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Latitude 20° - 29°
Declination CONTRARY name to Latitude

Sight-Reduction Tables for Latitude 20° - 29°

Declination CONTRARY name to Latitude

Revision V1.2 - Apr2017

Warning and Terms of Usage:

The following pages have been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data in these Tables is believed to be accurate but no warranty is given for its correctness.

Use these Tables only for training and exercising!

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Purpose and Scope

The following tables are designed to determine Altitude and Azimuth of a celestial object, given the position of the observer (Latitude - Longitude) and the coordinates of the celestial object (Declination - GHA). Using the Altitude-Intercept Method, the calculated Altitude H_c and Azimuth Z_c may be used to refine the observer's position by comparing the calculated Altitude H_c with the observed Altitude H_o obtained by means of a sextant measurement.

The tables on the following pages were calculated according to:

$$H_c = \text{asin} (\sin(\text{Latitude}) * \sin(\text{Declination}) + \cos(\text{Latitude}) * \cos(\text{Declination}) * \cos(\text{LHA}))$$
$$Z = \text{atan} (\frac{\cos(\text{Declination}) * \sin(\text{LHA})}{\cos(\text{Latitude}) * \sin(\text{Declination}) - \sin(\text{Latitude}) * \cos(\text{Declination}) * \cos(\text{LHA})})$$

The Local Hour Angle (LHA) is the angle measured westward from the observer's Meridian to the Hour Circle of the observed celestial object: $LHA = GHA + Longitude$.

The tables are organized with the Latitude value as primary parameter. The Latitude value is printed on the first line of each page. The particular values for Declination (Dec) and LHA are read from the vertical and horizontal labels of the tables respectively. Notice that each table entry is valid for two different values of LHA related by $LHA_1 = 360^\circ - LHA_2$ (conjugate LHA angles).

The covered range of the Declination values is limited from 0° to 29° , which applies to the Declination of the Sun, the Moon and the planets used for celestial navigation. The LHA range is such that the resulting Altitude is positive (object above the local horizon).

For practical Sight Reduction this manual is used as follows:

1. select the correct part of the manual (Declination "SAME as" / "CONTRARY to" Latitude),
2. select the correct Latitude page,
3. select the correct LHA column from one of the sub-tables,
4. read the H , dH and Z values from the correct Declination (integral value) line.

Further steps include interpolation for the specific (fractional) value of Declination and determination of the true Azimuth value Z_c according to the following rules:

Latitude NORTH	LHA > 180°: $Z_c = Z$
	LHA < 180°: $Z_c = 360^\circ - Z$
Latitude SOUTH	LHA > 180°: $Z_c = 180^\circ - Z$
	LHA < 180°: $Z_c = 180^\circ + Z$

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	70 00.0 -60.0 180.0	69 58.6 -60.0 177.1	69 54.3 -59.8 174.2	69 47.1 -59.4 171.3	69 37.2 -59.0 168.4
1°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.2	68 54.5 -59.7 174.4	68 47.7 -59.5 171.7	68 38.2 -59.0 169.0
2°	68 00.0 -60.0 180.0	67 58.7 -60.0 177.3	67 54.8 -59.8 174.7	67 48.2 -59.5 172.0	67 39.2 -59.2 169.4
3°	67 00.0 -60.0 180.0	66 58.7 -59.9 177.4	66 55.0 -59.8 174.9	66 48.7 -59.5 172.4	66 40.0 -59.2 169.9
4°	66 00.0 -60.0 180.0	65 58.8 -60.0 177.5	65 55.2 -59.8 175.1	65 49.2 -59.6 172.7	65 40.8 -59.2 170.3
5°	65 00.0 -60.0 180.0	64 58.8 -59.9 177.6	64 55.4 -59.9 175.3	64 49.6 -59.6 173.0	64 41.6 -59.4 170.6
6°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.7	63 55.5 -59.8 175.5	63 50.0 -59.7 173.2	63 42.2 -59.3 171.0
7°	63 00.0 -60.0 180.0	62 58.9 -59.9 177.8	62 55.7 -59.8 175.6	62 50.3 -59.6 173.5	62 42.9 -59.4 171.3
8°	62 00.0 -60.0 180.0	61 59.0 -60.0 177.9	61 55.9 -59.9 175.8	61 50.7 -59.7 173.7	61 43.5 -59.5 171.6
9°	61 00.0 -60.0 180.0	60 59.0 -60.0 178.0	60 56.0 -59.9 175.9	60 51.0 -59.7 173.9	60 44.0 -59.4 171.9
10°	60 00.0 -60.0 180.0	59 59.0 -59.9 178.0	59 56.1 -59.8 176.1	59 51.3 -59.7 174.1	59 44.6 -59.5 172.2
11°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.1	58 56.3 -59.9 176.2	58 51.6 -59.8 174.3	58 45.1 -59.6 172.4
12°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.2	57 56.4 -59.9 176.3	57 51.8 -59.7 174.5	57 45.5 -59.5 172.7
13°	57 00.0 -60.0 180.0	56 59.1 -60.0 178.2	56 56.5 -59.9 176.4	56 52.1 -59.8 174.6	56 46.0 -59.6 172.9
14°	56 00.0 -60.0 180.0	55 59.1 -59.9 178.3	55 56.6 -59.9 176.5	55 52.3 -59.7 174.8	55 46.4 -59.6 173.1
15°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.3	54 56.7 -59.9 176.6	54 52.6 -59.8 175.0	54 46.8 -59.6 173.3
16°	54 00.0 -60.0 180.0	53 59.2 -60.0 178.4	53 56.8 -59.9 176.7	53 52.8 -59.8 175.1	53 47.2 -59.7 173.5
17°	53 00.0 -60.0 180.0	52 59.2 -60.0 178.4	52 56.9 -59.9 176.8	52 53.0 -59.8 175.2	52 47.5 -59.6 173.7
18°	52 00.0 -60.0 180.0	51 59.2 -59.9 178.5	51 57.0 -60.0 176.9	51 53.2 -59.8 175.4	51 47.9 -59.7 173.8
19°	51 00.0 -60.0 180.0	50 59.3 -60.0 178.5	50 57.0 -59.9 177.0	50 53.4 -59.9 175.5	50 48.2 -59.7 174.0
20°	50 00.0 -60.0 180.0	49 59.3 -60.0 178.5	49 57.1 -59.9 177.1	49 53.5 -59.8 175.6	49 48.5 -59.7 174.2
21°	49 00.0 -60.0 180.0	48 59.3 -60.0 178.6	48 57.2 -59.9 177.2	48 53.7 -59.8 175.7	48 48.8 -59.7 174.3
22°	48 00.0 -60.0 180.0	47 59.3 -60.0 178.6	47 57.3 -60.0 177.2	47 53.9 -59.9 175.8	47 49.1 -59.7 174.5
23°	47 00.0 -60.0 180.0	46 59.3 -59.9 178.7	46 57.3 -59.9 177.3	46 54.0 -59.8 176.0	46 49.4 -59.7 174.6
24°	46 00.0 -60.0 180.0	45 59.4 -60.0 178.7	45 57.4 -59.9 177.4	45 54.2 -59.9 176.1	45 49.7 -59.8 174.8
25°	45 00.0 -60.0 180.0	44 59.4 -60.0 178.7	44 57.5 -60.0 177.4	44 54.3 -59.8 176.2	44 49.9 -59.7 174.9
26°	44 00.0 -60.0 180.0	43 59.4 -60.0 178.8	43 57.5 -59.9 177.5	43 54.5 -59.9 176.3	43 50.2 -59.8 175.0
27°	43 00.0 -60.0 180.0	42 59.4 -60.0 178.8	42 57.6 -59.9 177.6	42 54.6 -59.9 176.3	42 50.4 -59.7 175.1
28°	42 00.0 -60.0 180.0	41 59.4 -60.0 178.8	41 57.7 -60.0 177.6	41 54.7 -59.8 176.4	41 50.7 -59.8 175.3
29°	41 00.0 -60.0 180.0	40 59.4 -60.0 178.8	40 57.7 -59.9 177.7	40 54.9 -59.9 176.5	40 50.9 -59.8 175.4

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	69 24.6 -58.5 165.7	69 09.3 -57.8 162.9	68 51.5 -57.1 160.3	68 31.2 -56.2 157.7	68 08.6 -55.3 155.2
1°	68 26.1 -58.5 166.3	68 11.5 -57.9 163.7	67 54.4 -57.2 161.1	67 35.0 -56.5 158.6	67 13.3 -55.6 156.2
2°	67 27.6 -58.7 166.9	67 13.6 -58.2 164.3	66 57.2 -57.5 161.9	66 38.5 -56.8 159.5	66 17.7 -56.0 157.1
3°	66 28.9 -58.8 167.4	66 15.4 -58.2 165.0	65 59.7 -57.7 162.6	65 41.7 -57.0 160.3	65 21.7 -56.3 158.0
4°	65 30.1 -58.8 167.9	65 17.2 -58.4 165.6	65 02.0 -57.8 163.3	64 44.7 -57.2 161.0	64 25.4 -56.6 158.8
5°	64 31.3 -59.0 168.4	64 18.8 -58.5 166.1	64 04.2 -58.0 163.9	63 47.5 -57.4 161.7	63 28.8 -56.7 159.6
6°	63 32.3 -59.0 168.8	63 20.3 -58.6 166.6	63 06.2 -58.1 164.5	62 50.1 -57.5 162.4	62 32.1 -57.0 160.3
7°	62 33.3 -59.0 169.2	62 21.7 -58.7 167.1	62 08.1 -58.2 165.0	61 52.6 -57.8 163.0	61 35.1 -57.2 161.0
8°	61 34.3 -59.2 169.6	61 23.0 -58.7 167.5	61 09.9 -58.3 165.5	60 54.8 -57.8 163.5	60 37.9 -57.3 161.6
9°	60 35.1 -59.2 169.9	60 24.3 -58.9 167.9	60 11.6 -58.5 166.0	59 57.0 -58.0 164.1	59 40.6 -57.5 162.2
10°	59 35.9 -59.2 170.2	59 25.4 -58.9 168.3	59 13.1 -58.5 166.4	58 59.0 -58.1 164.6	58 43.1 -57.6 162.7
11°	58 36.7 -59.3 170.5	58 26.5 -58.9 168.7	58 14.6 -58.6 166.9	58 00.9 -58.2 165.1	57 45.5 -57.7 163.3
12°	57 37.4 -59.3 170.8	57 27.6 -59.0 169.0	57 16.0 -58.7 167.3	57 02.7 -58.3 165.5	56 47.8 -57.9 163.8
13°	56 38.1 -59.3 171.1	56 28.6 -59.1 169.4	56 17.3 -58.7 167.6	56 04.4 -58.3 165.9	55 49.9 -57.9 164.3
14°	55 38.8 -59.4 171.4	55 29.5 -59.1 169.7	55 18.6 -58.8 168.0	55 06.1 -58.5 166.3	54 52.0 -58.1 164.7
15°	54 39.4 -59.4 171.6	54 30.4 -59.2 170.0	54 19.8 -58.9 168.4	54 07.6 -58.5 166.7	53 53.9 -58.1 165.1
16°	53 40.0 -59.5 171.9	53 31.2 -59.2 170.3	53 20.9 -58.9 168.7	53 09.1 -58.6 167.1	52 55.8 -58.2 165.6
17°	52 40.5 -59.4 172.1	52 32.0 -59.2 170.5	52 22.0 -58.9 169.0	52 10.5 -58.6 167.5	51 57.6 -58.4 166.0
18°	51 41.1 -59.5 172.3	51 32.8 -59.3 170.8	51 23.1 -59.0 169.3	51 11.9 -58.7 167.8	50 59.2 -58.3 166.3
19°	50 41.6 -59.5 172.5	50 33.5 -59.3 171.0	50 24.1 -59.1 169.6	50 13.2 -58.8 168.1	50 00.9 -58.5 166.7
20°	49 42.1 -59.5 172.7	49 34.2 -59.3 171.3	49 25.0 -59.1 169.9	49 14.4 -58.8 168.4	49 02.4 -58.5 167.0
21°	48 42.6 -59.6 172.9	48 34.9 -59.3 171.5	48 25.9 -59.1 170.1	48 15.6 -58.9 168.7	48 03.9 -58.5 167.4
22°	47 43.0 -59.5 173.1	47 35.6 -59.4 171.7	47 26.8 -59.1 170.4	47 16.7 -58.9 169.0	47 05.4 -58.6 167.7
23°	46 43.5 -59.6 173.3	46 36.2 -59.4 171.9	46 27.7 -59.2 170.6	46 17.8 -58.9 169.3	46 06.8 -58.7 168.0
24°	45 43.9 -59.6 173.5	45 36.8 -59.4 172.2	45 28.5 -59.2 170.9	45 18.9 -59.0 169.6	45 08.1 -58.7 168.3
25°	44 44.3 -59.6 173.6	44 37.4 -59.4 172.4	44 29.3 -59.3 171.1	44 19.9 -59.0 169.8	44 09.4 -58.8 168.6
26°	43 44.7 -59.6 173.8	43 38.0 -59.5 172.5	43 30.0 -59.2 171.3	43 20.9 -59.0 170.1	43 10.6 -58.7 168.9
27°	42 45.1 -59.7 173.9	42 38.5 -59.5 172.7	42 30.8 -59.3 171.5	42 21.9 -59.1 170.3	42 11.9 -58.9 169.2
28°	41 45.4 -59.6 174.1	41 39.0 -59.5 172.9	41 31.5 -59.3 171.7	41 22.8 -59.1 170.6	41 13.0 -58.8 169.4
29°	40 45.8 -59.7 174.2	40 39.5 -59.5 173.1	40 32.2 -59.3 171.9	40 23.7 -59.1 170.8	40 14.2 -58.9 169.7

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	67 43.9 -54.4 152.7	67 17.0 -53.4 150.4	66 48.2 -52.4 148.1	66 17.5 -51.3 146.0	65 45.1 -50.3 143.9
1°	66 49.5 -54.8 153.8	66 23.6 -53.9 151.5	65 55.8 -52.9 149.4	65 26.2 -52.0 147.2	64 54.8 -50.9 145.2
2°	65 54.7 -55.2 154.8	65 29.7 -54.3 152.6	65 02.9 -53.4 150.5	64 34.2 -52.5 148.4	64 03.9 -51.6 146.4
3°	64 59.5 -55.5 155.8	64 35.4 -54.7 153.6	64 09.5 -53.9 151.6	63 41.7 -52.9 149.5	63 12.3 -52.0 147.6
4°	64 04.0 -55.8 156.7	63 40.7 -55.0 154.6	63 15.6 -54.2 152.6	62 48.8 -53.4 150.6	62 20.3 -52.6 148.7
5°	63 08.2 -56.1 157.5	62 45.7 -55.4 155.5	62 21.4 -54.6 153.5	61 55.4 -53.8 151.6	61 27.7 -53.0 149.7
6°	62 12.1 -56.3 158.3	61 50.3 -55.6 156.3	61 26.8 -54.9 154.4	61 01.6 -54.2 152.5	60 34.7 -53.3 150.7
7°	61 15.8 -56.6 159.0	60 54.7 -55.9 157.1	60 31.9 -55.2 155.2	60 07.4 -54.5 153.4	59 41.4 -53.8 151.6
8°	60 19.2 -56.7 159.7	59 58.8 -56.1 157.8	59 36.7 -55.5 156.0	59 12.9 -54.8 154.2	58 47.6 -54.1 152.5
9°	59 22.5 -56.9 160.3	59 02.7 -56.4 158.5	58 41.2 -55.7 156.7	58 18.1 -55.0 155.0	57 53.5 -54.3 153.3
10°	58 25.6 -57.1 160.9	58 06.3 -56.5 159.2	57 45.5 -56.0 157.4	57 23.1 -55.3 155.7	56 59.2 -54.7 154.1
11°	57 28.5 -57.3 161.5	57 09.8 -56.7 159.8	56 49.5 -56.1 158.1	56 27.8 -55.6 156.4	56 04.5 -54.9 154.8
12°	56 31.2 -57.3 162.1	56 13.1 -56.9 160.4	55 53.4 -56.3 158.7	55 32.2 -55.8 157.1	55 09.6 -55.2 155.5
13°	55 33.9 -57.6 162.6	55 16.2 -57.0 161.0	54 57.1 -56.5 159.3	54 36.4 -55.9 157.8	54 14.4 -55.4 156.2
14°	54 36.3 -57.6 163.1	54 19.2 -57.2 161.5	54 00.6 -56.7 159.9	53 40.5 -56.1 158.4	53 19.0 -55.6 156.9
15°	53 38.7 -57.7 163.6	53 22.0 -57.3 162.0	53 03.9 -56.8 160.5	52 44.4 -56.4 159.0	52 23.4 -55.7 157.5
16°	52 41.0 -57.9 164.0	52 24.7 -57.4 162.5	52 07.1 -57.0 161.0	51 48.0 -56.4 159.5	51 27.7 -56.0 158.1
17°	51 43.1 -57.9 164.5	51 27.3 -57.5 163.0	51 10.1 -57.0 161.5	50 51.6 -56.6 160.1	50 31.7 -56.1 158.7
18°	50 45.2 -58.0 164.9	50 29.8 -57.6 163.4	50 13.1 -57.2 162.0	49 55.0 -56.8 160.6	49 35.6 -56.3 159.2
19°	49 47.2 -58.1 165.3	49 32.2 -57.7 163.9	49 15.9 -57.3 162.5	48 58.2 -56.8 161.1	48 39.3 -56.4 159.7
20°	48 49.1 -58.1 165.7	48 34.5 -57.8 164.3	48 18.6 -57.4 162.9	48 01.4 -57.0 161.6	47 42.9 -56.5 160.3
21°	47 51.0 -58.3 166.0	47 36.7 -57.9 164.7	47 21.2 -57.5 163.4	47 04.4 -57.1 162.0	46 46.4 -56.7 160.7
22°	46 52.7 -58.3 166.4	46 38.8 -57.9 165.1	46 23.7 -57.6 163.8	46 07.3 -57.2 162.5	45 49.7 -56.7 161.2
23°	45 54.4 -58.3 166.7	45 40.9 -58.1 165.4	45 26.1 -57.7 164.2	45 10.1 -57.3 162.9	44 53.0 -56.9 161.7
24°	44 56.1 -58.4 167.1	44 42.8 -58.1 165.8	44 28.4 -57.7 164.6	44 12.8 -57.3 163.3	43 56.1 -57.0 162.1
25°	43 57.7 -58.5 167.4	43 44.7 -58.1 166.2	43 30.7 -57.8 164.9	43 15.5 -57.5 163.7	42 59.1 -57.1 162.6
26°	42 59.2 -58.5 167.7	42 46.6 -58.2 166.5	42 32.9 -57.9 165.3	42 18.0 -57.5 164.1	42 02.0 -57.1 163.0
27°	42 00.7 -58.6 168.0	41 48.4 -58.3 166.8	41 35.0 -58.0 165.7	41 20.5 -57.6 164.5	41 04.9 -57.3 163.4
28°	41 02.1 -58.6 168.3	40 50.1 -58.3 167.1	40 37.0 -58.0 166.0	40 22.9 -57.7 164.9	40 07.6 -57.3 163.8
29°	40 03.5 -58.6 168.6	39 51.8 -58.4 167.4	39 39.0 -58.1 166.3	39 25.2 -57.8 165.2	39 10.3 -57.4 164.2

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	65 11.1 -49.2 141.9	64 35.6 -48.2 140.0	63 58.7 -47.2 138.2	63 20.5 -46.1 136.5	62 41.1 -45.2 134.8
1°	64 21.9 -50.0 143.3	63 47.4 -48.9 141.4	63 11.5 -47.9 139.6	62 34.4 -47.0 137.9	61 55.9 -45.9 136.2
2°	63 31.9 -50.6 144.5	62 58.5 -49.7 142.7	62 23.6 -48.7 140.9	61 47.4 -47.7 139.2	61 10.0 -46.8 137.6
3°	62 41.3 -51.1 145.7	62 08.8 -50.2 143.9	61 34.9 -49.3 142.2	60 59.7 -48.4 140.5	60 23.2 -47.5 138.9
4°	61 50.2 -51.7 146.8	61 18.6 -50.8 145.1	60 45.6 -49.9 143.3	60 11.3 -49.0 141.7	59 35.7 -48.1 140.1
5°	60 58.5 -52.1 147.9	60 27.8 -51.3 146.2	59 55.7 -50.4 144.5	59 22.3 -49.6 142.8	58 47.6 -48.7 141.2
6°	60 06.4 -52.6 148.9	59 36.5 -51.7 147.2	59 05.3 -51.0 145.5	58 32.7 -50.1 143.9	57 58.9 -49.3 142.4
7°	59 13.8 -53.0 149.9	58 44.8 -52.2 148.2	58 14.3 -51.4 146.5	57 42.6 -50.6 145.0	57 09.6 -49.8 143.4
8°	58 20.8 -53.3 150.8	57 52.6 -52.6 149.1	57 22.9 -51.8 147.5	56 52.0 -51.0 146.0	56 19.8 -50.2 144.4
9°	57 27.5 -53.7 151.6	57 00.0 -53.0 150.0	56 31.1 -52.2 148.4	56 01.0 -51.5 146.9	55 29.6 -50.8 145.4
10°	56 33.8 -54.0 152.4	56 07.0 -53.3 150.9	55 38.9 -52.6 149.3	55 09.5 -51.9 147.8	54 38.8 -51.1 146.3
11°	55 39.8 -54.3 153.2	55 13.7 -53.6 151.7	54 46.3 -52.9 150.2	54 17.6 -52.2 148.7	53 47.7 -51.5 147.2
12°	54 45.5 -54.5 154.0	54 20.1 -53.9 152.5	53 53.4 -53.2 151.0	53 25.4 -52.6 149.5	52 56.2 -51.9 148.1
13°	53 51.0 -54.8 154.7	53 26.2 -54.1 153.2	53 00.2 -53.6 151.7	52 32.8 -52.8 150.3	52 04.3 -52.2 148.9
14°	52 56.2 -55.0 155.4	52 32.1 -54.5 153.9	52 06.6 -53.8 152.5	51 40.0 -53.2 151.1	51 12.1 -52.5 149.7
15°	52 01.2 -55.2 156.0	51 37.6 -54.6 154.6	51 12.8 -54.0 153.2	50 46.8 -53.4 151.8	50 19.6 -52.8 150.5
16°	51 06.0 -55.4 156.7	50 43.0 -54.9 155.3	50 18.8 -54.3 153.9	49 53.4 -53.7 152.5	49 26.8 -53.1 151.2
17°	50 10.6 -55.6 157.3	49 48.1 -55.0 155.9	49 24.5 -54.5 154.6	48 59.7 -53.9 153.2	48 33.7 -53.3 151.9
18°	49 15.0 -55.8 157.8	48 53.1 -55.2 156.5	48 30.0 -54.7 155.2	48 05.8 -54.2 153.9	47 40.4 -53.6 152.6
19°	48 19.2 -55.9 158.4	47 57.9 -55.5 157.1	47 35.3 -54.9 155.8	47 11.6 -54.3 154.5	46 46.8 -53.7 153.3
20°	47 23.3 -56.1 158.9	47 02.4 -55.5 157.7	46 40.4 -55.0 156.4	46 17.3 -54.5 155.2	45 53.1 -54.0 153.9
21°	46 27.2 -56.2 159.5	46 06.9 -55.8 158.2	45 45.4 -55.3 157.0	45 22.8 -54.8 155.8	44 59.1 -54.2 154.5
22°	45 31.0 -56.3 160.0	45 11.1 -55.8 158.7	44 50.1 -55.4 157.5	44 28.0 -54.9 156.3	44 04.9 -54.4 155.2
23°	44 34.7 -56.5 160.5	44 15.3 -56.0 159.3	43 54.7 -55.5 158.1	43 33.1 -55.0 156.9	43 10.5 -54.6 155.7
24°	43 38.2 -56.5 160.9	43 19.3 -56.2 159.8	42 59.2 -55.7 158.6	42 38.1 -55.2 157.4	42 15.9 -54.7 156.3
25°	42 41.7 -56.7 161.4	42 23.1 -56.2 160.2	42 03.5 -55.8 159.1	41 42.9 -55.4 158.0	41 21.2 -54.8 156.9
26°	41 45.0 -56.8 161.8	41 26.9 -56.4 160.7	41 07.7 -55.9 159.6	40 47.5 -55.4 158.5	40 26.4 -55.0 157.4
27°	40 48.2 -56.8 162.3	40 30.5 -56.4 161.2	40 11.8 -56.0 160.1	39 52.1 -55.6 159.0	39 31.4 -55.2 157.9
28°	39 51.4 -57.0 162.7	39 34.1 -56.6 161.6	39 15.8 -56.2 160.5	38 56.5 -55.7 159.5	38 36.2 -55.3 158.4
29°	38 54.4 -57.0 163.1	38 37.5 -56.6 162.0	38 19.6 -56.2 161.0	38 00.8 -55.9 159.9	37 40.9 -55.4 158.9

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	62 00.5 -44.1 133.2	61 18.9 -43.2 131.7	60 36.4 -42.3 130.2	59 52.9 -41.4 128.9	59 08.6 -40.5 127.5
1°	61 16.4 -45.1 134.6	60 35.7 -44.1 133.1	59 54.1 -43.2 131.7	59 11.5 -42.2 130.3	58 28.1 -41.4 129.0
2°	60 31.3 -45.8 136.0	59 51.6 -44.9 134.5	59 10.9 -44.0 133.0	58 29.3 -43.2 131.7	57 46.7 -42.2 130.3
3°	59 45.5 -46.5 137.3	59 06.7 -45.6 135.8	58 26.9 -44.7 134.4	57 46.1 -43.9 133.0	57 04.5 -43.1 131.6
4°	58 59.0 -47.3 138.5	58 21.1 -46.4 137.1	57 42.2 -45.5 135.6	57 02.2 -44.6 134.2	56 21.4 -43.8 132.9
5°	58 11.7 -47.8 139.7	57 34.7 -47.0 138.2	56 56.7 -46.2 136.8	56 17.6 -45.3 135.5	55 37.6 -44.5 134.1
6°	57 23.9 -48.5 140.9	56 47.7 -47.6 139.4	56 10.5 -46.8 138.0	55 32.3 -46.0 136.6	54 53.1 -45.2 135.3
7°	56 35.4 -48.9 141.9	56 00.1 -48.1 140.5	55 23.7 -47.3 139.1	54 46.3 -46.6 137.8	54 07.9 -45.7 136.4
8°	55 46.5 -49.5 143.0	55 12.0 -48.7 141.6	54 36.4 -48.0 140.2	53 59.7 -47.1 138.8	53 22.2 -46.4 137.5
9°	54 57.0 -50.0 144.0	54 23.3 -49.2 142.6	53 48.4 -48.4 141.2	53 12.6 -47.6 139.9	52 35.8 -46.9 138.6
10°	54 07.0 -50.4 144.9	53 34.1 -49.7 143.5	53 00.0 -48.9 142.2	52 25.0 -48.2 140.9	51 48.9 -47.4 139.6
11°	53 16.6 -50.8 145.8	52 44.4 -50.0 144.5	52 11.1 -49.3 143.1	51 36.8 -48.6 141.9	51 01.5 -47.9 140.6
12°	52 25.8 -51.1 146.7	51 54.4 -50.5 145.4	51 21.8 -49.8 144.1	50 48.2 -49.1 142.8	50 13.6 -48.3 141.5
13°	51 34.7 -51.6 147.6	51 03.9 -50.9 146.2	50 32.0 -50.1 145.0	49 59.1 -49.4 143.7	49 25.3 -48.8 142.5
14°	50 43.1 -51.8 148.4	50 13.0 -51.1 147.1	49 41.9 -50.5 145.8	49 09.7 -49.8 144.6	48 36.5 -49.1 143.4
15°	49 51.3 -52.2 149.2	49 21.9 -51.6 147.9	48 51.4 -50.9 146.6	48 19.9 -50.2 145.4	47 47.4 -49.6 144.2
16°	48 59.1 -52.4 149.9	48 30.3 -51.8 148.7	48 00.5 -51.2 147.4	47 29.7 -50.6 146.2	46 57.8 -49.8 145.0
17°	48 06.7 -52.8 150.7	47 38.5 -52.1 149.4	47 09.3 -51.5 148.2	46 39.1 -50.8 147.0	46 08.0 -50.3 145.9
18°	47 13.9 -52.9 151.4	46 46.4 -52.4 150.2	46 17.8 -51.7 149.0	45 48.3 -51.2 147.8	45 17.7 -50.5 146.6
19°	46 21.0 -53.2 152.1	45 54.0 -52.6 150.9	45 26.1 -52.1 149.7	44 57.1 -51.4 148.5	44 27.2 -50.8 147.4
20°	45 27.8 -53.5 152.7	45 01.4 -52.9 151.5	44 34.0 -52.3 150.4	44 05.7 -51.7 149.3	43 36.4 -51.1 148.1
21°	44 34.3 -53.6 153.4	44 08.5 -53.1 152.2	43 41.7 -52.5 151.1	43 14.0 -52.0 150.0	42 45.3 -51.4 148.9
22°	43 40.7 -53.9 154.0	43 15.4 -53.3 152.9	42 49.2 -52.7 151.7	42 22.0 -52.1 150.6	41 53.9 -51.6 149.6
23°	42 46.8 -54.0 154.6	42 22.1 -53.5 153.5	41 56.5 -53.0 152.4	41 29.9 -52.4 151.3	41 02.3 -51.8 150.2
24°	41 52.8 -54.2 155.2	41 28.6 -53.7 154.1	41 03.5 -53.1 153.0	40 37.5 -52.7 151.9	40 10.5 -52.1 150.9
25°	40 58.6 -54.4 155.8	40 34.9 -53.8 154.7	40 10.4 -53.4 153.6	39 44.8 -52.8 152.6	39 18.4 -52.2 151.5
26°	40 04.2 -54.5 156.3	39 41.1 -54.1 155.3	39 17.0 -53.5 154.2	38 52.0 -53.0 153.2	38 26.2 -52.5 152.2
27°	39 09.7 -54.7 156.9	38 47.0 -54.1 155.8	38 23.5 -53.7 154.8	37 59.0 -53.1 153.8	37 33.7 -52.7 152.8
28°	38 15.0 -54.8 157.4	37 52.9 -54.4 156.4	37 29.8 -53.8 155.4	37 05.9 -53.4 154.4	36 41.0 -52.8 153.4
29°	37 20.2 -55.0 157.9	36 58.5 -54.5 156.9	36 36.0 -54.0 155.9	36 12.5 -53.5 154.9	35 48.2 -53.0 154.0

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	58 23.5 -39.6 126.3	57 37.7 -38.8 125.0	56 51.2 -38.0 123.9	56 04.1 -37.3 122.8	55 16.4 -36.5 121.7
1°	57 43.9 -40.6 127.7	56 58.9 -39.8 126.5	56 13.2 -38.9 125.3	55 26.8 -38.1 124.1	54 39.9 -37.4 123.1
2°	57 03.3 -41.4 129.0	56 19.1 -40.5 127.8	55 34.3 -39.9 126.6	54 48.7 -39.1 125.5	54 02.5 -38.3 124.4
3°	56 21.9 -42.2 130.4	55 38.6 -41.5 129.1	54 54.4 -40.6 127.9	54 09.6 -39.8 126.8	53 24.2 -39.1 125.7
4°	55 39.7 -43.0 131.6	54 57.1 -42.1 130.4	54 13.8 -41.4 129.2	53 29.8 -40.6 128.1	52 45.1 -39.9 127.0
5°	54 56.7 -43.7 132.9	54 15.0 -42.9 131.6	53 32.4 -42.1 130.4	52 49.2 -41.4 129.3	52 05.2 -40.6 128.2
6°	54 13.0 -44.4 134.0	53 32.1 -43.6 132.8	52 50.3 -42.8 131.6	52 07.8 -42.1 130.5	51 24.6 -41.4 129.4
7°	53 28.6 -45.0 135.2	52 48.5 -44.3 134.0	52 07.5 -43.5 132.8	51 25.7 -42.7 131.6	50 43.2 -42.0 130.5
8°	52 43.6 -45.5 136.3	52 04.2 -44.8 135.1	51 24.0 -44.1 133.9	50 43.0 -43.3 132.8	50 01.2 -42.6 131.7
9°	51 58.1 -46.2 137.4	51 19.4 -45.4 136.1	50 39.9 -44.6 135.0	49 59.7 -44.0 133.8	49 18.6 -43.2 132.7
10°	51 11.9 -46.7 138.4	50 34.0 -45.9 137.2	49 55.3 -45.2 136.0	49 15.7 -44.5 134.9	48 35.4 -43.8 133.8
11°	50 25.2 -47.1 139.4	49 48.1 -46.5 138.2	49 10.1 -45.7 137.0	48 31.2 -45.0 135.9	47 51.6 -44.3 134.8
12°	49 38.1 -47.6 140.3	49 01.6 -46.9 139.2	48 24.4 -46.3 138.0	47 46.2 -45.5 136.9	47 07.3 -44.8 135.8
13°	48 50.5 -48.1 141.3	48 14.7 -47.3 140.1	47 38.1 -46.6 139.0	47 00.7 -46.0 137.9	46 22.5 -45.3 136.8
14°	48 02.4 -48.5 142.2	47 27.4 -47.8 141.0	46 51.5 -47.1 139.9	46 14.7 -46.4 138.8	45 37.2 -45.7 137.7
15°	47 13.9 -48.8 143.0	46 39.6 -48.2 141.9	46 04.4 -47.5 140.8	45 28.3 -46.8 139.7	44 51.5 -46.2 138.7
16°	46 25.1 -49.3 143.9	45 51.4 -48.6 142.8	45 16.9 -48.0 141.7	44 41.5 -47.3 140.6	44 05.3 -46.6 139.5
17°	45 35.8 -49.5 144.7	45 02.8 -48.9 143.6	44 28.9 -48.2 142.5	43 54.2 -47.6 141.5	43 18.7 -47.0 140.4
18°	44 46.3 -49.9 145.5	44 13.9 -49.3 144.4	43 40.7 -48.6 143.3	43 06.6 -48.0 142.3	42 31.7 -47.3 141.3
19°	43 56.4 -50.2 146.3	43 24.6 -49.5 145.2	42 52.1 -49.0 144.1	42 18.6 -48.3 143.1	41 44.4 -47.7 142.1
20°	43 06.2 -50.5 147.0	42 35.1 -49.9 146.0	42 03.1 -49.3 144.9	41 30.3 -48.6 143.9	40 56.7 -48.0 142.9
21°	42 15.7 -50.8 147.8	41 45.2 -50.2 146.7	41 13.8 -49.5 145.7	40 41.7 -49.0 144.7	40 08.7 -48.4 143.7
22°	41 24.9 -51.0 148.5	40 55.0 -50.4 147.5	40 24.3 -49.9 146.4	39 52.7 -49.2 145.4	39 20.3 -48.6 144.5
23°	40 33.9 -51.3 149.2	40 04.6 -50.7 148.2	39 34.4 -50.1 147.2	39 03.5 -49.5 146.2	38 31.7 -48.9 145.2
24°	39 42.6 -51.5 149.9	39 13.9 -50.9 148.9	38 44.3 -50.3 147.9	38 14.0 -49.8 146.9	37 42.8 -49.2 146.0
25°	38 51.1 -51.7 150.5	38 23.0 -51.2 149.5	37 54.0 -50.6 148.6	37 24.2 -50.0 147.6	36 53.6 -49.4 146.7
26°	37 59.4 -51.9 151.2	37 31.8 -51.4 150.2	37 03.4 -50.8 149.2	36 34.2 -50.3 148.3	36 04.2 -49.7 147.4
27°	37 07.5 -52.1 151.8	36 40.4 -51.5 150.9	36 12.6 -51.1 149.9	35 43.9 -50.5 149.0	35 14.5 -49.9 148.1
28°	36 15.4 -52.4 152.4	35 48.9 -51.8 151.5	35 21.5 -51.2 150.6	34 53.4 -50.6 149.6	34 24.6 -50.2 148.7
29°	35 23.0 -52.4 153.0	34 57.1 -52.0 152.1	34 30.3 -51.4 151.2	34 02.8 -50.9 150.3	33 34.4 -50.3 149.4

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	54 28.1 -35.8 120.6	53 39.4 -35.1 119.6	52 50.1 -34.4 118.7	52 00.5 -33.8 117.8	51 10.4 -33.2 116.9
1°	53 52.3 -36.7 122.0	53 04.3 -36.0 121.0	52 15.7 -35.3 120.0	51 26.7 -34.7 119.1	50 37.2 -34.1 118.2
2°	53 15.6 -37.5 123.3	52 28.3 -36.9 122.3	51 40.4 -36.2 121.4	50 52.0 -35.5 120.4	50 03.1 -34.9 119.5
3°	52 38.1 -38.4 124.6	51 51.4 -37.7 123.6	51 04.2 -37.0 122.6	50 16.5 -36.4 121.7	49 28.2 -35.7 120.8
4°	51 59.7 -39.2 125.9	51 13.7 -38.4 124.9	50 27.2 -37.8 123.9	49 40.1 -37.1 122.9	48 52.5 -36.4 122.0
5°	51 20.5 -39.9 127.1	50 35.3 -39.2 126.1	49 49.4 -38.5 125.1	49 03.0 -37.8 124.1	48 16.1 -37.2 123.2
6°	50 40.6 -40.6 128.3	49 56.1 -39.9 127.3	49 10.9 -39.2 126.3	48 25.2 -38.6 125.3	47 38.9 -37.9 124.4
7°	50 00.0 -41.2 129.5	49 16.2 -40.6 128.4	48 31.7 -39.9 127.4	47 46.6 -39.2 126.4	47 01.0 -38.6 125.5
8°	49 18.8 -41.9 130.6	48 35.6 -41.2 129.5	47 51.8 -40.5 128.5	47 07.4 -39.8 127.6	46 22.4 -39.2 126.6
9°	48 36.9 -42.6 131.7	47 54.4 -41.8 130.6	47 11.3 -41.1 129.6	46 27.6 -40.5 128.7	45 43.2 -39.8 127.7
10°	47 54.3 -43.0 132.7	47 12.6 -42.4 131.7	46 30.2 -41.7 130.7	45 47.1 -41.0 129.7	45 03.4 -40.3 128.8
11°	47 11.3 -43.6 133.8	46 30.2 -42.9 132.7	45 48.5 -42.3 131.7	45 06.1 -41.6 130.8	44 23.1 -41.0 129.8
12°	46 27.7 -44.2 134.8	45 47.3 -43.5 133.7	45 06.2 -42.8 132.7	44 24.5 -42.2 131.8	43 42.1 -41.5 130.8
13°	45 43.5 -44.6 135.7	45 03.8 -43.9 134.7	44 23.4 -43.3 133.7	43 42.3 -42.6 132.8	43 00.6 -41.9 131.8
14°	44 58.9 -45.1 136.7	44 19.9 -44.4 135.7	43 40.1 -43.7 134.7	42 59.7 -43.1 133.7	42 18.7 -42.5 132.8
15°	44 13.8 -45.5 137.6	43 35.5 -44.9 136.6	42 56.4 -44.2 135.6	42 16.6 -43.5 134.7	41 36.2 -42.9 133.8
16°	43 28.3 -45.9 138.5	42 50.6 -45.3 137.5	42 12.2 -44.6 136.6	41 33.1 -44.0 135.6	40 53.3 -43.3 134.7
17°	42 42.4 -46.3 139.4	42 05.3 -45.7 138.4	41 27.6 -45.1 137.5	40 49.1 -44.4 136.5	40 10.0 -43.8 135.6
18°	41 56.1 -46.7 140.3	41 19.6 -46.0 139.3	40 42.5 -45.4 138.3	40 04.7 -44.8 137.4	39 26.2 -44.2 136.5
19°	41 09.4 -47.1 141.1	40 33.6 -46.4 140.1	39 57.1 -45.8 139.2	39 19.9 -45.2 138.3	38 42.0 -44.5 137.4
20°	40 22.3 -47.4 141.9	39 47.2 -46.8 141.0	39 11.3 -46.2 140.0	38 34.7 -45.5 139.1	37 57.5 -44.9 138.2
21°	39 34.9 -47.7 142.7	39 00.4 -47.1 141.8	38 25.1 -46.5 140.8	37 49.2 -45.9 139.9	37 12.6 -45.3 139.0
22°	38 47.2 -48.0 143.5	38 13.3 -47.4 142.6	37 38.6 -46.8 141.6	37 03.3 -46.2 140.7	36 27.3 -45.6 139.9
23°	37 59.2 -48.4 144.3	37 25.9 -47.8 143.3	36 51.8 -47.1 142.4	36 17.1 -46.5 141.5	35 41.7 -45.9 140.7
24°	37 10.8 -48.6 145.0	36 38.1 -48.0 144.1	36 04.7 -47.4 143.2	35 30.6 -46.8 142.3	34 55.8 -46.2 141.5
25°	36 22.2 -48.8 145.8	35 50.1 -48.2 144.8	35 17.3 -47.7 144.0	34 43.8 -47.1 143.1	34 09.6 -46.5 142.2
26°	35 33.4 -49.1 146.5	35 01.9 -48.5 145.6	34 29.6 -47.9 144.7	33 56.7 -47.3 143.8	33 23.1 -46.8 143.0
27°	34 44.3 -49.4 147.2	34 13.4 -48.8 146.3	33 41.7 -48.2 145.4	33 09.4 -47.6 144.6	32 36.3 -47.0 143.7
28°	33 54.9 -49.5 147.9	33 24.6 -49.0 147.0	32 53.5 -48.4 146.1	32 21.8 -47.9 145.3	31 49.3 -47.2 144.5
29°	33 05.4 -49.8 148.5	32 35.6 -49.2 147.7	32 05.1 -48.7 146.8	31 33.9 -48.1 146.0	31 02.1 -47.6 145.2

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	50 19.9 -32.6 116.0	49 29.1 -32.1 115.2	48 37.9 -31.5 114.4	47 46.4 -31.0 113.6	46 54.6 -30.5 112.9
1°	49 47.3 -33.5 117.3	48 57.0 -32.8 116.5	48 06.4 -32.3 115.7	47 15.4 -31.8 114.9	46 24.1 -31.2 114.2
2°	49 13.8 -34.2 118.6	48 24.2 -33.7 117.8	47 34.1 -33.1 116.9	46 43.6 -32.5 116.2	45 52.9 -32.1 115.4
3°	48 39.6 -35.1 119.9	47 50.5 -34.5 119.0	47 01.0 -33.9 118.2	46 11.1 -33.4 117.4	45 20.8 -32.8 116.6
4°	48 04.5 -35.8 121.1	47 16.0 -35.2 120.2	46 27.1 -34.7 119.4	45 37.7 -34.0 118.6	44 48.0 -33.5 117.8
5°	47 28.7 -36.6 122.3	46 40.8 -36.0 121.4	45 52.4 -35.3 120.6	45 03.7 -34.8 119.7	44 14.5 -34.2 118.9
6°	46 52.1 -37.3 123.5	46 04.8 -36.6 122.6	45 17.1 -36.1 121.7	44 28.9 -35.4 120.9	43 40.3 -34.9 120.1
7°	46 14.8 -37.9 124.6	45 28.2 -37.3 123.7	44 41.0 -36.6 122.8	43 53.5 -36.1 122.0	43 05.4 -35.5 121.2
8°	45 36.9 -38.5 125.7	44 50.9 -37.9 124.8	44 04.4 -37.4 124.0	43 17.4 -36.8 123.1	42 29.9 -36.1 122.3
9°	44 58.4 -39.2 126.8	44 13.0 -38.6 125.9	43 27.0 -37.9 125.0	42 40.6 -37.3 124.2	41 53.8 -36.8 123.4
10°	44 19.2 -39.7 127.9	43 34.4 -39.1 127.0	42 49.1 -38.5 126.1	42 03.3 -37.9 125.3	41 17.0 -37.3 124.4
11°	43 39.5 -40.3 128.9	42 55.3 -39.7 128.0	42 10.6 -39.0 127.1	41 25.4 -38.4 126.3	40 39.7 -37.8 125.5
12°	42 59.2 -40.9 129.9	42 15.6 -40.2 129.0	41 31.6 -39.6 128.2	40 47.0 -39.0 127.3	40 01.9 -38.4 126.5
13°	42 18.3 -41.3 130.9	41 35.4 -40.7 130.0	40 52.0 -40.1 129.2	40 08.0 -39.5 128.3	39 23.5 -38.9 127.5
14°	41 37.0 -41.8 131.9	40 54.7 -41.2 131.0	40 11.9 -40.6 130.1	39 28.5 -39.9 129.3	38 44.6 -39.3 128.5
15°	40 55.2 -42.3 132.8	40 13.5 -41.6 132.0	39 31.3 -41.0 131.1	38 48.6 -40.4 130.3	38 05.3 -39.8 129.4
16°	40 12.9 -42.7 133.8	39 31.9 -42.1 132.9	38 50.3 -41.5 132.0	38 08.2 -40.9 131.2	37 25.5 -40.3 130.4
17°	39 30.2 -43.2 134.7	38 49.8 -42.5 133.8	38 08.8 -41.9 133.0	37 27.3 -41.3 132.1	36 45.2 -40.7 131.3
18°	38 47.0 -43.5 135.6	38 07.3 -42.9 134.7	37 26.9 -42.3 133.9	36 46.0 -41.7 133.0	36 04.5 -41.1 132.2
19°	38 03.5 -43.9 136.5	37 24.4 -43.4 135.6	36 44.6 -42.7 134.8	36 04.3 -42.1 133.9	35 23.4 -41.5 133.1
20°	37 19.6 -44.3 137.3	36 41.0 -43.6 136.5	36 01.9 -43.1 135.6	35 22.2 -42.5 134.8	34 41.9 -41.9 134.0
21°	36 35.3 -44.7 138.2	35 57.4 -44.1 137.3	35 18.8 -43.4 136.5	34 39.7 -42.8 135.7	34 00.0 -42.2 134.9
22°	35 50.6 -45.0 139.0	35 13.3 -44.3 138.2	34 35.4 -43.8 137.3	33 56.9 -43.2 136.5	33 17.8 -42.6 135.7
23°	35 05.6 -45.3 139.8	34 29.0 -44.7 139.0	33 51.6 -44.1 138.2	33 13.7 -43.5 137.4	32 35.2 -42.9 136.6
24°	34 20.3 -45.6 140.6	33 44.3 -45.1 139.8	33 07.5 -44.4 139.0	32 30.2 -43.8 138.2	31 52.3 -43.2 137.4
25°	33 34.7 -45.9 141.4	32 59.2 -45.3 140.6	32 23.1 -44.7 139.8	31 46.4 -44.1 139.0	31 09.1 -43.5 138.2
26°	32 48.8 -46.1 142.2	32 13.9 -45.5 141.4	31 38.4 -45.0 140.6	31 02.3 -44.4 139.8	30 25.6 -43.8 139.0
27°	32 02.7 -46.5 142.9	31 28.4 -45.9 142.1	30 53.4 -45.2 141.3	30 17.9 -44.7 140.6	29 41.8 -44.1 139.8
28°	31 16.2 -46.7 143.7	30 42.5 -46.1 142.9	30 08.2 -45.5 142.1	29 33.2 -44.9 141.3	28 57.7 -44.3 140.6
29°	30 29.5 -46.9 144.4	29 56.4 -46.3 143.6	29 22.7 -45.8 142.8	28 48.3 -45.2 142.1	28 13.4 -44.6 141.3

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	46 02.5 -30.0 112.2	45 10.2 -29.5 111.5	44 17.6 -29.1 110.8	43 24.8 -28.7 110.1	42 31.7 -28.2 109.5
1°	45 32.5 -30.7 113.4	44 40.7 -30.3 112.7	43 48.5 -29.8 112.0	42 56.1 -29.4 111.3	42 03.5 -29.0 110.7
2°	45 01.8 -31.6 114.6	44 10.4 -31.1 113.9	43 18.7 -30.6 113.2	42 26.7 -30.1 112.5	41 34.5 -29.6 111.9
3°	44 30.2 -32.2 115.8	43 39.3 -31.7 115.1	42 48.1 -31.2 114.4	41 56.6 -30.7 113.7	41 04.9 -30.4 113.0
4°	43 58.0 -33.0 117.0	43 07.6 -32.5 116.3	42 16.9 -32.0 115.6	41 25.9 -31.5 114.8	40 34.5 -31.0 114.2
5°	43 25.0 -33.7 118.2	42 35.1 -33.1 117.4	41 44.9 -32.6 116.7	40 54.4 -32.2 116.0	40 03.5 -31.6 115.3
6°	42 51.3 -34.3 119.3	42 02.0 -33.8 118.5	41 12.3 -33.3 117.8	40 22.2 -32.7 117.1	39 31.9 -32.3 116.4
7°	42 17.0 -35.0 120.4	41 28.2 -34.4 119.7	40 39.0 -33.9 118.9	39 49.5 -33.4 118.2	38 59.6 -32.8 117.5
8°	41 42.0 -35.5 121.5	40 53.8 -35.0 120.7	40 05.1 -34.4 120.0	39 16.1 -33.9 119.3	38 26.8 -33.5 118.6
9°	41 06.5 -36.2 122.6	40 18.8 -35.6 121.8	39 30.7 -35.1 121.1	38 42.2 -34.5 120.3	37 53.3 -34.0 119.6
10°	40 30.3 -36.7 123.6	39 43.2 -36.2 122.9	38 55.6 -35.6 122.1	38 07.7 -35.1 121.4	37 19.3 -34.5 120.7
11°	39 53.6 -37.3 124.7	39 07.0 -36.7 123.9	38 20.0 -36.1 123.1	37 32.6 -35.6 122.4	36 44.8 -35.1 121.7
12°	39 16.3 -37.8 125.7	38 30.3 -37.2 124.9	37 43.9 -36.7 124.2	36 57.0 -36.1 123.4	36 09.7 -35.5 122.7
13°	38 38.5 -38.2 126.7	37 53.1 -37.7 125.9	37 07.2 -37.1 125.1	36 20.9 -36.6 124.4	35 34.2 -36.0 123.7
14°	38 00.3 -38.8 127.7	37 15.4 -38.2 126.9	36 30.1 -37.6 126.1	35 44.3 -37.0 125.4	34 58.2 -36.5 124.7
15°	37 21.5 -39.2 128.6	36 37.2 -38.6 127.9	35 52.5 -38.1 127.1	35 07.3 -37.5 126.4	34 21.7 -37.0 125.6
16°	36 42.3 -39.7 129.6	35 58.6 -39.1 128.8	35 14.4 -38.5 128.0	34 29.8 -38.0 127.3	33 44.7 -37.4 126.6
17°	36 02.6 -40.1 130.5	35 19.5 -39.5 129.7	34 35.9 -38.9 129.0	33 51.8 -38.3 128.2	33 07.3 -37.8 127.5
18°	35 22.5 -40.5 131.4	34 40.0 -39.9 130.7	33 57.0 -39.4 129.9	33 13.5 -38.8 129.2	32 29.5 -38.2 128.4
19°	34 42.0 -40.9 132.3	34 00.1 -40.4 131.6	33 17.6 -39.7 130.8	32 34.7 -39.1 130.1	31 51.3 -38.5 129.4
20°	34 01.1 -41.3 133.2	33 19.7 -40.6 132.5	32 37.9 -40.1 131.7	31 55.6 -39.6 131.0	31 12.8 -39.0 130.2
21°	33 19.8 -41.6 134.1	32 39.1 -41.1 133.3	31 57.8 -40.5 132.6	31 16.0 -39.8 131.9	30 33.8 -39.3 131.1
22°	32 38.2 -42.0 134.9	31 58.0 -41.4 134.2	31 17.3 -40.8 133.4	30 36.2 -40.3 132.7	29 54.5 -39.6 132.0
23°	31 56.2 -42.3 135.8	31 16.6 -41.7 135.0	30 36.5 -41.1 134.3	29 55.9 -40.5 133.6	29 14.9 -40.0 132.9
24°	31 13.9 -42.6 136.6	30 34.9 -42.0 135.9	29 55.4 -41.4 135.1	29 15.4 -40.9 134.4	28 34.9 -40.3 133.7
25°	30 31.3 -43.0 137.4	29 52.9 -42.4 136.7	29 14.0 -41.8 136.0	28 34.5 -41.2 135.3	27 54.6 -40.6 134.6
26°	29 48.3 -43.2 138.3	29 10.5 -42.6 137.5	28 32.2 -42.0 136.8	27 53.3 -41.4 136.1	27 14.0 -40.9 135.4
27°	29 05.1 -43.5 139.1	28 27.9 -42.9 138.3	27 50.2 -42.4 137.6	27 11.9 -41.8 136.9	26 33.1 -41.1 136.2
28°	28 21.6 -43.7 139.8	27 45.0 -43.2 139.1	27 07.8 -42.6 138.4	26 30.1 -42.0 137.7	25 52.0 -41.5 137.0
29°	27 37.9 -44.1 140.6	27 01.8 -43.4 139.9	26 25.2 -42.8 139.2	25 48.1 -42.2 138.5	25 10.5 -41.7 137.8

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	41 38.5 -27.9 108.9	40 45.0 -27.4 108.3	39 51.4 -27.1 107.7	38 57.6 -26.7 107.1	38 03.6 -26.4 106.6
1°	41 10.6 -28.5 110.1	40 17.6 -28.2 109.4	39 24.3 -27.7 108.8	38 30.9 -27.4 108.3	37 37.2 -27.0 107.7
2°	40 42.1 -29.2 111.2	39 49.4 -28.8 110.6	38 56.6 -28.5 110.0	38 03.5 -28.1 109.4	37 10.2 -27.7 108.8
3°	40 12.9 -29.9 112.4	39 20.6 -29.5 111.7	38 28.1 -29.0 111.1	37 35.4 -28.6 110.5	36 42.5 -28.2 109.9
4°	39 43.0 -30.6 113.5	38 51.1 -30.1 112.9	37 59.1 -29.7 112.2	37 06.8 -29.3 111.6	36 14.3 -28.9 111.0
5°	39 12.4 -31.2 114.6	38 21.0 -30.7 114.0	37 29.4 -30.3 113.3	36 37.5 -29.9 112.7	35 45.4 -29.5 112.1
6°	38 41.2 -31.7 115.7	37 50.3 -31.3 115.1	36 59.1 -30.9 114.4	36 07.6 -30.4 113.8	35 15.9 -30.0 113.2
7°	38 09.5 -32.4 116.8	37 19.0 -31.9 116.1	36 28.2 -31.4 115.5	35 37.2 -31.0 114.9	34 45.9 -30.5 114.2
8°	37 37.1 -33.0 117.9	36 47.1 -32.5 117.2	35 56.8 -32.0 116.5	35 06.2 -31.5 115.9	34 15.4 -31.1 115.3
9°	37 04.1 -33.4 118.9	36 14.6 -33.0 118.2	35 24.8 -32.5 117.6	34 34.7 -32.0 116.9	33 44.3 -31.6 116.3
10°	36 30.7 -34.1 120.0	35 41.6 -33.5 119.3	34 52.3 -33.0 118.6	34 02.7 -32.6 118.0	33 12.7 -32.1 117.3
11°	35 56.6 -34.5 121.0	35 08.1 -34.0 120.3	34 19.3 -33.5 119.6	33 30.1 -33.0 119.0	32 40.6 -32.5 118.3
12°	35 22.1 -35.0 122.0	34 34.1 -34.5 121.3	33 45.8 -34.0 120.6	32 57.1 -33.5 120.0	32 08.1 -33.0 119.3
13°	34 47.1 -35.5 123.0	33 59.6 -35.0 122.3	33 11.8 -34.5 121.6	32 23.6 -34.0 121.0	31 35.1 -33.5 120.3
14°	34 11.6 -36.0 124.0	33 24.6 -35.4 123.3	32 37.3 -34.9 122.6	31 49.6 -34.4 121.9	31 01.6 -33.9 121.3
15°	33 35.6 -36.4 124.9	32 49.2 -35.9 124.2	32 02.4 -35.3 123.6	31 15.2 -34.8 122.9	30 27.7 -34.3 122.2
16°	32 59.2 -36.8 125.9	32 13.3 -36.3 125.2	31 27.1 -35.8 124.5	30 40.4 -35.2 123.8	29 53.4 -34.7 123.2
17°	32 22.4 -37.2 126.8	31 37.0 -36.6 126.1	30 51.3 -36.1 125.4	30 05.2 -35.6 124.8	29 18.7 -35.1 124.1
18°	31 45.2 -37.7 127.7	31 00.4 -37.1 127.0	30 15.2 -36.6 126.4	29 29.6 -36.0 125.7	28 43.6 -35.5 125.1
19°	31 07.5 -38.0 128.6	30 23.3 -37.5 128.0	29 38.6 -36.9 127.3	28 53.6 -36.4 126.6	28 08.1 -35.8 126.0
20°	30 29.5 -38.4 129.5	29 45.8 -37.8 128.9	29 01.7 -37.3 128.2	28 17.2 -36.7 127.5	27 32.3 -36.2 126.9
21°	29 51.1 -38.7 130.4	29 08.0 -38.2 129.8	28 24.4 -37.6 129.1	27 40.5 -37.1 128.4	26 56.1 -36.5 127.8
22°	29 12.4 -39.1 131.3	28 29.8 -38.5 130.6	27 46.8 -37.9 130.0	27 03.4 -37.4 129.3	26 19.6 -36.9 128.7
23°	28 33.3 -39.4 132.2	27 51.3 -38.8 131.5	27 08.9 -38.3 130.8	26 26.0 -37.7 130.2	25 42.7 -37.1 129.6
24°	27 53.9 -39.7 133.0	27 12.5 -39.2 132.4	26 30.6 -38.6 131.7	25 48.3 -38.0 131.1	25 05.6 -37.5 130.4
25°	27 14.2 -40.0 133.9	26 33.3 -39.4 133.2	25 52.0 -38.9 132.6	25 10.3 -38.3 131.9	24 28.1 -37.8 131.3
26°	26 34.2 -40.3 134.7	25 53.9 -39.8 134.1	25 13.1 -39.1 133.4	24 32.0 -38.6 132.8	23 50.3 -38.0 132.1
27°	25 53.9 -40.6 135.5	25 14.1 -40.0 134.9	24 34.0 -39.5 134.2	23 53.4 -38.9 133.6	23 12.3 -38.3 133.0
28°	25 13.3 -40.9 136.4	24 34.1 -40.2 135.7	23 54.5 -39.7 135.1	23 14.5 -39.1 134.4	22 34.0 -38.5 133.8
29°	24 32.4 -41.1 137.2	23 53.9 -40.6 136.5	23 14.8 -39.9 135.9	22 35.4 -39.4 135.3	21 55.5 -38.8 134.6

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	37 09.5 -26.1 106.0	36 15.2 -25.7 105.5	35 20.8 -25.4 105.0	34 26.3 -25.2 104.5	33 31.7 -25.0 104.0
1°	36 43.4 -26.7 107.1	35 49.5 -26.4 106.6	34 55.4 -26.1 106.1	34 01.1 -25.7 105.6	33 06.7 -25.4 105.0
2°	36 16.7 -27.3 108.3	35 23.1 -27.0 107.7	34 29.3 -26.6 107.2	33 35.4 -26.3 106.6	32 41.3 -26.0 106.1
3°	35 49.4 -27.9 109.4	34 56.1 -27.5 108.8	34 02.7 -27.2 108.2	33 09.1 -26.9 107.7	32 15.3 -26.6 107.2
4°	35 21.5 -28.5 110.4	34 28.6 -28.1 109.9	33 35.5 -27.8 109.3	32 42.2 -27.4 108.8	31 48.7 -27.0 108.2
5°	34 53.0 -29.0 111.5	34 00.5 -28.7 110.9	33 07.7 -28.3 110.4	32 14.8 -27.9 109.8	31 21.7 -27.6 109.3
6°	34 24.0 -29.6 112.6	33 31.8 -29.2 112.0	32 39.4 -28.8 111.4	31 46.9 -28.5 110.9	30 54.1 -28.1 110.3
7°	33 54.4 -30.1 113.6	33 02.6 -29.7 113.0	32 10.6 -29.3 112.5	31 18.4 -28.9 111.9	30 26.0 -28.5 111.4
8°	33 24.3 -30.7 114.7	32 32.9 -30.2 114.1	31 41.3 -29.8 113.5	30 49.5 -29.4 112.9	29 57.5 -29.0 112.4
9°	32 53.6 -31.1 115.7	32 02.7 -30.7 115.1	31 11.5 -30.3 114.5	30 20.1 -29.9 113.9	29 28.5 -29.5 113.4
10°	32 22.5 -31.6 116.7	31 32.0 -31.2 116.1	30 41.2 -30.7 115.5	29 50.2 -30.3 114.9	28 59.0 -29.9 114.4
11°	31 50.9 -32.1 117.7	31 00.8 -31.6 117.1	30 10.5 -31.2 116.5	29 19.9 -30.7 115.9	28 29.1 -30.3 115.4
12°	31 18.8 -32.6 118.7	30 29.2 -32.1 118.1	29 39.3 -31.6 117.5	28 49.2 -31.2 116.9	27 58.8 -30.8 116.4
13°	30 46.2 -32.9 119.7	29 57.1 -32.5 119.1	29 07.7 -32.0 118.5	28 18.0 -31.6 117.9	27 28.0 -31.1 117.3
14°	30 13.3 -33.4 120.7	29 24.6 -32.9 120.0	28 35.7 -32.5 119.4	27 46.4 -32.0 118.9	26 56.9 -31.5 118.3
15°	29 39.9 -33.8 121.6	28 51.7 -33.3 121.0	28 03.2 -32.8 120.4	27 14.4 -32.3 119.8	26 25.4 -31.9 119.2
16°	29 06.1 -34.2 122.6	28 18.4 -33.7 122.0	27 30.4 -33.2 121.3	26 42.1 -32.8 120.8	25 53.5 -32.3 120.2
17°	28 31.9 -34.6 123.5	27 44.7 -34.1 122.9	26 57.2 -33.6 122.3	26 09.3 -33.0 121.7	25 21.2 -32.6 121.1
18°	27 57.3 -35.0 124.4	27 10.6 -34.4 123.8	26 23.6 -34.0 123.2	25 36.3 -33.5 122.6	24 48.6 -32.9 122.0
19°	27 22.3 -35.3 125.4	26 36.2 -34.8 124.7	25 49.6 -34.2 124.1	25 02.8 -33.8 123.5	24 15.7 -33.3 123.0
20°	26 47.0 -35.7 126.3	26 01.4 -35.2 125.6	25 15.4 -34.6 125.0	24 29.0 -34.1 124.4	23 42.4 -33.6 123.9
21°	26 11.3 -35.9 127.2	25 26.2 -35.4 126.5	24 40.8 -35.0 125.9	23 54.9 -34.4 125.4	23 08.8 -33.9 124.8
22°	25 35.4 -36.3 128.0	24 50.8 -35.8 127.4	24 05.8 -35.2 126.8	23 20.5 -34.7 126.2	22 34.9 -34.2 125.7
23°	24 59.1 -36.7 128.9	24 15.0 -36.1 128.3	23 30.6 -35.6 127.7	22 45.8 -35.0 127.1	22 00.7 -34.5 126.6
24°	24 22.4 -36.9 129.8	23 38.9 -36.3 129.2	22 55.0 -35.8 128.6	22 10.8 -35.3 128.0	21 26.2 -34.8 127.4
25°	23 45.5 -37.2 130.7	23 02.6 -36.7 130.1	22 19.2 -36.1 129.5	21 35.5 -35.5 128.9	20 51.4 -35.0 128.3
26°	23 08.3 -37.4 131.5	22 25.9 -36.9 130.9	21 43.1 -36.3 130.3	21 00.0 -35.9 129.7	20 16.4 -35.3 129.2
27°	22 30.9 -37.8 132.4	21 49.0 -37.2 131.8	21 06.8 -36.7 131.2	20 24.1 -36.0 130.6	19 41.1 -35.5 130.0
28°	21 53.1 -38.0 133.2	21 11.8 -37.4 132.6	20 30.1 -36.8 132.0	19 48.1 -36.3 131.5	19 05.6 -35.7 130.9
29°	21 15.1 -38.2 134.0	20 34.4 -37.7 133.4	19 53.3 -37.1 132.9	19 11.8 -36.6 132.3	18 29.9 -36.0 131.7

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	32 36.9 -24.7 103.5	31 42.0 -24.4 103.0	30 47.0 -24.1 102.5	29 51.9 -23.9 102.1	28 56.7 -23.7 101.6
1°	32 12.2 -25.2 104.5	31 17.6 -24.9 104.1	30 22.9 -24.7 103.6	29 28.0 -24.4 103.1	28 33.0 -24.1 102.7
2°	31 47.0 -25.7 105.6	30 52.7 -25.4 105.1	29 58.2 -25.2 104.6	29 03.6 -24.9 104.2	28 08.9 -24.7 103.7
3°	31 21.3 -26.2 106.7	30 27.3 -26.0 106.2	29 33.0 -25.6 105.7	28 38.7 -25.4 105.2	27 44.2 -25.1 104.7
4°	30 55.1 -26.7 107.7	30 01.3 -26.4 107.2	29 07.4 -26.1 106.7	28 13.3 -25.8 106.2	27 19.1 -25.5 105.8
5°	30 28.4 -27.3 108.8	29 34.9 -26.9 108.3	28 41.3 -26.6 107.8	27 47.5 -26.3 107.3	26 53.6 -26.0 106.8
6°	30 01.1 -27.7 109.8	29 08.0 -27.4 109.3	28 14.7 -27.0 108.8	27 21.2 -26.7 108.3	26 27.6 -26.4 107.8
7°	29 33.4 -28.2 110.8	28 40.6 -27.8 110.3	27 47.7 -27.5 109.8	26 54.5 -27.1 109.3	26 01.2 -26.8 108.8
8°	29 05.2 -28.6 111.8	28 12.8 -28.3 111.3	27 20.2 -27.9 110.8	26 27.4 -27.6 110.3	25 34.4 -27.2 109.8
9°	28 36.6 -29.1 112.8	27 44.5 -28.6 112.3	26 52.3 -28.3 111.8	25 59.8 -27.9 111.3	25 07.2 -27.6 110.8
10°	28 07.5 -29.5 113.8	27 15.9 -29.1 113.3	26 24.0 -28.7 112.8	25 31.9 -28.4 112.2	24 39.6 -28.0 111.7
11°	27 38.0 -29.9 114.8	26 46.8 -29.5 114.3	25 55.3 -29.2 113.7	25 03.5 -28.7 113.2	24 11.6 -28.3 112.7
12°	27 08.1 -30.3 115.8	26 17.3 -29.9 115.2	25 26.1 -29.4 114.7	24 34.8 -29.1 114.2	23 43.3 -28.7 113.7
13°	26 37.8 -30.7 116.8	25 47.4 -30.3 116.2	24 56.7 -29.9 115.7	24 05.7 -29.4 115.2	23 14.6 -29.0 114.6
14°	26 07.1 -31.1 117.7	25 17.1 -30.6 117.2	24 26.8 -30.2 116.6	23 36.3 -29.8 116.1	22 45.6 -29.4 115.6
15°	25 36.0 -31.4 118.7	24 46.5 -31.0 118.1	23 56.6 -30.6 117.6	23 06.5 -30.1 117.0	22 16.2 -29.7 116.5
16°	25 04.6 -31.8 119.6	24 15.5 -31.4 119.1	23 26.0 -30.8 118.5	22 36.4 -30.5 118.0	21 46.5 -30.0 117.5
17°	24 32.8 -32.1 120.5	23 44.1 -31.7 120.0	22 55.2 -31.3 119.5	22 05.9 -30.7 118.9	21 16.5 -30.4 118.4
18°	24 00.7 -32.5 121.5	23 12.4 -31.9 120.9	22 23.9 -31.5 120.4	21 35.2 -31.1 119.8	20 46.1 -30.6 119.3
19°	23 28.2 -32.8 122.4	22 40.5 -32.4 121.8	21 52.4 -31.8 121.3	21 04.1 -31.4 120.8	20 15.5 -30.9 120.2
20°	22 55.4 -33.1 123.3	22 08.1 -32.6 122.8	21 20.6 -32.1 122.2	20 32.7 -31.6 121.7	19 44.6 -31.2 121.2
21°	22 22.3 -33.4 124.2	21 35.5 -32.9 123.7	20 48.5 -32.5 123.1	20 01.1 -31.9 122.6	19 13.4 -31.4 122.1
22°	21 48.9 -33.7 125.1	21 02.6 -33.1 124.6	20 16.0 -32.6 124.0	19 29.2 -32.2 123.5	18 42.0 -31.7 123.0
23°	21 15.2 -33.9 126.0	20 29.5 -33.5 125.4	19 43.4 -33.0 124.9	18 57.0 -32.5 124.4	18 10.3 -31.9 123.9
24°	20 41.3 -34.3 126.9	19 56.0 -33.7 126.3	19 10.4 -33.2 125.8	18 24.5 -32.6 125.3	17 38.4 -32.2 124.7
25°	20 07.0 -34.5 127.8	19 22.3 -34.0 127.2	18 37.2 -33.4 126.7	17 51.9 -33.0 126.1	17 06.2 -32.4 125.6
26°	19 32.5 -34.7 128.6	18 48.3 -34.2 128.1	18 03.8 -33.7 127.5	17 18.9 -33.1 127.0	16 33.8 -32.7 126.5
27°	18 57.8 -35.0 129.5	18 14.1 -34.4 128.9	17 30.1 -33.9 128.4	16 45.8 -33.4 127.9	16 01.1 -32.8 127.4
28°	18 22.8 -35.2 130.3	17 39.7 -34.7 129.8	16 56.2 -34.1 129.3	16 12.4 -33.6 128.8	15 28.3 -33.1 128.3
29°	17 47.6 -35.4 131.2	17 05.0 -34.8 130.7	16 22.1 -34.3 130.1	15 38.8 -33.8 129.6	14 55.2 -33.2 129.1

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	28 01.5 -23.5 101.2	27 06.1 -23.3 100.7	26 10.7 -23.1 100.3	25 15.2 -22.9 99.9	24 19.6 -22.7 99.5
1°	27 38.0 -24.0 102.2	26 42.8 -23.7 101.8	25 47.6 -23.5 101.3	24 52.3 -23.3 100.9	23 56.9 -23.2 100.5
2°	27 14.0 -24.4 103.2	26 19.1 -24.2 102.8	25 24.1 -24.0 102.4	24 29.0 -23.8 101.9	23 33.7 -23.5 101.5
3°	26 49.6 -24.8 104.3	25 54.9 -24.5 103.8	25 00.1 -24.3 103.4	24 05.2 -24.1 102.9	23 10.2 -23.9 102.5
4°	26 24.8 -25.3 105.3	25 30.4 -25.0 104.8	24 35.8 -24.7 104.4	23 41.1 -24.5 103.9	22 46.3 -24.2 103.5
5°	25 59.5 -25.7 106.3	25 05.4 -25.4 105.8	24 11.1 -25.2 105.4	23 16.6 -24.8 104.9	22 22.1 -24.6 104.5
6°	25 33.8 -26.0 107.3	24 40.0 -25.8 106.8	23 45.9 -25.5 106.4	22 51.8 -25.3 105.9	21 57.5 -25.0 105.5
7°	25 07.8 -26.5 108.3	24 14.2 -26.2 107.8	23 20.4 -25.9 107.4	22 26.5 -25.6 106.9	21 32.5 -25.3 106.4
8°	24 41.3 -26.9 109.3	23 48.0 -26.6 108.8	22 54.5 -26.2 108.3	22 00.9 -25.9 107.9	21 07.2 -25.6 107.4
9°	24 14.4 -27.3 110.3	23 21.4 -26.9 109.8	22 28.3 -26.6 109.3	21 35.0 -26.3 108.8	20 41.6 -26.0 108.4
10°	23 47.1 -27.6 111.2	22 54.5 -27.3 110.8	22 01.7 -26.9 110.3	21 08.7 -26.6 109.8	20 15.6 -26.3 109.3
11°	23 19.5 -27.9 112.2	22 27.2 -27.6 111.7	21 34.8 -27.3 111.2	20 42.1 -26.9 110.8	19 49.3 -26.5 110.3
12°	22 51.6 -28.4 113.2	21 59.6 -27.9 112.7	21 07.5 -27.6 112.2	20 15.2 -27.2 111.7	19 22.8 -26.9 111.3
13°	22 23.2 -28.6 114.1	21 31.7 -28.3 113.6	20 39.9 -27.8 113.1	19 48.0 -27.5 112.7	18 55.9 -27.2 112.2
14°	21 54.6 -29.0 115.1	21 03.4 -28.6 114.6	20 12.1 -28.2 114.1	19 20.5 -27.8 113.6	18 28.7 -27.4 113.1
15°	21 25.6 -29.3 116.0	20 34.8 -28.8 115.5	19 43.9 -28.5 115.0	18 52.7 -28.1 114.6	18 01.3 -27.7 114.1
16°	20 56.3 -29.6 117.0	20 06.0 -29.2 116.5	19 15.4 -28.8 116.0	18 24.6 -28.4 115.5	17 33.6 -28.0 115.0
17°	20 26.7 -29.8 117.9	19 36.8 -29.5 117.4	18 46.6 -29.0 116.9	17 56.2 -28.6 116.4	17 05.6 -28.2 115.9
18°	19 56.9 -30.2 118.8	19 07.3 -29.7 118.3	18 17.6 -29.3 117.8	17 27.6 -28.9 117.3	16 37.4 -28.4 116.9
19°	19 26.7 -30.5 119.7	18 37.6 -30.0 119.2	17 48.3 -29.6 118.7	16 58.7 -29.1 118.3	16 09.0 -28.7 117.8
20°	18 56.2 -30.7 120.6	18 07.6 -30.3 120.1	17 18.7 -29.8 119.6	16 29.6 -29.4 119.2	15 40.3 -29.0 118.7
21°	18 25.5 -30.9 121.5	17 37.3 -30.5 121.0	16 48.9 -30.0 120.6	16 00.2 -29.5 120.1	15 11.3 -29.1 119.6
22°	17 54.6 -31.3 122.5	17 06.8 -30.7 122.0	16 18.9 -30.3 121.5	15 30.7 -29.8 121.0	14 42.2 -29.3 120.5
23°	17 23.3 -31.4 123.3	16 36.1 -31.0 122.8	15 48.6 -30.5 122.4	15 00.9 -30.1 121.9	14 12.9 -29.6 121.4
24°	16 51.9 -31.7 124.2	16 05.1 -31.2 123.7	15 18.1 -30.7 123.3	14 30.8 -30.2 122.8	13 43.3 -29.7 122.3
25°	16 20.2 -31.9 125.1	15 33.9 -31.4 124.6	14 47.4 -30.9 124.1	14 00.6 -30.4 123.7	13 13.6 -30.0 123.2
26°	15 48.3 -32.1 126.0	15 02.5 -31.6 125.5	14 16.5 -31.1 125.0	13 30.2 -30.6 124.6	12 43.6 -30.1 124.1
27°	15 16.2 -32.3 126.9	14 30.9 -31.8 126.4	13 45.4 -31.3 125.9	12 59.6 -30.8 125.4	12 13.5 -30.2 125.0
28°	14 43.9 -32.6 127.8	13 59.1 -32.0 127.3	13 14.1 -31.4 126.8	12 28.8 -30.9 126.3	11 43.3 -30.5 125.9
29°	14 11.3 -32.7 128.6	13 27.1 -32.1 128.1	12 42.7 -31.7 127.7	11 57.9 -31.1 127.2	11 12.8 -30.6 126.7

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	23 23.9 -22.5 99.1	22 28.2 -22.4 98.7	21 32.5 -22.3 98.3	20 36.6 -22.1 97.9	19 40.8 -22.0 97.5
1°	23 01.4 -23.0 100.1	22 05.8 -22.7 99.7	21 10.2 -22.6 99.3	20 14.5 -22.4 98.9	19 18.8 -22.3 98.5
2°	22 38.4 -23.3 101.1	21 43.1 -23.1 100.7	20 47.6 -22.9 100.2	19 52.1 -22.7 99.8	18 56.5 -22.5 99.4
3°	22 15.1 -23.6 102.1	21 20.0 -23.5 101.7	20 24.7 -23.3 101.2	19 29.4 -23.1 100.8	18 34.0 -22.9 100.4
4°	21 51.5 -24.0 103.1	20 56.5 -23.8 102.6	20 01.4 -23.5 102.2	19 06.3 -23.4 101.8	18 11.1 -23.2 101.4
5°	21 27.5 -24.4 104.0	20 32.7 -24.1 103.6	19 37.9 -23.9 103.2	18 42.9 -23.7 102.8	17 47.9 -23.5 102.4
6°	21 03.1 -24.7 105.0	20 08.6 -24.5 104.6	19 14.0 -24.2 104.2	18 19.2 -23.9 103.8	17 24.4 -23.7 103.3
7°	20 38.4 -25.1 106.0	19 44.1 -24.7 105.6	18 49.8 -24.6 105.1	17 55.3 -24.3 104.7	17 00.7 -24.0 104.3
8°	20 13.3 -25.3 107.0	19 19.4 -25.1 106.5	18 25.2 -24.7 106.1	17 31.0 -24.5 105.7	16 36.7 -24.3 105.3
9°	19 48.0 -25.7 107.9	18 54.3 -25.4 107.5	18 00.5 -25.1 107.1	17 06.5 -24.8 106.6	16 12.4 -24.5 106.2
10°	19 22.3 -25.9 108.9	18 28.9 -25.6 108.5	17 35.4 -25.4 108.0	16 41.7 -25.1 107.6	15 47.9 -24.8 107.2
11°	18 56.4 -26.3 109.9	18 03.3 -25.9 109.4	17 10.0 -25.6 109.0	16 16.6 -25.3 108.5	15 23.1 -25.0 108.1
12°	18 30.1 -26.5 110.8	17 37.4 -26.2 110.4	16 44.4 -25.9 109.9	15 51.3 -25.5 109.5	14 58.1 -25.2 109.0
13°	18 03.6 -26.8 111.7	17 11.2 -26.5 111.3	16 18.5 -26.1 110.8	15 25.8 -25.8 110.4	14 32.9 -25.5 110.0
14°	17 36.8 -27.1 112.7	16 44.7 -26.7 112.2	15 52.4 -26.3 111.8	15 00.0 -26.0 111.3	14 07.4 -25.7 110.9
15°	17 09.7 -27.3 113.6	16 18.0 -27.0 113.2	15 26.1 -26.6 112.7	14 34.0 -26.3 112.3	13 41.7 -25.9 111.9
16°	16 42.4 -27.6 114.6	15 51.0 -27.2 114.1	14 59.5 -26.8 113.6	14 07.7 -26.4 113.2	13 15.8 -26.1 112.8
17°	16 14.8 -27.8 115.5	15 23.8 -27.4 115.0	14 32.7 -27.1 114.6	13 41.3 -26.7 114.1	12 49.7 -26.2 113.7
18°	15 47.0 -28.0 116.4	14 56.4 -27.6 115.9	14 05.6 -27.2 115.5	13 14.6 -26.8 115.1	12 23.5 -26.5 114.6
19°	15 19.0 -28.3 117.3	14 28.8 -27.9 116.9	13 38.4 -27.5 116.4	12 47.8 -27.1 116.0	11 57.0 -26.6 115.5
20°	14 50.7 -28.5 118.2	14 00.9 -28.0 117.8	13 10.9 -27.6 117.3	12 20.7 -27.2 116.9	11 30.4 -26.9 116.5
21°	14 22.2 -28.7 119.1	13 32.9 -28.3 118.7	12 43.3 -27.8 118.2	11 53.5 -27.4 117.8	11 03.5 -26.9 117.4
22°	13 53.5 -28.9 120.0	13 04.6 -28.4 119.6	12 15.5 -28.0 119.1	11 26.1 -27.6 118.7	10 36.6 -27.2 118.3
23°	13 24.6 -29.1 120.9	12 36.2 -28.7 120.5	11 47.5 -28.2 120.0	10 58.5 -27.7 119.6	10 09.4 -27.3 119.2
24°	12 55.5 -29.2 121.8	12 07.5 -28.8 121.4	11 19.3 -28.4 121.0	10 30.8 -27.9 120.5	9 42.1 -27.4 120.1
25°	12 26.3 -29.5 122.7	11 38.7 -28.9 122.3	10 50.9 -28.4 121.8	10 02.9 -28.0 121.4	9 14.7 -27.5 121.0
26°	11 56.8 -29.6 123.6	11 09.8 -29.2 123.2	10 22.5 -28.7 122.7	9 34.9 -28.1 122.3	8 47.2 -27.7 121.9
27°	11 27.2 -29.8 124.5	10 40.6 -29.2 124.1	9 53.8 -28.8 123.6	9 06.8 -28.3 123.2	8 19.5 -27.8 122.8
28°	10 57.4 -29.9 125.4	10 11.4 -29.5 125.0	9 25.0 -28.9 124.5	8 38.5 -28.5 124.1	7 51.7 -28.0 123.7
29°	10 27.5 -30.1 126.3	9 41.9 -29.5 125.8	8 56.1 -29.0 125.4	8 10.0 -28.5 125.0	7 23.7 -28.0 124.6

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	18 44.8 -21.8 97.1	17 48.9 -21.7 96.7	16 52.8 -21.5 96.3	15 56.8 -21.5 96.0	15 00.7 -21.4 95.6
1°	18 23.0 -22.1 98.1	17 27.2 -22.0 97.7	16 31.3 -21.9 97.3	15 35.3 -21.7 96.9	14 39.3 -21.6 96.6
2°	18 00.9 -22.4 99.1	17 05.2 -22.3 98.7	16 09.4 -22.1 98.3	15 13.6 -22.0 97.9	14 17.7 -21.8 97.5
3°	17 38.5 -22.7 100.0	16 42.9 -22.5 99.6	15 47.3 -22.4 99.3	14 51.6 -22.2 98.9	13 55.9 -22.1 98.5
4°	17 15.8 -23.0 101.0	16 20.4 -22.8 100.6	15 24.9 -22.6 100.2	14 29.4 -22.4 99.8	13 33.8 -22.3 99.4
5°	16 52.8 -23.3 102.0	15 57.6 -23.1 101.6	15 02.3 -22.9 101.2	14 07.0 -22.7 100.8	13 11.5 -22.5 100.4
6°	16 29.5 -23.5 102.9	15 34.5 -23.3 102.5	14 39.4 -23.0 102.1	13 44.3 -22.9 101.7	12 49.0 -22.7 101.4
7°	16 06.0 -23.8 103.9	15 11.2 -23.5 103.5	14 16.4 -23.4 103.1	13 21.4 -23.1 102.7	12 26.3 -22.8 102.3
8°	15 42.2 -24.0 104.8	14 47.7 -23.8 104.4	13 53.0 -23.5 104.0	12 58.3 -23.3 103.6	12 03.5 -23.1 103.2
9°	15 18.2 -24.2 105.8	14 23.9 -24.0 105.4	13 29.5 -23.8 105.0	12 35.0 -23.5 104.6	11 40.4 -23.3 104.2
10°	14 54.0 -24.5 106.7	13 59.9 -24.2 106.3	13 05.7 -23.9 105.9	12 11.5 -23.7 105.5	11 17.1 -23.5 105.1
11°	14 29.5 -24.8 107.7	13 35.7 -24.4 107.3	12 41.8 -24.2 106.9	11 47.8 -23.9 106.5	10 53.6 -23.6 106.1
12°	14 04.7 -24.9 108.6	13 11.3 -24.7 108.2	12 17.6 -24.3 107.8	11 23.9 -24.1 107.4	10 30.0 -23.8 107.0
13°	13 39.8 -25.1 109.6	12 46.6 -24.8 109.1	11 53.3 -24.5 108.7	10 59.8 -24.2 108.3	10 06.2 -23.9 107.9
14°	13 14.7 -25.4 110.5	12 21.8 -25.0 110.1	11 28.8 -24.8 109.7	10 35.6 -24.4 109.3	9 42.3 -24.1 108.9
15°	12 49.3 -25.5 111.4	11 56.8 -25.3 111.0	11 04.0 -24.8 110.6	10 11.2 -24.5 110.2	9 18.2 -24.2 109.8
16°	12 23.8 -25.8 112.4	11 31.5 -25.3 111.9	10 39.2 -25.1 111.5	9 46.7 -24.7 111.1	8 54.0 -24.4 110.7
17°	11 58.0 -25.9 113.3	11 06.2 -25.6 112.9	10 14.1 -25.2 112.5	9 22.0 -24.9 112.0	8 29.6 -24.5 111.7
18°	11 32.1 -26.1 114.2	10 40.6 -25.7 113.8	9 48.9 -25.3 113.4	8 57.1 -25.0 113.0	8 05.1 -24.6 112.6
19°	11 06.0 -26.2 115.1	10 14.9 -25.9 114.7	9 23.6 -25.5 114.3	8 32.1 -25.1 113.9	7 40.5 -24.7 113.5
20°	10 39.8 -26.4 116.0	9 49.0 -26.0 115.6	8 58.1 -25.6 115.2	8 07.0 -25.2 114.8	7 15.8 -24.9 114.4
21°	10 13.4 -26.6 116.9	9 23.0 -26.1 116.5	8 32.5 -25.8 116.1	7 41.8 -25.4 115.7	6 50.9 -25.0 115.3
22°	9 46.8 -26.7 117.9	8 56.9 -26.3 117.4	8 06.7 -25.8 117.0	7 16.4 -25.4 116.6	6 25.9 -25.0 116.2
23°	9 20.1 -26.8 118.8	8 30.6 -26.4 118.4	7 40.9 -26.0 117.9	6 51.0 -25.6 117.5	6 00.9 -25.2 117.2
24°	8 53.3 -27.0 119.7	8 04.2 -26.6 119.3	7 14.9 -26.1 118.9	6 25.4 -25.7 118.5	5 35.7 -25.2 118.1
25°	8 26.3 -27.1 120.6	7 37.6 -26.6 120.2	6 48.8 -26.2 119.8	5 59.7 -25.7 119.4	5 10.5 -25.3 119.0
26°	7 59.2 -27.2 121.5	7 11.0 -26.8 121.1	6 22.6 -26.3 120.7	5 34.0 -25.8 120.3	4 45.2 -25.4 119.9
27°	7 32.0 -27.4 122.4	6 44.2 -26.8 122.0	5 56.3 -26.4 121.6	5 08.2 -25.9 121.2	4 19.8 -25.4 120.8
28°	7 04.6 -27.4 123.3	6 17.4 -27.0 122.9	5 29.9 -26.4 122.5	4 42.3 -26.0 122.1	3 54.4 -25.5 121.7
29°	6 37.2 -27.5 124.2	5 50.4 -27.0 123.8	5 03.5 -26.6 123.4	4 16.3 -26.1 123.0	3 28.9 -25.6 122.6

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	14 04.6 -21.3 95.2	13 08.4 -21.2 94.9	12 12.2 -21.1 94.5	11 16.0 -21.0 94.2	10 19.7 -20.9 93.8
1°	13 43.3 -21.5 96.2	12 47.2 -21.4 95.8	11 51.1 -21.3 95.5	10 55.0 -21.2 95.1	9 58.8 -21.1 94.8
2°	13 21.8 -21.7 97.2	12 25.8 -21.6 96.8	11 29.8 -21.4 96.4	10 33.8 -21.4 96.1	9 37.7 -21.3 95.7
3°	13 00.1 -21.9 98.1	12 04.2 -21.7 97.7	11 08.4 -21.7 97.4	10 12.4 -21.5 97.0	9 16.4 -21.4 96.7
4°	12 38.2 -22.2 99.1	11 42.5 -22.0 98.7	10 46.7 -21.8 98.3	9 50.9 -21.7 98.0	8 55.0 -21.5 97.6
5°	12 16.0 -22.3 100.0	11 20.5 -22.2 99.6	10 24.9 -22.0 99.3	9 29.2 -21.8 98.9	8 33.5 -21.7 98.5
6°	11 53.7 -22.5 101.0	10 58.3 -22.3 100.6	10 02.9 -22.2 100.2	9 07.4 -22.0 99.9	8 11.8 -21.8 99.5
7°	11 31.2 -22.7 101.9	10 36.0 -22.5 101.5	9 40.7 -22.3 101.2	8 45.4 -22.1 100.8	7 50.0 -22.0 100.4
8°	11 08.5 -22.8 102.9	10 13.5 -22.6 102.5	9 18.4 -22.4 102.1	8 23.3 -22.3 101.7	7 28.0 -22.0 101.4
9°	10 45.7 -23.1 103.8	9 50.9 -22.9 103.4	8 56.0 -22.6 103.0	8 01.0 -22.4 102.7	7 06.0 -22.2 102.3
10°	10 22.6 -23.2 104.7	9 28.0 -22.9 104.4	8 33.4 -22.7 104.0	7 38.6 -22.5 103.6	6 43.8 -22.3 103.2
11°	9 59.4 -23.3 105.7	9 05.1 -23.1 105.3	8 10.7 -22.9 104.9	7 16.1 -22.6 104.5	6 21.5 -22.4 104.2
12°	9 36.1 -23.6 106.6	8 42.0 -23.3 106.2	7 47.8 -23.0 105.9	6 53.5 -22.7 105.5	5 59.1 -22.5 105.1
13°	9 12.5 -23.6 107.5	8 18.7 -23.3 107.2	7 24.8 -23.1 106.8	6 30.8 -22.9 106.4	5 36.6 -22.5 106.0
14°	8 48.9 -23.8 108.5	7 55.4 -23.5 108.1	7 01.7 -23.2 107.7	6 07.9 -22.9 107.3	5 14.1 -22.7 107.0
15°	8 25.1 -23.9 109.4	7 31.9 -23.6 109.0	6 38.5 -23.3 108.6	5 45.0 -23.0 108.3	4 51.4 -22.7 107.9
16°	8 01.2 -24.1 110.3	7 08.3 -23.8 109.9	6 15.2 -23.4 109.6	5 22.0 -23.1 109.2	4 28.7 -22.8 108.8
17°	7 37.1 -24.1 111.3	6 44.5 -23.8 110.9	5 51.8 -23.5 110.5	4 58.9 -23.2 110.1	4 05.9 -22.9 109.8
18°	7 13.0 -24.3 112.2	6 20.7 -23.9 111.8	5 28.3 -23.6 111.4	4 35.7 -23.2 111.0	3 43.0 -22.9 110.7
19°	6 48.7 -24.4 113.1	5 56.8 -24.0 112.7	5 04.7 -23.7 112.3	4 12.5 -23.3 112.0	3 20.1 -22.9 111.6
20°	6 24.3 -24.4 114.0	5 32.8 -24.1 113.6	4 41.0 -23.7 113.3	3 49.2 -23.4 112.9	2 57.2 -23.1 112.5
21°	5 59.9 -24.6 114.9	5 08.7 -24.2 114.6	4 17.3 -23.8 114.2	3 25.8 -23.4 113.8	2 34.1 -23.0 113.5
22°	5 35.3 -24.7 115.9	4 44.5 -24.3 115.5	3 53.5 -23.9 115.1	3 02.4 -23.5 114.7	2 11.1 -23.1 114.4
23°	5 10.6 -24.7 116.8	4 20.2 -24.3 116.4	3 29.6 -23.9 116.0	2 38.9 -23.5 115.7	1 48.0 -23.1 115.3
24°	4 45.9 -24.8 117.7	3 55.9 -24.4 117.3	3 05.7 -23.9 116.9	2 15.4 -23.6 116.6	1 24.9 -23.2 116.2
25°	4 21.1 -24.9 118.6	3 31.5 -24.4 118.2	2 41.8 -24.0 117.9	1 51.8 -23.5 117.5	1 01.7 -23.1 117.2
26°	3 56.2 -24.9 119.5	3 07.1 -24.5 119.1	2 17.8 -24.1 118.8	1 28.3 -23.7 118.4	0 38.6 -23.2 118.1
27°	3 31.3 -25.0 120.4	2 42.6 -24.5 120.1	1 53.7 -24.1 119.7	1 04.6 -23.6 119.3	0 15.4 -23.2 119.0
28°	3 06.3 -25.0 121.3	2 18.1 -24.6 121.0	1 29.6 -24.0 120.6	0 41.0 -23.6 120.3	-0 07.8 -23.1
29°	2 41.3 -25.1 122.2	1 53.5 -24.6 121.9	1 05.6 -24.2 121.5	0 17.4 -23.6 121.2	-0 30.9 -23.2

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 23.5 -20.9 93.5	8 27.2 -20.8 93.1	7 30.9 -20.8 92.8	6 34.6 -20.8 92.4	5 38.2 -20.6 92.1
1°	9 02.6 -21.0 94.4	8 06.4 -21.0 94.0	7 10.1 -20.9 93.7	6 13.8 -20.8 93.3	5 17.6 -20.8 93.0
2°	8 41.6 -21.2 95.3	7 45.4 -21.0 95.0	6 49.2 -20.9 94.6	5 53.0 -20.9 94.3	4 56.8 -20.8 93.9
3°	8 20.4 -21.3 96.3	7 24.4 -21.2 95.9	6 28.3 -21.1 95.6	5 32.1 -21.0 95.2	4 36.0 -20.9 94.9
4°	7 59.1 -21.4 97.2	7 03.2 -21.3 96.9	6 07.2 -21.2 96.5	5 11.1 -21.0 96.2	4 15.1 -21.0 95.8
5°	7 37.7 -21.5 98.2	6 41.9 -21.4 97.8	5 46.0 -21.3 97.5	4 50.1 -21.2 97.1	3 54.1 -21.0 96.8
6°	7 16.2 -21.7 99.1	6 20.5 -21.6 98.8	5 24.7 -21.4 98.4	4 28.9 -21.2 98.1	3 33.1 -21.1 97.7
7°	6 54.5 -21.8 100.1	5 58.9 -21.6 99.7	5 03.3 -21.4 99.3	4 07.7 -21.3 99.0	3 12.0 -21.2 98.6
8°	6 32.7 -21.9 101.0	5 37.3 -21.7 100.6	4 41.9 -21.5 100.3	3 46.4 -21.4 99.9	2 50.8 -21.2 99.6
9°	6 10.8 -21.9 101.9	5 15.6 -21.7 101.6	4 20.4 -21.6 101.2	3 25.0 -21.4 100.9	2 29.6 -21.2 100.5
10°	5 48.9 -22.1 102.9	4 53.9 -21.9 102.5	3 58.8 -21.7 102.2	3 03.6 -21.4 101.8	2 08.4 -21.3 101.5
11°	5 26.8 -22.2 103.8	4 32.0 -21.9 103.4	3 37.1 -21.7 103.1	2 42.2 -21.5 102.7	1 47.1 -21.3 102.4
12°	5 04.6 -22.2 104.7	4 10.1 -22.0 104.4	3 15.4 -21.8 104.0	2 20.7 -21.6 103.7	1 25.8 -21.3 103.3
13°	4 42.4 -22.3 105.7	3 48.1 -22.1 105.3	2 53.6 -21.8 105.0	1 59.1 -21.5 104.6	1 04.5 -21.3 104.3
14°	4 20.1 -22.4 106.6	3 26.0 -22.1 106.2	2 31.8 -21.8 105.9	1 37.6 -21.6 105.5	0 43.2 -21.3 105.2
15°	3 57.7 -22.4 107.5	3 03.9 -22.2 107.2	2 10.0 -21.9 106.8	1 16.0 -21.6 106.5	0 21.9 -21.4 106.1
16°	3 35.3 -22.5 108.5	2 41.7 -22.2 108.1	1 48.1 -21.9 107.8	0 54.4 -21.7 107.4	0 00.5 -21.3 107.1
17°	3 12.8 -22.6 109.4	2 19.5 -22.2 109.0	1 26.2 -21.9 108.7	0 32.7 -21.6 108.3	-0 20.8 -21.4
18°	2 50.2 -22.6 110.3	1 57.3 -22.3 110.0	1 04.3 -22.0 109.6	0 11.1 -21.7 109.3	-0 42.2 -21.3
19°	2 27.6 -22.6 111.2	1 35.0 -22.3 110.9	0 42.3 -22.0 110.5	-0 10.6 -21.6	-1 03.5 -21.3
20°	2 05.0 -22.6 112.2	1 12.7 -22.3 111.8	0 20.3 -21.9 111.5	-0 32.2 -21.6	-1 24.8 -21.3
21°	1 42.4 -22.7 113.1	0 50.4 -22.3 112.8	-0 01.6 -22.0	-0 53.8 -21.6	-1 46.1 -21.3
22°	1 19.7 -22.7 114.0	0 28.1 -22.3 113.7	-0 23.6 -22.0	-1 15.4 -21.6	-2 07.4 -21.2
23°	0 57.0 -22.8 115.0	0 05.8 -22.4 114.6	-0 45.6 -21.9	-1 37.0 -21.6	-2 28.6 -21.2
24°	0 34.2 -22.7 115.9	-0 16.6 -22.3	-1 07.5 -22.0	-1 58.6 -21.5	-2 49.8 -21.2
25°	0 11.5 -22.7 116.8	-0 38.9 -22.3	-1 29.5 -21.9	-2 20.1 -21.5	-3 11.0 -21.1
26°	-0 11.2 -22.8	-1 01.2 -22.3	-1 51.4 -21.8	-2 41.6 -21.5	-3 32.1 -21.0
27°	-0 34.0 -22.7	-1 23.5 -22.3	-2 13.2 -21.9	-3 03.1 -21.4	-3 53.1 -21.0
28°	-0 56.7 -22.7	-1 45.8 -22.3	-2 35.1 -21.8	-3 24.5 -21.4	-4 14.1 -20.9
29°	-1 19.4 -22.7	-2 08.1 -22.2	-2 56.9 -21.7	-3 45.9 -21.3	-4 35.0 -20.8

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 41.9 -20.7 91.7	3 45.5 -20.6 91.4	2 49.1 -20.5 91.0	1 52.8 -20.6 90.7	0 56.4 -20.5 90.3
1°	4 21.2 -20.7 92.7	3 24.9 -20.6 92.3	2 28.6 -20.6 92.0	1 32.2 -20.6 91.6	0 35.9 -20.6 91.3
2°	4 00.5 -20.7 93.6	3 04.3 -20.7 93.3	2 08.0 -20.7 92.9	1 11.6 -20.5 92.6	0 15.3 -20.5 92.2
3°	3 39.8 -20.8 94.5	2 43.6 -20.8 94.2	1 47.3 -20.7 93.8	0 51.1 -20.7 93.5	-0 05.2 -20.6
4°	3 19.0 -20.9 95.5	2 22.8 -20.8 95.1	1 26.6 -20.6 94.8	0 30.4 -20.6 94.4	-0 25.8 -20.5
5°	2 58.1 -20.9 96.4	2 02.0 -20.8 96.1	1 06.0 -20.8 95.7	0 09.8 -20.6 95.4	-0 46.3 -20.5
6°	2 37.2 -21.0 97.4	1 41.2 -20.8 97.0	0 45.2 -20.7 96.7	-0 10.8 -20.6	-1 06.8 -20.5
7°	2 16.2 -21.0 98.3	1 20.4 -20.9 97.9	0 24.5 -20.7 97.6	-0 31.4 -20.6	-1 27.3 -20.5
8°	1 55.2 -21.0 99.2	0 59.5 -20.9 98.9	0 03.8 -20.7 98.5	-0 52.0 -20.6	-1 47.8 -20.5
9°	1 34.2 -21.1 100.2	0 38.6 -20.9 99.8	-0 16.9 -20.8	-1 12.6 -20.6	-2 08.3 -20.4
10°	1 13.1 -21.1 101.1	0 17.7 -20.8 100.8	-0 37.7 -20.7	-1 33.2 -20.5	-2 28.7 -20.4
11°	0 52.0 -21.1 102.0	-0 03.1 -20.9	-0 58.4 -20.7	-1 53.7 -20.5	-2 49.1 -20.3
12°	0 30.9 -21.1 103.0	-0 24.0 -20.9	-1 19.1 -20.7	-2 14.2 -20.5	-3 09.4 -20.3
13°	0 09.8 -21.1 103.9	-0 44.9 -20.9	-1 39.8 -20.6	-2 34.7 -20.4	-3 29.7 -20.2
14°	-0 11.3 -21.1	-1 05.8 -20.9	-2 00.4 -20.6	-2 55.1 -20.4	-3 49.9 -20.2
15°	-0 32.4 -21.0	-1 26.7 -20.8	-2 21.0 -20.6	-3 15.5 -20.4	-4 10.1 -20.1
16°	-0 53.4 -21.1	-1 47.5 -20.8	-2 41.6 -20.6	-3 35.9 -20.2	-4 30.2 -20.0
17°	-1 14.5 -21.1	-2 08.3 -20.8	-3 02.2 -20.5	-3 56.1 -20.3	-4 50.2 -19.9
18°	-1 35.6 -21.0	-2 29.1 -20.7	-3 22.7 -20.4	-4 16.4 -20.1	-5 10.1 -19.9
19°	-1 56.6 -21.0	-2 49.8 -20.7	-3 43.1 -20.4	-4 36.5 -20.1	-5 30.0 -19.8
20°	-2 17.6 -21.0	-3 10.5 -20.6	-4 03.5 -20.3	-4 56.6 -20.0	-5 49.8 -19.6
21°	-2 38.6 -20.9	-3 31.1 -20.6	-4 23.8 -20.2	-5 16.6 -19.9	-6 09.4 -19.6
22°	-2 59.5 -20.9	-3 51.7 -20.5	-4 44.0 -20.2	-5 36.5 -19.8	-6 29.0 -19.5
23°	-3 20.4 -20.8	-4 12.2 -20.5	-5 04.2 -20.1	-5 56.3 -19.7	-6 48.5 -19.3
24°	-3 41.2 -20.7	-4 32.7 -20.3	-5 24.3 -20.0	-6 16.0 -19.6	-7 07.8 -19.3
25°	-4 01.9 -20.7	-4 53.0 -20.3	-5 44.3 -19.9	-6 35.6 -19.5	-7 27.1 -19.1
26°	-4 22.6 -20.6	-5 13.3 -20.2	-6 04.2 -19.7	-6 55.1 -19.4	-7 46.2 -19.0
27°	-4 43.2 -20.6	-5 33.5 -20.2	-6 23.9 -19.7	-7 14.5 -19.3	-8 05.2 -18.8
28°	-5 03.8 -20.5	-5 53.7 -20.0	-6 43.6 -19.6	-7 33.8 -19.1	-8 24.0 -18.7
29°	-5 24.3 -20.3	-6 13.7 -19.9	-7 03.2 -19.5	-7 52.9 -19.0	-8 42.7 -18.6

Latitude 20°

Declination CONTRARY name to Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -20.5 90.0	-0 56.4 -20.5			
1°	-0 20.5 -20.5	-1 16.9 -20.5			
2°	-0 41.0 -20.5	-1 37.4 -20.5			
3°	-1 01.5 -20.5	-1 57.9 -20.4			
4°	-1 22.0 -20.5	-2 18.3 -20.4			
5°	-1 42.5 -20.4	-2 38.7 -20.4			
6°	-2 02.9 -20.4	-2 59.1 -20.3			
7°	-2 23.3 -20.4	-3 19.4 -20.2			
8°	-2 43.7 -20.3	-3 39.6 -20.2			
9°	-3 04.0 -20.3	-3 59.8 -20.1			
10°	-3 24.3 -20.2	-4 19.9 -20.1			
11°	-3 44.5 -20.2	-4 40.0 -20.0			
12°	-4 04.7 -20.1	-5 00.0 -19.9			
13°	-4 24.8 -20.0	-5 19.9 -19.8			
14°	-4 44.8 -19.9	-5 39.7 -19.7			
15°	-5 04.7 -19.9	-5 59.4 -19.7			
16°	-5 24.6 -19.7	-6 19.1 -19.5			
17°	-5 44.3 -19.7	-6 38.6 -19.4			
18°	-6 04.0 -19.6	-6 58.0 -19.3			
19°	-6 23.6 -19.5	-7 17.3 -19.2			
20°	-6 43.1 -19.3	-7 36.5 -19.0			
21°	-7 02.4 -19.3	-7 55.5 -18.9			
22°	-7 21.7 -19.1	-8 14.4 -18.8			
23°	-7 40.8 -19.0	-8 33.2 -18.7			
24°	-7 59.8 -18.9	-8 51.9 -18.4			
25°	-8 18.7 -18.7	-9 10.3 -18.4			
26°	-8 37.4 -18.6	-9 28.7 -18.2			
27°	-8 56.0 -18.4	-9 46.9 -18.0			
28°	-9 14.4 -18.3				
29°	-9 32.7 -18.1				

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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The data on this page is believed to be accurate but no warranty is given for it's correctness. Use it only for training and exercising!

