

Latitude 60° - 69°

Declination SAME name as Latitude

Sight-Reduction Tables for Latitude 60° - 69°

Declination SAME name as Latitude

Revision V1.2 - Apr2017

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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°: $Z_c = 180^\circ + Z$

Declination SAME name as Latitude

Latitude 60°

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°	30 00.0 +60.0 180.0	29 59.7 +60.0 178.8	29 58.8 +60.0 177.7	29 57.3 +60.0 176.5	29 55.2 +59.9 175.4
1°	31 00.0 +60.0 180.0	30 59.7 +60.0 178.8	30 58.8 +60.0 177.7	30 57.3 +59.9 176.5	30 55.1 +60.0 175.3
2°	32 00.0 +60.0 180.0	31 59.7 +60.0 178.8	31 58.8 +60.0 177.6	31 57.2 +60.0 176.5	31 55.1 +59.9 175.3
3°	33 00.0 +60.0 180.0	32 59.7 +60.0 178.8	32 58.8 +59.9 177.6	32 57.2 +60.0 176.4	32 55.0 +60.0 175.2
4°	34 00.0 +60.0 180.0	33 59.7 +60.0 178.8	33 58.7 +60.0 177.6	33 57.2 +59.9 176.4	33 55.0 +59.9 175.2
5°	35 00.0 +60.0 180.0	34 59.7 +60.0 178.8	34 58.7 +60.0 177.6	34 57.1 +60.0 176.4	34 54.9 +60.0 175.1
6°	36 00.0 +60.0 180.0	35 59.7 +60.0 178.8	35 58.7 +60.0 177.5	35 57.1 +60.0 176.3	35 54.9 +59.9 175.1
7°	37 00.0 +60.0 180.0	36 59.7 +60.0 178.8	36 58.7 +60.0 177.5	36 57.1 +59.9 176.3	36 54.8 +59.9 175.0
8°	38 00.0 +60.0 180.0	37 59.7 +60.0 178.7	37 58.7 +60.0 177.5	37 57.0 +60.0 176.2	37 54.7 +60.0 175.0
9°	39 00.0 +60.0 180.0	38 59.7 +60.0 178.7	38 58.7 +60.0 177.5	38 57.0 +60.0 176.2	38 54.7 +59.9 174.9
10°	40 00.0 +60.0 180.0	39 59.7 +60.0 178.7	39 58.7 +59.9 177.4	39 57.0 +59.9 176.1	39 54.6 +60.0 174.9
11°	41 00.0 +60.0 180.0	40 59.7 +60.0 178.7	40 58.6 +60.0 177.4	40 56.9 +60.0 176.1	40 54.6 +59.9 174.8
12°	42 00.0 +60.0 180.0	41 59.7 +60.0 178.7	41 58.6 +60.0 177.4	41 56.9 +60.0 176.1	41 54.5 +59.9 174.7
13°	43 00.0 +60.0 180.0	42 59.7 +59.9 178.7	42 58.6 +60.0 177.3	42 56.9 +59.9 176.0	42 54.4 +60.0 174.7
14°	44 00.0 +60.0 180.0	43 59.6 +60.0 178.7	43 58.6 +60.0 177.3	43 56.8 +60.0 176.0	43 54.4 +59.9 174.6
15°	45 00.0 +60.0 180.0	44 59.6 +60.0 178.6	44 58.6 +60.0 177.3	44 56.8 +59.9 175.9	44 54.3 +59.9 174.5
16°	46 00.0 +60.0 180.0	45 59.6 +60.0 178.6	45 58.6 +59.9 177.2	45 56.7 +60.0 175.9	45 54.2 +59.9 174.5
17°	47 00.0 +60.0 180.0	46 59.6 +60.0 178.6	46 58.5 +60.0 177.2	46 56.7 +60.0 175.8	46 54.1 +60.0 174.4
18°	48 00.0 +60.0 180.0	47 59.6 +60.0 178.6	47 58.5 +60.0 177.2	47 56.7 +59.9 175.7	47 54.1 +59.9 174.3
19°	49 00.0 +60.0 180.0	48 59.6 +60.0 178.6	48 58.5 +60.0 177.1	48 56.6 +60.0 175.7	48 54.0 +59.9 174.2
20°	50 00.0 +60.0 180.0	49 59.6 +60.0 178.5	49 58.5 +59.9 177.1	49 56.6 +59.9 175.6	49 53.9 +59.9 174.2
21°	51 00.0 +60.0 180.0	50 59.6 +60.0 178.5	50 58.4 +60.0 177.0	50 56.5 +60.0 175.6	50 53.8 +59.9 174.1
22°	52 00.0 +60.0 180.0	51 59.6 +60.0 178.5	51 58.4 +60.0 177.0	51 56.5 +59.9 175.5	51 53.7 +59.9 174.0
23°	53 00.0 +60.0 180.0	52 59.6 +60.0 178.5	52 58.4 +60.0 176.9	52 56.4 +59.9 175.4	52 53.6 +59.9 173.9
24°	54 00.0 +60.0 180.0	53 59.6 +60.0 178.4	53 58.4 +59.9 176.9	53 56.3 +60.0 175.3	53 53.5 +59.9 173.8
25°	55 00.0 +60.0 180.0	54 59.6 +60.0 178.4	54 58.3 +60.0 176.8	54 56.3 +59.9 175.3	54 53.4 +59.9 173.7
26°	56 00.0 +60.0 180.0	55 59.6 +60.0 178.4	55 58.3 +60.0 176.8	55 56.2 +59.9 175.2	55 53.3 +59.9 173.6
27°	57 00.0 +60.0 180.0	56 59.6 +60.0 178.4	56 58.3 +60.0 176.7	56 56.1 +60.0 175.1	56 53.2 +59.8 173.5
28°	58 00.0 +60.0 180.0	57 59.6 +60.0 178.3	57 58.3 +59.9 176.7	57 56.1 +59.9 175.0	57 53.0 +59.9 173.3
29°	59 00.0 +60.0 180.0	58 59.6 +59.9 178.3	58 58.2 +60.0 176.6	58 56.0 +59.9 174.9	58 52.9 +59.9 173.2

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°	29 52.5 +59.9 174.2	29 49.1 +59.9 173.1	29 45.2 +59.9 171.9	29 40.7 +59.8 170.8	29 35.6 +59.8 169.6
1°	30 52.4 +59.9 174.2	30 49.0 +59.9 173.0	30 45.1 +59.8 171.8	30 40.5 +59.8 170.7	30 35.4 +59.7 169.5
2°	31 52.3 +59.9 174.1	31 48.9 +59.9 172.9	31 44.9 +59.9 171.8	31 40.3 +59.8 170.6	31 35.1 +59.8 169.4
3°	32 52.2 +59.9 174.1	32 48.8 +59.9 172.9	32 44.8 +59.8 171.7	32 40.1 +59.8 170.5	32 34.9 +59.7 169.3
4°	33 52.1 +60.0 174.0	33 48.7 +59.9 172.8	33 44.6 +59.8 171.6	33 39.9 +59.8 170.4	33 34.6 +59.7 169.2
5°	34 52.1 +59.9 173.9	34 48.6 +59.8 172.7	34 44.4 +59.9 171.5	34 39.7 +59.8 170.3	34 34.3 +59.8 169.1
6°	35 52.0 +59.9 173.9	35 48.4 +59.9 172.6	35 44.3 +59.8 171.4	35 39.5 +59.8 170.2	35 34.1 +59.7 169.0
7°	36 51.9 +59.9 173.8	36 48.3 +59.9 172.6	36 44.1 +59.8 171.3	36 39.3 +59.7 170.1	36 33.8 +59.7 168.9
8°	37 51.8 +59.9 173.7	37 48.2 +59.8 172.5	37 43.9 +59.8 171.2	37 39.0 +59.8 170.0	37 33.5 +59.7 168.7
9°	38 51.7 +59.9 173.7	38 48.0 +59.9 172.4	38 43.7 +59.9 171.1	38 38.8 +59.8 169.9	38 33.2 +59.7 168.6
10°	39 51.6 +59.9 173.6	39 47.9 +59.9 172.3	39 43.6 +59.8 171.0	39 38.6 +59.7 169.7	39 32.9 +59.7 168.5
11°	40 51.5 +59.9 173.5	40 47.8 +59.8 172.2	40 43.4 +59.8 170.9	40 38.3 +59.7 169.6	40 32.6 +59.6 168.3
12°	41 51.4 +59.9 173.4	41 47.6 +59.9 172.1	41 43.2 +59.8 170.8	41 38.0 +59.8 169.5	41 32.2 +59.7 168.2
13°	42 51.3 +59.9 173.3	42 47.5 +59.8 172.0	42 43.0 +59.8 170.7	42 37.8 +59.7 169.4	42 31.9 +59.7 168.1
14°	43 51.2 +59.9 173.3	43 47.3 +59.9 171.9	43 42.8 +59.7 170.6	43 37.5 +59.7 169.2	43 31.6 +59.6 167.9
15°	44 51.1 +59.9 173.2	44 47.2 +59.8 171.8	44 42.5 +59.8 170.5	44 37.2 +59.7 169.1	44 31.2 +59.6 167.8
16°	45 51.0 +59.8 173.1	45 47.0 +59.8 171.7	45 42.3 +59.8 170.3	45 36.9 +59.7 169.0	45 30.8 +59.7 167.6
17°	46 50.8 +59.9 173.0	46 46.8 +59.8 171.6	46 42.1 +59.7 170.2	46 36.6 +59.7 168.8	46 30.5 +59.6 167.4
18°	47 50.7 +59.9 172.9	47 46.6 +59.9 171.5	47 41.8 +59.8 170.1	47 36.3 +59.7 168.7	47 30.1 +59.6 167.3
19°	48 50.6 +59.9 172.8	48 46.5 +59.8 171.4	48 41.6 +59.7 169.9	48 36.0 +59.6 168.5	48 29.7 +59.5 167.1
20°	49 50.5 +59.8 172.7	49 46.3 +59.8 171.3	49 41.3 +59.8 169.8	49 35.6 +59.7 168.4	49 29.2 +59.6 166.9
21°	50 50.3 +59.9 172.6	50 46.1 +59.8 171.1	50 41.1 +59.7 169.7	50 35.3 +59.6 168.2	50 28.8 +59.5 166.7
22°	51 50.2 +59.8 172.5	51 45.9 +59.7 171.0	51 40.8 +59.7 169.5	51 34.9 +59.6 168.0	51 28.3 +59.5 166.5
23°	52 50.0 +59.9 172.4	52 45.6 +59.8 170.9	52 40.5 +59.7 169.3	52 34.5 +59.6 167.8	52 27.8 +59.5 166.3
24°	53 49.9 +59.8 172.2	53 45.4 +59.8 170.7	53 40.2 +59.6 169.2	53 34.1 +59.6 167.6	53 27.3 +59.5 166.1
25°	54 49.7 +59.8 172.1	54 45.2 +59.7 170.6	54 39.8 +59.7 169.0	54 33.7 +59.6 167.4	54 26.8 +59.4 165.9
26°	55 49.5 +59.8 172.0	55 44.9 +59.7 170.4	55 39.5 +59.6 168.8	55 33.3 +59.5 167.2	55 26.2 +59.4 165.7
27°	56 49.3 +59.8 171.8	56 44.6 +59.8 170.2	56 39.1 +59.7 168.6	56 32.8 +59.5 167.0	56 25.6 +59.4 165.4
28°	57 49.1 +59.8 171.7	57 44.4 +59.7 170.0	57 38.8 +59.6 168.4	57 32.3 +59.5 166.8	57 25.0 +59.4 165.1
29°	58 48.9 +59.8 171.5	58 44.1 +59.7 169.9	58 38.4 +59.5 168.2	58 31.8 +59.4 166.5	58 24.4 +59.3 164.9

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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°	29 29.9 +59.7 168.5	29 23.6 +59.7 167.3	29 16.8 +59.6 166.2	29 09.3 +59.5 165.1	29 01.3 +59.4 163.9
1°	30 29.6 +59.7 168.4	30 23.3 +59.6 167.2	30 16.4 +59.5 166.1	30 08.8 +59.5 164.9	30 00.7 +59.5 163.8
2°	31 29.3 +59.7 168.3	31 22.9 +59.6 167.1	31 15.9 +59.6 165.9	31 08.3 +59.5 164.8	31 00.2 +59.3 163.6
3°	32 29.0 +59.7 168.1	32 22.5 +59.6 167.0	32 15.5 +59.5 165.8	32 07.8 +59.5 164.6	31 59.5 +59.4 163.4
4°	33 28.7 +59.6 168.0	33 22.1 +59.6 166.8	33 15.0 +59.5 165.6	33 07.3 +59.4 164.5	32 58.9 +59.4 163.3
5°	34 28.3 +59.7 167.9	34 21.7 +59.6 166.7	34 14.5 +59.5 165.5	34 06.7 +59.4 164.3	33 58.3 +59.3 163.1
6°	35 28.0 +59.7 167.8	35 21.3 +59.6 166.5	35 14.0 +59.6 165.3	35 06.1 +59.5 164.1	34 57.6 +59.4 162.9
7°	36 27.7 +59.6 167.6	36 20.9 +59.6 166.4	36 13.6 +59.4 165.2	36 05.6 +59.4 164.0	35 57.0 +59.3 162.7
8°	37 27.3 +59.6 167.5	37 20.5 +59.6 166.3	37 13.0 +59.5 165.0	37 05.0 +59.4 163.8	36 56.3 +59.3 162.6
9°	38 26.9 +59.7 167.3	38 20.1 +59.5 166.1	38 12.5 +59.5 164.9	38 04.4 +59.3 163.6	37 55.6 +59.3 162.4
10°	39 26.6 +59.6 167.2	39 19.6 +59.5 165.9	39 12.0 +59.4 164.7	39 03.7 +59.4 163.4	38 54.9 +59.2 162.2
11°	40 26.2 +59.6 167.1	40 19.1 +59.6 165.8	40 11.4 +59.5 164.5	40 03.1 +59.3 163.2	39 54.1 +59.3 162.0
12°	41 25.8 +59.6 166.9	41 18.7 +59.5 165.6	41 10.9 +59.4 164.3	41 02.4 +59.4 163.0	40 53.4 +59.2 161.8
13°	42 25.4 +59.5 166.7	42 18.2 +59.5 165.4	42 10.3 +59.4 164.1	42 01.8 +59.3 162.8	41 52.6 +59.2 161.5
14°	43 24.9 +59.6 166.6	43 17.7 +59.4 165.3	43 09.7 +59.4 163.9	43 01.1 +59.2 162.6	42 51.8 +59.1 161.3
15°	44 24.5 +59.6 166.4	44 17.1 +59.5 165.1	44 09.1 +59.3 163.7	44 00.3 +59.3 162.4	43 50.9 +59.2 161.1
16°	45 24.1 +59.5 166.2	45 16.6 +59.4 164.9	45 08.4 +59.4 163.5	44 59.6 +59.2 162.2	44 50.1 +59.1 160.9
17°	46 23.6 +59.5 166.1	46 16.0 +59.4 164.7	46 07.8 +59.3 163.3	45 58.8 +59.2 162.0	45 49.2 +59.1 160.6
18°	47 23.1 +59.5 165.9	47 15.4 +59.4 164.5	47 07.1 +59.2 163.1	46 58.0 +59.2 161.7	46 48.3 +59.0 160.4
19°	48 22.6 +59.5 165.7	48 14.8 +59.4 164.3	48 06.3 +59.3 162.9	47 57.2 +59.1 161.5	47 47.3 +59.0 160.1
20°	49 22.1 +59.4 165.5	49 14.2 +59.3 164.1	49 05.6 +59.2 162.6	48 56.3 +59.1 161.2	48 46.3 +59.0 159.8
21°	50 21.5 +59.5 165.3	50 13.5 +59.4 163.8	50 04.8 +59.2 162.4	49 55.4 +59.0 161.0	49 45.3 +58.9 159.5
22°	51 21.0 +59.4 165.1	51 12.9 +59.2 163.6	51 04.0 +59.2 162.1	50 54.4 +59.1 160.7	50 44.2 +58.8 159.2
23°	52 20.4 +59.3 164.8	52 12.1 +59.3 163.3	52 03.2 +59.1 161.9	51 53.5 +58.9 160.4	51 43.0 +58.9 158.9
24°	53 19.7 +59.4 164.6	53 11.4 +59.2 163.1	53 02.3 +59.1 161.6	52 52.4 +59.0 160.1	52 41.9 +58.7 158.6
25°	54 19.1 +59.3 164.3	54 10.6 +59.2 162.8	54 01.4 +59.0 161.3	53 51.4 +58.8 159.8	53 40.6 +58.7 158.3
26°	55 18.4 +59.3 164.1	55 09.8 +59.1 162.5	55 00.4 +59.0 161.0	54 50.2 +58.9 159.4	54 39.3 +58.7 157.9
27°	56 17.7 +59.2 163.8	56 08.9 +59.1 162.2	55 59.4 +58.9 160.7	55 49.1 +58.7 159.1	55 38.0 +58.5 157.6
28°	57 16.9 +59.2 163.5	57 08.0 +59.0 161.9	56 58.3 +58.9 160.3	56 47.8 +58.7 158.7	56 36.5 +58.5 157.2
29°	58 16.1 +59.2 163.2	58 07.0 +59.0 161.6	57 57.2 +58.8 160.0	57 46.5 +58.6 158.3	57 35.0 +58.4 156.8

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°	28 52.7 +59.4 162.8	28 43.6 +59.2 161.7	28 33.9 +59.1 160.6	28 23.6 +59.1 159.4	28 12.8 +59.0 158.3
1°	29 52.1 +59.3 162.6	29 42.8 +59.3 161.5	29 33.0 +59.2 160.4	29 22.7 +59.0 159.2	29 11.8 +58.9 158.1
2°	30 51.4 +59.3 162.5	30 42.1 +59.2 161.3	30 32.2 +59.1 160.2	30 21.7 +59.0 159.0	30 10.7 +58.9 157.9
3°	31 50.7 +59.3 162.3	31 41.3 +59.2 161.1	31 31.3 +59.1 160.0	31 20.7 +59.0 158.8	31 09.6 +58.9 157.7
4°	32 50.0 +59.3 162.1	32 40.5 +59.2 160.9	32 30.4 +59.1 159.8	32 19.7 +59.0 158.6	32 08.5 +58.9 157.4
5°	33 49.3 +59.2 161.9	33 39.7 +59.1 160.7	33 29.5 +59.0 159.6	33 18.7 +59.0 158.4	33 07.4 +58.8 157.2
6°	34 48.5 +59.3 161.7	34 38.8 +59.2 160.5	34 28.5 +59.1 159.3	34 17.7 +58.9 158.2	34 06.2 +58.8 157.0
7°	35 47.8 +59.2 161.5	35 38.0 +59.1 160.3	35 27.6 +59.0 159.1	35 16.6 +58.9 157.9	35 05.0 +58.8 156.7
8°	36 47.0 +59.2 161.3	36 37.1 +59.1 160.1	36 26.6 +59.0 158.9	36 15.5 +58.9 157.7	36 03.8 +58.8 156.5
9°	37 46.2 +59.2 161.1	37 36.2 +59.1 159.9	37 25.6 +58.9 158.7	37 14.4 +58.8 157.5	37 02.6 +58.7 156.2
10°	38 45.4 +59.1 160.9	38 35.3 +59.0 159.7	38 24.5 +59.0 158.4	38 13.2 +58.8 157.2	38 01.3 +58.7 156.0
11°	39 44.5 +59.2 160.7	39 34.3 +59.0 159.5	39 23.5 +58.9 158.2	39 12.0 +58.8 157.0	39 00.0 +58.6 155.7
12°	40 43.7 +59.1 160.5	40 33.3 +59.0 159.2	40 22.4 +58.8 158.0	40 10.8 +58.8 156.7	39 58.6 +58.7 155.4
13°	41 42.8 +59.0 160.3	41 32.3 +59.0 159.0	41 21.2 +58.9 157.7	41 09.6 +58.7 156.4	40 57.3 +58.5 155.2
14°	42 41.8 +59.1 160.0	42 31.3 +58.9 158.7	42 20.1 +58.8 157.4	42 08.3 +58.6 156.1	41 55.8 +58.5 154.9
15°	43 40.9 +59.0 159.8	43 30.2 +58.9 158.5	43 18.9 +58.7 157.2	43 06.9 +58.6 155.9	42 54.3 +58.5 154.6
16°	44 39.9 +59.0 159.5	44 29.1 +58.8 158.2	44 17.6 +58.7 156.9	44 05.5 +58.6 155.6	43 52.8 +58.4 154.3
17°	45 38.9 +58.9 159.3	45 27.9 +58.9 157.9	45 16.3 +58.7 156.6	45 04.1 +58.5 155.3	44 51.2 +58.4 153.9
18°	46 37.8 +58.9 159.0	46 26.8 +58.7 157.6	46 15.0 +58.6 156.3	46 02.6 +58.5 154.9	45 49.6 +58.3 153.6
19°	47 36.7 +58.9 158.7	47 25.5 +58.7 157.3	47 13.6 +58.6 156.0	47 01.1 +58.4 154.6	46 47.9 +58.3 153.3
20°	48 35.6 +58.8 158.4	48 24.2 +58.7 157.0	48 12.2 +58.5 155.7	47 59.5 +58.4 154.3	47 46.2 +58.1 152.9
21°	49 34.4 +58.8 158.1	49 22.9 +58.6 156.7	49 10.7 +58.5 155.3	48 57.9 +58.2 153.9	48 44.3 +58.2 152.6
22°	50 33.2 +58.7 157.8	50 21.5 +58.6 156.4	50 09.2 +58.3 155.0	49 56.1 +58.2 153.6	49 42.5 +58.0 152.2
23°	51 31.9 +58.7 157.5	51 20.1 +58.5 156.0	51 07.5 +58.4 154.6	50 54.3 +58.2 153.2	50 40.5 +57.9 151.8
24°	52 30.6 +58.6 157.1	52 18.6 +58.4 155.7	52 05.9 +58.2 154.2	51 52.5 +58.0 152.8	51 38.4 +57.9 151.4
25°	53 29.2 +58.5 156.8	53 17.0 +58.3 155.3	53 04.1 +58.1 153.8	52 50.5 +58.0 152.4	52 36.3 +57.7 150.9
26°	54 27.7 +58.4 156.4	54 15.3 +58.3 154.9	54 02.2 +58.1 153.4	53 48.5 +57.8 151.9	53 34.0 +57.7 150.5
27°	55 26.1 +58.4 156.0	55 13.6 +58.2 154.5	55 00.3 +58.0 153.0	54 46.3 +57.8 151.5	54 31.7 +57.5 150.0
28°	56 24.5 +58.3 155.6	56 11.8 +58.0 154.1	55 58.3 +57.8 152.5	55 44.1 +57.6 151.0	55 29.2 +57.4 149.5
29°	57 22.8 +58.2 155.2	57 09.8 +58.0 153.6	56 56.1 +57.8 152.0	56 41.7 +57.5 150.5	56 26.6 +57.3 149.0

Declination SAME name as Latitude

Latitude 60°

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°	28 01.5 +58.8 157.2	27 49.6 +58.7 156.1	27 37.1 +58.7 155.0	27 24.2 +58.5 153.9	27 10.7 +58.4 152.8
1°	29 00.3 +58.8 157.0	28 48.3 +58.7 155.9	28 35.8 +58.6 154.7	28 22.7 +58.5 153.6	28 09.1 +58.4 152.5
2°	29 59.1 +58.8 156.8	29 47.0 +58.7 155.6	29 34.4 +58.6 154.5	29 21.2 +58.5 153.4	29 07.5 +58.3 152.3
3°	30 57.9 +58.8 156.5	30 45.7 +58.7 155.4	30 33.0 +58.5 154.3	30 19.7 +58.4 153.1	30 05.8 +58.3 152.0
4°	31 56.7 +58.8 156.3	31 44.4 +58.6 155.1	31 31.5 +58.5 154.0	31 18.1 +58.4 152.9	31 04.1 +58.3 151.7
5°	32 55.5 +58.7 156.1	32 43.0 +58.6 154.9	32 30.0 +58.5 153.7	32 16.5 +58.3 152.6	32 02.4 +58.2 151.4
6°	33 54.2 +58.7 155.8	33 41.6 +58.6 154.6	33 28.5 +58.5 153.5	33 14.8 +58.4 152.3	33 00.6 +58.2 151.2
7°	34 52.9 +58.7 155.6	34 40.2 +58.6 154.4	34 27.0 +58.4 153.2	34 13.2 +58.2 152.0	33 58.8 +58.2 150.9
8°	35 51.6 +58.6 155.3	35 38.8 +58.5 154.1	35 25.4 +58.4 152.9	35 11.4 +58.3 151.7	34 57.0 +58.1 150.6
9°	36 50.2 +58.6 155.0	36 37.3 +58.4 153.8	36 23.8 +58.3 152.6	36 09.7 +58.2 151.4	35 55.1 +58.0 150.3
10°	37 48.8 +58.6 154.8	37 35.7 +58.5 153.5	37 22.1 +58.3 152.3	37 07.9 +58.1 151.1	36 53.1 +58.0 149.9
11°	38 47.4 +58.5 154.5	38 34.2 +58.3 153.3	38 20.4 +58.2 152.0	38 06.0 +58.1 150.8	37 51.1 +58.0 149.6
12°	39 45.9 +58.5 154.2	39 32.5 +58.4 153.0	39 18.6 +58.2 151.7	39 04.1 +58.1 150.5	38 49.1 +57.9 149.3
13°	40 44.4 +58.4 153.9	40 30.9 +58.3 152.7	40 16.8 +58.1 151.4	40 02.2 +57.9 150.2	39 47.0 +57.8 149.0
14°	41 42.8 +58.4 153.6	41 29.2 +58.2 152.3	41 14.9 +58.1 151.1	41 00.1 +58.0 149.8	40 44.8 +57.8 148.6
15°	42 41.2 +58.3 153.3	42 27.4 +58.2 152.0	42 13.0 +58.0 150.8	41 58.1 +57.8 149.5	41 42.6 +57.7 148.2
16°	43 39.5 +58.3 153.0	43 25.6 +58.1 151.7	43 11.0 +58.0 150.4	42 55.9 +57.8 149.1	42 40.3 +57.6 147.9
17°	44 37.8 +58.2 152.6	44 23.7 +58.0 151.3	44 09.0 +57.9 150.0	43 53.7 +57.7 148.8	43 37.9 +57.5 147.5
18°	45 36.0 +58.1 152.3	45 21.7 +58.0 151.0	45 06.9 +57.8 149.7	44 51.4 +57.7 148.4	44 35.4 +57.5 147.1
19°	46 34.1 +58.1 151.9	46 19.7 +57.9 150.6	46 04.7 +57.7 149.3	45 49.1 +57.5 148.0	45 32.9 +57.3 146.7
20°	47 32.2 +58.0 151.6	47 17.6 +57.8 150.2	47 02.4 +57.7 148.9	46 46.6 +57.5 147.6	46 30.2 +57.3 146.3
21°	48 30.2 +57.9 151.2	48 15.4 +57.8 149.8	48 00.1 +57.5 148.5	47 44.1 +57.3 147.2	47 27.5 +57.2 145.8
22°	49 28.1 +57.9 150.8	49 13.2 +57.6 149.4	48 57.6 +57.5 148.1	48 41.4 +57.3 146.7	48 24.7 +57.0 145.4
23°	50 26.0 +57.7 150.4	50 10.8 +57.6 149.0	49 55.1 +57.3 147.6	49 38.7 +57.1 146.3	49 21.7 +57.0 144.9
24°	51 23.7 +57.7 149.9	51 08.4 +57.4 148.5	50 52.4 +57.3 147.2	50 35.8 +57.1 145.8	50 18.7 +56.8 144.4
25°	52 21.4 +57.5 149.5	52 05.8 +57.4 148.1	51 49.7 +57.1 146.7	51 32.9 +56.9 145.3	51 15.5 +56.7 143.9
26°	53 18.9 +57.5 149.0	53 03.2 +57.2 147.6	52 46.8 +57.0 146.2	52 29.8 +56.7 144.8	52 12.2 +56.5 143.4
27°	54 16.4 +57.3 148.5	54 00.4 +57.0 147.1	53 43.8 +56.8 145.7	53 26.5 +56.6 144.2	53 08.7 +56.4 142.8
28°	55 13.7 +57.1 148.0	54 57.4 +57.0 146.6	54 40.6 +56.7 145.1	54 23.1 +56.5 143.7	54 05.1 +56.1 142.2
29°	56 10.8 +57.0 147.5	55 54.4 +56.7 146.0	55 37.3 +56.5 144.5	55 19.6 +56.2 143.1	55 01.2 +56.0 141.6

