5	251°57.6	01.8	5	251°48.0	16.1
6	267°36.8	S20°58.8	6	267°22.1	S20°23.0	6	267°08.9	S19°43.8	6	266°57.5	S19°01.2	6	266°47.9	S18°15.5
7	282°36.6	58.4	7	282°21.9	22.5	7	282°08.7	43.2	7	281°57.3	00.6	7	281°47.8	14.8
8	297°36.4	57.9	8	297°21.7	22.0	8	297°08.6	42.6	8	296°57.2	19°00.0	8	296°47.6	14.2
9	312°36.2	57.4	9	312°21.5	21.5	9	312°08.4	42.1	9	311°57.0	18°59.3	9	311°47.5	13.5
10	327°36.0	56.9	10	327°21.3	20.9	10	327°08.2	41.5	10	326°56.9	58.7	10	326°47.4	12.9
11	342°35.8	56.5	11	342°21.1	20.4	11	342°08.1	40.9	11	341°56.8	58.1	11	341°47.3	12.2
12	357°35.6	S20°56.0	12	357°20.9	S20°19.9	12	357°07.9	S19°40.3	12	356°56.6	S18°57.5	12	356°47.2	S18°11.5
13	12°35.3	55.5	13	12°20.7	19.4	13	12°07.7	39.8	13	11°56.5	56.9	13	11°47.0	10.9
14	27°35.1	55.0	14	27°20.5	18.8	14	27°07.6	39.2	14	26°56.3	56.3	14	26°46.9	10.2
15	42°34.9	54.5	15	42°20.3	18.3	15	42°07.4	38.6	15	41°56.2	55.6	15	41°46.8	09.6
16	57°34.7	54.1	16	57°20.1	17.8	16	57°07.2	38.0	16	56°56.0	55.0	16	56°46.7	08.9
17	72°34.5	53.6	17	72°20.0	17.2	17	72°07.1	37.5	17	71°55.9	54.4	17	71°46.6	08.2
18	87°34.3	S20°53.1	18	87°19.8	S20°16.7	18	87°06.9	S19°36.9	18	86°55.8	S18°53.8	18	86°46.5	S18°07.6
19	102°34.1	52.6	19	102°19.6	16.2	19	102°06.7	36.3	19	101°55.6	53.2	19	101°46.3	06.9
20	117°33.8	52.1	20	117°19.4	15.7	20	117°06.6	35.7	20	116°55.5	52.5	20	116°46.2	06.3
21	132°33.6	51.7	21	132°19.2	15.1	21	132°06.4	35.2	21	131°55.3	51.9	21	131°46.1	05.6
22	147°33.4	51.2	22	147°19.0	14.6	22	147°06.2	34.6	22	146°55.2	51.3	22	146°46.0	04.9
23	162°33.2	50.7	23	162°18.8	14.1	23	162°06.1	34.0	23	161°55.0	50.7	23	161°45.9	04.3
SD=16.3' d=-0.5'														
SD=16.2' d=-0.5'														
SD=16.2' d=-0.6'														
SD=16.2' d=-0.6'														
SD=16.2' d=-0.7'														

17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec	29	GHA	Dec
0	177°33.0	S20°50.2	0	177°18.6	S20°13.5	0	177°05.9	S19°33.4	0	176°54.9	S18°50.1	0	176°45.8	S18°03.6
1	192°32.8	49.7	1	192°18.4	13.0	1	192°05.7	32.8	1	191°54.8	49.4	1	191°45.6	02.9
2	207°32.6	49.2	2	207°18.2	12.5	2	207°05.6	32.3	2	206°54.6	48.8	2	206°45.5	02.3
3	222°32.4	48.8	3	222°18.1	11.9	3	222°05.4	31.7	3	221°54.5	48.2	3	221°45.4	01.6
4	237°32.2	48.3	4	237°17.9	11.4	4	237°05.2	31.1	4	236°54.4	47.5	4	236°45.3	00.9
5	252°32.0	47.8	5	252°17.7	10.9	5	252°05.1	30.5	5	251°54.2	46.9	5	251°45.2	18°00.3
6	267°31.7	S20°47.3	6	267°17.5	S20°10.3	6	267°04.9	S19°29.9	6	266°54.1	S18°46.3	6	266°45.1	S17°59.6
7	282°31.5	46.8	7	282°17.3	09.8	7	282°04.7	29.3	7	281°53.9	45.7	7	281°45.0	58.9
8	297°31.3	46.3	8	297°17.1	09.2	8	297°04.6	28.8	8	296°53.8	45.0	8	296°44.9	58.2
9	312°31.1	45.8	9	312°16.9	08.7	9	312°04.4	28.2	9	311°53.7	44.4	9	311°44.8	57.6
10	327°30.9	45.3	10	327°16.8	08.2	10	327°04.3	27.6	10	326°53.5	43.8	10	326°44.6	56.9
11	342°30.7	44.8	11	342°16.6	07.6	11	342°04.1	27.0	11	341°53.4	43.1	11	341°44.5	56.2
12	357°30.5	S20°44.3	12	357°16.4	S20°07.1	12	357°03.9	S19°26.4	12	356°53.3	S18°42.5	12	356°44.4	S17°55.6
13	12°30.3	43.8	13	12°16.2	06.5	13	12°03.8	25.8	13	11°53.1	41.9	13	11°44.3	54.9
14	27°30.1	43.4	14	27°16.0	06.0	14	27°03.6	25.2	14	26°53.0	41.3	14	26°44.2	54.2
15	42°29.9	42.9	15	42°15.8	05.5	15	42°03.5	24.7	15	41°52.9	40.6	15	41°44.1	53.5
16	57°29.7	42.4	16	57°15.6	04.9	16	57°03.3	24.1	16	56°52.7	40.0	16	56°44.0	52.9
17	72°29.5	41.9	17	72°15.5	04.4	17	72°03.1	23.5	17	71°52.6	39.4	17	71°43.9	52.2
18	87°29.3	S20°41.4	18	87°15.3	S20°03.8	18	87°03.0	S19°22.9	18	86°52.4	S18°38.7	18	86°43.8	S17°51.5
19	102°29.1	40.9	19	102°15.1	03.3	19	102°02.8	22.3	19	101°52.3	38.1	19	101°43.7	50.8
20	117°28.9	40.4	20	117°14.9	02.7	20	117°02.7	21.7	20	116°52.2	37.4	20	116°43.6	50.2
21	132°28.6	39.9	21	132°14.7	02.2	21	132°02.5	21.1	21	131°52.0	36.8	21	131°43.4	49.5
22	147°28.4	39.4	22	147°14.6	01.6	22	147°02.3	20.5	22	146°51.9	36.2	22	146°43.3	48.8
23	162°28.2	38.9	23	162°14.4	01.1	23	162°02.2	19.9	23	161°51.8	35.5	23	161°43.2	48.1
SD=16.3' d=-0.5'														
SD=16.2' d=-0.5'														
SD=16.2' d=-0.6'														
SD=16.2' d=-0.6'														
SD=16.2' d=-0.7'														

18	GHA	Dec	21	GHA	Dec	24	GHA	Dec	27	GHA	Dec	30	GHA	Dec
0	177°28.0	S20°38.4	0	177°14.2	S20°00.5	0	177°02.0	S19°19.3	0	176°51.7	S18°34.9	0	176°43.1	S17°47.4
1	192°27.8	37.9	1	192°14.0	20°00.0	1	192°01.9	18.7	1	191°51.5	34.3	1	191°43.0	46.8
2	207°27.6	37.4	2	207°13.8	19°59.4	2	207°01.7	18.1	2	206°51.4	33.6	2	206°42.9	46.1
3	222°27.4	36.9	3	222°13.7	19°58.9	3	222°01.6	17.5	3	221°51.3	33.0	3	221°42.8	45.4
4	237°27.2	36.4	4	237°13.5	19°58.3	4	237°01.4	16.9	4	236°51.1	32.3	4	236°42.7	44.7
5	252°27.0	35.9	5	252°13.3	19°57.8	5	252°01.2	16.3	5	251°51.0	31.7	5	251°42.6	44.0
6	267°26.8	S20°35.4	6	267°13.1	S19°57.2	6	267°01.1	S19°15.7	6	266°50.9	S18°31.1	6	266°42.5	S17°43.4
7	282°26.6	34.8	7	282°12.9	56.7	7	282°00.9	15.1	7	281°50.7	30.4	7	281°42.4	42.7
8	297°26.4	34.3	8	297°12.8	56.1	8	297°00.8	14.5	8	296°50.6	29.8	8	296°42.3	42.0
9	312°26.2	33.8	9	312°12.6	55.6	9	312°00.6	13.9	9	311°50.5	29.1	9	311°42.2	41.3
10	327°26.0	33.3	10	327°12.4	55.0	10	327°00.5	13.3	10	326°50.4	28.5	10	326°42.1	40.6
11	342°25.8	32.8	11	342°12.2	54.5	11	342°00.3	12.7	11	341°50.2	27.8	11	341°42.0	39.9
12	357°25.6	S20°32.3	12	357°12.0	S19°53.9	12	357°00.2	S19°12.1	12	356°50.1	S18°27.2	12	356°41.9	S17°39.3
13	12°25.4	31.8	13	12°11.9	53.3	13	12°00.0	11.5	13	11°50.0	26.6	13	11°41.8	38.6
14	27°25.2	31.3	14	27°11.7	52.8	14	26°59.9	10.9	14	26°49.9	25.9	14	26°41.7	37.9
15	42°25.0	30.8	15	42°11.5	52.2	15	41°59.7	10.3	15	41°49.7	25.3	15	41°41.6	37.2
16	57°24.8	30.3	16	57°11.3	51.7	16	56°59.6	09.7	16	56°49.6	24.6	16	56°41.5	36.5
17	72°24.6	29.8	17	72°11.2	51.1	17	71°59.4	09.1	17	71°49.5	24.0	17	71°41.4	35.8
18	87°24.4	S20°29.2	18	87°11.0	S19°50.5	18	86°59.3	S19°08.5	18	86°49.3	S18°23.3	18	86°41.3	S17°35.1
19	102°24.2	28.7	19	102°10.8	50.0	19	101°59.1	07.9	19	101°49.2	22.7	19	101°41.2	34.4
20	117°24.0	28.2	20	117°10.6	49.4	20	116°59.0	07.3	20	116°49.1	22.0	20	116°41.1	33.8
21	132°23.8	27.7	21	132°10.5	48.9	21	131°58.8	06.7	21	131°49.0	21.4	21	131°41.0	33.1
22	147°23.6	27.2	22	147°10.3	48.3	22	146°58.7	06.1	22	146°48.9	20.7	22	146°40.9	32.4
23	162°23.4	26.7	23	162°10.1	47.7	23	161°58.5	05.5	23	161°48.7	20.1	23	161°40.8	31.7
SD=16.2' d=-0.5'														
SD=16.2' d=-0.5'														
SD=16.2' d=-0.6'														
SD=16.2' d=-0.6'														
SD=16.2' d=-0.7'														

31	GHA	Dec	03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	12	GHA	Dec
0	176°40.7	S17°31.0	0	176°34.7	S16°39.8	0	176°30.5	S15°46.0	0	176°28.1	S14°49.7	0	176°27.5	S13°51.2
1	191°40.6	30.3	1	191°34.6	39.1	1	191°30.4	45.2	1	191°28.1	48.9	1	191°27.5	50.4
2	206°40.5	29.6	2	206°34.5	38.3	2	206°30.4	44.4	2	206°28.1	48.1	2	206°27.5	49.6
3	221°40.4	· · 28.9	3	221°34.5	· · 37.6	3	221°30.4	· · 43.7	3	221°28.0	· · 47.3	3	221°27.5	· · 48.8
4	236°40.3	28.2	4	236°34.4	36.9	4	236°30.3	42.9	4	236°28.0	46.5	4	236°27.5	47.9
5	251°40.2	27.5	5	251°34.3	36.1	5	251°30.3	42.1	5	251°28.0	45.7	5	251°27.5	47.1
6	266°40.1	S17°26.8	6	266°34.3	S16°35.4	6	266°30.2	S15°41.4	6	266°28.0	S14°44.9	6	266°27.5	S13°46.3
7	281°40.0	26.1	7	281°34.2	34.7	7	281°30.2	40.6	7	281°28.0	44.1	7	281°27.5	45.4
8	296°39.9	25.4	8	296°34.1	33.9	8	296°30.1	39.8	8	296°27.9	43.3	8	296°27.5	44.6
9	311°39.8	· · 24.7	9	311°34.0	· · 33.2	9	311°30.1	· · 39.1	9	311°27.9	· · 42.5	9	311°27.5	· · 43.8
10	326°39.8	24.0	10	326°34.0	32.5	10	326°30.0	38.3	10	326°27.9	41.7	10	326°27.5	43.0
11	341°39.7	23.3	11	341°33.9	31.7	11	341°30.0	37.5	11	341°27.9	40.9	11	341°27.5	42.1
12	356°39.6	S17°22.6	12	356°33.8	S16°31.0	12	356°30.0	S15°36.8	12	356°27.9	S14°40.1	12	356°27.5	S13°41.3
13	11°39.5	21.9	13	11°33.8	30.3	13	11°29.9	36.0	13	11°27.9	39.3	13	11°27.5	40.5
14	26°39.4	21.2	14	26°33.7	29.5	14	26°29.9	35.2	14	26°27.8	38.5	14	26°27.5	39.6
15	41°39.3	· · 20.5	15	41°33.6	· · 28.8	15	41°29.8	· · 34.5	15	41°27.8	· · 37.7	15	41°27.5	· · 38.8
16	56°39.2	19.8	16	56°33.6	28.0	16	56°29.8	33.7	16	56°27.8	36.9	16	56°27.6	38.0
17	71°39.1	19.1	17	71°33.5	27.3	17	71°29.8	32.9	17	71°27.8	36.1	17	71°27.6	37.1
18	86°39.0	S17°18.4	18	86°33.5	S16°26.6	18	86°29.7	S15°32.1	18	86°27.8	S14°35.3	18	86°27.6	S13°36.3
19	101°38.9	17.7	19	101°33.4	25.8	19	101°29.7	31.4	19	101°27.8	34.5	19	101°27.6	35.5
20	116°38.8	17.0	20	116°33.3	25.1	20	116°29.6	30.6	20	116°27.8	33.7	20	116°27.6	34.6
21	131°38.8	· · 16.3	21	131°33.3	· · 24.3	21	131°29.6	· · 29.8	21	131°27.7	· · 32.9	21	131°27.6	· · 33.8
22	146°38.7	15.6	22	146°33.2	23.6	22	146°29.6	29.0	22	146°27.7	32.1	22	146°27.6	33.0
23	161°38.6	14.9	23	161°33.1	22.9	23	161°29.5	28.3	23	161°27.7	31.3	23	161°27.6	32.1
SD=16.2' d=-0.7'														
SD=16.2' d=-0.7'														
SD=16.2' d=-0.8'														
SD=16.2' d=-0.8'														

01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec	13	GHA	Dec
0	176°38.5	S17°14.2	0	176°33.1	S16°22.1	0	176°29.5	S15°27.5	0	176°27.7	S14°30.5	0	176°27.6	S13°31.3
1	191°38.4	13.5	1	191°33.0	21.4	1	191°29.5	26.7	1	191°27.7	29.7	1	191°27.6	30.4
2	206°38.3	12.8	2	206°32.9	20.6	2	206°29.4	25.9	2	206°27.7	28.9	2	206°27.6	29.6
3	221°38.2	· · 12.1	3	221°32.9	· · 19.9	3	221°29.4	· · 25.2	3	221°27.7	· · 28.1	3	221°27.7	· · 28.8
4	236°38.1	11.4	4	236°32.8	19.2	4	236°29.3	24.4	4	236°27.7	27.2	4	236°27.7	27.9
5	251°38.0	10.7	5	251°32.8	18.4	5	251°29.3	23.6	5	251°27.6	26.4	5	251°27.7	27.1
6	266°38.0	S17°10.0	6	266°32.7	S16°17.7	6	266°29.3	S15°22.8	6	266°27.6	S14°25.6	6	266°27.7	S13°26.3
7	281°37.9	09.3	7	281°32.6	16.9	7	281°29.2	22.0	7	281°27.6	24.8	7	281°27.7	25.4
8	296°37.8	08.6	8	296°32.6	16.2	8	296°29.2	21.3	8	296°27.6	24.0	8	296°27.7	24.6
9	311°37.7	· · 07.9	9	311°32.5	· · 15.4	9	311°29.2	· · 20.5	9	311°27.6	· · 23.2	9	311°27.7	· · 23.7
10	326°37.6	07.1	10	326°32.5	14.7	10	326°29.1	19.7	10	326°27.6	22.4	10	326°27.7	22.9
11	341°37.5	06.4	11	341°32.4	13.9	11	341°29.1	18.9	11	341°27.6	21.6	11	341°27.8	22.1
12	356°37.5	S17°05.7	12	356°32.3	S16°13.2	12	356°29.1	S15°18.1	12	356°27.6	S14°20.8	12	356°27.8	S13°21.2
13	11°37.4	05.0	13	11°32.3	12.4	13	11°29.0	17.4	13	11°27.6	20.0	13	11°27.8	20.4
14	26°37.3	04.3	14	26°32.2	11.7	14	26°29.0	16.6	14	26°27.6	19.1	14	26°27.8	19.5
15	41°37.2	· · 03.6	15	41°32.2	· · 10.9	15	41°29.0	· · 15.8	15	41°27.5	· · 18.3	15	41°27.8	· · 18.7
16	56°37.1	02.9	16	56°32.1	10.2	16	56°28.9	15.0	16	56°27.5	17.5	16	56°27.8	17.8
17	71°37.0	02.2	17	71°32.1	09.4	17	71°28.9	14.2	17	71°27.5	16.7	17	71°27.9	17.0
18	86°37.0	S17°01.4	18	86°32.0	S16°08.7	18	86°28.9	S15°13.5	18	86°27.5	S14°15.9	18	86°27.9	S13°16.2
19	101°36.9	00.7	19	101°32.0	07.9	19	101°28.9	12.7	19	101°27.5	15.1	19	101°27.9	15.3
20	116°36.8	17°00.0	20	116°31.9	07.2	20	116°28.8	11.9	20	116°27.5	14.3	20	116°27.9	14.5
21	131°36.7	16°59.3	21	131°31.8	· · 06.4	21	131°28.8	· · 11.1	21	131°27.5	· · 13.4	21	131°27.9	· · 13.6
22	146°36.6	58.6	22	146°31.8	05.7	22	146°28.8	10.3	22	146°27.5	12.6	22	146°27.9	12.8
23	161°36.6	57.9	23	161°31.7	04.9	23	161°28.7	09.5	23	161°27.5	11.8	23	161°28.0	11.9
SD=16.2' d=-0.7'														
SD=16.2' d=-0.7'														
SD=16.2' d=-0.8'														
SD=16.2' d=-0.8'														

02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec	14	GHA	Dec
0	176°36.5	S16°57.2	0	176°31.7	S16°04.2	0	176°28.7	S15°08.7	0	176°27.5	S14°11.0	0	176°28.0	S13°11.1
1	191°36.4	56.4	1	191°31.6	03.4	1	191°28.7	08.0	1	191°27.5	10.2	1	191°28.0	10.2
2	206°36.3	55.7	2	206°31.6	02.7	2	206°28.6	07.2	2	206°27.5	09.3	2	206°28.0	09.4
3	221°36.2	· · 55.0	3	221°31.5	· · 01.9	3	221°28.6	· · 06.4	3	221°27.5	· · 08.5	3	221°28.0	· · 08.6
4	236°36.2	54.3	4	236°31.5	01.2	4	236°28.6	05.6	4	236°27.5	07.7	4	236°28.0	07.7
5	251°36.1	53.6	5	251°31.4	16°00.4	5	251°28.6	04.8	5	251°27.5	06.9	5	251°28.1	06.9
6	266°36.0	S16°52.8	6	266°31.4	S15°59.7	6	266°28.5	S15°04.0	6	266°27.5	S14°06.1	6	266°28.1	S13°06.0
7	281°35.9	52.1	7	281°31.3	58.9	7	281°28.5	03.2	7	281°27.5	05.3	7	281°28.1	05.2
8	296°35.9	51.4	8	296°31.3	58.1	8	296°28.5	02.4	8	296°27.5	04.4	8	296°28.1	04.3
9	311°35.8	· · 50.7	9	311°31.2	· · 57.4	9	311°28.5	· · 01.6	9	311°27.5	· · 03.6	9	311°28.1	· · 03.5
10	326°35.7	50.0	10	326°31.2	56.6	10	326°28.4	00.9	10	326°27.5	02.8	10	326°28.2	02.6
11	341°35.6	49.2	11	341°31.1	55.9	11	341°28.4	15°00.1	11	341°27.5	02.0	11	341°28.2	01.8
12	356°35.5	S16°48.5	12	356°31.1	S15°55.1	12	356°28.4	S14°59.3	12	356°27.5	S14°01.1	12	356°28.2	S13°00.9
13	11°35.5	47.8	13	11°31.0	54.4	13	11°28.4	58.5	13	11°27.5	14°00.3	13	11°28.2	13°00.1
14	26°35.4	47.1	14	26°31.0	53.6	14	26°28.3	57.7	14	26°27.5	13°59.5	14	26°28.3	12°59.2
15	41°35.3	· · 46.3	15	41°30.9	· · 52.8	15	41°28.3	· · 56.9	15	41°27.5	· · 58.7	15	41°28.3	· · 58.4
16	56°35.2	45.6	16	56°30.9	52.1	16	56°28.3	56.1	16	56°27.5	57.9	16	56°28.3	57.5
17	71°35.2	44.9	17	71°30.8	51.3	17	71°28.3	55.3	17	71°27.5	57.0	17	71°28.3	56.7
18	86°35.1	S16°44.2	18	86°30.8	S15°50.6	18	86°28.2	S14°54.5	18	86°27.5	S13°56.2	18	86°28.3	S12°55.8
19	101°35.0	43.4	19	101°30.7	49.8	19	101°28.2	53.7	19	101°27.5	55.4	19	101°28.4	55.0
20	116°35.0	42.7	20	116°30.7	49.0	20	116°28.2	52.9	20	116°27.5	54.6	20	116°28.4	54.1
21	131°34.9	· · 42.0	21	131°30.6	· · 48.3	21	131°28.2	· · 52.1	21	131°27.5	· · 53.7	21	131°28.4	· · 53.3
22	146°34.8	41.2	22	146°30.6	47.5	22	146°28.1	51.3	22	146°27.5	52.9	22	146°28.4	52.4
23	161°34.7	40.5	23	161°30.5	46.7	23	161°28.1	50.5	23	161°27.5	52.1	23	161°28.5	51.5
SD=16.2' d=-0.7'														
SD=16.2' d=-0.8'														
SD=16.2' d=-0.8'														
SD=16.2' d=-0.8'														

15	GHA	Dec	18	GHA	Dec	21	GHA	Dec	24	GHA	Dec	27	GHA	Dec
0	176°28.5	S12°50.7	0	176°31.1	S11°48.2	0	176°35.3	S10°44.1	0	176°40.9	S09°38.5	0	176°47.9	S08°31.5
1	191°28.5	49.8	1	191°31.2	47.4	1	191°35.4	43.2	1	191°41.0	37.5	1	191°48.0	30.6
2	206°28.5	49.0	2	206°31.2	46.5	2	206°35.4	42.3	2	206°41.1	36.6	2	206°48.1	29.6
3	221°28.6	· · 48.1	3	221°31.3	· · 45.6	3	221°35.5	· · 41.4	3	221°41.2	· · 35.7	3	221°48.3	· · 28.7
4	236°28.6	47.3	4	236°31.3	44.7	4	236°35.6	40.5	4	236°41.3	34.8	4	236°48.4	27.7
5	251°28.6	46.4	5	251°31.4	43.8	5	251°35.6	39.6	5	251°41.4	33.8	5	251°48.5	26.8
6	266°28.7	S12°45.6	6	266°31.4	S11°43.0	6	266°35.7	S10°38.7	6	266°41.4	S09°32.9	6	266°48.6	S08°25.9
7	281°28.7	44.7	7	281°31.5	42.1	7	281°35.8	37.8	7	281°41.5	32.0	7	281°48.7	24.9
8	296°28.7	43.8	8	296°31.5	41.2	8	296°35.8	36.9	8	296°41.6	31.1	8	296°48.8	24.0
9	311°28.7	· · 43.0	9	311°31.6	· · 40.3	9	311°35.9	· · 36.0	9	311°41.7	· · 30.1	9	311°48.9	· · 23.0
10	326°28.8	42.1	10	326°31.6	39.4	10	326°36.0	35.1	10	326°41.8	29.2	10	326°49.0	22.1
11	341°28.8	41.3	11	341°31.7	38.5	11	341°36.1	34.2	11	341°41.9	28.3	11	341°49.1	21.2
12	356°28.8	S12°40.4	12	356°31.7	S11°37.7	12	356°36.1	S10°33.3	12	356°42.0	S09°27.4	12	356°49.2	S08°20.2
13	11°28.9	39.5	13	11°31.8	36.8	13	11°36.2	32.3	13	11°42.1	26.5	13	11°49.3	19.3
14	26°28.9	38.7	14	26°31.8	35.9	14	26°36.3	31.4	14	26°42.2	25.5	14	26°49.4	18.3
15	41°28.9	· · 37.8	15	41°31.9	· · 35.0	15	41°36.3	· · 30.5	15	41°42.3	· · 24.6	15	41°49.6	· · 17.4
16	56°28.9	37.0	16	56°31.9	34.1	16	56°36.4	29.6	16	56°42.4	23.7	16	56°49.7	16.5
17	71°29.0	36.1	17	71°32.0	33.2	17	71°36.5	28.7	17	71°42.5	22.8	17	71°49.8	15.5
18	86°29.0	S12°35.2	18	86°32.0	S11°32.4	18	86°36.6	S10°27.8	18	86°42.5	S09°21.8	18	86°49.9	S08°14.6
19	101°29.0	34.4	19	101°32.1	31.5	19	101°36.6	26.9	19	101°42.6	20.9	19	101°50.0	13.6
20	116°29.1	33.5	20	116°32.1	30.6	20	116°36.7	26.0	20	116°42.7	20.0	20	116°50.1	12.7
21	131°29.1	· · 32.7	21	131°32.2	· · 29.7	21	131°36.8	· · 25.1	21	131°42.8	· · 19.1	21	131°50.2	· · 11.8
22	146°29.1	31.8	22	146°32.2	28.8	22	146°36.9	24.2	22	146°42.9	18.1	22	146°50.3	10.8
23	161°29.2	30.9	23	161°32.3	27.9	23	161°36.9	23.3	23	161°43.0	17.2	23	161°50.4	09.9
SD=16.2' d=-0.9'														

16	GHA	Dec	19	GHA	Dec	22	GHA	Dec	25	GHA	Dec	28	GHA	Dec
0	176°29.2	S12°30.1	0	176°32.3	S11°27.0	0	176°37.0	S10°22.4	0	176°43.1	S09°16.3	0	176°50.6	S08°08.9
1	191°29.2	29.2	1	191°32.4	26.1	1	191°37.1	21.5	1	191°43.2	15.3	1	191°50.7	08.0
2	206°29.3	28.3	2	206°32.5	25.3	2	206°37.2	20.6	2	206°43.3	14.4	2	206°50.8	07.0
3	221°29.3	· · 27.5	3	221°32.5	· · 24.4	3	221°37.2	· · 19.6	3	221°43.4	· · 13.5	3	221°50.9	· · 06.1
4	236°29.3	26.6	4	236°32.6	23.5	4	236°37.3	18.7	4	236°43.5	12.6	4	236°51.0	05.2
5	251°29.4	25.8	5	251°32.6	22.6	5	251°37.4	17.8	5	251°43.6	11.6	5	251°51.1	04.2
6	266°29.4	S12°24.9	6	266°32.7	S11°21.7	6	266°37.5	S10°16.9	6	266°43.7	S09°10.7	6	266°51.2	S08°03.3
7	281°29.4	24.0	7	281°32.7	20.8	7	281°37.5	16.0	7	281°43.8	09.8	7	281°51.4	02.3
8	296°29.5	23.2	8	296°32.8	19.9	8	296°37.6	15.1	8	296°43.9	08.8	8	296°51.5	01.4
9	311°29.5	· · 22.3	9	311°32.8	· · 19.0	9	311°37.7	· · 14.2	9	311°44.0	· · 07.9	9	311°51.6	08°00.4
10	326°29.5	21.4	10	326°32.9	18.1	10	326°37.8	13.3	10	326°44.1	07.0	10	326°51.7	07°59.5
11	341°29.6	20.6	11	341°33.0	17.3	11	341°37.8	12.4	11	341°44.2	06.1	11	341°51.8	58.5
12	356°29.6	S12°19.7	12	356°33.0	S11°16.4	12	356°37.9	S10°11.4	12	356°44.3	S09°05.1	12	356°51.9	S07°57.6
13	11°29.7	18.8	13	11°33.1	15.5	13	11°38.0	10.5	13	11°44.4	04.2	13	11°52.0	56.6
14	26°29.7	18.0	14	26°33.1	14.6	14	26°38.1	09.6	14	26°44.5	03.3	14	26°52.2	55.7
15	41°29.7	· · 17.1	15	41°33.2	· · 13.7	15	41°38.2	· · 08.7	15	41°44.6	· · 02.3	15	41°52.3	· · 54.8
16	56°29.8	16.2	16	56°33.3	12.8	16	56°38.2	07.8	16	56°44.6	01.4	16	56°52.4	53.8
17	71°29.8	15.3	17	71°33.3	11.9	17	71°38.3	06.9	17	71°44.7	09°00.5	17	71°52.5	52.9
18	86°29.8	S12°14.5	18	86°33.4	S11°11.0	18	86°38.4	S10°06.0	18	86°44.8	S08°59.5	18	86°52.6	S07°51.9
19	101°29.9	13.6	19	101°33.4	10.1	19	101°38.5	05.1	19	101°44.9	58.6	19	101°52.7	51.0
20	116°29.9	12.7	20	116°33.5	09.2	20	116°38.6	04.1	20	116°45.0	57.7	20	116°52.9	50.0
21	131°30.0	· · 11.9	21	131°33.6	· · 08.3	21	131°38.6	· · 03.2	21	131°45.1	· · 56.7	21	131°53.0	· · 49.1
22	146°30.0	11.0	22	146°33.6	07.4	22	146°38.7	02.3	22	146°45.2	55.8	22	146°53.1	48.1
23	161°30.0	10.1	23	161°33.7	06.5	23	161°38.8	01.4	23	161°45.3	54.9	23	161°53.2	47.2
SD=16.2' d=-0.9'														

17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec	01	GHA	Dec
0	176°30.1	S12°09.3	0	176°33.7	S11°05.7	0	176°38.9	S10°00.5	0	176°45.4	S08°54.0	0	176°53.3	S07°46.2
1	191°30.1	08.4	1	191°33.8	04.8	1	191°39.0	09°59.6	1	191°45.5	53.0	1	191°53.4	45.3
2	206°30.2	07.5	2	206°33.9	03.9	2	206°39.0	58.7	2	206°45.6	52.1	2	206°53.6	44.3
3	221°30.2	· · 06.6	3	221°33.9	· · 03.0	3	221°39.1	· · 57.7	3	221°45.7	· · 51.2	3	221°53.7	· · 43.4
4	236°30.2	05.8	4	236°34.0	02.1	4	236°39.2	56.8	4	236°45.9	50.2	4	236°53.8	42.4
5	251°30.3	04.9	5	251°34.0	01.2	5	251°39.3	55.9	5	251°46.0	49.3	5	251°53.9	41.5
6	266°30.3	S12°04.0	6	266°34.1	S11°00.3	6	266°39.4	S09°55.0	6	266°46.1	S08°48.4	6	266°54.0	S07°40.5
7	281°30.4	03.1	7	281°34.2	10°59.4	7	281°39.5	54.1	7	281°46.2	47.4	7	281°54.2	39.6
8	296°30.4	02.3	8	296°34.2	58.5	8	296°39.5	53.2	8	296°46.3	46.5	8	296°54.3	38.6
9	311°30.5	· · 01.4	9	311°34.3	· · 57.6	9	311°39.6	· · 52.2	9	311°46.4	· · 45.5	9	311°54.4	· · 37.7
10	326°30.5	12°00.5	10	326°34.4	56.7	10	326°39.7	51.3	10	326°46.5	44.6	10	326°54.5	36.7
11	341°30.5	11°59.6	11	341°34.4	55.8	11	341°39.8	50.4	11	341°46.6	43.7	11	341°54.6	35.8
12	356°30.6	S11°58.8	12	356°34.5	S10°54.9	12	356°39.9	S09°49.5	12	356°46.7	S08°42.7	12	356°54.8	S07°34.8
13	11°30.6	57.9	13	11°34.6	54.0	13	11°40.0	48.6	13	11°46.8	41.8	13	11°54.9	33.9
14	26°30.7	57.0	14	26°34.6	53.1	14	26°40.0	47.7	14	26°46.9	40.9	14	26°55.0	32.9
15	41°30.7	· · 56.1	15	41°34.7	· · 52.2	15	41°40.1	· · 46.7	15	41°47.0	· · 39.9	15	41°55.1	· · 32.0
16	56°30.8	55.3	16	56°34.8	51.3	16	56°40.2	45.8	16	56°47.1	39.0	16	56°55.2	31.0
17	71°30.8	54.4	17	71°34.8	50.4	17	71°40.3	44.9	17	71°47.2	38.1	17	71°55.4	30.1
18	86°30.8	S11°53.5	18	86°34.9	S10°49.5	18	86°40.4	S09°44.0	18	86°47.3	S08°37.1	18	86°55.5	S07°29.1
19	101°30.9	52.6	19	101°34.9	48.6	19	101°40.5	43.1	19	101°47.4	36.2	19	101°55.6	28.2
20	116°30.9	51.8	20	116°35.0	47.7	20	116°40.6	42.1	20	116°47.5	35.3	20	116°55.7	27.2
21	131°31.0	· · 50.9	21	131°35.1	· · 46.8	21	131°40.7	· · 41.2	21	131°47.6	· · 34.3	21	131°55.9	· · 26.3
22	146°31.0	50.0	22	146°35.2	45.9	22	146°40.7	40.3	22	146°47.7	33.4	22	146°56.0	25.3
23	161°31.1	49.1	23	161°35.2	45.0	23	161°40.8	39.4	23	161°47.8	32.4	23	161°56.1	24.4
SD=16.2' d=-0.9'														

02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec	14	GHA	Dec
0	176°56.2	S07°23.4	0	177°05.7	S06°14.4	0	177°16.1	S05°04.7	0	177°27.4	S03°54.3	0	177°39.4	S02°43.5
1	191°56.3	22.5	1	192°05.8	13.5	1	192°16.3	03.7	1	192°27.6	53.3	1	192°39.6	42.5
2	206°56.5	21.5	2	207°05.9	12.5	2	207°16.4	02.7	2	207°27.8	52.3	2	207°39.8	41.5
3	221°56.6	· · 20.6	3	222°06.1	· · 11.5	3	222°16.6	· · 01.7	3	222°27.9	· · 51.3	3	222°40.0	· · 40.5
4	236°56.7	19.6	4	237°06.2	10.6	4	237°16.7	05°00.8	4	237°28.1	50.4	4	237°40.1	39.5
5	251°56.8	18.7	5	252°06.4	09.6	5	252°16.9	04°59.8	5	252°28.2	49.4	5	252°40.3	38.6
6	266°57.0	S07°17.7	6	267°06.5	S06°08.6	6	267°17.0	S04°58.8	6	267°28.4	S03°48.4	6	267°40.5	S02°37.6
7	281°57.1	16.8	7	282°06.6	07.7	7	282°17.2	57.8	7	282°28.6	47.4	7	282°40.6	36.6
8	296°57.2	15.8	8	297°06.8	06.7	8	297°17.3	56.9	8	297°28.7	46.4	8	297°40.8	35.6
9	311°57.3	· · 14.9	9	312°06.9	· · 05.7	9	312°17.5	· · 55.9	9	312°28.9	· · 45.5	9	312°41.0	· · 34.6
10	326°57.5	13.9	10	327°07.1	04.8	10	327°17.6	54.9	10	327°29.1	44.5	10	327°41.2	33.6
11	341°57.6	12.9	11	342°07.2	03.8	11	342°17.8	53.9	11	342°29.2	43.5	11	342°41.3	32.6
12	356°57.7	S07°12.0	12	357°07.3	S06°02.8	12	357°17.9	S04°53.0	12	357°29.4	S03°42.5	12	357°41.5	S02°31.6
13	11°57.9	11.0	13	12°07.5	01.9	13	12°18.1	52.0	13	12°29.5	41.5	13	12°41.7	30.7
14	26°58.0	10.1	14	27°07.6	00.9	14	27°18.3	51.0	14	27°29.7	40.6	14	27°41.8	29.7
15	41°58.1	· · 09.1	15	42°07.8	06°00.0	15	42°18.4	· · 50.0	15	42°29.9	· · 39.6	15	42°42.0	· · 28.7
16	56°58.2	08.2	16	57°07.9	05°59.0	16	57°18.6	49.1	16	57°30.0	38.6	16	57°42.2	27.7
17	71°58.4	07.2	17	72°08.1	58.0	17	72°18.7	48.1	17	72°30.2	37.6	17	72°42.4	26.7
18	86°58.5	S07°06.3	18	87°08.2	S05°57.1	18	87°18.9	S04°47.1	18	87°30.4	S03°36.6	18	87°42.5	S02°25.7
19	101°58.6	05.3	19	102°08.3	56.1	19	102°19.0	46.1	19	102°30.5	35.6	19	102°42.7	24.7
20	116°58.7	04.4	20	117°08.5	55.1	20	117°19.2	45.2	20	117°30.7	34.7	20	117°42.9	23.8
21	131°58.9	· · 03.4	21	132°08.6	· · 54.2	21	132°19.3	· · 44.2	21	132°30.9	· · 33.7	21	132°43.1	· · 22.8
22	146°59.0	02.4	22	147°08.8	53.2	22	147°19.5	43.2	22	147°31.0	32.7	22	147°43.2	21.8
23	161°59.1	01.5	23	162°08.9	52.2	23	162°19.6	42.2	23	162°31.2	31.7	23	162°43.4	20.8
SD=16.1' d=-1.0'														

03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	12	GHA	Dec	15	GHA	Dec
0	176°59.3	S07°00.5	0	177°09.0	S05°51.2	0	177°19.8	S04°41.3	0	177°31.4	S03°30.7	0	177°43.6	S02°19.8
1	191°59.4	06°59.6	1	192°09.2	50.3	1	192°20.0	40.3	1	192°31.5	29.7	1	192°43.7	18.8
2	206°59.5	58.6	2	207°09.3	49.3	2	207°20.1	39.3	2	207°31.7	28.8	2	207°43.9	17.8
3	221°59.6	· · 57.7	3	222°09.5	· · 48.3	3	222°20.3	· · 38.3	3	222°31.9	· · 27.8	3	222°44.1	· · 16.8
4	236°59.8	56.7	4	237°09.6	47.4	4	237°20.4	37.4	4	237°32.0	26.8	4	237°44.3	15.9
5	251°59.9	55.7	5	252°09.8	46.4	5	252°20.6	36.4	5	252°32.2	25.8	5	252°44.4	14.9
6	267°00.0	S06°54.8	6	267°09.9	S05°45.4	6	267°20.7	S04°35.4	6	267°32.4	S03°24.8	6	267°44.6	S02°13.9
7	282°00.2	53.8	7	282°10.1	44.5	7	282°20.9	34.4	7	282°32.5	23.8	7	282°44.8	12.9
8	297°00.3	52.9	8	297°10.2	43.5	8	297°21.0	33.5	8	297°32.7	22.9	8	297°45.0	11.9
9	312°00.4	· · 51.9	9	312°10.3	· · 42.5	9	312°21.2	· · 32.5	9	312°32.9	· · 21.9	9	312°45.1	· · 10.9
10	327°00.6	51.0	10	327°10.5	41.6	10	327°21.4	31.5	10	327°33.0	20.9	10	327°45.3	09.9
11	342°00.7	50.0	11	342°10.6	40.6	11	342°21.5	30.5	11	342°33.2	19.9	11	342°45.5	08.9
12	357°00.8	S06°49.0	12	357°10.8	S05°39.6	12	357°21.7	S04°29.5	12	357°33.4	S03°18.9	12	357°45.7	S02°08.0
13	12°00.9	48.1	13	12°10.9	38.7	13	12°21.8	28.6	13	12°33.5	17.9	13	12°45.8	07.0
14	27°01.1	47.1	14	27°11.1	37.7	14	27°22.0	27.6	14	27°33.7	17.0	14	27°46.0	06.0
15	42°01.2	· · 46.2	15	42°11.2	· · 36.7	15	42°22.1	· · 26.6	15	42°33.9	· · 16.0	15	42°46.2	· · 05.0
16	57°01.3	45.2	16	57°11.4	35.8	16	57°22.3	25.6	16	57°34.0	15.0	16	57°46.4	04.0
17	72°01.5	44.2	17	72°11.5	34.8	17	72°22.5	24.7	17	72°34.2	14.0	17	72°46.5	03.0
18	87°01.6	S06°43.3	18	87°11.7	S05°33.8	18	87°22.6	S04°23.7	18	87°34.4	S03°13.0	18	87°46.7	S02°02.0
19	102°01.7	42.3	19	102°11.8	32.8	19	102°22.8	22.7	19	102°34.5	12.0	19	102°46.9	01.0
20	117°01.9	41.4	20	117°11.9	31.9	20	117°22.9	21.7	20	117°34.7	11.1	20	117°47.1	02°00.1
21	132°02.0	· · 40.4	21	132°12.1	· · 30.9	21	132°23.1	· · 20.7	21	132°34.9	· · 10.1	21	132°47.2	01°59.1
22	147°02.1	39.4	22	147°12.2	29.9	22	147°23.3	19.8	22	147°35.0	09.1	22	147°47.4	58.1
23	162°02.3	38.5	23	162°12.4	29.0	23	162°23.4	18.8	23	162°35.2	08.1	23	162°47.6	57.1
SD=16.1' d=-1.0'														

04	GHA	Dec	07	GHA	Dec	10	GHA	Dec	13	GHA	Dec	16	GHA	Dec
0	177°02.4	S06°37.5	0	177°12.5	S05°28.0	0	177°23.6	S04°17.8	0	177°35.4	S03°07.1	0	177°47.8	S01°56.1
1	192°02.5	36.6	1	192°12.7	27.0	1	192°23.7	16.8	1	192°35.5	06.1	1	192°47.9	55.1
2	207°02.7	35.6	2	207°12.8	26.1	2	207°23.9	15.8	2	207°35.7	05.2	2	207°48.1	54.1
3	222°02.8	· · 34.6	3	222°13.0	· · 25.1	3	222°24.0	· · 14.9	3	222°35.9	· · 04.2	3	222°48.3	· · 53.1
4	237°02.9	33.7	4	237°13.1	24.1	4	237°24.2	13.9	4	237°36.0	03.2	4	237°48.5	52.2
5	252°03.1	32.7	5	252°13.3	23.1	5	252°24.4	12.9	5	252°36.2	02.2	5	252°48.6	51.2
6	267°03.2	S06°31.8	6	267°13.4	S05°22.2	6	267°24.5	S04°11.9	6	267°36.4	S03°01.2	6	267°48.8	S01°50.2
7	282°03.3	30.8	7	282°13.6	21.2	7	282°24.7	11.0	7	282°36.5	03°00.2	7	282°49.0	49.2
8	297°03.5	29.8	8	297°13.7	20.2	8	297°24.8	10.0	8	297°36.7	02°59.2	8	297°49.2	48.2
9	312°03.6	· · 28.9	9	312°13.9	· · 19.3	9	312°25.0	· · 09.0	9	312°36.9	· · 58.3	9	312°49.3	· · 47.2
10	327°03.7	27.9	10	327°14.0	18.3	10	327°25.2	08.0	10	327°37.1	57.3	10	327°49.5	46.2
11	342°03.9	26.9	11	342°14.2	17.3	11	342°25.3	07.0	11	342°37.2	56.3	11	342°49.7	45.2
12	357°04.0	S06°26.0	12	357°14.3	S05°16.3	12	357°25.5	S04°06.1	12	357°37.4	S02°55.3	12	357°49.9	S01°44.2
13	12°04.2	25.0	13	12°14.5	15.4	13	12°25.6	05.1	13	12°37.6	54.3	13	12°50.1	43.3
14	27°04.3	24.1	14	27°14.6	14.4	14	27°25.8	04.1	14	27°37.7	53.3	14	27°50.2	42.3
15	42°04.4	· · 23.1	15	42°14.8	· · 13.4	15	42°26.0	· · 03.1	15	42°37.9	· · 52.4	15	42°50.4	· · 41.3
16	57°04.6	22.1	16	57°14.9	12.4	16	57°26.1	02.1	16	57°38.1	51.4	16	57°50.6	40.3
17	72°04.7	21.2	17	72°15.1	11.5	17	72°26.3	01.2	17	72°38.2	50.4	17	72°50.8	39.3
18	87°04.8	S06°20.2	18	87°15.2	S05°10.5	18	87°26.5	S04°00.2	18	87°38.4	S02°49.4	18	87°50.9	S01°38.3
19	102°05.0	19.2	19	102°15.4	09.5	19	102°26.6	03°59.2	19	102°38.6	48.4	19	102°51.1	37.3
20	117°05.1	18.3	20	117°15.5	08.6	20	117°26.8	58.2	20	117°38.8	47.4	20	117°51.3	36.3
21	132°05.3	· · 17.3	21	132°15.7	· · 07.6	21	132°26.9	· · 57.2	21	132°38.9	· · 46.4	21	132°51.5	· · 35.4
22	147°05.4	16.4	22	147°15.8	06.6	22	147°27.1	56.3	22	147°39.1	45.5	22	147°51.6	34.4
23	162°05.5	15.4	23	162°16.0	05.6	23	162°27.3	55.3	23	162°39.3	44.5	23	162°51.8	33.4
SD=16.1' d=-1.0'														

17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec	29	GHA	Dec
0	177°52.0	S01°32.4	0	178°05.0	S00°21.2	0	178°18.3	N00°50.0	0	178°31.7	N02°00.9	0	178°45.3	N03°11.4
1	192°52.2	31.4	1	193°05.2	20.2	1	193°18.5	51.0	1	193°31.9	01.9	1	193°45.5	12.4
2	207°52.4	30.4	2	208°05.4	19.2	2	208°18.6	51.9	2	208°32.1	02.8	2	208°45.7	13.3
3	222°52.5	· · 29.4	3	223°05.5	· · 18.2	3	223°18.8	· · 52.9	3	223°32.3	· · 03.8	3	223°45.9	· · 14.3
4	237°52.7	28.4	4	238°05.7	17.2	4	238°19.0	53.9	4	238°32.5	04.8	4	238°46.0	15.3
5	252°52.9	27.4	5	253°05.9	16.2	5	253°19.2	54.9	5	253°32.7	05.8	5	253°46.2	16.3
6	267°53.1	S01°26.5	6	268°06.1	S00°15.2	6	268°19.4	N00°55.9	6	268°32.9	N02°06.8	6	268°46.4	N03°17.2
7	282°53.2	25.5	7	283°06.3	14.3	7	283°19.6	56.9	7	283°33.1	07.8	7	283°46.6	18.2
8	297°53.4	24.5	8	298°06.4	13.3	8	298°19.8	57.9	8	298°33.3	08.7	8	298°46.8	19.2
9	312°53.6	· · 23.5	9	313°06.6	· · 12.3	9	313°19.9	· · 58.9	9	313°33.4	· · 09.7	9	313°47.0	· · 20.2
10	327°53.8	22.5	10	328°06.8	11.3	10	328°20.1	00°59.8	10	328°33.6	10.7	10	328°47.2	21.1
11	342°54.0	21.5	11	343°07.0	10.3	11	343°20.3	01°00.8	11	343°33.8	11.7	11	343°47.4	22.1
12	357°54.1	S01°20.5	12	358°07.2	S00°09.3	12	358°20.5	N01°01.8	12	358°34.0	N02°12.7	12	358°47.6	N03°23.1
13	12°54.3	19.5	13	13°07.4	08.3	13	13°20.7	02.8	13	13°34.2	13.6	13	13°47.7	24.1
14	27°54.5	18.5	14	28°07.5	07.3	14	28°20.9	03.8	14	28°34.4	14.6	14	28°47.9	25.0
15	42°54.7	· · 17.6	15	43°07.7	· · 06.3	15	43°21.1	· · 04.8	15	43°34.6	· · 15.6	15	43°48.1	· · 26.0
16	57°54.9	16.6	16	58°07.9	05.4	16	58°21.3	05.8	16	58°34.8	16.6	16	58°48.3	27.0
17	72°55.0	15.6	17	73°08.1	04.4	17	73°21.4	06.7	17	73°34.9	17.6	17	73°48.5	28.0
18	87°55.2	S01°14.6	18	88°08.3	S00°03.4	18	88°21.6	N01°07.7	18	88°35.1	N02°18.6	18	88°48.7	N03°28.9
19	102°55.4	13.6	19	103°08.5	02.4	19	103°21.8	08.7	19	103°35.3	19.5	19	103°48.9	29.9
20	117°55.6	12.6	20	118°08.7	01.4	20	118°22.0	09.7	20	118°35.5	20.5	20	118°49.1	30.9
21	132°55.8	· · 11.6	21	133°08.8	S00°00.4	21	133°22.2	· · 10.7	21	133°35.7	· · 21.5	21	133°49.2	· · 31.8
22	147°55.9	10.6	22	148°09.0	N00°00.6	22	148°22.4	11.7	22	148°35.9	22.5	22	148°49.4	32.8
23	162°56.1	09.6	23	163°09.2	01.6	23	163°22.6	12.7	23	163°36.1	23.5	23	163°49.6	33.8
SD=16.1' d=-1.0'														
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18	GHA	Dec	21	GHA	Dec	24	GHA	Dec	27	GHA	Dec	30	GHA	Dec
0	177°56.3	S01°08.7	0	178°09.4	N00°02.6	0	178°22.7	N01°13.6	0	178°36.3	N02°24.4	0	178°49.8	N03°34.8
1	192°56.5	07.7	1	193°09.6	03.5	1	193°22.9	14.6	1	193°36.4	25.4	1	193°50.0	35.7
2	207°56.6	06.7	2	208°09.8	04.5	2	208°23.1	15.6	2	208°36.6	26.4	2	208°50.2	36.7
3	222°56.8	· · 05.7	3	223°09.9	· · 05.3	3	223°23.3	· · 16.6	3	223°36.8	· · 27.4	3	223°50.4	· · 37.7
4	237°57.0	04.7	4	238°10.1	06.5	4	238°23.5	17.6	4	238°37.0	28.4	4	238°50.6	38.7
5	252°57.2	03.7	5	253°10.3	07.5	5	253°23.7	18.6	5	253°37.2	29.3	5	253°50.7	39.6
6	267°57.4	S01°02.7	6	268°10.5	N00°08.5	6	268°23.9	N01°19.6	6	268°37.4	N02°30.3	6	268°50.9	N03°40.6
7	282°57.5	01.7	7	283°10.7	09.5	7	283°24.1	20.5	7	283°37.6	31.3	7	283°51.1	41.6
8	297°57.7	01°00.7	8	298°10.9	10.5	8	298°24.2	21.5	8	298°37.8	32.3	8	298°51.3	42.5
9	312°57.9	00°59.8	9	313°11.0	· · 11.5	9	313°24.4	· · 22.5	9	313°38.0	· · 33.3	9	313°51.5	· · 43.5
10	327°58.1	58.8	10	328°11.2	12.4	10	328°24.6	23.5	10	328°38.1	34.2	10	328°51.7	44.5
11	342°58.3	57.8	11	343°11.4	13.4	11	343°24.8	24.5	11	343°38.3	35.2	11	343°51.9	45.5
12	357°58.4	S00°56.8	12	358°11.6	N00°14.4	12	358°25.0	N01°25.5	12	358°38.5	N02°36.2	12	358°52.1	N03°46.4
13	12°58.6	55.8	13	13°11.8	15.4	13	13°25.2	26.5	13	13°38.7	37.2	13	13°52.2	47.4
14	27°58.8	54.8	14	28°12.0	16.4	14	28°25.4	27.4	14	28°38.9	38.2	14	28°52.4	48.4
15	42°59.0	· · 53.8	15	43°12.2	· · 17.4	15	43°25.6	· · 28.4	15	43°39.1	· · 39.1	15	43°52.6	· · 49.3
16	57°59.2	52.8	16	58°12.3	18.4	16	58°25.7	29.4	16	58°39.3	40.1	16	58°52.8	50.3
17	72°59.4	51.8	17	73°12.5	19.4	17	73°25.9	30.4	17	73°39.5	41.1	17	73°53.0	51.3
18	87°59.5	S00°50.8	18	88°12.7	N00°20.3	18	88°26.1	N01°31.4	18	88°39.6	N02°42.1	18	88°53.2	N03°52.3
19	102°59.7	49.9	19	103°12.9	21.3	19	103°26.3	32.4	19	103°39.8	43.0	19	103°53.4	53.2
20	117°59.9	48.9	20	118°13.1	22.3	20	118°26.5	33.3	20	118°40.0	44.0	20	118°53.6	54.2
21	132°00.1	· · 47.9	21	133°13.3	· · 23.3	21	133°26.7	· · 34.3	21	133°40.2	· · 45.0	21	133°53.7	· · 55.2
22	147°00.3	46.9	22	148°13.4	24.3	22	148°26.9	35.3	22	148°40.4	46.0	22	148°53.9	56.1
23	162°00.4	45.9	23	163°13.6	25.3	23	163°27.1	36.3	23	163°40.6	47.0	23	163°54.1	57.1
SD=16.1' d=-1.0'														
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19	GHA	Dec	22	GHA	Dec	25	GHA	Dec	28	GHA	Dec	31	GHA	Dec
0	178°00.6	S00°44.9	0	178°13.8	N00°26.3	0	178°27.2	N01°37.3	0	178°40.8	N02°47.9	0	178°54.3	N03°58.1
1	193°00.8	43.9	1	193°14.0	27.3	1	193°27.4	38.3	1	193°41.0	48.9	1	193°54.5	03°59.0
2	208°01.0	42.9	2	208°14.2	28.2	2	208°27.6	39.2	2	208°41.2	49.9	2	208°54.7	04°00.0
3	223°01.2	· · 41.9	3	223°14.4	· · 29.2	3	223°27.8	· · 40.2	3	223°41.3	· · 50.9	3	223°54.9	· · 01.0
4	238°01.3	41.0	4	238°14.6	30.2	4	238°28.0	41.2	4	238°41.5	51.8	4	238°55.1	02.0
5	253°01.5	40.0	5	253°14.7	31.2	5	253°28.2	42.2	5	253°41.7	52.8	5	253°55.2	02.9
6	268°01.7	S00°39.0	6	268°14.9	N00°32.2	6	268°28.4	N01°43.2	6	268°41.9	N02°53.8	6	268°55.4	N04°03.9
7	283°01.9	38.0	7	283°15.1	33.2	7	283°28.6	44.2	7	283°42.1	54.8	7	283°55.6	04.9
8	298°02.1	37.0	8	298°15.3	34.2	8	298°28.7	45.2	8	298°42.3	55.8	8	298°55.8	05.8
9	313°02.3	· · 36.0	9	313°15.5	· · 35.2	9	313°28.9	· · 46.1	9	313°42.5	· · 56.7	9	313°56.0	· · 06.8
10	328°02.4	35.0	10	328°15.7	36.1	10	328°29.1	47.1	10	328°42.7	57.7	10	328°56.2	07.8
11	343°02.6	34.0	11	343°15.9	37.1	11	343°29.3	48.1	11	343°42.8	58.7	11	343°56.4	08.7
12	358°02.8	S00°33.0	12	358°16.0	N00°38.1	12	358°29.5	N01°49.1	12	358°43.0	N02°59.7	12	358°56.5	N04°09.7
13	13°03.0	32.1	13	13°16.2	39.1	13	13°29.7	50.1	13	13°43.2	03°00.6	13	13°56.7	10.7
14	28°03.2	31.1	14	28°16.4	40.1	14	28°29.9	51.1	14	28°43.4	01.6	14	28°56.9	11.6
15	43°03.3	· · 30.1	15	43°16.6	· · 41.1	15	43°30.1	· · 52.0	15	43°43.6	· · 02.6	15	43°57.1	· · 12.6
16	58°03.5	29.1	16	58°16.8	42.1	16	58°30.2	53.0	16	58°43.8	03.6	16	58°57.3	13.6
17	73°03.7	28.1	17	73°17.0	43.1	17	73°30.4	54.0	17	73°44.0	04.6	17	73°57.5	14.5
18	88°03.9	S00°27.1	18	88°17.2	N00°44.0	18	88°30.6	N01°55.0	18	88°44.2	N03°05.5	18	88°57.7	N04°15.5
19	103°04.1	26.1	19	103°17.3	45.0	19	103°30.8	56.0	19	103°44.4	06.5	19	103°57.9	16.5
20	118°04.3	25.1	20	118°17.5	46.0	20	118°31.0	56.9	20	118°44.5	07.5	20	118°58.0	17.4
21	133°04.4	· · 24.1	21	133°17.7	· · 47.0	21	133°31.2	· · 57.9	21	133°44.7	· · 08.5	21	133°58.2	· · 18.4
22	148°04.6	23.2	22	148°17.9	48.0	22	148°31.4	58.9	22	148°44.9	09.4	22	148°58.4	19.4
23	163°04.8	22.2	23	163°18.1	49.0	23	163°31.6	59.9	23	163°45.1	10.4	23	163°58.6	20.3
SD=16.1' d=-1.0'														
SD=16.0' d=1.0'														
SD=16.0' d=1.0'														
SD=16.0' d=1.0'														
SD=16.0' d=1.0'														
SD=16.0' d=1.0'														