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.2	68 54.6 -59.8 174.4	68 47.8 -59.5 171.7	68 38.4 -59.1 169.0
1°	68 00.0 -60.0 180.0	67 58.7 -59.9 177.3	67 54.8 -59.8 174.7	67 48.3 -59.5 172.0	67 39.3 -59.2 169.4
2°	67 00.0 -60.0 180.0	66 58.8 -60.0 177.4	66 55.0 -59.8 174.9	66 48.8 -59.6 172.4	66 40.1 -59.2 169.9
3°	66 00.0 -60.0 180.0	65 58.8 -60.0 177.5	65 55.2 -59.8 175.1	65 49.2 -59.5 172.7	65 40.9 -59.2 170.3
4°	65 00.0 -60.0 180.0	64 58.8 -59.9 177.6	64 55.4 -59.8 175.3	64 49.7 -59.7 172.9	64 41.7 -59.4 170.6
5°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.7	63 55.6 -59.9 175.5	63 50.0 -59.6 173.2	63 42.3 -59.3 171.0
6°	63 00.0 -60.0 180.0	62 58.9 -59.9 177.8	62 55.7 -59.8 175.6	62 50.4 -59.7 173.5	62 43.0 -59.5 171.3
7°	62 00.0 -60.0 180.0	61 59.0 -60.0 177.9	61 55.9 -59.9 175.8	61 50.7 -59.7 173.7	61 43.5 -59.4 171.6
8°	61 00.0 -60.0 180.0	60 59.0 -60.0 178.0	60 56.0 -59.9 175.9	60 51.0 -59.7 173.9	60 44.1 -59.5 171.9
9°	60 00.0 -60.0 180.0	59 59.0 -59.9 178.0	59 56.1 -59.8 176.1	59 51.3 -59.7 174.1	59 44.6 -59.5 172.1
10°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.1	58 56.3 -59.9 176.2	58 51.6 -59.7 174.3	58 45.1 -59.5 172.4
11°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.1	57 56.4 -59.9 176.3	57 51.9 -59.8 174.5	57 45.6 -59.6 172.6
12°	57 00.0 -60.0 180.0	56 59.1 -60.0 178.2	56 56.5 -59.9 176.4	56 52.1 -59.8 174.6	56 46.0 -59.6 172.8
13°	56 00.0 -60.0 180.0	55 59.1 -59.9 178.3	55 56.6 -59.9 176.5	55 52.3 -59.7 174.8	55 46.4 -59.6 173.1
14°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.3	54 56.7 -59.9 176.6	54 52.6 -59.8 174.9	54 46.8 -59.6 173.3
15°	54 00.0 -60.0 180.0	53 59.2 -60.0 178.4	53 56.8 -59.9 176.7	53 52.8 -59.8 175.1	53 47.2 -59.7 173.5
16°	53 00.0 -60.0 180.0	52 59.2 -60.0 178.4	52 56.9 -59.9 176.8	52 53.0 -59.8 175.2	52 47.5 -59.6 173.6
17°	52 00.0 -60.0 180.0	51 59.2 -59.9 178.4	51 57.0 -60.0 176.9	51 53.2 -59.8 175.3	51 47.9 -59.7 173.8
18°	51 00.0 -60.0 180.0	50 59.3 -60.0 178.5	50 57.0 -59.9 177.0	50 53.4 -59.9 175.5	50 48.2 -59.7 174.0
19°	50 00.0 -60.0 180.0	49 59.3 -60.0 178.5	49 57.1 -59.9 177.1	49 53.5 -59.8 175.6	49 48.5 -59.7 174.1
20°	49 00.0 -60.0 180.0	48 59.3 -60.0 178.6	48 57.2 -59.9 177.1	48 53.7 -59.8 175.7	48 48.8 -59.7 174.3
21°	48 00.0 -60.0 180.0	47 59.3 -60.0 178.6	47 57.3 -60.0 177.2	47 53.9 -59.9 175.8	47 49.1 -59.7 174.4
22°	47 00.0 -60.0 180.0	46 59.3 -59.9 178.6	46 57.3 -59.9 177.3	46 54.0 -59.8 175.9	46 49.4 -59.7 174.6
23°	46 00.0 -60.0 180.0	45 59.4 -60.0 178.7	45 57.4 -59.9 177.4	45 54.2 -59.9 176.0	45 49.7 -59.8 174.7
24°	45 00.0 -60.0 180.0	44 59.4 -60.0 178.7	44 57.5 -60.0 177.4	44 54.3 -59.8 176.1	44 49.9 -59.7 174.8
25°	44 00.0 -60.0 180.0	43 59.4 -60.0 178.7	43 57.5 -59.9 177.5	43 54.5 -59.9 176.2	43 50.2 -59.8 175.0
26°	43 00.0 -60.0 180.0	42 59.4 -60.0 178.8	42 57.6 -59.9 177.5	42 54.6 -59.9 176.3	42 50.4 -59.8 175.1
27°	42 00.0 -60.0 180.0	41 59.4 -60.0 178.8	41 57.7 -60.0 177.6	41 54.7 -59.8 176.4	41 50.6 -59.7 175.2
28°	41 00.0 -60.0 180.0	40 59.4 -60.0 178.8	40 57.7 -59.9 177.7	40 54.9 -59.9 176.5	40 50.9 -59.8 175.3
29°	40 00.0 -60.0 180.0	39 59.4 -59.9 178.9	39 57.8 -60.0 177.7	39 55.0 -59.9 176.6	39 51.1 -59.8 175.4

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	68 26.3 -58.5 166.3	68 11.8 -58.0 163.7	67 54.9 -57.4 161.1	67 35.5 -56.5 158.6	67 14.0 -55.8 156.2
1°	67 27.8 -58.7 166.9	67 13.8 -58.1 164.3	66 57.5 -57.5 161.9	66 39.0 -56.8 159.4	66 18.2 -56.0 157.1
2°	66 29.1 -58.8 167.4	66 15.7 -58.3 165.0	66 00.0 -57.7 162.6	65 42.2 -57.1 160.2	65 22.2 -56.3 158.0
3°	65 30.3 -58.9 167.9	65 17.4 -58.4 165.5	65 02.3 -57.8 163.2	64 45.1 -57.2 161.0	64 25.9 -56.6 158.8
4°	64 31.4 -58.9 168.3	64 19.0 -58.5 166.1	64 04.5 -58.0 163.9	63 47.9 -57.4 161.7	63 29.3 -56.8 159.5
5°	63 32.5 -59.1 168.8	63 20.5 -58.6 166.6	63 06.5 -58.1 164.4	62 50.5 -57.6 162.3	62 32.5 -57.0 160.2
6°	62 33.4 -59.0 169.2	62 21.9 -58.7 167.0	62 08.4 -58.3 165.0	61 52.9 -57.8 162.9	61 35.5 -57.2 160.9
7°	61 34.4 -59.2 169.5	61 23.2 -58.8 167.5	61 10.1 -58.4 165.5	60 55.1 -57.9 163.5	60 38.3 -57.4 161.5
8°	60 35.2 -59.2 169.9	60 24.4 -58.8 167.9	60 11.7 -58.4 165.9	59 57.2 -58.0 164.0	59 40.9 -57.5 162.1
9°	59 36.0 -59.2 170.2	59 25.6 -58.9 168.3	59 13.3 -58.5 166.4	58 59.2 -58.1 164.5	58 43.4 -57.6 162.7
10°	58 36.8 -59.3 170.5	58 26.7 -59.0 168.7	58 14.8 -58.7 166.8	58 01.1 -58.2 165.0	57 45.8 -57.8 163.2
11°	57 37.5 -59.3 170.8	57 27.7 -59.1 169.0	57 16.1 -58.7 167.2	57 02.9 -58.3 165.5	56 48.0 -57.9 163.7
12°	56 38.2 -59.4 171.1	56 28.6 -59.0 169.3	56 17.4 -58.7 167.6	56 04.6 -58.4 165.9	55 50.1 -58.0 164.2
13°	55 38.8 -59.4 171.3	55 29.6 -59.2 169.6	55 18.7 -58.8 168.0	55 06.2 -58.5 166.3	54 52.1 -58.0 164.6
14°	54 39.4 -59.4 171.6	54 30.4 -59.1 169.9	54 19.9 -58.9 168.3	54 07.7 -58.5 166.7	53 54.1 -58.2 165.1
15°	53 40.0 -59.4 171.8	53 31.3 -59.2 170.2	53 21.0 -58.9 168.6	53 09.2 -58.6 167.0	52 55.9 -58.3 165.5
16°	52 40.6 -59.5 172.1	52 32.1 -59.3 170.5	52 22.1 -59.0 168.9	52 10.6 -58.7 167.4	51 57.6 -58.3 165.9
17°	51 41.1 -59.5 172.3	51 32.8 -59.2 170.8	51 23.1 -59.0 169.2	51 11.9 -58.7 167.7	50 59.3 -58.4 166.3
18°	50 41.6 -59.5 172.5	50 33.6 -59.3 171.0	50 24.1 -59.1 169.5	50 13.2 -58.8 168.1	50 00.9 -58.5 166.6
19°	49 42.1 -59.5 172.7	49 34.3 -59.4 171.2	49 25.0 -59.1 169.8	49 14.4 -58.8 168.4	49 02.4 -58.5 167.0
20°	48 42.6 -59.6 172.9	48 34.9 -59.3 171.5	48 25.9 -59.1 170.1	48 15.6 -58.9 168.7	48 03.9 -58.5 167.3
21°	47 43.0 -59.6 173.1	47 35.6 -59.4 171.7	47 26.8 -59.2 170.3	47 16.7 -58.9 169.0	47 05.4 -58.7 167.6
22°	46 43.4 -59.5 173.2	46 36.2 -59.4 171.9	46 27.6 -59.2 170.6	46 17.8 -58.9 169.2	46 06.7 -58.7 167.9
23°	45 43.9 -59.6 173.4	45 36.8 -59.4 172.1	45 28.4 -59.2 170.8	45 18.9 -59.0 169.5	45 08.0 -58.7 168.2
24°	44 44.3 -59.7 173.6	44 37.4 -59.5 172.3	44 29.2 -59.2 171.0	44 19.9 -59.0 169.8	44 09.3 -58.7 168.5
25°	43 44.6 -59.6 173.7	43 37.9 -59.4 172.5	43 30.0 -59.3 171.2	43 20.9 -59.1 170.0	43 10.6 -58.8 168.8
26°	42 45.0 -59.6 173.9	42 38.5 -59.5 172.7	42 30.7 -59.3 171.5	42 21.8 -59.1 170.3	42 11.8 -58.9 169.1
27°	41 45.4 -59.7 174.0	41 39.0 -59.5 172.8	41 31.4 -59.3 171.7	41 22.7 -59.1 170.5	41 12.9 -58.9 169.3
28°	40 45.7 -59.6 174.2	40 39.5 -59.5 173.0	40 32.1 -59.3 171.9	40 23.6 -59.1 170.7	40 14.0 -58.9 169.6
29°	39 46.1 -59.7 174.3	39 40.0 -59.5 173.2	39 32.8 -59.4 172.1	39 24.5 -59.2 170.9	39 15.1 -58.9 169.8

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	66 50.3 -54.9 153.8	66 24.6 -54.0 151.5	65 56.9 -53.0 149.3	65 27.4 -52.0 147.2	64 56.3 -51.1 145.2
1°	65 55.4 -55.2 154.8	65 30.6 -54.4 152.6	65 03.9 -53.5 150.5	64 35.4 -52.6 148.4	64 05.2 -51.6 146.4
2°	65 00.2 -55.6 155.8	64 36.2 -54.7 153.6	64 10.4 -53.9 151.5	63 42.8 -53.0 149.5	63 13.6 -52.2 147.5
3°	64 04.6 -55.9 156.6	63 41.5 -55.1 154.5	63 16.5 -54.3 152.5	62 49.8 -53.5 150.5	62 21.4 -52.6 148.6
4°	63 08.7 -56.1 157.5	62 46.4 -55.5 155.4	62 22.2 -54.7 153.4	61 56.3 -53.9 151.5	61 28.8 -53.1 149.6
5°	62 12.6 -56.4 158.2	61 50.9 -55.7 156.2	61 27.5 -55.0 154.3	61 02.4 -54.2 152.4	60 35.7 -53.5 150.6
6°	61 16.2 -56.5 158.9	60 55.2 -55.9 157.0	60 32.5 -55.2 155.1	60 08.2 -54.6 153.3	59 42.2 -53.8 151.5
7°	60 19.7 -56.8 159.6	59 59.3 -56.2 157.8	59 37.3 -55.6 155.9	59 13.6 -54.9 154.1	58 48.4 -54.2 152.4
8°	59 22.9 -57.0 160.3	59 03.1 -56.4 158.4	58 41.7 -55.7 156.7	58 18.7 -55.1 154.9	57 54.2 -54.4 153.2
9°	58 25.9 -57.1 160.9	58 06.7 -56.5 159.1	57 46.0 -56.0 157.4	57 23.6 -55.4 155.6	56 59.8 -54.8 154.0
10°	57 28.8 -57.3 161.5	57 10.2 -56.8 159.7	56 50.0 -56.2 158.0	56 28.2 -55.6 156.4	56 05.0 -54.9 154.7
11°	56 31.5 -57.4 162.0	56 13.4 -56.9 160.3	55 53.8 -56.4 158.7	55 32.6 -55.8 157.0	55 10.1 -55.3 155.4
12°	55 34.1 -57.6 162.5	55 16.5 -57.1 160.9	54 57.4 -56.6 159.3	54 36.8 -56.0 157.7	54 14.8 -55.4 156.1
13°	54 36.5 -57.6 163.0	54 19.4 -57.2 161.4	54 00.8 -56.7 159.8	53 40.8 -56.2 158.3	53 19.4 -55.7 156.8
14°	53 38.9 -57.8 163.5	53 22.2 -57.3 161.9	53 04.1 -56.8 160.4	52 44.6 -56.3 158.9	52 23.7 -55.8 157.4
15°	52 41.1 -57.8 163.9	52 24.9 -57.4 162.4	52 07.3 -57.0 160.9	51 48.3 -56.5 159.4	51 27.9 -56.0 158.0
16°	51 43.3 -58.0 164.4	51 27.5 -57.6 162.9	51 10.3 -57.1 161.4	50 51.8 -56.7 160.0	50 31.9 -56.2 158.5
17°	50 45.3 -58.0 164.8	50 29.9 -57.6 163.3	50 13.2 -57.3 161.9	49 55.1 -56.8 160.5	49 35.7 -56.3 159.1
18°	49 47.3 -58.2 165.2	49 32.3 -57.8 163.8	49 15.9 -57.3 162.4	48 58.3 -56.9 161.0	48 39.4 -56.4 159.6
19°	48 49.1 -58.1 165.6	48 34.5 -57.8 164.2	48 18.6 -57.4 162.8	48 01.4 -57.0 161.5	47 43.0 -56.6 160.1
20°	47 51.0 -58.3 165.9	47 36.7 -57.9 164.6	47 21.2 -57.6 163.2	47 04.4 -57.1 161.9	46 46.4 -56.7 160.6
21°	46 52.7 -58.3 166.3	46 38.8 -58.0 165.0	46 23.6 -57.6 163.7	46 07.3 -57.3 162.4	45 49.7 -56.8 161.1
22°	45 54.4 -58.4 166.6	45 40.8 -58.0 165.3	45 26.0 -57.7 164.1	45 10.0 -57.3 162.8	44 52.9 -56.9 161.5
23°	44 56.0 -58.4 167.0	44 42.8 -58.2 165.7	44 28.3 -57.8 164.4	44 12.7 -57.4 163.2	43 56.0 -57.1 162.0
24°	43 57.6 -58.5 167.3	43 44.6 -58.1 166.0	43 30.5 -57.8 164.8	43 15.3 -57.5 163.6	42 58.9 -57.1 162.4
25°	42 59.1 -58.5 167.6	42 46.5 -58.3 166.4	42 32.7 -57.9 165.2	42 17.8 -57.6 164.0	42 01.8 -57.2 162.8
26°	42 00.6 -58.6 167.9	41 48.2 -58.3 166.7	41 34.8 -58.0 165.5	41 20.2 -57.6 164.4	41 04.6 -57.3 163.2
27°	41 02.0 -58.6 168.2	40 49.9 -58.3 167.0	40 36.8 -58.0 165.9	40 22.6 -57.7 164.7	40 07.3 -57.3 163.6
28°	40 03.4 -58.7 168.4	39 51.6 -58.4 167.3	39 38.8 -58.1 166.2	39 24.9 -57.8 165.1	39 10.0 -57.5 164.0
29°	39 04.7 -58.7 168.7	38 53.2 -58.4 167.6	38 40.7 -58.2 166.5	38 27.1 -57.8 165.4	38 12.5 -57.5 164.4

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	64 23.5 -50.1 143.2	63 49.2 -49.1 141.3	63 13.5 -48.1 139.5	62 36.5 -47.1 137.8	61 58.3 -46.1 136.1
1°	63 33.4 -50.7 144.5	63 00.1 -49.7 142.6	62 25.4 -48.8 140.8	61 49.4 -47.8 139.1	61 12.2 -47.0 137.5
2°	62 42.7 -51.2 145.7	62 10.4 -50.4 143.8	61 36.6 -49.4 142.1	61 01.6 -48.6 140.4	60 25.2 -47.6 138.8
3°	61 51.5 -51.8 146.8	61 20.0 -50.9 145.0	60 47.2 -50.0 143.3	60 13.0 -49.1 141.6	59 37.6 -48.2 140.0
4°	60 59.7 -52.3 147.8	60 29.1 -51.4 146.1	59 57.2 -50.6 144.4	59 23.9 -49.7 142.7	58 49.4 -48.9 141.1
5°	60 07.4 -52.6 148.8	59 37.7 -51.9 147.1	59 06.6 -51.0 145.4	58 34.2 -50.3 143.8	58 00.5 -49.4 142.3
6°	59 14.8 -53.1 149.8	58 45.8 -52.3 148.1	58 15.6 -51.6 146.4	57 43.9 -50.7 144.9	57 11.1 -49.9 143.3
7°	58 21.7 -53.4 150.7	57 53.5 -52.6 149.0	57 24.0 -51.9 147.4	56 53.2 -51.1 145.8	56 21.2 -50.4 144.3
8°	57 28.3 -53.8 151.5	57 00.9 -53.1 149.9	56 32.1 -52.3 148.3	56 02.1 -51.6 146.8	55 30.8 -50.9 145.3
9°	56 34.5 -54.1 152.3	56 07.8 -53.4 150.8	55 39.8 -52.7 149.2	55 10.5 -52.0 147.7	54 39.9 -51.2 146.2
10°	55 40.4 -54.3 153.1	55 14.4 -53.7 151.6	54 47.1 -53.0 150.0	54 18.5 -52.3 148.6	53 48.7 -51.6 147.1
11°	54 46.1 -54.6 153.9	54 20.7 -53.9 152.3	53 54.1 -53.3 150.8	53 26.2 -52.7 149.4	52 57.1 -52.0 148.0
12°	53 51.5 -54.9 154.6	53 26.8 -54.3 153.1	53 00.8 -53.6 151.6	52 33.5 -52.9 150.2	52 05.1 -52.3 148.8
13°	52 56.6 -55.1 155.3	52 32.5 -54.5 153.8	52 07.2 -53.9 152.4	51 40.6 -53.3 151.0	51 12.8 -52.6 149.6
14°	52 01.5 -55.2 155.9	51 38.0 -54.7 154.5	51 13.3 -54.1 153.1	50 47.3 -53.5 151.7	50 20.2 -52.9 150.3
15°	51 06.3 -55.5 156.5	50 43.3 -54.9 155.1	50 19.2 -54.4 153.7	49 53.8 -53.8 152.4	49 27.3 -53.2 151.1
16°	50 10.8 -55.7 157.1	49 48.4 -55.1 155.8	49 24.8 -54.6 154.4	49 00.0 -54.0 153.1	48 34.1 -53.4 151.8
17°	49 15.1 -55.8 157.7	48 53.3 -55.3 156.4	48 30.2 -54.7 155.0	48 06.0 -54.2 153.7	47 40.7 -53.7 152.5
18°	48 19.3 -56.0 158.3	47 58.0 -55.5 157.0	47 35.5 -55.0 155.7	47 11.8 -54.4 154.4	46 47.0 -53.9 153.1
19°	47 23.3 -56.1 158.8	47 02.5 -55.6 157.5	46 40.5 -55.1 156.2	46 17.4 -54.6 155.0	45 53.1 -54.0 153.8
20°	46 27.2 -56.2 159.3	46 06.9 -55.8 158.1	45 45.4 -55.3 156.8	45 22.8 -54.8 155.6	44 59.1 -54.3 154.4
21°	45 31.0 -56.4 159.8	45 11.1 -55.9 158.6	44 50.1 -55.5 157.4	44 28.0 -55.0 156.2	44 04.8 -54.5 155.0
22°	44 34.6 -56.5 160.3	44 15.2 -56.1 159.1	43 54.6 -55.6 157.9	43 33.0 -55.1 156.7	43 10.3 -54.6 155.5
23°	43 38.1 -56.6 160.8	43 19.1 -56.2 159.6	42 59.0 -55.7 158.4	42 37.9 -55.3 157.3	42 15.7 -54.8 156.1
24°	42 41.5 -56.7 161.2	42 22.9 -56.3 160.1	42 03.3 -55.9 158.9	41 42.6 -55.4 157.8	41 20.9 -54.9 156.7
25°	41 44.8 -56.9 161.7	41 26.6 -56.4 160.5	41 07.4 -56.0 159.4	40 47.2 -55.5 158.3	40 26.0 -55.1 157.2
26°	40 47.9 -57.0 162.1	40 30.2 -56.5 161.0	40 11.4 -56.1 159.9	39 51.7 -55.7 158.8	39 30.9 -55.2 157.7
27°	39 51.0 -57.0 162.5	39 33.7 -56.6 161.4	39 15.3 -56.2 160.3	38 56.0 -55.8 159.3	38 35.7 -55.3 158.2
28°	38 54.0 -57.0 162.9	38 37.1 -56.7 161.9	38 19.1 -56.3 160.8	38 00.2 -55.9 159.7	37 40.4 -55.5 158.7
29°	37 57.0 -57.2 163.3	37 40.4 -56.8 162.3	37 22.8 -56.3 161.2	37 04.3 -55.9 160.2	36 44.9 -55.6 159.2

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	61 18.9 -45.2 134.6	60 38.5 -44.3 133.0	59 57.1 -43.4 131.6	59 14.7 -42.5 130.2	58 31.5 -41.6 128.8
1°	60 33.7 -46.0 135.9	59 54.2 -45.1 134.4	59 13.7 -44.2 132.9	58 32.2 -43.3 131.5	57 49.9 -42.5 130.2
2°	59 47.7 -46.7 137.2	59 09.1 -45.8 135.7	58 29.5 -44.9 134.2	57 48.9 -44.1 132.9	57 07.4 -43.3 131.5
3°	59 01.0 -47.4 138.4	58 23.3 -46.5 136.9	57 44.6 -45.7 135.5	57 04.8 -44.8 134.1	56 24.1 -44.0 132.8
4°	58 13.6 -48.0 139.6	57 36.8 -47.2 138.1	56 58.9 -46.4 136.7	56 20.0 -45.5 135.3	55 40.1 -44.7 134.0
5°	57 25.6 -48.6 140.7	56 49.6 -47.8 139.3	56 12.5 -46.9 137.9	55 34.5 -46.2 136.5	54 55.4 -45.3 135.2
6°	56 37.0 -49.1 141.8	56 01.8 -48.3 140.4	55 25.6 -47.5 139.0	54 48.3 -46.7 137.6	54 10.1 -46.0 136.3
7°	55 47.9 -49.6 142.8	55 13.5 -48.8 141.4	54 38.1 -48.1 140.0	54 01.6 -47.3 138.7	53 24.1 -46.5 137.4
8°	54 58.3 -50.1 143.8	54 24.7 -49.4 142.4	53 50.0 -48.6 141.1	53 14.3 -47.9 139.7	52 37.6 -47.1 138.4
9°	54 08.2 -50.5 144.8	53 35.3 -49.7 143.4	53 01.4 -49.0 142.0	52 26.4 -48.3 140.7	51 50.5 -47.6 139.4
10°	53 17.7 -50.9 145.7	52 45.6 -50.2 144.3	52 12.4 -49.5 143.0	51 38.1 -48.7 141.7	51 02.9 -48.0 140.4
11°	52 26.8 -51.3 146.6	51 55.4 -50.6 145.2	51 22.9 -49.9 143.9	50 49.4 -49.2 142.6	50 14.9 -48.5 141.4
12°	51 35.5 -51.7 147.4	51 04.8 -51.0 146.1	50 33.0 -50.3 144.8	50 00.2 -49.6 143.5	49 26.4 -48.9 142.3
13°	50 43.8 -51.9 148.2	50 13.8 -51.3 146.9	49 42.7 -50.6 145.6	49 10.6 -50.0 144.4	48 37.5 -49.3 143.2
14°	49 51.9 -52.3 149.0	49 22.5 -51.6 147.7	48 52.1 -51.0 146.5	48 20.6 -50.3 145.2	47 48.2 -49.7 144.0
15°	48 59.6 -52.6 149.8	48 30.9 -52.0 148.5	48 01.1 -51.3 147.3	47 30.3 -50.7 146.0	46 58.5 -50.0 144.8
16°	48 07.0 -52.8 150.5	47 38.9 -52.2 149.2	47 09.8 -51.6 148.0	46 39.6 -51.0 146.8	46 08.5 -50.4 145.6
17°	47 14.2 -53.1 151.2	46 46.7 -52.5 150.0	46 18.2 -51.9 148.8	45 48.6 -51.2 147.6	45 18.1 -50.6 146.4
18°	46 21.1 -53.3 151.9	45 54.2 -52.7 150.7	45 26.3 -52.2 149.5	44 57.4 -51.6 148.3	44 27.5 -51.0 147.2
19°	45 27.8 -53.5 152.5	45 01.5 -53.0 151.4	44 34.1 -52.4 150.2	44 05.8 -51.8 149.0	43 36.5 -51.2 147.9
20°	44 34.3 -53.7 153.2	44 08.5 -53.2 152.0	43 41.7 -52.6 150.9	43 14.0 -52.1 149.7	42 45.3 -51.5 148.6
21°	43 40.6 -54.0 153.8	43 15.3 -53.4 152.7	42 49.1 -52.8 151.5	42 21.9 -52.3 150.4	41 53.8 -51.7 149.3
22°	42 46.6 -54.1 154.4	42 21.9 -53.5 153.3	41 56.3 -53.1 152.2	41 29.6 -52.5 151.1	41 02.1 -52.0 150.0
23°	41 52.5 -54.3 155.0	41 28.4 -53.8 153.9	41 03.2 -53.2 152.8	40 37.1 -52.7 151.7	40 10.1 -52.1 150.7
24°	40 58.2 -54.4 155.6	40 34.6 -54.0 154.5	40 10.0 -53.5 153.4	39 44.4 -52.9 152.3	39 18.0 -52.4 151.3
25°	40 03.8 -54.6 156.1	39 40.6 -54.1 155.0	39 16.5 -53.6 154.0	38 51.5 -53.1 153.0	38 25.6 -52.6 151.9
26°	39 09.2 -54.8 156.6	38 46.5 -54.3 155.6	38 22.9 -53.8 154.6	37 58.4 -53.3 153.5	37 33.0 -52.8 152.5
27°	38 14.4 -54.8 157.2	37 52.2 -54.4 156.1	37 29.1 -53.9 155.1	37 05.1 -53.4 154.1	36 40.2 -52.9 153.1
28°	37 19.6 -55.1 157.7	36 57.8 -54.5 156.7	36 35.2 -54.1 155.7	36 11.7 -53.6 154.7	35 47.3 -53.1 153.7
29°	36 24.5 -55.1 158.2	36 03.3 -54.7 157.2	35 41.1 -54.2 156.2	35 18.1 -53.8 155.2	34 54.2 -53.3 154.3

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	57 47.5 -40.8 127.5	57 02.7 -40.0 126.3	56 17.2 -39.2 125.1	55 31.1 -38.5 124.0	54 44.3 -37.7 122.9
1°	57 06.7 -41.7 128.9	56 22.7 -40.8 127.7	55 38.0 -40.0 126.5	54 52.6 -39.2 125.3	54 06.6 -38.5 124.2
2°	56 25.0 -42.4 130.2	55 41.9 -41.7 129.0	54 58.0 -40.9 127.8	54 13.4 -40.2 126.6	53 28.1 -39.4 125.5
3°	55 42.6 -43.2 131.5	55 00.2 -42.4 130.2	54 17.1 -41.6 129.0	53 33.2 -40.8 127.9	52 48.7 -40.1 126.8
4°	54 59.4 -43.9 132.7	54 17.8 -43.1 131.5	53 35.5 -42.4 130.3	52 52.4 -41.7 129.1	52 08.6 -40.9 128.0
5°	54 15.5 -44.6 133.9	53 34.7 -43.8 132.6	52 53.1 -43.0 131.5	52 10.7 -42.3 130.3	51 27.7 -41.6 129.2
6°	53 30.9 -45.2 135.0	52 50.9 -44.4 133.8	52 10.1 -43.7 132.6	51 28.4 -42.9 131.4	50 46.1 -42.2 130.3
7°	52 45.7 -45.8 136.1	52 06.5 -45.1 134.9	51 26.4 -44.3 133.7	50 45.5 -43.6 132.6	50 03.9 -42.9 131.4
8°	51 59.9 -46.3 137.2	51 21.4 -45.6 136.0	50 42.1 -44.9 134.8	50 01.9 -44.1 133.6	49 21.0 -43.4 132.5
9°	51 13.6 -46.8 138.2	50 35.8 -46.1 137.0	49 57.2 -45.4 135.8	49 17.8 -44.7 134.7	48 37.6 -44.0 133.6
10°	50 26.8 -47.4 139.2	49 49.7 -46.6 138.0	49 11.8 -45.9 136.8	48 33.1 -45.2 135.7	47 53.6 -44.6 134.6
11°	49 39.4 -47.8 140.1	49 03.1 -47.1 139.0	48 25.9 -46.4 137.8	47 47.9 -45.7 136.7	47 09.0 -45.0 135.6
12°	48 51.6 -48.2 141.1	48 16.0 -47.5 139.9	47 39.5 -46.9 138.8	47 02.2 -46.2 137.6	46 24.0 -45.5 136.6
13°	48 03.4 -48.6 142.0	47 28.5 -48.0 140.8	46 52.6 -47.2 139.7	46 16.0 -46.6 138.6	45 38.5 -45.9 137.5
14°	47 14.8 -49.0 142.8	46 40.5 -48.3 141.7	46 05.4 -47.7 140.6	45 29.4 -47.1 139.5	44 52.6 -46.4 138.4
15°	46 25.8 -49.4 143.7	45 52.2 -48.8 142.5	45 17.7 -48.1 141.4	44 42.3 -47.4 140.4	44 06.2 -46.8 139.3
16°	45 36.4 -49.7 144.5	45 03.4 -49.0 143.4	44 29.6 -48.5 142.3	43 54.9 -47.8 141.2	43 19.4 -47.1 140.2
17°	44 46.7 -50.0 145.3	44 14.4 -49.5 144.2	43 41.1 -48.7 143.1	43 07.1 -48.2 142.0	42 32.3 -47.6 141.0
18°	43 56.7 -50.4 146.1	43 24.9 -49.7 145.0	42 52.4 -49.1 143.9	42 18.9 -48.4 142.9	41 44.7 -47.8 141.8
19°	43 06.3 -50.6 146.8	42 35.2 -50.0 145.7	42 03.3 -49.5 144.7	41 30.5 -48.8 143.6	40 56.9 -48.2 142.6
20°	42 15.7 -50.9 147.5	41 45.2 -50.3 146.5	41 13.8 -49.7 145.4	40 41.7 -49.2 144.4	40 08.7 -48.5 143.4
21°	41 24.8 -51.2 148.3	40 54.9 -50.6 147.2	40 24.1 -50.0 146.2	39 52.5 -49.3 145.2	39 20.2 -48.8 144.2
22°	40 33.6 -51.3 149.0	40 04.3 -50.8 147.9	39 34.1 -50.2 146.9	39 03.2 -49.7 145.9	38 31.4 -49.1 144.9
23°	39 42.3 -51.7 149.6	39 13.5 -51.1 148.6	38 43.9 -50.5 147.6	38 13.5 -49.9 146.6	37 42.3 -49.4 145.7
24°	38 50.6 -51.8 150.3	38 22.4 -51.2 149.3	37 53.4 -50.7 148.3	37 23.6 -50.2 147.3	36 52.9 -49.6 146.4
25°	37 58.8 -52.1 150.9	37 31.2 -51.6 149.9	37 02.7 -51.0 149.0	36 33.4 -50.4 148.0	36 03.3 -49.8 147.1
26°	37 06.7 -52.2 151.6	36 39.6 -51.7 150.6	36 11.7 -51.1 149.6	35 43.0 -50.6 148.7	35 13.5 -50.0 147.8
27°	36 14.5 -52.4 152.2	35 47.9 -51.9 151.2	35 20.6 -51.4 150.3	34 52.4 -50.8 149.3	34 23.5 -50.3 148.4
28°	35 22.1 -52.6 152.8	34 56.0 -52.0 151.8	34 29.2 -51.5 150.9	34 01.6 -51.0 150.0	33 33.2 -50.5 149.1
29°	34 29.5 -52.8 153.4	34 04.0 -52.3 152.4	33 37.7 -51.8 151.5	33 10.6 -51.3 150.6	32 42.7 -50.7 149.7

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	53 57.0 -37.0 121.8	53 09.2 -36.3 120.8	52 20.8 -35.6 119.8	51 32.0 -35.0 118.9	50 42.7 -34.4 118.0
1°	53 20.0 -37.8 123.2	52 32.9 -37.2 122.1	51 45.2 -36.5 121.1	50 57.0 -35.9 120.2	50 08.3 -35.2 119.3
2°	52 42.2 -38.7 124.4	51 55.7 -38.0 123.4	51 08.7 -37.3 122.4	50 21.1 -36.6 121.5	49 33.1 -36.0 120.5
3°	52 03.5 -39.4 125.7	51 17.7 -38.7 124.7	50 31.4 -38.1 123.7	49 44.5 -37.4 122.7	48 57.1 -36.8 121.7
4°	51 24.1 -40.2 126.9	50 39.0 -39.5 125.9	49 53.3 -38.8 124.9	49 07.1 -38.2 123.9	48 20.3 -37.5 122.9
5°	50 43.9 -40.8 128.1	49 59.5 -40.1 127.1	49 14.5 -39.5 126.0	48 28.9 -38.8 125.1	47 42.8 -38.2 124.1
6°	50 03.1 -41.6 129.2	49 19.4 -40.9 128.2	48 35.0 -40.1 127.2	47 50.1 -39.5 126.2	47 04.6 -38.8 125.3
7°	49 21.5 -42.1 130.4	48 38.5 -41.4 129.3	47 54.9 -40.8 128.3	47 10.6 -40.1 127.3	46 25.8 -39.5 126.4
8°	48 39.4 -42.8 131.4	47 57.1 -42.1 130.4	47 14.1 -41.4 129.4	46 30.5 -40.7 128.4	45 46.3 -40.1 127.4
9°	47 56.6 -43.3 132.5	47 15.0 -42.6 131.5	46 32.7 -42.0 130.4	45 49.8 -41.4 129.5	45 06.2 -40.7 128.5
10°	47 13.3 -43.8 133.5	46 32.4 -43.2 132.5	45 50.7 -42.5 131.5	45 08.4 -41.8 130.5	44 25.5 -41.2 129.5
11°	46 29.5 -44.4 134.5	45 49.2 -43.7 133.5	45 08.2 -43.0 132.5	44 26.6 -42.4 131.5	43 44.3 -41.7 130.6
12°	45 45.1 -44.8 135.5	45 05.5 -44.2 134.5	44 25.2 -43.5 133.5	43 44.2 -42.9 132.5	43 02.6 -42.2 131.5
13°	45 00.3 -45.3 136.4	44 21.3 -44.6 135.4	43 41.7 -44.0 134.4	43 01.3 -43.3 133.5	42 20.4 -42.7 132.5
14°	44 15.0 -45.7 137.4	43 36.7 -45.1 136.4	42 57.7 -44.4 135.4	42 18.0 -43.8 134.4	41 37.7 -43.2 133.5
15°	43 29.3 -46.2 138.3	42 51.6 -45.5 137.3	42 13.3 -44.9 136.3	41 34.2 -44.2 135.3	40 54.5 -43.6 134.4
16°	42 43.1 -46.5 139.1	42 06.1 -45.9 138.1	41 28.4 -45.3 137.2	40 50.0 -44.7 136.2	40 10.9 -44.0 135.3
17°	41 56.6 -46.9 140.0	41 20.2 -46.2 139.0	40 43.1 -45.6 138.0	40 05.3 -45.0 137.1	39 26.9 -44.4 136.2
18°	41 09.7 -47.2 140.8	40 34.0 -46.7 139.8	39 57.5 -46.0 138.9	39 20.3 -45.4 138.0	38 42.5 -44.8 137.0
19°	40 22.5 -47.6 141.6	39 47.3 -46.9 140.7	39 11.5 -46.4 139.7	38 34.9 -45.7 138.8	37 57.7 -45.1 137.9
20°	39 34.9 -47.9 142.4	39 00.4 -47.3 141.5	38 25.1 -46.7 140.5	37 49.2 -46.1 139.6	37 12.6 -45.5 138.7
21°	38 47.0 -48.2 143.2	38 13.1 -47.6 142.3	37 38.4 -47.0 141.3	37 03.1 -46.4 140.4	36 27.1 -45.8 139.5
22°	37 58.8 -48.5 144.0	37 25.5 -47.9 143.0	36 51.4 -47.3 142.1	36 16.7 -46.7 141.2	35 41.3 -46.1 140.3
23°	37 10.3 -48.8 144.7	36 37.6 -48.2 143.8	36 04.1 -47.6 142.9	35 30.0 -47.0 142.0	34 55.2 -46.5 141.1
24°	36 21.5 -49.0 145.4	35 49.4 -48.4 144.5	35 16.5 -47.8 143.6	34 43.0 -47.3 142.7	34 08.7 -46.7 141.9
25°	35 32.5 -49.2 146.2	35 01.0 -48.7 145.3	34 28.7 -48.1 144.4	33 55.7 -47.5 143.5	33 22.0 -46.9 142.6
26°	34 43.3 -49.5 146.9	34 12.3 -49.0 146.0	33 40.6 -48.4 145.1	33 08.2 -47.8 144.2	32 35.1 -47.2 143.4
27°	33 53.8 -49.8 147.5	33 23.3 -49.1 146.7	32 52.2 -48.6 145.8	32 20.4 -48.1 144.9	31 47.9 -47.5 144.1
28°	33 04.0 -49.9 148.2	32 34.2 -49.4 147.3	32 03.6 -48.8 146.5	31 32.3 -48.2 145.7	31 00.4 -47.7 144.8
29°	32 14.1 -50.1 148.9	31 44.8 -49.6 148.0	31 14.8 -49.1 147.2	30 44.1 -48.5 146.3	30 12.7 -47.9 145.5

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	49 53.1 -33.8 117.1	49 03.0 -33.2 116.3	48 12.6 -32.7 115.4	47 21.8 -32.1 114.6	46 30.8 -31.7 113.9
1°	49 19.3 -34.7 118.4	48 29.8 -34.1 117.5	47 39.9 -33.5 116.7	46 49.7 -32.9 115.9	45 59.1 -32.4 115.1
2°	48 44.6 -35.4 119.6	47 55.7 -34.8 118.8	47 06.4 -34.2 117.9	46 16.8 -33.7 117.1	45 26.7 -33.2 116.3
3°	48 09.2 -36.1 120.8	47 20.9 -35.5 120.0	46 32.2 -35.0 119.1	45 43.1 -34.5 118.3	44 53.5 -33.8 117.5
4°	47 33.1 -36.9 122.0	46 45.4 -36.3 121.1	45 57.2 -35.7 120.3	45 08.6 -35.1 119.5	44 19.7 -34.6 118.6
5°	46 56.2 -37.6 123.2	46 09.1 -37.0 122.3	45 21.5 -36.3 121.4	44 33.5 -35.8 120.6	43 45.1 -35.2 119.8
6°	46 18.6 -38.2 124.3	45 32.1 -37.6 123.4	44 45.2 -37.1 122.6	43 57.7 -36.4 121.7	43 09.9 -35.9 120.9
7°	45 40.4 -38.8 125.4	44 54.5 -38.2 124.5	44 08.1 -37.6 123.7	43 21.3 -37.1 122.8	42 34.0 -36.5 122.0
8°	45 01.6 -39.5 126.5	44 16.3 -38.9 125.6	43 30.5 -38.2 124.7	42 44.2 -37.6 123.9	41 57.5 -37.1 123.1
9°	44 22.1 -40.0 127.6	43 37.4 -39.4 126.7	42 52.3 -38.8 125.8	42 06.6 -38.2 124.9	41 20.4 -37.6 124.1
10°	43 42.1 -40.6 128.6	42 58.0 -39.9 127.7	42 13.5 -39.4 126.8	41 28.4 -38.8 126.0	40 42.8 -38.2 125.2
11°	43 01.5 -41.1 129.6	42 18.1 -40.5 128.7	41 34.1 -39.9 127.9	40 49.6 -39.3 127.0	40 04.6 -38.7 126.2
12°	42 20.4 -41.6 130.6	41 37.6 -41.0 129.7	40 54.2 -40.4 128.8	40 10.3 -39.8 128.0	39 25.9 -39.2 127.2
13°	41 38.8 -42.1 131.6	40 56.6 -41.5 130.7	40 13.8 -40.8 129.8	39 30.5 -40.2 129.0	38 46.7 -39.6 128.1
14°	40 56.7 -42.6 132.5	40 15.1 -41.9 131.6	39 33.3 -41.3 130.8	38 50.3 -40.7 129.9	38 07.1 -40.2 129.1
15°	40 14.1 -42.9 133.5	39 33.2 -42.4 132.6	38 51.7 -41.8 131.7	38 09.6 -41.2 130.9	37 26.9 -40.5 130.0
16°	39 31.2 -43.4 134.4	38 50.8 -42.8 133.5	38 09.9 -42.2 132.6	37 28.4 -41.6 131.8	36 46.4 -41.0 131.0
17°	38 47.8 -43.8 135.3	38 08.0 -43.1 134.4	37 27.7 -42.6 133.5	36 46.8 -42.0 132.7	36 05.4 -41.4 131.9
18°	38 04.0 -44.2 136.1	37 24.9 -43.6 135.3	36 45.1 -42.9 134.4	36 04.8 -42.3 133.6	35 24.0 -41.8 132.8
19°	37 19.8 -44.5 137.0	36 41.3 -43.9 136.1	36 02.2 -43.4 135.3	35 22.5 -42.8 134.4	34 42.2 -42.2 133.6
20°	36 35.3 -44.9 137.8	35 57.4 -44.3 137.0	35 18.8 -43.6 136.1	34 39.7 -43.1 135.3	34 00.0 -42.5 134.5
21°	35 50.4 -45.2 138.7	35 13.1 -44.6 137.8	34 35.2 -44.1 137.0	33 56.6 -43.4 136.1	33 17.5 -42.8 135.3
22°	35 05.2 -45.5 139.5	34 28.5 -45.0 138.6	33 51.1 -44.3 137.8	33 13.2 -43.8 137.0	32 34.7 -43.2 136.2
23°	34 19.7 -45.9 140.3	33 43.5 -45.2 139.4	33 06.8 -44.7 138.6	32 29.4 -44.0 137.8	31 51.5 -43.5 137.0
24°	33 33.8 -46.1 141.0	32 58.3 -45.5 140.2	32 22.1 -44.9 139.4	31 45.4 -44.4 138.6	31 08.0 -43.7 137.8
25°	32 47.7 -46.4 141.8	32 12.8 -45.8 141.0	31 37.2 -45.2 140.2	31 01.0 -44.6 139.4	30 24.3 -44.1 138.6
26°	32 01.3 -46.6 142.6	31 27.0 -46.1 141.7	30 52.0 -45.5 140.9	30 16.4 -44.9 140.2	29 40.2 -44.3 139.4
27°	31 14.7 -46.9 143.3	30 40.9 -46.3 142.5	30 06.5 -45.8 141.7	29 31.5 -45.2 140.9	28 55.9 -44.6 140.2
28°	30 27.8 -47.1 144.0	29 54.6 -46.6 143.2	29 20.7 -46.0 142.4	28 46.3 -45.4 141.7	28 11.3 -44.9 140.9
29°	29 40.7 -47.4 144.7	29 08.0 -46.8 143.9	28 34.7 -46.2 143.2	28 00.9 -45.7 142.4	27 26.4 -45.1 141.7

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Declination CONTRARY name to Latitude

Latitude 21°

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	45 39.4 -31.2 113.1	44 47.7 -30.6 112.4	43 55.8 -30.2 111.7	43 03.7 -29.8 111.0	42 11.3 -29.4 110.4
1°	45 08.2 -31.9 114.3	44 17.1 -31.5 113.6	43 25.6 -31.0 112.9	42 33.9 -30.5 112.2	41 41.9 -30.1 111.5
2°	44 36.3 -32.6 115.5	43 45.6 -32.1 114.8	42 54.6 -31.6 114.1	42 03.4 -31.3 113.4	41 11.8 -30.8 112.7
3°	44 03.7 -33.4 116.7	43 13.5 -32.9 116.0	42 23.0 -32.4 115.2	41 32.1 -31.8 114.5	40 41.0 -31.4 113.8
4°	43 30.3 -34.0 117.9	42 40.6 -33.5 117.1	41 50.6 -33.0 116.4	41 00.3 -32.6 115.6	40 09.6 -32.0 114.9
5°	42 56.3 -34.7 119.0	42 07.1 -34.1 118.2	41 17.6 -33.7 117.5	40 27.7 -33.1 116.8	39 37.6 -32.7 116.0
6°	42 21.6 -35.3 120.1	41 33.0 -34.8 119.3	40 43.9 -34.2 118.6	39 54.6 -33.8 117.8	39 04.9 -33.3 117.1
7°	41 46.3 -35.9 121.2	40 58.2 -35.4 120.4	40 09.7 -34.9 119.7	39 20.8 -34.3 118.9	38 31.6 -33.8 118.2
8°	41 10.4 -36.6 122.3	40 22.8 -36.0 121.5	39 34.8 -35.4 120.7	38 46.5 -34.9 120.0	37 57.8 -34.4 119.2
9°	40 33.8 -37.0 123.3	39 46.8 -36.5 122.5	38 59.4 -36.0 121.8	38 11.6 -35.5 121.0	37 23.4 -34.9 120.3
10°	39 56.8 -37.6 124.3	39 10.3 -37.0 123.6	38 23.4 -36.5 122.8	37 36.1 -35.9 122.0	36 48.5 -35.5 121.3
11°	39 19.2 -38.1 125.4	38 33.3 -37.6 124.6	37 46.9 -37.0 123.8	37 00.2 -36.5 123.0	36 13.0 -35.9 122.3
12°	38 41.1 -38.7 126.3	37 55.7 -38.0 125.6	37 09.9 -37.5 124.8	36 23.7 -37.0 124.0	35 37.1 -36.4 123.3
13°	38 02.4 -39.1 127.3	37 17.7 -38.6 126.5	36 32.4 -37.9 125.8	35 46.7 -37.4 125.0	35 00.7 -36.9 124.3
14°	37 23.3 -39.5 128.3	36 39.1 -38.9 127.5	35 54.5 -38.5 126.7	35 09.3 -37.8 126.0	34 23.8 -37.3 125.2
15°	36 43.8 -40.0 129.2	36 00.2 -39.5 128.4	35 16.0 -38.8 127.7	34 31.5 -38.3 126.9	33 46.5 -37.8 126.2
16°	36 03.8 -40.4 130.1	35 20.7 -39.8 129.4	34 37.2 -39.3 128.6	33 53.2 -38.7 127.8	33 08.7 -38.1 127.1
17°	35 23.4 -40.8 131.1	34 40.9 -40.2 130.3	33 57.9 -39.6 129.5	33 14.5 -39.1 128.8	32 30.6 -38.6 128.0
18°	34 42.6 -41.2 132.0	34 00.7 -40.6 131.2	33 18.3 -40.1 130.4	32 35.4 -39.5 129.7	31 52.0 -38.9 128.9
19°	34 01.4 -41.6 132.8	33 20.1 -41.0 132.1	32 38.2 -40.4 131.3	31 55.9 -39.9 130.6	31 13.1 -39.3 129.8
20°	33 19.8 -41.9 133.7	32 39.1 -41.4 132.9	31 57.8 -40.8 132.2	31 16.0 -40.2 131.4	30 33.8 -39.6 130.7
21°	32 37.9 -42.3 134.6	31 57.7 -41.7 133.8	31 17.0 -41.1 133.0	30 35.8 -40.5 132.3	29 54.2 -40.0 131.6
22°	31 55.6 -42.6 135.4	31 16.0 -42.0 134.6	30 35.9 -41.4 133.9	29 55.3 -40.9 133.1	29 14.2 -40.3 132.4
23°	31 13.0 -42.9 136.2	30 34.0 -42.3 135.5	29 54.5 -41.8 134.7	29 14.4 -41.2 134.0	28 33.9 -40.6 133.3
24°	30 30.1 -43.2 137.0	29 51.7 -42.6 136.3	29 12.7 -42.0 135.5	28 33.2 -41.4 134.8	27 53.3 -40.9 134.1
25°	29 46.9 -43.5 137.8	29 09.1 -42.9 137.1	28 30.7 -42.4 136.4	27 51.8 -41.8 135.6	27 12.4 -41.2 134.9
26°	29 03.4 -43.7 138.6	28 26.2 -43.2 137.9	27 48.3 -42.6 137.2	27 10.0 -42.1 136.5	26 31.2 -41.5 135.8
27°	28 19.7 -44.0 139.4	27 43.0 -43.5 138.7	27 05.7 -42.9 138.0	26 27.9 -42.3 137.2	25 49.7 -41.8 136.6
28°	27 35.7 -44.3 140.2	26 59.5 -43.7 139.5	26 22.8 -43.1 138.7	25 45.6 -42.5 138.0	25 07.9 -42.0 137.4
29°	26 51.4 -44.5 140.9	26 15.8 -43.9 140.2	25 39.7 -43.4 139.5	25 03.1 -42.8 138.8	24 25.9 -42.2 138.1

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	41 18.6 -28.9 109.7	40 25.8 -28.6 109.1	39 32.8 -28.2 108.5	38 39.6 -27.9 107.9	37 46.2 -27.6 107.3
1°	40 49.7 -29.7 110.9	39 57.2 -29.3 110.2	39 04.6 -28.9 109.6	38 11.7 -28.5 109.0	37 18.6 -28.1 108.4
2°	40 20.0 -30.3 112.0	39 27.9 -29.9 111.4	38 35.7 -29.5 110.7	37 43.2 -29.1 110.1	36 50.5 -28.8 109.5
3°	39 49.7 -31.0 113.1	38 58.0 -30.5 112.5	38 06.2 -30.2 111.9	37 14.1 -29.8 111.2	36 21.7 -29.3 110.6
4°	39 18.7 -31.6 114.3	38 27.5 -31.2 113.6	37 36.0 -30.7 113.0	36 44.3 -30.3 112.3	35 52.4 -29.9 111.7
5°	38 47.1 -32.2 115.4	37 56.3 -31.7 114.7	37 05.3 -31.3 114.0	36 14.0 -30.9 113.4	35 22.5 -30.5 112.8
6°	38 14.9 -32.8 116.4	37 24.6 -32.4 115.8	36 34.0 -31.9 115.1	35 43.1 -31.4 114.5	34 52.0 -31.0 113.8
7°	37 42.1 -33.4 117.5	36 52.2 -32.8 116.8	36 02.1 -32.4 116.1	35 11.7 -32.0 115.5	34 21.0 -31.5 114.9
8°	37 08.7 -33.9 118.5	36 19.4 -33.4 117.9	35 29.7 -33.0 117.2	34 39.7 -32.5 116.5	33 49.5 -32.1 115.9
9°	36 34.8 -34.4 119.6	35 46.0 -34.0 118.9	34 56.7 -33.4 118.2	34 07.2 -33.0 117.5	33 17.4 -32.5 116.9
10°	36 00.4 -34.9 120.6	35 12.0 -34.4 119.9	34 23.3 -33.9 119.2	33 34.2 -33.4 118.6	32 44.9 -33.0 117.9
11°	35 25.5 -35.4 121.6	34 37.6 -34.9 120.9	33 49.4 -34.5 120.2	33 00.8 -33.9 119.5	32 11.9 -33.5 118.9
12°	34 50.1 -35.9 122.6	34 02.7 -35.4 121.9	33 14.9 -34.8 121.2	32 26.9 -34.4 120.5	31 38.4 -33.9 119.9
13°	34 14.2 -36.4 123.6	33 27.3 -35.8 122.9	32 40.1 -35.3 122.2	31 52.5 -34.8 121.5	31 04.5 -34.3 120.8
14°	33 37.8 -36.8 124.5	32 51.5 -36.3 123.8	32 04.8 -35.8 123.1	31 17.7 -35.3 122.5	30 30.2 -34.7 121.8
15°	33 01.0 -37.2 125.5	32 15.2 -36.7 124.8	31 29.0 -36.1 124.1	30 42.4 -35.6 123.4	29 55.5 -35.2 122.7
16°	32 23.8 -37.6 126.4	31 38.5 -37.0 125.7	30 52.9 -36.6 125.0	30 06.8 -36.0 124.3	29 20.3 -35.5 123.7
17°	31 46.2 -38.0 127.3	31 01.5 -37.5 126.6	30 16.3 -36.9 125.9	29 30.8 -36.5 125.3	28 44.8 -35.9 124.6
18°	31 08.2 -38.3 128.2	30 24.0 -37.8 127.5	29 39.4 -37.3 126.8	28 54.3 -36.7 126.2	28 08.9 -36.2 125.5
19°	30 29.9 -38.8 129.1	29 46.2 -38.2 128.4	29 02.1 -37.7 127.7	28 17.6 -37.1 127.1	27 32.7 -36.6 126.4
20°	29 51.1 -39.1 130.0	29 08.0 -38.6 129.3	28 24.4 -38.0 128.6	27 40.5 -37.5 128.0	26 56.1 -36.9 127.3
21°	29 12.0 -39.4 130.9	28 29.4 -38.8 130.2	27 46.4 -38.3 129.5	27 03.0 -37.8 128.8	26 19.2 -37.3 128.2
22°	28 32.6 -39.7 131.7	27 50.6 -39.2 131.0	27 08.1 -38.6 130.4	26 25.2 -38.1 129.7	25 41.9 -37.5 129.1
23°	27 52.9 -40.1 132.6	27 11.4 -39.5 131.9	26 29.5 -39.0 131.2	25 47.1 -38.4 130.6	25 04.4 -37.9 129.9
24°	27 12.8 -40.3 133.4	26 31.9 -39.8 132.7	25 50.5 -39.2 132.1	25 08.7 -38.7 131.4	24 26.5 -38.1 130.8
25°	26 32.5 -40.7 134.2	25 52.1 -40.1 133.6	25 11.3 -39.5 132.9	24 30.0 -38.9 132.3	23 48.4 -38.4 131.6
26°	25 51.8 -40.9 135.1	25 12.0 -40.3 134.4	24 31.8 -39.8 133.7	23 51.1 -39.2 133.1	23 10.0 -38.7 132.5
27°	25 10.9 -41.2 135.9	24 31.7 -40.6 135.2	23 52.0 -40.0 134.6	23 11.9 -39.5 133.9	22 31.3 -38.9 133.3
28°	24 29.7 -41.4 136.7	23 51.1 -40.9 136.0	23 12.0 -40.3 135.4	22 32.4 -39.7 134.7	21 52.4 -39.2 134.1
29°	23 48.3 -41.6 137.5	23 10.2 -41.1 136.8	22 31.7 -40.6 136.2	21 52.7 -40.0 135.5	21 13.2 -39.4 134.9

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Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	36 52.6 -27.2 106.7	35 58.9 -26.9 106.2	35 05.0 -26.6 105.6	34 11.0 -26.3 105.1	33 16.9 -26.0 104.6
1°	36 25.4 -27.8 107.8	35 32.0 -27.5 107.3	34 38.4 -27.1 106.7	33 44.7 -26.8 106.2	32 50.9 -26.6 105.7
2°	35 57.6 -28.4 108.9	35 04.5 -28.0 108.4	34 11.3 -27.7 107.8	33 17.9 -27.4 107.3	32 24.3 -27.1 106.7
3°	35 29.2 -29.0 110.0	34 36.5 -28.6 109.5	33 43.6 -28.3 108.9	32 50.5 -27.9 108.3	31 57.2 -27.6 107.8
4°	35 00.2 -29.5 111.1	34 07.9 -29.2 110.5	33 15.3 -28.8 109.9	32 22.6 -28.5 109.4	31 29.6 -28.1 108.8
5°	34 30.7 -30.1 112.2	33 38.7 -29.7 111.6	32 46.5 -29.3 111.0	31 54.1 -28.9 110.4	31 01.5 -28.5 109.9
6°	34 00.6 -30.6 113.2	33 09.0 -30.2 112.6	32 17.2 -29.8 112.0	31 25.2 -29.4 111.5	30 33.0 -29.1 110.9
7°	33 30.0 -31.1 114.2	32 38.8 -30.6 113.6	31 47.4 -30.3 113.0	30 55.8 -29.9 112.5	30 03.9 -29.5 111.9
8°	32 58.9 -31.6 115.3	32 08.2 -31.2 114.7	31 17.1 -30.7 114.1	30 25.9 -30.4 113.5	29 34.4 -30.0 112.9
9°	32 27.3 -32.0 116.3	31 37.0 -31.7 115.7	30 46.4 -31.3 115.1	29 55.5 -30.8 114.5	29 04.4 -30.4 113.9
10°	31 55.3 -32.6 117.3	31 05.3 -32.1 116.7	30 15.1 -31.6 116.1	29 24.7 -31.3 115.5	28 34.0 -30.8 114.9
11°	31 22.7 -33.0 118.3	30 33.2 -32.5 117.6	29 43.5 -32.1 117.0	28 53.4 -31.6 116.4	28 03.2 -31.3 115.9
12°	30 49.7 -33.4 119.2	30 00.7 -33.0 118.6	29 11.4 -32.5 118.0	28 21.8 -32.1 117.4	27 31.9 -31.6 116.8
13°	30 16.3 -33.9 120.2	29 27.7 -33.3 119.6	28 38.9 -32.9 119.0	27 49.7 -32.4 118.4	27 00.3 -32.0 117.8
14°	29 42.4 -34.2 121.2	28 54.4 -33.8 120.5	28 06.0 -33.3 119.9	27 17.3 -32.9 119.3	26 28.3 -32.4 118.7
15°	29 08.2 -34.6 122.1	28 20.6 -34.2 121.5	27 32.7 -33.7 120.9	26 44.4 -33.2 120.3	25 55.9 -32.8 119.7
16°	28 33.6 -35.1 123.0	27 46.4 -34.5 122.4	26 59.0 -34.1 121.8	26 11.2 -33.6 121.2	25 23.1 -33.1 120.6
17°	27 58.5 -35.3 124.0	27 11.9 -34.9 123.3	26 24.9 -34.4 122.7	25 37.6 -33.9 122.1	24 50.0 -33.4 121.5
18°	27 23.2 -35.8 124.9	26 37.0 -35.2 124.2	25 50.5 -34.7 123.6	25 03.7 -34.2 123.0	24 16.6 -33.7 122.4
19°	26 47.4 -36.1 125.8	26 01.8 -35.6 125.1	25 15.8 -35.0 124.5	24 29.5 -34.6 123.9	23 42.9 -34.1 123.3
20°	26 11.3 -36.4 126.7	25 26.2 -35.9 126.0	24 40.8 -35.4 125.4	23 54.9 -34.8 124.8	23 08.8 -34.4 124.2
21°	25 34.9 -36.7 127.5	24 50.3 -36.2 126.9	24 05.4 -35.7 126.3	23 20.1 -35.2 125.7	22 34.4 -34.6 125.1
22°	24 58.2 -37.0 128.4	24 14.1 -36.4 127.8	23 29.7 -36.0 127.2	22 44.9 -35.5 126.6	21 59.8 -35.0 126.0
23°	24 21.2 -37.3 129.3	23 37.7 -36.8 128.7	22 53.7 -36.2 128.1	22 09.4 -35.7 127.5	21 24.8 -35.2 126.9
24°	23 43.9 -37.6 130.1	23 00.9 -37.1 129.5	22 17.5 -36.5 128.9	21 33.7 -36.0 128.3	20 49.6 -35.5 127.7
25°	23 06.3 -37.9 131.0	22 23.8 -37.3 130.4	21 41.0 -36.8 129.8	20 57.7 -36.2 129.2	20 14.1 -35.7 128.6
26°	22 28.4 -38.1 131.8	21 46.5 -37.6 131.2	21 04.2 -37.1 130.6	20 21.5 -36.5 130.0	19 38.4 -36.0 129.5
27°	21 50.3 -38.4 132.7	21 08.9 -37.8 132.1	20 27.1 -37.2 131.5	19 45.0 -36.8 130.9	19 02.4 -36.2 130.3
28°	21 11.9 -38.6 133.5	20 31.1 -38.1 132.9	19 49.9 -37.5 132.3	19 08.2 -36.9 131.7	18 26.2 -36.4 131.2
29°	20 33.3 -38.8 134.3	19 53.0 -38.2 133.7	19 12.4 -37.8 133.1	18 31.3 -37.2 132.6	17 49.8 -36.6 132.0

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	32 22.6 -25.7 104.1	31 28.2 -25.5 103.6	30 33.7 -25.2 103.1	29 39.1 -25.0 102.6	28 44.4 -24.8 102.2
1°	31 56.9 -26.3 105.2	31 02.7 -26.0 104.6	30 08.5 -25.8 104.2	29 14.1 -25.5 103.7	28 19.6 -25.2 103.2
2°	31 30.6 -26.8 106.2	30 36.7 -26.4 105.7	29 42.7 -26.2 105.2	28 48.6 -25.9 104.7	27 54.4 -25.7 104.2
3°	31 03.8 -27.3 107.3	30 10.3 -27.0 106.7	29 16.5 -26.6 106.2	28 22.7 -26.4 105.7	27 28.7 -26.1 105.2
4°	30 36.5 -27.7 108.3	29 43.3 -27.5 107.8	28 49.9 -27.2 107.3	27 56.3 -26.9 106.7	27 02.6 -26.6 106.3
5°	30 08.8 -28.3 109.3	29 15.8 -27.9 108.8	28 22.7 -27.6 108.3	27 29.4 -27.2 107.8	26 36.0 -26.9 107.3
6°	29 40.5 -28.7 110.3	28 47.9 -28.3 109.8	27 55.1 -28.0 109.3	27 02.2 -27.7 108.8	26 09.1 -27.4 108.3
7°	29 11.8 -29.1 111.3	28 19.6 -28.8 110.8	27 27.1 -28.4 110.3	26 34.5 -28.1 109.8	25 41.7 -27.8 109.2
8°	28 42.7 -29.6 112.3	27 50.8 -29.3 111.8	26 58.7 -28.9 111.3	26 06.4 -28.6 110.7	25 13.9 -28.2 110.2
9°	28 13.1 -30.0 113.3	27 21.5 -29.6 112.8	26 29.8 -29.3 112.2	25 37.8 -28.8 111.7	24 45.7 -28.5 111.2
10°	27 43.1 -30.5 114.3	26 51.9 -30.0 113.8	26 00.5 -29.6 113.2	25 09.0 -29.3 112.7	24 17.2 -28.9 112.2
11°	27 12.6 -30.8 115.3	26 21.9 -30.4 114.7	25 30.9 -30.0 114.2	24 39.7 -29.7 113.6	23 48.3 -29.3 113.1
12°	26 41.8 -31.2 116.3	25 51.5 -30.8 115.7	25 00.9 -30.4 115.1	24 10.0 -30.0 114.6	23 19.0 -29.6 114.1
13°	26 10.6 -31.6 117.2	25 20.7 -31.2 116.6	24 30.5 -30.8 116.1	23 40.0 -30.3 115.6	22 49.4 -29.9 115.0
14°	25 39.0 -31.9 118.2	24 49.5 -31.5 117.6	23 59.7 -31.1 117.0	23 09.7 -30.7 116.5	22 19.5 -30.3 116.0
15°	25 07.1 -32.3 119.1	24 18.0 -31.9 118.5	23 28.6 -31.4 118.0	22 39.0 -30.9 117.4	21 49.2 -30.6 116.9
16°	24 34.8 -32.7 120.0	23 46.1 -32.1 119.5	22 57.2 -31.7 118.9	22 08.1 -31.3 118.4	21 18.6 -30.8 117.8
17°	24 02.1 -32.9 120.9	23 14.0 -32.5 120.4	22 25.5 -32.1 119.8	21 36.8 -31.6 119.3	20 47.8 -31.2 118.7
18°	23 29.2 -33.3 121.9	22 41.5 -32.9 121.3	21 53.4 -32.3 120.7	21 05.2 -31.9 120.2	20 16.6 -31.4 119.6
19°	22 55.9 -33.6 122.8	22 08.6 -33.1 122.2	21 21.1 -32.6 121.6	20 33.3 -32.2 121.1	19 45.2 -31.8 120.6
20°	22 22.3 -33.9 123.7	21 35.5 -33.4 123.1	20 48.5 -33.0 122.5	20 01.1 -32.5 122.0	19 13.4 -31.9 121.5
21°	21 48.4 -34.1 124.5	21 02.1 -33.6 124.0	20 15.5 -33.1 123.4	19 28.6 -32.7 122.9	18 41.5 -32.3 122.4
22°	21 14.3 -34.5 125.4	20 28.5 -34.0 124.9	19 42.4 -33.5 124.3	18 55.9 -32.9 123.8	18 09.2 -32.4 123.2
23°	20 39.8 -34.7 126.3	19 54.5 -34.2 125.7	19 08.9 -33.7 125.2	18 23.0 -33.2 124.7	17 36.8 -32.7 124.1
24°	20 05.1 -34.9 127.2	19 20.3 -34.4 126.6	18 35.2 -33.9 126.1	17 49.8 -33.4 125.5	17 04.1 -33.0 125.0
25°	19 30.2 -35.2 128.0	18 45.9 -34.7 127.5	18 01.3 -34.2 126.9	17 16.4 -33.7 126.4	16 31.1 -33.1 125.9
26°	18 55.0 -35.5 128.9	18 11.2 -34.9 128.3	17 27.1 -34.4 127.8	16 42.7 -33.9 127.3	15 58.0 -33.4 126.7
27°	18 19.5 -35.6 129.7	17 36.3 -35.1 129.2	16 52.7 -34.6 128.7	16 08.8 -34.0 128.1	15 24.6 -33.5 127.6
28°	17 43.9 -35.9 130.6	17 01.2 -35.4 130.0	16 18.1 -34.8 129.5	15 34.8 -34.3 129.0	14 51.1 -33.8 128.5
29°	17 08.0 -36.1 131.4	16 25.8 -35.5 130.9	15 43.3 -35.0 130.4	15 00.5 -34.5 129.8	14 17.3 -33.9 129.3

Declination CONTRARY name to Latitude**Latitude 21°**

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	27 49.6 -24.6 101.7	26 54.7 -24.4 101.2	25 59.7 -24.1 100.8	25 04.6 -23.9 100.3	24 09.5 -23.8 99.9
1°	27 25.0 -25.0 102.7	26 30.3 -24.7 102.3	25 35.6 -24.6 101.8	24 40.7 -24.4 101.4	23 45.7 -24.1 100.9
2°	27 00.0 -25.4 103.7	26 05.6 -25.2 103.3	25 11.0 -25.0 102.8	24 16.3 -24.7 102.4	23 21.6 -24.6 101.9
3°	26 34.6 -25.9 104.8	25 40.4 -25.6 104.3	24 46.0 -25.3 103.8	23 51.6 -25.1 103.4	22 57.0 -24.9 102.9
4°	26 08.7 -26.2 105.8	25 14.8 -26.0 105.3	24 20.7 -25.8 104.8	23 26.5 -25.5 104.4	22 32.1 -25.2 103.9
5°	25 42.5 -26.7 106.8	24 48.8 -26.4 106.3	23 54.9 -26.1 105.8	23 01.0 -25.9 105.3	22 06.9 -25.6 104.9
6°	25 15.8 -27.1 107.8	24 22.4 -26.8 107.3	23 28.8 -26.5 106.8	22 35.1 -26.2 106.3	21 41.3 -26.0 105.9
7°	24 48.7 -27.5 108.7	23 55.6 -27.2 108.2	23 02.3 -26.8 107.8	22 08.9 -26.6 107.3	21 15.3 -26.2 106.8
8°	24 21.2 -27.8 109.7	23 28.4 -27.5 109.2	22 35.5 -27.2 108.7	21 42.3 -26.9 108.3	20 49.1 -26.6 107.8
9°	23 53.4 -28.2 110.7	23 00.9 -27.9 110.2	22 08.3 -27.6 109.7	21 15.4 -27.2 109.2	20 22.5 -26.9 108.7
10°	23 25.2 -28.5 111.7	22 33.0 -28.2 111.1	21 40.7 -27.8 110.7	20 48.2 -27.5 110.2	19 55.6 -27.2 109.7
11°	22 56.7 -28.9 112.6	22 04.8 -28.5 112.1	21 12.9 -28.2 111.6	20 20.7 -27.8 111.1	19 28.4 -27.5 110.6
12°	22 27.8 -29.3 113.6	21 36.3 -28.8 113.1	20 44.7 -28.5 112.6	19 52.9 -28.2 112.1	19 00.9 -27.8 111.6
13°	21 58.5 -29.5 114.5	21 07.5 -29.2 114.0	20 16.2 -28.8 113.5	19 24.7 -28.4 113.0	18 33.1 -28.1 112.5
14°	21 29.0 -29.9 115.4	20 38.3 -29.5 114.9	19 47.4 -29.1 114.4	18 56.3 -28.7 113.9	18 05.0 -28.3 113.4
15°	20 59.1 -30.1 116.4	20 08.8 -29.7 115.9	19 18.3 -29.3 115.4	18 27.6 -29.0 114.9	17 36.7 -28.6 114.4
16°	20 29.0 -30.5 117.3	19 39.1 -30.1 116.8	18 49.0 -29.7 116.3	17 58.6 -29.2 115.8	17 08.1 -28.8 115.3
17°	19 58.5 -30.7 118.2	19 09.0 -30.3 117.7	18 19.3 -29.9 117.2	17 29.4 -29.5 116.7	16 39.3 -29.1 116.2
18°	19 27.8 -31.0 119.1	18 38.7 -30.5 118.6	17 49.4 -30.1 118.1	16 59.9 -29.7 117.6	16 10.2 -29.3 117.1
19°	18 56.8 -31.3 120.0	18 08.2 -30.9 119.5	17 19.3 -30.4 119.0	16 30.2 -30.0 118.5	15 40.9 -29.6 118.0
20°	18 25.5 -31.5 120.9	17 37.3 -31.0 120.4	16 48.9 -30.6 119.9	16 00.2 -30.1 119.4	15 11.3 -29.7 118.9
21°	17 54.0 -31.8 121.8	17 06.3 -31.3 121.3	16 18.3 -30.8 120.8	15 30.1 -30.4 120.3	14 41.6 -30.0 119.8
22°	17 22.2 -32.0 122.7	16 35.0 -31.5 122.2	15 47.5 -31.1 121.7	14 59.7 -30.6 121.2	14 11.6 -30.1 120.7
23°	16 50.2 -32.2 123.6	16 03.5 -31.8 123.1	15 16.4 -31.3 122.6	14 29.1 -30.8 122.1	13 41.5 -30.3 121.6
24°	16 18.0 -32.4 124.5	15 31.7 -31.9 124.0	14 45.1 -31.5 123.5	13 58.3 -31.0 123.0	13 11.2 -30.6 122.5
25°	15 45.6 -32.7 125.4	14 59.8 -32.2 124.9	14 13.6 -31.6 124.4	13 27.3 -31.2 123.9	12 40.6 -30.7 123.4
26°	15 12.9 -32.8 126.2	14 27.6 -32.3 125.7	13 42.0 -31.9 125.2	12 56.1 -31.4 124.7	12 09.9 -30.8 124.3
27°	14 40.1 -33.1 127.1	13 55.3 -32.6 126.6	13 10.1 -32.0 126.1	12 24.7 -31.5 125.6	11 39.1 -31.1 125.1
28°	14 07.0 -33.2 128.0	13 22.7 -32.7 127.5	12 38.1 -32.2 127.0	11 53.2 -31.7 126.5	11 08.0 -31.1 126.0
29°	13 33.8 -33.4 128.8	12 50.0 -32.9 128.3	12 05.9 -32.3 127.8	11 21.5 -31.8 127.4	10 36.9 -31.3 126.9

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	23 14.3 -23.6 99.5	22 19.0 -23.4 99.1	21 23.6 -23.2 98.6	20 28.2 -23.1 98.2	19 32.8 -23.0 97.8
1°	22 50.7 -24.0 100.5	21 55.6 -23.8 100.1	21 00.4 -23.6 99.6	20 05.1 -23.4 99.2	19 09.8 -23.3 98.8
2°	22 26.7 -24.3 101.5	21 31.8 -24.1 101.0	20 36.8 -24.0 100.6	19 41.7 -23.8 100.2	18 46.5 -23.6 99.8
3°	22 02.4 -24.7 102.5	21 07.7 -24.5 102.0	20 12.8 -24.2 101.6	19 17.9 -24.1 101.2	18 22.9 -23.9 100.8
4°	21 37.7 -25.0 103.4	20 43.2 -24.8 103.0	19 48.6 -24.6 102.6	18 53.8 -24.3 102.1	17 59.0 -24.1 101.7
5°	21 12.7 -25.4 104.4	20 18.4 -25.1 104.0	19 24.0 -24.9 103.5	18 29.5 -24.7 103.1	17 34.9 -24.5 102.7
6°	20 47.3 -25.6 105.4	19 53.3 -25.5 104.9	18 59.1 -25.2 104.5	18 04.8 -24.9 104.1	17 10.4 -24.7 103.6
7°	20 21.7 -26.0 106.4	19 27.8 -25.7 105.9	18 33.9 -25.5 105.5	17 39.9 -25.2 105.0	16 45.7 -25.0 104.6
8°	19 55.7 -26.3 107.3	19 02.1 -26.0 106.9	18 08.4 -25.7 106.4	17 14.7 -25.5 106.0	16 20.7 -25.2 105.5
9°	19 29.4 -26.7 108.3	18 36.1 -26.3 107.8	17 42.7 -26.0 107.4	16 49.2 -25.8 106.9	15 55.5 -25.4 106.5
10°	19 02.7 -26.8 109.2	18 09.8 -26.6 108.8	17 16.7 -26.3 108.3	16 23.4 -26.0 107.9	15 30.1 -25.8 107.4
11°	18 35.9 -27.2 110.2	17 43.2 -26.9 109.7	16 50.4 -26.6 109.3	15 57.4 -26.2 108.8	15 04.3 -25.9 108.4
12°	18 08.7 -27.5 111.1	17 16.3 -27.1 110.6	16 23.8 -26.7 110.2	15 31.2 -26.5 109.7	14 38.4 -26.2 109.3
13°	17 41.2 -27.7 112.0	16 49.2 -27.3 111.6	15 57.1 -27.1 111.1	15 04.7 -26.7 110.7	14 12.2 -26.3 110.2
14°	17 13.5 -27.9 113.0	16 21.9 -27.6 112.5	15 30.0 -27.2 112.0	14 38.0 -26.9 111.6	13 45.9 -26.6 111.2
15°	16 45.6 -28.3 113.9	15 54.3 -27.9 113.4	15 02.8 -27.5 113.0	14 11.1 -27.1 112.5	13 19.3 -26.8 112.1
16°	16 17.3 -28.4 114.8	15 26.4 -28.1 114.4	14 35.3 -27.7 113.9	13 44.0 -27.4 113.4	12 52.5 -27.0 113.0
17°	15 48.9 -28.7 115.7	14 58.3 -28.2 115.3	14 07.6 -27.9 114.8	13 16.6 -27.5 114.4	12 25.5 -27.1 113.9
18°	15 20.2 -28.9 116.6	14 30.1 -28.5 116.2	13 39.7 -28.1 115.7	12 49.1 -27.7 115.3	11 58.4 -27.4 114.8
19°	14 51.3 -29.1 117.6	14 01.6 -28.7 117.1	13 11.6 -28.3 116.6	12 21.4 -27.9 116.2	11 31.0 -27.5 115.7
20°	14 22.2 -29.3 118.5	13 32.9 -28.9 118.0	12 43.3 -28.5 117.5	11 53.5 -28.1 117.1	11 03.5 -27.6 116.6
21°	13 52.9 -29.5 119.4	13 04.0 -29.1 118.9	12 14.8 -28.6 118.4	11 25.4 -28.2 118.0	10 35.9 -27.8 117.5
22°	13 23.4 -29.7 120.3	12 34.9 -29.3 119.8	11 46.2 -28.9 119.3	10 57.2 -28.4 118.9	10 08.1 -28.0 118.4
23°	12 53.7 -29.9 121.1	12 05.6 -29.4 120.7	11 17.3 -29.0 120.2	10 28.8 -28.5 119.8	9 40.1 -28.1 119.3
24°	12 23.8 -30.1 122.0	11 36.2 -29.6 121.6	10 48.3 -29.1 121.1	10 00.3 -28.7 120.7	9 12.0 -28.2 120.2
25°	11 53.7 -30.2 122.9	11 06.6 -29.8 122.5	10 19.2 -29.3 122.0	9 31.6 -28.8 121.6	8 43.8 -28.4 121.1
26°	11 23.5 -30.4 123.8	10 36.8 -29.9 123.3	9 49.9 -29.4 122.9	9 02.8 -29.0 122.5	8 15.4 -28.5 122.0
27°	10 53.1 -30.5 124.7	10 06.9 -30.0 124.2	9 20.5 -29.5 123.8	8 33.8 -29.0 123.3	7 46.9 -28.6 122.9
28°	10 22.6 -30.7 125.6	9 36.9 -30.2 125.1	8 51.0 -29.7 124.7	8 04.8 -29.2 124.2	7 18.3 -28.7 123.8
29°	9 51.9 -30.8 126.4	9 06.7 -30.3 126.0	8 21.3 -29.8 125.5	7 35.6 -29.3 125.1	6 49.6 -28.8 124.7

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	18 37.2 -22.8 97.4	17 41.7 -22.7 97.0	16 46.1 -22.6 96.6	15 50.4 -22.5 96.3	14 54.7 -22.4 95.9
1°	18 14.4 -23.1 98.4	17 19.0 -23.0 98.0	16 23.5 -22.9 97.6	15 27.9 -22.7 97.2	14 32.3 -22.6 96.8
2°	17 51.3 -23.4 99.4	16 56.0 -23.3 99.0	16 00.6 -23.1 98.6	15 05.2 -23.0 98.2	14 09.7 -22.8 97.8
3°	17 27.9 -23.7 100.3	16 32.7 -23.5 99.9	15 37.5 -23.4 99.5	14 42.2 -23.2 99.1	13 46.9 -23.1 98.7
4°	17 04.2 -24.0 101.3	16 09.2 -23.8 100.9	15 14.1 -23.6 100.5	14 19.0 -23.4 100.1	13 23.8 -23.2 99.7
5°	16 40.2 -24.2 102.3	15 45.4 -24.0 101.8	14 50.5 -23.8 101.4	13 55.6 -23.6 101.0	13 00.6 -23.5 100.6
6°	16 16.0 -24.5 103.2	15 21.4 -24.3 102.8	14 26.7 -24.1 102.4	13 32.0 -23.9 102.0	12 37.1 -23.6 101.6
7°	15 51.5 -24.8 104.2	14 57.1 -24.5 103.7	14 02.6 -24.2 103.3	13 08.1 -24.1 102.9	12 13.5 -23.9 102.5
8°	15 26.7 -24.9 105.1	14 32.6 -24.7 104.7	13 38.4 -24.5 104.3	12 44.0 -24.2 103.9	11 49.6 -24.0 103.5
9°	15 01.8 -25.3 106.1	14 07.9 -25.0 105.6	13 13.9 -24.7 105.2	12 19.8 -24.5 104.8	11 25.6 -24.3 104.4
10°	14 36.5 -25.4 107.0	13 42.9 -25.1 106.6	12 49.2 -24.9 106.1	11 55.3 -24.6 105.7	11 01.3 -24.4 105.3
11°	14 11.1 -25.6 107.9	13 17.8 -25.4 107.5	12 24.3 -25.1 107.1	11 30.7 -24.9 106.7	10 36.9 -24.5 106.3
12°	13 45.5 -25.9 108.9	12 52.4 -25.6 108.4	11 59.2 -25.3 108.0	11 05.8 -24.9 107.6	10 12.4 -24.7 107.2
13°	13 19.6 -26.1 109.8	12 26.8 -25.7 109.4	11 33.9 -25.4 108.9	10 40.9 -25.2 108.5	9 47.7 -24.9 108.1
14°	12 53.5 -26.2 110.7	12 01.1 -26.0 110.3	11 08.5 -25.6 109.9	10 15.7 -25.3 109.4	9 22.8 -25.0 109.0
15°	12 27.3 -26.4 111.6	11 35.1 -26.1 111.2	10 42.9 -25.8 110.8	9 50.4 -25.4 110.4	8 57.8 -25.1 110.0
16°	12 00.9 -26.7 112.6	11 09.0 -26.2 112.1	10 17.1 -26.0 111.7	9 25.0 -25.6 111.3	8 32.7 -25.3 110.9
17°	11 34.2 -26.8 113.5	10 42.8 -26.5 113.0	9 51.1 -26.0 112.6	8 59.4 -25.8 112.2	8 07.4 -25.4 111.8
18°	11 07.4 -26.9 114.4	10 16.3 -26.5 114.0	9 25.1 -26.3 113.5	8 33.6 -25.8 113.1	7 42.0 -25.5 112.7
19°	10 40.5 -27.1 115.3	9 49.8 -26.8 114.9	8 58.8 -26.3 114.4	8 07.8 -26.0 114.0	7 16.5 -25.6 113.6
20°	10 13.4 -27.3 116.2	9 23.0 -26.8 115.8	8 32.5 -26.5 115.3	7 41.8 -26.1 114.9	6 50.9 -25.7 114.5
21°	9 46.1 -27.4 117.1	8 56.2 -27.0 116.7	8 06.0 -26.6 116.3	7 15.7 -26.2 115.8	6 25.2 -25.8 115.4
22°	9 18.7 -27.5 118.0	8 29.2 -27.2 117.6	7 39.4 -26.7 117.2	6 49.5 -26.3 116.7	5 59.4 -25.9 116.3
23°	8 51.2 -27.7 118.9	8 02.0 -27.2 118.5	7 12.7 -26.8 118.1	6 23.2 -26.4 117.7	5 33.5 -26.0 117.2
24°	8 23.5 -27.8 119.8	7 34.8 -27.4 119.4	6 45.9 -26.9 119.0	5 56.8 -26.5 118.6	5 07.5 -26.1 118.2
25°	7 55.7 -27.9 120.7	7 07.4 -27.4 120.3	6 19.0 -27.1 119.9	5 30.3 -26.6 119.5	4 41.4 -26.1 119.1
26°	7 27.8 -28.0 121.6	6 40.0 -27.6 121.2	5 51.9 -27.1 120.8	5 03.7 -26.6 120.4	4 15.3 -26.2 120.0
27°	6 59.8 -28.1 122.5	6 12.4 -27.6 122.1	5 24.8 -27.1 121.7	4 37.1 -26.8 121.3	3 49.1 -26.3 120.9
28°	6 31.7 -28.2 123.4	5 44.8 -27.8 123.0	4 57.7 -27.3 122.6	4 10.3 -26.7 122.2	3 22.8 -26.3 121.8
29°	6 03.5 -28.3 124.3	5 17.0 -27.8 123.9	4 30.4 -27.3 123.4	3 43.6 -26.9 123.1	2 56.5 -26.3 122.7

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	13 59.0 -22.3 95.5	13 03.2 -22.2 95.1	12 07.4 -22.1 94.7	11 11.5 -22.0 94.4	10 15.7 -22.0 94.0
1°	13 36.7 -22.5 96.4	12 41.0 -22.4 96.1	11 45.3 -22.3 95.7	10 49.5 -22.2 95.3	9 53.7 -22.1 94.9
2°	13 14.2 -22.7 97.4	12 18.6 -22.5 97.0	11 23.0 -22.4 96.6	10 27.3 -22.3 96.2	9 31.6 -22.2 95.9
3°	12 51.5 -22.9 98.3	11 56.1 -22.8 98.0	11 00.6 -22.7 97.6	10 05.0 -22.5 97.2	9 09.4 -22.4 96.8
4°	12 28.6 -23.1 99.3	11 33.3 -23.0 98.9	10 37.9 -22.8 98.5	9 42.5 -22.7 98.1	8 47.0 -22.5 97.8
5°	12 05.5 -23.3 100.2	11 10.3 -23.1 99.8	10 15.1 -22.9 99.5	9 19.8 -22.8 99.1	8 24.5 -22.7 98.7
6°	11 42.2 -23.5 101.2	10 47.2 -23.3 100.8	9 52.2 -23.2 100.4	8 57.0 -22.9 100.0	8 01.8 -22.8 99.6
7°	11 18.7 -23.6 102.1	10 23.9 -23.4 101.7	9 29.0 -23.2 101.3	8 34.1 -23.1 100.9	7 39.0 -22.9 100.6
8°	10 55.1 -23.9 103.1	10 00.5 -23.7 102.7	9 05.8 -23.4 102.3	8 11.0 -23.2 101.9	7 16.1 -23.0 101.5
9°	10 31.2 -23.9 104.0	9 36.8 -23.7 103.6	8 42.4 -23.6 103.2	7 47.8 -23.4 102.8	6 53.1 -23.1 102.4
10°	10 07.3 -24.2 104.9	9 13.1 -23.9 104.5	8 18.8 -23.7 104.1	7 24.4 -23.4 103.7	6 30.0 -23.2 103.4
11°	9 43.1 -24.3 105.8	8 49.2 -24.1 105.4	7 55.1 -23.8 105.1	7 01.0 -23.6 104.7	6 06.8 -23.4 104.3
12°	9 18.8 -24.4 106.8	8 25.1 -24.1 106.4	7 31.3 -23.9 106.0	6 37.4 -23.6 105.6	5 43.4 -23.4 105.2
13°	8 54.4 -24.6 107.7	8 01.0 -24.3 107.3	7 07.4 -24.0 106.9	6 13.8 -23.8 106.5	5 20.0 -23.5 106.1
14°	8 29.8 -24.7 108.6	7 36.7 -24.5 108.2	6 43.4 -24.1 107.8	5 50.0 -23.8 107.4	4 56.5 -23.6 107.1
15°	8 05.1 -24.8 109.5	7 12.2 -24.5 109.1	6 19.3 -24.3 108.8	5 26.2 -24.0 108.4	4 32.9 -23.6 108.0
16°	7 40.3 -25.0 110.5	6 47.7 -24.6 110.1	5 55.0 -24.3 109.7	5 02.2 -24.0 109.3	4 09.3 -23.7 108.9
17°	7 15.3 -25.0 111.4	6 23.1 -24.7 111.0	5 30.7 -24.4 110.6	4 38.2 -24.1 110.2	3 45.6 -23.8 109.8
18°	6 50.3 -25.2 112.3	5 58.4 -24.8 111.9	5 06.3 -24.4 111.5	4 14.1 -24.1 111.1	3 21.8 -23.8 110.7
19°	6 25.1 -25.2 113.2	5 33.6 -24.9 112.8	4 41.9 -24.6 112.4	3 50.0 -24.2 112.0	2 58.0 -23.9 111.7
20°	5 59.9 -25.4 114.1	5 08.7 -25.0 113.7	4 17.3 -24.6 113.3	3 25.8 -24.3 113.0	2 34.1 -23.9 112.6
21°	5 34.5 -25.4 115.0	4 43.7 -25.1 114.6	3 52.7 -24.7 114.3	3 01.5 -24.3 113.9	2 10.2 -23.9 113.5
22°	5 09.1 -25.5 115.9	4 18.6 -25.1 115.6	3 28.0 -24.7 115.2	2 37.2 -24.3 114.8	1 46.3 -24.0 114.4
23°	4 43.6 -25.6 116.9	3 53.5 -25.2 116.5	3 03.3 -24.8 116.1	2 12.9 -24.4 115.7	1 22.3 -23.9 115.3
24°	4 18.0 -25.6 117.8	3 28.3 -25.2 117.4	2 38.5 -24.8 117.0	1 48.5 -24.4 116.6	0 58.4 -24.0 116.2
25°	3 52.4 -25.7 118.7	3 03.1 -25.3 118.3	2 13.7 -24.9 117.9	1 24.1 -24.4 117.5	0 34.4 -24.1 117.2
26°	3 26.7 -25.8 119.6	2 37.8 -25.3 119.2	1 48.8 -24.8 118.8	0 59.7 -24.5 118.4	0 10.3 -24.0 118.1
27°	3 00.9 -25.8 120.5	2 12.5 -25.3 120.1	1 24.0 -24.9 119.7	0 35.2 -24.4 119.4	-0 13.7 -24.0
28°	2 35.1 -25.8 121.4	1 47.2 -25.4 121.0	0 59.1 -24.9 120.6	0 10.8 -24.5 120.3	-0 37.7 -24.0
29°	2 09.3 -25.9 122.3	1 21.8 -25.4 121.9	0 34.2 -25.0 121.5	-0 13.7 -24.4	-1 01.7 -24.0

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 19.8 -21.9 93.6	8 23.9 -21.8 93.2	7 27.9 -21.7 92.9	6 32.0 -21.7 92.5	5 36.0 -21.6 92.2
1°	8 57.9 -22.0 94.6	8 02.1 -22.0 94.2	7 06.2 -21.9 93.8	6 10.3 -21.8 93.5	5 14.4 -21.8 93.1
2°	8 35.9 -22.1 95.5	7 40.1 -22.0 95.1	6 44.3 -21.9 94.8	5 48.5 -21.9 94.4	4 52.6 -21.8 94.0
3°	8 13.8 -22.3 96.4	7 18.1 -22.2 96.1	6 22.4 -22.1 95.7	5 26.6 -22.0 95.3	4 30.8 -21.9 95.0
4°	7 51.5 -22.4 97.4	6 55.9 -22.3 97.0	6 00.3 -22.2 96.6	5 04.6 -22.0 96.3	4 08.9 -21.9 95.9
5°	7 29.1 -22.5 98.3	6 33.6 -22.3 97.9	5 38.1 -22.2 97.6	4 42.6 -22.1 97.2	3 47.0 -22.0 96.8
6°	7 06.6 -22.7 99.2	6 11.3 -22.5 98.9	5 15.9 -22.3 98.5	4 20.5 -22.2 98.1	3 25.0 -22.1 97.8
7°	6 43.9 -22.7 100.2	5 48.8 -22.6 99.8	4 53.6 -22.5 99.4	3 58.3 -22.3 99.1	3 02.9 -22.1 98.7
8°	6 21.2 -22.8 101.1	5 26.2 -22.6 100.7	4 31.1 -22.4 100.4	3 36.0 -22.3 100.0	2 40.8 -22.1 99.6
9°	5 58.4 -23.0 102.0	5 03.6 -22.8 101.7	4 08.7 -22.6 101.3	3 13.7 -22.4 100.9	2 18.7 -22.2 100.6
10°	5 35.4 -23.0 103.0	4 40.8 -22.8 102.6	3 46.1 -22.6 102.2	2 51.3 -22.4 101.9	1 56.5 -22.2 101.5
11°	5 12.4 -23.1 103.9	4 18.0 -22.9 103.5	3 23.5 -22.7 103.1	2 28.9 -22.4 102.8	1 34.3 -22.3 102.4
12°	4 49.3 -23.1 104.8	3 55.1 -22.9 104.4	3 00.8 -22.7 104.1	2 06.5 -22.5 103.7	1 12.0 -22.3 103.3
13°	4 26.2 -23.3 105.8	3 32.2 -23.0 105.4	2 38.1 -22.7 105.0	1 44.0 -22.5 104.6	0 49.7 -22.2 104.3
14°	4 02.9 -23.3 106.7	3 09.2 -23.0 106.3	2 15.4 -22.8 105.9	1 21.5 -22.6 105.6	0 27.5 -22.3 105.2
15°	3 39.6 -23.4 107.6	2 46.2 -23.1 107.2	1 52.6 -22.8 106.9	0 58.9 -22.5 106.5	0 05.2 -22.3 106.1
16°	3 16.2 -23.4 108.5	2 23.1 -23.1 108.1	1 29.8 -22.8 107.8	0 36.4 -22.6 107.4	-0 17.1 -22.3
17°	2 52.8 -23.4 109.4	2 00.0 -23.2 109.1	1 07.0 -22.9 108.7	0 13.8 -22.5 108.3	-0 39.4 -22.2
18°	2 29.4 -23.5 110.4	1 36.8 -23.2 110.0	0 44.1 -22.9 109.6	-0 08.7 -22.6	-1 01.6 -22.3
19°	2 05.9 -23.5 111.3	1 13.6 -23.2 110.9	0 21.2 -22.8 110.6	-0 31.3 -22.5	-1 23.9 -22.2
20°	1 42.4 -23.6 112.2	0 50.4 -23.2 111.8	-0 01.6 -22.9	-0 53.8 -22.6	-1 46.1 -22.2
21°	1 18.8 -23.6 113.1	0 27.2 -23.2 112.8	-0 24.5 -22.9	-1 16.4 -22.5	-2 08.3 -22.2
22°	0 55.2 -23.6 114.0	0 04.0 -23.2 113.7	-0 47.4 -22.8	-1 38.9 -22.5	-2 30.5 -22.1
23°	0 31.6 -23.6 115.0	-0 19.2 -23.2	-1 10.2 -22.9	-2 01.4 -22.4	-2 52.6 -22.1
24°	0 08.0 -23.6 115.9	-0 42.4 -23.2	-1 33.1 -22.8	-2 23.8 -22.4	-3 14.7 -22.1
25°	-0 15.6 -23.6	-1 05.6 -23.2	-1 55.9 -22.7	-2 46.2 -22.4	-3 36.8 -21.9
26°	-0 39.2 -23.5	-1 28.8 -23.2	-2 18.6 -22.8	-3 08.6 -22.3	-3 58.7 -21.9
27°	-1 02.7 -23.6	-1 52.0 -23.1	-2 41.4 -22.7	-3 30.9 -22.3	-4 20.6 -21.9
28°	-1 26.3 -23.6	-2 15.1 -23.1	-3 04.1 -22.6	-3 53.2 -22.2	-4 42.5 -21.8
29°	-1 49.9 -23.5	-2 38.2 -23.1	-3 26.7 -22.6	-4 15.4 -22.2	-5 04.3 -21.6

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 40.0 -21.6 91.8	3 44.0 -21.5 91.4	2 48.0 -21.5 91.1	1 52.0 -21.5 90.7	0 56.0 -21.5 90.4
1°	4 18.4 -21.7 92.7	3 22.5 -21.7 92.4	2 26.5 -21.6 92.0	1 30.5 -21.6 91.7	0 34.5 -21.5 91.3
2°	3 56.7 -21.7 93.7	3 00.8 -21.6 93.3	2 04.9 -21.6 92.9	1 08.9 -21.5 92.6	0 13.0 -21.5 92.2
3°	3 35.0 -21.8 94.6	2 39.2 -21.8 94.2	1 43.3 -21.7 93.9	0 47.4 -21.6 93.5	-0 08.5 -21.6
4°	3 13.2 -21.8 95.5	2 17.4 -21.7 95.2	1 21.6 -21.6 94.8	0 25.8 -21.6 94.5	-0 30.1 -21.5
5°	2 51.4 -21.9 96.5	1 55.7 -21.8 96.1	1 00.0 -21.7 95.7	0 04.2 -21.6 95.4	-0 51.6 -21.5
6°	2 29.5 -22.0 97.4	1 33.9 -21.8 97.0	0 38.3 -21.7 96.7	-0 17.4 -21.6	-1 13.1 -21.5
7°	2 07.5 -21.9 98.3	1 12.1 -21.9 98.0	0 16.6 -21.7 97.6	-0 39.0 -21.5	-1 34.6 -21.4
8°	1 45.6 -22.0 99.3	0 50.2 -21.8 98.9	-0 05.1 -21.7	-1 00.5 -21.6	-1 56.0 -21.4
9°	1 23.6 -22.1 100.2	0 28.4 -21.9 99.8	-0 26.8 -21.7	-1 22.1 -21.5	-2 17.4 -21.4
10°	1 01.5 -22.0 101.1	0 06.5 -21.8 100.8	-0 48.5 -21.7	-1 43.6 -21.6	-2 38.8 -21.4
11°	0 39.5 -22.0 102.1	-0 15.3 -21.9	-1 10.2 -21.7	-2 05.2 -21.4	-3 00.2 -21.3
12°	0 17.5 -22.1 103.0	-0 37.2 -21.8	-1 31.9 -21.6	-2 26.6 -21.5	-3 21.5 -21.2
13°	-0 04.6 -22.0	-0 59.0 -21.8	-1 53.5 -21.6	-2 48.1 -21.4	-3 42.7 -21.2
14°	-0 26.6 -22.1	-1 20.8 -21.8	-2 15.1 -21.6	-3 09.5 -21.3	-4 03.9 -21.1
15°	-0 48.7 -22.0	-1 42.6 -21.8	-2 36.7 -21.5	-3 30.8 -21.3	-4 25.0 -21.1
16°	-1 10.7 -22.0	-2 04.4 -21.7	-2 58.2 -21.5	-3 52.1 -21.2	-4 46.1 -20.9
17°	-1 32.7 -22.0	-2 26.1 -21.7	-3 19.7 -21.4	-4 13.3 -21.2	-5 07.0 -20.9
18°	-1 54.7 -21.9	-2 47.8 -21.7	-3 41.1 -21.4	-4 34.5 -21.1	-5 27.9 -20.8
19°	-2 16.6 -22.0	-3 09.5 -21.6	-4 02.5 -21.3	-4 55.6 -21.0	-5 48.7 -20.7
20°	-2 38.6 -21.8	-3 31.1 -21.6	-4 23.8 -21.2	-5 16.6 -20.9	-6 09.4 -20.6
21°	-3 00.4 -21.9	-3 52.7 -21.5	-4 45.0 -21.2	-5 37.5 -20.8	-6 30.0 -20.5
22°	-3 22.3 -21.7	-4 14.2 -21.4	-5 06.2 -21.1	-5 58.3 -20.7	-6 50.5 -20.4
23°	-3 44.0 -21.8	-4 35.6 -21.3	-5 27.3 -20.9	-6 19.0 -20.7	-7 10.9 -20.3
24°	-4 05.8 -21.6	-4 56.9 -21.3	-5 48.2 -20.9	-6 39.7 -20.5	-7 31.2 -20.2
25°	-4 27.4 -21.6	-5 18.2 -21.2	-6 09.1 -20.8	-7 00.2 -20.4	-7 51.4 -20.0
26°	-4 49.0 -21.5	-5 39.4 -21.1	-6 29.9 -20.7	-7 20.6 -20.3	-8 11.4 -19.9
27°	-5 10.5 -21.4	-6 00.5 -21.0	-6 50.6 -20.6	-7 40.9 -20.2	-8 31.3 -19.7
28°	-5 31.9 -21.3	-6 21.5 -20.9	-7 11.2 -20.5	-8 01.1 -20.0	-8 51.0 -19.6
29°	-5 53.2 -21.3	-6 42.4 -20.8	-7 31.7 -20.3	-8 21.1 -19.9	-9 10.6 -19.5

Latitude 21°

Declination CONTRARY name to Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -21.5 90.0	-0 56.0 -21.5			
1°	-0 21.5 -21.5	-1 17.5 -21.5			
2°	-0 43.0 -21.5	-1 39.0 -21.4			
3°	-1 04.5 -21.4	-2 00.4 -21.5			
4°	-1 25.9 -21.5	-2 21.9 -21.3			
5°	-1 47.4 -21.4	-2 43.2 -21.4			
6°	-2 08.8 -21.4	-3 04.6 -21.3			
7°	-2 30.2 -21.3	-3 25.9 -21.2			
8°	-2 51.5 -21.3	-3 47.1 -21.2			
9°	-3 12.8 -21.3	-4 08.3 -21.1			
10°	-3 34.1 -21.2	-4 29.4 -21.0			
11°	-3 55.3 -21.1	-4 50.4 -21.0			
12°	-4 16.4 -21.0	-5 11.4 -20.8			
13°	-4 37.4 -21.0	-5 32.2 -20.8			
14°	-4 58.4 -20.9	-5 53.0 -20.7			
15°	-5 19.3 -20.8	-6 13.7 -20.6			
16°	-5 40.1 -20.8	-6 34.3 -20.5			
17°	-6 00.9 -20.6	-6 54.8 -20.3			
18°	-6 21.5 -20.5	-7 15.1 -20.3			
19°	-6 42.0 -20.4	-7 35.4 -20.1			
20°	-7 02.4 -20.3	-7 55.5 -20.0			
21°	-7 22.7 -20.2	-8 15.5 -19.9			
22°	-7 42.9 -20.1	-8 35.4 -19.7			
23°	-8 03.0 -19.9	-8 55.1 -19.6			
24°	-8 22.9 -19.8	-9 14.7 -19.4			
25°	-8 42.7 -19.6	-9 34.1 -19.2			
26°	-9 02.3 -19.5	-9 53.3 -19.1			
27°	-9 21.8 -19.3				
28°	-9 41.1 -19.2				
29°					

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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 The data on this page is believed to be accurate but no warranty is given for it's correctness. Use it only for training and exercising!