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°	26 56.8 +58.2 151.7	26 42.3 +58.2 150.6	26 27.3 +58.1 149.5	26 11.9 +57.9 148.5	25 55.9 +57.8 147.4
1°	27 55.0 +58.3 151.4	27 40.5 +58.1 150.3	27 25.4 +57.9 149.2	27 09.8 +57.8 148.2	26 53.7 +57.7 147.1
2°	28 53.3 +58.2 151.2	28 38.6 +58.0 150.1	28 23.3 +58.0 149.0	28 07.6 +57.8 147.9	27 51.4 +57.7 146.8
3°	29 51.5 +58.2 150.9	29 36.6 +58.1 149.8	29 21.3 +57.9 148.7	29 05.4 +57.8 147.6	28 49.1 +57.6 146.5
4°	30 49.7 +58.1 150.6	30 34.7 +58.0 149.5	30 19.2 +57.9 148.4	30 03.2 +57.7 147.2	29 46.7 +57.6 146.1
5°	31 47.8 +58.1 150.3	31 32.7 +58.0 149.2	31 17.1 +57.8 148.0	31 00.9 +57.7 146.9	30 44.3 +57.6 145.8
6°	32 45.9 +58.1 150.0	32 30.7 +57.9 148.9	32 14.9 +57.8 147.7	31 58.6 +57.7 146.6	31 41.9 +57.5 145.5
7°	33 44.0 +58.0 149.7	33 28.6 +57.8 148.6	33 12.7 +57.7 147.4	32 56.3 +57.5 146.3	32 39.4 +57.4 145.1
8°	34 42.0 +57.9 149.4	34 26.4 +57.8 148.2	34 10.4 +57.7 147.1	33 53.8 +57.6 145.9	33 36.8 +57.4 144.8
9°	35 39.9 +57.9 149.1	35 24.2 +57.8 147.9	35 08.1 +57.6 146.7	34 51.4 +57.4 145.6	34 34.2 +57.3 144.4
10°	36 37.8 +57.9 148.8	36 22.0 +57.7 147.6	36 05.7 +57.5 146.4	35 48.8 +57.4 145.2	35 31.5 +57.2 144.1
11°	37 35.7 +57.8 148.4	37 19.7 +57.7 147.2	37 03.2 +57.5 146.1	36 46.2 +57.3 144.9	36 28.7 +57.2 143.7
12°	38 33.5 +57.7 148.1	38 17.4 +57.5 146.9	38 00.7 +57.4 145.7	37 43.5 +57.3 144.5	37 25.9 +57.1 143.3
13°	39 31.2 +57.7 147.7	39 14.9 +57.6 146.5	38 58.1 +57.4 145.3	38 40.8 +57.2 144.1	38 23.0 +57.0 142.9
14°	40 28.9 +57.6 147.4	40 12.5 +57.4 146.2	39 55.5 +57.3 144.9	39 38.0 +57.1 143.7	39 20.0 +56.9 142.5
15°	41 26.5 +57.5 147.0	41 09.9 +57.4 145.8	40 52.8 +57.1 144.6	40 35.1 +57.0 143.3	40 16.9 +56.9 142.1
16°	42 24.0 +57.5 146.6	42 07.3 +57.2 145.4	41 49.9 +57.1 144.1	41 32.1 +56.9 142.9	41 13.8 +56.7 141.7
17°	43 21.5 +57.3 146.2	43 04.5 +57.2 145.0	42 47.0 +57.1 143.7	42 29.0 +56.9 142.5	42 10.5 +56.7 141.3
18°	44 18.8 +57.3 145.8	44 01.7 +57.1 144.6	43 44.1 +56.9 143.3	43 25.9 +56.7 142.1	43 07.2 +56.5 140.8
19°	45 16.1 +57.2 145.4	44 58.8 +57.0 144.1	44 41.0 +56.8 142.9	44 22.6 +56.6 141.6	44 03.7 +56.4 140.4
20°	46 13.3 +57.1 145.0	45 55.8 +56.9 143.7	45 37.8 +56.7 142.4	45 19.2 +56.5 141.1	45 00.1 +56.3 139.9
21°	47 10.4 +57.0 144.5	46 52.7 +56.8 143.2	46 34.5 +56.5 141.9	46 15.7 +56.4 140.7	46 56.4 +56.2 139.4
22°	48 07.4 +56.8 144.1	47 49.5 +56.6 142.7	47 31.0 +56.5 141.4	47 12.1 +56.2 140.2	48 52.6 +56.0 138.9
23°	49 04.2 +56.7 143.6	48 46.1 +56.5 142.2	48 27.5 +56.3 140.9	48 08.3 +56.1 139.6	47 48.6 +55.9 138.4
24°	50 00.9 +56.6 143.1	49 42.6 +56.4 141.7	49 23.8 +56.1 140.4	49 04.4 +55.9 139.1	48 44.5 +55.7 137.8
25°	50 57.5 +56.5 142.5	50 39.0 +56.2 141.2	50 19.9 +56.0 139.9	50 00.3 +55.8 138.5	49 40.2 +55.6 137.2
26°	51 54.0 +56.3 142.0	51 35.2 +56.1 140.6	51 15.9 +55.9 139.3	50 56.1 +55.6 138.0	50 35.8 +55.3 136.7
27°	52 50.3 +56.1 141.4	52 31.3 +55.9 140.1	52 11.8 +55.6 138.7	51 51.7 +55.4 137.4	51 31.1 +55.2 136.0
28°	53 46.4 +55.9 140.8	53 27.2 +55.7 139.5	53 07.4 +55.4 138.1	52 47.1 +55.2 136.7	52 26.3 +54.9 135.4
29°	54 42.3 +55.8 140.2	54 22.9 +55.4 138.8	54 02.8 +55.3 137.4	53 42.3 +55.0 136.1	53 21.2 +54.7 134.7

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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°	25 39.5 +57.7 146.3	25 22.7 +57.5 145.2	25 05.3 +57.4 144.2	24 47.6 +57.2 143.1	24 29.3 +57.1 142.1
1°	26 37.2 +57.5 146.0	26 20.2 +57.4 144.9	26 02.7 +57.3 143.9	25 44.8 +57.1 142.8	25 26.4 +57.0 141.7
2°	27 34.7 +57.6 145.7	27 17.6 +57.4 144.6	27 00.0 +57.3 143.5	26 41.9 +57.2 142.5	26 23.4 +57.0 141.4
3°	28 32.3 +57.5 145.4	28 15.0 +57.4 144.3	27 57.3 +57.2 143.2	27 39.1 +57.0 142.1	27 20.4 +56.9 141.0
4°	29 29.8 +57.4 145.0	29 12.4 +57.3 143.9	28 54.5 +57.1 142.9	28 36.1 +57.0 141.8	28 17.3 +56.9 140.7
5°	30 27.2 +57.4 144.7	30 09.7 +57.2 143.6	29 51.6 +57.1 142.5	29 33.1 +57.0 141.4	29 14.2 +56.8 140.3
6°	31 24.6 +57.4 144.4	31 06.9 +57.2 143.3	30 48.7 +57.1 142.1	30 30.1 +56.9 141.0	30 11.0 +56.8 140.0
7°	32 22.0 +57.2 144.0	32 04.1 +57.1 142.9	31 45.8 +57.0 141.8	31 27.0 +56.8 140.7	31 07.8 +56.6 139.6
8°	33 19.2 +57.3 143.7	33 01.2 +57.1 142.5	32 42.8 +56.9 141.4	32 23.8 +56.8 140.3	32 04.4 +56.6 139.2
9°	34 16.5 +57.1 143.3	33 58.3 +57.0 142.2	33 39.7 +56.8 141.0	33 20.6 +56.7 139.9	33 01.0 +56.6 138.8
10°	35 13.6 +57.1 142.9	34 55.3 +56.9 141.8	34 36.5 +56.8 140.6	34 17.3 +56.6 139.5	33 57.6 +56.4 138.4
11°	36 10.7 +57.0 142.6	35 52.2 +56.9 141.4	35 33.3 +56.7 140.3	35 13.9 +56.5 139.1	34 54.0 +56.4 138.0
12°	37 07.7 +57.0 142.2	36 49.1 +56.7 141.0	36 30.0 +56.6 139.8	36 10.4 +56.4 138.7	35 50.4 +56.2 137.6
13°	38 04.7 +56.8 141.8	37 45.8 +56.7 140.6	37 26.6 +56.5 139.4	37 06.8 +56.4 138.3	36 46.6 +56.2 137.1
14°	39 01.5 +56.8 141.4	38 42.5 +56.6 140.2	38 23.1 +56.4 139.0	38 03.2 +56.2 137.8	37 42.8 +56.1 136.7
15°	39 58.3 +56.6 140.9	39 39.1 +56.5 139.7	39 19.5 +56.3 138.6	38 59.4 +56.2 137.4	38 38.9 +56.0 136.2
16°	40 54.9 +56.6 140.5	40 35.6 +56.4 139.3	40 15.8 +56.2 138.1	39 55.6 +56.0 136.9	39 34.9 +55.8 135.8
17°	41 51.5 +56.5 140.1	41 32.0 +56.3 138.9	41 12.0 +56.1 137.7	40 51.6 +55.9 136.5	40 30.7 +55.8 135.3
18°	42 48.0 +56.3 139.6	42 28.3 +56.2 138.4	42 08.1 +56.0 137.2	41 47.5 +55.8 136.0	41 26.5 +55.6 134.8
19°	43 44.3 +56.3 139.1	43 24.5 +56.0 137.9	43 04.1 +55.9 136.7	42 43.3 +55.7 135.5	42 22.1 +55.4 134.3
20°	44 40.6 +56.1 138.6	44 20.5 +55.9 137.4	44 00.0 +55.7 136.2	43 39.0 +55.5 135.0	43 17.5 +55.4 133.8
21°	45 36.7 +55.9 138.1	45 16.4 +55.8 136.9	44 55.7 +55.5 135.7	44 34.5 +55.3 134.5	44 12.9 +55.1 133.2
22°	46 32.6 +55.9 137.6	46 12.2 +55.6 136.4	45 51.2 +55.4 135.1	45 29.8 +55.3 133.9	45 08.0 +55.0 132.7
23°	47 28.5 +55.6 137.1	47 07.8 +55.4 135.8	46 46.6 +55.3 134.6	46 25.1 +55.0 133.3	46 03.0 +54.8 132.1
24°	48 24.1 +55.5 136.5	48 03.2 +55.3 135.3	47 41.9 +55.1 134.0	47 20.1 +54.8 132.8	46 57.8 +54.7 131.5
25°	49 19.6 +55.3 135.9	48 58.5 +55.1 134.7	48 37.0 +54.8 133.4	48 14.9 +54.7 132.2	47 52.5 +54.4 130.9
26°	50 14.9 +55.2 135.3	49 53.6 +54.9 134.1	49 31.8 +54.7 132.8	49 09.6 +54.4 131.5	48 46.9 +54.2 130.3
27°	51 10.1 +54.9 134.7	50 48.5 +54.7 133.4	50 26.5 +54.4 132.2	50 04.0 +54.2 130.9	49 41.1 +54.0 129.6
28°	52 05.0 +54.7 134.1	51 43.2 +54.4 132.8	51 20.9 +54.3 131.5	50 58.2 +54.0 130.2	50 35.1 +53.8 129.0
29°	52 59.7 +54.4 133.4	52 37.6 +54.3 132.1	52 15.2 +53.9 130.8	51 52.2 +53.7 129.5	51 28.9 +53.4 128.2

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°	24 10.7 +56.9 141.0	23 51.6 +56.8 140.0	23 32.1 +56.7 139.0	23 12.2 +56.5 137.9	22 51.9 +56.4 136.9
1°	25 07.6 +56.9 140.7	24 48.4 +56.8 139.7	24 28.8 +56.6 138.6	24 08.7 +56.5 137.6	23 48.3 +56.3 136.5
2°	26 04.5 +56.8 140.3	25 45.2 +56.6 139.3	25 25.4 +56.5 138.2	25 05.2 +56.4 137.2	24 44.6 +56.3 136.2
3°	27 01.3 +56.8 140.0	26 41.8 +56.7 138.9	26 21.9 +56.5 137.9	26 01.6 +56.3 136.8	25 40.9 +56.2 135.8
4°	27 58.1 +56.7 139.6	27 38.5 +56.5 138.6	27 18.4 +56.4 137.5	26 57.9 +56.3 136.4	26 37.1 +56.1 135.4
5°	28 54.8 +56.7 139.2	28 35.0 +56.6 138.2	28 14.8 +56.4 137.1	27 54.2 +56.2 136.1	27 33.2 +56.1 135.0
6°	29 51.5 +56.6 138.9	29 31.6 +56.4 137.8	29 11.2 +56.3 136.7	28 50.4 +56.2 135.7	28 29.3 +55.9 134.6
7°	30 48.1 +56.5 138.5	30 28.0 +56.4 137.4	30 07.5 +56.2 136.3	29 46.6 +56.0 135.2	29 25.2 +56.0 134.2
8°	31 44.6 +56.5 138.1	31 24.4 +56.3 137.0	31 03.7 +56.1 135.9	30 42.6 +56.0 134.8	30 21.2 +55.8 133.8
9°	32 41.1 +56.3 137.7	32 20.7 +56.2 136.6	31 59.8 +56.1 135.5	31 38.6 +55.9 134.4	31 17.0 +55.7 133.3
10°	33 37.4 +56.3 137.3	33 16.9 +56.1 136.2	32 55.9 +56.0 135.1	32 34.5 +55.8 134.0	32 12.7 +55.7 132.9
11°	34 33.7 +56.2 136.9	34 13.0 +56.0 135.8	33 51.9 +55.8 134.6	33 30.3 +55.7 133.5	33 08.4 +55.5 132.5
12°	35 29.9 +56.1 136.4	35 09.0 +56.0 135.3	34 47.7 +55.8 134.2	34 26.0 +55.6 133.1	34 03.9 +55.5 132.0
13°	36 26.0 +56.0 136.0	36 05.0 +55.8 134.9	35 43.5 +55.7 133.8	35 21.6 +55.5 132.6	34 59.4 +55.3 131.5
14°	37 22.0 +55.9 135.6	37 00.8 +55.7 134.4	36 39.2 +55.5 133.3	36 17.1 +55.4 132.2	35 54.7 +55.2 131.1
15°	38 17.9 +55.8 135.1	37 56.5 +55.7 134.0	37 34.7 +55.5 132.8	37 12.5 +55.3 131.7	36 49.9 +55.2 130.6
16°	39 13.7 +55.7 134.6	38 52.2 +55.5 133.5	38 30.2 +55.3 132.3	38 07.8 +55.2 131.2	37 45.1 +54.9 130.1
17°	40 09.4 +55.6 134.1	39 47.7 +55.3 133.0	39 25.5 +55.2 131.8	39 03.0 +55.0 130.7	38 40.0 +54.9 129.6
18°	41 05.0 +55.4 133.6	40 43.0 +55.3 132.5	40 20.7 +55.1 131.3	39 58.0 +54.9 130.2	39 34.9 +54.7 129.1
19°	42 00.4 +55.3 133.1	41 38.3 +55.1 132.0	41 15.8 +54.9 130.8	40 52.9 +54.7 129.7	40 29.6 +54.5 128.5
20°	42 55.7 +55.1 132.6	42 33.4 +54.9 131.4	42 10.7 +54.7 130.3	41 47.6 +54.5 129.1	41 24.1 +54.4 128.0
21°	43 50.8 +55.0 132.1	43 28.3 +54.8 130.9	43 05.4 +54.6 129.7	42 42.1 +54.4 128.5	42 18.5 +54.2 127.4
22°	44 45.8 +54.8 131.5	44 23.1 +54.6 130.3	44 00.0 +54.4 129.1	43 36.5 +54.3 128.0	43 12.7 +54.0 126.8
23°	45 40.6 +54.6 130.9	45 17.7 +54.4 129.7	44 54.4 +54.2 128.5	44 30.8 +54.0 127.4	44 06.7 +53.9 126.2
24°	46 35.2 +54.4 130.3	46 12.1 +54.2 129.1	45 48.6 +54.1 127.9	45 24.8 +53.8 126.8	45 00.6 +53.6 125.6
25°	47 29.6 +54.2 129.7	47 06.3 +54.0 128.5	46 42.7 +53.8 127.3	46 18.6 +53.6 126.1	45 54.2 +53.4 125.0
26°	48 23.8 +54.0 129.1	48 00.3 +53.8 127.9	47 36.5 +53.5 126.7	47 12.2 +53.4 125.5	46 47.6 +53.2 124.3
27°	49 17.8 +53.8 128.4	48 54.1 +53.6 127.2	48 30.0 +53.4 126.0	48 05.6 +53.1 124.8	47 40.8 +52.9 123.6
28°	50 11.6 +53.5 127.7	49 47.7 +53.3 126.5	49 23.4 +53.0 125.3	48 58.7 +52.9 124.1	48 33.7 +52.6 122.9
29°	51 05.1 +53.3 127.0	50 41.0 +53.0 125.8	50 16.4 +52.8 124.6	49 51.6 +52.5 123.4	49 26.3 +52.4 122.2

Declination SAME name as Latitude

Latitude 60°

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°	22 31.3 +56.2 135.9	22 10.2 +56.1 134.9	21 48.8 +55.9 133.9	21 27.0 +55.8 132.9	21 04.8 +55.7 131.9
1°	23 27.5 +56.2 135.5	23 06.3 +56.0 134.5	22 44.7 +55.9 133.5	22 22.8 +55.7 132.5	22 00.5 +55.6 131.5
2°	24 23.7 +56.1 135.1	24 02.3 +56.0 134.1	23 40.6 +55.8 133.1	23 18.5 +55.7 132.1	22 56.1 +55.5 131.1
3°	25 19.8 +56.0 134.8	24 58.3 +55.9 133.7	24 36.4 +55.8 132.7	24 14.2 +55.6 131.7	23 51.6 +55.5 130.7
4°	26 15.8 +56.0 134.4	25 54.2 +55.8 133.3	25 32.2 +55.6 132.3	25 09.8 +55.5 131.3	24 47.1 +55.4 130.2
5°	27 11.8 +55.9 134.0	26 50.0 +55.8 132.9	26 27.8 +55.7 131.9	26 05.3 +55.5 130.8	25 42.5 +55.3 129.8
6°	28 07.7 +55.8 133.5	27 45.8 +55.7 132.5	27 23.5 +55.5 131.5	27 00.8 +55.4 130.4	26 37.8 +55.2 129.4
7°	29 03.5 +55.8 133.1	28 41.5 +55.6 132.1	28 19.0 +55.5 131.0	27 56.2 +55.3 130.0	27 33.0 +55.2 129.0
8°	29 59.3 +55.7 132.7	29 37.1 +55.5 131.6	29 14.5 +55.3 130.6	28 51.5 +55.2 129.5	28 28.2 +55.1 128.5
9°	30 55.0 +55.6 132.3	30 32.6 +55.4 131.2	30 09.8 +55.3 130.1	29 46.7 +55.1 129.1	29 23.3 +54.9 128.1
10°	31 50.6 +55.4 131.8	31 28.0 +55.4 130.8	31 05.1 +55.2 129.7	30 41.8 +55.1 128.6	30 18.2 +54.9 127.6
11°	32 46.0 +55.4 131.4	32 23.4 +55.2 130.3	32 00.3 +55.1 129.2	31 36.9 +54.9 128.2	31 13.1 +54.8 127.1
12°	33 41.4 +55.3 130.9	33 18.6 +55.1 129.8	32 55.4 +54.9 128.8	32 31.8 +54.8 127.7	32 07.9 +54.7 126.6
13°	34 36.7 +55.2 130.4	34 13.7 +55.0 129.4	33 50.3 +54.9 128.3	33 26.6 +54.7 127.2	33 02.6 +54.5 126.2
14°	35 31.9 +55.1 130.0	35 08.7 +54.9 128.9	34 45.2 +54.7 127.8	34 21.3 +54.6 126.7	33 57.1 +54.4 125.7
15°	36 27.0 +54.9 129.5	36 03.6 +54.8 128.4	35 39.9 +54.7 127.3	35 15.9 +54.5 126.2	34 51.5 +54.3 125.1
16°	37 21.9 +54.8 129.0	36 58.4 +54.7 127.9	36 34.6 +54.4 126.8	36 10.4 +54.3 125.7	35 45.8 +54.2 124.6
17°	38 16.7 +54.7 128.5	37 53.1 +54.5 127.4	37 29.0 +54.4 126.3	37 04.7 +54.1 125.2	36 40.0 +54.0 124.1
18°	39 11.4 +54.5 127.9	38 47.6 +54.3 126.8	38 23.4 +54.1 125.7	37 58.8 +54.1 124.6	37 34.0 +53.8 123.5
19°	40 05.9 +54.4 127.4	39 41.9 +54.2 126.3	39 17.5 +54.1 125.2	38 52.9 +53.8 124.1	38 27.8 +53.7 123.0
20°	41 00.3 +54.2 126.8	40 36.1 +54.0 125.7	40 11.6 +53.8 124.6	39 46.7 +53.7 123.5	39 21.5 +53.6 122.4
21°	41 54.5 +54.0 126.3	41 30.1 +53.9 125.1	41 05.4 +53.7 124.0	40 40.4 +53.5 122.9	40 15.1 +53.3 121.8
22°	42 48.5 +53.9 125.7	42 24.0 +53.6 124.5	41 59.1 +53.5 123.4	41 33.9 +53.3 122.3	41 08.4 +53.1 121.2
23°	43 42.4 +53.6 125.1	43 17.6 +53.5 123.9	42 52.6 +53.3 122.8	42 27.2 +53.1 121.7	42 01.5 +53.0 120.6
24°	44 36.0 +53.4 124.4	44 11.1 +53.2 123.3	43 45.9 +53.0 122.2	43 20.3 +52.9 121.1	42 54.5 +52.7 120.0
25°	45 29.4 +53.2 123.8	45 04.3 +53.1 122.7	44 38.9 +52.9 121.5	44 13.2 +52.6 120.4	43 47.2 +52.5 119.3
26°	46 22.6 +53.0 123.1	45 57.4 +52.7 122.0	45 31.8 +52.5 120.9	45 05.8 +52.5 119.7	44 39.7 +52.2 118.6
27°	47 15.6 +52.7 122.4	46 50.1 +52.6 121.3	46 24.3 +52.4 120.2	45 58.3 +52.1 119.0	45 31.9 +52.0 117.9
28°	48 08.3 +52.5 121.7	47 42.7 +52.2 120.6	47 16.7 +52.0 119.4	46 50.4 +51.9 118.3	46 23.9 +51.7 117.2
29°	49 00.8 +52.1 121.0	48 34.9 +52.0 119.8	48 08.7 +51.8 118.7	47 42.3 +51.6 117.6	47 15.6 +51.3 116.5

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°	20 42.3 +55.5 130.9	20 19.4 +55.4 129.9	19 56.3 +55.2 128.9	19 32.8 +55.1 127.9	19 09.0 +54.9 127.0
1°	21 37.8 +55.5 130.5	21 14.8 +55.3 129.5	20 51.5 +55.2 128.5	20 27.9 +55.0 127.5	20 03.9 +54.9 126.5
2°	22 33.3 +55.4 130.1	22 10.1 +55.3 129.1	21 46.7 +55.1 128.1	21 22.9 +55.0 127.1	20 58.8 +54.9 126.1
3°	23 28.7 +55.3 129.7	23 05.4 +55.2 128.7	22 41.8 +55.1 127.7	22 17.9 +54.9 126.7	21 53.7 +54.8 125.7
4°	24 24.0 +55.3 129.2	24 00.6 +55.1 128.2	23 36.9 +54.9 127.2	23 12.8 +54.9 126.2	22 48.5 +54.7 125.2
5°	25 19.3 +55.1 128.8	24 55.7 +55.0 127.8	24 31.8 +54.9 126.8	24 07.7 +54.7 125.8	23 43.2 +54.6 124.8
6°	26 14.4 +55.1 128.4	25 50.7 +55.0 127.4	25 26.7 +54.9 126.3	25 02.4 +54.7 125.3	24 37.8 +54.5 124.3
7°	27 09.5 +55.1 127.9	26 45.7 +54.9 126.9	26 21.6 +54.7 125.9	25 57.1 +54.6 124.9	25 32.3 +54.5 123.9
8°	28 04.6 +54.9 127.5	27 40.6 +54.8 126.5	27 16.3 +54.6 125.4	26 51.7 +54.5 124.4	26 26.8 +54.4 123.4
9°	28 59.5 +54.8 127.0	28 35.4 +54.6 126.0	28 10.9 +54.6 125.0	27 46.2 +54.4 123.9	27 21.2 +54.2 122.9
10°	29 54.3 +54.7 126.6	29 30.0 +54.6 125.5	29 05.5 +54.4 124.5	28 40.6 +54.3 123.5	28 15.4 +54.2 122.5
11°	30 49.0 +54.7 126.1	30 24.6 +54.5 125.0	29 59.9 +54.4 124.0	29 34.9 +54.2 123.0	29 09.6 +54.0 122.0
12°	31 43.7 +54.5 125.6	31 19.1 +54.4 124.6	30 54.3 +54.2 123.5	30 29.1 +54.1 122.5	30 03.6 +54.0 121.5
13°	32 38.2 +54.4 125.1	32 13.5 +54.2 124.1	31 48.5 +54.1 123.0	31 23.2 +53.9 122.0	30 57.6 +53.8 121.0
14°	33 32.6 +54.2 124.6	33 07.7 +54.1 123.5	32 42.6 +53.9 122.5	32 17.1 +53.9 121.5	31 51.4 +53.7 120.4
15°	34 26.8 +54.2 124.1	34 01.8 +54.0 123.0	33 36.5 +53.9 122.0	33 11.0 +53.6 120.9	32 45.1 +53.5 119.9
16°	35 21.0 +54.0 123.6	34 55.8 +53.9 122.5	34 30.4 +53.7 121.4	34 04.6 +53.6 120.4	33 38.6 +53.4 119.4
17°	36 15.0 +53.8 123.0	35 49.7 +53.7 122.0	35 24.1 +53.5 120.9	34 58.2 +53.4 119.9	34 32.0 +53.3 118.8
18°	37 08.8 +53.7 122.5	36 43.4 +53.5 121.4	36 17.6 +53.4 120.3	35 51.6 +53.2 119.3	35 25.3 +53.1 118.3
19°	38 02.5 +53.6 121.9	37 36.9 +53.4 120.8	37 11.0 +53.2 119.8	36 44.8 +53.1 118.7	36 18.4 +52.9 117.7
20°	38 56.1 +53.3 121.3	38 30.3 +53.2 120.3	38 04.2 +53.1 119.2	37 37.9 +52.9 118.1	37 11.3 +52.8 117.1
21°	39 49.4 +53.2 120.7	39 23.5 +53.0 119.7	38 57.3 +52.8 118.6	38 30.8 +52.7 117.5	38 04.1 +52.5 116.5
22°	40 42.6 +53.0 120.1	40 16.5 +52.8 119.1	39 50.1 +52.7 118.0	39 23.5 +52.5 116.9	38 56.6 +52.4 115.9
23°	41 35.6 +52.7 119.5	41 09.3 +52.6 118.4	40 42.8 +52.4 117.4	40 16.0 +52.3 116.3	39 49.0 +52.2 115.2
24°	42 28.3 +52.6 118.9	42 01.9 +52.4 117.8	41 35.2 +52.3 116.7	41 08.3 +52.1 115.7	40 41.2 +51.9 114.6
25°	43 20.9 +52.3 118.2	42 54.3 +52.2 117.1	42 27.5 +52.0 116.0	42 00.4 +51.8 115.0	41 33.1 +51.7 113.9
26°	44 13.2 +52.0 117.5	43 46.5 +51.9 116.4	43 19.5 +51.7 115.4	42 52.2 +51.6 114.3	42 24.8 +51.4 113.3
27°	45 05.2 +51.8 116.8	44 38.4 +51.6 115.7	44 11.2 +51.5 114.7	43 43.8 +51.4 113.6	43 16.2 +51.2 112.6
28°	45 57.0 +51.6 116.1	45 30.0 +51.3 115.0	45 02.7 +51.2 113.9	44 35.2 +51.0 112.9	44 07.4 +50.9 111.8
29°	46 48.6 +51.2 115.4	46 21.3 +51.1 114.3	45 53.9 +50.9 113.2	45 26.2 +50.7 112.1	44 58.3 +50.6 111.1