01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec	13	GHA	Dec
0	178°58.8	N04°21.3	0	179°12.1	N05°30.5	0	179°25.1	N06°38.8	0	170°37.5	N07°46.1	0	179°49.4	N08°52.3
1	193°59.0	22.3	1	194°12.3	31.5	1	194°25.2	39.8	1	194°37.7	47.1	1	194°49.6	53.2
2	208°59.2	23.2	2	209°12.5	32.4	2	209°25.4	40.7	2	209°37.9	48.0	2	209°49.7	54.1
3	223°59.3	· · 24.2	3	224°12.6	· · 33.4	3	224°25.6	· · 41.7	3	224°38.0	· · 48.9	3	224°49.9	· · 55.0
4	238°59.5	25.2	4	239°12.8	34.3	4	239°25.8	42.6	4	239°38.2	49.8	4	239°50.0	55.9
5	253°59.7	26.1	5	254°13.0	35.3	5	254°25.9	43.5	5	254°38.4	50.8	5	254°50.2	56.8
6	268°59.9	N04°27.1	6	269°13.2	N05°36.2	6	269°26.1	N06°44.5	6	269°38.5	N07°51.7	6	269°50.3	N08°57.7
7	284°00.1	28.1	7	284°13.4	37.2	7	284°26.3	45.4	7	284°38.7	52.6	7	284°50.5	58.6
8	299°00.3	29.0	8	299°13.5	38.1	8	299°26.5	46.4	8	299°38.9	53.5	8	299°50.7	08°59.5
9	314°00.5	· · 30.0	9	314°13.7	· · 39.1	9	314°26.6	· · 47.3	9	314°39.1	· · 54.5	9	314°50.8	09°00.4
10	329°00.7	31.0	10	329°13.9	40.1	10	329°26.8	48.2	10	329°39.2	55.4	10	329°51.0	01.4
11	344°00.8	31.9	11	344°14.1	41.0	11	344°27.0	49.2	11	344°39.4	56.3	11	344°51.1	02.3
12	359°01.0	N04°32.9	12	359°14.3	N05°42.0	12	359°27.2	N06°50.1	12	359°39.6	N07°57.2	12	359°51.3	N09°03.2
13	14°01.2	33.9	13	14°14.5	42.9	13	14°27.3	51.1	13	14°39.7	58.2	13	14°51.5	04.1
14	29°01.4	34.8	14	29°14.6	43.9	14	29°27.5	52.0	14	29°39.9	07°59.1	14	29°51.6	05.0
15	44°01.6	· · 35.8	15	44°14.8	· · 44.8	15	44°27.7	· · 52.9	15	44°40.1	08°00.0	15	44°51.8	· · 05.9
16	59°01.8	36.8	16	59°15.0	45.8	16	59°27.9	53.9	16	59°40.2	00.9	16	59°51.9	06.8
17	74°02.0	37.7	17	74°15.2	46.7	17	74°28.0	54.8	17	74°40.4	01.9	17	74°52.1	07.7
18	89°02.1	N04°38.7	18	89°15.4	N05°47.7	18	89°28.2	N06°55.8	18	89°40.6	N08°02.8	18	89°52.2	N09°08.6
19	104°02.3	39.6	19	104°15.5	48.6	19	104°28.4	56.7	19	104°40.7	03.7	19	104°52.4	09.5
20	119°02.5	40.6	20	119°15.7	49.6	20	119°28.6	57.6	20	119°40.9	04.6	20	119°52.6	10.4
21	134°02.7	· · 41.6	21	134°15.9	· · 50.5	21	134°28.7	· · 58.6	21	134°41.1	· · 05.2	21	134°52.7	· · 11.3
22	149°02.9	42.5	22	149°16.1	51.5	22	149°28.9	06°59.5	22	149°41.2	06.5	22	149°52.9	12.2
23	164°03.1	43.5	23	164°16.3	52.4	23	164°29.1	07°00.4	23	164°41.4	07.4	23	164°53.0	13.1
SD=16.0'		d = 1.0'	SD=16.0'		d = 1.0'	SD=16.0'		d = 0.9'	SD=16.0'		d = 0.9'	SD=15.9'		d = 0.9'

02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec	14	GHA	Dec
0	179°03.3	N04°44.5	0	179°16.5	N05°53.4	0	179°29.3	N07°01.4	0	170°41.6	N08°08.3	0	179°53.2	N09°14.0
1	194°03.4	45.4	1	194°16.6	54.3	1	194°29.4	02.3	1	194°41.7	09.2	1	194°53.3	14.9
2	209°03.6	46.4	2	209°16.8	55.3	2	209°29.6	03.3	2	209°41.9	10.2	2	209°53.5	15.8
3	224°03.8	· · 47.4	3	224°17.0	· · 56.2	3	224°29.8	· · 04.2	3	224°42.1	· · 11.1	3	224°53.7	· · 16.7
4	239°04.0	48.3	4	239°17.2	57.2	4	239°30.0	05.1	4	239°42.2	12.0	4	239°53.8	17.6
5	254°04.2	49.3	5	254°17.4	58.1	5	254°30.1	06.1	5	254°42.4	12.9	5	254°54.0	18.5
6	269°04.4	N04°50.2	6	269°17.5	N05°59.1	6	269°30.3	N07°07.0	6	269°42.6	N08°13.8	6	269°54.1	N09°19.4
7	284°04.5	51.2	7	284°17.7	06°00.0	7	284°30.5	07.9	7	284°42.7	14.8	7	284°54.3	20.3
8	299°04.7	52.2	8	299°17.9	01.0	8	299°30.7	08.9	8	299°42.9	15.7	8	299°54.4	21.2
9	314°04.9	· · 53.1	9	314°18.1	· · 01.9	9	314°30.8	· · 09.8	9	314°43.1	· · 16.6	9	314°54.6	· · 22.1
10	329°05.1	54.1	10	329°18.3	02.9	10	329°31.0	10.7	10	329°43.2	17.5	10	329°54.7	23.1
11	344°05.3	55.0	11	344°18.4	03.8	11	344°31.2	11.7	11	344°43.4	18.4	11	344°54.9	24.0
12	359°05.5	N04°56.0	12	359°18.6	N06°04.8	12	359°31.4	N07°12.6	12	359°43.5	N08°19.3	12	359°55.0	N09°24.9
13	14°05.7	57.0	13	14°18.8	05.7	13	14°31.5	13.5	13	14°43.7	20.3	13	14°55.2	25.8
14	29°05.8	57.9	14	29°19.0	06.7	14	29°31.7	14.5	14	29°43.9	21.2	14	29°55.4	26.7
15	44°06.0	· · 58.9	15	44°19.2	· · 07.6	15	44°31.9	· · 15.4	15	44°44.0	· · 22.1	15	44°55.5	· · 27.6
16	59°06.2	04°59.9	16	59°19.3	08.6	16	59°32.1	16.4	16	59°44.2	23.0	16	59°55.7	28.5
17	74°06.4	05°00.8	17	74°19.5	09.5	17	74°32.2	17.3	17	74°44.4	23.9	17	74°55.8	29.4
18	89°06.6	N05°01.8	18	89°19.7	N06°10.5	18	89°32.4	N07°18.2	18	89°44.5	N08°24.9	18	89°56.0	N09°30.3
19	104°06.8	02.7	19	104°19.9	11.4	19	104°32.6	19.2	19	104°44.7	25.8	19	104°56.1	31.1
20	119°06.9	03.7	20	119°20.1	12.4	20	119°32.7	20.1	20	119°44.9	26.7	20	119°56.3	32.0
21	134°07.1	· · 04.7	21	134°20.2	· · 13.3	21	134°32.9	· · 21.0	21	134°45.0	· · 27.6	21	134°56.4	· · 32.9
22	149°07.3	05.6	22	149°20.4	14.3	22	149°33.1	21.9	22	149°45.2	28.5	22	149°56.6	33.8
23	164°07.5	06.6	23	164°20.6	15.2	23	164°33.3	22.9	23	164°45.4	29.4	23	164°56.7	34.7
SD=16.0'		d = 1.0'	SD=16.0'		d = 1.0'	SD=16.0'		d = 0.9'	SD=16.0'		d = 0.9'	SD=15.9'		d = 0.9'

03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	12	GHA	Dec	15	GHA	Dec
0	179°07.7	N05°07.5	0	179°20.8	N06°16.2	0	179°33.4	N07°23.8	0	170°45.5	N08°30.4	0	179°56.9	N09°35.6
1	194°07.9	08.5	1	194°21.0	17.1	1	194°33.6	24.7	1	194°45.7	31.3	1	194°57.0	36.5
2	209°08.1	09.5	2	209°21.1	18.1	2	209°33.8	25.7	2	209°45.8	32.2	2	209°57.2	37.4
3	224°08.2	· · 10.4	3	224°21.3	· · 19.0	3	224°33.9	· · 26.6	3	224°46.0	· · 33.1	3	224°57.3	· · 38.3
4	239°08.4	11.4	4	239°21.5	19.9	4	239°34.1	27.5	4	239°46.2	34.0	4	239°57.5	39.2
5	254°08.6	12.3	5	254°21.7	20.9	5	254°34.3	28.5	5	254°46.3	34.9	5	254°57.7	40.1
6	269°08.8	N05°13.3	6	269°21.8	N06°21.8	6	269°34.5	N07°29.4	6	269°46.5	N08°35.8	6	269°57.8	N09°41.0
7	284°09.0	14.2	7	284°22.0	22.8	7	284°34.6	30.3	7	284°46.7	36.8	7	284°58.0	41.9
8	299°09.2	15.2	8	299°22.2	23.7	8	299°34.8	31.3	8	299°46.8	37.7	8	299°58.1	42.8
9	314°09.3	· · 16.2	9	314°22.4	· · 24.7	9	314°35.0	· · 32.2	9	314°47.0	· · 38.6	9	314°58.3	· · 43.7
10	329°09.5	17.1	10	329°22.6	25.6	10	329°35.1	33.1	10	329°47.1	39.5	10	329°58.4	44.6
11	344°09.7	18.1	11	344°22.7	26.6	11	344°35.3	34.1	11	344°47.3	40.4	11	344°58.6	45.5
12	359°09.9	N05°19.0	12	359°22.9	N06°27.5	12	359°35.5	N07°35.0	12	359°47.5	N08°41.3	12	359°58.7	N09°46.4
13	14°10.1	20.0	13	14°23.1	28.5	13	14°35.7	35.9	13	14°47.6	42.2	13	14°58.9	47.3
14	29°10.3	20.9	14	29°23.3	29.4	14	29°35.8	36.8	14	29°47.8	43.2	14	29°59.0	48.2
15	44°10.4	· · 21.9	15	44°23.5	· · 30.3	15	44°36.0	· · 37.8	15	44°47.9	· · 44.1	15	44°59.2	· · 49.1
16	59°10.6	22.9	16	59°23.6	31.3	16	59°36.2	38.7	16	59°48.1	45.0	16	59°59.3	50.0
17	74°10.8	23.8	17	74°23.8	32.2	17	74°36.3	39.6	17	74°48.3	45.9	17	74°59.5	50.9
18	89°11.0	N05°24.8	18	89°24.0	N06°33.2	18	89°36.5	N07°40.6	18	89°48.4	N08°46.8	18	89°59.6	N09°51.7
19	104°11.2	25.7	19	104°24.2	34.1	19	104°36.7	41.5	19	104°48.6	47.7	19	104°59.8	52.6
20	119°11.4	26.7	20	119°24.3	35.1	20	119°36.9	42.4	20	119°48.8	48.6	20	119°59.9	53.5
21	134°11.5	· · 27.6	21	134°24.5	· · 36.0	21	134°37.0	· · 43.3	21	134°48.9	· · 49.5	21	135°00.1	· · 54.4
22	149°11.7	28.6	22	149°24.7	36.9	22	149°37.2	44.3	22	149°49.1	50.4	22	150°00.2	55.3
23	164°11.9	29.6	23	164°24.9	37.9	23	164°37.4	45.2	23	164°49.2	51.4	23	165°00.4	56.2
SD=16.0'		d = 1.0'	SD=16.0'		d = 0.9'	SD=16.0'		d = 0.9'	SD=16.0'		d = 0.9'	SD=15.9'		d = 0.9'

16	GHA	Dec	19	GHA	Dec	22	GHA	Dec	25	GHA	Dec	28	GHA	Dec
0	180°00.5	N09°57.1	0	180°10.8	N11°00.5	0	180°20.1	N12°02.2	0	180°28.5	N13°02.1	0	180°35.8	N14°00.1
1	195°00.7	58.0	1	195°10.9	01.3	1	195°20.3	03.0	1	195°28.6	02.9	1	195°35.9	00.9
2	210°00.8	58.9	2	210°11.0	02.2	2	210°20.4	03.9	2	210°28.7	03.8	2	210°36.0	01.7
3	225°01.0	00°59.8	3	225°11.2	03.1	3	225°20.5	04.7	3	225°28.8	04.6	3	225°36.1	02.5
4	240°01.1	10°00.7	4	240°11.3	03.9	4	240°20.6	05.6	4	240°28.9	05.4	4	240°36.2	03.3
5	255°01.2	01.5	5	255°11.5	04.8	5	255°20.7	06.4	5	255°29.0	06.2	5	255°36.3	04.1
6	270°01.4	N10°02.4	6	270°11.6	N11°05.7	6	270°20.9	N12°07.2	6	270°29.1	N13°07.0	6	270°36.4	N14°04.9
7	285°01.5	03.3	7	285°11.7	06.5	7	285°21.0	08.1	7	285°29.3	07.8	7	285°36.5	05.6
8	300°01.7	04.2	8	300°11.9	07.4	8	300°21.1	08.9	8	300°29.4	08.7	8	300°36.6	06.4
9	315°01.8	05.1	9	315°12.0	08.3	9	315°21.2	09.8	9	315°29.5	09.5	9	315°36.7	07.2
10	330°02.0	06.0	10	330°12.1	09.1	10	330°21.4	10.6	10	330°29.6	10.3	10	330°36.8	08.0
11	345°02.1	06.9	11	345°12.3	10.0	11	345°21.5	11.5	11	345°29.7	11.1	11	345°36.8	08.8
12	0°02.3	N10°07.8	12	0°12.4	N11°10.9	12	0°21.6	N12°12.3	12	0°29.8	N13°11.9	12	0°36.9	N14°09.6
13	15°02.4	08.6	13	15°12.5	11.7	13	15°21.7	13.1	13	15°29.9	12.7	13	15°37.0	10.4
14	30°02.6	09.5	14	30°12.7	12.6	14	30°21.8	14.0	14	30°30.0	13.6	14	30°37.1	11.2
15	45°02.7	10.4	15	45°12.8	13.5	15	45°22.0	14.8	15	45°30.1	14.4	15	45°37.2	11.9
16	60°02.9	11.3	16	60°12.9	14.3	16	60°22.1	15.7	16	60°30.2	15.2	16	60°37.3	12.7
17	75°03.0	12.2	17	75°13.1	15.2	17	75°22.2	16.5	17	75°30.3	16.0	17	75°37.4	13.5
18	90°03.2	N10°13.1	18	90°13.2	N11°16.0	18	90°22.3	N12°17.3	18	90°30.4	N13°16.8	18	90°37.5	N14°14.3
19	105°03.3	14.0	19	105°13.3	16.9	19	105°22.4	18.2	19	105°30.5	17.6	19	105°37.6	15.1
20	120°03.4	14.8	20	120°13.5	17.8	20	120°22.6	19.0	20	120°30.6	18.4	20	120°37.7	15.9
21	135°03.6	15.7	21	135°13.6	18.6	21	135°22.7	19.9	21	135°30.7	19.2	21	135°37.8	16.6
22	150°03.7	16.6	22	150°13.7	19.5	22	150°22.8	20.7	22	150°30.8	20.1	22	150°37.8	17.4
23	165°03.9	17.5	23	165°13.9	20.4	23	165°22.9	21.5	23	165°31.0	20.9	23	165°37.9	18.2
	SD=15.9'	d = 0.9'		SD=15.9'	d = 0.9'		SD=15.9'	d = 0.8'		SD=15.9'	d = 0.8'		SD=15.9'	d = 0.8'

17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec	29	GHA	Dec
0	180°04.0	N10°18.4	0	180°14.0	N11°21.2	0	180°23.0	N12°22.4	0	180°31.1	N13°21.7	0	180°38.0	N14°19.0
1	195°04.2	19.3	1	195°14.1	22.1	1	195°23.1	23.2	1	195°31.2	22.5	1	195°38.1	19.8
2	210°04.3	20.2	2	210°14.3	22.9	2	210°23.3	24.0	2	210°31.3	23.3	2	210°38.2	20.6
3	225°04.5	21.0	3	225°14.4	23.8	3	225°23.4	24.9	3	225°31.4	24.1	3	225°38.3	21.3
4	240°04.6	21.9	4	240°14.5	24.7	4	240°23.5	25.7	4	240°31.5	24.9	4	240°38.4	22.1
5	255°04.8	22.8	5	255°14.7	25.5	5	255°23.6	26.5	5	255°31.6	25.7	5	255°38.5	22.9
6	270°04.9	N10°23.7	6	270°14.8	N11°26.4	6	270°23.7	N12°27.4	6	270°31.7	N13°26.5	6	270°38.5	N14°23.7
7	285°05.0	24.6	7	285°14.9	27.2	7	285°23.9	28.2	7	285°31.8	27.3	7	285°38.6	24.5
8	300°05.2	25.4	8	300°15.1	28.1	8	300°24.0	29.1	8	300°31.9	28.1	8	300°38.7	25.2
9	315°05.3	26.3	9	315°15.2	29.0	9	315°24.1	29.9	9	315°32.0	29.0	9	315°38.8	26.0
10	330°05.5	27.2	10	330°15.3	29.8	10	330°24.2	30.7	10	330°32.1	29.8	10	330°38.9	26.8
11	345°05.6	28.1	11	345°15.4	30.7	11	345°24.3	31.6	11	345°32.2	30.6	11	345°39.0	27.6
12	0°05.8	N10°29.0	12	0°15.6	N11°31.5	12	0°24.4	N12°32.4	12	0°32.3	N13°31.4	12	0°39.1	N14°28.3
13	15°05.9	29.8	13	15°15.7	32.4	13	15°24.6	33.2	13	15°32.4	32.2	13	15°39.2	29.1
14	30°06.0	30.7	14	30°15.8	33.2	14	30°24.7	34.1	14	30°32.5	33.0	14	30°39.2	29.9
15	45°06.2	31.6	15	45°16.0	34.1	15	45°24.8	34.9	15	45°32.6	33.8	15	45°39.3	30.7
16	60°06.3	32.5	16	60°16.1	35.0	16	60°24.9	35.7	16	60°32.7	34.6	16	60°39.4	31.4
17	75°06.5	33.4	17	75°16.2	35.8	17	75°25.0	36.5	17	75°32.8	35.4	17	75°39.5	32.2
18	90°06.6	N10°34.2	18	90°16.3	N11°36.7	18	90°25.1	N12°37.4	18	90°32.9	N13°36.2	18	90°39.6	N14°33.0
19	105°06.7	35.1	19	105°16.5	37.5	19	105°25.2	38.2	19	105°33.0	37.0	19	105°39.7	33.8
20	120°06.9	36.0	20	120°16.6	38.4	20	120°25.4	39.0	20	120°33.1	37.8	20	120°39.8	34.5
21	135°07.0	36.9	21	135°16.7	39.2	21	135°25.5	39.9	21	135°33.2	38.6	21	135°39.8	35.3
22	150°07.2	37.8	22	150°16.9	40.1	22	150°25.6	40.7	22	150°33.3	39.4	22	150°39.9	36.1
23	165°07.3	38.6	23	165°17.0	40.9	23	165°25.7	41.5	23	165°33.4	40.2	23	165°40.0	36.9
	SD=15.9'	d = 0.9'		SD=15.9'	d = 0.9'		SD=15.9'	d = 0.8'		SD=15.9'	d = 0.8'		SD=15.9'	d = 0.8'

18	GHA	Dec	21	GHA	Dec	24	GHA	Dec	27	GHA	Dec	30	GHA	Dec
0	180°07.5	N10°39.5	0	180°17.1	N11°41.8	0	180°25.8	N12°42.4	0	180°33.5	N13°41.0	0	180°40.1	N14°37.6
1	195°07.6	40.4	1	195°17.2	42.6	1	195°25.9	43.2	1	195°33.6	41.8	1	195°40.2	38.4
2	210°07.7	41.3	2	210°17.4	43.5	2	210°26.0	44.0	2	210°33.7	42.6	2	210°40.3	39.2
3	225°07.9	42.1	3	225°17.5	44.4	3	225°26.2	44.8	3	225°33.8	43.4	3	225°40.3	39.9
4	240°08.0	43.0	4	240°17.6	45.2	4	240°26.3	45.7	4	240°33.9	44.2	4	240°40.4	40.7
5	255°08.2	43.9	5	255°17.8	46.1	5	255°26.4	46.5	5	255°34.0	45.0	5	255°40.5	41.5
6	270°08.3	N10°44.8	6	270°17.9	N11°46.9	6	270°26.5	N12°47.3	6	270°34.1	N13°45.8	6	270°40.6	N14°42.2
7	285°08.4	45.6	7	285°18.0	47.8	7	285°26.6	48.1	7	285°34.2	46.6	7	285°40.7	43.0
8	300°08.6	46.5	8	300°18.1	48.6	8	300°26.7	49.0	8	300°34.3	47.4	8	300°40.8	43.8
9	315°08.7	47.4	9	315°18.3	49.5	9	315°26.8	49.8	9	315°34.4	48.2	9	315°40.8	44.6
10	330°08.9	48.3	10	330°18.4	50.3	10	330°26.9	50.6	10	330°34.5	49.0	10	330°40.9	45.3
11	345°09.0	49.1	11	345°18.5	51.2	11	345°27.1	51.4	11	345°34.6	49.8	11	345°41.0	46.1
12	0°09.1	N10°50.0	12	0°18.6	N11°52.0	12	0°27.2	N12°52.3	12	0°34.7	N13°50.6	12	0°41.1	N14°46.9
13	15°09.3	50.9	13	15°18.8	52.9	13	15°27.3	53.1	13	15°34.8	51.4	13	15°41.2	47.6
14	30°09.4	51.7	14	30°18.9	53.7	14	30°27.4	53.9	14	30°34.9	52.2	14	30°41.2	48.4
15	45°09.5	52.6	15	45°19.0	54.6	15	45°27.5	54.7	15	45°35.0	53.0	15	45°41.3	49.2
16	60°09.7	53.5	16	60°19.1	55.4	16	60°27.6	55.6	16	60°35.1	53.8	16	60°41.4	49.9
17	75°09.8	54.4	17	75°19.3	56.3	17	75°27.7	56.4	17	75°35.2	54.6	17	75°41.5	50.7
18	90°10.0	N10°55.2	18	90°19.4	N11°57.1	18	90°27.8	N12°57.2	18	90°35.3	N13°55.4	18	90°41.6	N14°51.4
19	105°10.1	56.1	19	105°19.5	58.0	19	105°27.9	58.0	19	105°35.3	56.2	19	105°41.6	52.2
20	120°10.2	57.0	20	120°19.6	58.8	20	120°28.1	58.8	20	120°35.4	57.0	20	120°41.7	53.0
21	135°10.4	57.8	21	135°19.8	59.6	21	135°28.2	59.7	21	135°35.5	57.7	21	135°41.8	53.7
22	150°10.5	58.7	22	150°19.9	60.5	22	150°28.3	60.5	22	150°35.6	58.5	22	150°41.9	54.5
23	165°10.6	59.6	23	165°20.0	61.3	23	165°28.4	61.3	23	165°35.7	59.3	23	165°42.0	55.3
	SD=15.9'	d = 0.9'		SD=15.9'	d = 0.9'		SD=15.9'	d = 0.8'		SD=15.9'	d = 0.8'		SD=15.9'	d = 0.8'

01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec	13	GHA	Dec
0	180°42.0	N14°56.0	0	180°47.1	N15°49.7	0	180°50.9	N16°41.0	0	180°53.5	N17°29.8	0	180°54.7	N18°16.0
1	195°42.1	56.8	1	195°47.2	50.4	1	195°51.0	41.7	1	195°53.5	30.4	1	195°54.7	16.6
2	210°42.2	57.5	2	210°47.2	51.1	2	210°51.0	42.4	2	210°53.5	31.1	2	210°54.7	17.2
3	225°42.3	58.3	3	225°47.3	51.9	3	225°51.1	43.1	3	225°53.5	31.8	3	225°54.7	17.8
4	240°42.4	59.1	4	240°47.3	52.6	4	240°51.1	43.8	4	240°53.6	32.4	4	240°54.7	18.5
5	255°42.4	14°59.8	5	255°47.4	53.3	5	255°51.1	44.5	5	255°53.6	33.1	5	255°54.7	19.1
6	270°42.5	N15°00.6	6	270°47.5	N15°54.1	6	270°51.2	N16°45.1	6	270°53.6	N17°33.7	6	270°54.7	N18°19.7
7	285°42.6	01.3	7	285°47.5	54.8	7	285°51.2	45.8	7	285°53.6	34.4	7	285°54.7	20.3
8	300°42.7	02.1	8	300°47.6	55.5	8	300°51.3	46.5	8	300°53.7	35.1	8	300°54.7	20.9
9	315°42.7	02.9	9	315°47.6	56.2	9	315°51.3	47.2	9	315°53.7	35.7	9	315°54.7	21.6
10	330°42.8	03.6	10	330°47.7	57.0	10	330°51.3	47.9	10	330°53.7	36.4	10	330°54.8	22.2
11	345°42.9	04.4	11	345°47.8	57.7	11	345°51.4	48.6	11	345°53.7	37.0	11	345°54.8	22.8
12	0°43.0	N15°05.1	12	0°47.8	N15°58.4	12	0°51.4	N16°49.3	12	0°53.8	N17°37.7	12	0°54.8	N18°23.4
13	15°43.0	05.9	13	15°47.9	59.1	13	15°51.5	50.0	13	15°53.8	38.3	13	15°54.8	24.0
14	30°43.1	06.6	14	30°47.9	15°59.8	14	30°51.5	50.7	14	30°53.8	39.0	14	30°54.8	24.6
15	45°43.2	07.4	15	45°48.0	16°00.6	15	45°51.6	51.4	15	45°53.8	39.6	15	45°54.8	25.3
16	60°43.3	08.1	16	60°48.1	01.3	16	60°51.6	52.0	16	60°53.8	40.3	16	60°54.8	25.9
17	75°43.3	08.9	17	75°48.1	02.0	17	75°51.6	52.7	17	75°53.9	40.9	17	75°54.8	26.5
18	90°43.4	N15°09.7	18	90°48.2	N16°02.7	18	90°51.7	N16°53.4	18	90°53.9	N17°41.6	18	90°54.8	N18°27.1
19	105°43.5	10.4	19	105°48.2	03.5	19	105°51.7	54.1	19	105°53.9	42.2	19	105°54.8	27.7
20	120°43.6	11.2	20	120°48.3	04.2	20	120°51.8	54.8	20	120°53.9	42.9	20	120°54.8	28.3
21	135°43.6	11.9	21	135°48.3	04.9	21	135°51.8	55.5	21	135°54.0	43.5	21	135°54.8	28.9
22	150°43.7	12.7	22	150°48.4	05.6	22	150°51.8	56.2	22	150°54.0	44.2	22	150°54.8	29.5
23	165°43.8	13.4	23	165°48.5	06.3	23	165°51.9	56.8	23	165°54.0	44.8	23	165°54.8	30.2
	SD=15.9'	d=0.8'		SD=15.9'	d=0.7'		SD=15.8'	d=0.7'		SD=15.8'	d=0.7'		SD=15.8'	d=0.6'

02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec	14	GHA	Dec
0	180°43.9	N15°14.2	0	180°48.5	N16°07.1	0	180°51.9	N16°57.5	0	180°54.0	N17°45.5	0	180°54.8	N18°30.8
1	195°43.9	14.9	1	195°48.6	07.8	1	195°51.9	58.2	1	195°54.0	46.1	1	195°54.8	31.4
2	210°44.0	15.7	2	210°48.6	08.5	2	210°52.0	58.9	2	210°54.1	46.8	2	210°54.8	32.0
3	225°44.1	16.4	3	225°48.7	09.2	3	225°52.0	16°59.6	3	225°54.1	47.4	3	225°54.8	32.6
4	240°44.1	17.2	4	240°48.7	09.9	4	240°52.1	17°00.3	4	240°54.1	48.1	4	240°54.8	33.2
5	255°44.2	17.9	5	255°48.8	10.6	5	255°52.1	00.9	5	255°54.1	48.7	5	255°54.8	33.8
6	270°44.3	N15°18.7	6	270°48.8	N16°11.4	6	270°52.1	N17°01.6	6	270°54.1	N17°49.4	6	270°54.8	N18°34.4
7	285°44.4	19.4	7	285°48.9	12.1	7	285°52.2	02.3	7	285°54.2	50.0	7	285°54.8	35.0
8	300°44.4	20.2	8	300°48.9	12.8	8	300°52.2	03.0	8	300°54.2	50.6	8	300°54.8	35.6
9	315°44.5	20.9	9	315°49.0	13.5	9	315°52.2	03.7	9	315°54.2	51.3	9	315°54.8	36.2
10	330°44.6	21.6	10	330°49.1	14.2	10	330°52.3	04.3	10	330°54.2	51.9	10	330°54.8	36.8
11	345°44.6	22.4	11	345°49.1	14.9	11	345°52.3	05.0	11	345°54.2	52.6	11	345°54.8	37.4
12	0°44.7	N15°23.1	12	0°49.2	N16°15.6	12	0°52.4	N17°05.7	12	0°54.2	N17°53.2	12	0°54.8	N18°38.0
13	15°44.8	23.9	13	15°49.2	16.3	13	15°52.4	06.4	13	15°54.3	53.9	13	15°54.8	38.6
14	30°44.9	24.6	14	30°49.3	17.1	14	30°52.4	07.1	14	30°54.3	54.5	14	30°54.8	39.2
15	45°44.9	25.4	15	45°49.3	17.8	15	45°52.5	07.7	15	45°54.3	55.1	15	45°54.8	39.9
16	60°45.0	26.1	16	60°49.4	18.5	16	60°52.5	08.4	16	60°54.3	55.8	16	60°54.8	40.5
17	75°45.1	26.9	17	75°49.4	19.2	17	75°52.5	09.1	17	75°54.3	56.4	17	75°54.8	41.1
18	90°45.1	N15°27.6	18	90°49.5	N16°19.9	18	90°52.6	N17°09.8	18	90°54.3	N17°57.1	18	90°54.8	N18°41.7
19	105°45.2	28.3	19	105°49.5	20.6	19	105°52.6	10.4	19	105°54.4	57.7	19	105°54.8	42.3
20	120°45.3	29.1	20	120°49.6	21.3	20	120°52.6	11.1	20	120°54.4	58.3	20	120°54.8	42.9
21	135°45.3	29.8	21	135°49.6	22.0	21	135°52.7	11.8	21	135°54.4	59.0	21	135°54.8	43.5
22	150°45.4	30.6	22	150°49.7	22.7	22	150°52.7	12.5	22	150°54.4	17°59.6	22	150°54.8	44.0
23	165°45.5	31.3	23	165°49.7	23.4	23	165°52.7	13.1	23	165°54.4	18°00.2	23	165°54.8	44.6
	SD=15.9'	d=0.8'		SD=15.9'	d=0.7'		SD=15.8'	d=0.7'		SD=15.8'	d=0.6'		SD=15.8'	d=0.6'

03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	12	GHA	Dec	15	GHA	Dec
0	180°45.5	N15°32.1	0	180°49.8	N16°24.2	0	180°52.8	N17°13.8	0	180°54.4	N18°00.9	0	180°54.8	N18°45.2
1	195°45.6	32.8	1	195°49.8	24.9	1	195°52.8	14.5	1	195°54.4	01.5	1	195°54.8	45.8
2	210°45.7	33.5	2	210°49.9	25.6	2	210°52.8	15.1	2	210°54.5	02.1	2	210°54.8	46.4
3	225°45.7	34.3	3	225°49.9	26.3	3	225°52.9	15.8	3	225°54.5	02.8	3	225°54.7	47.0
4	240°45.8	35.0	4	240°50.0	27.0	4	240°52.9	16.5	4	240°54.5	03.4	4	240°54.7	47.6
5	255°45.9	35.7	5	255°50.0	27.7	5	255°52.9	17.2	5	255°54.5	04.0	5	255°54.7	48.2
6	270°45.9	N15°36.5	6	270°50.1	N16°28.4	6	270°52.9	N17°17.8	6	270°54.5	N18°04.7	6	270°54.7	N18°48.8
7	285°46.0	37.2	7	285°50.1	29.1	7	285°53.0	18.5	7	285°54.5	05.3	7	285°54.7	49.4
8	300°46.1	38.0	8	300°50.2	29.8	8	300°53.0	19.2	8	300°54.5	05.9	8	300°54.7	50.0
9	315°46.1	38.7	9	315°50.2	30.5	9	315°53.0	19.9	9	315°54.5	06.6	9	315°54.7	50.6
10	330°46.2	39.4	10	330°50.3	31.2	10	330°53.1	20.5	10	330°54.6	07.2	10	330°54.7	51.2
11	345°46.3	40.2	11	345°50.3	31.9	11	345°53.1	21.2	11	345°54.6	07.8	11	345°54.7	51.8
12	0°46.3	N15°40.9	12	0°50.4	N16°32.6	12	0°53.1	N17°21.8	12	0°54.6	N18°08.5	12	0°54.7	N18°52.4
13	15°46.4	41.6	13	15°50.4	33.3	13	15°53.2	22.5	13	15°54.6	09.1	13	15°54.7	53.0
14	30°46.5	42.4	14	30°50.5	34.0	14	30°53.2	23.2	14	30°54.6	09.7	14	30°54.7	53.5
15	45°46.5	43.1	15	45°50.5	34.7	15	45°53.2	23.8	15	45°54.6	10.3	15	45°54.7	54.1
16	60°46.6	43.8	16	60°50.6	35.4	16	60°53.2	24.5	16	60°54.6	11.0	16	60°54.7	54.7
17	75°46.7	44.6	17	75°50.6	36.1	17	75°53.3	25.2	17	75°54.6	11.6	17	75°54.7	55.3
18	90°46.7	N15°45.3	18	90°50.6	N16°36.8	18	90°53.3	N17°25.8	18	90°54.6	N18°12.2	18	90°54.6	N18°55.9
19	105°46.8	46.0	19	105°50.7	37.5	19	105°53.3	26.5	19	105°54.6	12.9	19	105°54.6	56.5
20	120°46.8	46.8	20	120°50.7	38.2	20	120°53.4	27.1	20	120°54.7	13.5	20	120°54.6	57.1
21	135°46.9	47.5	21	135°50.8	38.9	21	135°53.4	27.8	21	135°54.7	14.1	21	135°54.6	57.7
22	150°47.0	48.2	22	150°50.8	39.6	22	150°53.4	28.5	22	150°54.7	14.7	22	150°54.6	58.2
23	165°47.0	49.0	23	165°50.9	40.3	23	165°53.4	29.1	23	165°54.7	15.4	23	165°54.6	58.8
	SD=15.9'	d=0.7'		SD=15.9'	d=0.7'		SD=15.8'	d=0.7'		SD=15.8'	d=0.6'		SD=15.8'	d=0.6'

16	GHA	Dec	19	GHA	Dec	22	GHA	Dec	25	GHA	Dec	28	GHA	Dec
0	180°54.6	N18°59.4	0	180°53.2	N19°40.0	0	180°50.5	N20°17.5	0	180°46.7	N20°51.9	0	180°41.8	N21°23.0
1	195°54.6	19°00.0	1	195°53.1	40.5	1	195°50.5	18.0	1	195°46.6	52.3	1	195°41.7	23.4
2	210°54.6	00.6	2	210°53.1	41.0	2	210°50.4	18.5	2	210°46.6	52.8	2	210°41.6	23.9
3	225°54.5	01.2	3	225°53.1	41.6	3	225°50.4	19.0	3	225°46.5	53.2	3	225°41.6	24.3
4	240°54.5	01.7	4	240°53.1	42.1	4	240°50.3	19.5	4	240°46.5	53.7	4	240°41.5	24.7
5	255°54.5	02.3	5	255°53.0	42.7	5	255°50.3	20.0	5	255°46.4	54.2	5	255°41.4	25.1
6	270°54.5	N19°02.9	6	270°53.0	N19°43.2	6	270°50.3	N20°20.5	6	270°46.3	N20°54.6	6	270°41.3	N21°25.5
7	285°54.5	03.5	7	285°53.0	43.7	7	285°50.2	21.0	7	285°46.3	55.1	7	285°41.3	25.9
8	300°54.5	04.1	8	300°52.9	44.3	8	300°50.2	21.5	8	300°46.2	55.5	8	300°41.2	26.3
9	315°54.5	04.6	9	315°52.9	44.8	9	315°50.1	22.0	9	315°46.1	56.0	9	315°41.1	26.7
10	330°54.5	05.2	10	330°52.9	45.3	10	330°50.1	22.5	10	330°46.1	56.4	10	330°41.0	27.1
11	345°54.5	05.8	11	345°52.8	45.9	11	345°50.0	22.9	11	345°46.0	56.9	11	345°41.0	27.5
12	0°54.4	N19°06.4	12	0°52.8	N19°46.4	12	0°50.0	N20°23.4	12	0°46.0	N20°57.3	12	0°40.9	N21°27.9
13	15°54.4	06.9	13	15°52.8	47.0	13	15°49.9	23.9	13	15°45.9	57.7	13	15°40.8	28.3
14	30°54.4	07.5	14	30°52.8	47.5	14	30°49.9	24.4	14	30°45.8	58.2	14	30°40.7	28.7
15	45°54.4	08.1	15	45°52.7	48.0	15	45°49.8	24.9	15	45°45.8	58.6	15	45°40.6	29.1
16	60°54.4	08.7	16	60°52.7	48.6	16	60°49.8	25.4	16	60°45.7	59.1	16	60°40.6	29.5
17	75°54.4	09.2	17	75°52.7	49.1	17	75°49.7	25.9	17	75°45.6	59.5	17	75°40.5	29.9
18	90°54.4	N19°09.8	18	90°52.6	N19°49.6	18	90°49.7	N20°26.4	18	90°45.6	N21°00.0	18	90°40.4	N21°30.3
19	105°54.3	10.4	19	105°52.6	50.2	19	105°49.6	26.9	19	105°45.5	60.4	19	105°40.3	30.7
20	120°54.3	11.0	20	120°52.6	50.7	20	120°49.6	27.4	20	120°45.4	60.9	20	120°40.3	31.1
21	135°54.3	11.5	21	135°52.5	51.2	21	135°49.5	27.8	21	135°45.4	61.3	21	135°40.2	31.5
22	150°54.3	12.1	22	150°52.5	51.7	22	150°49.5	28.3	22	150°45.3	61.7	22	150°40.1	31.9
23	165°54.3	12.7	23	165°52.5	52.3	23	165°49.4	28.8	23	165°45.3	62.2	23	165°40.0	32.3
SD=15.8'		d=0.6'	SD=15.8'		d=0.5'	SD=15.8'		d=0.5'	SD=15.8'		d=0.5'	SD=15.8'		d=0.4'

17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec	29	GHA	Dec
0	180°54.3	N19°13.2	0	180°52.4	N19°52.8	0	180°49.4	N20°29.3	0	180°45.2	N21°02.6	0	180°39.9	N21°32.7
1	195°54.2	13.8	1	195°52.4	53.3	1	195°49.3	29.8	1	195°45.1	63.1	1	195°39.9	33.1
2	210°54.2	14.4	2	210°52.4	53.9	2	210°49.3	30.3	2	210°45.1	63.5	2	210°39.8	33.5
3	225°54.2	15.0	3	225°52.3	54.4	3	225°49.2	30.8	3	225°45.0	63.9	3	225°39.7	33.9
4	240°54.2	15.5	4	240°52.3	54.9	4	240°49.2	31.2	4	240°44.9	64.4	4	240°39.6	34.2
5	255°54.2	16.1	5	255°52.3	55.4	5	255°49.1	31.7	5	255°44.9	64.8	5	255°39.5	34.6
6	270°54.2	N19°16.7	6	270°52.2	N19°56.0	6	270°49.1	N20°32.2	6	270°44.8	N21°05.3	6	270°39.5	N21°35.0
7	285°54.1	17.2	7	285°52.2	56.5	7	285°49.0	32.7	7	285°44.7	65.7	7	285°39.4	35.4
8	300°54.1	17.8	8	300°52.1	57.0	8	300°49.0	33.2	8	300°44.7	66.1	8	300°39.3	35.8
9	315°54.1	18.4	9	315°52.1	57.5	9	315°48.9	33.6	9	315°44.6	66.6	9	315°39.2	36.2
10	330°54.1	18.9	10	330°52.1	58.1	10	330°48.9	34.1	10	330°44.5	67.0	10	330°39.1	36.6
11	345°54.1	19.5	11	345°52.0	58.6	11	345°48.8	34.6	11	345°44.5	67.4	11	345°39.0	37.0
12	0°54.0	N19°20.0	12	0°52.0	N19°59.1	12	0°48.8	N20°35.1	12	0°44.4	N21°07.9	12	0°39.0	N21°37.4
13	15°54.0	20.6	13	15°52.0	19°59.6	13	15°48.7	35.6	13	15°44.3	68.3	13	15°38.9	37.7
14	30°54.0	21.2	14	30°51.9	20°00.1	14	30°48.6	36.0	14	30°44.2	68.7	14	30°38.8	38.1
15	45°54.0	21.7	15	45°51.9	00.7	15	45°48.6	36.5	15	45°44.2	69.2	15	45°38.7	38.5
16	60°54.0	22.3	16	60°51.9	01.2	16	60°48.5	37.0	16	60°44.1	69.6	16	60°38.6	38.9
17	75°53.9	22.9	17	75°51.8	01.7	17	75°48.5	37.5	17	75°44.0	70.0	17	75°38.6	39.3
18	90°53.9	N19°23.4	18	90°51.8	N20°02.2	18	90°48.4	N20°37.9	18	90°44.0	N21°10.5	18	90°38.5	N21°39.7
19	105°53.9	24.0	19	105°51.7	02.7	19	105°48.4	38.4	19	105°43.9	70.9	19	105°38.4	40.0
20	120°53.9	24.5	20	120°51.7	03.2	20	120°48.3	38.9	20	120°43.8	71.3	20	120°38.3	40.4
21	135°53.9	25.1	21	135°51.7	03.8	21	135°48.3	39.4	21	135°43.8	71.7	21	135°38.2	40.8
22	150°53.8	25.7	22	150°51.6	04.3	22	150°48.2	39.8	22	150°43.7	72.2	22	150°38.1	41.2
23	165°53.8	26.2	23	165°51.6	04.8	23	165°48.2	40.3	23	165°43.6	72.6	23	165°38.1	41.6
SD=15.8'		d=0.6'	SD=15.8'		d=0.5'	SD=15.8'		d=0.5'	SD=15.8'		d=0.4'	SD=15.8'		d=0.4'

18	GHA	Dec	21	GHA	Dec	24	GHA	Dec	27	GHA	Dec	30	GHA	Dec
0	180°53.8	N19°26.8	0	180°51.5	N20°05.3	0	180°48.1	N20°40.8	0	180°43.5	N21°13.0	0	180°38.0	N21°41.9
1	195°53.8	27.3	1	195°51.5	05.8	1	195°48.0	41.2	1	195°43.5	13.4	1	195°37.9	42.3
2	210°53.7	27.9	2	210°51.5	06.3	2	210°48.0	41.7	2	210°43.4	13.9	2	210°37.8	42.7
3	225°53.7	28.4	3	225°51.4	06.9	3	225°47.9	42.2	3	225°43.3	14.3	3	225°37.7	43.1
4	240°53.7	29.0	4	240°51.4	07.4	4	240°47.9	42.6	4	240°43.3	14.7	4	240°37.6	43.5
5	255°53.7	29.5	5	255°51.3	07.9	5	255°47.8	43.1	5	255°43.2	15.1	5	255°37.5	43.8
6	270°53.6	N19°30.1	6	270°51.3	N20°08.4	6	270°47.8	N20°43.6	6	270°43.1	N21°15.6	6	270°37.5	N21°44.2
7	285°53.6	30.6	7	285°51.3	08.9	7	285°47.7	44.0	7	285°43.1	16.0	7	285°37.4	44.6
8	300°53.6	31.2	8	300°51.2	09.4	8	300°47.7	44.5	8	300°43.0	16.4	8	300°37.3	45.0
9	315°53.6	31.7	9	315°51.2	09.9	9	315°47.6	45.0	9	315°42.9	16.8	9	315°37.2	45.3
10	330°53.5	32.3	10	330°51.1	10.4	10	330°47.5	45.4	10	330°42.8	17.2	10	330°37.1	45.7
11	345°53.5	32.9	11	345°51.1	10.9	11	345°47.5	45.9	11	345°42.8	17.7	11	345°37.0	46.1
12	0°53.5	N19°33.4	12	0°51.1	N20°11.4	12	0°47.4	N20°46.4	12	0°42.7	N21°18.1	12	0°36.9	N21°46.4
13	15°53.5	34.0	13	15°51.0	11.9	13	15°47.4	46.8	13	15°42.6	18.5	13	15°36.9	46.8
14	30°53.4	34.5	14	30°51.0	12.5	14	30°47.3	47.3	14	30°42.5	18.9	14	30°36.8	47.2
15	45°53.4	35.0	15	45°50.9	13.0	15	45°47.2	47.8	15	45°42.5	19.3	15	45°36.7	47.6
16	60°53.4	35.6	16	60°50.9	13.5	16	60°47.2	48.2	16	60°42.4	19.7	16	60°36.6	47.9
17	75°53.4	36.1	17	75°50.8	14.0	17	75°47.1	48.7	17	75°42.3	20.1	17	75°36.5	48.3
18	90°53.3	N19°36.7	18	90°50.8	N20°14.5	18	90°47.1	N20°49.1	18	90°42.2	N21°20.6	18	90°36.4	N21°48.7
19	105°53.3	37.2	19	105°50.7	15.0	19	105°47.0	49.6	19	105°42.2	21.0	19	105°36.3	49.0
20	120°53.3	37.8	20	120°50.7	15.5	20	120°46.9	50.1	20	120°42.1	21.4	20	120°36.2	49.4
21	135°53.3	38.3	21	135°50.7	16.0	21	135°46.9	50.5	21	135°42.0	21.8	21	135°36.2	49.8
22	150°53.2	38.9	22	150°50.6	16.5	22	150°46.8	51.0	22	150°41.9	22.2	22	150°36.1	50.1
23	165°53.2	39.4	23	165°50.6	17.0	23	165°46.8	51.4	23	165°41.9	22.6	23	165°36.0	50.5
SD=15.8'		d=0.6'	SD=15.8'		d=0.5'	SD=15.8'		d=0.5'	SD=15.8'		d=0.4'	SD=15.8'		d=0.4'

31	GHA	Dec	03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	12	GHA	Dec
0	180°35.9	N21°50.8	0	180°29.1	N22°15.2	0	180°21.4	N22°36.1	0	180°13.1	N22°53.5	0	180°04.1	N23°07.2
1	195°35.8	51.2	1	195°29.0	15.5	1	195°21.3	36.4	1	195°13.0	53.7	1	195°04.0	07.3
2	210°35.7	51.6	2	210°28.9	15.9	2	210°21.2	36.6	2	210°12.8	53.9	2	210°03.8	07.5
3	225°35.6	51.9	3	225°28.8	16.2	3	225°21.1	36.9	3	225°12.7	54.1	3	225°03.7	07.7
4	240°35.5	52.3	4	240°28.7	16.5	4	240°21.0	37.2	4	240°12.6	54.3	4	240°03.6	07.8
5	255°35.4	52.6	5	255°28.6	16.8	5	255°20.9	37.4	5	255°12.5	54.5	5	255°03.5	08.0
6	270°35.4	N21°53.0	6	270°28.5	N22°17.1	6	270°20.8	N22°37.7	6	270°12.4	N22°54.7	6	270°03.3	N23°08.2
7	285°35.3	53.4	7	285°28.4	17.4	7	285°20.7	38.0	7	285°12.2	54.9	7	285°03.2	08.3
8	300°35.2	53.7	8	300°28.3	17.7	8	300°20.6	38.2	8	300°12.1	55.2	8	300°03.1	08.5
9	315°35.1	54.1	9	315°28.2	18.0	9	315°20.4	38.5	9	315°12.0	55.4	9	315°02.9	08.6
10	330°35.0	54.4	10	330°28.1	18.3	10	330°20.3	38.7	10	330°11.9	55.6	10	330°02.8	08.8
11	345°34.9	54.8	11	345°28.0	18.6	11	345°20.2	39.0	11	345°11.7	55.8	11	345°02.7	08.9
12	0°34.8	N21°55.1	12	0°27.9	N22°19.0	12	0°20.1	N22°39.3	12	0°11.6	N22°56.0	12	0°02.6	N23°09.1
13	15°34.7	55.5	13	15°27.8	19.3	13	15°20.0	39.5	13	15°11.5	56.2	13	15°02.4	09.3
14	30°34.6	55.9	14	30°27.7	19.6	14	30°19.9	39.8	14	30°11.4	56.4	14	30°02.3	09.4
15	45°34.5	56.2	15	45°27.6	19.9	15	45°19.8	40.0	15	45°11.3	56.6	15	45°02.2	09.6
16	60°34.5	56.6	16	60°27.5	20.2	16	60°19.6	40.3	16	60°11.1	56.8	16	60°02.0	09.7
17	75°34.4	56.9	17	75°27.3	20.5	17	75°19.5	40.5	17	75°11.0	57.0	17	75°01.9	09.9
18	90°34.3	N21°57.3	18	90°27.2	N22°20.8	18	90°19.4	N22°40.8	18	90°10.9	N22°57.2	18	90°01.8	N23°10.0
19	105°34.2	57.6	19	105°27.1	21.1	19	105°19.3	41.0	19	105°10.8	57.4	19	105°01.7	10.2
20	120°34.1	58.0	20	120°27.0	21.4	20	120°19.2	41.3	20	120°10.6	57.6	20	120°01.5	10.3
21	135°34.0	58.3	21	135°26.9	21.7	21	135°19.1	41.5	21	135°10.5	57.8	21	135°01.4	10.5
22	150°33.9	58.7	22	150°26.8	22.0	22	150°19.0	41.8	22	150°10.4	58.0	22	150°01.3	10.6
23	165°33.8	59.0	23	165°26.7	22.3	23	165°18.8	42.0	23	165°10.3	58.2	23	165°01.1	10.8
	SD=15.8'	d=0.4'		SD=15.8'	d=0.3'		SD=15.8'	d=0.3'		SD=15.8'	d=0.2'		SD=15.7'	d=0.2'