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	68 00.0 -60.0 180.0	67 58.7 -59.9 177.3	67 54.8 -59.8 174.7	67 48.4 -59.5 172.0	67 39.4 -59.1 169.4
1°	67 00.0 -60.0 180.0	66 58.8 -60.0 177.4	66 55.0 -59.8 174.9	66 48.9 -59.6 172.4	66 40.3 -59.3 169.9
2°	66 00.0 -60.0 180.0	65 58.8 -59.9 177.5	65 55.2 -59.8 175.1	65 49.3 -59.6 172.7	65 41.0 -59.2 170.3
3°	65 00.0 -60.0 180.0	64 58.9 -60.0 177.6	64 55.4 -59.8 175.3	64 49.7 -59.6 172.9	64 41.8 -59.4 170.6
4°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.7	63 55.6 -59.9 175.5	63 50.1 -59.7 173.2	63 42.4 -59.4 171.0
5°	63 00.0 -60.0 180.0	62 58.9 -59.9 177.8	62 55.7 -59.8 175.6	62 50.4 -59.6 173.4	62 43.0 -59.4 171.3
6°	62 00.0 -60.0 180.0	61 59.0 -60.0 177.9	61 55.9 -59.9 175.8	61 50.8 -59.7 173.7	61 43.6 -59.4 171.6
7°	61 00.0 -60.0 180.0	60 59.0 -60.0 178.0	60 56.0 -59.8 175.9	60 51.1 -59.7 173.9	60 44.2 -59.5 171.9
8°	60 00.0 -60.0 180.0	59 59.0 -59.9 178.0	59 56.2 -59.9 176.0	59 51.4 -59.8 174.1	59 44.7 -59.5 172.1
9°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.1	58 56.3 -59.9 176.2	58 51.6 -59.7 174.3	58 45.2 -59.6 172.4
10°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.1	57 56.4 -59.9 176.3	57 51.9 -59.8 174.4	57 45.6 -59.6 172.6
11°	57 00.0 -60.0 180.0	56 59.1 -59.9 178.2	56 56.5 -59.9 176.4	56 52.1 -59.7 174.6	56 46.0 -59.5 172.8
12°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.3	55 56.6 -59.9 176.5	55 52.4 -59.8 174.8	55 46.5 -59.7 173.0
13°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.3	54 56.7 -59.9 176.6	54 52.6 -59.8 174.9	54 46.8 -59.6 173.2
14°	54 00.0 -60.0 180.0	53 59.2 -60.0 178.3	53 56.8 -59.9 176.7	53 52.8 -59.8 175.1	53 47.2 -59.6 173.4
15°	53 00.0 -60.0 180.0	52 59.2 -60.0 178.4	52 56.9 -59.9 176.8	52 53.0 -59.8 175.2	52 47.6 -59.7 173.6
16°	52 00.0 -60.0 180.0	51 59.2 -59.9 178.4	51 57.0 -59.9 176.9	51 53.2 -59.8 175.3	51 47.9 -59.7 173.8
17°	51 00.0 -60.0 180.0	50 59.3 -60.0 178.5	50 57.1 -60.0 177.0	50 53.4 -59.9 175.4	50 48.2 -59.7 173.9
18°	50 00.0 -60.0 180.0	49 59.3 -60.0 178.5	49 57.1 -59.9 177.0	49 53.5 -59.8 175.6	49 48.5 -59.7 174.1
19°	49 00.0 -60.0 180.0	48 59.3 -60.0 178.6	48 57.2 -59.9 177.1	48 53.7 -59.8 175.7	48 48.8 -59.7 174.3
20°	48 00.0 -60.0 180.0	47 59.3 -60.0 178.6	47 57.3 -60.0 177.2	47 53.9 -59.9 175.8	47 49.1 -59.7 174.4
21°	47 00.0 -60.0 180.0	46 59.3 -59.9 178.6	46 57.3 -59.9 177.3	46 54.0 -59.8 175.9	46 49.4 -59.7 174.5
22°	46 00.0 -60.0 180.0	45 59.4 -60.0 178.7	45 57.4 -59.9 177.3	45 54.2 -59.9 176.0	45 49.7 -59.8 174.7
23°	45 00.0 -60.0 180.0	44 59.4 -60.0 178.7	44 57.5 -60.0 177.4	44 54.3 -59.8 176.1	44 49.9 -59.7 174.8
24°	44 00.0 -60.0 180.0	43 59.4 -60.0 178.7	43 57.5 -59.9 177.5	43 54.5 -59.9 176.2	43 50.2 -59.8 174.9
25°	43 00.0 -60.0 180.0	42 59.4 -60.0 178.8	42 57.6 -59.9 177.5	42 54.6 -59.9 176.3	42 50.4 -59.8 175.1
26°	42 00.0 -60.0 180.0	41 59.4 -60.0 178.8	41 57.7 -60.0 177.6	41 54.7 -59.9 176.4	41 50.6 -59.8 175.2
27°	41 00.0 -60.0 180.0	40 59.4 -60.0 178.8	40 57.7 -59.9 177.6	40 54.8 -59.8 176.5	40 50.8 -59.7 175.3
28°	40 00.0 -60.0 180.0	39 59.4 -59.9 178.8	39 57.8 -60.0 177.7	39 55.0 -59.9 176.5	39 51.1 -59.8 175.4
29°	39 00.0 -60.0 180.0	38 59.5 -60.0 178.9	38 57.8 -59.9 177.8	38 55.1 -59.9 176.6	38 51.3 -59.8 175.5

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	67 28.0 -58.7 166.9	67 14.1 -58.1 164.3	66 58.0 -57.6 161.9	66 39.5 -56.8 159.4	66 18.9 -56.1 157.1
1°	66 29.3 -58.8 167.4	66 16.0 -58.3 164.9	66 00.4 -57.7 162.6	65 42.7 -57.1 160.2	65 22.8 -56.4 157.9
2°	65 30.5 -58.9 167.9	65 17.7 -58.4 165.5	65 02.7 -57.9 163.2	64 45.6 -57.3 161.0	64 26.4 -56.6 158.8
3°	64 31.6 -59.0 168.3	64 19.3 -58.6 166.1	64 04.8 -58.0 163.8	63 48.3 -57.5 161.6	63 29.8 -56.9 159.5
4°	63 32.6 -59.0 168.7	63 20.7 -58.6 166.6	63 06.8 -58.2 164.4	62 50.8 -57.6 162.3	62 32.9 -57.0 160.2
5°	62 33.6 -59.1 169.1	62 22.1 -58.7 167.0	62 08.6 -58.3 164.9	61 53.2 -57.8 162.9	61 35.9 -57.2 160.9
6°	61 34.5 -59.2 169.5	61 23.4 -58.8 167.5	61 10.3 -58.3 165.4	60 55.4 -57.9 163.5	60 38.7 -57.4 161.5
7°	60 35.3 -59.2 169.9	60 24.6 -58.9 167.9	60 12.0 -58.5 165.9	59 57.5 -58.0 164.0	59 41.3 -57.6 162.1
8°	59 36.1 -59.2 170.2	59 25.7 -58.9 168.3	59 13.5 -58.6 166.4	58 59.5 -58.2 164.5	58 43.7 -57.6 162.6
9°	58 36.9 -59.3 170.5	58 26.8 -59.0 168.6	58 14.9 -58.6 166.8	58 01.3 -58.2 165.0	57 46.1 -57.8 163.2
10°	57 37.6 -59.4 170.8	57 27.8 -59.1 169.0	57 16.3 -58.7 167.2	57 03.1 -58.3 165.4	56 48.3 -57.9 163.7
11°	56 38.2 -59.3 171.1	56 28.7 -59.0 169.3	56 17.6 -58.8 167.6	56 04.8 -58.4 165.8	55 50.4 -58.1 164.1
12°	55 38.9 -59.4 171.3	55 29.7 -59.2 169.6	55 18.8 -58.8 167.9	55 06.4 -58.5 166.2	54 52.3 -58.1 164.6
13°	54 39.5 -59.4 171.6	54 30.5 -59.2 169.9	54 20.0 -58.9 168.2	54 07.9 -58.6 166.6	53 54.2 -58.2 165.0
14°	53 40.1 -59.5 171.8	53 31.3 -59.2 170.2	53 21.1 -59.0 168.6	53 09.3 -58.6 167.0	52 56.0 -58.2 165.4
15°	52 40.6 -59.5 172.0	52 32.1 -59.2 170.4	52 22.1 -58.9 168.9	52 10.7 -58.7 167.3	51 57.8 -58.4 165.8
16°	51 41.1 -59.5 172.2	51 32.9 -59.3 170.7	51 23.2 -59.1 169.2	51 12.0 -58.7 167.7	50 59.4 -58.4 166.2
17°	50 41.6 -59.5 172.4	50 33.6 -59.3 170.9	50 24.1 -59.0 169.5	50 13.3 -58.8 168.0	50 01.0 -58.5 166.5
18°	49 42.1 -59.5 172.6	49 34.3 -59.4 171.2	49 25.1 -59.1 169.7	49 14.5 -58.9 168.3	49 02.5 -58.5 166.9
19°	48 42.6 -59.6 172.8	48 34.9 -59.3 171.4	48 26.0 -59.2 170.0	48 15.6 -58.9 168.6	48 04.0 -58.6 167.2
20°	47 43.0 -59.6 173.0	47 35.6 -59.4 171.6	47 26.8 -59.2 170.3	47 16.7 -58.9 168.9	47 05.4 -58.7 167.5
21°	46 43.4 -59.5 173.2	46 36.2 -59.4 171.8	46 27.6 -59.2 170.5	46 17.8 -58.9 169.2	46 06.7 -58.7 167.8
22°	45 43.9 -59.7 173.4	45 36.8 -59.5 172.0	45 28.4 -59.2 170.7	45 18.9 -59.0 169.4	45 08.0 -58.7 168.1
23°	44 44.2 -59.6 173.5	44 37.3 -59.4 172.2	44 29.2 -59.2 171.0	44 19.9 -59.1 169.7	44 09.3 -58.8 168.4
24°	43 44.6 -59.6 173.7	43 37.9 -59.5 172.4	43 30.0 -59.3 171.2	43 20.8 -59.0 169.9	43 10.5 -58.8 168.7
25°	42 45.0 -59.6 173.8	42 38.4 -59.5 172.6	42 30.7 -59.3 171.4	42 21.8 -59.1 170.2	42 11.7 -58.9 169.0
26°	41 45.4 -59.7 174.0	41 38.9 -59.5 172.8	41 31.4 -59.4 171.6	41 22.7 -59.2 170.4	41 12.8 -58.9 169.2
27°	40 45.7 -59.7 174.1	40 39.4 -59.5 172.9	40 32.0 -59.3 171.8	40 23.5 -59.1 170.6	40 13.9 -58.9 169.5
28°	39 46.0 -59.6 174.3	39 39.9 -59.5 173.1	39 32.7 -59.4 172.0	39 24.4 -59.2 170.8	39 15.0 -58.9 169.7
29°	38 46.4 -59.7 174.4	38 40.4 -59.5 173.3	38 33.3 -59.3 172.2	38 25.2 -59.2 171.1	38 16.1 -59.0 170.0

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	65 56.2 -55.3 154.8	65 31.6 -54.5 152.6	65 05.0 -53.6 150.4	64 36.7 -52.7 148.4	64 06.7 -51.8 146.4
1°	65 00.9 -55.6 155.7	64 37.1 -54.8 153.6	64 11.4 -54.0 151.5	63 44.0 -53.1 149.5	63 14.9 -52.3 147.5
2°	64 05.3 -55.9 156.6	63 42.3 -55.2 154.5	63 17.4 -54.4 152.5	62 50.9 -53.6 150.5	62 22.6 -52.7 148.6
3°	63 09.4 -56.2 157.4	62 47.1 -55.5 155.4	62 23.0 -54.7 153.4	61 57.3 -54.0 151.5	61 29.9 -53.2 149.6
4°	62 13.2 -56.4 158.2	61 51.6 -55.7 156.2	61 28.3 -55.0 154.3	61 03.3 -54.3 152.4	60 36.7 -53.5 150.5
5°	61 16.8 -56.7 158.9	60 55.9 -56.0 157.0	60 33.3 -55.4 155.1	60 09.0 -54.6 153.2	59 43.2 -53.9 151.4
6°	60 20.1 -56.8 159.6	59 59.9 -56.3 157.7	59 37.9 -55.6 155.9	59 14.4 -54.9 154.1	58 49.3 -54.3 152.3
7°	59 23.3 -57.0 160.2	59 03.6 -56.4 158.4	58 42.3 -55.8 156.6	58 19.5 -55.2 154.8	57 55.0 -54.5 153.1
8°	58 26.3 -57.2 160.8	58 07.2 -56.6 159.0	57 46.5 -56.0 157.3	57 24.3 -55.5 155.6	57 00.5 -54.8 153.9
9°	57 29.1 -57.3 161.4	57 10.6 -56.8 159.7	56 50.5 -56.3 157.9	56 28.8 -55.6 156.3	56 05.7 -55.0 154.6
10°	56 31.8 -57.4 161.9	56 13.8 -57.0 160.2	55 54.2 -56.4 158.6	55 33.2 -55.9 156.9	55 10.7 -55.3 155.3
11°	55 34.4 -57.6 162.5	55 16.8 -57.1 160.8	54 57.8 -56.6 159.2	54 37.3 -56.1 157.6	54 15.4 -55.5 156.0
12°	54 36.8 -57.7 162.9	54 19.7 -57.2 161.3	54 01.2 -56.8 159.7	53 41.2 -56.2 158.2	53 19.9 -55.7 156.7
13°	53 39.1 -57.8 163.4	53 22.5 -57.4 161.8	53 04.4 -56.9 160.3	52 45.0 -56.4 158.8	52 24.2 -55.9 157.3
14°	52 41.3 -57.9 163.9	52 25.1 -57.5 162.3	52 07.5 -57.0 160.8	51 48.6 -56.6 159.3	51 28.3 -56.1 157.9
15°	51 43.4 -58.0 164.3	51 27.6 -57.5 162.8	51 10.5 -57.2 161.3	50 52.0 -56.7 159.9	50 32.2 -56.2 158.4
16°	50 45.4 -58.0 164.7	50 30.1 -57.7 163.2	50 13.3 -57.2 161.8	49 55.3 -56.8 160.4	49 36.0 -56.4 159.0
17°	49 47.4 -58.2 165.1	49 32.4 -57.8 163.7	49 16.1 -57.4 162.3	48 58.5 -57.0 160.9	48 39.6 -56.5 159.5
18°	48 49.2 -58.2 165.5	48 34.6 -57.8 164.1	48 18.7 -57.5 162.7	48 01.5 -57.0 161.3	47 43.1 -56.6 160.0
19°	47 51.0 -58.3 165.8	47 36.8 -58.0 164.5	47 21.2 -57.5 163.1	47 04.5 -57.2 161.8	46 46.5 -56.8 160.5
20°	46 52.7 -58.3 166.2	46 38.8 -58.0 164.9	46 23.7 -57.7 163.5	46 07.3 -57.3 162.2	45 49.7 -56.8 161.0
21°	45 54.4 -58.4 166.5	45 40.8 -58.1 165.2	45 26.0 -57.7 163.9	45 10.0 -57.3 162.7	44 52.9 -57.0 161.4
22°	44 56.0 -58.5 166.9	44 42.7 -58.1 165.6	44 28.3 -57.8 164.3	44 12.7 -57.5 163.1	43 55.9 -57.0 161.9
23°	43 57.5 -58.5 167.2	43 44.6 -58.2 165.9	43 30.5 -57.9 164.7	43 15.2 -57.5 163.5	42 58.9 -57.2 162.3
24°	42 59.0 -58.5 167.5	42 46.4 -58.3 166.3	42 32.6 -57.9 165.1	42 17.7 -57.6 163.9	42 01.7 -57.2 162.7
25°	42 00.5 -58.6 167.8	41 48.1 -58.3 166.6	41 34.7 -58.0 165.4	41 20.1 -57.7 164.2	41 04.5 -57.4 163.1
26°	41 01.9 -58.7 168.1	40 49.8 -58.3 166.9	40 36.7 -58.1 165.7	40 22.4 -57.7 164.6	40 07.1 -57.4 163.5
27°	40 03.2 -58.6 168.3	39 51.5 -58.5 167.2	39 38.6 -58.1 166.1	39 24.7 -57.8 165.0	39 09.7 -57.4 163.9
28°	39 04.6 -58.8 168.6	38 53.0 -58.4 167.5	38 40.5 -58.2 166.4	38 26.9 -57.9 165.3	38 12.3 -57.6 164.2
29°	38 05.8 -58.7 168.9	37 54.6 -58.5 167.8	37 42.3 -58.2 166.7	37 29.0 -57.9 165.6	37 14.7 -57.6 164.6

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	63 35.1 -50.9 144.4	63 02.0 -49.9 142.6	62 27.5 -49.0 140.8	61 51.6 -48.0 139.1	61 14.6 -47.1 137.4
1°	62 44.2 -51.3 145.6	62 12.1 -50.5 143.8	61 38.5 -49.6 142.0	61 03.6 -48.6 140.3	60 27.5 -47.8 138.7
2°	61 52.9 -51.9 146.7	61 21.6 -51.0 144.9	60 48.9 -50.1 143.2	60 15.0 -49.3 141.5	59 39.7 -48.4 139.9
3°	61 01.0 -52.4 147.8	60 30.6 -51.5 146.0	59 58.8 -50.7 144.3	59 25.7 -49.9 142.6	58 51.3 -49.0 141.1
4°	60 08.6 -52.7 148.8	59 39.1 -52.0 147.0	59 08.1 -51.2 145.4	58 35.8 -50.3 143.7	58 02.3 -49.6 142.2
5°	59 15.9 -53.2 149.7	58 47.1 -52.4 148.0	58 16.9 -51.6 146.4	57 45.5 -50.9 144.8	57 12.7 -50.0 143.2
6°	58 22.7 -53.5 150.6	57 54.7 -52.8 148.9	57 25.3 -52.0 147.3	56 54.6 -51.3 145.7	56 22.7 -50.5 144.2
7°	57 29.2 -53.9 151.4	57 01.9 -53.2 149.8	56 33.3 -52.5 148.2	56 03.3 -51.7 146.7	55 32.2 -51.0 145.2
8°	56 35.3 -54.1 152.3	56 08.7 -53.4 150.7	55 40.8 -52.8 149.1	55 11.6 -52.1 147.6	54 41.2 -51.4 146.1
9°	55 41.2 -54.5 153.0	55 15.3 -53.8 151.5	54 48.0 -53.1 149.9	54 19.5 -52.4 148.4	53 49.8 -51.7 147.0
10°	54 46.7 -54.6 153.8	54 21.5 -54.1 152.2	53 54.9 -53.4 150.7	53 27.1 -52.7 149.3	52 58.1 -52.1 147.8
11°	53 52.1 -55.0 154.5	53 27.4 -54.3 153.0	53 01.5 -53.7 151.5	52 34.4 -53.1 150.1	52 06.0 -52.4 148.7
12°	52 57.1 -55.1 155.2	52 33.1 -54.5 153.7	52 07.8 -53.9 152.2	51 41.3 -53.3 150.8	51 13.6 -52.7 149.4
13°	52 02.0 -55.3 155.8	51 38.6 -54.8 154.4	51 13.9 -54.2 152.9	50 48.0 -53.7 151.6	50 20.9 -53.0 150.2
14°	51 06.7 -55.6 156.4	50 43.8 -55.0 155.0	50 19.7 -54.5 153.6	49 54.3 -53.8 152.3	49 27.9 -53.3 150.9
15°	50 11.1 -55.7 157.0	49 48.8 -55.2 155.6	49 25.2 -54.6 154.3	49 00.5 -54.1 152.9	48 34.6 -53.5 151.6
16°	49 15.4 -55.9 157.6	48 53.6 -55.4 156.2	48 30.6 -54.9 154.9	48 06.4 -54.3 153.6	47 41.1 -53.8 152.3
17°	48 19.5 -56.0 158.1	47 58.2 -55.5 156.8	47 35.7 -55.0 155.5	47 12.1 -54.5 154.2	46 47.3 -53.9 153.0
18°	47 23.5 -56.2 158.7	47 02.7 -55.7 157.4	46 40.7 -55.2 156.1	46 17.6 -54.7 154.8	45 53.4 -54.2 153.6
19°	46 27.3 -56.3 159.2	46 07.0 -55.9 157.9	45 45.5 -55.4 156.7	45 22.9 -54.9 155.4	44 59.2 -54.3 154.2
20°	45 31.0 -56.4 159.7	45 11.1 -55.9 158.4	44 50.1 -55.5 157.2	44 28.0 -55.0 156.0	44 04.9 -54.6 154.8
21°	44 34.6 -56.6 160.2	44 15.2 -56.2 158.9	43 54.6 -55.6 157.7	43 33.0 -55.2 156.5	43 10.3 -54.7 155.4
22°	43 38.0 -56.6 160.6	43 19.0 -56.2 159.4	42 59.0 -55.8 158.3	42 37.8 -55.3 157.1	42 15.6 -54.8 155.9
23°	42 41.4 -56.8 161.1	42 22.8 -56.4 159.9	42 03.2 -56.0 158.7	41 42.5 -55.5 157.6	41 20.8 -55.0 156.5
24°	41 44.6 -56.9 161.5	41 26.4 -56.4 160.4	41 07.2 -56.0 159.2	40 47.0 -55.6 158.1	40 25.8 -55.2 157.0
25°	40 47.7 -56.9 161.9	40 30.0 -56.6 160.8	40 11.2 -56.1 159.7	39 51.4 -55.7 158.6	39 30.6 -55.3 157.5
26°	39 50.8 -57.0 162.4	39 33.4 -56.6 161.3	39 15.1 -56.3 160.2	38 55.7 -55.9 159.1	38 35.3 -55.4 158.0
27°	38 53.8 -57.2 162.8	38 36.8 -56.8 161.7	38 18.8 -56.4 160.6	37 59.8 -55.9 159.5	37 39.9 -55.5 158.5
28°	37 56.6 -57.1 163.2	37 40.0 -56.8 162.1	37 22.4 -56.4 161.0	37 03.9 -56.1 160.0	36 44.4 -55.6 159.0
29°	36 59.5 -57.3 163.5	36 43.2 -56.9 162.5	36 26.0 -56.5 161.5	36 07.8 -56.1 160.4	35 48.8 -55.8 159.4

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	60 36.4 -46.2 135.8	59 57.1 -45.3 134.3	59 16.8 -44.4 132.8	58 35.5 -43.5 131.4	57 53.4 -42.7 130.1
1°	59 50.2 -46.9 137.1	59 11.8 -46.0 135.6	58 32.4 -45.2 134.1	57 52.0 -44.3 132.7	57 10.7 -43.5 131.4
2°	59 03.3 -47.5 138.3	58 25.8 -46.7 136.8	57 47.2 -45.8 135.4	57 07.7 -45.1 134.0	56 27.2 -44.2 132.6
3°	58 15.8 -48.2 139.5	57 39.1 -47.4 138.0	57 01.4 -46.6 136.6	56 22.6 -45.7 135.2	55 43.0 -44.9 133.9
4°	57 27.6 -48.8 140.6	56 51.7 -47.9 139.2	56 14.8 -47.1 137.7	55 36.9 -46.3 136.4	54 58.1 -45.6 135.0
5°	56 38.8 -49.2 141.7	56 03.8 -48.5 140.2	55 27.7 -47.7 138.8	54 50.6 -46.9 137.5	54 12.5 -46.1 136.1
6°	55 49.6 -49.8 142.7	55 15.3 -49.0 141.3	54 40.0 -48.2 139.9	54 03.7 -47.5 138.5	53 26.4 -46.8 137.2
7°	54 59.8 -50.2 143.7	54 26.3 -49.4 142.3	53 51.8 -48.8 140.9	53 16.2 -48.0 139.6	52 39.6 -47.2 138.3
8°	54 09.6 -50.7 144.7	53 36.9 -50.0 143.3	53 03.0 -49.2 141.9	52 28.2 -48.5 140.6	51 52.4 -47.8 139.3
9°	53 18.9 -51.0 145.6	52 46.9 -50.3 144.2	52 13.8 -49.6 142.8	51 39.7 -48.9 141.5	51 04.6 -48.2 140.3
10°	52 27.9 -51.4 146.4	51 56.6 -50.7 145.1	51 24.2 -50.0 143.7	50 50.8 -49.3 142.5	50 16.4 -48.6 141.2
11°	51 36.5 -51.8 147.3	51 05.9 -51.1 145.9	50 34.2 -50.4 144.6	50 01.5 -49.8 143.3	49 27.8 -49.1 142.1
12°	50 44.7 -52.0 148.1	50 14.8 -51.5 146.8	49 43.8 -50.8 145.5	49 11.7 -50.1 144.2	48 38.7 -49.5 143.0
13°	49 52.7 -52.4 148.9	49 23.3 -51.7 147.6	48 53.0 -51.1 146.3	48 21.6 -50.5 145.0	47 49.2 -49.8 143.8
14°	49 00.3 -52.7 149.6	48 31.6 -52.1 148.3	48 01.9 -51.5 147.1	47 31.1 -50.8 145.8	46 59.4 -50.1 144.6
15°	48 07.6 -52.9 150.3	47 39.5 -52.3 149.1	47 10.4 -51.7 147.8	46 40.3 -51.1 146.6	46 09.3 -50.5 145.4
16°	47 14.7 -53.2 151.0	46 47.2 -52.6 149.8	46 18.7 -52.0 148.6	45 49.2 -51.4 147.4	45 18.8 -50.8 146.2
17°	46 21.5 -53.4 151.7	45 54.6 -52.8 150.5	45 26.7 -52.2 149.3	44 57.8 -51.6 148.1	44 28.0 -51.1 147.0
18°	45 28.1 -53.6 152.4	45 01.8 -53.1 151.2	44 34.5 -52.5 150.0	44 06.2 -52.0 148.8	43 36.9 -51.4 147.7
19°	44 34.5 -53.8 153.0	44 08.7 -53.3 151.8	43 42.0 -52.8 150.7	43 14.2 -52.2 149.5	42 45.5 -51.6 148.4
20°	43 40.7 -54.1 153.6	43 15.4 -53.5 152.5	42 49.2 -52.9 151.3	42 22.0 -52.4 150.2	41 53.9 -51.8 149.1
21°	42 46.6 -54.2 154.2	42 21.9 -53.6 153.1	41 56.3 -53.2 152.0	41 29.6 -52.6 150.9	41 02.1 -52.1 149.8
22°	41 52.4 -54.3 154.8	41 28.3 -53.9 153.7	41 03.1 -53.3 152.6	40 37.0 -52.8 151.5	40 10.0 -52.3 150.4
23°	40 58.1 -54.6 155.4	40 34.4 -54.0 154.3	40 09.8 -53.6 153.2	39 44.2 -53.0 152.1	39 17.7 -52.5 151.1
24°	40 03.5 -54.6 155.9	39 40.4 -54.2 154.8	39 16.2 -53.7 153.8	38 51.2 -53.2 152.7	38 25.2 -52.7 151.7
25°	39 08.9 -54.9 156.4	38 46.2 -54.4 155.4	38 22.5 -53.9 154.3	37 58.0 -53.4 153.3	37 32.5 -52.8 152.3
26°	38 14.0 -54.9 157.0	37 51.8 -54.5 155.9	37 28.6 -54.0 154.9	37 04.6 -53.5 153.9	36 39.7 -53.1 152.9
27°	37 19.1 -55.1 157.5	36 57.3 -54.6 156.4	36 34.6 -54.1 155.4	36 11.1 -53.7 154.4	35 46.6 -53.2 153.5
28°	36 24.0 -55.2 158.0	36 02.7 -54.8 157.0	35 40.5 -54.4 156.0	35 17.4 -53.9 155.0	34 53.4 -53.3 154.0
29°	35 28.8 -55.3 158.4	35 07.9 -54.9 157.5	34 46.1 -54.4 156.5	34 23.5 -53.9 155.5	34 00.1 -53.5 154.6

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	57 10.4 -41.9 128.8	56 26.6 -41.0 127.5	55 42.2 -40.3 126.3	54 57.0 -39.5 125.2	54 11.2 -38.8 124.1
1°	56 28.5 -42.7 130.1	55 45.6 -41.9 128.8	55 01.9 -41.2 127.6	54 17.5 -40.4 126.5	53 32.4 -39.6 125.3
2°	55 45.8 -43.4 131.3	55 03.7 -42.7 130.1	54 20.7 -41.8 128.9	53 37.1 -41.1 127.7	52 52.8 -40.5 126.6
3°	55 02.4 -44.1 132.6	54 21.0 -43.3 131.3	53 38.9 -42.6 130.1	52 56.0 -41.9 128.9	52 12.3 -41.1 127.8
4°	54 18.3 -44.8 133.7	53 37.7 -44.0 132.5	52 56.3 -43.3 131.3	52 14.1 -42.5 130.1	51 31.2 -41.8 129.0
5°	53 33.5 -45.4 134.9	52 53.7 -44.7 133.6	52 13.0 -43.9 132.4	51 31.6 -43.2 131.3	50 49.4 -42.5 130.1
6°	52 48.1 -45.9 136.0	52 09.0 -45.2 134.7	51 29.1 -44.5 133.5	50 48.4 -43.8 132.4	50 06.9 -43.1 131.2
7°	52 02.2 -46.6 137.0	51 23.8 -45.8 135.8	50 44.6 -45.1 134.6	50 04.6 -44.4 133.4	49 23.8 -43.7 132.3
8°	51 15.6 -47.0 138.0	50 38.0 -46.3 136.8	49 59.5 -45.6 135.6	49 20.2 -44.9 134.5	48 40.1 -44.2 133.4
9°	50 28.6 -47.5 139.0	49 51.7 -46.8 137.8	49 13.9 -46.1 136.6	48 35.3 -45.4 135.5	47 55.9 -44.7 134.4
10°	49 41.1 -48.0 140.0	49 04.9 -47.3 138.8	48 27.8 -46.6 137.6	47 49.9 -46.0 136.5	47 11.2 -45.3 135.4
11°	48 53.1 -48.4 140.9	48 17.6 -47.7 139.7	47 41.2 -47.1 138.5	47 03.9 -46.3 137.4	46 25.9 -45.7 136.3
12°	48 04.7 -48.8 141.8	47 29.9 -48.2 140.6	46 54.1 -47.4 139.5	46 17.6 -46.8 138.3	45 40.2 -46.2 137.3
13°	47 15.9 -49.1 142.6	46 41.7 -48.5 141.5	46 06.7 -47.9 140.4	45 30.8 -47.3 139.2	44 54.0 -46.5 138.2
14°	46 26.8 -49.6 143.5	45 53.2 -48.9 142.3	45 18.8 -48.3 141.2	44 43.5 -47.6 140.1	44 07.5 -47.0 139.1
15°	45 37.2 -49.8 144.3	45 04.3 -49.2 143.2	44 30.5 -48.6 142.1	43 55.9 -48.0 141.0	43 20.5 -47.4 139.9
16°	44 47.4 -50.2 145.1	44 15.1 -49.6 144.0	43 41.9 -48.9 142.9	43 07.9 -48.3 141.8	42 33.1 -47.7 140.8
17°	43 57.2 -50.5 145.8	43 25.5 -49.9 144.7	42 53.0 -49.3 143.7	42 19.6 -48.6 142.6	41 45.4 -48.0 141.6
18°	43 06.7 -50.7 146.6	42 35.6 -50.1 145.5	42 03.7 -49.6 144.4	41 31.0 -49.0 143.4	40 57.4 -48.4 142.4
19°	42 16.0 -51.1 147.3	41 45.5 -50.5 146.2	41 14.1 -49.8 145.2	40 42.0 -49.3 144.2	40 09.0 -48.7 143.2
20°	41 24.9 -51.3 148.0	40 55.0 -50.7 147.0	40 24.3 -50.2 145.9	39 52.7 -49.5 144.9	39 20.3 -48.9 143.9
21°	40 33.6 -51.5 148.7	40 04.3 -50.9 147.7	39 34.1 -50.3 146.6	39 03.2 -49.9 145.6	38 31.4 -49.3 144.7
22°	39 42.1 -51.7 149.4	39 13.4 -51.2 148.4	38 43.8 -50.7 147.3	38 13.3 -50.0 146.4	37 42.1 -49.5 145.4
23°	38 50.4 -52.0 150.0	38 22.2 -51.5 149.0	37 53.1 -50.8 148.0	37 23.3 -50.4 147.1	36 52.6 -49.7 146.1
24°	37 58.4 -52.1 150.7	37 30.7 -51.6 149.7	37 02.3 -51.1 148.7	36 32.9 -50.5 147.7	36 02.9 -50.0 146.8
25°	37 06.3 -52.4 151.3	36 39.1 -51.8 150.3	36 11.2 -51.3 149.4	35 42.4 -50.7 148.4	35 12.9 -50.2 147.5
26°	36 13.9 -52.5 151.9	35 47.3 -52.0 150.9	35 19.9 -51.5 150.0	34 51.7 -51.0 149.1	34 22.7 -50.5 148.1
27°	35 21.4 -52.7 152.5	34 55.3 -52.2 151.6	34 28.4 -51.7 150.6	34 00.7 -51.2 149.7	33 32.2 -50.6 148.8
28°	34 28.7 -52.9 153.1	34 03.1 -52.4 152.1	33 36.7 -51.9 151.2	33 09.5 -51.3 150.3	32 41.6 -50.8 149.4
29°	33 35.8 -53.0 153.7	33 10.7 -52.5 152.7	32 44.8 -52.0 151.8	32 18.2 -51.5 150.9	31 50.8 -51.0 150.1

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	53 24.8 -38.1 123.0	52 37.9 -37.4 121.9	51 50.4 -36.7 120.9	51 02.5 -36.2 120.0	50 14.1 -35.6 119.0
1°	52 46.7 -38.9 124.3	52 00.5 -38.3 123.2	51 13.7 -37.6 122.2	50 26.3 -36.9 121.2	49 38.5 -36.3 120.3
2°	52 07.8 -39.7 125.5	51 22.2 -39.0 124.5	50 36.1 -38.4 123.4	49 49.4 -37.7 122.5	49 02.2 -37.1 121.5
3°	51 28.1 -40.5 126.7	50 43.2 -39.8 125.7	49 57.7 -39.1 124.7	49 11.7 -38.5 123.7	48 25.1 -37.8 122.7
4°	50 47.6 -41.1 127.9	50 03.4 -40.4 126.8	49 18.6 -39.8 125.8	48 33.2 -39.1 124.8	47 47.3 -38.5 123.9
5°	50 06.5 -41.8 129.0	49 23.0 -41.1 128.0	48 38.8 -40.4 127.0	47 54.1 -39.8 126.0	47 08.8 -39.2 125.0
6°	49 24.7 -42.4 130.2	48 41.9 -41.7 129.1	47 58.4 -41.1 128.1	47 14.3 -40.4 127.1	46 29.6 -39.7 126.1
7°	48 42.3 -43.0 131.2	48 00.2 -42.4 130.2	47 17.3 -41.6 129.2	46 33.9 -41.0 128.2	45 49.9 -40.4 127.2
8°	47 59.3 -43.5 132.3	47 17.8 -42.8 131.2	46 35.7 -42.3 130.2	45 52.9 -41.6 129.2	45 09.5 -41.0 128.3
9°	47 15.8 -44.1 133.3	46 35.0 -43.5 132.3	45 53.4 -42.7 131.2	45 11.3 -42.1 130.2	44 28.5 -41.5 129.3
10°	46 31.7 -44.6 134.3	45 51.5 -43.9 133.3	45 10.7 -43.3 132.2	44 29.2 -42.7 131.3	43 47.0 -42.0 130.3
11°	45 47.1 -45.0 135.3	45 07.6 -44.4 134.2	44 27.4 -43.8 133.2	43 46.5 -43.1 132.2	43 05.0 -42.5 131.3
12°	45 02.1 -45.5 136.2	44 23.2 -44.9 135.2	43 43.6 -44.2 134.2	43 03.4 -43.6 133.2	42 22.5 -42.9 132.2
13°	44 16.6 -46.0 137.1	43 38.3 -45.2 136.1	42 59.4 -44.6 135.1	42 19.8 -44.0 134.1	41 39.6 -43.5 133.2
14°	43 30.6 -46.3 138.0	42 53.1 -45.8 137.0	42 14.8 -45.1 136.0	41 35.8 -44.5 135.0	40 56.1 -43.8 134.1
15°	42 44.3 -46.7 138.9	42 07.3 -46.1 137.9	41 29.7 -45.5 136.9	40 51.3 -44.9 135.9	40 12.3 -44.3 135.0
16°	41 57.6 -47.1 139.7	41 21.2 -46.4 138.7	40 44.2 -45.9 137.8	40 06.4 -45.2 136.8	39 28.0 -44.6 135.9
17°	41 10.5 -47.5 140.6	40 34.8 -46.9 139.6	39 58.3 -46.2 138.6	39 21.2 -45.6 137.7	38 43.4 -45.0 136.7
18°	40 23.0 -47.7 141.4	39 47.9 -47.1 140.4	39 12.1 -46.6 139.4	38 35.6 -46.0 138.5	37 58.4 -45.4 137.6
19°	39 35.3 -48.1 142.2	39 00.8 -47.5 141.2	38 25.5 -46.9 140.2	37 49.6 -46.3 139.3	37 13.0 -45.7 138.4
20°	38 47.2 -48.4 142.9	38 13.3 -47.8 142.0	37 38.6 -47.2 141.0	37 03.3 -46.6 140.1	36 27.3 -46.0 139.2
21°	37 58.8 -48.7 143.7	37 25.5 -48.1 142.7	36 51.4 -47.5 141.8	36 16.7 -46.9 140.9	35 41.3 -46.4 140.0
22°	37 10.1 -48.9 144.4	36 37.4 -48.4 143.5	36 03.9 -47.7 142.6	35 29.8 -47.2 141.7	34 54.9 -46.6 140.8
23°	36 21.2 -49.2 145.1	35 49.0 -48.6 144.2	35 16.2 -48.1 143.3	34 42.6 -47.5 142.4	34 08.3 -46.9 141.5
24°	35 32.0 -49.4 145.9	35 00.4 -48.9 144.9	34 28.1 -48.3 144.0	33 55.1 -47.7 143.2	33 21.4 -47.2 142.3
25°	34 42.6 -49.7 146.5	34 11.5 -49.1 145.6	33 39.8 -48.6 144.8	33 07.4 -48.0 143.9	32 34.2 -47.4 143.0
26°	33 52.9 -49.9 147.2	33 22.4 -49.3 146.3	32 51.2 -48.7 145.5	32 19.4 -48.3 144.6	31 46.8 -47.7 143.8
27°	33 03.0 -50.1 147.9	32 33.1 -49.5 147.0	32 02.5 -49.0 146.2	31 31.1 -48.4 145.3	30 59.1 -47.9 144.5
28°	32 12.9 -50.2 148.5	31 43.6 -49.8 147.7	31 13.5 -49.2 146.8	30 42.7 -48.7 146.0	30 11.2 -48.1 145.2
29°	31 22.7 -50.5 149.2	30 53.8 -49.9 148.3	30 24.3 -49.5 147.5	29 54.0 -48.8 146.7	29 23.1 -48.3 145.9

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	49 25.2 -34.9 118.1	48 36.0 -34.4 117.3	47 46.3 -33.8 116.4	46 56.4 -33.3 115.6	46 06.0 -32.8 114.8
1°	48 50.3 -35.8 119.4	48 01.6 -35.2 118.5	47 12.5 -34.6 117.7	46 23.1 -34.1 116.8	45 33.2 -33.5 116.0
2°	48 14.5 -36.4 120.6	47 26.4 -35.9 119.7	46 37.9 -35.3 118.9	45 49.0 -34.8 118.0	44 59.7 -34.3 117.2
3°	47 38.1 -37.2 121.8	46 50.5 -36.6 120.9	46 02.6 -36.0 120.0	45 14.2 -35.5 119.2	44 25.4 -34.9 118.4
4°	47 00.9 -37.9 122.9	46 13.9 -37.3 122.0	45 26.6 -36.8 121.2	44 38.7 -36.1 120.3	43 50.5 -35.6 119.5
5°	46 23.0 -38.6 124.1	45 36.6 -37.9 123.2	44 49.8 -37.3 122.3	44 02.6 -36.8 121.4	43 14.9 -36.2 120.6
6°	45 44.4 -39.1 125.2	44 58.7 -38.5 124.3	44 12.5 -38.0 123.4	43 25.8 -37.4 122.5	42 38.7 -36.8 121.7
7°	45 05.3 -39.8 126.3	44 20.2 -39.2 125.3	43 34.5 -38.5 124.5	42 48.4 -38.0 123.6	42 01.9 -37.5 122.8
8°	44 25.5 -40.3 127.3	43 41.0 -39.7 126.4	42 56.0 -39.2 125.5	42 10.4 -38.5 124.6	41 24.4 -37.9 123.8
9°	43 45.2 -40.9 128.3	43 01.3 -40.3 127.4	42 16.8 -39.6 126.5	41 31.9 -39.1 125.7	40 46.5 -38.5 124.8
10°	43 04.3 -41.4 129.4	42 21.0 -40.8 128.4	41 37.2 -40.2 127.6	40 52.8 -39.6 126.7	40 08.0 -39.1 125.8
11°	42 22.9 -41.9 130.3	41 40.2 -41.2 129.4	40 57.0 -40.7 128.5	40 13.2 -40.1 127.7	39 28.9 -39.5 126.8
12°	41 41.0 -42.3 131.3	40 59.0 -41.8 130.4	40 16.3 -41.1 129.5	39 33.1 -40.5 128.6	38 49.4 -40.0 127.8
13°	40 58.7 -42.8 132.2	40 17.2 -42.2 131.3	39 35.2 -41.7 130.5	38 52.6 -41.1 129.6	38 09.4 -40.4 128.8
14°	40 15.9 -43.3 133.2	39 35.0 -42.6 132.3	38 53.5 -42.0 131.4	38 11.5 -41.4 130.5	37 29.0 -40.9 129.7
15°	39 32.6 -43.6 134.1	38 52.4 -43.1 133.2	38 11.5 -42.5 132.3	37 30.1 -41.9 131.4	36 48.1 -41.3 130.6
16°	38 49.0 -44.1 135.0	38 09.3 -43.4 134.1	37 29.0 -42.8 133.2	36 48.2 -42.3 132.3	36 06.8 -41.7 131.5
17°	38 04.9 -44.4 135.8	37 25.9 -43.9 134.9	36 46.2 -43.2 134.1	36 05.9 -42.6 133.2	35 25.1 -42.0 132.4
18°	37 20.5 -44.8 136.7	36 42.0 -44.1 135.8	36 03.0 -43.6 134.9	35 23.3 -43.0 134.1	34 43.1 -42.5 133.3
19°	36 35.7 -45.1 137.5	35 57.9 -44.6 136.6	35 19.4 -44.0 135.8	34 40.3 -43.4 134.9	34 00.6 -42.8 134.1
20°	35 50.6 -45.4 138.3	35 13.3 -44.8 137.5	34 35.4 -44.3 136.6	33 56.9 -43.7 135.8	33 17.8 -43.1 135.0
21°	35 05.2 -45.8 139.1	34 28.5 -45.2 138.3	33 51.1 -44.6 137.4	33 13.2 -44.0 136.6	32 34.7 -43.5 135.8
22°	34 19.4 -46.0 139.9	33 43.3 -45.5 139.1	33 06.5 -44.9 138.2	32 29.2 -44.3 137.4	31 51.2 -43.7 136.6
23°	33 33.4 -46.4 140.7	32 57.8 -45.7 139.8	32 21.6 -45.1 139.0	31 44.9 -44.7 138.2	31 07.5 -44.1 137.4
24°	32 47.0 -46.6 141.4	32 12.1 -46.1 140.6	31 36.5 -45.5 139.8	31 00.2 -44.9 139.0	30 23.4 -44.3 138.2
25°	32 00.4 -46.8 142.2	31 26.0 -46.3 141.4	30 51.0 -45.7 140.6	30 15.3 -45.1 139.8	29 39.1 -44.6 139.0
26°	31 13.6 -47.1 142.9	30 39.7 -46.5 142.1	30 05.3 -46.0 141.3	29 30.2 -45.4 140.5	28 54.5 -44.8 139.7
27°	30 26.5 -47.4 143.6	29 53.2 -46.8 142.8	29 19.3 -46.2 142.0	28 44.8 -45.7 141.3	28 09.7 -45.1 140.5
28°	29 39.1 -47.5 144.4	29 06.4 -47.0 143.6	28 33.1 -46.5 142.8	27 59.1 -45.9 142.0	27 24.6 -45.4 141.2
29°	28 51.6 -47.8 145.1	28 19.4 -47.2 144.3	27 46.6 -46.7 143.5	27 13.2 -46.1 142.7	26 39.2 -45.5 142.0

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	36 35.0 -28.3 107.4	35 41.8 -28.0 106.9	34 48.5 -27.7 106.3	33 55.0 -27.3 105.8	33 01.4 -27.1 105.2
1°	36 06.7 -28.9 108.5	35 13.8 -28.5 108.0	34 20.8 -28.2 107.4	33 27.7 -27.9 106.8	32 34.3 -27.6 106.3
2°	35 37.8 -29.5 109.6	34 45.3 -29.1 109.0	33 52.6 -28.8 108.5	32 59.8 -28.5 107.9	32 06.7 -28.1 107.3
3°	35 08.3 -30.0 110.7	34 16.2 -29.7 110.1	33 23.8 -29.2 109.5	32 31.3 -28.9 108.9	31 38.6 -28.6 108.4
4°	34 38.3 -30.5 111.8	33 46.5 -30.1 111.1	32 54.6 -29.9 110.6	32 02.4 -29.5 110.0	31 10.0 -29.1 109.4
5°	34 07.8 -31.1 112.8	33 16.4 -30.7 112.2	32 24.7 -30.3 111.6	31 32.9 -29.9 111.0	30 40.9 -29.6 110.4
6°	33 36.7 -31.6 113.8	32 45.7 -31.2 113.2	31 54.4 -30.7 112.6	31 03.0 -30.4 112.0	30 11.3 -30.0 111.4
7°	33 05.1 -32.1 114.8	32 14.5 -31.6 114.2	31 23.7 -31.3 113.6	30 32.6 -30.9 113.0	29 41.3 -30.5 112.4
8°	32 33.0 -32.5 115.8	31 42.9 -32.2 115.2	30 52.4 -31.7 114.6	30 01.7 -31.3 114.0	29 10.8 -31.0 113.4
9°	32 00.5 -33.0 116.8	31 10.7 -32.5 116.2	30 20.7 -32.2 115.6	29 30.4 -31.7 115.0	28 39.8 -31.3 114.4
10°	31 27.5 -33.4 117.8	30 38.2 -33.0 117.2	29 48.5 -32.5 116.6	28 58.7 -32.2 116.0	28 08.5 -31.7 115.4
11°	30 54.1 -33.9 118.8	30 05.2 -33.5 118.2	29 16.0 -33.0 117.5	28 26.5 -32.6 116.9	27 36.8 -32.2 116.3
12°	30 20.2 -34.3 119.8	29 31.7 -33.8 119.1	28 43.0 -33.4 118.5	27 53.9 -32.9 117.9	27 04.6 -32.5 117.3
13°	29 45.9 -34.7 120.7	28 57.9 -34.2 120.1	28 09.6 -33.8 119.4	27 21.0 -33.3 118.8	26 32.1 -32.9 118.2
14°	29 11.2 -35.1 121.6	28 23.7 -34.6 121.0	27 35.8 -34.1 120.4	26 47.7 -33.7 119.8	25 59.2 -33.2 119.2
15°	28 36.1 -35.4 122.6	27 49.1 -35.0 121.9	27 01.7 -34.5 121.3	26 14.0 -34.0 120.7	25 26.0 -33.6 120.1
16°	28 00.7 -35.9 123.5	27 14.1 -35.3 122.8	26 27.2 -34.9 122.2	25 40.0 -34.4 121.6	24 52.4 -33.9 121.0
17°	27 24.8 -36.1 124.4	26 38.8 -35.7 123.7	25 52.3 -35.2 123.1	25 05.6 -34.7 122.5	24 18.5 -34.2 121.9
18°	26 48.7 -36.5 125.3	26 03.1 -36.0 124.6	25 17.1 -35.5 124.0	24 30.9 -35.1 123.4	23 44.3 -34.6 122.8
19°	26 12.2 -36.8 126.2	25 27.1 -36.3 125.5	24 41.6 -35.8 124.9	23 55.8 -35.3 124.3	23 09.7 -34.8 123.7
20°	25 35.4 -37.2 127.0	24 50.8 -36.7 126.4	24 05.8 -36.1 125.8	23 20.5 -35.6 125.2	22 34.9 -35.1 124.6
21°	24 58.2 -37.4 127.9	24 14.1 -36.9 127.3	23 29.7 -36.4 126.7	22 44.9 -35.9 126.1	21 59.8 -35.5 125.5
22°	24 20.8 -37.7 128.8	23 37.2 -37.2 128.1	22 53.3 -36.7 127.5	22 09.0 -36.2 126.9	21 24.3 -35.6 126.3
23°	23 43.1 -38.0 129.6	23 00.0 -37.4 129.0	22 16.6 -36.9 128.4	21 32.8 -36.4 127.8	20 48.7 -36.0 127.2
24°	23 05.1 -38.3 130.5	22 22.6 -37.8 129.8	21 39.7 -37.2 129.2	20 56.4 -36.7 128.6	20 12.7 -36.1 128.0
25°	22 26.8 -38.5 131.3	21 44.8 -38.0 130.7	21 02.5 -37.5 130.1	20 19.7 -36.9 129.5	19 36.6 -36.4 128.9
26°	21 48.3 -38.8 132.1	21 06.8 -38.2 131.5	20 25.0 -37.7 130.9	19 42.8 -37.2 130.3	19 00.2 -36.7 129.7
27°	21 09.5 -39.0 133.0	20 28.6 -38.4 132.3	19 47.3 -37.9 131.7	19 05.6 -37.4 131.1	18 23.5 -36.8 130.6
28°	20 30.5 -39.2 133.8	19 50.2 -38.7 133.2	19 09.4 -38.2 132.6	18 28.2 -37.6 132.0	17 46.7 -37.1 131.4
29°	19 51.3 -39.4 134.6	19 11.5 -38.9 134.0	18 31.2 -38.3 133.4	17 50.6 -37.8 132.8	17 09.6 -37.3 132.2

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	32 07.7 -26.8 104.7	31 13.8 -26.5 104.2	30 19.8 -26.3 103.7	29 25.7 -26.1 103.2	28 31.5 -25.8 102.7
1°	31 40.9 -27.3 105.8	30 47.3 -27.1 105.2	29 53.5 -26.8 104.7	28 59.6 -26.5 104.2	28 05.7 -26.3 103.7
2°	31 13.6 -27.9 106.8	30 20.2 -27.5 106.3	29 26.7 -27.2 105.7	28 33.1 -26.9 105.2	27 39.4 -26.7 104.7
3°	30 45.7 -28.3 107.8	29 52.7 -28.0 107.3	28 59.5 -27.7 106.8	28 06.2 -27.5 106.2	27 12.7 -27.2 105.7
4°	30 17.4 -28.8 108.9	29 24.7 -28.5 108.3	28 31.8 -28.1 107.8	27 38.7 -27.8 107.3	26 45.5 -27.5 106.7
5°	29 48.6 -29.2 109.9	28 56.2 -28.9 109.3	28 03.7 -28.6 108.8	27 10.9 -28.3 108.2	26 18.0 -28.0 107.7
6°	29 19.4 -29.7 110.9	28 27.3 -29.3 110.3	27 35.1 -29.0 109.8	26 42.6 -28.6 109.2	25 50.0 -28.3 108.7
7°	28 49.7 -30.1 111.9	27 58.0 -29.8 111.3	27 06.1 -29.4 110.8	26 14.0 -29.1 110.2	25 21.7 -28.8 109.7
8°	28 19.6 -30.5 112.8	27 28.2 -30.1 112.3	26 36.7 -29.8 111.7	25 44.9 -29.5 111.2	24 52.9 -29.1 110.7
9°	27 49.1 -31.0 113.8	26 58.1 -30.6 113.3	26 06.9 -30.2 112.7	25 15.4 -29.8 112.2	24 23.8 -29.5 111.6
10°	27 18.1 -31.3 114.8	26 27.5 -30.9 114.2	25 36.7 -30.6 113.7	24 45.6 -30.2 113.1	23 54.3 -29.8 112.6
11°	26 46.8 -31.7 115.7	25 56.6 -31.4 115.2	25 06.1 -30.9 114.6	24 15.4 -30.5 114.1	23 24.5 -30.2 113.5
12°	26 15.1 -32.1 116.7	25 25.2 -31.6 116.1	24 35.2 -31.3 115.6	23 44.9 -30.9 115.0	22 54.3 -30.5 114.5
13°	25 43.0 -32.5 117.6	24 53.6 -32.1 117.1	24 03.9 -31.6 116.5	23 14.0 -31.2 115.9	22 23.8 -30.8 115.4
14°	25 10.5 -32.8 118.6	24 21.5 -32.3 118.0	23 32.3 -32.0 117.4	22 42.8 -31.6 116.9	21 53.0 -31.1 116.3
15°	24 37.7 -33.1 119.5	23 49.2 -32.7 118.9	23 00.3 -32.2 118.3	22 11.2 -31.8 117.8	21 21.9 -31.4 117.2
16°	24 04.6 -33.5 120.4	23 16.5 -33.0 119.8	22 28.1 -32.6 119.3	21 39.4 -32.1 118.7	20 50.5 -31.7 118.2
17°	23 31.1 -33.7 121.3	22 43.5 -33.4 120.7	21 55.5 -32.9 120.2	21 07.3 -32.5 119.6	20 18.8 -32.0 119.1
18°	22 57.4 -34.1 122.2	22 10.1 -33.6 121.6	21 22.6 -33.1 121.1	20 34.8 -32.7 120.5	19 46.8 -32.3 120.0
19°	22 23.3 -34.4 123.1	21 36.5 -33.9 122.5	20 49.5 -33.5 122.0	20 02.1 -32.9 121.4	19 14.5 -32.5 120.9
20°	21 48.9 -34.6 124.0	21 02.6 -34.1 123.4	20 16.0 -33.6 122.8	19 29.2 -33.3 122.3	18 42.0 -32.8 121.7
21°	21 14.3 -34.9 124.9	20 28.5 -34.5 124.3	19 42.4 -34.0 123.7	18 55.9 -33.4 123.2	18 09.2 -33.0 122.6
22°	20 39.4 -35.2 125.7	19 54.0 -34.6 125.2	19 08.4 -34.2 124.6	18 22.5 -33.7 124.1	17 36.2 -33.2 123.5
23°	20 04.2 -35.4 126.6	19 19.4 -35.0 126.0	18 34.2 -34.4 125.5	17 48.8 -34.0 124.9	17 03.0 -33.5 124.4
24°	19 28.8 -35.7 127.5	18 44.4 -35.1 126.9	17 59.8 -34.7 126.3	17 14.8 -34.2 125.8	16 29.5 -33.6 125.2
25°	18 53.1 -35.9 128.3	18 09.3 -35.4 127.7	17 25.1 -34.9 127.2	16 40.6 -34.3 126.6	15 55.9 -33.9 126.1
26°	18 17.2 -36.1 129.2	17 33.9 -35.6 128.6	16 50.2 -35.0 128.0	16 06.3 -34.6 127.5	15 22.0 -34.1 127.0
27°	17 41.1 -36.3 130.0	16 58.3 -35.8 129.4	16 15.2 -35.3 128.9	15 31.7 -34.8 128.3	14 47.9 -34.3 127.8
28°	17 04.8 -36.6 130.8	16 22.5 -36.0 130.3	15 39.9 -35.5 129.7	14 56.9 -34.9 129.2	14 13.6 -34.4 128.7
29°	16 28.2 -36.7 131.7	15 46.5 -36.2 131.1	15 04.4 -35.7 130.6	14 22.0 -35.2 130.0	13 39.2 -34.6 129.5

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 15.9 -22.8 93.8	8 20.4 -22.8 93.4	7 24.8 -22.7 93.0	6 29.3 -22.7 92.6	5 33.7 -22.6 92.3
1°	8 53.1 -23.0 94.7	7 57.6 -22.9 94.3	7 02.1 -22.8 93.9	6 06.6 -22.8 93.6	5 11.1 -22.7 93.2
2°	8 30.1 -23.1 95.6	7 34.7 -23.0 95.3	6 39.3 -23.0 94.9	5 43.8 -22.8 94.5	4 48.4 -22.8 94.1
3°	8 07.0 -23.3 96.6	7 11.7 -23.2 96.2	6 16.3 -23.0 95.8	5 21.0 -23.0 95.4	4 25.6 -22.9 95.0
4°	7 43.7 -23.4 97.5	6 48.5 -23.2 97.1	5 53.3 -23.1 96.7	4 58.0 -23.0 96.4	4 02.7 -22.9 96.0
5°	7 20.3 -23.4 98.4	6 25.3 -23.4 98.1	5 30.2 -23.2 97.7	4 35.0 -23.1 97.3	3 39.8 -23.0 96.9
6°	6 56.9 -23.6 99.4	6 01.9 -23.4 99.0	5 07.0 -23.3 98.6	4 11.9 -23.1 98.2	3 16.8 -23.0 97.8
7°	6 33.3 -23.7 100.3	5 38.5 -23.5 99.9	4 43.7 -23.4 99.5	3 48.8 -23.2 99.1	2 53.8 -23.0 98.7
8°	6 09.6 -23.8 101.2	5 15.0 -23.6 100.8	4 20.3 -23.4 100.4	3 25.6 -23.3 100.1	2 30.8 -23.2 99.7
9°	5 45.8 -23.9 102.1	4 51.4 -23.7 101.8	3 56.9 -23.5 101.4	3 02.3 -23.3 101.0	2 07.6 -23.1 100.6
10°	5 21.9 -23.9 103.1	4 27.7 -23.8 102.7	3 33.4 -23.6 102.3	2 39.0 -23.4 101.9	1 44.5 -23.2 101.5
11°	4 58.0 -24.1 104.0	4 03.9 -23.8 103.6	3 09.8 -23.6 103.2	2 15.6 -23.4 102.8	1 21.3 -23.2 102.4
12°	4 33.9 -24.1 104.9	3 40.1 -23.8 104.5	2 46.2 -23.6 104.1	1 52.2 -23.4 103.7	0 58.1 -23.2 103.4
13°	4 09.8 -24.1 105.8	3 16.3 -24.0 105.4	2 22.6 -23.7 105.0	1 28.8 -23.4 104.7	0 34.9 -23.2 104.3
14°	3 45.7 -24.3 106.7	2 52.3 -23.9 106.4	1 58.9 -23.7 106.0	1 05.4 -23.5 105.6	0 11.7 -23.2 105.2
15°	3 21.4 -24.2 107.7	2 28.4 -24.0 107.3	1 35.2 -23.7 106.9	0 41.9 -23.5 106.5	-0 11.5 -23.2
16°	2 57.2 -24.4 108.6	2 04.4 -24.1 108.2	1 11.5 -23.8 107.8	0 18.4 -23.4 107.4	-0 34.7 -23.2
17°	2 32.8 -24.3 109.5	1 40.3 -24.0 109.1	0 47.7 -23.8 108.7	-0 05.0 -23.5	-0 57.9 -23.2
18°	2 08.5 -24.4 110.4	1 16.3 -24.1 110.0	0 23.9 -23.7 109.6	-0 28.5 -23.5	-1 21.1 -23.2
19°	1 44.1 -24.4 111.3	0 52.2 -24.1 110.9	0 00.2 -23.8 110.6	-0 52.0 -23.4	-1 44.3 -23.1
20°	1 19.7 -24.5 112.2	0 28.1 -24.1 111.9	-0 23.6 -23.8	-1 15.4 -23.5	-2 07.4 -23.1
21°	0 55.2 -24.4 113.1	0 04.0 -24.1 112.8	-0 47.4 -23.7	-1 38.9 -23.4	-2 30.5 -23.1
22°	0 30.8 -24.5 114.1	-0 20.1 -24.1	-1 11.1 -23.8	-2 02.3 -23.4	-2 53.6 -23.0
23°	0 06.3 -24.5 115.0	-0 44.2 -24.1	-1 34.9 -23.7	-2 25.7 -23.3	-3 16.6 -23.0
24°	-0 18.2 -24.4	-1 08.3 -24.1	-1 58.6 -23.6	-2 49.0 -23.3	-3 39.6 -22.9
25°	-0 42.6 -24.5	-1 32.4 -24.0	-2 22.2 -23.7	-3 12.3 -23.2	-4 02.5 -22.8
26°	-1 07.1 -24.4	-1 56.4 -24.0	-2 45.9 -23.6	-3 35.5 -23.2	-4 25.3 -22.8
27°	-1 31.5 -24.4	-2 20.4 -24.0	-3 09.5 -23.5	-3 58.7 -23.2	-4 48.1 -22.7
28°	-1 55.9 -24.4	-2 44.4 -23.9	-3 33.0 -23.5	-4 21.9 -23.0	-5 10.8 -22.7
29°	-2 20.3 -24.3	-3 08.3 -23.9	-3 56.5 -23.5	-4 44.9 -23.0	-5 33.5 -22.5

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 38.1 -22.6 91.9	3 42.5 -22.6 91.5	2 46.9 -22.5 91.1	1 51.3 -22.5 90.7	0 55.6 -22.5 90.4
1°	4 15.5 -22.6 92.8	3 19.9 -22.6 92.4	2 24.4 -22.6 92.1	1 28.8 -22.6 91.7	0 33.1 -22.4 91.3
2°	3 52.9 -22.7 93.7	2 57.3 -22.6 93.4	2 01.8 -22.6 93.0	1 06.2 -22.5 92.6	0 10.7 -22.5 92.2
3°	3 30.2 -22.8 94.7	2 34.7 -22.7 94.3	1 39.2 -22.6 93.9	0 43.7 -22.6 93.5	-0 11.8 -22.5
4°	3 07.4 -22.8 95.6	2 12.0 -22.7 95.2	1 16.6 -22.7 94.8	0 21.1 -22.5 94.5	-0 34.3 -22.5
5°	2 44.6 -22.9 96.5	1 49.3 -22.8 96.1	0 53.9 -22.6 95.8	-0 01.4 -22.6	-0 56.8 -22.5
6°	2 21.7 -22.9 97.4	1 26.5 -22.8 97.1	0 31.3 -22.7 96.7	-0 24.0 -22.5	-1 19.3 -22.4
7°	1 58.8 -22.9 98.4	1 03.7 -22.7 98.0	0 08.6 -22.6 97.6	-0 46.5 -22.6	-1 41.7 -22.5
8°	1 35.9 -23.0 99.3	0 41.0 -22.9 98.9	-0 14.0 -22.7	-1 09.1 -22.5	-2 04.2 -22.4
9°	1 12.9 -22.9 100.2	0 18.1 -22.8 99.8	-0 36.7 -22.6	-1 31.6 -22.5	-2 26.6 -22.3
10°	0 50.0 -23.0 101.1	-0 04.7 -22.8	-0 59.3 -22.7	-1 54.1 -22.5	-2 48.9 -22.3
11°	0 27.0 -23.0 102.1	-0 27.5 -22.8	-1 22.0 -22.6	-2 16.6 -22.4	-3 11.2 -22.3
12°	0 04.0 -23.0 103.0	-0 50.3 -22.8	-1 44.6 -22.6	-2 39.0 -22.4	-3 33.5 -22.2
13°	-0 19.0 -23.0	-1 13.1 -22.7	-2 07.2 -22.5	-3 01.4 -22.3	-3 55.7 -22.1
14°	-0 42.0 -23.0	-1 35.8 -22.8	-2 29.7 -22.5	-3 23.7 -22.3	-4 17.8 -22.1
15°	-1 05.0 -22.9	-1 58.6 -22.7	-2 52.2 -22.5	-3 46.0 -22.3	-4 39.9 -22.0
16°	-1 27.9 -23.0	-2 21.3 -22.7	-3 14.7 -22.4	-4 08.3 -22.1	-5 01.9 -21.9
17°	-1 50.9 -22.9	-2 44.0 -22.6	-3 37.1 -22.4	-4 30.4 -22.1	-5 23.8 -21.8
18°	-2 13.8 -22.9	-3 06.6 -22.6	-3 59.5 -22.3	-4 52.5 -22.0	-5 45.6 -21.8
19°	-2 36.7 -22.8	-3 29.2 -22.5	-4 21.8 -22.2	-5 14.5 -22.0	-6 07.4 -21.6
20°	-2 59.5 -22.8	-3 51.7 -22.5	-4 44.0 -22.2	-5 36.5 -21.8	-6 29.0 -21.5
21°	-3 22.3 -22.7	-4 14.2 -22.4	-5 06.2 -22.0	-5 58.3 -21.8	-6 50.5 -21.5
22°	-3 45.0 -22.7	-4 36.6 -22.3	-5 28.2 -22.0	-6 20.1 -21.6	-7 12.0 -21.3
23°	-4 07.7 -22.6	-4 58.9 -22.2	-5 50.2 -21.9	-6 41.7 -21.5	-7 33.3 -21.2
24°	-4 30.3 -22.5	-5 21.1 -22.2	-6 12.1 -21.8	-7 03.2 -21.5	-7 54.5 -21.0
25°	-4 52.8 -22.5	-5 43.3 -22.1	-6 33.9 -21.7	-7 24.7 -21.3	-8 15.5 -21.0
26°	-5 15.3 -22.4	-6 05.4 -22.0	-6 55.6 -21.6	-7 46.0 -21.2	-8 36.5 -20.8
27°	-5 37.7 -22.3	-6 27.4 -21.8	-7 17.2 -21.5	-8 07.2 -21.0	-8 57.3 -20.6
28°	-6 00.0 -22.2	-6 49.2 -21.8	-7 38.7 -21.3	-8 28.2 -20.9	-9 17.9 -20.5
29°	-6 22.2 -22.0	-7 11.0 -21.7	-8 00.0 -21.2	-8 49.1 -20.8	-9 38.4 -20.3

Latitude 22°

Declination CONTRARY name to Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -22.5 90.0	-0 55.6 -22.5			
1°	-0 22.5 -22.4	-1 18.1 -22.5			
2°	-0 44.9 -22.5	-1 40.6 -22.4			
3°	-1 07.4 -22.4	-2 03.0 -22.4			
4°	-1 29.8 -22.5	-2 25.4 -22.3			
5°	-1 52.3 -22.3	-2 47.7 -22.3			
6°	-2 14.6 -22.4	-3 10.0 -22.3			
7°	-2 37.0 -22.3	-3 32.3 -22.2			
8°	-2 59.3 -22.3	-3 54.5 -22.1			
9°	-3 21.6 -22.2	-4 16.6 -22.1			
10°	-3 43.8 -22.1	-4 38.7 -22.0			
11°	-4 05.9 -22.1	-5 00.7 -21.9			
12°	-4 28.0 -22.0	-5 22.6 -21.9			
13°	-4 50.0 -22.0	-5 44.5 -21.7			
14°	-5 12.0 -21.8	-6 06.2 -21.7			
15°	-5 33.8 -21.8	-6 27.9 -21.5			
16°	-5 55.6 -21.7	-6 49.4 -21.4			
17°	-6 17.3 -21.5	-7 10.8 -21.4			
18°	-6 38.8 -21.5	-7 32.2 -21.2			
19°	-7 00.3 -21.4	-7 53.4 -21.0			
20°	-7 21.7 -21.2	-8 14.4 -21.0			
21°	-7 42.9 -21.1	-8 35.4 -20.8			
22°	-8 04.0 -21.0	-8 56.2 -20.6			
23°	-8 25.0 -20.8	-9 16.8 -20.5			
24°	-8 45.8 -20.7	-9 37.3 -20.4			
25°	-9 06.5 -20.6	-9 57.7 -20.2			
26°	-9 27.1 -20.4				
27°	-9 47.5 -20.2				
28°					
29°					

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	67 00.0 -60.0 180.0	66 58.8 -60.0 177.4	66 55.1 -59.8 174.9	66 48.9 -59.5 172.4	66 40.4 -59.2 169.9
1°	66 00.0 -60.0 180.0	65 58.8 -59.9 177.5	65 55.3 -59.9 175.1	65 49.4 -59.6 172.7	65 41.2 -59.3 170.2
2°	65 00.0 -60.0 180.0	64 58.9 -60.0 177.6	64 55.4 -59.8 175.3	64 49.8 -59.7 172.9	64 41.9 -59.4 170.6
3°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.7	63 55.6 -59.8 175.5	63 50.1 -59.6 173.2	63 42.5 -59.4 171.0
4°	63 00.0 -60.0 180.0	62 58.9 -59.9 177.8	62 55.8 -59.9 175.6	62 50.5 -59.7 173.4	62 43.1 -59.4 171.3
5°	62 00.0 -60.0 180.0	61 59.0 -60.0 177.9	61 55.9 -59.9 175.8	61 50.8 -59.7 173.7	61 43.7 -59.4 171.6
6°	61 00.0 -60.0 180.0	60 59.0 -60.0 177.9	60 56.0 -59.8 175.9	60 51.1 -59.7 173.9	60 44.3 -59.5 171.8
7°	60 00.0 -60.0 180.0	59 59.0 -59.9 178.0	59 56.2 -59.9 176.0	59 51.4 -59.7 174.1	59 44.8 -59.6 172.1
8°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.1	58 56.3 -59.9 176.2	58 51.7 -59.8 174.2	58 45.2 -59.5 172.3
9°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.1	57 56.4 -59.9 176.3	57 51.9 -59.7 174.4	57 45.7 -59.6 172.6
10°	57 00.0 -60.0 180.0	56 59.1 -59.9 178.2	56 56.5 -59.9 176.4	56 52.2 -59.8 174.6	56 46.1 -59.6 172.8
11°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.2	55 56.6 -59.9 176.5	55 52.4 -59.8 174.7	55 46.5 -59.6 173.0
12°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.3	54 56.7 -59.9 176.6	54 52.6 -59.8 174.9	54 46.9 -59.6 173.2
13°	54 00.0 -60.0 180.0	53 59.2 -60.0 178.3	53 56.8 -59.9 176.7	53 52.8 -59.8 175.0	53 47.3 -59.7 173.4
14°	53 00.0 -60.0 180.0	52 59.2 -60.0 178.4	52 56.9 -59.9 176.8	52 53.0 -59.8 175.2	52 47.6 -59.7 173.6
15°	52 00.0 -60.0 180.0	51 59.2 -59.9 178.4	51 57.0 -59.9 176.9	51 53.2 -59.8 175.3	51 47.9 -59.6 173.7
16°	51 00.0 -60.0 180.0	50 59.3 -60.0 178.5	50 57.1 -60.0 177.0	50 53.4 -59.8 175.4	50 48.3 -59.7 173.9
17°	50 00.0 -60.0 180.0	49 59.3 -60.0 178.5	49 57.1 -59.9 177.0	49 53.6 -59.9 175.5	49 48.6 -59.8 174.1
18°	49 00.0 -60.0 180.0	48 59.3 -60.0 178.6	48 57.2 -59.9 177.1	48 53.7 -59.8 175.7	48 48.8 -59.7 174.2
19°	48 00.0 -60.0 180.0	47 59.3 -60.0 178.6	47 57.3 -60.0 177.2	47 53.9 -59.9 175.8	47 49.1 -59.7 174.4
20°	47 00.0 -60.0 180.0	46 59.3 -59.9 178.6	46 57.3 -59.9 177.2	46 54.0 -59.8 175.9	46 49.4 -59.7 174.5
21°	46 00.0 -60.0 180.0	45 59.4 -60.0 178.7	45 57.4 -59.9 177.3	45 54.2 -59.9 176.0	45 49.7 -59.8 174.6
22°	45 00.0 -60.0 180.0	44 59.4 -60.0 178.7	44 57.5 -60.0 177.4	44 54.3 -59.8 176.1	44 49.9 -59.8 174.8
23°	44 00.0 -60.0 180.0	43 59.4 -60.0 178.7	43 57.5 -59.9 177.4	43 54.5 -59.9 176.2	43 50.1 -59.7 174.9
24°	43 00.0 -60.0 180.0	42 59.4 -60.0 178.8	42 57.6 -60.0 177.5	42 54.6 -59.9 176.3	42 50.4 -59.8 175.0
25°	42 00.0 -60.0 180.0	41 59.4 -60.0 178.8	41 57.6 -59.9 177.6	41 54.7 -59.9 176.3	41 50.6 -59.8 175.1
26°	41 00.0 -60.0 180.0	40 59.4 -60.0 178.8	40 57.7 -59.9 177.6	40 54.8 -59.8 176.4	40 50.8 -59.8 175.2
27°	40 00.0 -60.0 180.0	39 59.4 -59.9 178.8	39 57.8 -60.0 177.7	39 55.0 -59.9 176.5	39 51.0 -59.7 175.4
28°	39 00.0 -60.0 180.0	38 59.5 -60.0 178.9	38 57.8 -59.9 177.7	38 55.1 -59.9 176.6	38 51.3 -59.8 175.5
29°	38 00.0 -60.0 180.0	37 59.5 -60.0 178.9	37 57.9 -60.0 177.8	37 55.2 -59.9 176.7	37 51.5 -59.9 175.6

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	66 29.5 -58.8 167.4	66 16.3 -58.3 164.9	66 00.8 -57.7 162.6	65 43.2 -57.1 160.2	65 23.5 -56.5 157.9
1°	65 30.7 -58.9 167.9	65 18.0 -58.5 165.5	65 03.1 -57.9 163.2	64 46.1 -57.3 160.9	64 27.0 -56.6 158.7
2°	64 31.8 -59.0 168.3	64 19.5 -58.5 166.0	64 05.2 -58.1 163.8	63 48.8 -57.6 161.6	63 30.4 -56.9 159.5
3°	63 32.8 -59.1 168.7	63 21.0 -58.7 166.5	63 07.1 -58.2 164.4	62 51.2 -57.6 162.3	62 33.5 -57.1 160.2
4°	62 33.7 -59.1 169.1	62 22.3 -58.7 167.0	62 08.9 -58.3 164.9	61 53.6 -57.8 162.9	61 36.4 -57.3 160.8
5°	61 34.6 -59.1 169.5	61 23.6 -58.8 167.4	61 10.6 -58.4 165.4	60 55.8 -58.0 163.4	60 39.1 -57.4 161.5
6°	60 35.5 -59.3 169.8	60 24.8 -58.9 167.8	60 12.2 -58.5 165.9	59 57.8 -58.0 163.9	59 41.7 -57.6 162.0
7°	59 36.2 -59.2 170.2	59 25.9 -59.0 168.2	59 13.7 -58.6 166.3	58 59.8 -58.2 164.4	58 44.1 -57.7 162.6
8°	58 37.0 -59.3 170.5	58 26.9 -59.0 168.6	58 15.1 -58.6 166.7	58 01.6 -58.3 164.9	57 46.4 -57.8 163.1
9°	57 37.7 -59.4 170.7	57 27.9 -59.0 168.9	57 16.5 -58.8 167.1	57 03.3 -58.3 165.4	56 48.6 -58.0 163.6
10°	56 38.3 -59.3 171.0	56 28.9 -59.1 169.3	56 17.7 -58.7 167.5	56 05.0 -58.4 165.8	55 50.6 -58.0 164.1
11°	55 39.0 -59.4 171.3	55 29.8 -59.2 169.6	55 19.0 -58.9 167.9	55 06.6 -58.6 166.2	54 52.6 -58.2 164.5
12°	54 39.6 -59.5 171.5	54 30.6 -59.2 169.9	54 20.1 -58.9 168.2	54 08.0 -58.5 166.6	53 54.4 -58.2 164.9
13°	53 40.1 -59.4 171.8	53 31.4 -59.2 170.1	53 21.2 -59.0 168.5	53 09.5 -58.7 166.9	52 56.2 -58.3 165.4
14°	52 40.7 -59.5 172.0	52 32.2 -59.3 170.4	52 22.2 -59.0 168.8	52 10.8 -58.7 167.3	51 57.9 -58.3 165.7
15°	51 41.2 -59.5 172.2	51 32.9 -59.3 170.7	51 23.2 -59.0 169.1	51 12.1 -58.8 167.6	50 59.6 -58.5 166.1
16°	50 41.7 -59.6 172.4	50 33.6 -59.3 170.9	50 24.2 -59.1 169.4	50 13.3 -58.8 167.9	50 01.1 -58.5 166.5
17°	49 42.1 -59.5 172.6	49 34.3 -59.3 171.1	49 25.1 -59.1 169.7	49 14.5 -58.8 168.2	49 02.6 -58.6 166.8
18°	48 42.6 -59.6 172.8	48 35.0 -59.4 171.4	48 26.0 -59.2 169.9	48 15.7 -58.9 168.5	48 04.0 -58.6 167.1
19°	47 43.0 -59.5 173.0	47 35.6 -59.4 171.6	47 26.8 -59.1 170.2	47 16.8 -59.0 168.8	47 05.4 -58.6 167.5
20°	46 43.5 -59.6 173.1	46 36.2 -59.4 171.8	46 27.7 -59.3 170.4	46 17.8 -58.9 169.1	46 06.8 -58.8 167.8
21°	45 43.9 -59.7 173.3	45 36.8 -59.5 172.0	45 28.4 -59.2 170.7	45 18.9 -59.0 169.4	45 08.0 -58.7 168.1
22°	44 44.2 -59.6 173.5	44 37.3 -59.4 172.2	44 29.2 -59.3 170.9	44 19.9 -59.1 169.6	44 09.3 -58.8 168.3
23°	43 44.6 -59.6 173.6	43 37.9 -59.5 172.4	43 29.9 -59.2 171.1	43 20.8 -59.1 169.9	43 10.5 -58.8 168.6
24°	42 45.0 -59.7 173.8	42 38.4 -59.5 172.5	42 30.7 -59.4 171.3	42 21.7 -59.1 170.1	42 11.7 -58.9 168.9
25°	41 45.3 -59.6 173.9	41 38.9 -59.5 172.7	41 31.3 -59.3 171.5	41 22.6 -59.1 170.3	41 12.8 -58.9 169.1
26°	40 45.7 -59.7 174.1	40 39.4 -59.5 172.9	40 32.0 -59.3 171.7	40 23.5 -59.2 170.5	40 13.9 -59.0 169.4
27°	39 46.0 -59.7 174.2	39 39.9 -59.5 173.1	39 32.7 -59.4 171.9	39 24.3 -59.1 170.8	39 14.9 -58.9 169.6
28°	38 46.3 -59.6 174.3	38 40.4 -59.6 173.2	38 33.3 -59.4 172.1	38 25.2 -59.2 171.0	38 16.0 -59.0 169.9
29°	37 46.7 -59.7 174.5	37 40.8 -59.6 173.4	37 33.9 -59.4 172.3	37 26.0 -59.3 171.2	37 17.0 -59.1 170.1

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	44 50.5 -33.4 115.0	44 00.3 -33.0 114.2	43 09.7 -32.4 113.5	42 18.9 -32.0 112.7	41 27.9 -31.6 112.0
1°	44 17.1 -34.2 116.1	43 27.3 -33.6 115.4	42 37.3 -33.2 114.6	41 46.9 -32.7 113.9	40 56.3 -32.3 113.2
2°	43 42.9 -34.7 117.3	42 53.7 -34.3 116.5	42 04.1 -33.8 115.7	41 14.2 -33.4 115.0	40 24.0 -32.9 114.3
3°	43 08.2 -35.5 118.4	42 19.4 -34.9 117.6	41 30.3 -34.5 116.8	40 40.8 -33.9 116.1	39 51.1 -33.5 115.4
4°	42 32.7 -36.0 119.5	41 44.5 -35.6 118.7	40 55.8 -35.0 117.9	40 06.9 -34.6 117.2	39 17.6 -34.1 116.4
5°	41 56.7 -36.7 120.6	41 08.9 -36.1 119.8	40 20.8 -35.6 119.0	39 32.3 -35.1 118.2	38 43.5 -34.7 117.5
6°	41 20.0 -37.2 121.6	40 32.8 -36.7 120.8	39 45.2 -36.2 120.1	38 57.2 -35.7 119.3	38 08.8 -35.2 118.5
7°	40 42.8 -37.8 122.7	39 56.1 -37.2 121.9	39 09.0 -36.7 121.1	38 21.5 -36.2 120.3	37 33.6 -35.7 119.6
8°	40 05.0 -38.3 123.7	39 18.9 -37.8 122.9	38 32.3 -37.3 122.1	37 45.3 -36.7 121.3	36 57.9 -36.2 120.6
9°	39 26.7 -38.8 124.7	38 41.1 -38.3 123.9	37 55.0 -37.7 123.1	37 08.6 -37.3 122.3	36 21.7 -36.7 121.6
10°	38 47.9 -39.3 125.7	38 02.8 -38.7 124.9	37 17.3 -38.2 124.1	36 31.3 -37.6 123.3	35 45.0 -37.2 122.5
11°	38 08.6 -39.7 126.6	37 24.1 -39.2 125.8	36 39.1 -38.7 125.0	35 53.7 -38.2 124.3	35 07.8 -37.6 123.5
12°	37 28.9 -40.2 127.6	36 44.9 -39.7 126.8	36 00.4 -39.1 126.0	35 15.5 -38.6 125.2	34 30.2 -38.1 124.5
13°	36 48.7 -40.7 128.5	36 05.2 -40.1 127.7	35 21.3 -39.5 126.9	34 36.9 -39.0 126.2	33 52.1 -38.5 125.4
14°	36 08.0 -41.0 129.4	35 25.1 -40.4 128.6	34 41.8 -40.0 127.8	33 57.9 -39.4 127.1	33 13.6 -38.8 126.3
15°	35 27.0 -41.4 130.3	34 44.7 -40.9 129.5	34 01.8 -40.3 128.7	33 18.5 -39.8 128.0	32 34.8 -39.3 127.2
16°	34 45.6 -41.8 131.2	34 03.8 -41.3 130.4	33 21.5 -40.7 129.6	32 38.7 -40.2 128.9	31 55.5 -39.7 128.1
17°	34 03.8 -42.2 132.1	33 22.5 -41.6 131.3	32 40.8 -41.1 130.5	31 58.5 -40.5 129.7	31 15.8 -39.9 129.0
18°	33 21.6 -42.5 133.0	32 40.9 -42.0 132.2	31 59.7 -41.4 131.4	31 18.0 -40.9 130.6	30 35.9 -40.4 129.9
19°	32 39.1 -42.9 133.8	31 58.9 -42.3 133.0	31 18.3 -41.8 132.2	30 37.1 -41.2 131.5	29 55.5 -40.6 130.7
20°	31 56.2 -43.2 134.6	31 16.6 -42.6 133.8	30 36.5 -42.0 133.1	29 55.9 -41.5 132.3	29 14.9 -41.0 131.6
21°	31 13.0 -43.4 135.4	30 34.0 -42.9 134.7	29 54.5 -42.4 133.9	29 14.4 -41.8 133.1	28 33.9 -41.3 132.4
22°	30 29.6 -43.8 136.2	29 51.1 -43.2 135.5	29 12.1 -42.7 134.7	28 32.6 -42.1 134.0	27 52.6 -41.6 133.2
23°	29 45.8 -44.0 137.0	29 07.9 -43.5 136.3	28 29.4 -42.9 135.5	27 50.5 -42.4 134.8	27 11.0 -41.8 134.0
24°	29 01.8 -44.3 137.8	28 24.4 -43.7 137.0	27 46.5 -43.2 136.3	27 08.1 -42.7 135.6	26 29.2 -42.1 134.8
25°	28 17.5 -44.6 138.6	27 40.7 -44.1 137.8	27 03.3 -43.5 137.1	26 25.4 -42.9 136.4	25 47.1 -42.4 135.6
26°	27 32.9 -44.8 139.3	26 56.6 -44.2 138.6	26 19.8 -43.7 137.9	25 42.5 -43.1 137.1	25 04.7 -42.6 136.4
27°	26 48.1 -45.0 140.1	26 12.4 -44.5 139.3	25 36.1 -43.9 138.6	24 59.4 -43.4 137.9	24 22.1 -42.9 137.2
28°	26 03.1 -45.3 140.8	25 27.9 -44.7 140.1	24 52.2 -44.2 139.4	24 16.0 -43.6 138.7	23 39.2 -43.0 138.0
29°	25 17.8 -45.5 141.6	24 43.2 -44.9 140.8	24 08.0 -44.3 140.1	23 32.4 -43.9 139.4	22 56.2 -43.3 138.7

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	40 36.5 -31.2 111.3	39 45.0 -30.8 110.7	38 53.2 -30.4 110.0	38 01.2 -30.1 109.4	37 09.0 -29.7 108.8
1°	40 05.3 -31.8 112.5	39 14.2 -31.5 111.8	38 22.8 -31.1 111.1	37 31.1 -30.6 110.5	36 39.3 -30.3 109.8
2°	39 33.5 -32.5 113.6	38 42.7 -32.0 112.9	37 51.7 -31.6 112.2	37 00.5 -31.3 111.6	36 09.0 -30.9 110.9
3°	39 01.0 -33.0 114.7	38 10.7 -32.6 114.0	37 20.1 -32.2 113.3	36 29.2 -31.8 112.6	35 38.1 -31.4 112.0
4°	38 28.0 -33.7 115.7	37 38.1 -33.2 115.0	36 47.9 -32.8 114.3	35 57.4 -32.3 113.7	35 06.7 -31.9 113.0
5°	37 54.3 -34.1 116.8	37 04.9 -33.8 116.1	36 15.1 -33.3 115.4	35 25.1 -32.9 114.7	34 34.8 -32.5 114.1
6°	37 20.2 -34.8 117.8	36 31.1 -34.2 117.1	35 41.8 -33.8 116.4	34 52.2 -33.4 115.7	34 02.3 -32.9 115.1
7°	36 45.4 -35.2 118.8	35 56.9 -34.8 118.1	35 08.0 -34.3 117.4	34 18.8 -33.8 116.7	33 29.4 -33.5 116.1
8°	36 10.2 -35.7 119.8	35 22.1 -35.2 119.1	34 33.7 -34.8 118.4	33 45.0 -34.4 117.7	32 55.9 -33.9 117.1
9°	35 34.5 -36.3 120.8	34 46.9 -35.8 120.1	33 58.9 -35.3 119.4	33 10.6 -34.8 118.7	32 22.0 -34.3 118.1
10°	34 58.2 -36.6 121.8	34 11.1 -36.2 121.1	33 23.6 -35.7 120.4	32 35.8 -35.2 119.7	31 47.7 -34.8 119.0
11°	34 21.6 -37.2 122.8	33 34.9 -36.6 122.0	32 47.9 -36.1 121.3	32 00.6 -35.7 120.7	31 12.9 -35.2 120.0
12°	33 44.4 -37.5 123.7	32 58.3 -37.0 123.0	32 11.8 -36.6 122.3	31 24.9 -36.0 121.6	30 37.7 -35.6 120.9
13°	33 06.9 -38.0 124.7	32 21.3 -37.5 123.9	31 35.2 -36.9 123.2	30 48.9 -36.5 122.5	30 02.1 -36.0 121.9
14°	32 28.9 -38.3 125.6	31 43.8 -37.9 124.9	30 58.3 -37.4 124.1	30 12.4 -36.9 123.5	29 26.1 -36.4 122.8
15°	31 50.6 -38.8 126.5	31 05.9 -38.2 125.8	30 20.9 -37.7 125.1	29 35.5 -37.2 124.4	28 49.7 -36.7 123.7
16°	31 11.8 -39.1 127.4	30 27.7 -38.6 126.7	29 43.2 -38.1 126.0	28 58.3 -37.6 125.3	28 13.0 -37.1 124.6
17°	30 32.7 -39.5 128.3	29 49.1 -38.9 127.5	29 05.1 -38.4 126.8	28 20.7 -37.9 126.1	27 35.9 -37.4 125.5
18°	29 53.2 -39.8 129.1	29 10.2 -39.3 128.4	28 26.7 -38.8 127.7	27 42.8 -38.2 127.0	26 58.5 -37.7 126.4
19°	29 13.4 -40.1 130.0	28 30.9 -39.6 129.3	27 47.9 -39.0 128.6	27 04.6 -38.6 127.9	26 20.8 -38.1 127.2
20°	28 33.3 -40.4 130.8	27 51.3 -39.9 130.1	27 08.9 -39.4 129.4	26 26.0 -38.9 128.8	25 42.7 -38.3 128.1
21°	27 52.9 -40.8 131.7	27 11.4 -40.2 131.0	26 29.5 -39.7 130.3	25 47.1 -39.1 129.6	25 04.4 -38.7 128.9
22°	27 12.1 -41.0 132.5	26 31.2 -40.5 131.8	25 49.8 -40.0 131.1	25 08.0 -39.5 130.4	24 25.7 -38.9 129.8
23°	26 31.1 -41.3 133.3	25 50.7 -40.8 132.6	25 09.8 -40.2 131.9	24 28.5 -39.7 131.3	23 46.8 -39.2 130.6
24°	25 49.8 -41.6 134.1	25 09.9 -41.0 133.4	24 29.6 -40.5 132.8	23 48.8 -40.0 132.1	23 07.6 -39.4 131.4
25°	25 08.2 -41.8 134.9	24 28.9 -41.3 134.2	23 49.1 -40.8 133.6	23 08.8 -40.2 132.9	22 28.2 -39.7 132.3
26°	24 26.4 -42.1 135.7	23 47.6 -41.5 135.0	23 08.3 -41.0 134.4	22 28.6 -40.4 133.7	21 48.5 -39.9 133.1
27°	23 44.3 -42.3 136.5	23 06.1 -41.8 135.8	22 27.3 -41.2 135.2	21 48.2 -40.7 134.5	21 08.6 -40.2 133.9
28°	23 02.0 -42.5 137.3	22 24.3 -42.0 136.6	21 46.1 -41.4 135.9	21 07.5 -40.9 135.3	20 28.4 -40.3 134.7
29°	22 19.5 -42.8 138.0	21 42.3 -42.2 137.4	21 04.7 -41.7 136.7	20 26.6 -41.1 136.1	19 48.1 -40.6 135.4

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	36 16.6 -29.4 108.2	35 24.0 -29.0 107.6	34 31.3 -28.7 107.0	33 38.4 -28.4 106.4	32 45.3 -28.1 105.8
1°	35 47.2 -29.9 109.2	34 55.0 -29.6 108.6	34 02.6 -29.3 108.0	33 10.0 -29.0 107.5	32 17.2 -28.6 106.9
2°	35 17.3 -30.5 110.3	34 25.4 -30.1 109.7	33 33.3 -29.8 109.1	32 41.0 -29.5 108.5	31 48.6 -29.2 107.9
3°	34 46.8 -31.0 111.3	33 55.3 -30.7 110.7	33 03.5 -30.3 110.1	32 11.5 -29.9 109.5	31 19.4 -29.6 109.0
4°	34 15.8 -31.6 112.4	33 24.6 -31.2 111.8	32 33.2 -30.8 111.2	31 41.6 -30.5 110.6	30 49.8 -30.1 110.0
5°	33 44.2 -32.0 113.4	32 53.4 -31.6 112.8	32 02.4 -31.3 112.2	31 11.1 -30.9 111.6	30 19.7 -30.6 111.0
6°	33 12.2 -32.6 114.4	32 21.8 -32.2 113.8	31 31.1 -31.7 113.2	30 40.2 -31.4 112.6	29 49.1 -31.0 112.0
7°	32 39.6 -33.0 115.4	31 49.6 -32.6 114.8	30 59.4 -32.2 114.2	30 08.8 -31.8 113.6	29 18.1 -31.4 113.0
8°	32 06.6 -33.4 116.4	31 17.0 -33.0 115.8	30 27.2 -32.7 115.1	29 37.0 -32.2 114.5	28 46.7 -31.9 113.9
9°	31 33.2 -34.0 117.4	30 44.0 -33.5 116.7	29 54.5 -33.0 116.1	29 04.8 -32.7 115.5	28 14.8 -32.2 114.9
10°	30 59.2 -34.3 118.4	30 10.5 -33.9 117.7	29 21.5 -33.5 117.1	28 32.1 -33.0 116.5	27 42.6 -32.7 115.9
11°	30 24.9 -34.7 119.3	29 36.6 -34.3 118.7	28 48.0 -33.9 118.0	27 59.1 -33.4 117.4	27 09.9 -33.0 116.8
12°	29 50.2 -35.2 120.3	29 02.3 -34.7 119.6	28 14.1 -34.2 119.0	27 25.7 -33.8 118.3	26 36.9 -33.4 117.7
13°	29 15.0 -35.5 121.2	28 27.6 -35.0 120.5	27 39.9 -34.6 119.9	26 51.9 -34.2 119.3	26 03.5 -33.7 118.7
14°	28 39.5 -35.9 122.1	27 52.6 -35.5 121.5	27 05.3 -35.0 120.8	26 17.7 -34.5 120.2	25 29.8 -34.1 119.6
15°	28 03.6 -36.2 123.0	27 17.1 -35.7 122.4	26 30.3 -35.3 121.7	25 43.2 -34.9 121.1	24 55.7 -34.4 120.5
16°	27 27.4 -36.6 123.9	26 41.4 -36.2 123.3	25 55.0 -35.6 122.6	25 08.3 -35.1 122.0	24 21.3 -34.7 121.4
17°	26 50.8 -37.0 124.8	26 05.2 -36.4 124.2	25 19.4 -36.0 123.5	24 33.2 -35.5 122.9	23 46.6 -35.0 122.3
18°	26 13.8 -37.2 125.7	25 28.8 -36.7 125.0	24 43.4 -36.3 124.4	23 57.7 -35.8 123.8	23 11.6 -35.3 123.2
19°	25 36.6 -37.5 126.6	24 52.1 -37.1 125.9	24 07.1 -36.5 125.3	23 21.9 -36.1 124.7	22 36.3 -35.6 124.0
20°	24 59.1 -37.9 127.4	24 15.0 -37.3 126.8	23 30.6 -36.9 126.1	22 45.8 -36.4 125.5	22 00.7 -35.9 124.9
21°	24 21.2 -38.1 128.3	23 37.7 -37.7 127.6	22 53.7 -37.1 127.0	22 09.4 -36.6 126.4	21 24.8 -36.1 125.8
22°	23 43.1 -38.4 129.1	23 00.0 -37.9 128.5	22 16.6 -37.4 127.9	21 32.8 -36.9 127.2	20 48.7 -36.4 126.6
23°	23 04.7 -38.7 130.0	22 22.1 -38.1 129.3	21 39.2 -37.6 128.7	20 55.9 -37.1 128.1	20 12.3 -36.6 127.5
24°	22 26.0 -38.9 130.8	21 44.0 -38.4 130.2	21 01.6 -37.9 129.5	20 18.8 -37.4 128.9	19 35.7 -36.9 128.3
25°	21 47.1 -39.2 131.6	21 05.6 -38.6 131.0	20 23.7 -38.1 130.4	19 41.4 -37.6 129.8	18 58.8 -37.1 129.2
26°	21 07.9 -39.4 132.4	20 27.0 -38.9 131.8	19 45.6 -38.3 131.2	19 03.8 -37.8 130.6	18 21.7 -37.3 130.0
27°	20 28.5 -39.6 133.2	19 48.1 -39.1 132.6	19 07.3 -38.6 132.0	18 26.0 -38.0 131.4	17 44.4 -37.5 130.8
28°	19 48.9 -39.8 134.0	19 09.0 -39.3 133.4	18 28.7 -38.8 132.8	17 48.0 -38.2 132.2	17 06.9 -37.7 131.6
29°	19 09.1 -40.0 134.8	18 29.7 -39.5 134.2	17 49.9 -38.9 133.6	17 09.8 -38.5 133.0	16 29.2 -37.9 132.4

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	31 52.1 -27.8 105.3	30 58.8 -27.6 104.8	30 05.3 -27.3 104.2	29 11.7 -27.0 103.7	28 18.0 -26.8 103.2
1°	31 24.3 -28.4 106.3	30 31.2 -28.1 105.8	29 38.0 -27.8 105.3	28 44.7 -27.6 104.7	27 51.2 -27.3 104.2
2°	30 55.9 -28.8 107.4	30 03.1 -28.5 106.8	29 10.2 -28.3 106.3	28 17.1 -28.0 105.8	27 23.9 -27.7 105.2
3°	30 27.1 -29.3 108.4	29 34.6 -29.0 107.8	28 41.9 -28.7 107.3	27 49.1 -28.4 106.8	26 56.2 -28.2 106.2
4°	29 57.8 -29.8 109.4	29 05.6 -29.5 108.8	28 13.2 -29.1 108.3	27 20.7 -28.8 107.7	26 28.0 -28.5 107.2
5°	29 28.0 -30.2 110.4	28 36.1 -29.8 109.8	27 44.1 -29.6 109.3	26 51.9 -29.3 108.7	25 59.5 -29.0 108.2
6°	28 57.8 -30.7 111.4	28 06.3 -30.3 110.8	27 14.5 -29.9 110.3	26 22.6 -29.6 109.7	25 30.5 -29.3 109.2
7°	28 27.1 -31.0 112.4	27 36.0 -30.7 111.8	26 44.6 -30.4 111.2	25 53.0 -30.0 110.7	25 01.2 -29.7 110.1
8°	27 56.1 -31.5 113.3	27 05.3 -31.1 112.8	26 14.2 -30.7 112.2	25 23.0 -30.4 111.6	24 31.5 -30.0 111.1
9°	27 24.6 -31.9 114.3	26 34.2 -31.5 113.7	25 43.5 -31.1 113.2	24 52.6 -30.8 112.6	24 01.5 -30.4 112.0
10°	26 52.7 -32.2 115.3	26 02.7 -31.9 114.7	25 12.4 -31.5 114.1	24 21.8 -31.1 113.5	23 31.1 -30.7 113.0
11°	26 20.5 -32.6 116.2	25 30.8 -32.2 115.6	24 40.9 -31.8 115.0	23 50.7 -31.4 114.5	23 00.4 -31.1 113.9
12°	25 47.9 -33.0 117.1	24 58.6 -32.5 116.5	24 09.1 -32.2 116.0	23 19.3 -31.7 115.4	22 29.3 -31.4 114.8
13°	25 14.9 -33.3 118.1	24 26.1 -32.9 117.5	23 36.9 -32.4 116.9	22 47.6 -32.1 116.3	21 57.9 -31.7 115.8
14°	24 41.6 -33.6 119.0	23 53.2 -33.2 118.4	23 04.5 -32.8 117.8	22 15.5 -32.4 117.2	21 26.2 -31.9 116.7
15°	24 08.0 -34.0 119.9	23 20.0 -33.6 119.3	22 31.7 -33.1 118.7	21 43.1 -32.7 118.1	20 54.3 -32.3 117.6
16°	23 34.0 -34.2 120.8	22 46.4 -33.8 120.2	21 58.6 -33.4 119.6	21 10.4 -32.9 119.0	20 22.0 -32.5 118.5
17°	22 59.8 -34.6 121.7	22 12.6 -34.1 121.1	21 25.2 -33.7 120.5	20 37.5 -33.3 119.9	19 49.5 -32.8 119.4
18°	22 25.2 -34.8 122.6	21 38.5 -34.4 122.0	20 51.5 -33.9 121.4	20 04.2 -33.5 120.8	19 16.7 -33.1 120.3
19°	21 50.4 -35.2 123.4	21 04.1 -34.6 122.9	20 17.6 -34.2 122.3	19 30.7 -33.7 121.7	18 43.6 -33.3 121.2
20°	21 15.2 -35.4 124.3	20 29.5 -35.0 123.7	19 43.4 -34.5 123.2	18 57.0 -34.0 122.6	18 10.3 -33.5 122.0
21°	20 39.8 -35.6 125.2	19 54.5 -35.1 124.6	19 08.9 -34.7 124.0	18 23.0 -34.2 123.5	17 36.8 -33.8 122.9
22°	20 04.2 -35.9 126.0	19 19.4 -35.5 125.5	18 34.2 -34.9 124.9	17 48.8 -34.5 124.3	17 03.0 -34.0 123.8
23°	19 28.3 -36.1 126.9	18 43.9 -35.6 126.3	17 59.3 -35.2 125.7	17 14.3 -34.7 125.2	16 29.0 -34.2 124.6
24°	18 52.2 -36.4 127.7	18 08.3 -35.9 127.2	17 24.1 -35.3 126.6	16 39.6 -34.9 126.0	15 54.8 -34.4 125.5
25°	18 15.8 -36.6 128.6	17 32.4 -36.0 128.0	16 48.8 -35.6 127.4	16 04.7 -35.0 126.9	15 20.4 -34.6 126.3
26°	17 39.2 -36.8 129.4	16 56.4 -36.3 128.8	16 13.2 -35.8 128.3	15 29.7 -35.3 127.7	14 45.8 -34.8 127.2
27°	17 02.4 -37.0 130.2	16 20.1 -36.5 129.7	15 37.4 -36.0 129.1	14 54.4 -35.5 128.6	14 11.0 -34.9 128.0
28°	16 25.4 -37.1 131.1	15 43.6 -36.6 130.5	15 01.4 -36.1 129.9	14 18.9 -35.6 129.4	13 36.1 -35.1 128.9
29°	15 48.3 -37.4 131.9	15 07.0 -36.9 131.3	14 25.3 -36.3 130.8	13 43.3 -35.8 130.2	13 01.0 -35.3 129.7

Declination CONTRARY name to Latitude

Latitude 23°

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	27 24.2 -26.6 102.7	26 30.3 -26.4 102.2	25 36.2 -26.2 101.7	24 42.1 -26.0 101.3	23 47.9 -25.8 100.8
1°	26 57.6 -27.1 103.7	26 03.9 -26.8 103.2	25 10.0 -26.5 102.7	24 16.1 -26.4 102.2	23 22.1 -26.2 101.8
2°	26 30.5 -27.4 104.7	25 37.1 -27.3 104.2	24 43.5 -27.0 103.7	23 49.7 -26.7 103.2	22 55.9 -26.5 102.8
3°	26 03.1 -27.9 105.7	25 09.8 -27.6 105.2	24 16.5 -27.4 104.7	23 23.0 -27.1 104.2	22 29.4 -26.9 103.7
4°	25 35.2 -28.3 106.7	24 42.2 -28.0 106.2	23 49.1 -27.7 105.7	22 55.9 -27.5 105.2	22 02.5 -27.2 104.7
5°	25 06.9 -28.6 107.7	24 14.2 -28.3 107.2	23 21.4 -28.1 106.6	22 28.4 -27.8 106.1	21 35.3 -27.6 105.7
6°	24 38.3 -29.0 108.6	23 45.9 -28.7 108.1	22 53.3 -28.4 107.6	22 00.6 -28.1 107.1	21 07.7 -27.8 106.6
7°	24 09.3 -29.4 109.6	23 17.2 -29.1 109.1	22 24.9 -28.8 108.6	21 32.5 -28.5 108.1	20 39.9 -28.2 107.6
8°	23 39.9 -29.7 110.6	22 48.1 -29.4 110.0	21 56.1 -29.0 109.5	21 04.0 -28.8 109.0	20 11.7 -28.5 108.5
9°	23 10.2 -30.0 111.5	22 18.7 -29.7 111.0	21 27.1 -29.4 110.4	20 35.2 -29.0 109.9	19 43.2 -28.7 109.4
10°	22 40.2 -30.4 112.4	21 49.0 -30.0 111.9	20 57.7 -29.7 111.4	20 06.2 -29.4 110.9	19 14.5 -29.1 110.4
11°	22 09.8 -30.7 113.4	21 19.0 -30.4 112.8	20 28.0 -30.0 112.3	19 36.8 -29.7 111.8	18 45.4 -29.3 111.3
12°	21 39.1 -31.0 114.3	20 48.6 -30.6 113.8	19 58.0 -30.3 113.2	19 07.1 -29.9 112.7	18 16.1 -29.6 112.2
13°	21 08.1 -31.3 115.2	20 18.0 -30.9 114.7	19 27.7 -30.5 114.2	18 37.2 -30.2 113.6	17 46.5 -29.8 113.1
14°	20 36.8 -31.6 116.1	19 47.1 -31.2 115.6	18 57.2 -30.9 115.1	18 07.0 -30.4 114.5	17 16.7 -30.1 114.0
15°	20 05.2 -31.9 117.0	19 15.9 -31.5 116.5	18 26.3 -31.0 116.0	17 36.6 -30.7 115.5	16 46.6 -30.3 114.9
16°	19 33.3 -32.1 117.9	18 44.4 -31.7 117.4	17 55.3 -31.3 116.9	17 05.9 -30.9 116.4	16 16.3 -30.5 115.8
17°	19 01.2 -32.4 118.8	18 12.7 -32.0 118.3	17 24.0 -31.6 117.8	16 35.0 -31.2 117.2	15 45.8 -30.8 116.7
18°	18 28.8 -32.6 119.7	17 40.7 -32.2 119.2	16 52.4 -31.8 118.7	16 03.8 -31.4 118.1	15 15.0 -31.0 117.6
19°	17 56.2 -32.9 120.6	17 08.5 -32.4 120.1	16 20.6 -32.0 119.5	15 32.4 -31.5 119.0	14 44.0 -31.1 118.5
20°	17 23.3 -33.1 121.5	16 36.1 -32.6 120.9	15 48.6 -32.2 120.4	15 00.9 -31.8 119.9	14 12.9 -31.4 119.4
21°	16 50.2 -33.3 122.4	16 03.5 -32.9 121.8	15 16.4 -32.4 121.3	14 29.1 -32.0 120.8	13 41.5 -31.6 120.3
22°	16 16.9 -33.5 123.2	15 30.6 -33.1 122.7	14 44.0 -32.6 122.2	13 57.1 -32.2 121.7	13 09.9 -31.7 121.1
23°	15 43.4 -33.7 124.1	14 57.5 -33.2 123.6	14 11.4 -32.8 123.0	13 24.9 -32.3 122.5	12 38.2 -31.9 122.0
24°	15 09.7 -33.9 124.9	14 24.3 -33.5 124.4	13 38.6 -33.0 123.9	12 52.6 -32.5 123.4	12 06.3 -32.0 122.9
25°	14 35.8 -34.2 125.8	13 50.8 -33.6 125.3	13 05.6 -33.2 124.8	12 20.1 -32.7 124.2	11 34.3 -32.2 123.7
26°	14 01.6 -34.2 126.6	13 17.2 -33.8 126.1	12 32.4 -33.3 125.6	11 47.4 -32.8 125.1	11 02.1 -32.4 124.6
27°	13 27.4 -34.5 127.5	12 43.4 -34.0 127.0	11 59.1 -33.4 126.5	11 14.6 -33.0 126.0	10 29.7 -32.5 125.5
28°	12 52.9 -34.6 128.3	12 09.4 -34.1 127.8	11 25.7 -33.7 127.3	10 41.6 -33.1 126.8	9 57.2 -32.6 126.3
29°	12 18.3 -34.8 129.2	11 35.3 -34.2 128.7	10 52.0 -33.7 128.2	10 08.5 -33.3 127.7	9 24.6 -32.7 127.2

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	22 53.6 -25.6 100.3	21 59.2 -25.4 99.9	21 04.8 -25.3 99.4	20 10.3 -25.2 99.0	19 15.7 -25.0 98.5
1°	22 28.0 -26.0 101.3	21 33.8 -25.8 100.8	20 39.5 -25.6 100.4	19 45.1 -25.4 99.9	18 50.7 -25.3 99.5
2°	22 02.0 -26.3 102.3	21 08.0 -26.1 101.8	20 13.9 -25.9 101.4	19 19.7 -25.7 100.9	18 25.4 -25.5 100.4
3°	21 35.7 -26.7 103.2	20 41.9 -26.5 102.8	19 48.0 -26.3 102.3	18 54.0 -26.1 101.9	17 59.9 -25.9 101.4
4°	21 09.0 -27.0 104.2	20 15.4 -26.7 103.7	19 21.7 -26.5 103.3	18 27.9 -26.3 102.8	17 34.0 -26.1 102.3
5°	20 42.0 -27.3 105.2	19 48.7 -27.1 104.7	18 55.2 -26.8 104.2	18 01.6 -26.6 103.8	17 07.9 -26.4 103.3
6°	20 14.7 -27.6 106.1	19 21.6 -27.3 105.6	18 28.4 -27.1 105.2	17 35.0 -26.8 104.7	16 41.5 -26.6 104.2
7°	19 47.1 -27.9 107.1	18 54.3 -27.7 106.6	18 01.3 -27.4 106.1	17 08.2 -27.2 105.6	16 14.9 -26.9 105.2
8°	19 19.2 -28.1 108.0	18 26.6 -27.9 107.5	17 33.9 -27.6 107.0	16 41.0 -27.3 106.6	15 48.0 -27.1 106.1
9°	18 51.1 -28.5 108.9	17 58.7 -28.1 108.4	17 06.3 -27.9 108.0	16 13.7 -27.6 107.5	15 20.9 -27.3 107.0
10°	18 22.6 -28.7 109.9	17 30.6 -28.5 109.4	16 38.4 -28.1 108.9	15 46.1 -27.9 108.4	14 53.6 -27.6 107.9
11°	17 53.9 -29.0 110.8	17 02.1 -28.6 110.3	16 10.3 -28.4 109.8	15 18.2 -28.0 109.3	14 26.0 -27.7 108.9
12°	17 24.9 -29.3 111.7	16 33.5 -28.9 111.2	15 41.9 -28.6 110.7	14 50.2 -28.3 110.2	13 58.3 -28.0 109.8
13°	16 55.6 -29.5 112.6	16 04.6 -29.2 112.1	15 13.3 -28.8 111.6	14 21.9 -28.5 111.2	13 30.3 -28.2 110.7
14°	16 26.1 -29.7 113.5	15 35.4 -29.4 113.0	14 44.5 -29.0 112.5	13 53.4 -28.7 112.1	13 02.1 -28.3 111.6
15°	15 56.4 -29.9 114.4	15 06.0 -29.5 113.9	14 15.5 -29.3 113.5	13 24.7 -28.9 113.0	12 33.8 -28.6 112.5
16°	15 26.5 -30.2 115.3	14 36.5 -29.8 114.8	13 46.2 -29.4 114.4	12 55.8 -29.0 113.9	12 05.2 -28.7 113.4
17°	14 56.3 -30.3 116.2	14 06.7 -30.0 115.7	13 16.8 -29.6 115.2	12 26.8 -29.3 114.8	11 36.5 -28.9 114.3
18°	14 26.0 -30.6 117.1	13 36.7 -30.2 116.6	12 47.2 -29.8 116.1	11 57.5 -29.4 115.7	11 07.6 -29.0 115.2
19°	13 55.4 -30.8 118.0	13 06.5 -30.3 117.5	12 17.4 -29.9 117.0	11 28.1 -29.6 116.6	10 38.6 -29.2 116.1
20°	13 24.6 -30.9 118.9	12 36.2 -30.6 118.4	11 47.5 -30.2 117.9	10 58.5 -29.7 117.4	10 09.4 -29.3 117.0
21°	12 53.7 -31.1 119.8	12 05.6 -30.7 119.3	11 17.3 -30.3 118.8	10 28.8 -29.8 118.3	9 40.1 -29.5 117.9
22°	12 22.6 -31.3 120.6	11 34.9 -30.8 120.2	10 47.0 -30.4 119.7	9 59.0 -30.1 119.2	9 10.6 -29.6 118.7
23°	11 51.3 -31.5 121.5	11 04.1 -31.0 121.0	10 16.6 -30.6 120.6	9 28.9 -30.1 120.1	8 41.0 -29.7 119.6
24°	11 19.8 -31.6 122.4	10 33.1 -31.2 121.9	9 46.0 -30.7 121.4	8 58.8 -30.3 121.0	8 11.3 -29.8 120.5
25°	10 48.2 -31.7 123.3	10 01.9 -31.3 122.8	9 15.3 -30.8 122.3	8 28.5 -30.3 121.8	7 41.5 -29.9 121.4
26°	10 16.5 -31.9 124.1	9 30.6 -31.4 123.6	8 44.5 -30.9 123.2	7 58.2 -30.5 122.7	7 11.6 -30.1 122.2
27°	9 44.6 -32.0 125.0	8 59.2 -31.5 124.5	8 13.6 -31.1 124.0	7 27.7 -30.6 123.6	6 41.5 -30.1 123.1
28°	9 12.6 -32.1 125.8	8 27.7 -31.7 125.4	7 42.5 -31.2 124.9	6 57.1 -30.7 124.4	6 11.4 -30.2 124.0
29°	8 40.5 -32.3 126.7	7 56.0 -31.7 126.2	7 11.3 -31.2 125.8	6 26.4 -30.8 125.3	5 41.2 -30.3 124.9

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Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	18 21.0 -24.8 98.1	17 26.3 -24.7 97.7	16 31.6 -24.6 97.2	15 36.7 -24.4 96.8	14 41.9 -24.4 96.4
1°	17 56.2 -25.1 99.1	17 01.6 -25.0 98.6	16 07.0 -24.9 98.2	15 12.3 -24.7 97.8	14 17.5 -24.5 97.3
2°	17 31.1 -25.4 100.0	16 36.6 -25.2 99.6	15 42.1 -25.0 99.1	14 47.6 -24.9 98.7	13 53.0 -24.8 98.3
3°	17 05.7 -25.7 101.0	16 11.4 -25.5 100.5	15 17.1 -25.3 100.1	14 22.7 -25.2 99.6	13 28.2 -25.0 99.2
4°	16 40.0 -25.9 101.9	15 45.9 -25.7 101.5	14 51.8 -25.6 101.0	13 57.5 -25.4 100.6	13 03.2 -25.2 100.1
5°	16 14.1 -26.2 102.8	15 20.2 -26.0 102.4	14 26.2 -25.7 101.9	13 32.1 -25.5 101.5	12 38.0 -25.4 101.1
6°	15 47.9 -26.4 103.8	14 54.2 -26.1 103.3	14 00.5 -26.0 102.9	13 06.6 -25.8 102.4	12 12.6 -25.6 102.0
7°	15 21.5 -26.6 104.7	14 28.1 -26.4 104.3	13 34.5 -26.2 103.8	12 40.8 -26.0 103.4	11 47.0 -25.7 102.9
8°	14 54.9 -26.8 105.6	14 01.7 -26.6 105.2	13 08.3 -26.4 104.7	12 14.8 -26.1 104.3	11 21.3 -26.0 103.9
9°	14 28.1 -27.1 106.6	13 35.1 -26.9 106.1	12 41.9 -26.5 105.7	11 48.7 -26.3 105.2	10 55.3 -26.0 104.8
10°	14 01.0 -27.3 107.5	13 08.2 -27.0 107.0	12 15.4 -26.8 106.6	11 22.4 -26.5 106.1	10 29.3 -26.3 105.7
11°	13 33.7 -27.5 108.4	12 41.2 -27.2 107.9	11 48.6 -26.9 107.5	10 55.9 -26.7 107.0	10 03.0 -26.4 106.6
12°	13 06.2 -27.7 109.3	12 14.0 -27.4 108.9	11 21.7 -27.1 108.4	10 29.2 -26.8 108.0	9 36.6 -26.5 107.5
13°	12 38.5 -27.8 110.2	11 46.6 -27.5 109.8	10 54.6 -27.3 109.3	10 02.4 -27.0 108.9	9 10.1 -26.7 108.4
14°	12 10.7 -28.0 111.1	11 19.1 -27.7 110.7	10 27.3 -27.4 110.2	9 35.4 -27.1 109.8	8 43.4 -26.8 109.3
15°	11 42.7 -28.2 112.0	10 51.4 -27.9 111.6	9 59.9 -27.5 111.1	9 08.3 -27.2 110.7	8 16.6 -26.9 110.2
16°	11 14.5 -28.4 112.9	10 23.5 -28.0 112.5	9 32.4 -27.7 112.0	8 41.1 -27.4 111.6	7 49.7 -27.1 111.1
17°	10 46.1 -28.5 113.8	9 55.5 -28.2 113.4	9 04.7 -27.8 112.9	8 13.7 -27.4 112.5	7 22.6 -27.1 112.0
18°	10 17.6 -28.7 114.7	9 27.3 -28.3 114.3	8 36.9 -28.0 113.8	7 46.3 -27.6 113.4	6 55.5 -27.3 112.9
19°	9 48.9 -28.8 115.6	8 59.0 -28.4 115.2	8 08.9 -28.0 114.7	7 18.7 -27.7 114.3	6 28.2 -27.3 113.8
20°	9 20.1 -28.9 116.5	8 30.6 -28.6 116.1	7 40.9 -28.2 115.6	6 51.0 -27.8 115.2	6 00.9 -27.4 114.7
21°	8 51.2 -29.1 117.4	8 02.0 -28.6 116.9	7 12.7 -28.3 116.5	6 23.2 -27.9 116.1	5 33.5 -27.6 115.6
22°	8 22.1 -29.2 118.3	7 33.4 -28.8 117.8	6 44.4 -28.4 117.4	5 55.3 -28.0 116.9	5 05.9 -27.5 116.5
23°	7 52.9 -29.3 119.2	7 04.6 -28.9 118.7	6 16.0 -28.4 118.3	5 27.3 -28.1 117.8	4 38.4 -27.7 117.4
24°	7 23.6 -29.4 120.0	6 35.7 -29.0 119.6	5 47.6 -28.6 119.2	4 59.2 -28.1 118.7	4 10.7 -27.7 118.3
25°	6 54.2 -29.5 120.9	6 06.7 -29.0 120.5	5 19.0 -28.6 120.0	4 31.1 -28.2 119.6	3 43.0 -27.8 119.2
26°	6 24.7 -29.5 121.8	5 37.7 -29.1 121.4	4 50.4 -28.7 120.9	4 02.9 -28.2 120.5	3 15.2 -27.8 120.1
27°	5 55.2 -29.7 122.7	5 08.6 -29.2 122.2	4 21.7 -28.7 121.8	3 34.7 -28.3 121.4	2 47.4 -27.8 121.0
28°	5 25.5 -29.7 123.5	4 39.4 -29.3 123.1	3 53.0 -28.8 122.7	3 06.4 -28.4 122.3	2 19.6 -27.9 121.8
29°	4 55.8 -29.8 124.4	4 10.1 -29.3 124.0	3 24.2 -28.9 123.6	2 38.0 -28.3 123.1	1 51.7 -27.9 122.7

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	13 47.0 -24.3 96.0	12 52.0 -24.1 95.6	11 57.0 -24.0 95.2	11 02.0 -24.0 94.7	10 07.0 -23.9 94.3
1°	13 22.7 -24.4 96.9	12 27.9 -24.4 96.5	11 33.0 -24.3 96.1	10 38.0 -24.1 95.7	9 43.1 -24.1 95.3
2°	12 58.3 -24.7 97.9	12 03.5 -24.5 97.4	11 08.7 -24.4 97.0	10 13.9 -24.3 96.6	9 19.0 -24.2 96.2
3°	12 33.6 -24.8 98.8	11 39.0 -24.7 98.4	10 44.3 -24.5 98.0	9 49.6 -24.4 97.5	8 54.8 -24.3 97.1
4°	12 08.8 -25.1 99.7	11 14.3 -24.9 99.3	10 19.8 -24.8 98.9	9 25.2 -24.6 98.5	8 30.5 -24.4 98.1
5°	11 43.7 -25.2 100.7	10 49.4 -25.0 100.2	9 55.0 -24.8 99.8	9 00.6 -24.7 99.4	8 06.1 -24.6 99.0
6°	11 18.5 -25.4 101.6	10 24.4 -25.2 101.2	9 30.2 -25.1 100.7	8 35.9 -24.9 100.3	7 41.5 -24.7 99.9
7°	10 53.1 -25.5 102.5	9 59.2 -25.4 102.1	9 05.1 -25.1 101.7	8 11.0 -25.0 101.2	7 16.8 -24.8 100.8
8°	10 27.6 -25.7 103.4	9 33.8 -25.5 103.0	8 40.0 -25.3 102.6	7 46.0 -25.1 102.2	6 52.0 -24.9 101.7
9°	10 01.9 -25.9 104.3	9 08.3 -25.6 103.9	8 14.7 -25.5 103.5	7 20.9 -25.2 103.1	6 27.1 -25.0 102.7
10°	9 36.0 -26.0 105.3	8 42.7 -25.8 104.8	7 49.2 -25.5 104.4	6 55.7 -25.3 104.0	6 02.1 -25.1 103.6
11°	9 10.0 -26.1 106.2	8 16.9 -25.9 105.7	7 23.7 -25.7 105.3	6 30.4 -25.4 104.9	5 37.0 -25.2 104.5
12°	8 43.9 -26.3 107.1	7 51.0 -26.0 106.7	6 58.0 -25.7 106.2	6 05.0 -25.5 105.8	5 11.8 -25.3 105.4
13°	8 17.6 -26.4 108.0	7 25.0 -26.1 107.6	6 32.3 -25.9 107.1	5 39.5 -25.6 106.7	4 46.5 -25.3 106.3
14°	7 51.2 -26.5 108.9	6 58.9 -26.2 108.5	6 06.4 -25.9 108.0	5 13.9 -25.7 107.6	4 21.2 -25.4 107.2
15°	7 24.7 -26.6 109.8	6 32.7 -26.4 109.4	5 40.5 -26.0 108.9	4 48.2 -25.7 108.5	3 55.8 -25.5 108.1
16°	6 58.1 -26.7 110.7	6 06.3 -26.4 110.3	5 14.5 -26.1 109.9	4 22.5 -25.9 109.4	3 30.3 -25.5 109.0
17°	6 31.4 -26.9 111.6	5 39.9 -26.5 111.2	4 48.4 -26.2 110.8	3 56.6 -25.8 110.3	3 04.8 -25.6 109.9
18°	6 04.5 -26.9 112.5	5 13.4 -26.5 112.1	4 22.2 -26.3 111.7	3 30.8 -25.9 111.2	2 39.2 -25.6 110.8
19°	5 37.6 -27.0 113.4	4 46.9 -26.7 113.0	3 55.9 -26.3 112.6	3 04.9 -26.0 112.2	2 13.6 -25.6 111.7
20°	5 10.6 -27.0 114.3	4 20.2 -26.7 113.9	3 29.6 -26.3 113.5	2 38.9 -26.0 113.1	1 48.0 -25.7 112.6
21°	4 43.6 -27.2 115.2	3 53.5 -26.8 114.8	3 03.3 -26.4 114.4	2 12.9 -26.0 114.0	1 22.3 -25.6 113.6
22°	4 16.4 -27.2 116.1	3 26.7 -26.8 115.7	2 36.9 -26.5 115.3	1 46.9 -26.1 114.9	0 56.7 -25.7 114.5
23°	3 49.2 -27.2 117.0	2 59.9 -26.8 116.6	2 10.4 -26.4 116.2	1 20.8 -26.1 115.8	0 31.0 -25.7 115.4
24°	3 22.0 -27.3 117.9	2 33.1 -26.9 117.5	1 44.0 -26.5 117.1	0 54.7 -26.1 116.7	0 05.3 -25.7 116.3
25°	2 54.7 -27.4 118.8	2 06.2 -26.9 118.4	1 17.5 -26.5 118.0	0 28.6 -26.1 117.6	-0 20.4 -25.7
26°	2 27.3 -27.3 119.7	1 39.3 -27.0 119.3	0 51.0 -26.6 118.9	0 02.5 -26.1 118.5	-0 46.1 -25.7
27°	2 00.0 -27.4 120.6	1 12.3 -27.0 120.1	0 24.4 -26.5 119.8	-0 23.6 -26.1	-1 11.8 -25.7
28°	1 32.6 -27.5 121.4	0 45.3 -26.9 121.0	-0 02.1 -26.5	-0 49.7 -26.1	-1 37.5 -25.6
29°	1 05.1 -27.4 122.3	0 18.4 -27.0 121.9	-0 28.6 -26.5	-1 15.8 -26.0	-2 03.1 -25.7

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 11.9 -23.8 93.9	8 16.8 -23.8 93.5	7 21.6 -23.7 93.1	6 26.5 -23.7 92.7	5 31.3 -23.6 92.4
1°	8 48.1 -24.0 94.9	7 53.0 -23.9 94.5	6 57.9 -23.8 94.1	6 02.8 -23.7 93.7	5 07.7 -23.7 93.3
2°	8 24.1 -24.1 95.8	7 29.1 -24.0 95.4	6 34.1 -23.9 95.0	5 39.1 -23.8 94.6	4 44.0 -23.7 94.2
3°	8 00.0 -24.2 96.7	7 05.1 -24.1 96.3	6 10.2 -24.0 95.9	5 15.3 -23.9 95.5	4 20.3 -23.8 95.1
4°	7 35.8 -24.3 97.6	6 41.0 -24.2 97.2	5 46.2 -24.1 96.8	4 51.4 -24.0 96.4	3 56.5 -23.9 96.0
5°	7 11.5 -24.5 98.6	6 16.8 -24.3 98.2	5 22.1 -24.1 97.8	4 27.4 -24.1 97.4	3 32.6 -23.9 97.0
6°	6 47.0 -24.5 99.5	5 52.5 -24.4 99.1	4 58.0 -24.3 98.7	4 03.3 -24.1 98.3	3 08.7 -24.0 97.9
7°	6 22.5 -24.6 100.4	5 28.1 -24.4 100.0	4 33.7 -24.3 99.6	3 39.2 -24.1 99.2	2 44.7 -24.0 98.8
8°	5 57.9 -24.8 101.3	5 03.7 -24.6 100.9	4 09.4 -24.4 100.5	3 15.1 -24.3 100.1	2 20.7 -24.1 99.7
9°	5 33.1 -24.8 102.2	4 39.1 -24.6 101.8	3 45.0 -24.4 101.4	2 50.8 -24.2 101.0	1 56.6 -24.1 100.6
10°	5 08.3 -24.9 103.2	4 14.5 -24.7 102.7	3 20.6 -24.5 102.3	2 26.6 -24.3 101.9	1 32.5 -24.1 101.5
11°	4 43.4 -24.9 104.1	3 49.8 -24.7 103.7	2 56.1 -24.5 103.3	2 02.3 -24.3 102.9	1 08.4 -24.1 102.5
12°	4 18.5 -25.1 105.0	3 25.1 -24.8 104.6	2 31.6 -24.6 104.2	1 38.0 -24.4 103.8	0 44.3 -24.2 103.4
13°	3 53.4 -25.0 105.9	3 00.3 -24.9 105.5	2 07.0 -24.6 105.1	1 13.6 -24.4 104.7	0 20.1 -24.1 104.3
14°	3 28.4 -25.2 106.8	2 35.4 -24.9 106.4	1 42.4 -24.6 106.0	0 49.2 -24.3 105.6	-0 04.0 -24.1
15°	3 03.2 -25.2 107.7	2 10.5 -24.9 107.3	1 17.8 -24.7 106.9	0 24.9 -24.4 106.5	-0 28.1 -24.2
16°	2 38.0 -25.2 108.6	1 45.6 -24.9 108.2	0 53.1 -24.7 107.8	0 00.5 -24.4 107.4	-0 52.3 -24.1
17°	2 12.8 -25.3 109.5	1 20.7 -25.0 109.1	0 28.4 -24.6 108.7	-0 23.9 -24.4	-1 16.4 -24.1
18°	1 47.5 -25.2 110.4	0 55.7 -25.0 110.0	0 03.8 -24.7 109.6	-0 48.3 -24.4	-1 40.5 -24.1
19°	1 22.3 -25.3 111.3	0 30.7 -24.9 110.9	-0 20.9 -24.7	-1 12.7 -24.3	-2 04.6 -24.0
20°	0 57.0 -25.4 112.2	0 05.8 -25.0 111.9	-0 45.6 -24.6	-1 37.0 -24.4	-2 28.6 -24.0
21°	0 31.6 -25.3 113.2	-0 19.2 -25.0	-1 10.2 -24.7	-2 01.4 -24.3	-2 52.6 -24.0
22°	0 06.3 -25.3 114.1	-0 44.2 -25.0	-1 34.9 -24.6	-2 25.7 -24.2	-3 16.6 -23.9
23°	-0 19.0 -25.3	-1 09.2 -24.9	-1 59.5 -24.6	-2 49.9 -24.2	-3 40.5 -23.9
24°	-0 44.3 -25.4	-1 34.1 -24.9	-2 24.1 -24.5	-3 14.1 -24.2	-4 04.4 -23.8
25°	-1 09.7 -25.3	-1 59.0 -24.9	-2 48.6 -24.5	-3 38.3 -24.1	-4 28.2 -23.7
26°	-1 35.0 -25.2	-2 23.9 -24.9	-3 13.1 -24.5	-4 02.4 -24.1	-4 51.9 -23.6
27°	-2 00.2 -25.3	-2 48.8 -24.8	-3 37.6 -24.4	-4 26.5 -23.9	-5 15.5 -23.6
28°	-2 25.5 -25.2	-3 13.6 -24.8	-4 02.0 -24.3	-4 50.4 -24.0	-5 39.1 -23.5
29°	-2 50.7 -25.1	-3 38.4 -24.7	-4 26.3 -24.3	-5 14.4 -23.8	-6 02.6 -23.4

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 36.1 -23.6 92.0	3 40.9 -23.5 91.6	2 45.7 -23.5 91.2	1 50.5 -23.5 90.8	0 55.2 -23.4 90.4
1°	4 12.5 -23.6 92.9	3 17.4 -23.6 92.5	2 22.2 -23.5 92.1	1 27.0 -23.5 91.7	0 31.8 -23.5 91.3
2°	3 48.9 -23.7 93.8	2 53.8 -23.6 93.4	1 58.7 -23.6 93.0	1 03.5 -23.5 92.6	0 08.3 -23.4 92.2
3°	3 25.2 -23.7 94.7	2 30.2 -23.7 94.3	1 35.1 -23.6 93.9	0 40.0 -23.5 93.5	-0 15.1 -23.5
4°	3 01.5 -23.8 95.6	2 06.5 -23.7 95.2	1 11.5 -23.6 94.9	0 16.5 -23.6 94.5	-0 38.6 -23.5
5°	2 37.7 -23.8 96.6	1 42.8 -23.7 96.2	0 47.9 -23.6 95.8	-0 07.1 -23.5	-1 02.1 -23.4
6°	2 13.9 -23.8 97.5	1 19.1 -23.7 97.1	0 24.3 -23.6 96.7	-0 30.6 -23.5	-1 25.5 -23.4
7°	1 50.1 -23.9 98.4	0 55.4 -23.7 98.0	0 00.7 -23.6 97.6	-0 54.1 -23.5	-1 48.9 -23.4
8°	1 26.2 -23.9 99.3	0 31.7 -23.8 98.9	-0 22.9 -23.7	-1 17.6 -23.5	-2 12.3 -23.3
9°	1 02.3 -23.9 100.2	0 07.9 -23.8 99.8	-0 46.6 -23.6	-1 41.1 -23.4	-2 35.6 -23.3
10°	0 38.4 -24.0 101.2	-0 15.9 -23.7	-1 10.2 -23.5	-2 04.5 -23.4	-2 58.9 -23.3
11°	0 14.4 -23.9 102.1	-0 39.6 -23.8	-1 33.7 -23.6	-2 27.9 -23.4	-3 22.2 -23.2
12°	-0 09.5 -23.9	-1 03.4 -23.7	-1 57.3 -23.5	-2 51.3 -23.4	-3 45.4 -23.2
13°	-0 33.4 -24.0	-1 27.1 -23.7	-2 20.8 -23.5	-3 14.7 -23.2	-4 08.6 -23.1
14°	-0 57.4 -23.9	-1 50.8 -23.7	-2 44.3 -23.5	-3 37.9 -23.3	-4 31.7 -23.0
15°	-1 21.3 -23.8	-2 14.5 -23.6	-3 07.8 -23.4	-4 01.2 -23.1	-4 54.7 -22.9
16°	-1 45.1 -23.9	-2 38.1 -23.6	-3 31.2 -23.3	-4 24.3 -23.1	-5 17.6 -22.9
17°	-2 09.0 -23.8	-3 01.7 -23.6	-3 54.5 -23.3	-4 47.4 -23.1	-5 40.5 -22.7
18°	-2 32.8 -23.8	-3 25.3 -23.5	-4 17.8 -23.2	-5 10.5 -22.9	-6 03.2 -22.7
19°	-2 56.6 -23.8	-3 48.8 -23.4	-4 41.0 -23.2	-5 33.4 -22.9	-6 25.9 -22.6
20°	-3 20.4 -23.6	-4 12.2 -23.4	-5 04.2 -23.1	-5 56.3 -22.7	-6 48.5 -22.4
21°	-3 44.0 -23.7	-4 35.6 -23.3	-5 27.3 -22.9	-6 19.0 -22.7	-7 10.9 -22.4
22°	-4 07.7 -23.5	-4 58.9 -23.2	-5 50.2 -22.9	-6 41.7 -22.6	-7 33.3 -22.2
23°	-4 31.2 -23.5	-5 22.1 -23.2	-6 13.1 -22.8	-7 04.3 -22.4	-7 55.5 -22.1
24°	-4 54.7 -23.5	-5 45.3 -23.0	-6 35.9 -22.7	-7 26.7 -22.3	-8 17.6 -22.0
25°	-5 18.2 -23.3	-6 08.3 -23.0	-6 58.6 -22.6	-7 49.0 -22.2	-8 39.6 -21.8
26°	-5 41.5 -23.3	-6 31.3 -22.8	-7 21.2 -22.5	-8 11.2 -22.1	-9 01.4 -21.7
27°	-6 04.8 -23.1	-6 54.1 -22.8	-7 43.7 -22.3	-8 33.3 -22.0	-9 23.1 -21.6
28°	-6 27.9 -23.1	-7 16.9 -22.6	-8 06.0 -22.2	-8 55.3 -21.8	-9 44.7 -21.3
29°	-6 51.0 -22.9	-7 39.5 -22.5	-8 28.2 -22.1	-9 17.1 -21.6	

Latitude 23°

Declination CONTRARY name to Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -23.4 90.0	-0 55.2 -23.5			
1°	-0 23.4 -23.5	-1 18.7 -23.4			
2°	-0 46.9 -23.4	-1 42.1 -23.4			
3°	-1 10.3 -23.4	-2 05.5 -23.3			
4°	-1 33.7 -23.4	-2 28.8 -23.4			
5°	-1 57.1 -23.3	-2 52.2 -23.2			
6°	-2 20.4 -23.4	-3 15.4 -23.3			
7°	-2 43.8 -23.2	-3 38.7 -23.1			
8°	-3 07.0 -23.3	-4 01.8 -23.1			
9°	-3 30.3 -23.1	-4 24.9 -23.1			
10°	-3 53.4 -23.1	-4 48.0 -22.9			
11°	-4 16.5 -23.1	-5 10.9 -22.9			
12°	-4 39.6 -23.0	-5 33.8 -22.8			
13°	-5 02.6 -22.8	-5 56.6 -22.7			
14°	-5 25.4 -22.9	-6 19.3 -22.6			
15°	-5 48.3 -22.7	-6 41.9 -22.5			
16°	-6 11.0 -22.6	-7 04.4 -22.4			
17°	-6 33.6 -22.5	-7 26.8 -22.3			
18°	-6 56.1 -22.4	-7 49.1 -22.1			
19°	-7 18.5 -22.3	-8 11.2 -22.0			
20°	-7 40.8 -22.2	-8 33.2 -21.9			
21°	-8 03.0 -22.0	-8 55.1 -21.7			
22°	-8 25.0 -21.9	-9 16.8 -21.6			
23°	-8 46.9 -21.8	-9 38.4 -21.4			
24°	-9 08.7 -21.6	-9 59.8 -21.3			
25°	-9 30.3 -21.5				
26°	-9 51.8 -21.3				
27°					
28°					
29°					

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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The data on this page is believed to be accurate but no warranty is given for it's correctness. Use it only for training and exercising!