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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°	18 44.8 +54.9 126.0	18 20.4 +54.7 125.0	17 55.7 +54.6 124.1	17 30.7 +54.5 123.1	17 05.5 +54.3 122.2
1°	19 39.7 +54.8 125.6	19 15.1 +54.7 124.6	18 50.3 +54.5 123.6	18 25.2 +54.4 122.7	17 59.8 +54.3 121.7
2°	20 34.5 +54.7 125.1	20 09.8 +54.6 124.2	19 44.8 +54.5 123.2	19 19.6 +54.3 122.2	18 54.1 +54.2 121.3
3°	21 29.2 +54.6 124.7	21 04.4 +54.5 123.7	20 39.3 +54.4 122.8	20 13.9 +54.3 121.8	19 48.3 +54.1 120.8
4°	22 23.8 +54.6 124.3	21 58.9 +54.4 123.3	21 33.7 +54.3 122.3	21 08.2 +54.2 121.3	20 42.4 +54.1 120.4
5°	23 18.4 +54.5 123.8	22 53.3 +54.4 122.8	22 28.0 +54.2 121.8	22 02.4 +54.1 120.9	21 36.5 +54.0 119.9
6°	24 12.9 +54.4 123.3	23 47.7 +54.3 122.4	23 22.2 +54.2 121.4	22 56.5 +54.0 120.4	22 30.5 +53.9 119.4
7°	25 07.3 +54.3 122.9	24 42.0 +54.2 121.9	24 16.4 +54.0 120.9	23 50.5 +53.9 119.9	23 24.4 +53.8 119.0
8°	26 01.6 +54.2 122.4	25 36.2 +54.0 121.4	25 10.4 +54.0 120.4	24 44.4 +53.9 119.4	24 18.2 +53.7 118.5
9°	26 55.8 +54.2 121.9	26 30.2 +54.0 120.9	26 04.4 +53.9 119.9	25 38.3 +53.7 119.0	25 11.9 +53.6 118.0
10°	27 50.0 +54.0 121.4	27 24.2 +53.9 120.4	26 58.3 +53.7 119.5	26 32.0 +53.6 118.5	26 05.5 +53.5 117.5
11°	28 44.0 +53.9 121.0	28 18.1 +53.8 120.0	27 52.0 +53.7 119.0	27 25.6 +53.6 118.0	26 59.0 +53.4 117.0
12°	29 37.9 +53.8 120.5	29 11.9 +53.7 119.4	28 45.7 +53.5 118.4	28 19.2 +53.4 117.5	27 52.4 +53.3 116.5
13°	30 31.7 +53.7 119.9	30 05.6 +53.5 118.9	29 39.2 +53.4 117.9	29 12.6 +53.3 116.9	28 45.7 +53.2 115.9
14°	31 25.4 +53.6 119.4	30 59.1 +53.5 118.4	30 32.6 +53.3 117.4	30 05.9 +53.1 116.4	29 38.9 +53.0 115.4
15°	32 19.0 +53.4 118.9	31 52.6 +53.2 117.9	31 25.9 +53.2 116.9	30 59.0 +53.1 115.9	30 31.9 +52.9 114.9
16°	33 12.4 +53.2 118.3	32 45.8 +53.2 117.3	32 19.1 +53.0 116.3	31 52.1 +52.8 115.3	31 24.8 +52.8 114.3
17°	34 05.6 +53.2 117.8	33 39.0 +53.0 116.8	33 12.1 +52.8 115.8	32 44.9 +52.8 114.8	32 17.6 +52.6 113.8
18°	34 58.8 +52.9 117.2	34 32.0 +52.8 116.2	34 04.9 +52.7 115.2	33 37.7 +52.5 114.2	33 10.2 +52.4 113.2
19°	35 51.7 +52.8 116.7	35 24.8 +52.6 115.6	34 57.6 +52.5 114.6	34 30.2 +52.4 113.6	34 02.6 +52.3 112.6
20°	36 44.5 +52.6 116.1	36 17.4 +52.5 115.0	35 50.1 +52.4 114.0	35 22.6 +52.3 113.0	34 54.9 +52.1 112.0
21°	37 37.1 +52.4 115.5	37 09.9 +52.3 114.4	36 42.5 +52.2 113.4	36 14.9 +52.0 112.4	35 47.0 +51.9 111.4
22°	38 29.5 +52.3 114.8	38 02.2 +52.1 113.8	37 34.7 +51.9 112.8	37 06.9 +51.8 111.8	36 38.9 +51.8 110.8
23°	39 21.8 +52.0 114.2	38 54.3 +51.9 113.2	38 26.6 +51.8 112.2	37 58.7 +51.7 111.1	37 30.7 +51.5 110.1
24°	40 13.8 +51.8 113.6	39 46.2 +51.6 112.5	39 18.4 +51.5 111.5	38 50.4 +51.4 110.5	38 22.2 +51.2 109.5
25°	41 05.6 +51.5 112.9	40 37.8 +51.4 111.9	40 09.9 +51.3 110.8	39 41.8 +51.1 109.8	39 13.4 +51.1 108.8
26°	41 57.1 +51.3 112.2	41 29.2 +51.2 111.2	41 01.2 +51.0 110.2	40 32.9 +50.9 109.1	40 04.5 +50.8 108.1
27°	42 48.4 +51.1 111.5	42 20.4 +50.9 110.5	41 52.2 +50.8 109.5	41 23.8 +50.7 108.4	40 55.3 +50.5 107.4
28°	43 39.5 +50.7 110.8	43 11.3 +50.6 109.8	42 43.0 +50.5 108.7	42 14.5 +50.4 107.7	41 45.8 +50.3 106.7
29°	44 30.2 +50.5 110.0	44 01.9 +50.4 109.0	43 33.5 +50.2 108.0	43 04.9 +50.1 107.0	42 36.1 +50.0 106.0

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°	16 39.9 +54.3 121.2	16 14.2 +54.1 120.3	15 48.1 +54.0 119.4	15 21.9 +53.8 118.4	14 55.4 +53.7 117.5
1°	17 34.2 +54.1 120.8	17 08.3 +54.0 119.8	16 42.1 +53.9 118.9	16 15.7 +53.8 118.0	15 49.1 +53.7 117.0
2°	18 28.3 +54.1 120.3	18 02.3 +54.0 119.4	17 36.0 +53.9 118.4	17 09.5 +53.8 117.5	16 42.8 +53.6 116.6
3°	19 22.4 +54.0 119.9	18 56.3 +53.8 118.9	18 29.9 +53.8 118.0	18 03.3 +53.6 117.0	17 36.4 +53.6 116.1
4°	20 16.4 +53.9 119.4	19 50.1 +53.9 118.5	19 23.7 +53.7 117.5	18 56.9 +53.6 116.6	18 30.0 +53.5 115.6
5°	21 10.3 +53.9 118.9	20 44.0 +53.7 118.0	20 17.4 +53.6 117.0	19 50.5 +53.5 116.1	19 23.5 +53.4 115.1
6°	22 04.2 +53.8 118.5	21 37.7 +53.7 117.5	21 11.0 +53.5 116.6	20 44.0 +53.5 115.6	20 16.9 +53.3 114.7
7°	22 58.0 +53.7 118.0	22 31.4 +53.6 117.0	22 04.5 +53.5 116.1	21 37.5 +53.3 115.1	21 10.2 +53.3 114.2
8°	23 51.7 +53.6 117.5	23 25.0 +53.4 116.5	22 58.0 +53.4 115.6	22 30.8 +53.3 114.6	22 03.5 +53.1 113.7
9°	24 45.3 +53.5 117.0	24 18.4 +53.4 116.0	23 51.4 +53.2 115.1	23 24.1 +53.2 114.1	22 56.6 +53.1 113.2
10°	25 38.8 +53.4 116.5	25 11.8 +53.3 115.5	24 44.6 +53.2 114.6	24 17.3 +53.0 113.6	23 49.7 +52.9 112.7
11°	26 32.2 +53.3 116.0	26 05.1 +53.2 115.0	25 37.8 +53.1 114.1	25 10.3 +53.0 113.1	24 42.6 +52.9 112.1
12°	27 25.5 +53.1 115.5	26 58.3 +53.0 114.5	26 30.9 +52.9 113.5	26 03.3 +52.8 112.6	25 35.5 +52.7 111.6
13°	28 18.6 +53.1 115.0	27 51.3 +53.0 114.0	27 23.8 +52.8 113.0	26 56.1 +52.7 112.0	26 28.2 +52.6 111.1
14°	29 11.7 +52.9 114.4	28 44.3 +52.8 113.4	28 16.6 +52.7 112.5	27 48.8 +52.6 111.5	27 20.8 +52.5 110.6
15°	30 04.6 +52.8 113.9	29 37.1 +52.6 112.9	29 09.3 +52.6 111.9	28 41.4 +52.5 111.0	28 13.3 +52.4 110.0
16°	30 57.4 +52.6 113.3	30 29.7 +52.6 112.4	30 01.9 +52.4 111.4	29 33.9 +52.3 110.4	29 05.7 +52.2 109.4
17°	31 50.0 +52.5 112.8	31 22.3 +52.4 111.8	30 54.3 +52.3 110.8	30 26.2 +52.2 109.8	29 57.9 +52.1 108.9
18°	32 42.5 +52.4 112.2	32 14.7 +52.2 111.2	31 46.6 +52.1 110.2	31 18.4 +52.0 109.3	30 50.0 +51.9 108.3
19°	33 34.9 +52.1 111.6	33 06.9 +52.0 110.6	32 38.7 +52.0 109.7	32 10.4 +51.8 108.7	31 41.9 +51.7 107.7
20°	34 27.0 +52.0 111.0	33 58.9 +51.9 110.0	33 30.7 +51.7 109.1	33 02.2 +51.7 108.1	32 33.6 +51.6 107.1
21°	35 19.0 +51.8 110.4	34 50.8 +51.7 109.4	34 22.4 +51.6 108.4	33 53.9 +51.5 107.5	33 25.2 +51.4 106.5
22°	36 10.8 +51.6 109.8	35 42.5 +51.5 108.8	35 14.0 +51.4 107.8	34 45.4 +51.3 106.9	34 16.6 +51.2 105.9
23°	37 02.4 +51.4 109.2	36 34.0 +51.3 108.2	36 05.4 +51.2 107.2	35 36.7 +51.1 106.2	35 07.8 +51.0 105.3
24°	37 53.8 +51.2 108.5	37 25.3 +51.0 107.5	36 56.6 +50.9 106.5	36 27.8 +50.8 105.6	35 58.8 +50.8 104.6
25°	38 45.0 +50.9 107.8	38 16.3 +50.9 106.9	37 47.5 +50.8 105.9	37 18.6 +50.7 104.9	36 49.6 +50.5 103.9
26°	39 35.9 +50.7 107.2	39 07.2 +50.6 106.2	38 38.3 +50.5 105.2	38 09.3 +50.4 104.2	37 40.1 +50.4 103.3
27°	40 26.6 +50.4 106.5	39 57.8 +50.3 105.5	39 28.8 +50.2 104.5	38 59.7 +50.1 103.5	38 30.5 +50.0 102.6
28°	41 17.0 +50.2 105.7	40 48.1 +50.1 104.8	40 19.0 +50.0 103.8	39 49.8 +49.9 102.8	39 20.5 +49.8 101.9
29°	42 07.2 +49.9 105.0	41 38.2 +49.7 104.0	41 09.0 +49.7 103.1	40 39.7 +49.6 102.1	40 10.3 +49.6 101.1

Declination SAME name as Latitude

Latitude 60°

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°	14 28.7 +53.6 116.6	14 01.7 +53.5 115.6	13 34.6 +53.4 114.7	13 07.2 +53.3 113.8	12 39.7 +53.2 112.9
1°	15 22.3 +53.6 116.1	14 55.2 +53.5 115.2	14 28.0 +53.4 114.3	14 00.5 +53.3 113.3	13 32.9 +53.2 112.4
2°	16 15.9 +53.5 115.6	15 48.7 +53.4 114.7	15 21.4 +53.3 113.8	14 53.8 +53.2 112.9	14 26.1 +53.1 111.9
3°	17 09.4 +53.4 115.2	16 42.1 +53.4 114.2	16 14.7 +53.2 113.3	15 47.0 +53.2 112.4	15 19.2 +53.1 111.5
4°	18 02.8 +53.4 114.7	17 35.5 +53.3 113.8	17 07.9 +53.2 112.8	16 40.2 +53.1 111.9	16 12.3 +52.9 111.0
5°	18 56.2 +53.3 114.2	18 28.8 +53.2 113.3	18 01.1 +53.1 112.3	17 33.3 +53.0 111.4	17 05.2 +53.0 110.5
6°	19 49.5 +53.2 113.7	19 22.0 +53.1 112.8	18 54.2 +53.0 111.8	18 26.3 +52.9 110.9	17 58.2 +52.8 110.0
7°	20 42.7 +53.2 113.2	20 15.1 +53.0 112.3	19 47.2 +53.0 111.4	19 19.2 +52.9 110.4	18 51.0 +52.8 109.5
8°	21 35.9 +53.0 112.7	21 08.1 +53.0 111.8	20 40.2 +52.8 110.9	20 12.1 +52.7 109.9	19 43.8 +52.6 109.0
9°	22 28.9 +53.0 112.2	22 01.1 +52.8 111.3	21 33.0 +52.8 110.3	21 04.8 +52.7 109.4	20 36.4 +52.6 108.5
10°	23 21.9 +52.8 111.7	22 53.9 +52.8 110.8	22 25.8 +52.7 109.8	21 57.5 +52.6 108.9	21 29.0 +52.5 108.0
11°	24 14.7 +52.8 111.2	23 46.7 +52.6 110.3	23 18.5 +52.5 109.3	22 50.1 +52.4 108.4	22 21.5 +52.4 107.4
12°	25 07.5 +52.6 110.7	24 39.3 +52.6 109.7	24 11.0 +52.5 108.8	23 42.5 +52.4 107.8	23 13.9 +52.3 106.9
13°	26 00.1 +52.5 110.1	25 31.9 +52.4 109.2	25 03.5 +52.3 108.2	24 34.9 +52.3 107.3	24 06.2 +52.2 106.4
14°	26 52.6 +52.4 109.6	26 24.3 +52.3 108.7	25 55.8 +52.2 107.7	25 27.2 +52.1 106.8	24 58.4 +52.0 105.8
15°	27 45.0 +52.3 109.0	27 16.6 +52.2 108.1	26 48.0 +52.1 107.2	26 19.3 +52.0 106.2	25 50.4 +51.9 105.3
16°	28 37.3 +52.1 108.5	28 08.8 +52.0 107.5	27 40.1 +51.9 106.6	27 11.3 +51.8 105.7	26 42.3 +51.8 104.7
17°	29 29.4 +52.0 107.9	29 00.8 +51.9 107.0	28 32.0 +51.8 106.0	28 03.1 +51.8 105.1	27 34.1 +51.7 104.2
18°	30 21.4 +51.8 107.3	29 52.7 +51.7 106.4	29 23.8 +51.7 105.5	28 54.9 +51.5 104.5	28 25.8 +51.5 103.6
19°	31 13.2 +51.7 106.8	30 44.4 +51.6 105.8	30 15.5 +51.5 104.9	29 46.4 +51.4 103.9	29 17.3 +51.3 103.0
20°	32 04.9 +51.5 106.2	31 36.0 +51.4 105.2	31 07.0 +51.3 104.3	30 37.8 +51.3 103.3	30 08.6 +51.2 102.4
21°	32 56.4 +51.3 105.6	32 27.4 +51.2 104.6	31 58.3 +51.1 103.7	31 29.1 +51.1 102.7	30 59.8 +51.0 101.8
22°	33 47.7 +51.1 104.9	33 18.6 +51.1 104.0	32 49.4 +51.0 103.0	32 20.2 +50.9 102.1	31 50.8 +50.8 101.2
23°	34 38.8 +50.9 104.3	34 09.7 +50.8 103.4	33 40.4 +50.8 102.4	33 11.1 +50.6 101.5	32 41.6 +50.6 100.6
24°	35 29.7 +50.7 103.7	35 00.5 +50.6 102.7	34 31.2 +50.5 101.8	34 01.7 +50.5 100.8	33 32.2 +50.5 99.9
25°	36 20.4 +50.5 103.0	35 51.1 +50.4 102.0	35 21.7 +50.4 101.1	34 52.2 +50.3 100.2	34 22.7 +50.2 99.3
26°	37 10.9 +50.2 102.3	36 41.5 +50.2 101.4	36 12.1 +50.1 100.4	35 42.5 +50.1 99.5	35 12.9 +50.0 98.6
27°	38 01.1 +50.0 101.6	37 31.7 +49.9 100.7	37 02.2 +49.8 99.8	36 32.6 +49.8 98.8	36 02.9 +49.7 97.9
28°	38 51.1 +49.8 100.9	38 21.6 +49.7 100.0	37 52.0 +49.6 99.1	37 22.4 +49.5 98.1	36 52.6 +49.5 97.2
29°	39 40.9 +49.4 100.2	39 11.3 +49.4 99.3	38 41.6 +49.4 98.3	38 11.9 +49.3 97.4	37 42.1 +49.3 96.5

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°	12 11.9 +53.2 112.0	11 44.0 +53.1 111.1	11 16.0 +52.9 110.2	10 47.7 +52.9 109.3	10 19.3 +52.8 108.4
1°	13 05.1 +53.1 111.5	12 37.1 +53.0 110.6	12 08.9 +52.9 109.7	11 40.6 +52.8 108.8	11 12.1 +52.8 107.9
2°	13 58.2 +53.0 111.0	13 30.1 +52.9 110.1	13 01.8 +52.9 109.2	12 33.4 +52.8 108.3	12 04.9 +52.7 107.4
3°	14 51.2 +53.0 110.6	14 23.0 +52.9 109.6	13 54.7 +52.8 108.7	13 26.2 +52.7 107.8	12 57.6 +52.6 106.9
4°	15 44.2 +52.9 110.1	15 15.9 +52.8 109.2	14 47.5 +52.7 108.2	14 18.9 +52.7 107.3	13 50.2 +52.6 106.4
5°	16 37.1 +52.8 109.6	16 08.7 +52.8 108.7	15 40.2 +52.7 107.7	15 11.6 +52.6 106.8	14 42.8 +52.5 105.9
6°	17 29.9 +52.7 109.1	17 01.5 +52.6 108.2	16 32.9 +52.6 107.3	16 04.2 +52.5 106.3	15 35.3 +52.5 105.4
7°	18 22.6 +52.7 108.6	17 54.1 +52.6 107.7	17 25.5 +52.5 106.7	16 56.7 +52.4 105.8	16 27.8 +52.3 104.9
8°	19 15.3 +52.6 108.1	18 46.7 +52.5 107.2	18 18.0 +52.4 106.2	17 49.1 +52.4 105.3	17 20.1 +52.3 104.4
9°	20 07.9 +52.5 107.6	19 39.2 +52.5 106.6	19 10.4 +52.4 105.7	18 41.5 +52.3 104.8	18 12.4 +52.2 103.9
10°	21 00.4 +52.4 107.0	20 31.7 +52.3 106.1	20 02.8 +52.2 105.2	19 33.8 +52.2 104.3	19 04.6 +52.2 103.4
11°	21 52.8 +52.3 106.5	21 24.0 +52.2 105.6	20 55.0 +52.2 104.7	20 26.0 +52.1 103.8	19 56.8 +52.0 102.9
12°	22 45.1 +52.2 106.0	22 16.2 +52.2 105.1	21 47.2 +52.1 104.2	21 18.1 +52.0 103.2	20 48.8 +51.9 102.3
13°	23 37.3 +52.1 105.5	23 08.4 +52.0 104.5	22 39.3 +51.9 103.6	22 10.1 +51.8 102.7	21 40.7 +51.9 101.8
14°	24 29.4 +52.0 104.9	24 00.4 +51.9 104.0	23 31.2 +51.8 103.1	23 01.9 +51.8 102.2	22 32.6 +51.7 101.2
15°	25 21.4 +51.9 104.4	24 52.3 +51.8 103.4	24 23.0 +51.8 102.5	23 53.7 +51.7 101.6	23 24.3 +51.6 100.7
16°	26 13.3 +51.7 103.8	25 44.1 +51.6 102.9	25 14.8 +51.5 102.0	24 45.4 +51.5 101.0	24 15.9 +51.5 100.1
17°	27 05.0 +51.5 103.2	26 35.7 +51.5 102.3	26 06.3 +51.5 101.4	25 36.9 +51.4 100.5	25 07.4 +51.3 99.6
18°	27 56.5 +51.5 102.7	27 27.2 +51.4 101.7	26 57.8 +51.3 100.8	26 28.3 +51.2 99.9	25 58.7 +51.2 99.0
19°	28 48.0 +51.3 102.1	28 18.6 +51.2 101.2	27 49.1 +51.2 100.2	27 19.5 +51.2 99.3	26 49.9 +51.1 98.4
20°	29 39.3 +51.1 101.5	29 09.8 +51.1 100.6	28 40.3 +51.0 99.6	28 10.7 +50.9 98.7	27 41.0 +50.9 97.8
21°	30 30.4 +50.9 100.9	30 00.9 +50.8 100.0	29 31.3 +50.8 99.0	29 01.6 +50.8 98.1	28 31.9 +50.7 97.2
22°	31 21.3 +50.8 100.3	30 51.7 +50.8 99.3	30 22.1 +50.7 98.4	29 52.4 +50.6 97.5	29 22.6 +50.6 96.6
23°	32 12.1 +50.5 99.6	31 42.5 +50.5 98.7	31 12.8 +50.4 97.8	30 43.0 +50.5 96.9	30 13.2 +50.4 96.0
24°	33 02.6 +50.4 99.0	32 33.0 +50.3 98.1	32 03.2 +50.3 97.2	31 33.5 +50.2 96.3	31 03.6 +50.2 95.4
25°	33 53.0 +50.2 98.3	33 23.3 +50.1 97.4	32 53.5 +50.1 96.5	32 23.7 +50.0 95.6	31 53.8 +50.0 94.7
26°	34 43.2 +49.9 97.7	34 13.4 +49.9 96.8	33 43.6 +49.9 95.9	33 13.7 +49.9 95.0	32 43.8 +49.8 94.1
27°	35 33.1 +49.7 97.0	35 03.3 +49.7 96.1	34 33.5 +49.6 95.2	34 03.6 +49.6 94.3	33 33.6 +49.6 93.4
28°	36 22.8 +49.5 96.3	35 53.0 +49.4 95.4	35 23.1 +49.4 94.5	34 53.2 +49.4 93.6	34 23.2 +49.4 92.7
29°	37 12.3 +49.2 95.6	36 42.4 +49.2 94.7	36 12.5 +49.2 93.8	35 42.6 +49.1 92.9	35 12.6 +49.1 92.0

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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°	9 50.8 +52.7 107.5	9 22.1 +52.7 106.6	8 53.3 +52.6 105.7	8 24.4 +52.5 104.8	7 55.3 +52.4 103.9
1°	10 43.5 +52.7 107.0	10 14.8 +52.6 106.1	9 45.9 +52.5 105.2	9 16.9 +52.4 104.3	8 47.7 +52.4 103.5
2°	11 36.2 +52.6 106.5	11 07.4 +52.5 105.6	10 38.4 +52.5 104.7	10 09.3 +52.5 103.8	9 40.1 +52.4 103.0
3°	12 28.8 +52.6 106.0	11 59.9 +52.5 105.1	11 30.9 +52.4 104.2	11 01.8 +52.3 103.4	10 32.5 +52.3 102.5
4°	13 21.4 +52.5 105.5	12 52.4 +52.5 104.6	12 23.3 +52.4 103.7	11 54.1 +52.3 102.9	11 24.8 +52.3 102.0
5°	14 13.9 +52.4 105.0	13 44.9 +52.3 104.1	13 15.7 +52.3 103.2	12 46.4 +52.3 102.4	12 17.1 +52.2 101.5
6°	15 06.3 +52.4 104.5	14 37.2 +52.4 103.6	14 08.0 +52.3 102.7	13 38.7 +52.2 101.8	13 09.3 +52.2 101.0
7°	15 58.7 +52.3 104.0	15 29.6 +52.2 103.1	15 00.3 +52.2 102.2	14 30.9 +52.2 101.3	14 01.5 +52.0 100.5
8°	16 51.0 +52.3 103.5	16 21.8 +52.2 102.6	15 52.5 +52.1 101.7	15 23.1 +52.0 100.8	14 53.5 +52.1 99.9
9°	17 43.3 +52.1 103.0	17 14.0 +52.1 102.1	16 44.6 +52.0 101.2	16 15.1 +52.0 100.3	15 45.6 +51.9 99.4
10°	18 35.4 +52.1 102.5	18 06.1 +52.0 101.6	17 36.6 +52.0 100.7	17 07.1 +51.9 99.8	16 37.5 +51.9 98.9
11°	19 27.5 +51.9 102.0	18 58.1 +51.9 101.1	18 28.6 +51.9 100.2	17 59.0 +51.8 99.3	17 29.4 +51.8 98.4
12°	20 19.4 +51.9 101.4	19 50.0 +51.8 100.5	19 20.5 +51.7 99.6	18 50.8 +51.8 98.7	18 21.2 +51.6 97.8
13°	21 11.3 +51.8 100.9	20 41.8 +51.7 100.0	20 12.2 +51.7 99.1	19 42.6 +51.6 98.2	19 12.8 +51.6 97.3
14°	22 03.1 +51.7 100.3	21 33.5 +51.7 99.4	21 03.9 +51.6 98.5	20 34.2 +51.5 97.7	20 04.4 +51.5 96.8
15°	22 54.8 +51.5 99.8	22 25.2 +51.5 98.9	21 55.5 +51.4 98.0	21 25.7 +51.5 97.1	20 55.9 +51.4 96.2
16°	23 46.3 +51.4 99.2	23 16.7 +51.3 98.3	22 46.9 +51.4 97.4	22 17.2 +51.3 96.6	21 47.3 +51.3 95.7
17°	24 37.7 +51.3 98.7	24 08.0 +51.3 97.8	23 38.3 +51.2 96.9	23 08.5 +51.2 96.0	22 38.6 +51.2 95.1
18°	25 29.0 +51.2 98.1	24 59.3 +51.1 97.2	24 29.5 +51.1 96.3	23 59.7 +51.0 95.4	23 29.8 +51.0 94.5
19°	26 20.2 +51.0 97.5	25 50.4 +51.0 96.6	25 20.6 +51.0 95.7	24 50.7 +51.0 94.8	24 20.8 +50.9 94.0
20°	27 11.2 +50.9 96.9	26 41.4 +50.8 96.0	26 11.6 +50.8 95.1	25 41.7 +50.7 94.3	25 11.7 +50.8 93.4
21°	28 02.1 +50.7 96.3	27 32.2 +50.7 95.4	27 02.4 +50.6 94.5	26 32.4 +50.7 93.7	26 02.5 +50.6 92.8
22°	28 52.8 +50.5 95.7	28 22.9 +50.5 94.8	27 53.0 +50.5 93.9	27 23.1 +50.4 93.1	26 53.1 +50.5 92.2
23°	29 43.3 +50.4 95.1	29 13.4 +50.4 94.2	28 43.5 +50.3 93.3	28 13.5 +50.4 92.5	27 43.6 +50.3 91.6
24°	30 33.7 +50.2 94.5	30 03.8 +50.2 93.6	29 33.8 +50.2 92.7	29 03.9 +50.1 91.8	28 33.9 +50.1 91.0
25°	31 23.9 +50.0 93.8	30 54.0 +49.9 93.0	30 24.0 +49.9 92.1	29 54.0 +50.0 91.2	29 24.0 +50.0 90.3
26°	32 13.9 +49.8 93.2	31 43.9 +49.8 92.3	31 13.9 +49.8 91.4	30 44.0 +49.7 90.6	30 14.0 +49.7 89.7
27°	33 03.7 +49.6 92.5	32 33.7 +49.6 91.6	32 03.7 +49.6 90.8	31 33.7 +49.6 89.9	31 03.7 +49.6 89.0
28°	33 53.3 +49.3 91.8	33 23.3 +49.3 91.0	32 53.3 +49.3 90.1	32 23.3 +49.3 89.2	31 53.3 +49.3 88.4
29°	34 42.6 +49.1 91.2	34 12.6 +49.1 90.3	33 42.6 +49.1 89.4	33 12.6 +49.1 88.6	32 42.6 +49.2 87.7