01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec	13	GHA	Dec
0	180°33.7	N21°59.4	0	180°26.6	N22°22.6	0	180°18.7	N22°42.3	0	180°10.2	N22°58.4	0	180°01.0	N23°10.9
1	195°33.6	21°59.7	1	195°26.5	22.9	1	195°18.6	42.5	1	195°10.0	58.6	1	195°00.9	11.1
2	210°33.5	22°00.0	2	210°26.4	23.2	2	210°18.5	42.8	2	210°09.9	58.8	2	210°00.7	11.2
3	225°33.4	00.4	3	225°26.3	23.5	3	225°18.4	43.0	3	225°09.8	59.0	3	225°00.6	11.4
4	240°33.3	00.7	4	240°26.2	23.8	4	240°18.3	43.3	4	240°09.7	59.2	4	240°00.5	11.5
5	255°33.3	01.1	5	255°26.1	24.1	5	255°18.2	43.5	5	255°09.5	59.4	5	255°00.3	11.7
6	270°33.2	N22°01.4	6	270°26.0	N22°24.4	6	270°18.0	N22°43.8	6	270°09.4	N22°59.6	6	270°00.2	N23°11.8
7	285°33.1	01.8	7	285°25.9	24.7	7	285°17.9	44.0	7	285°09.3	22°59.8	7	285°00.1	12.0
8	300°33.0	02.1	8	300°25.8	24.9	8	300°17.8	44.3	8	300°09.2	23°00.0	8	300°00.0	12.1
9	315°32.9	02.4	9	315°25.7	25.2	9	315°17.7	44.5	9	315°09.0	00.2	9	314°59.8	12.2
10	330°32.8	02.8	10	330°25.6	25.5	10	330°17.6	44.7	10	330°08.9	00.4	10	329°59.7	12.4
11	345°32.7	03.1	11	345°25.5	25.8	11	345°17.5	45.0	11	345°08.8	00.6	11	344°59.6	12.5
12	0°32.6	N22°03.5	12	0°25.4	N22°26.1	12	0°17.3	N22°45.2	12	0°08.7	N23°00.8	12	359°59.4	N23°12.7
13	15°32.5	03.8	13	15°25.3	26.4	13	15°17.2	45.5	13	15°08.5	01.0	13	14°59.3	12.8
14	30°32.4	04.1	14	30°25.1	26.7	14	30°17.1	45.7	14	30°08.4	01.1	14	29°59.2	12.9
15	45°32.3	04.5	15	45°25.0	27.0	15	45°17.0	46.0	15	45°08.3	01.3	15	44°59.0	13.1
16	60°32.2	04.8	16	60°24.9	27.3	16	60°16.9	46.2	16	60°08.2	01.5	16	59°58.9	13.2
17	75°32.1	05.2	17	75°24.8	27.6	17	75°16.8	46.4	17	75°08.0	01.7	17	74°58.8	13.4
18	90°32.0	N22°05.5	18	90°24.7	N22°27.8	18	90°16.6	N22°46.7	18	90°07.9	N23°01.9	18	89°58.6	N23°13.5
19	105°31.9	05.8	19	105°24.6	28.1	19	105°16.5	46.9	19	105°07.8	02.1	19	104°58.5	13.6
20	120°31.8	06.2	20	120°24.5	28.4	20	120°16.4	47.1	20	120°07.7	02.3	20	119°58.4	13.8
21	135°31.7	06.5	21	135°24.4	28.7	21	135°16.3	47.4	21	135°07.5	02.5	21	134°58.2	13.9
22	150°31.6	06.8	22	150°24.3	29.0	22	150°16.2	47.6	22	150°07.4	02.6	22	149°58.1	14.0
23	165°31.5	07.2	23	165°24.2	29.3	23	165°16.1	47.8	23	165°07.3	02.8	23	164°58.0	14.2
	SD=15.8'	d=0.3'		SD=15.8'	d=0.3'		SD=15.8'	d=0.2'		SD=15.7'	d=0.2'		SD=15.7'	d=0.1'

02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec	14	GHA	Dec
0	180°31.4	N22°07.5	0	180°24.1	N22°29.5	0	180°15.9	N22°48.1	0	180°07.2	N23°03.0	0	179°57.8	N23°14.3
1	195°31.3	07.8	1	195°24.0	29.8	1	195°15.8	48.3	1	195°07.0	03.2	1	194°57.7	14.4
2	210°31.3	08.1	2	210°23.9	30.1	2	210°15.7	48.5	2	210°06.9	03.4	2	209°57.6	14.5
3	225°31.2	08.5	3	225°23.8	30.4	3	225°15.6	48.8	3	225°06.8	03.5	3	224°57.4	14.7
4	240°31.1	08.8	4	240°23.6	30.7	4	240°15.5	49.0	4	240°06.7	03.7	4	239°57.3	14.8
5	255°31.0	09.1	5	255°23.5	30.9	5	255°15.4	49.2	5	255°06.5	03.9	5	254°57.2	14.9
6	270°30.9	N22°09.5	6	270°23.4	N22°31.2	6	270°15.2	N22°49.5	6	270°06.4	N23°04.1	6	269°57.1	N23°15.1
7	285°30.8	09.8	7	285°23.3	31.5	7	285°15.1	49.7	7	285°06.3	04.3	7	284°56.9	15.2
8	300°30.7	10.1	8	300°23.2	31.8	8	300°15.0	49.9	8	300°06.1	04.4	8	299°56.8	15.3
9	315°30.6	10.4	9	315°23.1	32.1	9	315°14.9	50.1	9	315°06.0	04.6	9	314°56.7	15.4
10	330°30.5	10.8	10	330°23.0	32.3	10	330°14.8	50.4	10	330°05.9	04.8	10	329°56.5	15.6
11	345°30.4	11.1	11	345°22.9	32.6	11	345°14.6	50.6	11	345°05.8	05.0	11	344°56.4	15.7
12	0°30.3	N22°11.4	12	0°22.8	N22°32.9	12	0°14.5	N22°50.8	12	0°05.6	N23°05.1	12	359°56.3	N23°15.8
13	15°30.2	11.7	13	15°22.7	33.2	13	15°14.4	51.0	13	15°05.5	05.3	13	14°56.1	15.9
14	30°30.1	12.0	14	30°22.6	33.4	14	30°14.3	51.3	14	30°05.4	05.5	14	29°56.0	16.1
15	45°30.0	12.4	15	45°22.4	33.7	15	45°14.2	51.5	15	45°05.3	05.7	15	44°55.9	16.2
16	60°29.9	12.7	16	60°22.3	34.0	16	60°14.0	51.7	16	60°05.1	05.8	16	59°55.7	16.3
17	75°29.8	13.0	17	75°22.2	34.2	17	75°13.9	51.9	17	75°05.0	06.0	17	74°55.6	16.4
18	90°29.7	N22°13.3	18	90°22.1	N22°34.5	18	90°13.8	N22°52.1	18	90°04.9	N23°06.2	18	89°55.5	N23°16.5
19	105°29.6	13.6	19	105°22.0	34.8	19	105°13.7	52.4	19	105°04.7	06.3	19	104°55.3	16.7
20	120°29.5	14.0	20	120°21.9	35.0	20	120°13.6	52.6	20	120°04.6	06.5	20	119°55.2	16.8
21	135°29.4	14.3	21	135°21.8	35.3	21	135°13.4	52.8	21	135°04.5	06.7	21	134°55.1	16.9
22	150°29.3	14.6	22	150°21.7	35.6	22	150°13.3	53.0	22	150°04.4	06.8	22	149°54.9	17.0
23	165°29.2	14.9	23	165°21.6	35.8	23	165°13.2	53.2	23	165°04.2	07.0	23	164°54.8	17.1
	SD=15.8'	d=0.3'		SD=15.8'	d=0.3'		SD=15.8'	d=0.2'		SD=15.7'	d=0.2'		SD=15.7'	d=0.1'

15	GHA	Dec	18	GHA	Dec	21	GHA	Dec	24	GHA	Dec	27	GHA	Dec
0	179°54.7	N23°17.2	0	179°44.9	N23°23.6	0	179°35.0	N23°26.2	0	170°25.2	N23°25.1	0	179°15.6	N23°20.3
1	194°54.5	17.3	1	194°44.8	23.6	1	194°34.9	26.2	1	194°25.1	25.1	1	194°15.5	20.2
2	209°54.4	17.5	2	209°44.6	23.7	2	209°34.7	26.2	2	209°24.9	25.1	2	209°15.4	20.2
3	224°54.3	17.6	3	224°44.5	23.8	3	224°34.6	26.3	3	224°24.8	25.0	3	224°15.2	20.1
4	239°54.1	17.7	4	239°44.3	23.8	4	239°34.5	26.3	4	239°24.7	25.0	4	239°15.1	20.0
5	254°54.0	17.8	5	254°44.2	23.9	5	254°34.3	26.3	5	254°24.5	24.9	5	254°15.0	19.9
6	269°53.8	N23°17.9	6	269°44.1	N23°23.9	6	269°34.2	N23°26.3	6	269°24.4	N23°24.9	6	269°14.8	N23°19.8
7	284°53.7	18.0	7	284°43.9	24.0	7	284°34.1	26.3	7	284°24.3	24.8	7	284°14.7	19.7
8	299°53.6	18.1	8	299°43.8	24.1	8	299°33.9	26.3	8	299°24.1	24.8	8	299°14.6	19.6
9	314°53.4	18.2	9	314°43.7	24.1	9	314°33.8	26.3	9	314°24.0	24.7	9	314°14.5	19.5
10	329°53.3	18.3	10	329°43.5	24.2	10	329°33.6	26.3	10	329°23.9	24.7	10	329°14.3	19.4
11	344°53.2	18.4	11	344°43.4	24.2	11	344°33.5	26.3	11	344°23.7	24.6	11	344°14.2	19.3
12	359°53.0	N23°18.5	12	359°43.3	N23°24.3	12	359°33.4	N23°26.3	12	359°23.6	N23°24.6	12	359°14.1	N23°19.2
13	14°52.9	18.7	13	14°43.1	24.3	13	14°33.2	26.3	13	14°23.4	24.5	13	14°13.9	19.1
14	29°52.8	18.8	14	29°43.0	24.4	14	29°33.1	26.3	14	29°23.3	24.5	14	29°13.8	19.0
15	44°52.6	18.9	15	44°42.8	24.4	15	44°32.0	26.3	15	44°23.2	24.4	15	44°13.7	18.9
16	59°52.5	19.0	16	59°42.7	24.5	16	59°32.8	26.3	16	59°23.0	24.4	16	59°13.5	18.8
17	74°52.4	19.1	17	74°42.6	24.5	17	74°32.7	26.3	17	74°22.9	24.3	17	74°13.4	18.7
18	89°52.2	N23°19.2	18	89°42.4	N23°24.6	18	89°32.5	N23°26.3	18	89°22.8	N23°24.3	18	89°13.3	N23°18.6
19	104°52.1	19.3	19	104°42.3	24.6	19	104°32.4	26.3	19	104°22.6	24.2	19	104°13.2	18.5
20	119°52.0	19.4	20	119°42.2	24.7	20	119°32.3	26.3	20	119°22.5	24.2	20	119°13.0	18.3
21	134°51.8	19.5	21	134°42.0	24.7	21	134°32.1	26.3	21	134°22.4	24.2	21	134°12.9	18.2
22	149°51.7	19.6	22	149°41.9	24.8	22	149°32.0	26.3	22	149°22.2	24.1	22	149°12.8	18.1
23	164°51.6	19.7	23	164°41.7	24.8	23	164°31.9	26.3	23	164°22.1	24.0	23	164°12.6	18.0
	SD=15.7'	d=0.1'		SD=15.7'	d=0.1'		SD=15.7'	d=0.0'		SD=15.7'	d=-0.0'		SD=15.7'	d=-0.1'

16	GHA	Dec	19	GHA	Dec	22	GHA	Dec	25	GHA	Dec	28	GHA	Dec
0	179°51.4	N23°19.8	0	179°41.6	N23°24.9	0	179°31.7	N23°26.3	0	170°22.0	N23°24.0	0	179°12.5	N23°17.9
1	194°51.3	19.9	1	194°41.5	24.9	1	194°31.6	26.3	1	194°21.8	23.9	1	194°12.4	17.8
2	209°51.2	20.0	2	209°41.3	25.0	2	209°31.5	26.3	2	209°21.7	23.8	2	209°12.3	17.7
3	224°51.0	20.0	3	224°41.2	25.0	3	224°31.3	26.3	3	224°21.6	23.8	3	224°12.1	17.6
4	239°50.9	20.1	4	239°41.1	25.1	4	239°31.2	26.2	4	239°21.4	23.7	4	239°12.0	17.5
5	254°50.7	20.2	5	254°40.9	25.1	5	254°31.0	26.2	5	254°21.3	23.7	5	254°11.9	17.4
6	269°50.6	N23°20.3	6	269°40.8	N23°25.1	6	269°30.9	N23°26.2	6	269°21.2	N23°23.6	6	269°11.7	N23°17.2
7	284°50.5	20.4	7	284°40.6	25.2	7	284°30.8	26.2	7	284°21.0	23.5	7	284°11.6	17.1
8	299°50.3	20.5	8	299°40.5	25.2	8	299°30.6	26.2	8	299°20.9	23.5	8	299°11.5	17.0
9	314°50.2	20.6	9	314°40.4	25.3	9	314°30.5	26.2	9	314°20.8	23.4	9	314°11.4	16.9
10	329°50.1	20.7	10	329°40.2	25.3	10	329°30.4	26.2	10	329°20.6	23.3	10	329°11.2	16.8
11	344°49.9	20.8	11	344°40.1	25.3	11	344°30.2	26.2	11	344°20.5	23.3	11	344°11.1	16.7
12	359°49.8	N23°20.9	12	359°40.0	N23°25.4	12	359°30.1	N23°26.1	12	359°20.4	N23°23.2	12	359°11.0	N23°16.5
13	14°49.7	21.0	13	14°39.8	25.4	13	14°30.0	26.1	13	14°20.2	23.1	13	14°10.8	16.4
14	29°49.5	21.0	14	29°39.7	25.4	14	29°29.8	26.1	14	29°20.1	23.1	14	29°10.7	16.3
15	44°49.4	21.1	15	44°39.5	25.5	15	44°29.7	26.1	15	44°20.0	23.0	15	44°10.6	16.2
16	59°49.3	21.2	16	59°39.4	25.5	16	59°29.5	26.1	16	59°19.8	22.9	16	59°10.5	16.1
17	74°49.1	21.3	17	74°39.3	25.5	17	74°29.4	26.1	17	74°19.7	22.9	17	74°10.3	15.9
18	89°49.0	N23°21.4	18	89°39.1	N23°25.6	18	89°29.3	N23°26.0	18	89°19.6	N23°22.8	18	89°10.2	N23°15.8
19	104°48.9	21.5	19	104°39.0	25.6	19	104°29.1	26.0	19	104°19.4	22.7	19	104°10.1	15.7
20	119°48.7	21.6	20	119°38.9	25.6	20	119°29.0	26.0	20	119°19.3	22.6	20	119°10.0	15.6
21	134°48.6	21.6	21	134°38.7	25.7	21	134°28.9	26.0	21	134°19.2	22.6	21	134°09.8	15.5
22	149°48.4	21.7	22	149°38.6	25.7	22	149°28.7	26.0	22	149°19.0	22.5	22	149°09.7	15.3
23	164°48.3	21.8	23	164°38.4	25.7	23	164°28.6	25.9	23	164°18.9	22.4	23	164°09.6	15.2
	SD=15.7'	d=0.1'		SD=15.7'	d=0.0'		SD=15.7'	d=-0.0'		SD=15.7'	d=-0.1'		SD=15.7'	d=-0.1'

17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec	29	GHA	Dec
0	179°48.2	N23°21.9	0	179°38.3	N23°25.8	0	179°28.5	N23°25.9	0	170°18.8	N23°22.3	0	179°09.5	N23°15.1
1	194°48.0	22.0	1	194°38.2	25.8	1	194°28.3	25.9	1	194°18.6	22.3	1	194°09.3	15.0
2	209°47.9	22.0	2	209°38.0	25.8	2	209°28.2	25.9	2	209°18.5	22.2	2	209°09.2	14.8
3	224°47.8	22.1	3	224°37.9	25.8	3	224°28.0	25.8	3	224°18.4	22.1	3	224°09.1	14.7
4	239°47.6	22.2	4	239°37.8	25.9	4	239°27.9	25.8	4	239°18.3	22.0	4	239°08.9	14.6
5	254°47.5	22.3	5	254°37.6	25.9	5	254°27.8	25.8	5	254°18.1	22.0	5	254°08.8	14.4
6	269°47.4	N23°22.3	6	269°37.5	N23°25.9	6	269°27.6	N23°25.8	6	269°18.0	N23°21.9	6	269°08.7	N23°14.3
7	284°47.2	22.4	7	284°37.3	25.9	7	284°27.5	25.7	7	284°17.9	21.8	7	284°08.6	14.2
8	299°47.1	22.5	8	299°37.2	26.0	8	299°27.4	25.7	8	299°17.7	21.7	8	299°08.4	14.0
9	314°46.9	22.6	9	314°37.1	26.0	9	314°27.2	25.7	9	314°17.6	21.6	9	314°08.3	13.9
10	329°46.8	22.6	10	329°36.9	26.0	10	329°27.1	25.6	10	329°17.5	21.6	10	329°08.2	13.8
11	344°46.7	22.7	11	344°36.8	26.0	11	344°27.0	25.6	11	344°17.3	21.5	11	344°08.1	13.6
12	359°46.5	N23°22.8	12	359°36.7	N23°26.0	12	359°26.8	N23°25.6	12	359°17.2	N23°21.4	12	359°07.9	N23°13.5
13	14°46.4	22.9	13	14°36.5	26.1	13	14°26.7	25.5	13	14°17.1	21.3	13	14°07.8	13.4
14	29°46.3	22.9	14	29°36.4	26.1	14	29°26.6	25.5	14	29°16.9	21.2	14	29°07.7	13.2
15	44°46.1	23.0	15	44°36.3	26.1	15	44°26.4	25.5	15	44°16.8	21.1	15	44°07.6	13.1
16	59°46.0	23.1	16	59°36.1	26.1	16	59°26.3	25.4	16	59°16.7	21.1	16	59°07.4	13.0
17	74°45.9	23.1	17	74°36.0	26.1	17	74°26.1	25.4	17	74°16.5	21.0	17	74°07.3	12.8
18	89°45.7	N23°23.2	18	89°35.8	N23°26.1	18	89°26.0	N23°25.4	18	89°16.4	N23°20.9	18	89°07.2	N23°12.7
19	104°45.6	23.3	19	104°35.7	26.2	19	104°25.9	25.3	19	104°16.3	20.8	19	104°07.1	12.5
20	119°45.4	23.3	20	119°35.6	26.2	20	119°25.7	25.3	20	119°16.1	20.7	20	119°06.9	12.4
21	134°45.3	23.4	21	134°35.4	26.2	21	134°25.6	25.3	21	134°16.0	20.6	21	134°06.8	12.3
22	149°45.2	23.5	22	149°35.3	26.2	22	149°25.5	25.2	22	149°15.9	20.5	22	149°06.7	12.1
23	164°45.0	23.5	23	164°35.2	26.2	23	164°25.3	25.2	23	164°15.8	20.4	23	164°06.6	12.0
	SD=15.7'	d=0.1'		SD=15.7'	d=0.0'		SD=15.7'	d=-0.0'		SD=15.7'	d=-0.1'		SD=15.7'	d=-0.1'

30	GHA	Dec	03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	12	GHA	Dec
0	179°06.4	N23°11.8	0	178°57.8	N22°59.7	0	178°49.8	N22°43.9	0	178°42.6	N22°24.7	0	178°36.3	N22°01.9
1	194°06.3	11.7	1	193°57.7	59.5	1	193°49.7	43.7	1	193°42.5	24.4	1	193°36.2	01.5
2	209°06.2	11.6	2	208°57.6	59.3	2	208°49.6	43.5	2	208°42.4	24.1	2	208°36.1	01.2
3	224°06.1	11.4	3	223°57.5	59.1	3	223°49.5	43.2	3	223°42.3	23.8	3	223°36.0	00.9
4	239°06.0	11.3	4	238°57.4	58.9	4	238°49.4	43.0	4	238°42.3	23.5	4	238°36.0	00.5
5	254°05.8	11.1	5	253°57.2	58.7	5	253°49.3	42.7	5	253°42.2	23.2	5	253°35.9	22°00.2
6	269°05.7	N23°11.0	6	268°57.1	N22°58.5	6	268°49.2	N22°42.5	6	268°42.1	N22°22.9	6	268°35.8	N21°59.8
7	284°05.6	10.8	7	283°57.0	58.3	7	283°49.1	42.2	7	283°42.0	22.6	7	283°35.7	59.5
8	299°05.5	10.7	8	298°56.9	58.1	8	298°49.0	42.0	8	298°41.9	22.3	8	298°35.6	59.1
9	314°05.3	10.5	9	313°56.8	57.9	9	313°48.9	41.7	9	313°41.8	22.0	9	313°35.6	58.8
10	329°05.2	10.4	10	328°56.7	57.7	10	328°48.8	41.5	10	328°41.7	21.7	10	328°35.5	58.4
11	344°05.1	10.2	11	343°56.6	57.5	11	343°48.7	41.2	11	343°41.6	21.4	11	343°35.4	58.1
12	359°05.0	N23°10.1	12	358°56.4	N22°57.3	12	358°48.6	N22°41.0	12	358°41.5	N22°21.1	12	358°35.3	N21°57.7
13	14°04.8	09.9	13	13°56.3	57.1	13	13°48.5	40.7	13	13°41.4	20.8	13	13°35.2	57.4
14	29°04.7	09.8	14	28°56.2	56.9	14	28°48.4	40.5	14	28°41.3	20.5	14	28°35.2	57.0
15	44°04.6	09.6	15	43°56.1	56.7	15	43°48.3	40.2	15	43°41.2	20.2	15	43°35.1	56.7
16	59°04.5	09.5	16	58°56.0	56.5	16	58°48.2	40.0	16	58°41.1	19.9	16	58°35.0	56.3
17	74°04.4	09.3	17	73°55.9	56.3	17	73°48.1	39.7	17	73°41.0	19.6	17	73°34.9	56.0
18	89°04.2	N23°09.1	18	88°55.8	N22°56.1	18	88°48.0	N22°39.5	18	88°41.0	N22°19.3	18	88°34.8	N21°55.6
19	104°04.1	09.0	19	103°55.6	55.9	19	103°47.9	39.2	19	103°40.9	19.0	19	103°34.8	55.3
20	119°04.0	08.8	20	118°55.5	55.7	20	118°47.8	38.9	20	118°40.8	18.7	20	118°34.7	54.9
21	134°03.9	08.7	21	133°55.4	55.5	21	133°47.7	38.7	21	133°40.7	18.4	21	133°34.6	54.6
22	149°03.7	08.5	22	148°55.3	55.3	22	148°47.6	38.4	22	148°40.6	18.1	22	148°34.5	54.2
23	164°03.6	08.4	23	163°55.2	55.1	23	163°47.5	38.2	23	163°40.5	17.8	23	163°34.5	53.9
SD=15.7' d=-0.1'														
SD=15.7' d=-0.2'														
SD=15.7' d=-0.2'														
SD=15.7' d=-0.3'														
SD=15.7' d=-0.3'														

01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec	13	GHA	Dec
0	179°03.5	N23°08.2	0	178°55.1	N22°54.8	0	178°47.3	N22°37.9	0	178°40.4	N22°17.4	0	178°34.4	N21°53.5
1	194°03.4	08.0	1	193°55.0	54.6	1	193°47.2	37.6	1	193°40.3	17.1	1	193°34.3	53.2
2	209°03.3	07.9	2	208°54.9	54.4	2	208°47.1	37.4	2	208°40.2	16.8	2	208°34.2	52.8
3	224°03.1	07.7	3	223°54.7	54.2	3	223°47.0	37.1	3	223°40.1	16.5	3	223°34.1	52.5
4	239°03.0	07.5	4	238°54.6	54.0	4	238°46.9	36.9	4	238°40.1	16.2	4	238°34.1	52.1
5	254°02.9	07.4	5	253°54.5	53.8	5	253°46.8	36.6	5	253°40.0	15.9	5	253°34.0	51.7
6	269°02.8	N23°07.2	6	268°54.4	N22°53.6	6	268°46.7	N22°36.3	6	268°39.9	N22°15.6	6	268°33.9	N21°51.4
7	284°02.7	07.1	7	283°54.3	53.4	7	283°46.6	36.1	7	283°39.8	15.3	7	283°33.8	51.0
8	299°02.5	06.9	8	298°54.2	53.1	8	298°46.5	35.8	8	298°39.7	15.0	8	298°33.8	50.7
9	314°02.4	06.7	9	313°54.1	52.9	9	313°46.4	35.5	9	313°39.6	14.6	9	313°33.7	50.3
10	329°02.3	06.6	10	328°54.0	52.7	10	328°46.3	35.3	10	328°39.5	14.3	10	328°33.6	49.9
11	344°02.2	06.4	11	343°53.9	52.5	11	343°46.2	35.0	11	343°39.4	14.0	11	343°33.5	49.6
12	359°02.1	N23°06.2	12	358°53.7	N22°52.3	12	358°46.1	N22°34.7	12	358°39.3	N22°13.7	12	358°33.5	N21°49.2
13	14°01.9	06.1	13	13°53.6	52.0	13	13°46.0	34.5	13	13°39.3	13.4	13	13°33.4	48.8
14	29°01.8	05.9	14	28°53.5	51.8	14	28°45.9	34.2	14	28°39.2	13.1	14	28°33.3	48.5
15	44°01.7	05.7	15	43°53.4	51.6	15	43°45.8	33.9	15	43°39.1	12.7	15	43°33.2	48.1
16	59°01.6	05.5	16	58°53.3	51.4	16	58°45.7	33.7	16	58°39.0	12.4	16	58°33.2	47.7
17	74°01.5	05.4	17	73°53.2	51.2	17	73°45.6	33.4	17	73°38.9	12.1	17	73°33.1	47.4
18	89°01.3	N23°05.2	18	88°53.1	N22°50.9	18	88°45.5	N22°33.1	18	88°38.8	N22°11.8	18	88°33.0	N21°47.0
19	104°01.2	05.0	19	103°53.0	50.7	19	103°45.4	32.8	19	103°38.7	11.5	19	103°33.0	46.6
20	119°01.1	04.8	20	118°52.9	50.5	20	118°45.3	32.6	20	118°38.6	11.2	20	118°32.9	46.3
21	134°01.0	04.7	21	133°52.7	50.3	21	133°45.2	32.3	21	133°38.6	10.8	21	133°32.8	45.9
22	149°00.9	04.5	22	148°52.6	50.0	22	148°45.1	32.0	22	148°38.5	10.5	22	148°32.7	45.5
23	164°00.7	04.3	23	163°52.5	49.8	23	163°45.0	31.8	23	163°38.4	10.2	23	163°32.7	45.2
SD=15.7' d=-0.2'														
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02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec	14	GHA	Dec
0	179°00.6	N23°04.1	0	178°52.4	N22°49.6	0	178°44.9	N22°31.5	0	178°38.3	N22°09.9	0	178°32.6	N21°44.8
1	194°00.5	04.0	1	193°52.3	49.4	1	193°44.8	31.2	1	193°38.2	09.5	1	193°32.5	44.4
2	209°00.4	03.8	2	208°52.2	49.1	2	208°44.7	30.9	2	208°38.1	09.2	2	208°32.4	44.0
3	224°00.3	03.6	3	223°52.1	48.9	3	223°44.6	30.6	3	223°38.0	08.9	3	223°32.4	43.7
4	239°00.2	03.4	4	238°52.0	48.7	4	238°44.6	30.4	4	238°38.0	08.5	4	238°32.3	43.3
5	254°00.0	03.3	5	253°51.9	48.4	5	253°44.5	30.1	5	253°37.9	08.2	5	253°32.2	42.9
6	269°59.9	N23°03.1	6	268°51.8	N22°48.2	6	268°44.4	N22°29.8	6	268°37.8	N22°07.9	6	268°32.2	N21°42.5
7	283°59.8	02.9	7	283°51.7	48.0	7	283°44.3	29.5	7	283°37.7	07.6	7	283°32.1	42.2
8	298°59.7	02.7	8	298°51.6	47.8	8	298°44.2	29.2	8	298°37.6	07.2	8	298°32.0	41.8
9	313°59.6	02.5	9	313°51.4	47.5	9	313°44.1	29.0	9	313°37.5	06.9	9	313°31.9	41.4
10	328°59.4	02.3	10	328°51.3	47.3	10	328°44.0	28.7	10	328°37.4	06.6	10	328°31.9	41.0
11	343°59.3	02.2	11	343°51.2	47.1	11	343°43.9	28.4	11	343°37.4	06.2	11	343°31.8	40.7
12	358°59.2	N23°02.0	12	358°51.1	N22°46.8	12	358°43.8	N22°28.1	12	358°37.3	N22°05.9	12	358°31.7	N21°40.3
13	13°59.1	01.8	13	13°51.0	46.6	13	13°43.7	27.8	13	13°37.2	05.6	13	13°31.7	39.9
14	28°59.0	01.6	14	28°50.9	46.3	14	28°43.6	27.5	14	28°37.1	05.2	14	28°31.6	39.5
15	43°58.9	01.4	15	43°50.8	46.1	15	43°43.5	27.3	15	43°37.0	04.9	15	43°31.5	39.1
16	58°58.7	01.2	16	58°50.7	45.9	16	58°43.4	27.0	16	58°36.9	04.6	16	58°31.5	38.8
17	73°58.6	01.0	17	73°50.6	45.6	17	73°43.3	26.7	17	73°36.9	04.2	17	73°31.4	38.4
18	88°58.5	N23°00.8	18	88°50.5	N22°45.4	18	88°43.2	N22°26.4	18	88°36.8	N22°03.9	18	88°31.3	N21°38.0
19	103°58.4	00.7	19	103°50.4	45.2	19	103°43.1	26.1	19	103°36.7	03.6	19	103°31.3	37.6
20	118°58.3	00.5	20	118°50.3	44.9	20	118°43.0	25.8	20	118°36.6	03.2	20	118°31.2	37.2
21	133°58.2	00.3	21	133°50.2	44.7	21	133°42.9	25.5	21	133°36.5	02.9	21	133°31.1	36.8
22	148°58.0	23°00.1	22	148°50.1	44.4	22	148°42.8	25.2	22	148°36.4	02.6	22	148°31.1	36.5
23	163°57.9	22°59.9	23	163°49.9	44.2	23	163°42.7	24.9	23	163°36.4	02.2	23	163°31.0	36.1
SD=15.7' d=-0.2'														
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15	GHA	Dec	18	GHA	Dec	21	GHA	Dec	24	GHA	Dec	27	GHA	Dec
0	178°30.9	N21°35.7	0	178°26.7	N21°06.2	0	178°23.6	N20°33.5	0	178°21.8	N19°57.6	0	178°21.4	N19°18.8
1	193°30.9	35.3	1	193°26.6	05.8	1	193°23.6	33.0	1	193°21.8	57.1	1	193°21.4	18.3
2	208°30.8	34.9	2	208°26.5	05.3	2	208°23.5	32.5	2	208°21.8	56.6	2	208°21.4	17.7
3	223°30.7	· · 34.5	3	223°26.5	· · 04.9	3	223°23.5	· · 32.0	3	223°21.8	· · 56.1	3	223°21.4	· · 17.1
4	238°30.7	34.1	4	238°26.4	04.4	4	238°23.5	31.6	4	238°21.8	55.6	4	238°21.4	16.6
5	253°30.6	33.7	5	253°26.4	04.0	5	253°23.4	31.1	5	253°21.7	55.0	5	253°21.4	16.0
6	268°30.5	N21°33.4	6	268°26.3	N21°03.6	6	268°23.4	N20°30.6	6	268°21.7	N19°54.5	6	268°21.4	N19°15.5
7	283°30.5	33.0	7	283°26.3	03.1	7	283°23.4	30.1	7	283°21.7	54.0	7	283°21.4	14.9
8	298°30.4	32.6	8	298°26.2	02.7	8	298°23.3	29.6	8	298°21.7	53.5	8	298°21.4	14.3
9	313°30.3	· · 32.2	9	313°26.2	· · 02.3	9	313°23.3	· · 29.2	9	313°21.7	· · 52.9	9	313°21.5	· · 13.8
10	328°30.3	31.8	10	328°26.2	01.8	10	328°23.3	28.7	10	328°21.7	52.4	10	328°21.5	13.2
11	343°30.2	31.4	11	343°26.1	01.4	11	343°23.2	28.2	11	343°21.7	51.9	11	343°21.5	12.6
12	358°30.1	N21°31.0	12	358°26.1	N21°00.9	12	358°23.2	N20°27.7	12	358°21.7	N19°51.4	12	358°21.5	N19°12.1
13	13°30.1	30.6	13	13°26.0	00.5	13	13°23.2	27.2	13	13°21.6	50.8	13	13°21.5	11.5
14	28°30.0	30.2	14	28°26.0	21°00.1	14	28°23.1	26.7	14	28°21.6	50.3	14	28°21.5	10.9
15	43°29.9	· · 29.8	15	43°25.9	20°59.6	15	43°23.1	· · 26.3	15	43°21.6	· · 49.8	15	43°21.5	· · 10.4
16	58°29.9	29.4	16	58°25.9	59.2	16	58°23.1	25.8	16	58°21.6	49.3	16	58°21.5	09.8
17	73°29.8	29.0	17	73°25.8	58.7	17	73°23.1	25.3	17	73°21.6	48.7	17	73°21.5	09.2
18	88°29.7	N21°28.6	18	88°25.8	N20°58.3	18	88°23.0	N20°24.8	18	88°21.6	N19°48.2	18	88°21.5	N19°08.7
19	103°29.7	28.2	19	103°25.7	57.9	19	103°23.0	24.3	19	103°21.6	47.7	19	103°21.5	08.1
20	118°29.6	27.8	20	118°25.7	57.4	20	118°23.0	23.8	20	118°21.6	47.1	20	118°21.5	07.5
21	133°29.6	· · 27.4	21	133°25.6	· · 57.0	21	133°22.9	· · 23.3	21	133°21.6	· · 46.6	21	133°21.5	· · 07.0
22	148°29.5	27.0	22	148°25.6	56.5	22	148°22.9	22.8	22	148°21.5	46.1	22	148°21.6	06.4
23	163°29.4	26.6	23	163°25.5	56.1	23	163°22.9	22.3	23	163°21.5	45.6	23	163°21.6	05.8
SD=15.7' d=-0.4'														
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16	GHA	Dec	19	GHA	Dec	22	GHA	Dec	25	GHA	Dec	28	GHA	Dec
0	178°29.4	N21°26.2	0	178°25.5	N20°55.6	0	178°22.9	N20°21.9	0	178°21.5	N19°45.0	0	178°21.6	N19°05.2
1	193°29.3	25.8	1	193°25.4	55.2	1	193°22.8	21.4	1	193°21.5	44.5	1	193°21.6	04.7
2	208°29.2	25.4	2	208°25.4	54.7	2	208°22.8	20.9	2	208°21.5	44.0	2	208°21.6	04.1
3	223°29.2	· · 25.0	3	223°25.4	· · 54.3	3	223°22.8	· · 20.4	3	223°21.5	· · 43.4	3	223°21.6	· · 03.5
4	238°29.1	24.6	4	238°25.3	53.8	4	238°22.7	19.9	4	238°21.5	42.9	4	238°21.6	02.9
5	253°29.1	24.2	5	253°25.3	53.4	5	253°22.7	19.4	5	253°21.5	42.4	5	253°21.6	02.4
6	268°29.0	N21°23.8	6	268°25.2	N20°52.9	6	268°22.7	N20°18.9	6	268°21.5	N19°41.8	6	268°21.6	N19°01.8
7	283°28.9	23.4	7	283°25.2	52.5	7	283°22.7	18.4	7	283°21.5	41.3	7	283°21.7	01.2
8	298°28.9	23.0	8	298°25.1	52.0	8	298°22.6	17.9	8	298°21.5	40.7	8	298°21.7	00.6
9	313°28.8	· · 22.6	9	313°25.1	· · 51.6	9	313°22.6	· · 17.4	9	313°21.5	· · 40.2	9	313°21.7	19°00.1
10	328°28.8	22.2	10	328°25.0	51.1	10	328°22.6	16.9	10	328°21.5	39.7	10	328°21.7	18°59.5
11	343°28.7	21.8	11	343°25.0	50.7	11	343°22.6	16.4	11	343°21.4	39.1	11	343°21.7	58.9
12	358°28.6	N21°21.3	12	358°25.0	N20°50.2	12	358°22.5	N20°15.9	12	358°21.4	N19°38.6	12	358°21.7	N18°58.3
13	13°28.6	20.9	13	13°24.9	49.8	13	13°22.5	15.4	13	13°21.4	38.1	13	13°21.7	57.8
14	28°28.5	20.5	14	28°24.9	49.3	14	28°22.5	14.9	14	28°21.4	37.5	14	28°21.7	57.2
15	43°28.5	· · 20.1	15	43°24.8	· · 48.9	15	43°22.5	· · 14.4	15	43°21.4	· · 37.0	15	43°21.8	· · 56.6
16	58°28.4	19.7	16	58°24.8	48.4	16	58°22.4	13.9	16	58°21.4	36.4	16	58°21.8	56.0
17	73°28.3	19.3	17	73°24.8	47.9	17	73°22.4	13.4	17	73°21.4	35.9	17	73°21.8	55.4
18	88°28.3	N21°18.9	18	88°24.7	N20°47.5	18	88°22.4	N20°12.9	18	88°21.4	N19°35.3	18	88°21.8	N18°54.8
19	103°28.2	18.5	19	103°24.7	47.0	19	103°22.4	12.4	19	103°21.4	34.8	19	103°21.8	54.3
20	118°28.2	18.0	20	118°24.6	46.6	20	118°22.4	11.9	20	118°21.4	34.3	20	118°21.8	53.7
21	133°28.1	· · 17.6	21	133°24.6	· · 46.1	21	133°22.3	· · 11.4	21	133°21.4	· · 33.7	21	133°21.9	· · 53.1
22	148°28.1	17.2	22	148°24.6	45.6	22	148°22.3	10.9	22	148°21.4	33.2	22	148°21.9	52.5
23	163°28.0	16.8	23	163°24.5	45.2	23	163°22.3	10.4	23	163°21.4	32.6	23	163°21.9	51.9
SD=15.7' d=-0.4'														
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17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec	29	GHA	Dec
0	178°27.9	N21°16.4	0	178°24.5	N20°44.7	0	178°22.3	N20°09.9	0	178°21.4	N19°32.1	0	178°21.9	N18°51.3
1	193°27.9	16.0	1	193°24.4	44.3	1	193°22.2	09.4	1	193°21.4	31.5	1	193°21.9	50.8
2	208°27.8	15.5	2	208°24.4	43.8	2	208°22.2	08.9	2	208°21.4	31.0	2	208°21.9	50.2
3	223°27.8	· · 15.1	3	223°24.4	· · 43.3	3	223°22.2	· · 08.4	3	223°21.4	· · 30.4	3	223°22.0	· · 49.6
4	238°27.7	14.7	4	238°24.3	42.9	4	238°22.2	07.9	4	238°21.4	29.9	4	238°22.0	49.0
5	253°27.7	14.3	5	253°24.3	42.4	5	253°22.2	07.4	5	253°21.4	29.3	5	253°22.0	48.4
6	268°27.6	N21°13.9	6	268°24.2	N20°41.9	6	268°22.1	N20°06.9	6	268°21.4	N19°28.8	6	268°22.0	N18°47.8
7	283°27.6	13.4	7	283°24.2	41.5	7	283°22.1	06.4	7	283°21.4	28.2	7	283°22.0	47.2
8	298°27.5	13.0	8	298°24.2	41.0	8	298°22.1	05.9	8	298°21.4	27.7	8	298°22.0	46.6
9	313°27.4	· · 12.6	9	313°24.1	· · 40.5	9	313°22.1	· · 05.3	9	313°21.4	· · 27.1	9	313°22.1	· · 46.1
10	328°27.4	12.2	10	328°24.1	40.1	10	328°22.1	04.8	10	328°21.4	26.6	10	328°22.1	45.5
11	343°27.3	11.8	11	343°24.0	39.6	11	343°22.0	04.3	11	343°21.4	26.0	11	343°22.1	44.9
12	358°27.3	N21°11.3	12	358°24.0	N20°39.1	12	358°22.0	N20°03.8	12	358°21.4	N19°25.5	12	358°22.1	N18°44.3
13	13°27.2	10.9	13	13°24.0	38.7	13	13°22.0	03.3	13	13°21.4	24.9	13	13°22.1	43.7
14	28°27.2	10.5	14	28°23.9	38.2	14	28°22.0	02.8	14	28°21.4	24.4	14	28°22.2	43.1
15	43°27.1	· · 10.0	15	43°23.9	· · 37.7	15	43°22.0	· · 02.3	15	43°21.4	· · 23.8	15	43°22.2	· · 42.5
16	58°27.1	09.6	16	58°23.9	37.3	16	58°22.0	01.8	16	58°21.4	23.3	16	58°22.2	41.9
17	73°27.0	09.2	17	73°23.8	36.8	17	73°21.9	01.3	17	73°21.4	22.7	17	73°22.2	41.3
18	88°27.0	N21°08.8	18	88°23.8	N20°36.3	18	88°21.9	N20°00.7	18	88°21.4	N19°22.2	18	88°22.2	N18°40.7
19	103°26.9	08.3	19	103°23.8	35.8	19	103°21.9	20°00.2	19	103°21.4	21.6	19	103°22.3	40.1
20	118°26.9	07.9	20	118°23.7	35.4	20	118°21.9	19°59.7	20	118°21.4	21.1	20	118°22.3	39.5
21	133°26.8	· · 07.5	21	133°23.7	· · 34.9	21	133°21.9	· · 59.2	21	133°21.4	· · 20.5	21	133°22.3	· · 38.9
22	148°26.8	07.0	22	148°23.7	34.4	22	148°21.9	58.7	22	148°21.4	19.9	22	148°22.3	38.3
23	163°26.7	06.6	23	163°23.6	33.9	23	163°21.8	58.2	23	163°21.4	19.4	23	163°22.4	37.7
SD=15.7' d=-0.4'														
SD=15.7' d=-0.5'														
SD=15.7' d=-0.5'														
SD=15.7' d=-0.5'														
SD=15.7' d=-0.6'														

30	GHA	Dec	02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec
0	178°22.4	N18°37.1	0	178°24.8	N17°52.7	0	178°28.5	N17°05.7	0	178°33.5	N16°16.2	0	178°39.9	N15°24.3
1	193°22.4	36.5	1	193°24.8	52.1	1	193°28.5	05.0	1	193°33.6	15.5	1	193°40.0	23.6
2	208°22.4	35.9	2	208°24.8	51.5	2	208°28.6	04.4	2	208°33.7	14.8	2	208°40.1	22.8
3	223°22.5	· · 35.3	3	223°24.9	· · 50.8	3	223°28.7	· · 03.7	3	223°33.8	· · 14.1	3	223°40.2	· · 22.1
4	238°22.5	34.7	4	238°24.9	50.2	4	238°28.7	03.0	4	238°33.9	13.4	4	238°40.3	21.3
5	253°22.5	34.1	5	253°25.0	49.5	5	253°28.8	02.3	5	253°33.9	12.7	5	253°40.4	20.6
6	268°22.5	N18°33.5	6	268°25.0	N17°48.9	6	268°28.9	N17°01.7	6	268°34.0	N16°11.9	6	268°40.4	N15°19.9
7	283°22.6	32.9	7	283°25.1	48.3	7	283°28.9	01.0	7	283°34.1	11.2	7	283°40.5	19.1
8	298°22.6	32.3	8	298°25.1	47.6	8	298°29.0	17°00.3	8	298°34.2	10.5	8	298°40.6	18.4
9	313°22.6	· · 31.7	9	313°25.1	· · 47.0	9	313°29.0	16°59.6	9	313°34.3	· · 09.8	9	313°40.7	· · 17.7
10	328°22.6	31.1	10	328°25.2	46.4	10	328°29.1	59.0	10	328°34.3	09.1	10	328°40.8	16.9
11	343°22.7	30.5	11	343°25.2	45.7	11	343°29.2	58.3	11	343°34.4	08.4	11	343°40.9	16.2
12	358°22.7	N18°29.9	12	358°25.3	N17°45.1	12	358°29.2	N16°57.6	12	358°34.5	N16°07.7	12	358°41.0	N15°15.4
13	13°22.7	29.3	13	13°25.3	44.4	13	13°29.3	56.9	13	13°34.6	07.0	13	13°41.1	14.7
14	28°22.7	28.7	14	28°25.4	43.8	14	28°29.4	56.3	14	28°34.7	06.3	14	28°41.2	13.9
15	43°22.8	· · 28.1	15	43°25.4	· · 43.1	15	43°29.4	· · 55.6	15	43°34.7	· · 05.6	15	43°41.3	· · 13.2
16	58°22.8	27.5	16	58°25.5	42.5	16	58°29.5	54.9	16	58°34.8	04.9	16	58°41.4	12.5
17	73°22.8	26.9	17	73°25.5	41.9	17	73°29.6	54.2	17	73°34.9	04.1	17	73°41.5	11.7
18	88°22.8	N18°26.3	18	88°25.6	N17°41.2	18	88°29.6	N16°53.6	18	88°35.0	N16°03.4	18	88°41.6	N15°11.0
19	103°22.9	25.7	19	103°25.6	40.6	19	103°29.7	52.9	19	103°35.1	02.7	19	103°41.7	10.2
20	118°22.9	25.1	20	118°25.7	39.9	20	118°29.8	52.2	20	118°35.2	02.0	20	118°41.8	09.5
21	133°22.9	· · 24.5	21	133°25.7	· · 39.3	21	133°29.8	· · 51.5	21	133°35.2	· · 01.3	21	133°41.9	· · 08.7
22	148°23.0	23.9	22	148°25.7	38.6	22	148°29.9	50.8	22	148°35.3	16°00.6	22	148°42.0	08.0
23	163°23.0	23.2	23	163°25.8	38.0	23	163°30.0	50.2	23	163°35.4	15°59.9	23	163°42.2	07.2
SD=15.7' d=-0.6'														
SD=15.8' d=-0.6'														
SD=15.8' d=-0.7'														
SD=15.8' d=-0.7'														
SD=15.8' d=-0.7'														

31	GHA	Dec	03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	12	GHA	Dec
0	178°23.0	N18°22.6	0	178°25.8	N17°37.3	0	178°30.0	N16°49.5	0	178°35.5	N15°59.1	0	178°42.3	N15°06.5
1	193°23.0	22.0	1	193°25.9	36.7	1	193°30.1	48.8	1	193°35.6	58.4	1	193°42.4	05.8
2	208°23.1	21.4	2	208°25.9	36.0	2	208°30.2	48.1	2	208°35.7	57.7	2	208°42.5	05.0
3	223°23.1	· · 20.8	3	223°26.0	· · 35.4	3	223°30.2	· · 47.4	3	223°35.8	· · 57.0	3	223°42.6	· · 04.3
4	238°23.1	20.2	4	238°26.0	34.7	4	238°30.3	46.7	4	238°35.8	56.3	4	238°42.7	03.5
5	253°23.2	19.6	5	253°26.1	34.1	5	253°30.4	46.1	5	253°35.9	55.6	5	253°42.8	02.8
6	268°23.2	N18°19.0	6	268°26.1	N17°33.4	6	268°30.4	N16°45.4	6	268°36.0	N15°54.8	6	268°42.9	N15°02.0
7	283°23.2	18.3	7	283°26.2	32.8	7	283°30.5	44.7	7	283°36.1	54.1	7	283°43.0	01.3
8	298°23.3	17.7	8	298°26.2	32.1	8	298°30.6	44.0	8	298°36.2	53.4	8	298°43.1	15°00.5
9	313°23.3	· · 17.1	9	313°26.3	· · 31.5	9	313°30.6	· · 43.3	9	313°36.3	· · 52.7	9	313°43.2	14°59.8
10	328°23.3	16.5	10	328°26.3	30.8	10	328°30.7	42.6	10	328°36.4	52.0	10	328°43.3	59.0
11	343°23.4	15.9	11	343°26.4	30.2	11	343°30.8	41.9	11	343°36.5	51.2	11	343°43.4	58.3
12	358°23.4	N18°15.3	12	358°26.5	N17°29.5	12	358°30.8	N16°41.2	12	358°36.5	N15°50.5	12	358°43.5	N14°57.5
13	13°23.4	14.7	13	13°26.5	28.9	13	13°30.9	40.6	13	13°36.6	49.8	13	13°43.6	56.8
14	28°23.5	14.0	14	28°26.6	28.2	14	28°31.0	39.9	14	28°36.7	49.1	14	28°43.7	56.0
15	43°23.5	· · 13.4	15	43°26.6	· · 27.6	15	43°31.1	· · 39.2	15	43°36.8	· · 48.4	15	43°43.8	· · 55.3
16	58°23.5	12.8	16	58°26.7	26.9	16	58°31.1	38.5	16	58°36.9	47.6	16	58°43.9	54.5
17	73°23.6	12.2	17	73°26.7	26.3	17	73°31.2	37.8	17	73°37.0	46.9	17	73°44.0	53.7
18	88°23.6	N18°11.6	18	88°26.8	N17°25.6	18	88°31.3	N16°37.1	18	88°37.1	N15°46.2	18	88°44.1	N14°53.0
19	103°23.6	10.9	19	103°26.8	25.0	19	103°31.3	36.4	19	103°37.2	45.5	19	103°44.2	52.2
20	118°23.7	10.3	20	118°26.9	24.3	20	118°31.4	35.7	20	118°37.3	44.7	20	118°44.3	51.5
21	133°23.7	· · 09.7	21	133°26.9	· · 23.6	21	133°31.5	· · 35.0	21	133°37.3	· · 44.0	21	133°44.5	· · 50.7
22	148°23.7	09.1	22	148°27.0	23.0	22	148°31.6	34.3	22	148°37.4	43.3	22	148°44.6	50.0
23	163°23.8	08.5	23	163°27.0	22.3	23	163°31.6	33.7	23	163°37.5	42.6	23	163°44.7	49.2
SD=15.7' d=-0.6'														
SD=15.8' d=-0.6'														
SD=15.8' d=-0.7'														
SD=15.8' d=-0.7'														
SD=15.8' d=-0.7'														

01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec	13	GHA	Dec
0	178°23.8	N18°07.8	0	178°27.1	N17°21.7	0	178°31.7	N16°33.0	0	178°37.6	N15°41.8	0	178°44.8	N14°48.5
1	193°23.8	07.2	1	193°27.1	21.0	1	193°31.8	32.3	1	193°37.7	41.1	1	193°44.9	47.7
2	208°23.9	06.6	2	208°27.2	20.3	2	208°31.9	31.6	2	208°37.8	40.4	2	208°45.0	46.9
3	223°23.9	· · 06.0	3	223°27.3	· · 19.7	3	223°31.9	· · 30.9	3	223°37.9	· · 39.7	3	223°45.1	· · 46.2
4	238°24.0	05.3	4	238°27.3	19.0	4	238°32.0	30.2	4	238°38.0	38.9	4	238°45.2	45.4
5	253°24.0	04.7	5	253°27.4	18.4	5	253°32.1	29.5	5	253°38.1	38.2	5	253°45.3	44.7
6	268°24.0	N18°04.1	6	268°27.4	N17°17.7	6	268°32.1	N16°28.8	6	268°38.2	N15°37.5	6	268°45.4	N14°43.9
7	283°24.1	03.5	7	283°27.5	17.0	7	283°32.2	28.1	7	283°38.3	36.8	7	283°45.5	43.2
8	298°24.1	02.8	8	298°27.5	16.4	8	298°32.3	27.4	8	298°38.3	36.0	8	298°45.7	42.4
9	313°24.1	· · 02.2	9	313°27.6	· · 15.7	9	313°32.4	· · 26.7	9	313°38.4	· · 35.3	9	313°45.8	· · 41.6
10	328°24.2	01.6	10	328°27.7	15.0	10	328°32.4	26.0	10	328°38.5	34.6	10	328°45.9	40.9
11	343°24.2	00.9	11	343°27.7	14.4	11	343°32.5	25.3	11	343°38.6	33.8	11	343°46.0	40.1
12	358°24.3	N18°00.3	12	358°27.8	N17°13.7	12	358°32.6	N16°24.6	12	358°38.7	N15°33.1	12	358°46.1	N14°39.4
13	13°24.3	17°59.7	13	13°27.8	13.1	13	13°32.7	23.9	13	13°38.8	32.4	13	13°46.2	38.6
14	28°24.3	59.1	14	28°27.9	12.4	14	28°32.8	23.2	14	28°38.9	31.6	14	28°46.3	37.8
15	43°24.4	· · 58.4	15	43°27.9	· · 11.7	15	43°32.8	· · 22.5	15	43°39.0	· · 30.9	15	43°46.4	· · 37.1
16	58°24.4	57.8	16	58°28.0	11.1	16	58°32.9	21.8	16	58°39.1	30.2	16	58°46.5	36.3
17	73°24.5	57.2	17	73°28.1	10.4	17	73°33.0	21.1	17	73°39.2	29.4	17	73°46.7	35.5
18	88°24.5	N17°56.5	18	88°28.1	N17°09.7	18	88°33.1	N16°20.4	18	88°39.3	N15°28.7	18	88°46.8	N14°34.8
19	103°24.5	55.9	19	103°28.2	09.1	19	103°33.1	19.7	19	103°39.4	28.0	19	103°46.9	34.0
20	118°24.6	55.3	20	118°28.2	08.4	20	118°33.2	19.0	20	118°39.5	27.2	20	118°47.0	33.2
21	133°24.6	· · 54.6	21	133°28.3	· · 07.7	21	133°33.3	· · 18.3	21	133°39.6	· · 26.5	21	133°47.1	· · 32.5
22	148°24.7	54.0	22	148°28.4	07.0	22	148°33.4	17.6	22	148°39.7	25.8	22	148°47.2	31.7
23	163°24.7	53.4	23	163°28.4	06.4	23	163°33.5	16.9	23	163°39.8	25.0	23	163°47.3	30.9
SD=15.7' d=-0.6'														
SD=15.8' d=-0.7'														
SD=15.8' d=-0.7'														
SD=15.8' d=-0.7'														
SD=15.8' d=-0.8'														