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	66 00.0 -60.0 180.0	65 58.8 -59.9 177.5	65 55.3 -59.8 175.1	65 49.5 -59.7 172.7	65 41.3 -59.3 170.2
1°	65 00.0 -60.0 180.0	64 58.9 -60.0 177.6	64 55.5 -59.9 175.3	64 49.8 -59.6 172.9	64 42.0 -59.4 170.6
2°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.7	63 55.6 -59.8 175.4	63 50.2 -59.6 173.2	63 42.6 -59.3 170.9
3°	63 00.0 -60.0 180.0	62 58.9 -59.9 177.8	62 55.8 -59.9 175.6	62 50.6 -59.7 173.4	62 43.3 -59.5 171.3
4°	62 00.0 -60.0 180.0	61 59.0 -60.0 177.9	61 55.9 -59.8 175.8	61 50.9 -59.7 173.6	61 43.8 -59.5 171.6
5°	61 00.0 -60.0 180.0	60 59.0 -60.0 177.9	60 56.1 -59.9 175.9	60 51.2 -59.7 173.9	60 44.3 -59.5 171.8
6°	60 00.0 -60.0 180.0	59 59.0 -59.9 178.0	59 56.2 -59.9 176.0	59 51.5 -59.8 174.1	59 44.8 -59.5 172.1
7°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.1	58 56.3 -59.9 176.2	58 51.7 -59.7 174.2	58 45.3 -59.5 172.3
8°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.1	57 56.4 -59.9 176.3	57 52.0 -59.8 174.4	57 45.8 -59.6 172.6
9°	57 00.0 -60.0 180.0	56 59.1 -59.9 178.2	56 56.5 -59.9 176.4	56 52.2 -59.8 174.6	56 46.2 -59.6 172.8
10°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.2	55 56.6 -59.9 176.5	55 52.4 -59.8 174.7	55 46.6 -59.7 173.0
11°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.3	54 56.7 -59.9 176.6	54 52.6 -59.8 174.9	54 46.9 -59.6 173.2
12°	54 00.0 -60.0 180.0	53 59.2 -60.0 178.3	53 56.8 -59.9 176.7	53 52.8 -59.8 175.0	53 47.3 -59.7 173.4
13°	53 00.0 -60.0 180.0	52 59.2 -60.0 178.4	52 56.9 -59.9 176.8	52 53.0 -59.8 175.2	52 47.6 -59.6 173.5
14°	52 00.0 -60.0 180.0	51 59.2 -59.9 178.4	51 57.0 -59.9 176.9	51 53.2 -59.8 175.3	51 48.0 -59.7 173.7
15°	51 00.0 -60.0 180.0	50 59.3 -60.0 178.5	50 57.1 -60.0 176.9	50 53.4 -59.8 175.4	50 48.3 -59.7 173.9
16°	50 00.0 -60.0 180.0	49 59.3 -60.0 178.5	49 57.1 -59.9 177.0	49 53.6 -59.9 175.5	49 48.6 -59.7 174.0
17°	49 00.0 -60.0 180.0	48 59.3 -60.0 178.5	48 57.2 -59.9 177.1	48 53.7 -59.8 175.6	48 48.9 -59.8 174.2
18°	48 00.0 -60.0 180.0	47 59.3 -60.0 178.6	47 57.3 -60.0 177.2	47 53.9 -59.9 175.7	47 49.1 -59.7 174.3
19°	47 00.0 -60.0 180.0	46 59.3 -59.9 178.6	46 57.3 -59.9 177.2	46 54.0 -59.8 175.8	46 49.4 -59.7 174.5
20°	46 00.0 -60.0 180.0	45 59.4 -60.0 178.6	45 57.4 -59.9 177.3	45 54.2 -59.9 175.9	45 49.7 -59.8 174.6
21°	45 00.0 -60.0 180.0	44 59.4 -60.0 178.7	44 57.5 -60.0 177.4	44 54.3 -59.8 176.0	44 49.9 -59.7 174.7
22°	44 00.0 -60.0 180.0	43 59.4 -60.0 178.7	43 57.5 -59.9 177.4	43 54.5 -59.9 176.1	43 50.2 -59.8 174.9
23°	43 00.0 -60.0 180.0	42 59.4 -60.0 178.7	42 57.6 -60.0 177.5	42 54.6 -59.9 176.2	42 50.4 -59.8 175.0
24°	42 00.0 -60.0 180.0	41 59.4 -60.0 178.8	41 57.6 -59.9 177.5	41 54.7 -59.9 176.3	41 50.6 -59.8 175.1
25°	41 00.0 -60.0 180.0	40 59.4 -60.0 178.8	40 57.7 -59.9 177.6	40 54.8 -59.8 176.4	40 50.8 -59.8 175.2
26°	40 00.0 -60.0 180.0	39 59.4 -59.9 178.8	39 57.8 -60.0 177.7	39 55.0 -59.9 176.5	39 51.0 -59.8 175.3
27°	39 00.0 -60.0 180.0	38 59.5 -60.0 178.9	38 57.8 -59.9 177.7	38 55.1 -59.9 176.6	38 51.2 -59.8 175.4
28°	38 00.0 -60.0 180.0	37 59.5 -60.0 178.9	37 57.9 -60.0 177.8	37 55.2 -59.9 176.6	37 51.4 -59.8 175.5
29°	37 00.0 -60.0 180.0	36 59.5 -60.0 178.9	36 57.9 -59.9 177.8	36 55.3 -59.9 176.7	36 51.6 -59.8 175.6

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	65 30.9 -58.9 167.9	65 18.3 -58.5 165.5	65 03.5 -58.0 163.2	64 46.6 -57.4 160.9	64 27.7 -56.7 158.7
1°	64 32.0 -59.0 168.3	64 19.8 -58.6 166.0	64 05.5 -58.0 163.8	63 49.2 -57.5 161.6	63 31.0 -57.0 159.5
2°	63 33.0 -59.1 168.7	63 21.2 -58.6 166.5	63 07.5 -58.3 164.4	62 51.7 -57.7 162.2	62 34.0 -57.1 160.2
3°	62 33.9 -59.1 169.1	62 22.6 -58.8 167.0	62 09.2 -58.3 164.9	61 54.0 -57.8 162.8	61 36.9 -57.3 160.8
4°	61 34.8 -59.2 169.5	61 23.8 -58.8 167.4	61 10.9 -58.4 165.4	60 56.2 -58.0 163.4	60 39.6 -57.5 161.4
5°	60 35.6 -59.2 169.8	60 25.0 -58.9 167.8	60 12.5 -58.5 165.9	59 58.2 -58.1 163.9	59 42.1 -57.6 162.0
6°	59 36.4 -59.3 170.1	59 26.1 -59.0 168.2	59 14.0 -58.6 166.3	59 00.1 -58.2 164.4	58 44.5 -57.7 162.6
7°	58 37.1 -59.3 170.4	58 27.1 -59.0 168.6	58 15.4 -58.7 166.7	58 01.9 -58.3 164.9	57 46.8 -57.9 163.1
8°	57 37.8 -59.4 170.7	57 28.1 -59.1 168.9	57 16.7 -58.8 167.1	57 03.6 -58.4 165.3	56 48.9 -58.0 163.6
9°	56 38.4 -59.4 171.0	56 29.0 -59.1 169.2	56 17.9 -58.8 167.5	56 05.2 -58.4 165.7	55 50.9 -58.0 164.0
10°	55 39.0 -59.4 171.3	55 29.9 -59.2 169.5	55 19.1 -58.8 167.8	55 06.8 -58.6 166.1	54 52.9 -58.2 164.5
11°	54 39.6 -59.4 171.5	54 30.7 -59.2 169.8	54 20.3 -59.0 168.2	54 08.2 -58.6 166.5	53 54.7 -58.2 164.9
12°	53 40.2 -59.5 171.7	53 31.5 -59.2 170.1	53 21.3 -58.9 168.5	53 09.6 -58.6 166.9	52 56.5 -58.4 165.3
13°	52 40.7 -59.5 171.9	52 32.3 -59.3 170.4	52 22.4 -59.0 168.8	52 11.0 -58.7 167.2	51 58.1 -58.4 165.7
14°	51 41.2 -59.5 172.2	51 33.0 -59.3 170.6	51 23.4 -59.1 169.1	51 12.3 -58.8 167.6	50 59.7 -58.4 166.0
15°	50 41.7 -59.5 172.4	50 33.7 -59.3 170.9	50 24.3 -59.1 169.4	50 13.5 -58.9 167.9	50 01.3 -58.6 166.4
16°	49 42.2 -59.6 172.6	49 34.4 -59.4 171.1	49 25.2 -59.1 169.6	49 14.6 -58.8 168.2	49 02.7 -58.5 166.7
17°	48 42.6 -59.5 172.7	48 35.0 -59.4 171.3	48 26.1 -59.2 169.9	48 15.8 -58.9 168.5	48 04.2 -58.7 167.1
18°	47 43.1 -59.6 172.9	47 35.6 -59.4 171.5	47 26.9 -59.2 170.1	47 16.9 -59.0 168.7	47 05.5 -58.7 167.4
19°	46 43.5 -59.6 173.1	46 36.2 -59.4 171.7	46 27.7 -59.2 170.4	46 17.9 -59.0 169.0	46 06.8 -58.7 167.7
20°	45 43.9 -59.6 173.3	45 36.8 -59.4 171.9	45 28.5 -59.3 170.6	45 18.9 -59.0 169.3	45 08.1 -58.8 168.0
21°	44 44.3 -59.7 173.4	44 37.4 -59.5 172.1	44 29.2 -59.2 170.8	44 19.9 -59.1 169.5	44 09.3 -58.8 168.3
22°	43 44.6 -59.6 173.6	43 37.9 -59.5 172.3	43 30.0 -59.3 171.0	43 20.8 -59.1 169.8	43 10.5 -58.8 168.5
23°	42 45.0 -59.7 173.7	42 38.4 -59.5 172.5	42 30.7 -59.4 171.2	42 21.7 -59.1 170.0	42 11.7 -58.9 168.8
24°	41 45.3 -59.6 173.9	41 38.9 -59.5 172.7	41 31.3 -59.3 171.4	41 22.6 -59.1 170.2	41 12.8 -59.0 169.0
25°	40 45.7 -59.7 174.0	40 39.4 -59.5 172.8	40 32.0 -59.4 171.6	40 23.5 -59.2 170.5	40 13.8 -58.9 169.3
26°	39 46.0 -59.7 174.2	39 39.9 -59.6 173.0	39 32.6 -59.4 171.8	39 24.3 -59.2 170.7	39 14.9 -59.0 169.5
27°	38 46.3 -59.7 174.3	38 40.3 -59.5 173.1	38 33.2 -59.4 172.0	38 25.1 -59.2 170.9	38 15.9 -59.0 169.8
28°	37 46.6 -59.7 174.4	37 40.8 -59.6 173.3	37 33.8 -59.4 172.2	37 25.9 -59.3 171.1	37 16.9 -59.1 170.0
29°	36 46.9 -59.7 174.5	36 41.2 -59.6 173.5	36 34.4 -59.4 172.4	36 26.6 -59.2 171.3	36 17.8 -59.0 170.2

Latitude 24°

Declination CONTRARY name to Latitude

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	64 06.9 -56.1 156.6	63 44.1 -55.3 154.5	63 19.6 -54.5 152.4	62 53.4 -53.8 150.4	62 25.5 -52.9 148.5
1°	63 10.8 -56.3 157.4	62 48.8 -55.6 155.3	62 25.1 -54.9 153.3	61 59.6 -54.1 151.4	61 32.6 -53.4 149.5
2°	62 14.5 -56.5 158.1	61 53.2 -55.9 156.1	61 30.2 -55.2 154.2	61 05.5 -54.5 152.3	60 39.2 -53.7 150.4
3°	61 18.0 -56.7 158.8	60 57.3 -56.1 156.9	60 35.0 -55.5 155.0	60 11.0 -54.8 153.1	59 45.5 -54.1 151.3
4°	60 21.3 -57.0 159.5	60 01.2 -56.3 157.6	59 39.5 -55.7 155.8	59 16.2 -55.0 153.9	58 51.4 -54.4 152.2
5°	59 24.3 -57.0 160.1	59 04.9 -56.5 158.3	58 43.8 -55.9 156.5	58 21.2 -55.4 154.7	57 57.0 -54.7 153.0
6°	58 27.3 -57.3 160.7	58 08.4 -56.8 158.9	57 47.9 -56.2 157.2	57 25.8 -55.5 155.4	57 02.3 -54.9 153.8
7°	57 30.0 -57.4 161.3	57 11.6 -56.9 159.5	56 51.7 -56.4 157.8	56 30.3 -55.8 156.1	56 07.4 -55.2 154.5
8°	56 32.6 -57.5 161.8	56 14.7 -57.0 160.1	55 55.3 -56.5 158.4	55 34.5 -56.0 156.8	55 12.2 -55.5 155.2
9°	55 35.1 -57.7 162.3	55 17.7 -57.2 160.7	54 58.8 -56.7 159.0	54 38.5 -56.2 157.4	54 16.7 -55.6 155.8
10°	54 37.4 -57.7 162.8	54 20.5 -57.3 161.2	54 02.1 -56.8 159.6	53 42.3 -56.4 158.0	53 21.1 -55.8 156.5
11°	53 39.7 -57.9 163.3	53 23.2 -57.5 161.7	53 05.3 -57.0 160.1	52 45.9 -56.5 158.6	52 25.3 -56.0 157.1
12°	52 41.8 -57.9 163.7	52 25.7 -57.5 162.2	52 08.3 -57.1 160.6	51 49.4 -56.6 159.1	51 29.3 -56.2 157.7
13°	51 43.9 -58.1 164.1	51 28.2 -57.7 162.6	51 11.2 -57.3 161.1	50 52.8 -56.8 159.7	50 33.1 -56.3 158.2
14°	50 45.8 -58.1 164.6	50 30.5 -57.7 163.1	50 13.9 -57.3 161.6	49 56.0 -56.9 160.2	49 36.8 -56.5 158.8
15°	49 47.7 -58.2 164.9	49 32.8 -57.8 163.5	49 16.6 -57.5 162.1	48 59.1 -57.1 160.7	48 40.3 -56.6 159.3
16°	48 49.5 -58.3 165.3	48 35.0 -58.0 163.9	48 19.1 -57.5 162.5	48 02.0 -57.1 161.1	47 43.7 -56.8 159.8
17°	47 51.2 -58.3 165.7	47 37.0 -58.0 164.3	47 21.6 -57.7 162.9	47 04.9 -57.3 161.6	46 46.9 -56.8 160.3
18°	46 52.9 -58.4 166.0	46 39.0 -58.0 164.7	46 23.9 -57.7 163.3	46 07.6 -57.3 162.0	45 50.1 -57.0 160.7
19°	45 54.5 -58.4 166.4	45 41.0 -58.2 165.0	45 26.2 -57.8 163.7	45 10.3 -57.5 162.4	44 53.1 -57.0 161.2
20°	44 56.1 -58.5 166.7	44 42.8 -58.2 165.4	44 28.4 -57.9 164.1	44 12.8 -57.5 162.8	43 56.1 -57.2 161.6
21°	43 57.6 -58.6 167.0	43 44.6 -58.2 165.7	43 30.5 -57.9 164.5	43 15.3 -57.6 163.2	42 58.9 -57.2 162.0
22°	42 59.0 -58.6 167.3	42 46.4 -58.3 166.1	42 32.6 -58.0 164.8	42 17.7 -57.7 163.6	42 01.7 -57.3 162.4
23°	42 00.4 -58.6 167.6	41 48.1 -58.4 166.4	41 34.6 -58.1 165.2	41 20.0 -57.7 164.0	41 04.4 -57.4 162.8
24°	41 01.8 -58.7 167.9	40 49.7 -58.4 166.7	40 36.5 -58.1 165.5	40 22.3 -57.8 164.4	40 07.0 -57.5 163.2
25°	40 03.1 -58.7 168.1	39 51.3 -58.5 167.0	39 38.4 -58.2 165.8	39 24.5 -57.9 164.7	39 09.5 -57.5 163.6
26°	39 04.4 -58.8 168.4	38 52.8 -58.5 167.3	38 40.2 -58.2 166.2	38 26.6 -57.9 165.0	38 12.0 -57.7 163.9
27°	38 05.6 -58.7 168.7	37 54.3 -58.5 167.6	37 42.0 -58.2 166.5	37 28.7 -58.0 165.4	37 14.3 -57.6 164.3
28°	37 06.9 -58.9 168.9	36 55.8 -58.6 167.8	36 43.8 -58.4 166.8	36 30.7 -58.0 165.7	36 16.7 -57.8 164.6
29°	36 08.0 -58.8 169.2	35 57.2 -58.6 168.1	35 45.4 -58.3 167.1	35 32.7 -58.1 166.0	35 18.9 -57.7 165.0

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	61 56.1 -52.1 146.6	61 25.2 -51.2 144.8	60 53.0 -50.4 143.1	60 19.4 -49.6 141.4	59 44.6 -48.8 139.8
1°	61 04.0 -52.6 147.7	60 34.0 -51.8 145.9	60 02.6 -51.0 144.2	59 29.8 -50.1 142.5	58 55.8 -49.3 140.9
2°	60 11.4 -52.9 148.6	59 42.2 -52.2 146.9	59 11.6 -51.4 145.2	58 39.7 -50.7 143.6	58 06.5 -49.8 142.0
3°	59 18.5 -53.4 149.6	58 50.0 -52.6 147.9	58 20.2 -51.9 146.2	57 49.0 -51.1 144.6	57 16.7 -50.4 143.0
4°	58 25.1 -53.7 150.5	57 57.4 -53.0 148.8	57 28.3 -52.3 147.2	56 57.9 -51.5 145.6	56 26.3 -50.8 144.0
5°	57 31.4 -54.0 151.3	57 04.4 -53.4 149.7	56 36.0 -52.6 148.1	56 06.4 -51.9 146.5	55 35.5 -51.2 145.0
6°	56 37.4 -54.3 152.1	56 11.0 -53.6 150.5	55 43.4 -53.0 148.9	55 14.5 -52.3 147.4	54 44.3 -51.6 145.9
7°	55 43.1 -54.6 152.9	55 17.4 -54.0 151.3	54 50.4 -53.3 149.7	54 22.2 -52.7 148.2	53 52.7 -52.0 146.8
8°	54 48.5 -54.9 153.6	54 23.4 -54.2 152.0	53 57.1 -53.6 150.5	53 29.5 -53.0 149.0	53 00.7 -52.3 147.6
9°	53 53.6 -55.0 154.3	53 29.2 -54.5 152.8	53 03.5 -53.9 151.3	52 36.5 -53.2 149.8	52 08.4 -52.6 148.4
10°	52 58.6 -55.3 155.0	52 34.7 -54.7 153.5	52 09.6 -54.1 152.0	51 43.3 -53.6 150.6	51 15.8 -53.0 149.2
11°	52 03.3 -55.5 155.6	51 40.0 -55.0 154.1	51 15.5 -54.4 152.7	50 49.7 -53.8 151.3	50 22.8 -53.2 149.9
12°	51 07.8 -55.7 156.2	50 45.0 -55.1 154.8	50 21.1 -54.6 153.4	49 55.9 -54.0 152.0	49 29.6 -53.5 150.6
13°	50 12.1 -55.8 156.8	49 49.9 -55.3 155.4	49 26.5 -54.8 154.0	49 01.9 -54.3 152.7	48 36.1 -53.7 151.3
14°	49 16.3 -56.0 157.4	48 54.6 -55.5 156.0	48 31.7 -55.0 154.6	48 07.6 -54.4 153.3	47 42.4 -53.9 152.0
15°	48 20.3 -56.2 157.9	47 59.1 -55.7 156.6	47 36.7 -55.2 155.2	47 13.2 -54.7 153.9	46 48.5 -54.1 152.6
16°	47 24.1 -56.3 158.4	47 03.4 -55.8 157.1	46 41.5 -55.3 155.8	46 18.5 -54.9 154.5	45 54.4 -54.4 153.3
17°	46 27.8 -56.4 158.9	46 07.6 -56.0 157.6	45 46.2 -55.6 156.4	45 23.6 -55.0 155.1	45 00.0 -54.5 153.9
18°	45 31.4 -56.5 159.4	45 11.6 -56.1 158.2	44 50.6 -55.6 156.9	44 28.6 -55.2 155.7	44 05.5 -54.7 154.5
19°	44 34.9 -56.7 159.9	44 15.5 -56.2 158.7	43 55.0 -55.8 157.4	43 33.4 -55.3 156.2	43 10.8 -54.9 155.0
20°	43 38.2 -56.7 160.4	43 19.3 -56.4 159.1	42 59.2 -55.9 157.9	42 38.1 -55.5 156.8	42 15.9 -55.0 155.6
21°	42 41.5 -56.9 160.8	42 22.9 -56.5 159.6	42 03.3 -56.1 158.4	41 42.6 -55.6 157.3	41 20.9 -55.1 156.1
22°	41 44.6 -56.9 161.2	41 26.4 -56.5 160.1	41 07.2 -56.1 158.9	40 47.0 -55.7 157.8	40 25.8 -55.3 156.6
23°	40 47.7 -57.1 161.7	40 29.9 -56.7 160.5	40 11.1 -56.3 159.4	39 51.3 -55.9 158.3	39 30.5 -55.5 157.1
24°	39 50.6 -57.1 162.1	39 33.2 -56.7 160.9	39 14.8 -56.4 159.8	38 55.4 -55.9 158.7	38 35.0 -55.5 157.6
25°	38 53.5 -57.2 162.5	38 36.5 -56.9 161.4	38 18.4 -56.4 160.3	37 59.5 -56.1 159.2	37 39.5 -55.7 158.1
26°	37 56.3 -57.3 162.8	37 39.6 -56.9 161.8	37 22.0 -56.6 160.7	37 03.4 -56.2 159.6	36 43.8 -55.7 158.6
27°	36 59.0 -57.3 163.2	36 42.7 -57.0 162.2	36 25.4 -56.6 161.1	36 07.2 -56.2 160.1	35 48.1 -55.9 159.0
28°	36 01.7 -57.4 163.6	35 45.7 -57.1 162.5	35 28.8 -56.7 161.5	35 11.0 -56.4 160.5	34 52.2 -56.0 159.5
29°	35 04.3 -57.5 163.9	34 48.6 -57.1 162.9	34 32.1 -56.8 161.9	34 14.6 -56.4 160.9	33 56.2 -56.0 159.9

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	59 08.6 -47.9 138.2	58 31.5 -47.1 136.7	57 53.4 -46.3 135.2	57 14.3 -45.5 133.8	56 34.2 -44.6 132.4
1°	58 20.7 -48.5 139.3	57 44.4 -47.7 137.8	57 07.1 -46.9 136.4	56 28.8 -46.1 135.0	55 49.6 -45.3 133.6
2°	57 32.2 -49.1 140.4	56 56.7 -48.2 139.0	56 20.2 -47.5 137.5	55 42.7 -46.7 136.1	55 04.3 -46.0 134.8
3°	56 43.1 -49.5 141.5	56 08.5 -48.8 140.0	55 32.7 -48.0 138.6	54 56.0 -47.3 137.2	54 18.3 -46.5 135.9
4°	55 53.6 -50.1 142.5	55 19.7 -49.4 141.1	54 44.7 -48.6 139.7	54 08.7 -47.8 138.3	53 31.8 -47.2 137.0
5°	55 03.5 -50.5 143.5	54 30.3 -49.7 142.1	53 56.1 -49.0 140.7	53 20.9 -48.4 139.3	52 44.6 -47.6 138.0
6°	54 13.0 -50.9 144.4	53 40.6 -50.3 143.0	53 07.1 -49.6 141.6	52 32.5 -48.8 140.3	51 57.0 -48.1 139.0
7°	53 22.1 -51.3 145.3	52 50.3 -50.6 143.9	52 17.5 -49.9 142.6	51 43.7 -49.2 141.2	51 08.9 -48.5 139.9
8°	52 30.8 -51.7 146.2	51 59.7 -51.0 144.8	51 27.6 -50.3 143.5	50 54.5 -49.7 142.1	50 20.4 -49.0 140.9
9°	51 39.1 -52.0 147.0	51 08.7 -51.3 145.7	50 37.3 -50.7 144.3	50 04.8 -50.0 143.0	49 31.4 -49.4 141.8
10°	50 47.1 -52.3 147.8	50 17.4 -51.7 146.5	49 46.6 -51.1 145.2	49 14.8 -50.5 143.9	48 42.0 -49.8 142.6
11°	49 54.8 -52.6 148.6	49 25.7 -52.0 147.3	48 55.5 -51.4 146.0	48 24.3 -50.7 144.7	47 52.2 -50.1 143.5
12°	49 02.2 -52.9 149.3	48 33.7 -52.3 148.0	48 04.1 -51.6 146.7	47 33.6 -51.1 145.5	47 02.1 -50.5 144.3
13°	48 09.3 -53.1 150.0	47 41.4 -52.6 148.8	47 12.5 -52.0 147.5	46 42.5 -51.4 146.3	46 11.6 -50.8 145.1
14°	47 16.2 -53.4 150.7	46 48.8 -52.8 149.5	46 20.5 -52.3 148.2	45 51.1 -51.6 147.0	45 20.8 -51.1 145.8
15°	46 22.8 -53.6 151.4	45 56.0 -53.0 150.2	45 28.2 -52.5 148.9	44 59.5 -52.0 147.7	44 29.7 -51.3 146.6
16°	45 29.2 -53.8 152.0	45 03.0 -53.3 150.8	44 35.7 -52.7 149.6	44 07.5 -52.1 148.4	43 38.4 -51.6 147.3
17°	44 35.4 -54.0 152.7	44 09.7 -53.5 151.5	43 43.0 -52.9 150.3	43 15.4 -52.5 149.1	42 46.8 -51.9 148.0
18°	43 41.4 -54.2 153.3	43 16.2 -53.7 152.1	42 50.1 -53.2 150.9	42 22.9 -52.6 149.8	41 54.9 -52.1 148.7
19°	42 47.2 -54.4 153.9	42 22.5 -53.9 152.7	41 56.9 -53.4 151.6	41 30.3 -52.8 150.4	41 02.8 -52.3 149.3
20°	41 52.8 -54.6 154.4	41 28.6 -54.0 153.3	41 03.5 -53.5 152.2	40 37.5 -53.1 151.1	40 10.5 -52.5 150.0
21°	40 58.2 -54.7 155.0	40 34.6 -54.2 153.9	40 10.0 -53.8 152.8	39 44.4 -53.2 151.7	39 18.0 -52.8 150.6
22°	40 03.5 -54.8 155.5	39 40.4 -54.4 154.4	39 16.2 -53.9 153.3	38 51.2 -53.4 152.3	38 25.2 -52.9 151.2
23°	39 08.7 -55.0 156.0	38 46.0 -54.6 155.0	38 22.3 -54.0 153.9	37 57.8 -53.6 152.9	37 32.3 -53.1 151.8
24°	38 13.7 -55.1 156.6	37 51.4 -54.6 155.5	37 28.3 -54.2 154.5	37 04.2 -53.8 153.4	36 39.2 -53.2 152.4
25°	37 18.6 -55.2 157.1	36 56.8 -54.8 156.0	36 34.1 -54.4 155.0	36 10.4 -53.8 154.0	35 46.0 -53.4 153.0
26°	36 23.4 -55.4 157.6	36 02.0 -54.9 156.5	35 39.7 -54.5 155.5	35 16.6 -54.1 154.5	34 52.6 -53.6 153.5
27°	35 28.0 -55.5 158.0	35 07.1 -55.1 157.0	34 45.2 -54.6 156.0	34 22.5 -54.1 155.1	33 59.0 -53.7 154.1
28°	34 32.5 -55.5 158.5	34 12.0 -55.1 157.5	33 50.6 -54.7 156.5	33 28.4 -54.3 155.6	33 05.3 -53.9 154.6
29°	33 37.0 -55.7 158.9	33 16.9 -55.3 158.0	32 55.9 -54.9 157.0	32 34.1 -54.4 156.1	32 11.4 -53.9 155.1

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	55 53.3 -43.8 131.1	55 11.6 -43.1 129.8	54 29.2 -42.4 128.6	53 46.0 -41.7 127.4	53 02.1 -40.9 126.3
1°	55 09.5 -44.6 132.3	54 28.5 -43.8 131.0	53 46.8 -43.1 129.8	53 04.3 -42.3 128.6	52 21.2 -41.7 127.5
2°	54 24.9 -45.2 133.5	53 44.7 -44.5 132.2	53 03.7 -43.7 131.0	52 22.0 -43.1 129.8	51 39.5 -42.4 128.6
3°	53 39.7 -45.8 134.6	53 00.2 -45.0 133.3	52 20.0 -44.4 132.1	51 38.9 -43.7 130.9	50 57.1 -42.9 129.8
4°	52 53.9 -46.4 135.7	52 15.2 -45.7 134.4	51 35.6 -45.0 133.2	50 55.2 -44.2 132.0	50 14.2 -43.6 130.9
5°	52 07.5 -46.9 136.7	51 29.5 -46.2 135.5	50 50.6 -45.5 134.3	50 11.0 -44.8 133.1	49 30.6 -44.2 131.9
6°	51 20.6 -47.4 137.7	50 43.3 -46.7 136.5	50 05.1 -46.0 135.3	49 26.2 -45.4 134.1	48 46.4 -44.7 133.0
7°	50 33.2 -47.9 138.7	49 56.6 -47.2 137.5	49 19.1 -46.6 136.3	48 40.8 -45.9 135.1	48 01.7 -45.2 134.0
8°	49 45.3 -48.3 139.6	49 09.4 -47.7 138.4	48 32.5 -46.9 137.2	47 54.9 -46.3 136.1	47 16.5 -45.7 135.0
9°	48 57.0 -48.8 140.5	48 21.7 -48.1 139.3	47 45.6 -47.5 138.2	47 08.6 -46.8 137.0	46 30.8 -46.1 135.9
10°	48 08.2 -49.1 141.4	47 33.6 -48.5 140.2	46 58.1 -47.8 139.1	46 21.8 -47.2 137.9	45 44.7 -46.6 136.8
11°	47 19.1 -49.5 142.3	46 45.1 -48.9 141.1	46 10.3 -48.3 139.9	45 34.6 -47.6 138.8	44 58.1 -47.0 137.7
12°	46 29.6 -49.8 143.1	45 56.2 -49.2 141.9	45 22.0 -48.6 140.8	44 47.0 -48.0 139.7	44 11.1 -47.4 138.6
13°	45 39.8 -50.2 143.9	45 07.0 -49.5 142.7	44 33.4 -48.9 141.6	43 59.0 -48.4 140.5	43 23.7 -47.7 139.5
14°	44 49.6 -50.5 144.7	44 17.5 -49.9 143.5	43 44.5 -49.3 142.4	43 10.6 -48.7 141.3	42 36.0 -48.1 140.3
15°	43 59.1 -50.8 145.4	43 27.6 -50.2 144.3	42 55.2 -49.6 143.2	42 21.9 -49.0 142.1	41 47.9 -48.4 141.1
16°	43 08.3 -51.0 146.2	42 37.4 -50.5 145.1	42 05.6 -49.9 144.0	41 32.9 -49.3 142.9	40 59.5 -48.8 141.9
17°	42 17.3 -51.3 146.9	41 46.9 -50.7 145.8	41 15.7 -50.2 144.7	40 43.6 -49.6 143.7	40 10.7 -49.0 142.6
18°	41 26.0 -51.6 147.6	40 56.2 -51.0 146.5	40 25.5 -50.5 145.4	39 54.0 -49.9 144.4	39 21.7 -49.3 143.4
19°	40 34.4 -51.8 148.3	40 05.2 -51.3 147.2	39 35.0 -50.7 146.2	39 04.1 -50.1 145.1	38 32.4 -49.6 144.1
20°	39 42.6 -52.0 148.9	39 13.9 -51.5 147.9	38 44.3 -50.9 146.8	38 14.0 -50.4 145.8	37 42.8 -49.9 144.8
21°	38 50.6 -52.2 149.6	38 22.4 -51.7 148.5	37 53.4 -51.1 147.5	37 23.6 -50.7 146.5	36 52.9 -50.0 145.5
22°	37 58.4 -52.4 150.2	37 30.7 -51.8 149.2	37 02.3 -51.4 148.2	36 32.9 -50.8 147.2	36 02.9 -50.3 146.2
23°	37 06.0 -52.6 150.8	36 38.9 -52.1 149.8	36 10.9 -51.6 148.8	35 42.1 -51.0 147.8	35 12.6 -50.6 146.9
24°	36 13.4 -52.8 151.4	35 46.8 -52.3 150.4	35 19.3 -51.8 149.4	34 51.1 -51.3 148.5	34 22.0 -50.7 147.6
25°	35 20.6 -52.9 152.0	34 54.5 -52.4 151.0	34 27.5 -51.9 150.1	33 59.8 -51.4 149.1	33 31.3 -50.9 148.2
26°	34 27.7 -53.1 152.6	34 02.1 -52.7 151.6	33 35.6 -52.1 150.7	33 08.4 -51.7 149.7	32 40.4 -51.2 148.8
27°	33 34.6 -53.2 153.1	33 09.4 -52.7 152.2	32 43.5 -52.3 151.3	32 16.7 -51.7 150.3	31 49.2 -51.2 149.4
28°	32 41.4 -53.4 153.7	32 16.7 -52.9 152.8	31 51.2 -52.4 151.8	31 25.0 -52.0 150.9	30 58.0 -51.5 150.1
29°	31 48.0 -53.5 154.2	31 23.8 -53.1 153.3	30 58.8 -52.6 152.4	30 33.0 -52.1 151.5	30 06.5 -51.6 150.6

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	52 17.6 -40.3 125.2	51 32.5 -39.6 124.1	50 46.8 -38.9 123.1	50 00.6 -38.3 122.1	49 13.9 -37.7 121.1
1°	51 37.3 -41.0 126.4	50 52.9 -40.3 125.3	50 07.9 -39.7 124.3	49 22.3 -39.1 123.2	48 36.2 -38.4 122.3
2°	50 56.3 -41.6 127.5	50 12.6 -41.0 126.5	49 28.2 -40.4 125.4	48 43.2 -39.7 124.4	47 57.8 -39.2 123.4
3°	50 14.7 -42.3 128.7	49 31.6 -41.7 127.6	48 47.8 -41.0 126.5	48 03.5 -40.4 125.5	47 18.6 -39.7 124.6
4°	49 32.4 -42.9 129.8	48 49.9 -42.2 128.7	48 06.8 -41.6 127.6	47 23.1 -41.0 126.6	46 38.9 -40.4 125.6
5°	48 49.5 -43.5 130.8	48 07.7 -42.9 129.8	47 25.2 -42.2 128.7	46 42.1 -41.5 127.7	45 58.5 -41.0 126.7
6°	48 06.0 -44.1 131.9	47 24.8 -43.4 130.8	46 43.0 -42.8 129.8	46 00.6 -42.2 128.8	45 17.5 -41.5 127.8
7°	47 21.9 -44.5 132.9	46 41.4 -43.9 131.8	46 00.2 -43.3 130.8	45 18.4 -42.7 129.8	44 36.0 -42.1 128.8
8°	46 37.4 -45.1 133.9	45 57.5 -44.4 132.8	45 16.9 -43.7 131.8	44 35.7 -43.1 130.8	43 53.9 -42.5 129.8
9°	45 52.3 -45.5 134.8	45 13.1 -44.9 133.8	44 33.2 -44.3 132.7	43 52.6 -43.7 131.7	43 11.4 -43.1 130.8
10°	45 06.8 -45.9 135.8	44 28.2 -45.3 134.7	43 48.9 -44.7 133.7	43 08.9 -44.1 132.7	42 28.3 -43.5 131.7
11°	44 20.9 -46.4 136.7	43 42.9 -45.8 135.6	43 04.2 -45.2 134.6	42 24.8 -44.5 133.6	41 44.8 -43.9 132.6
12°	43 34.5 -46.8 137.5	42 57.1 -46.1 136.5	42 19.0 -45.5 135.5	41 40.3 -45.0 134.5	41 00.9 -44.4 133.5
13°	42 47.7 -47.1 138.4	42 11.0 -46.6 137.4	41 33.5 -46.0 136.4	40 55.3 -45.3 135.4	40 16.5 -44.8 134.4
14°	42 00.6 -47.5 139.2	41 24.4 -46.9 138.2	40 47.5 -46.3 137.2	40 10.0 -45.8 136.2	39 31.7 -45.1 135.3
15°	41 13.1 -47.9 140.1	40 37.5 -47.2 139.0	40 01.2 -46.6 138.1	39 24.2 -46.0 137.1	38 46.6 -45.5 136.1
16°	40 25.2 -48.1 140.9	39 50.3 -47.6 139.9	39 14.6 -47.0 138.9	38 38.2 -46.5 137.9	38 01.1 -45.8 137.0
17°	39 37.1 -48.5 141.6	39 02.7 -47.9 140.6	38 27.6 -47.4 139.7	37 51.7 -46.7 138.7	37 15.3 -46.2 137.8
18°	38 48.6 -48.7 142.4	38 14.8 -48.2 141.4	37 40.2 -47.6 140.5	37 05.0 -47.0 139.5	36 29.1 -46.5 138.6
19°	37 59.9 -49.1 143.1	37 26.6 -48.5 142.2	36 52.6 -47.9 141.2	36 18.0 -47.4 140.3	35 42.6 -46.8 139.4
20°	37 10.8 -49.3 143.9	36 38.1 -48.7 142.9	36 04.7 -48.2 142.0	35 30.6 -47.6 141.0	34 55.8 -47.1 140.1
21°	36 21.5 -49.5 144.6	35 49.4 -49.0 143.6	35 16.5 -48.4 142.7	34 43.0 -47.9 141.8	34 08.7 -47.3 140.9
22°	35 32.0 -49.8 145.3	35 00.4 -49.2 144.3	34 28.1 -48.7 143.4	33 55.1 -48.2 142.5	33 21.4 -47.6 141.6
23°	34 42.2 -50.0 146.0	34 11.2 -49.5 145.0	33 39.4 -48.9 144.1	33 06.9 -48.3 143.2	32 33.8 -47.8 142.4
24°	33 52.2 -50.2 146.6	33 21.7 -49.7 145.7	32 50.5 -49.2 144.8	32 18.6 -48.7 143.9	31 46.0 -48.1 143.1
25°	33 02.0 -50.4 147.3	32 32.0 -49.8 146.4	32 01.3 -49.3 145.5	31 29.9 -48.8 144.6	30 57.9 -48.3 143.8
26°	32 11.6 -50.6 147.9	31 42.2 -50.1 147.0	31 12.0 -49.6 146.2	30 41.1 -49.0 145.3	30 09.6 -48.5 144.5
27°	31 21.0 -50.8 148.6	30 52.1 -50.3 147.7	30 22.4 -49.7 146.8	29 52.1 -49.3 146.0	29 21.1 -48.7 145.1
28°	30 30.2 -50.9 149.2	30 01.8 -50.5 148.3	29 32.7 -50.0 147.5	29 02.8 -49.4 146.6	28 32.4 -49.0 145.8
29°	29 39.3 -51.2 149.8	29 11.3 -50.6 148.9	28 42.7 -50.1 148.1	28 13.4 -49.6 147.3	27 43.4 -49.0 146.5

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	48 26.8 -37.2 120.2	47 39.2 -36.6 119.2	46 51.1 -36.0 118.4	46 02.7 -35.5 117.5	45 13.9 -35.0 116.7
1°	47 49.6 -37.8 121.3	47 02.6 -37.3 120.4	46 15.1 -36.8 119.5	45 27.2 -36.2 118.7	44 38.9 -35.7 117.8
2°	47 11.8 -38.6 122.5	46 25.3 -38.0 121.6	45 38.3 -37.3 120.7	44 51.0 -36.9 119.8	44 03.2 -36.3 118.9
3°	46 33.2 -39.1 123.6	45 47.3 -38.6 122.7	45 01.0 -38.1 121.8	44 14.1 -37.4 120.9	43 26.9 -37.0 120.0
4°	45 54.1 -39.8 124.7	45 08.7 -39.2 123.8	44 22.9 -38.6 122.9	43 36.7 -38.1 122.0	42 49.9 -37.5 121.1
5°	45 14.3 -40.4 125.8	44 29.5 -39.8 124.8	43 44.3 -39.2 123.9	42 58.6 -38.7 123.0	42 12.4 -38.1 122.2
6°	44 33.9 -40.9 126.8	43 49.7 -40.3 125.9	43 05.1 -39.8 125.0	42 19.9 -39.2 124.1	41 34.3 -38.7 123.2
7°	43 53.0 -41.5 127.8	43 09.4 -40.9 126.9	42 25.3 -40.3 126.0	41 40.7 -39.7 125.1	40 55.6 -39.2 124.2
8°	43 11.5 -42.0 128.8	42 28.5 -41.4 127.9	41 45.0 -40.8 127.0	41 01.0 -40.3 126.1	40 16.4 -39.7 125.2
9°	42 29.5 -42.4 129.8	41 47.1 -41.8 128.9	41 04.2 -41.3 128.0	40 20.7 -40.7 127.1	39 36.7 -40.1 126.2
10°	41 47.1 -42.9 130.8	41 05.3 -42.4 129.8	40 22.9 -41.8 128.9	39 40.0 -41.2 128.0	38 56.6 -40.7 127.2
11°	41 04.2 -43.4 131.7	40 22.9 -42.7 130.8	39 41.1 -42.2 129.9	38 58.8 -41.6 129.0	38 15.9 -41.1 128.1
12°	40 20.8 -43.8 132.6	39 40.2 -43.2 131.7	38 58.9 -42.6 130.8	38 17.2 -42.1 129.9	37 34.8 -41.5 129.0
13°	39 37.0 -44.1 133.5	38 57.0 -43.6 132.6	38 16.3 -43.0 131.7	37 35.1 -42.5 130.8	36 53.3 -41.9 129.9
14°	38 52.9 -44.6 134.4	38 13.4 -44.0 133.5	37 33.3 -43.4 132.6	36 52.6 -42.8 131.7	36 11.4 -42.3 130.8
15°	38 08.3 -44.9 135.2	37 29.4 -44.4 134.3	36 49.9 -43.8 133.4	36 09.8 -43.3 132.6	35 29.1 -42.6 131.7
16°	37 23.4 -45.3 136.1	36 45.0 -44.7 135.2	36 06.1 -44.2 134.3	35 26.5 -43.5 133.4	34 46.5 -43.1 132.6
17°	36 38.1 -45.6 136.9	36 00.3 -45.0 136.0	35 21.9 -44.4 135.1	34 43.0 -44.0 134.3	34 03.4 -43.3 133.4
18°	35 52.5 -45.9 137.7	35 15.3 -45.4 136.8	34 37.5 -44.8 135.9	33 59.0 -44.2 135.1	33 20.1 -43.7 134.2
19°	35 06.6 -46.3 138.5	34 29.9 -45.6 137.6	33 52.7 -45.2 136.7	33 14.8 -44.6 135.9	32 36.4 -44.1 135.1
20°	34 20.3 -46.5 139.3	33 44.3 -46.0 138.4	33 07.5 -45.4 137.5	32 30.2 -44.8 136.7	31 52.3 -44.3 135.9
21°	33 33.8 -46.8 140.0	32 58.3 -46.2 139.1	32 22.1 -45.6 138.3	31 45.4 -45.2 137.5	31 08.0 -44.6 136.7
22°	32 47.0 -47.0 140.8	32 12.1 -46.5 139.9	31 36.5 -46.0 139.1	31 00.2 -45.4 138.2	30 23.4 -44.8 137.4
23°	32 00.0 -47.3 141.5	31 25.6 -46.8 140.6	30 50.5 -46.2 139.8	30 14.8 -45.6 139.0	29 38.6 -45.1 138.2
24°	31 12.7 -47.5 142.2	30 38.8 -47.0 141.4	30 04.3 -46.5 140.6	29 29.2 -46.0 139.8	28 53.5 -45.4 139.0
25°	30 25.2 -47.8 142.9	29 51.8 -47.2 142.1	29 17.8 -46.7 141.3	28 43.2 -46.1 140.5	28 08.1 -45.6 139.7
26°	29 37.4 -48.0 143.6	29 04.6 -47.5 142.8	28 31.1 -46.9 142.0	27 57.1 -46.4 141.2	27 22.5 -45.9 140.4
27°	28 49.4 -48.2 144.3	28 17.1 -47.6 143.5	27 44.2 -47.1 142.7	27 10.7 -46.6 141.9	26 36.6 -46.0 141.2
28°	28 01.2 -48.4 145.0	27 29.5 -47.9 144.2	26 57.1 -47.3 143.4	26 24.1 -46.8 142.6	25 50.6 -46.3 141.9
29°	27 12.8 -48.5 145.7	26 41.6 -48.0 144.9	26 09.8 -47.6 144.1	25 37.3 -47.0 143.3	25 04.3 -46.5 142.6

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	44 24.7 -34.5 115.9	43 35.2 -34.0 115.1	42 45.4 -33.5 114.3	41 55.4 -33.2 113.6	41 05.0 -32.7 112.8
1°	43 50.2 -35.1 117.0	43 01.2 -34.7 116.2	42 11.9 -34.2 115.4	41 22.2 -33.7 114.7	40 32.3 -33.3 113.9
2°	43 15.1 -35.9 118.1	42 26.5 -35.3 117.3	41 37.7 -34.9 116.5	40 48.5 -34.4 115.8	39 59.0 -34.0 115.0
3°	42 39.2 -36.4 119.2	41 51.2 -35.9 118.4	41 02.8 -35.4 117.6	40 14.1 -35.0 116.9	39 25.0 -34.5 116.1
4°	42 02.8 -37.0 120.3	41 15.3 -36.5 119.5	40 27.4 -36.0 118.7	39 39.1 -35.5 117.9	38 50.5 -35.0 117.2
5°	41 25.8 -37.6 121.3	40 38.8 -37.1 120.5	39 51.4 -36.6 119.7	39 03.6 -36.1 119.0	38 15.5 -35.6 118.2
6°	40 48.2 -38.1 122.4	40 01.7 -37.6 121.6	39 14.8 -37.1 120.8	38 27.5 -36.6 120.0	37 39.9 -36.2 119.2
7°	40 10.1 -38.7 123.4	39 24.1 -38.1 122.6	38 37.7 -37.6 121.8	37 50.9 -37.1 121.0	37 03.7 -36.6 120.2
8°	39 31.4 -39.1 124.4	38 46.0 -38.6 123.6	38 00.1 -38.1 122.8	37 13.8 -37.6 122.0	36 27.1 -37.1 121.2
9°	38 52.3 -39.7 125.4	38 07.4 -39.1 124.5	37 22.0 -38.6 123.7	36 36.2 -38.1 123.0	35 50.0 -37.6 122.2
10°	38 12.6 -40.0 126.3	37 28.3 -39.6 125.5	36 43.4 -39.0 124.7	35 58.1 -38.5 123.9	35 12.4 -38.0 123.1
11°	37 32.6 -40.6 127.3	36 48.7 -40.0 126.4	36 04.4 -39.5 125.6	35 19.6 -38.9 124.9	34 34.4 -38.4 124.1
12°	36 52.0 -40.9 128.2	36 08.7 -40.4 127.4	35 24.9 -39.9 126.6	34 40.7 -39.4 125.8	33 56.0 -38.9 125.0
13°	36 11.1 -41.4 129.1	35 28.3 -40.8 128.3	34 45.0 -40.3 127.5	34 01.3 -39.8 126.7	33 17.1 -39.2 125.9
14°	35 29.7 -41.8 130.0	34 47.5 -41.3 129.2	34 04.7 -40.7 128.4	33 21.5 -40.1 127.6	32 37.9 -39.7 126.8
15°	34 47.9 -42.1 130.9	34 06.2 -41.5 130.1	33 24.0 -41.0 129.3	32 41.4 -40.5 128.5	31 58.2 -40.0 127.7
16°	34 05.8 -42.5 131.7	33 24.7 -42.0 130.9	32 43.0 -41.4 130.1	32 00.9 -40.9 129.4	31 18.2 -40.3 128.6
17°	33 23.3 -42.8 132.6	32 42.7 -42.3 131.8	32 01.6 -41.7 131.0	31 20.0 -41.2 130.2	30 37.9 -40.7 129.5
18°	32 40.5 -43.1 133.4	32 00.4 -42.6 132.6	31 19.9 -42.1 131.8	30 38.8 -41.6 131.1	29 57.2 -41.0 130.3
19°	31 57.4 -43.5 134.2	31 17.8 -42.9 133.5	30 37.8 -42.4 132.7	29 57.2 -41.8 131.9	29 16.2 -41.3 131.2
20°	31 13.9 -43.8 135.1	30 34.9 -43.2 134.3	29 55.4 -42.7 133.5	29 15.4 -42.2 132.7	28 34.9 -41.6 132.0
21°	30 30.1 -44.0 135.9	29 51.7 -43.5 135.1	29 12.7 -42.9 134.3	28 33.2 -42.4 133.5	27 53.3 -41.9 132.8
22°	29 46.1 -44.3 136.6	29 08.2 -43.8 135.9	28 29.8 -43.3 135.1	27 50.8 -42.7 134.3	27 11.4 -42.2 133.6
23°	29 01.8 -44.6 137.4	28 24.4 -44.0 136.6	27 46.5 -43.5 135.9	27 08.1 -43.0 135.1	26 29.2 -42.5 134.4
24°	28 17.2 -44.9 138.2	27 40.4 -44.3 137.4	27 03.0 -43.8 136.7	26 25.1 -43.2 135.9	25 46.7 -42.7 135.2
25°	27 32.3 -45.0 138.9	26 56.1 -44.6 138.2	26 19.2 -44.0 137.4	25 41.9 -43.5 136.7	25 04.0 -42.9 136.0
26°	26 47.3 -45.3 139.7	26 11.5 -44.7 138.9	25 35.2 -44.2 138.2	24 58.4 -43.7 137.5	24 21.1 -43.1 136.7
27°	26 02.0 -45.6 140.4	25 26.8 -45.0 139.7	24 51.0 -44.4 138.9	24 14.7 -43.9 138.2	23 38.0 -43.4 137.5
28°	25 16.4 -45.7 141.1	24 41.8 -45.2 140.4	24 06.6 -44.7 139.7	23 30.8 -44.1 139.0	22 54.6 -43.6 138.3
29°	24 30.7 -45.9 141.8	23 56.6 -45.4 141.1	23 21.9 -44.9 140.4	22 46.7 -44.3 139.7	22 11.0 -43.8 139.0

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	40 14.3 -32.3 112.1	39 23.4 -31.9 111.4	38 32.3 -31.5 110.8	37 40.9 -31.1 110.1	36 49.4 -30.8 109.5
1°	39 42.0 -32.9 113.2	38 51.5 -32.4 112.5	38 00.8 -32.1 111.9	37 09.8 -31.7 111.2	36 18.6 -31.4 110.5
2°	39 09.1 -33.4 114.3	38 19.1 -33.1 113.6	37 28.7 -32.7 112.9	36 38.1 -32.3 112.3	35 47.2 -31.8 111.6
3°	38 35.7 -34.1 115.4	37 46.0 -33.6 114.7	36 56.0 -33.2 114.0	36 05.8 -32.8 113.3	35 15.4 -32.4 112.6
4°	38 01.6 -34.6 116.4	37 12.4 -34.2 115.7	36 22.8 -33.7 115.0	35 33.0 -33.3 114.3	34 43.0 -33.0 113.7
5°	37 27.0 -35.2 117.5	36 38.2 -34.7 116.7	35 49.1 -34.3 116.0	34 59.7 -33.8 115.4	34 10.0 -33.4 114.7
6°	36 51.8 -35.6 118.5	36 03.5 -35.2 117.8	35 14.8 -34.7 117.0	34 25.9 -34.3 116.4	33 36.6 -33.9 115.7
7°	36 16.2 -36.1 119.5	35 28.3 -35.7 118.8	34 40.1 -35.2 118.0	33 51.6 -34.8 117.3	33 02.7 -34.3 116.7
8°	35 40.1 -36.7 120.5	34 52.6 -36.1 119.7	34 04.9 -35.7 119.0	33 16.8 -35.3 118.3	32 28.4 -34.8 117.6
9°	35 03.4 -37.0 121.4	34 16.5 -36.6 120.7	33 29.2 -36.2 120.0	32 41.5 -35.6 119.3	31 53.6 -35.3 118.6
10°	34 26.4 -37.6 122.4	33 39.9 -37.1 121.7	32 53.0 -36.5 120.9	32 05.9 -36.1 120.2	31 18.3 -35.6 119.6
11°	33 48.8 -37.9 123.3	33 02.8 -37.4 122.6	32 16.5 -37.0 121.9	31 29.8 -36.5 121.2	30 42.7 -36.0 120.5
12°	33 10.9 -38.4 124.3	32 25.4 -37.9 123.5	31 39.5 -37.4 122.8	30 53.3 -36.9 122.1	30 06.7 -36.5 121.4
13°	32 32.5 -38.7 125.2	31 47.5 -38.2 124.4	31 02.1 -37.7 123.7	30 16.4 -37.3 123.0	29 30.2 -36.8 122.3
14°	31 53.8 -39.1 126.1	31 09.3 -38.6 125.4	30 24.4 -38.1 124.6	29 39.1 -37.6 123.9	28 53.4 -37.1 123.2
15°	31 14.7 -39.5 127.0	30 30.7 -39.0 126.2	29 46.3 -38.5 125.5	29 01.5 -38.0 124.8	28 16.3 -37.5 124.1
16°	30 35.2 -39.8 127.9	29 51.7 -39.3 127.1	29 07.8 -38.8 126.4	28 23.5 -38.4 125.7	27 38.8 -37.9 125.0
17°	29 55.4 -40.2 128.7	29 12.4 -39.7 128.0	28 29.0 -39.2 127.3	27 45.1 -38.6 126.6	27 00.9 -38.1 125.9
18°	29 15.2 -40.5 129.6	28 32.7 -40.0 128.8	27 49.8 -39.4 128.1	27 06.5 -39.0 127.4	26 22.8 -38.5 126.8
19°	28 34.7 -40.8 130.4	27 52.7 -40.2 129.7	27 10.4 -39.8 129.0	26 27.5 -39.2 128.3	25 44.3 -38.7 127.6
20°	27 53.9 -41.1 131.2	27 12.5 -40.6 130.5	26 30.6 -40.1 129.8	25 48.3 -39.6 129.1	25 05.6 -39.1 128.5
21°	27 12.8 -41.4 132.1	26 31.9 -40.9 131.4	25 50.5 -40.3 130.7	25 08.7 -39.8 130.0	24 26.5 -39.3 129.3
22°	26 31.4 -41.6 132.9	25 51.0 -41.1 132.2	25 10.2 -40.6 131.5	24 28.9 -40.1 130.8	23 47.2 -39.6 130.1
23°	25 49.8 -41.9 133.7	25 09.9 -41.4 133.0	24 29.6 -40.9 132.3	23 48.8 -40.3 131.6	23 07.6 -39.8 130.9
24°	25 07.9 -42.2 134.5	24 28.5 -41.6 133.8	23 48.7 -41.1 133.1	23 08.5 -40.6 132.4	22 27.8 -40.1 131.7
25°	24 25.7 -42.4 135.3	23 46.9 -41.9 134.6	23 07.6 -41.3 133.9	22 27.9 -40.8 133.2	21 47.7 -40.3 132.6
26°	23 43.3 -42.6 136.0	23 05.0 -42.1 135.3	22 26.3 -41.6 134.7	21 47.1 -41.1 134.0	21 07.4 -40.5 133.3
27°	23 00.7 -42.9 136.8	22 22.9 -42.3 136.1	21 44.7 -41.8 135.4	21 06.0 -41.2 134.8	20 26.9 -40.7 134.1
28°	22 17.8 -43.0 137.6	21 40.6 -42.5 136.9	21 02.9 -42.0 136.2	20 24.8 -41.5 135.6	19 46.2 -41.0 134.9
29°	21 34.8 -43.3 138.3	20 58.1 -42.7 137.6	20 20.9 -42.2 137.0	19 43.3 -41.7 136.3	19 05.2 -41.1 135.7

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	35 57.6 -30.5 108.8	35 05.6 -30.1 108.2	34 13.5 -29.8 107.6	33 21.1 -29.4 107.0	32 28.7 -29.2 106.5
1°	35 27.1 -30.9 109.9	34 35.5 -30.6 109.3	33 43.7 -30.3 108.7	32 51.7 -30.0 108.1	31 59.5 -29.7 107.5
2°	34 56.2 -31.5 111.0	34 04.9 -31.2 110.3	33 13.4 -30.8 109.7	32 21.7 -30.5 109.1	31 29.8 -30.2 108.5
3°	34 24.7 -32.1 112.0	33 33.7 -31.6 111.4	32 42.6 -31.3 110.7	31 51.2 -31.0 110.1	30 59.6 -30.6 109.5
4°	33 52.6 -32.5 113.0	33 02.1 -32.2 112.4	32 11.3 -31.8 111.7	31 20.2 -31.4 111.1	30 29.0 -31.1 110.5
5°	33 20.1 -33.0 114.0	32 29.9 -32.6 113.4	31 39.5 -32.3 112.7	30 48.8 -31.9 112.1	29 57.9 -31.5 111.5
6°	32 47.1 -33.5 115.0	31 57.3 -33.1 114.4	31 07.2 -32.7 113.7	30 16.9 -32.3 113.1	29 26.4 -31.9 112.5
7°	32 13.6 -33.9 116.0	31 24.2 -33.5 115.3	30 34.5 -33.1 114.7	29 44.6 -32.7 114.1	28 54.5 -32.4 113.5
8°	31 39.7 -34.4 117.0	30 50.7 -34.0 116.3	30 01.4 -33.5 115.7	29 11.9 -33.2 115.0	28 22.1 -32.8 114.4
9°	31 05.3 -34.8 117.9	30 16.7 -34.3 117.3	29 27.9 -34.0 116.6	28 38.7 -33.5 116.0	27 49.3 -33.1 115.4
10°	30 30.5 -35.2 118.9	29 42.4 -34.8 118.2	28 53.9 -34.3 117.6	28 05.2 -33.9 116.9	27 16.2 -33.5 116.3
11°	29 55.3 -35.6 119.8	29 07.6 -35.2 119.2	28 19.6 -34.7 118.5	27 31.3 -34.3 117.9	26 42.7 -33.9 117.2
12°	29 19.7 -36.0 120.7	28 32.4 -35.5 120.1	27 44.9 -35.1 119.4	26 57.0 -34.7 118.8	26 08.8 -34.2 118.2
13°	28 43.7 -36.3 121.7	27 56.9 -35.9 121.0	27 09.8 -35.5 120.3	26 22.3 -35.0 119.7	25 34.6 -34.6 119.1
14°	28 07.4 -36.7 122.6	27 21.0 -36.2 121.9	26 34.3 -35.7 121.3	25 47.3 -35.3 120.6	25 00.0 -34.9 120.0
15°	27 30.7 -37.0 123.5	26 44.8 -36.5 122.8	25 58.6 -36.1 122.1	25 12.0 -35.6 121.5	24 25.1 -35.2 120.9
16°	26 53.7 -37.4 124.3	26 08.3 -36.9 123.7	25 22.5 -36.4 123.0	24 36.4 -36.0 122.4	23 49.9 -35.5 121.8
17°	26 16.3 -37.6 125.2	25 31.4 -37.2 124.6	24 46.1 -36.8 123.9	24 00.4 -36.2 123.3	23 14.4 -35.8 122.6
18°	25 38.7 -38.0 126.1	24 54.2 -37.5 125.4	24 09.3 -37.0 124.8	23 24.2 -36.6 124.1	22 38.6 -36.1 123.5
19°	25 00.7 -38.3 126.9	24 16.7 -37.8 126.3	23 32.3 -37.3 125.6	22 47.6 -36.8 125.0	22 02.5 -36.3 124.4
20°	24 22.4 -38.5 127.8	23 38.9 -38.0 127.1	22 55.0 -37.5 126.5	22 10.8 -37.1 125.9	21 26.2 -36.6 125.2
21°	23 43.9 -38.8 128.6	23 00.9 -38.3 128.0	22 17.5 -37.8 127.3	21 33.7 -37.3 126.7	20 49.6 -36.9 126.1
22°	23 05.1 -39.1 129.5	22 22.6 -38.6 128.8	21 39.7 -38.1 128.2	20 56.4 -37.6 127.5	20 12.7 -37.0 126.9
23°	22 26.0 -39.3 130.3	21 44.0 -38.8 129.6	21 01.6 -38.3 129.0	20 18.8 -37.8 128.4	19 35.7 -37.4 127.8
24°	21 46.7 -39.6 131.1	21 05.2 -39.1 130.5	20 23.3 -38.6 129.8	19 41.0 -38.0 129.2	18 58.3 -37.5 128.6
25°	21 07.1 -39.8 131.9	20 26.1 -39.2 131.3	19 44.7 -38.7 130.6	19 03.0 -38.3 130.0	18 20.8 -37.8 129.4
26°	20 27.3 -40.0 132.7	19 46.9 -39.5 132.1	19 06.0 -39.0 131.5	18 24.7 -38.5 130.8	17 43.0 -37.9 130.2
27°	19 47.3 -40.2 133.5	19 07.4 -39.7 132.9	18 27.0 -39.2 132.3	17 46.2 -38.6 131.6	17 05.1 -38.2 131.1
28°	19 07.1 -40.4 134.3	18 27.7 -39.9 133.7	17 47.8 -39.3 133.1	17 07.6 -38.9 132.4	16 26.9 -38.3 131.9
29°	18 26.7 -40.6 135.1	17 47.8 -40.1 134.4	17 08.5 -39.6 133.8	16 28.7 -39.0 133.2	15 48.6 -38.5 132.7

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	31 36.0 -28.9 105.9	30 43.2 -28.6 105.3	29 50.3 -28.4 104.8	28 57.2 -28.1 104.3	28 04.0 -27.8 103.7
1°	31 07.1 -29.4 106.9	30 14.6 -29.1 106.4	29 21.9 -28.8 105.8	28 29.1 -28.5 105.3	27 36.2 -28.3 104.7
2°	30 37.7 -29.8 107.9	29 45.5 -29.6 107.4	28 53.1 -29.3 106.8	28 00.6 -29.0 106.3	27 07.9 -28.7 105.7
3°	30 07.9 -30.3 108.9	29 15.9 -29.9 108.4	28 23.8 -29.7 107.8	27 31.6 -29.4 107.3	26 39.2 -29.2 106.7
4°	29 37.6 -30.8 109.9	28 46.0 -30.5 109.4	27 54.1 -30.1 108.8	27 02.2 -29.8 108.2	26 10.0 -29.5 107.7
5°	29 06.8 -31.2 110.9	28 15.5 -30.8 110.3	27 24.0 -30.5 109.8	26 32.4 -30.2 109.2	25 40.5 -29.9 108.7
6°	28 35.6 -31.5 111.9	27 44.7 -31.3 111.3	26 53.5 -30.9 110.7	26 02.2 -30.6 110.2	25 10.6 -30.2 109.6
7°	28 04.1 -32.0 112.9	27 13.4 -31.6 112.3	26 22.6 -31.3 111.7	25 31.6 -31.0 111.1	24 40.4 -30.7 110.6
8°	27 32.1 -32.4 113.8	26 41.8 -32.0 113.2	25 51.3 -31.6 112.6	25 00.6 -31.3 112.1	24 09.7 -30.9 111.5
9°	26 59.7 -32.8 114.8	26 09.8 -32.4 114.2	25 19.7 -32.0 113.6	24 29.3 -31.6 113.0	23 38.8 -31.3 112.5
10°	26 26.9 -33.1 115.7	25 37.4 -32.7 115.1	24 47.7 -32.4 114.5	23 57.7 -32.0 113.9	23 07.5 -31.6 113.4
11°	25 53.8 -33.5 116.6	25 04.7 -33.1 116.0	24 15.3 -32.7 115.4	23 25.7 -32.3 114.9	22 35.9 -32.0 114.3
12°	25 20.3 -33.8 117.6	24 31.6 -33.4 117.0	23 42.6 -33.0 116.4	22 53.4 -32.6 115.8	22 03.9 -32.2 115.2
13°	24 46.5 -34.1 118.5	23 58.2 -33.7 117.9	23 09.6 -33.3 117.3	22 20.8 -33.0 116.7	21 31.7 -32.6 116.1
14°	24 12.4 -34.5 119.4	23 24.5 -34.1 118.8	22 36.3 -33.6 118.2	21 47.8 -33.2 117.6	20 59.1 -32.8 117.0
15°	23 37.9 -34.7 120.3	22 50.4 -34.3 119.7	22 02.7 -33.9 119.1	21 14.6 -33.5 118.5	20 26.3 -33.1 117.9
16°	23 03.2 -35.1 121.2	22 16.1 -34.6 120.6	21 28.8 -34.2 120.0	20 41.1 -33.7 119.4	19 53.2 -33.3 118.8
17°	22 28.1 -35.3 122.0	21 41.5 -34.9 121.4	20 54.6 -34.5 120.8	20 07.4 -34.1 120.3	19 19.9 -33.6 119.7
18°	21 52.8 -35.7 122.9	21 06.6 -35.2 122.3	20 20.1 -34.7 121.7	19 33.3 -34.2 121.1	18 46.3 -33.9 120.6
19°	21 17.1 -35.8 123.8	20 31.4 -35.4 123.2	19 45.4 -35.0 122.6	18 59.1 -34.6 122.0	18 12.4 -34.0 121.4
20°	20 41.3 -36.2 124.6	19 56.0 -35.7 124.0	19 10.4 -35.2 123.4	18 24.5 -34.7 122.9	17 38.4 -34.3 122.3
21°	20 05.1 -36.3 125.5	19 20.3 -35.9 124.9	18 35.2 -35.4 124.3	17 49.8 -35.0 123.7	17 04.1 -34.6 123.2
22°	19 28.8 -36.6 126.3	18 44.4 -36.1 125.7	17 59.8 -35.7 125.2	17 14.8 -35.2 124.6	16 29.5 -34.7 124.0
23°	18 52.2 -36.9 127.2	18 08.3 -36.3 126.6	17 24.1 -35.8 126.0	16 39.6 -35.4 125.4	15 54.8 -34.9 124.9
24°	18 15.3 -37.0 128.0	17 32.0 -36.6 127.4	16 48.3 -36.1 126.8	16 04.2 -35.6 126.3	15 19.9 -35.1 125.7
25°	17 38.3 -37.3 128.8	16 55.4 -36.8 128.2	16 12.2 -36.3 127.7	15 28.6 -35.8 127.1	14 44.8 -35.3 126.6
26°	17 01.0 -37.4 129.6	16 18.6 -36.9 129.1	15 35.9 -36.4 128.5	14 52.8 -35.9 127.9	14 09.5 -35.5 127.4
27°	16 23.6 -37.7 130.5	15 41.7 -37.1 129.9	14 59.5 -36.7 129.3	14 16.9 -36.1 128.8	13 34.0 -35.6 128.2
28°	15 45.9 -37.8 131.3	15 04.6 -37.3 130.7	14 22.8 -36.8 130.1	13 40.8 -36.3 129.6	12 58.4 -35.8 129.0
29°	15 08.1 -38.0 132.1	14 27.3 -37.5 131.5	13 46.0 -36.9 131.0	13 04.5 -36.5 130.4	12 22.6 -36.0 129.9

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	27 10.7 -27.6 103.2	26 17.3 -27.4 102.7	25 23.8 -27.2 102.2	24 30.2 -27.0 101.7	23 36.5 -26.9 101.2
1°	26 43.1 -28.1 104.2	25 49.9 -27.8 103.7	24 56.6 -27.6 103.2	24 03.2 -27.4 102.7	23 09.6 -27.1 102.2
2°	26 15.0 -28.4 105.2	25 22.1 -28.2 104.7	24 29.0 -28.0 104.2	23 35.8 -27.7 103.7	22 42.5 -27.5 103.2
3°	25 46.6 -28.9 106.2	24 53.9 -28.6 105.7	24 01.0 -28.3 105.1	23 08.1 -28.1 104.6	22 15.0 -27.9 104.1
4°	25 17.7 -29.2 107.1	24 25.3 -29.0 106.6	23 32.7 -28.7 106.1	22 40.0 -28.5 105.6	21 47.1 -28.2 105.1
5°	24 48.5 -29.6 108.1	23 56.3 -29.3 107.6	23 04.0 -29.0 107.1	22 11.5 -28.7 106.5	21 18.9 -28.5 106.0
6°	24 18.9 -29.9 109.1	23 27.0 -29.6 108.5	22 35.0 -29.4 108.0	21 42.8 -29.1 107.5	20 50.4 -28.8 107.0
7°	23 49.0 -30.3 110.0	22 57.4 -30.0 109.5	22 05.6 -29.7 108.9	21 13.7 -29.4 108.4	20 21.6 -29.1 107.9
8°	23 18.7 -30.7 111.0	22 27.4 -30.3 110.4	21 35.9 -30.0 109.9	20 44.3 -29.7 109.4	19 52.5 -29.4 108.8
9°	22 48.0 -30.9 111.9	21 57.1 -30.7 111.4	21 05.9 -30.3 110.8	20 14.6 -30.0 110.3	19 23.1 -29.7 109.8
10°	22 17.1 -31.3 112.8	21 26.4 -30.9 112.3	20 35.6 -30.6 111.7	19 44.6 -30.3 111.2	18 53.4 -29.9 110.7
11°	21 45.8 -31.6 113.7	20 55.5 -31.2 113.2	20 05.0 -30.8 112.7	19 14.3 -30.5 112.1	18 23.5 -30.2 111.6
12°	21 14.2 -31.9 114.7	20 24.3 -31.5 114.1	19 34.2 -31.2 113.6	18 43.8 -30.8 113.0	17 53.3 -30.5 112.5
13°	20 42.3 -32.1 115.6	19 52.8 -31.8 115.0	19 03.0 -31.4 114.5	18 13.0 -31.0 113.9	17 22.8 -30.7 113.4
14°	20 10.2 -32.4 116.5	19 21.0 -32.0 115.9	18 31.6 -31.7 115.4	17 42.0 -31.3 114.8	16 52.1 -30.9 114.3
15°	19 37.8 -32.7 117.4	18 49.0 -32.3 116.8	17 59.9 -31.9 116.3	17 10.7 -31.6 115.7	16 21.2 -31.2 115.2
16°	19 05.1 -33.0 118.2	18 16.7 -32.6 117.7	17 28.0 -32.1 117.2	16 39.1 -31.7 116.6	15 50.0 -31.4 116.1
17°	18 32.1 -33.1 119.1	17 44.1 -32.7 118.6	16 55.9 -32.4 118.0	16 07.4 -32.0 117.5	15 18.6 -31.5 117.0
18°	17 59.0 -33.5 120.0	17 11.4 -33.0 119.5	16 23.5 -32.6 118.9	15 35.4 -32.2 118.4	14 47.1 -31.8 117.9
19°	17 25.5 -33.6 120.9	16 38.4 -33.3 120.3	15 50.9 -32.8 119.8	15 03.2 -32.4 119.3	14 15.3 -32.0 118.7
20°	16 51.9 -33.9 121.7	16 05.1 -33.4 121.2	15 18.1 -33.0 120.7	14 30.8 -32.5 120.1	13 43.3 -32.1 119.6
21°	16 18.0 -34.1 122.6	15 31.7 -33.6 122.1	14 45.1 -33.2 121.5	13 58.3 -32.8 121.0	13 11.2 -32.4 120.5
22°	15 43.9 -34.2 123.5	14 58.1 -33.8 122.9	14 11.9 -33.3 122.4	13 25.5 -32.9 121.9	12 38.8 -32.5 121.3
23°	15 09.7 -34.5 124.3	14 24.3 -34.0 123.8	13 38.6 -33.6 123.2	12 52.6 -33.1 122.7	12 06.3 -32.6 122.2
24°	14 35.2 -34.6 125.2	13 50.3 -34.2 124.6	13 05.0 -33.7 124.1	12 19.5 -33.3 123.6	11 33.7 -32.8 123.1
25°	14 00.6 -34.9 126.0	13 16.1 -34.4 125.5	12 31.3 -33.9 124.9	11 46.2 -33.4 124.4	11 00.9 -33.0 123.9
26°	13 25.7 -34.9 126.8	12 41.7 -34.5 126.3	11 57.4 -34.0 125.8	11 12.8 -33.5 125.3	10 27.9 -33.1 124.8
27°	12 50.8 -35.2 127.7	12 07.2 -34.6 127.1	11 23.4 -34.2 126.6	10 39.3 -33.7 126.1	9 54.8 -33.2 125.6
28°	12 15.6 -35.3 128.5	11 32.6 -34.8 128.0	10 49.2 -34.3 127.5	10 05.6 -33.8 127.0	9 21.6 -33.3 126.5
29°	11 40.3 -35.4 129.3	10 57.8 -34.9 128.8	10 14.9 -34.4 128.3	9 31.8 -34.0 127.8	8 48.3 -33.4 127.3

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	22 42.7 -26.7 100.7	21 48.8 -26.5 100.3	20 54.8 -26.3 99.8	20 00.7 -26.1 99.3	19 06.6 -26.0 98.9
1°	22 16.0 -27.0 101.7	21 22.3 -26.8 101.2	20 28.5 -26.6 100.8	19 34.6 -26.4 100.3	18 40.6 -26.2 99.8
2°	21 49.0 -27.3 102.7	20 55.5 -27.1 102.2	20 01.9 -26.9 101.7	19 08.2 -26.7 101.2	18 14.4 -26.6 100.8
3°	21 21.7 -27.6 103.6	20 28.4 -27.4 103.1	19 35.0 -27.2 102.7	18 41.5 -27.0 102.2	17 47.8 -26.8 101.7
4°	20 54.1 -27.9 104.6	20 01.0 -27.7 104.1	19 07.8 -27.5 103.6	18 14.5 -27.3 103.1	17 21.0 -27.0 102.7
5°	20 26.2 -28.3 105.5	19 33.3 -28.0 105.0	18 40.3 -27.8 104.5	17 47.2 -27.6 104.1	16 54.0 -27.4 103.6
6°	19 57.9 -28.5 106.5	19 05.3 -28.3 106.0	18 12.5 -28.0 105.5	17 19.6 -27.8 105.0	16 26.6 -27.5 104.5
7°	19 29.4 -28.9 107.4	18 37.0 -28.6 106.9	17 44.5 -28.3 106.4	16 51.8 -28.0 105.9	15 59.1 -27.8 105.4
8°	19 00.5 -29.1 108.3	18 08.4 -28.8 107.8	17 16.2 -28.6 107.3	16 23.8 -28.3 106.8	15 31.3 -28.1 106.4
9°	18 31.4 -29.3 109.3	17 39.6 -29.1 108.8	16 47.6 -28.8 108.3	15 55.5 -28.5 107.8	15 03.2 -28.2 107.3
10°	18 02.1 -29.7 110.2	17 10.5 -29.3 109.7	16 18.8 -29.0 109.2	15 27.0 -28.8 108.7	14 35.0 -28.5 108.2
11°	17 32.4 -29.9 111.1	16 41.2 -29.6 110.6	15 49.8 -29.3 110.1	14 58.2 -28.9 109.6	14 06.5 -28.6 109.1
12°	17 02.5 -30.1 112.0	16 11.6 -29.8 111.5	15 20.5 -29.4 111.0	14 29.3 -29.2 110.5	13 37.9 -28.9 110.0
13°	16 32.4 -30.3 112.9	15 41.8 -30.0 112.4	14 51.1 -29.7 111.9	14 00.1 -29.4 111.4	13 09.0 -29.1 110.9
14°	16 02.1 -30.6 113.8	15 11.8 -30.2 113.3	14 21.4 -29.9 112.8	13 30.7 -29.5 112.3	12 39.9 -29.2 111.8
15°	15 31.5 -30.8 114.7	14 41.6 -30.5 114.2	13 51.5 -30.1 113.7	13 01.2 -29.8 113.2	12 10.7 -29.4 112.7
16°	15 00.7 -31.0 115.6	14 11.1 -30.6 115.1	13 21.4 -30.3 114.6	12 31.4 -29.9 114.1	11 41.3 -29.6 113.6
17°	14 29.7 -31.2 116.5	13 40.5 -30.8 116.0	12 51.1 -30.4 115.5	12 01.5 -30.0 115.0	11 11.7 -29.7 114.5
18°	13 58.5 -31.4 117.3	13 09.7 -31.0 116.8	12 20.7 -30.6 116.3	11 31.5 -30.3 115.8	10 42.0 -29.8 115.4
19°	13 27.1 -31.6 118.2	12 38.7 -31.2 117.7	11 50.1 -30.8 117.2	11 01.2 -30.4 116.7	10 12.2 -30.1 116.2
20°	12 55.5 -31.7 119.1	12 07.5 -31.3 118.6	11 19.3 -31.0 118.1	10 30.8 -30.5 117.6	9 42.1 -30.1 117.1
21°	12 23.8 -31.9 120.0	11 36.2 -31.5 119.5	10 48.3 -31.0 119.0	10 00.3 -30.7 118.5	9 12.0 -30.3 118.0
22°	11 51.9 -32.1 120.8	11 04.7 -31.6 120.3	10 17.3 -31.3 119.8	9 29.6 -30.8 119.4	8 41.7 -30.4 118.9
23°	11 19.8 -32.2 121.7	10 33.1 -31.8 121.2	9 46.0 -31.3 120.7	8 58.8 -30.9 120.2	8 11.3 -30.5 119.7
24°	10 47.6 -32.4 122.6	10 01.3 -31.9 122.1	9 14.7 -31.5 121.6	8 27.9 -31.1 121.1	7 40.8 -30.6 120.6
25°	10 15.2 -32.4 123.4	9 29.4 -32.1 122.9	8 43.2 -31.6 122.4	7 56.8 -31.1 122.0	7 10.2 -30.7 121.5
26°	9 42.8 -32.7 124.3	8 57.3 -32.1 123.8	8 11.6 -31.7 123.3	7 25.7 -31.3 122.8	6 39.5 -30.8 122.4
27°	9 10.1 -32.7 125.1	8 25.2 -32.3 124.6	7 39.9 -31.8 124.1	6 54.4 -31.3 123.7	6 08.7 -30.9 123.2
28°	8 37.4 -32.8 126.0	7 52.9 -32.4 125.5	7 08.1 -31.9 125.0	6 23.1 -31.4 124.5	5 37.8 -30.9 124.1
29°	8 04.6 -33.0 126.8	7 20.5 -32.4 126.3	6 36.2 -31.9 125.9	5 51.7 -31.5 125.4	5 06.9 -31.0 124.9

Latitude 24°

Declination CONTRARY name to Latitude

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	18 12.4 -25.8 98.4	17 18.2 -25.7 98.0	16 23.9 -25.6 97.5	15 29.5 -25.5 97.1	14 35.1 -25.4 96.7
1°	17 46.6 -26.1 99.4	16 52.5 -26.0 98.9	15 58.3 -25.8 98.5	15 04.0 -25.6 98.0	14 09.7 -25.5 97.6
2°	17 20.5 -26.4 100.3	16 26.5 -26.2 99.9	15 32.5 -26.1 99.4	14 38.4 -25.9 99.0	13 44.2 -25.8 98.5
3°	16 54.1 -26.6 101.3	16 00.3 -26.4 100.8	15 06.4 -26.2 100.3	14 12.5 -26.1 99.9	13 18.4 -25.9 99.4
4°	16 27.5 -26.9 102.2	15 33.9 -26.7 101.7	14 40.2 -26.5 101.3	13 46.4 -26.4 100.8	12 52.5 -26.2 100.4
5°	16 00.6 -27.1 103.1	15 07.2 -26.9 102.7	14 13.7 -26.7 102.2	13 20.0 -26.5 101.7	12 26.3 -26.3 101.3
6°	15 33.5 -27.3 104.0	14 40.3 -27.1 103.6	13 47.0 -27.0 103.1	12 53.5 -26.7 102.7	12 00.0 -26.5 102.2
7°	15 06.2 -27.6 105.0	14 13.2 -27.4 104.5	13 20.0 -27.1 104.0	12 26.8 -26.9 103.6	11 33.5 -26.7 103.1
8°	14 38.6 -27.8 105.9	13 45.8 -27.5 105.4	12 52.9 -27.3 105.0	11 59.9 -27.1 104.5	11 06.8 -26.9 104.0
9°	14 10.8 -28.0 106.8	13 18.3 -27.7 106.3	12 25.6 -27.5 105.9	11 32.8 -27.2 105.4	10 39.9 -27.0 105.0
10°	13 42.8 -28.1 107.7	12 50.6 -28.0 107.2	11 58.1 -27.6 106.8	11 05.6 -27.4 106.3	10 12.9 -27.1 105.9
11°	13 14.7 -28.4 108.6	12 22.6 -28.1 108.2	11 30.5 -27.8 107.7	10 38.2 -27.6 107.2	9 45.8 -27.3 106.8
12°	12 46.3 -28.6 109.5	11 54.5 -28.2 109.1	11 02.7 -28.0 108.6	10 10.6 -27.7 108.1	9 18.5 -27.5 107.7
13°	12 17.7 -28.7 110.4	11 26.3 -28.5 110.0	10 34.7 -28.2 109.5	9 42.9 -27.8 109.0	8 51.0 -27.5 108.6
14°	11 49.0 -28.9 111.3	10 57.8 -28.6 110.9	10 06.5 -28.3 110.4	9 15.1 -28.0 109.9	8 23.5 -27.7 109.5
15°	11 20.1 -29.1 112.2	10 29.2 -28.7 111.7	9 38.2 -28.4 111.3	8 47.1 -28.1 110.8	7 55.8 -27.8 110.4
16°	10 51.0 -29.2 113.1	10 00.5 -28.9 112.6	9 09.8 -28.5 112.2	8 19.0 -28.3 111.7	7 28.0 -27.9 111.3
17°	10 21.8 -29.4 114.0	9 31.6 -29.0 113.5	8 41.3 -28.7 113.1	7 50.7 -28.3 112.6	7 00.1 -28.1 112.2
18°	9 52.4 -29.5 114.9	9 02.6 -29.2 114.4	8 12.6 -28.8 114.0	7 22.4 -28.4 113.5	6 32.0 -28.1 113.0
19°	9 22.9 -29.6 115.8	8 33.4 -29.2 115.3	7 43.8 -28.9 114.8	6 54.0 -28.6 114.4	6 03.9 -28.2 113.9
20°	8 53.3 -29.8 116.7	8 04.2 -29.4 116.2	7 14.9 -29.0 115.7	6 25.4 -28.6 115.3	5 35.7 -28.2 114.8
21°	8 23.5 -29.9 117.5	7 34.8 -29.5 117.1	6 45.9 -29.1 116.6	5 56.8 -28.8 116.2	5 07.5 -28.4 115.7
22°	7 53.6 -30.0 118.4	7 05.3 -29.6 117.9	6 16.8 -29.2 117.5	5 28.0 -28.8 117.0	4 39.1 -28.4 116.6
23°	7 23.6 -30.1 119.3	6 35.7 -29.7 118.8	5 47.6 -29.3 118.4	4 59.2 -28.8 117.9	4 10.7 -28.5 117.5
24°	6 53.5 -30.1 120.2	6 06.0 -29.7 119.7	5 18.3 -29.3 119.2	4 30.4 -29.0 118.8	3 42.2 -28.5 118.4
25°	6 23.4 -30.3 121.0	5 36.3 -29.9 120.6	4 49.0 -29.4 120.1	4 01.4 -28.9 119.7	3 13.7 -28.6 119.2
26°	5 53.1 -30.4 121.9	5 06.4 -29.9 121.4	4 19.6 -29.5 121.0	3 32.5 -29.1 120.6	2 45.1 -28.6 120.1
27°	5 22.7 -30.4 122.8	4 36.5 -30.0 122.3	3 50.1 -29.5 121.9	3 03.4 -29.1 121.4	2 16.5 -28.6 121.0
28°	4 52.3 -30.5 123.6	4 06.5 -30.0 123.2	3 20.6 -29.6 122.7	2 34.3 -29.1 122.3	1 47.9 -28.7 121.9
29°	4 21.8 -30.5 124.5	3 36.5 -30.1 124.0	2 51.0 -29.6 123.6	2 05.2 -29.1 123.2	1 19.2 -28.7 122.8

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	13 40.6 -25.2 96.2	12 46.1 -25.1 95.8	11 51.5 -25.0 95.4	10 56.9 -24.9 94.9	10 02.3 -24.8 94.5
1°	13 15.4 -25.4 97.2	12 21.0 -25.3 96.7	11 26.5 -25.2 96.3	10 32.0 -25.1 95.9	9 37.5 -25.0 95.4
2°	12 50.0 -25.7 98.1	11 55.7 -25.5 97.6	11 01.3 -25.4 97.2	10 06.9 -25.2 96.8	9 12.5 -25.2 96.4
3°	12 24.3 -25.8 99.0	11 30.2 -25.7 98.6	10 35.9 -25.5 98.1	9 41.7 -25.4 97.7	8 47.3 -25.3 97.3
4°	11 58.5 -26.0 99.9	11 04.5 -25.8 99.5	10 10.4 -25.7 99.1	9 16.3 -25.6 98.6	8 22.0 -25.4 98.2
5°	11 32.5 -26.1 100.9	10 38.7 -26.0 100.4	9 44.7 -25.8 100.0	8 50.7 -25.7 99.5	7 56.6 -25.5 99.1
6°	11 06.4 -26.3 101.8	10 12.7 -26.2 101.3	9 18.9 -26.0 100.9	8 25.0 -25.8 100.5	7 31.1 -25.6 100.0
7°	10 40.1 -26.5 102.7	9 46.5 -26.3 102.2	8 52.9 -26.1 101.8	7 59.2 -25.9 101.4	7 05.5 -25.8 100.9
8°	10 13.6 -26.7 103.6	9 20.2 -26.4 103.2	8 26.8 -26.2 102.7	7 33.3 -26.0 102.3	6 39.7 -25.8 101.9
9°	9 46.9 -26.7 104.5	8 53.8 -26.5 104.1	8 00.6 -26.3 103.6	7 07.3 -26.2 103.2	6 13.9 -26.0 102.8
10°	9 20.2 -27.0 105.4	8 27.3 -26.7 105.0	7 34.3 -26.5 104.5	6 41.1 -26.2 104.1	5 47.9 -26.0 103.7
11°	8 53.2 -27.0 106.3	8 00.6 -26.8 105.9	7 07.8 -26.6 105.4	6 14.9 -26.3 105.0	5 21.9 -26.1 104.6
12°	8 26.2 -27.2 107.2	7 33.8 -27.0 106.8	6 41.2 -26.6 106.3	5 48.6 -26.4 105.9	4 55.8 -26.2 105.5
13°	7 59.0 -27.3 108.1	7 06.8 -27.0 107.7	6 14.6 -26.8 107.2	5 22.2 -26.5 106.8	4 29.6 -26.2 106.4
14°	7 31.7 -27.4 109.0	6 39.8 -27.1 108.6	5 47.8 -26.8 108.1	4 55.7 -26.6 107.7	4 03.4 -26.3 107.3
15°	7 04.3 -27.5 109.9	6 12.7 -27.2 109.5	5 21.0 -27.0 109.0	4 29.1 -26.7 108.6	3 37.1 -26.4 108.2
16°	6 36.8 -27.6 110.8	5 45.5 -27.3 110.4	4 54.0 -26.9 109.9	4 02.4 -26.6 109.5	3 10.7 -26.4 109.1
17°	6 09.2 -27.7 111.7	5 18.2 -27.4 111.3	4 27.1 -27.1 110.8	3 35.8 -26.8 110.4	2 44.3 -26.4 110.0
18°	5 41.5 -27.7 112.6	4 50.8 -27.4 112.2	4 00.0 -27.1 111.7	3 09.0 -26.8 111.3	2 17.9 -26.5 110.9
19°	5 13.8 -27.9 113.5	4 23.4 -27.5 113.1	3 32.9 -27.2 112.6	2 42.2 -26.8 112.2	1 51.4 -26.5 111.8
20°	4 45.9 -27.9 114.4	3 55.9 -27.6 113.9	3 05.7 -27.2 113.5	2 15.4 -26.9 113.1	1 24.9 -26.5 112.7
21°	4 18.0 -28.0 115.3	3 28.3 -27.6 114.8	2 38.5 -27.2 114.4	1 48.5 -26.9 114.0	0 58.4 -26.6 113.6
22°	3 50.0 -28.0 116.2	3 00.7 -27.6 115.7	2 11.3 -27.3 115.3	1 21.6 -26.9 114.9	0 31.8 -26.5 114.5
23°	3 22.0 -28.1 117.0	2 33.1 -27.7 116.6	1 44.0 -27.3 116.2	0 54.7 -26.9 115.8	0 05.3 -26.6 115.4
24°	2 53.9 -28.1 117.9	2 05.4 -27.7 117.5	1 16.7 -27.4 117.1	0 27.8 -27.0 116.7	-0 21.3 -26.5
25°	2 25.8 -28.2 118.8	1 37.7 -27.8 118.4	0 49.3 -27.3 118.0	0 00.8 -26.9 117.6	-0 47.8 -26.6
26°	1 57.6 -28.1 119.7	1 09.9 -27.7 119.3	0 22.0 -27.3 118.9	-0 26.1 -26.9	-1 14.4 -26.5
27°	1 29.5 -28.3 120.6	0 42.2 -27.8 120.2	-0 05.3 -27.4	-0 53.0 -26.9	-1 40.9 -26.5
28°	1 01.2 -28.2 121.5	0 14.4 -27.8 121.0	-0 32.7 -27.3	-1 19.9 -26.9	-2 07.4 -26.4
29°	0 33.0 -28.2 122.3	-0 13.4 -27.8	-1 00.0 -27.3	-1 46.8 -26.9	-2 33.8 -26.5

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Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 07.7 -24.8 94.1	8 13.0 -24.7 93.7	7 18.3 -24.7 93.3	6 23.5 -24.6 92.9	5 28.8 -24.6 92.4
1°	8 42.9 -24.9 95.0	7 48.3 -24.9 94.6	6 53.6 -24.8 94.2	5 58.9 -24.7 93.8	5 04.2 -24.6 93.4
2°	8 18.0 -25.1 95.9	7 23.4 -24.9 95.5	6 28.8 -24.8 95.1	5 34.2 -24.8 94.7	4 39.6 -24.7 94.3
3°	7 52.9 -25.2 96.9	6 58.5 -25.1 96.4	6 04.0 -25.0 96.0	5 09.4 -24.8 95.6	4 14.9 -24.8 95.2
4°	7 27.7 -25.2 97.8	6 33.4 -25.1 97.4	5 39.0 -25.0 96.9	4 44.6 -24.9 96.5	3 50.1 -24.8 96.1
5°	7 02.5 -25.4 98.7	6 08.3 -25.3 98.3	5 14.0 -25.1 97.9	4 19.7 -25.0 97.4	3 25.3 -24.9 97.0
6°	6 37.1 -25.5 99.6	5 43.0 -25.3 99.2	4 48.9 -25.2 98.8	3 54.7 -25.1 98.3	3 00.4 -24.9 97.9
7°	6 11.6 -25.6 100.5	5 17.7 -25.4 100.1	4 23.7 -25.3 99.7	3 29.6 -25.1 99.3	2 35.5 -25.0 98.8
8°	5 46.0 -25.6 101.4	4 52.3 -25.5 101.0	3 58.4 -25.3 100.6	3 04.5 -25.2 100.2	2 10.5 -25.0 99.8
9°	5 20.4 -25.8 102.3	4 26.8 -25.6 101.9	3 33.1 -25.4 101.5	2 39.3 -25.2 101.1	1 45.5 -25.0 100.7
10°	4 54.6 -25.8 103.2	4 01.2 -25.6 102.8	3 07.7 -25.4 102.4	2 14.1 -25.2 102.0	1 20.5 -25.1 101.6
11°	4 28.8 -25.9 104.1	3 35.6 -25.7 103.7	2 42.3 -25.5 103.3	1 48.9 -25.2 102.9	0 55.4 -25.0 102.5
12°	4 02.9 -25.9 105.1	3 09.9 -25.7 104.6	2 16.8 -25.4 104.2	1 23.7 -25.3 103.8	0 30.4 -25.1 103.4
13°	3 37.0 -26.0 106.0	2 44.2 -25.7 105.5	1 51.4 -25.6 105.1	0 58.4 -25.3 104.7	0 05.3 -25.0 104.3
14°	3 11.0 -26.1 106.9	2 18.5 -25.8 106.4	1 25.8 -25.5 106.0	0 33.1 -25.3 105.6	-0 19.7 -25.1
15°	2 44.9 -26.1 107.8	1 52.7 -25.8 107.3	1 00.3 -25.6 106.9	0 07.8 -25.3 106.5	-0 44.8 -25.1
16°	2 18.8 -26.1 108.7	1 26.9 -25.9 108.2	0 34.7 -25.5 107.8	-0 17.5 -25.3	-1 09.9 -25.0
17°	1 52.7 -26.1 109.6	1 01.0 -25.8 109.1	0 09.2 -25.6 108.7	-0 42.8 -25.3	-1 34.9 -25.0
18°	1 26.6 -26.2 110.5	0 35.2 -25.9 110.0	-0 16.4 -25.6	-1 08.1 -25.3	-1 59.9 -25.0
19°	1 00.4 -26.2 111.4	0 09.3 -25.9 111.0	-0 42.0 -25.5	-1 33.4 -25.2	-2 24.9 -24.9
20°	0 34.2 -26.2 112.3	-0 16.6 -25.8	-1 07.5 -25.6	-1 58.6 -25.2	-2 49.8 -24.9
21°	0 08.0 -26.2 113.2	-0 42.4 -25.9	-1 33.1 -25.5	-2 23.8 -25.2	-3 14.7 -24.9
22°	-0 18.2 -26.1	-1 08.3 -25.8	-1 58.6 -25.5	-2 49.0 -25.1	-3 39.6 -24.8
23°	-0 44.3 -26.2	-1 34.1 -25.8	-2 24.1 -25.4	-3 14.1 -25.1	-4 04.4 -24.7
24°	-1 10.5 -26.2	-1 59.9 -25.8	-2 49.5 -25.4	-3 39.2 -25.1	-4 29.1 -24.7
25°	-1 36.7 -26.1	-2 25.7 -25.8	-3 14.9 -25.4	-4 04.3 -24.9	-4 53.8 -24.6
26°	-2 02.8 -26.1	-2 51.5 -25.7	-3 40.3 -25.3	-4 29.2 -24.9	-5 18.4 -24.5
27°	-2 28.9 -26.1	-3 17.2 -25.6	-4 05.6 -25.2	-4 54.1 -24.9	-5 42.9 -24.4
28°	-2 55.0 -26.0	-3 42.8 -25.6	-4 30.8 -25.2	-5 19.0 -24.7	-6 07.3 -24.3
29°	-3 21.0 -26.0	-4 08.4 -25.6	-4 56.0 -25.1	-5 43.7 -24.7	-6 31.6 -24.2