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°	7 26.1 +52.4 103.1	6 56.9 +52.3 102.2	6 27.5 +52.3 101.3	5 58.0 +52.3 100.4	5 28.5 +52.2 99.6
1°	8 18.5 +52.4 102.6	7 49.2 +52.3 101.7	7 19.8 +52.2 100.8	6 50.3 +52.2 99.9	6 20.7 +52.1 99.1
2°	9 10.9 +52.3 102.1	8 41.5 +52.2 101.2	8 12.0 +52.2 100.3	7 42.5 +52.1 99.4	7 12.8 +52.1 98.6
3°	10 03.2 +52.2 101.6	9 33.7 +52.3 100.7	9 04.2 +52.2 99.8	8 34.6 +52.1 98.9	8 04.9 +52.1 98.1
4°	10 55.4 +52.2 101.1	10 26.0 +52.1 100.2	9 56.4 +52.1 99.3	9 26.7 +52.1 98.4	8 57.0 +52.1 97.6
5°	11 47.6 +52.2 100.6	11 18.1 +52.1 99.7	10 48.5 +52.1 98.8	10 18.8 +52.1 97.9	9 49.1 +52.0 97.1
6°	12 39.8 +52.1 100.1	12 10.2 +52.1 99.2	11 40.6 +52.0 98.3	11 10.9 +52.0 97.4	10 41.1 +51.9 96.5
7°	13 31.9 +52.1 99.6	13 02.3 +52.0 98.7	12 32.6 +52.0 97.8	12 02.9 +51.9 96.9	11 33.0 +51.9 96.0
8°	14 24.0 +51.9 99.1	13 54.3 +51.9 98.2	13 24.6 +51.9 97.3	12 54.8 +51.9 96.4	12 24.9 +51.9 95.5
9°	15 15.9 +51.9 98.5	14 46.2 +51.9 97.6	14 16.5 +51.8 96.8	13 46.7 +51.8 95.9	13 16.8 +51.8 95.0
10°	16 07.8 +51.9 98.0	15 38.1 +51.8 97.1	15 08.3 +51.8 96.2	14 38.5 +51.7 95.4	14 08.6 +51.7 94.5
11°	16 59.7 +51.7 97.5	16 29.9 +51.7 96.6	16 00.1 +51.6 95.7	15 30.2 +51.6 94.8	15 00.3 +51.6 94.0
12°	17 51.4 +51.7 97.0	17 21.6 +51.6 96.1	16 51.7 +51.6 95.2	16 21.8 +51.6 94.3	15 51.9 +51.6 93.4
13°	18 43.1 +51.5 96.4	18 13.2 +51.6 95.5	17 43.3 +51.6 94.7	17 13.4 +51.5 93.8	16 43.5 +51.5 92.9
14°	19 34.6 +51.5 95.9	19 04.8 +51.4 95.0	18 34.9 +51.4 94.1	18 04.9 +51.4 93.2	17 35.0 +51.3 92.4
15°	20 26.1 +51.4 95.3	19 56.2 +51.3 94.5	19 26.3 +51.3 93.6	18 56.3 +51.3 92.7	18 26.3 +51.3 91.8
16°	21 17.5 +51.2 94.8	20 47.5 +51.3 93.9	20 17.6 +51.2 93.0	19 47.6 +51.2 92.1	19 17.6 +51.2 91.3
17°	22 08.7 +51.2 94.2	21 38.8 +51.1 93.3	21 08.8 +51.1 92.5	20 38.8 +51.1 91.6	20 08.8 +51.1 90.7
18°	22 59.9 +51.0 93.7	22 29.9 +51.0 92.8	21 59.9 +51.0 91.9	21 29.9 +51.0 91.0	20 59.9 +51.0 90.2
19°	23 50.9 +50.9 93.1	23 20.9 +50.9 92.2	22 50.9 +50.9 91.3	22 20.9 +50.9 90.5	21 50.9 +50.9 89.6
20°	24 41.8 +50.7 92.5	24 11.8 +50.7 91.6	23 41.8 +50.7 90.8	23 11.8 +50.7 89.9	22 41.8 +50.7 89.0
21°	25 32.5 +50.6 91.9	25 02.5 +50.6 91.0	24 32.5 +50.6 90.2	24 02.5 +50.6 89.3	23 32.5 +50.6 88.4
22°	26 23.1 +50.5 91.3	25 53.1 +50.5 90.4	25 23.1 +50.5 89.6	24 53.1 +50.5 88.7	24 23.1 +50.5 87.9
23°	27 13.6 +50.3 90.7	26 43.6 +50.3 89.8	26 13.6 +50.3 89.0	25 43.6 +50.3 88.1	25 13.6 +50.3 87.3
24°	28 03.9 +50.1 90.1	27 33.9 +50.1 89.2	27 03.9 +50.1 88.4	26 33.9 +50.2 87.5	26 03.9 +50.2 86.7
25°	28 54.0 +50.0 89.5	28 24.0 +50.0 88.6	27 54.0 +50.0 87.7	27 24.1 +49.9 86.9	26 54.1 +50.0 86.0
26°	29 44.0 +49.7 88.8	29 14.0 +49.7 88.0	28 44.0 +49.8 87.1	28 14.0 +49.9 86.3	27 44.1 +49.9 85.4
27°	30 33.7 +49.6 88.2	30 03.7 +49.6 87.3	29 33.8 +49.6 86.5	29 03.9 +49.6 85.6	28 34.0 +49.6 84.8
28°	31 23.3 +49.4 87.5	30 53.3 +49.4 86.7	30 23.4 +49.4 85.8	29 53.5 +49.4 85.0	29 23.6 +49.5 84.1
29°	32 12.7 +49.1 86.9	31 42.7 +49.2 86.0	31 12.8 +49.2 85.2	30 42.9 +49.3 84.3	30 13.1 +49.3 83.5

Declination SAME name as Latitude

Latitude 60°

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°	4 58.9 +52.1 98.7	4 29.2 +52.1 97.8	3 59.4 +52.1 96.9	3 29.6 +52.1 96.1	2 59.8 +52.0 95.2
1°	5 51.0 +52.1 98.2	5 21.3 +52.1 97.3	4 51.5 +52.0 96.4	4 21.7 +52.0 95.6	3 51.8 +52.0 94.7
2°	6 43.1 +52.1 97.7	6 13.4 +52.0 96.8	5 43.5 +52.1 95.9	5 13.7 +52.0 95.1	4 43.8 +52.0 94.2
3°	7 35.2 +52.1 97.2	7 05.4 +52.0 96.3	6 35.6 +52.0 95.4	6 05.7 +52.0 94.6	5 35.8 +51.9 93.7
4°	8 27.3 +52.0 96.7	7 57.4 +52.0 95.8	7 27.6 +51.9 94.9	6 57.7 +51.9 94.1	6 27.7 +52.0 93.2
5°	9 19.3 +52.0 96.2	8 49.4 +52.0 95.3	8 19.5 +52.0 94.4	7 49.6 +51.9 93.6	7 19.7 +51.9 92.7
6°	10 11.3 +51.9 95.7	9 41.4 +51.9 94.8	9 11.5 +51.9 93.9	8 41.5 +51.9 93.1	8 11.6 +51.8 92.2
7°	11 03.2 +51.9 95.2	10 33.3 +51.8 94.3	10 03.4 +51.8 93.4	9 33.4 +51.8 92.5	9 03.4 +51.8 91.7
8°	11 55.1 +51.8 94.7	11 25.1 +51.8 93.8	10 55.2 +51.8 92.9	10 25.2 +51.8 92.0	9 55.2 +51.8 91.2
9°	12 46.9 +51.7 94.1	12 16.9 +51.8 93.3	11 47.0 +51.7 92.4	11 17.0 +51.7 91.5	10 47.0 +51.7 90.7
10°	13 38.6 +51.7 93.6	13 08.7 +51.7 92.7	12 38.7 +51.7 91.9	12 08.7 +51.7 91.0	11 38.7 +51.7 90.1
11°	14 30.3 +51.7 93.1	14 00.4 +51.6 92.2	13 30.4 +51.6 91.4	13 00.4 +51.6 90.5	12 30.4 +51.6 89.6
12°	15 22.0 +51.5 92.6	14 52.0 +51.5 91.7	14 22.0 +51.5 90.8	13 52.0 +51.5 90.0	13 22.0 +51.5 89.1
13°	16 13.5 +51.5 92.0	15 43.5 +51.5 91.2	15 13.5 +51.5 90.3	14 43.5 +51.5 89.4	14 13.5 +51.5 88.6
14°	17 05.0 +51.4 91.5	16 35.0 +51.4 90.6	16 05.0 +51.4 89.8	15 35.0 +51.4 88.9	15 05.0 +51.4 88.0
15°	17 56.4 +51.3 91.0	17 26.4 +51.3 90.1	16 56.4 +51.3 89.2	16 26.4 +51.3 88.4	15 56.4 +51.3 87.5
16°	18 47.7 +51.1 90.4	18 17.7 +51.1 89.5	17 47.7 +51.2 88.7	17 17.7 +51.2 87.8	16 47.7 +51.2 87.0
17°	19 38.8 +51.1 89.9	19 08.8 +51.1 89.0	18 38.9 +51.1 88.1	18 08.9 +51.1 87.3	17 38.9 +51.2 86.4
18°	20 29.9 +51.0 89.3	19 59.9 +51.0 88.4	19 30.0 +51.0 87.6	19 00.0 +51.0 86.7	18 30.1 +51.0 85.9
19°	21 20.9 +50.9 88.7	20 50.9 +50.9 87.9	20 21.0 +50.9 87.0	19 51.0 +50.9 86.2	19 21.1 +50.9 85.3
20°	22 11.8 +50.7 88.2	21 41.8 +50.8 87.3	21 11.9 +50.7 86.4	20 41.9 +50.8 85.6	20 12.0 +50.9 84.7
21°	23 02.5 +50.7 87.6	22 32.6 +50.6 86.7	22 02.6 +50.7 85.9	21 32.7 +50.7 85.0	21 02.9 +50.7 84.2
22°	23 53.2 +50.5 87.0	23 23.2 +50.5 86.1	22 53.3 +50.5 85.3	22 23.4 +50.6 84.4	21 53.6 +50.6 83.6
23°	24 43.7 +50.3 86.4	24 13.7 +50.4 85.6	23 43.8 +50.4 84.7	23 14.0 +50.4 83.9	22 44.2 +50.5 83.0
24°	25 34.0 +50.2 85.8	25 04.1 +50.2 85.0	24 34.2 +50.3 84.1	24 04.4 +50.3 83.3	23 34.7 +50.3 82.4
25°	26 24.2 +50.0 85.2	25 54.3 +50.1 84.4	25 24.5 +50.1 83.5	24 54.7 +50.2 82.7	24 25.0 +50.2 81.8
26°	27 14.2 +49.9 84.6	26 44.4 +49.9 83.7	26 14.6 +49.9 82.9	25 44.9 +50.0 82.1	25 15.2 +50.0 81.2
27°	28 04.1 +49.7 83.9	27 34.3 +49.7 83.1	27 04.5 +49.8 82.3	26 34.9 +49.8 81.5	26 05.2 +49.9 80.6
28°	28 53.8 +49.5 83.3	28 24.0 +49.6 82.5	27 54.3 +49.6 81.7	27 24.7 +49.6 80.8	26 55.1 +49.7 80.0
29°	29 43.3 +49.4 82.7	29 13.6 +49.4 81.8	28 43.9 +49.5 81.0	28 14.3 +49.5 80.2	27 44.8 +49.6 79.4

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°	2 29.9 +52.0 94.3	1 59.9 +52.0 93.5	1 30.0 +51.9 92.6	1 00.0 +52.0 91.7	0 30.0 +52.0 90.9
1°	3 21.9 +52.0 93.8	2 51.9 +52.0 93.0	2 21.9 +52.0 92.1	1 52.0 +51.9 91.2	1 22.0 +51.9 90.4
2°	4 13.9 +51.9 93.3	3 43.9 +51.9 92.5	3 13.9 +52.0 91.6	2 43.9 +52.0 90.7	2 13.9 +52.0 89.9
3°	5 05.8 +52.0 92.8	4 35.8 +52.0 92.0	4 05.9 +51.9 91.1	3 35.9 +51.9 90.2	3 05.9 +51.9 89.4
4°	5 57.8 +51.9 92.3	5 27.8 +51.9 91.5	4 57.8 +51.9 90.6	4 27.8 +51.9 89.7	3 57.8 +51.9 88.9
5°	6 49.7 +51.9 91.8	6 19.7 +51.9 91.0	5 49.7 +51.9 90.1	5 19.7 +51.9 89.2	4 49.7 +51.9 88.4
6°	7 41.6 +51.8 91.3	7 11.6 +51.8 90.5	6 41.6 +51.8 89.6	6 11.6 +51.8 88.7	5 41.6 +51.9 87.9
7°	8 33.4 +51.8 90.8	8 03.4 +51.8 89.9	7 33.4 +51.8 89.1	7 03.4 +51.9 88.2	6 33.5 +51.8 87.3
8°	9 25.2 +51.8 90.3	8 55.2 +51.8 89.4	8 25.2 +51.8 88.6	7 55.3 +51.7 87.7	7 25.3 +51.8 86.8
9°	10 17.0 +51.7 89.8	9 47.0 +51.7 88.9	9 17.0 +51.7 88.1	8 47.0 +51.8 87.2	8 17.1 +51.8 86.3
10°	11 08.7 +51.7 89.3	10 38.7 +51.7 88.4	10 08.7 +51.7 87.5	9 38.8 +51.7 86.7	9 08.9 +51.7 85.8
11°	12 00.4 +51.6 88.8	11 30.4 +51.6 87.9	11 00.4 +51.7 87.0	10 30.5 +51.6 86.2	10 00.6 +51.6 85.3
12°	12 52.0 +51.5 88.2	12 22.0 +51.6 87.4	11 52.1 +51.5 86.5	11 22.1 +51.6 85.6	10 52.2 +51.7 84.8
13°	13 43.5 +51.5 87.7	13 13.6 +51.5 86.8	12 43.6 +51.5 86.0	12 13.7 +51.6 85.1	11 43.9 +51.5 84.3
14°	14 35.0 +51.4 87.2	14 05.1 +51.4 86.3	13 35.1 +51.5 85.5	13 05.3 +51.4 84.6	12 35.4 +51.5 83.7
15°	15 26.4 +51.4 86.6	14 56.5 +51.3 85.8	14 26.6 +51.4 84.9	13 56.7 +51.4 84.1	13 26.9 +51.4 83.2
16°	16 17.8 +51.2 86.1	15 47.8 +51.3 85.2	15 18.0 +51.3 84.4	14 48.1 +51.4 83.5	14 18.3 +51.4 82.7
17°	17 09.0 +51.2 85.6	16 39.1 +51.2 84.7	16 09.3 +51.2 83.9	15 39.5 +51.2 83.0	15 09.7 +51.3 82.2
18°	18 00.2 +51.0 85.0	17 30.3 +51.1 84.2	17 00.5 +51.1 83.3	16 30.7 +51.2 82.5	16 01.0 +51.2 81.6
19°	18 51.2 +51.0 84.5	18 21.4 +51.0 83.6	17 51.6 +51.0 82.8	17 21.9 +51.0 81.9	16 52.2 +51.1 81.1
20°	19 42.2 +50.9 83.9	19 12.4 +50.9 83.1	18 42.6 +51.0 82.2	18 12.9 +51.0 81.4	17 43.3 +51.0 80.5
21°	20 33.1 +50.7 83.3	20 03.3 +50.8 82.5	19 33.6 +50.8 81.6	19 03.9 +50.9 80.8	18 34.3 +51.0 79.4
22°	21 23.8 +50.6 82.8	20 54.1 +50.6 81.9	20 24.4 +50.7 81.1	19 54.8 +50.8 80.2	19 25.3 +50.8 79.4
23°	22 14.4 +50.5 82.2	21 44.7 +50.6 81.3	21 15.1 +50.6 80.5	20 45.6 +50.6 79.7	20 16.1 +50.7 78.8
24°	23 04.9 +50.4 81.6	22 35.3 +50.4 80.8	22 05.7 +50.5 79.9	21 36.2 +50.6 79.1	21 06.8 +50.6 78.3
25°	23 55.3 +50.3 81.0	23 25.7 +50.3 80.2	22 56.2 +50.4 79.3	22 26.8 +50.4 78.5	21 57.4 +50.5 77.7
26°	24 45.6 +50.1 80.4	24 16.0 +50.2 79.6	23 46.6 +50.2 78.8	23 17.2 +50.2 77.9	22 47.9 +50.3 77.1
27°	25 35.7 +49.9 79.8	25 06.2 +50.0 79.0	24 36.8 +50.0 78.2	24 07.4 +50.2 77.3	23 38.2 +50.2 76.5
28°	26 25.6 +49.8 79.2	25 56.2 +49.8 78.4	25 26.8 +49.9 77.5	24 57.6 +50.0 76.7	24 28.4 +50.1 75.9
29°	27 15.4 +49.6 78.6	26 46.0 +49.7 77.7	26 16.7 +49.8 76.9	25 47.6 +49.8 76.1	25 18.5 +49.9 75.3

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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 +52.0 90.0	-0 30.0 +52.0	-1 00.0 +52.0	-1 30.0 +52.0	-1 59.9 +52.0
1°	0 52.0 +51.9 89.5	0 22.0 +51.9 88.6	-0 08.0 +52.0	-0 38.0 +52.0	-1 07.9 +52.0
2°	1 43.9 +52.0 89.0	1 13.9 +52.0 88.1	0 44.0 +51.9 87.3	0 14.0 +52.0 86.4	-0 15.9 +52.0
3°	2 35.9 +51.9 88.5	2 05.9 +51.9 87.6	1 35.9 +52.0 86.8	1 06.0 +52.0 85.9	0 36.1 +52.0 85.0
4°	3 27.8 +51.9 88.0	2 57.8 +52.0 87.1	2 27.9 +51.9 86.3	1 58.0 +51.9 85.4	1 28.1 +52.0 84.5
5°	4 19.7 +51.9 87.5	3 49.8 +51.9 86.6	3 19.8 +52.0 85.8	2 49.9 +52.0 84.9	2 20.1 +52.0 84.0
6°	5 11.6 +51.9 87.0	4 41.7 +51.9 86.1	4 11.8 +51.9 85.3	3 41.9 +51.9 84.4	3 12.1 +51.9 83.5
7°	6 03.5 +51.9 86.5	5 33.6 +51.8 85.6	5 03.7 +51.9 84.8	4 33.8 +51.9 83.9	4 04.0 +52.0 83.0
8°	6 55.4 +51.8 86.0	6 25.4 +51.9 85.1	5 55.6 +51.8 84.3	5 25.7 +51.9 83.4	4 56.0 +51.9 82.5
9°	7 47.2 +51.7 85.5	7 17.3 +51.8 84.6	6 47.4 +51.9 83.8	6 17.6 +51.9 82.9	5 47.9 +51.9 82.0
10°	8 38.9 +51.8 85.0	8 09.1 +51.8 84.1	7 39.3 +51.8 83.2	7 09.5 +51.8 82.4	6 39.8 +51.9 81.5
11°	9 30.7 +51.7 84.4	9 00.9 +51.7 83.6	8 31.1 +51.7 82.7	8 01.3 +51.8 81.9	7 31.7 +51.8 81.0
12°	10 22.4 +51.6 83.9	9 52.6 +51.7 83.1	9 22.8 +51.7 82.2	8 53.1 +51.8 81.4	8 23.5 +51.8 80.5
13°	11 14.0 +51.6 83.4	10 44.3 +51.6 82.6	10 14.5 +51.7 81.7	9 44.9 +51.7 80.9	9 15.3 +51.8 80.0
14°	12 05.6 +51.6 82.9	11 35.9 +51.5 82.0	11 06.2 +51.6 81.2	10 36.6 +51.6 80.3	10 07.1 +51.7 79.5
15°	12 57.2 +51.4 82.4	12 27.4 +51.6 81.5	11 57.8 +51.6 80.7	11 28.2 +51.6 79.8	10 58.8 +51.6 79.0
16°	13 48.6 +51.4 81.8	13 19.0 +51.4 81.0	12 49.4 +51.5 80.1	12 19.8 +51.6 79.3	11 50.4 +51.6 78.5
17°	14 40.0 +51.3 81.3	14 10.4 +51.4 80.5	13 40.9 +51.4 79.6	13 11.4 +51.5 78.8	12 42.0 +51.5 77.9
18°	15 31.3 +51.3 80.8	15 01.8 +51.3 79.9	14 32.3 +51.3 79.1	14 02.9 +51.4 78.2	13 33.5 +51.5 77.4
19°	16 22.6 +51.2 80.2	15 53.1 +51.2 79.4	15 23.6 +51.3 78.6	14 54.3 +51.3 77.7	14 25.0 +51.4 76.9
20°	17 13.8 +51.0 79.7	16 44.3 +51.1 78.8	16 14.9 +51.2 78.0	15 45.6 +51.3 77.2	15 16.4 +51.3 76.3
21°	18 04.8 +51.0 79.1	17 35.4 +51.1 78.3	17 06.1 +51.1 77.5	16 36.9 +51.1 76.6	16 07.7 +51.3 75.8
22°	18 55.8 +50.9 78.6	18 26.5 +50.9 77.7	17 57.2 +51.0 76.9	17 28.0 +51.1 76.1	16 59.0 +51.1 75.3
23°	19 46.7 +50.8 78.0	19 17.4 +50.8 77.2	18 48.2 +50.9 76.4	18 19.1 +51.0 75.5	17 50.1 +51.1 74.7
24°	20 37.5 +50.6 77.4	20 08.2 +50.8 76.6	19 39.1 +50.8 75.8	19 10.1 +50.9 75.0	18 41.2 +50.9 74.2
25°	21 28.1 +50.6 76.9	20 59.0 +50.6 76.1	20 29.9 +50.7 75.2	20 01.0 +50.7 74.4	19 32.1 +50.9 73.6
26°	22 18.7 +50.4 76.3	21 49.6 +50.5 75.5	21 20.6 +50.6 74.7	20 51.7 +50.7 73.8	20 23.0 +50.7 73.0
27°	23 09.1 +50.3 75.7	22 40.1 +50.4 74.9	22 11.2 +50.4 74.1	21 42.4 +50.5 73.3	21 13.7 +50.6 72.5
28°	23 59.4 +50.1 75.1	23 30.5 +50.2 74.3	23 01.6 +50.3 73.5	22 32.9 +50.4 72.7	22 04.3 +50.6 71.9
29°	24 49.5 +50.0 74.5	24 20.7 +50.1 73.7	23 51.9 +50.2 72.9	23 23.3 +50.3 72.1	22 54.9 +50.3 71.3

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°	-2 29.9 +52.1	-2 59.8 +52.1	-3 29.6 +52.1	-3 59.4 +52.1	-4 29.2 +52.2
1°	-1 37.8 +52.0	-2 07.7 +52.0	-2 37.5 +52.0	-3 07.3 +52.1	-3 37.0 +52.1
2°	-0 45.8 +52.0	-1 15.7 +52.1	-1 45.5 +52.1	-2 15.2 +52.1	-2 44.9 +52.2
3°	0 06.2 +52.0 84.2	-0 23.6 +52.0	-0 53.4 +52.1	-1 23.1 +52.1	-1 52.7 +52.1
4°	0 58.2 +52.1 83.7	0 28.4 +52.1 82.8	-0 01.3 +52.1	-0 31.0 +52.2	-1 00.6 +52.2
5°	1 50.3 +52.0 83.2	1 20.5 +52.0 82.3	0 50.8 +52.1 81.4	0 21.2 +52.1 80.6	-0 08.4 +52.2
6°	2 42.3 +52.0 82.7	2 12.5 +52.1 81.8	1 42.9 +52.1 80.9	1 13.3 +52.1 80.1	0 43.8 +52.2 79.2
7°	3 34.3 +52.0 82.2	3 04.6 +52.0 81.3	2 35.0 +52.0 80.5	2 05.4 +52.1 79.6	1 36.0 +52.1 78.7
8°	4 26.3 +51.9 81.7	3 56.6 +52.0 80.8	3 27.0 +52.1 80.0	2 57.5 +52.1 79.1	2 28.1 +52.2 78.2
9°	5 18.2 +52.0 81.2	4 48.6 +52.0 80.3	4 19.1 +52.0 79.5	3 49.6 +52.1 78.6	3 20.3 +52.1 77.7
10°	6 10.2 +51.9 80.7	5 40.6 +52.0 79.8	5 11.1 +52.0 79.0	4 41.7 +52.1 78.1	4 12.4 +52.1 77.2
11°	7 02.1 +51.9 80.2	6 32.6 +51.9 79.3	6 03.1 +52.0 78.5	5 33.8 +52.0 77.6	5 04.5 +52.1 76.7
12°	7 54.0 +51.8 79.7	7 24.5 +51.9 78.8	6 55.1 +51.9 78.0	6 25.8 +52.0 77.1	5 56.6 +52.1 76.2
13°	8 45.8 +51.8 79.2	8 16.4 +51.8 78.3	7 47.0 +52.0 77.4	7 17.8 +52.0 76.6	6 48.7 +52.0 75.7
14°	9 37.6 +51.8 78.6	9 08.2 +51.8 77.8	8 39.0 +51.8 76.9	8 09.8 +51.9 76.1	7 40.7 +52.0 75.2
15°	10 29.4 +51.7 78.1	10 00.0 +51.8 77.3	9 30.8 +51.9 76.4	9 01.7 +51.9 75.6	8 32.7 +52.0 74.7
16°	11 21.1 +51.6 77.6	10 51.8 +51.7 76.8	10 22.7 +51.7 75.9	9 53.6 +51.9 75.1	9 24.7 +51.9 74.2
17°	12 12.7 +51.6 77.1	11 43.5 +51.7 76.2	11 14.4 +51.8 75.4	10 45.5 +51.8 74.6	10 16.6 +51.9 73.7
18°	13 04.3 +51.5 76.6	12 35.2 +51.6 75.7	12 06.2 +51.6 74.9	11 37.3 +51.7 74.1	11 08.5 +51.8 73.2
19°	13 55.8 +51.5 76.0	13 26.8 +51.5 75.2	12 57.8 +51.6 74.4	12 29.0 +51.7 73.5	12 00.3 +51.8 72.7
20°	14 47.3 +51.4 75.5	14 18.3 +51.5 74.7	13 49.4 +51.6 73.8	13 20.7 +51.6 73.0	12 52.1 +51.7 72.2
21°	15 38.7 +51.3 75.0	15 09.8 +51.4 74.1	14 41.0 +51.4 73.3	14 12.3 +51.5 72.5	13 43.8 +51.6 71.7
22°	16 30.0 +51.2 74.4	16 01.2 +51.3 73.6	15 32.4 +51.4 72.8	15 03.8 +51.5 72.0	14 35.4 +51.6 71.1
23°	17 21.2 +51.2 73.9	16 52.5 +51.2 73.1	16 23.8 +51.3 72.2	15 55.3 +51.4 71.4	15 27.0 +51.4 70.6
24°	18 12.4 +51.0 73.3	17 43.7 +51.1 72.5	17 15.1 +51.2 71.7	16 46.7 +51.3 70.9	16 18.4 +51.4 70.1
25°	19 03.4 +50.9 72.8	18 34.8 +51.0 72.0	18 06.3 +51.2 71.2	17 38.0 +51.2 70.3	17 09.8 +51.4 69.5
26°	19 54.3 +50.9 72.2	19 25.8 +51.0 71.4	18 57.5 +51.0 70.6	18 29.2 +51.2 69.8	18 01.2 +51.2 69.0
27°	20 45.2 +50.7 71.7	20 16.8 +50.8 70.9	19 48.5 +50.9 70.0	19 20.4 +51.0 69.2	18 52.4 +51.1 68.4
28°	21 35.9 +50.6 71.1	21 07.6 +50.7 70.3	20 39.4 +50.8 69.5	20 11.4 +50.9 68.7	19 43.5 +51.1 67.9
29°	22 26.5 +50.5 70.5	21 58.3 +50.6 69.7	21 30.2 +50.7 68.9	21 02.3 +50.8 68.1	20 34.6 +50.9 67.3