14	GHA	Dec	17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec
0	178°47.4	N14°30.2	0	178°56.2	N13°34.0	0	179°06.2	N12°35.8	0	179°17.3	N11°35.9	0	179°29.4	N10°34.4
1	193°47.6	29.4	1	193°56.4	33.2	1	194°06.3	35.0	1	194°17.4	35.1	1	194°29.5	33.5
2	208°47.7	28.6	2	208°56.5	32.4	2	209°06.5	34.2	2	209°17.6	34.2	2	209°29.7	32.6
3	223°47.8	· · 27.9	3	223°56.6	· · 31.6	3	224°06.6	· · 33.4	3	224°17.8	· · 33.4	3	224°29.9	· · 31.8
4	238°47.9	27.1	4	238°56.8	30.8	4	239°06.8	32.6	4	239°17.9	32.5	4	239°30.1	30.9
5	253°48.0	26.3	5	253°56.9	30.0	5	254°06.9	31.7	5	254°18.1	31.7	5	254°30.3	30.0
6	268°48.1	N14°25.6	6	268°57.0	N13°29.2	6	269°07.1	N12°30.9	6	269°18.2	N11°30.9	6	269°30.4	N10°29.2
7	283°48.2	24.8	7	283°57.2	28.4	7	284°07.2	30.1	7	284°18.4	30.0	7	284°30.6	28.3
8	298°48.4	24.0	8	298°57.3	27.6	8	299°07.4	29.3	8	299°18.6	29.2	8	299°30.8	27.4
9	313°48.5	· · 23.3	9	313°57.4	· · 26.8	9	314°07.5	· · 28.5	9	314°18.7	· · 28.3	9	314°31.0	· · 26.6
10	328°48.6	22.5	10	328°57.6	26.0	10	329°07.7	27.6	10	329°18.9	27.5	10	329°31.1	25.7
11	343°48.7	21.7	11	343°57.7	25.2	11	344°07.8	26.8	11	344°19.1	26.6	11	344°31.3	24.8
12	358°48.8	N14°21.0	12	358°57.8	N13°24.4	12	359°08.0	N12°26.0	12	359°19.2	N11°25.8	12	359°31.5	N10°24.0
13	13°48.9	20.2	13	13°58.0	23.6	13	14°08.1	25.2	13	14°19.4	24.9	13	14°31.7	23.1
14	28°49.1	19.4	14	28°58.1	22.8	14	29°08.3	24.3	14	29°19.5	24.1	14	29°31.8	22.2
15	43°49.2	· · 18.6	15	43°58.2	· · 22.0	15	44°08.4	· · 23.5	15	44°19.7	· · 23.2	15	44°32.0	· · 21.3
16	58°49.3	17.9	16	58°58.4	21.2	16	59°08.6	22.7	16	59°19.9	22.4	16	59°32.2	20.5
17	73°49.4	17.1	17	73°58.5	20.4	17	74°08.7	21.9	17	74°20.0	21.5	17	74°32.4	19.6
18	88°49.5	N14°16.3	18	88°58.6	N13°19.6	18	89°08.9	N12°21.0	18	89°20.2	N11°20.7	18	89°32.6	N10°18.7
19	103°49.6	15.5	19	103°58.8	18.8	19	104°09.0	20.2	19	104°20.4	19.8	19	104°32.7	17.9
20	118°49.8	14.8	20	118°58.9	18.0	20	119°09.2	19.4	20	119°20.5	19.0	20	119°32.9	17.0
21	133°49.9	· · 14.0	21	133°59.0	· · 17.2	21	134°09.3	· · 18.5	21	134°20.7	· · 18.1	21	134°33.1	· · 16.1
22	148°50.0	13.2	22	148°59.2	16.4	22	149°09.5	17.7	22	149°20.9	17.3	22	149°33.3	15.3
23	163°50.1	12.4	23	163°59.3	15.6	23	164°09.6	16.9	23	164°21.0	16.4	23	164°33.4	14.4
SD=15.8' d=-0.8'														

15	GHA	Dec	18	GHA	Dec	21	GHA	Dec	24	GHA	Dec	27	GHA	Dec
0	178°50.2	N14°11.7	0	178°59.4	N13°14.8	0	179°09.8	N12°16.1	0	179°21.2	N11°15.6	0	179°33.6	N10°13.5
1	193°50.4	10.9	1	193°59.6	14.0	1	194°09.9	15.2	1	194°21.4	14.7	1	194°33.8	12.6
2	208°50.5	10.1	2	208°59.7	13.2	2	209°10.1	14.4	2	209°21.5	13.9	2	209°34.0	11.8
3	223°50.6	· · 09.3	3	223°59.8	· · 12.4	3	224°10.2	· · 13.6	3	224°21.7	· · 13.0	3	224°34.2	· · 10.9
4	238°50.7	08.6	4	239°00.0	11.6	4	239°10.4	12.7	4	239°21.9	12.2	4	239°34.3	10.0
5	253°50.8	07.8	5	254°00.1	10.8	5	254°10.5	11.9	5	254°22.0	11.3	5	254°34.5	09.1
6	268°51.0	N14°07.0	6	269°00.2	N13°10.0	6	269°10.7	N12°11.1	6	269°22.2	N11°10.5	6	269°34.7	N10°08.3
7	283°51.1	06.2	7	284°00.4	09.2	7	284°10.8	10.3	7	284°22.4	09.6	7	284°34.9	07.4
8	298°51.2	05.5	8	299°00.5	08.4	8	299°11.0	09.4	8	299°22.5	08.8	8	299°35.1	06.5
9	313°51.3	· · 04.7	9	314°00.7	· · 07.6	9	314°11.1	· · 08.6	9	314°22.7	· · 07.9	9	314°35.2	· · 05.6
10	328°51.4	03.9	10	329°00.8	06.8	10	329°11.3	07.8	10	329°22.9	07.1	10	329°35.4	04.8
11	343°51.6	03.1	11	344°00.9	06.0	11	344°11.4	06.9	11	344°23.0	06.2	11	344°35.6	03.9
12	358°51.7	N14°02.3	12	359°01.1	N13°05.1	12	359°11.6	N12°06.1	12	359°23.2	N11°05.3	12	359°35.8	N10°03.0
13	13°51.8	01.6	13	14°01.2	04.3	13	14°11.8	05.3	13	14°23.4	04.5	13	14°36.0	02.1
14	28°51.9	00.8	14	29°01.4	03.5	14	29°11.9	04.4	14	29°23.5	03.6	14	29°36.1	01.3
15	43°52.1	14°00.0	15	44°01.5	· · 02.7	15	44°12.1	· · 03.6	15	44°23.7	· · 02.8	15	44°36.3	10°00.4
16	58°52.2	13°59.2	16	59°01.6	01.9	16	59°12.2	02.8	16	59°23.9	01.9	16	59°36.5	09°59.5
17	73°52.3	58.4	17	74°01.8	01.1	17	74°12.4	01.9	17	74°24.0	01.1	17	74°36.7	58.6
18	88°52.4	N13°57.6	18	89°01.9	N13°00.3	18	89°12.5	N12°01.1	18	89°24.2	N11°00.2	18	89°36.9	N09°57.8
19	103°52.6	56.9	19	104°02.0	12°59.5	19	104°12.7	12°00.3	19	104°24.4	10°59.3	19	104°37.1	56.9
20	118°52.7	56.1	20	119°02.2	58.7	20	119°12.8	11°59.4	20	119°24.5	58.5	20	119°37.2	56.0
21	133°52.8	· · 55.3	21	134°02.3	· · 57.9	21	134°13.0	· · 58.6	21	134°24.7	· · 57.6	21	134°37.4	· · 55.1
22	148°52.9	54.5	22	149°02.5	57.1	22	149°13.1	57.8	22	149°24.9	56.8	22	149°37.6	54.2
23	163°53.0	53.7	23	164°02.6	56.2	23	164°13.3	56.9	23	164°25.1	55.9	23	164°37.8	53.4
SD=15.8' d=-0.8'														

16	GHA	Dec	19	GHA	Dec	22	GHA	Dec	25	GHA	Dec	28	GHA	Dec
0	178°53.2	N13°52.9	0	179°02.8	N12°55.4	0	179°13.5	N11°56.1	0	179°25.2	N10°55.1	0	179°38.0	N09°52.5
1	193°53.3	52.2	1	194°02.9	54.6	1	194°13.6	55.3	1	194°25.4	54.2	1	194°38.2	51.6
2	208°53.4	51.4	2	209°03.0	53.8	2	209°13.8	54.4	2	209°25.6	53.3	2	209°38.3	50.7
3	223°53.5	· · 50.6	3	224°03.2	· · 53.0	3	224°13.9	· · 53.6	3	224°25.7	· · 52.5	3	224°38.5	· · 49.9
4	238°53.7	49.8	4	239°03.3	52.2	4	239°14.1	52.7	4	239°25.9	51.6	4	239°38.7	49.0
5	253°53.8	49.0	5	254°03.5	51.4	5	254°14.2	51.9	5	254°26.1	50.8	5	254°38.9	48.1
6	268°53.9	N13°48.2	6	269°03.6	N12°50.6	6	269°14.4	N11°51.1	6	269°26.3	N10°49.9	6	269°39.1	N09°47.2
7	283°54.1	47.4	7	284°03.7	49.7	7	284°14.6	50.2	7	284°26.4	49.0	7	284°39.3	46.3
8	298°54.2	46.6	8	299°03.9	48.9	8	299°14.7	49.4	8	299°26.6	48.2	8	299°39.4	45.4
9	313°54.3	· · 45.9	9	314°04.0	· · 48.1	9	314°14.9	· · 48.5	9	314°26.8	· · 47.3	9	314°39.6	· · 44.6
10	328°54.4	45.1	10	329°04.2	47.3	10	329°15.0	47.7	10	329°26.9	46.5	10	329°39.8	43.7
11	343°54.6	44.3	11	344°04.3	46.5	11	344°15.2	46.9	11	344°27.1	45.6	11	344°40.0	42.8
12	358°54.7	N13°43.5	12	359°04.5	N12°45.7	12	359°15.3	N11°46.0	12	359°27.3	N10°44.7	12	359°40.2	N09°41.9
13	13°54.8	42.7	13	14°04.6	44.9	13	14°15.5	45.2	13	14°27.5	43.9	13	14°40.4	41.0
14	28°54.9	41.9	14	29°04.7	44.0	14	29°15.7	44.3	14	29°27.6	43.0	14	29°40.6	40.2
15	43°55.1	· · 41.1	15	44°04.9	· · 43.2	15	44°15.8	· · 43.5	15	44°27.8	· · 42.1	15	44°40.7	· · 39.3
16	58°55.2	40.3	16	59°05.0	42.4	16	59°16.0	42.7	16	59°28.0	41.3	16	59°40.9	38.4
17	73°55.3	39.5	17	74°05.2	41.6	17	74°16.1	41.8	17	74°28.2	40.4	17	74°41.1	37.5
18	88°55.5	N13°38.7	18	89°05.3	N12°40.8	18	89°16.3	N11°41.0	18	89°28.3	N10°39.6	18	89°41.3	N09°36.6
19	103°55.6	38.0	19	104°05.5	39.9	19	104°16.5	40.1	19	104°28.5	38.7	19	104°41.5	35.7
20	118°55.7	37.2	20	119°05.6	39.1	20	119°16.6	39.3	20	119°28.7	37.8	20	119°41.7	34.9
21	133°55.8	· · 36.4	21	134°05.8	· · 38.3	21	134°16.8	· · 38.5	21	134°28.9	· · 37.0	21	134°41.9	· · 34.0
22	148°56.0	35.6	22	149°05.9	37.5	22	149°16.9	37.6	22	149°29.0	36.1	22	149°42.0	33.1
23	163°56.1	34.8	23	164°06.1	36.7	23	164°17.1	36.8	23	164°29.2	35.2	23	164°42.2	32.2
SD=15.8' d=-0.8'														

29	GHA	Dec	01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec
0	179°42.4	N09°31.3	0	179°56.3	N08°26.9	0	180°10.8	N07°21.3	0	180°25.9	N06°14.6	0	180°41.4	N05°07.0
1	194°42.6	30.4	1	194°56.5	26.0	1	195°11.0	20.4	1	195°26.1	13.7	1	195°41.6	06.0
2	209°42.8	29.5	2	209°56.7	25.1	2	210°11.2	19.5	2	210°26.3	12.7	2	210°41.8	05.1
3	224°43.0	· · 28.7	3	224°56.9	· · 24.2	3	225°11.4	· · 18.6	3	225°26.5	· · 11.8	3	225°42.1	· · 04.1
4	239°43.2	27.8	4	239°57.1	23.3	4	240°11.7	17.6	4	240°26.8	10.9	4	240°42.3	03.2
5	254°43.4	26.9	5	254°57.3	22.4	5	255°11.9	16.7	5	255°27.0	09.9	5	255°42.5	02.2
6	269°43.5	N09°26.0	6	269°57.5	N08°21.5	6	270°12.1	N07°15.8	6	270°27.2	N06°09.0	6	270°42.7	N05°01.3
7	284°43.7	25.1	7	284°57.7	20.6	7	285°12.3	14.9	7	285°27.4	08.1	7	285°42.9	05°00.3
8	299°43.9	24.2	8	299°57.9	19.7	8	300°12.5	14.0	8	300°27.6	07.1	8	300°43.1	04°59.4
9	314°44.1	· · 23.3	9	314°58.1	· · 18.8	9	315°12.7	· · 13.0	9	315°27.8	· · 06.2	9	315°43.4	· · 58.4
10	329°44.3	22.5	10	329°58.3	17.9	10	330°12.9	12.1	10	330°28.0	05.3	10	330°43.6	57.5
11	344°44.5	21.6	11	344°58.5	17.0	11	345°13.1	11.2	11	345°28.2	04.3	11	345°43.8	56.6
12	359°44.7	N09°20.7	12	359°58.7	N08°16.1	12	0°13.3	N07°10.3	12	0°28.5	N06°03.4	12	0°44.0	N04°55.6
13	14°44.9	19.8	13	14°58.9	15.2	13	15°13.5	09.3	13	15°28.7	02.5	13	15°44.2	54.7
14	29°45.1	18.9	14	29°59.1	14.3	14	30°13.7	08.4	14	30°28.9	01.5	14	30°44.4	53.7
15	44°45.2	· · 18.0	15	44°59.3	· · 13.4	15	45°13.9	· · 07.5	15	45°29.1	06°00.6	15	45°44.7	· · 52.8
16	59°45.4	17.1	16	59°59.5	12.4	16	60°14.1	06.6	16	60°29.3	05°59.7	16	60°44.9	51.8
17	74°45.6	16.2	17	74°59.7	11.5	17	75°14.3	05.7	17	75°29.5	58.7	17	75°45.1	50.9
18	89°45.8	N09°15.3	18	89°59.9	N08°10.6	18	90°14.5	N07°04.7	18	90°29.7	N05°57.8	18	90°45.3	N04°49.9
19	104°46.0	14.4	19	105°00.1	09.7	19	105°14.8	03.8	19	105°30.0	56.8	19	105°45.5	49.0
20	119°46.2	13.6	20	120°00.3	08.8	20	120°15.0	02.9	20	120°30.2	55.9	20	120°45.8	48.0
21	134°46.4	· · 12.7	21	135°00.5	· · 07.9	21	135°15.2	· · 02.0	21	135°30.4	· · 55.0	21	135°46.0	· · 47.1
22	149°46.6	11.8	22	150°00.7	07.0	22	150°15.4	01.0	22	150°30.6	54.0	22	150°46.2	46.1
23	164°46.8	10.9	23	165°00.9	06.1	23	165°15.6	00.1	23	165°30.8	53.1	23	165°46.4	45.2
SD=15.8' d=-0.9'														

30	GHA	Dec	02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec
0	179°47.0	N09°10.0	0	180°01.1	N08°05.2	0	180°15.8	N06°59.2	0	180°31.0	N05°52.2	0	180°46.6	N04°44.2
1	194°47.1	09.1	1	195°01.3	04.3	1	195°16.0	58.3	1	195°31.2	51.2	1	195°46.9	43.3
2	209°47.3	08.2	2	210°01.5	03.4	2	210°16.2	57.3	2	210°31.5	50.3	2	210°47.1	42.3
3	224°47.5	· · 07.3	3	225°01.7	· · 02.5	3	225°16.4	· · 56.4	3	225°31.7	· · 49.3	3	225°47.3	· · 41.4
4	239°47.7	06.4	4	240°01.9	01.5	4	240°16.6	55.5	4	240°31.9	48.4	4	240°47.5	40.4
5	254°47.9	05.5	5	255°02.1	08°00.6	5	255°16.8	54.6	5	255°32.1	47.5	5	255°47.7	39.5
6	269°48.1	N09°04.6	6	270°02.3	N07°59.7	6	270°17.1	N06°53.6	6	270°32.3	N05°46.5	6	270°47.9	N04°38.5
7	284°48.3	03.7	7	285°02.5	58.8	7	285°17.3	52.7	7	285°32.5	45.6	7	285°48.2	37.6
8	299°48.5	02.9	8	300°02.7	57.9	8	300°17.5	51.8	8	300°32.7	44.7	8	300°48.4	36.6
9	314°48.7	· · 02.0	9	315°02.9	· · 57.0	9	315°17.7	· · 50.9	9	315°33.0	· · 43.7	9	315°48.6	· · 35.7
10	329°48.9	01.1	10	330°03.1	56.1	10	330°17.9	49.9	10	330°33.2	42.8	10	330°48.8	34.7
11	344°49.1	09°00.2	11	345°03.3	55.2	11	345°18.1	49.0	11	345°33.4	41.8	11	345°49.0	33.8
12	359°49.3	N08°59.3	12	0°03.5	N07°54.3	12	0°18.3	N06°48.1	12	0°33.6	N05°40.9	12	0°49.3	N04°32.8
13	14°49.5	58.4	13	15°03.7	53.4	13	15°18.5	47.2	13	15°33.8	40.0	13	15°49.5	31.9
14	29°49.6	57.5	14	30°03.9	52.4	14	30°18.7	46.2	14	30°34.0	39.0	14	30°49.7	30.9
15	44°49.8	· · 56.6	15	45°04.1	· · 51.5	15	45°18.9	· · 45.3	15	45°34.3	· · 38.1	15	45°49.9	· · 30.0
16	59°50.0	55.7	16	60°04.3	50.6	16	60°19.1	44.4	16	60°34.5	37.1	16	60°50.1	29.0
17	74°50.2	54.8	17	75°04.5	49.7	17	75°19.4	43.5	17	75°34.7	36.2	17	75°50.4	28.1
18	89°50.4	N08°53.9	18	90°04.7	N07°48.8	18	90°19.6	N06°42.5	18	90°34.9	N05°35.3	18	90°50.6	N04°27.1
19	104°50.6	53.0	19	105°04.9	47.9	19	105°19.8	41.6	19	105°35.1	34.3	19	105°50.8	26.2
20	119°50.8	52.1	20	120°05.1	47.0	20	120°20.0	40.7	20	120°35.3	33.4	20	120°51.0	25.2
21	134°51.0	· · 51.2	21	135°05.3	· · 46.1	21	135°20.2	· · 39.7	21	135°35.5	· · 32.4	21	135°51.2	· · 24.3
22	149°51.2	50.3	22	150°05.5	45.1	22	150°20.4	38.8	22	150°35.8	31.5	22	150°51.5	23.3
23	164°51.4	49.4	23	165°05.7	44.2	23	165°20.6	37.9	23	165°36.0	30.6	23	165°51.7	22.4
SD=15.8' d=-0.9'														

31	GHA	Dec	03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	12	GHA	Dec
0	179°51.6	N08°48.5	0	180°05.9	N07°43.3	0	180°20.8	N06°37.0	0	180°36.2	N05°29.6	0	180°51.9	N04°21.4
1	194°51.8	47.6	1	195°06.1	42.4	1	195°21.0	36.0	1	195°36.4	28.7	1	195°52.1	20.5
2	209°52.0	46.7	2	210°06.3	41.5	2	210°21.2	35.1	2	210°36.6	27.7	2	210°52.3	19.5
3	224°52.2	· · 45.8	3	225°06.5	· · 40.6	3	225°21.5	· · 34.2	3	225°36.8	· · 26.8	3	225°52.6	· · 18.6
4	239°52.4	44.9	4	240°06.7	39.7	4	240°21.7	33.2	4	240°37.1	25.8	4	240°52.8	17.6
5	254°52.6	44.0	5	255°06.9	38.7	5	255°21.9	32.3	5	255°37.3	24.9	5	255°53.0	16.7
6	269°52.7	N08°43.1	6	270°07.1	N07°37.8	6	270°22.1	N06°31.4	6	270°37.5	N05°24.0	6	270°53.2	N04°15.7
7	284°52.9	42.2	7	285°07.3	36.9	7	285°22.3	30.5	7	285°37.7	23.0	7	285°53.4	14.7
8	299°53.1	41.3	8	300°07.5	36.0	8	300°22.5	29.5	8	300°37.9	22.1	8	300°53.7	13.8
9	314°53.3	· · 40.4	9	315°07.7	· · 35.1	9	315°22.7	· · 28.6	9	315°38.1	· · 21.1	9	315°53.9	· · 12.8
10	329°53.5	39.5	10	330°08.0	34.2	10	330°22.9	27.7	10	330°38.4	20.2	10	330°54.1	11.9
11	344°53.7	38.6	11	345°08.2	33.2	11	345°23.1	26.7	11	345°38.6	19.2	11	345°54.3	10.9
12	359°53.9	N08°37.7	12	0°08.4	N07°32.3	12	0°23.4	N06°25.8	12	0°38.8	N05°18.3	12	0°54.5	N04°10.0
13	14°54.1	36.8	13	15°08.6	31.4	13	15°23.6	24.9	13	15°39.0	17.4	13	15°54.8	09.0
14	29°54.3	35.9	14	30°08.8	30.5	14	30°23.8	23.9	14	30°39.2	16.4	14	30°55.0	08.1
15	44°54.5	· · 35.0	15	45°09.0	· · 29.6	15	45°24.0	· · 23.0	15	45°39.4	· · 15.5	15	45°55.2	· · 07.1
16	59°54.7	34.1	16	60°09.2	28.7	16	60°24.2	22.1	16	60°39.7	14.5	16	60°55.4	06.2
17	74°54.9	33.2	17	75°09.4	27.7	17	75°24.4	21.1	17	75°39.9	13.6	17	75°55.6	05.2
18	89°55.1	N08°32.3	18	90°09.6	N07°26.8	18	90°24.6	N06°20.2	18	90°40.1	N05°12.6	18	90°55.9	N04°04.3
19	104°55.3	31.4	19	105°09.8	25.9	19	105°24.8	19.3	19	105°40.3	11.7	19	105°56.1	03.3
20	119°55.5	30.5	20	120°10.0	25.0	20	120°25.1	18.3	20	120°40.5	10.7	20	120°56.3	02.3
21	134°55.7	· · 29.6	21	135°10.2	· · 24.1	21	135°25.3	· · 17.4	21	135°40.7	· · 09.8	21	135°56.5	· · 01.4
22	149°55.9	28.7	22	150°10.4	23.2	22	150°25.5	16.5	22	150°41.0	08.9	22	150°56.7	04°00.4
23	164°56.1	27.8	23	165°10.6	22.2	23	165°25.7	15.5	23	165°41.2	07.9	23	165°57.0	03°59.5
SD=15.8' d=-0.9'														

13	GHA	Dec	16	GHA	Dec	19	GHA	Dec	22	GHA	Dec	25	GHA	Dec
0	180°57.2	N03°58.5	0	181°13.2	N02°49.4	0	181°29.2	N01°39.9	0	181°45.2	N00°30.0	0	182°01.0	S00°40.1
1	195°57.4	57.6	1	196°13.4	48.5	1	196°29.4	38.9	1	196°45.4	29.0	1	197°01.2	41.0
2	210°57.6	56.6	2	211°13.6	47.5	2	211°29.6	37.9	2	211°45.6	28.0	2	212°01.4	42.0
3	225°57.9	· · 55.7	3	226°13.8	· · 46.6	3	226°29.9	· · 37.0	3	226°45.9	· · 27.1	3	227°01.7	· · 43.0
4	240°58.1	54.7	4	241°14.1	45.6	4	241°30.1	36.0	4	241°46.1	26.1	4	242°01.9	44.0
5	255°58.3	53.7	5	256°14.3	44.6	5	256°30.3	35.0	5	256°46.3	25.1	5	257°02.1	44.9
6	270°58.5	N03°52.8	6	271°14.5	N02°43.7	6	271°30.5	N01°34.1	6	271°46.5	N00°24.2	6	272°02.3	S00°45.9
7	285°58.7	51.8	7	286°14.7	42.7	7	286°30.8	33.7	7	286°46.7	23.2	7	287°02.5	46.9
8	300°59.0	50.9	8	301°14.9	41.7	8	301°31.0	32.1	8	301°47.0	22.2	8	302°02.8	47.9
9	315°59.2	· · 49.9	9	316°15.2	· · 40.8	9	316°31.2	· · 31.2	9	316°47.2	· · 21.2	9	317°03.0	· · 48.8
10	330°59.4	49.0	10	331°15.4	39.8	10	331°31.4	30.2	10	331°47.4	20.3	10	332°03.2	49.8
11	345°59.6	48.0	11	346°15.6	38.8	11	346°31.6	29.2	11	346°47.6	19.3	11	347°03.4	50.8
12	0°59.8	N03°47.0	12	1°15.8	N02°37.9	12	1°31.9	N01°28.2	12	1°47.8	N00°18.3	12	2°03.6	S00°51.7
13	16°00.1	46.1	13	16°16.1	36.9	13	16°32.1	27.3	13	16°48.1	17.3	13	17°03.8	52.7
14	31°00.3	45.1	14	31°16.3	35.9	14	31°32.3	26.3	14	31°48.3	16.4	14	32°04.1	53.7
15	46°00.5	· · 44.2	15	46°16.5	· · 35.0	15	46°32.5	· · 25.3	15	46°48.5	· · 15.4	15	47°04.3	· · 54.7
16	61°00.7	43.2	16	61°16.7	34.0	16	61°32.8	24.4	16	61°48.7	14.4	16	62°04.5	55.6
17	76°00.9	42.3	17	76°16.9	33.1	17	76°33.0	23.4	17	76°48.9	13.5	17	77°04.7	56.6
18	91°01.2	N03°41.3	18	91°17.2	N02°32.1	18	91°33.2	N01°22.4	18	91°49.2	N00°12.5	18	92°04.9	S00°57.6
19	106°01.4	40.3	19	106°17.4	31.1	19	106°33.4	21.5	19	106°49.4	11.5	19	107°05.1	58.6
20	121°01.6	39.4	20	121°17.6	30.2	20	121°33.7	20.5	20	121°49.6	10.5	20	122°05.4	00°59.5
21	136°01.8	· · 38.4	21	136°17.8	· · 29.2	21	136°33.9	· · 19.5	21	136°49.8	· · 09.6	21	137°05.6	01°00.5
22	151°02.1	37.5	22	151°18.1	28.2	22	151°34.1	18.5	22	151°50.1	08.6	22	152°05.8	01.5
23	166°02.3	36.5	23	166°18.3	27.3	23	166°34.3	17.6	23	166°50.3	07.6	23	167°06.0	02.5
SD=15.9' d=-1.0'														

14	GHA	Dec	17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec
0	181°02.5	N03°35.6	0	181°18.5	N02°26.3	0	181°34.5	N01°16.6	0	181°50.5	N00°06.6	0	182°06.2	S01°03.4
1	196°02.7	34.6	1	196°18.7	25.3	1	196°34.8	15.6	1	196°50.7	05.7	1	197°06.4	04.4
2	211°02.9	33.6	2	211°19.0	24.4	2	211°35.0	14.7	2	211°50.9	04.7	2	212°06.7	05.4
3	226°03.2	· · 32.7	3	226°19.2	· · 23.4	3	226°35.2	· · 13.7	3	226°51.2	· · 03.7	3	227°06.9	· · 06.3
4	241°03.4	31.7	4	241°19.4	22.4	4	241°35.4	12.7	4	241°51.4	02.8	4	242°07.1	07.3
5	256°03.6	30.8	5	256°19.6	21.5	5	256°35.7	11.8	5	256°51.6	01.8	5	257°07.3	08.3
6	271°03.8	N03°29.8	6	271°19.8	N02°20.5	6	271°35.9	N01°10.8	6	271°51.8	N00°00.8	6	272°07.5	S01°09.3
7	286°04.0	28.8	7	286°20.1	19.5	7	286°36.1	09.8	7	286°52.0	S00°00.2	7	287°07.7	10.2
8	301°04.3	27.9	8	301°20.3	18.6	8	301°36.3	08.8	8	301°52.3	01.1	8	302°07.9	11.2
9	316°04.5	· · 26.9	9	316°20.5	· · 17.6	9	316°36.5	· · 07.9	9	316°52.5	· · 02.1	9	317°08.2	· · 12.2
10	331°04.7	26.0	10	331°20.7	16.6	10	331°36.8	06.9	10	331°52.7	03.1	10	332°08.4	13.2
11	346°04.9	25.0	11	346°21.0	15.7	11	346°37.0	05.9	11	346°52.9	04.1	11	347°08.6	14.1
12	1°05.2	N03°24.1	12	1°21.2	N02°14.7	12	1°37.2	N01°05.0	12	1°53.1	S00°05.0	12	2°08.8	S01°15.1
13	16°05.4	23.1	13	16°21.4	13.7	13	16°37.4	04.0	13	16°53.4	06.0	13	17°09.0	16.1
14	31°05.6	22.1	14	31°21.6	12.8	14	31°37.7	03.0	14	31°53.6	07.0	14	32°09.2	17.1
15	46°05.8	· · 21.2	15	46°21.8	· · 11.8	15	46°37.9	· · 02.0	15	46°53.8	· · 07.9	15	47°09.5	· · 18.0
16	61°06.0	20.2	16	61°22.1	10.8	16	61°38.1	01.1	16	61°54.0	08.9	16	62°09.7	19.0
17	76°06.3	19.3	17	76°22.3	09.9	17	76°38.3	01°00.1	17	76°54.2	09.9	17	77°09.9	20.0
18	91°06.5	N03°18.3	18	91°22.5	N02°08.9	18	91°38.5	N00°59.1	18	91°54.4	S00°10.9	18	92°10.1	S01°20.9
19	106°06.7	17.3	19	106°22.7	07.9	19	106°38.8	58.2	19	106°54.7	11.8	19	107°10.3	21.9
20	121°06.9	16.4	20	121°23.0	07.0	20	121°39.0	57.2	20	121°54.9	12.8	20	122°10.5	22.9
21	136°07.2	· · 15.4	21	136°23.2	· · 06.0	21	136°39.2	· · 56.2	21	136°55.1	· · 13.8	21	137°10.7	· · 23.9
22	151°07.4	14.5	22	151°23.4	05.0	22	151°39.4	55.3	22	151°55.3	14.8	22	152°11.0	24.8
23	166°07.6	13.5	23	166°23.6	04.1	23	166°39.7	54.3	23	166°55.5	15.7	23	167°11.2	25.8
SD=15.9' d=-1.0'														

15	GHA	Dec	18	GHA	Dec	21	GHA	Dec	24	GHA	Dec	27	GHA	Dec
0	181°07.8	N03°12.5	0	181°23.9	N02°03.1	0	181°39.9	N00°53.3	0	181°55.8	S00°16.7	0	182°11.4	S01°26.8
1	196°08.0	11.6	1	196°24.1	02.1	1	196°40.1	52.3	1	196°56.0	17.7	1	197°11.6	27.8
2	211°08.3	10.6	2	211°24.3	01.2	2	211°40.3	51.4	2	211°56.2	18.7	2	212°11.8	28.7
3	226°08.5	· · 09.6	3	226°24.5	02°00.2	3	226°40.5	· · 50.4	3	226°56.4	· · 19.6	3	227°12.0	· · 29.7
4	241°08.7	08.7	4	241°24.7	01°59.2	4	241°40.8	49.4	4	241°56.6	20.6	4	242°12.2	30.7
5	256°08.9	07.7	5	256°25.0	58.3	5	256°41.0	48.5	5	256°56.9	21.6	5	257°12.5	31.6
6	271°09.2	N03°06.8	6	271°25.2	N01°57.3	6	271°41.2	N00°47.5	6	271°57.1	S00°22.5	6	272°12.7	S01°32.6
7	286°09.4	05.8	7	286°25.4	56.3	7	286°41.4	46.5	7	286°57.3	23.5	7	287°12.9	33.6
8	301°09.6	04.8	8	301°25.6	55.4	8	301°41.6	45.5	8	301°57.5	24.5	8	302°13.1	34.6
9	316°09.8	· · 03.9	9	316°25.9	· · 54.4	9	316°41.9	· · 44.6	9	316°57.7	· · 25.5	9	317°13.3	· · 35.5
10	331°10.0	02.9	10	331°26.1	53.4	10	331°42.1	43.6	10	331°58.0	26.4	10	332°13.5	36.5
11	346°10.3	02.0	11	346°26.3	52.5	11	346°42.3	42.6	11	346°58.2	27.4	11	347°13.7	37.5
12	1°10.5	N03°01.0	12	1°26.5	N01°51.5	12	1°42.5	N00°41.7	12	1°58.4	S00°28.4	12	2°14.0	S01°38.5
13	16°10.7	03°00.0	13	16°26.8	50.5	13	16°42.8	40.7	13	16°58.6	29.4	13	17°14.2	39.4
14	31°10.9	02°59.1	14	31°27.0	49.6	14	31°43.0	39.7	14	31°58.8	30.3	14	32°14.4	40.4
15	46°11.2	· · 58.1	15	46°27.2	· · 48.6	15	46°43.2	· · 38.7	15	46°59.0	· · 31.3	15	47°14.6	· · 41.4
16	61°11.4	57.1	16	61°27.4	47.6	16	61°43.4	37.8	16	61°59.3	32.3	16	62°14.8	42.3
17	76°11.6	56.2	17	76°27.6	46.7	17	76°43.6	36.8	17	76°59.5	33.3	17	77°15.0	43.3
18	91°11.8	N02°55.2	18	91°27.9	N01°45.7	18	91°43.9	N00°35.8	18	91°59.7	S00°34.2	18	92°15.2	S01°44.3
19	106°12.0	54.3	19	106°28.1	44.7	19	106°44.1	34.8	19	106°59.9	35.2	19	107°15.5	45.3
20	121°12.3	53.3	20	121°28.3	43.8	20	121°44.3	33.9	20	122°00.1	36.2	20	122°15.7	46.2
21	136°12.5	· · 52.3	21	136°28.5	· · 42.8	21	136°44.5	· · 32.9	21	137°00.4	· · 37.1	21	137°15.9	· · 47.2
22	151°12.7	51.4	22	151°28.8	41.8	22	151°44.7	31.9	22	152°00.6	38.1	22	152°16.1	48.2
23	166°12.9	50.4	23	166°29.0	40.8	23	166°45.0	31.0	23	167°00.8	39.1	23	167°16.3	49.2
SD=15.9' d=-1.0'														

28	GHA	Dec	01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec
0	182°16.5	S01°50.1	0	182°31.5	S03°00.0	0	182°45.9	S04°09.7	0	182°59.5	S05°18.9	0	183°12.2	S06°27.6
1	197°16.7	51.1	1	197°31.7	01.0	1	197°46.1	10.7	1	197°59.7	19.9	1	198°12.4	28.5
2	212°16.9	52.1	2	212°32.0	02.0	2	212°46.3	11.6	2	212°59.9	20.8	2	213°12.5	29.5
3	227°17.2	· · 53.0	3	227°32.2	· · 03.0	3	227°46.5	· · 12.6	3	228°00.1	· · 21.8	3	228°12.7	· · 30.4
4	242°17.4	54.0	4	242°32.4	03.9	4	242°46.7	13.6	4	243°00.3	22.8	4	243°12.9	31.4
5	257°17.6	55.0	5	257°32.6	04.9	5	257°46.9	14.5	5	258°00.4	23.7	5	258°13.0	32.3
6	272°17.8	S01°56.0	6	272°32.8	S03°05.9	6	272°47.1	S04°15.5	6	273°00.6	S05°24.7	6	273°13.2	S06°33.2
7	287°18.0	56.9	7	287°33.0	06.8	7	287°47.3	16.4	7	288°00.8	25.6	7	288°13.4	34.2
8	302°18.2	57.9	8	302°33.2	07.8	8	302°47.5	17.4	8	303°01.0	26.6	8	303°13.5	35.1
9	317°18.4	· · 58.9	9	317°33.4	· · 08.8	9	317°47.7	· · 18.4	9	318°01.2	· · 27.5	9	318°13.7	· · 36.1
10	332°18.6	01°59.8	10	332°33.6	09.7	10	332°47.9	19.3	10	333°01.3	28.5	10	333°13.9	37.0
11	347°18.8	02°00.8	11	347°33.8	10.7	11	347°48.1	20.3	11	348°01.5	29.5	11	348°14.0	38.0
12	2°19.1	S02°01.8	12	2°34.0	S03°11.7	12	2°48.3	S04°21.3	12	3°01.7	S05°30.4	12	3°14.2	S06°38.9
13	17°19.3	02.8	13	17°34.2	12.6	13	17°48.4	22.2	13	18°01.9	31.4	13	18°14.4	39.9
14	32°19.5	03.7	14	32°34.4	13.6	14	32°48.6	23.2	14	33°02.1	32.3	14	33°14.5	40.8
15	47°19.7	· · 04.7	15	47°34.6	· · 14.6	15	47°48.8	· · 24.2	15	48°02.2	· · 33.3	15	48°14.7	· · 41.8
16	62°19.9	05.7	16	62°34.8	15.6	16	62°49.0	25.1	16	63°02.4	34.2	16	63°14.9	42.7
17	77°20.1	06.7	17	77°35.0	16.5	17	77°49.2	26.1	17	78°02.6	35.2	17	78°15.0	43.7
18	92°20.3	S02°07.6	18	92°35.2	S03°17.5	18	92°49.4	S04°27.0	18	93°02.8	S05°36.1	18	93°15.2	S06°44.6
19	107°20.5	08.6	19	107°35.4	18.5	19	107°49.6	28.0	19	108°03.0	37.1	19	108°15.4	45.6
20	122°20.7	09.6	20	122°35.6	19.4	20	122°49.8	29.0	20	123°03.1	38.1	20	123°15.5	46.5
21	137°21.0	· · 10.5	21	137°35.8	· · 20.4	21	137°50.0	· · 29.9	21	138°03.3	· · 39.0	21	138°15.7	· · 47.4
22	152°21.2	11.5	22	152°36.0	21.4	22	152°50.2	30.9	22	153°03.5	40.0	22	153°15.9	48.4
23	167°21.4	12.5	23	167°36.2	22.3	23	167°50.4	31.9	23	168°03.7	40.9	23	168°16.0	49.3
SD=16.0'		d = 1.0'	SD=16.0'		d = 1.0'	SD=16.0'		d = 1.0'	SD=16.0'		d = 1.0'	SD=16.0'		d = 0.9'

29	GHA	Dec	02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec
0	182°21.6	S02°13.5	0	182°36.4	S03°23.3	0	182°50.6	S04°32.8	0	183°03.9	S05°41.9	0	183°16.2	S06°50.3
1	197°21.8	14.4	1	197°36.6	24.3	1	197°50.7	33.8	1	198°04.0	42.8	1	198°16.3	51.2
2	212°22.0	15.4	2	212°36.8	25.2	2	212°50.9	34.8	2	213°04.2	43.8	2	213°16.5	52.2
3	227°22.2	· · 16.4	3	227°37.0	· · 26.2	3	227°51.1	· · 35.7	3	228°04.4	· · 44.7	3	228°16.7	· · 53.1
4	242°22.4	17.3	4	242°37.2	27.2	4	242°51.3	36.7	4	243°04.6	45.7	4	243°16.8	54.1
5	257°22.6	18.3	5	257°37.4	28.1	5	257°51.5	37.6	5	258°04.7	46.6	5	258°17.0	55.0
6	272°22.8	S02°19.3	6	272°37.6	S03°29.1	6	272°51.7	S04°38.6	6	273°04.9	S05°47.6	6	273°17.2	S06°55.9
7	287°23.1	20.3	7	287°37.8	30.1	7	287°51.9	39.6	7	288°05.1	48.6	7	288°17.3	56.9
8	302°23.3	21.2	8	302°38.0	31.0	8	302°52.1	40.5	8	303°05.3	49.5	8	303°17.5	57.8
9	317°23.5	· · 22.2	9	317°38.2	· · 32.0	9	317°52.3	· · 41.5	9	318°05.5	· · 50.5	9	318°17.6	· · 58.8
10	332°23.7	23.2	10	332°38.4	33.0	10	332°52.5	42.4	10	333°05.6	51.4	10	333°17.8	06°59.7
11	347°23.9	24.1	11	347°38.6	33.9	11	347°52.6	43.4	11	348°05.8	52.4	11	348°18.0	07°00.7
12	2°24.1	S02°25.1	12	2°38.8	S03°34.9	12	2°52.8	S04°44.4	12	3°06.0	S05°53.3	12	3°18.1	S07°01.6
13	17°24.3	26.1	13	17°39.0	35.9	13	17°53.0	45.3	13	18°06.2	54.3	13	18°18.3	02.5
14	32°24.5	27.1	14	32°39.2	36.9	14	32°53.2	46.3	14	33°06.3	55.2	14	33°18.5	03.5
15	47°24.7	· · 28.0	15	47°39.4	· · 37.8	15	47°53.4	· · 47.3	15	48°06.5	· · 56.2	15	48°18.6	· · 04.4
16	62°24.9	29.0	16	62°39.6	38.8	16	62°53.6	48.2	16	63°06.7	57.1	16	63°18.8	05.4
17	77°25.1	30.0	17	77°39.8	39.8	17	77°53.8	49.2	17	78°06.9	58.1	17	78°18.9	06.3
18	92°25.3	S02°30.9	18	92°40.0	S03°40.7	18	92°54.0	S04°50.1	18	93°07.0	S05°59.0	18	93°19.1	S07°07.3
19	107°25.6	31.9	19	107°40.2	41.7	19	107°54.2	51.1	19	108°07.2	06°00.0	19	108°19.3	08.2
20	122°25.8	32.9	20	122°40.4	42.7	20	122°54.3	52.1	20	123°07.4	00.9	20	123°19.4	09.1
21	137°26.0	· · 33.9	21	137°40.6	· · 43.6	21	137°54.5	· · 53.0	21	138°07.6	· · 01.9	21	138°19.6	· · 10.1
22	152°26.2	34.8	22	152°40.8	44.6	22	152°54.7	54.0	22	153°07.7	02.9	22	153°19.7	11.0
23	167°26.4	35.8	23	167°41.0	45.6	23	167°54.9	54.9	23	168°07.9	03.8	23	168°19.9	12.0
SD=16.0'		d = 1.0'	SD=16.0'		d = 1.0'	SD=16.0'		d = 1.0'	SD=16.0'		d = 1.0'	SD=16.0'		d = 0.9'

30	GHA	Dec	03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	12	GHA	Dec
0	182°26.6	S02°36.8	0	182°41.2	S03°46.5	0	182°55.1	S04°55.9	0	183°08.1	S06°04.8	0	183°20.1	S07°12.9
1	197°26.8	37.7	1	197°41.4	47.5	1	197°55.3	56.9	1	198°08.3	05.7	1	198°20.2	13.9
2	212°27.0	38.7	2	212°41.6	48.5	2	212°55.5	57.8	2	213°08.4	06.7	2	213°20.4	14.8
3	227°27.2	· · 39.7	3	227°41.8	· · 49.4	3	227°55.7	· · 58.8	3	228°08.6	· · 07.6	3	228°20.5	· · 15.7
4	242°27.4	40.6	4	242°42.0	50.4	4	242°55.8	04°59.4	4	243°08.8	08.6	4	243°20.7	16.7
5	257°27.6	41.6	5	257°42.2	51.4	5	257°56.0	05°00.7	5	258°08.9	09.5	5	258°20.8	17.6
6	272°27.8	S02°42.6	6	272°42.4	S03°52.3	6	272°56.2	S05°01.7	6	273°09.1	S06°10.5	6	273°21.0	S07°18.6
7	287°28.0	43.6	7	287°42.6	53.3	7	287°56.4	02.6	7	288°09.3	11.4	7	288°21.2	19.5
8	302°28.3	44.5	8	302°42.8	54.3	8	302°56.6	03.6	8	303°09.5	12.4	8	303°21.3	20.4
9	317°28.5	· · 45.5	9	317°43.0	· · 55.2	9	317°56.8	· · 04.5	9	318°09.6	· · 13.3	9	318°21.5	· · 21.4
10	332°28.7	46.5	10	332°43.2	56.2	10	332°57.0	05.5	10	333°09.8	14.3	10	333°21.6	22.3
11	347°28.9	47.4	11	347°43.4	57.1	11	347°57.1	06.5	11	348°10.0	15.2	11	348°21.8	23.2
12	2°29.1	S02°48.4	12	2°43.6	S03°58.1	12	2°57.3	S05°07.4	12	3°10.1	S06°16.2	12	3°21.9	S07°24.2
13	17°29.3	49.4	13	17°43.8	03°59.1	13	17°57.5	08.4	13	18°10.3	17.1	13	18°22.1	25.1
14	32°29.5	50.4	14	32°44.0	04°00.0	14	32°57.7	09.3	14	33°10.5	18.1	14	33°22.3	26.1
15	47°29.7	· · 51.3	15	47°44.2	· · 01.0	15	47°57.9	· · 10.3	15	48°10.7	· · 19.0	15	48°22.4	· · 27.0
16	62°29.9	52.3	16	62°44.4	02.0	16	62°58.1	11.3	16	63°10.8	20.0	16	63°22.6	27.9
17	77°30.1	53.3	17	77°44.6	02.9	17	77°58.2	12.2	17	78°11.0	20.9	17	78°22.7	28.9
18	92°30.3	S02°54.2	18	92°44.8	S04°03.9	18	92°58.4	S05°13.2	18	93°11.2	S06°21.9	18	93°22.9	S07°29.8
19	107°30.5	55.2	19	107°45.0	04.9	19	107°58.6	14.1	19	108°11.3	22.8	19	108°23.0	30.8
20	122°30.7	56.2	20	122°45.2	05.8	20	122°58.8	15.1	20	123°11.5	23.8	20	123°23.2	31.7
21	137°30.9	· · 57.1	21	137°45.3	· · 06.8	21	137°59.0	· · 16.0	21	138°11.7	· · 24.7	21	138°23.3	· · 32.6
22	152°31.1	58.1	22	152°45.5	07.8	22	152°59.2	17.0	22	153°11.8	25.7	22	153°23.5	33.6
23	167°31.3	59.1	23	167°45.7	08.7	23	167°59.3	18.0	23	168°12.0	26.6	23	168°23.6	34.5
SD=16.0'		d = 1.0'	SD=16.0'		d = 1.0'	SD=16.0'		d = 1.0'	SD=16.0'		d = 1.0'	SD=16.0'		d = 0.9'

13	GHA	Dec	16	GHA	Dec	19	GHA	Dec	22	GHA	Dec	25	GHA	Dec
0	183°23.8	S07°35.4	0	183°34.2	S08°42.4	0	183°43.4	S09°48.2	0	183°51.2	S10°52.8	0	183°57.6	S11°55.8
1	198°23.9	36.4	1	198°34.4	43.3	1	198°43.5	49.1	1	198°51.3	53.7	1	198°57.6	56.7
2	213°24.1	37.3	2	213°34.5	44.2	2	213°43.6	50.0	2	213°51.4	54.5	2	213°57.7	57.6
3	228°24.3	· · 38.3	3	228°34.6	· · 45.2	3	228°43.8	· · 50.9	3	228°51.5	· · 55.4	3	228°57.8	· · 58.4
4	243°24.4	39.2	4	243°34.8	46.1	4	243°43.9	51.8	4	243°51.6	56.3	4	243°57.9	11°59.3
5	258°24.6	40.1	5	258°34.9	47.0	5	258°44.0	52.8	5	258°51.7	57.2	5	258°57.9	12°00.1
6	273°24.7	S07°41.1	6	273°35.0	S08°47.9	6	273°44.1	S09°53.7	6	273°51.8	S10°58.1	6	273°58.0	S12°01.0
7	288°24.9	42.0	7	288°35.2	48.8	7	288°44.2	54.6	7	288°51.9	59.0	7	288°58.1	01.9
8	303°25.0	42.9	8	303°35.3	49.8	8	303°44.3	55.5	8	303°52.0	10°59.8	8	303°58.2	02.7
9	318°25.2	· · 43.9	9	318°35.5	· · 50.7	9	318°44.5	· · 56.4	9	318°52.1	11°00.7	9	318°58.2	· · 03.6
10	333°25.3	44.8	10	333°35.6	51.6	10	333°44.6	57.3	10	333°52.2	01.6	10	333°58.3	04.5
11	348°25.5	45.7	11	348°35.7	52.5	11	348°44.7	58.2	11	348°52.3	02.5	11	348°58.4	05.3
12	3°25.6	S07°46.7	12	3°35.9	S08°53.4	12	3°44.8	S09°59.1	12	3°52.4	S11°03.4	12	3°58.5	S12°06.2
13	18°25.8	47.6	13	18°36.0	54.4	13	18°44.9	10°00.0	13	18°52.5	04.3	13	18°58.5	07.0
14	33°25.9	48.5	14	33°36.1	55.3	14	33°45.0	00.9	14	33°52.6	05.2	14	33°58.6	07.9
15	48°26.1	· · 49.5	15	48°36.3	· · 56.2	15	48°45.1	· · 01.8	15	48°52.7	· · 06.0	15	48°58.7	· · 08.8
16	63°26.2	50.4	16	63°36.4	57.1	16	63°45.3	02.7	16	63°52.8	06.9	16	63°58.8	09.6
17	78°26.4	51.3	17	78°36.5	58.0	17	78°45.4	03.6	17	78°52.8	07.8	17	78°58.8	10.5
18	93°26.5	S07°52.3	18	93°36.7	S08°59.0	18	93°45.5	S10°04.5	18	93°52.9	S11°08.7	18	93°58.9	S12°11.3
19	108°26.7	53.2	19	108°36.8	08°59.9	19	108°45.6	05.4	19	108°53.0	09.6	19	108°59.0	12.2
20	123°26.8	54.1	20	123°36.9	09°00.8	20	123°45.7	06.3	20	123°53.1	10.4	20	123°59.1	13.1
21	138°27.0	· · 55.1	21	138°37.0	· · 01.7	21	138°45.8	· · 07.2	21	138°53.2	· · 11.3	21	138°59.1	· · 13.9
22	153°27.1	56.0	22	153°37.2	02.6	22	153°45.9	08.1	22	153°53.3	12.2	22	153°59.2	14.8
23	168°27.3	56.9	23	168°37.3	03.5	23	168°46.1	09.0	23	168°53.4	13.1	23	168°59.3	15.6
SD=16.0'		d = 0.9'	SD=16.0'		d = 0.9'	SD=16.0'		d = 0.9'	SD=16.1'		d = 0.9'	SD=16.1'		d = 0.9'