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 34.0 -24.5 92.0	3 39.2 -24.5 91.6	2 44.4 -24.4 91.2	1 49.6 -24.4 90.8	0 54.8 -24.4 90.4
1°	4 09.5 -24.6 93.0	3 14.7 -24.5 92.5	2 20.0 -24.5 92.1	1 25.2 -24.5 91.7	0 30.4 -24.4 91.3
2°	3 44.9 -24.6 93.9	2 50.2 -24.6 93.5	1 55.5 -24.5 93.0	1 00.7 -24.4 92.6	0 06.0 -24.4 92.2
3°	3 20.3 -24.7 94.8	2 25.6 -24.6 94.4	1 31.0 -24.6 94.0	0 36.3 -24.5 93.6	-0 18.4 -24.5
4°	2 55.6 -24.7 95.7	2 01.0 -24.6 95.3	1 06.4 -24.5 94.9	0 11.8 -24.5 94.5	-0 42.9 -24.4
5°	2 30.9 -24.8 96.6	1 36.4 -24.7 96.2	0 41.9 -24.6 95.8	-0 12.7 -24.5	-1 07.3 -24.4
6°	2 06.1 -24.8 97.5	1 11.7 -24.7 97.1	0 17.3 -24.6 96.7	-0 37.2 -24.4	-1 31.7 -24.3
7°	1 41.3 -24.8 98.4	0 47.0 -24.7 98.0	-0 07.3 -24.5	-1 01.6 -24.5	-1 56.0 -24.4
8°	1 16.5 -24.9 99.3	0 22.3 -24.7 98.9	-0 31.8 -24.6	-1 26.1 -24.4	-2 20.4 -24.3
9°	0 51.6 -24.8 100.2	-0 02.4 -24.7	-0 56.4 -24.5	-1 50.5 -24.4	-2 44.7 -24.2
10°	0 26.8 -24.9 101.2	-0 27.1 -24.7	-1 20.9 -24.6	-2 14.9 -24.4	-3 08.9 -24.2
11°	0 01.9 -24.9 102.1	-0 51.8 -24.6	-1 45.5 -24.5	-2 39.3 -24.3	-3 33.1 -24.2
12°	-0 23.0 -24.8	-1 16.4 -24.7	-2 10.0 -24.4	-3 03.6 -24.3	-3 57.3 -24.1
13°	-0 47.8 -24.9	-1 41.1 -24.6	-2 34.4 -24.5	-3 27.9 -24.2	-4 21.4 -24.0
14°	-1 12.7 -24.8	-2 05.7 -24.6	-2 58.9 -24.4	-3 52.1 -24.2	-4 45.4 -24.0
15°	-1 37.5 -24.8	-2 30.3 -24.6	-3 23.3 -24.3	-4 16.3 -24.1	-5 09.4 -23.8
16°	-2 02.3 -24.8	-2 54.9 -24.5	-3 47.6 -24.3	-4 40.4 -24.0	-5 33.2 -23.8
17°	-2 27.1 -24.7	-3 19.4 -24.5	-4 11.9 -24.2	-5 04.4 -23.9	-5 57.0 -23.7
18°	-2 51.8 -24.7	-3 43.9 -24.4	-4 36.1 -24.1	-5 28.3 -23.9	-6 20.7 -23.6
19°	-3 16.5 -24.7	-4 08.3 -24.4	-5 00.2 -24.1	-5 52.2 -23.8	-6 44.3 -23.5
20°	-3 41.2 -24.6	-4 32.7 -24.2	-5 24.3 -23.9	-6 16.0 -23.7	-7 07.8 -23.4
21°	-4 05.8 -24.5	-4 56.9 -24.2	-5 48.2 -23.9	-6 39.7 -23.5	-7 31.2 -23.3
22°	-4 30.3 -24.4	-5 21.1 -24.2	-6 12.1 -23.8	-7 03.2 -23.5	-7 54.5 -23.1
23°	-4 54.7 -24.4	-5 45.3 -24.0	-6 35.9 -23.7	-7 26.7 -23.4	-8 17.6 -23.0
24°	-5 19.1 -24.3	-6 09.3 -23.9	-6 59.6 -23.6	-7 50.1 -23.2	-8 40.6 -22.9
25°	-5 43.4 -24.2	-6 33.2 -23.9	-7 23.2 -23.5	-8 13.3 -23.1	-9 03.5 -22.7
26°	-6 07.6 -24.2	-6 57.1 -23.7	-7 46.7 -23.3	-8 36.4 -22.9	-9 26.2 -22.6
27°	-6 31.8 -24.0	-7 20.8 -23.6	-8 10.0 -23.2	-8 59.3 -22.9	-9 48.8 -22.5
28°	-6 55.8 -23.9	-7 44.4 -23.5	-8 33.2 -23.1	-9 22.2 -22.6	
29°	-7 19.7 -23.8	-8 07.9 -23.4	-8 56.3 -22.9	-9 44.8 -22.6	

Latitude 24°

Declination CONTRARY name to Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -24.4 90.0	-0 54.8 -24.4			
1°	-0 24.4 -24.4	-1 19.2 -24.4			
2°	-0 48.8 -24.4	-1 43.6 -24.3			
3°	-1 13.2 -24.4	-2 07.9 -24.4			
4°	-1 37.6 -24.3	-2 32.3 -24.2			
5°	-2 01.9 -24.3	-2 56.5 -24.3			
6°	-2 26.2 -24.3	-3 20.8 -24.2			
7°	-2 50.5 -24.2	-3 45.0 -24.1			
8°	-3 14.7 -24.2	-4 09.1 -24.1			
9°	-3 38.9 -24.1	-4 33.2 -24.0			
10°	-4 03.0 -24.1	-4 57.2 -23.9			
11°	-4 27.1 -24.0	-5 21.1 -23.8			
12°	-4 51.1 -23.9	-5 44.9 -23.8			
13°	-5 15.0 -23.8	-6 08.7 -23.6			
14°	-5 38.8 -23.8	-6 32.3 -23.6			
15°	-6 02.6 -23.6	-6 55.9 -23.4			
16°	-6 26.2 -23.6	-7 19.3 -23.3			
17°	-6 49.8 -23.4	-7 42.6 -23.2			
18°	-7 13.2 -23.4	-8 05.8 -23.1			
19°	-7 36.6 -23.2	-8 28.9 -23.0			
20°	-7 59.8 -23.1	-8 51.9 -22.8			
21°	-8 22.9 -22.9	-9 14.7 -22.6			
22°	-8 45.8 -22.9	-9 37.3 -22.5			
23°	-9 08.7 -22.6	-9 59.8 -22.4			
24°	-9 31.3 -22.6				
25°	-9 53.9 -22.4				
26°					
27°					
28°					
29°					

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	65 00.0 -60.0 180.0	64 58.9 -60.0 177.6	64 55.5 -59.8 175.3	64 49.9 -59.6 172.9	64 42.1 -59.3 170.6
1°	64 00.0 -60.0 180.0	63 58.9 -59.9 177.7	63 55.7 -59.9 175.4	63 50.3 -59.7 173.2	63 42.8 -59.4 170.9
2°	63 00.0 -60.0 180.0	62 59.0 -60.0 177.8	62 55.8 -59.8 175.6	62 50.6 -59.7 173.4	62 43.4 -59.5 171.3
3°	62 00.0 -60.0 180.0	61 59.0 -60.0 177.9	61 56.0 -59.9 175.8	61 50.9 -59.7 173.6	61 43.9 -59.5 171.5
4°	61 00.0 -60.0 180.0	60 59.0 -59.9 177.9	60 56.1 -59.9 175.9	60 51.2 -59.7 173.8	60 44.4 -59.5 171.8
5°	60 00.0 -60.0 180.0	59 59.1 -60.0 178.0	59 56.2 -59.9 176.0	59 51.5 -59.7 174.0	59 44.9 -59.5 172.1
6°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.1	58 56.3 -59.9 176.1	58 51.8 -59.8 174.2	58 45.4 -59.6 172.3
7°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.1	57 56.4 -59.8 176.3	57 52.0 -59.8 174.4	57 45.8 -59.6 172.5
8°	57 00.0 -60.0 180.0	56 59.1 -59.9 178.2	56 56.6 -59.9 176.4	56 52.2 -59.7 174.6	56 46.2 -59.6 172.8
9°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.2	55 56.7 -60.0 176.5	55 52.5 -59.8 174.7	55 46.6 -59.6 173.0
10°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.3	54 56.7 -59.9 176.6	54 52.7 -59.8 174.9	54 47.0 -59.6 173.2
11°	54 00.0 -60.0 180.0	53 59.2 -60.0 178.3	53 56.8 -59.9 176.7	53 52.9 -59.8 175.0	53 47.4 -59.7 173.3
12°	53 00.0 -60.0 180.0	52 59.2 -60.0 178.4	52 56.9 -59.9 176.8	52 53.1 -59.8 175.1	52 47.7 -59.7 173.5
13°	52 00.0 -60.0 180.0	51 59.2 -59.9 178.4	51 57.0 -59.9 176.8	51 53.3 -59.9 175.3	51 48.0 -59.7 173.7
14°	51 00.0 -60.0 180.0	50 59.3 -60.0 178.5	50 57.1 -60.0 176.9	50 53.4 -59.8 175.4	50 48.3 -59.7 173.9
15°	50 00.0 -60.0 180.0	49 59.3 -60.0 178.5	49 57.1 -59.9 177.0	49 53.6 -59.8 175.5	49 48.6 -59.7 174.0
16°	49 00.0 -60.0 180.0	48 59.3 -60.0 178.5	48 57.2 -59.9 177.1	48 53.8 -59.9 175.6	48 48.9 -59.7 174.2
17°	48 00.0 -60.0 180.0	47 59.3 -60.0 178.6	47 57.3 -59.9 177.1	47 53.9 -59.8 175.7	47 49.2 -59.8 174.3
18°	47 00.0 -60.0 180.0	46 59.3 -59.9 178.6	46 57.4 -60.0 177.2	46 54.1 -59.9 175.8	46 49.4 -59.7 174.4
19°	46 00.0 -60.0 180.0	45 59.4 -60.0 178.6	45 57.4 -59.9 177.3	45 54.2 -59.9 175.9	45 49.7 -59.8 174.6
20°	45 00.0 -60.0 180.0	44 59.4 -60.0 178.7	44 57.5 -60.0 177.3	44 54.3 -59.8 176.0	44 49.9 -59.7 174.7
21°	44 00.0 -60.0 180.0	43 59.4 -60.0 178.7	43 57.5 -59.9 177.4	43 54.5 -59.9 176.1	43 50.2 -59.8 174.8
22°	43 00.0 -60.0 180.0	42 59.4 -60.0 178.7	42 57.6 -60.0 177.5	42 54.6 -59.9 176.2	42 50.4 -59.8 174.9
23°	42 00.0 -60.0 180.0	41 59.4 -60.0 178.8	41 57.6 -59.9 177.5	41 54.7 -59.9 176.3	41 50.6 -59.8 175.1
24°	41 00.0 -60.0 180.0	40 59.4 -60.0 178.8	40 57.7 -59.9 177.6	40 54.8 -59.8 176.4	40 50.8 -59.8 175.2
25°	40 00.0 -60.0 180.0	39 59.4 -59.9 178.8	39 57.8 -60.0 177.6	39 55.0 -59.9 176.5	39 51.0 -59.8 175.3
26°	39 00.0 -60.0 180.0	38 59.5 -60.0 178.8	38 57.8 -59.9 177.7	38 55.1 -59.9 176.5	38 51.2 -59.8 175.4
27°	38 00.0 -60.0 180.0	37 59.5 -60.0 178.9	37 57.9 -60.0 177.7	37 55.2 -59.9 176.6	37 51.4 -59.8 175.5
28°	37 00.0 -60.0 180.0	36 59.5 -60.0 178.9	36 57.9 -60.0 177.8	36 55.3 -59.9 176.7	36 51.6 -59.8 175.6
29°	36 00.0 -60.0 180.0	35 59.5 -60.0 178.9	35 57.9 -59.9 177.8	35 55.4 -59.9 176.8	35 51.8 -59.8 175.7

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	64 32.2 -59.0 168.3	64 20.1 -58.6 166.0	64 06.0 -58.2 163.8	63 49.8 -57.6 161.6	63 31.7 -57.0 159.5
1°	63 33.2 -59.1 168.7	63 21.5 -58.7 166.5	63 07.8 -58.2 164.4	62 52.2 -57.7 162.2	62 34.7 -57.2 160.1
2°	62 34.1 -59.1 169.1	62 22.8 -58.8 167.0	62 09.6 -58.4 164.9	61 54.5 -57.9 162.8	61 37.5 -57.4 160.8
3°	61 35.0 -59.2 169.5	61 24.0 -58.8 167.4	61 11.2 -58.4 165.4	60 56.6 -58.0 163.4	60 40.1 -57.5 161.4
4°	60 35.8 -59.3 169.8	60 25.2 -58.9 167.8	60 12.8 -58.5 165.8	59 58.6 -58.1 163.9	59 42.6 -57.6 162.0
5°	59 36.5 -59.3 170.1	59 26.3 -59.0 168.2	59 14.3 -58.7 166.3	59 00.5 -58.2 164.4	58 45.0 -57.8 162.5
6°	58 37.2 -59.3 170.4	58 27.3 -59.0 168.5	58 15.6 -58.7 166.7	58 02.3 -58.4 164.8	57 47.2 -57.9 163.0
7°	57 37.9 -59.4 170.7	57 28.3 -59.1 168.9	57 16.9 -58.7 167.1	57 03.9 -58.4 165.3	56 49.3 -58.0 163.5
8°	56 38.5 -59.3 171.0	56 29.2 -59.2 169.2	56 18.2 -58.9 167.4	56 05.5 -58.5 165.7	55 51.3 -58.1 164.0
9°	55 39.2 -59.5 171.2	55 30.0 -59.1 169.5	55 19.3 -58.9 167.8	55 07.0 -58.5 166.1	54 53.2 -58.2 164.4
10°	54 39.7 -59.4 171.5	54 30.9 -59.2 169.8	54 20.4 -58.9 168.1	54 08.5 -58.6 166.5	53 55.0 -58.3 164.8
11°	53 40.3 -59.5 171.7	53 31.7 -59.3 170.1	53 21.5 -59.0 168.4	53 09.9 -58.7 166.8	52 56.7 -58.3 165.2
12°	52 40.8 -59.5 171.9	52 32.4 -59.3 170.3	52 22.5 -59.0 168.7	52 11.2 -58.8 167.2	51 58.4 -58.4 165.6
13°	51 41.3 -59.5 172.1	51 33.1 -59.3 170.6	51 23.5 -59.1 169.0	51 12.4 -58.8 167.5	51 00.0 -58.5 166.0
14°	50 41.8 -59.6 172.3	50 33.8 -59.3 170.8	50 24.4 -59.1 169.3	50 13.6 -58.8 167.8	50 01.5 -58.6 166.3
15°	49 42.2 -59.5 172.5	49 34.5 -59.4 171.0	49 25.3 -59.1 169.6	49 14.8 -58.9 168.1	49 02.9 -58.6 166.7
16°	48 42.7 -59.6 172.7	48 35.1 -59.4 171.3	48 26.2 -59.2 169.8	48 15.9 -58.9 168.4	48 04.3 -58.6 167.0
17°	47 43.1 -59.6 172.9	47 35.7 -59.4 171.5	47 27.0 -59.2 170.1	47 17.0 -59.0 168.7	47 05.7 -58.8 167.3
18°	46 43.5 -59.6 173.1	46 36.3 -59.5 171.7	46 27.8 -59.3 170.3	46 18.0 -59.0 169.0	46 06.9 -58.7 167.6
19°	45 43.9 -59.6 173.2	45 36.8 -59.4 171.9	45 28.5 -59.2 170.5	45 19.0 -59.1 169.2	45 08.2 -58.8 167.9
20°	44 44.3 -59.7 173.4	44 37.4 -59.5 172.1	44 29.3 -59.3 170.8	44 19.9 -59.0 169.5	44 09.4 -58.8 168.2
21°	43 44.6 -59.6 173.5	43 37.9 -59.5 172.3	43 30.0 -59.3 171.0	43 20.9 -59.1 169.7	43 10.6 -58.9 168.4
22°	42 45.0 -59.7 173.7	42 38.4 -59.5 172.4	42 30.7 -59.4 171.2	42 21.8 -59.2 169.9	42 11.7 -58.9 168.7
23°	41 45.3 -59.6 173.8	41 38.9 -59.5 172.6	41 31.3 -59.3 171.4	41 22.6 -59.1 170.2	41 12.8 -59.0 169.0
24°	40 45.7 -59.7 174.0	40 39.4 -59.5 172.8	40 32.0 -59.4 171.6	40 23.5 -59.2 170.4	40 13.8 -58.9 169.2
25°	39 46.0 -59.7 174.1	39 39.9 -59.6 172.9	39 32.6 -59.4 171.8	39 24.3 -59.2 170.6	39 14.9 -59.0 169.5
26°	38 46.3 -59.7 174.2	38 40.3 -59.6 173.1	38 33.2 -59.4 171.9	38 25.1 -59.3 170.8	38 15.9 -59.1 169.7
27°	37 46.6 -59.7 174.4	37 40.7 -59.5 173.2	37 33.8 -59.4 172.1	37 25.8 -59.2 171.0	37 16.8 -59.0 169.9
28°	36 46.9 -59.7 174.5	36 41.2 -59.6 173.4	36 34.4 -59.4 172.3	36 26.6 -59.3 171.2	36 17.8 -59.1 170.1
29°	35 47.2 -59.7 174.6	35 41.6 -59.6 173.5	35 35.0 -59.5 172.5	35 27.3 -59.3 171.4	35 18.7 -59.1 170.3

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	63 11.6 -56.3 157.4	62 49.8 -55.7 155.3	62 26.2 -54.9 153.3	62 01.0 -54.3 151.4	61 34.1 -53.5 149.5
1°	62 15.3 -56.6 158.1	61 54.1 -55.9 156.1	61 31.3 -55.3 154.2	61 06.7 -54.5 152.3	60 40.6 -53.8 150.4
2°	61 18.7 -56.8 158.8	60 58.2 -56.2 156.9	60 36.0 -55.5 155.0	60 12.2 -54.9 153.1	59 46.8 -54.2 151.3
3°	60 21.9 -56.9 159.5	60 02.0 -56.4 157.6	59 40.5 -55.8 155.7	59 17.3 -55.1 153.9	58 52.6 -54.4 152.1
4°	59 25.0 -57.2 160.1	59 05.6 -56.6 158.2	58 44.7 -56.0 156.4	58 22.2 -55.4 154.7	57 58.2 -54.8 152.9
5°	58 27.8 -57.3 160.7	58 09.0 -56.7 158.9	57 48.7 -56.3 157.1	57 26.8 -55.7 155.4	57 03.4 -55.0 153.7
6°	57 30.5 -57.4 161.2	57 12.3 -57.0 159.5	56 52.4 -56.4 157.8	56 31.1 -55.8 156.1	56 08.4 -55.3 154.4
7°	56 33.1 -57.6 161.8	56 15.3 -57.1 160.1	55 56.0 -56.6 158.4	55 35.3 -56.1 156.7	55 13.1 -55.5 155.1
8°	55 35.5 -57.7 162.3	55 18.2 -57.2 160.6	54 59.4 -56.7 159.0	54 39.2 -56.2 157.4	54 17.6 -55.7 155.8
9°	54 37.8 -57.7 162.8	54 21.0 -57.4 161.1	54 02.7 -56.9 159.5	53 43.0 -56.4 157.9	53 21.9 -55.9 156.4
10°	53 40.1 -57.9 163.2	53 23.6 -57.4 161.6	53 05.8 -57.0 160.1	52 46.6 -56.6 158.5	52 26.0 -56.1 157.0
11°	52 42.2 -58.0 163.7	52 26.2 -57.6 162.1	52 08.8 -57.2 160.6	51 50.0 -56.7 159.1	51 29.9 -56.2 157.6
12°	51 44.2 -58.1 164.1	51 28.6 -57.7 162.6	51 11.6 -57.3 161.1	50 53.3 -56.9 159.6	50 33.7 -56.4 158.1
13°	50 46.1 -58.2 164.5	50 30.9 -57.8 163.0	50 14.3 -57.4 161.5	49 56.4 -56.9 160.1	49 37.3 -56.5 158.7
14°	49 47.9 -58.2 164.9	49 33.1 -57.9 163.4	49 16.9 -57.5 162.0	48 59.5 -57.1 160.6	48 40.8 -56.7 159.2
15°	48 49.7 -58.3 165.2	48 35.2 -57.9 163.8	48 19.4 -57.6 162.4	48 02.4 -57.2 161.0	47 44.1 -56.8 159.7
16°	47 51.4 -58.3 165.6	47 37.3 -58.1 164.2	47 21.8 -57.6 162.8	47 05.2 -57.3 161.5	46 47.3 -56.9 160.1
17°	46 53.1 -58.4 165.9	46 39.2 -58.1 164.6	46 24.2 -57.8 163.2	46 07.9 -57.4 161.9	45 50.4 -57.0 160.6
18°	45 54.7 -58.5 166.3	45 41.1 -58.1 164.9	45 26.4 -57.8 163.6	45 10.5 -57.5 162.3	44 53.4 -57.1 161.0
19°	44 56.2 -58.5 166.6	44 43.0 -58.3 165.3	44 28.6 -57.9 164.0	44 13.0 -57.5 162.7	43 56.3 -57.2 161.5
20°	43 57.7 -58.6 166.9	43 44.7 -58.2 165.6	43 30.7 -58.0 164.4	43 15.5 -57.7 163.1	42 59.1 -57.3 161.9
21°	42 59.1 -58.6 167.2	42 46.5 -58.4 166.0	42 32.7 -58.0 164.7	42 17.8 -57.7 163.5	42 01.8 -57.3 162.3
22°	42 00.5 -58.7 167.5	41 48.1 -58.4 166.3	41 34.7 -58.1 165.1	41 20.1 -57.8 163.9	41 04.5 -57.5 162.7
23°	41 01.8 -58.7 167.8	40 49.7 -58.4 166.6	40 36.6 -58.2 165.4	40 22.3 -57.8 164.2	40 07.0 -57.5 163.1
24°	40 03.1 -58.7 168.0	39 51.3 -58.5 166.9	39 38.4 -58.2 165.7	39 24.5 -57.9 164.6	39 09.5 -57.6 163.4
25°	39 04.4 -58.8 168.3	38 52.8 -58.5 167.2	38 40.2 -58.2 166.0	38 26.6 -58.0 164.9	38 11.9 -57.6 163.8
26°	38 05.6 -58.8 168.6	37 54.3 -58.6 167.4	37 42.0 -58.3 166.3	37 28.6 -58.0 165.2	37 14.3 -57.7 164.2
27°	37 06.8 -58.8 168.8	36 55.7 -58.6 167.7	36 43.7 -58.4 166.6	36 30.6 -58.1 165.6	36 16.6 -57.8 164.5
28°	36 08.0 -58.9 169.1	35 57.1 -58.6 168.0	35 45.3 -58.3 166.9	35 32.5 -58.1 165.9	35 18.8 -57.8 164.8
29°	35 09.1 -58.9 169.3	34 58.5 -58.7 168.2	34 47.0 -58.5 167.2	34 34.4 -58.1 166.2	34 21.0 -57.9 165.2

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	61 05.7 -52.7 147.6	60 35.9 -51.9 145.8	60 04.7 -51.1 144.1	59 32.2 -50.3 142.4	58 58.4 -49.5 140.8
1°	60 13.0 -53.0 148.6	59 44.0 -52.3 146.9	59 13.6 -51.6 145.2	58 41.9 -50.8 143.5	58 08.9 -50.0 141.9
2°	59 20.0 -53.5 149.5	58 51.7 -52.7 147.8	58 22.0 -51.9 146.1	57 51.1 -51.2 144.5	57 18.9 -50.4 142.9
3°	58 26.5 -53.8 150.4	57 59.0 -53.1 148.7	57 30.1 -52.4 147.1	56 59.9 -51.7 145.5	56 28.5 -51.0 143.9
4°	57 32.7 -54.1 151.2	57 05.9 -53.5 149.6	56 37.7 -52.8 148.0	56 08.2 -52.1 146.4	55 37.5 -51.3 144.9
5°	56 38.6 -54.4 152.0	56 12.4 -53.8 150.4	55 44.9 -53.1 148.8	55 16.1 -52.4 147.3	54 46.2 -51.8 145.8
6°	55 44.2 -54.7 152.8	55 18.6 -54.0 151.2	54 51.8 -53.4 149.7	54 23.7 -52.8 148.1	53 54.4 -52.1 146.7
7°	54 49.5 -54.9 153.5	54 24.6 -54.3 152.0	53 58.4 -53.7 150.4	53 30.9 -53.0 148.9	53 02.3 -52.4 147.5
8°	53 54.6 -55.2 154.2	53 30.3 -54.6 152.7	53 04.7 -54.0 151.2	52 37.9 -53.4 149.7	52 09.9 -52.8 148.3
9°	52 59.4 -55.3 154.9	52 35.7 -54.8 153.4	52 10.7 -54.2 151.9	51 44.5 -53.7 150.5	51 17.1 -53.0 149.1
10°	52 04.1 -55.6 155.5	51 40.9 -55.0 154.0	51 16.5 -54.5 152.6	50 50.8 -53.8 151.2	50 24.1 -53.4 149.8
11°	51 08.5 -55.7 156.1	50 45.9 -55.2 154.7	50 22.0 -54.7 153.3	49 57.0 -54.2 151.9	49 30.7 -53.5 150.5
12°	50 12.8 -55.9 156.7	49 50.7 -55.5 155.3	49 27.3 -54.9 153.9	49 02.8 -54.3 152.5	48 37.2 -53.8 151.2
13°	49 16.9 -56.1 157.3	48 55.2 -55.5 155.9	48 32.4 -55.0 154.5	48 08.5 -54.6 153.2	47 43.4 -54.1 151.9
14°	48 20.8 -56.2 157.8	47 59.7 -55.8 156.4	47 37.4 -55.3 155.1	47 13.9 -54.8 153.8	46 49.3 -54.2 152.5
15°	47 24.6 -56.3 158.3	47 03.9 -55.9 157.0	46 42.1 -55.4 155.7	46 19.1 -54.9 154.4	45 55.1 -54.4 153.1
16°	46 28.3 -56.5 158.8	46 08.0 -56.0 157.5	45 46.7 -55.6 156.2	45 24.2 -55.1 155.0	45 00.7 -54.6 153.7
17°	45 31.8 -56.6 159.3	45 12.0 -56.2 158.0	44 51.1 -55.7 156.8	44 29.1 -55.2 155.5	44 06.1 -54.8 154.3
18°	44 35.2 -56.7 159.8	44 15.8 -56.3 158.5	43 55.4 -55.9 157.3	43 33.9 -55.5 156.1	43 11.3 -55.0 154.9
19°	43 38.5 -56.8 160.2	43 19.5 -56.4 159.0	42 59.5 -56.0 157.8	42 38.4 -55.5 156.6	42 16.3 -55.1 155.4
20°	42 41.7 -56.9 160.7	42 23.1 -56.5 159.5	42 03.5 -56.1 158.3	41 42.9 -55.7 157.1	41 21.2 -55.2 155.9
21°	41 44.8 -57.1 161.1	41 26.6 -56.6 159.9	41 07.4 -56.2 158.8	40 47.2 -55.8 157.6	40 26.0 -55.4 156.5
22°	40 47.7 -57.0 161.5	40 30.0 -56.7 160.4	40 11.2 -56.3 159.2	39 51.4 -55.9 158.1	39 30.6 -55.5 157.0
23°	39 50.7 -57.2 161.9	39 33.3 -56.8 160.8	39 14.9 -56.5 159.7	38 55.5 -56.0 158.6	38 35.1 -55.6 157.5
24°	38 53.5 -57.3 162.3	38 36.5 -56.9 161.2	38 18.4 -56.5 160.1	37 59.5 -56.2 159.0	37 39.5 -55.7 157.9
25°	37 56.2 -57.3 162.7	37 39.6 -57.0 161.6	37 21.9 -56.6 160.5	37 03.3 -56.2 159.5	36 43.8 -55.9 158.4
26°	36 58.9 -57.4 163.1	36 42.6 -57.1 162.0	36 25.3 -56.7 160.9	36 07.1 -56.3 159.9	35 47.9 -55.9 158.9
27°	36 01.5 -57.4 163.4	35 45.5 -57.1 162.4	35 28.6 -56.8 161.3	35 10.8 -56.4 160.3	34 52.0 -56.0 159.3
28°	35 04.1 -57.5 163.8	34 48.4 -57.2 162.8	34 31.8 -56.8 161.7	34 14.4 -56.5 160.7	33 56.0 -56.2 159.7
29°	34 06.6 -57.6 164.1	33 51.2 -57.2 163.1	33 35.0 -56.9 162.1	33 17.9 -56.6 161.1	32 59.8 -56.2 160.2

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	58 23.5 -48.7 139.3	57 47.5 -47.9 137.8	57 10.4 -47.1 136.3	56 32.3 -46.3 134.9	55 53.3 -45.5 133.5
1°	57 34.8 -49.2 140.4	56 59.6 -48.5 138.9	56 23.3 -47.7 137.4	55 46.0 -46.9 136.0	55 07.8 -46.2 134.7
2°	56 45.6 -49.7 141.4	56 11.1 -48.9 139.9	55 35.6 -48.2 138.5	54 59.1 -47.5 137.1	54 21.6 -46.7 135.8
3°	55 55.9 -50.2 142.4	55 22.2 -49.5 141.0	54 47.4 -48.7 139.5	54 11.6 -48.0 138.2	53 34.9 -47.3 136.8
4°	55 05.7 -50.7 143.4	54 32.7 -49.9 142.0	53 58.7 -49.3 140.5	53 23.6 -48.5 139.2	52 47.6 -47.8 137.9
5°	54 15.0 -51.0 144.3	53 42.8 -50.4 142.9	53 09.4 -49.6 141.5	52 35.1 -49.0 140.2	51 59.8 -48.3 138.8
6°	53 24.0 -51.5 145.2	52 52.4 -50.8 143.8	52 19.8 -50.1 142.4	51 46.1 -49.4 141.1	51 11.5 -48.8 139.8
7°	52 32.5 -51.8 146.1	52 01.6 -51.1 144.7	51 29.7 -50.5 143.3	50 56.7 -49.8 142.0	50 22.7 -49.1 140.7
8°	51 40.7 -52.1 146.9	51 10.5 -51.5 145.5	50 39.2 -50.9 144.2	50 06.9 -50.3 142.9	49 33.6 -49.6 141.6
9°	50 48.6 -52.4 147.7	50 19.0 -51.8 146.3	49 48.3 -51.2 145.0	49 16.6 -50.5 143.7	48 44.0 -49.9 142.5
10°	49 56.2 -52.8 148.4	49 27.2 -52.2 147.1	48 57.1 -51.5 145.8	48 26.1 -50.9 144.6	47 54.1 -50.3 143.3
11°	49 03.4 -53.0 149.2	48 35.0 -52.4 147.9	48 05.6 -51.8 146.6	47 35.2 -51.2 145.3	47 03.8 -50.6 144.1
12°	48 10.4 -53.2 149.9	47 42.6 -52.6 148.6	47 13.8 -52.1 147.3	46 44.0 -51.6 146.1	46 13.2 -51.0 144.9
13°	47 17.2 -53.5 150.6	46 50.0 -53.0 149.3	46 21.7 -52.4 148.1	45 52.4 -51.8 146.9	45 22.2 -51.2 145.7
14°	46 23.7 -53.7 151.2	45 57.0 -53.1 150.0	45 29.3 -52.6 148.8	45 00.6 -52.0 147.6	44 31.0 -51.5 146.4
15°	45 30.0 -53.9 151.9	45 03.9 -53.4 150.7	44 36.7 -52.8 149.5	44 08.6 -52.3 148.3	43 39.5 -51.7 147.1
16°	44 36.1 -54.1 152.5	44 10.5 -53.6 151.3	43 43.9 -53.1 150.1	43 16.3 -52.6 148.9	42 47.8 -52.0 147.8
17°	43 42.0 -54.3 153.1	43 16.9 -53.8 151.9	42 50.8 -53.3 150.8	42 23.7 -52.7 149.6	41 55.8 -52.3 148.5
18°	42 47.7 -54.5 153.7	42 23.1 -54.0 152.5	41 57.5 -53.5 151.4	41 31.0 -53.0 150.2	41 03.5 -52.4 149.1
19°	41 53.2 -54.6 154.3	41 29.1 -54.2 153.1	41 04.0 -53.6 152.0	40 38.0 -53.2 150.9	40 11.1 -52.7 149.8
20°	40 58.6 -54.8 154.8	40 34.9 -54.3 153.7	40 10.4 -53.9 152.6	39 44.8 -53.3 151.5	39 18.4 -52.8 150.4
21°	40 03.8 -54.9 155.3	39 40.6 -54.4 154.2	39 16.5 -54.0 153.1	38 51.5 -53.5 152.1	38 25.6 -53.1 151.0
22°	39 08.9 -55.1 155.9	38 46.2 -54.7 154.8	38 22.5 -54.1 153.7	37 58.0 -53.7 152.6	37 32.5 -53.2 151.6
23°	38 13.8 -55.2 156.4	37 51.5 -54.7 155.3	37 28.4 -54.3 154.2	37 04.3 -53.9 153.2	36 39.3 -53.3 152.2
24°	37 18.6 -55.3 156.9	36 56.8 -54.9 155.8	36 34.1 -54.5 154.8	36 10.4 -53.9 153.8	35 46.0 -53.6 152.7
25°	36 23.3 -55.4 157.4	36 01.9 -55.0 156.3	35 39.6 -54.6 155.3	35 16.5 -54.2 154.3	34 52.4 -53.6 153.3
26°	35 27.9 -55.6 157.8	35 06.9 -55.1 156.8	34 45.0 -54.7 155.8	34 22.3 -54.2 154.8	33 58.8 -53.8 153.8
27°	34 32.3 -55.6 158.3	34 11.8 -55.3 157.3	33 50.3 -54.8 156.3	33 28.1 -54.4 155.3	33 05.0 -54.0 154.4
28°	33 36.7 -55.8 158.7	33 16.5 -55.3 157.8	32 55.5 -54.9 156.8	32 33.7 -54.5 155.8	32 11.0 -54.1 154.9
29°	32 40.9 -55.8 159.2	32 21.2 -55.4 158.2	32 00.6 -55.0 157.3	31 39.2 -54.6 156.3	31 16.9 -54.2 155.4

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	55 13.5 -44.8 132.2	54 32.8 -44.1 130.9	53 51.3 -43.3 129.7	53 09.1 -42.6 128.5	52 26.2 -42.0 127.3
1°	54 28.7 -45.4 133.3	53 48.7 -44.7 132.1	53 08.0 -44.0 130.8	52 26.5 -43.3 129.6	51 44.2 -42.6 128.5
2°	53 43.3 -46.1 134.5	53 04.0 -45.3 133.2	52 24.0 -44.6 132.0	51 43.2 -44.0 130.8	51 01.6 -43.2 129.6
3°	52 57.2 -46.6 135.5	52 18.7 -45.9 134.3	51 39.4 -45.2 133.0	50 59.2 -44.5 131.9	50 18.4 -43.9 130.7
4°	52 10.6 -47.1 136.6	51 32.8 -46.4 135.3	50 54.2 -45.8 134.1	50 14.7 -45.0 132.9	49 34.5 -44.4 131.8
5°	51 23.5 -47.6 137.6	50 46.4 -46.9 136.3	50 08.4 -46.2 135.1	49 29.7 -45.6 133.9	48 50.1 -44.9 132.8
6°	50 35.9 -48.1 138.5	49 59.5 -47.4 137.3	49 22.2 -46.8 136.1	48 44.1 -46.1 134.9	48 05.2 -45.4 133.8
7°	49 47.8 -48.5 139.5	49 12.1 -47.9 138.2	48 35.4 -47.2 137.1	47 58.0 -46.6 135.9	47 19.8 -46.0 134.8
8°	48 59.3 -48.9 140.4	48 24.2 -48.3 139.2	47 48.2 -47.6 138.0	47 11.4 -47.0 136.8	46 33.8 -46.3 135.7
9°	48 10.4 -49.3 141.2	47 35.9 -48.6 140.1	47 00.6 -48.0 138.9	46 24.4 -47.4 137.7	45 47.5 -46.8 136.6
10°	47 21.1 -49.7 142.1	46 47.3 -49.1 140.9	46 12.6 -48.5 139.8	45 37.0 -47.8 138.6	45 00.7 -47.2 137.5
11°	46 31.4 -50.0 142.9	45 58.2 -49.4 141.7	45 24.1 -48.8 140.6	44 49.2 -48.2 139.5	44 13.5 -47.6 138.4
12°	45 41.4 -50.3 143.7	45 08.8 -49.7 142.6	44 35.3 -49.1 141.4	44 01.0 -48.5 140.3	43 25.9 -48.0 139.2
13°	44 51.1 -50.6 144.5	44 19.1 -50.1 143.3	43 46.2 -49.5 142.2	43 12.5 -48.9 141.1	42 37.9 -48.3 140.1
14°	44 00.5 -51.0 145.2	43 29.0 -50.3 144.1	42 56.7 -49.8 143.0	42 23.6 -49.2 141.9	41 49.6 -48.6 140.9
15°	43 09.5 -51.2 146.0	42 38.7 -50.7 144.9	42 06.9 -50.0 143.8	41 34.4 -49.5 142.7	41 01.0 -48.9 141.6
16°	42 18.3 -51.4 146.7	41 48.0 -50.9 145.6	41 16.9 -50.4 144.5	40 44.9 -49.8 143.4	40 12.1 -49.2 142.4
17°	41 26.9 -51.7 147.4	40 57.1 -51.1 146.3	40 26.5 -50.6 145.2	39 55.1 -50.1 144.2	39 22.9 -49.5 143.1
18°	40 35.2 -51.9 148.0	40 06.0 -51.4 147.0	39 35.9 -50.8 145.9	39 05.0 -50.3 144.9	38 33.4 -49.8 143.9
19°	39 43.3 -52.2 148.7	39 14.6 -51.6 147.6	38 45.1 -51.1 146.6	38 14.7 -50.5 145.6	37 43.6 -50.0 144.6
20°	38 51.1 -52.3 149.3	38 23.0 -51.8 148.3	37 54.0 -51.3 147.3	37 24.2 -50.8 146.3	36 53.6 -50.3 145.3
21°	37 58.8 -52.5 150.0	37 31.2 -52.1 148.9	37 02.7 -51.5 147.9	36 33.4 -51.0 146.9	36 03.3 -50.4 146.0
22°	37 06.3 -52.8 150.6	36 39.1 -52.2 149.6	36 11.2 -51.8 148.6	35 42.4 -51.2 147.6	35 12.9 -50.7 146.6
23°	36 13.5 -52.9 151.2	35 46.9 -52.4 150.2	35 19.4 -51.9 149.2	34 51.2 -51.4 148.2	34 22.2 -50.9 147.3
24°	35 20.6 -53.0 151.8	34 54.5 -52.6 150.8	34 27.5 -52.0 149.8	33 59.8 -51.6 148.8	33 31.3 -51.1 147.9
25°	34 27.6 -53.2 152.3	34 01.9 -52.7 151.4	33 35.5 -52.3 150.4	33 08.2 -51.7 149.5	32 40.2 -51.3 148.5
26°	33 34.4 -53.4 152.9	33 09.2 -52.9 151.9	32 43.2 -52.4 151.0	32 16.5 -52.0 150.1	31 48.9 -51.4 149.2
27°	32 41.0 -53.5 153.4	32 16.3 -53.0 152.5	31 50.8 -52.6 151.6	31 24.5 -52.1 150.7	30 57.5 -51.6 149.8
28°	31 47.5 -53.6 154.0	31 23.3 -53.2 153.0	30 58.2 -52.7 152.1	30 32.4 -52.2 151.2	30 05.9 -51.8 150.3
29°	30 53.9 -53.7 154.5	30 30.1 -53.3 153.6	30 05.5 -52.8 152.7	29 40.2 -52.4 151.8	29 14.1 -51.9 150.9

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	51 42.6 -41.3 126.2	50 58.4 -40.6 125.1	50 13.7 -40.0 124.1	49 28.3 -39.3 123.1	48 42.5 -38.8 122.1
1°	51 01.3 -41.9 127.4	50 17.8 -41.3 126.3	49 33.7 -40.7 125.2	48 49.0 -40.1 124.2	48 03.7 -39.4 123.2
2°	50 19.4 -42.6 128.5	49 36.5 -41.9 127.4	48 53.0 -41.3 126.4	48 08.9 -40.6 125.3	47 24.3 -40.1 124.3
3°	49 36.8 -43.2 129.6	48 54.6 -42.6 128.5	48 11.7 -41.9 127.5	47 28.3 -41.3 126.4	46 44.2 -40.7 125.4
4°	48 53.6 -43.7 130.7	48 12.0 -43.1 129.6	47 29.8 -42.5 128.5	46 47.0 -41.9 127.5	46 03.5 -41.2 126.5
5°	48 09.9 -44.3 131.7	47 28.9 -43.6 130.6	46 47.3 -43.0 129.6	46 05.1 -42.4 128.5	45 22.3 -41.9 127.5
6°	47 25.6 -44.8 132.7	46 45.3 -44.2 131.6	46 04.3 -43.6 130.6	45 22.7 -43.0 129.5	44 40.4 -42.3 128.6
7°	46 40.8 -45.3 133.7	46 01.1 -44.7 132.6	45 20.7 -44.0 131.6	44 39.7 -43.4 130.5	43 58.1 -42.9 129.5
8°	45 55.5 -45.7 134.6	45 16.4 -45.1 133.6	44 36.7 -44.5 132.5	43 56.3 -43.9 131.5	43 15.2 -43.3 130.5
9°	45 09.8 -46.2 135.5	44 31.3 -45.6 134.5	43 52.2 -45.0 133.4	43 12.4 -44.4 132.4	42 31.9 -43.8 131.5
10°	44 23.6 -46.6 136.4	43 45.7 -46.0 135.4	43 07.2 -45.4 134.4	42 28.0 -44.8 133.4	41 48.1 -44.2 132.4
11°	43 37.0 -47.0 137.3	42 59.7 -46.3 136.3	42 21.8 -45.8 135.3	41 43.2 -45.2 134.3	41 03.9 -44.6 133.3
12°	42 50.0 -47.4 138.2	42 13.4 -46.8 137.1	41 36.0 -46.2 136.1	40 58.0 -45.6 135.1	40 19.3 -45.0 134.2
13°	42 02.6 -47.7 139.0	41 26.6 -47.1 138.0	40 49.8 -46.5 137.0	40 12.4 -46.0 136.0	39 34.3 -45.4 135.0
14°	41 14.9 -48.0 139.8	40 39.5 -47.5 138.8	40 03.3 -46.9 137.8	39 26.4 -46.3 136.8	38 48.9 -45.8 135.9
15°	40 26.9 -48.4 140.6	39 52.0 -47.8 139.6	39 16.4 -47.2 138.6	38 40.1 -46.6 137.6	38 03.1 -46.1 136.7
16°	39 38.5 -48.6 141.4	39 04.2 -48.1 140.4	38 29.2 -47.5 139.4	37 53.5 -47.0 138.4	37 17.0 -46.4 137.5
17°	38 49.9 -49.0 142.1	38 16.1 -48.4 141.1	37 41.7 -47.9 140.2	37 06.5 -47.3 139.2	36 30.6 -46.7 138.3
18°	38 00.9 -49.2 142.9	37 27.7 -48.6 141.9	36 53.8 -48.1 140.9	36 19.2 -47.6 140.0	35 43.9 -47.0 139.1
19°	37 11.7 -49.5 143.6	36 39.1 -49.0 142.6	36 05.7 -48.4 141.7	35 31.6 -47.8 140.7	34 56.9 -47.3 139.8
20°	36 22.2 -49.7 144.3	35 50.1 -49.1 143.3	35 17.3 -48.6 142.4	34 43.8 -48.1 141.5	34 09.6 -47.6 140.6
21°	35 32.5 -49.9 145.0	35 01.0 -49.5 144.0	34 28.7 -48.9 143.1	33 55.7 -48.3 142.2	33 22.0 -47.8 141.3
22°	34 42.6 -50.2 145.7	34 11.5 -49.6 144.7	33 39.8 -49.1 143.8	33 07.4 -48.6 142.9	32 34.2 -48.0 142.0
23°	33 52.4 -50.4 146.3	33 21.9 -49.9 145.4	32 50.7 -49.4 144.5	32 18.8 -48.9 143.6	31 46.2 -48.3 142.7
24°	33 02.0 -50.5 147.0	32 32.0 -50.0 146.1	32 01.3 -49.5 145.2	31 29.9 -49.0 144.3	30 57.9 -48.5 143.4
25°	32 11.5 -50.8 147.6	31 42.0 -50.3 146.7	31 11.8 -49.8 145.8	30 40.9 -49.2 145.0	30 09.4 -48.7 144.1
26°	31 20.7 -51.0 148.3	30 51.7 -50.4 147.4	30 22.0 -49.9 146.5	29 51.7 -49.4 145.6	29 20.7 -49.0 144.8
27°	30 29.7 -51.1 148.9	30 01.3 -50.6 148.0	29 32.1 -50.1 147.1	29 02.3 -49.7 146.3	28 31.7 -49.1 145.5
28°	29 38.6 -51.3 149.5	29 10.7 -50.8 148.6	28 42.0 -50.3 147.8	28 12.6 -49.7 146.9	27 42.6 -49.2 146.1
29°	28 47.3 -51.4 150.1	28 19.9 -51.0 149.2	27 51.7 -50.5 148.4	27 22.9 -50.0 147.6	26 53.4 -49.5 146.7

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	47 56.2 -38.2 121.1	47 09.4 -37.6 120.2	46 22.2 -37.1 119.3	45 34.6 -36.6 118.4	44 46.5 -36.0 117.6
1°	47 18.0 -38.9 122.3	46 31.8 -38.3 121.3	45 45.1 -37.7 120.4	44 58.0 -37.2 119.5	44 10.5 -36.7 118.7
2°	46 39.1 -39.5 123.4	45 53.5 -38.9 122.4	45 07.4 -38.4 121.5	44 20.8 -37.8 120.6	43 33.8 -37.3 119.8
3°	45 59.6 -40.1 124.5	45 14.6 -39.6 123.5	44 29.0 -39.0 122.6	43 43.0 -38.5 121.7	42 56.5 -37.9 120.9
4°	45 19.5 -40.6 125.5	44 35.0 -40.1 124.6	43 50.0 -39.5 123.7	43 04.5 -39.0 122.8	42 18.6 -38.5 121.9
5°	44 38.9 -41.3 126.6	43 54.9 -40.6 125.6	43 10.5 -40.1 124.7	42 25.5 -39.5 123.8	41 40.1 -39.0 122.9
6°	43 57.6 -41.7 127.6	43 14.3 -41.2 126.6	42 30.4 -40.7 125.7	41 46.0 -40.1 124.8	41 01.1 -39.5 124.0
7°	43 15.9 -42.3 128.6	42 33.1 -41.7 127.6	41 49.7 -41.1 126.7	41 05.9 -40.6 125.8	40 21.6 -40.1 124.9
8°	42 33.6 -42.7 129.5	41 51.4 -42.2 128.6	41 08.6 -41.6 127.7	40 25.3 -41.0 126.8	39 41.5 -40.5 125.9
9°	41 50.9 -43.2 130.5	41 09.2 -42.6 129.6	40 27.0 -42.1 128.6	39 44.3 -41.5 127.7	39 01.0 -41.0 126.9
10°	41 07.7 -43.7 131.4	40 26.6 -43.1 130.5	39 44.9 -42.5 129.6	39 02.8 -42.0 128.7	38 20.0 -41.4 127.8
11°	40 24.0 -44.0 132.3	39 43.5 -43.5 131.4	39 02.4 -42.9 130.5	38 20.8 -42.4 129.6	37 38.6 -41.8 128.7
12°	39 40.0 -44.5 133.2	39 00.0 -43.8 132.3	38 19.5 -43.3 131.4	37 38.4 -42.7 130.5	36 56.8 -42.2 129.6
13°	38 55.5 -44.8 134.1	38 16.2 -44.3 133.2	37 36.2 -43.7 132.3	36 55.7 -43.2 131.4	36 14.6 -42.6 130.5
14°	38 10.7 -45.2 134.9	37 31.9 -44.6 134.0	36 52.5 -44.1 133.1	36 12.5 -43.5 132.2	35 32.0 -43.0 131.4
15°	37 25.5 -45.5 135.8	36 47.3 -45.0 134.9	36 08.4 -44.4 134.0	35 29.0 -43.9 133.1	34 49.0 -43.3 132.2
16°	36 40.0 -45.9 136.6	36 02.3 -45.3 135.7	35 24.0 -44.8 134.8	34 45.1 -44.2 133.9	34 05.7 -43.7 133.1
17°	35 54.1 -46.1 137.4	35 17.0 -45.6 136.5	34 39.2 -45.0 135.6	34 00.9 -44.5 134.7	33 22.0 -44.0 133.9
18°	35 08.0 -46.5 138.2	34 31.4 -45.9 137.3	33 54.2 -45.4 136.4	33 16.4 -44.9 135.5	32 38.0 -44.3 134.7
19°	34 21.5 -46.8 138.9	33 45.5 -46.3 138.1	33 08.8 -45.7 137.2	32 31.5 -45.1 136.3	31 53.7 -44.6 135.5
20°	33 34.7 -47.0 139.7	32 59.2 -46.4 138.8	32 23.1 -45.9 138.0	31 46.4 -45.4 137.1	31 09.1 -44.8 136.3
21°	32 47.7 -47.3 140.4	32 12.8 -46.8 139.6	31 37.2 -46.2 138.7	31 01.0 -45.7 137.9	30 24.3 -45.2 137.1
22°	32 00.4 -47.5 141.2	31 26.0 -47.0 140.3	30 51.0 -46.5 139.5	30 15.3 -45.9 138.6	29 39.1 -45.4 137.8
23°	31 12.9 -47.7 141.9	30 39.0 -47.2 141.0	30 04.5 -46.7 140.2	29 29.4 -46.2 139.4	28 53.7 -45.6 138.6
24°	30 25.2 -48.0 142.6	29 51.8 -47.5 141.7	29 17.8 -46.9 140.9	28 43.2 -46.4 140.1	28 08.1 -45.9 139.3
25°	29 37.2 -48.2 143.3	29 04.3 -47.6 142.4	28 30.9 -47.2 141.6	27 56.8 -46.6 140.8	27 22.2 -46.1 140.0
26°	28 49.0 -48.4 144.0	28 16.7 -47.9 143.1	27 43.7 -47.3 142.3	27 10.2 -46.8 141.5	26 36.1 -46.3 140.8
27°	28 00.6 -48.6 144.6	27 28.8 -48.1 143.8	26 56.4 -47.6 143.0	26 23.4 -47.1 142.2	25 49.8 -46.5 141.5
28°	27 12.0 -48.8 145.3	26 40.7 -48.2 144.5	26 08.8 -47.7 143.7	25 36.3 -47.2 142.9	25 03.3 -46.7 142.2
29°	26 23.2 -48.9 145.9	25 52.5 -48.5 145.2	25 21.1 -47.9 144.4	24 49.1 -47.4 143.6	24 16.6 -46.9 142.9

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	43 58.2 -35.6 116.7	43 09.4 -35.1 115.9	42 20.3 -34.6 115.1	41 31.0 -34.2 114.4	40 41.3 -33.8 113.6
1°	43 22.6 -36.2 117.8	42 34.3 -35.7 117.0	41 45.7 -35.2 116.2	40 56.8 -34.8 115.5	40 07.5 -34.3 114.7
2°	42 46.4 -36.8 118.9	41 58.6 -36.3 118.1	41 10.5 -35.8 117.3	40 22.0 -35.4 116.5	39 33.2 -34.9 115.8
3°	42 09.6 -37.4 120.0	41 22.3 -36.9 119.2	40 34.7 -36.5 118.4	39 46.6 -35.9 117.6	38 58.3 -35.5 116.8
4°	41 32.2 -37.9 121.1	40 45.4 -37.4 120.2	39 58.2 -36.9 119.4	39 10.7 -36.5 118.6	38 22.8 -36.0 117.9
5°	40 54.3 -38.5 122.1	40 08.0 -38.0 121.3	39 21.3 -37.5 120.4	38 34.2 -37.0 119.7	37 46.8 -36.5 118.9
6°	40 15.8 -39.0 123.1	39 30.0 -38.5 122.3	38 43.8 -38.0 121.5	37 57.2 -37.5 120.7	37 10.3 -37.1 119.9
7°	39 36.8 -39.6 124.1	38 51.5 -39.0 123.3	38 05.8 -38.5 122.4	37 19.7 -38.0 121.6	36 33.2 -37.5 120.9
8°	38 57.2 -39.9 125.1	38 12.5 -39.4 124.2	37 27.3 -38.9 123.4	36 41.7 -38.4 122.6	35 55.7 -37.9 121.8
9°	38 17.3 -40.5 126.0	37 33.1 -40.0 125.2	36 48.4 -39.4 124.4	36 03.3 -38.9 123.6	35 17.8 -38.4 122.8
10°	37 36.8 -40.8 127.0	36 53.1 -40.3 126.1	36 09.0 -39.8 125.3	35 24.4 -39.3 124.5	34 39.4 -38.8 123.7
11°	36 56.0 -41.3 127.9	36 12.8 -40.8 127.0	35 29.2 -40.3 126.2	34 45.1 -39.8 125.4	34 00.6 -39.3 124.7
12°	36 14.7 -41.7 128.8	35 32.0 -41.1 127.9	34 48.9 -40.6 127.1	34 05.3 -40.1 126.3	33 21.3 -39.6 125.6
13°	35 33.0 -42.1 129.7	34 50.9 -41.6 128.8	34 08.3 -41.0 128.0	33 25.2 -40.5 127.2	32 41.7 -40.0 126.5
14°	34 50.9 -42.4 130.5	34 09.3 -41.9 129.7	33 27.3 -41.4 128.9	32 44.7 -40.9 128.1	32 01.7 -40.4 127.3
15°	34 08.5 -42.8 131.4	33 27.4 -42.2 130.6	32 45.9 -41.8 129.8	32 03.8 -41.2 129.0	31 21.3 -40.7 128.2
16°	33 25.7 -43.2 132.2	32 45.2 -42.6 131.4	32 04.1 -42.0 130.6	31 22.6 -41.5 129.8	30 40.6 -41.0 129.1
17°	32 42.5 -43.4 133.1	32 02.6 -43.0 132.3	31 22.1 -42.4 131.5	30 41.1 -41.9 130.7	29 59.6 -41.4 129.9
18°	31 59.1 -43.8 133.9	31 19.6 -43.2 133.1	30 39.7 -42.7 132.3	29 59.2 -42.2 131.5	29 18.2 -41.6 130.7
19°	31 15.3 -44.0 134.7	30 36.4 -43.5 133.9	29 57.0 -43.0 133.1	29 17.0 -42.5 132.3	28 36.6 -42.0 131.6
20°	30 31.3 -44.4 135.5	29 52.9 -43.8 134.7	29 14.0 -43.3 133.9	28 34.5 -42.7 133.1	27 54.6 -42.2 132.4
21°	29 46.9 -44.6 136.3	29 09.1 -44.1 135.5	28 30.7 -43.6 134.7	27 51.8 -43.1 133.9	27 12.4 -42.6 133.2
22°	29 02.3 -44.8 137.0	28 25.0 -44.3 136.2	27 47.1 -43.8 135.5	27 08.7 -43.3 134.7	26 29.8 -42.7 134.0
23°	28 17.5 -45.2 137.8	27 40.7 -44.6 137.0	27 03.3 -44.1 136.2	26 25.4 -43.5 135.5	25 47.1 -43.1 134.8
24°	27 32.3 -45.3 138.5	26 56.1 -44.9 137.8	26 19.2 -44.3 137.0	25 41.9 -43.8 136.3	25 04.0 -43.2 135.5
25°	26 47.0 -45.6 139.3	26 11.2 -45.0 138.5	25 34.9 -44.5 137.8	24 58.1 -44.0 137.0	24 20.8 -43.5 136.3
26°	26 01.4 -45.8 140.0	25 26.2 -45.3 139.2	24 50.4 -44.7 138.5	24 14.1 -44.2 137.8	23 37.3 -43.7 137.0
27°	25 15.6 -46.0 140.7	24 40.9 -45.4 140.0	24 05.7 -45.0 139.2	23 29.9 -44.4 138.5	22 53.6 -43.9 137.8
28°	24 29.6 -46.1 141.4	23 55.5 -45.7 140.7	23 20.7 -45.1 139.9	22 45.5 -44.6 139.2	22 09.7 -44.1 138.5
29°	23 43.5 -46.4 142.1	23 09.8 -45.9 141.4	22 35.6 -45.4 140.7	22 00.9 -44.9 140.0	21 25.6 -44.3 139.3

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	39 51.3 -33.3 112.9	39 01.1 -32.9 112.2	38 10.7 -32.6 111.5	37 19.9 -32.1 110.8	36 29.0 -31.8 110.2
1°	39 18.0 -33.9 114.0	38 28.2 -33.5 113.3	37 38.1 -33.1 112.6	36 47.8 -32.8 111.9	35 57.2 -32.4 111.2
2°	38 44.1 -34.5 115.1	37 54.7 -34.1 114.3	37 05.0 -33.7 113.6	36 15.0 -33.2 112.9	35 24.8 -32.8 112.3
3°	38 09.6 -35.0 116.1	37 20.6 -34.6 115.4	36 31.3 -34.1 114.7	35 41.8 -33.8 114.0	34 52.0 -33.4 113.3
4°	37 34.6 -35.6 117.1	36 46.0 -35.1 116.4	35 57.2 -34.7 115.7	35 08.0 -34.3 115.0	34 18.6 -33.9 114.3
5°	36 59.0 -36.1 118.1	36 10.9 -35.6 117.4	35 22.5 -35.2 116.7	34 33.7 -34.7 116.0	33 44.7 -34.4 115.3
6°	36 22.9 -36.5 119.1	35 35.3 -36.1 118.4	34 47.3 -35.7 117.7	33 59.0 -35.3 117.0	33 10.3 -34.8 116.3
7°	35 46.4 -37.0 120.1	34 59.2 -36.6 119.4	34 11.6 -36.1 118.6	33 23.7 -35.7 117.9	32 35.5 -35.2 117.2
8°	35 09.4 -37.5 121.1	34 22.6 -37.0 120.3	33 35.5 -36.6 119.6	32 48.0 -36.1 118.9	32 00.3 -35.7 118.2
9°	34 31.9 -37.9 122.0	33 45.6 -37.5 121.3	32 58.9 -37.0 120.6	32 11.9 -36.5 119.8	31 24.6 -36.1 119.1
10°	33 54.0 -38.4 123.0	33 08.1 -37.8 122.2	32 21.9 -37.3 121.5	31 35.4 -36.9 120.8	30 48.5 -36.5 120.1
11°	33 15.6 -38.7 123.9	32 30.3 -38.3 123.1	31 44.6 -37.8 122.4	30 58.5 -37.3 121.7	30 12.0 -36.8 121.0
12°	32 36.9 -39.2 124.8	31 52.0 -38.6 124.1	31 06.8 -38.2 123.3	30 21.2 -37.7 122.6	29 35.2 -37.3 121.9
13°	31 57.7 -39.5 125.7	31 13.4 -39.0 125.0	30 28.6 -38.5 124.2	29 43.5 -38.1 123.5	28 57.9 -37.6 122.8
14°	31 18.2 -39.8 126.6	30 34.4 -39.4 125.8	29 50.1 -38.9 125.1	29 05.4 -38.4 124.4	28 20.3 -37.9 123.7
15°	30 38.4 -40.2 127.5	29 55.0 -39.7 126.7	29 11.2 -39.2 126.0	28 27.0 -38.7 125.3	27 42.4 -38.2 124.6
16°	29 58.2 -40.6 128.3	29 15.3 -40.0 127.6	28 32.0 -39.6 126.8	27 48.3 -39.1 126.1	27 04.2 -38.6 125.4
17°	29 17.6 -40.8 129.2	28 35.3 -40.4 128.4	27 52.4 -39.8 127.7	27 09.2 -39.3 127.0	26 25.6 -38.9 126.3
18°	28 36.8 -41.2 130.0	27 54.9 -40.6 129.3	27 12.6 -40.2 128.5	26 29.9 -39.7 127.8	25 46.7 -39.2 127.1
19°	27 55.6 -41.4 130.8	27 14.3 -41.0 130.1	26 32.4 -40.4 129.4	25 50.2 -39.9 128.7	25 07.5 -39.4 128.0
20°	27 14.2 -41.7 131.6	26 33.3 -41.2 130.9	25 52.0 -40.7 130.2	25 10.3 -40.3 129.5	24 28.1 -39.7 128.8
21°	26 32.5 -42.0 132.4	25 52.1 -41.5 131.7	25 11.3 -41.0 131.0	24 30.0 -40.4 130.3	23 48.4 -40.0 129.6
22°	25 50.5 -42.3 133.2	25 10.6 -41.7 132.5	24 30.3 -41.2 131.8	23 49.6 -40.8 131.1	23 08.4 -40.2 130.4
23°	25 08.2 -42.5 134.0	24 28.9 -42.0 133.3	23 49.1 -41.5 132.6	23 08.8 -40.9 131.9	22 28.2 -40.5 131.3
24°	24 25.7 -42.7 134.8	23 46.9 -42.2 134.1	23 07.6 -41.7 133.4	22 27.9 -41.2 132.7	21 47.7 -40.7 132.1
25°	23 43.0 -43.0 135.6	23 04.7 -42.5 134.9	22 25.9 -41.9 134.2	21 46.7 -41.4 133.5	21 07.0 -40.9 132.8
26°	23 00.0 -43.2 136.3	22 22.2 -42.6 135.6	21 44.0 -42.2 135.0	21 05.3 -41.7 134.3	20 26.1 -41.1 133.6
27°	22 16.8 -43.3 137.1	21 39.6 -42.9 136.4	21 01.8 -42.3 135.7	20 23.6 -41.8 135.1	19 45.0 -41.3 134.4
28°	21 33.5 -43.6 137.8	20 56.7 -43.0 137.2	20 19.5 -42.5 136.5	19 41.8 -42.0 135.8	19 03.7 -41.5 135.2
29°	20 49.9 -43.8 138.6	20 13.7 -43.3 137.9	19 37.0 -42.8 137.2	18 59.8 -42.2 136.6	18 22.2 -41.7 135.9

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	35 37.9 -31.5 109.5	34 46.5 -31.1 108.9	33 55.0 -30.8 108.3	33 03.2 -30.5 107.7	32 11.3 -30.2 107.1
1°	35 06.4 -32.0 110.6	34 15.4 -31.7 109.9	33 24.2 -31.4 109.3	32 32.7 -31.0 108.7	31 41.1 -30.7 108.1
2°	34 34.4 -32.5 111.6	33 43.7 -32.1 111.0	32 52.8 -31.8 110.3	32 01.7 -31.4 109.7	31 10.4 -31.1 109.1
3°	34 01.9 -33.0 112.6	33 11.6 -32.7 112.0	32 21.0 -32.3 111.3	31 30.3 -32.0 110.7	30 39.3 -31.6 110.1
4°	33 28.9 -33.5 113.6	32 38.9 -33.1 113.0	31 48.7 -32.7 112.3	30 58.3 -32.4 111.7	30 07.7 -32.0 111.1
5°	32 55.4 -34.0 114.6	32 05.8 -33.5 114.0	31 16.0 -33.2 113.3	30 25.9 -32.8 112.7	29 35.7 -32.5 112.1
6°	32 21.4 -34.4 115.6	31 32.3 -34.0 114.9	30 42.8 -33.6 114.3	29 53.1 -33.2 113.6	29 03.2 -32.9 113.0
7°	31 47.0 -34.8 116.6	30 58.3 -34.5 115.9	30 09.2 -34.0 115.2	29 19.9 -33.7 114.6	28 30.3 -33.3 114.0
8°	31 12.2 -35.3 117.5	30 23.8 -34.8 116.8	29 35.2 -34.5 116.2	28 46.2 -34.0 115.5	27 57.0 -33.6 114.9
9°	30 36.9 -35.6 118.5	29 49.0 -35.2 117.8	29 00.7 -34.8 117.1	28 12.2 -34.4 116.5	27 23.4 -34.0 115.8
10°	30 01.3 -36.0 119.4	29 13.8 -35.7 118.7	28 25.9 -35.2 118.1	27 37.8 -34.8 117.4	26 49.4 -34.4 116.8
11°	29 25.3 -36.5 120.3	28 38.1 -35.9 119.6	27 50.7 -35.5 119.0	27 03.0 -35.1 118.3	26 15.0 -34.7 117.7
12°	28 48.8 -36.7 121.2	28 02.2 -36.4 120.5	27 15.2 -35.9 119.9	26 27.9 -35.5 119.2	25 40.3 -35.1 118.6
13°	28 12.1 -37.2 122.1	27 25.8 -36.7 121.4	26 39.3 -36.3 120.8	25 52.4 -35.8 120.1	25 05.2 -35.4 119.5
14°	27 34.9 -37.4 123.0	26 49.1 -37.0 122.3	26 03.0 -36.5 121.7	25 16.6 -36.1 121.0	24 29.8 -35.7 120.4
15°	26 57.5 -37.8 123.9	26 12.1 -37.3 123.2	25 26.5 -36.9 122.6	24 40.5 -36.5 121.9	23 54.1 -35.9 121.3
16°	26 19.7 -38.1 124.8	25 34.8 -37.6 124.1	24 49.6 -37.2 123.4	24 04.0 -36.7 122.8	23 18.2 -36.3 122.1
17°	25 41.6 -38.4 125.6	24 57.2 -37.9 124.9	24 12.4 -37.4 124.3	23 27.3 -37.0 123.6	22 41.9 -36.6 123.0
18°	25 03.2 -38.7 126.5	24 19.3 -38.3 125.8	23 35.0 -37.8 125.1	22 50.3 -37.3 124.5	22 05.3 -36.8 123.9
19°	24 24.5 -39.0 127.3	23 41.0 -38.4 126.6	22 57.2 -38.0 126.0	22 13.0 -37.5 125.3	21 28.5 -37.1 124.7
20°	23 45.5 -39.2 128.1	23 02.6 -38.8 127.5	22 19.2 -38.2 126.8	21 35.5 -37.8 126.2	20 51.4 -37.3 125.6
21°	23 06.3 -39.5 129.0	22 23.8 -39.0 128.3	21 41.0 -38.5 127.7	20 57.7 -38.0 127.0	20 14.1 -37.5 126.4
22°	22 26.8 -39.7 129.8	21 44.8 -39.2 129.1	21 02.5 -38.8 128.5	20 19.7 -38.3 127.8	19 36.6 -37.8 127.2
23°	21 47.1 -40.0 130.6	21 05.6 -39.5 129.9	20 23.7 -39.0 129.3	19 41.4 -38.4 128.7	18 58.8 -38.0 128.0
24°	21 07.1 -40.2 131.4	20 26.1 -39.6 130.7	19 44.7 -39.1 130.1	19 03.0 -38.7 129.5	18 20.8 -38.2 128.9
25°	20 26.9 -40.4 132.2	19 46.5 -39.9 131.5	19 05.6 -39.4 130.9	18 24.3 -38.9 130.3	17 42.6 -38.4 129.7
26°	19 46.5 -40.6 133.0	19 06.6 -40.1 132.3	18 26.2 -39.6 131.7	17 45.4 -39.1 131.1	17 04.2 -38.6 130.5
27°	19 05.9 -40.8 133.8	18 26.5 -40.3 133.1	17 46.6 -39.8 132.5	17 06.3 -39.3 131.9	16 25.6 -38.8 131.3
28°	18 25.1 -40.9 134.5	17 46.2 -40.5 133.9	17 06.8 -40.0 133.3	16 27.0 -39.5 132.7	15 46.8 -38.9 132.1
29°	17 44.2 -41.2 135.3	17 05.7 -40.6 134.7	16 26.8 -40.1 134.1	15 47.5 -39.6 133.5	15 07.9 -39.1 132.9

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	31 19.3 -29.9 106.5	30 27.1 -29.7 105.9	29 34.7 -29.4 105.3	28 42.2 -29.1 104.8	27 49.5 -28.8 104.2
1°	30 49.4 -30.4 107.5	29 57.4 -30.1 106.9	29 05.3 -29.8 106.3	28 13.1 -29.6 105.8	27 20.7 -29.3 105.2
2°	30 19.0 -30.9 108.5	29 27.3 -30.5 107.9	28 35.5 -30.3 107.3	27 43.5 -30.0 106.8	26 51.4 -29.7 106.2
3°	29 48.1 -31.3 109.5	28 56.8 -31.0 108.9	28 05.2 -30.6 108.3	27 13.5 -30.3 107.7	26 21.7 -30.1 107.2
4°	29 16.8 -31.7 110.5	28 25.8 -31.4 109.9	27 34.6 -31.1 109.3	26 43.2 -30.8 108.7	25 51.6 -30.5 108.2
5°	28 45.1 -32.1 111.4	27 54.4 -31.8 110.8	27 03.5 -31.5 110.3	26 12.4 -31.1 109.7	25 21.1 -30.8 109.1
6°	28 13.0 -32.5 112.4	27 22.6 -32.1 111.8	26 32.0 -31.8 111.2	25 41.3 -31.6 110.6	24 50.3 -31.2 110.1
7°	27 40.5 -32.9 113.4	26 50.5 -32.6 112.7	26 00.2 -32.2 112.2	25 09.7 -31.8 111.6	24 19.1 -31.6 111.0
8°	27 07.6 -33.3 114.3	26 17.9 -32.9 113.7	25 28.0 -32.5 113.1	24 37.9 -32.2 112.5	23 47.5 -31.8 111.9
9°	26 34.3 -33.6 115.2	25 45.0 -33.2 114.6	24 55.5 -32.9 114.0	24 05.7 -32.6 113.4	23 15.7 -32.2 112.9
10°	26 00.7 -34.0 116.2	25 11.8 -33.6 115.5	24 22.6 -33.3 114.9	23 33.1 -32.8 114.3	22 43.5 -32.5 113.8
11°	25 26.7 -34.3 117.1	24 38.2 -34.0 116.5	23 49.3 -33.5 115.9	23 00.3 -33.2 115.3	22 11.0 -32.8 114.7
12°	24 52.4 -34.7 118.0	24 04.2 -34.2 117.4	23 15.8 -33.9 116.8	22 27.1 -33.5 116.2	21 38.2 -33.1 115.6
13°	24 17.7 -34.9 118.9	23 30.0 -34.6 118.3	22 41.9 -34.1 117.7	21 53.6 -33.7 117.1	21 05.1 -33.4 116.5
14°	23 42.8 -35.3 119.8	22 55.4 -34.8 119.1	22 07.8 -34.4 118.5	21 19.9 -34.0 117.9	20 31.7 -33.6 117.4
15°	23 07.5 -35.5 120.6	22 20.6 -35.2 120.0	21 33.4 -34.8 119.4	20 45.9 -34.3 118.8	19 58.1 -33.9 118.2
16°	22 32.0 -35.9 121.5	21 45.4 -35.4 120.9	20 58.6 -34.9 120.3	20 11.6 -34.6 119.7	19 24.2 -34.2 119.1
17°	21 56.1 -36.1 122.4	21 10.0 -35.6 121.8	20 23.7 -35.3 121.2	19 37.0 -34.8 120.6	18 50.0 -34.4 120.0
18°	21 20.0 -36.3 123.2	20 34.4 -35.9 122.6	19 48.4 -35.5 122.0	19 02.2 -35.1 121.4	18 15.6 -34.6 120.9
19°	20 43.7 -36.7 124.1	19 58.5 -36.2 123.5	19 12.9 -35.7 122.9	18 27.1 -35.2 122.3	17 41.0 -34.8 121.7
20°	20 07.0 -36.8 124.9	19 22.3 -36.4 124.3	18 37.2 -35.9 123.7	17 51.9 -35.5 123.1	17 06.2 -35.1 122.6
21°	19 30.2 -37.1 125.8	18 45.9 -36.6 125.2	18 01.3 -36.2 124.6	17 16.4 -35.8 124.0	16 31.1 -35.2 123.4
22°	18 53.1 -37.3 126.6	18 09.3 -36.9 126.0	17 25.1 -36.3 125.4	16 40.6 -35.9 124.8	15 55.9 -35.5 124.3
23°	18 15.8 -37.5 127.4	17 32.4 -37.0 126.8	16 48.8 -36.6 126.2	16 04.7 -36.1 125.7	15 20.4 -35.6 125.1
24°	17 38.3 -37.7 128.3	16 55.4 -37.2 127.7	16 12.2 -36.8 127.1	15 28.6 -36.3 126.5	14 44.8 -35.9 125.9
25°	17 00.6 -38.0 129.1	16 18.2 -37.5 128.5	15 35.4 -36.9 127.9	14 52.3 -36.4 127.3	14 08.9 -36.0 126.8
26°	16 22.6 -38.1 129.9	15 40.7 -37.6 129.3	14 58.5 -37.1 128.7	14 15.9 -36.7 128.1	13 32.9 -36.1 127.6
27°	15 44.5 -38.2 130.7	15 03.1 -37.7 130.1	14 21.4 -37.3 129.5	13 39.2 -36.7 129.0	12 56.8 -36.3 128.4
28°	15 06.3 -38.5 131.5	14 25.4 -38.0 130.9	13 44.1 -37.5 130.3	13 02.5 -37.0 129.8	12 20.5 -36.5 129.2
29°	14 27.8 -38.6 132.3	13 47.4 -38.1 131.7	13 06.6 -37.5 131.1	12 25.5 -37.1 130.6	11 44.0 -36.5 130.0

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	26 56.8 -28.7 103.7	26 03.9 -28.4 103.2	25 10.9 -28.2 102.7	24 17.8 -28.0 102.2	23 24.6 -27.8 101.6
1°	26 28.1 -29.0 104.7	25 35.5 -28.9 104.2	24 42.7 -28.6 103.6	23 49.8 -28.4 103.1	22 56.8 -28.2 102.6
2°	25 59.1 -29.5 105.7	25 06.6 -29.1 105.1	24 14.1 -29.0 104.6	23 21.4 -28.7 104.1	22 28.6 -28.5 103.6
3°	25 29.6 -29.8 106.6	24 37.5 -29.6 106.1	23 45.1 -29.3 105.6	22 52.7 -29.1 105.0	22 00.1 -28.8 104.5
4°	24 59.8 -30.2 107.6	24 07.9 -29.9 107.1	23 15.8 -29.6 106.5	22 23.6 -29.3 106.0	21 31.3 -29.1 105.5
5°	24 29.6 -30.5 108.5	23 38.0 -30.3 108.0	22 46.2 -30.0 107.5	21 54.3 -29.8 106.9	21 02.2 -29.5 106.4
6°	23 59.1 -30.9 109.5	23 07.7 -30.5 108.9	22 16.2 -30.3 108.4	21 24.5 -30.0 107.9	20 32.7 -29.7 107.3
7°	23 28.2 -31.2 110.4	22 37.2 -30.9 109.9	21 45.9 -30.6 109.3	20 54.5 -30.3 108.8	20 03.0 -30.1 108.3
8°	22 57.0 -31.5 111.4	22 06.3 -31.3 110.8	21 15.3 -30.9 110.3	20 24.2 -30.6 109.7	19 32.9 -30.3 109.2
9°	22 25.5 -31.9 112.3	21 35.0 -31.5 111.7	20 44.4 -31.2 111.2	19 53.6 -30.9 110.6	19 02.6 -30.5 110.1
10°	21 53.6 -32.1 113.2	21 03.5 -31.8 112.6	20 13.2 -31.4 112.1	19 22.7 -31.1 111.5	18 32.1 -30.9 111.0
11°	21 21.5 -32.5 114.1	20 31.7 -32.1 113.5	19 41.8 -31.8 113.0	18 51.6 -31.4 112.4	18 01.2 -31.0 111.9
12°	20 49.0 -32.7 115.0	19 59.6 -32.3 114.4	19 10.0 -32.0 113.9	18 20.2 -31.7 113.3	17 30.2 -31.4 112.8
13°	20 16.3 -33.0 115.9	19 27.3 -32.7 115.3	18 38.0 -32.3 114.8	17 48.5 -31.9 114.2	16 58.8 -31.5 113.7
14°	19 43.3 -33.2 116.8	18 54.6 -32.8 116.2	18 05.7 -32.5 115.7	17 16.6 -32.1 115.1	16 27.3 -31.8 114.6
15°	19 10.1 -33.6 117.7	18 21.8 -33.1 117.1	17 33.2 -32.7 116.6	16 44.5 -32.4 116.0	15 55.5 -32.0 115.5
16°	18 36.5 -33.7 118.5	17 48.7 -33.4 118.0	17 00.5 -32.9 117.4	16 12.1 -32.5 116.9	15 23.5 -32.2 116.3
17°	18 02.8 -34.0 119.4	17 15.3 -33.6 118.9	16 27.6 -33.2 118.3	15 39.6 -32.8 117.8	14 51.3 -32.4 117.2
18°	17 28.8 -34.2 120.3	16 41.7 -33.8 119.7	15 54.4 -33.4 119.2	15 06.8 -33.0 118.6	14 18.9 -32.6 118.1
19°	16 54.6 -34.4 121.1	16 07.9 -34.0 120.6	15 21.0 -33.6 120.0	14 33.8 -33.2 119.5	13 46.3 -32.7 119.0
20°	16 20.2 -34.6 122.0	15 33.9 -34.1 121.4	14 47.4 -33.8 120.9	14 00.6 -33.3 120.4	13 13.6 -33.0 119.8
21°	15 45.6 -34.8 122.9	14 59.8 -34.4 122.3	14 13.6 -33.9 121.7	13 27.3 -33.6 121.2	12 40.6 -33.1 120.7
22°	15 10.8 -35.0 123.7	14 25.4 -34.6 123.1	13 39.7 -34.1 122.6	12 53.7 -33.6 122.1	12 07.5 -33.2 121.5
23°	14 35.8 -35.2 124.5	13 50.8 -34.7 124.0	13 05.6 -34.3 123.4	12 20.1 -33.9 122.9	11 34.3 -33.4 122.4
24°	14 00.6 -35.4 125.4	13 16.1 -34.9 124.8	12 31.3 -34.5 124.3	11 46.2 -34.0 123.8	11 00.9 -33.6 123.2
25°	13 25.2 -35.5 126.2	12 41.2 -35.1 125.7	11 56.8 -34.5 125.1	11 12.2 -34.1 124.6	10 27.3 -33.7 124.1
26°	12 49.7 -35.7 127.0	12 06.1 -35.2 126.5	11 22.3 -34.8 126.0	10 38.1 -34.3 125.4	9 53.6 -33.8 124.9
27°	12 14.0 -35.8 127.9	11 30.9 -35.3 127.3	10 47.5 -34.8 126.8	10 03.8 -34.4 126.3	9 19.8 -33.9 125.8
28°	11 38.2 -36.0 128.7	10 55.6 -35.5 128.1	10 12.7 -35.0 127.6	9 29.4 -34.5 127.1	8 45.9 -34.0 126.6
29°	11 02.2 -36.1 129.5	10 20.1 -35.6 129.0	9 37.7 -35.1 128.4	8 54.9 -34.6 127.9	8 11.9 -34.1 127.4

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	22 31.3 -27.7 101.1	21 37.9 -27.5 100.7	20 44.4 -27.3 100.2	19 50.8 -27.1 99.7	18 57.2 -27.0 99.2
1°	22 03.6 -27.9 102.1	21 10.4 -27.7 101.6	20 17.1 -27.6 101.1	19 23.7 -27.4 100.6	18 30.2 -27.2 100.2
2°	21 35.7 -28.3 103.1	20 42.7 -28.1 102.6	19 49.5 -27.8 102.1	18 56.3 -27.7 101.6	18 03.0 -27.5 101.1
3°	21 07.4 -28.6 104.0	20 14.6 -28.4 103.5	19 21.7 -28.2 103.0	18 28.6 -27.9 102.5	17 35.5 -27.8 102.0
4°	20 38.8 -28.9 104.9	19 46.2 -28.6 104.4	18 53.5 -28.4 103.9	18 00.7 -28.3 103.4	17 07.7 -28.0 103.0
5°	20 09.9 -29.2 105.9	19 17.6 -29.0 105.4	18 25.1 -28.7 104.9	17 32.4 -28.4 104.4	16 39.7 -28.3 103.9
6°	19 40.7 -29.4 106.8	18 48.6 -29.2 106.3	17 56.4 -29.0 105.8	17 04.0 -28.8 105.3	16 11.4 -28.4 104.8
7°	19 11.3 -29.8 107.7	18 19.4 -29.5 107.2	17 27.4 -29.2 106.7	16 35.2 -28.9 106.2	15 43.0 -28.8 105.7
8°	18 41.5 -30.0 108.7	17 49.9 -29.7 108.1	16 58.2 -29.5 107.6	16 06.3 -29.2 107.1	15 14.2 -28.9 106.6
9°	18 11.5 -30.3 109.6	17 20.2 -30.0 109.0	16 28.7 -29.7 108.5	15 37.1 -29.5 108.0	14 45.3 -29.2 107.5
10°	17 41.2 -30.5 110.5	16 50.2 -30.2 110.0	15 59.0 -29.9 109.4	15 07.6 -29.6 108.9	14 16.1 -29.3 108.4
11°	17 10.7 -30.8 111.4	16 20.0 -30.5 110.9	15 29.1 -30.2 110.3	14 38.0 -29.8 109.8	13 46.8 -29.6 109.3
12°	16 39.9 -31.0 112.3	15 49.5 -30.6 111.8	14 58.9 -30.3 111.2	14 08.2 -30.1 110.7	13 17.2 -29.7 110.2
13°	16 08.9 -31.2 113.2	15 18.9 -30.9 112.6	14 28.6 -30.6 112.1	13 38.1 -30.2 111.6	12 47.5 -29.9 111.1
14°	15 37.7 -31.4 114.1	14 48.0 -31.1 113.5	13 58.0 -30.7 113.0	13 07.9 -30.4 112.5	12 17.6 -30.1 112.0
15°	15 06.3 -31.6 114.9	14 16.9 -31.3 114.4	13 27.3 -31.0 113.9	12 37.5 -30.6 113.4	11 47.5 -30.3 112.9
16°	14 34.7 -31.9 115.8	13 45.6 -31.5 115.3	12 56.3 -31.1 114.8	12 06.9 -30.8 114.3	11 17.2 -30.4 113.8
17°	14 02.8 -32.0 116.7	13 14.1 -31.6 116.2	12 25.2 -31.2 115.7	11 36.1 -30.9 115.2	10 46.8 -30.6 114.7
18°	13 30.8 -32.2 117.6	12 42.5 -31.8 117.0	11 54.0 -31.5 116.5	11 05.2 -31.1 116.0	10 16.2 -30.7 115.5
19°	12 58.6 -32.3 118.4	12 10.7 -32.0 117.9	11 22.5 -31.6 117.4	10 34.1 -31.2 116.9	9 45.5 -30.8 116.4
20°	12 26.3 -32.6 119.3	11 38.7 -32.1 118.8	10 50.9 -31.7 118.3	10 02.9 -31.3 117.8	9 14.7 -30.9 117.3
21°	11 53.7 -32.6 120.2	11 06.6 -32.3 119.6	10 19.2 -31.9 119.1	9 31.6 -31.5 118.6	8 43.8 -31.1 118.1
22°	11 21.1 -32.9 121.0	10 34.3 -32.4 120.5	9 47.3 -32.0 120.0	9 00.1 -31.6 119.5	8 12.7 -31.2 119.0
23°	10 48.2 -33.0 121.9	10 01.9 -32.5 121.4	9 15.3 -32.1 120.9	8 28.5 -31.7 120.4	7 41.5 -31.3 119.9
24°	10 15.2 -33.1 122.7	9 29.4 -32.7 122.2	8 43.2 -32.2 121.7	7 56.8 -31.8 121.2	7 10.2 -31.4 120.7
25°	9 42.1 -33.2 123.6	8 56.7 -32.8 123.1	8 11.0 -32.4 122.6	7 25.0 -31.9 122.1	6 38.8 -31.4 121.6
26°	9 08.9 -33.3 124.4	8 23.9 -32.9 123.9	7 38.6 -32.4 123.4	6 53.1 -32.0 122.9	6 07.4 -31.6 122.4
27°	8 35.6 -33.5 125.2	7 51.0 -33.0 124.7	7 06.2 -32.5 124.3	6 21.1 -32.0 123.8	5 35.8 -31.6 123.3
28°	8 02.1 -33.5 126.1	7 18.0 -33.1 125.6	6 33.7 -32.6 125.1	5 49.1 -32.2 124.6	5 04.2 -31.7 124.2
29°	7 28.6 -33.7 126.9	6 44.9 -33.1 126.4	6 01.1 -32.7 125.9	5 16.9 -32.2 125.5	4 32.5 -31.8 125.0

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	18 03.5 -26.8 98.7	17 09.7 -26.7 98.3	16 15.8 -26.5 97.8	15 21.9 -26.4 97.4	14 28.0 -26.3 96.9
1°	17 36.7 -27.1 99.7	16 43.0 -26.9 99.2	15 49.3 -26.8 98.8	14 55.5 -26.6 98.3	14 01.7 -26.5 97.8
2°	17 09.6 -27.3 100.6	16 16.1 -27.2 100.1	15 22.5 -27.0 99.7	14 28.9 -26.9 99.2	13 35.2 -26.7 98.8
3°	16 42.3 -27.6 101.6	15 48.9 -27.4 101.1	14 55.5 -27.2 100.6	14 02.0 -27.0 100.1	13 08.5 -26.9 99.7
4°	16 14.7 -27.8 102.5	15 21.5 -27.6 102.0	14 28.3 -27.4 101.5	13 35.0 -27.3 101.1	12 41.6 -27.1 100.6
5°	15 46.9 -28.1 103.4	14 53.9 -27.8 102.9	14 00.9 -27.7 102.4	13 07.7 -27.4 102.0	12 14.5 -27.3 101.5
6°	15 18.8 -28.3 104.3	14 26.1 -28.1 103.8	13 33.2 -27.8 103.4	12 40.3 -27.7 102.9	11 47.2 -27.4 102.4
7°	14 50.5 -28.4 105.2	13 58.0 -28.2 104.7	13 05.4 -28.1 104.3	12 12.6 -27.8 103.8	11 19.8 -27.7 103.3
8°	14 22.1 -28.7 106.1	13 29.8 -28.5 105.7	12 37.3 -28.2 105.2	11 44.8 -28.0 104.7	10 52.1 -27.7 104.2
9°	13 53.4 -28.9 107.0	13 01.3 -28.6 106.6	12 09.1 -28.4 106.1	11 16.8 -28.2 105.6	10 24.4 -28.0 105.1
10°	13 24.5 -29.1 107.9	12 32.7 -28.9 107.5	11 40.7 -28.5 107.0	10 48.6 -28.3 106.5	9 56.4 -28.0 106.0
11°	12 55.4 -29.3 108.8	12 03.8 -29.0 108.4	11 12.2 -28.8 107.9	10 20.3 -28.4 107.4	9 28.4 -28.2 106.9
12°	12 26.1 -29.4 109.7	11 34.8 -29.1 109.3	10 43.4 -28.8 108.8	9 51.9 -28.6 108.3	9 00.2 -28.4 107.8
13°	11 56.7 -29.6 110.6	11 05.7 -29.3 110.1	10 14.6 -29.1 109.7	9 23.3 -28.8 109.2	8 31.8 -28.4 108.7
14°	11 27.1 -29.8 111.5	10 36.4 -29.5 111.0	9 45.5 -29.1 110.6	8 54.5 -28.8 110.1	8 03.4 -28.6 109.6
15°	10 57.3 -29.9 112.4	10 06.9 -29.6 111.9	9 16.4 -29.3 111.4	8 25.7 -29.0 111.0	7 34.8 -28.6 110.5
16°	10 27.4 -30.1 113.3	9 37.3 -29.7 112.8	8 47.1 -29.4 112.3	7 56.7 -29.1 111.8	7 06.2 -28.8 111.4
17°	9 57.3 -30.2 114.2	9 07.6 -29.9 113.7	8 17.7 -29.5 113.2	7 27.6 -29.2 112.7	6 37.4 -28.9 112.3
18°	9 27.1 -30.4 115.0	8 37.7 -30.0 114.6	7 48.2 -29.7 114.1	6 58.4 -29.3 113.6	6 08.5 -28.9 113.1
19°	8 56.7 -30.4 115.9	8 07.7 -30.1 115.4	7 18.5 -29.7 115.0	6 29.1 -29.4 114.5	5 39.6 -29.1 114.0
20°	8 26.3 -30.6 116.8	7 37.6 -30.2 116.3	6 48.8 -29.8 115.8	5 59.7 -29.4 115.4	5 10.5 -29.1 114.9
21°	7 55.7 -30.7 117.7	7 07.4 -30.3 117.2	6 19.0 -30.0 116.7	5 30.3 -29.6 116.2	4 41.4 -29.2 115.8
22°	7 25.0 -30.8 118.5	6 37.1 -30.4 118.0	5 49.0 -30.0 117.6	5 00.7 -29.6 117.1	4 12.2 -29.2 116.7
23°	6 54.2 -30.8 119.4	6 06.7 -30.4 118.9	5 19.0 -30.0 118.4	4 31.1 -29.7 118.0	3 43.0 -29.3 117.5
24°	6 23.4 -31.0 120.3	5 36.3 -30.6 119.8	4 49.0 -30.2 119.3	4 01.4 -29.7 118.9	3 13.7 -29.3 118.4
25°	5 52.4 -31.1 121.1	5 05.7 -30.6 120.6	4 18.8 -30.2 120.2	3 31.7 -29.8 119.7	2 44.4 -29.4 119.3
26°	5 21.3 -31.1 122.0	4 35.1 -30.7 121.5	3 48.6 -30.2 121.1	3 01.9 -29.8 120.6	2 15.0 -29.4 120.2
27°	4 50.2 -31.1 122.8	4 04.4 -30.7 122.4	3 18.4 -30.3 121.9	2 32.1 -29.8 121.5	1 45.6 -29.4 121.0
28°	4 19.1 -31.3 123.7	3 33.7 -30.8 123.2	2 48.1 -30.3 122.8	2 02.3 -29.9 122.3	1 16.2 -29.4 121.9
29°	3 47.8 -31.3 124.5	3 02.9 -30.8 124.1	2 17.8 -30.4 123.6	1 32.4 -29.9 123.2	0 46.8 -29.5 122.8

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	13 34.0 -26.2 96.5	12 39.9 -26.1 96.0	11 45.8 -26.0 95.6	10 51.7 -25.9 95.1	9 57.5 -25.8 94.7
1°	13 07.8 -26.4 97.4	12 13.8 -26.2 96.9	11 19.8 -26.1 96.5	10 25.8 -26.1 96.1	9 31.7 -26.0 95.6
2°	12 41.4 -26.6 98.3	11 47.6 -26.5 97.9	10 53.7 -26.4 97.4	9 59.7 -26.2 97.0	9 05.7 -26.1 96.5
3°	12 14.8 -26.7 99.2	11 21.1 -26.6 98.8	10 27.3 -26.4 98.3	9 33.5 -26.3 97.9	8 39.6 -26.2 97.4
4°	11 48.1 -27.0 100.1	10 54.5 -26.8 99.7	10 00.9 -26.7 99.2	9 07.2 -26.5 98.8	8 13.4 -26.4 98.3
5°	11 21.1 -27.1 101.1	10 27.7 -26.9 100.6	9 34.2 -26.7 100.1	8 40.7 -26.6 99.7	7 47.0 -26.4 99.3
6°	10 54.0 -27.2 102.0	10 00.8 -27.1 101.5	9 07.5 -26.9 101.1	8 14.1 -26.8 100.6	7 20.6 -26.6 100.2
7°	10 26.8 -27.4 102.9	9 33.7 -27.2 102.4	8 40.6 -27.1 102.0	7 47.3 -26.8 101.5	6 54.0 -26.7 101.1
8°	9 59.4 -27.6 103.8	9 06.5 -27.3 103.3	8 13.5 -27.1 102.9	7 20.5 -27.0 102.4	6 27.3 -26.7 102.0
9°	9 31.8 -27.7 104.7	8 39.2 -27.5 104.2	7 46.4 -27.3 103.8	6 53.5 -27.0 103.3	6 00.6 -26.9 102.9
10°	9 04.1 -27.8 105.6	8 11.7 -27.6 105.1	7 19.1 -27.3 104.7	6 26.5 -27.2 104.2	5 33.7 -26.9 103.8
11°	8 36.3 -28.0 106.5	7 44.1 -27.7 106.0	6 51.8 -27.5 105.6	5 59.3 -27.2 105.1	5 06.8 -27.1 104.7
12°	8 08.3 -28.0 107.4	7 16.4 -27.8 106.9	6 24.3 -27.6 106.5	5 32.1 -27.3 106.0	4 39.7 -27.0 105.6
13°	7 40.3 -28.2 108.3	6 48.6 -27.9 107.8	5 56.7 -27.6 107.3	5 04.8 -27.4 106.9	4 12.7 -27.2 106.5
14°	7 12.1 -28.3 109.1	6 20.7 -28.0 108.7	5 29.1 -27.8 108.2	4 37.4 -27.5 107.8	3 45.5 -27.2 107.3
15°	6 43.8 -28.4 110.0	5 52.7 -28.1 109.6	5 01.3 -27.8 109.1	4 09.9 -27.5 108.7	3 18.3 -27.2 108.2
16°	6 15.4 -28.4 110.9	5 24.6 -28.2 110.5	4 33.5 -27.8 110.0	3 42.4 -27.6 109.6	2 51.1 -27.3 109.1
17°	5 47.0 -28.6 111.8	4 56.4 -28.2 111.4	4 05.7 -27.9 110.9	3 14.8 -27.6 110.5	2 23.8 -27.3 110.0
18°	5 18.4 -28.6 112.7	4 28.2 -28.3 112.2	3 37.8 -28.0 111.8	2 47.2 -27.7 111.3	1 56.5 -27.4 110.9
19°	4 49.8 -28.7 113.6	3 59.9 -28.4 113.1	3 09.8 -28.0 112.7	2 19.5 -27.7 112.2	1 29.1 -27.4 111.8
20°	4 21.1 -28.7 114.5	3 31.5 -28.4 114.0	2 41.8 -28.1 113.6	1 51.8 -27.7 113.1	1 01.7 -27.3 112.7
21°	3 52.4 -28.9 115.3	3 03.1 -28.4 114.9	2 13.7 -28.1 114.4	1 24.1 -27.7 114.0	0 34.4 -27.4 113.6
22°	3 23.5 -28.8 116.2	2 34.7 -28.5 115.8	1 45.6 -28.1 115.3	0 56.4 -27.8 114.9	0 07.0 -27.4 114.5
23°	2 54.7 -28.9 117.1	2 06.2 -28.5 116.6	1 17.5 -28.2 116.2	0 28.6 -27.8 115.8	-0 20.4 -27.4
24°	2 25.8 -28.9 118.0	1 37.7 -28.6 117.5	0 49.3 -28.1 117.1	0 00.8 -27.7 116.7	-0 47.8 -27.4
25°	1 56.9 -29.0 118.8	1 09.1 -28.5 118.4	0 21.2 -28.2 118.0	-0 26.9 -27.8	-1 15.2 -27.4
26°	1 27.9 -29.0 119.7	0 40.6 -28.6 119.3	-0 07.0 -28.1	-0 54.7 -27.7	-1 42.6 -27.3
27°	0 58.9 -29.0 120.6	0 12.0 -28.6 120.2	-0 35.1 -28.1	-1 22.4 -27.7	-2 09.9 -27.3
28°	0 29.9 -29.0 121.5	-0 16.6 -28.5	-1 03.2 -28.2	-1 50.1 -27.7	-2 37.2 -27.3
29°	0 00.9 -29.0 122.3	-0 45.1 -28.6	-1 31.4 -28.1	-2 17.8 -27.7	-3 04.5 -27.2

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 03.3 -25.8 94.3	8 09.0 -25.6 93.8	7 14.8 -25.6 93.4	6 20.5 -25.6 93.0	5 26.2 -25.5 92.5
1°	8 37.5 -25.8 95.2	7 43.4 -25.8 94.7	6 49.2 -25.8 94.3	5 54.9 -25.6 93.9	5 00.7 -25.6 93.5
2°	8 11.7 -26.0 96.1	7 17.6 -25.9 95.7	6 23.4 -25.8 95.2	5 29.3 -25.8 94.8	4 35.1 -25.7 94.4
3°	7 45.7 -26.1 97.0	6 51.7 -26.0 96.6	5 57.6 -25.9 96.1	5 03.5 -25.8 95.7	4 09.4 -25.7 95.3
4°	7 19.6 -26.3 97.9	6 25.7 -26.1 97.5	5 31.7 -26.0 97.0	4 37.7 -25.8 96.6	3 43.7 -25.8 96.2
5°	6 53.3 -26.3 98.8	5 59.6 -26.2 98.4	5 05.7 -26.0 97.9	4 11.9 -26.0 97.5	3 17.9 -25.8 97.1
6°	6 27.0 -26.4 99.7	5 33.4 -26.3 99.3	4 39.7 -26.1 98.8	3 45.9 -26.0 98.4	2 52.1 -25.9 98.0
7°	6 00.6 -26.5 100.6	5 07.1 -26.3 100.2	4 13.6 -26.2 99.7	3 19.9 -26.0 99.3	2 26.2 -25.9 98.9
8°	5 34.1 -26.6 101.5	4 40.8 -26.4 101.1	3 47.4 -26.3 100.6	2 53.9 -26.1 100.2	2 00.3 -25.9 99.8
9°	5 07.5 -26.7 102.4	4 14.4 -26.5 102.0	3 21.1 -26.3 101.5	2 27.8 -26.1 101.1	1 34.4 -26.0 100.7
10°	4 40.8 -26.7 103.3	3 47.9 -26.6 102.9	2 54.8 -26.3 102.4	2 01.7 -26.2 102.0	1 08.4 -25.9 101.6
11°	4 14.1 -26.8 104.2	3 21.3 -26.5 103.8	2 28.5 -26.4 103.3	1 35.5 -26.2 102.9	0 42.5 -26.0 102.5
12°	3 47.3 -26.8 105.1	2 54.8 -26.7 104.7	2 02.1 -26.4 104.2	1 09.3 -26.1 103.8	0 16.5 -26.0 103.4
13°	3 20.5 -26.9 106.0	2 28.1 -26.6 105.6	1 35.7 -26.4 105.1	0 43.2 -26.3 104.7	-0 09.5 -26.0
14°	2 53.6 -27.0 106.9	2 01.5 -26.7 106.5	1 09.3 -26.5 106.0	0 16.9 -26.2 105.6	-0 35.5 -26.0
15°	2 26.6 -27.0 107.8	1 34.8 -26.7 107.4	0 42.8 -26.4 106.9	-0 09.3 -26.2	-1 01.5 -25.9
16°	1 59.6 -27.0 108.7	1 08.1 -26.8 108.3	0 16.4 -26.5 107.8	-0 35.5 -26.2	-1 27.4 -25.9
17°	1 32.6 -27.0 109.6	0 41.3 -26.7 109.2	-0 10.1 -26.5	-1 01.7 -26.1	-1 53.3 -26.0
18°	1 05.6 -27.1 110.5	0 14.6 -26.8 110.1	-0 36.6 -26.4	-1 27.8 -26.2	-2 19.3 -25.8
19°	0 38.5 -27.0 111.4	-0 12.2 -26.7	-1 03.0 -26.5	-1 54.0 -26.1	-2 45.1 -25.9
20°	0 11.5 -27.1 112.3	-0 38.9 -26.7	-1 29.5 -26.4	-2 20.1 -26.1	-3 11.0 -25.8
21°	-0 15.6 -27.0	-1 05.6 -26.8	-1 55.9 -26.3	-2 46.2 -26.1	-3 36.8 -25.7
22°	-0 42.6 -27.1	-1 32.4 -26.6	-2 22.2 -26.4	-3 12.3 -26.0	-4 02.5 -25.7
23°	-1 09.7 -27.0	-1 59.0 -26.7	-2 48.6 -26.3	-3 38.3 -26.0	-4 28.2 -25.6
24°	-1 36.7 -27.0	-2 25.7 -26.6	-3 14.9 -26.3	-4 04.3 -25.9	-4 53.8 -25.5
25°	-2 03.7 -27.0	-2 52.3 -26.6	-3 41.2 -26.2	-4 30.2 -25.8	-5 19.3 -25.5
26°	-2 30.7 -26.9	-3 18.9 -26.6	-4 07.4 -26.1	-4 56.0 -25.7	-5 44.8 -25.3
27°	-2 57.6 -26.9	-3 45.5 -26.5	-4 33.5 -26.1	-5 21.7 -25.7	-6 10.1 -25.3
28°	-3 24.5 -26.8	-4 12.0 -26.4	-4 59.6 -26.0	-5 47.4 -25.6	-6 35.4 -25.2
29°	-3 51.3 -26.8	-4 38.4 -26.3	-5 25.6 -25.9	-6 13.0 -25.5	-7 00.6 -25.0

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 31.8 -25.4 92.1	3 37.5 -25.5 91.7	2 43.1 -25.4 91.3	1 48.8 -25.4 90.8	0 54.4 -25.4 90.4
1°	4 06.4 -25.6 93.0	3 12.0 -25.4 92.6	2 17.7 -25.4 92.2	1 23.4 -25.4 91.8	0 29.0 -25.4 91.3
2°	3 40.8 -25.6 93.9	2 46.6 -25.6 93.5	1 52.3 -25.5 93.1	0 58.0 -25.5 92.7	0 03.6 -25.3 92.2
3°	3 15.2 -25.6 94.8	2 21.0 -25.5 94.4	1 26.8 -25.5 94.0	0 32.5 -25.4 93.6	-0 21.7 -25.4
4°	2 49.6 -25.7 95.7	1 55.5 -25.6 95.3	1 01.3 -25.5 94.9	0 07.1 -25.4 94.5	-0 47.1 -25.4
5°	2 23.9 -25.7 96.6	1 29.9 -25.6 96.2	0 35.8 -25.5 95.8	-0 18.3 -25.4	-1 12.5 -25.3
6°	1 58.2 -25.7 97.6	1 04.3 -25.6 97.1	0 10.3 -25.5 96.7	-0 43.7 -25.4	-1 37.8 -25.3
7°	1 32.5 -25.8 98.5	0 38.7 -25.7 98.0	-0 15.2 -25.5	-1 09.1 -25.4	-2 03.1 -25.3
8°	1 06.7 -25.8 99.4	0 13.0 -25.6 98.9	-0 40.7 -25.5	-1 34.5 -25.4	-2 28.4 -25.2
9°	0 40.9 -25.8 100.3	-0 12.6 -25.7	-1 06.2 -25.5	-1 59.9 -25.3	-2 53.6 -25.2
10°	0 15.1 -25.8 101.2	-0 38.3 -25.6	-1 31.7 -25.5	-2 25.2 -25.4	-3 18.8 -25.2
11°	-0 10.7 -25.8	-1 03.9 -25.6	-1 57.2 -25.4	-2 50.6 -25.2	-3 44.0 -25.1
12°	-0 36.5 -25.7	-1 29.5 -25.6	-2 22.6 -25.4	-3 15.8 -25.2	-4 09.1 -25.0
13°	-1 02.2 -25.8	-1 55.1 -25.5	-2 48.0 -25.4	-3 41.0 -25.2	-4 34.1 -25.0
14°	-1 28.0 -25.8	-2 20.6 -25.6	-3 13.4 -25.3	-4 06.2 -25.1	-4 59.1 -24.9
15°	-1 53.8 -25.7	-2 46.2 -25.4	-3 38.7 -25.2	-4 31.3 -25.0	-5 24.0 -24.8
16°	-2 19.5 -25.7	-3 11.6 -25.5	-4 03.9 -25.2	-4 56.3 -25.0	-5 48.8 -24.7
17°	-2 45.2 -25.6	-3 37.1 -25.4	-4 29.1 -25.1	-5 21.3 -24.8	-6 13.5 -24.6
18°	-3 10.8 -25.6	-4 02.5 -25.3	-4 54.2 -25.1	-5 46.1 -24.8	-6 38.1 -24.6
19°	-3 36.4 -25.5	-4 27.8 -25.2	-5 19.3 -25.0	-6 10.9 -24.7	-7 02.7 -24.4
20°	-4 01.9 -25.5	-4 53.0 -25.2	-5 44.3 -24.8	-6 35.6 -24.6	-7 27.1 -24.3
21°	-4 27.4 -25.4	-5 18.2 -25.1	-6 09.1 -24.8	-7 00.2 -24.5	-7 51.4 -24.1
22°	-4 52.8 -25.4	-5 43.3 -25.0	-6 33.9 -24.7	-7 24.7 -24.3	-8 15.5 -24.1
23°	-5 18.2 -25.2	-6 08.3 -24.9	-6 58.6 -24.6	-7 49.0 -24.3	-8 39.6 -23.9
24°	-5 43.4 -25.2	-6 33.2 -24.9	-7 23.2 -24.5	-8 13.3 -24.1	-9 03.5 -23.8
25°	-6 08.6 -25.1	-6 58.1 -24.7	-7 47.7 -24.3	-8 37.4 -24.0	-9 27.3 -23.6
26°	-6 33.7 -25.0	-7 22.8 -24.6	-8 12.0 -24.2	-9 01.4 -23.8	-9 50.9 -23.5
27°	-6 58.7 -24.8	-7 47.4 -24.5	-8 36.2 -24.1	-9 25.2 -23.7	
28°	-7 23.5 -24.8	-8 11.9 -24.3	-9 00.3 -24.0	-9 48.9 -23.6	
29°	-7 48.3 -24.6	-8 36.2 -24.2	-9 24.3 -23.8		

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -25.4 90.0	-0 54.4 -25.3			
1°	-0 25.4 -25.3	-1 19.7 -25.4			
2°	-0 50.7 -25.3	-1 45.1 -25.3			
3°	-1 16.0 -25.4	-2 10.4 -25.2			
4°	-1 41.4 -25.3	-2 35.6 -25.3			
5°	-2 06.7 -25.2	-3 00.9 -25.2			
6°	-2 31.9 -25.2	-3 26.1 -25.1			
7°	-2 57.1 -25.2	-3 51.2 -25.1			
8°	-3 22.3 -25.1	-4 16.3 -25.0			
9°	-3 47.4 -25.1	-4 41.3 -24.9			
10°	-4 12.5 -25.0	-5 06.2 -24.9			
11°	-4 37.5 -25.0	-5 31.1 -24.8			
12°	-5 02.5 -24.8	-5 55.9 -24.7			
13°	-5 27.3 -24.8	-6 20.6 -24.6			
14°	-5 52.1 -24.7	-6 45.2 -24.5			
15°	-6 16.8 -24.6	-7 09.7 -24.3			
16°	-6 41.4 -24.5	-7 34.0 -24.3			
17°	-7 05.9 -24.3	-7 58.3 -24.2			
18°	-7 30.2 -24.3	-8 22.5 -24.0			
19°	-7 54.5 -24.2	-8 46.5 -23.8			
20°	-8 18.7 -24.0	-9 10.3 -23.8			
21°	-8 42.7 -23.8	-9 34.1 -23.6			
22°	-9 06.5 -23.8	-9 57.7 -23.4			
23°	-9 30.3 -23.6				
24°	-9 53.9 -23.4				
25°					
26°					
27°					
28°					
29°					