Declination SAME name as Latitude

Latitude 60°

Dec	LHA 100° / 260°	LHA 101° / 259°	LHA 102° / 258°	LHA 103° / 257°	LHA 104° / 256°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-4 58.9 +52.2	-5 28.5 +52.2	-5 58.0 +52.2	-6 27.5 +52.3	-6 56.9 +52.4
1°	-4 06.7 +52.2	-4 36.3 +52.3	-5 05.8 +52.3	-5 35.2 +52.4	-6 04.5 +52.4
2°	-3 14.5 +52.2	-3 44.0 +52.2	-4 13.5 +52.3	-4 42.8 +52.3	-5 12.1 +52.4
3°	-2 22.3 +52.2	-2 51.8 +52.3	-3 21.2 +52.3	-3 50.5 +52.4	-4 19.7 +52.4
4°	-1 30.1 +52.2	-1 59.5 +52.2	-2 28.9 +52.4	-2 58.1 +52.4	-3 27.3 +52.5
5°	-0 37.9 +52.3	-1 07.3 +52.3	-1 36.5 +52.3	-2 05.7 +52.3	-2 34.8 +52.4
6°	0 14.4 +52.2 78.4	-0 15.0 +52.3	-0 44.2 +52.3	-1 13.4 +52.4	-1 42.4 +52.5
7°	1 06.6 +52.2 77.9	0 37.3 +52.3 77.0	0 08.1 +52.4 76.1	-0 21.0 +52.4	-0 49.9 +52.5
8°	1 58.8 +52.2 77.4	1 29.6 +52.2 76.5	1 00.5 +52.3 75.6	0 31.4 +52.4 74.8	0 02.6 +52.4 73.9
9°	2 51.0 +52.2 76.9	2 21.8 +52.3 76.0	1 52.8 +52.3 75.2	1 23.8 +52.4 74.3	0 55.0 +52.5 73.4
10°	3 43.2 +52.2 76.4	3 14.1 +52.2 75.5	2 45.1 +52.3 74.7	2 16.2 +52.4 73.8	1 47.5 +52.4 72.9
11°	4 35.4 +52.1 75.9	4 06.3 +52.3 75.0	3 37.4 +52.3 74.2	3 08.6 +52.4 73.3	2 39.9 +52.5 72.5
12°	5 27.5 +52.2 75.4	4 58.6 +52.2 74.5	4 29.7 +52.3 73.7	4 01.0 +52.3 72.8	3 32.4 +52.4 72.0
13°	6 19.7 +52.1 74.9	5 50.8 +52.1 74.0	5 22.0 +52.2 73.2	4 53.3 +52.3 72.3	4 24.8 +52.4 71.5
14°	7 11.8 +52.0 74.4	6 42.9 +52.2 73.5	6 14.2 +52.2 72.7	5 45.6 +52.4 71.8	5 17.2 +52.4 71.0
15°	8 03.8 +52.1 73.9	7 35.1 +52.1 73.0	7 06.4 +52.2 72.2	6 38.0 +52.2 71.4	6 09.6 +52.4 70.5
16°	8 55.9 +52.0 73.4	8 27.2 +52.1 72.5	7 58.6 +52.2 71.7	7 30.2 +52.3 70.9	7 02.0 +52.3 70.0
17°	9 47.9 +51.9 72.9	9 19.3 +52.0 72.0	8 50.8 +52.1 71.2	8 22.5 +52.2 70.4	7 54.3 +52.3 69.5
18°	10 39.8 +51.9 72.4	10 11.3 +52.0 71.5	9 42.9 +52.1 70.7	9 14.7 +52.1 69.9	8 46.6 +52.2 69.0
19°	11 31.7 +51.9 71.9	11 03.3 +51.9 71.0	10 35.0 +52.0 70.2	10 06.8 +52.1 69.4	9 38.8 +52.2 68.5
20°	12 23.6 +51.7 71.4	11 55.2 +51.9 70.5	11 27.0 +52.0 69.7	10 58.9 +52.1 68.9	10 31.0 +52.2 68.0
21°	13 15.3 +51.8 70.8	12 47.1 +51.8 70.0	12 19.0 +51.9 69.2	11 51.0 +52.0 68.4	11 23.2 +52.1 67.5
22°	14 07.1 +51.6 70.3	13 38.9 +51.7 69.5	13 10.9 +51.8 68.7	12 43.0 +52.0 67.8	12 15.3 +52.1 67.0
23°	14 58.7 +51.6 69.8	14 30.6 +51.7 69.0	14 02.7 +51.8 68.1	13 35.0 +51.8 67.3	13 07.4 +52.0 66.5
24°	15 50.3 +51.5 69.3	15 22.3 +51.6 68.4	14 54.5 +51.7 67.6	14 26.8 +51.9 66.8	13 59.4 +51.9 66.0
25°	16 41.8 +51.4 68.7	16 13.9 +51.6 67.9	15 46.2 +51.7 67.1	15 18.7 +51.7 66.3	14 51.3 +51.8 65.5
26°	17 33.2 +51.4 68.2	17 05.5 +51.4 67.4	16 37.9 +51.5 66.6	16 10.4 +51.7 65.8	15 43.1 +51.8 65.0
27°	18 24.6 +51.2 67.6	17 56.9 +51.4 66.8	17 29.4 +51.5 66.0	17 02.1 +51.6 65.2	16 34.9 +51.7 64.4
28°	19 15.8 +51.2 67.1	18 48.3 +51.2 66.3	18 20.9 +51.4 65.5	17 53.7 +51.5 64.7	17 26.6 +51.7 63.9
29°	20 07.0 +51.0 66.5	19 39.5 +51.2 65.7	19 12.3 +51.2 64.9	18 45.2 +51.4 64.2	18 18.3 +51.5 63.4

Dec	LHA 105° / 255°	LHA 106° / 254°	LHA 107° / 253°	LHA 108° / 252°	LHA 109° / 251°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-7 26.1 +52.4	-7 55.3 +52.5	-8 24.4 +52.6	-8 53.3 +52.6	-9 22.1 +52.7
1°	-6 33.7 +52.4	-7 02.8 +52.5	-7 31.8 +52.6	-8 00.7 +52.7	-8 29.4 +52.7
2°	-5 41.3 +52.5	-6 10.3 +52.5	-6 39.2 +52.6	-7 08.0 +52.6	-7 36.7 +52.7
3°	-4 48.8 +52.5	-5 17.8 +52.6	-5 46.6 +52.6	-6 15.4 +52.7	-6 44.0 +52.8
4°	-3 56.3 +52.5	-4 25.2 +52.6	-4 54.0 +52.6	-5 22.7 +52.8	-5 51.2 +52.8
5°	-3 03.8 +52.5	-3 32.6 +52.6	-4 01.4 +52.7	-4 29.9 +52.7	-4 58.4 +52.8
6°	-2 11.3 +52.6	-2 40.0 +52.6	-3 08.7 +52.7	-3 37.2 +52.8	-4 05.6 +52.9
7°	-1 18.7 +52.5	-1 47.4 +52.6	-2 16.0 +52.7	-2 44.4 +52.7	-3 12.7 +52.8
8°	-0 26.2 +52.5	-0 54.8 +52.6	-1 23.3 +52.7	-1 51.7 +52.8	-2 19.9 +52.9
9°	0 26.3 +52.6 72.6	-0 02.2 +52.6	-0 30.6 +52.7	-0 58.9 +52.8	-1 27.0 +52.9
10°	1 18.9 +52.5 72.1	0 50.4 +52.6 71.2	0 22.1 +52.7 70.4	-0 06.1 +52.8	-0 34.1 +52.8
11°	2 11.4 +52.5 71.6	1 43.0 +52.6 70.7	1 14.8 +52.7 69.9	0 46.7 +52.7 69.0	0 18.7 +52.9 68.1
12°	3 03.9 +52.5 71.1	2 35.6 +52.6 70.3	2 07.5 +52.6 69.4	1 39.4 +52.8 68.5	1 11.6 +52.9 67.7
13°	3 56.4 +52.5 70.6	3 28.2 +52.6 69.8	3 00.1 +52.7 68.9	2 32.2 +52.8 68.1	2 04.5 +52.8 67.2
14°	4 48.9 +52.5 70.1	4 20.8 +52.5 69.3	3 52.8 +52.7 68.4	3 25.0 +52.7 67.6	2 57.3 +52.9 66.7
15°	5 41.4 +52.4 69.7	5 13.3 +52.6 68.8	4 45.5 +52.6 68.0	4 17.7 +52.8 67.1	3 50.2 +52.8 66.3
16°	6 33.8 +52.5 69.2	6 05.9 +52.5 68.3	5 38.1 +52.6 67.5	5 10.5 +52.7 66.6	4 43.0 +52.8 65.8
17°	7 26.3 +52.3 68.7	6 58.4 +52.5 67.8	6 30.7 +52.6 67.0	6 03.2 +52.6 66.1	5 35.8 +52.8 65.3
18°	8 18.6 +52.4 68.2	7 50.9 +52.4 67.3	7 23.3 +52.5 66.5	6 55.8 +52.7 65.7	6 28.6 +52.8 64.8
19°	9 11.0 +52.3 67.7	8 43.3 +52.4 66.9	8 15.8 +52.5 66.0	7 48.5 +52.6 65.2	7 21.4 +52.7 64.3
20°	10 03.3 +52.3 67.2	9 35.7 +52.4 66.4	9 08.3 +52.5 65.5	8 41.1 +52.6 64.7	8 14.1 +52.7 63.9
21°	10 55.6 +52.2 66.7	10 28.1 +52.3 65.9	10 00.8 +52.4 65.0	9 33.7 +52.5 64.2	9 06.8 +52.6 63.4
22°	11 47.8 +52.1 66.2	11 20.4 +52.3 65.4	10 53.2 +52.4 64.5	10 26.2 +52.5 63.7	9 59.4 +52.7 62.9
23°	12 39.9 +52.1 65.7	12 12.7 +52.2 64.9	11 45.6 +52.4 64.0	11 18.7 +52.5 63.2	10 52.1 +52.5 62.4
24°	13 32.0 +52.1 65.2	13 04.9 +52.2 64.4	12 38.0 +52.2 63.5	12 11.2 +52.4 62.7	11 44.6 +52.5 61.9
25°	14 24.1 +52.0 64.7	13 57.1 +52.1 63.9	13 30.2 +52.2 63.0	13 03.6 +52.3 62.2	12 37.1 +52.5 61.4
26°	15 16.1 +51.9 64.1	14 49.2 +52.0 63.3	14 22.4 +52.2 62.5	13 55.9 +52.3 61.7	13 29.6 +52.4 60.9
27°	16 08.0 +51.8 63.6	15 41.2 +51.9 62.8	15 14.6 +52.1 62.0	14 48.2 +52.2 61.2	14 22.0 +52.3 60.4
28°	16 59.8 +51.7 63.1	16 33.1 +51.9 62.3	16 06.7 +52.0 61.5	15 40.4 +52.1 60.7	15 14.3 +52.3 59.9
29°	17 51.5 +51.7 62.6	17 25.0 +51.8 61.8	16 58.7 +51.9 61.0	16 32.5 +52.1 60.2	16 06.6 +52.2 59.4

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Declination SAME name as Latitude

Latitude 60°

Dec	LHA 120° / 240°	LHA 121° / 239°	LHA 122° / 238°	LHA 123° / 237°	LHA 124° / 236°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°	-9 59.7 +53.9				
6°	-9 05.8 +53.9	-9 31.9 +54.1	-9 57.7 +54.2		
7°	-8 11.9 +54.0	-8 37.8 +54.1	-9 03.5 +54.2	-9 29.0 +54.4	-9 54.1 +54.4
8°	-7 17.9 +54.0	-7 43.7 +54.1	-8 09.3 +54.2	-8 34.6 +54.3	-8 59.7 +54.5
9°	-6 23.9 +54.0	-6 49.6 +54.1	-7 15.1 +54.3	-7 40.3 +54.4	-8 05.2 +54.5
10°	-5 29.9 +54.0	-5 55.5 +54.2	-6 20.8 +54.3	-6 45.9 +54.4	-7 10.7 +54.5
11°	-4 35.9 +54.1	-5 01.3 +54.1	-5 26.5 +54.2	-5 51.5 +54.4	-6 16.2 +54.5
12°	-3 41.8 +54.0	-4 07.2 +54.2	-4 32.3 +54.4	-4 57.1 +54.4	-5 21.7 +54.6
13°	-2 47.8 +54.1	-3 13.0 +54.2	-3 37.9 +54.3	-4 02.7 +54.5	-4 27.1 +54.6
14°	-1 53.7 +54.1	-2 18.8 +54.2	-2 43.6 +54.3	-3 08.2 +54.4	-3 32.5 +54.6
15°	-0 59.6 +54.1	-1 24.6 +54.2	-1 49.3 +54.3	-2 13.8 +54.5	-2 37.9 +54.6
16°	-0 05.5 +54.1	-0 30.4 +54.2	-0 55.0 +54.4	-1 19.3 +54.5	-1 43.3 +54.6
17°	0 48.6 +54.0 55.9	0 23.8 +54.2 55.1	-0 00.6 +54.3	-0 24.8 +54.5	-0 48.7 +54.6
18°	1 42.6 +54.1 55.5	1 18.0 +54.3 54.6	0 53.7 +54.4 53.8	0 29.7 +54.4 52.9	0 05.9 +54.6 52.0
19°	2 36.7 +54.1 55.1	2 12.3 +54.1 54.2	1 48.1 +54.3 53.3	1 24.1 +54.5 52.5	1 00.5 +54.6 51.6
20°	3 30.8 +54.0 54.6	3 06.4 +54.2 53.8	2 42.4 +54.3 52.9	2 18.6 +54.4 52.1	1 55.1 +54.6 51.2
21°	4 24.8 +54.1 54.2	4 00.6 +54.2 53.3	3 36.7 +54.3 52.5	3 13.0 +54.5 51.6	2 49.7 +54.5 50.8
22°	5 18.9 +54.0 53.7	4 54.8 +54.2 52.9	4 31.0 +54.3 52.1	4 07.5 +54.4 51.2	3 44.2 +54.6 50.4
23°	6 12.9 +54.0 53.3	5 49.0 +54.1 52.5	5 25.3 +54.3 51.6	5 01.9 +54.4 50.8	4 38.8 +54.6 50.0
24°	7 06.9 +54.0 52.9	6 43.1 +54.1 52.0	6 19.6 +54.2 51.2	5 56.3 +54.4 50.4	5 33.4 +54.5 49.5
25°	8 00.9 +53.9 52.4	7 37.2 +54.1 51.6	7 13.8 +54.3 50.8	6 50.7 +54.4 50.0	6 27.9 +54.5 49.1
26°	8 54.8 +53.9 52.0	8 31.3 +54.1 51.2	8 08.1 +54.2 50.4	7 45.1 +54.4 49.5	7 22.4 +54.5 48.7
27°	9 48.7 +53.9 51.5	9 25.4 +54.0 50.7	9 02.3 +54.1 49.9	8 39.5 +54.3 49.1	8 16.9 +54.5 48.3
28°	10 42.6 +53.8 51.1	10 19.4 +54.0 50.3	9 56.4 +54.2 49.5	9 33.8 +54.3 48.7	9 11.4 +54.4 47.9
29°	11 36.4 +53.8 50.6	11 13.4 +53.9 49.8	10 50.6 +54.1 49.0	10 28.1 +54.2 48.2	10 05.8 +54.4 47.4

Dec	LHA 125° / 235°	LHA 126° / 234°	LHA 127° / 233°	LHA 128° / 232°	LHA 129° / 231°
	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 24.5 +54.6	-9 49.0 +54.7			
9°	-8 29.9 +54.6	-8 54.3 +54.7	-9 18.4 +54.9	-9 42.3 +55.0	
10°	-7 35.3 +54.7	-7 59.6 +54.8	-8 23.5 +54.9	-8 47.3 +55.1	-9 10.7 +55.2
11°	-6 40.6 +54.6	-7 04.8 +54.8	-7 28.6 +54.9	-7 52.2 +55.0	-8 15.5 +55.2
12°	-5 46.0 +54.7	-6 10.0 +54.8	-6 33.7 +54.9	-6 57.2 +55.1	-7 20.3 +55.2
13°	-4 51.3 +54.7	-5 15.2 +54.9	-5 38.8 +55.0	-6 02.1 +55.1	-6 25.1 +55.2
14°	-3 56.6 +54.8	-4 20.3 +54.8	-4 43.8 +55.0	-5 07.0 +55.1	-5 29.9 +55.3
15°	-3 01.8 +54.7	-3 25.5 +54.9	-3 48.8 +55.0	-4 11.9 +55.2	-4 34.6 +55.3
16°	-2 07.1 +54.7	-2 30.6 +54.8	-2 53.8 +55.0	-3 16.7 +55.1	-3 39.3 +55.2
17°	-1 12.4 +54.7	-1 35.8 +54.9	-1 58.8 +55.0	-2 21.6 +55.1	-2 44.1 +55.3
18°	-0 17.7 +54.8	-0 40.9 +54.9	-1 03.8 +55.0	-1 26.5 +55.2	-1 48.8 +55.3
19°	0 37.1 +54.7 50.8	0 14.0 +54.9 49.9	-0 08.8 +55.0	-0 31.3 +55.1	-0 53.5 +55.3
20°	1 31.8 +54.7 50.4	1 08.9 +54.8 49.5	0 46.2 +55.0 48.6	0 23.8 +55.2 47.8	0 01.8 +55.3 46.9
21°	2 26.5 +54.8 49.9	2 03.7 +54.9 49.1	1 41.2 +55.0 48.2	1 19.0 +55.1 47.4	0 57.1 +55.2 46.5
22°	3 21.3 +54.7 49.5	2 58.6 +54.8 48.7	2 36.2 +55.0 47.8	2 14.1 +55.2 47.0	1 52.3 +55.3 46.1
23°	4 16.0 +54.7 49.1	3 53.4 +54.9 48.3	3 31.2 +55.0 47.4	3 09.3 +55.1 46.6	2 47.6 +55.3 45.7
24°	5 10.7 +54.7 48.7	4 48.3 +54.8 47.9	4 26.2 +55.0 47.0	4 04.4 +55.1 46.2	3 42.9 +55.2 45.4
25°	6 05.4 +54.6 48.3	5 43.1 +54.8 47.5	5 21.2 +54.9 46.6	4 59.5 +55.1 45.8	4 38.1 +55.3 45.0
26°	7 00.0 +54.7 47.9	6 37.9 +54.8 47.1	6 16.1 +54.9 46.2	5 54.6 +55.1 45.4	5 33.4 +55.2 44.6
27°	7 54.7 +54.6 47.5	7 32.7 +54.8 46.6	7 11.0 +55.0 45.8	6 49.7 +55.0 45.0	6 28.6 +55.2 44.2
28°	8 49.3 +54.6 47.0	8 27.5 +54.7 46.2	8 06.0 +54.8 45.4	7 44.7 +55.1 44.6	7 23.8 +55.2 43.8
29°	9 43.9 +54.5 46.6	9 22.2 +54.7 45.8	9 00.8 +54.9 45.0	8 39.8 +55.0 44.2	8 19.0 +55.2 43.4

Warning: This page has been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data.
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Dec	LHA 130° / 230°	LHA 131° / 229°	LHA 132° / 228°	LHA 133° / 227°	LHA 134° / 226°
	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°	-9 33.8 +55.3	-9 56.6 +55.5			
11°	-8 38.5 +55.4	-9 01.1 +55.4	-9 23.5 +55.6	-9 45.5 +55.7	
12°	-7 43.1 +55.3	-8 05.7 +55.5	-8 27.9 +55.6	-8 49.8 +55.8	-9 11.3 +55.9
13°	-6 47.8 +55.4	-7 10.2 +55.5	-7 32.3 +55.7	-7 54.0 +55.8	-8 15.4 +55.9
14°	-5 52.4 +55.4	-6 14.7 +55.5	-6 36.6 +55.6	-6 58.2 +55.8	-7 19.5 +55.9
15°	-4 57.0 +55.4	-5 19.2 +55.6	-5 41.0 +55.7	-6 02.4 +55.8	-6 23.6 +56.0
16°	-4 01.6 +55.4	-4 23.6 +55.5	-4 45.3 +55.7	-5 06.6 +55.8	-5 27.6 +55.9
17°	-3 06.2 +55.4	-3 28.1 +55.6	-3 49.6 +55.7	-4 10.8 +55.8	-4 31.7 +56.0
18°	-2 10.8 +55.4	-2 32.5 +55.5	-2 53.9 +55.7	-3 15.0 +55.8	-3 35.7 +55.9
19°	-1 15.4 +55.4	-1 37.0 +55.6	-1 58.2 +55.7	-2 19.2 +55.9	-2 39.8 +56.0
20°	-0 20.0 +55.4	-0 41.4 +55.5	-1 02.5 +55.7	-1 23.3 +55.8	-1 43.8 +56.0
21°	0 35.4 +55.5 45.7	0 14.1 +55.6 44.8	-0 06.8 +55.7	-0 27.5 +55.9	-0 47.8 +56.0
22°	1 30.9 +55.4 45.3	1 09.7 +55.6 44.4	0 48.9 +55.7 43.6	0 28.4 +55.8 42.7	0 08.2 +56.0 41.8
23°	2 26.3 +55.4 44.9	2 05.3 +55.5 44.0	1 44.6 +55.7 43.2	1 24.2 +55.8 42.3	1 04.2 +56.0 41.5
24°	3 21.7 +55.4 44.5	3 00.8 +55.6 43.7	2 40.3 +55.7 42.8	2 20.0 +55.9 42.0	2 00.2 +55.9 41.1
25°	4 17.1 +55.4 44.1	3 56.4 +55.5 43.3	3 36.0 +55.6 42.4	3 15.9 +55.8 41.6	2 56.1 +56.0 40.8
26°	5 12.5 +55.4 43.7	4 51.9 +55.5 42.9	4 31.6 +55.7 42.1	4 11.7 +55.8 41.2	3 52.1 +56.0 40.4
27°	6 07.9 +55.3 43.4	5 47.4 +55.5 42.5	5 27.3 +55.7 41.7	5 07.5 +55.8 40.9	4 48.1 +55.9 40.0
28°	7 03.2 +55.4 43.0	6 42.9 +55.5 42.1	6 23.0 +55.6 41.3	6 03.3 +55.8 40.5	5 44.0 +55.9 39.7
29°	7 58.6 +55.3 42.6	7 38.4 +55.5 41.8	7 18.6 +55.6 40.9	6 59.1 +55.8 40.1	6 39.9 +56.0 39.3

Dec	LHA 135° / 225°	LHA 136° / 224°	LHA 137° / 223°	LHA 138° / 222°	LHA 139° / 221°
	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°	-9 32.5 +56.0	-9 53.4 +56.2			
13°	-8 36.5 +56.0	-8 57.2 +56.1	-9 17.6 +56.3	-9 37.6 +56.4	-9 57.3 +56.6
14°	-7 40.5 +56.1	-8 01.1 +56.2	-8 21.3 +56.3	-8 41.2 +56.5	-9 00.7 +56.6
15°	-6 44.4 +56.1	-7 04.9 +56.3	-7 25.0 +56.4	-7 44.7 +56.5	-8 04.1 +56.6
16°	-5 48.3 +56.1	-6 08.6 +56.2	-6 28.6 +56.4	-6 48.2 +56.5	-7 07.5 +56.7
17°	-4 52.2 +56.1	-5 12.4 +56.2	-5 32.2 +56.3	-5 51.7 +56.5	-6 10.8 +56.6
18°	-3 56.1 +56.1	-4 16.2 +56.3	-4 35.9 +56.4	-4 55.2 +56.5	-5 14.2 +56.7
19°	-3 00.0 +56.1	-3 19.9 +56.2	-3 39.5 +56.4	-3 58.7 +56.5	-4 17.5 +56.6
20°	-2 03.9 +56.1	-2 23.7 +56.3	-2 43.1 +56.4	-3 02.2 +56.6	-3 20.9 +56.7
21°	-1 07.8 +56.1	-1 27.4 +56.2	-1 46.7 +56.4	-2 05.6 +56.5	-2 24.2 +56.7
22°	-0 11.7 +56.2	-0 31.2 +56.3	-0 50.3 +56.4	-1 09.1 +56.5	-1 27.5 +56.6
23°	0 44.5 +56.1 40.6	0 25.1 +56.3 39.8	0 06.1 +56.4 38.9	-0 12.6 +56.6	-0 30.9 +56.7
24°	1 40.6 +56.1 40.3	1 21.4 +56.2 39.4	1 02.5 +56.4 38.5	0 44.0 +56.5 37.7	0 25.8 +56.7 36.8
25°	2 36.7 +56.1 39.9	2 17.6 +56.3 39.1	1 58.9 +56.4 38.2	1 40.5 +56.6 37.4	1 22.5 +56.7 36.5
26°	3 32.8 +56.1 39.6	3 13.9 +56.2 38.7	2 55.3 +56.4 37.9	2 37.1 +56.5 37.0	2 19.2 +56.7 36.2
27°	4 28.9 +56.1 39.2	4 10.1 +56.3 38.4	3 51.7 +56.4 37.5	3 33.6 +56.5 36.7	3 15.9 +56.6 35.8
28°	5 25.0 +56.1 38.8	5 06.4 +56.2 38.0	4 48.1 +56.4 37.2	4 30.1 +56.5 36.3	4 12.5 +56.7 35.5
29°	6 21.1 +56.1 38.5	6 02.6 +56.2 37.7	5 44.5 +56.3 36.8	5 26.6 +56.5 36.0	5 09.2 +56.6 35.2

Dec	LHA 140° / 220°	LHA 141° / 219°	LHA 142° / 218°	LHA 143° / 217°	LHA 144° / 216°
	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°	-9 19.8 +56.7	-9 38.6 +56.9	-9 57.0 +57.0		
15°	-8 23.1 +56.7	-8 41.7 +56.8	-9 00.0 +57.0	-9 17.9 +57.2	-9 35.3 +57.2
16°	-7 26.4 +56.8	-7 44.9 +56.9	-8 03.0 +57.0	-8 20.7 +57.1	-8 38.1 +57.3
17°	-6 29.6 +56.8	-6 48.0 +57.0	-7 06.0 +57.1	-7 23.6 +57.2	-7 40.8 +57.3
18°	-5 32.8 +56.8	-5 51.0 +56.9	-6 08.9 +57.1	-6 26.4 +57.2	-6 43.5 +57.4
19°	-4 36.0 +56.8	-4 54.1 +56.9	-5 11.8 +57.0	-5 29.2 +57.2	-5 46.1 +57.3
20°	-3 39.2 +56.8	-3 57.2 +57.0	-4 14.8 +57.1	-4 32.0 +57.2	-4 48.8 +57.3
21°	-2 42.4 +56.8	-3 00.2 +56.9	-3 17.7 +57.1	-3 34.8 +57.2	-3 51.5 +57.4
22°	-1 45.6 +56.8	-2 03.3 +56.9	-2 20.6 +57.1	-2 37.6 +57.2	-2 54.1 +57.3
23°	-0 48.8 +56.8	-1 06.4 +57.0	-1 23.5 +57.0	-1 40.4 +57.3	-1 56.8 +57.3
24°	0 08.0 +56.8 36.0	-0 09.4 +57.0	-0 26.5 +57.1	-0 43.1 +57.2	-0 59.5 +57.4
25°	1 04.8 +56.9 35.6	0 47.6 +56.9 34.8	0 30.6 +57.1 33.9	0 14.1 +57.2 33.1	-0 02.1 +57.3
26°	2 01.7 +56.8 35.3	1 44.5 +56.9 34.5	1 27.7 +57.1 33.6	1 11.3 +57.2 32.8	0 55.2 +57.4 31.9
27°	2 58.5 +56.8 35.0	2 41.4 +57.0 34.1	2 24.8 +57.1 33.3	2 08.5 +57.2 32.5	1 52.6 +57.3 31.6
28°	3 55.3 +56.8 34.7	3 38.4 +56.9 33.8	3 21.9 +57.0 33.0	3 05.7 +57.2 32.2	2 49.9 +57.4 31.3
29°	4 52.1 +56.8 34.3	4 35.3 +57.0 33.5	4 18.9 +57.1 32.7	4 02.9 +57.2 31.8	3 47.3 +57.3 31.0

Dec	LHA 145° / 215°	LHA 146° / 214°	LHA 147° / 213°	LHA 148° / 212°	LHA 149° / 211°
	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°	-9 52.4 +57.4				
16°	-8 55.0 +57.4	-9 11.6 +57.6	-9 27.7 +57.7	-9 43.4 +57.8	-9 58.7 +57.9
17°	-7 57.6 +57.4	-8 14.0 +57.6	-8 30.0 +57.7	-8 45.6 +57.8	-9 00.8 +58.0
18°	-7 00.2 +57.5	-7 16.4 +57.5	-7 32.3 +57.7	-7 47.8 +57.8	-8 02.8 +57.9
19°	-6 02.7 +57.4	-6 18.9 +57.6	-6 34.6 +57.7	-6 50.0 +57.9	-7 04.9 +58.0
20°	-5 05.3 +57.5	-5 21.3 +57.6	-5 36.9 +57.7	-5 52.1 +57.8	-6 06.9 +57.9
21°	-4 07.8 +57.5	-4 23.7 +57.6	-4 39.2 +57.7	-4 54.3 +57.8	-5 09.0 +58.0
22°	-3 10.3 +57.5	-3 26.1 +57.6	-3 41.5 +57.7	-3 56.5 +57.9	-4 11.0 +57.9
23°	-2 12.8 +57.4	-2 28.5 +57.6	-2 43.8 +57.8	-2 58.6 +57.8	-3 13.1 +58.0
24°	-1 15.4 +57.5	-1 30.9 +57.6	-1 46.0 +57.7	-2 00.8 +57.9	-2 15.1 +58.0
25°	-0 17.9 +57.5	-0 33.3 +57.6	-0 48.3 +57.7	-1 02.9 +57.8	-1 17.1 +58.0
26°	0 39.6 +57.5 31.0	0 24.3 +57.6 30.2	0 09.4 +57.8 29.3	-0 05.1 +57.9	-0 19.1 +57.9
27°	1 37.1 +57.4 30.7	1 21.9 +57.6 29.9	1 07.2 +57.7 29.0	0 52.8 +57.9 28.2	0 38.8 +58.0 27.3
28°	2 34.5 +57.5 30.5	2 19.5 +57.6 29.6	2 04.9 +57.7 28.8	1 50.7 +57.8 27.9	1 36.8 +58.0 27.1
29°	3 32.0 +57.5 30.2	3 17.1 +57.6 29.3	3 02.6 +57.7 28.5	2 48.5 +57.9 27.6	2 34.8 +58.0 26.8