14	GHA	Dec	17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec
0	183°27.4	S07°57.9	0	183°37.4	S09°04.5	0	183°46.2	S10°09.9	0	183°53.5	S11°14.0	0	183°59.3	S12°16.5
1	198°27.6	58.8	1	198°37.6	05.4	1	198°46.3	10.8	1	198°53.6	14.8	1	198°59.4	17.3
2	213°27.7	07°59.7	2	213°37.7	06.3	2	213°46.4	11.7	2	213°53.7	15.7	2	213°59.5	18.2
3	228°27.9	08°00.7	3	228°37.8	· · 07.2	3	228°46.5	· · 12.6	3	228°53.8	· · 16.6	3	228°59.5	· · 19.1
4	243°28.0	01.6	4	243°38.0	08.1	4	243°46.6	13.5	4	243°53.9	17.5	4	243°59.6	19.9
5	258°28.1	02.5	5	258°38.1	09.1	5	258°46.7	14.4	5	258°54.0	18.4	5	258°59.7	20.8
6	273°28.3	S08°03.5	6	273°38.2	S09°10.0	6	273°46.8	S10°15.3	6	273°54.0	S11°19.2	6	273°59.8	S12°21.6
7	288°28.4	04.4	7	288°38.3	10.9	7	288°46.9	16.2	7	288°54.1	20.1	7	288°59.8	22.5
8	303°28.6	05.3	8	303°38.5	11.8	8	303°47.0	17.1	8	303°54.2	21.0	8	303°59.9	23.3
9	318°28.7	· · 06.3	9	318°38.6	· · 12.7	9	318°47.2	· · 18.0	9	318°54.3	· · 21.9	9	319°00.0	· · 24.2
10	333°28.9	07.2	10	333°38.7	13.6	10	333°47.3	18.9	10	333°54.4	22.7	10	334°00.0	25.0
11	348°29.0	08.1	11	348°38.9	14.5	11	348°47.4	19.8	11	348°54.5	23.6	11	349°00.1	25.9
12	3°29.2	S08°09.0	12	3°39.0	S09°15.5	12	3°47.5	S10°20.7	12	3°54.6	S11°24.5	12	4°00.2	S12°26.8
13	18°29.3	10.0	13	18°39.1	16.4	13	18°47.6	21.6	13	18°54.7	25.4	13	19°00.2	27.6
14	33°29.5	10.9	14	33°39.2	17.3	14	33°47.7	22.5	14	33°54.8	26.2	14	34°00.3	28.5
15	48°29.6	· · 11.8	15	48°39.4	· · 18.2	15	48°47.8	· · 23.4	15	48°54.8	· · 27.1	15	49°00.4	· · 29.3
16	63°29.7	12.8	16	63°39.5	19.1	16	63°47.9	24.3	16	63°54.9	28.0	16	64°00.4	30.2
17	78°29.9	13.7	17	78°39.6	20.0	17	78°48.0	25.1	17	78°55.0	28.9	17	79°00.5	31.0
18	93°30.0	S08°14.6	18	93°39.7	S09°20.9	18	93°48.1	S10°26.0	18	93°55.1	S11°29.7	18	94°00.6	S12°31.9
19	108°30.2	15.5	19	108°39.9	21.9	19	108°48.2	26.9	19	108°55.2	30.6	19	109°00.6	32.7
20	123°30.3	16.5	20	123°40.0	22.8	20	123°48.3	27.8	20	123°55.3	31.5	20	124°00.7	33.6
21	138°30.5	· · 17.4	21	138°40.1	· · 23.7	21	138°48.5	· · 28.7	21	138°55.4	· · 32.4	21	139°00.7	· · 34.4
22	153°30.6	18.3	22	153°40.2	24.6	22	153°48.6	29.6	22	153°55.4	33.2	22	154°00.8	35.3
23	168°30.7	19.3	23	168°40.4	25.5	23	168°48.7	30.5	23	168°55.5	34.1	23	169°00.9	36.1
SD=16.0'		d = 0.9'	SD=16.0'		d = 0.9'	SD=16.1'		d = 0.9'	SD=16.1'		d = 0.9'	SD=16.1'		d = 0.9'

15	GHA	Dec	18	GHA	Dec	21	GHA	Dec	24	GHA	Dec	27	GHA	Dec
0	183°30.9	S08°20.2	0	183°40.5	S09°26.4	0	183°48.8	S10°31.4	0	183°55.6	S11°35.0	0	184°00.9	S12°37.0
1	198°31.0	21.1	1	198°40.6	27.3	1	198°48.9	32.3	1	198°55.7	35.9	1	199°01.0	37.8
2	213°31.2	22.0	2	213°40.7	28.2	2	213°49.0	33.2	2	213°55.8	36.7	2	214°01.1	38.7
3	228°31.3	· · 23.0	3	228°40.9	· · 29.1	3	228°49.1	· · 34.1	3	228°55.9	· · 37.6	3	229°01.1	· · 39.5
4	243°31.5	23.9	4	243°41.0	30.1	4	243°49.2	35.0	4	243°56.0	38.5	4	244°01.2	40.4
5	258°31.6	24.8	5	258°41.1	31.0	5	258°49.3	35.9	5	258°56.0	39.3	5	259°01.2	41.2
6	273°31.7	S08°25.7	6	273°41.2	S09°31.9	6	273°49.4	S10°36.8	6	273°56.1	S11°40.2	6	274°01.3	S12°42.0
7	288°31.9	26.7	7	288°41.4	32.8	7	288°49.5	37.7	7	288°56.2	41.1	7	289°01.4	42.9
8	303°32.0	27.6	8	303°41.5	33.7	8	303°49.6	38.5	8	303°56.3	42.0	8	304°01.4	43.7
9	318°32.2	· · 28.5	9	318°41.6	· · 34.6	9	318°49.7	· · 39.4	9	318°56.4	· · 42.8	9	319°01.5	· · 44.6
10	333°32.3	29.5	10	333°41.7	35.5	10	333°49.8	40.3	10	333°56.4	43.7	10	334°01.5	45.4
11	348°32.4	30.4	11	348°41.8	36.4	11	348°49.9	41.2	11	348°56.5	44.6	11	349°01.6	46.3
12	3°32.6	S08°31.3	12	3°42.0	S09°37.3	12	3°50.0	S10°42.1	12	3°56.6	S11°45.4	12	4°01.7	S12°47.1
13	18°32.7	32.2	13	18°42.1	38.2	13	18°50.1	43.0	13	18°56.7	46.3	13	19°01.7	48.0
14	33°32.9	33.2	14	33°42.2	39.2	14	33°50.2	43.9	14	33°56.8	47.2	14	34°01.8	48.8
15	48°33.0	· · 34.1	15	48°42.3	· · 40.1	15	48°50.3	· · 44.8	15	48°56.9	· · 48.0	15	49°01.8	· · 49.7
16	63°33.1	35.0	16	63°42.5	41.0	16	63°50.4	45.7	16	63°56.9	48.9	16	64°01.9	50.5
17	78°33.3	35.9	17	78°42.6	41.9	17	78°50.5	46.6	17	78°57.0	49.8	17	79°02.0	51.3
18	93°33.4	S08°36.9	18	93°42.7	S09°42.8	18	93°50.6	S10°47.4	18	93°57.1	S11°50.6	18	94°02.0	S12°52.2
19	108°33.6	37.8	19	108°42.8	43.7	19	108°50.7	48.3	19	108°57.2	51.5	19	109°02.1	53.0
20	123°33.7	38.7	20	123°42.9	44.6	20	123°50.8	49.2	20	123°57.3	52.4	20	124°02.1	53.9
21	138°33.8	· · 39.6	21	138°43.1	· · 45.5	21	138°50.9	· · 50.1	21	138°57.3	· · 53.2	21	139°02.2	· · 54.7
22	153°34.0	40.5	22	153°43.2	46.4	22	153°51.0	51.0	22	153°57.4	54.1	22	154°02.2	55.6
23	168°34.1	41.5	23	168°43.3	47.3	23	168°51.1	51.9	23	168°57.5	55.0	23	169°02.3	56.4
SD=16.0'		d = 0.9'	SD=16.0'		d = 0.9'	SD=16.1'		d = 0.9'	SD=16.1'		d = 0.9'	SD=16.1'		d = 0.8'

28	GHA	Dec	31	GHA	Dec	03	GHA	Dec	06	GHA	Dec	09	GHA	Dec
0	184°02.3	S12°57.2	0	184°05.5	S13°56.8	0	184°06.8	S14°54.4	0	184°06.3	S15°49.9	0	184°03.8	S16°43.0
1	199°02.4	58.1	1	199°05.5	57.6	1	199°06.8	55.2	1	199°06.2	50.6	1	199°03.8	43.7
2	214°02.5	58.9	2	214°05.5	58.5	2	214°06.8	56.0	2	214°06.2	51.4	2	214°03.7	44.4
3	229°02.5	12°59.8	3	229°05.5	13°59.3	3	229°06.8	· · 56.8	3	229°06.2	· · 52.1	3	229°03.7	· · 45.1
4	244°02.6	13°00.6	4	244°05.6	14°00.1	4	244°06.8	57.6	4	244°06.2	52.9	4	244°03.6	45.9
5	259°02.6	01.4	5	259°05.6	00.9	5	259°06.8	58.4	5	259°06.2	53.6	5	259°03.6	46.6
6	274°02.7	S13°02.3	6	274°05.6	S14°01.7	6	274°06.8	S14°59.1	6	274°06.1	S15°54.4	6	274°03.5	S16°47.3
7	289°02.7	03.1	7	289°05.7	02.5	7	289°06.8	14°59.7	7	289°06.1	55.2	7	289°03.5	48.0
8	304°02.8	04.0	8	304°05.7	03.3	8	304°06.8	15°00.7	8	304°06.1	55.9	8	304°03.4	48.7
9	319°02.8	· · 04.8	9	319°05.7	· · 04.1	9	319°06.8	· · 01.5	9	319°06.1	· · 56.7	9	319°03.4	· · 49.4
10	334°02.9	05.6	10	334°05.8	05.0	10	334°06.8	02.3	10	334°06.0	57.4	10	334°03.3	50.2
11	349°02.9	06.5	11	349°05.8	05.8	11	349°06.8	03.1	11	349°06.0	58.2	11	349°03.3	50.9
12	4°03.0	S13°07.3	12	4°05.8	S14°06.6	12	4°06.8	S15°03.8	12	4°06.0	S15°58.9	12	4°03.2	S16°51.6
13	19°03.0	08.1	13	19°05.8	07.4	13	19°06.8	04.6	13	19°06.0	15°59.6	13	19°03.2	52.3
14	34°03.1	09.0	14	34°05.9	08.2	14	34°06.8	05.4	14	34°05.9	16°00.4	14	34°03.1	53.0
15	49°03.1	· · 09.8	15	49°05.9	· · 09.0	15	49°06.8	· · 06.2	15	49°05.9	· · 01.1	15	49°03.1	· · 53.7
16	64°03.2	10.6	16	64°05.9	09.8	16	64°06.8	07.0	16	64°05.9	01.9	16	64°03.0	54.4
17	79°03.2	11.5	17	79°05.9	10.6	17	79°06.8	07.7	17	79°05.9	02.6	17	79°03.0	55.2
18	94°03.3	S13°12.3	18	94°06.0	S14°11.4	18	94°06.8	S15°08.5	18	94°05.8	S16°03.4	18	94°02.9	S16°55.9
19	109°03.3	13.1	19	109°06.0	12.2	19	109°06.8	09.3	19	109°05.8	04.1	19	109°02.9	56.6
20	124°03.4	14.0	20	124°06.0	13.0	20	124°06.8	10.1	20	124°05.8	04.9	20	124°02.8	57.3
21	139°03.4	· · 14.8	21	139°06.0	· · 13.8	21	139°06.8	· · 10.8	21	139°05.7	· · 05.6	21	139°02.7	· · 58.0
22	154°03.5	15.6	22	154°06.1	14.6	22	154°06.8	11.6	22	154°05.7	06.4	22	154°02.7	58.7
23	169°03.5	16.5	23	169°06.1	15.5	23	169°06.8	12.4	23	169°05.7	07.1	23	169°02.6	59.4
SD=16.1' d=0.8'														

29	GHA	Dec	01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec
0	184°03.6	S13°17.3	0	184°06.1	S14°16.3	0	184°06.8	S15°13.2	0	184°05.7	S16°07.9	0	184°02.6	S17°00.1
1	199°03.6	18.1	1	199°06.1	17.1	1	199°06.8	13.9	1	199°05.6	08.6	1	199°02.5	00.8
2	214°03.7	19.0	2	214°06.1	17.9	2	214°06.8	14.7	2	214°05.6	09.3	2	214°02.5	01.5
3	229°03.7	· · 19.8	3	229°06.2	· · 18.7	3	229°06.8	· · 15.5	3	229°05.6	· · 10.1	3	229°02.4	· · 02.2
4	244°03.8	20.6	4	244°06.2	19.5	4	244°06.8	16.3	4	244°05.5	10.8	4	244°02.4	03.0
5	259°03.8	21.5	5	259°06.2	20.3	5	259°06.8	17.0	5	259°05.5	11.6	5	259°02.3	03.7
6	274°03.9	S13°22.3	6	274°06.2	S14°21.1	6	274°06.8	S15°17.8	6	274°05.5	S16°12.3	6	274°02.2	S17°04.4
7	289°03.9	23.1	7	289°06.3	21.9	7	289°06.8	18.6	7	289°05.4	13.0	7	289°02.2	05.1
8	304°03.9	24.0	8	304°06.3	22.7	8	304°06.8	19.4	8	304°05.4	13.8	8	304°02.1	05.8
9	319°04.0	· · 24.8	9	319°06.3	· · 23.5	9	319°06.8	· · 20.1	9	319°05.4	· · 14.5	9	319°02.1	· · 06.5
10	334°04.0	25.6	10	334°06.3	24.3	10	334°06.8	20.9	10	334°05.3	15.3	10	334°02.0	07.2
11	349°04.1	26.4	11	349°06.3	25.1	11	349°06.8	21.7	11	349°05.3	16.0	11	349°01.9	07.9
12	4°04.1	S13°27.3	12	4°06.3	S14°25.9	12	4°06.8	S15°22.4	12	4°05.3	S16°16.7	12	4°01.9	S17°08.6
13	19°04.2	28.1	13	19°06.4	26.7	13	19°06.8	23.2	13	19°05.2	17.5	13	19°01.8	09.3
14	34°04.2	28.9	14	34°06.4	27.5	14	34°06.7	24.0	14	34°05.2	18.2	14	34°01.8	10.0
15	49°04.2	· · 29.8	15	49°06.4	· · 28.3	15	49°06.7	· · 24.7	15	49°05.2	· · 18.9	15	49°01.7	· · 10.7
16	64°04.3	30.6	16	64°06.4	29.1	16	64°06.7	25.5	16	64°05.1	19.7	16	64°01.6	11.4
17	79°04.3	31.4	17	79°06.4	29.9	17	79°06.7	26.3	17	79°05.1	20.4	17	79°01.6	12.1
18	94°04.4	S13°32.2	18	94°06.5	S14°30.7	18	94°06.7	S15°27.1	18	94°05.1	S16°21.2	18	94°01.5	S17°12.8
19	109°04.4	33.1	19	109°06.5	31.5	19	109°06.7	27.8	19	109°05.0	21.9	19	109°01.4	13.5
20	124°04.5	33.9	20	124°06.5	32.3	20	124°06.7	28.6	20	124°05.0	22.6	20	124°01.4	14.2
21	139°04.5	· · 34.7	21	139°06.5	· · 33.1	21	139°06.7	· · 29.4	21	139°05.0	· · 23.4	21	139°01.3	· · 14.9
22	154°04.5	35.5	22	154°06.5	33.9	22	154°06.7	30.1	22	154°04.9	24.1	22	154°01.3	15.6
23	169°04.6	36.4	23	169°06.5	34.7	23	169°06.7	30.9	23	169°04.9	24.8	23	169°01.2	16.3
SD=16.1' d=0.8'														

30	GHA	Dec	02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec
0	184°04.6	S13°37.2	0	184°06.5	S14°35.5	0	184°06.6	S15°31.7	0	184°04.8	S16°25.6	0	184°01.1	S17°17.0
1	199°04.7	38.0	1	199°06.6	36.3	1	199°06.6	32.4	1	199°04.8	26.3	1	199°01.1	17.7
2	214°04.7	38.8	2	214°06.6	37.1	2	214°06.6	33.2	2	214°04.8	27.0	2	214°01.0	18.4
3	229°04.7	· · 39.6	3	229°06.6	· · 37.8	3	229°06.6	· · 33.9	3	229°04.7	· · 27.7	3	229°00.9	· · 19.1
4	244°04.8	40.5	4	244°06.6	38.6	4	244°06.6	34.7	4	244°04.7	28.5	4	244°00.9	19.8
5	259°04.8	41.3	5	259°06.6	39.4	5	259°06.6	35.5	5	259°04.7	29.2	5	259°00.8	20.5
6	274°04.8	S13°42.1	6	274°06.6	S14°40.2	6	274°06.6	S15°36.2	6	274°04.6	S16°29.9	6	274°00.7	S17°21.2
7	289°04.9	42.9	7	289°06.6	41.0	7	289°06.6	37.0	7	289°04.6	30.7	7	289°00.7	21.8
8	304°04.9	43.8	8	304°06.6	41.8	8	304°06.5	37.8	8	304°04.5	31.4	8	304°00.6	22.5
9	319°05.0	· · 44.6	9	319°06.7	· · 42.6	9	319°06.5	· · 38.5	9	319°04.5	· · 32.1	9	319°00.5	· · 23.2
10	334°05.0	45.4	10	334°06.7	43.4	10	334°06.5	39.3	10	334°04.4	32.8	10	334°00.5	23.9
11	349°05.0	46.2	11	349°06.7	44.2	11	349°06.5	40.0	11	349°04.4	33.6	11	349°00.4	24.6
12	4°05.1	S13°47.0	12	4°06.7	S14°45.0	12	4°06.5	S15°40.8	12	4°04.4	S16°34.3	12	4°00.3	S17°25.3
13	19°05.1	47.8	13	19°06.7	45.8	13	19°06.5	41.6	13	19°04.3	35.0	13	19°00.2	26.0
14	34°05.1	48.7	14	34°06.7	46.6	14	34°06.4	42.3	14	34°04.3	35.8	14	34°00.2	26.7
15	49°05.2	· · 49.5	15	49°06.7	· · 47.4	15	49°06.4	· · 43.1	15	49°04.2	· · 36.5	15	49°00.1	· · 27.4
16	64°05.2	50.3	16	64°06.7	48.1	16	64°06.4	43.8	16	64°04.2	37.2	16	64°00.0	28.1
17	79°05.2	51.1	17	79°06.7	48.9	17	79°06.4	44.6	17	79°04.1	37.9	17	79°00.0	28.7
18	94°05.3	S13°51.9	18	94°06.7	S14°49.7	18	94°06.4	S15°45.3	18	94°04.1	S16°38.6	18	93°59.9	S17°29.4
19	109°05.3	52.8	19	109°06.8	50.5	19	109°06.4	46.1	19	109°04.1	39.4	19	108°59.8	30.1
20	124°05.3	53.6	20	124°06.8	51.3	20	124°06.3	46.9	20	124°04.0	40.1	20	123°59.7	30.8
21	139°05.4	· · 54.4	21	139°06.8	· · 52.1	21	139°06.3	· · 47.6	21	139°04.0	· · 40.8	21	138°59.7	· · 31.5
22	154°05.4	55.2	22	154°06.8	52.9	22	154°06.3	48.4	22	154°03.9	41.5	22	153°59.6	32.2
23	169°05.4	56.0	23	169°06.8	53.7	23	169°06.3	49.1	23	169°03.9	42.3	23	168°59.5	32.9
SD=16.1' d=0.8'														

12	GHA	Dec	15	GHA	Dec	18	GHA	Dec	21	GHA	Dec	24	GHA	Dec
0	183°59.5	S17°33.5	0	183°53.2	S18°21.4	0	183°45.0	S19°06.3	0	183°35.0	S19°48.2	0	183°23.2	S20°26.8
1	198°59.4	34.2	1	198°53.1	22.0	1	198°44.9	06.9	1	198°34.8	48.7	1	198°23.0	27.3
2	213°59.3	34.9	2	213°53.0	22.7	2	213°44.7	07.5	2	213°34.7	49.3	2	213°22.8	27.8
3	228°59.2	· · 35.6	3	228°52.9	· · 23.3	3	228°44.6	· · 08.1	3	228°34.5	· · 49.8	3	228°22.7	· · 28.3
4	243°59.2	36.3	4	243°52.8	24.0	4	243°44.5	08.7	4	243°34.4	50.4	4	243°22.5	28.8
5	258°59.1	37.0	5	258°52.7	24.6	5	258°44.3	09.3	5	258°34.2	51.0	5	258°22.3	29.3
6	273°59.0	S17°37.6	6	273°52.6	S18°25.2	6	273°44.2	S19°09.9	6	273°34.1	S19°51.5	6	273°22.1	S20°29.8
7	288°58.9	38.3	7	288°52.4	25.9	7	288°44.1	10.5	7	288°33.9	52.1	7	288°21.9	30.3
8	303°58.9	39.0	8	303°52.3	26.5	8	303°44.0	11.1	8	303°33.7	52.6	8	303°21.8	30.8
9	318°58.8	· · 39.7	9	318°52.2	· · 27.2	9	318°43.8	· · 11.7	9	318°33.6	· · 53.2	9	318°21.6	· · 31.4
10	333°58.7	40.4	10	333°52.1	27.8	10	333°43.7	12.3	10	333°33.4	53.7	10	333°21.4	31.9
11	348°58.6	41.0	11	348°52.0	28.4	11	348°43.6	12.9	11	348°33.3	54.3	11	348°21.2	32.4
12	3°58.5	S17°41.7	12	3°51.9	S18°29.1	12	3°43.4	S19°13.5	12	3°33.1	S19°54.8	12	3°21.1	S20°32.9
13	18°58.5	42.4	13	18°51.8	29.7	13	18°43.3	14.1	13	18°33.0	55.4	13	18°20.9	33.4
14	33°58.4	43.1	14	33°51.7	30.4	14	33°43.2	14.7	14	33°32.8	55.9	14	33°20.7	33.9
15	48°58.3	· · 43.7	15	48°51.6	· · 31.0	15	48°43.0	· · 15.3	15	48°32.7	· · 56.5	15	48°20.5	· · 34.4
16	63°58.2	44.4	16	63°51.5	31.6	16	63°42.9	15.9	16	63°32.5	57.0	16	63°20.3	34.9
17	78°58.1	45.1	17	78°51.4	32.3	17	78°42.8	16.5	17	78°32.3	57.6	17	78°20.2	35.4
18	93°58.1	S17°45.8	18	93°51.3	S18°32.9	18	93°42.6	S19°17.1	18	93°32.2	S19°58.1	18	93°20.0	S20°35.9
19	108°58.0	46.4	19	108°51.2	33.5	19	108°42.5	17.7	19	108°32.0	58.7	19	108°19.8	36.4
20	123°57.9	47.1	20	123°51.1	34.2	20	123°42.4	18.3	20	123°31.9	59.2	20	123°19.6	36.9
21	138°57.8	· · 47.8	21	138°51.0	· · 34.8	21	138°42.2	· · 18.9	21	138°31.7	19°59.8	21	138°19.4	· · 37.4
22	153°57.7	48.5	22	153°50.9	35.4	22	153°42.1	19.4	22	153°31.6	20°00.3	22	153°19.2	37.9
23	168°57.7	49.1	23	168°50.8	36.1	23	168°42.0	20.0	23	168°31.4	00.9	23	168°19.1	38.4
SD=16.1'		d = 0.7'	SD=16.2'		d = 0.6'	SD=16.2'		d = 0.6'	SD=16.2'		d = 0.6'	SD=16.2'		d = 0.5'

13	GHA	Dec	16	GHA	Dec	19	GHA	Dec	22	GHA	Dec	25	GHA	Dec
0	183°57.6	S17°49.8	0	183°50.6	S18°36.7	0	183°41.8	S19°20.6	0	183°31.2	S20°01.4	0	183°18.9	S20°38.9
1	198°57.5	50.5	1	198°50.5	37.3	1	198°41.7	21.2	1	198°31.1	01.9	1	198°18.7	39.4
2	213°57.4	51.1	2	213°50.4	38.0	2	213°41.6	21.8	2	213°30.9	02.5	2	213°18.5	39.9
3	228°57.3	· · 51.8	3	228°50.3	· · 38.6	3	228°41.4	· · 22.4	3	228°30.8	· · 03.0	3	228°18.3	· · 40.4
4	243°57.2	52.5	4	243°50.2	39.2	4	243°41.3	23.0	4	243°30.6	03.6	4	243°18.1	40.9
5	258°57.2	53.2	5	258°50.1	39.8	5	258°41.2	23.6	5	258°30.4	04.1	5	258°18.0	41.4
6	273°57.1	S17°53.8	6	273°50.0	S18°40.5	6	273°41.0	S19°24.1	6	273°30.3	S20°04.7	6	273°17.8	S20°41.8
7	288°57.0	54.5	7	288°49.9	41.1	7	288°40.9	24.7	7	288°30.1	05.2	7	288°17.6	42.3
8	303°56.9	55.2	8	303°49.8	41.7	8	303°40.8	25.3	8	303°29.9	05.7	8	303°17.4	42.8
9	318°56.8	· · 55.8	9	318°49.6	· · 42.4	9	318°40.6	· · 25.9	9	318°29.8	· · 06.3	9	318°17.2	· · 43.3
10	333°56.7	56.5	10	333°49.5	43.0	10	333°40.5	26.5	10	333°29.6	06.8	10	333°17.0	43.8
11	348°56.6	57.2	11	348°49.4	43.6	11	348°40.3	27.1	11	348°29.5	07.3	11	348°16.8	44.3
12	3°56.5	S17°57.8	12	3°49.3	S18°44.2	12	3°40.2	S19°27.6	12	3°29.3	S20°07.9	12	3°16.6	S20°44.8
13	18°56.5	58.5	13	18°49.2	44.9	13	18°40.1	28.2	13	18°29.1	08.4	13	18°16.5	45.3
14	33°56.4	59.1	14	33°49.1	45.5	14	33°39.9	28.8	14	33°29.0	09.0	14	33°16.3	45.8
15	48°56.3	17°59.8	15	48°49.0	· · 46.1	15	48°39.8	· · 29.4	15	48°28.8	· · 09.5	15	48°16.1	· · 46.3
16	63°56.2	18°00.5	16	63°48.8	46.7	16	63°39.6	30.0	16	63°28.6	10.0	16	63°15.9	46.7
17	78°56.1	01.1	17	78°48.7	47.3	17	78°39.5	30.5	17	78°28.5	10.6	17	78°15.7	47.2
18	93°56.0	S18°01.8	18	93°48.6	S18°48.0	18	93°39.4	S19°31.1	18	93°28.3	S20°11.1	18	93°15.5	S20°47.7
19	108°55.9	02.5	19	108°48.5	48.6	19	108°39.2	31.7	19	108°28.1	11.6	19	108°15.3	48.2
20	123°55.8	03.1	20	123°48.4	49.2	20	123°39.1	32.3	20	123°28.0	12.2	20	123°15.1	48.7
21	138°55.7	· · 03.8	21	138°48.3	· · 49.8	21	138°38.9	· · 32.8	21	138°27.8	· · 12.7	21	138°14.9	· · 49.2
22	153°55.7	04.4	22	153°48.2	50.4	22	153°38.8	33.4	22	153°27.6	13.2	22	153°14.8	49.6
23	168°55.6	05.1	23	168°48.0	51.1	23	168°38.6	34.0	23	168°27.5	13.7	23	168°14.6	50.1
SD=16.2'		d = 0.7'	SD=16.2'		d = 0.6'	SD=16.2'		d = 0.6'	SD=16.2'		d = 0.5'	SD=16.2'		d = 0.5'

14	GHA	Dec	17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec
0	183°55.5	S18°05.8	0	183°47.9	S18°51.7	0	183°38.5	S19°34.6	0	183°27.3	S20°14.3	0	183°14.4	S20°50.6
1	198°55.4	06.4	1	198°47.8	52.3	1	198°38.4	35.1	1	198°27.1	14.8	1	198°14.2	51.1
2	213°55.3	07.1	2	213°47.7	52.9	2	213°38.2	35.7	2	213°27.0	15.3	2	213°14.0	51.6
3	228°55.2	· · 07.7	3	228°47.6	· · 53.5	3	228°38.1	· · 36.3	3	228°26.8	· · 15.9	3	228°13.8	· · 52.0
4	243°55.1	08.4	4	243°47.4	54.1	4	243°37.9	36.9	4	243°26.6	16.4	4	243°13.6	52.5
5	258°55.0	09.0	5	258°47.3	54.8	5	258°37.8	37.4	5	258°26.5	16.9	5	258°13.4	53.0
6	273°54.9	S18°09.7	6	273°47.2	S18°55.4	6	273°37.6	S19°38.0	6	273°26.3	S20°17.4	6	273°13.2	S20°53.5
7	288°54.8	10.3	7	288°47.1	56.0	7	288°37.5	38.6	7	288°26.1	18.0	7	288°13.0	54.0
8	303°54.7	11.0	8	303°47.0	56.6	8	303°37.3	39.1	8	303°26.0	18.5	8	303°12.8	54.4
9	318°54.6	· · 11.7	9	318°46.8	· · 57.2	9	318°37.2	· · 39.7	9	318°25.8	· · 19.0	9	318°12.6	· · 54.9
10	333°54.5	12.3	10	333°46.7	57.8	10	333°37.1	40.3	10	333°25.6	19.5	10	333°12.4	55.4
11	348°54.4	13.0	11	348°46.6	58.4	11	348°36.9	40.8	11	348°25.4	20.0	11	348°12.3	55.9
12	3°54.3	S18°13.6	12	3°46.5	S18°59.0	12	3°36.8	S19°41.4	12	3°25.3	S20°20.6	12	3°12.1	S20°56.3
13	18°54.2	14.3	13	18°46.4	18°59.6	13	18°36.6	42.0	13	18°25.1	21.1	13	18°11.9	56.8
14	33°54.2	14.9	14	33°46.2	19°00.3	14	33°36.5	42.5	14	33°24.9	21.6	14	33°11.7	57.3
15	48°54.1	· · 15.6	15	48°46.1	· · 00.9	15	48°36.3	· · 43.1	15	48°24.8	· · 22.1	15	48°11.5	· · 57.7
16	63°54.0	16.2	16	63°46.0	01.5	16	63°36.2	43.7	16	63°24.6	22.6	16	63°11.3	58.2
17	78°53.9	16.9	17	78°45.9	02.1	17	78°36.0	44.2	17	78°24.4	23.2	17	78°11.1	58.7
18	93°53.8	S18°17.5	18	93°45.7	S19°02.7	18	93°35.9	S19°44.8	18	93°24.2	S20°23.7	18	93°10.9	S20°59.2
19	108°53.7	18.2	19	108°45.6	03.3	19	108°35.7	45.4	19	108°24.1	24.2	19	108°10.7	20°59.6
20	123°53.6	18.8	20	123°45.5	03.9	20	123°35.6	45.9	20	123°23.9	24.7	20	123°10.5	21°00.1
21	138°53.5	· · 19.4	21	138°45.4	· · 04.5	21	138°35.4	· · 46.5	21	138°23.7	· · 25.2	21	138°10.3	· · 00.6
22	153°53.4	20.1	22	153°45.2	05.1	22	153°35.3	47.1	22	153°23.5	25.7	22	153°10.1	01.0
23	168°53.3	20.7	23	168°45.1	05.7	23	168°35.1	47.6	23	168°23.4	26.3	23	168°09.9	01.5
SD=16.2'		d = 0.7'	SD=16.2'		d = 0.6'	SD=16.2'		d = 0.6'	SD=16.2'		d = 0.5'	SD=16.2'		d = 0.5'

27	GHA	Dec	30	GHA	Dec	03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	
0	183°09.7	S21°02.0	0	182°54.6	S21°33.6	0	182°37.9	S22°01.6	0	182°19.8	S22°25.7	0	182°00.4	S22°46.0	
1	198°09.5	02.4	1	197°54.3	34.0	1	197°37.6	01.9	1	197°19.5	26.1	1	197°00.2	46.2	
2	213°09.3	02.9	2	212°54.1	34.4	2	212°37.4	02.3	2	212°19.3	26.4	2	211°59.9	46.5	
3	228°09.1	· · 03.3	3	227°53.9	· · 34.8	3	227°37.2	· · 02.7	3	227°19.0	· · 26.7	3	226°59.6	· · 46.7	
4	243°08.9	03.8	4	242°53.7	35.3	4	242°36.9	03.0	4	242°18.7	27.0	4	241°59.3	47.0	
5	258°08.7	04.3	5	257°53.4	35.7	5	257°36.7	03.4	5	257°18.5	27.3	5	256°59.1	47.2	
6	273°08.5	S21°04.7	6	272°53.2	S21°36.1	6	272°36.4	S22°03.7	6	272°18.2	S22°27.6	6	271°58.8	S22°47.5	
7	288°08.3	05.2	7	287°53.0	36.5	7	287°36.2	04.1	7	287°18.0	27.9	7	286°58.5	47.7	
8	303°08.1	05.6	8	302°52.8	36.9	8	302°35.9	04.5	8	302°17.7	28.2	8	301°58.2	48.0	
9	318°07.9	· · 06.1	9	317°52.6	· · 37.3	9	317°35.7	· · 04.8	9	317°17.4	· · 28.5	9	316°57.9	· · 48.2	
10	333°07.7	06.6	10	332°52.3	37.7	10	332°35.5	05.2	10	332°17.2	28.8	10	331°57.7	48.5	
11	348°07.5	07.0	11	347°52.1	38.1	11	347°35.2	05.5	11	347°16.9	29.1	11	346°57.4	48.7	
12	3°07.3	S21°07.5	12	2°51.9	S21°38.5	12	2°35.0	S22°05.9	12	2°16.6	S22°29.4	12	1°57.1	S22°49.0	
13	18°07.1	07.9	13	17°51.7	38.9	13	17°34.7	06.2	13	17°16.4	29.7	13	16°56.8	49.2	
14	33°06.9	08.4	14	32°51.4	39.3	14	32°34.5	06.6	14	32°16.1	30.0	14	31°56.5	49.5	
15	48°06.7	· · 08.8	15	47°51.2	· · 39.7	15	47°34.2	· · 06.9	15	47°15.9	· · 30.3	15	46°56.3	· · 49.7	
16	63°06.5	09.3	16	62°51.0	40.1	16	62°34.0	07.3	16	62°15.6	30.6	16	61°56.0	49.9	
17	78°06.3	09.8	17	77°50.8	40.5	17	77°33.7	07.6	17	77°15.3	30.9	17	76°55.7	50.2	
18	93°06.1	S21°10.2	18	92°50.5	S21°40.9	18	92°33.5	S22°08.0	18	92°15.1	S22°31.2	18	91°55.4	S22°50.4	
19	108°05.9	10.7	19	107°50.3	41.3	19	107°33.2	08.3	19	107°14.8	31.5	19	106°55.2	50.7	
20	123°05.6	11.1	20	122°50.1	41.7	20	122°33.0	08.7	20	122°14.5	31.8	20	121°54.9	50.9	
21	138°05.4	· · 11.6	21	137°49.8	· · 42.1	21	137°32.7	· · 09.0	21	137°14.3	· · 32.1	21	136°54.6	· · 51.1	
22	153°05.2	12.0	22	152°49.6	42.5	22	152°32.5	09.4	22	152°14.0	32.4	22	151°54.3	51.4	
23	168°05.0	12.5	23	167°49.4	42.9	23	167°32.3	09.7	23	167°13.7	32.6	23	166°54.0	51.6	
		SD=16.2'	d = 0.5'			SD=16.2'	d = 0.4'			SD=16.2'	d = 0.4'			SD=16.2'	d = 0.3'

28	GHA	Dec	01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec	
0	183°04.8	S21°12.9	0	182°49.2	S21°43.3	0	182°32.0	S22°10.1	0	182°13.5	S22°32.9	0	181°53.7	S22°51.8	
1	198°04.6	13.4	1	197°48.9	43.7	1	197°31.8	10.4	1	197°13.2	33.2	1	196°53.5	52.1	
2	213°04.4	13.8	2	212°48.7	44.1	2	212°31.5	10.7	2	212°12.9	33.5	2	211°53.2	52.3	
3	228°04.2	· · 14.2	3	227°48.5	· · 44.5	3	227°31.3	· · 11.1	3	227°12.7	· · 33.8	3	226°52.9	· · 52.6	
4	243°04.0	14.7	4	242°48.3	44.9	4	242°31.0	11.4	4	242°12.4	34.1	4	241°52.6	52.8	
5	258°03.8	15.1	5	257°48.0	45.3	5	257°30.8	11.8	5	257°12.1	34.4	5	256°52.3	53.0	
6	273°03.6	S21°15.6	6	272°47.8	S21°45.7	6	272°30.5	S22°12.1	6	272°11.9	S22°34.7	6	271°52.1	S22°53.2	
7	288°03.4	16.0	7	287°47.6	46.1	7	287°30.3	12.5	7	287°11.6	34.9	7	286°51.8	53.5	
8	303°03.2	16.5	8	302°47.3	46.5	8	302°30.0	12.8	8	302°11.3	35.2	8	301°51.5	53.7	
9	318°03.0	· · 16.9	9	317°47.1	· · 46.9	9	317°29.8	· · 13.1	9	317°11.1	· · 35.5	9	316°51.2	· · 53.9	
10	333°02.7	17.3	10	332°46.9	47.3	10	332°29.5	13.5	10	332°10.8	35.8	10	331°50.9	54.2	
11	348°02.5	17.8	11	347°46.6	47.7	11	347°29.3	13.8	11	347°10.5	36.1	11	346°50.6	54.4	
12	3°02.3	S21°18.2	12	2°46.4	S21°48.1	12	2°29.0	S22°14.1	12	2°10.3	S22°36.4	12	1°50.4	S22°54.6	
13	18°02.1	18.7	13	17°46.2	48.4	13	17°28.8	14.5	13	17°10.0	36.6	13	16°50.1	54.8	
14	33°01.9	19.1	14	32°45.9	48.8	14	32°28.5	14.8	14	32°09.7	36.9	14	31°49.8	55.1	
15	48°01.7	· · 19.5	15	47°45.7	· · 49.2	15	47°28.2	· · 15.1	15	47°09.5	· · 37.2	15	46°49.5	· · 55.3	
16	63°01.5	20.0	16	62°45.5	49.6	16	62°28.0	15.5	16	62°09.2	37.5	16	61°49.2	55.5	
17	78°01.3	20.4	17	77°45.2	50.0	17	77°27.7	15.8	17	77°08.9	37.8	17	76°48.9	55.7	
18	93°01.1	S21°20.9	18	92°45.0	S21°50.4	18	92°27.5	S22°16.1	18	92°08.6	S22°38.0	18	91°48.6	S22°55.9	
19	108°00.8	21.3	19	107°44.8	50.8	19	107°27.2	16.5	19	107°08.4	38.3	19	106°48.4	56.2	
20	123°00.6	21.7	20	122°44.5	51.1	20	122°27.0	16.8	20	122°08.1	38.6	20	121°48.1	56.4	
21	138°00.4	· · 22.2	21	137°44.3	· · 51.5	21	137°26.7	· · 17.1	21	137°07.8	· · 38.9	21	136°47.8	· · 56.6	
22	153°00.2	22.6	22	152°44.1	51.9	22	152°26.5	17.5	22	152°07.6	39.1	22	151°47.5	56.8	
23	168°00.0	23.0	23	167°43.8	52.3	23	167°26.2	17.8	23	167°07.3	39.4	23	166°47.2	57.0	
		SD=16.2'	d = 0.4'			SD=16.2'	d = 0.4'			SD=16.2'	d = 0.3'			SD=16.2'	d = 0.3'

29	GHA	Dec	02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec	
0	182°59.8	S21°23.5	0	182°43.6	S21°52.7	0	182°26.0	S22°18.1	0	182°07.0	S22°39.7	0	181°46.9	S22°57.3	
1	197°59.6	23.9	1	197°43.4	53.0	1	197°25.7	18.4	1	197°06.7	40.0	1	196°46.7	57.5	
2	212°59.4	24.3	2	212°43.1	53.4	2	212°25.5	18.8	2	212°06.5	40.2	2	211°46.4	57.7	
3	227°59.1	· · 24.7	3	227°42.9	· · 53.8	3	227°25.2	· · 19.1	3	227°06.2	· · 40.5	3	226°46.1	· · 57.9	
4	242°58.9	25.2	4	242°42.7	54.2	4	242°24.9	19.4	4	242°05.9	40.8	4	241°45.8	58.1	
5	257°58.7	25.6	5	257°42.4	54.6	5	257°24.7	19.7	5	257°05.7	41.0	5	256°45.5	58.3	
6	272°58.5	S21°26.0	6	272°42.2	S21°54.9	6	272°24.4	S22°20.1	6	272°05.4	S22°41.3	6	271°45.2	S22°58.5	
7	287°58.3	26.5	7	287°42.0	55.3	7	287°24.2	20.4	7	287°05.1	41.6	7	286°44.9	58.8	
8	302°58.1	26.9	8	302°41.7	55.7	8	302°23.9	20.7	8	302°04.8	41.8	8	301°44.6	59.0	
9	317°57.8	· · 27.3	9	317°41.5	· · 56.1	9	317°23.7	· · 21.0	9	317°04.6	· · 42.1	9	316°44.4	· · 59.2	
10	332°57.6	27.7	10	332°41.2	56.4	10	332°23.4	21.3	10	332°04.3	42.4	10	331°44.1	59.4	
11	347°57.4	28.2	11	347°41.0	56.8	11	347°23.2	21.7	11	347°04.0	42.6	11	346°43.8	59.6	
12	2°57.2	S21°28.6	12	2°40.8	S21°57.2	12	2°22.9	S22°22.0	12	2°03.7	S22°42.9	12	1°43.5	S22°59.8	
13	17°57.0	29.0	13	17°40.5	57.5	13	17°22.6	22.3	13	17°03.5	43.2	13	16°43.2	23°00.0	
14	32°56.8	29.4	14	32°40.3	57.9	14	32°22.4	22.6	14	32°03.2	43.4	14	31°42.9	00.2	
15	47°56.5	· · 29.8	15	47°40.0	· · 58.3	15	47°22.1	· · 22.9	15	47°02.9	· · 43.7	15	46°42.6	· · 00.4	
16	62°56.3	30.3	16	62°39.8	58.7	16	62°21.9	23.3	16	62°02.6	43.9	16	61°42.3	00.6	
17	77°56.1	30.7	17	77°39.6	59.0	17	77°21.6	23.6	17	77°02.4	44.2	17	76°42.1	00.8	
18	92°55.9	S21°31.1	18	92°39.3	S21°59.4	18	92°21.3	S22°23.9	18	92°02.1	S22°44.5	18	91°41.8	S23°01.0	
19	107°55.7	31.5	19	107°39.1	21°59.8	19	107°21.1	24.2	19	107°01.8	44.7	19	106°41.5	01.2	
20	122°55.4	31.9	20	122°38.8	22°00.1	20	122°20.8	24.5	20	122°01.5	45.0	20	121°41.2	01.4	
21	137°55.2	· · 32.4	21	137°38.6	· · 00.5	21	137°20.6	· · 24.8	21	137°01.3	· · 45.2	21	136°40.9	· · 01.6	
22	152°55.0	32.8	22	152°38.4	00.8	22	152°20.3	25.1	22	152°01.0	45.5	22	151°40.6	01.8	
23	167°54.8	33.2	23	167°38.1	01.2	23	167°20.1	25.4	23	167°00.7	45.7	23	166°40.3	02.0	
		SD=16.2'	d = 0.4'			SD=16.2'	d = 0.4'			SD=16.2'	d = 0.3'			SD=16.2'	d = 0.2'

12	GHA	Dec	15	GHA	Dec	18	GHA	Dec	21	GHA	Dec	24	GHA	Dec
0	181°40.0	S23°02.2	0	181°18.8	S23°14.3	0	180°56.9	S23°22.3	0	180°34.7	S23°26.0	0	180°12.4	S23°25.5
1	196°39.7	02.4	1	196°18.5	14.5	1	195°56.6	22.3	1	195°34.4	26.0	1	195°12.1	25.4
2	211°39.4	02.6	2	211°18.2	14.6	2	210°56.3	22.4	2	210°34.1	26.0	2	210°11.8	25.4
3	226°39.2	.. 02.8	3	226°17.9	.. 14.7	3	225°56.0	.. 22.5	3	225°33.8	.. 26.1	3	225°11.4	.. 25.4
4	241°38.9	03.0	4	241°17.6	14.9	4	240°55.7	22.6	4	240°33.5	26.1	4	240°11.1	25.3
5	256°38.6	03.2	5	256°17.3	15.0	5	255°55.4	22.7	5	255°33.2	26.1	5	255°10.8	25.3
6	271°38.3	S23°03.4	6	271°17.0	S23°15.1	6	270°55.1	S23°22.7	6	270°32.8	S23°26.1	6	270°10.5	S23°25.2
7	286°38.0	03.6	7	286°16.7	15.3	7	285°54.8	22.8	7	285°32.5	26.1	7	285°10.2	25.2
8	301°37.7	03.8	8	301°16.4	15.4	8	300°54.5	22.9	8	300°32.2	26.1	8	300°09.9	25.2
9	316°37.4	.. 04.0	9	316°16.1	.. 15.5	9	315°54.1	.. 23.0	9	315°31.9	.. 26.2	9	315°09.6	.. 25.1
10	331°37.1	04.1	10	331°15.8	15.7	10	330°53.8	23.0	10	330°31.6	26.2	10	330°09.3	25.1
11	346°36.8	04.3	11	346°15.5	15.8	11	345°53.5	23.1	11	345°31.3	26.2	11	345°09.0	25.0
12	1°36.5	S23°04.5	12	1°15.2	S23°15.9	12	0°53.2	S23°23.2	12	0°31.0	S23°26.2	12	0°08.7	S23°25.0
13	16°36.2	04.7	13	16°14.9	16.1	13	15°52.9	23.3	13	15°30.7	26.2	13	15°08.3	24.9
14	31°36.0	04.9	14	31°14.6	16.2	14	30°52.6	23.3	14	30°30.4	26.2	14	30°08.0	24.9
15	46°35.7	.. 05.1	15	46°14.3	.. 16.3	15	45°52.3	.. 23.4	15	45°30.1	.. 26.2	15	45°07.7	.. 24.8
16	61°35.4	05.3	16	61°14.0	16.5	16	60°52.0	23.5	16	60°29.7	26.2	16	60°07.4	24.8
17	76°35.1	05.4	17	76°13.6	16.6	17	75°51.7	23.5	17	75°29.4	26.3	17	75°07.1	24.7
18	91°34.8	S23°05.6	18	91°13.3	S23°16.7	18	90°51.4	S23°23.6	18	90°29.1	S23°26.3	18	90°06.8	S23°24.7
19	106°34.5	05.8	19	106°13.0	16.8	19	105°51.1	23.7	19	105°28.8	26.3	19	105°06.5	24.6
20	121°34.2	06.0	20	121°12.7	17.0	20	120°50.8	23.7	20	120°28.5	26.3	20	120°06.2	24.6
21	136°33.9	.. 06.2	21	136°12.4	.. 17.1	21	135°50.5	.. 23.8	21	135°28.2	.. 26.3	21	135°05.9	.. 24.5
22	151°33.6	06.4	22	151°12.1	17.2	22	150°50.1	23.9	22	150°27.9	26.3	22	150°05.6	24.5
23	166°33.3	06.5	23	166°11.8	17.3	23	165°49.8	23.9	23	165°27.6	26.3	23	165°05.2	24.4
SD=16.2' d=0.2'														
SD=16.2' d=0.1'														
SD=16.2' d=0.1'														
SD=16.3' d=0.0'														
SD=16.3' d=-0.0'														

13	GHA	Dec	16	GHA	Dec	19	GHA	Dec	22	GHA	Dec	25	GHA	Dec
0	181°33.0	S23°06.7	0	181°11.5	S23°17.4	0	180°49.5	S23°24.0	0	180°27.3	S23°26.3	0	180°04.9	S23°24.4
1	196°32.7	06.9	1	196°11.2	17.6	1	195°49.2	24.0	1	195°26.9	26.3	1	195°04.6	24.3
2	211°32.4	07.1	2	211°10.9	17.7	2	210°48.9	24.1	2	210°26.6	26.3	2	210°04.3	24.3
3	226°32.1	.. 07.2	3	226°10.6	.. 17.8	3	225°48.6	.. 24.2	3	225°26.3	.. 26.3	3	225°04.0	.. 24.2
4	241°31.8	07.4	4	241°10.3	17.9	4	240°48.3	24.2	4	240°26.0	26.3	4	240°03.7	24.1
5	256°31.6	07.6	5	256°10.0	18.0	5	255°48.0	24.3	5	255°25.7	26.3	5	255°03.4	24.1
6	271°31.3	S23°07.8	6	271°09.7	S23°18.1	6	270°47.7	S23°24.3	6	270°25.4	S23°26.3	6	270°03.1	S23°24.0
7	286°31.0	07.9	7	286°09.4	18.3	7	285°47.4	24.4	7	285°25.1	26.3	7	285°02.8	24.0
8	301°30.7	08.1	8	301°09.1	18.4	8	300°47.1	24.4	8	300°24.8	26.3	8	300°02.5	23.9
9	316°30.4	.. 08.3	9	316°08.8	.. 18.5	9	315°46.8	.. 24.5	9	315°24.5	.. 26.3	9	315°02.2	.. 23.8
10	331°30.1	08.4	10	331°08.5	18.6	10	330°46.4	24.6	10	330°24.2	26.3	10	330°01.8	23.8
11	346°29.8	08.6	11	346°08.2	18.7	11	345°46.1	24.6	11	345°23.8	26.3	11	345°01.5	23.7
12	1°29.5	S23°08.8	12	1°07.9	S23°18.8	12	0°45.8	S23°24.7	12	0°23.5	S23°26.3	12	0°01.2	S23°23.6
13	16°29.2	09.0	13	16°07.6	18.9	13	15°45.5	24.7	13	15°23.2	26.3	13	15°00.9	23.6
14	31°28.9	09.1	14	31°07.3	19.0	14	30°45.2	24.8	14	30°22.9	26.3	14	30°00.6	23.5
15	46°28.6	.. 09.3	15	46°07.0	.. 19.2	15	45°44.9	.. 24.8	15	45°22.6	.. 26.2	15	45°00.3	.. 23.4
16	61°28.3	09.5	16	61°06.7	19.3	16	60°44.6	24.9	16	60°22.3	26.2	16	60°00.0	23.4
17	76°28.0	09.6	17	76°06.4	19.4	17	75°44.3	24.9	17	75°22.0	26.2	17	74°59.7	23.3
18	91°27.7	S23°09.8	18	91°06.1	S23°19.5	18	90°44.0	S23°25.0	18	90°21.7	S23°26.2	18	89°59.4	S23°23.2
19	106°27.4	09.9	19	106°05.8	19.6	19	105°43.7	25.0	19	105°21.4	26.2	19	104°59.1	23.2
20	121°27.1	10.1	20	121°05.5	19.7	20	120°43.4	25.0	20	120°21.1	26.2	20	119°58.8	23.1
21	136°26.8	.. 10.3	21	136°05.2	.. 19.8	21	135°43.1	.. 25.1	21	135°20.7	.. 26.2	21	134°58.4	.. 23.0
22	151°26.5	10.4	22	151°04.9	19.9	22	150°42.7	25.1	22	150°20.4	26.2	22	149°58.1	22.9
23	166°26.2	10.6	23	166°04.5	20.0	23	165°42.4	25.2	23	165°20.1	26.1	23	164°57.8	22.9
SD=16.2' d=0.2'														
SD=16.2' d=0.1'														
SD=16.2' d=0.1'														
SD=16.3' d=0.0'														
SD=16.3' d=-0.1'														

14	GHA	Dec	17	GHA	Dec	20	GHA	Dec	23	GHA	Dec	26	GHA	Dec
0	181°25.9	S23°10.7	0	181°04.2	S23°20.1	0	180°42.1	S23°25.2	0	180°19.8	S23°26.1	0	179°57.5	S23°22.8
1	196°25.6	10.9	1	196°03.9	20.2	1	195°41.8	25.3	1	195°19.5	26.1	1	194°57.2	22.7
2	211°25.3	11.1	2	211°03.6	20.3	2	210°41.5	25.3	2	210°19.2	26.1	2	209°56.9	22.6
3	226°25.0	.. 11.2	3	226°03.3	.. 20.4	3	225°41.2	.. 25.3	3	225°18.9	.. 26.1	3	224°56.6	.. 22.6
4	241°24.7	11.4	4	241°03.0	20.5	4	240°40.9	25.4	4	240°18.6	26.0	4	239°56.3	22.5
5	256°24.4	11.5	5	256°02.7	20.6	5	255°40.6	25.4	5	255°18.3	26.0	5	254°56.0	22.4
6	271°24.1	S23°11.7	6	271°02.4	S23°20.7	6	270°40.3	S23°25.5	6	270°18.0	S23°26.0	6	269°55.7	S23°22.3
7	286°23.8	11.8	7	286°02.1	20.8	7	285°40.0	25.5	7	285°17.6	26.0	7	284°55.4	22.2
8	301°23.6	12.0	8	301°01.8	20.9	8	300°39.7	25.5	8	300°17.3	26.0	8	299°55.1	22.2
9	316°23.3	.. 12.1	9	316°01.5	.. 21.0	9	315°39.3	.. 25.6	9	315°17.0	.. 25.9	9	314°54.7	.. 22.1
10	331°23.0	12.3	10	331°01.2	21.1	10	330°39.0	25.6	10	330°16.7	25.9	10	329°54.4	22.0
11	346°22.7	12.4	11	346°00.9	21.1	11	345°38.7	25.6	11	345°16.4	25.9	11	344°54.1	21.9
12	1°22.4	S23°12.6	12	1°00.6	S23°21.2	12	0°38.4	S23°25.7	12	0°16.1	S23°25.9	12	359°53.8	S23°21.8
13	16°22.1	12.7	13	16°00.3	21.3	13	15°38.1	25.7	13	15°15.8	25.8	13	14°53.5	21.7
14	31°21.8	12.9	14	31°00.0	21.4	14	30°37.8	25.7	14	30°15.5	25.8	14	29°53.2	21.7
15	46°21.5	.. 13.0	15	45°59.7	.. 21.5	15	45°37.5	.. 25.8	15	45°15.2	.. 25.8	15	44°52.9	.. 21.6
16	61°21.2	13.2	16	60°59.4	21.6	16	60°37.2	25.8	16	60°14.9	25.7	16	59°52.6	21.5
17	76°20.9	13.3	17	75°59.1	21.7	17	75°36.9	25.8	17	75°14.5	25.7	17	74°52.3	21.4
18	91°20.6	S23°13.5	18	90°58.7	S23°21.8	18	90°36.6	S23°25.8	18	90°14.2	S23°25.7	18	89°52.0	S23°21.3
19	106°20.3	13.6	19	105°58.4	21.9	19	105°36.2	25.9	19	105°13.9	25.7	19	104°51.7	21.2
20	121°20.0	13.8	20	120°58.1	21.9	20	120°35.9	25.9	20	120°13.6	25.6	20	119°51.4	21.1
21	136°19.7	.. 13.9	21	135°57.8	.. 22.0	21	135°35.6	.. 25.9	21	135°13.3	.. 25.6	21	134°51.1	.. 21.0
22	151°19.4	14.0	22	150°57.5	22.1	22	150°35.3	25.9	22	150°13.0	25.6	22	149°50.7	20.9
23	166°19.1	14.2	23	165°57.2	22.2	23	165°35.0	26.0	23	165°12.7	25.5	23	164°50.4	20.8
SD=16.2' d=0.2'														
SD=16.2' d=0.1'														
SD=16.2' d=0.0'														
SD=16.3' d=-0.0'														
SD=16.3' d=-0.1'														

DUT1 = UT1-UTC = +0.0877 sec $\Delta T = TT-UT1 = +69.0963$ sec

2023 December 27 to Dec. 31 UT

27	GHA	Dec	30	GHA	Dec
0	179°50.1	S23°20.7	0	179°28.2	S23°11.8
1	194°49.8	20.6	1	194°27.9	11.6
2	209°49.5	20.6	2	209°27.6	11.5
3	224°49.2	· · 20.5	3	224°27.3	· · 11.3
4	239°48.9	20.4	4	239°27.0	11.2
5	254°48.6	20.3	5	254°26.7	11.0
6	269°48.3	S23°20.2	6	269°26.4	S23°10.9
7	284°48.0	20.1	7	284°26.1	10.7
8	299°47.7	20.0	8	299°25.8	10.5
9	314°47.4	· · 19.9	9	314°25.5	· · 10.4
10	329°47.1	19.8	10	329°25.2	10.2
11	344°46.8	19.6	11	344°24.9	10.1
12	359°46.4	S23°19.5	12	359°24.6	S23°09.9
13	14°46.1	19.4	13	14°24.3	09.7
14	29°45.8	19.3	14	29°24.0	09.6
15	44°45.5	· · 19.2	15	44°23.7	· · 09.4
16	59°45.2	19.1	16	59°23.4	09.2
17	74°44.9	19.0	17	74°23.1	09.1
18	89°44.6	S23°18.9	18	89°22.8	S23°08.9
19	104°44.3	18.8	19	104°22.5	08.7
20	119°44.0	18.7	20	119°22.2	08.6
21	134°43.7	· · 18.6	21	134°21.9	· · 08.4
22	149°43.4	18.5	22	149°21.6	08.2
23	164°43.1	18.3	23	164°21.3	08.1
SD=16.3'		d = -0.1'	SD=16.3'		d = -0.2'

28	GHA	Dec	31	GHA	Dec
0	179°42.8	S23°18.2	0	179°21.0	S23°07.9
1	194°42.5	18.1	1	194°20.7	07.7
2	209°42.2	18.0	2	209°20.4	07.5
3	224°41.9	· · 17.9	3	224°20.1	· · 07.4
4	239°41.6	17.8	4	239°19.8	07.2
5	254°41.2	17.6	5	254°19.5	07.0
6	269°40.9	S23°17.5	6	269°19.2	S23°06.8
7	284°40.6	17.4	7	284°18.9	06.7
8	299°40.3	17.3	8	299°18.6	06.5
9	314°40.0	· · 17.2	9	314°18.3	· · 06.3
10	329°39.7	17.0	10	329°18.0	06.1
11	344°39.4	16.9	11	344°17.7	05.9
12	359°39.1	S23°16.8	12	359°17.4	S23°05.8
13	14°38.8	16.7	13	14°17.1	05.6
14	29°38.5	16.5	14	29°16.8	05.4
15	44°38.2	· · 16.4	15	44°16.5	· · 05.2
16	59°37.9	16.3	16	59°16.2	05.0
17	74°37.6	16.2	17	74°15.9	04.8
18	89°37.3	S23°16.0	18	89°15.6	S23°04.6
19	104°37.0	15.9	19	104°15.3	04.5
20	119°36.7	15.8	20	119°15.0	04.3
21	134°36.4	· · 15.6	21	134°14.7	· · 04.1
22	149°36.1	15.5	22	149°14.4	03.9
23	164°35.8	15.4	23	164°14.1	03.7
SD=16.3'		d = -0.1'	SD=16.3'		d = -0.2'

29	GHA	Dec
0	179°35.5	S23°15.2
1	194°35.2	15.1
2	209°34.8	15.0
3	224°34.5	· · 14.8
4	239°34.2	14.7
5	254°33.9	14.6
6	269°33.6	S23°14.4
7	284°33.3	14.3
8	299°33.0	14.1
9	314°32.7	· · 14.0
10	329°32.4	13.9
11	344°32.1	13.7
12	359°31.8	S23°13.6
13	14°31.5	13.4
14	29°31.2	13.3
15	44°30.9	· · 13.1
16	59°30.6	13.0
17	74°30.3	12.8
18	89°30.0	S23°12.7
19	104°29.7	12.6
20	119°29.4	12.4
21	134°29.1	· · 12.3
22	149°28.8	12.1
23	164°28.5	11.9
SD=16.3'		d = -0.1'

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		
0	Plan.						1	Plan.					2	Plan.						
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.															