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	64 00.0 -60.0 180.0	63 58.9 -59.9 177.7	63 55.7 -59.8 175.4	63 50.4 -59.7 173.2	63 42.9 -59.4 170.9
1°	63 00.0 -60.0 180.0	62 59.0 -60.0 177.8	62 55.9 -59.9 175.6	62 50.7 -59.7 173.4	62 43.5 -59.5 171.2
2°	62 00.0 -60.0 180.0	61 59.0 -60.0 177.9	61 56.0 -59.9 175.7	61 51.0 -59.7 173.6	61 44.0 -59.4 171.5
3°	61 00.0 -60.0 180.0	60 59.0 -59.9 177.9	60 56.1 -59.9 175.9	60 51.3 -59.7 173.8	60 44.6 -59.6 171.8
4°	60 00.0 -60.0 180.0	59 59.1 -60.0 178.0	59 56.2 -59.8 176.0	59 51.6 -59.8 174.0	59 45.0 -59.5 172.1
5°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.1	58 56.4 -59.9 176.1	58 51.8 -59.7 174.2	58 45.5 -59.6 172.3
6°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.1	57 56.5 -59.9 176.3	57 52.1 -59.8 174.4	57 45.9 -59.6 172.5
7°	57 00.0 -60.0 180.0	56 59.1 -59.9 178.2	56 56.6 -59.9 176.4	56 52.3 -59.8 174.5	56 46.3 -59.6 172.7
8°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.2	55 56.7 -59.9 176.5	55 52.5 -59.8 174.7	55 46.7 -59.6 172.9
9°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.3	54 56.8 -60.0 176.6	54 52.7 -59.8 174.8	54 47.1 -59.7 173.1
10°	54 00.0 -60.0 180.0	53 59.2 -60.0 178.3	53 56.8 -59.9 176.7	53 52.9 -59.8 175.0	53 47.4 -59.6 173.3
11°	53 00.0 -60.0 180.0	52 59.2 -59.9 178.4	52 56.9 -59.9 176.7	52 53.1 -59.8 175.1	52 47.8 -59.7 173.5
12°	52 00.0 -60.0 180.0	51 59.3 -60.0 178.4	51 57.0 -59.9 176.8	51 53.3 -59.8 175.2	51 48.1 -59.7 173.7
13°	51 00.0 -60.0 180.0	50 59.3 -60.0 178.5	50 57.1 -59.9 176.9	50 53.5 -59.9 175.4	50 48.4 -59.7 173.8
14°	50 00.0 -60.0 180.0	49 59.3 -60.0 178.5	49 57.2 -60.0 177.0	49 53.6 -59.8 175.5	49 48.7 -59.8 174.0
15°	49 00.0 -60.0 180.0	48 59.3 -60.0 178.5	48 57.2 -59.9 177.1	48 53.8 -59.9 175.6	48 48.9 -59.7 174.1
16°	48 00.0 -60.0 180.0	47 59.3 -60.0 178.6	47 57.3 -59.9 177.1	47 53.9 -59.8 175.7	47 49.2 -59.7 174.3
17°	47 00.0 -60.0 180.0	46 59.3 -59.9 178.6	46 57.4 -60.0 177.2	46 54.1 -59.9 175.8	46 49.5 -59.8 174.4
18°	46 00.0 -60.0 180.0	45 59.4 -60.0 178.6	45 57.4 -59.9 177.3	45 54.2 -59.9 175.9	45 49.7 -59.7 174.5
19°	45 00.0 -60.0 180.0	44 59.4 -60.0 178.7	44 57.5 -60.0 177.3	44 54.3 -59.8 176.0	44 50.0 -59.8 174.7
20°	44 00.0 -60.0 180.0	43 59.4 -60.0 178.7	43 57.5 -59.9 177.4	43 54.5 -59.9 176.1	43 50.2 -59.8 174.8
21°	43 00.0 -60.0 180.0	42 59.4 -60.0 178.7	42 57.6 -59.9 177.4	42 54.6 -59.9 176.2	42 50.4 -59.8 174.9
22°	42 00.0 -60.0 180.0	41 59.4 -60.0 178.8	41 57.7 -60.0 177.5	41 54.7 -59.9 176.3	41 50.6 -59.8 175.0
23°	41 00.0 -60.0 180.0	40 59.4 -60.0 178.8	40 57.7 -59.9 177.6	40 54.8 -59.8 176.3	40 50.8 -59.8 175.1
24°	40 00.0 -60.0 180.0	39 59.4 -59.9 178.8	39 57.8 -60.0 177.6	39 55.0 -59.9 176.4	39 51.0 -59.8 175.2
25°	39 00.0 -60.0 180.0	38 59.5 -60.0 178.8	38 57.8 -59.9 177.7	38 55.1 -59.9 176.5	38 51.2 -59.8 175.3
26°	38 00.0 -60.0 180.0	37 59.5 -60.0 178.9	37 57.9 -60.0 177.7	37 55.2 -59.9 176.6	37 51.4 -59.8 175.4
27°	37 00.0 -60.0 180.0	36 59.5 -60.0 178.9	36 57.9 -60.0 177.8	36 55.3 -59.9 176.7	36 51.6 -59.8 175.5
28°	36 00.0 -60.0 180.0	35 59.5 -60.0 178.9	35 57.9 -59.9 177.8	35 55.4 -59.9 176.7	35 51.8 -59.8 175.6
29°	35 00.0 -60.0 180.0	34 59.5 -60.0 178.9	34 58.0 -60.0 177.9	34 55.5 -59.9 176.8	34 52.0 -59.9 175.7

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	63 33.4 -59.1 168.7	63 21.8 -58.7 166.5	63 08.3 -58.3 164.4	62 52.7 -57.7 162.2	62 35.4 -57.3 160.1
1°	62 34.3 -59.2 169.1	62 23.1 -58.8 167.0	62 10.0 -58.4 164.9	61 55.0 -57.9 162.8	61 38.1 -57.4 160.8
2°	61 35.1 -59.2 169.5	61 24.3 -58.9 167.4	61 11.6 -58.5 165.4	60 57.1 -58.1 163.4	60 40.7 -57.5 161.4
3°	60 35.9 -59.2 169.8	60 25.4 -58.9 167.8	60 13.1 -58.5 165.8	59 59.0 -58.1 163.9	59 43.2 -57.7 162.0
4°	59 36.7 -59.3 170.1	59 26.5 -59.0 168.2	59 14.6 -58.7 166.2	59 00.9 -58.3 164.4	58 45.5 -57.8 162.5
5°	58 37.4 -59.4 170.4	58 27.5 -59.0 168.5	58 15.9 -58.7 166.7	58 02.6 -58.3 164.8	57 47.7 -57.9 163.0
6°	57 38.0 -59.3 170.7	57 28.5 -59.1 168.9	57 17.2 -58.8 167.0	57 04.3 -58.4 165.2	56 49.8 -58.1 163.5
7°	56 38.7 -59.4 170.9	56 29.4 -59.2 169.2	56 18.4 -58.8 167.4	56 05.9 -58.6 165.7	55 51.7 -58.1 163.9
8°	55 39.3 -59.5 171.2	55 30.2 -59.2 169.5	55 19.6 -58.9 167.8	55 07.3 -58.5 166.1	54 53.6 -58.2 164.4
9°	54 39.8 -59.4 171.4	54 31.0 -59.2 169.8	54 20.7 -59.0 168.1	54 08.8 -58.7 166.4	53 55.4 -58.3 164.8
10°	53 40.4 -59.5 171.7	53 31.8 -59.3 170.0	53 21.7 -59.0 168.4	53 10.1 -58.7 166.8	52 57.1 -58.4 165.2
11°	52 40.9 -59.5 171.9	52 32.5 -59.3 170.3	52 22.7 -59.0 168.7	52 11.4 -58.8 167.1	51 58.7 -58.5 165.6
12°	51 41.4 -59.5 172.1	51 33.2 -59.3 170.5	51 23.7 -59.1 169.0	51 12.6 -58.8 167.4	51 00.2 -58.5 165.9
13°	50 41.9 -59.6 172.3	50 33.9 -59.3 170.8	50 24.6 -59.2 169.3	50 13.8 -58.8 167.8	50 01.7 -58.6 166.3
14°	49 42.3 -59.6 172.5	49 34.6 -59.4 171.0	49 25.4 -59.1 169.5	49 15.0 -59.0 168.1	49 03.1 -58.6 166.6
15°	48 42.7 -59.5 172.7	48 35.2 -59.4 171.2	48 26.3 -59.2 169.8	48 16.0 -58.9 168.3	48 04.5 -58.7 166.9
16°	47 43.2 -59.6 172.8	47 35.8 -59.4 171.4	47 27.1 -59.2 170.0	47 17.1 -59.0 168.6	47 05.8 -58.7 167.2
17°	46 43.6 -59.7 173.0	46 36.4 -59.5 171.6	46 27.9 -59.3 170.3	46 18.1 -59.0 168.9	46 07.1 -58.8 167.5
18°	45 43.9 -59.6 173.2	45 36.9 -59.5 171.8	45 28.6 -59.3 170.5	45 19.1 -59.1 169.2	45 08.3 -58.8 167.8
19°	44 44.3 -59.6 173.3	44 37.4 -59.4 172.0	44 29.3 -59.3 170.7	44 20.0 -59.1 169.4	44 09.5 -58.9 168.1
20°	43 44.7 -59.7 173.5	43 38.0 -59.5 172.2	43 30.0 -59.3 170.9	43 20.9 -59.1 169.6	43 10.6 -58.8 168.4
21°	42 45.0 -59.6 173.6	42 38.5 -59.6 172.4	42 30.7 -59.3 171.1	42 21.8 -59.1 169.9	42 11.8 -59.0 168.6
22°	41 45.4 -59.7 173.8	41 38.9 -59.5 172.5	41 31.4 -59.4 171.3	41 22.7 -59.2 170.1	41 12.8 -58.9 168.9
23°	40 45.7 -59.7 173.9	40 39.4 -59.5 172.7	40 32.0 -59.4 171.5	40 23.5 -59.2 170.3	40 13.9 -59.0 169.1
24°	39 46.0 -59.7 174.1	39 39.9 -59.6 172.9	39 32.6 -59.4 171.7	39 24.3 -59.2 170.5	39 14.9 -59.0 169.4
25°	38 46.3 -59.7 174.2	38 40.3 -59.6 173.0	38 33.2 -59.4 171.9	38 25.1 -59.3 170.7	38 15.9 -59.1 169.6
26°	37 46.6 -59.7 174.3	37 40.7 -59.5 173.2	37 33.8 -59.4 172.1	37 25.8 -59.2 170.9	37 16.8 -59.0 169.8
27°	36 46.9 -59.7 174.4	36 41.2 -59.6 173.3	36 34.4 -59.5 172.2	36 26.6 -59.3 171.1	36 17.8 -59.1 170.0
28°	35 47.2 -59.7 174.6	35 41.6 -59.6 173.5	35 34.9 -59.4 172.4	35 27.3 -59.3 171.3	35 18.7 -59.2 170.3
29°	34 47.5 -59.8 174.7	34 42.0 -59.7 173.6	34 35.5 -59.5 172.6	34 28.0 -59.3 171.5	34 19.5 -59.1 170.5

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	62 16.1 -56.6 158.1	61 55.1 -56.0 156.1	61 32.4 -55.3 154.1	61 08.1 -54.7 152.2	60 42.2 -53.9 150.4
1°	61 19.5 -56.8 158.8	60 59.1 -56.2 156.8	60 37.1 -55.6 154.9	60 13.4 -54.9 153.1	59 48.3 -54.3 151.3
2°	60 22.7 -57.1 159.4	60 02.9 -56.5 157.5	59 41.5 -55.9 155.7	59 18.5 -55.2 153.9	58 54.0 -54.6 152.1
3°	59 25.6 -57.2 160.1	59 06.4 -56.6 158.2	58 45.6 -56.1 156.4	58 23.3 -55.5 154.6	57 59.4 -54.8 152.9
4°	58 28.4 -57.3 160.7	58 09.8 -56.8 158.8	57 49.5 -56.2 157.1	57 27.8 -55.7 155.3	57 04.6 -55.2 153.6
5°	57 31.1 -57.5 161.2	57 13.0 -57.0 159.4	56 53.3 -56.5 157.7	56 32.1 -55.9 156.0	56 09.4 -55.3 154.4
6°	56 33.6 -57.6 161.7	56 16.0 -57.2 160.0	55 56.8 -56.7 158.3	55 36.2 -56.2 156.7	55 14.1 -55.6 155.0
7°	55 36.0 -57.7 162.2	55 18.8 -57.3 160.6	55 00.1 -56.8 158.9	54 40.0 -56.3 157.3	54 18.5 -55.8 155.7
8°	54 38.3 -57.8 162.7	54 21.5 -57.4 161.1	54 03.3 -56.9 159.5	53 43.7 -56.4 157.9	53 22.7 -55.9 156.3
9°	53 40.5 -58.0 163.2	53 24.1 -57.5 161.6	53 06.4 -57.1 160.0	52 47.3 -56.7 158.4	52 26.8 -56.2 156.9
10°	52 42.5 -58.0 163.6	52 26.6 -57.6 162.0	52 09.3 -57.2 160.5	51 50.6 -56.7 159.0	51 30.6 -56.3 157.5
11°	51 44.5 -58.1 164.0	51 29.0 -57.7 162.5	51 12.1 -57.3 161.0	50 53.9 -56.9 159.5	50 34.3 -56.4 158.0
12°	50 46.4 -58.2 164.4	50 31.3 -57.9 162.9	50 14.8 -57.5 161.5	49 57.0 -57.0 160.0	49 37.9 -56.6 158.6
13°	49 48.2 -58.2 164.8	49 33.4 -57.9 163.3	49 17.3 -57.5 161.9	49 00.0 -57.2 160.5	48 41.3 -56.7 159.1
14°	48 50.0 -58.3 165.2	48 35.5 -58.0 163.7	48 19.8 -57.6 162.3	48 02.8 -57.2 160.9	47 44.6 -56.8 159.6
15°	47 51.7 -58.4 165.5	47 37.5 -58.0 164.1	47 22.2 -57.7 162.8	47 05.6 -57.4 161.4	46 47.8 -57.0 160.0
16°	46 53.3 -58.5 165.9	46 39.5 -58.1 164.5	46 24.5 -57.8 163.2	46 08.2 -57.4 161.8	45 50.8 -57.0 160.5
17°	45 54.8 -58.5 166.2	45 41.4 -58.2 164.9	45 26.7 -57.9 163.5	45 10.8 -57.5 162.2	44 53.8 -57.2 160.9
18°	44 56.3 -58.5 166.5	44 43.2 -58.3 165.2	44 28.8 -57.9 163.9	44 13.3 -57.6 162.6	43 56.6 -57.2 161.4
19°	43 57.8 -58.6 166.8	43 44.9 -58.3 165.5	43 30.9 -58.0 164.3	43 15.7 -57.7 163.0	42 59.4 -57.4 161.8
20°	42 59.2 -58.6 167.1	42 46.6 -58.4 165.9	42 32.9 -58.1 164.6	42 18.0 -57.8 163.4	42 02.0 -57.4 162.2
21°	42 00.6 -58.7 167.4	41 48.2 -58.4 166.2	41 34.8 -58.1 165.0	41 20.2 -57.8 163.8	41 04.6 -57.5 162.6
22°	41 01.9 -58.7 167.7	40 49.8 -58.4 166.5	40 36.7 -58.2 165.3	40 22.4 -57.8 164.1	40 07.1 -57.5 162.9
23°	40 03.2 -58.8 167.9	39 51.4 -58.6 166.8	39 38.5 -58.3 165.6	39 24.6 -58.0 164.5	39 09.6 -57.6 163.3
24°	39 04.4 -58.8 168.2	38 52.8 -58.5 167.1	38 40.2 -58.2 165.9	38 26.6 -58.0 164.8	38 12.0 -57.7 163.7
25°	38 05.6 -58.8 168.5	37 54.3 -58.6 167.3	37 42.0 -58.4 166.2	37 28.6 -58.0 165.1	37 14.3 -57.8 164.0
26°	37 06.8 -58.9 168.7	36 55.7 -58.6 167.6	36 43.6 -58.3 166.5	36 30.6 -58.1 165.4	36 16.5 -57.8 164.4
27°	36 07.9 -58.9 169.0	35 57.1 -58.7 167.9	35 45.3 -58.4 166.8	35 32.5 -58.2 165.7	35 18.7 -57.8 164.7
28°	35 09.0 -58.9 169.2	34 58.4 -58.6 168.1	34 46.9 -58.5 167.1	34 34.3 -58.1 166.0	34 20.9 -57.9 165.0
29°	34 10.1 -58.9 169.4	33 59.8 -58.8 168.4	33 48.4 -58.5 167.4	33 36.2 -58.3 166.3	33 23.0 -58.0 165.3

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	60 14.8 -53.2 148.6	59 46.0 -52.5 146.8	59 15.8 -51.7 145.1	58 44.3 -50.9 143.5	58 11.6 -50.2 141.9
1°	59 21.6 -53.6 149.5	58 53.5 -52.8 147.8	58 24.1 -52.1 146.1	57 53.4 -51.4 144.5	57 21.4 -50.6 142.9
2°	58 28.0 -53.9 150.4	58 00.7 -53.2 148.7	57 32.0 -52.5 147.0	57 02.0 -51.8 145.4	56 30.8 -51.1 143.9
3°	57 34.1 -54.2 151.2	57 07.5 -53.6 149.5	56 39.5 -52.9 147.9	56 10.2 -52.2 146.3	55 39.7 -51.5 144.8
4°	56 39.9 -54.5 152.0	56 13.9 -53.9 150.4	55 46.6 -53.2 148.8	55 18.0 -52.6 147.2	54 48.2 -51.9 145.7
5°	55 45.4 -54.7 152.7	55 20.0 -54.1 151.1	54 53.4 -53.6 149.6	54 25.4 -52.8 148.1	53 56.3 -52.2 146.6
6°	54 50.7 -55.0 153.4	54 25.9 -54.4 151.9	53 59.8 -53.8 150.4	53 32.6 -53.2 148.9	53 04.1 -52.6 147.4
7°	53 55.7 -55.3 154.1	53 31.5 -54.7 152.6	53 06.0 -54.0 151.1	52 39.4 -53.5 149.6	52 11.5 -52.9 148.2
8°	53 00.4 -55.4 154.8	52 36.8 -54.9 153.3	52 12.0 -54.4 151.8	51 45.9 -53.8 150.4	51 18.6 -53.1 149.0
9°	52 05.0 -55.6 155.4	51 41.9 -55.1 153.9	51 17.6 -54.5 152.5	50 52.1 -54.0 151.1	50 25.5 -53.4 149.7
10°	51 09.4 -55.8 156.0	50 46.8 -55.3 154.6	50 23.1 -54.8 153.2	49 58.1 -54.2 151.8	49 32.1 -53.7 150.4
11°	50 13.6 -56.0 156.6	49 51.5 -55.5 155.2	49 28.3 -55.0 153.8	49 03.9 -54.4 152.4	48 38.4 -53.9 151.1
12°	49 17.6 -56.2 157.2	48 56.0 -55.6 155.8	48 33.3 -55.1 154.4	48 09.5 -54.7 153.1	47 44.5 -54.2 151.7
13°	48 21.4 -56.2 157.7	48 00.4 -55.8 156.3	47 38.2 -55.4 155.0	47 14.8 -54.8 153.7	46 50.3 -54.3 152.4
14°	47 25.2 -56.4 158.2	47 04.6 -56.0 156.9	46 42.8 -55.5 155.6	46 20.0 -55.1 154.3	45 56.0 -54.5 153.0
15°	46 28.8 -56.6 158.7	46 08.6 -56.1 157.4	45 47.3 -55.6 156.1	45 24.9 -55.1 154.8	45 01.5 -54.7 153.6
16°	45 32.2 -56.6 159.2	45 12.5 -56.2 157.9	44 51.7 -55.8 156.6	44 29.8 -55.4 155.4	44 06.8 -54.9 154.2
17°	44 35.6 -56.8 159.7	44 16.3 -56.4 158.4	43 55.9 -55.9 157.2	43 34.4 -55.5 155.9	43 11.9 -55.0 154.7
18°	43 38.8 -56.8 160.1	43 19.9 -56.4 158.9	43 00.0 -56.1 157.7	42 38.9 -55.6 156.4	42 16.9 -55.2 155.3
19°	42 42.0 -57.0 160.5	42 23.5 -56.6 159.3	42 03.9 -56.2 158.1	41 43.3 -55.8 157.0	41 21.7 -55.3 155.8
20°	41 45.0 -57.1 161.0	41 26.9 -56.7 159.8	41 07.7 -56.3 158.6	40 47.5 -55.8 157.4	40 26.4 -55.5 156.3
21°	40 47.9 -57.1 161.4	40 30.2 -56.8 160.2	40 11.4 -56.3 159.1	39 51.7 -56.0 157.9	39 30.9 -55.6 156.8
22°	39 50.8 -57.2 161.8	39 33.4 -56.8 160.6	39 15.1 -56.5 159.5	38 55.7 -56.1 158.4	38 35.3 -55.7 157.3
23°	38 53.6 -57.3 162.2	38 36.6 -57.0 161.1	38 18.6 -56.6 159.9	37 59.6 -56.2 158.8	37 39.6 -55.8 157.8
24°	37 56.3 -57.4 162.6	37 39.6 -57.0 161.5	37 22.0 -56.7 160.4	37 03.4 -56.3 159.3	36 43.8 -55.9 158.2
25°	36 58.9 -57.4 162.9	36 42.6 -57.1 161.8	36 25.3 -56.7 160.8	36 07.1 -56.4 159.7	35 47.9 -56.0 158.7
26°	36 01.5 -57.5 163.3	35 45.5 -57.2 162.2	35 28.6 -56.9 161.2	35 10.7 -56.5 160.1	34 51.9 -56.1 159.1
27°	35 04.0 -57.6 163.6	34 48.3 -57.2 162.6	34 31.7 -56.9 161.6	34 14.2 -56.5 160.5	33 55.8 -56.2 159.5
28°	34 06.4 -57.6 164.0	33 51.1 -57.3 163.0	33 34.8 -56.9 161.9	33 17.7 -56.7 160.9	32 59.6 -56.2 160.0
29°	33 08.8 -57.6 164.3	32 53.8 -57.4 163.3	32 37.9 -57.1 162.3	32 21.0 -56.7 161.3	32 03.4 -56.4 160.4

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	26 42.3 -29.6 104.2	25 50.0 -29.5 103.7	24 57.5 -29.2 103.1	24 04.9 -29.0 102.6	23 12.2 -28.8 102.1
1°	26 12.7 -30.1 105.2	25 20.5 -29.7 104.6	24 28.3 -29.6 104.1	23 35.9 -29.3 103.5	22 43.4 -29.1 103.0
2°	25 42.6 -30.4 106.1	24 50.8 -30.2 105.6	23 58.7 -29.9 105.0	23 06.6 -29.7 104.5	22 14.3 -29.4 104.0
3°	25 12.2 -30.7 107.1	24 20.6 -30.5 106.5	23 28.8 -30.2 106.0	22 36.9 -30.0 105.4	21 44.9 -29.8 104.9
4°	24 41.5 -31.2 108.0	23 50.1 -30.9 107.5	22 58.6 -30.6 106.9	22 06.9 -30.3 106.4	21 15.1 -30.1 105.8
5°	24 10.3 -31.4 109.0	23 19.2 -31.1 108.4	22 28.0 -30.9 107.9	21 36.6 -30.6 107.3	20 45.0 -30.3 106.8
6°	23 38.9 -31.8 109.9	22 48.1 -31.5 109.3	21 57.1 -31.2 108.8	21 06.0 -31.0 108.2	20 14.7 -30.7 107.7
7°	23 07.1 -32.1 110.8	22 16.6 -31.8 110.3	21 25.9 -31.5 109.7	20 35.0 -31.2 109.1	19 44.0 -30.9 108.6
8°	22 35.0 -32.5 111.7	21 44.8 -32.1 111.2	20 54.4 -31.8 110.6	20 03.8 -31.5 110.1	19 13.1 -31.2 109.5
9°	22 02.5 -32.7 112.7	21 12.7 -32.4 112.1	20 22.6 -32.1 111.5	19 32.3 -31.7 111.0	18 41.9 -31.5 110.4
10°	21 29.8 -33.0 113.6	20 40.3 -32.7 113.0	19 50.5 -32.3 112.4	19 00.6 -32.1 111.9	18 10.4 -31.7 111.3
11°	20 56.8 -33.3 114.5	20 07.6 -33.0 113.9	19 18.2 -32.6 113.3	18 28.5 -32.2 112.8	17 38.7 -31.9 112.2
12°	20 23.5 -33.6 115.3	19 34.6 -33.2 114.8	18 45.6 -32.9 114.2	17 56.3 -32.5 113.6	17 06.8 -32.2 113.1
13°	19 49.9 -33.8 116.2	19 01.4 -33.4 115.7	18 12.7 -33.1 115.1	17 23.8 -32.8 114.5	16 34.6 -32.4 114.0
14°	19 16.1 -34.1 117.1	18 28.0 -33.7 116.5	17 39.6 -33.3 116.0	16 51.0 -32.9 115.4	16 02.2 -32.6 114.9
15°	18 42.0 -34.3 118.0	17 54.3 -33.9 117.4	17 06.3 -33.6 116.8	16 18.1 -33.2 116.3	15 29.6 -32.8 115.7
16°	18 07.7 -34.5 118.8	17 20.4 -34.2 118.3	16 32.7 -33.7 117.7	15 44.9 -33.4 117.1	14 56.8 -33.0 116.6
17°	17 33.2 -34.8 119.7	16 46.2 -34.3 119.1	15 59.0 -34.0 118.6	15 11.5 -33.6 118.0	14 23.8 -33.2 117.5
18°	16 58.4 -34.9 120.6	16 11.9 -34.6 120.0	15 25.0 -34.1 119.4	14 37.9 -33.7 118.9	13 50.6 -33.4 118.3
19°	16 23.5 -35.2 121.4	15 37.3 -34.8 120.8	14 50.9 -34.4 120.3	14 04.2 -34.0 119.7	13 17.2 -33.6 119.2
20°	15 48.3 -35.4 122.2	15 02.5 -34.9 121.7	14 16.5 -34.5 121.1	13 30.2 -34.1 120.6	12 43.6 -33.7 120.0
21°	15 12.9 -35.5 123.1	14 27.6 -35.1 122.5	13 42.0 -34.7 122.0	12 56.1 -34.3 121.4	12 09.9 -33.8 120.9
22°	14 37.4 -35.8 123.9	13 52.5 -35.3 123.4	13 07.3 -34.9 122.8	12 21.8 -34.4 122.2	11 36.1 -34.0 121.7
23°	14 01.6 -35.9 124.7	13 17.2 -35.5 124.2	12 32.4 -35.0 123.6	11 47.4 -34.6 123.1	11 02.1 -34.2 122.5
24°	13 25.7 -36.0 125.6	12 41.7 -35.6 125.0	11 57.4 -35.1 124.5	11 12.8 -34.7 123.9	10 27.9 -34.3 123.4
25°	12 49.7 -36.2 126.4	12 06.1 -35.7 125.8	11 22.3 -35.3 125.3	10 38.1 -34.9 124.8	9 53.6 -34.4 124.2
26°	12 13.5 -36.4 127.2	11 30.4 -35.9 126.7	10 47.0 -35.5 126.1	10 03.2 -34.9 125.6	9 19.2 -34.5 125.1
27°	11 37.1 -36.5 128.0	10 54.5 -36.0 127.5	10 11.5 -35.5 126.9	9 28.3 -35.1 126.4	8 44.7 -34.6 125.9
28°	11 00.6 -36.6 128.8	10 18.5 -36.2 128.3	9 36.0 -35.7 127.8	8 53.2 -35.2 127.2	8 10.1 -34.7 126.7
29°	10 24.0 -36.7 129.6	9 42.3 -36.2 129.1	9 00.3 -35.8 128.6	8 18.0 -35.3 128.0	7 35.4 -34.8 127.5

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	22 19.5 -28.6 101.6	21 26.6 -28.4 101.0	20 33.6 -28.2 100.5	19 40.5 -28.0 100.0	18 47.4 -27.9 99.6
1°	21 50.9 -29.0 102.5	20 58.2 -28.8 102.0	20 05.4 -28.6 101.5	19 12.5 -28.4 101.0	18 19.5 -28.2 100.5
2°	21 21.9 -29.2 103.4	20 29.4 -29.0 102.9	19 36.8 -28.8 102.4	18 44.1 -28.6 101.9	17 51.3 -28.5 101.4
3°	20 52.7 -29.5 104.4	20 00.4 -29.3 103.9	19 08.0 -29.1 103.3	18 15.5 -28.9 102.8	17 22.8 -28.7 102.3
4°	20 23.2 -29.9 105.3	19 31.1 -29.6 104.8	18 38.9 -29.4 104.3	17 46.6 -29.2 103.8	16 54.1 -28.9 103.3
5°	19 53.3 -30.1 106.2	19 01.5 -29.9 105.7	18 09.5 -29.6 105.2	17 17.4 -29.4 104.7	16 25.2 -29.2 104.2
6°	19 23.2 -30.4 107.2	18 31.6 -30.1 106.6	17 39.9 -29.9 106.1	16 48.0 -29.7 105.6	15 56.0 -29.4 105.1
7°	18 52.8 -30.6 108.1	18 01.5 -30.4 107.5	17 10.0 -30.2 107.0	16 18.3 -29.8 106.5	15 26.6 -29.7 106.0
8°	18 22.2 -31.0 109.0	17 31.1 -30.7 108.4	16 39.8 -30.3 107.9	15 48.5 -30.1 107.4	14 56.9 -29.8 106.9
9°	17 51.2 -31.1 109.9	17 00.4 -30.8 109.3	16 09.5 -30.6 108.8	15 18.4 -30.4 108.3	14 27.1 -30.1 107.8
10°	17 20.1 -31.4 110.8	16 29.6 -31.1 110.2	15 38.9 -30.8 109.7	14 48.0 -30.5 109.2	13 57.0 -30.2 108.7
11°	16 48.7 -31.6 111.7	15 58.5 -31.3 111.1	15 08.1 -31.0 110.6	14 17.5 -30.7 110.1	13 26.8 -30.4 109.6
12°	16 17.1 -31.9 112.5	15 27.2 -31.6 112.0	14 37.1 -31.2 111.5	13 46.8 -30.9 111.0	12 56.4 -30.7 110.5
13°	15 45.2 -32.0 113.4	14 55.6 -31.7 112.9	14 05.9 -31.5 112.4	13 15.9 -31.1 111.8	12 25.7 -30.7 111.3
14°	15 13.2 -32.3 114.3	14 23.9 -31.9 113.8	13 34.4 -31.5 113.2	12 44.8 -31.3 112.7	11 55.0 -31.0 112.2
15°	14 40.9 -32.5 115.2	13 52.0 -32.1 114.6	13 02.9 -31.8 114.1	12 13.5 -31.4 113.6	11 24.0 -31.1 113.1
16°	14 08.4 -32.6 116.0	13 19.9 -32.3 115.5	12 31.1 -31.9 115.0	11 42.1 -31.6 114.5	10 52.9 -31.2 114.0
17°	13 35.8 -32.8 116.9	12 47.6 -32.5 116.4	11 59.2 -32.1 115.9	11 10.5 -31.7 115.3	10 21.7 -31.4 114.8
18°	13 03.0 -33.0 117.8	12 15.1 -32.6 117.2	11 27.1 -32.3 116.7	10 38.8 -31.9 116.2	9 50.3 -31.5 115.7
19°	12 30.0 -33.2 118.6	11 42.5 -32.7 118.1	10 54.8 -32.3 117.6	10 06.9 -32.0 117.1	9 18.8 -31.6 116.6
20°	11 56.8 -33.3 119.5	11 09.8 -33.0 119.0	10 22.5 -32.6 118.4	9 34.9 -32.1 117.9	8 47.2 -31.8 117.4
21°	11 23.5 -33.4 120.3	10 36.8 -33.0 119.8	9 49.9 -32.6 119.3	9 02.8 -32.3 118.8	8 15.4 -31.9 118.3
22°	10 50.1 -33.6 121.2	10 03.8 -33.2 120.7	9 17.3 -32.8 120.1	8 30.5 -32.3 119.6	7 43.5 -31.9 119.1
23°	10 16.5 -33.7 122.0	9 30.6 -33.3 121.5	8 44.5 -32.9 121.0	7 58.2 -32.5 120.5	7 11.6 -32.1 120.0
24°	9 42.8 -33.9 122.9	8 57.3 -33.4 122.3	8 11.6 -33.0 121.8	7 25.7 -32.6 121.3	6 39.5 -32.1 120.8
25°	9 08.9 -33.9 123.7	8 23.9 -33.5 123.2	7 38.6 -33.0 122.7	6 53.1 -32.6 122.2	6 07.4 -32.3 121.7
26°	8 35.0 -34.1 124.5	7 50.4 -33.6 124.0	7 05.6 -33.2 123.5	6 20.5 -32.8 123.0	5 35.1 -32.3 122.5
27°	8 00.9 -34.2 125.4	7 16.8 -33.7 124.9	6 32.4 -33.3 124.4	5 47.7 -32.8 123.9	5 02.8 -32.3 123.4
28°	7 26.7 -34.2 126.2	6 43.1 -33.8 125.7	5 59.1 -33.3 125.2	5 14.9 -32.9 124.7	4 30.5 -32.5 124.2
29°	6 52.5 -34.4 127.0	6 09.3 -33.9 126.5	5 25.8 -33.4 126.0	4 42.0 -32.9 125.5	3 58.0 -32.4 125.1

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	17 54.2 -27.8 99.1	17 00.9 -27.6 98.6	16 07.5 -27.5 98.1	15 14.1 -27.4 97.6	14 20.6 -27.2 97.2
1°	17 26.4 -28.0 100.0	16 33.3 -27.9 99.5	15 40.0 -27.7 99.0	14 46.7 -27.6 98.6	13 53.4 -27.5 98.1
2°	16 58.4 -28.3 100.9	16 05.4 -28.1 100.4	15 12.3 -27.9 100.0	14 19.1 -27.8 99.5	13 25.9 -27.6 99.0
3°	16 30.1 -28.5 101.8	15 37.3 -28.4 101.4	14 44.4 -28.2 100.9	13 51.3 -28.0 100.4	12 58.3 -27.9 99.9
4°	16 01.6 -28.8 102.8	15 08.9 -28.5 102.3	14 16.2 -28.4 101.8	13 23.3 -28.2 101.3	12 30.4 -28.0 100.8
5°	15 32.8 -29.0 103.7	14 40.4 -28.8 103.2	13 47.8 -28.6 102.7	12 55.1 -28.3 102.2	12 02.4 -28.2 101.7
6°	15 03.8 -29.1 104.6	14 11.6 -29.0 104.1	13 19.2 -28.7 103.6	12 26.8 -28.6 103.1	11 34.2 -28.4 102.6
7°	14 34.7 -29.4 105.5	13 42.6 -29.1 105.0	12 50.5 -29.0 104.5	11 58.2 -28.7 104.0	11 05.8 -28.5 103.5
8°	14 05.3 -29.6 106.4	13 13.5 -29.4 105.9	12 21.5 -29.1 105.4	11 29.5 -28.9 104.9	10 37.3 -28.7 104.4
9°	13 35.7 -29.8 107.3	12 44.1 -29.5 106.8	11 52.4 -29.3 106.3	11 00.6 -29.1 105.8	10 08.6 -28.8 105.3
10°	13 05.9 -30.0 108.2	12 14.6 -29.8 107.7	11 23.1 -29.5 107.2	10 31.5 -29.2 106.7	9 39.8 -29.0 106.2
11°	12 35.9 -30.2 109.1	11 44.8 -29.8 108.6	10 53.6 -29.6 108.1	10 02.3 -29.3 107.6	9 10.8 -29.1 107.1
12°	12 05.7 -30.3 109.9	11 15.0 -30.1 109.4	10 24.0 -29.7 108.9	9 33.0 -29.5 108.5	8 41.7 -29.2 108.0
13°	11 35.4 -30.4 110.8	10 44.9 -30.1 110.3	9 54.3 -29.9 109.8	9 03.5 -29.6 109.3	8 12.5 -29.3 108.9
14°	11 05.0 -30.7 111.7	10 14.8 -30.4 111.2	9 24.4 -30.0 110.7	8 33.9 -29.7 110.2	7 43.2 -29.4 109.7
15°	10 34.3 -30.7 112.6	9 44.4 -30.4 112.1	8 54.4 -30.2 111.6	8 04.2 -29.9 111.1	7 13.8 -29.6 110.6
16°	10 03.6 -31.0 113.5	9 14.0 -30.6 113.0	8 24.2 -30.2 112.5	7 34.3 -29.9 112.0	6 44.2 -29.6 111.5
17°	9 32.6 -31.0 114.3	8 43.4 -30.7 113.8	7 54.0 -30.4 113.3	7 04.4 -30.1 112.8	6 14.6 -29.7 112.4
18°	9 01.6 -31.2 115.2	8 12.7 -30.8 114.7	7 23.6 -30.5 114.2	6 34.3 -30.1 113.7	5 44.9 -29.8 113.2
19°	8 30.4 -31.2 116.1	7 41.9 -30.9 115.6	6 53.1 -30.5 115.1	6 04.2 -30.2 114.6	5 15.1 -29.9 114.1
20°	7 59.2 -31.4 116.9	7 11.0 -31.0 116.4	6 22.6 -30.7 115.9	5 34.0 -30.3 115.5	4 45.2 -29.9 115.0
21°	7 27.8 -31.5 117.8	6 40.0 -31.1 117.3	5 51.9 -30.7 116.8	5 03.7 -30.4 116.3	4 15.3 -30.0 115.9
22°	6 56.3 -31.6 118.6	6 08.9 -31.2 118.1	5 21.2 -30.8 117.7	4 33.3 -30.4 117.2	3 45.3 -30.1 116.7
23°	6 24.7 -31.6 119.5	5 37.7 -31.3 119.0	4 50.4 -30.8 118.5	4 02.9 -30.4 118.1	3 15.2 -30.1 117.6
24°	5 53.1 -31.8 120.3	5 06.4 -31.3 119.9	4 19.6 -31.0 119.4	3 32.5 -30.6 118.9	2 45.1 -30.1 118.5
25°	5 21.3 -31.8 121.2	4 35.1 -31.4 120.7	3 48.6 -30.9 120.2	3 01.9 -30.5 119.8	2 15.0 -30.1 119.3
26°	4 49.5 -31.8 122.0	4 03.7 -31.4 121.6	3 17.7 -31.1 121.1	2 31.4 -30.6 120.6	1 44.9 -30.2 120.2
27°	4 17.7 -32.0 122.9	3 32.3 -31.5 122.4	2 46.6 -31.0 122.0	2 00.8 -30.7 121.5	1 14.7 -30.2 121.1
28°	3 45.7 -31.9 123.7	3 00.8 -31.5 123.3	2 15.6 -31.1 122.8	1 30.1 -30.6 122.4	0 44.5 -30.2 121.9
29°	3 13.8 -32.0 124.6	2 29.3 -31.6 124.1	1 44.5 -31.1 123.7	0 59.5 -30.7 123.2	0 14.3 -30.2 122.8

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	13 27.1 -27.1 96.7	12 33.5 -27.0 96.2	11 39.9 -27.0 95.8	10 46.2 -26.8 95.3	9 52.5 -26.8 94.9
1°	13 00.0 -27.4 97.6	12 06.5 -27.2 97.2	11 12.9 -27.1 96.7	10 19.4 -27.0 96.2	9 25.7 -26.9 95.8
2°	12 32.6 -27.5 98.5	11 39.3 -27.4 98.1	10 45.8 -27.2 97.6	9 52.4 -27.2 97.1	8 58.8 -27.0 96.7
3°	12 05.1 -27.7 99.4	11 11.9 -27.6 99.0	10 18.6 -27.4 98.5	9 25.2 -27.3 98.0	8 31.8 -27.2 97.6
4°	11 37.4 -27.9 100.3	10 44.3 -27.7 99.9	9 51.2 -27.6 99.4	8 57.9 -27.4 98.9	8 04.6 -27.3 98.5
5°	11 09.5 -28.0 101.2	10 16.6 -27.8 100.8	9 23.6 -27.7 100.3	8 30.5 -27.5 99.8	7 37.3 -27.4 99.4
6°	10 41.5 -28.2 102.1	9 48.8 -28.0 101.7	8 55.9 -27.8 101.2	8 03.0 -27.7 100.7	7 09.9 -27.5 100.3
7°	10 13.3 -28.3 103.0	9 20.8 -28.2 102.6	8 28.1 -28.0 102.1	7 35.3 -27.8 101.6	6 42.4 -27.6 101.2
8°	9 45.0 -28.5 103.9	8 52.6 -28.2 103.5	8 00.1 -28.0 103.0	7 07.5 -27.8 102.5	6 14.8 -27.7 102.1
9°	9 16.5 -28.6 104.8	8 24.4 -28.4 104.4	7 32.1 -28.2 103.9	6 39.7 -28.0 103.4	5 47.1 -27.7 103.0
10°	8 47.9 -28.7 105.7	7 56.0 -28.5 105.3	7 03.9 -28.3 104.8	6 11.7 -28.1 104.3	5 19.4 -27.9 103.9
11°	8 19.2 -28.8 106.6	7 27.5 -28.6 106.1	6 35.6 -28.4 105.7	5 43.6 -28.1 105.2	4 51.5 -27.9 104.7
12°	7 50.4 -29.0 107.5	6 58.9 -28.7 107.0	6 07.2 -28.4 106.6	5 15.5 -28.2 106.1	4 23.6 -28.0 105.6
13°	7 21.4 -29.0 108.4	6 30.2 -28.8 107.9	5 38.8 -28.5 107.4	4 47.3 -28.3 107.0	3 55.6 -28.0 106.5
14°	6 52.4 -29.2 109.3	6 01.4 -28.9 108.8	5 10.3 -28.7 108.3	4 19.0 -28.3 107.9	3 27.6 -28.1 107.4
15°	6 23.2 -29.2 110.1	5 32.5 -29.0 109.7	4 41.6 -28.6 109.2	3 50.7 -28.4 108.7	2 59.5 -28.1 108.3
16°	5 54.0 -29.4 111.0	5 03.5 -29.0 110.6	4 13.0 -28.8 110.1	3 22.3 -28.5 109.6	2 31.4 -28.2 109.2
17°	5 24.6 -29.4 111.9	4 34.5 -29.1 111.4	3 44.2 -28.7 111.0	2 53.8 -28.5 110.5	2 03.2 -28.2 110.1
18°	4 55.2 -29.4 112.8	4 05.4 -29.1 112.3	3 15.5 -28.9 111.8	2 25.3 -28.5 111.4	1 35.0 -28.2 110.9
19°	4 25.8 -29.6 113.6	3 36.3 -29.2 113.2	2 46.6 -28.8 112.7	1 56.8 -28.5 112.3	1 06.8 -28.2 111.8
20°	3 56.2 -29.5 114.5	3 07.1 -29.3 114.1	2 17.8 -29.0 113.6	1 28.3 -28.6 113.2	0 38.6 -28.3 112.7
21°	3 26.7 -29.7 115.4	2 37.8 -29.2 114.9	1 48.8 -28.9 114.5	0 59.7 -28.6 114.0	0 10.3 -28.2 113.6
22°	2 57.0 -29.7 116.3	2 08.6 -29.3 115.8	1 19.9 -28.9 115.4	0 31.1 -28.6 114.9	-0 17.9 -28.2
23°	2 27.3 -29.7 117.1	1 39.3 -29.4 116.7	0 51.0 -29.0 116.2	0 02.5 -28.6 115.8	-0 46.1 -28.3
24°	1 57.6 -29.7 118.0	1 09.9 -29.3 117.6	0 22.0 -29.0 117.1	-0 26.1 -28.6	-1 14.4 -28.2
25°	1 27.9 -29.8 118.9	0 40.6 -29.4 118.4	-0 07.0 -28.9	-0 54.7 -28.5	-1 42.6 -28.2
26°	0 58.1 -29.7 119.7	0 11.2 -29.3 119.3	-0 35.9 -29.0	-1 23.2 -28.6	-2 10.8 -28.1
27°	0 28.4 -29.8 120.6	-0 18.1 -29.4	-1 04.9 -28.9	-1 51.8 -28.5	-2 38.9 -28.1
28°	-0 01.4 -29.8	-0 47.5 -29.3	-1 33.8 -28.9	-2 20.3 -28.5	-3 07.0 -28.1
29°	-0 31.2 -29.7	-1 16.8 -29.4	-2 02.7 -28.9	-2 48.8 -28.5	-3 35.1 -28.0

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 58.7 -26.6 94.4	8 05.0 -26.7 94.0	7 11.2 -26.6 93.5	6 17.3 -26.5 93.1	5 23.5 -26.5 92.6
1°	8 32.1 -26.9 95.3	7 38.3 -26.7 94.9	6 44.6 -26.7 94.4	5 50.8 -26.6 94.0	4 57.0 -26.5 93.5
2°	8 05.2 -26.9 96.2	7 11.6 -26.8 95.8	6 17.9 -26.7 95.3	5 24.2 -26.7 94.9	4 30.5 -26.6 94.4
3°	7 38.3 -27.1 97.1	6 44.8 -27.0 96.7	5 51.2 -26.9 96.2	4 57.5 -26.7 95.8	4 03.9 -26.7 95.3
4°	7 11.2 -27.1 98.0	6 17.8 -27.0 97.6	5 24.3 -26.9 97.1	4 30.8 -26.8 96.7	3 37.2 -26.7 96.2
5°	6 44.1 -27.3 98.9	5 50.8 -27.1 98.5	4 57.4 -27.0 98.0	4 04.0 -26.9 97.6	3 10.5 -26.8 97.1
6°	6 16.8 -27.3 99.8	5 23.7 -27.2 99.4	4 30.4 -27.0 98.9	3 37.1 -26.9 98.5	2 43.7 -26.8 98.0
7°	5 49.5 -27.4 100.7	4 56.5 -27.3 100.3	4 03.4 -27.2 99.8	3 10.2 -27.0 99.4	2 16.9 -26.8 98.9
8°	5 22.1 -27.6 101.6	4 29.2 -27.3 101.2	3 36.2 -27.1 100.7	2 43.2 -27.0 100.3	1 50.1 -26.8 99.8
9°	4 54.5 -27.5 102.5	4 01.9 -27.4 102.1	3 09.1 -27.2 101.6	2 16.2 -27.0 101.2	1 23.3 -26.9 100.7
10°	4 27.0 -27.7 103.4	3 34.5 -27.5 102.9	2 41.9 -27.3 102.5	1 49.2 -27.1 102.1	0 56.4 -26.9 101.6
11°	3 59.3 -27.7 104.3	3 07.0 -27.5 103.8	2 14.6 -27.3 103.4	1 22.1 -27.1 102.9	0 29.5 -26.9 102.5
12°	3 31.6 -27.7 105.2	2 39.5 -27.5 104.7	1 47.3 -27.3 104.3	0 55.0 -27.1 103.8	0 02.6 -26.9 103.4
13°	3 03.9 -27.8 106.1	2 12.0 -27.6 105.6	1 20.0 -27.3 105.2	0 27.9 -27.1 104.7	-0 24.3 -26.9
14°	2 36.1 -27.9 107.0	1 44.4 -27.6 106.5	0 52.7 -27.4 106.1	0 00.8 -27.1 105.6	-0 51.2 -26.9
15°	2 08.2 -27.8 107.8	1 16.8 -27.6 107.4	0 25.3 -27.3 107.0	-0 26.3 -27.1	-1 18.1 -26.8
16°	1 40.4 -27.9 108.7	0 49.2 -27.6 108.3	-0 02.0 -27.4	-0 53.4 -27.1	-1 44.9 -26.9
17°	1 12.5 -27.9 109.6	0 21.6 -27.6 109.2	-0 29.4 -27.3	-1 20.5 -27.1	-2 11.8 -26.8
18°	0 44.6 -27.9 110.5	-0 06.0 -27.6	-0 56.7 -27.3	-1 47.6 -27.0	-2 38.6 -26.7
19°	0 16.7 -27.9 111.4	-0 33.6 -27.6	-1 24.0 -27.4	-2 14.6 -27.0	-3 05.3 -26.8
20°	-0 11.2 -28.0	-1 01.2 -27.6	-1 51.4 -27.2	-2 41.6 -27.0	-3 32.1 -26.6
21°	-0 39.2 -27.9	-1 28.8 -27.6	-2 18.6 -27.3	-3 08.6 -26.9	-3 58.7 -26.6
22°	-1 07.1 -27.9	-1 56.4 -27.5	-2 45.9 -27.2	-3 35.5 -26.9	-4 25.3 -26.6
23°	-1 35.0 -27.8	-2 23.9 -27.6	-3 13.1 -27.2	-4 02.4 -26.8	-4 51.9 -26.5
24°	-2 02.8 -27.9	-2 51.5 -27.4	-3 40.3 -27.1	-4 29.2 -26.8	-5 18.4 -26.4
25°	-2 30.7 -27.8	-3 18.9 -27.5	-4 07.4 -27.0	-4 56.0 -26.7	-5 44.8 -26.3
26°	-2 58.5 -27.7	-3 46.4 -27.3	-4 34.4 -27.0	-5 22.7 -26.6	-6 11.1 -26.2
27°	-3 26.2 -27.7	-4 13.7 -27.3	-5 01.4 -26.9	-5 49.3 -26.5	-6 37.3 -26.1
28°	-3 53.9 -27.7	-4 41.0 -27.3	-5 28.3 -26.8	-6 15.8 -26.4	-7 03.4 -26.0
29°	-4 21.6 -27.6	-5 08.3 -27.1	-5 55.1 -26.8	-6 42.2 -26.3	-7 29.4 -25.9

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 29.6 -26.4 92.2	3 35.7 -26.4 91.8	2 41.8 -26.4 91.3	1 47.9 -26.4 90.9	0 53.9 -26.3 90.4
1°	4 03.2 -26.5 93.1	3 09.3 -26.4 92.7	2 15.4 -26.4 92.2	1 21.5 -26.3 91.8	0 27.6 -26.3 91.3
2°	3 36.7 -26.5 94.0	2 42.9 -26.5 93.6	1 49.0 -26.4 93.1	0 55.2 -26.4 92.7	0 01.3 -26.3 92.2
3°	3 10.2 -26.6 94.9	2 16.4 -26.5 94.5	1 22.6 -26.4 94.0	0 28.8 -26.4 93.6	-0 25.0 -26.3
4°	2 43.6 -26.6 95.8	1 49.9 -26.5 95.4	0 56.2 -26.5 94.9	0 02.4 -26.3 94.5	-0 51.3 -26.3
5°	2 17.0 -26.7 96.7	1 23.4 -26.6 96.2	0 29.7 -26.4 95.8	-0 23.9 -26.4	-1 17.6 -26.3
6°	1 50.3 -26.7 97.6	0 56.8 -26.5 97.1	0 03.3 -26.5 96.7	-0 50.3 -26.3	-1 43.9 -26.3
7°	1 23.6 -26.7 98.5	0 30.3 -26.6 98.0	-0 23.2 -26.4	-1 16.6 -26.4	-2 10.2 -26.2
8°	0 56.9 -26.7 99.4	0 03.7 -26.6 98.9	-0 49.6 -26.4	-1 43.0 -26.3	-2 36.4 -26.2
9°	0 30.2 -26.7 100.3	-0 22.9 -26.5	-1 16.0 -26.5	-2 09.3 -26.2	-3 02.6 -26.1
10°	0 03.5 -26.7 101.2	-0 49.4 -26.6	-1 42.5 -26.3	-2 35.5 -26.3	-3 28.7 -26.1
11°	-0 23.2 -26.7	-1 16.0 -26.5	-2 08.8 -26.4	-3 01.8 -26.2	-3 54.8 -26.0
12°	-0 49.9 -26.7	-1 42.5 -26.5	-2 35.2 -26.3	-3 28.0 -26.1	-4 20.8 -26.0
13°	-1 16.6 -26.7	-2 09.0 -26.5	-3 01.5 -26.3	-3 54.1 -26.1	-4 46.8 -25.9
14°	-1 43.3 -26.7	-2 35.5 -26.4	-3 27.8 -26.2	-4 20.2 -26.0	-5 12.7 -25.8
15°	-2 10.0 -26.6	-3 01.9 -26.4	-3 54.0 -26.2	-4 46.2 -26.0	-5 38.5 -25.7
16°	-2 36.6 -26.6	-3 28.3 -26.4	-4 20.2 -26.1	-5 12.2 -25.8	-6 04.2 -25.7
17°	-3 03.2 -26.5	-3 54.7 -26.3	-4 46.3 -26.0	-5 38.0 -25.8	-6 29.9 -25.5
18°	-3 29.7 -26.5	-4 21.0 -26.2	-5 12.3 -26.0	-6 03.8 -25.7	-6 55.4 -25.5
19°	-3 56.2 -26.4	-4 47.2 -26.1	-5 38.3 -25.9	-6 29.5 -25.6	-7 20.9 -25.3
20°	-4 22.6 -26.4	-5 13.3 -26.1	-6 04.2 -25.7	-6 55.1 -25.5	-7 46.2 -25.2
21°	-4 49.0 -26.3	-5 39.4 -26.0	-6 29.9 -25.7	-7 20.6 -25.4	-8 11.4 -25.1
22°	-5 15.3 -26.2	-6 05.4 -25.9	-6 55.6 -25.6	-7 46.0 -25.2	-8 36.5 -24.9
23°	-5 41.5 -26.1	-6 31.3 -25.8	-7 21.2 -25.5	-8 11.2 -25.2	-9 01.4 -24.8
24°	-6 07.6 -26.1	-6 57.1 -25.7	-7 46.7 -25.3	-8 36.4 -25.0	-9 26.2 -24.7
25°	-6 33.7 -25.9	-7 22.8 -25.6	-8 12.0 -25.2	-9 01.4 -24.9	-9 50.9 -24.5
26°	-6 59.6 -25.9	-7 48.4 -25.4	-8 37.2 -25.1	-9 26.3 -24.7	
27°	-7 25.5 -25.7	-8 13.8 -25.4	-9 02.3 -25.0	-9 51.0 -24.6	
28°	-7 51.2 -25.6	-8 39.2 -25.2	-9 27.3 -24.8		
29°	-8 16.8 -25.5	-9 04.4 -25.0	-9 52.1 -24.7		

Latitude 26°

Declination CONTRARY name to Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -26.3 90.0	-0 53.9 -26.3			
1°	-0 26.3 -26.3	-1 20.2 -26.3			
2°	-0 52.6 -26.3	-1 46.5 -26.3			
3°	-1 18.9 -26.2	-2 12.8 -26.2			
4°	-1 45.1 -26.3	-2 39.0 -26.2			
5°	-2 11.4 -26.2	-3 05.2 -26.1			
6°	-2 37.6 -26.1	-3 31.3 -26.1			
7°	-3 03.7 -26.2	-3 57.4 -26.0			
8°	-3 29.9 -26.0	-4 23.4 -26.0			
9°	-3 55.9 -26.0	-4 49.4 -25.8			
10°	-4 21.9 -26.0	-5 15.2 -25.8			
11°	-4 47.9 -25.9	-5 41.0 -25.8			
12°	-5 13.8 -25.8	-6 06.8 -25.6			
13°	-5 39.6 -25.7	-6 32.4 -25.5			
14°	-6 05.3 -25.6	-6 57.9 -25.5			
15°	-6 30.9 -25.5	-7 23.4 -25.3			
16°	-6 56.4 -25.4	-7 48.7 -25.2			
17°	-7 21.8 -25.3	-8 13.9 -25.0			
18°	-7 47.1 -25.2	-8 38.9 -25.0			
19°	-8 12.3 -25.1	-9 03.9 -24.8			
20°	-8 37.4 -24.9	-9 28.7 -24.6			
21°	-9 02.3 -24.8	-9 53.3 -24.6			
22°	-9 27.1 -24.7				
23°	-9 51.8 -24.5				
24°					
25°					
26°					
27°					
28°					
29°					

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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 The data on this page is believed to be accurate but no warranty is given for it's correctness. Use it only for training and exercising!

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	63 00.0 -60.0 180.0	62 59.0 -60.0 177.8	62 55.9 -59.9 175.6	62 50.8 -59.7 173.4	62 43.6 -59.4 171.2
1°	62 00.0 -60.0 180.0	61 59.0 -60.0 177.9	61 56.0 -59.8 175.7	61 51.1 -59.7 173.6	61 44.2 -59.5 171.5
2°	61 00.0 -60.0 180.0	60 59.0 -59.9 177.9	60 56.2 -59.9 175.9	60 51.4 -59.8 173.8	60 44.7 -59.5 171.8
3°	60 00.0 -60.0 180.0	59 59.1 -60.0 178.0	59 56.3 -59.9 176.0	59 51.6 -59.7 174.0	59 45.2 -59.6 172.1
4°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.1	58 56.4 -59.9 176.1	58 51.9 -59.8 174.2	58 45.6 -59.6 172.3
5°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.1	57 56.5 -59.9 176.2	57 52.1 -59.8 174.4	57 46.0 -59.6 172.5
6°	57 00.0 -60.0 180.0	56 59.1 -59.9 178.2	56 56.6 -59.9 176.4	56 52.3 -59.7 174.5	56 46.4 -59.6 172.7
7°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.2	55 56.7 -59.9 176.5	55 52.6 -59.8 174.7	55 46.8 -59.6 172.9
8°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.3	54 56.8 -59.9 176.6	54 52.8 -59.8 174.8	54 47.2 -59.7 173.1
9°	54 00.0 -60.0 180.0	53 59.2 -60.0 178.3	53 56.9 -60.0 176.6	53 53.0 -59.9 175.0	53 47.5 -59.7 173.3
10°	53 00.0 -60.0 180.0	52 59.2 -59.9 178.4	52 56.9 -59.9 176.7	52 53.1 -59.8 175.1	52 47.8 -59.7 173.5
11°	52 00.0 -60.0 180.0	51 59.3 -60.0 178.4	51 57.0 -59.9 176.8	51 53.3 -59.8 175.2	51 48.1 -59.7 173.6
12°	51 00.0 -60.0 180.0	50 59.3 -60.0 178.4	50 57.1 -59.9 176.9	50 53.5 -59.9 175.3	50 48.4 -59.7 173.8
13°	50 00.0 -60.0 180.0	49 59.3 -60.0 178.5	49 57.2 -60.0 177.0	49 53.6 -59.8 175.5	49 48.7 -59.7 174.0
14°	49 00.0 -60.0 180.0	48 59.3 -60.0 178.5	48 57.2 -59.9 177.0	48 53.8 -59.9 175.6	48 49.0 -59.8 174.1
15°	48 00.0 -60.0 180.0	47 59.3 -60.0 178.6	47 57.3 -59.9 177.1	47 53.9 -59.8 175.7	47 49.2 -59.7 174.2
16°	47 00.0 -60.0 180.0	46 59.3 -59.9 178.6	46 57.4 -60.0 177.2	46 54.1 -59.9 175.8	46 49.5 -59.8 174.4
17°	46 00.0 -60.0 180.0	45 59.4 -60.0 178.6	45 57.4 -59.9 177.2	45 54.2 -59.8 175.9	45 49.7 -59.7 174.5
18°	45 00.0 -60.0 180.0	44 59.4 -60.0 178.7	44 57.5 -60.0 177.3	44 54.4 -59.9 176.0	44 50.0 -59.8 174.6
19°	44 00.0 -60.0 180.0	43 59.4 -60.0 178.7	43 57.5 -59.9 177.4	43 54.5 -59.9 176.1	43 50.2 -59.8 174.8
20°	43 00.0 -60.0 180.0	42 59.4 -60.0 178.7	42 57.6 -59.9 177.4	42 54.6 -59.9 176.1	42 50.4 -59.8 174.9
21°	42 00.0 -60.0 180.0	41 59.4 -60.0 178.7	41 57.7 -60.0 177.5	41 54.7 -59.9 176.2	41 50.6 -59.8 175.0
22°	41 00.0 -60.0 180.0	40 59.4 -60.0 178.8	40 57.7 -59.9 177.5	40 54.8 -59.8 176.3	40 50.8 -59.8 175.1
23°	40 00.0 -60.0 180.0	39 59.4 -59.9 178.8	39 57.8 -60.0 177.6	39 55.0 -59.9 176.4	39 51.0 -59.8 175.2
24°	39 00.0 -60.0 180.0	38 59.5 -60.0 178.8	38 57.8 -59.9 177.7	38 55.1 -59.9 176.5	38 51.2 -59.8 175.3
25°	38 00.0 -60.0 180.0	37 59.5 -60.0 178.9	37 57.9 -60.0 177.7	37 55.2 -59.9 176.6	37 51.4 -59.8 175.4
26°	37 00.0 -60.0 180.0	36 59.5 -60.0 178.9	36 57.9 -60.0 177.8	36 55.3 -59.9 176.6	36 51.6 -59.8 175.5
27°	36 00.0 -60.0 180.0	35 59.5 -60.0 178.9	35 57.9 -59.9 177.8	35 55.4 -59.9 176.7	35 51.8 -59.8 175.6
28°	35 00.0 -60.0 180.0	34 59.5 -60.0 178.9	34 58.0 -60.0 177.8	34 55.5 -59.9 176.8	34 52.0 -59.9 175.7
29°	34 00.0 -60.0 180.0	33 59.5 -60.0 178.9	33 58.0 -59.9 177.9	33 55.6 -59.9 176.8	33 52.1 -59.8 175.8

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	62 34.5 -59.2 169.1	62 23.4 -58.8 167.0	62 10.4 -58.4 164.9	61 55.5 -57.9 162.8	61 38.8 -57.4 160.8
1°	61 35.3 -59.2 169.4	61 24.6 -58.9 167.4	61 12.0 -58.5 165.3	60 57.6 -58.1 163.3	60 41.4 -57.6 161.4
2°	60 36.1 -59.2 169.8	60 25.7 -58.9 167.8	60 13.5 -58.6 165.8	59 59.5 -58.2 163.9	59 43.8 -57.7 161.9
3°	59 36.9 -59.4 170.1	59 26.8 -59.0 168.2	59 14.9 -58.7 166.2	59 01.3 -58.3 164.3	58 46.1 -57.9 162.5
4°	58 37.5 -59.3 170.4	58 27.8 -59.1 168.5	58 16.2 -58.7 166.6	58 03.0 -58.3 164.8	57 48.2 -58.0 163.0
5°	57 38.2 -59.4 170.7	57 28.7 -59.1 168.8	57 17.5 -58.8 167.0	57 04.7 -58.5 165.2	56 50.2 -58.0 163.4
6°	56 38.8 -59.4 170.9	56 29.6 -59.2 169.1	56 18.7 -58.9 167.4	56 06.2 -58.5 165.6	55 52.2 -58.2 163.9
7°	55 39.4 -59.4 171.2	55 30.4 -59.2 169.4	55 19.8 -58.9 167.7	55 07.7 -58.6 166.0	54 54.0 -58.3 164.3
8°	54 40.0 -59.5 171.4	54 31.2 -59.2 169.7	54 20.9 -59.0 168.1	54 09.1 -58.7 166.4	53 55.7 -58.3 164.7
9°	53 40.5 -59.5 171.6	53 32.0 -59.3 170.0	53 21.9 -59.0 168.4	53 10.4 -58.7 166.7	52 57.4 -58.4 165.1
10°	52 41.0 -59.5 171.9	52 32.7 -59.3 170.3	52 22.9 -59.1 168.7	52 11.7 -58.8 167.1	51 59.0 -58.5 165.5
11°	51 41.5 -59.6 172.1	51 33.4 -59.4 170.5	51 23.8 -59.1 168.9	51 12.9 -58.9 167.4	51 00.5 -58.5 165.9
12°	50 41.9 -59.5 172.3	50 34.0 -59.3 170.7	50 24.7 -59.1 169.2	50 14.0 -58.8 167.7	50 02.0 -58.6 166.2
13°	49 42.4 -59.6 172.5	49 34.7 -59.4 171.0	49 25.6 -59.2 169.5	49 15.2 -59.0 168.0	49 03.4 -58.7 166.5
14°	48 42.8 -59.6 172.6	48 35.3 -59.4 171.2	48 26.4 -59.2 169.7	48 16.2 -58.9 168.3	48 04.7 -58.7 166.9
15°	47 43.2 -59.6 172.8	47 35.9 -59.5 171.4	47 27.2 -59.2 170.0	47 17.3 -59.0 168.6	47 06.0 -58.7 167.2
16°	46 43.6 -59.6 173.0	46 36.4 -59.4 171.6	46 28.0 -59.3 170.2	46 18.3 -59.1 168.8	46 07.3 -58.8 167.5
17°	45 44.0 -59.6 173.1	45 37.0 -59.5 171.8	45 28.7 -59.3 170.4	45 19.2 -59.1 169.1	45 08.5 -58.9 167.8
18°	44 44.4 -59.7 173.3	44 37.5 -59.5 172.0	44 29.4 -59.3 170.6	44 20.1 -59.1 169.3	44 09.6 -58.8 168.0
19°	43 44.7 -59.6 173.4	43 38.0 -59.5 172.2	43 30.1 -59.3 170.9	43 21.0 -59.1 169.6	43 10.8 -58.9 168.3
20°	42 45.1 -59.7 173.6	42 38.5 -59.5 172.3	42 30.8 -59.4 171.1	42 21.9 -59.2 169.8	42 11.9 -59.0 168.6
21°	41 45.4 -59.7 173.7	41 39.0 -59.6 172.5	41 31.4 -59.4 171.3	41 22.7 -59.2 170.0	41 12.9 -59.0 168.8
22°	40 45.7 -59.7 173.9	40 39.4 -59.5 172.7	40 32.0 -59.3 171.4	40 23.5 -59.2 170.2	40 13.9 -59.0 169.0
23°	39 46.0 -59.7 174.0	39 39.9 -59.6 172.8	39 32.7 -59.5 171.6	39 24.3 -59.2 170.5	39 14.9 -59.0 169.3
24°	38 46.3 -59.7 174.1	38 40.3 -59.6 173.0	38 33.2 -59.4 171.8	38 25.1 -59.3 170.7	38 15.9 -59.1 169.5
25°	37 46.6 -59.7 174.3	37 40.7 -59.5 173.1	37 33.8 -59.4 172.0	37 25.8 -59.2 170.9	37 16.8 -59.0 169.7
26°	36 46.9 -59.7 174.4	36 41.2 -59.6 173.3	36 34.4 -59.5 172.2	36 26.6 -59.3 171.1	36 17.8 -59.2 170.0
27°	35 47.2 -59.7 174.5	35 41.6 -59.7 173.4	35 34.9 -59.4 172.3	35 27.3 -59.3 171.2	35 18.6 -59.1 170.2
28°	34 47.5 -59.8 174.6	34 41.9 -59.6 173.6	34 35.5 -59.5 172.5	34 28.0 -59.4 171.4	34 19.5 -59.1 170.4
29°	33 47.7 -59.7 174.7	33 42.3 -59.6 173.7	33 36.0 -59.5 172.6	33 28.6 -59.3 171.6	33 20.4 -59.2 170.6

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	61 20.3 -56.9 158.8	61 00.1 -56.3 156.8	60 38.3 -55.7 154.9	60 14.8 -55.0 153.0	59 49.8 -54.3 151.2
1°	60 23.4 -57.0 159.4	60 03.8 -56.5 157.5	59 42.6 -55.9 155.7	59 19.8 -55.3 153.8	58 55.5 -54.7 152.1
2°	59 26.4 -57.3 160.0	59 07.3 -56.7 158.2	58 46.7 -56.2 156.4	58 24.5 -55.6 154.6	58 00.8 -55.0 152.8
3°	58 29.1 -57.4 160.6	58 10.6 -56.9 158.8	57 50.5 -56.3 157.0	57 28.9 -55.8 155.3	57 05.8 -55.2 153.6
4°	57 31.7 -57.5 161.2	57 13.7 -57.0 159.4	56 54.2 -56.6 157.7	56 33.1 -56.0 156.0	56 10.6 -55.4 154.3
5°	56 34.2 -57.6 161.7	56 16.7 -57.2 160.0	55 57.6 -56.7 158.3	55 37.1 -56.2 156.6	55 15.2 -55.6 155.0
6°	55 36.6 -57.8 162.2	55 19.5 -57.3 160.5	55 00.9 -56.8 158.9	54 40.9 -56.3 157.2	54 19.6 -55.9 155.6
7°	54 38.8 -57.9 162.7	54 22.2 -57.5 161.0	54 04.1 -57.0 159.4	53 44.6 -56.6 157.8	53 23.7 -56.0 156.3
8°	53 40.9 -57.9 163.1	53 24.7 -57.6 161.5	53 07.1 -57.2 159.9	52 48.0 -56.6 158.4	52 27.7 -56.2 156.8
9°	52 43.0 -58.1 163.6	52 27.1 -57.6 162.0	52 09.9 -57.2 160.4	51 51.4 -56.9 158.9	51 31.5 -56.4 157.4
10°	51 44.9 -58.1 164.0	51 29.5 -57.8 162.4	51 12.7 -57.4 160.9	50 54.5 -56.9 159.4	50 35.1 -56.5 158.0
11°	50 46.8 -58.2 164.4	50 31.7 -57.8 162.9	50 15.3 -57.5 161.4	49 57.6 -57.1 159.9	49 38.6 -56.6 158.5
12°	49 48.6 -58.3 164.7	49 33.9 -58.0 163.3	49 17.8 -57.6 161.8	49 00.5 -57.2 160.4	48 42.0 -56.8 159.0
13°	48 50.3 -58.4 165.1	48 35.9 -58.0 163.7	48 20.2 -57.6 162.3	48 03.3 -57.3 160.9	47 45.2 -56.9 159.5
14°	47 51.9 -58.4 165.5	47 37.9 -58.1 164.1	47 22.6 -57.8 162.7	47 06.0 -57.3 161.3	46 48.3 -57.0 159.9
15°	46 53.5 -58.4 165.8	46 39.8 -58.2 164.4	46 24.8 -57.8 163.1	46 08.7 -57.5 161.7	45 51.3 -57.1 160.4
16°	45 55.1 -58.6 166.1	45 41.6 -58.2 164.8	45 27.0 -57.9 163.4	45 11.2 -57.6 162.1	44 54.2 -57.2 160.8
17°	44 56.5 -58.5 166.4	44 43.4 -58.3 165.1	44 29.1 -58.0 163.8	44 13.6 -57.6 162.5	44 57.0 -57.3 161.3
18°	43 58.0 -58.7 166.7	43 45.1 -58.3 165.4	43 31.1 -58.0 164.2	43 16.0 -57.8 162.9	42 59.7 -57.4 161.7
19°	42 59.3 -58.6 167.0	42 46.8 -58.4 165.8	42 33.1 -58.1 164.5	42 18.2 -57.7 163.3	42 02.3 -57.4 162.1
20°	42 00.7 -58.7 167.3	41 48.4 -58.5 166.1	41 35.0 -58.2 164.9	41 20.5 -57.9 163.6	41 04.9 -57.6 162.4
21°	41 02.0 -58.8 167.6	40 49.9 -58.4 166.4	40 36.8 -58.2 165.2	40 22.6 -57.9 164.0	40 07.3 -57.6 162.8
22°	40 03.2 -58.7 167.9	39 51.5 -58.6 166.7	39 38.6 -58.3 165.5	39 24.7 -58.0 164.3	39 09.7 -57.6 163.2
23°	39 04.5 -58.9 168.1	38 52.9 -58.6 167.0	38 40.3 -58.3 165.8	38 26.7 -58.0 164.7	38 12.1 -57.8 163.5
24°	38 05.6 -58.8 168.4	37 54.3 -58.6 167.2	37 42.0 -58.3 166.1	37 28.7 -58.1 165.0	37 14.3 -57.7 163.9
25°	37 06.8 -58.9 168.6	36 55.7 -58.6 167.5	36 43.7 -58.4 166.4	36 30.6 -58.1 165.3	36 16.6 -57.9 164.2
26°	36 07.9 -58.9 168.9	35 57.1 -58.7 167.8	35 45.3 -58.5 166.7	35 32.5 -58.2 165.6	35 18.7 -57.9 164.5
27°	35 09.0 -58.9 169.1	34 58.4 -58.7 168.0	34 46.8 -58.4 167.0	34 34.3 -58.2 165.9	34 20.8 -57.9 164.9
28°	34 10.1 -59.0 169.3	33 59.7 -58.7 168.3	33 48.4 -58.5 167.2	33 36.1 -58.3 166.2	33 22.9 -58.0 165.2
29°	33 11.1 -58.9 169.5	33 01.0 -58.8 168.5	32 49.9 -58.6 167.5	32 37.8 -58.3 166.5	32 24.9 -58.0 165.5

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	59 23.4 -53.7 149.5	58 55.5 -53.0 147.7	58 26.3 -52.3 146.0	57 55.8 -51.5 144.4	57 24.1 -50.8 142.8
1°	58 29.7 -54.0 150.3	58 02.5 -53.3 148.6	57 34.0 -52.6 147.0	57 04.3 -52.0 145.4	56 33.3 -51.3 143.8
2°	57 35.7 -54.3 151.1	57 09.2 -53.7 149.5	56 41.4 -53.0 147.9	56 12.3 -52.3 146.3	55 42.0 -51.6 144.7
3°	56 41.4 -54.6 151.9	56 15.5 -53.9 150.3	55 48.4 -53.3 148.7	55 20.0 -52.7 147.1	54 50.4 -52.0 145.6
4°	55 46.8 -54.9 152.7	55 21.6 -54.3 151.1	54 55.1 -53.7 149.5	54 27.3 -53.0 148.0	53 58.4 -52.4 146.5
5°	54 51.9 -55.1 153.4	54 27.3 -54.5 151.8	54 01.4 -53.9 150.3	53 34.3 -53.3 148.8	53 06.0 -52.7 147.3
6°	53 56.8 -55.3 154.1	53 32.8 -54.7 152.5	53 07.5 -54.2 151.0	52 41.0 -53.6 149.5	52 13.3 -53.0 148.1
7°	53 01.5 -55.5 154.7	52 38.1 -55.0 153.2	52 13.3 -54.4 151.7	51 47.4 -53.8 150.3	51 20.3 -53.2 148.9
8°	52 06.0 -55.7 155.3	51 43.1 -55.2 153.9	51 18.9 -54.6 152.4	50 53.6 -54.1 151.0	50 27.1 -53.6 149.6
9°	51 10.3 -55.9 155.9	50 47.9 -55.4 154.5	50 24.3 -54.9 153.1	49 59.5 -54.4 151.7	49 33.5 -53.8 150.3
10°	50 14.4 -56.0 156.5	49 52.5 -55.5 155.1	49 29.4 -55.1 153.7	49 05.1 -54.5 152.3	48 39.7 -54.0 151.0
11°	49 18.4 -56.2 157.1	48 57.0 -55.8 155.7	48 34.3 -55.2 154.3	48 10.6 -54.8 152.9	47 45.7 -54.2 151.6
12°	48 22.2 -56.3 157.6	48 01.2 -55.9 156.2	47 39.1 -55.4 154.9	47 15.8 -54.9 153.6	46 51.5 -54.4 152.2
13°	47 25.9 -56.5 158.1	47 05.3 -56.0 156.8	46 43.7 -55.6 155.4	46 20.9 -55.1 154.1	45 57.1 -54.7 152.9
14°	46 29.4 -56.6 158.6	46 09.3 -56.2 157.3	45 48.1 -55.7 156.0	45 25.8 -55.3 154.7	45 02.4 -54.8 153.4
15°	45 32.8 -56.7 159.1	45 13.1 -56.3 157.8	44 52.4 -55.9 156.5	44 30.5 -55.4 155.3	44 07.6 -54.9 154.0
16°	44 36.1 -56.8 159.5	44 16.8 -56.4 158.3	43 56.5 -56.0 157.0	43 35.1 -55.5 155.8	43 12.7 -55.1 154.6
17°	43 39.3 -57.0 160.0	43 20.4 -56.5 158.8	43 00.5 -56.1 157.5	42 39.6 -55.7 156.3	42 17.6 -55.3 155.1
18°	42 42.3 -57.0 160.4	42 23.9 -56.6 159.2	42 04.4 -56.2 158.0	41 43.9 -55.9 156.8	41 22.3 -55.4 155.6
19°	41 45.3 -57.1 160.8	41 27.3 -56.8 159.7	41 08.2 -56.4 158.5	40 48.0 -55.9 157.3	40 26.9 -55.5 156.1
20°	40 48.2 -57.2 161.3	40 30.5 -56.8 160.1	40 11.8 -56.5 158.9	39 52.1 -56.1 157.8	39 31.4 -55.7 156.6
21°	39 51.0 -57.2 161.7	39 33.7 -56.9 160.5	39 15.3 -56.5 159.4	38 56.0 -56.2 158.2	38 35.7 -55.8 157.1
22°	38 53.8 -57.4 162.0	38 36.8 -57.0 160.9	38 18.8 -56.6 159.8	37 59.8 -56.2 158.7	37 39.9 -55.8 157.6
23°	37 56.4 -57.4 162.4	37 39.8 -57.1 161.3	37 22.2 -56.8 160.2	37 03.6 -56.4 159.1	36 44.1 -56.0 158.0
24°	36 59.0 -57.5 162.8	36 42.7 -57.2 161.7	36 25.4 -56.8 160.6	36 07.2 -56.4 159.5	35 48.1 -56.1 158.5
25°	36 01.5 -57.5 163.1	35 45.5 -57.2 162.1	35 28.6 -56.9 161.0	35 10.8 -56.6 160.0	34 52.0 -56.2 158.9
26°	35 04.0 -57.6 163.5	34 48.3 -57.3 162.4	34 31.7 -56.9 161.4	34 14.2 -56.6 160.4	33 55.8 -56.2 159.3
27°	34 06.4 -57.7 163.8	33 51.0 -57.3 162.8	33 34.8 -57.0 161.8	33 17.6 -56.7 160.8	32 59.6 -56.4 159.8
28°	33 08.7 -57.7 164.2	32 53.7 -57.4 163.2	32 37.8 -57.1 162.2	32 20.9 -56.7 161.2	32 03.2 -56.4 160.2
29°	32 11.0 -57.7 164.5	31 56.3 -57.5 163.5	31 40.7 -57.2 162.5	31 24.2 -56.9 161.5	31 06.8 -56.5 160.6

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	56 51.2 -50.1 141.3	56 17.2 -49.3 139.8	55 42.2 -48.6 138.3	55 06.1 -47.8 136.9	54 29.2 -47.2 135.6
1°	56 01.1 -50.5 142.3	55 27.9 -49.8 140.8	54 53.6 -49.1 139.4	54 18.3 -48.4 138.0	53 42.0 -47.7 136.6
2°	55 10.6 -50.9 143.2	54 38.1 -50.3 141.8	54 04.5 -49.6 140.4	53 29.9 -48.9 139.0	52 54.3 -48.2 137.6
3°	54 19.7 -51.4 144.1	53 47.8 -50.7 142.7	53 14.9 -50.0 141.3	52 41.0 -49.4 139.9	52 06.1 -48.7 138.6
4°	53 28.3 -51.7 145.0	52 57.1 -51.0 143.6	52 24.9 -50.4 142.2	51 51.6 -49.7 140.9	51 17.4 -49.1 139.5
5°	52 36.6 -52.1 145.9	52 06.1 -51.5 144.5	51 34.5 -50.8 143.1	51 01.9 -50.2 141.8	50 28.3 -49.5 140.5
6°	51 44.5 -52.4 146.7	51 14.6 -51.8 145.3	50 43.7 -51.2 143.9	50 11.7 -50.5 142.6	49 38.8 -49.9 141.3
7°	50 52.1 -52.7 147.5	50 22.8 -52.0 146.1	49 52.5 -51.5 144.8	49 21.2 -50.9 143.5	48 48.9 -50.3 142.2
8°	49 59.4 -52.9 148.2	49 30.8 -52.4 146.9	49 01.0 -51.8 145.6	48 30.3 -51.2 144.3	47 58.6 -50.6 143.0
9°	49 06.5 -53.3 148.9	48 38.4 -52.7 147.6	48 09.2 -52.1 146.3	47 39.1 -51.5 145.0	47 08.0 -51.0 143.8
10°	48 13.2 -53.4 149.6	47 45.7 -52.9 148.3	47 17.1 -52.3 147.1	46 47.6 -51.8 145.8	46 17.0 -51.2 144.6
11°	47 19.8 -53.7 150.3	46 52.8 -53.2 149.0	46 24.8 -52.7 147.8	45 55.8 -52.1 146.5	45 25.8 -51.5 145.3
12°	46 26.1 -54.0 151.0	45 59.6 -53.4 149.7	45 32.1 -52.8 148.5	45 03.7 -52.4 147.2	44 34.3 -51.8 146.0
13°	45 32.1 -54.1 151.6	45 06.2 -53.6 150.3	44 39.3 -53.1 149.1	44 11.3 -52.5 147.9	43 42.5 -52.0 146.8
14°	44 38.0 -54.3 152.2	44 12.6 -53.8 151.0	43 46.2 -53.3 149.8	43 18.8 -52.8 148.6	42 50.5 -52.3 147.4
15°	43 43.7 -54.5 152.8	43 18.8 -54.0 151.6	42 52.9 -53.6 150.4	42 26.0 -53.0 149.2	41 58.2 -52.5 148.1
16°	42 49.2 -54.6 153.4	42 24.8 -54.2 152.2	41 59.3 -53.7 151.0	41 33.0 -53.2 149.9	41 05.7 -52.7 148.7
17°	41 54.6 -54.9 153.9	41 30.6 -54.4 152.8	41 05.6 -53.8 151.6	40 39.8 -53.4 150.5	40 13.0 -52.9 149.4
18°	40 59.7 -54.9 154.5	40 36.2 -54.5 153.3	40 11.8 -54.1 152.2	39 46.4 -53.6 151.1	39 20.1 -53.1 150.0
19°	40 04.8 -55.1 155.0	39 41.7 -54.7 153.9	39 17.7 -54.2 152.8	38 52.8 -53.8 151.7	38 27.0 -53.3 150.6
20°	39 09.7 -55.3 155.5	38 47.0 -54.8 154.4	38 23.5 -54.4 153.3	37 59.0 -53.9 152.2	37 33.7 -53.5 151.2
21°	38 14.4 -55.3 156.0	37 52.2 -54.9 154.9	37 29.1 -54.5 153.8	37 05.1 -54.0 152.8	36 40.2 -53.6 151.7
22°	37 19.1 -55.5 156.5	36 57.3 -55.1 155.4	36 34.6 -54.6 154.4	36 11.1 -54.2 153.3	35 46.6 -53.7 152.3
23°	36 23.6 -55.6 157.0	36 02.2 -55.1 155.9	35 40.0 -54.8 154.9	35 16.9 -54.4 153.9	34 52.9 -53.9 152.8
24°	35 28.0 -55.7 157.4	35 07.1 -55.3 156.4	34 45.2 -54.9 155.4	34 22.5 -54.4 154.4	33 59.0 -54.0 153.4
25°	34 32.3 -55.8 157.9	34 11.8 -55.4 156.9	33 50.3 -55.0 155.9	33 28.1 -54.6 154.9	33 05.0 -54.2 153.9
26°	33 36.5 -55.9 158.3	33 16.4 -55.5 157.3	32 55.3 -55.1 156.4	32 33.5 -54.7 155.4	32 10.8 -54.3 154.4
27°	32 40.6 -55.9 158.8	32 20.9 -55.6 157.8	32 00.2 -55.2 156.8	31 38.8 -54.8 155.9	31 16.5 -54.4 154.9
28°	31 44.7 -56.1 159.2	31 25.3 -55.7 158.2	31 05.0 -55.3 157.3	30 44.0 -54.9 156.3	30 22.1 -54.5 155.4
29°	30 48.6 -56.1 159.6	30 29.6 -55.8 158.7	30 09.7 -55.4 157.7	29 49.1 -55.0 156.8	29 27.6 -54.6 155.9

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	53 51.3 -46.5 134.2	53 12.6 -45.8 132.9	52 33.0 -45.0 131.7	51 52.8 -44.5 130.5	51 11.7 -43.7 129.3
1°	53 04.8 -47.0 135.3	52 26.8 -46.3 134.0	51 48.0 -45.7 132.8	51 08.3 -45.0 131.6	50 28.0 -44.4 130.4
2°	52 17.8 -47.5 136.3	51 40.5 -46.9 135.1	51 02.3 -46.2 133.8	50 23.3 -45.5 132.6	49 43.6 -44.9 131.5
3°	51 30.3 -48.0 137.3	50 53.6 -47.3 136.0	50 16.1 -46.7 134.8	49 37.8 -46.1 133.6	48 58.7 -45.4 132.5
4°	50 42.3 -48.5 138.3	50 06.3 -47.9 137.0	49 29.4 -47.2 135.8	48 51.7 -46.5 134.6	48 13.3 -45.9 133.5
5°	49 53.8 -48.9 139.2	49 18.4 -48.2 137.9	48 42.2 -47.6 136.7	48 05.2 -47.0 135.6	47 27.4 -46.4 134.4
6°	49 04.9 -49.3 140.1	48 30.2 -48.7 138.9	47 54.6 -48.1 137.7	47 18.2 -47.5 136.5	46 41.0 -46.9 135.3
7°	48 15.6 -49.6 140.9	47 41.5 -49.0 139.7	47 06.5 -48.4 138.5	46 30.7 -47.8 137.4	45 54.1 -47.2 136.3
8°	47 26.0 -50.1 141.8	46 52.5 -49.5 140.6	46 18.1 -48.8 139.4	45 42.9 -48.2 138.3	45 06.9 -47.6 137.1
9°	46 35.9 -50.3 142.6	46 03.0 -49.7 141.4	45 29.3 -49.2 140.2	44 54.7 -48.6 139.1	44 19.3 -48.1 138.0
10°	45 45.6 -50.7 143.4	45 13.3 -50.1 142.2	44 40.1 -49.5 141.0	44 06.1 -49.0 139.9	43 31.2 -48.3 138.8
11°	44 54.9 -50.9 144.1	44 23.2 -50.4 143.0	43 50.6 -49.9 141.8	43 17.1 -49.2 140.7	42 42.9 -48.7 139.6
12°	44 04.0 -51.3 144.9	43 32.8 -50.7 143.7	43 00.7 -50.1 142.6	42 27.9 -49.6 141.5	41 54.2 -49.0 140.4
13°	43 12.7 -51.5 145.6	42 42.1 -51.0 144.5	42 10.6 -50.4 143.4	41 38.3 -49.9 142.3	41 05.2 -49.3 141.2
14°	42 21.2 -51.7 146.3	41 51.1 -51.2 145.2	41 20.2 -50.7 144.1	40 48.4 -50.1 143.0	40 15.9 -49.6 141.9
15°	41 29.5 -52.0 147.0	40 59.9 -51.4 145.9	40 29.5 -50.9 144.8	39 58.3 -50.4 143.7	39 26.3 -49.9 142.7
16°	40 37.5 -52.2 147.6	40 08.5 -51.7 146.5	39 38.6 -51.2 145.5	39 07.9 -50.7 144.4	38 36.4 -50.1 143.4
17°	39 45.3 -52.4 148.3	39 16.8 -51.9 147.2	38 47.4 -51.4 146.2	38 17.2 -50.9 145.1	37 46.3 -50.4 144.1
18°	38 52.9 -52.6 148.9	38 24.9 -52.1 147.9	37 56.0 -51.6 146.8	37 26.3 -51.1 145.8	36 55.9 -50.6 144.8
19°	38 00.3 -52.8 149.5	37 32.8 -52.4 148.5	37 04.4 -51.8 147.5	36 35.2 -51.3 146.4	36 05.3 -50.8 145.4
20°	37 07.5 -53.0 150.1	36 40.4 -52.5 149.1	36 12.6 -52.0 148.1	35 43.9 -51.5 147.1	35 14.5 -51.0 146.1
21°	36 14.5 -53.1 150.7	35 47.9 -52.6 149.7	35 20.6 -52.2 148.7	34 52.4 -51.7 147.7	34 23.5 -51.3 146.7
22°	35 21.4 -53.3 151.3	34 55.3 -52.9 150.3	34 28.4 -52.4 149.3	34 00.7 -51.9 148.3	33 32.2 -51.4 147.4
23°	34 28.1 -53.5 151.8	34 02.4 -53.0 150.9	33 36.0 -52.5 149.9	33 08.8 -52.1 148.9	32 40.8 -51.6 148.0
24°	33 34.6 -53.6 152.4	33 09.4 -53.1 151.4	32 43.5 -52.7 150.5	32 16.7 -52.2 149.5	31 49.2 -51.7 148.6
25°	32 41.0 -53.7 152.9	32 16.3 -53.3 152.0	31 50.8 -52.8 151.0	31 24.5 -52.4 150.1	30 57.5 -51.9 149.2
26°	31 47.3 -53.9 153.5	31 23.0 -53.4 152.5	30 58.0 -53.0 151.6	30 32.1 -52.5 150.7	30 05.6 -52.1 149.8
27°	30 53.4 -53.9 154.0	30 29.6 -53.5 153.0	30 05.0 -53.1 152.1	29 39.6 -52.6 151.2	29 13.5 -52.2 150.3
28°	29 59.5 -54.1 154.5	29 36.1 -53.7 153.6	29 11.9 -53.2 152.7	28 47.0 -52.8 151.8	28 21.3 -52.3 150.9
29°	29 05.4 -54.2 155.0	28 42.4 -53.8 154.1	28 18.7 -53.4 153.2	27 54.2 -52.9 152.3	27 29.0 -52.5 151.4

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	50 30.1 -43.2 128.2	49 47.7 -42.5 127.1	49 04.8 -41.9 126.0	48 21.2 -41.3 125.0	47 37.1 -40.7 123.9
1°	49 46.9 -43.7 129.3	49 05.2 -43.1 128.2	48 22.9 -42.5 127.1	47 39.9 -41.9 126.0	46 56.4 -41.3 125.0
2°	49 03.2 -44.3 130.3	48 22.1 -43.7 129.2	47 40.4 -43.1 128.1	46 58.0 -42.4 127.1	46 15.1 -41.9 126.1
3°	48 18.9 -44.8 131.3	47 38.4 -44.1 130.2	46 57.3 -43.6 129.2	46 15.6 -43.0 128.1	45 33.2 -42.4 127.1
4°	47 34.1 -45.3 132.3	46 54.3 -44.7 131.2	46 13.7 -44.1 130.2	45 32.6 -43.6 129.1	44 50.8 -43.0 128.1
5°	46 48.8 -45.8 133.3	46 09.6 -45.2 132.2	45 29.6 -44.6 131.1	44 49.0 -44.0 130.1	44 07.8 -43.4 129.1
6°	46 03.0 -46.2 134.2	45 24.4 -45.7 133.1	44 45.0 -45.0 132.1	44 05.0 -44.4 131.1	43 24.4 -43.9 130.0
7°	45 16.8 -46.6 135.1	44 38.7 -46.0 134.1	44 00.0 -45.5 133.0	43 20.6 -44.9 132.0	42 40.5 -44.3 131.0
8°	44 30.2 -47.1 136.0	43 52.7 -46.5 135.0	43 14.5 -45.9 133.9	42 35.7 -45.4 132.9	41 56.2 -44.8 131.9
9°	43 43.1 -47.4 136.9	43 06.2 -46.8 135.8	42 28.6 -46.3 134.8	41 50.3 -45.7 133.8	41 11.4 -45.1 132.8
10°	42 55.7 -47.8 137.7	42 19.4 -47.3 136.7	41 42.3 -46.6 135.7	41 04.6 -46.1 134.6	40 26.3 -45.6 133.7
11°	42 07.9 -48.2 138.6	41 32.1 -47.5 137.5	40 55.7 -47.0 136.5	40 18.5 -46.4 135.5	39 40.7 -45.9 134.5
12°	41 19.7 -48.4 139.4	40 44.6 -47.9 138.3	40 08.7 -47.4 137.3	39 32.1 -46.8 136.3	38 54.8 -46.2 135.3
13°	40 31.3 -48.8 140.1	39 56.7 -48.3 139.1	39 21.3 -47.7 138.1	38 45.3 -47.2 137.1	38 08.6 -46.6 136.1
14°	39 42.5 -49.0 140.9	39 08.4 -48.5 139.9	38 33.6 -47.9 138.9	37 58.1 -47.4 137.9	37 22.0 -46.9 136.9
15°	38 53.5 -49.4 141.6	38 19.9 -48.8 140.6	37 45.7 -48.3 139.6	37 10.7 -47.7 138.7	36 35.1 -47.2 137.7
16°	38 04.1 -49.6 142.4	37 31.1 -49.1 141.4	36 57.4 -48.6 140.4	36 23.0 -48.0 139.4	35 47.9 -47.5 138.5
17°	37 14.5 -49.8 143.1	36 42.0 -49.3 142.1	36 08.8 -48.8 141.1	35 35.0 -48.3 140.2	35 00.4 -47.8 139.2
18°	36 24.7 -50.1 143.8	35 52.7 -49.5 142.8	35 20.0 -49.0 141.8	34 46.7 -48.6 140.9	34 12.6 -48.0 140.0
19°	35 34.6 -50.3 144.5	35 03.2 -49.8 143.5	34 31.0 -49.3 142.5	33 58.1 -48.7 141.6	33 24.6 -48.3 140.7
20°	34 44.3 -50.5 145.1	34 13.4 -50.1 144.2	33 41.7 -49.5 143.2	33 09.4 -49.0 142.3	32 36.3 -48.4 141.4
21°	33 53.8 -50.8 145.8	33 23.3 -50.2 144.8	32 52.2 -49.7 143.9	32 20.4 -49.3 143.0	31 47.9 -48.8 142.1
22°	33 03.0 -50.9 146.4	32 33.1 -50.4 145.5	32 02.5 -50.0 144.6	31 31.1 -49.4 143.7	30 59.1 -48.9 142.8
23°	32 12.1 -51.1 147.0	31 42.7 -50.6 146.1	31 12.5 -50.1 145.2	30 41.7 -49.6 144.3	30 10.2 -49.1 143.5
24°	31 21.0 -51.3 147.7	30 52.1 -50.8 146.8	30 22.4 -50.3 145.9	29 52.1 -49.8 145.0	29 21.1 -49.4 144.1
25°	30 29.7 -51.4 148.3	30 01.3 -51.0 147.4	29 32.1 -50.5 146.5	29 02.3 -50.0 145.6	28 31.7 -49.5 144.8
26°	29 38.3 -51.6 148.9	29 10.3 -51.1 148.0	28 41.6 -50.6 147.1	28 12.3 -50.2 146.3	27 42.2 -49.6 145.4
27°	28 46.7 -51.7 149.5	28 19.2 -51.3 148.6	27 51.0 -50.8 147.7	27 22.1 -50.3 146.9	26 52.6 -49.9 146.0
28°	27 55.0 -51.9 150.0	27 27.9 -51.4 149.2	27 00.2 -51.0 148.3	26 31.8 -50.5 147.5	26 02.7 -50.0 146.7
29°	27 03.1 -52.0 150.6	26 36.5 -51.6 149.7	26 09.2 -51.1 148.9	25 41.3 -50.7 148.1	25 12.7 -50.2 147.3

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	46 52.5 -40.1 123.0	46 07.4 -39.6 122.0	45 21.9 -39.1 121.1	44 35.9 -38.6 120.2	43 49.4 -38.0 119.3
1°	46 12.4 -40.8 124.0	45 27.8 -40.2 123.1	44 42.8 -39.7 122.1	43 57.3 -39.1 121.2	43 11.4 -38.7 120.3
2°	45 31.6 -41.3 125.1	44 47.6 -40.7 124.1	44 03.1 -40.2 123.2	43 18.2 -39.7 122.3	42 32.7 -39.2 121.4
3°	44 50.3 -41.9 126.1	44 06.9 -41.4 125.2	43 22.9 -40.8 124.2	42 38.5 -40.3 123.3	41 53.5 -39.7 122.4
4°	44 08.4 -42.3 127.1	43 25.5 -41.8 126.2	42 42.1 -41.3 125.2	41 58.2 -40.7 124.3	41 13.8 -40.2 123.4
5°	43 26.1 -42.9 128.1	42 43.7 -42.3 127.1	42 00.8 -41.7 126.2	41 17.5 -41.3 125.3	40 33.6 -40.7 124.4
6°	42 43.2 -43.3 129.1	42 01.4 -42.8 128.1	41 19.1 -42.3 127.2	40 36.2 -41.7 126.2	39 52.9 -41.2 125.4
7°	41 59.9 -43.8 130.0	41 18.6 -43.2 129.0	40 36.8 -42.7 128.1	39 54.5 -42.2 127.2	39 11.7 -41.7 126.3
8°	41 16.1 -44.2 130.9	40 35.4 -43.7 130.0	39 54.1 -43.1 129.0	39 12.3 -42.5 128.1	38 30.0 -42.0 127.2
9°	40 31.9 -44.6 131.8	39 51.7 -44.0 130.9	39 11.0 -43.5 129.9	38 29.8 -43.0 129.0	37 48.0 -42.5 128.1
10°	39 47.3 -45.0 132.7	39 07.7 -44.5 131.7	38 27.5 -43.9 130.8	37 46.8 -43.4 129.9	37 05.5 -42.9 129.0
11°	39 02.3 -45.4 133.5	38 23.2 -44.8 132.6	37 43.6 -44.3 131.7	37 03.4 -43.8 130.8	36 22.6 -43.2 129.9
12°	38 16.9 -45.7 134.4	37 38.4 -45.2 133.4	36 59.3 -44.7 132.5	36 19.6 -44.1 131.6	35 39.4 -43.6 130.7
13°	37 31.2 -46.1 135.2	36 53.2 -45.5 134.3	36 14.6 -44.9 133.4	35 35.5 -44.5 132.5	34 55.8 -44.0 131.6
14°	36 45.1 -46.3 136.0	36 07.7 -45.8 135.1	35 29.7 -45.4 134.2	34 51.0 -44.8 133.3	34 11.8 -44.2 132.4
15°	35 58.8 -46.7 136.8	35 21.9 -46.2 135.9	34 44.3 -45.6 135.0	34 06.2 -45.1 134.1	33 27.6 -44.6 133.2
16°	35 12.1 -46.9 137.6	34 35.7 -46.4 136.7	33 58.7 -45.9 135.8	33 21.1 -45.4 134.9	32 43.0 -44.9 134.0
17°	34 25.2 -47.3 138.3	33 49.3 -46.7 137.4	33 12.8 -46.2 136.5	32 35.7 -45.6 135.7	31 58.1 -45.2 134.8
18°	33 37.9 -47.5 139.1	33 02.6 -47.0 138.2	32 26.6 -46.4 137.3	31 50.1 -46.0 136.4	31 12.9 -45.4 135.6
19°	32 50.4 -47.7 139.8	32 15.6 -47.2 138.9	31 40.2 -46.8 138.0	31 04.1 -46.2 137.2	30 27.5 -45.7 136.3
20°	32 02.7 -48.0 140.5	31 28.4 -47.5 139.6	30 53.4 -46.9 138.8	30 17.9 -46.4 137.9	29 41.8 -45.9 137.1
21°	31 14.7 -48.2 141.2	30 40.9 -47.7 140.4	30 06.5 -47.2 139.5	29 31.5 -46.7 138.7	28 55.9 -46.2 137.8
22°	30 26.5 -48.4 141.9	29 53.2 -47.9 141.1	29 19.3 -47.4 140.2	28 44.8 -47.0 139.4	28 09.7 -46.4 138.6
23°	29 38.1 -48.7 142.6	29 05.3 -48.2 141.7	28 31.9 -47.7 140.9	27 57.8 -47.1 140.1	27 23.3 -46.7 139.3
24°	28 49.4 -48.8 143.3	28 17.1 -48.3 142.4	27 44.2 -47.8 141.6	27 10.7 -47.3 140.8	26 36.6 -46.8 140.0
25°	28 00.6 -49.0 143.9	27 28.8 -48.5 143.1	26 56.4 -48.0 142.3	26 23.4 -47.5 141.5	25 49.8 -47.0 140.7
26°	27 11.6 -49.2 144.6	26 40.3 -48.7 143.8	26 08.4 -48.2 142.9	25 35.9 -47.8 142.2	25 02.8 -47.3 141.4
27°	26 22.4 -49.4 145.2	25 51.6 -48.9 144.4	25 20.2 -48.4 143.6	24 48.1 -47.9 142.8	24 15.5 -47.4 142.0
28°	25 33.0 -49.5 145.9	25 02.7 -49.0 145.1	24 31.8 -48.6 144.3	24 00.2 -48.0 143.5	23 28.1 -47.5 142.7
29°	24 43.5 -49.7 146.5	24 13.7 -49.2 145.7	23 43.2 -48.7 144.9	23 12.2 -48.2 144.1	22 40.6 -47.8 143.4

Declination CONTRARY name to Latitude

Latitude 27°

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	43 02.6 -37.6 118.4	42 15.4 -37.1 117.6	41 27.8 -36.6 116.8	40 39.9 -36.2 116.0	39 51.7 -35.8 115.2
1°	42 25.0 -38.1 119.5	41 38.3 -37.7 118.6	40 51.2 -37.2 117.8	40 03.7 -36.7 117.0	39 15.9 -36.3 116.2
2°	41 46.9 -38.7 120.5	41 00.6 -38.2 119.7	40 14.0 -37.8 118.8	39 27.0 -37.3 118.0	38 39.6 -36.8 117.2
3°	41 08.2 -39.2 121.5	40 22.4 -38.7 120.7	39 36.2 -38.2 119.9	38 49.7 -37.8 119.0	38 02.8 -37.4 118.3
4°	40 29.0 -39.8 122.5	39 43.7 -39.3 121.7	38 58.0 -38.8 120.9	38 11.9 -38.3 120.0	37 25.4 -37.8 119.2
5°	39 49.2 -40.2 123.5	39 04.4 -39.7 122.7	38 19.2 -39.2 121.8	37 33.6 -38.8 121.0	36 47.6 -38.3 120.2
6°	39 09.0 -40.7 124.5	38 24.7 -40.2 123.6	37 40.0 -39.7 122.8	36 54.8 -39.2 122.0	36 09.3 -38.8 121.2
7°	38 28.3 -41.1 125.4	37 44.5 -40.6 124.6	37 00.3 -40.1 123.7	36 15.6 -39.6 122.9	35 30.5 -39.1 122.1
8°	37 47.2 -41.5 126.3	37 03.9 -41.0 125.5	36 20.2 -40.6 124.7	35 36.0 -40.1 123.8	34 51.4 -39.6 123.0
9°	37 05.7 -42.0 127.3	36 22.9 -41.5 126.4	35 39.6 -41.0 125.6	34 55.9 -40.5 124.8	34 11.8 -40.0 124.0
10°	36 23.7 -42.4 128.1	35 41.4 -41.8 127.3	34 58.6 -41.3 126.5	34 15.4 -40.8 125.6	33 31.8 -40.4 124.8
11°	35 41.3 -42.7 129.0	34 59.6 -42.3 128.2	34 17.3 -41.7 127.3	33 34.6 -41.3 126.5	32 51.4 -40.8 125.7
12°	34 58.6 -43.1 129.9	34 17.3 -42.5 129.0	33 35.6 -42.1 128.2	32 53.3 -41.6 127.4	32 10.6 -41.1 126.6
13°	34 15.5 -43.4 130.7	33 34.8 -43.0 129.9	32 53.5 -42.4 129.1	32 11.7 -41.9 128.3	31 29.5 -41.4 127.5
14°	33 32.1 -43.8 131.6	32 51.8 -43.2 130.7	32 11.1 -42.8 129.9	31 29.8 -42.2 129.1	30 48.1 -41.8 128.3
15°	32 48.3 -44.0 132.4	32 08.6 -43.6 131.5	31 28.3 -43.0 130.7	30 47.6 -42.6 129.9	30 06.3 -42.0 129.1
16°	32 04.3 -44.4 133.2	31 25.0 -43.8 132.4	30 45.3 -43.4 131.5	30 05.0 -42.9 130.7	29 24.3 -42.4 130.0
17°	31 19.9 -44.7 134.0	30 41.2 -44.2 133.2	30 01.9 -43.6 132.3	29 22.1 -43.1 131.5	28 41.9 -42.7 130.8
18°	30 35.2 -44.9 134.8	29 57.0 -44.4 133.9	29 18.3 -44.0 133.1	28 39.0 -43.4 132.3	27 59.2 -42.9 131.6
19°	29 50.3 -45.2 135.5	29 12.6 -44.7 134.7	28 34.3 -44.1 133.9	27 55.6 -43.7 133.1	27 16.3 -43.2 132.4
20°	29 05.1 -45.4 136.3	28 27.9 -44.9 135.5	27 50.2 -44.5 134.7	27 11.9 -44.0 133.9	26 33.1 -43.4 133.1
21°	28 19.7 -45.7 137.0	27 43.0 -45.2 136.2	27 05.7 -44.7 135.4	26 27.9 -44.1 134.7	25 49.7 -43.7 133.9
22°	27 34.0 -45.9 137.8	26 57.8 -45.4 137.0	26 21.0 -44.9 136.2	25 43.8 -44.4 135.4	25 06.0 -43.9 134.7
23°	26 48.1 -46.1 138.5	26 12.4 -45.6 137.7	25 36.1 -45.1 136.9	24 59.4 -44.7 136.2	24 22.1 -44.1 135.4
24°	26 02.0 -46.4 139.2	25 26.8 -45.9 138.4	24 51.0 -45.3 137.7	24 14.7 -44.8 136.9	23 38.0 -44.4 136.2
25°	25 15.6 -46.5 139.9	24 40.9 -46.0 139.1	24 05.7 -45.6 138.4	23 29.9 -45.0 137.6	22 53.6 -44.5 136.9
26°	24 29.1 -46.7 140.6	23 54.9 -46.2 139.8	23 20.1 -45.7 139.1	22 44.9 -45.3 138.3	22 09.1 -44.8 137.6
27°	23 42.4 -46.9 141.3	23 08.7 -46.4 140.5	22 34.4 -45.9 139.8	21 59.6 -45.4 139.1	21 24.3 -44.9 138.3
28°	22 55.5 -47.1 142.0	22 22.3 -46.6 141.2	21 48.5 -46.1 140.5	21 14.2 -45.6 139.8	20 39.4 -45.0 139.0
29°	22 08.4 -47.2 142.6	21 35.7 -46.8 141.9	21 02.4 -46.2 141.2	20 28.6 -45.7 140.5	19 54.4 -45.3 139.7

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	39 03.2 -35.4 114.4	38 14.3 -34.9 113.7	37 25.3 -34.6 112.9	36 35.9 -34.2 112.2	35 46.3 -33.8 111.5
1°	38 27.8 -35.9 115.5	37 39.4 -35.5 114.7	36 50.7 -35.1 114.0	36 01.7 -34.7 113.3	35 12.5 -34.4 112.6
2°	37 51.9 -36.4 116.5	37 03.9 -36.0 115.7	36 15.6 -35.6 115.0	35 27.0 -35.2 114.3	34 38.1 -34.8 113.6
3°	37 15.5 -36.9 117.5	36 27.9 -36.5 116.7	35 40.0 -36.1 116.0	34 51.8 -35.7 115.2	34 03.3 -35.3 114.5
4°	36 38.6 -37.4 118.5	35 51.4 -36.9 117.7	35 03.9 -36.5 117.0	34 16.1 -36.1 116.2	33 28.0 -35.7 115.5
5°	36 01.2 -37.8 119.4	35 14.5 -37.4 118.7	34 27.4 -37.0 117.9	33 40.0 -36.6 117.2	32 52.3 -36.2 116.5
6°	35 23.4 -38.3 120.4	34 37.1 -37.9 119.6	33 50.4 -37.4 118.9	33 03.4 -37.0 118.1	32 16.1 -36.5 117.4
7°	34 45.1 -38.8 121.3	33 59.2 -38.3 120.6	33 13.0 -37.8 119.8	32 26.4 -37.4 119.1	31 39.6 -37.0 118.4
8°	34 06.3 -39.1 122.3	33 20.9 -38.6 121.5	32 35.2 -38.3 120.7	31 49.0 -37.8 120.0	31 02.6 -37.4 119.3
9°	33 27.2 -39.5 123.2	32 42.3 -39.1 122.4	31 56.9 -38.6 121.6	31 11.2 -38.1 120.9	30 25.2 -37.7 120.2
10°	32 47.7 -39.9 124.1	32 03.2 -39.4 123.3	31 18.3 -39.0 122.5	30 33.1 -38.6 121.8	29 47.5 -38.1 121.1
11°	32 07.8 -40.3 125.0	31 23.8 -39.9 124.2	30 39.3 -39.3 123.4	29 54.5 -38.9 122.7	29 09.4 -38.5 122.0
12°	31 27.5 -40.6 125.8	30 43.9 -40.1 125.1	30 00.0 -39.7 124.3	29 15.6 -39.2 123.6	28 30.9 -38.8 122.8
13°	30 46.9 -41.0 126.7	30 03.8 -40.5 125.9	29 20.3 -40.0 125.2	28 36.4 -39.6 124.4	27 52.1 -39.1 123.7
14°	30 05.9 -41.3 127.5	29 23.3 -40.8 126.8	28 40.3 -40.4 126.0	27 56.8 -39.8 125.3	27 13.0 -39.4 124.6
15°	29 24.6 -41.5 128.4	28 42.5 -41.1 127.6	27 59.9 -40.6 126.9	27 17.0 -40.2 126.1	26 33.6 -39.7 125.4
16°	28 43.1 -41.9 129.2	28 01.4 -41.4 128.4	27 19.3 -40.9 127.7	26 36.8 -40.5 127.0	25 53.9 -40.0 126.2
17°	28 01.2 -42.2 130.0	27 20.0 -41.7 129.3	26 38.4 -41.2 128.5	25 56.3 -40.7 127.8	25 13.9 -40.3 127.1
18°	27 19.0 -42.4 130.8	26 38.3 -41.9 130.1	25 57.2 -41.5 129.3	25 15.6 -41.0 128.6	24 33.6 -40.5 127.9
19°	26 36.6 -42.7 131.6	25 56.4 -42.3 130.9	25 15.7 -41.7 130.1	24 34.6 -41.2 129.4	23 53.1 -40.8 128.7
20°	25 53.9 -43.0 132.4	25 14.1 -42.4 131.6	24 34.0 -42.0 130.9	23 53.4 -41.5 130.2	23 12.3 -41.0 129.5
21°	25 10.9 -43.2 133.2	24 31.7 -42.7 132.4	23 52.0 -42.2 131.7	23 11.9 -41.8 131.0	22 31.3 -41.3 130.3
22°	24 27.7 -43.4 133.9	23 49.0 -42.9 133.2	23 09.8 -42.5 132.5	22 30.1 -41.9 131.8	21 50.0 -41.4 131.1
23°	23 44.3 -43.6 134.7	23 06.1 -43.2 134.0	22 27.3 -42.6 133.2	21 48.2 -42.2 132.5	21 08.6 -41.7 131.9
24°	23 00.7 -43.9 135.4	22 22.9 -43.3 134.7	21 44.7 -42.9 134.0	21 06.0 -42.4 133.3	20 26.9 -41.9 132.6
25°	22 16.8 -44.0 136.2	21 39.6 -43.6 135.5	21 01.8 -43.0 134.8	20 23.6 -42.5 134.1	19 45.0 -42.1 133.4
26°	21 32.8 -44.2 136.9	20 56.0 -43.7 136.2	20 18.8 -43.3 135.5	19 41.1 -42.8 134.8	19 02.9 -42.2 134.1
27°	20 48.6 -44.5 137.6	20 12.3 -43.9 136.9	19 35.5 -43.4 136.2	18 58.3 -42.9 135.6	18 20.7 -42.4 134.9
28°	20 04.1 -44.5 138.3	19 28.4 -44.1 137.6	18 52.1 -43.6 137.0	18 15.4 -43.1 136.3	17 38.3 -42.6 135.6
29°	19 19.6 -44.8 139.1	18 44.3 -44.3 138.4	18 08.5 -43.7 137.7	17 32.3 -43.2 137.0	16 55.7 -42.8 136.4

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	34 56.4 -33.4 110.9	34 06.4 -33.2 110.2	33 16.1 -32.8 109.5	32 25.6 -32.5 108.9	31 34.9 -32.2 108.3
1°	34 23.0 -34.0 111.9	33 33.2 -33.6 111.2	32 43.3 -33.3 110.5	31 53.1 -33.0 109.9	31 02.7 -32.6 109.2
2°	33 49.0 -34.5 112.9	32 59.6 -34.1 112.2	32 10.0 -33.8 111.5	31 20.1 -33.4 110.9	30 30.1 -33.1 110.2
3°	33 14.5 -34.9 113.8	32 25.5 -34.5 113.2	31 36.2 -34.1 112.5	30 46.7 -33.8 111.8	29 57.0 -33.5 111.2
4°	32 39.6 -35.3 114.8	31 51.0 -35.0 114.1	31 02.1 -34.6 113.4	30 12.9 -34.2 112.8	29 23.5 -33.9 112.1
5°	32 04.3 -35.8 115.8	31 16.0 -35.4 115.1	30 27.5 -35.0 114.4	29 38.7 -34.7 113.7	28 49.6 -34.3 113.1
6°	31 28.5 -36.1 116.7	30 40.6 -35.7 116.0	29 52.5 -35.4 115.3	29 04.0 -35.0 114.7	28 15.3 -34.7 114.0
7°	30 52.4 -36.6 117.6	30 04.9 -36.2 116.9	29 17.1 -35.8 116.3	28 29.0 -35.4 115.6	27 40.6 -35.0 114.9
8°	30 15.8 -37.0 118.6	29 28.7 -36.6 117.9	28 41.3 -36.2 117.2	27 53.6 -35.8 116.5	27 05.6 -35.4 115.9
9°	29 38.8 -37.3 119.5	28 52.1 -36.9 118.8	28 05.1 -36.5 118.1	27 17.8 -36.1 117.4	26 30.2 -35.7 116.8
10°	29 01.5 -37.7 120.4	28 15.2 -37.2 119.7	27 28.6 -36.8 119.0	26 41.7 -36.4 118.3	25 54.5 -36.1 117.7
11°	28 23.8 -38.0 121.3	27 38.0 -37.6 120.6	26 51.8 -37.2 119.9	26 05.3 -36.8 119.2	25 18.4 -36.3 118.5
12°	27 45.8 -38.3 122.1	27 00.4 -37.9 121.4	26 14.6 -37.5 120.8	25 28.5 -37.1 120.1	24 42.1 -36.7 119.4
13°	27 07.5 -38.7 123.0	26 22.5 -38.3 122.3	25 37.1 -37.8 121.6	24 51.4 -37.4 121.0	24 05.4 -37.0 120.3
14°	26 28.8 -39.0 123.9	25 44.2 -38.5 123.2	24 59.3 -38.1 122.5	24 14.0 -37.6 121.8	23 28.4 -37.2 121.2
15°	25 49.8 -39.2 124.7	25 05.7 -38.8 124.0	24 21.2 -38.4 123.3	23 36.4 -38.0 122.7	22 51.2 -37.5 122.0
16°	25 10.6 -39.6 125.5	24 26.9 -39.1 124.9	23 42.8 -38.6 124.2	22 58.4 -38.2 123.5	22 13.7 -37.8 122.8
17°	24 31.0 -39.8 126.4	23 47.8 -39.3 125.7	23 04.2 -38.9 125.0	22 20.2 -38.4 124.3	21 35.9 -38.0 123.7
18°	23 51.2 -40.0 127.2	23 08.5 -39.6 126.5	22 25.3 -39.2 125.8	21 41.8 -38.7 125.2	20 57.9 -38.3 124.5
19°	23 11.2 -40.3 128.0	22 28.9 -39.9 127.3	21 46.1 -39.3 126.7	21 03.1 -39.0 126.0	20 19.6 -38.5 125.3
20°	22 30.9 -40.6 128.8	21 49.0 -40.1 128.1	21 06.8 -39.7 127.5	20 24.1 -39.1 126.8	19 41.1 -38.7 126.2
21°	21 50.3 -40.8 129.6	21 08.9 -40.3 128.9	20 27.1 -39.8 128.3	19 45.0 -39.4 127.6	19 02.4 -38.9 127.0
22°	21 09.5 -41.0 130.4	20 28.6 -40.5 129.7	19 47.3 -40.0 129.1	19 05.6 -39.6 128.4	18 23.5 -39.1 127.8
23°	20 28.5 -41.2 131.2	19 48.1 -40.7 130.5	19 07.3 -40.3 129.9	18 26.0 -39.8 129.2	17 44.4 -39.3 128.6
24°	19 47.3 -41.4 131.9	19 07.4 -40.9 131.3	18 27.0 -40.4 130.6	17 46.2 -39.9 130.0	17 05.1 -39.5 129.4
25°	19 05.9 -41.5 132.7	18 26.5 -41.1 132.1	17 46.6 -40.7 131.4	17 06.3 -40.2 130.8	16 25.6 -39.7 130.1
26°	18 24.4 -41.8 133.5	17 45.4 -41.3 132.8	17 05.9 -40.8 132.2	16 26.1 -40.3 131.5	15 45.9 -39.8 130.9
27°	17 42.6 -41.9 134.2	17 04.1 -41.5 133.6	16 25.1 -40.9 132.9	15 45.8 -40.5 132.3	15 06.1 -40.0 131.7
28°	17 00.7 -42.2 135.0	16 22.6 -41.6 134.3	15 44.2 -41.1 133.7	15 05.3 -40.6 133.1	14 26.1 -40.1 132.5
29°	16 18.5 -42.2 135.7	15 41.0 -41.7 135.1	15 03.1 -41.3 134.5	14 24.7 -40.8 133.8	13 46.0 -40.3 133.2

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	30 44.1 -31.9 107.6	29 53.0 -31.6 107.0	29 01.8 -31.3 106.4	28 10.5 -31.1 105.8	27 19.0 -30.9 105.3
1°	30 12.2 -32.4 108.6	29 21.4 -32.1 108.0	28 30.5 -31.8 107.4	27 39.4 -31.5 106.8	26 48.1 -31.2 106.2
2°	29 39.8 -32.8 109.6	28 49.3 -32.4 109.0	27 58.7 -32.2 108.4	27 07.9 -31.9 107.8	26 16.9 -31.6 107.2
3°	29 07.0 -33.1 110.6	28 16.9 -32.9 109.9	27 26.5 -32.5 109.3	26 36.0 -32.3 108.7	25 45.3 -32.0 108.1
4°	28 33.9 -33.6 111.5	27 44.0 -33.2 110.9	26 54.0 -33.0 110.3	26 03.7 -32.6 109.7	25 13.3 -32.4 109.1
5°	28 00.3 -34.0 112.4	27 10.8 -33.6 111.8	26 21.0 -33.3 111.2	25 31.1 -33.0 110.6	24 40.9 -32.6 110.0
6°	27 26.3 -34.3 113.4	26 37.2 -34.0 112.7	25 47.7 -33.6 112.1	24 58.1 -33.3 111.5	24 08.3 -33.0 110.9
7°	26 52.0 -34.6 114.3	26 03.2 -34.3 113.7	25 14.1 -34.0 113.0	24 24.8 -33.7 112.4	23 35.3 -33.4 111.8
8°	26 17.4 -35.1 115.2	25 28.9 -34.7 114.6	24 40.1 -34.3 113.9	23 51.1 -33.9 113.3	23 01.9 -33.6 112.7
9°	25 42.3 -35.3 116.1	24 54.2 -35.0 115.5	24 05.8 -34.6 114.8	23 17.2 -34.3 114.2	22 28.3 -33.9 113.6
10°	25 07.0 -35.7 117.0	24 19.2 -35.3 116.4	23 31.2 -34.9 115.7	22 42.9 -34.5 115.1	21 54.4 -34.2 114.5
11°	24 31.3 -35.9 117.9	23 43.9 -35.5 117.3	22 56.3 -35.2 116.6	22 08.4 -34.9 116.0	21 20.2 -34.5 115.4
12°	23 55.4 -36.3 118.8	23 08.4 -35.9 118.1	22 21.1 -35.5 117.5	21 33.5 -35.1 116.9	20 45.7 -34.7 116.3
13°	23 19.1 -36.6 119.6	22 32.5 -36.2 119.0	21 45.6 -35.8 118.4	20 58.4 -35.4 117.8	20 11.0 -35.0 117.1
14°	22 42.5 -36.8 120.5	21 56.3 -36.4 119.9	21 09.8 -36.0 119.2	20 23.0 -35.6 118.6	19 36.0 -35.3 118.0
15°	22 05.7 -37.1 121.4	21 19.9 -36.7 120.7	20 33.8 -36.3 120.1	19 47.4 -35.9 119.5	19 00.7 -35.5 118.9
16°	21 28.6 -37.3 122.2	20 43.2 -36.9 121.6	19 57.5 -36.5 120.9	19 11.5 -36.1 120.3	18 25.2 -35.7 119.7
17°	20 51.3 -37.6 123.0	20 06.3 -37.2 122.4	19 21.0 -36.7 121.8	18 35.4 -36.3 121.2	17 49.5 -35.9 120.6
18°	20 13.7 -37.8 123.9	19 29.1 -37.4 123.2	18 44.3 -37.0 122.6	17 59.1 -36.6 122.0	17 13.6 -36.1 121.4
19°	19 35.9 -38.1 124.7	18 51.7 -37.6 124.1	18 07.3 -37.2 123.5	17 22.5 -36.7 122.8	16 37.5 -36.4 122.2
20°	18 57.8 -38.3 125.5	18 14.1 -37.8 124.9	17 30.1 -37.4 124.3	16 45.8 -37.0 123.7	16 01.1 -36.5 123.1
21°	18 19.5 -38.4 126.3	17 36.3 -38.0 125.7	16 52.7 -37.5 125.1	16 08.8 -37.1 124.5	15 24.6 -36.7 123.9
22°	17 41.1 -38.7 127.1	16 58.3 -38.2 126.5	16 15.2 -37.8 125.9	15 31.7 -37.3 125.3	14 47.9 -36.9 124.7
23°	17 02.4 -38.8 127.9	16 20.1 -38.4 127.3	15 37.4 -37.9 126.7	14 54.4 -37.5 126.1	14 11.0 -37.0 125.5
24°	16 23.6 -39.1 128.7	15 41.7 -38.6 128.1	14 59.5 -38.1 127.5	14 16.9 -37.7 126.9	13 34.0 -37.2 126.3
25°	15 44.5 -39.2 129.5	15 03.1 -38.7 128.9	14 21.4 -38.3 128.3	13 39.2 -37.8 127.7	12 56.8 -37.4 127.1
26°	15 05.3 -39.3 130.3	14 24.4 -38.9 129.7	13 43.1 -38.4 129.1	13 01.4 -37.9 128.5	12 19.4 -37.4 127.9
27°	14 26.0 -39.5 131.1	13 45.5 -39.0 130.5	13 04.7 -38.6 129.9	12 23.5 -38.1 129.3	11 42.0 -37.6 128.7
28°	13 46.5 -39.7 131.9	13 06.5 -39.2 131.3	12 26.1 -38.7 130.7	11 45.4 -38.2 130.1	11 04.4 -37.8 129.5
29°	13 06.8 -39.8 132.6	12 27.3 -39.3 132.0	11 47.4 -38.8 131.5	11 07.2 -38.3 130.9	10 26.6 -37.8 130.3

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Table with 6 columns: Dec, LHA 060° / 300°, LHA 061° / 299°, LHA 062° / 298°, LHA 063° / 297°, LHA 064° / 296°. Rows range from 0° to 29° declination.