Latitude 60°

Declination SAME name as Latitude

Dec	LHA 150° / 210°	LHA 151° / 209°	LHA 152° / 208°	LHA 153° / 207°	LHA 154° / 206°
	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°	-9 15.5 +58.0	-9 29.8 +58.1	-9 43.7 +58.3	-9 57.2 +58.4	
18°	-8 17.5 +58.1	-8 31.7 +58.2	-8 45.4 +58.2	-8 58.8 +58.4	-9 11.7 +58.5
19°	-7 19.4 +58.1	-7 33.5 +58.2	-7 47.2 +58.3	-8 00.4 +58.4	-8 13.2 +58.6
20°	-6 21.3 +58.0	-6 35.3 +58.2	-6 48.9 +58.3	-7 02.0 +58.4	-7 14.6 +58.5
21°	-5 23.3 +58.1	-5 37.1 +58.2	-5 50.6 +58.4	-6 03.6 +58.5	-6 16.1 +58.5
22°	-4 25.2 +58.1	-4 38.9 +58.2	-4 52.2 +58.3	-5 05.1 +58.4	-5 17.6 +58.5
23°	-3 27.1 +58.1	-3 40.7 +58.2	-3 53.9 +58.3	-4 06.7 +58.4	-4 19.1 +58.6
24°	-2 29.0 +58.1	-2 42.5 +58.2	-2 55.6 +58.3	-3 08.3 +58.4	-3 20.5 +58.5
25°	-1 30.9 +58.1	-1 44.3 +58.2	-1 57.3 +58.3	-2 09.9 +58.5	-2 22.0 +58.5
26°	-0 32.8 +58.1	-0 46.1 +58.2	-0 59.0 +58.4	-1 11.4 +58.4	-1 23.5 +58.6
27°	0 25.3 +58.1 26.5	0 12.1 +58.2 25.6	-0 00.6 +58.3	-0 13.0 +58.4	-0 24.9 +58.5
28°	1 23.4 +58.1 26.2	1 10.3 +58.2 25.4	0 57.7 +58.3 24.5	0 45.4 +58.5 23.6	0 33.6 +58.6 22.8
29°	2 21.5 +58.0 26.0	2 08.5 +58.2 25.1	1 56.0 +58.3 24.3	1 43.9 +58.4 23.4	1 32.2 +58.5 22.6

Dec	LHA 155° / 205°	LHA 156° / 204°	LHA 157° / 203°	LHA 158° / 202°	LHA 159° / 201°
	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°	-9 24.1 +58.6	-9 36.1 +58.7	-9 47.7 +58.9	-9 58.7 +58.9	
19°	-8 25.5 +58.6	-8 37.4 +58.7	-8 48.8 +58.8	-8 59.8 +58.9	-9 10.4 +59.1
20°	-7 26.9 +58.6	-7 38.7 +58.8	-7 50.0 +58.8	-8 00.9 +58.9	-8 11.3 +59.0
21°	-6 28.3 +58.7	-6 39.9 +58.7	-6 51.2 +58.8	-7 02.0 +58.9	-7 12.3 +59.0
22°	-5 29.6 +58.6	-5 41.2 +58.7	-5 52.4 +58.9	-6 03.1 +59.0	-6 13.3 +59.0
23°	-4 31.0 +58.6	-4 42.5 +58.8	-4 53.5 +58.8	-5 04.1 +58.9	-5 14.3 +59.0
24°	-3 32.4 +58.7	-3 43.7 +58.7	-3 54.7 +58.8	-4 05.2 +58.9	-4 15.3 +59.0
25°	-2 33.7 +58.6	-2 45.0 +58.7	-2 55.9 +58.9	-3 06.3 +59.0	-3 16.3 +59.1
26°	-1 35.1 +58.7	-1 46.3 +58.8	-1 57.0 +58.8	-2 07.3 +58.9	-2 17.2 +59.0
27°	-0 36.4 +58.6	-0 47.5 +58.7	-0 58.2 +58.9	-1 08.4 +58.9	-1 18.2 +59.0
28°	0 22.2 +58.7 21.9	0 11.2 +58.8 21.0	0 00.7 +58.8 20.2	-0 09.5 +59.0	-0 19.2 +59.1
29°	1 20.9 +58.6 21.7	1 10.0 +58.7 20.8	0 59.5 +58.9 20.0	0 49.5 +58.9 19.1	0 39.9 +59.0 18.3

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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 160° / 200°	LHA 161° / 199°	LHA 162° / 198°	LHA 163° / 197°	LHA 164° / 196°
	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°	-9 20.4 +59.1	-9 30.0 +59.2	-9 39.1 +59.2	-9 47.8 +59.3	-9 56.0 +59.4
20°	-8 21.3 +59.1	-8 30.8 +59.1	-8 39.9 +59.3	-8 48.5 +59.4	-8 56.6 +59.5
21°	-7 22.2 +59.1	-7 31.7 +59.2	-7 40.6 +59.2	-7 49.1 +59.3	-7 57.1 +59.4
22°	-6 23.1 +59.1	-6 32.5 +59.2	-6 41.4 +59.3	-6 49.8 +59.4	-6 57.7 +59.4
23°	-5 24.0 +59.1	-5 33.3 +59.2	-5 42.1 +59.3	-5 50.4 +59.3	-5 58.3 +59.4
24°	-4 24.9 +59.1	-4 34.1 +59.2	-4 42.8 +59.3	-4 51.1 +59.4	-4 58.9 +59.4
25°	-3 25.8 +59.1	-3 34.9 +59.2	-3 43.5 +59.2	-3 51.7 +59.3	-3 59.5 +59.5
26°	-2 26.7 +59.1	-2 35.7 +59.2	-2 44.3 +59.3	-2 52.4 +59.4	-3 00.0 +59.4
27°	-1 27.6 +59.2	-1 36.5 +59.2	-1 45.0 +59.3	-1 53.0 +59.3	-2 00.6 +59.4
28°	-0 28.4 +59.1	-0 37.3 +59.2	-0 45.7 +59.3	-0 53.7 +59.4	-1 01.2 +59.4
29°	0 30.7 +59.1 17.4	0 21.9 +59.2 16.5	0 13.6 +59.3 15.7	0 05.7 +59.3 14.8	-0 01.8 +59.5

Dec	LHA 165° / 195°	LHA 166° / 194°	LHA 167° / 193°	LHA 168° / 192°	LHA 169° / 191°
	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°					
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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°	29 00.0 +60.0 180.0	28 59.7 +60.0 178.9	28 58.8 +60.0 177.7	28 57.4 +60.0 176.6	28 55.4 +59.9 175.4
1°	30 00.0 +60.0 180.0	29 59.7 +60.0 178.8	29 58.8 +60.0 177.7	29 57.4 +59.9 176.5	29 55.3 +60.0 175.4
2°	31 00.0 +60.0 180.0	30 59.7 +60.0 178.8	30 58.8 +60.0 177.7	30 57.3 +60.0 176.5	30 55.3 +59.9 175.3
3°	32 00.0 +60.0 180.0	31 59.7 +60.0 178.8	31 58.8 +60.0 177.6	31 57.3 +60.0 176.5	31 55.2 +60.0 175.3
4°	33 00.0 +60.0 180.0	32 59.7 +60.0 178.8	32 58.8 +60.0 177.6	32 57.3 +60.0 176.4	32 55.2 +59.9 175.2
5°	34 00.0 +60.0 180.0	33 59.7 +60.0 178.8	33 58.8 +60.0 177.6	33 57.3 +59.9 176.4	33 55.1 +60.0 175.2
6°	35 00.0 +60.0 180.0	34 59.7 +60.0 178.8	34 58.8 +60.0 177.6	34 57.2 +60.0 176.4	34 55.1 +59.9 175.1
7°	36 00.0 +60.0 180.0	35 59.7 +60.0 178.8	35 58.8 +59.9 177.5	35 57.2 +60.0 176.3	35 55.0 +60.0 175.1
8°	37 00.0 +60.0 180.0	36 59.7 +60.0 178.8	36 58.7 +60.0 177.5	36 57.2 +59.9 176.3	36 55.0 +59.9 175.0
9°	38 00.0 +60.0 180.0	37 59.7 +60.0 178.7	37 58.7 +60.0 177.5	37 57.1 +60.0 176.2	37 54.9 +60.0 175.0
10°	39 00.0 +60.0 180.0	38 59.7 +60.0 178.7	38 58.7 +60.0 177.5	38 57.1 +60.0 176.2	38 54.9 +59.9 174.9
11°	40 00.0 +60.0 180.0	39 59.7 +60.0 178.7	39 58.7 +60.0 177.4	39 57.1 +59.9 176.2	39 54.8 +59.9 174.9
12°	41 00.0 +60.0 180.0	40 59.7 +60.0 178.7	40 58.7 +60.0 177.4	40 57.0 +60.0 176.1	40 54.7 +60.0 174.8
13°	42 00.0 +60.0 180.0	41 59.7 +60.0 178.7	41 58.7 +60.0 177.4	41 57.0 +60.0 176.1	41 54.7 +59.9 174.8
14°	43 00.0 +60.0 180.0	42 59.7 +60.0 178.7	42 58.7 +59.9 177.3	42 57.0 +59.9 176.0	42 54.6 +60.0 174.7
15°	44 00.0 +60.0 180.0	43 59.7 +60.0 178.7	43 58.6 +60.0 177.3	43 56.9 +60.0 176.0	43 54.6 +59.9 174.6
16°	45 00.0 +60.0 180.0	44 59.7 +60.0 178.6	44 58.6 +60.0 177.3	44 56.9 +60.0 175.9	44 54.5 +59.9 174.6
17°	46 00.0 +60.0 180.0	45 59.7 +59.9 178.6	45 58.6 +60.0 177.2	45 56.9 +59.9 175.9	45 54.4 +59.9 174.5
18°	47 00.0 +60.0 180.0	46 59.6 +60.0 178.6	46 58.6 +60.0 177.2	46 56.8 +60.0 175.8	46 54.3 +60.0 174.4
19°	48 00.0 +60.0 180.0	47 59.6 +60.0 178.6	47 58.6 +59.9 177.2	47 56.8 +59.9 175.8	47 54.3 +59.9 174.4
20°	49 00.0 +60.0 180.0	48 59.6 +60.0 178.6	48 58.5 +60.0 177.1	48 56.7 +60.0 175.7	48 54.2 +59.9 174.3
21°	50 00.0 +60.0 180.0	49 59.6 +60.0 178.5	49 58.5 +60.0 177.1	49 56.7 +59.9 175.6	49 54.1 +59.9 174.2
22°	51 00.0 +60.0 180.0	50 59.6 +60.0 178.5	50 58.5 +60.0 177.1	50 56.6 +60.0 175.6	50 54.0 +59.9 174.1
23°	52 00.0 +60.0 180.0	51 59.6 +60.0 178.5	51 58.5 +60.0 177.0	51 56.6 +59.9 175.5	51 53.9 +59.9 174.0
24°	53 00.0 +60.0 180.0	52 59.6 +60.0 178.5	52 58.5 +59.9 177.0	52 56.5 +60.0 175.4	52 53.8 +59.9 173.9
25°	54 00.0 +60.0 180.0	53 59.6 +60.0 178.5	53 58.4 +60.0 176.9	53 56.5 +59.9 175.4	53 53.7 +59.9 173.8
26°	55 00.0 +60.0 180.0	54 59.6 +60.0 178.4	54 58.4 +60.0 176.9	54 56.4 +60.0 175.3	54 53.6 +59.9 173.7
27°	56 00.0 +60.0 180.0	55 59.6 +60.0 178.4	55 58.4 +60.0 176.8	55 56.4 +59.9 175.2	55 53.5 +59.9 173.6
28°	57 00.0 +60.0 180.0	56 59.6 +60.0 178.4	56 58.4 +59.9 176.8	56 56.3 +59.9 175.1	56 53.4 +59.9 173.5
29°	58 00.0 +60.0 180.0	57 59.6 +60.0 178.3	57 58.3 +60.0 176.7	57 56.2 +60.0 175.1	57 53.3 +59.9 173.4

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°	28 52.8 +59.9 174.3	28 49.6 +59.9 173.1	28 45.8 +59.9 172.0	28 41.5 +59.8 170.9	28 36.6 +59.8 169.7
1°	29 52.7 +59.9 174.2	29 49.5 +59.9 173.1	29 45.7 +59.8 171.9	29 41.3 +59.8 170.8	29 36.4 +59.7 169.6
2°	30 52.6 +59.9 174.2	30 49.4 +59.9 173.0	30 45.5 +59.9 171.9	30 41.1 +59.8 170.7	30 36.1 +59.8 169.5
3°	31 52.5 +60.0 174.1	31 49.3 +59.9 172.9	31 45.4 +59.8 171.8	31 40.9 +59.8 170.6	31 35.9 +59.7 169.4
4°	32 52.5 +59.9 174.1	32 49.2 +59.8 172.9	32 45.2 +59.9 171.7	32 40.7 +59.8 170.5	32 35.6 +59.8 169.3
5°	33 52.4 +59.9 174.0	33 49.0 +59.9 172.8	33 45.1 +59.8 171.6	33 40.5 +59.8 170.4	33 35.4 +59.8 169.2
6°	34 52.3 +59.9 173.9	34 48.9 +59.9 172.7	34 44.9 +59.9 171.5	34 40.3 +59.8 170.3	34 35.2 +59.7 169.1
7°	35 52.2 +59.9 173.9	35 48.8 +59.9 172.6	35 44.8 +59.8 171.4	35 40.1 +59.8 170.2	35 34.9 +59.7 169.0
8°	36 52.1 +60.0 173.8	36 48.7 +59.9 172.6	36 44.6 +59.9 171.3	36 39.9 +59.8 170.1	36 34.6 +59.8 168.9
9°	37 52.1 +59.9 173.7	37 48.6 +59.8 172.5	37 44.5 +59.8 171.2	37 39.7 +59.8 170.0	37 34.4 +59.7 168.8
10°	38 52.0 +59.9 173.7	38 48.4 +59.9 172.4	38 44.3 +59.8 171.1	38 39.5 +59.8 169.9	38 34.1 +59.7 168.6
11°	39 51.9 +59.9 173.6	39 48.3 +59.9 172.3	39 44.1 +59.8 171.1	39 39.3 +59.7 169.8	39 33.8 +59.7 168.5
12°	40 51.8 +59.9 173.5	40 48.2 +59.8 172.2	40 43.9 +59.8 170.9	40 39.0 +59.8 169.7	40 33.5 +59.7 168.4
13°	41 51.7 +59.9 173.5	41 48.0 +59.9 172.1	41 43.7 +59.9 170.8	41 38.8 +59.7 169.5	41 33.2 +59.7 168.2
14°	42 51.6 +59.9 173.4	42 47.9 +59.9 172.1	42 43.6 +59.8 170.7	42 38.5 +59.8 169.4	42 32.9 +59.7 168.1
15°	43 51.5 +59.9 173.3	43 47.8 +59.8 172.0	43 43.4 +59.8 170.6	43 38.3 +59.7 169.3	43 32.6 +59.6 168.0
16°	44 51.4 +59.9 173.2	44 47.6 +59.9 171.9	44 43.2 +59.7 170.5	44 38.0 +59.7 169.2	44 32.2 +59.7 167.8
17°	45 51.3 +59.9 173.1	45 47.5 +59.8 171.8	45 42.9 +59.8 170.4	45 37.7 +59.8 169.0	45 31.9 +59.6 167.7
18°	46 51.2 +59.9 173.0	46 47.3 +59.8 171.7	46 42.7 +59.8 170.3	46 37.5 +59.7 168.9	46 31.5 +59.6 167.5
19°	47 51.1 +59.8 172.9	47 47.1 +59.9 171.5	47 42.5 +59.8 170.1	47 37.2 +59.7 168.7	47 31.1 +59.7 167.3
20°	48 50.9 +59.9 172.9	48 47.0 +59.8 171.4	48 42.3 +59.7 170.0	48 36.9 +59.6 168.6	48 30.8 +59.5 167.2
21°	49 50.8 +59.9 172.8	49 46.8 +59.8 171.3	49 42.0 +59.8 169.9	49 36.5 +59.7 168.4	49 30.3 +59.6 167.0
22°	50 50.7 +59.8 172.6	50 46.6 +59.8 171.2	50 41.8 +59.7 169.7	50 36.2 +59.7 168.3	50 29.9 +59.6 166.8
23°	51 50.5 +59.9 172.5	51 46.4 +59.8 171.1	51 41.5 +59.7 169.6	51 35.9 +59.6 168.1	51 29.5 +59.5 166.6
24°	52 50.4 +59.8 172.4	52 46.2 +59.8 170.9	52 41.2 +59.7 169.4	52 35.5 +59.6 167.9	52 29.0 +59.6 166.4
25°	53 50.2 +59.9 172.3	53 46.0 +59.7 170.8	53 40.9 +59.7 169.3	53 35.1 +59.6 167.7	53 28.6 +59.5 166.2
26°	54 50.1 +59.8 172.2	54 45.7 +59.8 170.6	54 40.6 +59.7 169.1	54 34.7 +59.6 167.5	54 28.1 +59.4 166.0
27°	55 49.9 +59.8 172.1	55 45.5 +59.7 170.5	55 40.3 +59.7 168.9	55 34.3 +59.6 167.3	55 27.5 +59.5 165.8
28°	56 49.7 +59.9 171.9	56 45.2 +59.8 170.3	56 40.0 +59.6 168.7	56 33.9 +59.5 167.1	56 27.0 +59.4 165.5
29°	57 49.6 +59.8 171.8	57 45.0 +59.7 170.1	57 39.6 +59.6 168.5	57 33.4 +59.5 166.9	57 26.4 +59.4 165.3

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°	28 31.1 +59.7 168.6	28 25.1 +59.7 167.5	28 18.5 +59.6 166.3	28 11.3 +59.6 165.2	28 03.6 +59.5 164.1
1°	29 30.8 +59.8 168.5	29 24.8 +59.6 167.3	29 18.1 +59.6 166.2	29 10.9 +59.5 165.1	29 03.1 +59.5 163.9
2°	30 30.6 +59.7 168.4	30 24.4 +59.7 167.2	30 17.7 +59.6 166.1	30 10.4 +59.5 164.9	30 02.6 +59.4 163.8
3°	31 30.3 +59.7 168.3	31 24.1 +59.6 167.1	31 17.3 +59.6 165.9	31 09.9 +59.5 164.8	31 02.0 +59.4 163.6
4°	32 30.0 +59.7 168.1	32 23.7 +59.6 167.0	32 16.9 +59.5 165.8	32 09.4 +59.5 164.6	32 01.4 +59.5 163.5
5°	33 29.7 +59.7 168.0	33 23.3 +59.7 166.8	33 16.4 +59.6 165.7	33 08.9 +59.5 164.5	33 00.9 +59.4 163.3
6°	34 29.4 +59.6 167.9	34 23.0 +59.6 166.7	34 16.0 +59.5 165.5	34 08.4 +59.5 164.3	34 00.3 +59.3 163.1
7°	35 29.0 +59.7 167.8	35 22.6 +59.6 166.6	35 15.5 +59.6 165.4	35 07.9 +59.4 164.2	34 59.6 +59.4 163.0
8°	36 28.7 +59.7 167.7	36 22.2 +59.6 166.4	36 15.1 +59.5 165.2	36 07.3 +59.5 164.0	35 59.0 +59.4 162.8
9°	37 28.4 +59.6 167.5	37 21.8 +59.6 166.3	37 14.6 +59.5 165.1	37 06.8 +59.4 163.8	36 58.4 +59.3 162.6
10°	38 28.0 +59.7 167.4	38 21.4 +59.5 166.1	38 14.1 +59.5 164.9	38 06.2 +59.4 163.6	37 57.7 +59.3 162.4
11°	39 27.7 +59.6 167.2	39 20.9 +59.6 166.0	39 13.6 +59.5 164.7	39 05.6 +59.4 163.5	38 57.0 +59.3 162.2
12°	40 27.3 +59.6 167.1	40 20.5 +59.6 165.8	40 13.1 +59.4 164.6	40 05.0 +59.4 163.3	39 56.3 +59.3 162.0
13°	41 26.9 +59.7 167.0	41 20.1 +59.5 165.7	41 12.5 +59.5 164.4	41 04.4 +59.4 163.1	40 55.6 +59.3 161.8
14°	42 26.6 +59.6 166.8	42 19.6 +59.5 165.5	42 12.0 +59.4 164.2	42 03.8 +59.3 162.9	41 54.9 +59.2 161.6
15°	43 26.2 +59.5 166.6	43 19.1 +59.5 165.3	43 11.4 +59.4 164.0	43 03.1 +59.3 162.7	42 54.1 +59.2 161.4
16°	44 25.7 +59.6 166.5	44 18.6 +59.5 165.1	44 10.8 +59.4 163.8	44 02.4 +59.3 162.5	43 53.3 +59.2 161.2
17°	45 25.3 +59.6 166.3	45 18.1 +59.5 165.0	45 10.2 +59.4 163.6	45 01.7 +59.3 162.3	44 52.5 +59.2 160.9
18°	46 24.9 +59.5 166.1	46 17.6 +59.4 164.8	46 09.6 +59.4 163.4	46 01.0 +59.2 162.1	45 51.7 +59.1 160.7
19°	47 24.4 +59.5 166.0	47 17.0 +59.5 164.6	47 09.0 +59.3 163.2	47 00.2 +59.2 161.8	46 50.8 +59.1 160.5
20°	48 23.9 +59.6 165.8	48 16.5 +59.4 164.4	48 08.3 +59.3 163.0	47 59.4 +59.2 161.6	47 49.9 +59.1 160.2
21°	49 23.5 +59.4 165.6	49 15.9 +59.3 164.2	49 07.6 +59.2 162.7	48 58.6 +59.2 161.3	48 49.0 +59.0 159.9
22°	50 22.9 +59.5 165.4	50 15.2 +59.4 163.9	50 06.8 +59.3 162.5	49 57.8 +59.1 161.1	49 48.0 +59.0 159.7
23°	51 22.4 +59.4 165.2	51 14.6 +59.3 163.7	51 06.1 +59.2 162.3	50 56.9 +59.0 160.8	50 47.0 +58.9 159.4
24°	52 21.8 +59.5 164.9	52 13.9 +59.3 163.5	52 05.3 +59.2 162.0	51 55.9 +59.1 160.5	51 45.9 +58.9 159.1
25°	53 21.3 +59.3 164.7	53 13.2 +59.3 163.2	53 04.5 +59.1 161.7	52 55.0 +59.0 160.2	52 44.8 +58.8 158.8
26°	54 20.6 +59.4 164.5	54 12.5 +59.2 162.9	54 03.6 +59.1 161.4	53 54.0 +58.9 159.9	53 43.6 +58.8 158.4
27°	55 20.0 +59.3 164.2	55 11.7 +59.2 162.7	55 02.7 +59.0 161.1	54 52.9 +58.9 159.6	54 42.4 +58.7 158.1
28°	56 19.3 +59.3 163.9	56 10.9 +59.1 162.4	56 01.7 +59.0 160.8	55 51.8 +58.8 159.3	55 41.1 +58.7 157.7
29°	57 18.6 +59.3 163.7	57 10.0 +59.1 162.1	57 00.7 +58.9 160.5	56 50.6 +58.8 158.9	56 39.8 +58.6 157.4

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°	27 55.4 +59.4 163.0	27 46.6 +59.3 161.8	27 37.3 +59.2 160.7	27 27.4 +59.1 159.6	27 17.0 +59.1 158.5
1°	28 54.8 +59.4 162.8	28 45.9 +59.3 161.7	28 36.5 +59.2 160.6	28 26.5 +59.2 159.4	28 16.1 +59.0 158.3
2°	29 54.2 +59.3 162.6	29 45.2 +59.3 161.5	29 35.7 +59.2 160.4	29 25.7 +59.1 159.2	29 15.1 +59.0 158.1
3°	30 53.5 +59.4 162.5	30 44.5 +59.2 161.3	30 34.9 +59.2 160.2	30 24.8 +59.0 159.0	30 14.1 +59.0 157.9
4°	31 52.9 +59.3 162.3	31 43.7 +59.3 161.1	31 34.1 +59.1 160.0	31 23.8 +59.1 158.8	31 13.1 +58.9 157.7
5°	32 52.2 +59.3 162.1	32 43.0 +59.2 161.0	32 33.2 +59.2 159.8	32 22.9 +59.0 158.6	32 12.0 +59.0 157.5
6°	33 51.5 +59.3 161.9	33 42.2 +59.2 160.8	33 32.4 +59.1 159.6	33 21.9 +59.0 158.4	33 11.0 +58.9 157.2
7°	34 50.8 +59.3 161.8	34 41.4 +59.2 160.6	34 31.5 +59.1 159.4	34 20.9 +59.0 158.2	34 09.9 +58.8 157.0
8°	35 50.1 +59.3 161.6	35 40.6 +59.2 160.4	35 30.6 +59.0 159.2	35 19.9 +59.0 158.0	35 08.7 +58.9 156.8
9°	36 49.4 +59.2 161.4	36 39.8 +59.2 160.2	36 29.6 +59.1 158.9	36 18.9 +58.9 157.7	36 07.6 +58.8 156.5
10°	37 48.6 +59.3 161.2	37 39.0 +59.1 159.9	37 28.7 +59.0 158.7	37 17.8 +59.0 157.5	37 06.4 +58.8 156.3
11°	38 47.9 +59.2 161.0	38 38.1 +59.1 159.7	38 27.7 +59.0 158.5	38 16.8 +58.8 157.3	38 05.2 +58.8 156.0
12°	39 47.1 +59.1 160.8	39 37.2 +59.1 159.5	39 26.7 +59.0 158.3	39 15.6 +58.9 157.0	39 04.0 +58.7 155.8
13°	40 46.2 +59.2 160.5	40 36.3 +59.0 159.3	40 25.7 +58.9 158.0	40 14.5 +58.8 156.8	40 02.7 +58.7 155.5
14°	41 45.4 +59.1 160.3	41 35.3 +59.0 159.0	41 24.6 +58.9 157.8	41 13.3 +58.8 156.5	41 01.4 +58.7 155.2
15°	42 44.5 +59.1 160.1	42 34.3 +59.0 158.8	42 23.5 +58.9 157.5	42 12.1 +58.7 156.2	42 00.1 +58.6 155.0
16°	43 43.6 +59.1 159.9	43 33.3 +59.0 158.6	43 22.4 +58.8 157.3	43 10.8 +58.7 156.0	42 58.7 +58.5 154.7
17°	44 42.7 +59.1 159.6	44 32.3 +58.9 158.3	44 21.2 +58.8 157.0	44 09.5 +58.7 155.7	43 57.2 +58.6 154.4
18°	45 41.8 +59.0 159.4	45 31.2 +58.9 158.0	45 20.0 +58.7 156.7	45 08.2 +58.6 155.4	44 55.8 +58.4 154.1
19°	46 40.8 +58.9 159.1	46 30.1 +58.8 157.8	46 18.7 +58.7 156.4	46 06.8 +58.5 155.1	45 54.2 +58.4 153.7
20°	47 39.7 +59.0 158.8	47 28.9 +58.8 157.5	47 17.4 +58.7 156.1	47 05.3 +58.5 154.8	46 52.6 +58.4 153.4
21°	48 38.7 +58.8 158.5	48 27.7 +58.7 157.2	48 16.1 +58.6 155.8	48 03.8 +58.5 154.4	47 51.0 +58.3 153.1
22°	49 37.5 +58.9 158.3	49 26.4 +58.7 156.9	49 14.7 +58.5 155.5	49 02.3 +58.4 154.1	48 49.3 +58.2 152.7
23°	50 36.4 +58.8 158.0	50 25.1 +58.7 156.5	50 13.2 +58.5 155.1	50 00.7 +58.3 153.7	49 47.5 +58.1 152.3
24°	51 35.2 +58.7 157.6	51 23.8 +58.5 156.2	51 11.7 +58.4 154.8	50 59.0 +58.2 153.4	50 45.6 +58.1 152.0
25°	52 33.9 +58.7 157.3	52 22.3 +58.6 155.8	52 10.1 +58.3 154.4	51 57.2 +58.2 153.0	51 43.7 +58.0 151.6
26°	53 32.6 +58.6 157.0	53 20.9 +58.4 155.5	53 08.4 +58.3 154.0	52 55.4 +58.0 152.6	52 41.7 +57.8 151.1
27°	54 31.2 +58.5 156.6	54 19.3 +58.4 155.1	54 06.7 +58.2 153.6	53 53.4 +58.0 152.1	53 39.5 +57.8 150.7
28°	55 29.7 +58.5 156.2	55 17.7 +58.2 154.7	55 04.9 +58.1 153.2	54 51.4 +57.9 151.7	54 37.3 +57.7 150.2
29°	56 28.2 +58.4 155.8	56 15.9 +58.2 154.3	56 03.0 +58.0 152.7	55 49.3 +57.8 151.2	55 35.0 +57.5 149.7