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																		

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																		

Increments and Corrections

m 9	Sun Plan.	Aries	Moon	v and d corr			m 10	Sun Plan.	Aries	Moon	v and d corr			m 11	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	0	2°30.0	2°30.4	2°23.2	0.0 - 0.0	6.0 - 1.0	12.0 - 2.1	0	2°45.0	2°45.5	2°37.5	0.0 - 0.0	6.0 - 1.2	12.0 - 2.3
1	2°15.3	2°15.6	2°09.1	0.1 - 0.0	6.1 - 1.0	12.1 - 1.9	1	2°30.3	2°30.7	2°23.4	0.1 - 0.0	6.1 - 1.1	12.1 - 2.1	1	2°45.3	2°45.7	2°37.7	0.1 - 0.0	6.1 - 1.2	12.1 - 2.3
2	2°15.5	2°15.9	2°09.3	0.2 - 0.0	6.2 - 1.0	12.2 - 1.9	2	2°30.5	2°30.9	2°23.6	0.2 - 0.0	6.2 - 1.1	12.2 - 2.1	2	2°45.5	2°46.0	2°38.0	0.2 - 0.0	6.2 - 1.2	12.2 - 2.3
3	2°15.8	2°16.1	2°09.6	0.3 - 0.0	6.3 - 1.0	12.3 - 1.9	3	2°30.8	2°31.2	2°23.9	0.3 - 0.1	6.3 - 1.1	12.3 - 2.2	3	2°45.8	2°46.2	2°38.2	0.3 - 0.1	6.3 - 1.2	12.3 - 2.4
4	2°16.0	2°16.4	2°09.8	0.4 - 0.1	6.4 - 1.0	12.4 - 2.0	4	2°31.0	2°31.4	2°24.1	0.4 - 0.1	6.4 - 1.1	12.4 - 2.2	4	2°46.0	2°46.5	2°38.4	0.4 - 0.1	6.4 - 1.2	12.4 - 2.4
5	2°16.3	2°16.6	2°10.0	0.5 - 0.1	6.5 - 1.0	12.5 - 2.0	5	2°31.3	2°31.7	2°24.4	0.5 - 0.1	6.5 - 1.1	12.5 - 2.2	5	2°46.3	2°46.7	2°38.7	0.5 - 0.1	6.5 - 1.2	12.5 - 2.4
6	2°16.5	2°16.9	2°10.3	0.6 - 0.1	6.6 - 1.0	12.6 - 2.0	6	2°31.5	2°31.9	2°24.6	0.6 - 0.1	6.6 - 1.2	12.6 - 2.2	6	2°46.5	2°47.0	2°38.9	0.6 - 0.1	6.6 - 1.3	12.6 - 2.4
7	2°16.8	2°17.1	2°10.5	0.7 - 0.1	6.7 - 1.1	12.7 - 2.0	7	2°31.8	2°32.2	2°24.8	0.7 - 0.1	6.7 - 1.2	12.7 - 2.2	7	2°46.8	2°47.2	2°39.2	0.7 - 0.1	6.7 - 1.3	12.7 - 2.4
8	2°17.0	2°17.4	2°10.8	0.8 - 0.1	6.8 - 1.1	12.8 - 2.0	8	2°32.0	2°32.4	2°25.1	0.8 - 0.1	6.8 - 1.2	12.8 - 2.2	8	2°47.0	2°47.5	2°39.4	0.8 - 0.2	6.8 - 1.3	12.8 - 2.5
9	2°17.3	2°17.6	2°11.0	0.9 - 0.1	6.9 - 1.1	12.9 - 2.0	9	2°32.3	2°32.7	2°25.3	0.9 - 0.2	6.9 - 1.2	12.9 - 2.3	9	2°47.3	2°47.7	2°39.6	0.9 - 0.2	6.9 - 1.3	12.9 - 2.5
10	2°17.5	2°17.9	2°11.2	1.0 - 0.2	7.0 - 1.1	13.0 - 2.1	10	2°32.5	2°32.9	2°25.6	1.0 - 0.2	7.0 - 1.2	13.0 - 2.3	10	2°47.5	2°48.0	2°39.9	1.0 - 0.2	7.0 - 1.3	13.0 - 2.5
11	2°17.8	2°18.1	2°11.5	1.1 - 0.2	7.1 - 1.1	13.1 - 2.1	11	2°32.8	2°33.2	2°25.8	1.1 - 0.2	7.1 - 1.2	13.1 - 2.3	11	2°47.8	2°48.2	2°40.1	1.1 - 0.2	7.1 - 1.4	13.1 - 2.5
12	2°18.0	2°18.4	2°11.7	1.2 - 0.2	7.2 - 1.1	13.2 - 2.1	12	2°33.0	2°33.4	2°26.0	1.2 - 0.2	7.2 - 1.3	13.2 - 2.3	12	2°48.0	2°48.5	2°40.3	1.2 - 0.2	7.2 - 1.4	13.2 - 2.5
13	2°18.3	2°18.6	2°12.0	1.3 - 0.2	7.3 - 1.2	13.3 - 2.1	13	2°33.3	2°33.7	2°26.3	1.3 - 0.2	7.3 - 1.3	13.3 - 2.3	13	2°48.3	2°48.7	2°40.6	1.3 - 0.2	7.3 - 1.4	13.3 - 2.5
14	2°18.5	2°18.9	2°12.2	1.4 - 0.2	7.4 - 1.2	13.4 - 2.1	14	2°33.5	2°33.9	2°26.5	1.4 - 0.2	7.4 - 1.3	13.4 - 2.3	14	2°48.5	2°49.0	2°40.8	1.4 - 0.3	7.4 - 1.4	13.4 - 2.6
15	2°18.8	2°19.1	2°12.4	1.5 - 0.2	7.5 - 1.2	13.5 - 2.1	15	2°33.8	2°34.2	2°26.7	1.5 - 0.3	7.5 - 1.3	13.5 - 2.4	15	2°48.8	2°49.2	2°41.1	1.5 - 0.3	7.5 - 1.4	13.5 - 2.6
16	2°19.0	2°19.4	2°12.7	1.6 - 0.3	7.6 - 1.2	13.6 - 2.2	16	2°34.0	2°34.4	2°27.0	1.6 - 0.3	7.6 - 1.3	13.6 - 2.4	16	2°49.0	2°49.5	2°41.3	1.6 - 0.3	7.6 - 1.5	13.6 - 2.6
17	2°19.3	2°19.6	2°12.9	1.7 - 0.3	7.7 - 1.2	13.7 - 2.2	17	2°34.3	2°34.7	2°27.2	1.7 - 0.3	7.7 - 1.3	13.7 - 2.4	17	2°49.3	2°49.7	2°41.5	1.7 - 0.3	7.7 - 1.5	13.7 - 2.6
18	2°19.5	2°19.9	2°13.1	1.8 - 0.3	7.8 - 1.2	13.8 - 2.2	18	2°34.5	2°34.9	2°27.5	1.8 - 0.3	7.8 - 1.4	13.8 - 2.4	18	2°49.5	2°50.0	2°41.8	1.8 - 0.3	7.8 - 1.5	13.8 - 2.6
19	2°19.7	2°20.1	2°13.4	1.9 - 0.3	7.9 - 1.3	13.9 - 2.2	19	2°34.8	2°35.2	2°27.7	1.9 - 0.3	7.9 - 1.4	13.9 - 2.4	19	2°49.8	2°50.2	2°42.0	1.9 - 0.4	7.9 - 1.5	13.9 - 2.7
20	2°20.0	2°20.4	2°13.6	2.0 - 0.3	8.0 - 1.3	14.0 - 2.2	20	2°35.0	2°35.4	2°27.9	2.0 - 0.3	8.0 - 1.4	14.0 - 2.4	20	2°50.0	2°50.5	2°42.3	2.0 - 0.4	8.0 - 1.5	14.0 - 2.7
21	2°20.2	2°20.6	2°13.9	2.1 - 0.3	8.1 - 1.3	14.1 - 2.2	21	2°35.2	2°35.6	2°28.2	2.1 - 0.4	8.1 - 1.4	14.1 - 2.5	21	2°50.2	2°50.7	2°42.5	2.1 - 0.4	8.1 - 1.6	14.1 - 2.7
22	2°20.5	2°20.9	2°14.1	2.2 - 0.3	8.2 - 1.3	14.2 - 2.2	22	2°35.5	2°35.9	2°28.4	2.2 - 0.4	8.2 - 1.4	14.2 - 2.5	22	2°50.5	2°51.0	2°42.7	2.2 - 0.4	8.2 - 1.6	14.2 - 2.7
23	2°20.7	2°21.1	2°14.3	2.3 - 0.4	8.3 - 1.3	14.3 - 2.3	23	2°35.7	2°36.2	2°28.7	2.3 - 0.4	8.3 - 1.5	14.3 - 2.5	23	2°50.7	2°51.2	2°43.0	2.3 - 0.4	8.3 - 1.6	14.3 - 2.7
24	2°21.0	2°21.4	2°14.6	2.4 - 0.4	8.4 - 1.3	14.4 - 2.3	24	2°36.0	2°36.4	2°28.9	2.4 - 0.4	8.4 - 1.5	14.4 - 2.5	24	2°51.0	2°51.5	2°43.2	2.4 - 0.5	8.4 - 1.6	14.4 - 2.8
25	2°21.2	2°21.6	2°14.8	2.5 - 0.4	8.5 - 1.3	14.5 - 2.3	25	2°36.2	2°36.7	2°29.1	2.5 - 0.4	8.5 - 1.5	14.5 - 2.5	25	2°51.2	2°51.7	2°43.4	2.5 - 0.5	8.5 - 1.6	14.5 - 2.8
26	2°21.5	2°21.9	2°15.1	2.6 - 0.4	8.6 - 1.4	14.6 - 2.3	26	2°36.5	2°36.9	2°29.4	2.6 - 0.5	8.6 - 1.5	14.6 - 2.6	26	2°51.5	2°52.0	2°43.7	2.6 - 0.5	8.6 - 1.6	14.6 - 2.8
27	2°21.7	2°22.1	2°15.3	2.7 - 0.4	8.7 - 1.4	14.7 - 2.3	27	2°36.7	2°37.2	2°29.6	2.7 - 0.5	8.7 - 1.5	14.7 - 2.6	27	2°51.7	2°52.2	2°43.9	2.7 - 0.5	8.7 - 1.7	14.7 - 2.8
28	2°22.0	2°22.4	2°15.5	2.8 - 0.4	8.8 - 1.4	14.8 - 2.3	28	2°37.0	2°37.4	2°29.8	2.8 - 0.5	8.8 - 1.5	14.8 - 2.6	28	2°52.0	2°52.5	2°44.2	2.8 - 0.5	8.8 - 1.7	14.8 - 2.8
29	2°22.2	2°22.6	2°15.8	2.9 - 0.5	8.9 - 1.4	14.9 - 2.4	29	2°37.2	2°37.7	2°30.1	2.9 - 0.5	8.9 - 1.6	14.9 - 2.6	29	2°52.2	2°52.7	2°44.4	2.9 - 0.6	8.9 - 1.7	14.9 - 2.9
30	2°22.5	2°22.9	2°16.0	3.0 - 0.5	9.0 - 1.4	15.0 - 2.4	30	2°37.5	2°37.9	2°30.3	3.0 - 0.5	9.0 - 1.6	15.0 - 2.6	30	2°52.5	2°53.0	2°44.6	3.0 - 0.6	9.0 - 1.7	15.0 - 2.9
31	2°22.8	2°23.1	2°16.2	3.1 - 0.5	9.1 - 1.4	15.1 - 2.4	31	2°37.8	2°38.2	2°30.6	3.1 - 0.5	9.1 - 1.6	15.1 - 2.6	31	2°52.8	2°53.2	2°44.9	3.1 - 0.6	9.1 - 1.7	15.1 - 2.9
32	2°23.0	2°23.4	2°16.5	3.2 - 0.5	9.2 - 1.5	15.2 - 2.4	32	2°38.0	2°38.4	2°30.8	3.2 - 0.6	9.2 - 1.6	15.2 - 2.7	32	2°53.0	2°53.5	2°45.1	3.2 - 0.6	9.2 - 1.8	15.2 - 2.9
33	2°23.3	2°23.6	2°16.7	3.3 - 0.5	9.3 - 1.5	15.3 - 2.4	33	2°38.3	2°38.7	2°31.0	3.3 - 0.6	9.3 - 1.6	15.3 - 2.7	33	2°53.3	2°53.7	2°45.4	3.3 - 0.6	9.3 - 1.8	15.3 - 2.9
34	2°23.5	2°23.9	2°17.0	3.4 - 0.5	9.4 - 1.5	15.4 - 2.4	34	2°38.5	2°38.9	2°31.3	3.4 - 0.6	9.4 - 1.6	15.4 - 2.7	34	2°53.5	2°54.0	2°45.6	3.4 - 0.7	9.4 - 1.8	15.4 - 3.0
35	2°23.8	2°24.1	2°17.2	3.5 - 0.6	9.5 - 1.5	15.5 - 2.5	35	2°38.8	2°39.2	2°31.5	3.5 - 0.6	9.5 - 1.7	15.5 - 2.7	35	2°53.8	2°54.2	2°45.8	3.5 - 0.7	9.5 - 1.8	15.5 - 3.0
36	2°24.0	2°24.4	2°17.4	3.6 - 0.6	9.6 - 1.5	15.6 - 2.5	36	2°39.0	2°39.4	2°31.8	3.6 - 0.6	9.6 - 1.7	15.6 - 2.7	36	2°54.0	2°54.5	2°46.1	3.6 - 0.7	9.6 - 1.8	15.6 - 3.0
37	2°24.3	2°24.6	2°17.7	3.7 - 0.6	9.7 - 1.5	15.7 - 2.5	37	2°39.3	2°39.7	2°32.0	3.7 - 0.6	9.7 - 1.7	15.7 - 2.7	37	2°54.3	2°54.7	2°46.3	3.7 - 0.7	9.7 - 1.9	15.7 - 3.0
38	2°24.5	2°24.9	2°17.9	3.8 - 0.6	9.8 - 1.6	15.8 - 2.5	38	2°39.5	2°39.9	2°32.2	3.8 - 0.7	9.8 - 1.7	15.8 - 2.8	38	2°54.5	2°55.0	2°46.6	3.8 - 0.7	9.8 - 1.9	15.8 - 3.0
39	2°24.8	2°25.1	2°18.2	3.9 - 0.6	9.9 - 1.6	15.9 - 2.5	39	2°39.8	2°40.2	2°32.5	3.9 - 0.7	9.9 - 1.7	15.9 - 2.8	39	2°54.8	2°55.2	2°46.8	3.9 - 0.7	9.9 - 1.9	15.9 - 3.0
40	2°25.0	2°25.4	2°18.4	4.0 - 0.6	10.0 - 1.6	16.0 - 2.5	40	2°40.0	2°40.4	2°32.7	4.0 - 0.7	10.0 - 1.8	16.0 - 2.8	40	2°55.0	2°55.5	2°47.0	4.0 - 0.8	10.0 - 1.9	16.0 - 3.1
41	2°25.3	2°25.6	2°18.6	4.1 - 0.6	10.1 - 1.6	16.1 - 2.5	41	2°40.3	2°40.7	2°32.9	4.1 - 0.7	10.1 - 1.8	16.1 - 2.8	41	2°55.3	2°55.7	2°47.3	4.1 - 0.8	10.1 - 1.9	16.1 - 3.1
42	2°25.5	2°25.9	2°18.9	4.2 - 0.7	10.2 - 1.6	16.2 - 2.6	42	2°40.5	2°40.9	2°33.2	4.2 - 0.7	10.2 - 1.8	16.2 - 2.8	42	2°55.5	2°56.0	2°47.5	4.2 - 0.8	10.2 - 2.0	16.2 - 3.1
43	2°25.8	2°26.1	2°19.1	4.3 - 0.7	10.3 - 1.6	16.3 - 2.6	43	2°40.8	2°41.2	2°33.4	4.3 - 0.8	10.3 - 1.8	16.3 - 2.9	43	2°55.8	2°56.2	2°47.7	4.3 - 0.8	10.3 - 2.0	16.3 - 3.1
44	2°26.0	2°26.4	2°19.3	4.4 - 0.7	10.4 - 1.6	16.4 - 2.6	44	2°41.0	2°41.4	2°33.7	4.4 - 0.8	10.4 - 1.8	16.4 - 2.9	44	2°56.0	2°56.5	2°48.0	4.4 - 0.8	10.4 - 2.0	16.4 - 3.1
45	2°26.3	2°26.6	2°19.6	4.5 - 0.7	10.5 - 1.7	16.5 - 2.6	45	2°41.3	2°41.7	2°33.9	4.5 - 0.8	10.5 - 1.8	16.5 - 2.9	45	2°56.3	2°56.7	2°48.2	4.5 - 0.9	10.5 - 2.0	16.5 - 3.2
46	2°26.5	2°26.9	2°19.8	4.6 - 0.7	10.6 - 1.7	16.6 - 2.6	46	2°41.5	2°41.9	2°34.1	4.6 - 0.8	10.6 - 1.9	16.6 - 2.9	46	2°56.5	2°57.0	2°48.5	4.6 - 0.9	10.6 - 2.0	16.6 - 3.2
47	2°26.8	2°27.2	2°20.1	4.7 - 0.7	10.7 - 1.7	16.7 - 2.6	47	2°41.8	2°42.2	2°34.4	4.7 - 0.8	10.7 - 1.9	16.7 - 2.9	47	2°56.8	2°57.2	2°48.7	4.7 - 0.9	10.7 - 2.1	16.7 - 3.2
48	2°27.0	2°27.4	2°20.3	4.8 - 0.8	10.8 - 1.7	16.8 - 2.7	48	2°42.0	2°42.4	2°34.6	4.8 - 0.8	10.8 - 1.9	16.8 - 2.9	48	2°57.0	2°57.5	2°48.9	4.8 - 0.9	10.8 - 2.1	16.8 - 3.2
49	2°27.2	2°27.7																		

Increments and Corrections

m 12	Sun Plan.	Aries	Moon	v and d corr			m 13	Sun Plan.	Aries	Moon	v and d corr			m 14	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	0	3°15.0	3°15.5	3°06.1	0.0 - 0.0	6.0 - 1.4	12.0 - 2.7	0	3°30.0	3°30.6	3°20.4	0.0 - 0.0	6.0 - 1.4	12.0 - 2.9
1	3°00.3	3°00.7	2°52.0	0.1 - 0.0	6.1 - 1.3	12.1 - 2.5	1	3°15.3	3°15.8	3°06.4	0.1 - 0.0	6.1 - 1.4	12.1 - 2.7	1	3°30.3	3°30.8	3°20.7	0.1 - 0.0	6.1 - 1.5	12.1 - 2.9
2	3°00.5	3°01.0	2°52.3	0.2 - 0.0	6.2 - 1.3	12.2 - 2.5	2	3°15.5	3°16.0	3°06.6	0.2 - 0.0	6.2 - 1.4	12.2 - 2.7	2	3°30.5	3°31.1	3°20.9	0.2 - 0.0	6.2 - 1.5	12.2 - 2.9
3	3°00.8	3°01.2	2°52.5	0.3 - 0.1	6.3 - 1.3	12.3 - 2.6	3	3°15.8	3°16.3	3°06.8	0.3 - 0.1	6.3 - 1.4	12.3 - 2.8	3	3°30.8	3°31.3	3°21.1	0.3 - 0.1	6.3 - 1.5	12.3 - 3.0
4	3°01.0	3°01.5	2°52.8	0.4 - 0.1	6.4 - 1.3	12.4 - 2.6	4	3°16.0	3°16.5	3°07.1	0.4 - 0.1	6.4 - 1.4	12.4 - 2.8	4	3°31.0	3°31.6	3°21.4	0.4 - 0.1	6.4 - 1.5	12.4 - 3.0
5	3°01.3	3°01.7	2°53.0	0.5 - 0.1	6.5 - 1.4	12.5 - 2.6	5	3°16.3	3°16.8	3°07.3	0.5 - 0.1	6.5 - 1.5	12.5 - 2.8	5	3°31.3	3°31.8	3°21.6	0.5 - 0.1	6.5 - 1.6	12.5 - 3.0
6	3°01.5	3°02.0	2°53.2	0.6 - 0.1	6.6 - 1.4	12.6 - 2.6	6	3°16.5	3°17.0	3°07.5	0.6 - 0.1	6.6 - 1.5	12.6 - 2.8	6	3°31.5	3°32.1	3°21.9	0.6 - 0.1	6.6 - 1.6	12.6 - 3.0
7	3°01.8	3°02.2	2°53.5	0.7 - 0.1	6.7 - 1.4	12.7 - 2.6	7	3°16.8	3°17.3	3°07.8	0.7 - 0.2	6.7 - 1.5	12.7 - 2.9	7	3°31.8	3°32.3	3°22.1	0.7 - 0.2	6.7 - 1.6	12.7 - 3.1
8	3°02.0	3°02.5	2°53.7	0.8 - 0.2	6.8 - 1.4	12.8 - 2.7	8	3°17.0	3°17.5	3°08.0	0.8 - 0.2	6.8 - 1.5	12.8 - 2.9	8	3°32.0	3°32.6	3°22.3	0.8 - 0.2	6.8 - 1.6	12.8 - 3.1
9	3°02.3	3°02.7	2°53.9	0.9 - 0.2	6.9 - 1.4	12.9 - 2.7	9	3°17.3	3°17.8	3°08.3	0.9 - 0.2	6.9 - 1.6	12.9 - 2.9	9	3°32.3	3°32.8	3°22.6	0.9 - 0.2	6.9 - 1.7	12.9 - 3.1
10	3°02.5	3°03.0	2°54.2	1.0 - 0.2	7.0 - 1.5	13.0 - 2.7	10	3°17.5	3°18.0	3°08.5	1.0 - 0.2	7.0 - 1.6	13.0 - 2.9	10	3°32.5	3°33.1	3°22.8	1.0 - 0.2	7.0 - 1.7	13.0 - 3.1
11	3°02.8	3°03.2	2°54.4	1.1 - 0.2	7.1 - 1.5	13.1 - 2.7	11	3°17.8	3°18.3	3°08.7	1.1 - 0.2	7.1 - 1.6	13.1 - 2.9	11	3°32.8	3°33.3	3°23.1	1.1 - 0.3	7.1 - 1.7	13.1 - 3.2
12	3°03.0	3°03.5	2°54.7	1.2 - 0.3	7.2 - 1.5	13.2 - 2.8	12	3°18.0	3°18.5	3°09.0	1.2 - 0.3	7.2 - 1.6	13.2 - 3.0	12	3°33.0	3°33.6	3°23.3	1.2 - 0.3	7.2 - 1.7	13.2 - 3.2
13	3°03.3	3°03.8	2°54.9	1.3 - 0.3	7.3 - 1.5	13.3 - 2.8	13	3°18.3	3°18.8	3°09.2	1.3 - 0.3	7.3 - 1.6	13.3 - 3.0	13	3°33.3	3°33.8	3°23.5	1.3 - 0.3	7.3 - 1.8	13.3 - 3.2
14	3°03.5	3°04.0	2°55.1	1.4 - 0.3	7.4 - 1.5	13.4 - 2.8	14	3°18.5	3°19.0	3°09.5	1.4 - 0.3	7.4 - 1.7	13.4 - 3.0	14	3°33.5	3°34.1	3°23.8	1.4 - 0.3	7.4 - 1.8	13.4 - 3.2
15	3°03.8	3°04.3	2°55.4	1.5 - 0.3	7.5 - 1.6	13.5 - 2.8	15	3°18.8	3°19.3	3°09.7	1.5 - 0.3	7.5 - 1.7	13.5 - 3.0	15	3°33.8	3°34.3	3°24.0	1.5 - 0.4	7.5 - 1.8	13.5 - 3.3
16	3°04.0	3°04.5	2°55.6	1.6 - 0.3	7.6 - 1.6	13.6 - 2.8	16	3°19.0	3°19.5	3°09.9	1.6 - 0.4	7.6 - 1.7	13.6 - 3.1	16	3°34.0	3°34.6	3°24.3	1.6 - 0.4	7.6 - 1.8	13.6 - 3.3
17	3°04.2	3°04.8	2°55.9	1.7 - 0.4	7.7 - 1.6	13.7 - 2.9	17	3°19.3	3°19.8	3°10.2	1.7 - 0.4	7.7 - 1.7	13.7 - 3.1	17	3°34.3	3°34.8	3°24.5	1.7 - 0.4	7.7 - 1.9	13.7 - 3.3
18	3°04.5	3°05.0	2°56.1	1.8 - 0.4	7.8 - 1.6	13.8 - 2.9	18	3°19.5	3°20.0	3°10.4	1.8 - 0.4	7.8 - 1.8	13.8 - 3.1	18	3°34.5	3°35.1	3°24.7	1.8 - 0.4	7.8 - 1.9	13.8 - 3.3
19	3°04.7	3°05.3	2°56.3	1.9 - 0.4	7.9 - 1.6	13.9 - 2.9	19	3°19.7	3°20.3	3°10.7	1.9 - 0.4	7.9 - 1.8	13.9 - 3.1	19	3°34.8	3°35.3	3°25.0	1.9 - 0.5	7.9 - 1.9	13.9 - 3.4
20	3°05.0	3°05.5	2°56.6	2.0 - 0.4	8.0 - 1.7	14.0 - 2.9	20	3°20.0	3°20.5	3°10.9	2.0 - 0.5	8.0 - 1.8	14.0 - 3.1	20	3°35.0	3°35.6	3°25.2	2.0 - 0.5	8.0 - 1.9	14.0 - 3.4
21	3°05.2	3°05.8	2°56.8	2.1 - 0.4	8.1 - 1.7	14.1 - 2.9	21	3°20.2	3°20.8	3°11.1	2.1 - 0.5	8.1 - 1.8	14.1 - 3.2	21	3°35.2	3°35.8	3°25.4	2.1 - 0.5	8.1 - 2.0	14.1 - 3.4
22	3°05.5	3°06.0	2°57.0	2.2 - 0.5	8.2 - 1.7	14.2 - 3.0	22	3°20.5	3°21.0	3°11.4	2.2 - 0.5	8.2 - 1.8	14.2 - 3.2	22	3°35.5	3°36.1	3°25.7	2.2 - 0.5	8.2 - 2.0	14.2 - 3.4
23	3°05.7	3°06.3	2°57.3	2.3 - 0.5	8.3 - 1.7	14.3 - 3.0	23	3°20.7	3°21.3	3°11.6	2.3 - 0.5	8.3 - 1.9	14.3 - 3.2	23	3°35.7	3°36.3	3°25.9	2.3 - 0.6	8.3 - 2.0	14.3 - 3.5
24	3°06.0	3°06.5	2°57.5	2.4 - 0.5	8.4 - 1.8	14.4 - 3.0	24	3°21.0	3°21.5	3°11.8	2.4 - 0.5	8.4 - 1.9	14.4 - 3.2	24	3°36.0	3°36.6	3°26.2	2.4 - 0.6	8.4 - 2.0	14.4 - 3.5
25	3°06.2	3°06.8	2°57.8	2.5 - 0.5	8.5 - 1.8	14.5 - 3.0	25	3°21.2	3°21.8	3°12.1	2.5 - 0.6	8.5 - 1.9	14.5 - 3.3	25	3°36.2	3°36.8	3°26.4	2.5 - 0.6	8.5 - 2.1	14.5 - 3.5
26	3°06.5	3°07.0	2°58.0	2.6 - 0.5	8.6 - 1.8	14.6 - 3.0	26	3°21.5	3°22.1	3°12.3	2.6 - 0.6	8.6 - 1.9	14.6 - 3.3	26	3°36.5	3°37.1	3°26.6	2.6 - 0.6	8.6 - 2.1	14.6 - 3.5
27	3°06.7	3°07.3	2°58.2	2.7 - 0.6	8.7 - 1.8	14.7 - 3.1	27	3°21.7	3°22.3	3°12.6	2.7 - 0.6	8.7 - 2.0	14.7 - 3.3	27	3°36.7	3°37.3	3°26.9	2.7 - 0.7	8.7 - 2.1	14.7 - 3.6
28	3°07.0	3°07.5	2°58.5	2.8 - 0.6	8.8 - 1.8	14.8 - 3.1	28	3°22.0	3°22.6	3°12.8	2.8 - 0.6	8.8 - 2.0	14.8 - 3.3	28	3°37.0	3°37.6	3°27.1	2.8 - 0.7	8.8 - 2.1	14.8 - 3.6
29	3°07.2	3°07.8	2°58.7	2.9 - 0.6	8.9 - 1.9	14.9 - 3.1	29	3°22.2	3°22.8	3°13.0	2.9 - 0.7	8.9 - 2.0	14.9 - 3.4	29	3°37.2	3°37.8	3°27.4	2.9 - 0.7	8.9 - 2.2	14.9 - 3.6
30	3°07.5	3°08.0	2°59.0	3.0 - 0.6	9.0 - 1.9	15.0 - 3.1	30	3°22.5	3°23.1	3°13.3	3.0 - 0.7	9.0 - 2.0	15.0 - 3.4	30	3°37.5	3°38.1	3°27.6	3.0 - 0.7	9.0 - 2.2	15.0 - 3.6
31	3°07.8	3°08.3	2°59.2	3.1 - 0.6	9.1 - 1.9	15.1 - 3.1	31	3°22.8	3°23.3	3°13.5	3.1 - 0.7	9.1 - 2.0	15.1 - 3.4	31	3°37.8	3°38.3	3°27.8	3.1 - 0.7	9.1 - 2.2	15.1 - 3.6
32	3°08.0	3°08.5	2°59.4	3.2 - 0.7	9.2 - 1.9	15.2 - 3.2	32	3°23.0	3°23.6	3°13.8	3.2 - 0.7	9.2 - 2.1	15.2 - 3.4	32	3°38.0	3°38.6	3°28.1	3.2 - 0.8	9.2 - 2.2	15.2 - 3.7
33	3°08.3	3°08.8	2°59.7	3.3 - 0.7	9.3 - 1.9	15.3 - 3.2	33	3°23.3	3°23.8	3°14.0	3.3 - 0.7	9.3 - 2.1	15.3 - 3.4	33	3°38.3	3°38.8	3°28.3	3.3 - 0.8	9.3 - 2.2	15.3 - 3.7
34	3°08.5	3°09.0	2°59.9	3.4 - 0.7	9.4 - 2.0	15.4 - 3.2	34	3°23.5	3°24.1	3°14.2	3.4 - 0.8	9.4 - 2.1	15.4 - 3.5	34	3°38.5	3°39.1	3°28.5	3.4 - 0.8	9.4 - 2.3	15.4 - 3.7
35	3°08.8	3°09.3	3°00.2	3.5 - 0.7	9.5 - 2.0	15.5 - 3.2	35	3°23.8	3°24.3	3°14.5	3.5 - 0.8	9.5 - 2.1	15.5 - 3.5	35	3°38.8	3°39.3	3°28.8	3.5 - 0.8	9.5 - 2.3	15.5 - 3.7
36	3°09.0	3°09.5	3°00.4	3.6 - 0.8	9.6 - 2.0	15.6 - 3.3	36	3°24.0	3°24.6	3°14.7	3.6 - 0.8	9.6 - 2.2	15.6 - 3.5	36	3°39.0	3°39.6	3°29.0	3.6 - 0.9	9.6 - 2.3	15.6 - 3.8
37	3°09.3	3°09.8	3°00.6	3.7 - 0.8	9.7 - 2.0	15.7 - 3.3	37	3°24.3	3°24.8	3°14.9	3.7 - 0.8	9.7 - 2.2	15.7 - 3.5	37	3°39.3	3°39.8	3°29.3	3.7 - 0.9	9.7 - 2.3	15.7 - 3.8
38	3°09.5	3°10.0	3°00.9	3.8 - 0.8	9.8 - 2.0	15.8 - 3.3	38	3°24.5	3°25.1	3°15.2	3.8 - 0.9	9.8 - 2.2	15.8 - 3.6	38	3°39.5	3°40.1	3°29.5	3.8 - 0.9	9.8 - 2.4	15.8 - 3.8
39	3°09.8	3°10.3	3°01.1	3.9 - 0.8	9.9 - 2.1	15.9 - 3.3	39	3°24.8	3°25.3	3°15.4	3.9 - 0.9	9.9 - 2.2	15.9 - 3.6	39	3°39.8	3°40.4	3°29.7	3.9 - 0.9	9.9 - 2.4	15.9 - 3.8
40	3°10.0	3°10.5	3°01.3	4.0 - 0.8	10.0 - 2.1	16.0 - 3.3	40	3°25.0	3°25.6	3°15.7	4.0 - 0.9	10.0 - 2.3	16.0 - 3.6	40	3°40.0	3°40.6	3°30.0	4.0 - 1.0	10.0 - 2.4	16.0 - 3.9
41	3°10.3	3°10.8	3°01.6	4.1 - 0.9	10.1 - 2.1	16.1 - 3.4	41	3°25.3	3°25.8	3°15.9	4.1 - 0.9	10.1 - 2.3	16.1 - 3.6	41	3°40.3	3°40.9	3°30.2	4.1 - 1.0	10.1 - 2.4	16.1 - 3.9
42	3°10.5	3°11.0	3°01.8	4.2 - 0.9	10.2 - 2.1	16.2 - 3.4	42	3°25.5	3°26.1	3°16.1	4.2 - 0.9	10.2 - 2.3	16.2 - 3.6	42	3°40.5	3°41.1	3°30.5	4.2 - 1.0	10.2 - 2.5	16.2 - 3.9
43	3°10.8	3°11.3	3°02.1	4.3 - 0.9	10.3 - 2.1	16.3 - 3.4	43	3°25.8	3°26.3	3°16.4	4.3 - 1.0	10.3 - 2.3	16.3 - 3.7	43	3°40.8	3°41.4	3°30.7	4.3 - 1.0	10.3 - 2.5	16.3 - 3.9
44	3°11.0	3°11.5	3°02.3	4.4 - 0.9	10.4 - 2.2	16.4 - 3.4	44	3°26.0	3°26.6	3°16.6	4.4 - 1.0	10.4 - 2.3	16.4 - 3.7	44	3°41.0	3°41.6	3°30.9	4.4 - 1.1	10.4 - 2.5	16.4 - 4.0
45	3°11.3	3°11.8	3°02.5	4.5 - 0.9	10.5 - 2.2	16.5 - 3.4	45	3°26.3	3°26.8	3°16.9	4.5 - 1.0	10.5 - 2.4	16.5 - 3.7	45	3°41.3	3°41.9	3°31.2	4.5 - 1.1	10.5 - 2.5	16.5 - 4.0
46	3°11.5	3°12.0	3°02.8	4.6 - 1.0	10.6 - 2.2	16.6 - 3.5	46	3°26.5	3°27.1	3°17.1	4.6 - 1.0	10.6 - 2.4	16.6 - 3.7	46	3°41.5	3°42.1	3°31.4	4.6 - 1.1	10.6 - 2.6	16.6 - 4.0
47	3°11.7	3°12.3	3°03.0	4.7 - 1.0	10.7 - 2.2	16.7 - 3.5	47	3°26.8	3°27.3	3°17.3	4.7 - 1.1	10.7 - 2.4	16.7 - 3.8	47	3°41.8	3°42.4	3°31.6	4.7 - 1.1	10.7 - 2.6	16.7 - 4.0
48	3°12.0	3°12.5	3°03.3	4.8 - 1.0	10.8 - 2.3	16.8 - 3.5	48	3°27.0	3°27.6	3°17.6	4.8 - 1.1	10.8 - 2.4	16.8 - 3.8	48	3°42.0	3°42.6	3°31.9	4.8 - 1.2	10.8 - 2.6	16.8 - 4.1
49	3°12.2	3°12.																		

Increments and Corrections

m 15	Sun Plan.	Aries	Moon	v and d corr			m 16	Sun Plan.	Aries	Moon	v and d corr			m 17	Sun Plan.	Aries	Moon	v and d corr		
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 - 2.2	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.																		

Increments and Corrections

m 21	Sun Plan.	Aries	Moon	v and d corr			m 22	Sun Plan.	Aries	Moon	v and d corr			m 23	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	0	5°30.0	5°30.9	5°15.0	0.0 - 0.0	6.0 - 2.3	12.0 - 4.5	0	5°45.0	5°45.9	5°29.3	0.0 - 0.0	6.0 - 2.4	12.0 - 4.7
1	5°15.2	5°16.1	5°00.9	0.1 - 0.0	6.1 - 2.2	12.1 - 4.3	1	5°30.2	5°31.2	5°15.2	0.1 - 0.0	6.1 - 2.3	12.1 - 4.5	1	5°45.2	5°46.2	5°29.5	0.1 - 0.0	6.1 - 2.4	12.1 - 4.7
2	5°15.5	5°16.4	5°01.1	0.2 - 0.1	6.2 - 2.2	12.2 - 4.4	2	5°30.5	5°31.4	5°15.4	0.2 - 0.1	6.2 - 2.3	12.2 - 4.6	2	5°45.5	5°46.4	5°29.8	0.2 - 0.1	6.2 - 2.4	12.2 - 4.8
3	5°15.8	5°16.6	5°01.4	0.3 - 0.1	6.3 - 2.3	12.3 - 4.4	3	5°30.8	5°31.7	5°15.7	0.3 - 0.1	6.3 - 2.4	12.3 - 4.6	3	5°45.8	5°46.7	5°30.0	0.3 - 0.1	6.3 - 2.5	12.3 - 4.8
4	5°16.0	5°16.9	5°01.6	0.4 - 0.1	6.4 - 2.3	12.4 - 4.4	4	5°31.0	5°31.9	5°15.9	0.4 - 0.2	6.4 - 2.4	12.4 - 4.7	4	5°46.0	5°46.9	5°30.2	0.4 - 0.2	6.4 - 2.5	12.4 - 4.9
5	5°16.2	5°17.1	5°01.8	0.5 - 0.2	6.5 - 2.3	12.5 - 4.5	5	5°31.2	5°32.2	5°16.2	0.5 - 0.2	6.5 - 2.4	12.5 - 4.7	5	5°46.2	5°47.2	5°30.5	0.5 - 0.2	6.5 - 2.5	12.5 - 4.9
6	5°16.5	5°17.4	5°02.1	0.6 - 0.2	6.6 - 2.4	12.6 - 4.5	6	5°31.5	5°32.4	5°16.4	0.6 - 0.2	6.6 - 2.5	12.6 - 4.7	6	5°46.5	5°47.4	5°30.7	0.6 - 0.2	6.6 - 2.6	12.6 - 4.9
7	5°16.8	5°17.6	5°02.3	0.7 - 0.3	6.7 - 2.4	12.7 - 4.6	7	5°31.8	5°32.7	5°16.6	0.7 - 0.3	6.7 - 2.5	12.7 - 4.8	7	5°46.8	5°47.7	5°31.0	0.7 - 0.3	6.7 - 2.6	12.7 - 5.0
8	5°17.0	5°17.9	5°02.6	0.8 - 0.3	6.8 - 2.4	12.8 - 4.6	8	5°32.0	5°32.9	5°16.9	0.8 - 0.3	6.8 - 2.5	12.8 - 4.8	8	5°47.0	5°47.9	5°31.2	0.8 - 0.3	6.8 - 2.7	12.8 - 5.0
9	5°17.2	5°18.1	5°02.8	0.9 - 0.3	6.9 - 2.5	12.9 - 4.6	9	5°32.2	5°33.2	5°17.1	0.9 - 0.3	6.9 - 2.6	12.9 - 4.8	9	5°47.2	5°48.2	5°31.4	0.9 - 0.4	6.9 - 2.7	12.9 - 5.1
10	5°17.5	5°18.4	5°03.0	1.0 - 0.4	7.0 - 2.5	13.0 - 4.7	10	5°32.5	5°33.4	5°17.4	1.0 - 0.4	7.0 - 2.6	13.0 - 4.9	10	5°47.5	5°48.4	5°31.7	1.0 - 0.4	7.0 - 2.7	13.0 - 5.1
11	5°17.8	5°18.6	5°03.3	1.1 - 0.4	7.1 - 2.5	13.1 - 4.7	11	5°32.8	5°33.7	5°17.6	1.1 - 0.4	7.1 - 2.7	13.1 - 4.9	11	5°47.8	5°48.7	5°31.9	1.1 - 0.4	7.1 - 2.8	13.1 - 5.1
12	5°18.0	5°18.9	5°03.5	1.2 - 0.4	7.2 - 2.6	13.2 - 4.7	12	5°33.0	5°33.9	5°17.8	1.2 - 0.5	7.2 - 2.7	13.2 - 4.9	12	5°48.0	5°49.0	5°32.1	1.2 - 0.5	7.2 - 2.8	13.2 - 5.2
13	5°18.2	5°19.1	5°03.8	1.3 - 0.5	7.3 - 2.6	13.3 - 4.8	13	5°33.2	5°34.2	5°18.1	1.3 - 0.5	7.3 - 2.7	13.3 - 5.0	13	5°48.2	5°49.2	5°32.4	1.3 - 0.5	7.3 - 2.9	13.3 - 5.2
14	5°18.5	5°19.4	5°04.0	1.4 - 0.5	7.4 - 2.7	13.4 - 4.8	14	5°33.5	5°34.4	5°18.3	1.4 - 0.5	7.4 - 2.8	13.4 - 5.0	14	5°48.5	5°49.5	5°32.6	1.4 - 0.5	7.4 - 2.9	13.4 - 5.2
15	5°18.8	5°19.6	5°04.2	1.5 - 0.5	7.5 - 2.7	13.5 - 4.8	15	5°33.8	5°34.7	5°18.5	1.5 - 0.6	7.5 - 2.8	13.5 - 5.1	15	5°48.8	5°49.7	5°32.9	1.5 - 0.6	7.5 - 2.9	13.5 - 5.3
16	5°19.0	5°19.9	5°04.5	1.6 - 0.6	7.6 - 2.7	13.6 - 4.9	16	5°34.0	5°34.9	5°18.8	1.6 - 0.6	7.6 - 2.8	13.6 - 5.1	16	5°49.0	5°50.0	5°33.1	1.6 - 0.6	7.6 - 3.0	13.6 - 5.3
17	5°19.3	5°20.1	5°04.7	1.7 - 0.6	7.7 - 2.8	13.7 - 4.9	17	5°34.3	5°35.2	5°19.0	1.7 - 0.6	7.7 - 2.9	13.7 - 5.1	17	5°49.3	5°50.2	5°33.3	1.7 - 0.7	7.7 - 3.0	13.7 - 5.4
18	5°19.5	5°20.4	5°04.9	1.8 - 0.6	7.8 - 2.8	13.8 - 4.9	18	5°34.5	5°35.4	5°19.3	1.8 - 0.7	7.8 - 2.9	13.8 - 5.2	18	5°49.5	5°50.5	5°33.6	1.8 - 0.7	7.8 - 3.1	13.8 - 5.4
19	5°19.7	5°20.6	5°05.2	1.9 - 0.7	7.9 - 2.8	13.9 - 5.0	19	5°34.8	5°35.7	5°19.5	1.9 - 0.7	7.9 - 3.0	13.9 - 5.2	19	5°49.8	5°50.7	5°33.8	1.9 - 0.7	7.9 - 3.1	13.9 - 5.4
20	5°20.0	5°20.9	5°05.4	2.0 - 0.7	8.0 - 2.9	14.0 - 5.0	20	5°35.0	5°35.9	5°19.7	2.0 - 0.8	8.0 - 3.0	14.0 - 5.3	20	5°50.0	5°51.0	5°34.1	2.0 - 0.8	8.0 - 3.1	14.0 - 5.5
21	5°20.3	5°21.1	5°05.7	2.1 - 0.8	8.1 - 2.9	14.1 - 5.1	21	5°35.3	5°36.2	5°20.0	2.1 - 0.8	8.1 - 3.0	14.1 - 5.3	21	5°50.3	5°51.2	5°34.3	2.1 - 0.8	8.1 - 3.2	14.1 - 5.5
22	5°20.5	5°21.4	5°05.9	2.2 - 0.8	8.2 - 2.9	14.2 - 5.1	22	5°35.5	5°36.4	5°20.2	2.2 - 0.8	8.2 - 3.1	14.2 - 5.3	22	5°50.5	5°51.5	5°34.5	2.2 - 0.9	8.2 - 3.2	14.2 - 5.6
23	5°20.7	5°21.6	5°06.1	2.3 - 0.8	8.3 - 3.0	14.3 - 5.1	23	5°35.7	5°36.7	5°20.5	2.3 - 0.9	8.3 - 3.1	14.3 - 5.4	23	5°50.7	5°51.7	5°34.8	2.3 - 0.9	8.3 - 3.3	14.3 - 5.6
24	5°21.0	5°21.9	5°06.4	2.4 - 0.9	8.4 - 3.0	14.4 - 5.2	24	5°36.0	5°36.9	5°20.7	2.4 - 0.9	8.4 - 3.2	14.4 - 5.4	24	5°51.0	5°52.0	5°35.0	2.4 - 0.9	8.4 - 3.3	14.4 - 5.6
25	5°21.3	5°22.1	5°06.6	2.5 - 0.9	8.5 - 3.0	14.5 - 5.2	25	5°36.3	5°37.2	5°20.9	2.5 - 0.9	8.5 - 3.2	14.5 - 5.4	25	5°51.3	5°52.2	5°35.2	2.5 - 1.0	8.5 - 3.3	14.5 - 5.7
26	5°21.5	5°22.4	5°06.9	2.6 - 0.9	8.6 - 3.1	14.6 - 5.2	26	5°36.5	5°37.4	5°21.2	2.6 - 1.0	8.6 - 3.2	14.6 - 5.5	26	5°51.5	5°52.5	5°35.5	2.6 - 1.0	8.6 - 3.4	14.6 - 5.7
27	5°21.7	5°22.6	5°07.1	2.7 - 1.0	8.7 - 3.1	14.7 - 5.3	27	5°36.7	5°37.7	5°21.4	2.7 - 1.0	8.7 - 3.3	14.7 - 5.5	27	5°51.7	5°52.7	5°35.7	2.7 - 1.1	8.7 - 3.4	14.7 - 5.8
28	5°22.0	5°22.9	5°07.3	2.8 - 1.0	8.8 - 3.2	14.8 - 5.3	28	5°37.0	5°37.9	5°21.6	2.8 - 1.1	8.8 - 3.3	14.8 - 5.6	28	5°52.0	5°53.0	5°36.0	2.8 - 1.1	8.8 - 3.4	14.8 - 5.8
29	5°22.3	5°23.1	5°07.6	2.9 - 1.0	8.9 - 3.2	14.9 - 5.3	29	5°37.3	5°38.2	5°21.9	2.9 - 1.1	8.9 - 3.3	14.9 - 5.6	29	5°52.3	5°53.2	5°36.2	2.9 - 1.1	8.9 - 3.5	14.9 - 5.8
30	5°22.5	5°23.4	5°07.8	3.0 - 1.1	9.0 - 3.2	15.0 - 5.4	30	5°37.5	5°38.4	5°22.1	3.0 - 1.1	9.0 - 3.4	15.0 - 5.6	30	5°52.5	5°53.5	5°36.4	3.0 - 1.2	9.0 - 3.5	15.0 - 5.9
31	5°22.7	5°23.6	5°08.0	3.1 - 1.1	9.1 - 3.3	15.1 - 5.4	31	5°37.7	5°38.7	5°22.4	3.1 - 1.2	9.1 - 3.4	15.1 - 5.7	31	5°52.7	5°53.7	5°36.7	3.1 - 1.2	9.1 - 3.6	15.1 - 5.9
32	5°23.0	5°23.9	5°08.3	3.2 - 1.1	9.2 - 3.3	15.2 - 5.4	32	5°38.0	5°38.9	5°22.6	3.2 - 1.2	9.2 - 3.4	15.2 - 5.7	32	5°53.0	5°54.0	5°36.9	3.2 - 1.3	9.2 - 3.6	15.2 - 6.0
33	5°23.3	5°24.1	5°08.5	3.3 - 1.2	9.3 - 3.3	15.3 - 5.5	33	5°38.3	5°39.2	5°22.8	3.3 - 1.2	9.3 - 3.5	15.3 - 5.7	33	5°53.3	5°54.2	5°37.2	3.3 - 1.3	9.3 - 3.6	15.3 - 6.0
34	5°23.5	5°24.4	5°08.8	3.4 - 1.2	9.4 - 3.4	15.4 - 5.5	34	5°38.5	5°39.4	5°23.1	3.4 - 1.3	9.4 - 3.5	15.4 - 5.8	34	5°53.5	5°54.5	5°37.4	3.4 - 1.3	9.4 - 3.7	15.4 - 6.0
35	5°23.7	5°24.6	5°09.0	3.5 - 1.3	9.5 - 3.4	15.5 - 5.6	35	5°38.7	5°39.7	5°23.3	3.5 - 1.3	9.5 - 3.6	15.5 - 5.8	35	5°53.7	5°54.7	5°37.6	3.5 - 1.4	9.5 - 3.7	15.5 - 6.1
36	5°24.0	5°24.9	5°09.2	3.6 - 1.3	9.6 - 3.4	15.6 - 5.6	36	5°39.0	5°39.9	5°23.6	3.6 - 1.4	9.6 - 3.6	15.6 - 5.8	36	5°54.0	5°55.0	5°37.9	3.6 - 1.4	9.6 - 3.8	15.6 - 6.1
37	5°24.3	5°25.1	5°09.5	3.7 - 1.3	9.7 - 3.5	15.7 - 5.6	37	5°39.3	5°40.2	5°23.8	3.7 - 1.4	9.7 - 3.6	15.7 - 5.9	37	5°54.3	5°55.2	5°38.1	3.7 - 1.4	9.7 - 3.8	15.7 - 6.2
38	5°24.5	5°25.4	5°09.7	3.8 - 1.4	9.8 - 3.5	15.8 - 5.7	38	5°39.5	5°40.4	5°24.0	3.8 - 1.4	9.8 - 3.7	15.8 - 5.9	38	5°54.5	5°55.5	5°38.4	3.8 - 1.5	9.8 - 3.8	15.8 - 6.2
39	5°24.7	5°25.6	5°10.0	3.9 - 1.4	9.9 - 3.5	15.9 - 5.7	39	5°39.7	5°40.7	5°24.3	3.9 - 1.5	9.9 - 3.7	15.9 - 6.0	39	5°54.7	5°55.7	5°38.6	3.9 - 1.5	9.9 - 3.9	15.9 - 6.2
40	5°25.0	5°25.9	5°10.2	4.0 - 1.4	10.0 - 3.6	16.0 - 5.7	40	5°40.0	5°40.9	5°24.5	4.0 - 1.5	10.0 - 3.8	16.0 - 6.0	40	5°55.0	5°56.0	5°38.8	4.0 - 1.6	10.0 - 3.9	16.0 - 6.3
41	5°25.3	5°26.1	5°10.4	4.1 - 1.5	10.1 - 3.6	16.1 - 5.8	41	5°40.3	5°41.2	5°24.7	4.1 - 1.5	10.1 - 3.8	16.1 - 6.0	41	5°55.3	5°56.2	5°39.1	4.1 - 1.6	10.1 - 4.0	16.1 - 6.3
42	5°25.5	5°26.4	5°10.7	4.2 - 1.5	10.2 - 3.7	16.2 - 5.8	42	5°40.5	5°41.4	5°25.0	4.2 - 1.6	10.2 - 3.8	16.2 - 6.1	42	5°55.5	5°56.5	5°39.3	4.2 - 1.6	10.2 - 4.0	16.2 - 6.3
43	5°25.7	5°26.6	5°10.9	4.3 - 1.5	10.3 - 3.7	16.3 - 5.8	43	5°40.7	5°41.7	5°25.2	4.3 - 1.6	10.3 - 3.9	16.3 - 6.1	43	5°55.7	5°56.7	5°39.5	4.3 - 1.7	10.3 - 4.0	16.3 - 6.4
44	5°26.0	5°26.9	5°11.1	4.4 - 1.6	10.4 - 3.7	16.4 - 5.9	44	5°41.0	5°41.9	5°25.5	4.4 - 1.7	10.4 - 3.9	16.4 - 6.1	44	5°56.0	5°57.0	5°39.8	4.4 - 1.7	10.4 - 4.1	16.4 - 6.4
45	5°26.3	5°27.1	5°11.4	4.5 - 1.6	10.5 - 3.8	16.5 - 5.9	45	5°41.3	5°42.2	5°25.7	4.5 - 1.7	10.5 - 3.9	16.5 - 6.2	45	5°56.3	5°57.2	5°40.0	4.5 - 1.8	10.5 - 4.1	16.5 - 6.5
46	5°26.5	5°27.4	5°11.6	4.6 - 1.6	10.6 - 3.8	16.6 - 5.9	46	5°41.5	5°42.4	5°25.9	4.6 - 1.7	10.6 - 4.0	16.6 - 6.2	46	5°56.5	5°57.5	5°40.3	4.6 - 1.8	10.6 - 4.2	16.6 - 6.5
47	5°26.8	5°27.6	5°11.9	4.7 - 1.7	10.7 - 3.8	16.7 - 6.0	47	5°41.8	5°42.7	5°26.2	4.7 - 1.8	10.7 - 4.0	16.7 - 6.3	47	5°56.8	5°57.7	5°40.5	4.7 - 1.8	10.7 - 4.2	16.7 - 6.5
48	5°27.0	5°27.9	5°12.1	4.8 - 1.7	10.8 - 3.9	16.8 - 6.0	48	5°42.0	5°42.9	5°26.4	4.8 - 1.8	10.8 - 4.1	16.8 - 6.3	48	5°57.0	5°58.0	5°40.7	4.8 - 1.9	10.8 - 4.2	16.8 - 6.6
49	5°27.2	5°28.																		