Table with 6 columns: Dec, LHA 065° / 295°, LHA 066° / 294°, LHA 067° / 293°, LHA 068° / 292°, LHA 069° / 291°. Rows range from 0° to 29° declination.

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	17 44.6 -28.8 99.4	16 51.8 -28.6 98.9	15 58.9 -28.4 98.4	15 06.0 -28.3 97.9	14 13.0 -28.2 97.4
1°	17 15.8 -28.9 100.3	16 23.2 -28.8 99.8	15 30.5 -28.7 99.3	14 37.7 -28.6 98.8	13 44.8 -28.4 98.3
2°	16 46.9 -29.3 101.2	15 54.4 -29.1 100.7	15 01.8 -28.9 100.2	14 09.1 -28.7 99.7	13 16.4 -28.6 99.2
3°	16 17.6 -29.4 102.1	15 25.3 -29.3 101.6	14 32.9 -29.1 101.1	13 40.4 -28.9 100.6	12 47.8 -28.8 100.1
4°	15 48.2 -29.7 103.0	14 56.0 -29.4 102.5	14 03.8 -29.3 102.0	13 11.5 -29.1 101.5	12 19.0 -28.9 101.0
5°	15 18.5 -29.9 103.9	14 26.6 -29.7 103.4	13 34.5 -29.5 102.9	12 42.4 -29.4 102.4	11 50.1 -29.1 101.9
6°	14 48.6 -30.1 104.8	13 56.9 -29.9 104.3	13 05.0 -29.7 103.8	12 13.0 -29.4 103.3	11 21.0 -29.3 102.8
7°	14 18.5 -30.3 105.7	13 27.0 -30.1 105.2	12 35.3 -29.8 104.7	11 43.6 -29.7 104.2	10 51.7 -29.4 103.7
8°	13 48.2 -30.5 106.6	12 56.9 -30.2 106.1	12 05.5 -30.0 105.6	11 13.9 -29.8 105.1	10 22.3 -29.6 104.6
9°	13 17.7 -30.7 107.5	12 26.7 -30.5 107.0	11 35.5 -30.2 106.5	10 44.1 -29.9 106.0	9 52.7 -29.7 105.5
10°	12 47.0 -30.8 108.4	11 56.2 -30.5 107.9	11 05.3 -30.3 107.4	10 14.2 -30.1 106.9	9 23.0 -29.9 106.4
11°	12 16.2 -31.0 109.3	11 25.7 -30.8 108.8	10 35.0 -30.5 108.2	9 44.1 -30.2 107.7	8 53.1 -30.0 107.2
12°	11 45.2 -31.2 110.1	10 54.9 -30.9 109.6	10 04.5 -30.6 109.1	9 13.9 -30.4 108.6	8 23.1 -30.0 108.1
13°	11 14.0 -31.3 111.0	10 24.0 -31.0 110.5	9 33.9 -30.8 110.0	8 43.5 -30.4 109.5	7 53.1 -30.2 109.0
14°	10 42.7 -31.5 111.9	9 53.0 -31.2 111.4	9 03.1 -30.9 110.9	8 13.1 -30.6 110.4	7 22.9 -30.3 109.9
15°	10 11.2 -31.6 112.7	9 21.8 -31.3 112.2	8 32.2 -30.9 111.7	7 42.5 -30.7 111.2	6 52.6 -30.4 110.7
16°	9 39.6 -31.7 113.6	8 50.5 -31.4 113.1	8 01.3 -31.1 112.6	7 11.8 -30.8 112.1	6 22.2 -30.5 111.6
17°	9 07.9 -31.9 114.5	8 19.1 -31.5 114.0	7 30.2 -31.2 113.5	6 41.0 -30.9 113.0	5 51.7 -30.5 112.5
18°	8 36.0 -32.0 115.3	7 47.6 -31.6 114.8	6 59.0 -31.3 114.3	6 10.1 -30.9 113.8	5 21.2 -30.7 113.3
19°	8 04.0 -32.0 116.2	7 16.0 -31.8 115.7	6 27.7 -31.4 115.2	5 39.2 -31.0 114.7	4 50.5 -30.7 114.2
20°	7 32.0 -32.2 117.0	6 44.2 -31.8 116.5	5 56.3 -31.5 116.0	5 08.2 -31.1 115.5	4 19.8 -30.7 115.1
21°	6 59.8 -32.3 117.9	6 12.4 -31.9 117.4	5 24.8 -31.5 116.9	4 37.1 -31.2 116.4	3 49.1 -30.8 115.9
22°	6 27.5 -32.3 118.7	5 40.5 -31.9 118.2	4 53.3 -31.6 117.7	4 05.9 -31.2 117.3	3 18.3 -30.9 116.8
23°	5 55.2 -32.5 119.6	5 08.6 -32.1 119.1	4 21.7 -31.6 118.6	3 34.7 -31.3 118.1	2 47.4 -30.9 117.6
24°	5 22.7 -32.5 120.4	4 36.5 -32.1 119.9	3 50.1 -31.7 119.5	3 03.4 -31.3 119.0	2 16.5 -30.9 118.5
25°	4 50.2 -32.5 121.3	4 04.4 -32.1 120.8	3 18.4 -31.8 120.3	2 32.1 -31.3 119.8	1 45.6 -30.9 119.4
26°	4 17.7 -32.6 122.1	3 32.3 -32.2 121.6	2 46.6 -31.7 121.2	2 00.8 -31.4 120.7	1 14.7 -31.0 120.2
27°	3 45.1 -32.7 123.0	3 00.1 -32.3 122.5	2 14.9 -31.8 122.0	1 29.4 -31.4 121.5	0 43.7 -30.9 121.1
28°	3 12.4 -32.7 123.8	2 27.8 -32.2 123.3	1 43.1 -31.9 122.8	0 58.0 -31.4 122.4	0 12.8 -31.0 121.9
29°	2 39.7 -32.8 124.6	1 55.6 -32.3 124.2	1 11.2 -31.8 123.7	0 26.6 -31.4 123.2	-0 18.2 -31.0

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	13 20.0 -28.1 96.9	12 26.9 -28.0 96.5	11 33.7 -27.9 96.0	10 40.5 -27.8 95.5	9 47.3 -27.7 95.0
1°	12 51.9 -28.3 97.8	11 58.9 -28.2 97.4	11 05.8 -28.0 96.9	10 12.7 -27.9 96.4	9 19.6 -27.8 95.9
2°	12 23.6 -28.4 98.7	11 30.7 -28.3 98.3	10 37.8 -28.2 97.8	9 44.8 -28.1 97.3	8 51.8 -28.0 96.8
3°	11 55.2 -28.7 99.6	11 02.4 -28.5 99.2	10 09.6 -28.3 98.7	9 16.7 -28.2 98.2	8 23.8 -28.1 97.7
4°	11 26.5 -28.8 100.5	10 33.9 -28.6 100.1	9 41.3 -28.5 99.6	8 48.5 -28.3 99.1	7 55.7 -28.2 98.6
5°	10 57.7 -28.9 101.4	10 05.3 -28.8 101.0	9 12.8 -28.6 100.5	8 20.2 -28.5 100.0	7 27.5 -28.3 99.5
6°	10 28.8 -29.1 102.3	9 36.5 -28.9 101.8	8 44.2 -28.8 101.4	7 51.7 -28.6 100.9	6 59.2 -28.5 100.4
7°	9 59.7 -29.2 103.2	9 07.6 -29.0 102.7	8 15.4 -28.8 102.2	7 23.1 -28.7 101.8	6 30.7 -28.5 101.3
8°	9 30.5 -29.4 104.1	8 38.6 -29.2 103.6	7 46.6 -29.0 103.1	6 54.4 -28.7 102.7	6 02.2 -28.6 102.2
9°	9 01.1 -29.5 105.0	8 09.4 -29.3 104.5	7 17.6 -29.1 104.0	6 25.7 -28.9 103.5	5 33.6 -28.6 103.1
10°	8 31.6 -29.6 105.9	7 40.1 -29.4 105.4	6 48.5 -29.1 104.9	5 56.8 -29.0 104.4	5 05.0 -28.8 103.9
11°	8 02.0 -29.7 106.7	7 10.7 -29.5 106.3	6 19.4 -29.3 105.8	5 27.8 -29.0 105.3	4 36.2 -28.8 104.8
12°	7 32.3 -29.9 107.6	6 41.2 -29.5 107.1	5 50.1 -29.3 106.7	4 58.8 -29.1 106.2	4 07.4 -28.9 105.7
13°	7 02.4 -29.9 108.5	6 11.7 -29.7 108.0	5 20.8 -29.4 107.5	4 29.7 -29.1 107.1	3 38.5 -28.9 106.6
14°	6 32.5 -30.0 109.4	5 42.0 -29.7 108.9	4 51.4 -29.5 108.4	4 00.6 -29.3 107.9	3 09.6 -28.9 107.5
15°	6 02.5 -30.1 110.2	5 12.3 -29.9 109.8	4 21.9 -29.6 109.3	3 31.3 -29.2 108.8	2 40.7 -29.0 108.3
16°	5 32.4 -30.2 111.1	4 42.4 -29.8 110.6	3 52.3 -29.6 110.2	3 02.1 -29.3 109.7	2 11.7 -29.1 109.2
17°	5 02.2 -30.2 112.0	4 12.6 -30.0 111.5	3 22.7 -29.6 111.0	2 32.8 -29.4 110.6	1 42.6 -29.0 110.1
18°	4 32.0 -30.3 112.8	3 42.6 -30.0 112.4	2 53.1 -29.7 111.9	2 03.4 -29.4 111.4	1 13.6 -29.1 111.0
19°	4 01.7 -30.4 113.7	3 12.6 -30.0 113.2	2 23.4 -29.7 112.8	1 34.0 -29.4 112.3	0 44.5 -29.1 111.8
20°	3 31.3 -30.4 114.6	2 42.6 -30.1 114.1	1 53.7 -29.7 113.6	1 04.6 -29.4 113.2	0 15.4 -29.1 112.7
21°	3 00.9 -30.5 115.4	2 12.5 -30.1 115.0	1 24.0 -29.8 114.5	0 35.2 -29.4 114.0	-0 13.7 -29.1
22°	2 30.4 -30.4 116.3	1 42.4 -30.1 115.8	0 54.2 -29.8 115.4	0 05.8 -29.4 114.9	-0 42.8 -29.0
23°	2 00.0 -30.5 117.2	1 12.3 -30.1 116.7	0 24.4 -29.7 116.2	-0 23.6 -29.4	-1 11.8 -29.1
24°	1 29.5 -30.6 118.0	0 42.2 -30.2 117.6	-0 05.3 -29.8	-0 53.0 -29.4	-1 40.9 -29.0
25°	0 58.9 -30.5 118.9	0 12.0 -30.1 118.4	-0 35.1 -29.8	-1 22.4 -29.4	-2 09.9 -29.0
26°	0 28.4 -30.6 119.8	-0 18.1 -30.2	-1 04.9 -29.7	-1 51.8 -29.4	-2 38.9 -29.0
27°	-0 02.2 -30.5	-0 48.3 -30.1	-1 34.6 -29.7	-2 21.2 -29.3	-3 07.9 -28.9
28°	-0 32.7 -30.6	-1 18.4 -30.2	-2 04.3 -29.8	-2 50.5 -29.3	-3 36.8 -28.9
29°	-1 03.3 -30.5	-1 48.6 -30.0	-2 34.1 -29.6	-3 19.8 -29.2	-4 05.7 -28.8

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 54.0 -27.6 94.6	8 00.7 -27.5 94.1	7 07.4 -27.5 93.7	6 14.0 -27.4 93.2	5 20.6 -27.4 92.7
1°	8 26.4 -27.8 95.5	7 33.2 -27.7 95.0	6 39.9 -27.6 94.5	5 46.6 -27.5 94.1	4 53.2 -27.4 93.6
2°	7 58.6 -27.8 96.4	7 05.5 -27.8 95.9	6 12.3 -27.7 95.4	5 19.1 -27.7 95.0	4 25.8 -27.6 94.5
3°	7 30.8 -28.0 97.3	6 37.7 -27.9 96.8	5 44.6 -27.8 96.3	4 51.4 -27.6 95.9	3 58.2 -27.5 95.4
4°	7 02.8 -28.1 98.2	6 09.8 -27.9 97.7	5 16.8 -27.8 97.2	4 23.8 -27.8 96.8	3 30.7 -27.7 96.3
5°	6 34.7 -28.2 99.0	5 41.9 -28.1 98.6	4 49.0 -27.9 98.1	3 56.0 -27.8 97.6	3 03.0 -27.7 97.2
6°	6 06.5 -28.2 99.9	5 13.8 -28.1 99.5	4 21.1 -28.0 99.0	3 28.2 -27.8 98.5	2 35.3 -27.7 98.1
7°	5 38.3 -28.4 100.8	4 45.7 -28.2 100.4	3 53.1 -28.0 99.9	3 00.4 -27.9 99.4	2 07.6 -27.7 99.0
8°	5 09.9 -28.4 101.7	4 17.5 -28.2 101.2	3 25.1 -28.1 100.8	2 32.5 -27.9 100.3	1 39.9 -27.8 99.9
9°	4 41.5 -28.5 102.6	3 49.3 -28.3 102.1	2 57.0 -28.1 101.7	2 04.6 -28.0 101.2	1 12.1 -27.8 100.7
10°	4 13.0 -28.5 103.5	3 21.0 -28.4 103.0	2 28.9 -28.2 102.5	1 36.6 -28.0 102.1	0 44.3 -27.8 101.6
11°	3 44.5 -28.6 104.4	2 52.6 -28.3 103.9	2 00.7 -28.2 103.4	1 08.6 -28.0 103.0	0 16.5 -27.8 102.5
12°	3 15.9 -28.7 105.2	2 24.3 -28.5 104.8	1 32.5 -28.2 104.3	0 40.6 -28.0 103.9	-0 11.3 -27.8
13°	2 47.2 -28.6 106.1	1 55.8 -28.4 105.7	1 04.3 -28.2 105.2	0 12.6 -28.0 104.7	-0 39.1 -27.8
14°	2 18.6 -28.8 107.0	1 27.4 -28.5 106.5	0 36.1 -28.3 106.1	-0 15.4 -28.0	-1 06.9 -27.8
15°	1 49.8 -28.7 107.9	0 58.9 -28.5 107.4	0 07.8 -28.2 107.0	-0 43.4 -28.0	-1 34.7 -27.7
16°	1 21.1 -28.8 108.8	0 30.4 -28.5 108.3	-0 20.4 -28.2	-1 11.4 -27.9	-2 02.4 -27.8
17°	0 52.3 -28.7 109.6	0 01.9 -28.5 109.2	-0 48.6 -28.3	-1 39.3 -28.0	-2 30.2 -27.7
18°	0 23.6 -28.8 110.5	-0 26.6 -28.5	-1 16.9 -28.2	-2 07.3 -27.9	-2 57.9 -27.6
19°	-0 05.2 -28.8	-0 55.1 -28.4	-1 45.1 -28.1	-2 35.2 -27.9	-3 25.5 -27.6
20°	-0 34.0 -28.7	-1 23.5 -28.5	-2 13.2 -28.2	-3 03.1 -27.8	-3 53.1 -27.5
21°	-1 02.7 -28.8	-1 52.0 -28.4	-2 41.4 -28.1	-3 30.9 -27.8	-4 20.6 -27.5
22°	-1 31.5 -28.7	-2 20.4 -28.4	-3 09.5 -28.1	-3 58.7 -27.8	-4 48.1 -27.4
23°	-2 00.2 -28.7	-2 48.8 -28.4	-3 37.6 -28.0	-4 26.5 -27.6	-5 15.5 -27.4
24°	-2 28.9 -28.7	-3 17.2 -28.3	-4 05.6 -27.9	-4 54.1 -27.6	-5 42.9 -27.2
25°	-2 57.6 -28.6	-3 45.5 -28.2	-4 33.5 -27.9	-5 21.7 -27.6	-6 10.1 -27.2
26°	-3 26.2 -28.6	-4 13.7 -28.2	-5 01.4 -27.8	-5 49.3 -27.4	-6 37.3 -27.0
27°	-3 54.8 -28.5	-4 41.9 -28.1	-5 29.2 -27.8	-6 16.7 -27.3	-7 04.3 -27.0
28°	-4 23.3 -28.5	-5 10.0 -28.1	-5 57.0 -27.6	-6 44.0 -27.3	-7 31.3 -26.9
29°	-4 51.8 -28.4	-5 38.1 -28.0	-6 24.6 -27.6	-7 11.3 -27.1	-7 58.2 -26.7

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 27.2 -27.3 92.3	3 33.8 -27.3 91.8	2 40.4 -27.3 91.4	1 46.9 -27.2 90.9	0 53.5 -27.3 90.5
1°	3 59.9 -27.4 93.2	3 06.5 -27.4 92.7	2 13.1 -27.3 92.3	1 19.7 -27.3 91.8	0 26.2 -27.2 91.3
2°	3 32.5 -27.5 94.1	2 39.1 -27.4 93.6	1 45.8 -27.4 93.1	0 52.4 -27.3 92.7	-0 01.0 -27.3
3°	3 05.0 -27.5 94.9	2 11.7 -27.4 94.5	1 18.4 -27.3 94.0	0 25.1 -27.3 93.6	-0 28.3 -27.2
4°	2 37.5 -27.5 95.8	1 44.3 -27.5 95.4	0 51.1 -27.4 94.9	-0 02.2 -27.3	-0 55.5 -27.3
5°	2 10.0 -27.6 96.7	1 16.8 -27.4 96.3	0 23.7 -27.4 95.8	-0 29.5 -27.3	-1 22.8 -27.2
6°	1 42.4 -27.6 97.6	0 49.4 -27.5 97.2	-0 03.7 -27.4	-0 56.8 -27.3	-1 50.0 -27.2
7°	1 14.8 -27.6 98.5	0 21.9 -27.5 98.0	-0 31.1 -27.4	-1 24.1 -27.3	-2 17.2 -27.1
8°	0 47.2 -27.7 99.4	-0 05.6 -27.5	-0 58.5 -27.3	-1 51.4 -27.2	-2 44.3 -27.1
9°	0 19.5 -27.6 100.3	-0 33.1 -27.5	-1 25.8 -27.4	-2 18.6 -27.2	-3 11.4 -27.1
10°	-0 08.1 -27.6	-1 00.6 -27.5	-1 53.2 -27.3	-2 45.8 -27.2	-3 38.5 -27.0
11°	-0 35.7 -27.7	-1 28.1 -27.4	-2 20.5 -27.3	-3 13.0 -27.1	-4 05.5 -27.0
12°	-1 03.4 -27.6	-1 55.5 -27.4	-2 47.8 -27.2	-3 40.1 -27.0	-4 32.5 -26.9
13°	-1 31.0 -27.6	-2 22.9 -27.4	-3 15.0 -27.2	-4 07.1 -27.0	-4 59.4 -26.8
14°	-1 58.6 -27.5	-2 50.3 -27.4	-3 42.2 -27.1	-4 34.1 -27.0	-5 26.2 -26.7
15°	-2 26.1 -27.5	-3 17.7 -27.3	-4 09.3 -27.1	-5 01.1 -26.8	-5 52.9 -26.7
16°	-2 53.6 -27.5	-3 45.0 -27.2	-4 36.4 -27.0	-5 27.9 -26.8	-6 19.6 -26.5
17°	-3 21.1 -27.5	-4 12.2 -27.2	-5 03.4 -26.9	-5 54.7 -26.7	-6 46.1 -26.5
18°	-3 48.6 -27.3	-4 39.4 -27.1	-5 30.3 -26.9	-6 21.4 -26.6	-7 12.6 -26.3
19°	-4 15.9 -27.3	-5 06.5 -27.0	-5 57.2 -26.7	-6 48.0 -26.5	-7 38.9 -26.3
20°	-4 43.2 -27.3	-5 33.5 -27.0	-6 23.9 -26.7	-7 14.5 -26.4	-8 05.2 -26.1
21°	-5 10.5 -27.2	-6 00.5 -26.9	-6 50.6 -26.6	-7 40.9 -26.3	-8 31.3 -26.0
22°	-5 37.7 -27.1	-6 27.4 -26.7	-7 17.2 -26.5	-8 07.2 -26.1	-8 57.3 -25.8
23°	-6 04.8 -27.0	-6 54.1 -26.7	-7 43.7 -26.3	-8 33.3 -26.0	-9 23.1 -25.7
24°	-6 31.8 -26.9	-7 20.8 -26.6	-8 10.0 -26.2	-8 59.3 -25.9	-9 48.8 -25.6
25°	-6 58.7 -26.8	-7 47.4 -26.4	-8 36.2 -26.1	-9 25.2 -25.8	
26°	-7 25.5 -26.7	-8 13.8 -26.3	-9 02.3 -26.0	-9 51.0 -25.6	
27°	-7 52.2 -26.5	-8 40.1 -26.2	-9 28.3 -25.8		
28°	-8 18.7 -26.5	-9 06.3 -26.1	-9 54.1 -25.7		
29°	-8 45.2 -26.3	-9 32.4 -25.9			

Latitude 27°

Declination CONTRARY name to Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -27.2 90.0	-0 53.5 -27.2			
1°	-0 27.2 -27.3	-1 20.7 -27.2			
2°	-0 54.5 -27.2	-1 47.9 -27.2			
3°	-1 21.7 -27.2	-2 15.1 -27.2			
4°	-1 48.9 -27.2	-2 42.3 -27.1			
5°	-2 16.1 -27.1	-3 09.4 -27.0			
6°	-2 43.2 -27.1	-3 36.4 -27.1			
7°	-3 10.3 -27.1	-4 03.5 -26.9			
8°	-3 37.4 -27.0	-4 30.4 -26.9			
9°	-4 04.4 -26.9	-4 57.3 -26.8			
10°	-4 31.3 -26.9	-5 24.1 -26.8			
11°	-4 58.2 -26.8	-5 50.9 -26.6			
12°	-5 25.0 -26.7	-6 17.5 -26.6			
13°	-5 51.7 -26.6	-6 44.1 -26.5			
14°	-6 18.3 -26.6	-7 10.6 -26.3			
15°	-6 44.9 -26.4	-7 36.9 -26.3			
16°	-7 11.3 -26.4	-8 03.2 -26.1			
17°	-7 37.7 -26.2	-8 29.3 -26.0			
18°	-8 03.9 -26.1	-8 55.3 -25.8			
19°	-8 30.0 -26.0	-9 21.1 -25.8			
20°	-8 56.0 -25.8	-9 46.9 -25.5			
21°	-9 21.8 -25.7				
22°	-9 47.5 -25.6				
23°					
24°					
25°					
26°					
27°					
28°					
29°					

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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The data on this page is believed to be accurate but no warranty is given for it's correctness. Use it only for training and exercising!

Table with 6 columns: Dec, LHA 000°/360°, LHA 001°/359°, LHA 002°/358°, LHA 003°/357°, LHA 004°/356°. Rows for Dec 0° to 29°.

Table with 6 columns: Dec, LHA 005°/355°, LHA 006°/354°, LHA 007°/353°, LHA 008°/352°, LHA 009°/351°. Rows for Dec 0° to 29°.

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data on this page is believed to be accurate but no warranty is given for it's correctness. Use it only for training and exercising!

Latitude 28°

Declination CONTRARY name to Latitude

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	60 24.3 -57.2 159.4	60 04.8 -56.6 157.5	59 43.8 -56.0 155.6	59 21.1 -55.4 153.8	58 57.0 -54.7 152.0
1°	59 27.1 -57.2 160.0	59 08.2 -56.7 158.2	58 47.8 -56.3 156.3	58 25.7 -55.6 154.6	58 02.3 -55.1 152.8
2°	58 29.9 -57.5 160.6	58 11.5 -57.0 158.8	57 51.5 -56.4 157.0	57 30.1 -55.8 155.3	57 07.2 -55.3 153.6
3°	57 32.4 -57.5 161.1	57 14.5 -57.0 159.4	56 55.1 -56.6 157.6	56 34.3 -56.1 155.9	56 11.9 -55.5 154.3
4°	56 34.9 -57.7 161.7	56 17.5 -57.3 159.9	55 58.5 -56.7 158.2	55 38.2 -56.3 156.6	55 16.4 -55.7 154.9
5°	55 37.2 -57.8 162.2	55 20.2 -57.4 160.5	55 01.8 -56.9 158.8	54 41.9 -56.4 157.2	54 20.7 -55.9 155.6
6°	54 39.4 -57.9 162.6	54 22.8 -57.5 161.0	54 04.9 -57.1 159.4	53 45.5 -56.6 157.8	53 24.8 -56.1 156.2
7°	53 41.5 -58.0 163.1	53 25.3 -57.6 161.5	53 07.8 -57.2 159.9	52 48.9 -56.7 158.3	52 28.7 -56.3 156.8
8°	52 43.5 -58.1 163.5	52 27.7 -57.7 161.9	52 10.6 -57.3 160.4	51 52.2 -56.9 158.9	51 32.4 -56.4 157.3
9°	51 45.4 -58.2 163.9	51 30.0 -57.8 162.4	51 13.3 -57.4 160.9	50 55.3 -57.0 159.4	50 36.0 -56.6 157.9
10°	50 47.2 -58.2 164.3	50 32.2 -57.9 162.8	50 15.9 -57.5 161.3	49 58.3 -57.1 159.9	49 39.4 -56.7 158.4
11°	49 49.0 -58.3 164.7	49 34.3 -58.0 163.2	49 18.4 -57.6 161.8	49 01.2 -57.3 160.3	48 42.7 -56.8 158.9
12°	48 50.7 -58.4 165.0	48 36.3 -58.0 163.6	48 20.8 -57.8 162.2	48 03.9 -57.3 160.8	47 45.9 -57.0 159.4
13°	47 52.3 -58.5 165.4	47 38.3 -58.1 164.0	47 23.0 -57.7 162.6	47 06.6 -57.4 161.2	46 48.9 -57.0 159.9
14°	46 53.8 -58.5 165.7	46 40.2 -58.2 164.3	46 25.3 -57.9 163.0	46 09.2 -57.6 161.6	45 51.9 -57.2 160.3
15°	45 55.3 -58.5 166.0	45 42.0 -58.3 164.7	45 27.4 -58.0 163.4	45 11.6 -57.6 162.0	44 54.7 -57.2 160.7
16°	44 56.8 -58.6 166.4	44 43.7 -58.3 165.0	44 29.4 -58.0 163.7	44 14.0 -57.7 162.4	43 57.5 -57.4 161.2
17°	43 58.2 -58.7 166.7	43 45.4 -58.4 165.4	43 31.4 -58.1 164.1	43 16.3 -57.7 162.8	43 00.1 -57.4 161.6
18°	42 59.5 -58.6 167.0	42 47.0 -58.4 165.7	42 33.3 -58.1 164.4	42 18.6 -57.9 163.2	42 02.7 -57.5 162.0
19°	42 00.9 -58.8 167.2	41 48.6 -58.5 166.0	41 35.2 -58.2 164.8	41 20.7 -57.8 163.5	41 05.2 -57.6 162.3
20°	41 02.1 -58.7 167.5	40 50.1 -58.5 166.3	40 37.0 -58.2 165.1	40 22.9 -58.0 163.9	40 07.6 -57.6 162.7
21°	40 03.4 -58.8 167.8	39 51.6 -58.6 166.6	39 38.8 -58.3 165.4	39 24.9 -58.0 164.2	39 10.0 -57.7 163.1
22°	39 04.6 -58.9 168.0	38 53.0 -58.6 166.9	38 40.5 -58.4 165.7	38 26.9 -58.1 164.6	38 12.3 -57.8 163.4
23°	38 05.7 -58.8 168.3	37 54.4 -58.6 167.1	37 42.1 -58.3 166.0	37 28.8 -58.1 164.9	37 14.5 -57.8 163.8
24°	37 06.9 -58.9 168.5	36 55.8 -58.7 167.4	36 43.8 -58.5 166.3	36 30.7 -58.2 165.2	36 16.7 -57.9 164.1
25°	36 08.0 -59.0 168.8	35 57.1 -58.7 167.7	35 45.3 -58.4 166.6	35 32.5 -58.2 165.5	35 18.8 -57.9 164.4
26°	35 09.0 -58.9 169.0	34 58.4 -58.7 167.9	34 46.9 -58.5 166.8	34 34.3 -58.2 165.8	34 20.9 -58.0 164.7
27°	34 10.1 -59.0 169.2	33 59.7 -58.8 168.2	33 48.4 -58.6 167.1	33 36.1 -58.3 166.1	33 22.9 -58.0 165.0
28°	33 11.1 -59.0 169.4	33 00.9 -58.7 168.4	32 49.8 -58.5 167.4	32 37.8 -58.3 166.4	32 24.9 -58.1 165.3
29°	32 12.1 -59.0 169.7	32 02.2 -58.9 168.6	31 51.3 -58.6 167.6	31 39.5 -58.4 166.6	31 26.8 -58.1 165.6

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	58 31.5 -54.1 150.3	58 04.5 -53.4 148.6	57 36.3 -52.8 146.9	57 06.7 -52.1 145.3	56 36.0 -51.4 143.7
1°	57 37.4 -54.5 151.1	57 11.1 -53.8 149.4	56 43.5 -53.1 147.8	56 14.6 -52.4 146.2	55 44.6 -51.8 144.7
2°	56 42.9 -54.6 151.9	56 17.3 -54.1 150.2	55 50.4 -53.5 148.6	55 22.2 -52.8 147.1	54 52.8 -52.1 145.6
3°	55 48.3 -55.0 152.6	55 23.2 -54.3 151.0	54 56.9 -53.7 149.4	54 29.4 -53.1 147.9	54 00.7 -52.5 146.4
4°	54 53.3 -55.2 153.3	54 28.9 -54.6 151.8	54 03.2 -54.0 150.2	53 36.3 -53.5 148.7	53 08.2 -52.9 147.2
5°	53 58.1 -55.3 154.0	53 34.3 -54.9 152.5	53 09.2 -54.3 150.9	52 42.8 -53.7 149.5	52 15.3 -53.1 148.0
6°	53 02.8 -55.6 154.6	52 39.4 -55.0 153.1	52 14.9 -54.5 151.6	51 49.1 -53.9 150.2	51 22.2 -53.4 148.8
7°	52 07.2 -55.8 155.3	51 44.4 -55.3 153.8	51 20.4 -54.8 152.3	50 55.2 -54.2 150.9	50 28.8 -53.6 149.5
8°	51 11.4 -56.0 155.9	50 49.1 -55.5 154.4	50 25.6 -54.9 153.0	50 01.0 -54.5 151.6	49 35.2 -53.9 150.2
9°	50 15.4 -56.1 156.4	49 53.6 -55.6 155.0	49 30.7 -55.2 153.6	49 06.5 -54.6 152.2	48 41.3 -54.2 150.9
10°	49 19.3 -56.3 157.0	48 58.0 -55.8 155.6	48 35.5 -55.3 154.2	48 11.9 -54.9 152.8	47 47.1 -54.3 151.5
11°	48 23.0 -56.4 157.5	48 02.2 -56.0 156.1	47 40.2 -55.5 154.8	47 17.0 -55.0 153.4	46 52.8 -54.5 152.1
12°	47 26.6 -56.5 158.0	47 06.2 -56.1 156.7	46 44.7 -55.7 155.3	46 22.0 -55.2 154.0	45 58.3 -54.7 152.7
13°	46 30.1 -56.7 158.5	46 10.1 -56.2 157.2	45 49.0 -55.8 155.9	45 26.8 -55.3 154.6	45 03.6 -54.9 153.3
14°	45 33.4 -56.7 159.0	45 13.9 -56.4 157.7	44 53.2 -55.9 156.4	44 31.5 -55.5 155.1	44 08.7 -55.1 153.9
15°	44 36.7 -56.9 159.4	44 17.5 -56.5 158.2	43 57.3 -56.1 156.9	43 36.0 -55.7 155.7	43 13.6 -55.2 154.4
16°	43 39.8 -57.0 159.9	43 21.0 -56.6 158.6	43 01.2 -56.2 157.4	42 40.3 -55.8 156.2	42 18.4 -55.4 155.0
17°	42 42.8 -57.0 160.3	42 24.4 -56.7 159.1	42 05.0 -56.3 157.9	41 44.5 -55.9 156.7	41 23.0 -55.4 155.5
18°	41 45.8 -57.2 160.7	41 27.7 -56.8 159.5	41 08.7 -56.4 158.3	40 48.6 -56.0 157.2	40 27.6 -55.7 156.0
19°	40 48.6 -57.2 161.1	40 30.9 -56.8 160.0	40 12.3 -56.5 158.8	39 52.6 -56.1 157.6	39 31.9 -55.7 156.5
20°	39 51.4 -57.4 161.5	39 34.1 -57.0 160.4	39 15.8 -56.7 159.2	38 56.5 -56.3 158.1	38 36.2 -55.8 157.0
21°	38 54.0 -57.4 161.9	38 37.1 -57.1 160.8	38 19.1 -56.7 159.6	38 00.2 -56.3 158.5	37 40.4 -56.0 157.4
22°	37 56.6 -57.4 162.3	37 40.0 -57.1 161.2	37 22.4 -56.7 160.1	37 03.9 -56.4 159.0	36 44.4 -56.1 157.9
23°	36 59.2 -57.5 162.6	36 42.9 -57.2 161.5	36 25.7 -56.9 160.5	36 07.5 -56.5 159.4	35 48.3 -56.1 158.3
24°	36 01.7 -57.6 163.0	35 45.7 -57.3 161.9	35 28.8 -57.0 160.9	35 11.0 -56.6 159.8	34 52.2 -56.2 158.7
25°	35 04.1 -57.7 163.3	34 48.4 -57.3 162.3	34 31.8 -57.0 161.2	34 14.4 -56.7 160.2	33 56.0 -56.4 159.2
26°	34 06.4 -57.7 163.7	33 51.1 -57.4 162.6	33 34.8 -57.0 161.6	33 17.7 -56.8 160.6	32 59.6 -56.4 159.6
27°	33 08.7 -57.7 164.0	32 53.7 -57.5 163.0	32 37.8 -57.2 162.0	32 20.9 -56.8 161.0	32 03.2 -56.5 160.0
28°	32 11.0 -57.8 164.3	31 56.2 -57.5 163.3	31 40.6 -57.2 162.3	31 24.1 -56.9 161.4	31 06.7 -56.5 160.4
29°	31 13.2 -57.8 164.7	30 58.7 -57.5 163.7	30 43.4 -57.2 162.7	30 27.2 -56.9 161.7	30 10.2 -56.6 160.8

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	56 04.1 -50.7 142.2	55 31.1 -50.0 140.7	54 57.0 -49.3 139.3	54 22.0 -48.6 137.9	53 46.0 -47.9 136.5
1°	55 13.4 -51.1 143.2	54 41.1 -50.4 141.7	54 07.7 -49.7 140.3	53 33.4 -49.1 138.9	52 58.1 -48.4 137.5
2°	54 22.3 -51.5 144.1	53 50.7 -50.9 142.6	53 18.0 -50.2 141.2	52 44.3 -49.5 139.8	52 09.7 -48.9 138.5
3°	53 30.8 -51.9 144.9	52 59.8 -51.2 143.5	52 27.8 -50.6 142.1	51 54.8 -50.0 140.8	51 20.8 -49.3 139.4
4°	52 38.9 -52.2 145.8	52 08.6 -51.6 144.4	51 37.2 -51.0 143.0	51 04.8 -50.3 141.7	50 31.5 -49.7 140.3
5°	51 46.7 -52.5 146.6	51 17.0 -51.9 145.2	50 46.2 -51.3 143.8	50 14.5 -50.7 142.5	49 41.8 -50.1 141.2
6°	50 54.2 -52.8 147.4	50 25.1 -52.2 146.0	49 54.9 -51.6 144.6	49 23.8 -51.1 143.3	48 51.7 -50.5 142.1
7°	50 01.4 -53.1 148.1	49 32.9 -52.6 146.8	49 03.3 -52.0 145.4	48 32.7 -51.3 144.1	48 01.2 -50.7 142.9
8°	49 08.3 -53.4 148.8	48 40.3 -52.8 147.5	48 11.3 -52.2 146.2	47 41.4 -51.7 144.9	47 10.5 -51.1 143.7
9°	48 14.9 -53.6 149.5	47 47.5 -53.0 148.2	47 19.1 -52.5 146.9	46 49.7 -51.9 145.7	46 19.4 -51.4 144.4
10°	47 21.3 -53.8 150.2	46 54.5 -53.3 148.9	46 26.6 -52.8 147.6	45 57.8 -52.3 146.4	45 28.0 -51.7 145.2
11°	46 27.5 -54.0 150.8	46 01.2 -53.5 149.6	45 33.8 -53.0 148.3	45 05.5 -52.4 147.1	44 36.3 -51.9 145.9
12°	45 33.5 -54.2 151.5	45 07.7 -53.8 150.2	44 40.8 -53.2 149.0	44 13.1 -52.7 147.8	43 44.4 -52.2 146.6
13°	44 39.3 -54.5 152.1	44 13.9 -53.9 150.8	43 47.6 -53.4 149.6	43 20.4 -53.0 148.4	42 52.2 -52.4 147.3
14°	43 44.8 -54.6 152.7	43 20.0 -54.1 151.4	42 54.2 -53.6 150.3	42 27.4 -53.1 149.1	41 59.8 -52.7 147.9
15°	42 50.2 -54.7 153.2	42 25.9 -54.3 152.0	42 00.6 -53.9 150.9	41 34.3 -53.3 149.7	41 07.1 -52.8 148.6
16°	41 55.5 -54.9 153.8	41 31.6 -54.5 152.6	41 06.7 -54.0 151.4	40 41.0 -53.6 150.3	40 14.3 -53.1 149.2
17°	41 00.6 -55.1 154.3	40 37.1 -54.6 153.2	40 12.7 -54.1 152.0	39 47.4 -53.7 150.9	39 21.2 -53.2 149.8
18°	40 05.5 -55.2 154.8	39 42.5 -54.7 153.7	39 18.6 -54.3 152.6	38 53.7 -53.8 151.5	38 28.0 -53.4 150.4
19°	39 10.3 -55.3 155.3	38 47.8 -54.9 154.2	38 24.3 -54.5 153.1	37 59.9 -54.0 152.0	37 34.6 -53.6 151.0
20°	38 15.0 -55.4 155.8	37 52.9 -55.1 154.7	37 29.8 -54.6 153.7	37 05.9 -54.2 152.6	36 41.0 -53.7 151.5
21°	37 19.6 -55.6 156.3	36 57.8 -55.1 155.2	36 35.2 -54.7 154.2	36 11.7 -54.3 153.1	35 47.3 -53.9 152.1
22°	36 24.0 -55.7 156.8	36 02.7 -55.3 155.7	35 40.5 -54.9 154.7	35 17.4 -54.5 153.7	34 53.4 -54.0 152.6
23°	35 28.3 -55.8 157.3	35 07.4 -55.4 156.2	34 45.6 -55.0 155.2	34 22.9 -54.5 154.2	33 59.4 -54.1 153.2
24°	34 32.5 -55.8 157.7	34 12.0 -55.5 156.7	33 50.6 -55.1 155.7	33 28.4 -54.7 154.7	33 05.3 -54.3 153.7
25°	33 36.7 -56.0 158.1	33 16.5 -55.6 157.1	32 55.5 -55.2 156.1	32 33.7 -54.8 155.2	32 11.0 -54.4 154.2
26°	32 40.7 -56.0 158.6	32 20.9 -55.6 157.6	32 00.3 -55.3 156.6	31 38.9 -54.9 155.6	31 16.6 -54.5 154.7
27°	31 44.7 -56.2 159.0	31 25.3 -55.8 158.0	31 05.0 -55.4 157.1	30 44.0 -55.0 156.1	30 22.1 -54.6 155.2
28°	30 48.5 -56.2 159.4	30 29.5 -55.9 158.5	30 09.6 -55.4 157.5	29 49.0 -55.1 156.6	29 27.5 -54.7 155.6
29°	29 52.3 -56.2 159.8	29 33.6 -55.9 158.9	29 14.2 -55.6 157.9	28 53.9 -55.2 157.0	28 32.8 -54.8 156.1

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	53 09.1 -47.3 135.2	52 31.3 -46.5 133.9	51 52.8 -45.9 132.7	51 13.4 -45.2 131.4	50 33.3 -44.6 130.3
1°	52 21.8 -47.7 136.2	51 44.8 -47.1 134.9	51 06.9 -46.5 133.7	50 28.2 -45.8 132.5	49 48.7 -45.1 131.3
2°	51 34.1 -48.2 137.2	50 57.7 -47.6 135.9	50 20.4 -46.9 134.7	49 42.4 -46.3 133.5	49 03.6 -45.7 132.3
3°	50 45.9 -48.7 138.1	50 10.1 -48.0 136.9	49 33.5 -47.4 135.7	48 56.1 -46.8 134.5	48 17.9 -46.2 133.3
4°	49 57.2 -49.1 139.1	49 22.1 -48.5 137.8	48 46.1 -47.9 136.6	48 09.3 -47.3 135.4	47 31.7 -46.6 134.3
5°	49 08.1 -49.4 139.9	48 33.6 -48.9 138.7	47 58.2 -48.2 137.5	47 22.0 -47.6 136.3	46 45.1 -47.1 135.2
6°	48 18.7 -49.9 140.8	47 44.7 -49.2 139.6	47 10.0 -48.7 138.4	46 34.4 -48.1 137.2	45 58.0 -47.5 136.1
7°	47 28.8 -50.2 141.6	46 55.5 -49.6 140.4	46 21.3 -49.0 139.2	45 46.3 -48.4 138.1	45 10.5 -47.8 137.0
8°	46 38.6 -50.5 142.4	46 05.9 -50.0 141.2	45 32.3 -49.4 140.1	44 57.9 -48.8 138.9	44 22.7 -48.2 137.8
9°	45 48.1 -50.8 143.2	45 15.9 -50.2 142.0	44 42.9 -49.7 140.9	44 09.1 -49.2 139.7	43 34.5 -48.6 138.6
10°	44 57.3 -51.2 144.0	44 25.7 -50.6 142.8	43 53.2 -50.0 141.7	43 19.9 -49.4 140.5	42 45.9 -48.9 139.4
11°	44 06.1 -51.4 144.7	43 35.1 -50.9 143.6	43 03.2 -50.3 142.4	42 30.5 -49.8 141.3	41 57.0 -49.2 140.2
12°	43 14.7 -51.6 145.4	42 44.2 -51.1 144.3	42 12.9 -50.6 143.2	41 40.7 -50.0 142.1	41 07.8 -49.6 141.0
13°	42 23.1 -51.9 146.1	41 53.1 -51.4 145.0	41 22.3 -50.9 143.9	40 50.7 -50.4 142.8	40 18.2 -49.8 141.7
14°	41 31.2 -52.2 146.8	41 01.7 -51.6 145.7	40 31.4 -51.1 144.6	40 00.3 -50.5 143.5	39 28.4 -50.0 142.5
15°	40 39.0 -52.3 147.4	40 10.1 -51.8 146.3	39 40.3 -51.3 145.3	39 09.8 -50.9 144.2	38 38.4 -50.3 143.2
16°	39 46.7 -52.6 148.1	39 18.3 -52.1 147.0	38 49.0 -51.6 145.9	38 18.9 -51.0 144.9	37 48.1 -50.6 143.9
17°	38 54.1 -52.7 148.7	38 26.2 -52.3 147.6	37 57.4 -51.7 146.6	37 27.9 -51.3 145.6	36 57.5 -50.8 144.5
18°	38 01.4 -52.9 149.3	37 33.9 -52.4 148.3	37 05.7 -52.0 147.2	36 36.6 -51.5 146.2	36 06.7 -50.9 145.2
19°	37 08.5 -53.1 149.9	36 41.5 -52.6 148.9	36 13.7 -52.2 147.9	35 45.1 -51.7 146.8	35 15.8 -51.2 145.8
20°	36 15.4 -53.3 150.5	35 48.9 -52.9 149.5	35 21.5 -52.3 148.5	34 53.4 -51.8 147.5	34 24.6 -51.4 146.5
21°	35 22.1 -53.4 151.1	34 56.0 -52.9 150.1	34 29.2 -52.5 149.1	34 01.6 -52.1 148.1	33 33.2 -51.6 147.1
22°	34 28.7 -53.6 151.6	34 03.1 -53.1 150.6	33 36.7 -52.7 149.6	33 09.5 -52.2 148.7	32 41.6 -51.7 147.7
23°	33 35.1 -53.7 152.2	33 10.0 -53.3 151.2	32 44.0 -52.8 150.2	32 17.3 -52.3 149.3	31 49.9 -51.9 148.3
24°	32 41.4 -53.9 152.7	32 16.7 -53.4 151.7	31 51.2 -53.0 150.8	31 25.0 -52.6 149.8	30 58.0 -52.1 148.9
25°	31 47.5 -53.9 153.2	31 23.3 -53.6 152.3	30 58.2 -53.1 151.3	30 32.4 -52.6 150.4	30 05.9 -52.2 149.5
26°	30 53.6 -54.1 153.7	30 29.7 -53.6 152.8	30 05.1 -53.2 151.9	29 39.8 -52.8 150.9	29 13.7 -52.4 150.0
27°	29 59.5 -54.2 154.2	29 36.1 -53.8 153.3	29 11.9 -53.4 152.4	28 47.0 -53.0 151.5	28 21.3 -52.5 150.6
28°	29 05.3 -54.3 154.7	28 42.3 -53.9 153.8	28 18.5 -53.5 152.9	27 54.0 -53.0 152.0	27 28.8 -52.6 151.2
29°	28 11.0 -54.4 155.2	27 48.4 -54.0 154.3	27 25.0 -53.5 153.4	27 01.0 -53.2 152.6	26 36.2 -52.7 151.7

Latitude 28°

Declination CONTRARY name to Latitude

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	49 52.6 -44.0 129.1	49 11.2 -43.4 128.0	48 29.1 -42.8 126.9	47 46.5 -42.3 125.9	47 03.2 -41.6 124.8
1°	49 08.6 -44.6 130.2	48 27.8 -44.0 129.1	47 46.3 -43.3 128.0	47 04.2 -42.7 126.9	46 21.6 -42.2 125.9
2°	48 24.0 -45.0 131.2	47 43.8 -44.4 130.1	47 03.0 -43.9 129.0	46 21.5 -43.3 127.9	45 39.4 -42.7 126.9
3°	47 39.0 -45.6 132.2	46 59.4 -45.0 131.1	46 19.1 -44.4 130.0	45 38.2 -43.8 128.9	44 56.7 -43.3 127.9
4°	46 53.4 -46.0 133.1	46 14.4 -45.4 132.0	45 34.7 -44.9 131.0	44 54.4 -44.3 129.9	44 13.4 -43.7 128.9
5°	46 07.4 -46.5 134.1	45 29.0 -45.9 133.0	44 49.8 -45.3 131.9	44 10.1 -44.8 130.9	43 29.7 -44.2 129.8
6°	45 20.9 -46.9 135.0	44 43.1 -46.3 133.9	44 04.5 -45.7 132.8	43 25.3 -45.1 131.8	42 45.5 -44.6 130.8
7°	44 34.0 -47.3 135.8	43 56.8 -46.8 134.8	43 18.8 -46.2 133.7	42 40.2 -45.6 132.7	42 00.9 -45.0 131.7
8°	43 46.7 -47.6 136.7	43 10.0 -47.1 135.6	42 32.6 -46.5 134.6	41 54.6 -46.0 133.6	41 15.9 -45.5 132.5
9°	42 59.1 -48.1 137.5	42 22.9 -47.4 136.5	41 46.1 -46.9 135.4	41 08.6 -46.4 134.4	40 30.4 -45.8 133.4
10°	42 11.0 -48.3 138.4	41 35.5 -47.8 137.3	40 59.2 -47.3 136.3	40 22.2 -46.7 135.3	39 44.6 -46.2 134.3
11°	41 22.7 -48.7 139.1	40 47.7 -48.2 138.1	40 11.9 -47.5 137.1	39 35.5 -47.0 136.1	38 58.4 -46.5 135.1
12°	40 34.0 -49.0 139.9	39 59.5 -48.4 138.9	39 24.4 -47.9 137.9	38 48.5 -47.4 136.9	38 11.9 -46.8 135.9
13°	39 45.0 -49.2 140.7	39 11.1 -48.7 139.7	38 36.5 -48.2 138.6	38 01.1 -47.7 137.7	37 25.1 -47.2 136.7
14°	38 55.8 -49.6 141.4	38 22.4 -49.0 140.4	37 48.3 -48.5 139.4	37 13.4 -47.9 138.4	36 37.9 -47.4 137.5
15°	38 06.2 -49.7 142.1	37 33.4 -49.3 141.1	36 59.8 -48.8 140.1	36 25.5 -48.3 139.2	35 50.5 -47.7 138.2
16°	37 16.5 -50.1 142.8	36 44.1 -49.5 141.8	36 11.0 -49.0 140.9	35 37.2 -48.5 139.9	35 02.8 -48.0 139.0
17°	36 26.4 -50.3 143.5	35 54.6 -49.8 142.5	35 22.0 -49.3 141.6	34 48.7 -48.7 140.6	34 14.8 -48.3 139.7
18°	35 36.1 -50.5 144.2	35 04.8 -50.0 143.2	34 32.7 -49.5 142.3	34 00.0 -49.0 141.3	33 26.5 -48.5 140.4
19°	34 45.6 -50.7 144.9	34 14.8 -50.2 143.9	33 43.2 -49.7 143.0	33 11.0 -49.2 142.0	32 38.0 -48.7 141.1
20°	33 54.9 -50.9 145.5	33 24.6 -50.4 144.6	32 53.5 -49.9 143.6	32 21.8 -49.5 142.7	31 49.3 -48.9 141.8
21°	33 04.0 -51.1 146.2	32 34.2 -50.6 145.2	32 03.6 -50.1 144.3	31 32.3 -49.6 143.4	31 00.4 -49.2 142.5
22°	32 12.9 -51.2 146.8	31 43.6 -50.8 145.8	31 13.5 -50.4 144.9	30 42.7 -49.8 144.0	30 11.2 -49.3 143.1
23°	31 21.7 -51.5 147.4	30 52.8 -51.0 146.5	30 23.1 -50.4 145.6	29 52.9 -50.1 144.7	29 21.9 -49.5 143.8
24°	30 30.2 -51.6 148.0	30 01.8 -51.1 147.1	29 32.7 -50.7 146.2	29 02.8 -50.2 145.3	28 32.4 -49.8 144.4
25°	29 38.6 -51.7 148.6	29 10.7 -51.3 147.7	28 42.0 -50.8 146.8	28 12.6 -50.3 145.9	27 42.6 -49.8 145.1
26°	28 46.9 -51.9 149.2	28 19.4 -51.5 148.3	27 51.2 -51.0 147.4	27 22.3 -50.5 146.5	26 52.8 -50.1 145.7
27°	27 55.0 -52.1 149.7	27 27.9 -51.6 148.9	27 00.2 -51.2 148.0	26 31.8 -50.7 147.2	26 02.7 -50.2 146.3
28°	27 02.9 -52.2 150.3	26 36.3 -51.7 149.4	26 09.0 -51.2 148.6	25 41.1 -50.8 147.8	25 12.5 -50.3 146.9
29°	26 10.7 -52.3 150.8	25 44.6 -51.9 150.0	25 17.8 -51.4 149.2	24 50.3 -51.0 148.3	24 22.2 -50.5 147.5

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	46 19.5 -41.1 123.8	45 35.2 -40.5 122.9	44 50.5 -40.0 121.9	44 05.3 -39.5 121.0	43 19.7 -39.0 120.1
1°	45 38.4 -41.6 124.9	44 54.7 -41.1 123.9	44 10.5 -40.6 123.0	43 25.8 -40.0 122.0	42 40.7 -39.6 121.1
2°	44 56.8 -42.2 125.9	44 13.6 -41.6 124.9	43 29.9 -41.1 124.0	42 45.8 -40.6 123.1	42 01.1 -40.0 122.2
3°	44 14.6 -42.7 126.9	43 32.0 -42.2 125.9	42 48.8 -41.6 125.0	42 05.2 -41.1 124.1	41 21.1 -40.6 123.2
4°	43 31.9 -43.2 127.9	42 49.8 -42.6 126.9	42 07.2 -42.1 126.0	41 24.1 -41.6 125.0	40 40.5 -41.1 124.1
5°	42 48.7 -43.6 128.8	42 07.2 -43.1 127.9	41 25.1 -42.6 126.9	40 42.5 -42.1 126.0	39 59.4 -41.6 125.1
6°	42 05.1 -44.1 129.8	41 24.1 -43.5 128.8	40 42.5 -43.0 127.9	40 00.4 -42.4 126.9	39 17.8 -41.9 126.0
7°	41 21.0 -44.5 130.7	40 40.6 -44.0 129.7	39 59.5 -43.4 128.8	39 18.0 -43.0 127.8	38 35.9 -42.4 126.9
8°	40 36.5 -44.9 131.6	39 56.6 -44.4 130.6	39 16.1 -43.8 129.7	38 35.0 -43.3 128.7	37 53.5 -42.8 127.8
9°	39 51.6 -45.2 132.4	39 12.2 -44.7 131.5	38 32.3 -44.3 130.5	37 51.7 -43.7 129.6	37 10.7 -43.2 128.7
10°	39 06.4 -45.7 133.3	38 27.5 -45.1 132.3	37 48.0 -44.5 131.4	37 08.0 -44.0 130.5	36 27.5 -43.6 129.6
11°	38 20.7 -46.0 134.1	37 42.4 -45.5 133.2	37 03.5 -45.0 132.2	36 24.0 -44.5 131.3	35 43.9 -43.9 130.4
12°	37 34.7 -46.3 134.9	36 56.9 -45.8 134.0	36 18.5 -45.3 133.1	35 39.5 -44.7 132.2	35 00.0 -44.3 131.3
13°	36 48.4 -46.6 135.7	36 11.1 -46.1 134.8	35 33.2 -45.5 133.9	34 54.8 -45.1 133.0	34 15.7 -44.5 132.1
14°	36 01.8 -46.9 136.5	35 25.0 -46.4 135.6	34 47.7 -45.9 134.7	34 09.7 -45.4 133.8	33 31.2 -44.9 132.9
15°	35 14.9 -47.2 137.3	34 38.6 -46.7 136.4	34 01.8 -46.2 135.5	33 24.3 -45.7 134.6	32 46.3 -45.2 133.7
16°	34 27.7 -47.5 138.0	33 51.9 -46.9 137.1	33 15.6 -46.5 136.2	32 38.6 -45.9 135.3	32 01.1 -45.4 134.5
17°	33 40.2 -47.8 138.8	33 05.0 -47.3 137.9	32 29.1 -46.7 137.0	31 52.7 -46.3 136.1	31 15.7 -45.8 135.2
18°	32 52.4 -47.9 139.5	32 17.7 -47.5 138.6	31 42.4 -47.0 137.7	31 06.4 -46.4 136.9	30 29.9 -46.0 136.0
19°	32 04.5 -48.3 140.2	31 30.2 -47.7 139.3	30 55.4 -47.2 138.4	30 20.0 -46.8 137.6	29 43.9 -46.2 136.7
20°	31 16.2 -48.4 140.9	30 42.5 -47.9 140.0	30 08.2 -47.5 139.2	29 33.2 -46.9 138.3	28 57.7 -46.4 137.5
21°	30 27.8 -48.7 141.6	29 54.6 -48.2 140.7	29 20.7 -47.6 139.9	28 46.3 -47.2 139.0	28 11.3 -46.7 138.2
22°	29 39.1 -48.8 142.3	29 06.4 -48.4 141.4	28 33.1 -47.9 140.6	27 59.1 -47.4 139.7	27 24.6 -46.9 138.9
23°	28 50.3 -49.1 142.9	28 18.0 -48.5 142.1	27 45.2 -48.1 141.2	27 11.7 -47.6 140.4	26 37.7 -47.1 139.6
24°	28 01.2 -49.2 143.6	27 29.5 -48.8 142.7	26 57.1 -48.3 141.9	26 24.1 -47.8 141.1	25 50.6 -47.3 140.3
25°	27 12.0 -49.4 144.2	26 40.7 -48.9 143.4	26 08.8 -48.4 142.6	25 36.3 -47.9 141.8	25 03.3 -47.5 141.0
26°	26 22.6 -49.6 144.9	25 51.8 -49.1 144.0	25 20.4 -48.6 143.2	24 48.4 -48.2 142.4	24 15.8 -47.7 141.7
27°	25 33.0 -49.7 145.5	25 02.7 -49.3 144.7	24 31.8 -48.8 143.9	24 00.2 -48.3 143.1	23 28.1 -47.8 142.3
28°	24 43.3 -49.9 146.1	24 13.4 -49.4 145.3	23 43.0 -49.0 144.5	23 11.9 -48.4 143.7	22 40.3 -48.0 143.0
29°	23 53.4 -50.0 146.7	23 24.0 -49.5 145.9	22 54.0 -49.0 145.2	22 23.5 -48.6 144.4	21 52.3 -48.1 143.6

Declination CONTRARY name to Latitude

Latitude 28°

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	42 33.7 -38.6 119.2	41 47.2 -38.0 118.4	41 00.5 -37.7 117.5	40 13.3 -37.2 116.7	39 25.8 -36.7 115.9
1°	41 55.1 -39.0 120.3	41 09.2 -38.6 119.4	40 22.8 -38.1 118.6	39 36.1 -37.7 117.7	38 49.1 -37.3 116.9
2°	41 16.1 -39.6 121.3	40 30.6 -39.1 120.4	39 44.7 -38.6 119.6	38 58.4 -38.2 118.8	38 11.8 -37.7 117.9
3°	40 36.5 -40.1 122.3	39 51.5 -39.6 121.4	39 06.1 -39.2 120.6	38 20.2 -38.6 119.7	37 34.1 -38.3 118.9
4°	39 56.4 -40.6 123.2	39 11.9 -40.1 122.4	38 26.9 -39.6 121.5	37 41.6 -39.2 120.7	36 55.8 -38.7 119.9
5°	39 15.8 -41.0 124.2	38 31.8 -40.6 123.3	37 47.3 -40.1 122.5	37 02.4 -39.6 121.7	36 17.1 -39.1 120.9
6°	38 34.8 -41.5 125.1	37 51.2 -41.0 124.3	37 07.2 -40.5 123.4	36 22.8 -40.0 122.6	35 38.0 -39.6 121.8
7°	37 53.3 -41.9 126.1	37 10.2 -41.4 125.2	36 26.7 -40.9 124.3	35 42.8 -40.5 123.5	34 58.4 -40.0 122.7
8°	37 11.4 -42.3 127.0	36 28.8 -41.8 126.1	35 45.8 -41.3 125.3	35 02.3 -40.8 124.4	34 18.4 -40.4 123.6
9°	36 29.1 -42.7 127.8	35 47.0 -42.2 127.0	35 04.5 -41.8 126.1	34 21.5 -41.3 125.3	33 38.0 -40.8 124.5
10°	35 46.4 -43.1 128.7	35 04.8 -42.6 127.9	34 22.7 -42.0 127.0	33 40.2 -41.6 126.2	32 57.2 -41.1 125.4
11°	35 03.3 -43.4 129.6	34 22.2 -42.9 128.7	33 40.7 -42.5 127.9	32 58.6 -41.9 127.1	32 16.1 -41.4 126.2
12°	34 19.9 -43.7 130.4	33 39.3 -43.2 129.6	32 58.2 -42.7 128.7	32 16.7 -42.3 127.9	31 34.7 -41.9 127.1
13°	33 36.2 -44.1 131.2	32 56.1 -43.6 130.4	32 15.5 -43.1 129.6	31 34.4 -42.6 128.7	30 52.8 -42.1 127.9
14°	32 52.1 -44.4 132.0	32 12.5 -43.9 131.2	31 32.4 -43.4 130.4	30 51.8 -42.9 129.6	30 10.7 -42.4 128.8
15°	32 07.7 -44.7 132.8	31 28.6 -44.2 132.0	30 49.0 -43.7 131.2	30 08.9 -43.2 130.4	29 28.3 -42.7 129.6
16°	31 23.0 -44.9 133.6	30 44.4 -44.4 132.8	30 05.3 -44.0 132.0	29 25.7 -43.5 131.2	28 45.6 -43.0 130.4
17°	30 38.1 -45.2 134.4	30 00.0 -44.8 133.6	29 21.3 -44.2 132.8	28 42.2 -43.8 132.0	28 02.6 -43.3 131.2
18°	29 52.9 -45.5 135.2	29 15.2 -45.0 134.3	28 37.1 -44.5 133.5	27 58.4 -44.0 132.7	27 19.3 -43.6 132.0
19°	29 07.4 -45.8 135.9	28 30.2 -45.2 135.1	27 52.6 -44.8 134.3	27 14.4 -44.3 133.5	26 35.7 -43.7 132.7
20°	28 21.6 -45.9 136.7	27 45.0 -45.5 135.8	27 07.8 -45.0 135.0	26 30.1 -44.5 134.3	25 52.0 -44.1 133.5
21°	27 35.7 -46.2 137.4	26 59.5 -45.7 136.6	26 22.8 -45.2 135.8	25 45.6 -44.7 135.0	25 07.9 -44.2 134.2
22°	26 49.5 -46.4 138.1	26 13.8 -45.9 137.3	25 37.6 -45.4 136.5	25 00.9 -44.9 135.7	24 23.7 -44.5 135.0
23°	26 03.1 -46.7 138.8	25 27.9 -46.1 138.0	24 52.2 -45.6 137.2	24 16.0 -45.2 136.5	23 39.2 -44.6 135.7
24°	25 16.4 -46.8 139.5	24 41.8 -46.3 138.7	24 06.6 -45.9 138.0	23 30.8 -45.3 137.2	22 54.6 -44.9 136.5
25°	24 29.6 -46.9 140.2	23 55.5 -46.6 139.4	23 20.7 -46.0 138.7	22 45.5 -45.6 137.9	22 09.7 -45.0 137.2
26°	23 42.7 -47.2 140.9	23 08.9 -46.6 140.1	22 34.7 -46.2 139.4	21 59.9 -45.7 138.6	21 24.7 -45.3 137.9
27°	22 55.5 -47.4 141.5	22 22.3 -46.9 140.8	21 48.5 -46.4 140.0	21 14.2 -45.9 139.3	20 39.4 -45.4 138.6
28°	22 08.1 -47.5 142.2	21 35.4 -47.0 141.5	21 02.1 -46.5 140.7	20 28.3 -46.0 140.0	19 54.0 -45.5 139.3
29°	21 20.6 -47.6 142.9	20 48.4 -47.2 142.1	20 15.6 -46.7 141.4	19 42.3 -46.2 140.7	19 08.5 -45.7 140.0

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	38 38.0 -36.3 115.1	37 49.9 -35.9 114.4	37 01.5 -35.5 113.6	36 12.9 -35.2 112.9	35 23.9 -34.8 112.2
1°	38 01.7 -36.8 116.2	37 14.0 -36.4 115.4	36 26.0 -36.0 114.6	35 37.7 -35.7 113.9	34 49.1 -35.2 113.2
2°	37 24.9 -37.4 117.2	36 37.6 -37.0 116.4	35 50.0 -36.6 115.6	35 02.0 -36.1 114.9	34 13.9 -35.8 114.2
3°	36 47.5 -37.8 118.1	36 00.6 -37.3 117.4	35 13.4 -36.9 116.6	34 25.9 -36.6 115.9	33 38.1 -36.2 115.1
4°	36 09.7 -38.3 119.1	35 23.3 -37.9 118.3	34 36.5 -37.5 117.6	33 49.3 -37.0 116.8	33 01.9 -36.6 116.1
5°	35 31.4 -38.7 120.1	34 45.4 -38.3 119.3	33 59.0 -37.8 118.5	33 12.3 -37.4 117.8	32 25.3 -37.0 117.0
6°	34 52.7 -39.1 121.0	34 07.1 -38.6 120.2	33 21.2 -38.3 119.5	32 34.9 -37.9 118.7	31 48.3 -37.5 118.0
7°	34 13.6 -39.5 121.9	33 28.5 -39.1 121.1	32 42.9 -38.6 120.4	31 57.0 -38.2 119.6	31 10.8 -37.8 118.9
8°	33 34.1 -40.0 122.8	32 49.4 -39.5 122.0	32 04.3 -39.1 121.3	31 18.8 -38.6 120.5	30 33.0 -38.2 119.8
9°	32 54.1 -40.3 123.7	32 09.9 -39.9 122.9	31 25.2 -39.4 122.2	30 40.2 -39.0 121.4	29 54.8 -38.5 120.7
10°	32 13.8 -40.6 124.6	31 30.0 -40.2 123.8	30 45.8 -39.7 123.1	30 01.2 -39.3 122.3	29 16.3 -38.9 121.6
11°	31 33.2 -41.0 125.5	30 49.8 -40.5 124.7	30 06.1 -40.1 123.9	29 21.9 -39.6 123.2	28 37.4 -39.2 122.4
12°	30 52.2 -41.4 126.3	30 09.3 -40.9 125.5	29 26.0 -40.5 124.8	28 42.3 -40.0 124.0	27 58.2 -39.6 123.3
13°	30 10.8 -41.6 127.2	29 28.4 -41.2 126.4	28 45.5 -40.7 125.6	28 02.3 -40.3 124.9	27 18.6 -39.8 124.1
14°	29 29.2 -42.0 128.0	28 47.2 -41.5 127.2	28 04.8 -41.0 126.5	27 22.0 -40.6 125.7	26 38.8 -40.1 125.0
15°	28 47.2 -42.2 128.8	28 05.7 -41.8 128.0	27 23.8 -41.3 127.3	26 41.4 -40.8 126.5	25 58.7 -40.5 125.8
16°	28 05.0 -42.6 129.6	27 23.9 -42.0 128.8	26 42.5 -41.6 128.1	26 00.6 -41.2 127.4	25 18.2 -40.6 126.6
17°	27 22.4 -42.8 130.4	26 41.9 -42.4 129.6	26 00.9 -41.9 128.9	25 19.4 -41.4 128.2	24 37.6 -41.0 127.4
18°	26 39.6 -43.0 131.2	25 59.5 -42.5 130.4	25 19.0 -42.1 129.7	24 38.0 -41.6 129.0	23 56.6 -41.2 128.2
19°	25 56.6 -43.3 132.0	25 17.0 -42.9 131.2	24 36.9 -42.4 130.5	23 56.4 -41.9 129.8	23 15.4 -41.4 129.0
20°	25 13.3 -43.6 132.7	24 34.1 -43.0 132.0	23 54.5 -42.5 131.3	23 14.5 -42.1 130.5	22 34.0 -41.6 129.8
21°	24 29.7 -43.7 133.5	23 51.1 -43.3 132.8	23 12.0 -42.9 132.0	22 32.4 -42.4 131.3	21 52.4 -41.9 130.6
22°	23 46.0 -44.0 134.2	23 07.8 -43.5 133.5	22 29.1 -43.0 132.8	21 50.0 -42.5 132.1	21 10.5 -42.1 131.4
23°	23 02.0 -44.2 135.0	22 24.3 -43.7 134.3	21 46.1 -43.2 133.5	21 07.5 -42.7 132.8	20 28.4 -42.2 132.1
24°	22 17.8 -44.3 135.7	21 40.6 -43.9 135.0	21 02.9 -43.4 134.3	20 24.8 -43.0 133.6	19 46.2 -42.5 132.9
25°	21 33.5 -44.6 136.4	20 56.7 -44.1 135.7	20 19.5 -43.6 135.0	19 41.8 -43.1 134.3	19 03.7 -42.6 133.6
26°	20 48.9 -44.8 137.2	20 12.6 -44.2 136.5	19 35.9 -43.8 135.8	18 58.7 -43.3 135.1	18 21.1 -42.8 134.4
27°	20 04.1 -44.9 137.9	19 28.4 -44.5 137.2	18 52.1 -43.9 136.5	18 15.4 -43.4 135.8	17 38.3 -43.0 135.1
28°	19 19.2 -45.0 138.6	18 43.9 -44.5 137.9	18 08.2 -44.1 137.2	17 32.0 -43.7 136.5	16 55.3 -43.2 135.9
29°	18 34.2 -45.3 139.3	17 59.4 -44.8 138.6	17 24.1 -44.3 137.9	16 48.3 -43.7 137.2	16 12.1 -43.2 136.6

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Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	34 34.8 -34.5 111.5	33 45.4 -34.2 110.8	32 55.7 -33.8 110.1	32 05.9 -33.5 109.5	31 15.8 -33.1 108.8
1°	34 00.3 -34.9 112.5	33 11.2 -34.5 111.8	32 21.9 -34.2 111.1	31 32.4 -33.9 110.5	30 42.7 -33.6 109.8
2°	33 25.4 -35.4 113.5	32 36.7 -35.1 112.8	31 47.7 -34.7 112.1	30 58.5 -34.3 111.4	30 09.1 -34.0 110.8
3°	32 50.0 -35.8 114.4	32 01.6 -35.4 113.7	31 13.0 -35.1 113.1	30 24.2 -34.8 112.4	29 35.1 -34.5 111.7
4°	32 14.2 -36.2 115.4	31 26.2 -35.9 114.7	30 37.9 -35.5 114.0	29 49.4 -35.1 113.3	29 00.6 -34.8 112.7
5°	31 38.0 -36.7 116.3	30 50.3 -36.2 115.6	30 02.4 -35.9 114.9	29 14.3 -35.6 114.3	28 25.8 -35.2 113.6
6°	31 01.3 -37.0 117.3	30 14.1 -36.7 116.5	29 26.5 -36.2 115.9	28 38.7 -35.9 115.2	27 50.6 -35.5 114.5
7°	30 24.3 -37.4 118.2	29 37.4 -37.0 117.5	28 50.3 -36.7 116.8	28 02.8 -36.2 116.1	27 15.1 -35.9 115.4
8°	29 46.9 -37.8 119.1	29 00.4 -37.4 118.4	28 13.6 -37.0 117.7	27 26.6 -36.6 117.0	26 39.2 -36.2 116.3
9°	29 09.1 -38.1 120.0	28 23.0 -37.7 119.3	27 36.6 -37.3 118.6	26 50.0 -37.0 117.9	26 03.0 -36.6 117.2
10°	28 31.0 -38.5 120.8	27 45.3 -38.1 120.1	26 59.3 -37.6 119.4	26 13.0 -37.2 118.8	25 26.4 -36.8 118.1
11°	27 52.5 -38.8 121.7	27 07.2 -38.3 121.0	26 21.7 -38.0 120.3	25 35.8 -37.6 119.6	24 49.6 -37.2 119.0
12°	27 13.7 -39.1 122.6	26 28.9 -38.7 121.9	25 43.7 -38.2 121.2	24 58.2 -37.8 120.5	24 12.4 -37.4 119.8
13°	26 34.6 -39.4 123.4	25 50.2 -39.0 122.7	25 05.5 -38.6 122.0	24 20.4 -38.2 121.3	23 35.0 -37.8 120.7
14°	25 55.2 -39.7 124.3	25 11.2 -39.2 123.6	24 26.9 -38.8 122.9	23 42.2 -38.4 122.2	22 57.2 -38.0 121.5
15°	25 15.5 -40.0 125.1	24 32.0 -39.6 124.4	23 48.1 -39.1 123.7	23 03.8 -38.6 123.0	22 19.2 -38.2 122.4
16°	24 35.5 -40.2 125.9	23 52.4 -39.7 125.2	23 09.0 -39.4 124.5	22 25.2 -39.0 123.9	21 41.0 -38.5 123.2
17°	23 55.3 -40.5 126.7	23 12.7 -40.1 126.0	22 29.6 -39.6 125.4	21 46.2 -39.1 124.7	21 02.5 -38.7 124.0
18°	23 14.8 -40.7 127.5	22 32.6 -40.3 126.8	21 50.0 -39.8 126.2	21 07.1 -39.4 125.5	20 23.8 -39.0 124.8
19°	22 34.1 -41.0 128.3	21 52.3 -40.5 127.6	21 10.2 -40.1 127.0	20 27.7 -39.6 126.3	19 44.8 -39.2 125.6
20°	21 53.1 -41.2 129.1	21 11.8 -40.7 128.4	20 30.1 -40.2 127.8	19 48.1 -39.9 127.1	19 05.6 -39.4 126.4
21°	21 11.9 -41.4 129.9	20 31.1 -40.9 129.2	19 49.9 -40.5 128.6	19 08.2 -40.0 127.9	18 26.2 -39.5 127.2
22°	20 30.5 -41.6 130.7	19 50.2 -41.2 130.0	19 09.4 -40.7 129.3	18 28.2 -40.2 128.7	17 46.7 -39.8 128.0
23°	19 48.9 -41.8 131.5	19 09.0 -41.3 130.8	18 28.7 -40.9 130.1	17 48.0 -40.4 129.5	17 06.9 -40.0 128.8
24°	19 07.1 -42.0 132.2	18 27.7 -41.5 131.5	17 47.8 -41.0 130.9	17 07.6 -40.6 130.2	16 26.9 -40.1 129.6
25°	18 25.1 -42.1 133.0	17 46.2 -41.7 132.3	17 06.8 -41.2 131.6	16 27.0 -40.7 131.0	15 46.8 -40.3 130.4
26°	17 43.0 -42.3 133.7	17 04.5 -41.9 133.1	16 25.6 -41.4 132.4	15 46.3 -41.0 131.8	15 06.5 -40.4 131.1
27°	17 00.7 -42.5 134.5	16 22.6 -42.0 133.8	15 44.2 -41.5 133.2	15 05.3 -41.0 132.5	14 26.1 -40.6 131.9
28°	16 18.2 -42.7 135.2	15 40.6 -42.1 134.5	15 02.7 -41.7 133.9	14 24.3 -41.2 133.3	13 45.5 -40.7 132.7
29°	15 35.5 -42.8 135.9	14 58.5 -42.4 135.3	14 21.0 -41.8 134.7	13 43.1 -41.4 134.0	13 04.8 -40.9 133.4

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	30 25.6 -32.9 108.2	29 35.2 -32.6 107.6	28 44.6 -32.3 107.0	27 53.8 -32.0 106.3	27 02.9 -31.8 105.8
1°	29 52.7 -33.3 109.2	29 02.6 -33.0 108.5	28 12.3 -32.8 107.9	27 21.8 -32.5 107.3	26 31.1 -32.2 106.7
2°	29 19.4 -33.7 110.1	28 29.6 -33.4 109.5	27 39.5 -33.1 108.9	26 49.3 -32.8 108.2	25 58.9 -32.5 107.6
3°	28 45.7 -34.1 111.1	27 56.2 -33.8 110.4	27 06.4 -33.4 109.8	26 16.5 -33.2 109.2	25 26.4 -32.9 108.6
4°	28 11.6 -34.4 112.0	27 22.4 -34.2 111.4	26 33.0 -33.9 110.7	25 43.3 -33.5 110.1	24 53.5 -33.3 109.5
5°	27 37.2 -34.9 112.9	26 48.2 -34.5 112.3	25 59.1 -34.2 111.7	25 09.8 -33.9 111.0	24 20.2 -33.5 110.4
6°	27 02.3 -35.2 113.8	26 13.7 -34.8 113.2	25 24.9 -34.5 112.6	24 35.9 -34.2 111.9	23 46.7 -33.9 111.3
7°	26 27.1 -35.5 114.8	25 38.9 -35.2 114.1	24 50.4 -34.8 113.5	24 01.7 -34.5 112.8	23 12.8 -34.2 112.2
8°	25 51.6 -35.9 115.7	25 03.7 -35.5 115.0	24 15.6 -35.2 114.4	23 27.2 -34.8 113.7	22 38.6 -34.5 113.1
9°	25 15.7 -36.1 116.5	24 28.2 -35.8 115.9	23 40.4 -35.4 115.2	22 52.4 -35.1 114.6	22 04.1 -34.8 114.0
10°	24 39.6 -36.5 117.4	23 52.4 -36.1 116.8	23 05.0 -35.8 116.1	22 17.3 -35.4 115.5	21 29.3 -35.0 114.9
11°	24 03.1 -36.8 118.3	23 16.3 -36.4 117.6	22 29.2 -36.0 117.0	21 41.9 -35.7 116.4	20 54.3 -35.3 115.7
12°	23 26.3 -37.1 119.2	22 39.9 -36.7 118.5	21 53.2 -36.3 117.9	21 06.2 -35.9 117.2	20 19.0 -35.6 116.6
13°	22 49.2 -37.3 120.0	22 03.2 -36.9 119.4	21 16.9 -36.5 118.7	20 30.3 -36.2 118.1	19 43.4 -35.8 117.5
14°	22 11.9 -37.6 120.9	21 26.3 -37.2 120.2	20 40.4 -36.8 119.6	19 54.1 -36.4 118.9	19 07.6 -36.0 118.3
15°	21 34.3 -37.8 121.7	20 49.1 -37.4 121.0	20 03.6 -37.1 120.4	19 17.7 -36.6 119.8	18 31.6 -36.2 119.2
16°	20 56.5 -38.1 122.5	20 11.7 -37.7 121.9	19 26.5 -37.2 121.2	18 41.1 -36.9 120.6	17 55.4 -36.5 120.0
17°	20 18.4 -38.3 123.4	19 34.0 -37.9 122.7	18 49.3 -37.5 122.1	18 04.2 -37.0 121.5	17 18.9 -36.7 120.8
18°	19 40.1 -38.5 124.2	18 56.1 -38.1 123.5	18 11.8 -37.7 122.9	17 27.2 -37.3 122.3	16 42.2 -36.9 121.7
19°	19 01.6 -38.8 125.0	18 18.0 -38.3 124.3	17 34.1 -37.9 123.7	16 49.9 -37.5 123.1	16 05.3 -37.0 122.5
20°	18 22.8 -38.9 125.8	17 39.7 -38.5 125.2	16 56.2 -38.1 124.5	16 12.4 -37.6 123.9	15 28.3 -37.2 123.3
21°	17 43.9 -39.1 126.6	17 01.2 -38.7 126.0	16 18.1 -38.2 125.3	15 34.8 -37.9 124.7	14 51.1 -37.5 124.1
22°	17 04.8 -39.4 127.4	16 22.5 -38.9 126.8	15 39.9 -38.5 126.1	14 56.9 -38.0 125.5	14 13.6 -37.5 124.9
23°	16 25.4 -39.5 128.2	15 43.6 -39.0 127.6	15 01.4 -38.6 126.9	14 18.9 -38.1 126.3	13 36.1 -37.7 125.7
24°	15 45.9 -39.6 129.0	15 04.6 -39.2 128.3	14 22.8 -38.7 127.7	13 40.8 -38.3 127.1	12 58.4 -37.9 126.5
25°	15 06.3 -39.8 129.7	14 25.4 -39.4 129.1	13 44.1 -38.9 128.5	13 02.5 -38.5 127.9	12 20.5 -38.0 127.3
26°	14 26.5 -40.0 130.5	13 46.0 -39.5 129.9	13 05.2 -39.1 129.3	12 24.0 -38.6 128.7	11 42.5 -38.1 128.1
27°	13 46.5 -40.1 131.3	13 06.5 -39.7 130.7	12 26.1 -39.2 130.1	11 45.4 -38.7 129.5	11 04.4 -38.3 128.9
28°	13 06.4 -40.3 132.0	12 26.8 -39.7 131.4	11 46.9 -39.3 130.8	11 06.7 -38.8 130.3	10 26.1 -38.4 129.7
29°	12 26.1 -40.4 132.8	11 47.1 -39.9 132.2	11 07.6 -39.4 131.6	10 27.9 -39.0 131.0	9 47.7 -38.5 130.5

Declination CONTRARY name to Latitude

Latitude 28°

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	26 11.9 -31.6 105.2	25 20.7 -31.4 104.6	24 29.3 -31.1 104.0	23 37.9 -30.9 103.5	22 46.3 -30.7 102.9
1°	25 40.3 -31.9 106.1	24 49.3 -31.7 105.5	23 58.2 -31.4 105.0	23 07.0 -31.3 104.4	22 15.6 -31.0 103.8
2°	25 08.4 -32.3 107.0	24 17.6 -32.0 106.5	23 26.8 -31.8 105.9	22 35.7 -31.5 105.3	21 44.6 -31.4 104.8
3°	24 36.1 -32.7 108.0	23 45.6 -32.4 107.4	22 55.0 -32.2 106.8	22 04.2 -31.9 106.2	21 13.2 -31.6 105.7
4°	24 03.4 -32.9 108.9	23 13.2 -32.7 108.3	22 22.8 -32.4 107.7	21 32.3 -32.2 107.1	20 41.6 -31.9 106.6
5°	23 30.5 -33.3 109.8	22 40.5 -32.9 109.2	21 50.4 -32.7 108.6	21 00.1 -32.4 108.1	20 09.7 -32.2 107.5
6°	22 57.2 -33.6 110.7	22 07.6 -33.3 110.1	21 17.7 -33.0 109.5	20 27.7 -32.7 109.0	19 37.5 -32.4 108.4
7°	22 23.6 -33.9 111.6	21 34.3 -33.6 111.0	20 44.7 -33.3 110.4	19 55.0 -33.0 109.8	19 05.1 -32.7 109.3
8°	21 49.7 -34.1 112.5	21 00.7 -33.8 111.9	20 11.4 -33.5 111.3	19 22.0 -33.2 110.7	18 32.4 -33.0 110.2
9°	21 15.6 -34.4 113.4	20 26.9 -34.2 112.8	19 37.9 -33.8 112.2	18 48.8 -33.5 111.6	17 59.4 -33.2 111.0
10°	20 41.2 -34.7 114.3	19 52.7 -34.3 113.7	19 04.1 -34.0 113.1	18 15.3 -33.8 112.5	17 26.2 -33.4 111.9
11°	20 06.5 -35.0 115.1	19 18.4 -34.6 114.5	18 30.1 -34.3 113.9	17 41.5 -33.9 113.4	16 52.8 -33.6 112.8
12°	19 31.5 -35.2 116.0	18 43.8 -34.9 115.4	17 55.8 -34.5 114.8	17 07.6 -34.2 114.2	16 19.2 -33.9 113.6
13°	18 56.3 -35.4 116.9	18 08.9 -35.1 116.3	17 21.3 -34.7 115.7	16 33.4 -34.4 115.1	15 45.3 -34.0 114.5
14°	18 20.9 -35.7 117.7	17 33.8 -35.3 117.1	16 46.6 -35.0 116.5	15 59.0 -34.5 115.9	15 11.3 -34.3 115.4
15°	17 45.2 -35.9 118.6	16 58.5 -35.5 118.0	16 11.6 -35.1 117.4	15 24.5 -34.8 116.8	14 37.0 -34.4 116.2
16°	17 09.3 -36.0 119.4	16 23.0 -35.7 118.8	15 36.5 -35.3 118.2	14 49.7 -35.0 117.6	14 02.6 -34.6 117.1
17°	16 33.3 -36.3 120.2	15 47.3 -35.8 119.6	15 01.2 -35.5 119.0	14 14.7 -35.1 118.5	13 28.0 -34.7 117.9
18°	15 57.0 -36.5 121.1	15 11.5 -36.1 120.5	14 25.7 -35.7 119.9	13 39.6 -35.3 119.3	12 53.3 -35.0 118.7
19°	15 20.5 -36.6 121.9	14 35.4 -36.3 121.3	13 50.0 -35.9 120.7	13 04.3 -35.5 120.1	12 18.3 -35.0 119.6
20°	14 43.9 -36.9 122.7	13 59.1 -36.4 122.1	13 14.1 -36.0 121.5	12 28.8 -35.6 121.0	11 43.3 -35.3 120.4
21°	14 07.0 -36.9 123.5	13 22.7 -36.5 122.9	12 38.1 -36.1 122.4	11 53.2 -35.7 121.8	11 08.0 -35.3 121.2
22°	13 30.1 -37.2 124.3	12 46.2 -36.8 123.7	12 02.0 -36.3 123.2	11 17.5 -35.9 122.6	10 32.7 -35.5 122.0
23°	12 52.9 -37.3 125.1	12 09.4 -36.8 124.6	11 25.7 -36.5 124.0	10 41.6 -36.0 123.4	9 57.2 -35.6 122.9
24°	12 15.6 -37.4 125.9	11 32.6 -37.0 125.4	10 49.2 -36.5 124.8	10 05.6 -36.2 124.2	9 21.6 -35.7 123.7
25°	11 38.2 -37.6 126.7	10 55.6 -37.1 126.2	10 12.7 -36.7 125.6	9 29.4 -36.2 125.0	8 45.9 -35.8 124.5
26°	11 00.6 -37.6 127.5	10 18.5 -37.3 127.0	9 36.0 -36.8 126.4	8 53.2 -36.4 125.8	8 10.1 -35.9 125.3
27°	10 23.0 -37.8 128.3	9 41.2 -37.3 127.8	8 59.2 -36.9 127.2	8 16.8 -36.4 126.7	7 34.2 -36.0 126.1
28°	9 45.2 -37.9 129.1	9 03.9 -37.5 128.6	8 22.3 -37.0 128.0	7 40.4 -36.5 127.5	6 58.2 -36.1 126.9
29°	9 07.3 -38.1 129.9	8 26.4 -37.5 129.3	7 45.3 -37.1 128.8	7 03.9 -36.6 128.3	6 22.1 -36.1 127.7

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	21 54.6 -30.5 102.3	21 02.8 -30.3 101.8	20 10.9 -30.2 101.3	19 18.9 -30.0 100.7	18 26.8 -29.8 100.2
1°	21 24.1 -30.8 103.3	20 32.5 -30.7 102.7	19 40.7 -30.4 102.2	18 48.9 -30.2 101.7	17 57.0 -30.1 101.1
2°	20 53.3 -31.1 104.2	20 01.8 -30.9 103.6	19 10.3 -30.7 103.1	18 18.7 -30.6 102.6	17 26.9 -30.3 102.0
3°	20 22.2 -31.4 105.1	19 30.9 -31.1 104.6	18 39.6 -31.0 104.0	17 48.1 -30.7 103.5	16 56.6 -30.6 102.9
4°	19 50.8 -31.7 106.0	18 59.8 -31.5 105.5	18 08.6 -31.2 104.9	17 17.4 -31.0 104.4	16 26.0 -30.8 103.8
5°	19 19.1 -31.9 106.9	18 28.3 -31.7 106.4	17 37.4 -31.4 105.8	16 46.4 -31.2 105.3	15 55.2 -31.0 104.7
6°	18 47.2 -32.2 107.8	17 56.6 -31.9 107.3	17 06.0 -31.7 106.7	16 15.2 -31.5 106.2	15 24.2 -31.2 105.6
7°	18 15.0 -32.5 108.7	17 24.7 -32.2 108.1	16 34.3 -31.9 107.6	15 43.7 -31.7 107.0	14 53.0 -31.4 106.5
8°	17 42.5 -32.6 109.6	16 52.5 -32.4 109.0	16 02.4 -32.2 108.5	15 12.0 -31.8 107.9	14 21.6 -31.7 107.4
9°	17 09.9 -32.9 110.5	16 20.1 -32.6 109.9	15 30.2 -32.3 109.4	14 40.2 -32.1 108.8	13 49.9 -31.8 108.3
10°	16 37.0 -33.1 111.3	15 47.5 -32.8 110.8	14 57.9 -32.5 110.2	14 08.1 -32.2 109.7	13 18.1 -31.9 109.1
11°	16 03.9 -33.4 112.2	15 14.7 -33.0 111.6	14 25.4 -32.7 111.1	13 35.9 -32.5 110.5	12 46.2 -32.2 110.0
12°	15 30.5 -33.5 113.1	14 41.7 -33.2 112.5	13 52.7 -33.0 112.0	13 03.4 -32.6 111.4	12 14.0 -32.3 110.9
13°	14 57.0 -33.7 113.9	14 08.5 -33.4 113.4	13 19.7 -33.0 112.8	12 30.8 -32.7 112.3	11 41.7 -32.5 111.7
14°	14 23.3 -33.9 114.8	13 35.1 -33.6 114.2	12 46.7 -33.3 113.7	11 58.1 -33.0 113.1	11 09.2 -32.6 112.6
15°	13 49.4 -34.1 115.6	13 01.5 -33.7 115.1	12 13.4 -33.4 114.5	11 25.1 -33.0 114.0	10 36.6 -32.7 113.4
16°	13 15.3 -34.2 116.5	12 27.8 -33.9 115.9	11 40.0 -33.5 115.4	10 52.1 -33.3 114.8	10 03.9 -32.9 114.3
17°	12 41.1 -34.4 117.3	11 53.9 -34.0 116.8	11 06.5 -33.7 116.2	10 18.8 -33.3 115.7	9 31.0 -33.0 115.1
18°	12 06.7 -34.6 118.2	11 19.9 -34.2 117.6	10 32.8 -33.8 117.1	9 45.5 -33.5 116.5	8 58.0 -33.1 116.0
19°	11 32.1 -34.7 119.0	10 45.7 -34.3 118.4	9 59.0 -34.0 117.9	9 12.0 -33.5 117.4	8 24.9 -33.2 116.8
20°	10 57.4 -34.8 119.8	10 11.4 -34.5 119.3	9 25.0 -34.0 118.7	8 38.5 -33.7 118.2	7 51.7 -33.4 117.7
21°	10 22.6 -34.9 120.7	9 36.9 -34.5 120.1	8 51.0 -34.2 119.6	8 04.8 -33.8 119.0	7 18.3 -33.4 118.5
22°	9 47.7 -35.1 121.5	9 02.4 -34.7 120.9	8 16.8 -34.3 120.4	7 31.0 -33.9 119.9	6 44.9 -33.5 119.4
23°	9 12.6 -35.2 122.3	8 27.7 -34.8 121.8	7 42.5 -34.4 121.2	6 57.1 -34.0 120.7	6 11.4 -33.6 120.2
24°	8 37.4 -35.3 123.1	7 52.9 -34.9 122.6	7 08.1 -34.4 122.1	6 23.1 -34.0 121.5	5 37.8 -33.6 121.0
25°	8 02.1 -35.4 123.9	7 18.0 -34.9 123.4	6 33.7 -34.6 122.9	5 49.1 -34.2 122.4	5 04.2 -33.7 121.8
26°	7 26.7 -35.4 124.8	6 43.1 -35.1 124.2	5 59.1 -34.6 123.7	5 14.9 -34.2 123.2	4 30.5 -33.8 122.7
27°	6 51.3 -35.6 125.6	6 08.0 -35.1 125.0	5 24.5 -34.7 124.5	4 40.7 -34.2 124.0	3 56.7 -33.8 123.5
28°	6 15.7 -35.6 126.4	5 32.9 -35.2 125.9	4 49.8 -34.7 125.3	4 06.5 -34.3 124.8	3 22.9 -33.9 124.3
29°	5 40.1 -35.7 127.2	4 57.7 -35.2 126.7	4 15.1 -34.8 126.2	3 32.2 -34.4 125.7	2 49.0 -33.9 125.2