Declination SAME name as Latitude

Latitude 61°

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°	27 06.1 +58.9 157.4	26 54.7 +58.8 156.3	26 42.7 +58.8 155.2	26 30.3 +58.6 154.1	26 17.3 +58.5 153.0
1°	28 05.0 +59.0 157.2	27 53.5 +58.8 156.1	27 41.5 +58.7 155.0	27 28.9 +58.6 153.9	27 15.8 +58.5 152.8
2°	29 04.0 +58.9 157.0	28 52.3 +58.8 155.9	28 40.2 +58.7 154.7	28 27.5 +58.6 153.6	28 14.3 +58.5 152.5
3°	30 02.9 +58.8 156.8	29 51.1 +58.8 155.6	29 38.9 +58.6 154.5	29 26.1 +58.5 153.4	29 12.8 +58.4 152.3
4°	31 01.7 +58.9 156.5	30 49.9 +58.7 155.4	30 37.5 +58.7 154.3	30 24.6 +58.6 153.1	30 11.2 +58.4 152.0
5°	32 00.6 +58.8 156.3	31 48.6 +58.8 155.2	31 36.2 +58.6 154.0	31 23.2 +58.4 152.9	31 09.6 +58.4 151.7
6°	32 59.4 +58.8 156.1	32 47.4 +58.7 154.9	32 34.8 +58.5 153.8	32 21.6 +58.5 152.6	32 08.0 +58.3 151.5
7°	33 58.2 +58.8 155.8	33 46.1 +58.6 154.7	33 33.3 +58.6 153.5	33 20.1 +58.4 152.3	33 06.3 +58.3 151.2
8°	34 57.0 +58.7 155.6	34 44.7 +58.6 154.4	34 31.9 +58.5 153.2	34 18.5 +58.4 152.1	34 04.6 +58.3 150.9
9°	35 55.7 +58.8 155.3	35 43.3 +58.6 154.2	35 30.4 +58.5 153.0	35 16.9 +58.3 151.8	35 02.9 +58.2 150.6
10°	36 54.5 +58.6 155.1	36 41.9 +58.6 153.9	36 28.9 +58.4 152.7	36 15.2 +58.3 151.5	36 01.1 +58.2 150.3
11°	37 53.1 +58.7 154.8	37 40.5 +58.5 153.6	37 27.3 +58.4 152.4	37 13.5 +58.3 151.2	36 59.3 +58.1 150.0
12°	38 51.8 +58.6 154.6	38 39.0 +58.5 153.3	38 25.7 +58.3 152.1	38 11.8 +58.2 150.9	37 57.4 +58.0 149.7
13°	39 50.4 +58.5 154.3	39 37.5 +58.4 153.0	39 24.0 +58.3 151.8	39 10.0 +58.2 150.6	38 55.4 +58.1 149.4
14°	40 48.9 +58.6 154.0	40 35.9 +58.4 152.7	40 22.3 +58.3 151.5	40 08.2 +58.1 150.3	39 53.5 +57.9 149.0
15°	41 47.5 +58.4 153.7	41 34.3 +58.3 152.4	41 20.6 +58.1 151.2	41 06.3 +58.0 149.9	40 51.4 +57.9 148.7
16°	42 45.9 +58.5 153.4	42 32.6 +58.3 152.1	42 18.7 +58.2 150.9	42 04.3 +58.0 149.6	41 49.3 +57.8 148.4
17°	43 44.4 +58.3 153.1	43 30.9 +58.2 151.8	43 16.9 +58.0 150.5	43 02.3 +57.9 149.3	42 47.1 +57.8 148.0
18°	44 42.7 +58.4 152.8	44 29.1 +58.2 151.5	44 14.9 +58.1 150.2	44 00.2 +57.8 148.9	43 44.9 +57.7 147.6
19°	45 41.1 +58.2 152.4	45 27.3 +58.1 151.1	45 13.0 +57.9 149.8	44 58.0 +57.8 148.5	44 42.6 +57.6 147.2
20°	46 39.3 +58.2 152.1	46 25.4 +58.0 150.8	46 10.9 +57.9 149.4	45 55.8 +57.7 148.1	45 40.2 +57.5 146.8
21°	47 37.5 +58.1 151.7	47 23.4 +58.0 150.4	47 08.8 +57.7 149.1	46 53.5 +57.6 147.7	46 37.7 +57.4 146.4
22°	48 35.6 +58.1 151.3	48 21.4 +57.8 150.0	48 06.5 +57.7 148.7	47 51.1 +57.5 147.3	47 35.1 +57.4 146.0
23°	49 33.7 +57.9 151.0	49 19.2 +57.8 149.6	49 04.2 +57.6 148.2	48 48.6 +57.4 146.9	48 32.5 +57.2 145.6
24°	50 31.6 +57.9 150.6	50 17.0 +57.7 149.2	50 01.8 +57.5 147.8	49 46.0 +57.3 146.5	49 29.7 +57.1 145.1
25°	51 29.5 +57.8 150.1	51 14.7 +57.6 148.7	50 59.3 +57.4 147.4	50 43.3 +57.2 146.0	50 26.8 +57.0 144.6
26°	52 27.3 +57.7 149.7	52 12.3 +57.5 148.3	51 56.7 +57.3 146.9	51 40.5 +57.1 145.5	51 23.8 +56.8 144.1
27°	53 25.0 +57.6 149.2	53 09.8 +57.4 147.8	52 54.0 +57.1 146.4	52 37.6 +56.9 145.0	52 20.6 +56.8 143.6
28°	54 22.6 +57.4 148.8	54 07.2 +57.2 147.3	53 51.1 +57.1 145.9	53 34.5 +56.8 144.5	53 17.4 +56.5 143.1
29°	55 20.0 +57.3 148.3	55 04.4 +57.1 146.8	54 48.2 +56.8 145.4	54 31.3 +56.7 143.9	54 13.9 +56.4 142.5

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°	26 03.9 +58.4 151.9	25 50.0 +58.2 150.9	25 35.6 +58.1 149.8	25 20.7 +58.0 148.7	25 05.3 +58.0 147.6
1°	27 02.3 +58.4 151.7	26 48.2 +58.3 150.6	26 33.7 +58.2 149.5	26 18.7 +58.0 148.4	26 03.3 +57.9 147.3
2°	28 00.7 +58.3 151.4	27 46.5 +58.2 150.3	27 31.9 +58.1 149.2	27 16.7 +58.0 148.1	27 01.2 +57.8 147.1
3°	28 59.0 +58.3 151.2	28 44.7 +58.2 150.0	28 30.0 +58.0 148.9	28 14.7 +58.0 147.8	27 59.0 +57.8 146.8
4°	29 57.3 +58.3 150.9	29 42.9 +58.2 149.8	29 28.0 +58.1 148.7	29 12.7 +57.9 147.5	28 56.8 +57.8 146.4
5°	30 55.6 +58.3 150.6	30 41.1 +58.1 149.5	30 26.1 +58.0 148.4	30 10.6 +57.8 147.2	29 54.6 +57.7 146.1
6°	31 53.9 +58.2 150.3	31 39.2 +58.1 149.2	31 24.1 +57.9 148.1	31 08.4 +57.8 146.9	30 52.3 +57.7 145.8
7°	32 52.1 +58.1 150.0	32 37.3 +58.0 148.9	32 22.0 +57.9 147.8	32 06.2 +57.8 146.6	31 50.0 +57.6 145.5
8°	33 50.2 +58.2 149.7	33 35.3 +58.0 148.6	33 19.9 +57.9 147.4	33 04.0 +57.7 146.3	32 47.6 +57.6 145.2
9°	34 48.4 +58.0 149.4	34 33.3 +58.0 148.3	34 17.8 +57.8 147.1	34 01.7 +57.7 146.0	33 45.2 +57.5 144.8
10°	35 46.4 +58.1 149.1	35 31.3 +57.8 148.0	35 15.6 +57.7 146.8	34 59.4 +57.6 145.6	34 42.7 +57.5 144.5
11°	36 44.5 +57.9 148.8	36 29.1 +57.9 147.6	36 13.3 +57.7 146.5	35 57.0 +57.6 145.3	35 40.2 +57.4 144.1
12°	37 42.4 +58.0 148.5	37 27.0 +57.8 147.3	37 11.0 +57.7 146.1	36 54.6 +57.4 144.9	36 37.6 +57.3 143.8
13°	38 40.4 +57.8 148.2	38 24.8 +57.7 147.0	38 08.7 +57.5 145.8	37 52.0 +57.5 144.6	37 34.9 +57.3 143.4
14°	39 38.2 +57.8 147.8	39 22.5 +57.6 146.6	39 06.2 +57.5 145.4	38 49.5 +57.3 144.2	38 32.2 +57.2 143.0
15°	40 36.0 +57.8 147.5	40 20.1 +57.6 146.3	40 03.7 +57.5 145.0	39 46.8 +57.3 143.8	39 29.4 +57.1 142.6
16°	41 33.8 +57.7 147.1	41 17.7 +57.5 145.9	41 01.2 +57.3 144.7	40 44.1 +57.2 143.4	40 26.5 +57.0 142.2
17°	42 31.5 +57.5 146.7	42 15.2 +57.5 145.5	41 58.5 +57.3 144.3	41 41.3 +57.1 143.0	41 23.5 +57.0 141.8
18°	43 29.0 +57.6 146.4	43 12.7 +57.3 145.1	42 55.8 +57.2 143.9	42 38.4 +57.0 142.6	42 20.5 +56.8 141.4
19°	44 26.6 +57.4 146.0	44 10.0 +57.3 144.7	43 53.0 +57.0 143.4	43 35.4 +56.9 142.2	43 17.3 +56.7 141.0
20°	45 24.0 +57.3 145.6	45 07.3 +57.1 144.3	44 50.0 +57.0 143.0	44 32.3 +56.8 141.8	44 14.0 +56.7 140.5
21°	46 21.3 +57.3 145.1	46 04.4 +57.1 143.8	45 47.0 +56.9 142.6	45 29.1 +56.7 141.3	45 10.7 +56.5 140.1
22°	47 18.6 +57.1 144.7	47 01.5 +57.0 143.4	46 43.9 +56.8 142.1	46 25.8 +56.6 140.8	46 07.2 +56.3 139.6
23°	48 15.7 +57.1 144.2	47 58.5 +56.8 142.9	47 40.7 +56.6 141.6	47 22.4 +56.4 140.3	47 03.5 +56.3 139.1
24°	49 12.8 +56.9 143.8	48 55.3 +56.7 142.4	48 37.3 +56.5 141.1	48 18.8 +56.3 139.8	47 59.8 +56.1 138.6
25°	50 09.7 +56.8 143.3	49 52.0 +56.6 141.9	49 33.8 +56.4 140.6	49 15.1 +56.2 139.3	48 55.9 +55.9 138.0
26°	51 06.5 +56.6 142.8	50 48.6 +56.4 141.4	50 30.2 +56.2 140.1	50 11.3 +56.0 138.8	49 51.8 +55.8 137.5
27°	52 03.1 +56.5 142.2	51 45.0 +56.3 140.9	51 26.4 +56.1 139.5	51 07.3 +55.8 138.2	50 47.6 +55.6 136.9
28°	52 59.6 +56.3 141.7	52 41.3 +56.1 140.3	52 22.5 +55.8 139.0	52 03.1 +55.6 137.6	51 43.2 +55.5 136.3
29°	53 55.9 +56.2 141.1	53 37.4 +55.9 139.7	53 18.3 +55.7 138.4	52 58.7 +55.5 137.0	52 38.7 +55.2 135.7

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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°	24 49.5 +57.8 146.6	24 33.3 +57.7 145.5	24 16.6 +57.5 144.5	23 59.5 +57.4 143.4	23 41.9 +57.3 142.4
1°	25 47.3 +57.8 146.3	25 31.0 +57.6 145.2	25 14.1 +57.6 144.1	24 56.9 +57.4 143.1	24 39.2 +57.3 142.0
2°	26 45.1 +57.7 146.0	26 28.6 +57.6 144.9	26 11.7 +57.4 143.8	25 54.3 +57.3 142.8	25 36.5 +57.2 141.7
3°	27 42.8 +57.7 145.7	27 26.2 +57.6 144.6	27 09.1 +57.4 143.5	26 51.6 +57.3 142.4	26 33.7 +57.1 141.4
4°	28 40.5 +57.7 145.4	28 23.8 +57.5 144.3	28 06.5 +57.4 143.2	27 48.9 +57.2 142.1	27 30.8 +57.1 141.0
5°	29 38.2 +57.6 145.0	29 21.3 +57.4 143.9	29 03.9 +57.3 142.8	28 46.1 +57.2 141.8	28 27.9 +57.1 140.7
6°	30 35.8 +57.5 144.7	30 18.7 +57.4 143.6	30 01.2 +57.3 142.5	29 43.3 +57.1 141.4	29 25.0 +56.9 140.3
7°	31 33.3 +57.5 144.4	31 16.1 +57.4 143.3	30 58.5 +57.2 142.2	30 40.4 +57.1 141.1	30 21.9 +57.0 140.0
8°	32 30.8 +57.4 144.0	32 13.5 +57.3 142.9	31 55.7 +57.2 141.8	31 37.5 +57.0 140.7	31 18.9 +56.8 139.6
9°	33 28.2 +57.4 143.7	33 10.8 +57.2 142.6	32 52.9 +57.1 141.4	32 34.5 +57.0 140.3	32 15.7 +56.8 139.2
10°	34 25.6 +57.3 143.3	34 08.0 +57.2 142.2	33 50.0 +57.0 141.1	33 31.5 +56.8 140.0	33 12.5 +56.8 138.8
11°	35 22.9 +57.3 143.0	35 05.2 +57.1 141.8	34 47.0 +56.9 140.7	34 28.3 +56.9 139.6	34 09.3 +56.6 138.4
12°	36 20.2 +57.2 142.6	36 02.3 +57.0 141.5	35 43.9 +56.9 140.3	35 25.2 +56.7 139.2	35 05.9 +56.6 138.0
13°	37 17.4 +57.1 142.2	36 59.3 +57.0 141.1	36 40.8 +56.8 139.9	36 21.9 +56.6 138.8	36 02.5 +56.5 137.6
14°	38 14.5 +57.0 141.9	37 56.3 +56.9 140.7	37 37.6 +56.7 139.5	37 18.5 +56.6 138.4	36 59.0 +56.4 137.2
15°	39 11.5 +57.0 141.5	38 53.2 +56.7 140.3	38 34.3 +56.7 139.1	38 15.1 +56.4 137.9	37 55.4 +56.3 136.8
16°	40 08.5 +56.8 141.0	39 49.9 +56.7 139.9	39 31.0 +56.5 138.7	39 11.5 +56.4 137.5	38 51.7 +56.2 136.3
17°	41 05.3 +56.8 140.6	40 46.6 +56.6 139.4	40 27.5 +56.4 138.2	40 07.9 +56.2 137.1	39 47.9 +56.0 135.9
18°	42 02.1 +56.6 140.2	41 43.2 +56.5 139.0	41 23.9 +56.3 137.8	41 04.1 +56.2 136.6	40 43.9 +56.0 135.4
19°	42 58.7 +56.6 139.7	42 39.7 +56.4 138.5	42 20.2 +56.2 137.3	42 00.3 +56.0 136.1	41 39.9 +55.9 134.9
20°	43 55.3 +56.4 139.3	43 36.1 +56.3 138.1	43 16.4 +56.1 136.8	42 56.3 +55.9 135.6	42 35.8 +55.7 134.5
21°	44 51.7 +56.4 138.8	44 32.4 +56.1 137.6	44 12.5 +55.9 136.4	43 52.2 +55.8 135.1	43 31.5 +55.6 133.9
22°	45 48.1 +56.2 138.3	45 28.5 +56.0 137.1	45 08.4 +55.9 135.8	44 48.0 +55.6 134.6	44 27.1 +55.4 133.4
23°	46 44.3 +56.0 137.8	46 24.5 +55.8 136.6	46 04.3 +55.6 135.3	45 43.6 +55.4 134.1	45 22.5 +55.3 132.9
24°	47 40.3 +55.9 137.3	47 20.3 +55.7 136.0	46 59.9 +55.5 134.8	46 39.0 +55.3 133.5	46 17.8 +55.1 132.3
25°	48 36.2 +55.7 136.7	48 16.0 +55.6 135.5	47 55.4 +55.3 134.2	47 34.3 +55.2 133.0	47 12.9 +54.9 131.7
26°	49 31.9 +55.6 136.2	49 11.6 +55.3 134.9	48 50.7 +55.2 133.6	48 29.5 +54.9 132.4	48 07.8 +54.7 131.1
27°	50 27.5 +55.4 135.6	50 06.9 +55.2 134.3	49 45.9 +54.9 133.0	49 24.4 +54.7 131.8	49 02.5 +54.5 130.5
28°	51 22.9 +55.2 135.0	51 02.1 +55.0 133.7	50 40.8 +54.8 132.4	50 19.1 +54.6 131.1	49 57.0 +54.3 129.9
29°	52 18.1 +55.0 134.3	51 57.1 +54.7 133.0	51 35.6 +54.5 131.8	51 13.7 +54.2 130.5	50 51.3 +54.1 129.2

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°	23 23.9 +57.2 141.3	23 05.6 +57.0 140.3	22 46.8 +56.9 139.3	22 27.6 +56.7 138.2	22 08.0 +56.6 137.2
1°	24 21.1 +57.1 141.0	24 02.6 +57.0 139.9	23 43.7 +56.8 138.9	23 24.3 +56.8 137.9	23 04.6 +56.6 136.8
2°	25 18.2 +57.1 140.6	24 59.6 +56.9 139.6	24 40.5 +56.8 138.6	24 21.1 +56.6 137.5	24 01.2 +56.6 136.5
3°	26 15.3 +57.0 140.3	25 56.5 +56.9 139.3	25 37.3 +56.8 138.2	25 17.7 +56.6 137.2	24 57.8 +56.4 136.1
4°	27 12.3 +57.0 140.0	26 53.4 +56.8 138.9	26 34.1 +56.6 137.8	26 14.3 +56.6 136.8	25 54.2 +56.4 135.7
5°	28 09.3 +56.9 139.6	27 50.2 +56.8 138.5	27 30.7 +56.7 137.5	27 10.9 +56.5 136.4	26 50.6 +56.4 135.4
6°	29 06.2 +56.8 139.2	28 47.0 +56.7 138.2	28 27.4 +56.5 137.1	28 07.4 +56.4 136.0	27 47.0 +56.3 135.0
7°	30 03.0 +56.8 138.9	29 43.7 +56.6 137.8	29 23.9 +56.5 136.7	29 03.8 +56.4 135.6	28 43.3 +56.2 134.6
8°	30 59.8 +56.7 138.5	30 40.3 +56.6 137.4	30 20.4 +56.5 136.3	30 00.2 +56.2 135.3	29 39.5 +56.1 134.2
9°	31 56.5 +56.7 138.1	31 36.9 +56.5 137.0	31 16.9 +56.3 135.9	30 56.4 +56.3 134.8	30 35.6 +56.1 133.8
10°	32 53.2 +56.6 137.7	32 33.4 +56.4 136.6	32 13.2 +56.3 135.5	31 52.7 +56.1 134.4	31 31.7 +56.0 133.4
11°	33 49.8 +56.5 137.3	33 29.8 +56.4 136.2	33 09.5 +56.2 135.1	32 48.8 +56.0 134.0	32 27.7 +55.9 132.9
12°	34 46.3 +56.4 136.9	34 26.2 +56.2 135.8	34 05.7 +56.1 134.7	33 44.8 +56.0 133.6	33 23.6 +55.8 132.5
13°	35 42.7 +56.3 136.5	35 22.4 +56.2 135.4	35 01.8 +56.0 134.3	34 40.8 +55.9 133.2	34 19.4 +55.7 132.1
14°	36 39.0 +56.2 136.1	36 18.6 +56.1 134.9	35 57.8 +55.9 133.8	35 36.7 +55.7 132.7	35 15.1 +55.6 131.6
15°	37 35.2 +56.2 135.6	37 14.7 +56.0 134.5	36 53.7 +55.9 133.4	36 32.4 +55.7 132.3	36 10.7 +55.5 131.1
16°	38 31.4 +56.0 135.2	38 10.7 +55.8 134.0	37 49.6 +55.7 132.9	37 28.1 +55.5 131.8	37 06.2 +55.4 130.7
17°	39 27.4 +55.9 134.7	39 06.5 +55.8 133.6	38 45.3 +55.5 132.4	38 23.6 +55.4 131.3	38 01.6 +55.2 130.2
18°	40 23.3 +55.8 134.3	40 02.3 +55.6 133.1	39 40.8 +55.5 132.0	39 19.0 +55.3 130.8	38 56.8 +55.1 129.7
19°	41 19.1 +55.7 133.8	40 57.9 +55.5 132.6	40 36.3 +55.3 131.5	40 14.3 +55.2 130.3	39 51.9 +55.0 129.2
20°	42 14.8 +55.5 133.3	41 53.4 +55.4 132.1	41 31.6 +55.2 130.9	41 09.5 +55.0 129.8	40 46.9 +54.9 128.6
21°	43 10.3 +55.4 132.8	42 48.8 +55.2 131.6	42 26.8 +55.0 130.4	42 04.5 +54.8 129.3	41 41.8 +54.6 128.1
22°	44 05.7 +55.3 132.2	43 44.0 +55.0 131.0	43 21.8 +54.9 129.9	42 59.3 +54.7 128.7	42 36.4 +54.6 127.6
23°	45 01.0 +55.0 131.7	44 39.0 +54.9 130.5	44 16.7 +54.7 129.3	43 54.0 +54.5 128.1	43 31.0 +54.3 127.0
24°	45 56.0 +54.9 131.1	45 33.9 +54.7 129.9	45 11.4 +54.5 128.7	44 48.5 +54.4 127.6	44 25.3 +54.2 126.4
25°	46 50.9 +54.8 130.5	46 28.6 +54.6 129.3	46 05.9 +54.4 128.1	45 42.9 +54.1 127.0	45 19.5 +53.9 125.8
26°	47 45.7 +54.5 129.9	47 23.2 +54.3 128.7	47 00.3 +54.1 127.5	46 37.0 +54.0 126.3	46 13.4 +53.8 125.2
27°	48 40.2 +54.3 129.3	48 17.5 +54.1 128.1	47 54.4 +53.9 126.9	47 31.0 +53.7 125.7	47 07.2 +53.5 124.5
28°	49 34.5 +54.1 128.6	49 11.6 +53.9 127.4	48 48.3 +53.7 126.2	48 24.7 +53.4 125.0	48 00.7 +53.2 123.8
29°	50 28.6 +53.8 128.0	50 05.5 +53.6 126.7	49 42.0 +53.4 125.5	49 18.1 +53.2 124.3	48 53.9 +53.1 123.1

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°	21 48.1 +56.5 136.2	21 27.7 +56.4 135.2	21 07.1 +56.2 134.2	20 46.0 +56.1 133.2	20 24.6 +56.0 132.2
1°	22 44.6 +56.4 135.8	22 24.1 +56.3 134.8	22 03.3 +56.2 133.8	21 42.1 +56.1 132.8	21 20.6 +55.9 131.8
2°	23 41.0 +56.4 135.5	23 20.4 +56.3 134.4	22 59.5 +56.1 133.4	22 38.2 +55.9 132.4	22 16.5 +55.9 131.4
3°	24 37.4 +56.3 135.1	24 16.7 +56.2 134.1	22 55.6 +56.1 133.0	23 34.1 +56.0 132.0	23 12.4 +55.8 131.0
4°	25 33.7 +56.3 134.7	25 12.9 +56.1 133.7	24 51.7 +56.0 132.6	24 30.1 +55.8 131.6	24 08.2 +55.7 130.6
5°	26 30.0 +56.2 134.3	26 09.0 +56.1 133.3	25 47.7 +55.9 132.2	25 25.9 +55.8 131.2	25 03.9 +55.7 130.2
6°	27 26.2 +56.2 133.9	27 05.1 +56.0 132.9	26 43.6 +55.9 131.8	26 21.7 +55.8 130.8	25 59.6 +55.5 129.8
7°	28 22.4 +56.0 133.5	28 01.1 +55.9 132.5	27 39.5 +55.8 131.4	27 17.5 +55.6 130.4	26 55.1 +55.6 129.4
8°	29 18.4 +56.0 133.1	28 57.0 +55.9 132.1	28 35.3 +55.7 131.0	28 13.1 +55.6 130.0	27 50.7 +55.4 128.9
9°	30 14.4 +56.0 132.7	29 52.9 +55.8 131.6	29 31.0 +55.6 130.6	29 08.7 +55.5 129.5	28 46.1 +55.4 128.5
10°	31 10.4 +55.8 132.3	30 48.7 +55.7 131.2	30 26.6 +55.5 130.2	30 04.2 +55.4 129.1	29 41.5 +55.2 128.0
11°	32 06.2 +55.7 131.9	31 44.4 +55.6 130.8	31 22.1 +55.5 129.7	30 59.6 +55.3 128.7	30 36.7 +55.2 127.6
12°	33 01.9 +55.7 131.4	32 40.0 +55.5 130.3	32 17.6 +55.4 129.3	31 54.9 +55.2 128.2	31 31.9 +55.1 127.1
13°	33 57.6 +55.6 131.0	33 35.5 +55.4 129.9	33 13.0 +55.2 128.8	32 50.1 +55.1 127.7	32 27.0 +54.9 126.7
14°	34 53.2 +55.4 130.5	34 30.9 +55.3 129.4	34 08.2 +55.2 128.3	33 45.2 +55.0 127.3	33 21.9 +54.9 126.2
15°	35 48.6 +55.3 130.0	35 26.2 +55.1 128.9	35 03.4 +55.0 127.9	34 40.2 +54.9 126.8	34 16.8 +54.7 125.7
16°	36 43.9 +55.3 129.6	36 21.3 +55.1 128.5	35 58.4 +54.9 127.4	35 35.1 +54.8 126.3	35 11.5 +54.6 125.2
17°	37 39.2 +55.0 129.1	37 16.4 +54.9 128.0	36 53.3 +54.8 126.9	36 29.9 +54.6 125.8	36 06.1 +54.5 124.7
18°	38 34.2 +55.0 128.6	38 11.3 +54.8 127.5	37 48.1 +54.6 126.4	37 24.5 +54.5 125.3	37 00.6 +54.3 124.2
19°	39 29.2 +54.8 128.0	39 06.1 +54.7 126.9	38 42.7 +54.5 125.8	38 19.0 +54.3 124.7	37 54.9 +54.2 123.6
20°	40 24.0 +54.7 127.5	40 00.8 +54.5 126.4	39 37.2 +54.3 125.3	39 13.3 +54.2 124.2	38 49.1 +54.0 123.1
21°	41 18.7 +54.5 127.0	40 55.3 +54.3 125.8	40 31.5 +54.2 124.7	40 07.5 +54.0 123.6	39 43.1 +53.9 122.5
22°	42 13.2 +54.4 126.4	41 49.6 +54.2 125.3	41 25.7 +54.0 124.2	41 01.5 +53.8 123.1	40 37.0 +53.6 122.0
23°	43 07.6 +54.1 125.8	42 43.8 +54.0 124.7	42 19.7 +53.8 123.6	41 55.3 +53.7 122.5	41 30.6 +53.5 121.4
24°	44 01.7 +54.0 125.2	43 37.8 +53.8 124.1	43 13.5 +53.7 123.0	42 49.0 +53.5 121.9	42 24.1 +53.3 120.8
25°	44 55.7 +53.8 124.6	44 31.6 +53.6 123.5	44 07.2 +53.4 122.4	43 42.5 +53.2 121.2	43 17.4 +53.1 120.1
26°	45 49.5 +53.5 124.0	45 25.2 +53.4 122.9	45 00.6 +53.2 121.7	44 35.7 +53.0 120.6	44 10.5 +52.9 119.5
27°	46 43.0 +53.3 123.3	46 18.6 +53.1 122.2	45 53.8 +53.0 121.1	45 28.7 +52.8 119.9	45 03.4 +52.6 118.8
28°	47 36.3 +53.1 122.7	47 11.7 +52.9 121.5	46 46.8 +52.7 120.4	46 21.5 +52.6 119.2	45 56.0 +52.4 118.1
29°	48 29.4 +52.8 122.0	48 04.6 +52.6 120.8	47 39.5 +52.4 119.7	47 14.1 +52.2 118.5	46 48.4 +52.1 117.4