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.																		

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 - 7.9
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 - 7.8
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.																		

Increments and Corrections

m 30	Sun Plan.	Aries	Moon	v and d corr			m 31	Sun Plan.	Aries	Moon	v and d corr			m 32	Sun Plan.	Aries	Moon	v and d corr		
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°43.																		

Increments and Corrections

m 33	Sun Plan.	Aries	Moon	v and d corr			m 34	Sun Plan.	Aries	Moon	v and d corr			m 35	Sun Plan.	Aries	Moon	v and d corr		
0	8°15.0	8°16.4	7°52.5	0.0 - 0.0	6.0 - 3.4	12.0 - 6.7	0	8°30.0	8°31.4	8°06.8	0.0 - 0.0	6.0 - 3.4	12.0 - 6.9	0	8°45.0	8°46.4	8°21.1	0.0 - 0.0	6.0 - 3.5	12.0 - 7.1
1	8°15.2	8°16.6	7°52.7	0.1 - 0.1	6.1 - 3.4	12.1 - 6.8	1	8°30.2	8°31.6	8°07.0	0.1 - 0.1	6.1 - 3.5	12.1 - 7.0	1	8°45.2	8°46.7	8°21.3	0.1 - 0.1	6.1 - 3.6	12.1 - 7.2
2	8°15.5	8°16.9	7°52.9	0.2 - 0.1	6.2 - 3.5	12.2 - 6.8	2	8°30.5	8°31.9	8°07.2	0.2 - 0.1	6.2 - 3.6	12.2 - 7.0	2	8°45.5	8°46.9	8°21.6	0.2 - 0.1	6.2 - 3.7	12.2 - 7.2
3	8°15.7	8°17.1	7°53.2	0.3 - 0.2	6.3 - 3.5	12.3 - 6.9	3	8°30.7	8°32.1	8°07.5	0.3 - 0.2	6.3 - 3.6	12.3 - 7.1	3	8°45.7	8°47.2	8°21.8	0.3 - 0.2	6.3 - 3.7	12.3 - 7.3
4	8°16.0	8°17.4	7°53.4	0.4 - 0.2	6.4 - 3.6	12.4 - 6.9	4	8°31.0	8°32.4	8°07.7	0.4 - 0.2	6.4 - 3.7	12.4 - 7.1	4	8°46.0	8°47.4	8°22.0	0.4 - 0.2	6.4 - 3.8	12.4 - 7.3
5	8°16.3	8°17.6	7°53.6	0.5 - 0.3	6.5 - 3.6	12.5 - 7.0	5	8°31.3	8°32.6	8°08.0	0.5 - 0.3	6.5 - 3.7	12.5 - 7.2	5	8°46.3	8°47.7	8°22.3	0.5 - 0.3	6.5 - 3.8	12.5 - 7.4
6	8°16.5	8°17.9	7°53.9	0.6 - 0.3	6.6 - 3.7	12.6 - 7.0	6	8°31.5	8°32.9	8°08.2	0.6 - 0.3	6.6 - 3.8	12.6 - 7.2	6	8°46.5	8°47.9	8°22.5	0.6 - 0.4	6.6 - 3.9	12.6 - 7.5
7	8°16.8	8°18.1	7°54.1	0.7 - 0.4	6.7 - 3.7	12.7 - 7.1	7	8°31.8	8°33.1	8°08.4	0.7 - 0.4	6.7 - 3.9	12.7 - 7.3	7	8°46.8	8°48.2	8°22.8	0.7 - 0.4	6.7 - 4.0	12.7 - 7.5
8	8°17.0	8°18.4	7°54.4	0.8 - 0.4	6.8 - 3.8	12.8 - 7.1	8	8°32.0	8°33.4	8°08.7	0.8 - 0.5	6.8 - 3.9	12.8 - 7.4	8	8°47.0	8°48.4	8°23.0	0.8 - 0.5	6.8 - 4.0	12.8 - 7.6
9	8°17.2	8°18.6	7°54.6	0.9 - 0.5	6.9 - 3.9	12.9 - 7.2	9	8°32.2	8°33.7	8°08.9	0.9 - 0.5	6.9 - 4.0	12.9 - 7.4	9	8°47.2	8°48.7	8°23.2	0.9 - 0.5	6.9 - 4.1	12.9 - 7.6
10	8°17.5	8°18.9	7°54.8	1.0 - 0.6	7.0 - 3.9	13.0 - 7.3	10	8°32.5	8°33.9	8°09.2	1.0 - 0.6	7.0 - 4.0	13.0 - 7.5	10	8°47.5	8°48.9	8°23.5	1.0 - 0.6	7.0 - 4.1	13.0 - 7.7
11	8°17.7	8°19.1	7°55.1	1.1 - 0.6	7.1 - 4.0	13.1 - 7.3	11	8°32.7	8°34.2	8°09.4	1.1 - 0.6	7.1 - 4.1	13.1 - 7.5	11	8°47.7	8°49.2	8°23.7	1.1 - 0.7	7.1 - 4.2	13.1 - 7.8
12	8°18.0	8°19.4	7°55.3	1.2 - 0.7	7.2 - 4.0	13.2 - 7.4	12	8°33.0	8°34.4	8°09.6	1.2 - 0.7	7.2 - 4.1	13.2 - 7.6	12	8°48.0	8°49.4	8°23.9	1.2 - 0.7	7.2 - 4.3	13.2 - 7.8
13	8°18.3	8°19.6	7°55.6	1.3 - 0.7	7.3 - 4.1	13.3 - 7.4	13	8°33.3	8°34.7	8°09.9	1.3 - 0.7	7.3 - 4.2	13.3 - 7.6	13	8°48.3	8°49.7	8°24.2	1.3 - 0.8	7.3 - 4.3	13.3 - 7.9
14	8°18.5	8°19.9	7°55.8	1.4 - 0.8	7.4 - 4.1	13.4 - 7.5	14	8°33.5	8°34.9	8°10.1	1.4 - 0.8	7.4 - 4.3	13.4 - 7.7	14	8°48.5	8°49.9	8°24.4	1.4 - 0.8	7.4 - 4.4	13.4 - 7.9
15	8°18.8	8°20.1	7°56.0	1.5 - 0.8	7.5 - 4.2	13.5 - 7.5	15	8°33.8	8°35.2	8°10.3	1.5 - 0.9	7.5 - 4.3	13.5 - 7.8	15	8°48.8	8°50.2	8°24.7	1.5 - 0.9	7.5 - 4.4	13.5 - 8.0
16	8°19.0	8°20.4	7°56.3	1.6 - 0.9	7.6 - 4.2	13.6 - 7.6	16	8°34.0	8°35.4	8°10.6	1.6 - 0.9	7.6 - 4.4	13.6 - 7.8	16	8°49.0	8°50.4	8°24.9	1.6 - 0.9	7.6 - 4.5	13.6 - 8.0
17	8°19.2	8°20.6	7°56.5	1.7 - 0.9	7.7 - 4.3	13.7 - 7.6	17	8°34.2	8°35.7	8°10.8	1.7 - 1.0	7.7 - 4.4	13.7 - 7.9	17	8°49.2	8°50.7	8°25.1	1.7 - 1.0	7.7 - 4.6	13.7 - 8.1
18	8°19.5	8°20.9	7°56.7	1.8 - 1.0	7.8 - 4.4	13.8 - 7.7	18	8°34.5	8°35.9	8°11.1	1.8 - 1.0	7.8 - 4.5	13.8 - 7.9	18	8°49.5	8°50.9	8°25.4	1.8 - 1.1	7.8 - 4.6	13.8 - 8.2
19	8°19.8	8°21.1	7°57.0	1.9 - 1.1	7.9 - 4.4	13.9 - 7.8	19	8°34.8	8°36.2	8°11.3	1.9 - 1.1	7.9 - 4.5	13.9 - 8.0	19	8°49.8	8°51.2	8°25.6	1.9 - 1.1	7.9 - 4.7	13.9 - 8.2
20	8°20.0	8°21.4	7°57.2	2.0 - 1.1	8.0 - 4.5	14.0 - 7.8	20	8°35.0	8°36.4	8°11.5	2.0 - 1.1	8.0 - 4.6	14.0 - 8.0	20	8°50.0	8°51.4	8°25.9	2.0 - 1.2	8.0 - 4.7	14.0 - 8.3
21	8°20.3	8°21.6	7°57.5	2.1 - 1.2	8.1 - 4.5	14.1 - 7.9	21	8°35.3	8°36.7	8°11.8	2.1 - 1.2	8.1 - 4.7	14.1 - 8.1	21	8°50.3	8°51.7	8°26.1	2.1 - 1.2	8.1 - 4.8	14.1 - 8.3
22	8°20.5	8°21.9	7°57.7	2.2 - 1.2	8.2 - 4.6	14.2 - 7.9	22	8°35.5	8°36.9	8°12.0	2.2 - 1.3	8.2 - 4.7	14.2 - 8.2	22	8°50.5	8°52.0	8°26.3	2.2 - 1.3	8.2 - 4.9	14.2 - 8.4
23	8°20.7	8°22.1	7°57.9	2.3 - 1.3	8.3 - 4.6	14.3 - 8.0	23	8°35.7	8°37.2	8°12.3	2.3 - 1.3	8.3 - 4.8	14.3 - 8.2	23	8°50.7	8°52.2	8°26.6	2.3 - 1.4	8.3 - 4.9	14.3 - 8.5
24	8°21.0	8°22.4	7°58.2	2.4 - 1.3	8.4 - 4.7	14.4 - 8.0	24	8°36.0	8°37.4	8°12.5	2.4 - 1.4	8.4 - 4.8	14.4 - 8.3	24	8°51.0	8°52.5	8°26.8	2.4 - 1.4	8.4 - 5.0	14.4 - 8.5
25	8°21.2	8°22.6	7°58.4	2.5 - 1.4	8.5 - 4.7	14.5 - 8.1	25	8°36.2	8°37.7	8°12.7	2.5 - 1.4	8.5 - 4.9	14.5 - 8.3	25	8°51.2	8°52.7	8°27.0	2.5 - 1.5	8.5 - 5.0	14.5 - 8.6
26	8°21.5	8°22.9	7°58.7	2.6 - 1.5	8.6 - 4.8	14.6 - 8.2	26	8°36.5	8°37.9	8°13.0	2.6 - 1.5	8.6 - 4.9	14.6 - 8.4	26	8°51.5	8°53.0	8°27.3	2.6 - 1.5	8.6 - 5.1	14.6 - 8.6
27	8°21.8	8°23.1	7°58.9	2.7 - 1.5	8.7 - 4.9	14.7 - 8.2	27	8°36.8	8°38.2	8°13.2	2.7 - 1.6	8.7 - 5.0	14.7 - 8.5	27	8°51.8	8°53.2	8°27.5	2.7 - 1.6	8.7 - 5.1	14.7 - 8.7
28	8°22.0	8°23.4	7°59.1	2.8 - 1.6	8.8 - 4.9	14.8 - 8.3	28	8°37.0	8°38.4	8°13.4	2.8 - 1.6	8.8 - 5.1	14.8 - 8.5	28	8°52.0	8°53.5	8°27.8	2.8 - 1.7	8.8 - 5.2	14.8 - 8.8
29	8°22.3	8°23.6	7°59.4	2.9 - 1.6	8.9 - 5.0	14.9 - 8.3	29	8°37.3	8°38.7	8°13.7	2.9 - 1.7	8.9 - 5.1	14.9 - 8.6	29	8°52.3	8°53.7	8°28.0	2.9 - 1.7	8.9 - 5.3	14.9 - 8.8
30	8°22.5	8°23.9	7°59.6	3.0 - 1.7	9.0 - 5.0	15.0 - 8.4	30	8°37.5	8°38.9	8°13.9	3.0 - 1.7	9.0 - 5.2	15.0 - 8.6	30	8°52.5	8°54.0	8°28.2	3.0 - 1.8	9.0 - 5.3	15.0 - 8.9
31	8°22.7	8°24.1	7°59.8	3.1 - 1.7	9.1 - 5.1	15.1 - 8.4	31	8°37.7	8°39.2	8°14.2	3.1 - 1.8	9.1 - 5.2	15.1 - 8.7	31	8°52.7	8°54.2	8°28.5	3.1 - 1.8	9.1 - 5.4	15.1 - 8.9
32	8°23.0	8°24.4	8°00.1	3.2 - 1.8	9.2 - 5.1	15.2 - 8.5	32	8°38.0	8°39.4	8°14.4	3.2 - 1.8	9.2 - 5.3	15.2 - 8.7	32	8°53.0	8°54.5	8°28.7	3.2 - 1.9	9.2 - 5.4	15.2 - 9.0
33	8°23.2	8°24.6	8°00.3	3.3 - 1.8	9.3 - 5.2	15.3 - 8.5	33	8°38.2	8°39.7	8°14.6	3.3 - 1.9	9.3 - 5.3	15.3 - 8.8	33	8°53.2	8°54.7	8°29.0	3.3 - 2.0	9.3 - 5.5	15.3 - 9.1
34	8°23.5	8°24.9	8°00.6	3.4 - 1.9	9.4 - 5.2	15.4 - 8.6	34	8°38.5	8°39.9	8°14.9	3.4 - 2.0	9.4 - 5.4	15.4 - 8.9	34	8°53.5	8°55.0	8°29.2	3.4 - 2.0	9.4 - 5.6	15.4 - 9.1
35	8°23.8	8°25.1	8°00.8	3.5 - 2.0	9.5 - 5.3	15.5 - 8.7	35	8°38.8	8°40.2	8°15.1	3.5 - 2.0	9.5 - 5.5	15.5 - 8.9	35	8°53.8	8°55.2	8°29.4	3.5 - 2.1	9.5 - 5.6	15.5 - 9.2
36	8°24.0	8°25.4	8°01.0	3.6 - 2.0	9.6 - 5.4	15.6 - 8.7	36	8°39.0	8°40.4	8°15.4	3.6 - 2.1	9.6 - 5.5	15.6 - 9.0	36	8°54.0	8°55.5	8°29.7	3.6 - 2.1	9.6 - 5.7	15.6 - 9.2
37	8°24.3	8°25.6	8°01.3	3.7 - 2.1	9.7 - 5.4	15.7 - 8.8	37	8°39.3	8°40.7	8°15.6	3.7 - 2.1	9.7 - 5.6	15.7 - 9.0	37	8°54.3	8°55.7	8°29.9	3.7 - 2.2	9.7 - 5.7	15.7 - 9.3
38	8°24.5	8°25.9	8°01.5	3.8 - 2.1	9.8 - 5.5	15.8 - 8.8	38	8°39.5	8°40.9	8°15.8	3.8 - 2.2	9.8 - 5.6	15.8 - 9.1	38	8°54.5	8°56.0	8°30.2	3.8 - 2.2	9.8 - 5.8	15.8 - 9.3
39	8°24.7	8°26.1	8°01.8	3.9 - 2.2	9.9 - 5.5	15.9 - 8.9	39	8°39.7	8°41.2	8°16.1	3.9 - 2.2	9.9 - 5.7	15.9 - 9.1	39	8°54.7	8°56.2	8°30.4	3.9 - 2.3	9.9 - 5.9	15.9 - 9.4
40	8°25.0	8°26.4	8°02.0	4.0 - 2.2	10.0 - 5.6	16.0 - 8.9	40	8°40.0	8°41.4	8°16.3	4.0 - 2.3	10.0 - 5.8	16.0 - 9.2	40	8°55.0	8°56.5	8°30.6	4.0 - 2.4	10.0 - 5.9	16.0 - 9.5
41	8°25.2	8°26.6	8°02.2	4.1 - 2.3	10.1 - 5.6	16.1 - 9.0	41	8°40.2	8°41.7	8°16.5	4.1 - 2.4	10.1 - 5.8	16.1 - 9.3	41	8°55.2	8°56.7	8°30.9	4.1 - 2.4	10.1 - 6.0	16.1 - 9.5
42	8°25.5	8°26.9	8°02.5	4.2 - 2.3	10.2 - 5.7	16.2 - 9.0	42	8°40.5	8°41.9	8°16.8	4.2 - 2.4	10.2 - 5.9	16.2 - 9.3	42	8°55.5	8°57.0	8°31.1	4.2 - 2.5	10.2 - 6.0	16.2 - 9.6
43	8°25.8	8°27.1	8°02.7	4.3 - 2.4	10.3 - 5.8	16.3 - 9.1	43	8°40.8	8°42.2	8°17.0	4.3 - 2.5	10.3 - 5.9	16.3 - 9.4	43	8°55.8	8°57.2	8°31.3	4.3 - 2.5	10.3 - 6.1	16.3 - 9.6
44	8°26.0	8°27.4	8°02.9	4.4 - 2.5	10.4 - 5.8	16.4 - 9.2	44	8°41.0	8°42.4	8°17.3	4.4 - 2.5	10.4 - 6.0	16.4 - 9.4	44	8°56.0	8°57.5	8°31.6	4.4 - 2.6	10.4 - 6.2	16.4 - 9.7
45	8°26.3	8°27.6	8°03.2	4.5 - 2.5	10.5 - 5.9	16.5 - 9.2	45	8°41.3	8°42.7	8°17.5	4.5 - 2.6	10.5 - 6.0	16.5 - 9.5	45	8°56.3	8°57.7	8°31.8	4.5 - 2.7	10.5 - 6.2	16.5 - 9.8
46	8°26.5	8°27.9	8°03.4	4.6 - 2.6	10.6 - 5.9	16.6 - 9.3	46	8°41.5	8°42.9	8°17.7	4.6 - 2.6	10.6 - 6.1	16.6 - 9.5	46	8°56.5	8°58.0	8°32.1	4.6 - 2.7	10.6 - 6.3	16.6 - 9.8
47	8°26.7	8°28.1	8°03.7	4.7 - 2.6	10.7 - 6.0	16.7 - 9.3	47	8°41.7	8°43.2	8°18.0	4.7 - 2.7	10.7 - 6.2	16.7 - 9.6	47	8°56.7	8°58.2	8°32.3	4.7 - 2.8	10.7 - 6.3	16.7 - 9.9
48	8°27.0	8°28.4	8°03.9	4.8 - 2.7	10.8 - 6.0	16.8 - 9.4	48	8°42.0	8°43.4	8°18.2	4.8 - 2.8	10.8 - 6.2	16.8 - 9.7	48	8°57.0	8°58.5	8°32.5	4.8 - 2.8	10.8 - 6.4	16.8 - 9.9
49	8°27.3	8°28.																		

Increments and Corrections

m 36	Sun Plan.	Aries	Moon	v and d corr			m 37	Sun Plan.	Aries	Moon	v and d corr			m 38	Sun Plan.	Aries	Moon	v and d corr		
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 - 9.1
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 - 9.0
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 39	Sun Plan.	Aries	Moon	v and d corr			m 40	Sun Plan.	Aries	Moon	v and d corr			m 41	Sun Plan.	Aries	Moon	v and d corr		
0	9°45.0	9°46.6	9°18.4	0.0 - 0.0	6.0 - 4.0	12.0 - 7.9	0	10°00.0	10°01.6	9°32.7	0.0 - 0.0	6.0 - 4.1	12.0 - 8.1	0	10°15.0	10°16.7	9°47.0	0.0 - 0.0	6.0 - 4.2	12.0 - 8.3
1	9°45.2	9°46.8	9°18.6	0.1 - 0.1	6.1 - 4.0	12.1 - 8.0	1	10°00.2	10°01.9	9°32.9	0.1 - 0.1	6.1 - 4.1	12.1 - 8.2	1	10°15.2	10°16.9	9°47.2	0.1 - 0.1	6.1 - 4.2	12.1 - 8.4
2	9°45.5	9°47.1	9°18.8	0.2 - 0.1	6.2 - 4.1	12.2 - 8.0	2	10°00.5	10°02.1	9°33.1	0.2 - 0.1	6.2 - 4.2	12.2 - 8.2	2	10°15.5	10°17.2	9°47.5	0.2 - 0.1	6.2 - 4.3	12.2 - 8.4
3	9°45.7	9°47.4	9°19.1	0.3 - 0.2	6.3 - 4.1	12.3 - 8.1	3	10°00.7	10°02.4	9°33.4	0.3 - 0.2	6.3 - 4.3	12.3 - 8.3	3	10°15.7	10°17.4	9°47.7	0.3 - 0.2	6.3 - 4.4	12.3 - 8.5
4	9°46.0	9°47.6	9°19.3	0.4 - 0.3	6.4 - 4.2	12.4 - 8.2	4	10°01.0	10°02.6	9°33.6	0.4 - 0.3	6.4 - 4.3	12.4 - 8.4	4	10°16.0	10°17.7	9°47.9	0.4 - 0.3	6.4 - 4.4	12.4 - 8.6
5	9°46.3	9°47.9	9°19.5	0.5 - 0.3	6.5 - 4.3	12.5 - 8.2	5	10°01.3	10°02.9	9°33.9	0.5 - 0.3	6.5 - 4.4	12.5 - 8.4	5	10°16.3	10°17.9	9°48.2	0.5 - 0.3	6.5 - 4.5	12.5 - 8.6
6	9°46.5	9°48.1	9°19.8	0.6 - 0.4	6.6 - 4.3	12.6 - 8.3	6	10°01.5	10°03.1	9°34.1	0.6 - 0.4	6.6 - 4.5	12.6 - 8.5	6	10°16.5	10°18.2	9°48.4	0.6 - 0.4	6.6 - 4.6	12.6 - 8.7
7	9°46.8	9°48.4	9°20.0	0.7 - 0.5	6.7 - 4.4	12.7 - 8.4	7	10°01.8	10°03.4	9°34.3	0.7 - 0.5	6.7 - 4.5	12.7 - 8.6	7	10°16.8	10°18.4	9°48.7	0.7 - 0.5	6.7 - 4.6	12.7 - 8.8
8	9°47.0	9°48.6	9°20.3	0.8 - 0.5	6.8 - 4.5	12.8 - 8.4	8	10°02.0	10°03.6	9°34.6	0.8 - 0.5	6.8 - 4.6	12.8 - 8.6	8	10°17.0	10°18.7	9°48.9	0.8 - 0.6	6.8 - 4.7	12.8 - 8.9
9	9°47.2	9°48.9	9°20.5	0.9 - 0.6	6.9 - 4.5	12.9 - 8.5	9	10°02.2	10°03.9	9°34.8	0.9 - 0.6	6.9 - 4.7	12.9 - 8.7	9	10°17.2	10°18.9	9°49.1	0.9 - 0.6	6.9 - 4.8	12.9 - 8.9
10	9°47.5	9°49.1	9°20.7	1.0 - 0.7	7.0 - 4.6	13.0 - 8.6	10	10°02.5	10°04.1	9°35.1	1.0 - 0.7	7.0 - 4.7	13.0 - 8.8	10	10°17.5	10°19.2	9°49.4	1.0 - 0.7	7.0 - 4.8	13.0 - 9.0
11	9°47.7	9°49.4	9°21.0	1.1 - 0.7	7.1 - 4.7	13.1 - 8.6	11	10°02.7	10°04.4	9°35.3	1.1 - 0.7	7.1 - 4.8	13.1 - 8.8	11	10°17.7	10°19.4	9°49.6	1.1 - 0.8	7.1 - 4.9	13.1 - 9.1
12	9°48.0	9°49.6	9°21.2	1.2 - 0.8	7.2 - 4.7	13.2 - 8.7	12	10°03.0	10°04.6	9°35.5	1.2 - 0.8	7.2 - 4.9	13.2 - 8.9	12	10°18.0	10°19.7	9°49.8	1.2 - 0.8	7.2 - 5.0	13.2 - 9.1
13	9°48.3	9°49.9	9°21.5	1.3 - 0.9	7.3 - 4.8	13.3 - 8.8	13	10°03.3	10°04.9	9°35.8	1.3 - 0.9	7.3 - 4.9	13.3 - 9.0	13	10°18.3	10°19.9	9°50.1	1.3 - 0.9	7.3 - 5.0	13.3 - 9.2
14	9°48.5	9°50.1	9°21.7	1.4 - 0.9	7.4 - 4.9	13.4 - 8.8	14	10°03.5	10°05.1	9°36.0	1.4 - 0.9	7.4 - 5.0	13.4 - 9.0	14	10°18.5	10°20.2	9°50.3	1.4 - 1.0	7.4 - 5.1	13.4 - 9.3
15	9°48.8	9°50.4	9°21.9	1.5 - 1.0	7.5 - 4.9	13.5 - 8.9	15	10°03.8	10°05.4	9°36.2	1.5 - 1.0	7.5 - 5.1	13.5 - 9.1	15	10°18.8	10°20.4	9°50.6	1.5 - 1.0	7.5 - 5.2	13.5 - 9.3
16	9°49.0	9°50.6	9°22.2	1.6 - 1.1	7.6 - 5.0	13.6 - 9.0	16	10°04.0	10°05.7	9°36.5	1.6 - 1.1	7.6 - 5.1	13.6 - 9.2	16	10°19.0	10°20.7	9°50.8	1.6 - 1.1	7.6 - 5.3	13.6 - 9.4
17	9°49.2	9°50.9	9°22.4	1.7 - 1.1	7.7 - 5.1	13.7 - 9.0	17	10°04.2	10°05.9	9°36.7	1.7 - 1.1	7.7 - 5.2	13.7 - 9.2	17	10°19.2	10°20.9	9°51.0	1.7 - 1.2	7.7 - 5.3	13.7 - 9.5
18	9°49.5	9°51.1	9°22.6	1.8 - 1.2	7.8 - 5.1	13.8 - 9.1	18	10°04.5	10°06.2	9°37.0	1.8 - 1.2	7.8 - 5.3	13.8 - 9.3	18	10°19.5	10°21.2	9°51.3	1.8 - 1.2	7.8 - 5.4	13.8 - 9.5
19	9°49.8	9°51.4	9°22.9	1.9 - 1.3	7.9 - 5.2	13.9 - 9.2	19	10°04.8	10°06.4	9°37.2	1.9 - 1.3	7.9 - 5.3	13.9 - 9.4	19	10°19.8	10°21.4	9°51.5	1.9 - 1.3	7.9 - 5.5	13.9 - 9.6
20	9°50.0	9°51.6	9°23.1	2.0 - 1.3	8.0 - 5.3	14.0 - 9.2	20	10°05.0	10°06.7	9°37.4	2.0 - 1.4	8.0 - 5.4	14.0 - 9.5	20	10°20.0	10°21.7	9°51.8	2.0 - 1.4	8.0 - 5.5	14.0 - 9.7
21	9°50.3	9°51.9	9°23.4	2.1 - 1.4	8.1 - 5.3	14.1 - 9.3	21	10°05.3	10°06.9	9°37.7	2.1 - 1.4	8.1 - 5.5	14.1 - 9.5	21	10°20.3	10°21.9	9°52.0	2.1 - 1.5	8.1 - 5.6	14.1 - 9.8
22	9°50.5	9°52.1	9°23.6	2.2 - 1.4	8.2 - 5.4	14.2 - 9.3	22	10°05.5	10°07.2	9°37.9	2.2 - 1.5	8.2 - 5.5	14.2 - 9.6	22	10°20.5	10°22.2	9°52.2	2.2 - 1.5	8.2 - 5.7	14.2 - 9.8
23	9°50.7	9°52.4	9°23.8	2.3 - 1.5	8.3 - 5.5	14.3 - 9.4	23	10°05.7	10°07.4	9°38.2	2.3 - 1.6	8.3 - 5.6	14.3 - 9.7	23	10°20.7	10°22.4	9°52.5	2.3 - 1.6	8.3 - 5.7	14.3 - 9.9
24	9°51.0	9°52.6	9°24.1	2.4 - 1.6	8.4 - 5.5	14.4 - 9.5	24	10°06.0	10°07.7	9°38.4	2.4 - 1.6	8.4 - 5.7	14.4 - 9.7	24	10°21.0	10°22.7	9°52.7	2.4 - 1.7	8.4 - 5.8	14.4 - 10.0
25	9°51.2	9°52.9	9°24.3	2.5 - 1.6	8.5 - 5.6	14.5 - 9.5	25	10°06.2	10°07.9	9°38.6	2.5 - 1.7	8.5 - 5.7	14.5 - 9.8	25	10°21.2	10°22.9	9°52.9	2.5 - 1.7	8.5 - 5.9	14.5 - 10.0
26	9°51.5	9°53.1	9°24.6	2.6 - 1.7	8.6 - 5.7	14.6 - 9.6	26	10°06.5	10°08.2	9°38.9	2.6 - 1.8	8.6 - 5.8	14.6 - 9.9	26	10°21.5	10°23.2	9°53.2	2.6 - 1.8	8.6 - 5.9	14.6 - 10.1
27	9°51.8	9°53.4	9°24.8	2.7 - 1.8	8.7 - 5.7	14.7 - 9.7	27	10°06.8	10°08.4	9°39.1	2.7 - 1.8	8.7 - 5.9	14.7 - 9.9	27	10°21.8	10°23.4	9°53.4	2.7 - 1.9	8.7 - 6.0	14.7 - 10.2
28	9°52.0	9°53.6	9°25.0	2.8 - 1.8	8.8 - 5.8	14.8 - 9.7	28	10°07.0	10°08.7	9°39.3	2.8 - 1.9	8.8 - 5.9	14.8 - 10.0	28	10°22.0	10°23.7	9°53.7	2.8 - 1.9	8.8 - 6.1	14.8 - 10.2
29	9°52.3	9°53.9	9°25.3	2.9 - 1.9	8.9 - 5.9	14.9 - 9.8	29	10°07.3	10°08.9	9°39.6	2.9 - 2.0	8.9 - 6.0	14.9 - 10.1	29	10°22.3	10°24.0	9°53.9	2.9 - 2.0	8.9 - 6.2	14.9 - 10.3
30	9°52.5	9°54.1	9°25.5	3.0 - 2.0	9.0 - 5.9	15.0 - 9.9	30	10°07.5	10°09.2	9°39.8	3.0 - 2.0	9.0 - 6.1	15.0 - 10.1	30	10°22.5	10°24.2	9°54.1	3.0 - 2.1	9.0 - 6.2	15.0 - 10.4
31	9°52.7	9°54.4	9°25.7	3.1 - 2.0	9.1 - 6.0	15.1 - 9.9	31	10°07.7	10°09.4	9°40.1	3.1 - 2.1	9.1 - 6.1	15.1 - 10.2	31	10°22.7	10°24.5	9°54.4	3.1 - 2.1	9.1 - 6.3	15.1 - 10.4
32	9°53.0	9°54.6	9°26.0	3.2 - 2.1	9.2 - 6.1	15.2 - 10.0	32	10°08.0	10°09.7	9°40.3	3.2 - 2.2	9.2 - 6.2	15.2 - 10.3	32	10°23.0	10°24.7	9°54.6	3.2 - 2.2	9.2 - 6.4	15.2 - 10.5
33	9°53.2	9°54.9	9°26.2	3.3 - 2.2	9.3 - 6.1	15.3 - 10.1	33	10°08.2	10°09.9	9°40.5	3.3 - 2.2	9.3 - 6.3	15.3 - 10.3	33	10°23.2	10°25.0	9°54.9	3.3 - 2.3	9.3 - 6.4	15.3 - 10.6
34	9°53.5	9°55.1	9°26.5	3.4 - 2.2	9.4 - 6.2	15.4 - 10.1	34	10°08.5	10°10.2	9°40.8	3.4 - 2.3	9.4 - 6.3	15.4 - 10.4	34	10°23.5	10°25.2	9°55.1	3.4 - 2.4	9.4 - 6.5	15.4 - 10.7
35	9°53.8	9°55.4	9°26.7	3.5 - 2.3	9.5 - 6.3	15.5 - 10.2	35	10°08.8	10°10.4	9°41.0	3.5 - 2.4	9.5 - 6.4	15.5 - 10.5	35	10°23.8	10°25.5	9°55.3	3.5 - 2.4	9.5 - 6.6	15.5 - 10.7
36	9°54.0	9°55.6	9°26.9	3.6 - 2.4	9.6 - 6.3	15.6 - 10.3	36	10°09.0	10°10.7	9°41.3	3.6 - 2.4	9.6 - 6.5	15.6 - 10.5	36	10°24.0	10°25.7	9°55.6	3.6 - 2.5	9.6 - 6.6	15.6 - 10.8
37	9°54.3	9°55.9	9°27.2	3.7 - 2.4	9.7 - 6.4	15.7 - 10.3	37	10°09.3	10°10.9	9°41.5	3.7 - 2.5	9.7 - 6.5	15.7 - 10.6	37	10°24.3	10°26.0	9°55.8	3.7 - 2.6	9.7 - 6.7	15.7 - 10.9
38	9°54.5	9°56.1	9°27.4	3.8 - 2.5	9.8 - 6.5	15.8 - 10.4	38	10°09.5	10°11.2	9°41.7	3.8 - 2.6	9.8 - 6.6	15.8 - 10.7	38	10°24.5	10°26.2	9°56.1	3.8 - 2.6	9.8 - 6.8	15.8 - 10.9
39	9°54.7	9°56.4	9°27.7	3.9 - 2.6	9.9 - 6.5	15.9 - 10.5	39	10°09.7	10°11.4	9°42.0	3.9 - 2.6	9.9 - 6.7	15.9 - 10.7	39	10°24.7	10°26.5	9°56.3	3.9 - 2.7	9.9 - 6.8	15.9 - 11.0
40	9°55.0	9°56.6	9°27.9	4.0 - 2.6	10.0 - 6.6	16.0 - 10.5	40	10°10.0	10°11.7	9°42.2	4.0 - 2.7	10.0 - 6.8	16.0 - 10.8	40	10°25.0	10°26.7	9°56.5	4.0 - 2.8	10.0 - 6.9	16.0 - 11.1
41	9°55.2	9°56.9	9°28.1	4.1 - 2.7	10.1 - 6.6	16.1 - 10.6	41	10°10.2	10°11.9	9°42.4	4.1 - 2.8	10.1 - 6.8	16.1 - 10.9	41	10°25.2	10°27.0	9°56.8	4.1 - 2.8	10.1 - 7.0	16.1 - 11.1
42	9°55.5	9°57.1	9°28.4	4.2 - 2.8	10.2 - 6.7	16.2 - 10.7	42	10°10.5	10°12.2	9°42.7	4.2 - 2.8	10.2 - 6.9	16.2 - 10.9	42	10°25.5	10°27.2	9°57.0	4.2 - 2.9	10.2 - 7.1	16.2 - 11.2
43	9°55.8	9°57.4	9°28.6	4.3 - 2.8	10.3 - 6.8	16.3 - 10.7	43	10°10.8	10°12.4	9°42.9	4.3 - 2.9	10.3 - 7.0	16.3 - 11.0	43	10°25.8	10°27.5	9°57.2	4.3 - 3.0	10.3 - 7.1	16.3 - 11.3
44	9°56.0	9°57.6	9°28.8	4.4 - 2.9	10.4 - 6.8	16.4 - 10.8	44	10°11.0	10°12.7	9°43.2	4.4 - 3.0	10.4 - 7.0	16.4 - 11.1	44	10°26.0	10°27.7	9°57.5	4.4 - 3.0	10.4 - 7.2	16.4 - 11.3
45	9°56.3	9°57.9	9°29.1	4.5 - 3.0	10.5 - 6.9	16.5 - 10.9	45	10°11.3	10°12.9	9°43.4	4.5 - 3.0	10.5 - 7.1	16.5 - 11.1	45	10°26.3	10°28.0	9°57.7	4.5 - 3.1	10.5 - 7.3	16.5 - 11.4
46	9°56.5	9°58.1	9°29.3	4.6 - 3.0	10.6 - 7.0	16.6 - 10.9	46	10°11.5	10°13.2	9°43.6	4.6 - 3.1	10.6 - 7.2	16.6 - 11.2	46	10°26.5	10°28.2	9°58.0	4.6 - 3.2	10.6 - 7.3	16.6 - 11.5
47	9°56.7	9°58.4	9°29.6	4.7 - 3.1	10.7 - 7.0	16.7 - 11.0	47	10°11.7	10°13.4	9°43.9	4.7 - 3.2	10.7 - 7.2	16.7 - 11.3	47	10°26.7	10°28.5	9°58.2	4.7 - 3.3	10.7 - 7.4	16.7 - 11.6
48	9°57.0	9																		

Increments and Corrections

m 42	Sun Plan.	Aries	Moon	v and d corr			m 43	Sun Plan.	Aries	Moon	v and d corr			m 44	Sun Plan.	Aries	Moon	v and d corr		
0	10°30.0	10°31.7	10°01.3	0.0 - 0.0	6.0 - 4.3	12.0 - 8.5	0	10°45.0	10°46.8	10°15.6	0.0 - 0.0	6.0 - 4.3	12.0 - 8.7	0	11°00.0	11°01.8	10°29.9	0.0 - 0.0	6.0 - 4.5	12.0 - 8.9
1	10°30.2	10°32.0	10°01.5	0.1 - 0.1	6.1 - 4.3	12.1 - 8.6	1	10°45.2	10°47.0	10°15.9	0.1 - 0.1	6.1 - 4.4	12.1 - 8.8	1	11°00.2	11°02.1	10°30.2	0.1 - 0.1	6.1 - 4.5	12.1 - 9.0
2	10°30.5	10°32.2	10°01.8	0.2 - 0.1	6.2 - 4.4	12.2 - 8.6	2	10°45.5	10°47.3	10°16.1	0.2 - 0.1	6.2 - 4.5	12.2 - 8.8	2	11°00.5	11°02.3	10°30.4	0.2 - 0.1	6.2 - 4.6	12.2 - 9.0
3	10°30.7	10°32.5	10°02.0	0.3 - 0.2	6.3 - 4.5	12.3 - 8.7	3	10°45.7	10°47.5	10°16.3	0.3 - 0.2	6.3 - 4.6	12.3 - 8.9	3	11°00.7	11°02.6	10°30.6	0.3 - 0.2	6.3 - 4.7	12.3 - 9.1
4	10°31.0	10°32.7	10°02.3	0.4 - 0.3	6.4 - 4.5	12.4 - 8.8	4	10°46.0	10°47.8	10°16.6	0.4 - 0.3	6.4 - 4.6	12.4 - 9.0	4	11°01.0	11°02.8	10°30.9	0.4 - 0.3	6.4 - 4.7	12.4 - 9.2
5	10°31.3	10°33.0	10°02.5	0.5 - 0.4	6.5 - 4.6	12.5 - 8.9	5	10°46.3	10°48.0	10°16.8	0.5 - 0.4	6.5 - 4.7	12.5 - 9.1	5	11°01.3	11°03.1	10°31.1	0.5 - 0.4	6.5 - 4.8	12.5 - 9.3
6	10°31.5	10°33.2	10°02.7	0.6 - 0.4	6.6 - 4.7	12.6 - 8.9	6	10°46.5	10°48.3	10°17.0	0.6 - 0.4	6.6 - 4.8	12.6 - 9.1	6	11°01.5	11°03.3	10°31.4	0.6 - 0.4	6.6 - 4.9	12.6 - 9.3
7	10°31.8	10°33.5	10°03.0	0.7 - 0.5	6.7 - 4.7	12.7 - 9.0	7	10°46.8	10°48.5	10°17.3	0.7 - 0.5	6.7 - 4.9	12.7 - 9.2	7	11°01.8	11°03.6	10°31.6	0.7 - 0.5	6.7 - 5.0	12.7 - 9.4
8	10°32.0	10°33.7	10°03.2	0.8 - 0.6	6.8 - 4.8	12.8 - 9.1	8	10°47.0	10°48.8	10°17.5	0.8 - 0.6	6.8 - 4.9	12.8 - 9.3	8	11°02.0	11°03.8	10°31.8	0.8 - 0.6	6.8 - 5.0	12.8 - 9.5
9	10°32.2	10°34.0	10°03.4	0.9 - 0.6	6.9 - 4.9	12.9 - 9.1	9	10°47.2	10°49.0	10°17.8	0.9 - 0.7	6.9 - 5.0	12.9 - 9.4	9	11°02.2	11°04.1	10°32.1	0.9 - 0.7	6.9 - 5.1	12.9 - 9.6
10	10°32.5	10°34.2	10°03.7	1.0 - 0.7	7.0 - 5.0	13.0 - 9.2	10	10°47.5	10°49.3	10°18.0	1.0 - 0.7	7.0 - 5.1	13.0 - 9.4	10	11°02.5	11°04.3	10°32.3	1.0 - 0.7	7.0 - 5.2	13.0 - 9.6
11	10°32.7	10°34.5	10°03.9	1.1 - 0.8	7.1 - 5.0	13.1 - 9.3	11	10°47.7	10°49.5	10°18.2	1.1 - 0.8	7.1 - 5.1	13.1 - 9.5	11	11°02.7	11°04.6	10°32.6	1.1 - 0.8	7.1 - 5.3	13.1 - 9.7
12	10°33.0	10°34.7	10°04.2	1.2 - 0.9	7.2 - 5.1	13.2 - 9.3	12	10°48.0	10°49.8	10°18.5	1.2 - 0.9	7.2 - 5.2	13.2 - 9.6	12	11°03.0	11°04.8	10°32.8	1.2 - 0.9	7.2 - 5.3	13.2 - 9.8
13	10°33.3	10°35.0	10°04.4	1.3 - 0.9	7.3 - 5.2	13.3 - 9.4	13	10°48.3	10°50.0	10°18.7	1.3 - 0.9	7.3 - 5.3	13.3 - 9.6	13	11°03.3	11°05.1	10°33.0	1.3 - 1.0	7.3 - 5.4	13.3 - 9.9
14	10°33.5	10°35.2	10°04.6	1.4 - 1.0	7.4 - 5.2	13.4 - 9.5	14	10°48.5	10°50.3	10°19.0	1.4 - 1.0	7.4 - 5.4	13.4 - 9.7	14	11°03.5	11°05.3	10°33.3	1.4 - 1.0	7.4 - 5.5	13.4 - 9.9
15	10°33.8	10°35.5	10°04.9	1.5 - 1.1	7.5 - 5.3	13.5 - 9.6	15	10°48.8	10°50.5	10°19.2	1.5 - 1.1	7.5 - 5.4	13.5 - 9.8	15	11°03.8	11°05.6	10°33.5	1.5 - 1.1	7.5 - 5.6	13.5 - 10.0
16	10°34.0	10°35.7	10°05.1	1.6 - 1.1	7.6 - 5.4	13.6 - 9.6	16	10°49.0	10°50.8	10°19.4	1.6 - 1.2	7.6 - 5.5	13.6 - 9.9	16	11°04.0	11°05.8	10°33.8	1.6 - 1.2	7.6 - 5.6	13.6 - 10.1
17	10°34.2	10°36.0	10°05.4	1.7 - 1.2	7.7 - 5.5	13.7 - 9.7	17	10°49.2	10°51.0	10°19.7	1.7 - 1.2	7.7 - 5.6	13.7 - 9.9	17	11°04.2	11°06.1	10°34.0	1.7 - 1.3	7.7 - 5.7	13.7 - 10.2
18	10°34.5	10°36.2	10°05.6	1.8 - 1.3	7.8 - 5.5	13.8 - 9.8	18	10°49.5	10°51.3	10°19.9	1.8 - 1.3	7.8 - 5.7	13.8 - 10.0	18	11°04.5	11°06.3	10°34.2	1.8 - 1.3	7.8 - 5.8	13.8 - 10.2
19	10°34.8	10°36.5	10°05.8	1.9 - 1.3	7.9 - 5.6	13.9 - 9.8	19	10°49.8	10°51.5	10°20.2	1.9 - 1.4	7.9 - 5.7	13.9 - 10.1	19	11°04.8	11°06.6	10°34.5	1.9 - 1.4	7.9 - 5.9	13.9 - 10.3
20	10°35.0	10°36.7	10°06.1	2.0 - 1.4	8.0 - 5.7	14.0 - 9.9	20	10°50.0	10°51.8	10°20.4	2.0 - 1.4	8.0 - 5.8	14.0 - 10.2	20	11°05.0	11°06.8	10°34.7	2.0 - 1.5	8.0 - 5.9	14.0 - 10.4
21	10°35.3	10°37.0	10°06.3	2.1 - 1.5	8.1 - 5.7	14.1 - 10.0	21	10°50.3	10°52.0	10°20.6	2.1 - 1.5	8.1 - 5.9	14.1 - 10.2	21	11°05.3	11°07.1	10°34.9	2.1 - 1.6	8.1 - 6.0	14.1 - 10.5
22	10°35.5	10°37.2	10°06.5	2.2 - 1.6	8.2 - 5.8	14.2 - 10.1	22	10°50.5	10°52.3	10°20.9	2.2 - 1.6	8.2 - 5.9	14.2 - 10.3	22	11°05.5	11°07.3	10°35.2	2.2 - 1.6	8.2 - 6.1	14.2 - 10.5
23	10°35.7	10°37.5	10°06.8	2.3 - 1.6	8.3 - 5.9	14.3 - 10.1	23	10°50.7	10°52.5	10°21.1	2.3 - 1.7	8.3 - 6.0	14.3 - 10.4	23	11°05.7	11°07.6	10°35.4	2.3 - 1.7	8.3 - 6.2	14.3 - 10.6
24	10°36.0	10°37.7	10°07.0	2.4 - 1.7	8.4 - 6.0	14.4 - 10.2	24	10°51.0	10°52.8	10°21.3	2.4 - 1.7	8.4 - 6.1	14.4 - 10.4	24	11°06.0	11°07.8	10°35.7	2.4 - 1.8	8.4 - 6.2	14.4 - 10.7
25	10°36.2	10°38.0	10°07.3	2.5 - 1.8	8.5 - 6.0	14.5 - 10.3	25	10°51.2	10°53.0	10°21.6	2.5 - 1.8	8.5 - 6.2	14.5 - 10.5	25	11°06.2	11°08.1	10°35.9	2.5 - 1.9	8.5 - 6.3	14.5 - 10.8
26	10°36.5	10°38.2	10°07.5	2.6 - 1.8	8.6 - 6.1	14.6 - 10.3	26	10°51.5	10°53.3	10°21.8	2.6 - 1.9	8.6 - 6.2	14.6 - 10.6	26	11°06.5	11°08.3	10°36.1	2.6 - 1.9	8.6 - 6.4	14.6 - 10.8
27	10°36.8	10°38.5	10°07.7	2.7 - 1.9	8.7 - 6.2	14.7 - 10.4	27	10°51.8	10°53.5	10°22.1	2.7 - 2.0	8.7 - 6.3	14.7 - 10.7	27	11°06.8	11°08.6	10°36.4	2.7 - 2.0	8.7 - 6.5	14.7 - 10.9
28	10°37.0	10°38.7	10°08.0	2.8 - 2.0	8.8 - 6.2	14.8 - 10.5	28	10°52.0	10°53.8	10°22.3	2.8 - 2.0	8.8 - 6.4	14.8 - 10.7	28	11°07.0	11°08.8	10°36.6	2.8 - 2.1	8.8 - 6.5	14.8 - 11.0
29	10°37.3	10°39.0	10°08.2	2.9 - 2.1	8.9 - 6.3	14.9 - 10.6	29	10°52.3	10°54.0	10°22.5	2.9 - 2.1	8.9 - 6.5	14.9 - 10.8	29	11°07.3	11°09.1	10°36.9	2.9 - 2.2	8.9 - 6.6	14.9 - 11.1
30	10°37.5	10°39.2	10°08.5	3.0 - 2.1	9.0 - 6.4	15.0 - 10.6	30	10°52.5	10°54.3	10°22.8	3.0 - 2.2	9.0 - 6.5	15.0 - 10.9	30	11°07.5	11°09.3	10°37.1	3.0 - 2.2	9.0 - 6.7	15.0 - 11.1
31	10°37.7	10°39.5	10°08.7	3.1 - 2.2	9.1 - 6.4	15.1 - 10.7	31	10°52.7	10°54.5	10°23.0	3.1 - 2.2	9.1 - 6.6	15.1 - 10.9	31	11°07.7	11°09.6	10°37.3	3.1 - 2.3	9.1 - 6.7	15.1 - 11.2
32	10°38.0	10°39.7	10°08.9	3.2 - 2.3	9.2 - 6.5	15.2 - 10.8	32	10°53.0	10°54.8	10°23.3	3.2 - 2.3	9.2 - 6.7	15.2 - 11.0	32	11°08.0	11°09.8	10°37.6	3.2 - 2.4	9.2 - 6.8	15.2 - 11.3
33	10°38.2	10°40.0	10°09.2	3.3 - 2.3	9.3 - 6.6	15.3 - 10.8	33	10°53.2	10°55.0	10°23.5	3.3 - 2.4	9.3 - 6.7	15.3 - 11.1	33	11°08.2	11°10.1	10°37.8	3.3 - 2.4	9.3 - 6.9	15.3 - 11.3
34	10°38.5	10°40.2	10°09.4	3.4 - 2.4	9.4 - 6.7	15.4 - 10.9	34	10°53.5	10°55.3	10°23.7	3.4 - 2.5	9.4 - 6.8	15.4 - 11.2	34	11°08.5	11°10.3	10°38.0	3.4 - 2.5	9.4 - 7.0	15.4 - 11.4
35	10°38.8	10°40.5	10°09.7	3.5 - 2.5	9.5 - 6.7	15.5 - 11.0	35	10°53.8	10°55.5	10°24.0	3.5 - 2.5	9.5 - 6.9	15.5 - 11.2	35	11°08.8	11°10.6	10°38.3	3.5 - 2.6	9.5 - 7.0	15.5 - 11.5
36	10°39.0	10°40.7	10°09.9	3.6 - 2.6	9.6 - 6.8	15.6 - 11.1	36	10°54.0	10°55.8	10°24.2	3.6 - 2.6	9.6 - 7.0	15.6 - 11.3	36	11°09.0	11°10.8	10°38.5	3.6 - 2.7	9.6 - 7.1	15.6 - 11.6
37	10°39.3	10°41.0	10°10.1	3.7 - 2.6	9.7 - 6.9	15.7 - 11.1	37	10°54.3	10°56.0	10°24.4	3.7 - 2.7	9.7 - 7.0	15.7 - 11.4	37	11°09.3	11°11.1	10°38.8	3.7 - 2.7	9.7 - 7.2	15.7 - 11.6
38	10°39.5	10°41.2	10°10.4	3.8 - 2.7	9.8 - 6.9	15.8 - 11.2	38	10°54.5	10°56.3	10°24.7	3.8 - 2.8	9.8 - 7.1	15.8 - 11.5	38	11°09.5	11°11.3	10°39.0	3.8 - 2.8	9.8 - 7.3	15.8 - 11.7
39	10°39.7	10°41.5	10°10.6	3.9 - 2.8	9.9 - 7.0	15.9 - 11.3	39	10°54.7	10°56.5	10°24.9	3.9 - 2.8	9.9 - 7.2	15.9 - 11.5	39	11°09.7	11°11.6	10°39.2	3.9 - 2.9	9.9 - 7.3	15.9 - 11.8
40	10°40.0	10°41.7	10°10.8	4.0 - 2.8	10.0 - 7.1	16.0 - 11.3	40	10°55.0	10°56.8	10°25.2	4.0 - 2.9	10.0 - 7.3	16.0 - 11.6	40	11°10.0	11°11.8	10°39.5	4.0 - 3.0	10.0 - 7.4	16.0 - 11.9
41	10°40.2	10°42.0	10°11.1	4.1 - 2.9	10.1 - 7.2	16.1 - 11.4	41	10°55.2	10°57.0	10°25.4	4.1 - 3.0	10.1 - 7.3	16.1 - 11.7	41	11°10.2	11°12.1	10°39.7	4.1 - 3.0	10.1 - 7.5	16.1 - 11.9
42	10°40.5	10°42.3	10°11.3	4.2 - 3.0	10.2 - 7.2	16.2 - 11.5	42	10°55.5	10°57.3	10°25.6	4.2 - 3.0	10.2 - 7.4	16.2 - 11.7	42	11°10.5	11°12.3	10°40.0	4.2 - 3.1	10.2 - 7.6	16.2 - 12.0
43	10°40.8	10°42.5	10°11.6	4.3 - 3.0	10.3 - 7.3	16.3 - 11.5	43	10°55.8	10°57.5	10°25.9	4.3 - 3.1	10.3 - 7.5	16.3 - 11.8	43	11°10.8	11°12.6	10°40.2	4.3 - 3.2	10.3 - 7.6	16.3 - 12.1
44	10°41.0	10°42.8	10°11.8	4.4 - 3.1	10.4 - 7.4	16.4 - 11.6	44	10°56.0	10°57.8	10°26.1	4.4 - 3.2	10.4 - 7.5	16.4 - 11.9	44	11°11.0	11°12.8	10°40.4	4.4 - 3.3	10.4 - 7.7	16.4 - 12.2
45	10°41.3	10°43.0	10°12.0	4.5 - 3.2	10.5 - 7.4	16.5 - 11.7	45	10°56.3	10°58.0	10°26.4	4.5 - 3.3	10.5 - 7.6	16.5 - 12.0	45	11°11.3	11°13.1	10°40.7	4.5 - 3.3	10.5 - 7.8	16.5 - 12.2
46	10°41.5	10°43.3	10°12.3	4.6 - 3.3	10.6 - 7.5	16.6 - 11.8	46	10°56.5	10°58.3	10°26.6	4.6 - 3.3	10.6 - 7.7	16.6 - 12.0	46	11°11.5	11°13.3	10°40.9	4.6 - 3.4	10.6 - 7.9	16.6 - 12.3
47	10																			