Latitude 28°

Declination CONTRARY name to Latitude

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	17 34.6 -29.7 99.7	16 42.4 -29.6 99.2	15 50.0 -29.4 98.7	14 57.6 -29.2 98.2	14 05.1 -29.1 97.7
1°	17 04.9 -29.9 100.6	16 12.8 -29.7 100.1	15 20.6 -29.6 99.6	14 28.4 -29.5 99.1	13 36.0 -29.3 98.6
2°	16 35.0 -30.1 101.5	15 43.1 -30.0 101.0	14 51.0 -29.8 100.5	13 58.9 -29.7 100.0	13 06.7 -29.6 99.5
3°	16 04.9 -30.4 102.4	15 13.1 -30.2 101.9	14 21.2 -30.0 101.4	13 29.2 -29.8 100.9	12 37.1 -29.6 100.4
4°	15 34.5 -30.6 103.3	14 42.9 -30.4 102.8	13 51.2 -30.2 102.3	12 59.4 -30.1 101.8	12 07.5 -29.9 101.2
5°	15 03.9 -30.8 104.2	14 12.5 -30.6 103.7	13 21.0 -30.4 103.2	12 29.3 -30.2 102.6	11 37.6 -30.0 102.1
6°	14 33.1 -31.0 105.1	13 41.9 -30.8 104.6	12 50.6 -30.6 104.0	11 59.1 -30.4 103.5	11 07.6 -30.2 103.0
7°	14 02.1 -31.2 106.0	13 11.1 -30.9 105.4	12 20.0 -30.7 104.9	11 28.7 -30.5 104.4	10 37.4 -30.4 103.9
8°	13 30.9 -31.3 106.9	12 40.2 -31.2 106.3	11 49.3 -31.0 105.8	10 58.2 -30.7 105.3	10 07.0 -30.4 104.8
9°	12 59.6 -31.6 107.7	12 09.0 -31.3 107.2	11 18.3 -31.0 106.7	10 27.5 -30.8 106.2	9 36.6 -30.6 105.6
10°	12 28.0 -31.7 108.6	11 37.7 -31.4 108.1	10 47.3 -31.2 107.5	9 56.7 -31.0 107.0	9 06.0 -30.7 106.5
11°	11 56.3 -31.9 109.5	11 06.3 -31.6 108.9	10 16.1 -31.4 108.4	9 25.7 -31.0 107.9	8 35.3 -30.9 107.4
12°	11 24.4 -32.0 110.3	10 34.7 -31.8 109.8	9 44.7 -31.4 109.3	8 54.7 -31.3 108.8	8 04.4 -30.9 108.3
13°	10 52.4 -32.2 111.2	10 02.9 -31.9 110.7	9 13.3 -31.6 110.1	8 23.4 -31.3 109.6	7 33.5 -31.1 109.1
14°	10 20.2 -32.3 112.1	9 31.0 -32.0 111.5	8 41.7 -31.7 111.0	7 52.1 -31.4 110.5	7 02.4 -31.1 110.0
15°	9 47.9 -32.4 112.9	8 59.0 -32.1 112.4	8 10.0 -31.9 111.9	7 20.7 -31.5 111.4	6 31.3 -31.3 110.8
16°	9 15.5 -32.6 113.8	8 26.9 -32.2 113.2	7 38.1 -31.9 112.7	6 49.2 -31.6 112.2	6 00.0 -31.3 111.7
17°	8 42.9 -32.6 114.6	7 54.7 -32.4 114.1	7 06.2 -32.0 113.6	6 17.6 -31.7 113.1	5 28.7 -31.4 112.6
18°	8 10.3 -32.8 115.5	7 22.3 -32.4 114.9	6 34.2 -32.1 114.4	5 45.9 -31.8 113.9	4 57.3 -31.4 113.4
19°	7 37.5 -32.9 116.3	6 49.9 -32.5 115.8	6 02.1 -32.2 115.3	5 14.1 -31.8 114.8	4 25.9 -31.5 114.3
20°	7 04.6 -32.9 117.2	6 17.4 -32.6 116.6	5 29.9 -32.2 116.1	4 42.3 -32.0 115.6	3 54.4 -31.6 115.1
21°	6 31.7 -33.1 118.0	5 44.8 -32.7 117.5	4 57.7 -32.3 117.0	4 10.3 -31.9 116.5	3 22.8 -31.6 116.0
22°	5 58.6 -33.1 118.8	5 12.1 -32.7 118.3	4 25.4 -32.4 117.8	3 38.4 -32.0 117.3	2 51.2 -31.6 116.8
23°	5 25.5 -33.2 119.7	4 39.4 -32.9 119.2	3 53.0 -32.4 118.7	3 06.4 -32.1 118.2	2 19.6 -31.7 117.7
24°	4 52.3 -33.2 120.5	4 06.5 -32.8 120.0	3 20.6 -32.5 119.5	2 34.3 -32.0 119.0	1 47.9 -31.7 118.5
25°	4 19.1 -33.4 121.3	3 33.7 -32.9 120.8	2 48.1 -32.5 120.3	2 02.3 -32.2 119.9	1 16.2 -31.7 119.4
26°	3 45.7 -33.3 122.2	3 00.8 -33.0 121.7	2 15.6 -32.5 121.2	1 30.1 -32.1 120.7	0 44.5 -31.7 120.2
27°	3 12.4 -33.4 123.0	2 27.8 -32.9 122.5	1 43.1 -32.6 122.0	0 58.0 -32.1 121.5	0 12.8 -31.8 121.1
28°	2 39.0 -33.4 123.8	1 54.9 -33.0 123.4	1 10.5 -32.6 122.9	0 25.9 -32.2 122.4	-0 19.0 -31.7
29°	2 05.6 -33.5 124.7	1 21.9 -33.0 124.2	0 37.9 -32.6 123.7	-0 06.3 -32.1	-0 50.7 -31.7

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	13 12.6 -29.0 97.2	12 20.0 -28.9 96.7	11 27.4 -28.8 96.2	10 34.7 -28.7 95.7	9 41.9 -28.6 95.2
1°	12 43.6 -29.2 98.1	11 51.1 -29.1 97.6	10 58.6 -29.0 97.1	10 06.0 -28.9 96.6	9 13.3 -28.8 96.1
2°	12 14.4 -29.4 99.0	11 22.0 -29.2 98.5	10 29.6 -29.1 98.0	9 37.1 -29.0 97.5	8 44.5 -28.9 97.0
3°	11 45.0 -29.6 99.9	10 52.8 -29.4 99.4	10 00.5 -29.3 98.9	9 08.1 -29.2 98.4	8 15.6 -29.0 97.9
4°	11 15.4 -29.7 100.7	10 23.4 -29.6 100.2	9 31.2 -29.4 99.7	8 38.9 -29.2 99.3	7 46.6 -29.1 98.8
5°	10 45.7 -29.8 101.6	9 53.8 -29.7 101.1	9 01.8 -29.5 100.6	8 09.7 -29.4 100.1	7 17.5 -29.2 99.6
6°	10 15.9 -30.0 102.5	9 24.1 -29.8 102.0	8 32.3 -29.7 101.5	7 40.3 -29.5 101.0	6 48.3 -29.4 100.5
7°	9 45.9 -30.1 103.4	8 54.3 -29.9 102.9	8 02.6 -29.7 102.4	7 10.8 -29.6 101.9	6 18.9 -29.4 101.4
8°	9 15.8 -30.3 104.3	8 24.4 -30.1 103.8	7 32.9 -29.9 103.3	6 41.2 -29.6 102.8	5 49.5 -29.5 102.3
9°	8 45.5 -30.4 105.1	7 54.3 -30.2 104.6	7 03.0 -30.0 104.1	6 11.6 -29.8 103.6	5 20.0 -29.5 103.2
10°	8 15.1 -30.5 106.0	7 24.1 -30.2 105.5	6 33.0 -30.0 105.0	5 41.8 -29.8 104.5	4 50.5 -29.7 104.0
11°	7 44.6 -30.6 106.9	6 53.9 -30.4 106.4	6 03.0 -30.1 105.9	5 12.0 -29.9 105.4	4 20.8 -29.7 104.9
12°	7 14.0 -30.7 107.7	6 23.5 -30.4 107.2	5 32.9 -30.3 106.8	4 42.1 -30.0 106.3	3 51.1 -29.7 105.8
13°	6 43.3 -30.7 108.6	5 53.1 -30.6 108.1	5 02.6 -30.2 107.6	4 12.1 -30.1 107.1	3 21.4 -29.8 106.6
14°	6 12.6 -30.9 109.5	5 22.5 -30.6 109.0	4 32.4 -30.4 108.5	3 42.0 -30.0 108.0	2 51.6 -29.8 107.5
15°	5 41.7 -31.0 110.3	4 51.9 -30.6 109.8	4 02.0 -30.4 109.4	3 12.0 -30.2 108.9	2 21.8 -29.9 108.4
16°	5 10.7 -31.0 111.2	4 21.3 -30.8 110.7	3 31.6 -30.4 110.2	2 41.8 -30.1 109.7	1 51.9 -29.9 109.2
17°	4 39.7 -31.1 112.1	3 50.5 -30.7 111.6	3 01.2 -30.5 111.1	2 11.7 -30.2 110.6	1 22.0 -29.9 110.1
18°	4 08.6 -31.1 112.9	3 19.8 -30.9 112.4	2 30.7 -30.5 111.9	1 41.5 -30.2 111.5	0 52.1 -29.9 111.0
19°	3 37.5 -31.2 113.8	2 48.9 -30.8 113.3	2 00.2 -30.6 112.8	1 11.3 -30.3 112.3	0 22.2 -30.0 111.8
20°	3 06.3 -31.2 114.6	2 18.1 -30.9 114.1	1 29.6 -30.5 113.7	0 41.0 -30.2 113.2	-0 07.8 -29.9
21°	2 35.1 -31.3 115.5	1 47.2 -30.9 115.0	0 59.1 -30.6 114.5	0 10.8 -30.3 114.1	-0 37.7 -29.9
22°	2 03.8 -31.2 116.3	1 16.3 -31.0 115.9	0 28.5 -30.6 115.4	-0 19.5 -30.2	-1 07.6 -29.9
23°	1 32.6 -31.4 117.2	0 45.3 -30.9 116.7	-0 02.1 -30.6	-0 49.7 -30.2	-1 37.5 -29.9
24°	1 01.2 -31.3 118.0	0 14.4 -31.0 117.6	-0 32.7 -30.5	-1 19.9 -30.2	-2 07.4 -29.8
25°	0 29.9 -31.3 118.9	-0 16.6 -30.9	-1 03.2 -30.6	-1 50.1 -30.2	-2 37.2 -29.8
26°	-0 01.4 -31.3	-0 47.5 -30.9	-1 33.8 -30.5	-2 20.3 -30.2	-3 07.0 -29.8
27°	-0 32.7 -31.3	-1 18.4 -30.9	-2 04.3 -30.6	-2 50.5 -30.1	-3 36.8 -29.7
28°	-1 04.0 -31.4	-1 49.3 -30.9	-2 34.9 -30.4	-3 20.6 -30.1	-4 06.5 -29.7
29°	-1 35.4 -31.2	-2 20.2 -30.9	-3 05.3 -30.5	-3 50.7 -30.0	-4 36.2 -29.6

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Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 49.2 -28.6 94.7	7 56.4 -28.5 94.3	7 03.5 -28.4 93.8	6 10.6 -28.3 93.3	5 17.7 -28.3 92.8
1°	8 20.6 -28.7 95.6	7 27.9 -28.6 95.1	6 35.1 -28.5 94.7	5 42.3 -28.5 94.2	4 49.4 -28.4 93.7
2°	7 51.9 -28.8 96.5	6 59.3 -28.7 96.0	6 06.6 -28.7 95.5	5 13.8 -28.5 95.1	4 21.0 -28.4 94.6
3°	7 23.1 -28.9 97.4	6 30.6 -28.8 96.9	5 37.9 -28.7 96.4	4 45.3 -28.6 96.0	3 52.6 -28.6 95.5
4°	6 54.2 -29.0 98.3	6 01.8 -28.9 97.8	5 09.2 -28.7 97.3	4 16.7 -28.7 96.8	3 24.0 -28.5 96.4
5°	6 25.2 -29.1 99.2	5 32.9 -29.0 98.7	4 40.5 -28.9 98.2	3 48.0 -28.7 97.7	2 55.5 -28.6 97.2
6°	5 56.1 -29.1 100.0	5 03.9 -29.0 99.6	4 11.6 -28.8 99.1	3 19.3 -28.8 98.6	2 26.9 -28.6 98.1
7°	5 27.0 -29.3 100.9	4 34.9 -29.1 100.4	3 42.8 -29.0 100.0	2 50.5 -28.8 99.5	1 58.3 -28.7 99.0
8°	4 57.7 -29.3 101.8	4 05.8 -29.1 101.3	3 13.8 -29.0 100.8	2 21.7 -28.8 100.4	1 29.6 -28.7 99.9
9°	4 28.4 -29.4 102.7	3 36.7 -29.2 102.2	2 44.8 -29.0 101.7	1 52.9 -28.9 101.2	1 00.9 -28.7 100.8
10°	3 59.0 -29.4 103.5	3 07.5 -29.3 103.1	2 15.8 -29.1 102.6	1 24.0 -28.8 102.1	0 32.2 -28.7 101.6
11°	3 29.6 -29.5 104.4	2 38.2 -29.3 103.9	1 46.7 -29.0 103.5	0 55.2 -28.9 103.0	0 03.5 -28.7 102.5
12°	3 00.1 -29.5 105.3	2 08.9 -29.3 104.8	1 17.7 -29.1 104.3	0 26.3 -28.9 103.9	-0 25.2 -28.7
13°	2 30.6 -29.6 106.2	1 39.6 -29.3 105.7	0 48.6 -29.2 105.2	-0 02.6 -28.9	-0 53.9 -28.7
14°	2 01.0 -29.6 107.0	1 10.3 -29.4 106.6	0 19.4 -29.1 106.1	-0 31.5 -28.9	-1 22.6 -28.7
15°	1 31.4 -29.6 107.9	0 40.9 -29.3 107.4	-0 09.7 -29.1	-1 00.4 -28.9	-1 51.3 -28.6
16°	1 01.8 -29.6 108.8	0 11.6 -29.4 108.3	-0 38.8 -29.1	-1 29.3 -28.8	-2 19.9 -28.6
17°	0 32.2 -29.6 109.6	-0 17.8 -29.3	-1 07.9 -29.1	-1 58.1 -28.8	-2 48.5 -28.6
18°	0 02.6 -29.7 110.5	-0 47.1 -29.4	-1 37.0 -29.0	-2 27.0 -28.8	-3 17.1 -28.5
19°	-0 27.1 -29.6	-1 16.5 -29.3	-2 06.0 -29.1	-2 55.8 -28.7	-3 45.6 -28.5
20°	-0 56.7 -29.6	-1 45.8 -29.3	-2 35.1 -29.0	-3 24.5 -28.7	-4 14.1 -28.4
21°	-1 26.3 -29.6	-2 15.1 -29.3	-3 04.1 -28.9	-3 53.2 -28.7	-4 42.5 -28.3
22°	-1 55.9 -29.6	-2 44.4 -29.2	-3 33.0 -29.0	-4 21.9 -28.5	-5 10.8 -28.3
23°	-2 25.5 -29.5	-3 13.6 -29.2	-4 02.0 -28.8	-4 50.4 -28.6	-5 39.1 -28.2
24°	-2 55.0 -29.5	-3 42.8 -29.2	-4 30.8 -28.8	-5 19.0 -28.4	-6 07.3 -28.1
25°	-3 24.5 -29.4	-4 12.0 -29.0	-4 59.6 -28.7	-5 47.4 -28.4	-6 35.4 -28.0
26°	-3 53.9 -29.4	-4 41.0 -29.0	-5 28.3 -28.7	-6 15.8 -28.2	-7 03.4 -27.9
27°	-4 23.3 -29.4	-5 10.0 -29.0	-5 57.0 -28.5	-6 44.0 -28.2	-7 31.3 -27.8
28°	-4 52.7 -29.2	-5 39.0 -28.8	-6 25.5 -28.5	-7 12.2 -28.1	-7 59.1 -27.7
29°	-5 21.9 -29.2	-6 07.8 -28.8	-6 54.0 -28.3	-7 40.3 -27.9	-8 26.8 -27.5

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 24.8 -28.3 92.4	3 31.9 -28.3 91.9	2 38.9 -28.2 91.4	1 45.9 -28.1 90.9	0 53.0 -28.2 90.5
1°	3 56.5 -28.3 93.2	3 03.6 -28.3 92.8	2 10.7 -28.2 92.3	1 17.8 -28.3 91.8	0 24.8 -28.2 91.4
2°	3 28.2 -28.4 94.1	2 35.3 -28.3 93.6	1 42.5 -28.3 93.2	0 49.5 -28.2 92.7	-0 03.4 -28.2
3°	2 59.8 -28.4 95.0	2 07.0 -28.3 94.5	1 14.2 -28.3 94.1	0 21.3 -28.2 93.6	-0 31.6 -28.1
4°	2 31.4 -28.5 95.9	1 38.7 -28.4 95.4	0 45.9 -28.3 94.9	-0 06.9 -28.2	-0 59.7 -28.2
5°	2 02.9 -28.5 96.8	1 10.3 -28.4 96.3	0 17.6 -28.3 95.8	-0 35.1 -28.3	-1 27.9 -28.1
6°	1 34.4 -28.5 97.6	0 41.9 -28.4 97.2	-0 10.7 -28.3	-1 03.4 -28.2	-1 56.0 -28.2
7°	1 05.9 -28.5 98.5	0 13.5 -28.4 98.1	-0 39.0 -28.3	-1 31.6 -28.1	-2 24.2 -28.0
8°	0 37.4 -28.6 99.4	-0 14.9 -28.4	-1 07.3 -28.3	-1 59.7 -28.2	-2 52.2 -28.1
9°	0 08.8 -28.5 100.3	-0 43.3 -28.4	-1 35.6 -28.2	-2 27.9 -28.1	-3 20.3 -28.0
10°	-0 19.7 -28.6	-1 11.7 -28.4	-2 03.8 -28.3	-2 56.0 -28.1	-3 48.3 -27.9
11°	-0 48.3 -28.5	-1 40.1 -28.4	-2 32.1 -28.1	-3 24.1 -28.0	-4 16.2 -27.9
12°	-1 16.8 -28.5	-2 08.5 -28.3	-3 00.2 -28.2	-3 52.1 -28.0	-4 44.1 -27.8
13°	-1 45.3 -28.5	-2 36.8 -28.3	-3 28.4 -28.1	-4 20.1 -27.9	-5 11.9 -27.7
14°	-2 13.8 -28.4	-3 05.1 -28.2	-3 56.5 -28.0	-4 48.0 -27.8	-5 39.6 -27.6
15°	-2 42.2 -28.5	-3 33.3 -28.2	-4 24.5 -28.0	-5 15.8 -27.8	-6 07.2 -27.6
16°	-3 10.7 -28.3	-4 01.5 -28.2	-4 52.5 -27.9	-5 43.6 -27.7	-6 34.8 -27.5
17°	-3 39.0 -28.3	-4 29.7 -28.0	-5 20.4 -27.8	-6 11.3 -27.6	-7 02.3 -27.3
18°	-4 07.3 -28.3	-4 57.7 -28.0	-5 48.2 -27.8	-6 38.9 -27.5	-7 29.6 -27.3
19°	-4 35.6 -28.2	-5 25.7 -28.0	-6 16.0 -27.6	-7 06.4 -27.4	-7 56.9 -27.1
20°	-5 03.8 -28.1	-5 53.7 -27.8	-6 43.6 -27.6	-7 33.8 -27.3	-8 24.0 -27.0
21°	-5 31.9 -28.1	-6 21.5 -27.7	-7 11.2 -27.5	-8 01.1 -27.1	-8 51.0 -26.9
22°	-6 00.0 -27.9	-6 49.2 -27.7	-7 38.7 -27.3	-8 28.2 -27.1	-9 17.9 -26.8
23°	-6 27.9 -27.9	-7 16.9 -27.5	-8 06.0 -27.2	-8 55.3 -26.9	-9 44.7 -26.6
24°	-6 55.8 -27.7	-7 44.4 -27.5	-8 33.2 -27.1	-9 22.2 -26.7	
25°	-7 23.5 -27.7	-8 11.9 -27.3	-9 00.3 -27.0	-9 48.9 -26.7	
26°	-7 51.2 -27.5	-8 39.2 -27.1	-9 27.3 -26.8		
27°	-8 18.7 -27.5	-9 06.3 -26.9	-9 54.1 -26.7		
28°	-8 46.2 -27.3				
29°	-9 13.5 -27.1				

Latitude 28°

Declination CONTRARY name to Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -28.2 90.0	-0 53.0 -28.1			
1°	-0 28.2 -28.1	-1 21.1 -28.2			
2°	-0 56.3 -28.2	-1 49.3 -28.1			
3°	-1 24.5 -28.1	-2 17.4 -28.1			
4°	-1 52.6 -28.1	-2 45.5 -28.0			
5°	-2 20.7 -28.1	-3 13.5 -28.0			
6°	-2 48.8 -28.0	-3 41.5 -28.0			
7°	-3 16.8 -28.0	-4 09.5 -27.9			
8°	-3 44.8 -27.9	-4 37.4 -27.8			
9°	-4 12.7 -27.9	-5 05.2 -27.7			
10°	-4 40.6 -27.8	-5 32.9 -27.7			
11°	-5 08.4 -27.7	-6 00.6 -27.6			
12°	-5 36.1 -27.6	-6 28.2 -27.5			
13°	-6 03.7 -27.6	-6 55.7 -27.4			
14°	-6 31.3 -27.4	-7 23.1 -27.2			
15°	-6 58.7 -27.4	-7 50.3 -27.2			
16°	-7 26.1 -27.3	-8 17.5 -27.1			
17°	-7 53.4 -27.1	-8 44.6 -26.9			
18°	-8 20.5 -27.0	-9 11.5 -26.8			
19°	-8 47.5 -26.9	-9 38.3 -26.6			
20°	-9 14.4 -26.7				
21°	-9 41.1 -26.6				
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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 The data on this page is believed to be accurate but no warranty is given for it's correctness. Use it only for training and exercising!

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	61 00.0 -60.0 180.0	60 59.1 -60.0 177.9	60 56.2 -59.9 175.9	60 51.5 -59.7 173.8	60 45.0 -59.6 171.8
1°	60 00.0 -60.0 180.0	59 59.1 -60.0 178.0	59 56.3 -59.9 176.0	59 51.8 -59.8 174.0	59 45.4 -59.6 172.0
2°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.1	58 56.4 -59.8 176.1	58 52.0 -59.8 174.2	58 45.8 -59.6 172.3
3°	58 00.0 -60.0 180.0	57 59.1 -59.9 178.1	57 56.6 -60.0 176.2	57 52.2 -59.7 174.4	57 46.2 -59.6 172.5
4°	57 00.0 -60.0 180.0	56 59.2 -60.0 178.2	56 56.6 -59.9 176.3	56 52.5 -59.8 174.5	56 46.6 -59.6 172.7
5°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.2	55 56.7 -59.9 176.4	55 52.7 -59.8 174.7	55 47.0 -59.7 172.9
6°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.3	54 56.8 -59.9 176.5	54 52.9 -59.8 174.8	54 47.3 -59.6 173.1
7°	54 00.0 -60.0 180.0	53 59.2 -60.0 178.3	53 56.9 -59.9 176.6	53 53.1 -59.9 174.9	53 47.7 -59.7 173.3
8°	53 00.0 -60.0 180.0	52 59.2 -59.9 178.4	52 57.0 -59.9 176.7	52 53.2 -59.8 175.1	52 48.0 -59.7 173.4
9°	52 00.0 -60.0 180.0	51 59.3 -60.0 178.4	51 57.1 -60.0 176.8	51 53.4 -59.8 175.2	51 48.3 -59.7 173.6
10°	51 00.0 -60.0 180.0	50 59.3 -60.0 178.4	50 57.1 -59.9 176.9	50 53.6 -59.9 175.3	50 48.6 -59.8 173.8
11°	50 00.0 -60.0 180.0	49 59.3 -60.0 178.5	49 57.2 -59.9 176.9	49 53.7 -59.8 175.4	49 48.8 -59.7 173.9
12°	49 00.0 -60.0 180.0	48 59.3 -60.0 178.5	48 57.3 -60.0 177.0	48 53.9 -59.9 175.5	48 49.1 -59.7 174.1
13°	48 00.0 -60.0 180.0	47 59.3 -60.0 178.5	47 57.3 -59.9 177.1	47 54.0 -59.9 175.6	47 49.4 -59.8 174.2
14°	47 00.0 -60.0 180.0	46 59.3 -59.9 178.6	46 57.4 -59.9 177.2	46 54.1 -59.8 175.7	46 49.6 -59.8 174.3
15°	46 00.0 -60.0 180.0	45 59.4 -60.0 178.6	45 57.5 -60.0 177.2	45 54.3 -59.9 175.8	45 49.8 -59.7 174.5
16°	45 00.0 -60.0 180.0	44 59.4 -60.0 178.6	44 57.5 -59.9 177.3	44 54.4 -59.9 175.9	44 50.1 -59.8 174.6
17°	44 00.0 -60.0 180.0	43 59.4 -60.0 178.7	43 57.6 -60.0 177.3	43 54.5 -59.9 176.0	43 50.3 -59.8 174.7
18°	43 00.0 -60.0 180.0	42 59.4 -60.0 178.7	42 57.6 -59.9 177.4	42 54.6 -59.8 176.1	42 50.5 -59.8 174.8
19°	42 00.0 -60.0 180.0	41 59.4 -60.0 178.7	41 57.7 -60.0 177.5	41 54.8 -59.9 176.2	41 50.7 -59.8 174.9
20°	41 00.0 -60.0 180.0	40 59.4 -60.0 178.8	40 57.7 -59.9 177.5	40 54.9 -59.9 176.3	40 50.9 -59.8 175.0
21°	40 00.0 -60.0 180.0	39 59.4 -59.9 178.8	39 57.8 -60.0 177.6	39 55.0 -59.9 176.3	39 51.1 -59.8 175.1
22°	39 00.0 -60.0 180.0	38 59.5 -60.0 178.8	38 57.8 -59.9 177.6	38 55.1 -59.9 176.4	38 51.3 -59.8 175.2
23°	38 00.0 -60.0 180.0	37 59.5 -60.0 178.8	37 57.9 -60.0 177.7	37 55.2 -59.9 176.5	37 51.5 -59.9 175.3
24°	37 00.0 -60.0 180.0	36 59.5 -60.0 178.9	36 57.9 -60.0 177.7	36 55.3 -59.9 176.6	36 51.6 -59.8 175.4
25°	36 00.0 -60.0 180.0	35 59.5 -60.0 178.9	35 57.9 -59.9 177.8	35 55.4 -59.9 176.6	35 51.8 -59.8 175.5
26°	35 00.0 -60.0 180.0	34 59.5 -60.0 178.9	34 58.0 -60.0 177.8	34 55.5 -59.9 176.7	34 52.0 -59.9 175.6
27°	34 00.0 -60.0 180.0	33 59.5 -60.0 178.9	33 58.0 -59.9 177.9	33 55.6 -59.9 176.8	33 52.1 -59.8 175.7
28°	33 00.0 -60.0 180.0	32 59.5 -60.0 178.9	32 58.1 -60.0 177.9	32 55.7 -59.9 176.8	32 52.3 -59.8 175.8
29°	32 00.0 -60.0 180.0	31 59.5 -60.0 179.0	31 58.1 -60.0 177.9	31 55.8 -60.0 176.9	31 52.5 -59.9 175.9

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	60 36.5 -59.2 169.8	60 26.3 -59.0 167.8	60 14.3 -58.6 165.8	60 00.6 -58.3 163.8	59 45.1 -57.8 161.9
1°	59 37.3 -59.4 170.1	59 27.3 -59.0 168.1	59 15.7 -58.7 166.2	59 02.3 -58.3 164.3	58 47.3 -57.9 162.4
2°	58 37.9 -59.4 170.4	58 28.3 -59.1 168.5	58 17.0 -58.8 166.6	58 04.0 -58.5 164.8	57 49.4 -58.1 162.9
3°	57 38.5 -59.4 170.6	57 29.2 -59.2 168.8	57 18.2 -58.9 167.0	57 05.5 -58.5 165.2	56 51.3 -58.1 163.4
4°	56 39.1 -59.4 170.9	56 30.0 -59.2 169.1	56 19.3 -58.9 167.3	56 07.0 -58.6 165.6	55 53.2 -58.2 163.8
5°	55 39.7 -59.5 171.1	55 30.8 -59.2 169.4	55 20.4 -59.0 167.7	55 08.4 -58.6 166.0	54 55.0 -58.4 164.3
6°	54 40.2 -59.4 171.4	54 31.6 -59.3 169.7	54 21.4 -59.0 168.0	54 09.8 -58.7 166.3	53 56.6 -58.3 164.7
7°	53 40.8 -59.6 171.6	53 32.3 -59.3 169.9	53 22.4 -59.0 168.3	53 11.1 -58.8 166.7	52 58.3 -58.5 165.1
8°	52 41.2 -59.5 171.8	52 33.0 -59.3 170.2	52 23.4 -59.1 168.6	52 12.3 -58.8 167.0	51 59.8 -58.5 165.4
9°	51 41.7 -59.5 172.0	51 33.7 -59.4 170.4	51 24.3 -59.2 168.9	51 13.5 -58.9 167.3	51 01.3 -58.6 165.8
10°	50 42.2 -59.6 172.2	50 34.3 -59.3 170.7	50 25.1 -59.1 169.1	50 14.6 -58.9 167.6	50 02.7 -58.7 166.1
11°	49 42.6 -59.6 172.4	49 35.0 -59.5 170.9	49 26.0 -59.2 169.4	49 15.7 -59.0 167.9	49 04.0 -58.7 166.4
12°	48 43.0 -59.6 172.6	48 35.5 -59.4 171.1	48 26.8 -59.3 169.6	48 16.7 -59.0 168.2	48 05.3 -58.7 166.8
13°	47 43.4 -59.6 172.7	47 36.1 -59.4 171.3	47 27.5 -59.2 169.9	47 17.7 -59.1 168.5	47 06.6 -58.8 167.1
14°	46 43.8 -59.7 172.9	46 36.7 -59.5 171.5	46 28.3 -59.3 170.1	46 18.6 -59.0 168.7	46 07.8 -58.9 167.3
15°	45 44.1 -59.6 173.1	45 37.2 -59.5 171.7	45 29.0 -59.3 170.3	45 19.6 -59.2 169.0	45 08.9 -58.9 167.6
16°	44 44.5 -59.7 173.2	44 37.7 -59.5 171.9	44 29.7 -59.4 170.5	44 20.4 -59.1 169.2	44 10.0 -58.9 167.9
17°	43 44.8 -59.6 173.4	43 38.2 -59.6 172.1	43 30.3 -59.3 170.8	43 21.3 -59.2 169.5	43 11.1 -58.9 168.2
18°	42 45.2 -59.7 173.5	42 38.6 -59.5 172.2	42 31.0 -59.4 171.0	42 22.1 -59.2 169.7	42 12.2 -59.0 168.4
19°	41 45.5 -59.7 173.7	41 39.1 -59.6 172.4	41 31.6 -59.4 171.1	41 22.9 -59.2 169.9	41 13.2 -59.0 168.7
20°	40 45.8 -59.7 173.8	40 39.5 -59.5 172.6	40 32.2 -59.4 171.3	40 23.7 -59.2 170.1	40 14.2 -59.1 168.9
21°	39 46.1 -59.7 173.9	39 40.0 -59.6 172.7	39 32.8 -59.5 171.5	39 24.5 -59.3 170.3	39 15.1 -59.0 169.1
22°	38 46.4 -59.7 174.1	38 40.4 -59.6 172.9	38 33.3 -59.4 171.7	38 25.2 -59.2 170.5	38 16.1 -59.1 169.4
23°	37 46.7 -59.8 174.2	37 40.8 -59.6 173.0	37 33.9 -59.5 171.9	37 26.0 -59.4 170.7	37 17.0 -59.2 169.6
24°	36 46.9 -59.7 174.3	36 41.2 -59.6 173.2	36 34.4 -59.4 172.0	36 26.6 -59.3 170.9	36 17.8 -59.1 169.8
25°	35 47.2 -59.7 174.4	35 41.6 -59.6 173.3	35 35.0 -59.5 172.2	35 27.3 -59.3 171.1	35 18.7 -59.2 170.0
26°	34 47.5 -59.8 174.5	34 42.0 -59.7 173.4	34 35.5 -59.5 172.4	34 28.0 -59.4 171.3	34 19.5 -59.1 170.2
27°	33 47.7 -59.7 174.6	33 42.3 -59.6 173.6	33 36.0 -59.5 172.5	33 28.6 -59.3 171.5	33 20.4 -59.2 170.4
28°	32 48.0 -59.8 174.7	32 42.7 -59.7 173.7	32 36.5 -59.6 172.7	32 29.3 -59.4 171.6	32 21.2 -59.2 170.6
29°	31 48.2 -59.7 174.9	31 43.0 -59.6 173.8	31 36.9 -59.5 172.8	31 29.9 -59.4 171.8	31 22.0 -59.3 170.8

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	59 28.0 -57.3 160.0	59 09.3 -56.9 158.2	58 48.9 -56.2 156.3	58 27.1 -55.7 154.5	58 03.8 -55.1 152.8
1°	58 30.7 -57.5 160.6	58 12.4 -57.0 158.8	57 52.7 -56.5 157.0	57 31.4 -55.9 155.2	57 08.7 -55.3 153.5
2°	57 33.2 -57.6 161.1	57 15.4 -57.1 159.4	56 56.2 -56.7 157.6	56 35.5 -56.2 155.9	56 13.4 -55.6 154.2
3°	56 35.6 -57.8 161.6	56 18.3 -57.3 159.9	55 59.5 -56.8 158.2	55 39.3 -56.3 156.5	55 17.8 -55.8 154.9
4°	55 37.8 -57.8 162.1	55 21.0 -57.4 160.4	55 02.7 -57.0 158.8	54 43.0 -56.5 157.1	54 22.0 -56.0 155.5
5°	54 40.0 -57.9 162.6	54 23.6 -57.6 160.9	54 05.7 -57.1 159.3	53 46.5 -56.6 157.7	53 26.0 -56.2 156.1
6°	53 42.1 -58.1 163.0	53 26.0 -57.6 161.4	53 08.6 -57.2 159.8	52 49.9 -56.8 158.3	52 29.8 -56.4 156.7
7°	52 44.0 -58.1 163.5	52 28.4 -57.8 161.9	52 11.4 -57.4 160.3	51 53.1 -57.0 158.8	51 33.4 -56.5 157.3
8°	51 45.9 -58.2 163.9	51 30.6 -57.8 162.3	51 14.0 -57.4 160.8	50 56.1 -57.0 159.3	50 36.9 -56.6 157.8
9°	50 47.7 -58.3 164.3	50 32.8 -58.0 162.7	50 16.6 -57.6 161.3	49 59.1 -57.2 159.8	49 40.3 -56.8 158.3
10°	49 49.4 -58.3 164.6	49 34.8 -58.0 163.2	49 19.0 -57.7 161.7	49 01.9 -57.3 160.3	48 43.5 -56.8 158.8
11°	48 51.1 -58.5 165.0	48 36.8 -58.1 163.5	48 21.3 -57.7 162.1	48 04.6 -57.4 160.7	47 46.7 -57.0 159.3
12°	47 52.6 -58.4 165.3	47 38.7 -58.1 163.9	47 23.6 -57.9 162.5	47 07.2 -57.5 161.1	46 49.7 -57.2 159.8
13°	46 54.2 -58.5 165.7	46 40.6 -58.3 164.3	46 25.7 -57.9 162.9	46 09.7 -57.5 161.6	45 52.5 -57.2 160.2
14°	45 55.7 -58.6 166.0	45 42.3 -58.3 164.6	45 27.8 -57.9 163.3	45 12.2 -57.7 162.0	44 55.3 -57.3 160.6
15°	44 57.1 -58.6 166.3	44 44.0 -58.3 165.0	44 29.9 -58.1 163.6	44 14.5 -57.7 162.3	43 58.0 -57.4 161.1
16°	43 58.5 -58.7 166.6	43 45.7 -58.4 165.3	43 31.8 -58.1 164.0	43 16.8 -57.8 162.7	43 00.6 -57.4 161.5
17°	42 59.8 -58.7 166.9	42 47.3 -58.5 165.6	42 33.7 -58.2 164.3	42 19.0 -57.9 163.1	42 03.2 -57.6 161.8
18°	42 01.1 -58.8 167.2	41 48.8 -58.5 165.9	41 35.5 -58.2 164.7	41 21.1 -57.9 163.4	41 05.6 -57.6 162.2
19°	41 02.3 -58.8 167.4	40 50.3 -58.5 166.2	40 37.3 -58.3 165.0	40 23.2 -58.0 163.8	40 08.0 -57.7 162.6
20°	40 03.5 -58.8 167.7	39 51.8 -58.6 166.5	39 39.0 -58.3 165.3	39 25.2 -58.1 164.1	39 10.3 -57.8 162.9
21°	39 04.7 -58.9 167.9	38 53.2 -58.6 166.8	38 40.7 -58.4 165.6	38 27.1 -58.1 164.4	38 12.5 -57.8 163.3
22°	38 05.8 -58.8 168.2	37 54.6 -58.7 167.0	37 42.3 -58.4 165.9	37 29.0 -58.1 164.8	37 14.7 -57.8 163.6
23°	37 07.0 -59.0 168.4	36 55.9 -58.7 167.3	36 43.9 -58.5 166.2	36 30.9 -58.2 165.1	36 16.9 -58.0 164.0
24°	36 08.0 -58.9 168.7	35 57.2 -58.7 167.6	35 45.4 -58.4 166.5	35 32.7 -58.3 165.4	35 18.9 -57.9 164.3
25°	35 09.1 -59.0 168.9	34 58.5 -58.7 167.8	34 47.0 -58.6 166.7	34 34.4 -58.2 165.7	34 21.0 -58.0 164.6
26°	34 10.1 -59.0 169.1	33 59.8 -58.8 168.1	33 48.4 -58.5 167.0	33 36.2 -58.4 166.0	33 23.0 -58.1 164.9
27°	33 11.1 -59.0 169.3	33 01.0 -58.8 168.3	32 49.9 -58.6 167.3	32 37.8 -58.3 166.2	32 24.9 -58.1 165.2
28°	32 12.1 -59.0 169.6	32 02.2 -58.9 168.5	31 51.3 -58.7 167.5	31 39.5 -58.4 166.5	31 26.8 -58.2 165.5
29°	31 13.1 -59.1 169.8	31 03.3 -58.8 168.8	30 52.6 -58.6 167.8	30 41.1 -58.4 166.8	30 28.6 -58.1 165.8

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	57 39.1 -54.5 151.1	57 13.1 -53.9 149.4	56 45.7 -53.2 147.8	56 17.1 -52.6 146.2	55 47.3 -51.9 144.6
1°	56 44.6 -54.7 151.8	56 19.2 -54.2 150.2	55 52.5 -53.6 148.6	55 24.5 -52.9 147.0	54 55.4 -52.3 145.5
2°	55 49.9 -55.1 152.6	55 25.0 -54.4 151.0	54 58.9 -53.8 149.4	54 31.6 -53.2 147.8	54 03.1 -52.6 146.3
3°	54 54.8 -55.2 153.3	54 30.6 -54.7 151.7	54 05.1 -54.2 150.1	53 38.4 -53.6 148.6	53 10.5 -53.0 147.2
4°	53 59.6 -55.5 153.9	53 35.9 -55.0 152.4	53 10.9 -54.3 150.9	52 44.8 -53.8 149.4	52 17.5 -53.2 147.9
5°	53 04.1 -55.7 154.6	52 40.9 -55.1 153.1	52 16.6 -54.7 151.6	51 51.0 -54.1 150.1	51 24.3 -53.6 148.7
6°	52 08.4 -55.9 155.2	51 45.8 -55.4 153.7	51 21.9 -54.8 152.2	50 56.9 -54.3 150.8	50 30.7 -53.7 149.4
7°	51 12.5 -56.0 155.8	50 50.4 -55.5 154.3	50 27.1 -55.1 152.9	50 02.6 -54.5 151.5	49 37.0 -54.0 150.1
8°	50 16.5 -56.2 156.4	49 54.9 -55.8 154.9	49 32.0 -55.2 153.5	49 08.1 -54.8 152.1	48 43.0 -54.3 150.7
9°	49 20.3 -56.3 156.9	48 59.1 -55.8 155.5	48 36.8 -55.4 154.1	48 13.3 -54.9 152.7	47 48.7 -54.4 151.4
10°	48 24.0 -56.5 157.4	48 03.3 -56.1 156.0	47 41.4 -55.6 154.7	47 18.4 -55.1 153.3	46 54.3 -54.6 152.0
11°	47 27.5 -56.6 157.9	47 07.2 -56.2 156.6	46 45.8 -55.7 155.2	46 23.3 -55.3 153.9	45 59.7 -54.9 152.6
12°	46 30.9 -56.7 158.4	46 11.0 -56.3 157.1	45 50.1 -55.9 155.8	45 28.0 -55.5 154.5	45 04.8 -55.0 153.2
13°	45 34.2 -56.8 158.9	45 14.7 -56.4 157.6	44 54.2 -56.0 156.3	44 32.5 -55.6 155.0	44 09.8 -55.1 153.8
14°	44 37.4 -57.0 159.3	44 18.3 -56.5 158.1	43 58.2 -56.2 156.8	43 36.9 -55.7 155.5	43 14.7 -55.3 154.3
15°	43 40.4 -57.0 159.8	43 21.8 -56.7 158.5	43 02.0 -56.3 157.3	42 41.2 -55.8 156.0	42 19.4 -55.4 154.8
16°	42 43.4 -57.1 160.2	42 25.1 -56.8 159.0	42 05.7 -56.3 157.7	41 45.4 -56.0 156.5	41 24.0 -55.6 155.3
17°	41 46.3 -57.2 160.6	41 28.3 -56.8 159.4	41 09.4 -56.5 158.2	40 49.4 -56.1 157.0	40 28.4 -55.7 155.8
18°	40 49.1 -57.3 161.0	40 31.5 -57.0 159.8	40 12.9 -56.6 158.6	39 53.3 -56.2 157.5	39 32.7 -55.8 156.3
19°	39 51.8 -57.4 161.4	39 34.5 -57.0 160.2	39 16.3 -56.7 159.1	38 57.1 -56.3 157.9	38 36.9 -56.0 156.8
20°	38 54.4 -57.4 161.8	38 37.5 -57.1 160.6	38 19.6 -56.8 159.5	38 00.8 -56.5 158.4	37 40.9 -56.0 157.3
21°	37 57.0 -57.5 162.2	37 40.4 -57.2 161.0	37 22.8 -56.8 159.9	37 04.3 -56.5 158.8	36 44.9 -56.1 157.7
22°	36 59.5 -57.6 162.5	36 43.2 -57.3 161.4	36 26.0 -56.9 160.3	36 07.8 -56.5 159.2	35 48.8 -56.3 158.1
23°	36 01.9 -57.6 162.9	35 45.9 -57.3 161.8	35 29.1 -57.0 160.7	35 11.3 -56.7 159.6	34 52.5 -56.3 158.6
24°	35 04.3 -57.7 163.2	34 48.6 -57.4 162.1	34 32.1 -57.1 161.1	34 14.6 -56.7 160.0	33 56.2 -56.4 159.0
25°	34 06.6 -57.8 163.5	33 51.2 -57.4 162.5	33 35.0 -57.1 161.5	33 17.9 -56.9 160.4	32 59.8 -56.4 159.4
26°	33 08.8 -57.8 163.9	32 53.8 -57.5 162.8	32 37.9 -57.2 161.8	32 21.0 -56.8 160.8	32 03.4 -56.6 159.8
27°	32 11.0 -57.8 164.2	31 56.3 -57.6 163.2	31 40.7 -57.3 162.2	31 24.2 -57.0 161.2	31 06.8 -56.6 160.2
28°	31 13.2 -57.9 164.5	30 58.7 -57.6 163.5	30 43.4 -57.3 162.5	30 27.2 -57.0 161.5	30 10.2 -56.7 160.6
29°	30 15.3 -57.9 164.8	30 01.1 -57.6 163.8	29 46.1 -57.4 162.9	29 30.2 -57.0 161.9	29 13.5 -56.7 161.0

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	49 14.4 -44.9 130.0	48 33.8 -44.2 128.9	47 52.7 -43.7 127.8	47 10.9 -43.0 126.7	46 28.6 -42.5 125.7
1°	48 29.5 -45.3 131.0	47 49.6 -44.7 129.9	47 09.0 -44.1 128.8	46 27.9 -43.6 127.8	45 46.1 -43.1 126.7
2°	47 44.2 -45.8 132.0	47 04.9 -45.3 130.9	46 24.9 -44.7 129.8	45 44.3 -44.1 128.8	45 03.0 -43.5 127.7
3°	46 58.4 -46.3 133.0	46 19.6 -45.7 131.9	45 40.2 -45.1 130.8	45 00.2 -44.6 129.7	44 19.5 -44.0 128.7
4°	46 12.1 -46.7 133.9	45 33.9 -46.1 132.8	44 55.1 -45.6 131.7	44 15.6 -45.0 130.7	43 35.5 -44.5 129.6
5°	45 25.4 -47.2 134.8	44 47.8 -46.6 133.7	44 09.5 -46.0 132.6	43 30.6 -45.5 131.6	42 51.0 -44.9 130.6
6°	44 38.2 -47.5 135.7	44 01.2 -47.0 134.6	43 23.5 -46.4 133.5	42 45.1 -45.9 132.5	42 06.1 -45.3 131.4
7°	43 50.7 -47.9 136.5	43 14.2 -47.3 135.4	42 37.1 -46.8 134.4	41 59.2 -46.2 133.3	41 20.8 -45.8 132.3
8°	43 02.8 -48.2 137.3	42 26.9 -47.7 136.3	41 50.3 -47.2 135.2	41 13.0 -46.6 134.2	40 35.0 -46.0 133.2
9°	42 14.6 -48.6 138.2	41 39.2 -48.0 137.1	41 03.1 -47.5 136.0	40 26.4 -47.0 135.0	39 49.0 -46.5 134.0
10°	41 26.0 -48.9 138.9	40 51.2 -48.4 137.9	40 15.6 -47.8 136.9	39 39.4 -47.3 135.8	39 02.5 -46.8 134.8
11°	40 37.1 -49.2 139.7	40 02.8 -48.6 138.7	39 27.8 -48.1 137.6	38 52.1 -47.6 136.6	38 15.7 -47.0 135.6
12°	39 47.9 -49.4 140.5	39 14.2 -49.0 139.4	38 39.7 -48.5 138.4	38 04.5 -47.9 137.4	37 28.7 -47.5 136.4
13°	38 58.5 -49.8 141.2	38 25.2 -49.2 140.2	37 51.2 -48.7 139.2	37 16.6 -48.2 138.2	36 41.2 -47.6 137.2
14°	38 08.7 -50.0 141.9	37 36.0 -49.5 140.9	37 02.5 -49.0 139.9	36 28.4 -48.5 138.9	35 53.6 -48.0 138.0
15°	37 18.7 -50.2 142.6	36 46.5 -49.7 141.6	36 13.5 -49.2 140.6	35 39.9 -48.7 139.6	35 05.6 -48.2 138.7
16°	36 28.5 -50.5 143.3	35 56.8 -50.0 142.3	35 24.3 -49.5 141.3	34 51.2 -49.0 140.4	34 17.4 -48.5 139.4
17°	35 38.0 -50.7 144.0	35 06.8 -50.2 143.0	34 34.8 -49.7 142.0	34 02.2 -49.2 141.1	33 28.9 -48.7 140.1
18°	34 47.3 -50.8 144.6	34 16.6 -50.4 143.6	33 45.1 -49.9 142.7	33 13.0 -49.5 141.7	32 40.2 -49.0 140.8
19°	33 56.5 -51.1 145.3	33 26.2 -50.6 144.3	32 55.2 -50.1 143.4	32 23.5 -49.6 142.4	31 51.2 -49.1 141.5
20°	33 05.4 -51.3 145.9	32 35.6 -50.8 144.9	32 05.1 -50.3 144.0	31 33.9 -49.8 143.1	31 02.1 -49.4 142.2
21°	32 14.1 -51.4 146.5	31 44.8 -51.0 145.6	31 14.8 -50.5 144.6	30 44.1 -50.1 143.7	30 12.7 -49.6 142.8
22°	31 22.7 -51.7 147.1	30 53.8 -51.1 146.2	30 24.3 -50.7 145.3	29 54.0 -50.2 144.4	29 23.1 -49.7 143.5
23°	30 31.0 -51.7 147.7	30 02.7 -51.4 146.8	29 33.6 -50.9 145.9	29 03.8 -50.4 145.0	28 33.4 -50.0 144.1
24°	29 39.3 -52.0 148.3	29 11.3 -51.4 147.4	28 42.7 -51.0 146.5	28 13.4 -50.5 145.6	27 43.4 -50.0 144.8
25°	28 47.3 -52.0 148.9	28 19.9 -51.7 148.0	27 51.7 -51.2 147.1	27 22.9 -50.8 146.2	26 53.4 -50.3 145.4
26°	27 55.3 -52.2 149.4	27 28.2 -51.7 148.6	27 00.5 -51.3 147.7	26 32.1 -50.8 146.8	26 03.1 -50.4 146.0
27°	27 03.1 -52.4 150.0	26 36.5 -51.9 149.1	26 09.2 -51.4 148.3	25 41.3 -51.0 147.4	25 12.7 -50.5 146.6
28°	26 10.7 -52.4 150.5	25 44.6 -52.0 149.7	25 17.8 -51.6 148.8	24 50.3 -51.2 148.0	24 22.2 -50.7 147.2
29°	25 18.3 -52.6 151.1	24 52.6 -52.2 150.2	24 26.2 -51.7 149.4	23 59.1 -51.2 148.6	23 31.5 -50.8 147.8

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	45 45.7 -42.0 124.7	45 02.3 -41.4 123.7	44 18.4 -40.9 122.8	43 34.1 -40.5 121.8	42 49.2 -39.9 120.9
1°	45 03.7 -42.5 125.7	44 20.9 -42.0 124.7	43 37.5 -41.5 123.8	42 53.6 -40.9 122.8	42 09.3 -40.4 121.9
2°	44 21.2 -43.0 126.7	43 38.9 -42.5 125.7	42 56.0 -41.9 124.8	42 12.7 -41.5 123.8	41 28.9 -41.0 122.9
3°	43 38.2 -43.4 127.7	42 56.4 -42.9 126.7	42 14.1 -42.4 125.7	41 31.2 -41.9 124.8	40 47.9 -41.4 123.9
4°	42 54.8 -44.0 128.6	42 13.5 -43.4 127.6	41 31.7 -42.9 126.7	40 49.3 -42.4 125.7	40 06.5 -41.9 124.8
5°	42 10.8 -44.4 129.5	41 30.1 -43.9 128.6	40 48.8 -43.4 127.6	40 06.9 -42.8 126.7	39 24.6 -42.3 125.8
6°	41 26.4 -44.7 130.5	40 46.2 -44.2 129.5	40 05.4 -43.7 128.5	39 24.1 -43.2 127.6	38 42.3 -42.8 126.7
7°	40 41.7 -45.2 131.3	40 02.0 -44.7 130.4	39 21.7 -44.1 129.4	38 40.9 -43.7 128.5	37 59.5 -43.1 127.6
8°	39 56.5 -45.6 132.2	39 17.3 -45.0 131.2	38 37.6 -44.6 130.3	37 57.2 -44.0 129.4	37 16.4 -43.5 128.4
9°	39 10.9 -45.9 133.0	38 32.3 -45.4 132.1	37 53.0 -44.9 131.1	37 13.2 -44.4 130.2	36 32.9 -43.9 129.3
10°	38 25.0 -46.3 133.9	37 46.9 -45.8 132.9	37 08.1 -45.2 132.0	36 28.8 -44.7 131.1	35 49.0 -44.2 130.2
11°	37 38.7 -46.5 134.7	37 01.1 -46.0 133.7	36 22.9 -45.6 132.8	35 44.1 -45.0 131.9	35 04.8 -44.6 131.0
12°	36 52.2 -46.9 135.5	36 15.1 -46.4 134.5	35 37.3 -45.8 133.6	34 59.1 -45.4 132.7	34 20.2 -44.9 131.8
13°	36 05.3 -47.2 136.2	35 28.7 -46.7 135.3	34 51.5 -46.2 134.4	34 13.7 -45.7 133.5	33 35.3 -45.2 132.6
14°	35 18.1 -47.5 137.0	34 42.0 -47.0 136.1	34 05.3 -46.5 135.2	33 28.0 -46.0 134.3	32 50.1 -45.4 133.4
15°	34 30.6 -47.7 137.8	33 55.0 -47.2 136.8	33 18.8 -46.7 135.9	32 42.0 -46.2 135.0	32 04.7 -45.8 134.2
16°	33 42.9 -48.0 138.5	33 07.8 -47.5 137.6	32 32.1 -47.0 136.7	31 55.8 -46.5 135.8	31 18.9 -46.0 134.9
17°	32 54.9 -48.2 139.2	32 20.3 -47.7 138.3	31 45.1 -47.3 137.4	31 09.3 -46.8 136.5	30 32.9 -46.3 135.7
18°	32 06.7 -48.5 139.9	31 32.6 -48.0 139.0	30 57.8 -47.4 138.1	30 22.5 -47.0 137.3	29 46.6 -46.5 136.4
19°	31 18.2 -48.7 140.6	30 44.6 -48.2 139.7	30 10.4 -47.7 138.8	29 35.5 -47.2 138.0	29 00.1 -46.7 137.1
20°	30 29.5 -48.8 141.3	29 56.4 -48.4 140.4	29 22.7 -48.0 139.5	28 48.3 -47.4 138.7	28 13.4 -47.0 137.8
21°	29 40.7 -49.1 142.0	29 08.0 -48.6 141.1	28 34.7 -48.1 140.2	28 00.9 -47.7 139.4	27 26.4 -47.2 138.5
22°	28 51.6 -49.3 142.6	28 19.4 -48.8 141.7	27 46.6 -48.3 140.9	27 13.2 -47.8 140.1	26 39.2 -47.3 139.2
23°	28 02.3 -49.5 143.3	27 30.6 -49.0 142.4	26 58.3 -48.5 141.6	26 25.4 -48.1 140.7	25 51.9 -47.6 139.9
24°	27 12.8 -49.6 143.9	26 41.6 -49.1 143.1	26 09.8 -48.7 142.2	25 37.3 -48.2 141.4	25 04.3 -47.7 140.6
25°	26 23.2 -49.8 144.5	25 52.5 -49.4 143.7	25 21.1 -48.9 142.9	24 49.1 -48.4 142.1	24 16.6 -47.9 141.3
26°	25 33.4 -49.9 145.1	25 03.1 -49.4 144.3	24 32.2 -49.0 143.5	24 00.7 -48.5 142.7	23 28.7 -48.1 141.9
27°	24 43.5 -50.1 145.8	24 13.7 -49.7 144.9	23 43.2 -49.2 144.1	23 12.2 -48.7 143.4	22 40.6 -48.3 142.6
28°	23 53.4 -50.2 146.4	23 24.0 -49.8 145.6	22 54.0 -49.3 144.8	22 23.5 -48.9 144.0	21 52.3 -48.3 143.2
29°	23 03.2 -50.4 147.0	22 34.2 -49.9 146.2	22 04.7 -49.4 145.4	21 34.6 -48.9 144.6	21 04.0 -48.6 143.9

Declination CONTRARY name to Latitude

Latitude 29°

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	42 04.0 -39.4 120.0	41 18.4 -39.0 119.1	40 32.4 -38.6 118.3	39 46.0 -38.1 117.5	38 59.2 -37.6 116.7
1°	41 24.6 -40.0 121.0	40 39.4 -39.5 120.2	39 53.8 -39.0 119.3	39 07.9 -38.6 118.5	38 21.6 -38.2 117.7
2°	40 44.6 -40.5 122.0	39 59.9 -40.0 121.1	39 14.8 -39.6 120.3	38 29.3 -39.1 119.5	37 43.4 -38.7 118.6
3°	40 04.1 -40.9 123.0	39 19.9 -40.5 122.1	38 35.2 -40.0 121.3	37 50.2 -39.6 120.4	37 04.7 -39.1 119.6
4°	39 23.2 -41.4 123.9	38 39.4 -40.9 123.1	37 55.2 -40.4 122.2	37 10.6 -40.0 121.4	36 25.6 -39.5 120.5
5°	38 41.8 -41.8 124.9	37 58.5 -41.4 124.0	37 14.8 -40.9 123.1	36 30.6 -40.4 122.3	35 46.1 -40.0 121.5
6°	38 00.0 -42.3 125.8	37 17.1 -41.7 124.9	36 33.9 -41.3 124.1	35 50.2 -40.8 123.2	35 06.1 -40.4 122.4
7°	37 17.7 -42.6 126.7	36 35.4 -42.2 125.8	35 52.6 -41.7 125.0	35 09.4 -41.3 124.1	34 25.7 -40.8 123.3
8°	36 35.1 -43.1 127.6	35 53.2 -42.5 126.7	35 10.9 -42.1 125.8	34 28.1 -41.6 125.0	33 44.9 -41.1 124.2
9°	35 52.0 -43.4 128.4	35 10.7 -42.9 127.6	34 28.8 -42.4 126.7	33 46.5 -41.9 125.9	33 03.8 -41.5 125.0
10°	35 08.6 -43.7 129.3	34 27.8 -43.3 128.4	33 46.4 -42.8 127.6	33 04.6 -42.3 126.7	32 22.3 -41.9 125.9
11°	34 24.9 -44.1 130.1	33 44.5 -43.6 129.2	33 03.6 -43.1 128.4	32 22.3 -42.7 127.6	31 40.4 -42.1 126.8
12°	33 40.8 -44.4 130.9	33 00.9 -43.9 130.1	32 20.5 -43.4 129.2	31 39.6 -42.9 128.4	30 58.3 -42.5 127.6
13°	32 56.4 -44.7 131.7	32 17.0 -44.2 130.9	31 37.1 -43.8 130.0	30 56.7 -43.3 129.2	30 15.8 -42.8 128.4
14°	32 11.7 -45.0 132.5	31 32.8 -44.5 131.7	30 53.3 -44.0 130.8	30 13.4 -43.6 130.0	29 33.0 -43.1 129.2
15°	31 26.7 -45.2 133.3	30 48.3 -44.8 132.5	30 09.3 -44.3 131.6	29 29.8 -43.8 130.8	28 49.9 -43.4 130.0
16°	30 41.5 -45.6 134.1	30 03.5 -45.0 133.2	29 25.0 -44.6 132.4	28 46.0 -44.1 131.6	28 06.5 -43.6 130.8
17°	29 55.9 -45.7 134.8	29 18.5 -45.4 134.0	28 40.4 -44.8 133.2	28 01.9 -44.3 132.4	27 22.9 -43.9 131.6
18°	29 10.2 -46.1 135.6	28 33.1 -45.5 134.7	27 55.6 -45.1 133.9	27 17.6 -44.6 133.1	26 39.0 -44.1 132.3
19°	28 24.1 -46.2 136.3	27 47.6 -45.8 135.5	27 10.5 -45.3 134.7	26 33.0 -44.9 133.9	25 54.9 -44.4 133.1
20°	27 37.9 -46.5 137.0	27 01.8 -46.0 136.2	26 25.2 -45.5 135.4	25 48.1 -45.0 134.6	25 10.5 -44.6 133.8
21°	26 51.4 -46.7 137.7	26 15.8 -46.2 136.9	25 39.7 -45.7 136.1	25 03.1 -45.3 135.3	24 25.9 -44.7 134.6
22°	26 04.7 -46.9 138.4	25 29.6 -46.4 137.6	24 54.0 -46.0 136.8	24 17.8 -45.4 136.1	23 41.2 -45.0 135.3
23°	25 17.8 -47.1 139.1	24 43.2 -46.6 138.3	24 08.0 -46.1 137.6	23 32.4 -45.7 136.8	22 56.2 -45.2 136.0
24°	24 30.7 -47.2 139.8	23 56.6 -46.8 139.0	23 21.9 -46.3 138.2	22 46.7 -45.8 137.5	22 11.0 -45.4 136.7
25°	23 43.5 -47.5 140.5	23 09.8 -47.0 139.7	22 35.6 -46.5 138.9	22 00.9 -46.1 138.2	21 25.6 -45.5 137.4
26°	22 56.0 -47.6 141.1	22 22.8 -47.1 140.4	21 49.1 -46.7 139.6	21 14.8 -46.2 138.9	20 40.1 -45.7 138.1
27°	22 08.4 -47.8 141.8	21 35.7 -47.3 141.0	21 02.4 -46.8 140.3	20 28.6 -46.3 139.6	19 54.4 -45.9 138.8
28°	21 20.6 -47.9 142.5	20 48.4 -47.4 141.7	20 15.6 -47.0 141.0	19 42.3 -46.5 140.2	19 08.5 -46.0 139.5
29°	20 32.7 -48.0 143.1	20 01.0 -47.6 142.4	19 28.6 -47.1 141.6	18 55.8 -46.6 140.9	18 22.5 -46.2 140.2

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	38 12.2 -37.3 115.9	37 24.8 -36.9 115.1	36 37.1 -36.5 114.3	35 49.2 -36.1 113.6	35 00.9 -35.7 112.9
1°	37 34.9 -37.7 116.9	36 47.9 -37.3 116.1	36 00.6 -36.9 115.3	35 13.1 -36.6 114.6	34 25.2 -36.2 113.8
2°	36 57.2 -38.3 117.8	36 10.6 -37.8 117.1	35 23.7 -37.4 116.3	34 36.5 -37.1 115.5	33 49.0 -36.7 114.8
3°	36 18.9 -38.7 118.8	35 32.8 -38.3 118.0	34 46.3 -37.9 117.2	33 59.4 -37.4 116.5	33 12.3 -37.1 115.7
4°	35 40.2 -39.1 119.7	34 54.5 -38.7 119.0	34 08.4 -38.3 118.2	33 22.0 -37.9 117.4	32 35.2 -37.4 116.7
5°	35 01.1 -39.5 120.7	34 15.8 -39.1 119.9	33 30.1 -38.7 119.1	32 44.1 -38.3 118.3	31 57.8 -37.9 117.6
6°	34 21.6 -40.0 121.6	33 36.7 -39.5 120.8	32 51.4 -39.1 120.0	32 05.8 -38.7 119.3	31 19.9 -38.3 118.5
7°	33 41.6 -40.3 122.5	32 57.2 -39.9 121.7	32 12.3 -39.4 120.9	31 27.1 -39.0 120.2	30 41.6 -38.6 119.4
8°	33 01.3 -40.7 123.4	32 17.3 -40.3 122.6	31 32.9 -39.8 121.8	30 48.1 -39.4 121.0	30 03.0 -39.0 120.3
9°	32 20.6 -41.0 124.2	31 37.0 -40.6 123.5	30 53.1 -40.2 122.7	30 08.7 -39.8 121.9	29 24.0 -39.4 121.2
10°	31 39.6 -41.4 125.1	30 56.4 -40.9 124.3	30 12.9 -40.5 123.5	29 28.9 -40.0 122.8	28 44.6 -39.6 122.0
11°	30 58.2 -41.8 126.0	30 15.5 -41.3 125.2	29 32.4 -40.9 124.4	28 48.9 -40.4 123.6	28 05.0 -40.0 122.9
12°	30 16.4 -42.0 126.8	29 34.2 -41.6 126.0	28 51.5 -41.1 125.2	28 08.5 -40.7 124.5	27 25.0 -40.2 123.7
13°	29 34.4 -42.3 127.6	28 52.6 -41.9 126.8	28 10.4 -41.4 126.1	27 27.8 -41.0 125.3	26 44.8 -40.6 124.6
14°	28 52.1 -42.6 128.4	28 10.7 -42.1 127.6	27 29.0 -41.7 126.9	26 46.8 -41.3 126.1	26 04.2 -40.8 125.4
15°	28 09.5 -42.9 129.2	27 28.6 -42.5 128.4	26 47.3 -42.0 127.7	26 05.5 -41.5 126.9	25 23.4 -41.1 126.2
16°	27 26.6 -43.2 130.0	26 46.1 -42.7 129.2	26 05.3 -42.3 128.5	25 24.0 -41.8 127.7	24 42.3 -41.4 127.0
17°	26 43.4 -43.4 130.8	26 03.4 -42.9 130.0	25 23.0 -42.5 129.3	24 42.2 -42.0 128.5	24 00.9 -41.6 127.8
18°	26 00.0 -43.7 131.6	25 20.5 -43.2 130.8	24 40.5 -42.7 130.1	24 00.2 -42.3 129.3	23 19.3 -41.8 128.6
19°	25 16.3 -43.9 132.3	24 37.3 -43.4 131.6	23 57.8 -43.0 130.8	23 17.9 -42.5 130.1	22 37.5 -42.0 129.4
20°	24 32.4 -44.1 133.1	23 53.9 -43.7 132.3	23 14.8 -43.1 131.6	22 35.4 -42.7 130.9	21 55.5 -42.3 130.1
21°	23 48.3 -44.3 133.8	23 10.2 -43.8 133.1	22 31.7 -43.4 132.3	21 52.7 -43.0 131.6	21 13.2 -42.5 130.9
22°	23 04.0 -44.5 134.6	22 26.4 -44.1 133.8	21 48.3 -43.6 133.1	21 09.7 -43.1 132.4	20 30.7 -42.6 131.7
23°	22 19.5 -44.7 135.3	21 42.3 -44.2 134.5	21 04.7 -43.8 133.8	20 26.6 -43.3 133.1	19 48.1 -42.9 132.4
24°	21 34.8 -44.9 136.0	20 58.1 -44.4 135.3	20 20.9 -43.9 134.6	19 43.3 -43.5 133.8	19 05.2 -43.0 133.1
25°	20 49.9 -45.1 136.7	20 13.7 -44.6 136.0	19 37.0 -44.2 135.3	18 59.8 -43.7 134.6	18 22.2 -43.2 133.9
26°	20 04.8 -45.2 137.4	19 29.1 -44.8 136.7	18 52.8 -44.3 136.0	18 16.1 -43.8 135.3	17 39.0 -43.3 134.6
27°	19 19.6 -45.4 138.1	18 44.3 -44.9 137.4	18 08.5 -44.4 136.7	17 32.3 -44.0 136.0	16 55.7 -43.6 135.3
28°	18 34.2 -45.6 138.8	17 59.4 -45.1 138.1	17 24.1 -44.6 137.4	16 48.3 -44.1 136.7	16 12.1 -43.6 136.1
29°	17 48.6 -45.7 139.5	17 14.3 -45.2 138.8	16 39.5 -44.7 138.1	16 04.2 -44.2 137.4	15 28.5 -43.8 136.8

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Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	34 12.5 -35.4 112.1	33 23.7 -35.0 111.4	32 34.8 -34.8 110.7	31 45.6 -34.4 110.1	30 56.2 -34.1 109.4
1°	33 37.1 -35.9 113.1	32 48.7 -35.5 112.4	32 00.0 -35.1 111.7	31 11.2 -34.9 111.0	30 22.1 -34.6 110.4
2°	33 01.2 -36.3 114.1	32 13.2 -36.0 113.4	31 24.9 -35.6 112.7	30 36.3 -35.2 112.0	29 47.5 -34.9 111.3
3°	32 24.9 -36.7 115.0	31 37.2 -36.3 114.3	30 49.3 -36.0 113.6	30 01.1 -35.7 112.9	29 12.6 -35.3 112.2
4°	31 48.2 -37.1 115.9	31 00.9 -36.8 115.2	30 13.3 -36.4 114.5	29 25.4 -36.0 113.8	28 37.3 -35.7 113.2
5°	31 11.1 -37.5 116.9	30 24.1 -37.1 116.2	29 36.9 -36.8 115.4	28 49.4 -36.4 114.8	28 01.6 -36.1 114.1
6°	30 33.6 -37.9 117.8	29 47.0 -37.5 117.1	29 00.1 -37.1 116.4	28 13.0 -36.8 115.7	27 25.5 -36.4 115.0
7°	29 55.7 -38.2 118.7	29 09.5 -37.8 118.0	28 23.0 -37.4 117.3	27 36.2 -37.1 116.6	26 49.1 -36.7 115.9
8°	29 17.5 -38.6 119.6	28 31.7 -38.2 118.8	27 45.6 -37.8 118.1	26 59.1 -37.4 117.4	26 12.4 -37.0 116.8
9°	28 38.9 -38.9 120.4	27 53.5 -38.5 119.7	27 07.8 -38.2 119.0	26 21.7 -37.7 118.3	25 35.4 -37.4 117.6
10°	28 00.0 -39.3 121.3	27 15.0 -38.9 120.6	26 29.6 -38.4 119.9	25 44.0 -38.1 119.2	24 58.0 -37.7 118.5
11°	27 20.7 -39.5 122.2	26 36.1 -39.1 121.4	25 51.2 -38.7 120.7	25 05.9 -38.3 120.0	24 20.3 -37.9 119.4
12°	26 41.2 -39.8 123.0	25 57.0 -39.4 122.3	25 12.5 -39.0 121.6	24 27.6 -38.6 120.9	23 42.4 -38.2 120.2
13°	26 01.4 -40.2 123.8	25 17.6 -39.7 123.1	24 33.5 -39.3 122.4	23 49.0 -38.9 121.7	23 04.2 -38.5 121.0
14°	25 21.2 -40.4 124.7	24 37.9 -40.0 123.9	23 54.2 -39.6 123.2	23 10.1 -39.1 122.6	22 25.7 -38.7 121.9
15°	24 40.8 -40.6 125.5	23 57.9 -40.2 124.8	23 14.6 -39.8 124.1	22 31.0 -39.4 123.4	21 47.0 -39.0 122.7
16°	24 00.2 -40.9 126.3	23 17.7 -40.5 125.6	22 34.8 -40.0 124.9	21 51.6 -39.6 124.2	21 08.0 -39.2 123.5
17°	23 19.3 -41.2 127.1	22 37.2 -40.7 126.4	21 54.8 -40.3 125.7	21 12.0 -39.9 125.0	20 28.8 -39.4 124.3
18°	22 38.1 -41.4 127.9	21 56.5 -40.9 127.2	21 14.5 -40.5 126.5	20 32.1 -40.1 125.8	19 49.4 -39.7 125.1
19°	21 56.7 -41.6 128.7	21 15.6 -41.2 128.0	20 34.0 -40.7 127.3	19 52.0 -40.2 126.6	19 09.7 -39.8 125.9
20°	21 15.1 -41.8 129.4	20 34.4 -41.4 128.7	19 53.3 -40.9 128.1	19 11.8 -40.5 127.4	18 29.9 -40.1 126.7
21°	20 33.3 -42.0 130.2	19 53.0 -41.5 129.5	19 12.4 -41.2 128.8	18 31.3 -40.7 128.2	17 49.8 -40.2 127.5
22°	19 51.3 -42.2 131.0	19 11.5 -41.8 130.3	18 31.2 -41.3 129.6	17 50.6 -40.8 128.9	17 09.6 -40.4 128.3
23°	19 09.1 -42.4 131.7	18 29.7 -41.9 131.0	17 49.9 -41.4 130.4	17 09.8 -41.1 129.7	16 29.2 -40.6 129.0
24°	18 26.7 -42.5 132.5	17 47.8 -42.1 131.8	17 08.5 -41.7 131.1	16 28.7 -41.2 130.5	15 48.6 -40.7 129.8
25°	17 44.2 -42.8 133.2	17 05.7 -42.3 132.5	16 26.8 -41.8 131.9	15 47.5 -41.3 131.2	15 07.9 -40.9 130.6
26°	17 01.4 -42.9 133.9	16 23.4 -42.4 133.3	15 45.0 -41.9 132.6	15 06.2 -41.5 132.0	14 27.0 -41.0 131.3
27°	16 18.5 -43.0 134.7	15 41.0 -42.5 134.0	15 03.1 -42.1 133.4	14 24.7 -41.6 132.7	13 46.0 -41.2 132.1
28°	15 35.5 -43.2 135.4	14 58.5 -42.8 134.7	14 21.0 -42.3 134.1	13 43.1 -41.8 133.5	13 04.8 -41.3 132.8
29°	14 52.3 -43.3 136.1	14 15.7 -42.8 135.5	13 38.7 -42.3 134.8	13 01.3 -41.9 134.2	12 23.5 -41.4 133.6

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	30 06.6 -33.8 108.8	29 16.8 -33.5 108.1	28 26.8 -33.2 107.5	27 36.7 -33.0 106.9	26 46.4 -32.8 106.2
1°	29 32.8 -34.3 109.7	28 43.3 -34.0 109.1	27 53.6 -33.7 108.4	27 03.7 -33.4 107.8	26 13.6 -33.1 107.2
2°	28 58.5 -34.6 110.6	28 09.3 -34.3 110.0	27 19.9 -34.0 109.4	26 30.3 -33.7 108.7	25 40.5 -33.5 108.1
3°	28 23.9 -35.0 111.6	27 35.0 -34.7 110.9	26 45.9 -34.4 110.3	25 56.6 -34.1 109.6	25 07.0 -33.8 109.0
4°	27 48.9 -35.4 112.5	27 00.3 -35.0 111.8	26 11.5 -34.7 111.2	25 22.5 -34.5 110.6	24 33.2 -34.1 109.9
5°	27 13.5 -35.7 113.4	26 25.3 -35.4 112.7	25 36.8 -35.1 112.1	24 48.0 -34.7 111.5	23 59.1 -34.5 110.8
6°	26 37.8 -36.0 114.3	25 49.9 -35.7 113.6	25 01.7 -35.4 113.0	24 13.3 -35.1 112.4	23 24.6 -34.7 111.7
7°	26 01.8 -36.4 115.2	25 14.2 -36.1 114.5	24 26.3 -35.7 113.9	23 38.2 -35.3 113.2	22 49.9 -35.1 112.6
8°	25 25.4 -36.7 116.1	24 38.1 -36.3 115.4	23 50.6 -36.0 114.8	23 02.9 -35.7 114.1	22 14.8 -35.3 113.5
9°	24 48.7 -37.0 117.0	24 01.8 -36.6 116.3	23 14.6 -36.2 115.6	22 27.2 -35.9 115.0	21 39.5 -35.6 114.4
10°	24 11.7 -37.2 117.8	23 25.2 -36.9 117.2	22 38.4 -36.6 116.5	21 51.3 -36.2 115.9	21 03.9 -35.8 115.2
11°	23 34.5 -37.6 118.7	22 48.3 -37.2 118.0	22 01.8 -36.8 117.4	21 15.1 -36.5 116.7	20 28.1 -36.1 116.1
12°	22 56.9 -37.8 119.5	22 11.1 -37.5 118.9	21 25.0 -37.1 118.2	20 38.6 -36.7 117.6	19 52.0 -36.4 116.9
13°	22 19.1 -38.1 120.4	21 33.6 -37.7 119.7	20 47.9 -37.3 119.1	20 01.9 -36.9 118.4	19 15.6 -36.6 117.8
14°	21 41.0 -38.3 121.2	20 55.9 -37.9 120.5	20 10.6 -37.6 119.9	19 25.0 -37.2 119.3	18 39.0 -36.8 118.6
15°	21 02.7 -38.6 122.0	20 18.0 -38.2 121.4	19 33.0 -37.7 120.7	18 47.8 -37.4 120.1	18 02.2 -37.0 119.5
16°	20 24.1 -38.8 122.8	19 39.8 -38.4 122.2	18 55.3 -38.0 121.5	18 10.4 -37.6 120.9	17 25.2 -37.2 120.3
17°	19 45.3 -39.0 123.7	19 01.4 -38.6 123.0	18 17.3 -38.2 122.4	17 32.8 -37.8 121.7	16 48.0 -37.4 121.1
18°	19 06.3 -39.2 124.5	18 22.8 -38.8 123.8	17 39.1 -38.4 123.2	16 55.0 -38.0 122.5	16 10.6 -37.6 121.9
19°	18 27.1 -39.5 125.3	17 44.0 -39.0 124.6	17 00.7 -38.6 124.0	16 17.0 -38.2 123.3	15 33.0 -37.8 122.7
20°	17 47.6 -39.6 126.1	17 05.0 -39.2 125.4	16 22.1 -38.8 124.8	15 38.8 -38.3 124.1	14 55.2 -37.9 123.5
21°	17 08.0 -39.8 126.8	16 25.8 -39.3 126.2	15 43.3 -38.9 125.6	15 00.5 -38.5 124.9	14 17.3 -38.1 124.3
22°	16 28.2 -39.9 127.6	15 46.5 -39.5 127.0	15 04.4 -39.1 126.4	14 22.0 -38.7 125.7	13 39.2 -38.2 125.1
23°	15 48.3 -40.2 128.4	15 07.0 -39.7 127.8	14 25.3 -39.3 127.1	13 43.3 -38.8 126.5	13 01.0 -38.4 125.9
24°	15 08.1 -40.3 129.2	14 27.3 -39.9 128.5	13 46.0 -39.4 127.9	13 04.5 -39.0 127.3	12 22.6 -38.6 126.7
25°	14 27.8 -40.4 129.9	13 47.4 -40.0 129.3	13 06.6 -39.5 128.7	12 25.5 -39.1 128.1	11 44.0 -38.6 127.5
26°	13 47.4 -40.6 130.7	13 07.4 -40.1 130.1	12 27.1 -39.7 129.5	11 46.4 -39.2 128.9	11 05.4 -38.8 128.3
27°	13 06.8 -40.7 131.5	12 27.3 -40.2 130.8	11 47.4 -39.8 130.2	11 07.2 -39.3 129.6	10 26.6 -38.9 129.0
28°	12 26.1 -40.8 132.2	11 47.1 -40.4 131.6	11 07.6 -39.9 131.0	10 27.9 -39.5 130.4	9 47.7 -39.0 129.8
29°	11 45.3 -41.0 133.0	11 06.7 -40.5 132.4	10 27.7 -40.0 131.8	9 48.4 -39.5 131.2	9 08.7 -39.1 130.6

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	25 55.9 -32.5 105.6	25 05.3 -32.3 105.0	24 14.6 -32.1 104.5	23 23.7 -31.9 103.9	22 32.7 -31.7 103.3
1°	25 23.4 -32.9 106.6	24 33.0 -32.6 106.0	23 42.5 -32.4 105.4	22 51.8 -32.1 104.8	22 01.0 -31.9 104.2
2°	24 50.5 -33.2 107.5	24 00.4 -32.9 106.9	23 10.1 -32.7 106.3	22 19.7 -32.5 105.7	21 29.1 -32.3 105.1
3°	24 17.3 -33.5 108.4	23 27.5 -33.3 107.8	22 37.4 -33.0 107.2	21 47.2 -32.8 106.6	20 56.8 -32.5 106.0
4°	23 43.8 -33.9 109.3	22 54.2 -33.6 108.7	22 04.4 -33.3 108.1	21 14.4 -33.0 107.5	20 24.3 -32.8 106.9
5°	23 09.9 -34.1 110.2	22 20.6 -33.9 109.6	21 31.1 -33.6 109.0	20 41.4 -33.4 108.4	19 51.5 -33.1 107.8
6°	22 35.8 -34.5 111.1	21 46.7 -34.1 110.5	20 57.5 -33.9 109.9	20 08.0 -33.6 109.3	19 18.4 -33.3 108.7
7°	22 01.3 -34.7 112.0	21 12.6 -34.5 111.4	20 23.6 -34.1 110.8	19 34.4 -33.8 110.2	18 45.1 -33.6 109.6
8°	21 26.6 -35.0 112.9	20 38.1 -34.7 112.3	19 49.5 -34.4 111.7	19 00.6 -34.1 111.1	18 11.5 -33.8 110.5
9°	20 51.6 -35.3 113.7	20 03.4 -34.9 113.1	19 15.1 -34.7 112.5	18 26.5 -34.3 111.9	17 37.7 -34.0 111.3
10°	20 16.3 -35.5 114.6	19 28.5 -35.2 114.0	18 40.4 -34.8 113.4	17 52.2 -34.6 112.8	17 03.7 -34.3 112.2
11°	19 40.8 -35.8 115.5	18 53.3 -35.4 114.8	18 05.6 -35.1 114.2	17 17.6 -34.8 113.6	16 29.4 -34.4 113.1
12°	19 05.0 -35.9 116.3	18 17.9 -35.7 115.7	17 30.5 -35.3 115.1	16 42.8 -34.9 114.5	15 55.0 -34.7 113.9
13°	18 29.1 -36.3 117.2	17 42.2 -35.8 116.5	16 55.2 -35.6 115.9	16 07.9 -35.2 115.3	15 20.3 -34.8 114.8
14°	17 52.8 -36.4 118.0	17 06.4 -36.1 117.4	16 19.6 -35.7 116.8	15 32.7 -35.4 116.2	14 45.5 -35.1 115.6
15°	17 16.4 -36.6 118.8	16 30.3 -36.3 118.2	15 43.9 -35.9 117.6	14 57.3 -35.6 117.0	14 10.4 -35.2 116.4
16°	16 39.8 -36.9 119.7	15 54.0 -36.4 119.1	15 08.0 -36.1 118.4	14 21.7 -35.7 117.9	13 35.2 -35.3 117.3
17°	16 02.9 -37.0 120.5	15 17.6 -36.7 119.9	14 31.9 -36.2 119.3	13 46.0 -35.9 118.7	12 59.9 -35.6 118.1
18°	15 25.9 -37.2 121.3	14 40.9 -36.8 120.7	13 55.7 -36.5 120.1	13 10.1 -36.0 119.5	12 24.3 -35.7 118.9
19°	14 48.7 -37.4 122.1	14 04.1 -37.0 121.5	13 19.2 -36.5 120.9	12 34.1 -36.2 120.3	11 48.6 -35.8 119.7
20°	14 11.3 -37.5 122.9	13 27.1 -37.1 122.3	12 42.7 -36.8 121.7	11 57.9 -36.4 121.1	11 12.8 -35.9 120.6
21°	13 33.8 -37.7 123.7	12 50.0 -37.3 123.1	12 05.9 -36.8 122.5	11 21.5 -36.4 122.0	10 36.9 -36.1 121.4
22°	12 56.1 -37.8 124.5	12 12.7 -37.4 123.9	11 29.1 -37.1 123.3	10 45.1 -36.6 122.8	10 00.8 -36.2 122.2
23°	12 18.3 -38.0 125.3	11 35.3 -37.5 124.7	10 52.0 -37.1 124.1	10 08.5 -36.7 123.6	9 24.6 -36.3 123.0
24°	11 40.3 -38.1 126.1	10 57.8 -37.7 125.5	10 14.9 -37.2 124.9	9 31.8 -36.9 124.4	8 48.3 -36.4 123.8
25°	11 02.2 -38.2 126.9	10 20.1 -37.8 126.3	9 37.7 -37.4 125.7	8 54.9 -36.9 125.2	8 11.9 -36.5 124.6
26°	10 24.0 -38.3 127.7	9 42.3 -37.9 127.1	9 00.3 -37.4 126.5	8 18.0 -37.0 126.0	7 35.4 -36.6 125.4
27°	9 45.7 -38.4 128.5	9 04.4 -38.0 127.9	8 22.9 -37.6 127.3	7 41.0 -37.1 126.8	6 58.8 -36.7 126.2
28°	9 07.3 -38.6 129.2	8 26.4 -38.0 128.7	7 45.3 -37.6 128.1	7 03.9 -37.2 127.6	6 22.1 -36.7 127.0
29°	8 28.7 -38.6 130.0	7 48.4 -38.2 129.5	7 07.7 -37.7 128.9	6 26.7 -37.3 128.3	5 45.4 -36.8 127.8

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	21 41.6 -31.5 102.7	20 50.3 -31.2 102.2	19 59.0 -31.1 101.6	19 07.5 -30.9 101.1	18 16.0 -30.8 100.5
1°	21 10.1 -31.7 103.7	20 19.1 -31.6 103.1	19 27.9 -31.4 102.5	18 36.6 -31.2 102.0	17 45.2 -31.0 101.4
2°	20 38.4 -32.1 104.6	19 47.5 -31.8 104.0	18 56.5 -31.6 103.4	18 05.4 -31.4 102.9	17 14.2 -31.2 102.3
3°	20 06.3 -32.3 105.5	19 15.7 -32.1 104.9	18 24.9 -31.9 104.3	17 34.0 -31.7 103.8	16 43.0 -31.5 103.2
4°	19 34.0 -32.5 106.4	18 43.6 -32.3 105.8	17 53.0 -32.1 105.2	17 02.3 -31.9 104.7	16 11.5 -31.7 104.1
5°	19 01.5 -32.9 107.2	18 11.3 -32.6 106.7	17 20.9 -32.3 106.1	16 30.4 -32.1 105.6	15 39.8 -31.9 105.0
6°	18 28.6 -33.0 108.1	17 38.7 -32.8 107.6	16 48.6 -32.6 107.0	15 58.3 -32.3 106.4	15 07.9 -32.1 105.9
7°	17 55.6 -33.3 109.0	17 05.9 -33.1 108.4	16 16.0 -32.8 107.9	15 26.0 -32.6 107.3	14 35.8 -32.3 106.8
8°	17 22.3 -33.6 109.9	16 32.8 -33.2 109.3	15 43.2 -33.0 108.7	14 53.4 -32.7 108.2	14 03.5 -32.5 107.6
9°	16 48.7 -33.7 110.8	15 59.6 -33.5 110.2	15 10.2 -33.2 109.6	14 20.7 -32.9 109.0	13 31.0 -32.6 108.5
10°	16 15.0 -34.0 111.6	15 26.1 -33.6 111.0	14 37.0 -33.3 110.5	13 47.8 -33.1 109.9	12 58.4 -32.9 109.4
11°	15 41.0 -34.1 112.5	14 52.5 -33.9 111.9	14 03.7 -33.6 111.3	13 14.7 -33.3 110.8	12 25.5 -33.0 110.2
12°	15 06.9 -34.3 113.3	14 18.6 -34.0 112.8	13 30.1 -33.7 112.2	12 41.4 -33.4 111.6	11 52.5 -33.1 111.1
13°	14 32.6 -34.6 114.2	13 44.6 -34.2 113.6	12 56.4 -33.9 113.0	12 08.0 -33.6 112.5	11 19.4 -33.3 111.9
14°	13 58.0 -34.7 115.0	13 10.4 -34.4 114.4	12 22.5 -34.1 113.9	11 34.4 -33.7 113.3	10 46.1 -33.4 112.8
15°	13 23.3 -34.8 115.9	12 36.0 -34.5 115.3	11 48.4 -34.2 114.7	11 00.7 -33.9 114.2	10 12.7 -33.6 113.6
16°	12 48.5 -35.1 116.7	12 01.5 -34.7 116.1	11 14.2 -34.3 115.6	10 26.8 -34.0 115.0	9 39.1 -33.7 114.5
17°	12 13.4 -35.1 117.5	11 26.8 -34.8 117.0	10 39.9 -34.5 116.4	9 52.8 -34.2 115.8	9 05.4 -33.8 115.3
18°	11 38.3 -35.3 118.4	10 52.0 -35.0 117.8	10 05.4 -34.6 117.2	9 18.6 -34.2 116.7	8 31.6 -33.9 116.1
19°	11 03.0 -35.5 119.2	10 17.0 -35.1 118.6	9 30.8 -34.7 118.1	8 44.4 -34.4 117.5	7 57.7 -34.0 117.0
20°	10 27.5 -35.6 120.0	9 41.9 -35.2 119.4	8 56.1 -34.8 118.9	8 10.0 -34.4 118.3	7 23.7 -34.1 117.8
21°	9 51.9 -35.6 120.8	9 06.7 -35.3 120.3	8 21.3 -34.9 119.7	7 35.6 -34.6 119.2	6 49.6 -34.1 118.6
22°	9 16.3 -35.8 121.6	8 31.4 -35.4 121.1	7 46.4 -35.1 120.5	7 01.0 -34.6 120.0	6 15.5 -34.3 119.4
23°	8 40.5 -35.9 122.4	7 56.0 -35.5 121.9	7 11.3 -35.1 121.3	6 26.4 -34.7 120.8	5 41.2 -34.3 120.3
24°	8 04.6 -36.0 123.3	7 20.5 -35.6 122.7	6 36.2 -35.1 122.2	5 51.7 -34.8 121.6	5 06.9 -34.4 121.1
25°	7 28.6 -36.1 124.1	6 44.9 -35.6 123.5	6 01.1 -35.3 123.0	5 16.9 -34.9 122.4	4 32.5 -34.5 121.9
26°	6 52.5 -36.2 124.9	6 09.3 -35.8 124.3	5 25.8 -35.3 123.8	4 42.0 -34.9 123.3	3 58.0 -34.5 122.7
27°	6 16.3 -36.2 125.7	5 33.5 -35.8 125.1	4 50.5 -35.4 124.6	4 07.1 -34.9 124.1	3 23.5 -34.5 123.6
28°	5 40.1 -36.3 126.5	4 57.7 -35.8 125.9	4 15.1 -35.4 125.4	3 32.2 -35.0 124.9	2 49.0 -34.6 124.4
29°	5 03.8 -36.4 127.3	4 21.9 -36.0 126.7	3 39.7 -35.5 126.2	2 57.2 -35.0 125.7	2 14.4 -34.6 125.2

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	17 24.3 -30.6 100.0	16 32.6 -30.4 99.5	15 40.8 -30.3 99.0	14 49.0 -30.2 98.4	13 57.0 -30.1 97.9
1°	16 53.7 -30.8 100.9	16 02.2 -30.7 100.4	15 10.5 -30.5 99.8	14 18.8 -30.4 99.3	13 26.9 -30.2 98.8
2°	16 22.9 -31.1 101.8	15 31.5 -30.9 101.3	14 40.0 -30.8 100.7	13 48.4 -30.6 100.2	12 56.7 -30.5 99.7
3°	15 51.8 -31.2 102.7	15 00.6 -31.1 102.2	14 09.2 -30.9 101.6	13 17.8 -30.8 101.1	12 26.2 -30.6 100.6
4°	15 20.6 -31.5 103.6	14 29.5 -31.3 103.0	13 38.3 -31.1 102.5	12 47.0 -30.9 102.0	11 55.6 -30.7 101.5
5°	14 49.1 -31.7 104.5	13 58.2 -31.5 103.9	13 07.2 -31.3 103.4	12 16.1 -31.1 102.9	11 24.9 -31.0 102.3
6°	14 17.4 -31.9 105.3	13 26.7 -31.7 104.8	12 35.9 -31.5 104.3	11 45.0 -31.3 103.7	10 53.9 -31.0 103.2
7°	13 45.5 -32.1 106.2	12 55.0 -31.8 105.7	12 04.4 -31.6 105.1	11 13.7 -31.4 104.6	10 22.9 -31.2 104.1
8°	13 13.4 -32.2 107.1	12 23.2 -32.0 106.5	11 32.8 -31.8 106.0	10 42.3 -31.6 105.5	9 51.7 -31.4 104.9
9°	12 41.2 -32.4 107.9	11 51.2 -32.2 107.4	11 01.0 -31.9 106.9	10 10.7 -31.7 106.3	9 20.3 -31.5 105.8
10°	12 08.8 -32.6 108.8	11 19.0 -32.3 108.3	10 29.1 -32.1 107.7	9 39.0 -31.8 107.2	8 48.8 -31.5 106.7
11°	11 36.2 -32.7 109.7	10 46.7 -32.5 109.1	9 57.0 -32.2 108.6	9 07.2 -31.9 108.1	8 17.3 -31.7 107.5
12°	11 03.5 -32.9 110.5	10 14.2 -32.5 110.0	9 24.8 -32.3 109.4	8 35.3 -32.1 108.9	7 45.6 -31.8 108.4
13°	10 30.6 -33.0 111.4	9 41.7 -32.8 110.8	8 52.5 -32.4 110.3	8 03.2 -32.1 109.8	7 13.8 -31.9 109.2
14°	9 57.6 -33.1 112.2	9 08.9 -32.8 111.7	8 20.1 -32.6 111.1	7 31.1 -32.3 110.6	6 41.9 -32.0 110.1
15°	9 24.5 -33.3 113.1	8 36.1 -32.9 112.5	7 47.5 -32.6 112.0	6 58.8 -32.4 111.5	6 09.9 -32.1 110.9
16°	8 51.2 -33.3 113.9	8 03.2 -33.1 113.4	7 14.9 -32.7 112.8	6 26.4 -32.4 112.3	5 37.8 -32.1 111.8
17°	8 17.9 -33.5 114.8	7 30.1 -33.1 114.2	6 42.2 -32.9 113.7	5 54.0 -32.5 113.2	5 05.7 -32.2 112.6
18°	7 44.4 -33.5 115.6	6 57.0 -33.3 115.1	6 09.3 -32.9 114.5	5 21.5 -32.6 114.0	4 33.5 -32.3 113.5
19°	7 10.9 -33.7 116.4	6 23.7 -33.3 115.9	5 36.4 -32.9 115.4	4 48.9 -32.6 114.9	4 01.2 -32.3 114.3
20°	6 37.2 -33.7 117.3	5 50.4 -33.4 116.7	5 03.5 -33.1 116.2	4 16.3 -32.7 115.7	3 28.9 -32.4 115.2
21°	6 03.5 -33.9 118.1	5 17.0 -33.4 117.6	4 30.4 -33.1 117.0	3 43.6 -32.8 116.5	2 56.5 -32.4 116.0
22°	5 29.6 -33.8 118.9	4 43.6 -33.5 118.4	3 57.3 -33.1 117.9	3 10.8 -32.8 117.4	2 24.1 -32.4 116.9
23°	4 55.8 -34.0 119.7	4 10.1 -33.6 119.2	3 24.2 -33.2 118.7	2 38.0 -32.8 118.2	1 51.7 -32.5 117.7
24°	4 21.8 -34.0 120.6	3 36.5 -33.6 120.1	2 51.0 -33.2 119.6	2 05.2 -32.8 119.0	1 19.2 -32.4 118.6
25°	3 47.8 -34.0 121.4	3 02.9 -33.6 120.9	2 17.8 -33.3 120.4	1 32.4 -32.9 119.9	0 46.8 -32.5 119.4
26°	3 13.8 -34.1 122.2	2 29.3 -33.7 121.7	1 44.5 -33.3 121.2	0 59.5 -32.9 120.7	0 14.3 -32.5 120.2
27°	2 39.7 -34.1 123.1	1 55.6 -33.7 122.5	1 11.2 -33.3 122.1	0 26.6 -32.9 121.6	-0 18.2 -32.5
28°	2 05.6 -34.2 123.9	1 21.9 -33.7 123.4	0 37.9 -33.3 122.9	-0 06.3 -32.8	-0 50.7 -32.5
29°	1 31.4 -34.1 124.7	0 48.2 -33.8 124.2	0 04.6 -33.3 123.7	-0 39.1 -32.9	-1 23.2 -32.4

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	13 05.0 -30.0 97.4	12 12.9 -29.8 96.9	11 20.8 -29.7 96.4	10 28.6 -29.6 95.9	9 36.4 -29.6 95.4
1°	12 35.0 -30.1 98.3	11 43.1 -30.0 97.8	10 51.1 -29.9 97.3	9 59.0 -29.8 96.8	9 06.8 -29.7 96.3
2°	12 04.9 -30.3 99.2	11 13.1 -30.2 98.7	10 21.2 -30.1 98.2	9 29.2 -29.9 97.6	8 37.1 -29.8 97.1
3°	11 34.6 -30.4 100.1	10 42.9 -30.3 99.5	9 51.1 -30.2 99.0	8 59.3 -30.1 98.5	8 07.3 -29.9 98.0
4°	11 04.2 -30.6 100.9	10 12.6 -30.5 100.4	9 20.9 -30.3 99.9	8 29.2 -30.2 99.4	7 37.4 -30.0 98.9
5°	10 33.6 -30.8 101.8	9 42.1 -30.5 101.3	8 50.6 -30.4 100.8	7 59.0 -30.2 100.3	7 07.4 -30.2 99.8
6°	10 02.8 -30.9 102.7	9 11.6 -30.8 102.2	8 20.2 -30.5 101.7	7 28.8 -30.4 101.1	6 37.2 -30.2 100.6
7°	9 31.9 -31.0 103.6	8 40.8 -30.8 103.0	7 49.7 -30.7 102.5	6 58.4 -30.5 102.0	6 07.0 -30.3 101.5
8°	9 00.9 -31.1 104.4	8 10.0 -30.9 103.9	7 19.0 -30.7 103.4	6 27.9 -30.5 102.9	5 36.7 -30.4 102.4
9°	8 29.8 -31.3 105.3	7 39.1 -31.1 104.8	6 48.3 -30.9 104.3	5 57.4 -30.7 103.7	5 06.3 -30.4 103.2
10°	7 58.5 -31.4 106.1	7 08.0 -31.1 105.6	6 17.4 -30.9 105.1	5 26.7 -30.7 104.6	4 35.9 -30.5 104.1
11°	7 27.1 -31.4 107.0	6 36.9 -31.2 106.5	5 46.5 -31.0 106.0	4 56.0 -30.8 105.5	4 05.4 -30.6 105.0
12°	6 55.7 -31.6 107.9	6 05.7 -31.3 107.4	5 15.5 -31.1 106.8	4 25.2 -30.8 106.3	3 34.8 -30.6 105.8
13°	6 24.1 -31.6 108.7	5 34.4 -31.4 108.2	4 44.4 -31.1 107.7	3 54.4 -30.9 107.2	3 04.2 -30.7 106.7
14°	5 52.5 -31.7 109.6	5 03.0 -31.5 109.1	4 13.3 -31.2 108.6	3 23.5 -31.0 108.1	2 33.5 -30.7 107.6
15°	5 20.8 -31.8 110.4	4 31.5 -31.5 109.9	3 42.1 -31.2 109.4	2 52.5 -30.9 108.9	2 02.8 -30.7 108.4
16°	4 49.0 -31.8 111.3	4 00.0 -31.5 110.8	3 10.9 -31.3 110.3	2 21.6 -31.0 109.8	1 32.1 -30.7 109.3
17°	4 17.2 -32.0 112.1	3 28.5 -31.7 111.6	2 39.6 -31.3 111.1	1 50.6 -31.1 110.6	1 01.4 -30.8 110.1
18°	3 45.2 -31.9 113.0	2 56.8 -31.6 112.5	2 08.3 -31.4 112.0	1 19.5 -31.0 111.5	0 30.6 -30.8 111.0
19°	3 13.3 -32.0 113.8	2 25.2 -31.7 113.3	1 36.9 -31.3 112.8	0 48.5 -31.1 112.3	-0 00.2 -30.7
20°	2 41.3 -32.0 114.7	1 53.5 -31.7 114.2	1 05.6 -31.4 113.7	0 17.4 -31.1 113.2	-0 30.9 -30.8
21°	2 09.3 -32.1 115.5	1 21.8 -31.7 115.0	0 34.2 -31.4 114.5	-0 13.7 -31.0	-1 01.7 -30.7
22°	1 37.2 -32.1 116.4	0 50.1 -31.7 115.9	0 02.8 -31.4 115.4	-0 44.7 -31.1	-1 32.4 -30.7
23°	1 05.1 -32.1 117.2	0 18.4 -31.8 116.7	-0 28.6 -31.4	-1 15.8 -31.0	-2 03.1 -30.7
24°	0 33.0 -32.1 118.1	-0 13.4 -31.7	-1 00.0 -31.4	-1 46.8 -31.0	-2 33.8 -30.7
25°	0 00.9 -32.1 118.9	-0 45.1 -31.7	-1 31.4 -31.3	-2 17.8 -31.0	-3 04.5 -30.6
26°	-0 31.2 -32.1	-1 16.8 -31.8	-2 02.7 -31.4	-2 48.8 -31.0	-3 35.1 -30.6
27°	-1 03.3 -32.1	-1 48.6 -31.6	-2 34.1 -31.2	-3 19.8 -30.9	-4 05.7 -30.5
28°	-1 35.4 -32.0	-2 20.2 -31.7	-3 05.3 -31.3	-3 50.7 -30.8	-4 36.2 -30.4
29°	-2 07.4 -32.0	-2 51.9 -31.6	-3 36.6 -31.2	-4 21.5 -30.8	-5 06.6 -30.4

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 44.1 -29.4 94.9	7 51.8 -29.4 94.4	6 59.5 -29.4 93.9	6 07.1 -29.3 93.4	5 14.7 -29.2 92.9
1°	8 14.7 -29.7 95.8	7 22.4 -29.5 95.3	6 30.1 -29.4 94.8	5 37.8 -29.3 94.3	4 45.5 -29.3 93.8
2°	7 45.0 -29.7 96.6	6 52.9 -29.6 96.1	6 00.7 -29.5 95.7	5 08.5 -29.5 95.2	4 16.2 -29.4 94.7
3°	7 15.3 -29.8 97.5	6 23.3 -29.7 97.0	5 31.2 -29.6 96.5	4 39.0 -29.5 96.0	3 46.8 -29.4 95.5
4°	6 45.5 -29.9 98.4	5 53.6 -29.8 97.9	5 01.6 -29.7 97.4	4 09.5 -29.6 96.9	3 17.4 -29.5 96.4
5°	6 15.6 -30.0 99.3	5 23.8 -29.9 98.8	4 31.9 -29.8 98.3	3 39.9 -29.6 97.8	2 47.9 -29.5 97.3
6°	5 45.6 -30.1 100.1	4 53.9 -29.9 99.6	4 02.1 -29.7 99.1	3 10.3 -29.7 98.7	2 18.4 -29.6 98.2
7°	5 15.5 -30.1 101.0	4 24.0 -30.0 100.5	3 32.4 -29.9 100.0	2 40.6 -29.7 99.5	1 48.8 -29.5 99.0
8°	4 45.4 -30.2 101.9	3 54.0 -30.0 101.4	3 02.5 -29.9 100.9	2 10.9 -29.7 100.4	1 19.3 -29.6 99.9
9°	4 15.2 -30.3 102.7	3 24.0 -30.1 102.2	2 32.6 -29.9 101.8	1 41.2 -29.7 101.3	0 49.7 -29.6 100.8
10°	3 44.9 -30.3 103.6	2 53.9 -30.2 103.1	2 02.7 -29.9 102.6	1 11.5 -29.8 102.1	0 20.1 -29.6 101.6
11°	3 14.6 -30.4 104.5	2 23.7 -30.1 104.0	1 32.8 -30.0 103.5	0 41.7 -29.8 103.0	-0 09.5 -29.6
12°	2 44.2 -30.4 105.3	1 53.6 -30.2 104.8	1 02.8 -30.0 104.4	0 11.9 -29.8 103.9	-0 39.1 -29.6
13°	2 13.8 -30.4 106.2	1 23.4 -30.2 105.7	0 32.8 -30.0 105.2	-0 17.9 -29.8	-1 08.7 -29.6
14°	1 43.4 -30.4 107.1	0 53.2 -30.2 106.6	0 02.8 -30.0 106.1	-0 47.7 -29.7	-1 38.3 -29.5
15°	1 13.0 -30.5 107.9	0 23.0 -30.3 107.4	-0 27.2 -29.9	-1 17.4 -29.8	-2 07.8 -29.5
16°	0 42.5 -30.5 108.8	-0 07.3 -30.2	-0 57.1 -30.0	-1 47.2 -29.7	-2 37.3 -29.5
17°	0 12.0 -30.5 109.6	-0 37.5 -30.2	-1 27.1 -30.0	-2 16.9 -29.7	-3 06.8 -29.5
18°	-0 18.5 -30.4	-1 07.7 -30.2	-1 57.1 -29.9	-2 46.6 -29.7	-3 36.3 -29.4
19°	-0 48.9 -30.5	-1 37.9 -30.2	-2 27.0 -29.9	-3 16.3 -29.6	-4 05.7 -29.3
20°	-1 19.4 -30.5	-2 08.1 -30.1	-2 56.9 -29.8	-3 45.9 -29.5	-4 35.0 -29.3
21°	-1 49.9 -30.4	-2 38.2 -30.1	-3 26.7 -29.8	-4 15.4 -29.5	-5 04.3 -29.2
22°	-2 20.3 -30.4	-3 08.3 -30.1	-3 56.5 -29.8	-4 44.9 -29.5	-5 33.5 -29.1
23°	-2 50.7 -30.3	-3 38.4 -30.0	-4 26.3 -29.7	-5 14.4 -29.3	-6 02.6 -29.0
24°	-3 21.0 -30.3	-4 08.4 -30.0	-4 56.0 -29.6	-5 43.7 -29.3	-6 31.6 -29.0
25°	-3 51.3 -30.3	-4 38.4 -29.9	-5 25.6 -29.5	-6 13.0 -29.2	-7 00.6 -28.8
26°	-4 21.6 -30.2	-5 08.3 -29.8	-5 55.1 -29.5	-6 42.2 -29.1	-7 29.4 -28.8
27°	-4 51.8 -30.1	-5 38.1 -29.7	-6 24.6 -29.4	-7 11.3 -29.0	-7 58.2 -28.6
28°	-5 21.9 -30.1	-6 07.8 -29.7	-6 54.0 -29.2	-7 40.3 -28.9	-8 26.8 -28.5
29°	-5 52.0 -29.9	-6 37.5 -29.6	-7 23.2 -29.2	-8 09.2 -28.7	-8 55.3 -28.4

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 22.3 -29.2 92.4	3 29.9 -29.2 91.9	2 37.4 -29.1 91.5	1 44.9 -29.1 91.0	0 52.5 -29.1 90.5
1°	3 53.1 -29.3 93.3	3 00.7 -29.2 92.8	2 08.3 -29.2 92.3	1 15.8 -29.1 91.8	0 23.4 -29.1 91.4
2°	3 23.8 -29.3 94.2	2 31.5 -29.2 93.7	1 39.1 -29.2 93.2	0 46.7 -29.1 92.7	-0 05.7 -29.1
3°	2 54.5 -29.3 95.1	2 02.3 -29.3 94.6	1 09.9 -29.2 94.1	0 17.6 -29.2 93.6	-0 34.8 -29.1
4°	2 25.2 -29.4 95.9	1 33.0 -29.3 95.4	0 40.7 -29.2 95.0	-0 11.6 -29.1	-1 03.9 -29.1
5°	1 55.8 -29.4 96.8	1 03.7 -29.3 96.3	0 11.5 -29.2 95.8	-0 40.7 -29.2	-1 33.0 -29.1
6°	1 26.4 -29.4 97.7	0 34.4 -29.3 97.2	-0 17.7 -29.2	-1 09.9 -29.1	-2 02.1 -29.0
7°	0 57.0 -29.5 98.5	0 05.1 -29.4 98.1	-0 46.9 -29.2	-1 39.0 -29.1	-2 31.1 -29.0
8°	0 27.5 -29.4 99.4	-0 24.3 -29.3	-1 16.1 -29.2	-2 08.1 -29.0	-3 00.1 -28.9
9°	-0 01.9 -29.4	-0 53.6 -29.3	-1 45.3 -29.2	-2 37.1 -29.1	-3 29.0 -28.9
10°	-0 31.3 -29.5	-1 22.9 -29.2	-2 14.5 -29.1	-3 06.2 -28.9	-3 57.9 -28.9
11°	-1 00.8 -29.4	-1 52.1 -29.3	-2 43.6 -29.1	-3 35.1 -29.0	-4 26.8 -28.8
12°	-1 30.2 -29.4	-2 21.4 -29.2	-3 12.7 -29.0	-4 04.1 -28.9	-4 55.6 -28.7
13°	-1 59.6 -29.4	-2 50.6 -29.2	-3 41.7 -29.0	-4 33.0 -28.8	-5 24.3 -28.6
14°	-2 29.0 -29.3	-3 19.8 -29.1	-4 10.7 -29.0	-5 01.8 -28.7	-5 52.9 -28.6
15°	-2 58.3 -29.3	-3 48.9 -29.1	-4 39.7 -28.8	-5 30.5 -28.7	-6 21.5 -28.4
16°	-3 27.6 -29.3	-4 18.0 -29.0	-5 08.5 -28.8	-5 59.2 -28.6	-6 49.9 -28.4
17°	-3 56.9 -29.2	-4 47.0 -29.0	-5 37.3 -28.8	-6 27.8 -28.4	-7 18.3 -28.2
18°	-4 26.1 -29.1	-5 16.0 -28.9	-6 06.1 -28.6	-6 56.2 -28.4	-7 46.5 -28.2
19°	-4 55.2 -29.1	-5 44.9 -28.8	-6 34.7 -28.5	-7 24.6 -28.3	-8 14.7 -28.0
20°	-5 24.3 -28.9	-6 13.7 -28.7	-7 03.2 -28.5	-7 52.9 -28.2	-8 42.7 -27.9
21°	-5 53.2 -29.0	-6 42.4 -28.6	-7 31.7 -28.3	-8 21.1 -28.0	-9 10.6 -27.8
22°	-6 22.2 -28.8	-7 11.0 -28.5	-8 00.0 -28.2	-8 49.1 -28.0	-9 38.4 -27.6
23°	-6 51.0 -28.7	-7 39.5 -28.4	-8 28.2 -28.1	-9 17.1 -27.7	
24°	-7 19.7 -28.6	-8 07.9 -28.3	-8 56.3 -28.0	-9 44.8 -27.7	
25°	-7 48.3 -28.5	-8 36.2 -28.2	-9 24.3 -27.8		
26°	-8 16.8 -28.4	-9 04.4 -28.0	-9 52.1 -27.7		
27°	-8 45.2 -28.3	-9 32.4 -27.9			
28°	-9 13.5 -28.1				
29°	-9 41.6 -28.0				

Latitude 29°

Declination CONTRARY name to Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -29.1 90.0	-0 52.5 -29.1			
1°	-0 29.1 -29.1	-1 21.6 -29.0			
2°	-0 58.2 -29.0	-1 50.6 -29.1			
3°	-1 27.2 -29.1	-2 19.7 -29.0			
4°	-1 56.3 -29.0	-2 48.7 -28.9			
5°	-2 25.3 -29.0	-3 17.6 -29.0			
6°	-2 54.3 -28.9	-3 46.6 -28.8			
7°	-3 23.2 -28.9	-4 15.4 -28.8			
8°	-3 52.1 -28.9	-4 44.2 -28.8			
9°	-4 21.0 -28.8	-5 13.0 -28.7			
10°	-4 49.8 -28.7	-5 41.7 -28.5			
11°	-5 18.5 -28.6	-6 10.2 -28.5			
12°	-5 47.1 -28.6	-6 38.7 -28.4			
13°	-6 15.7 -28.4	-7 07.1 -28.3			
14°	-6 44.1 -28.4	-7 35.4 -28.2			
15°	-7 12.5 -28.3	-8 03.6 -28.1			
16°	-7 40.8 -28.1	-8 31.7 -28.0			
17°	-8 08.9 -28.1	-8 59.7 -27.8			
18°	-8 37.0 -27.9	-9 27.5 -27.7			
19°	-9 04.9 -27.8	-9 55.2 -27.5			
20°	-9 32.7 -27.6				
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
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22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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