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 - 8.4	16.6 - 13.1
47	11°26.7	11°28.6</																		

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		
48	Plan.						49	Plan.					50	Plan.						
0	12°00.0	12°02.0	11°27.2	0.0 - 0.0	6.0 - 4.8	12.0 - 9.7	0	12°15.0	12°17.0	11°41.5	0.0 - 0.0	6.0 - 4.9	12.0 - 9.9	0	12°30.0	12°32.1	11°55.8	0.0 - 0.0	6.0 - 5.0	12.0 - 10.1
1	12°00.2	12°02.2	11°27.4	0.1 - 0.1	6.1 - 4.9	12.1 - 9.8	1	12°15.2	12°17.3	11°41.8	0.1 - 0.1	6.1 - 5.0	12.1 - 10.0	1	12°30.2	12°32.3	11°56.1	0.1 - 0.1	6.1 - 5.1	12.1 - 10.2
2	12°00.5	12°02.5	11°27.7	0.2 - 0.2	6.2 - 5.0	12.2 - 9.9	2	12°15.5	12°17.5	11°42.0	0.2 - 0.2	6.2 - 5.1	12.2 - 10.1	2	12°30.5	12°32.6	11°56.3	0.2 - 0.2	6.2 - 5.2	12.2 - 10.3
3	12°00.7	12°02.7	11°27.9	0.3 - 0.2	6.3 - 5.1	12.3 - 9.9	3	12°15.7	12°17.8	11°42.2	0.3 - 0.2	6.3 - 5.2	12.3 - 10.1	3	12°30.7	12°32.8	11°56.5	0.3 - 0.3	6.3 - 5.3	12.3 - 10.4
4	12°01.0	12°03.0	11°28.2	0.4 - 0.3	6.4 - 5.2	12.4 - 10.0	4	12°16.0	12°18.0	11°42.5	0.4 - 0.3	6.4 - 5.3	12.4 - 10.2	4	12°31.0	12°33.1	11°56.8	0.4 - 0.3	6.4 - 5.4	12.4 - 10.4
5	12°01.3	12°03.2	11°28.4	0.5 - 0.4	6.5 - 5.3	12.5 - 10.1	5	12°16.3	12°18.3	11°42.7	0.5 - 0.4	6.5 - 5.4	12.5 - 10.3	5	12°31.3	12°33.3	11°57.0	0.5 - 0.4	6.5 - 5.5	12.5 - 10.5
6	12°01.5	12°03.5	11°28.6	0.6 - 0.5	6.6 - 5.3	12.6 - 10.2	6	12°16.5	12°18.5	11°42.9	0.6 - 0.5	6.6 - 5.4	12.6 - 10.4	6	12°31.5	12°33.6	11°57.3	0.6 - 0.5	6.6 - 5.6	12.6 - 10.6
7	12°01.8	12°03.7	11°28.9	0.7 - 0.6	6.7 - 5.4	12.7 - 10.3	7	12°16.8	12°18.8	11°43.2	0.7 - 0.6	6.7 - 5.5	12.7 - 10.5	7	12°31.8	12°33.8	11°57.5	0.7 - 0.6	6.7 - 5.6	12.7 - 10.7
8	12°02.0	12°04.0	11°29.1	0.8 - 0.6	6.8 - 5.5	12.8 - 10.3	8	12°17.0	12°19.0	11°43.4	0.8 - 0.7	6.8 - 5.6	12.8 - 10.6	8	12°32.0	12°34.1	11°57.7	0.8 - 0.7	6.8 - 5.7	12.8 - 10.8
9	12°02.2	12°04.2	11°29.3	0.9 - 0.7	6.9 - 5.6	12.9 - 10.4	9	12°17.2	12°19.3	11°43.7	0.9 - 0.7	6.9 - 5.7	12.9 - 10.6	9	12°32.2	12°34.3	11°58.0	0.9 - 0.8	6.9 - 5.8	12.9 - 10.9
10	12°02.5	12°04.5	11°29.6	1.0 - 0.8	7.0 - 5.7	13.0 - 10.5	10	12°17.5	12°19.5	11°43.9	1.0 - 0.8	7.0 - 5.8	13.0 - 10.7	10	12°32.5	12°34.6	11°58.2	1.0 - 0.8	7.0 - 5.9	13.0 - 10.9
11	12°02.7	12°04.7	11°29.8	1.1 - 0.9	7.1 - 5.7	13.1 - 10.6	11	12°17.7	12°19.8	11°44.1	1.1 - 0.9	7.1 - 5.9	13.1 - 10.8	11	12°32.7	12°34.8	11°58.5	1.1 - 0.9	7.1 - 6.0	13.1 - 11.0
12	12°03.0	12°05.0	11°30.1	1.2 - 1.0	7.2 - 5.8	13.2 - 10.7	12	12°18.0	12°20.0	11°44.4	1.2 - 1.0	7.2 - 5.9	13.2 - 10.9	12	12°33.0	12°35.1	11°58.7	1.2 - 1.0	7.2 - 6.1	13.2 - 11.1
13	12°03.3	12°05.2	11°30.3	1.3 - 1.1	7.3 - 5.9	13.3 - 10.8	13	12°18.3	12°20.3	11°44.6	1.3 - 1.1	7.3 - 6.0	13.3 - 11.0	13	12°33.3	12°35.3	11°58.9	1.3 - 1.1	7.3 - 6.1	13.3 - 11.2
14	12°03.5	12°05.5	11°30.5	1.4 - 1.1	7.4 - 6.0	13.4 - 10.8	14	12°18.5	12°20.5	11°44.9	1.4 - 1.2	7.4 - 6.1	13.4 - 11.1	14	12°33.5	12°35.6	11°59.2	1.4 - 1.2	7.4 - 6.2	13.4 - 11.3
15	12°03.8	12°05.7	11°30.8	1.5 - 1.2	7.5 - 6.1	13.5 - 10.9	15	12°18.8	12°20.8	11°45.1	1.5 - 1.2	7.5 - 6.2	13.5 - 11.1	15	12°33.8	12°35.8	11°59.4	1.5 - 1.3	7.5 - 6.3	13.5 - 11.4
16	12°04.0	12°06.0	11°31.0	1.6 - 1.3	7.6 - 6.1	13.6 - 11.0	16	12°19.0	12°21.0	11°45.3	1.6 - 1.3	7.6 - 6.3	13.6 - 11.2	16	12°34.0	12°36.1	11°59.7	1.6 - 1.3	7.6 - 6.4	13.6 - 11.4
17	12°04.2	12°06.2	11°31.3	1.7 - 1.4	7.7 - 6.2	13.7 - 11.1	17	12°19.2	12°21.3	11°45.6	1.7 - 1.4	7.7 - 6.4	13.7 - 11.3	17	12°34.2	12°36.3	11°59.9	1.7 - 1.4	7.7 - 6.5	13.7 - 11.5
18	12°04.5	12°06.5	11°31.5	1.8 - 1.5	7.8 - 6.3	13.8 - 11.2	18	12°19.5	12°21.5	11°45.8	1.8 - 1.5	7.8 - 6.4	13.8 - 11.4	18	12°34.5	12°36.6	12°00.1	1.8 - 1.5	7.8 - 6.6	13.8 - 11.6
19	12°04.8	12°06.7	11°31.7	1.9 - 1.5	7.9 - 6.4	13.9 - 11.2	19	12°19.8	12°21.8	11°46.1	1.9 - 1.6	7.9 - 6.5	13.9 - 11.5	19	12°34.8	12°36.8	12°00.4	1.9 - 1.6	7.9 - 6.6	13.9 - 11.7
20	12°05.0	12°07.0	11°32.0	2.0 - 1.6	8.0 - 6.5	14.0 - 11.3	20	12°20.0	12°22.0	11°46.3	2.0 - 1.6	8.0 - 6.6	14.0 - 11.5	20	12°35.0	12°37.1	12°00.6	2.0 - 1.7	8.0 - 6.7	14.0 - 11.8
21	12°05.3	12°07.2	11°32.2	2.1 - 1.7	8.1 - 6.5	14.1 - 11.4	21	12°20.3	12°22.3	11°46.5	2.1 - 1.7	8.1 - 6.7	14.1 - 11.6	21	12°35.3	12°37.3	12°00.8	2.1 - 1.8	8.1 - 6.8	14.1 - 11.9
22	12°05.5	12°07.5	11°32.4	2.2 - 1.8	8.2 - 6.6	14.2 - 11.5	22	12°20.5	12°22.5	11°46.8	2.2 - 1.8	8.2 - 6.8	14.2 - 11.7	22	12°35.5	12°37.6	12°01.1	2.2 - 1.9	8.2 - 6.9	14.2 - 12.0
23	12°05.7	12°07.7	11°32.7	2.3 - 1.9	8.3 - 6.7	14.3 - 11.6	23	12°20.7	12°22.8	11°47.0	2.3 - 1.9	8.3 - 6.8	14.3 - 11.8	23	12°35.7	12°37.8	12°01.3	2.3 - 1.9	8.3 - 7.0	14.3 - 12.0
24	12°06.0	12°08.0	11°32.9	2.4 - 1.9	8.4 - 6.8	14.4 - 11.6	24	12°21.0	12°23.0	11°47.2	2.4 - 2.0	8.4 - 6.9	14.4 - 11.9	24	12°36.0	12°38.1	12°01.6	2.4 - 2.0	8.4 - 7.1	14.4 - 12.1
25	12°06.2	12°08.2	11°33.2	2.5 - 2.0	8.5 - 6.9	14.5 - 11.7	25	12°21.2	12°23.3	11°47.5	2.5 - 2.1	8.5 - 7.0	14.5 - 12.0	25	12°36.2	12°38.3	12°01.8	2.5 - 2.1	8.5 - 7.2	14.5 - 12.2
26	12°06.5	12°08.5	11°33.4	2.6 - 2.1	8.6 - 7.0	14.6 - 11.8	26	12°21.5	12°23.5	11°47.7	2.6 - 2.1	8.6 - 7.1	14.6 - 12.0	26	12°36.5	12°38.6	12°02.0	2.6 - 2.2	8.6 - 7.2	14.6 - 12.3
27	12°06.8	12°08.7	11°33.6	2.7 - 2.2	8.7 - 7.0	14.7 - 11.9	27	12°21.8	12°23.8	11°48.0	2.7 - 2.2	8.7 - 7.2	14.7 - 12.1	27	12°36.8	12°38.8	12°02.3	2.7 - 2.3	8.7 - 7.3	14.7 - 12.4
28	12°07.0	12°09.0	11°33.9	2.8 - 2.3	8.8 - 7.1	14.8 - 12.0	28	12°22.0	12°24.0	11°48.2	2.8 - 2.3	8.8 - 7.3	14.8 - 12.2	28	12°37.0	12°39.1	12°02.5	2.8 - 2.4	8.8 - 7.4	14.8 - 12.5
29	12°07.3	12°09.2	11°34.1	2.9 - 2.3	8.9 - 7.2	14.9 - 12.0	29	12°22.3	12°24.3	11°48.4	2.9 - 2.4	8.9 - 7.3	14.9 - 12.3	29	12°37.3	12°39.3	12°02.8	2.9 - 2.4	8.9 - 7.5	14.9 - 12.5
30	12°07.5	12°09.5	11°34.4	3.0 - 2.4	9.0 - 7.3	15.0 - 12.1	30	12°22.5	12°24.5	11°48.7	3.0 - 2.5	9.0 - 7.4	15.0 - 12.4	30	12°37.5	12°39.6	12°03.0	3.0 - 2.5	9.0 - 7.6	15.0 - 12.6
31	12°07.7	12°09.7	11°34.6	3.1 - 2.5	9.1 - 7.4	15.1 - 12.2	31	12°22.7	12°24.8	11°48.9	3.1 - 2.6	9.1 - 7.5	15.1 - 12.5	31	12°37.7	12°39.8	12°03.2	3.1 - 2.6	9.1 - 7.7	15.1 - 12.7
32	12°08.0	12°10.0	11°34.8	3.2 - 2.6	9.2 - 7.4	15.2 - 12.3	32	12°23.0	12°25.0	11°49.2	3.2 - 2.6	9.2 - 7.6	15.2 - 12.5	32	12°38.0	12°40.1	12°03.5	3.2 - 2.7	9.2 - 7.7	15.2 - 12.8
33	12°08.2	12°10.2	11°35.1	3.3 - 2.7	9.3 - 7.5	15.3 - 12.4	33	12°23.2	12°25.3	11°49.4	3.3 - 2.7	9.3 - 7.7	15.3 - 12.6	33	12°38.2	12°40.3	12°03.7	3.3 - 2.8	9.3 - 7.8	15.3 - 12.9
34	12°08.5	12°10.5	11°35.3	3.4 - 2.7	9.4 - 7.6	15.4 - 12.4	34	12°23.5	12°25.5	11°49.6	3.4 - 2.8	9.4 - 7.8	15.4 - 12.7	34	12°38.5	12°40.6	12°03.9	3.4 - 2.9	9.4 - 7.9	15.4 - 13.0
35	12°08.8	12°10.7	11°35.6	3.5 - 2.8	9.5 - 7.7	15.5 - 12.5	35	12°23.8	12°25.8	11°49.9	3.5 - 2.9	9.5 - 7.8	15.5 - 12.8	35	12°38.8	12°40.8	12°04.2	3.5 - 2.9	9.5 - 8.0	15.5 - 13.0
36	12°09.0	12°11.0	11°35.8	3.6 - 2.9	9.6 - 7.8	15.6 - 12.6	36	12°24.0	12°26.0	11°50.1	3.6 - 3.0	9.6 - 7.9	15.6 - 12.9	36	12°39.0	12°41.1	12°04.4	3.6 - 3.0	9.6 - 8.1	15.6 - 13.1
37	12°09.3	12°11.2	11°36.0	3.7 - 3.0	9.7 - 7.8	15.7 - 12.7	37	12°24.3	12°26.3	11°50.3	3.7 - 3.1	9.7 - 8.0	15.7 - 13.0	37	12°39.3	12°41.3	12°04.7	3.7 - 3.1	9.7 - 8.2	15.7 - 13.2
38	12°09.5	12°11.5	11°36.3	3.8 - 3.1	9.8 - 7.9	15.8 - 12.8	38	12°24.5	12°26.5	11°50.6	3.8 - 3.1	9.8 - 8.1	15.8 - 13.0	38	12°39.5	12°41.6	12°04.9	3.8 - 3.2	9.8 - 8.2	15.8 - 13.3
39	12°09.7	12°11.7	11°36.5	3.9 - 3.2	9.9 - 8.0	15.9 - 12.9	39	12°24.7	12°26.8	11°50.8	3.9 - 3.2	9.9 - 8.2	15.9 - 13.1	39	12°39.7	12°41.8	12°05.1	3.9 - 3.3	9.9 - 8.3	15.9 - 13.4
40	12°10.0	12°12.0	11°36.7	4.0 - 3.2	10.0 - 8.1	16.0 - 12.9	40	12°25.0	12°27.0	11°51.1	4.0 - 3.3	10.0 - 8.3	16.0 - 13.2	40	12°40.0	12°42.1	12°05.4	4.0 - 3.4	10.0 - 8.4	16.0 - 13.5
41	12°10.2	12°12.2	11°37.0	4.1 - 3.3	10.1 - 8.2	16.1 - 13.0	41	12°25.2	12°27.3	11°51.3	4.1 - 3.4	10.1 - 8.3	16.1 - 13.3	41	12°40.2	12°42.3	12°05.6	4.1 - 3.5	10.1 - 8.5	16.1 - 13.6
42	12°10.5	12°12.5	11°37.2	4.2 - 3.4	10.2 - 8.2	16.2 - 13.1	42	12°25.5	12°27.5	11°51.5	4.2 - 3.5	10.2 - 8.4	16.2 - 13.4	42	12°40.5	12°42.6	12°05.9	4.2 - 3.5	10.2 - 8.6	16.2 - 13.6
43	12°10.8	12°12.7	11°37.5	4.3 - 3.5	10.3 - 8.3	16.3 - 13.2	43	12°25.8	12°27.8	11°51.8	4.3 - 3.5	10.3 - 8.5	16.3 - 13.4	43	12°40.8	12°42.8	12°06.1	4.3 - 3.6	10.3 - 8.7	16.3 - 13.7
44	12°11.0	12°13.0	11°37.7	4.4 - 3.6	10.4 - 8.4	16.4 - 13.3	44	12°26.0	12°28.0	11°52.0	4.4 - 3.6	10.4 - 8.6	16.4 - 13.5	44	12°41.0	12°43.1	12°06.3	4.4 - 3.7	10.4 - 8.8	16.4 - 13.8
45	12°11.3	12°13.2	11°37.9	4.5 - 3.6	10.5 - 8.5	16.5 - 13.3	45	12°26.3	12°28.3	11°52.3	4.5 - 3.7	10.5 - 8.7	16.5 - 13.6	45	12°41.3	12°43.3	12°06.6	4.5 - 3.8	10.5 - 8.8	16.5 - 13.9
46	12°11.5	12°13.5	11°38.2	4.6 - 3.7	10.6 - 8.6	16.6 - 13.4	46	12°26.5	12°28.5	11°52.5	4.6 - 3.8	10.6 - 8.7	16.6 - 13.7	46	12°41.5	12°43.6	12°06.8	4.6 - 3.9	10.6 - 8.9	16.6 - 14.0
47																				

Increments and Corrections

m 51	Sun Plan.	Aries	Moon	v and d corr			m 52	Sun Plan.	Aries	Moon	v and d corr			m 53	Sun Plan.	Aries	Moon	v and d corr		
0	12°45.0	12°47.1	12°10.1	0.0 - 0.0	6.0 - 5.1	12.0 - 10.3	0	13°00.0	13°02.1	12°24.5	0.0 - 0.0	6.0 - 5.3	12.0 - 10.5	0	13°15.0	13°17.2	12°38.8	0.0 - 0.0	6.0 - 5.4	12.0 - 10.7
1	12°45.2	12°47.3	12°10.4	0.1 - 0.1	6.1 - 5.2	12.1 - 10.4	1	13°00.2	13°02.4	12°24.7	0.1 - 0.1	6.1 - 5.3	12.1 - 10.6	1	13°15.2	13°17.4	12°39.0	0.1 - 0.1	6.1 - 5.4	12.1 - 10.8
2	12°45.5	12°47.6	12°10.6	0.2 - 0.2	6.2 - 5.3	12.2 - 10.5	2	13°00.5	13°02.6	12°24.9	0.2 - 0.2	6.2 - 5.4	12.2 - 10.7	2	13°15.5	13°17.7	12°39.3	0.2 - 0.2	6.2 - 5.5	12.2 - 10.9
3	12°45.7	12°47.8	12°10.9	0.3 - 0.3	6.3 - 5.4	12.3 - 10.6	3	13°00.7	13°02.9	12°25.2	0.3 - 0.3	6.3 - 5.5	12.3 - 10.8	3	13°15.7	13°17.9	12°39.5	0.3 - 0.3	6.3 - 5.6	12.3 - 11.0
4	12°46.0	12°48.1	12°11.1	0.4 - 0.3	6.4 - 5.5	12.4 - 10.6	4	13°01.0	13°03.1	12°25.4	0.4 - 0.4	6.4 - 5.6	12.4 - 10.8	4	13°16.0	13°18.2	12°39.7	0.4 - 0.4	6.4 - 5.7	12.4 - 11.1
5	12°46.3	12°48.3	12°11.3	0.5 - 0.4	6.5 - 5.6	12.5 - 10.7	5	13°01.3	13°03.4	12°25.7	0.5 - 0.4	6.5 - 5.7	12.5 - 10.9	5	13°16.3	13°18.4	12°40.0	0.5 - 0.4	6.5 - 5.8	12.5 - 11.1
6	12°46.5	12°48.6	12°11.6	0.6 - 0.5	6.6 - 5.7	12.6 - 10.8	6	13°01.5	13°03.6	12°25.9	0.6 - 0.5	6.6 - 5.8	12.6 - 11.0	6	13°16.5	13°18.7	12°40.2	0.6 - 0.5	6.6 - 5.9	12.6 - 11.2
7	12°46.8	12°48.8	12°11.8	0.7 - 0.6	6.7 - 5.8	12.7 - 10.9	7	13°01.8	13°03.9	12°26.1	0.7 - 0.6	6.7 - 5.9	12.7 - 11.1	7	13°16.8	13°18.9	12°40.5	0.7 - 0.6	6.7 - 6.0	12.7 - 11.3
8	12°47.0	12°49.1	12°12.1	0.8 - 0.7	6.8 - 5.8	12.8 - 11.0	8	13°02.0	13°04.1	12°26.4	0.8 - 0.7	6.8 - 6.0	12.8 - 11.2	8	13°17.0	13°19.2	12°40.7	0.8 - 0.7	6.8 - 6.1	12.8 - 11.4
9	12°47.2	12°49.3	12°12.3	0.9 - 0.8	6.9 - 5.9	12.9 - 11.1	9	13°02.2	13°04.4	12°26.6	0.9 - 0.8	6.9 - 6.0	12.9 - 11.3	9	13°17.2	13°19.4	12°40.9	0.9 - 0.8	6.9 - 6.2	12.9 - 11.5
10	12°47.5	12°49.6	12°12.5	1.0 - 0.9	7.0 - 6.0	13.0 - 11.2	10	13°02.5	13°04.6	12°26.9	1.0 - 0.9	7.0 - 6.1	13.0 - 11.4	10	13°17.5	13°19.7	12°41.2	1.0 - 0.9	7.0 - 6.2	13.0 - 11.6
11	12°47.7	12°49.8	12°12.8	1.1 - 0.9	7.1 - 6.1	13.1 - 11.2	11	13°02.7	13°04.9	12°27.1	1.1 - 1.0	7.1 - 6.2	13.1 - 11.5	11	13°17.7	13°19.9	12°41.4	1.1 - 1.0	7.1 - 6.3	13.1 - 11.7
12	12°48.0	12°50.1	12°13.0	1.2 - 1.0	7.2 - 6.2	13.2 - 11.3	12	13°03.0	13°05.1	12°27.3	1.2 - 1.1	7.2 - 6.3	13.2 - 11.5	12	13°18.0	13°20.2	12°41.6	1.2 - 1.1	7.2 - 6.4	13.2 - 11.8
13	12°48.3	12°50.3	12°13.3	1.3 - 1.1	7.3 - 6.3	13.3 - 11.4	13	13°03.3	13°05.4	12°27.6	1.3 - 1.1	7.3 - 6.4	13.3 - 11.6	13	13°18.3	13°20.4	12°41.9	1.3 - 1.2	7.3 - 6.5	13.3 - 11.9
14	12°48.5	12°50.6	12°13.5	1.4 - 1.2	7.4 - 6.4	13.4 - 11.5	14	13°03.5	13°05.6	12°27.8	1.4 - 1.2	7.4 - 6.5	13.4 - 11.7	14	13°18.5	13°20.7	12°42.1	1.4 - 1.2	7.4 - 6.6	13.4 - 11.9
15	12°48.8	12°50.9	12°13.7	1.5 - 1.3	7.5 - 6.4	13.5 - 11.6	15	13°03.8	13°05.9	12°28.0	1.5 - 1.3	7.5 - 6.6	13.5 - 11.8	15	13°18.8	13°20.9	12°42.4	1.5 - 1.3	7.5 - 6.7	13.5 - 12.0
16	12°49.0	12°51.1	12°14.0	1.6 - 1.4	7.6 - 6.5	13.6 - 11.7	16	13°04.0	13°06.1	12°28.3	1.6 - 1.4	7.6 - 6.6	13.6 - 11.9	16	13°19.0	13°21.2	12°42.6	1.6 - 1.4	7.6 - 6.8	13.6 - 12.1
17	12°49.2	12°51.4	12°14.2	1.7 - 1.5	7.7 - 6.6	13.7 - 11.8	17	13°04.2	13°06.4	12°28.5	1.7 - 1.5	7.7 - 6.7	13.7 - 12.0	17	13°19.2	13°21.4	12°42.8	1.7 - 1.5	7.7 - 6.9	13.7 - 12.2
18	12°49.5	12°51.6	12°14.4	1.8 - 1.5	7.8 - 6.7	13.8 - 11.8	18	13°04.5	13°06.6	12°28.8	1.8 - 1.6	7.8 - 6.8	13.8 - 12.1	18	13°19.5	13°21.7	12°43.1	1.8 - 1.6	7.8 - 7.0	13.8 - 12.3
19	12°49.8	12°51.9	12°14.7	1.9 - 1.6	7.9 - 6.8	13.9 - 11.9	19	13°04.8	13°06.9	12°29.0	1.9 - 1.7	7.9 - 6.9	13.9 - 12.2	19	13°19.8	13°21.9	12°43.3	1.9 - 1.7	7.9 - 7.0	13.9 - 12.4
20	12°50.0	12°52.1	12°14.9	2.0 - 1.7	8.0 - 6.9	14.0 - 12.0	20	13°05.0	13°07.1	12°29.2	2.0 - 1.8	8.0 - 7.0	14.0 - 12.3	20	13°20.0	13°22.2	12°43.6	2.0 - 1.8	8.0 - 7.1	14.0 - 12.5
21	12°50.3	12°52.4	12°15.2	2.1 - 1.8	8.1 - 7.0	14.1 - 12.1	21	13°05.3	13°07.4	12°29.5	2.1 - 1.8	8.1 - 7.1	14.1 - 12.3	21	13°20.3	13°22.4	12°43.8	2.1 - 1.9	8.1 - 7.2	14.1 - 12.6
22	12°50.5	12°52.6	12°15.4	2.2 - 1.9	8.2 - 7.0	14.2 - 12.2	22	13°05.5	13°07.6	12°29.7	2.2 - 1.9	8.2 - 7.2	14.2 - 12.4	22	13°20.5	13°22.7	12°44.0	2.2 - 2.0	8.2 - 7.3	14.2 - 12.7
23	12°50.7	12°52.9	12°15.6	2.3 - 2.0	8.3 - 7.1	14.3 - 12.3	23	13°05.7	13°07.9	12°30.0	2.3 - 2.0	8.3 - 7.3	14.3 - 12.5	23	13°20.7	13°22.9	12°44.3	2.3 - 2.1	8.3 - 7.4	14.3 - 12.8
24	12°51.0	12°53.1	12°15.9	2.4 - 2.1	8.4 - 7.2	14.4 - 12.4	24	13°06.0	13°08.1	12°30.2	2.4 - 2.1	8.4 - 7.4	14.4 - 12.6	24	13°21.0	13°23.2	12°44.5	2.4 - 2.1	8.4 - 7.5	14.4 - 12.8
25	12°51.2	12°53.4	12°16.1	2.5 - 2.1	8.5 - 7.3	14.5 - 12.4	25	13°06.2	13°08.4	12°30.4	2.5 - 2.2	8.5 - 7.4	14.5 - 12.7	25	13°21.2	13°23.4	12°44.7	2.5 - 2.2	8.5 - 7.6	14.5 - 12.9
26	12°51.5	12°53.6	12°16.4	2.6 - 2.2	8.6 - 7.4	14.6 - 12.5	26	13°06.5	13°08.6	12°30.7	2.6 - 2.3	8.6 - 7.5	14.6 - 12.8	26	13°21.5	13°23.7	12°45.0	2.6 - 2.3	8.6 - 7.7	14.6 - 13.0
27	12°51.8	12°53.9	12°16.6	2.7 - 2.3	8.7 - 7.5	14.7 - 12.6	27	13°06.8	13°08.9	12°30.9	2.7 - 2.4	8.7 - 7.6	14.7 - 12.9	27	13°21.8	13°23.9	12°45.2	2.7 - 2.4	8.7 - 7.8	14.7 - 13.1
28	12°52.0	12°54.1	12°16.8	2.8 - 2.4	8.8 - 7.6	14.8 - 12.7	28	13°07.0	13°09.2	12°31.1	2.8 - 2.5	8.8 - 7.7	14.8 - 13.0	28	13°22.0	13°24.2	12°45.5	2.8 - 2.5	8.8 - 7.8	14.8 - 13.2
29	12°52.3	12°54.4	12°17.1	2.9 - 2.5	8.9 - 7.6	14.9 - 12.8	29	13°07.3	13°09.4	12°31.4	2.9 - 2.5	8.9 - 7.8	14.9 - 13.0	29	13°22.3	13°24.4	12°45.7	2.9 - 2.6	8.9 - 7.9	14.9 - 13.3
30	12°52.5	12°54.6	12°17.3	3.0 - 2.6	9.0 - 7.7	15.0 - 12.9	30	13°07.5	13°09.7	12°31.6	3.0 - 2.6	9.0 - 7.9	15.0 - 13.1	30	13°22.5	13°24.7	12°45.9	3.0 - 2.7	9.0 - 8.0	15.0 - 13.4
31	12°52.7	12°54.9	12°17.5	3.1 - 2.7	9.1 - 7.8	15.1 - 13.0	31	13°07.7	13°09.9	12°31.9	3.1 - 2.7	9.1 - 8.0	15.1 - 13.2	31	13°22.7	13°24.9	12°46.2	3.1 - 2.8	9.1 - 8.1	15.1 - 13.5
32	12°53.0	12°55.1	12°17.8	3.2 - 2.7	9.2 - 7.9	15.2 - 13.0	32	13°08.0	13°10.2	12°32.1	3.2 - 2.8	9.2 - 8.0	15.2 - 13.3	32	13°23.0	13°25.2	12°46.4	3.2 - 2.9	9.2 - 8.2	15.2 - 13.6
33	12°53.2	12°55.4	12°18.0	3.3 - 2.8	9.3 - 8.0	15.3 - 13.1	33	13°08.2	13°10.4	12°32.3	3.3 - 2.9	9.3 - 8.1	15.3 - 13.4	33	13°23.2	13°25.4	12°46.7	3.3 - 2.9	9.3 - 8.3	15.3 - 13.7
34	12°53.5	12°55.6	12°18.3	3.4 - 2.9	9.4 - 8.1	15.4 - 13.2	34	13°08.5	13°10.7	12°32.6	3.4 - 3.0	9.4 - 8.2	15.4 - 13.5	34	13°23.5	13°25.7	12°46.9	3.4 - 3.0	9.4 - 8.4	15.4 - 13.6
35	12°53.8	12°55.9	12°18.5	3.5 - 3.0	9.5 - 8.2	15.5 - 13.3	35	13°08.8	13°10.9	12°32.8	3.5 - 3.1	9.5 - 8.3	15.5 - 13.6	35	13°23.8	13°25.9	12°47.1	3.5 - 3.1	9.5 - 8.5	15.5 - 13.8
36	12°54.0	12°56.1	12°18.7	3.6 - 3.1	9.6 - 8.2	15.6 - 13.4	36	13°09.0	13°11.2	12°33.1	3.6 - 3.1	9.6 - 8.4	15.6 - 13.7	36	13°24.0	13°26.2	12°47.4	3.6 - 3.2	9.6 - 8.6	15.6 - 13.9
37	12°54.3	12°56.4	12°19.0	3.7 - 3.2	9.7 - 8.3	15.7 - 13.5	37	13°09.3	13°11.4	12°33.3	3.7 - 3.2	9.7 - 8.5	15.7 - 13.7	37	13°24.3	13°26.4	12°47.6	3.7 - 3.3	9.7 - 8.6	15.7 - 14.0
38	12°54.5	12°56.6	12°19.2	3.8 - 3.3	9.8 - 8.4	15.8 - 13.6	38	13°09.5	13°11.7	12°33.5	3.8 - 3.3	9.8 - 8.6	15.8 - 13.8	38	13°24.5	13°26.7	12°47.9	3.8 - 3.4	9.8 - 8.7	15.8 - 14.1
39	12°54.7	12°56.9	12°19.5	3.9 - 3.3	9.9 - 8.5	15.9 - 13.6	39	13°09.7	13°11.9	12°33.8	3.9 - 3.4	9.9 - 8.7	15.9 - 13.9	39	13°24.7	13°26.9	12°48.1	3.9 - 3.5	9.9 - 8.8	15.9 - 14.2
40	12°55.0	12°57.1	12°19.7	4.0 - 3.4	10.0 - 8.6	16.0 - 13.7	40	13°10.0	13°12.2	12°34.0	4.0 - 3.5	10.0 - 8.8	16.0 - 14.0	40	13°25.0	13°27.2	12°48.3	4.0 - 3.6	10.0 - 8.9	16.0 - 14.3
41	12°55.2	12°57.4	12°19.9	4.1 - 3.5	10.1 - 8.7	16.1 - 13.8	41	13°10.2	13°12.4	12°34.2	4.1 - 3.6	10.1 - 8.8	16.1 - 14.1	41	13°25.2	13°27.5	12°48.6	4.1 - 3.7	10.1 - 9.0	16.1 - 14.4
42	12°55.5	12°57.6	12°20.2	4.2 - 3.6	10.2 - 8.8	16.2 - 13.9	42	13°10.5	13°12.7	12°34.5	4.2 - 3.7	10.2 - 8.9	16.2 - 14.2	42	13°25.5	13°27.7	12°48.8	4.2 - 3.7	10.2 - 9.1	16.2 - 14.4
43	12°55.8	12°57.9	12°20.4	4.3 - 3.7	10.3 - 8.8	16.3 - 14.0	43	13°10.8	13°12.9	12°34.7	4.3 - 3.8	10.3 - 9.0	16.3 - 14.3	43	13°25.8	13°28.0	12°49.0	4.3 - 3.8	10.3 - 9.2	16.3 - 14.5
44	12°56.0	12°58.1	12°20.6	4.4 - 3.8	10.4 - 8.9	16.4 - 14.1	44	13°11.0	13°13.2	12°35.0	4.4 - 3.9	10.4 - 9.1	16.4 - 14.3	44	13°26.0	13°28.2	12°49.3	4.4 - 3.9	10.4 - 9.3	16.4 - 14.6
45	12°56.3	12°58.4	12°20.9	4.5 - 3.9	10.5 - 9.0	16.5 - 14.2	45	13°11.3	13°13.4	12°35.2	4.5 - 3.9	10.5 - 9.2	16.5 - 14.4	45	13°26.3	13°28.5	12°49.5	4.5 - 4.0	10.5 - 9.4	16.5 - 14.7
46	12°56.5	12°58.6	12°21.1	4.6 - 3.9	10.6 - 9.1	16.6 - 14.2	46	13°11.5	13°13.7	12°35.4	4.6 - 4.0	10.6 - 9.3	16.6 - 14.5	46	13°26.5	13°28.7	12°49.8	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		
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°59.0	14°15.7	4.6 - 4.6	10.6 - 10	

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

Altitude Correction Tables for 10° to 90° — Sun, Stars, Planets

SUN October – March			SUN April – September			Stars & Planets		Additional Altitude Correction for Mars & Venus	Refraction		DIP <i>always subtracted from Hs</i>				
App. Alt.	Lower Limb	Upper Limb	App. Alt.	Lower Limb	Upper Limb	App. Alt.	Corr		App. Alt.	Corr	Ht. of Eye	Corr	Ht. of Eye	Ht. of Eye	Corr
9 33	+10.8	- 21.5	9 39	+10.6	- 21.2	9 55	-5.3	5.5	-9.1	2.4		8.0	1.0	-1.8	
9 45	+10.9	-21.4	9 50	+10.7	-21.1	10 07	-5.2	6.0	-8.5	2.6	-2.8	8.6	1.5	-2.2	
9 56	+11.0	-21.3	10 02	+10.8	-21.0	10 20	-5.1	6.5	-7.9	2.8	-2.9	9.2	2.0	-2.5	
10 08	+11.1	-21.2	10 14	+10.9	-20.9	10 32	-5.0	7.0	-7.5	3.0	-3.0	9.8	2.5	-2.8	
10 20	+11.2	-21.1	10 27	+11.0	-20.8	10 46	-4.9	7.5	-7.0	3.2	-3.1	10.5	3.0	-3.0	
10 33	+11.3	-21.0	10 40	+11.1	-20.7	10 59	-4.8	8.0	-6.6	3.4	-3.2	11.2			
10 46	+11.4	-20.9	10 53	+11.2	-20.6	11 14	-4.7	8.5	-6.3	3.6	-3.3	11.9		See table	
11 00	+11.5	-20.8	11 07	+11.3	-20.5	11 29	-4.6	9.0	-5.9	3.8	-3.4	12.6			
11 15	+11.6	-20.7	11 22	+11.4	-20.4	11 44	-4.6	9.5	-5.7	4.0	-3.5	13.3			
11 30	+11.7	-20.6	11 37	+11.5	-20.3	12 00	-4.5	10.0	-5.4	4.3	-3.6	14.1	20	-7.9	
11 45	+11.8	-20.5	11 53	+11.6	-20.2	12 17	-4.4	10.5	-5.1	4.5	-3.7	14.9	22	-8.3	
12 01	+11.9	-20.4	12 10	+11.7	-20.1	12 35	-4.3	11.0	-4.9	4.7	-3.8	15.7	24	-8.6	
12 18	+12.0	-20.3	12 27	+11.8	-20.0	12 53	-4.2	11.5	-4.7	5.0	-3.9	16.5	26	-9.0	
12 36	+12.1	-20.2	14 45	+11.9	-19.9	13 12	-4.1	12.0	-4.5	5.2	-4.0	17.4	28	-9.3	
12 54	+12.2	-20.1	13 04	+12.0	-19.8	13 32	-4.0	12.5	-4.4	5.5	-4.1	18.3			
13 14	+12.3	-20.0	13 24	+12.1	-19.7	13 53	-3.9	13.0	-4.2	5.8	-4.2	19.1	30	-9.6	
13 34	+12.4	-19.9	13 44	+12.2	-19.6	14 16	-3.8	13.5	-4.0	6.1	-4.3	20.1	32	-10.0	
13 55	+12.5	-19.8	14 06	+12.3	-19.5	14 39	-3.7	14.0	-3.9	6.3	-4.4	21.0	34	-10.3	
14 17	+12.6	-19.7	14 29	+12.4	-19.4	15 03	-3.6	14.5	-3.8	6.6	-4.5	22.0	36	-10.6	
14 41	+12.7	-19.6	14 53	+12.5	-19.3	15 29	-3.5	15.0	-3.6	6.9	-4.6	22.9	38	-10.8	
15 05	+12.8	-19.5	15 18	+12.6	-19.2	15 56	-3.4	15.5	-3.5	7.2	-4.7	23.9			
15 31	+12.9	-19.4	15 45	+12.7	-19.1	16 25	-3.3	16.0	-3.4	7.5	-4.8	24.9	40	-11.1	
15 59	+13.0	-19.3	16 13	+12.8	-19.0	16 55	-3.2	16.5	-3.3	7.9	-4.9	26.0	42	-11.4	
16 27	+13.1	-19.2	16 43	+12.9	-18.9	17 27	-3.1	17.0	-3.2	8.2	-5.0	27.1	44	-11.7	
16 58	+13.2	-19.1	17 14	+13.0	-18.8	18 01	-3.0	17.5	-3.1	8.5	-5.1	28.1	46	-11.9	
17 30	+13.3	-19.0	17 47	+13.1	-18.7	18 37	-2.9	18.0	-3.0	8.8	-5.2	29.2	48	-12.2	
18 05	+13.4	-18.9	18 23	+13.2	-18.6	19 16	-2.8	18.5	-2.9	9.2	-5.3	30.4		feet	
18 41	+13.5	-18.8	19 00	+13.3	-18.5	19 56	-2.7	19.0	-2.9	9.5	-5.4	31.5	2	-1.4	
19 20	+13.6	-18.7	19 41	+13.4	-18.4	20 40	-2.6	19.5	-2.8	9.9	-5.5	32.7	4	-1.9	
20 02	+13.7	-18.6	20 24	+13.5	-18.3	21 27	-2.5	20.0	-2.7	10.3	-5.6	33.9	6	-2.4	
20 46	+13.8	-18.5	21 10	+13.6	-18.2	22 17	-2.4	21.0	-2.6	10.6	-5.7	35.1	8	-2.7	
21 34	+13.9	-18.4	21 59	+13.7	-18.1	23 11	-2.3	22.0	-2.4	11.0	-5.8	36.3	10	-3.1	
22 25	+14.0	-18.3	22 52	+13.8	-18.0	24 09	-2.2	23.0	-2.3	11.4	-5.9	37.6		See table	
23 20	+14.1	-18.2	23 49	+13.9	-17.9	25 12	-2.1	24.0	-2.2	11.8	-6.0	38.9			
24 20	+14.2	-18.1	24 51	+14.0	-17.8	26 20	-2.0	25.0	-2.1	12.2	-6.1	40.1		feet	
25 24	+14.3	-18.0	25 58	+14.1	-17.7	27 34	-1.9	26.0	-2.0	12.6	-6.2	41.5	70	-8.1	
26 34	+14.4	-17.9	27 11	+14.2	-17.6	28 54	-1.8	27.0	-1.9	13.0	-6.3	42.8	75	-8.4	
27 50	+14.5	-17.8	28 31	+14.3	-17.5	30 22	-1.7	28.0	-1.9	13.4	-6.4	44.2	80	-8.7	
29 13	+14.6	-17.7	29 58	+14.4	-17.4	31 58	-1.6	29.0	-1.8	13.8	-6.5	45.5	85	-8.9	
30 44	+14.7	-17.6	31 33	+14.5	-17.3	33 43	-1.5	30.0	-1.7	14.2	-6.6	46.9	90	-9.2	
32 24	+14.8	-17.5	33 18	+14.6	-17.2	35 38	-1.4	31.0	-1.7	14.7	-6.7	48.4	95	9.5	
34 15	+14.9	-17.4	35 15	+14.7	-17.1	37 45	-1.3	32.0	-1.6	15.1	-6.8	49.8	100	-9.7	
36 17	+15.0	-17.3	37 24	+14.8	-17.0	40 06	-1.2	33.0	-1.5	15.5	-6.9	51.3	105	-9.9	
38 34	+15.1	-17.2	39 48	+14.9	-16.9	42 42	-1.1	34.0	-1.5	16.0	-7.0	52.8	110	-10.2	
41 06	+15.2	-17.1	42 28	+15.0	-16.8	45 34	-1.0	35.0	-1.4	16.5	-7.1	54.3	115	-10.4	
43 56	+15.3	-17.0	45 29	+15.1	-16.7	48 45	-0.9	36.0	-1.4	16.9	-7.2	55.8	120	-10.6	
47 07	+15.4	-16.9	48 52	+15.2	-16.6	52 16	-0.8	37.0	-1.3	17.4	-7.3	57.4	125	-10.8	
50 43	+15.5	-16.8	51 41	+15.3	-16.5	56 09	-0.7	38.0	-1.3	17.9	-7.4	58.9			
54 46	+15.6	-16.7	56 59	+15.4	-16.4	60 26	-0.6	39.0	-1.2	18.4	-7.5	60.5	130	-11.1	
59 21	+15.7	-16.6	61 50	+15.5	-16.3	65 06	-0.5	40.0	-1.2	18.8	-7.6	62.1	135	-11.3	
64 28	+15.8	-16.5	67 15	+15.6	-16.2	70 09	-0.4	45.0	-1.0	19.3	-7.7	63.8	140	-11.5	
70 10	+15.9	-16.4	73 14	+15.7	-16.1	75 32	-0.3	50.0	-0.8	19.8	-7.8	65.4	145	-11.7	
76 24	+16.0	-16.3	79 42	+15.8	-16.0	81 12	-0.2	55.0	-0.7	20.4	-7.9	67.1	150	-11.9	
83 05	+16.1	-16.2	86 21	+15.9	-15.9	87 03	0.0	60.0	-0.6	20.9	-8.0	68.8	155	-12.1	
90 00			90 00			90 00		65.0	-0.5	21.4	-8.1	70.5			
								70.0	-0.4						
								75.0	-0.3						
								80.0	-0.2						
								85.0	-0.1						

App. Alt. = Apparent altitude = Sextant altitude corrected for index error and dip.

Altitude Correction Tables for 0° to 10° — Sun, Stars, Planets

App. Alt.	Sun		Sun		Stars & Planets	App. Alt.	Sun		Sun		Stars & Planets
	October - March		April - September				October - March		April - September		
	Lower Limb	Upper Limb	Lower Limb	Upper Limb			Lower Limb	Upper Limb	Lower Limb	Upper Limb	
0 00	-17.5	-49.8	-17.8	-49.6	-33.8	3 30	+ 3.4	-28.9	+ 3.1	-28.7	-12.9
0 03	16.9	49.2	17.2	49.0	33.2	3 35	3.6	28.7	3.3	28.5	12.7
0 06	16.3	48.6	16.6	48.4	32.6	3 40	3.8	28.5	3.6	28.2	12.5
0 09	15.7	48.0	16.0	47.8	32.0	3 45	4.0	28.3	3.8	28.0	12.3
0 12	15.2	47.5	15.4	47.2	31.5	3 50	4.2	28.1	4.0	27.8	12.1
0 15	14.6	46.9	14.8	46.6	30.9	3 55	4.4	27.9	4.1	27.7	11.9
0 18	-14.1	-46.4	-14.3	-46.1	-30.4	4 00	+ 4.6	-27.7	+ 4.3	-27.5	-11.7
0 21	13.5	45.8	13.8	45.6	29.8	4 05	4.8	27.5	4.5	27.3	11.5
0 24	13.0	45.3	13.3	45.1	29.3	4 10	4.9	27.4	4.7	27.1	11.4
0 27	12.5	44.8	12.8	44.6	28.8	4 15	5.1	27.2	4.9	26.9	11.2
0 30	12.0	44.3	12.3	44.1	28.3	4 20	5.3	27.0	5.0	26.8	11.0
0 33	11.6	43.9	11.8	43.6	27.9	4 25	5.4	26.9	5.2	26.6	10.9
0 36	-11.1	-10.0	-11.3	-43.1	-27.4	4 30	+ 5.6	-26.7	+ 5.3	-26.5	-10.7
0 39	10.6	42.9	10.9	42.7	26.9	4 35	5.7	26.6	5.5	26.3	10.6
0 42	10.2	42.5	10.5	42.3	26.5	4 40	5.9	26.4	5.6	26.2	10.4
0 45	9.8	42.1	10.0	41.8	26.1	4 45	6.0	26.3	5.8	26.0	10.3
0 48	9.4	41.7	9.6	41.4	25.7	4 50	6.2	26.1	5.9	25.9	10.1
0 51	9.0	41.3	9.2	41.0	25.3	4 55	6.3	26.0	6.1	25.7	10.0
0 54	-8.6	-40.9	-8.8	-40.6	-24.9	5 00	+ 6.4	-25.9	+ 6.2	-25.6	-9.9
0 57	8.2	40.5	8.4	40.2	24.5	5 05	6.6	25.7	6.3	25.5	9.7
1 00	7.8	40.1	8.0	39.8	24.1	5 10	6.7	25.6	6.5	25.3	9.6
1 03	7.4	39.7	7.7	39.5	23.7	5 15	6.8	25.5	6.6	25.2	9.5
1 06	7.1	39.4	7.3	39.1	23.4	5 20	7.0	25.3	6.7	25.1	9.3
1 09	6.7	39.0	7.0	38.8	23.0	5 25	7.1	25.2	6.8	25.0	9.2
1 12	-6.4	-38.7	-6.6	-38.4	-22.7	5 30	+ 7.2	-25.1	+ 6.9	-24.9	-9.1
1 15	6.0	38.3	6.3	38.1	22.3	5 35	7.3	25.0	7.1	24.7	9.0
1 18	5.7	38.0	6.0	37.8	22.0	5 40	7.4	24.9	7.2	24.6	8.9
1 21	5.4	37.7	5.7	37.5	21.7	5 45	7.5	24.8	7.3	24.5	8.8
1 24	5.1	37.4	5.3	37.1	21.4	5 50	7.6	24.7	7.4	24.4	8.7
1 27	4.8	37.1	5.0	36.8	21.1	5 55	7.7	24.6	7.5	24.3	8.6
1 30	-4.5	-36.8	-4.7	-36.5	-20.8	6 00	+ 7.8	-24.5	+ 7.6	-24.2	-8.5
1 35	4.0	36.3	4.3	36.1	20.3	6 10	8.0	24.3	7.8	24.0	8.3
1 40	3.6	35.9	3.8	35.6	19.9	6 20	8.2	24.1	8.0	23.8	8.1
1 45	3.1	35.4	3.4	35.2	19.4	6 30	8.4	23.9	8.2	23.6	7.9
1 50	2.7	35.0	2.9	34.7	19.0	6 40	8.6	23.7	8.3	23.5	7.7
1 55	2.3	34.6	2.5	34.3	18.6	6 50	8.7	23.6	8.5	23.3	7.6
2 00	-1.9	-34.2	-2.1	-33.9	-18.2	7 00	+ 8.9	-23.4	+ 8.7	-23.1	-7.4
2 05	1.5	33.8	1.7	33.5	17.8	7 10	9.1	23.2	8.8	23.0	7.2
2 10	1.1	33.4	1.4	33.2	17.4	7 20	9.2	23.1	9.0	22.8	7.1
2 15	0.8	33.1	1.0	32.8	17.1	7 30	9.3	23.0	9.1	22.7	6.9
2 20	0.4	32.7	0.7	32.5	16.7	7 40	9.5	22.8	9.2	22.6	6.8
2 25	-0.1	32.4	-0.3	32.1	16.4	7 50	9.6	22.7	9.4	22.4	6.7
2 30	+ 0.2	-32.1	0.0	-31.8	-16.1	8 00	+ 9.7	-22.6	+ 9.5	-22.3	-6.6
2 35	0.5	31.8	+ 0.3	31.5	15.8	8 10	9.9	22.4	9.6	22.2	6.4
2 40	0.8	31.5	0.6	31.2	15.4	8 20	10.0	22.3	9.7	22.1	6.3
2 45	1.1	31.2	0.9	30.9	15.2	8 30	10.1	22.2	9.9	21.9	6.2
2 50	1.4	30.9	1.2	30.6	14.9	8 40	10.2	22.1	10.0	21.8	6.1
2 55	1.7	30.6	1.4	30.4	14.9	8 50	10.3	22.0	10.1	21.7	6.0
3 00	+ 2.0	-30.3	+ 1.7	-30.1	-14.3	9 00	+ 10.4	-21.9	+ 10.2	-21.6	-5.9
3 05	2.2	30.1	2.0	29.8	14.1	9 10	10.5	21.8	10.3	21.5	5.8
3 10	2.5	29.8	2.2	29.6	13.8	9 20	10.6	21.7	10.4	21.4	5.7
3 15	2.7	29.6	2.5	29.3	13.6	9 30	10.7	21.6	10.5	21.3	5.6
3 20	2.9	29.4	2.7	29.1	13.4	9 40	10.8	21.5	10.6	21.2	5.5
3 25	3.2	29.1	2.9	28.9	13.4	9 50	10.9	21.4	10.6	21.2	5.4
3 30	3.4	-28.9	+ 3.1	-28.7	-12.9	10 00	+ 11.0	-21.3	+ 10.7	-21.1	-5.3

For bubble sextant observations- ignore dip and use star corrections for the Sun, planets and stars.