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°	20 02.9 +55.8 131.2	19 40.8 +55.7 130.2	19 18.5 +55.5 129.2	18 55.8 +55.4 128.2	18 32.8 +55.3 127.2
1°	20 58.7 +55.8 130.8	20 36.5 +55.7 129.8	20 14.0 +55.6 128.8	19 51.2 +55.4 127.8	19 28.1 +55.2 126.8
2°	21 54.5 +55.7 130.4	21 32.2 +55.6 129.4	21 09.6 +55.4 128.4	20 46.6 +55.3 127.4	20 23.3 +55.3 126.4
3°	22 50.2 +55.7 130.0	22 27.8 +55.5 129.0	22 05.0 +55.4 128.0	21 41.9 +55.3 127.0	21 18.6 +55.1 126.0
4°	23 45.9 +55.6 129.6	23 23.3 +55.5 128.6	23 00.4 +55.4 127.6	22 37.2 +55.2 126.6	22 13.7 +55.1 125.6
5°	24 41.5 +55.5 129.2	24 18.8 +55.4 128.2	23 55.8 +55.2 127.1	23 32.4 +55.2 126.1	23 08.8 +55.0 125.1
6°	25 37.0 +55.5 128.7	25 14.2 +55.3 127.7	24 51.0 +55.2 126.7	24 27.6 +55.0 125.7	24 03.8 +54.9 124.7
7°	26 32.5 +55.4 128.3	26 09.5 +55.3 127.3	25 46.2 +55.1 126.3	25 22.6 +55.0 125.3	24 58.7 +54.9 124.3
8°	27 27.9 +55.3 127.9	27 04.8 +55.1 126.9	26 41.3 +55.1 125.8	26 17.6 +54.9 124.8	25 53.6 +54.8 123.8
9°	28 23.2 +55.2 127.5	27 59.9 +55.1 126.4	27 36.4 +54.9 125.4	27 12.5 +54.8 124.4	26 48.4 +54.6 123.4
10°	29 18.4 +55.1 127.0	28 55.0 +55.0 126.0	28 31.3 +54.9 124.9	28 07.3 +54.7 123.9	27 43.0 +54.6 122.9
11°	30 13.5 +55.0 126.6	29 50.0 +54.9 125.5	29 26.2 +54.7 124.5	29 02.0 +54.6 123.5	28 37.6 +54.5 122.4
12°	31 08.5 +55.0 126.1	30 44.9 +54.8 125.0	30 20.9 +54.7 124.0	29 56.6 +54.6 123.0	29 32.1 +54.4 122.0
13°	32 03.5 +54.8 125.6	31 39.7 +54.6 124.6	31 15.6 +54.5 123.5	30 51.2 +54.4 122.5	30 26.5 +54.3 121.5
14°	32 58.3 +54.7 125.1	32 34.3 +54.6 124.1	32 10.1 +54.4 123.0	31 45.6 +54.3 122.0	31 20.8 +54.1 121.0
15°	33 53.0 +54.6 124.6	33 28.9 +54.4 123.6	33 04.5 +54.3 122.5	32 39.9 +54.1 121.5	32 14.9 +54.0 120.5
16°	34 47.6 +54.4 124.1	34 23.3 +54.4 123.1	33 58.8 +54.2 122.0	33 34.0 +54.1 121.0	33 08.9 +53.9 119.9
17°	35 42.0 +54.3 123.6	35 17.7 +54.1 122.6	34 53.0 +54.0 121.5	34 28.1 +53.9 120.5	34 02.8 +53.8 119.4
18°	36 36.3 +54.2 123.1	36 11.8 +54.1 122.0	35 47.0 +53.9 121.0	35 22.0 +53.7 119.9	34 56.6 +53.6 118.9
19°	37 30.5 +54.1 122.6	37 05.9 +53.9 121.5	36 40.9 +53.8 120.4	36 15.7 +53.6 119.4	35 50.2 +53.5 118.3
20°	38 24.6 +53.8 122.0	37 59.8 +53.7 120.9	37 34.7 +53.5 119.9	37 09.3 +53.4 118.8	36 43.7 +53.3 117.8
21°	39 18.4 +53.7 121.4	38 53.5 +53.5 120.4	38 28.2 +53.4 119.3	38 02.7 +53.3 118.2	37 37.0 +53.1 117.2
22°	40 12.1 +53.6 120.9	39 47.0 +53.4 119.8	39 21.6 +53.3 118.7	38 56.0 +53.1 117.7	38 30.1 +53.0 116.6
23°	41 05.7 +53.3 120.3	40 40.4 +53.2 119.2	40 14.9 +53.0 118.1	39 49.1 +52.9 117.0	39 23.1 +52.7 116.0
24°	41 59.0 +53.1 119.7	41 33.6 +53.0 118.6	41 07.9 +52.8 117.5	40 42.0 +52.7 116.4	40 15.8 +52.6 115.4
25°	42 52.1 +53.0 119.0	42 26.6 +52.7 117.9	42 00.7 +52.7 116.9	41 34.7 +52.4 115.8	41 08.4 +52.3 114.7
26°	43 45.1 +52.7 118.4	43 19.3 +52.6 117.3	42 53.4 +52.4 116.2	42 27.1 +52.3 115.1	42 00.7 +52.1 114.1
27°	44 37.8 +52.4 117.7	44 11.9 +52.3 116.6	43 45.8 +52.1 115.5	43 19.4 +52.0 114.5	42 52.8 +51.9 113.4
28°	45 30.2 +52.2 117.0	45 04.2 +52.0 115.9	44 37.9 +51.9 114.9	44 11.4 +51.7 113.8	43 44.7 +51.6 112.7
29°	46 22.4 +51.9 116.3	45 56.2 +51.8 115.2	45 29.8 +51.6 114.1	45 03.1 +51.5 113.1	44 36.3 +51.3 112.0

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°	18 09.4 +55.2 126.3	17 45.9 +55.0 125.3	17 22.0 +54.9 124.3	16 57.8 +54.9 123.4	16 33.4 +54.7 122.4
1°	19 04.6 +55.2 125.9	18 40.9 +55.1 124.9	18 16.9 +54.9 123.9	17 52.7 +54.7 123.0	17 28.1 +54.7 122.0
2°	19 59.8 +55.1 125.4	19 36.0 +54.9 124.5	19 11.8 +54.9 123.5	18 47.4 +54.8 122.5	18 22.8 +54.6 121.6
3°	20 54.9 +55.0 125.0	20 30.9 +54.9 124.0	20 06.7 +54.8 123.1	19 42.2 +54.6 122.1	19 17.4 +54.5 121.1
4°	21 49.9 +55.0 124.6	21 25.8 +54.8 123.6	21 01.5 +54.7 122.6	20 36.8 +54.6 121.7	20 11.9 +54.5 120.7
5°	22 44.9 +54.8 124.2	22 20.6 +54.8 123.2	21 56.2 +54.6 122.2	21 31.4 +54.5 121.2	21 06.4 +54.4 120.2
6°	23 39.7 +54.8 123.7	23 15.4 +54.7 122.7	22 50.8 +54.6 121.7	22 25.9 +54.5 120.8	22 00.8 +54.3 119.8
7°	24 34.5 +54.8 123.3	24 10.1 +54.6 122.3	23 45.4 +54.4 121.3	23 20.4 +54.3 120.3	22 55.1 +54.3 119.3
8°	25 29.3 +54.6 122.8	25 04.7 +54.5 121.8	24 39.8 +54.4 120.8	24 14.7 +54.3 119.8	23 49.4 +54.1 118.9
9°	26 23.9 +54.6 122.4	25 59.2 +54.4 121.4	25 34.2 +54.3 120.4	25 09.0 +54.2 119.4	24 43.5 +54.1 118.4
10°	27 18.5 +54.4 121.9	26 53.6 +54.4 120.9	26 28.5 +54.3 119.9	26 03.2 +54.1 118.9	25 37.6 +54.0 117.9
11°	28 12.9 +54.4 121.4	27 48.0 +54.2 120.4	27 22.8 +54.1 119.4	26 57.3 +54.0 118.4	26 31.6 +53.9 117.4
12°	29 07.3 +54.2 120.9	28 42.2 +54.1 119.9	28 16.9 +54.0 118.9	27 51.3 +53.9 117.9	27 25.5 +53.7 116.9
13°	30 01.5 +54.2 120.4	29 36.3 +54.1 119.4	29 10.9 +53.9 118.4	28 45.2 +53.8 117.4	28 19.2 +53.7 116.4
14°	30 55.7 +54.0 119.9	30 30.4 +53.9 118.9	30 04.8 +53.7 117.9	29 39.0 +53.6 116.9	29 12.9 +53.5 115.9
15°	31 49.7 +53.9 119.4	31 24.3 +53.7 118.4	30 58.5 +53.7 117.4	30 32.6 +53.5 116.4	30 06.4 +53.5 115.4
16°	32 43.6 +53.8 118.9	32 18.0 +53.7 117.9	31 52.2 +53.5 116.9	31 26.1 +53.4 115.9	30 59.9 +53.2 114.9
17°	33 37.4 +53.6 118.4	33 11.7 +53.5 117.4	32 45.7 +53.4 116.3	32 19.5 +53.3 115.3	31 53.1 +53.2 114.3
18°	34 31.0 +53.5 117.8	34 05.2 +53.3 116.8	33 39.1 +53.2 115.8	33 12.8 +53.1 114.8	32 46.3 +53.0 113.8
19°	35 24.5 +53.3 117.3	34 58.5 +53.2 116.3	34 32.3 +53.1 115.2	34 05.9 +53.0 114.2	33 39.3 +52.8 113.2
20°	36 17.8 +53.2 116.7	35 51.7 +53.1 115.7	35 25.4 +52.9 114.7	34 58.9 +52.8 113.7	34 32.1 +52.7 112.7
21°	37 11.0 +53.0 116.1	36 44.8 +52.8 115.1	36 18.3 +52.8 114.1	35 51.7 +52.6 113.1	35 24.8 +52.5 112.1
22°	38 04.0 +52.8 115.6	37 37.6 +52.7 114.5	37 11.1 +52.5 113.5	36 44.3 +52.4 112.5	36 17.3 +52.3 111.5
23°	38 56.8 +52.6 115.0	38 30.3 +52.5 113.9	38 03.6 +52.4 112.9	37 36.7 +52.3 111.9	37 09.6 +52.2 110.9
24°	39 49.4 +52.4 114.3	39 22.8 +52.3 113.3	38 56.0 +52.2 112.3	38 29.0 +52.0 111.2	38 01.8 +51.9 110.2
25°	40 41.8 +52.2 113.7	40 15.1 +52.1 112.7	39 48.2 +51.9 111.6	39 21.0 +51.8 110.6	38 53.7 +51.7 109.6
26°	41 34.0 +52.0 113.0	41 07.2 +51.8 112.0	40 40.1 +51.7 111.0	40 12.8 +51.6 110.0	39 45.4 +51.5 108.9
27°	42 26.0 +51.7 112.4	41 59.0 +51.6 111.3	41 31.8 +51.5 110.3	41 04.4 +51.4 109.3	40 36.9 +51.3 108.3
28°	43 17.7 +51.5 111.7	42 50.6 +51.3 110.6	42 23.3 +51.2 109.6	41 55.8 +51.1 108.6	41 28.2 +50.9 107.6
29°	44 09.2 +51.2 111.0	43 41.9 +51.1 109.9	43 14.5 +51.0 108.9	42 46.9 +50.8 107.9	42 19.1 +50.8 106.9

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°	16 08.7 +54.6 121.5	15 43.8 +54.5 120.5	15 18.6 +54.4 119.6	14 53.2 +54.3 118.7	14 27.6 +54.1 117.7
1°	17 03.3 +54.6 121.1	16 38.3 +54.4 120.1	16 13.0 +54.3 119.2	15 47.5 +54.2 118.2	15 21.7 +54.2 117.3
2°	17 57.9 +54.5 120.6	17 32.7 +54.4 119.7	17 07.3 +54.3 118.7	16 41.7 +54.2 117.8	16 15.9 +54.0 116.8
3°	18 52.4 +54.4 120.2	18 27.1 +54.3 119.2	18 01.6 +54.2 118.3	17 35.9 +54.1 117.3	17 09.9 +54.0 116.4
4°	19 46.8 +54.4 119.7	19 21.4 +54.3 118.8	18 55.8 +54.1 117.8	18 30.0 +54.0 116.9	18 03.9 +53.9 115.9
5°	20 41.2 +54.2 119.3	20 15.7 +54.1 118.3	19 49.9 +54.1 117.4	19 24.0 +54.0 116.4	18 57.8 +53.9 115.5
6°	21 35.4 +54.3 118.8	21 09.8 +54.1 117.9	20 44.0 +54.0 116.9	20 18.0 +53.9 115.9	19 51.7 +53.8 115.0
7°	22 29.7 +54.1 118.4	22 03.9 +54.1 117.4	21 38.0 +53.9 116.4	21 11.9 +53.8 115.5	20 45.5 +53.7 114.5
8°	23 23.8 +54.0 117.9	22 58.0 +53.9 116.9	22 31.9 +53.9 116.0	22 05.7 +53.7 115.0	21 39.2 +53.6 114.0
9°	24 17.8 +54.0 117.4	23 51.9 +53.9 116.4	23 25.8 +53.7 115.5	22 59.4 +53.6 114.5	22 32.8 +53.6 113.6
10°	25 11.8 +53.9 116.9	24 45.8 +53.7 116.0	24 19.5 +53.6 115.0	23 53.0 +53.6 114.0	23 26.4 +53.4 113.1
11°	26 05.7 +53.7 116.4	25 39.5 +53.7 115.5	25 13.1 +53.6 114.5	24 46.6 +53.4 113.5	24 19.8 +53.4 112.6
12°	26 59.4 +53.7 115.9	26 33.2 +53.5 115.0	26 06.7 +53.4 114.0	25 40.0 +53.4 113.0	25 13.2 +53.2 112.1
13°	27 53.1 +53.5 115.4	27 26.7 +53.5 114.5	27 00.1 +53.4 113.5	26 33.4 +53.2 112.5	26 06.4 +53.1 111.6
14°	28 46.6 +53.5 114.9	28 20.2 +53.3 113.9	27 53.5 +53.2 113.0	27 26.6 +53.1 112.0	26 59.5 +53.0 111.0
15°	29 40.1 +53.3 114.4	29 13.5 +53.2 113.4	28 46.7 +53.1 112.4	28 19.7 +53.0 111.5	27 52.5 +52.9 110.5
16°	30 33.4 +53.1 113.9	30 06.7 +53.0 112.9	29 39.8 +52.9 111.9	29 12.7 +52.9 110.9	28 45.4 +52.8 110.0
17°	31 26.5 +53.1 113.3	30 59.7 +53.0 112.4	30 32.7 +52.9 111.4	30 05.6 +52.7 110.4	29 38.2 +52.6 109.4
18°	32 19.6 +52.9 112.8	31 52.7 +52.7 111.8	31 25.6 +52.6 110.8	30 58.3 +52.6 109.8	30 30.8 +52.5 108.9
19°	33 12.5 +52.7 112.2	32 45.4 +52.7 111.2	32 18.2 +52.6 110.3	31 50.9 +52.4 109.3	31 23.3 +52.4 108.3
20°	34 05.2 +52.6 111.7	33 38.1 +52.4 110.7	33 10.8 +52.3 109.7	32 43.3 +52.2 108.7	32 15.7 +52.1 107.7
21°	34 57.8 +52.4 111.1	34 30.5 +52.3 110.1	34 03.1 +52.2 109.1	33 35.5 +52.1 108.1	33 07.8 +52.0 107.1
22°	35 50.2 +52.2 110.5	35 22.8 +52.1 109.5	34 55.3 +52.0 108.5	34 27.6 +52.0 107.5	33 59.8 +51.9 106.5
23°	36 42.4 +52.0 109.9	36 14.9 +51.9 108.9	35 47.3 +51.8 107.9	35 19.6 +51.7 106.9	34 51.7 +51.6 105.9
24°	37 34.4 +51.8 109.2	37 06.8 +51.8 108.2	36 39.1 +51.7 107.3	36 11.3 +51.5 106.3	35 43.3 +51.4 105.3
25°	38 26.2 +51.6 108.6	37 58.6 +51.5 107.6	37 30.8 +51.4 106.6	37 02.8 +51.3 105.6	36 34.7 +51.3 104.7
26°	39 17.8 +51.4 107.9	38 50.1 +51.3 106.9	38 22.2 +51.2 106.0	37 54.1 +51.1 105.0	37 26.0 +51.0 104.0
27°	40 09.2 +51.1 107.3	39 41.4 +51.0 106.3	39 13.4 +50.9 105.3	38 45.2 +50.9 104.3	38 17.0 +50.8 103.4
28°	41 00.3 +50.9 106.6	40 32.4 +50.8 105.6	40 04.3 +50.7 104.6	39 36.1 +50.6 103.6	39 07.8 +50.5 102.7
29°	41 51.2 +50.7 105.9	41 23.2 +50.5 104.9	40 55.0 +50.5 103.9	40 26.7 +50.4 102.9	39 58.3 +50.3 102.0

Declination SAME name as Latitude

Latitude 61°

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°	14 01.7 +54.1 116.8	13 35.6 +54.0 115.9	13 09.4 +53.8 114.9	12 42.9 +53.8 114.0	12 16.2 +53.7 113.1
1°	14 55.8 +54.0 116.3	14 29.6 +53.9 115.4	14 03.2 +53.8 114.5	13 36.7 +53.7 113.6	13 09.9 +53.6 112.6
2°	15 49.8 +53.9 115.9	15 23.5 +53.9 115.0	14 57.0 +53.8 114.0	14 30.4 +53.7 113.1	14 03.5 +53.6 112.2
3°	16 43.7 +53.9 115.4	16 17.4 +53.8 114.5	15 50.8 +53.7 113.6	15 24.1 +53.6 112.6	14 57.1 +53.5 111.7
4°	17 37.6 +53.9 115.0	17 11.2 +53.7 114.0	16 44.5 +53.7 113.1	16 17.7 +53.5 112.2	15 50.6 +53.5 111.2
5°	18 31.5 +53.7 114.5	18 04.9 +53.7 113.6	17 38.2 +53.5 112.6	17 11.2 +53.5 111.7	16 44.1 +53.4 110.8
6°	19 25.2 +53.7 114.0	18 58.6 +53.6 113.1	18 31.7 +53.5 112.2	18 04.7 +53.4 111.2	17 37.5 +53.3 110.3
7°	20 18.9 +53.6 113.6	19 52.2 +53.5 112.6	19 25.2 +53.4 111.7	18 58.1 +53.3 110.7	18 30.8 +53.3 109.8
8°	21 12.5 +53.6 113.1	20 45.7 +53.4 112.1	20 18.6 +53.4 111.2	19 51.4 +53.3 110.3	19 24.1 +53.1 109.3
9°	22 06.1 +53.4 112.6	21 39.1 +53.4 111.7	21 12.0 +53.3 110.7	20 44.7 +53.2 109.8	20 17.2 +53.1 108.8
10°	22 59.5 +53.4 112.1	22 32.5 +53.2 111.2	22 05.3 +53.1 110.2	21 37.9 +53.1 109.3	21 10.3 +53.0 108.3
11°	23 52.9 +53.2 111.6	23 25.7 +53.2 110.7	22 58.4 +53.1 109.7	22 31.0 +52.9 108.8	22 03.3 +52.9 107.8
12°	24 46.1 +53.2 111.1	24 18.9 +53.0 110.2	23 51.5 +53.0 109.2	23 23.9 +52.9 108.3	22 56.2 +52.9 107.3
13°	25 39.3 +53.0 110.6	25 11.9 +53.0 109.6	24 44.5 +52.8 108.7	24 16.8 +52.8 107.7	23 49.1 +52.7 106.8
14°	26 32.3 +52.9 110.1	26 04.9 +52.8 109.1	25 37.3 +52.8 108.2	25 09.6 +52.7 107.2	24 41.8 +52.6 106.3
15°	27 25.2 +52.8 109.5	26 57.7 +52.7 108.6	26 30.1 +52.6 107.6	26 02.3 +52.5 106.7	25 34.4 +52.4 105.8
16°	28 18.0 +52.7 109.0	27 50.4 +52.6 108.0	27 22.7 +52.5 107.1	26 54.8 +52.5 106.2	26 26.8 +52.4 105.2
17°	29 10.7 +52.5 108.5	28 43.0 +52.5 107.5	28 15.2 +52.4 106.6	27 47.3 +52.3 105.6	27 19.2 +52.2 104.7
18°	30 03.2 +52.4 107.9	29 35.5 +52.3 106.9	29 07.6 +52.2 106.0	28 39.6 +52.1 105.0	28 11.4 +52.1 104.1
19°	30 55.6 +52.3 107.3	30 27.8 +52.1 106.4	29 59.8 +52.1 105.4	29 31.7 +52.0 104.5	29 03.5 +51.9 103.5
20°	31 47.9 +52.1 106.8	31 19.9 +52.1 105.8	30 51.9 +51.9 104.9	30 23.7 +51.9 103.9	29 55.4 +51.8 103.0
21°	32 40.0 +51.9 106.2	32 12.0 +51.8 105.2	31 43.8 +51.8 104.3	31 15.6 +51.7 103.3	30 47.2 +51.6 102.4
22°	33 31.9 +51.7 105.6	33 03.8 +51.7 104.6	32 35.6 +51.6 103.7	32 07.3 +51.5 102.7	31 38.8 +51.5 101.8
23°	34 23.6 +51.6 105.0	33 55.5 +51.4 104.0	33 27.2 +51.4 103.1	32 58.8 +51.3 102.1	32 30.3 +51.3 101.2
24°	35 15.2 +51.3 104.3	34 46.9 +51.3 103.4	34 18.6 +51.2 102.4	33 50.1 +51.2 101.5	33 21.6 +51.1 100.6
25°	36 06.5 +51.2 103.7	35 38.2 +51.1 102.8	35 09.8 +51.0 101.8	34 41.3 +50.9 100.9	34 12.7 +50.9 99.9
26°	36 57.7 +50.9 103.1	36 29.3 +50.9 102.1	36 00.8 +50.8 101.2	35 32.2 +50.8 100.2	35 03.6 +50.7 99.3
27°	37 48.6 +50.7 102.4	37 20.2 +50.6 101.4	36 51.6 +50.6 100.5	36 23.0 +50.5 99.6	35 54.3 +50.4 98.6
28°	38 39.3 +50.5 101.7	38 10.8 +50.4 100.8	37 42.2 +50.3 99.8	37 13.5 +50.3 98.9	36 44.7 +50.3 98.0
29°	39 29.8 +50.2 101.0	39 01.2 +50.2 100.1	38 32.5 +50.1 99.1	38 03.8 +50.0 98.2	37 35.0 +49.9 97.3

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°	11 49.4 +53.6 112.2	11 22.4 +53.5 111.3	10 55.2 +53.4 110.4	10 27.8 +53.4 109.5	10 00.3 +53.3 108.6
1°	12 43.0 +53.5 111.7	12 15.9 +53.4 110.8	11 48.6 +53.4 109.9	11 21.2 +53.3 109.0	10 53.6 +53.2 108.1
2°	13 36.5 +53.5 111.3	13 09.3 +53.4 110.3	12 42.0 +53.3 109.4	12 14.5 +53.2 108.5	11 46.8 +53.2 107.6
3°	14 30.0 +53.4 110.8	14 02.7 +53.4 109.9	13 35.3 +53.3 109.0	13 07.7 +53.2 108.1	12 40.0 +53.1 107.1
4°	15 23.4 +53.4 110.3	14 56.1 +53.3 109.4	14 28.6 +53.2 108.5	14 00.9 +53.2 107.6	13 33.1 +53.1 106.7
5°	16 16.8 +53.3 109.9	15 49.4 +53.2 108.9	15 21.8 +53.2 108.0	14 54.1 +53.0 107.1	14 26.2 +53.0 106.2
6°	17 10.1 +53.3 109.4	16 42.6 +53.2 108.5	16 15.0 +53.0 107.5	15 47.1 +53.1 106.6	15 19.2 +53.0 105.7
7°	18 03.4 +53.1 108.9	17 35.8 +53.1 108.0	17 08.0 +53.1 107.0	16 40.2 +52.9 106.1	16 12.2 +52.8 105.2
8°	18 56.5 +53.1 108.4	18 28.9 +53.0 107.5	18 01.1 +52.9 106.6	17 33.1 +52.9 105.6	17 05.0 +52.8 104.7
9°	19 49.6 +53.1 107.9	19 21.9 +52.9 107.0	18 54.0 +52.9 106.1	18 26.0 +52.8 105.1	17 57.8 +52.8 104.2
10°	20 42.7 +52.9 107.4	20 14.8 +52.9 106.5	19 46.9 +52.7 105.6	19 18.8 +52.7 104.6	18 50.6 +52.6 103.7
11°	21 35.6 +52.8 106.9	21 07.7 +52.7 106.0	20 39.6 +52.7 105.0	20 11.5 +52.6 104.1	19 43.2 +52.6 103.2
12°	22 28.4 +52.7 106.4	22 00.4 +52.7 105.5	21 32.3 +52.6 104.5	21 04.1 +52.6 103.6	20 35.8 +52.5 102.7
13°	23 21.1 +52.7 105.9	22 53.1 +52.6 104.9	22 24.9 +52.5 104.0	21 56.7 +52.4 103.1	21 28.3 +52.3 102.2
14°	24 13.8 +52.5 105.3	23 45.7 +52.4 104.4	23 17.4 +52.4 103.5	22 49.1 +52.3 102.6	22 20.6 +52.3 101.7
15°	25 06.3 +52.4 104.8	24 38.1 +52.3 103.9	24 09.8 +52.3 103.0	23 41.4 +52.2 102.0	23 12.9 +52.2 101.1
16°	25 58.7 +52.3 104.3	25 30.4 +52.3 103.3	25 02.1 +52.1 102.4	24 33.6 +52.1 101.5	24 05.1 +52.0 100.6
17°	26 51.0 +52.1 103.7	26 22.7 +52.1 102.8	25 54.2 +52.1 101.9	25 25.7 +52.0 101.0	24 57.1 +52.0 100.0
18°	27 43.1 +52.1 103.2	27 14.8 +51.9 102.2	26 46.3 +51.9 101.3	26 17.7 +51.9 100.4	25 49.1 +51.8 99.5
19°	28 35.2 +51.8 102.6	28 06.7 +51.8 101.7	27 38.2 +51.7 100.8	27 09.6 +51.7 99.8	26 40.9 +51.6 98.9
20°	29 27.0 +51.8 102.0	28 58.5 +51.7 101.1	28 29.9 +51.7 100.2	28 01.3 +51.5 99.3	27 32.5 +51.5 98.3
21°	30 18.8 +51.5 101.4	29 50.2 +51.5 100.5	29 21.6 +51.4 99.6	28 52.8 +51.4 98.7	28 24.0 +51.4 97.8
22°	31 10.3 +51.4 100.9	30 41.7 +51.4 99.9	30 13.0 +51.3 99.0	29 44.2 +51.3 98.1	29 15.4 +51.2 97.2
23°	32 01.7 +51.2 100.2	31 33.1 +51.1 99.3	31 04.3 +51.1 98.4	30 35.5 +51.1 97.5	30 06.6 +51.1 96.6
24°	32 52.9 +51.1 99.6	32 24.2 +51.0 98.7	31 55.4 +51.0 97.8	31 26.6 +50.9 96.9	30 57.7 +50.9 96.0
25°	33 44.0 +50.8 99.0	33 15.2 +50.8 98.1	32 46.4 +50.7 97.2	32 17.5 +50.7 96.3	31 48.6 +50.6 95.3
26°	34 34.8 +50.7 98.4	34 06.0 +50.6 97.4	33 37.1 +50.6 96.5	33 08.2 +50.5 95.6	32 39.2 +50.5 94.7
27°	35 25.5 +50.4 97.7	34 56.6 +50.4 96.8	34 27.7 +50.3 95.9	33 58.7 +50.3 95.0	33 29.7 +50.3 94.1
28°	36 15.9 +50.2 97.0	35 47.0 +50.1 96.1	35 18.0 +50.2 95.2	34 49.0 +50.1 94.3	34 20.0 +50.1 93.4
29°	37 06.1 +49.9 96.4	36 37.1 +50.0 95.4	36 08.2 +49.8 94.5	35 39.1 +49.9 93.6	35 10.1 +49.8 92.7

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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°	9 32.7 +53.2 107.7	9 04.9 +53.1 106.8	8 37.0 +53.0 105.9	8 08.9 +53.0 105.0	7 40.8 +52.9 104.1
1°	10 25.9 +53.1 107.2	9 58.0 +53.1 106.3	9 30.0 +53.0 105.4	9 01.9 +53.0 104.5	8 33.7 +52.9 103.6
2°	11 19.0 +53.1 106.7	10 51.1 +53.0 105.8	10 23.0 +53.0 104.9	9 54.9 +52.9 104.0	9 26.6 +52.9 103.1
3°	12 12.1 +53.1 106.2	11 44.1 +53.0 105.3	11 16.0 +53.0 104.4	10 47.8 +52.9 103.5	10 19.5 +52.8 102.6
4°	13 05.2 +53.0 105.8	12 37.1 +53.0 104.9	12 09.0 +52.8 104.0	11 40.7 +52.8 103.1	11 12.3 +52.8 102.2
5°	13 58.2 +52.9 105.3	13 30.1 +52.9 104.4	13 01.8 +52.9 103.5	12 33.5 +52.8 102.6	12 05.1 +52.7 101.7
6°	14 51.1 +52.9 104.8	14 23.0 +52.8 103.9	13 54.7 +52.7 103.0	13 26.3 +52.7 102.1	12 57.8 +52.6 101.2
7°	15 44.0 +52.8 104.3	15 15.8 +52.7 103.4	14 47.4 +52.7 102.5	14 19.0 +52.6 101.6	13 50.4 +52.7 100.7
8°	16 36.8 +52.8 103.8	16 08.5 +52.7 102.9	15 40.1 +52.7 102.0	15 11.6 +52.6 101.1	14 43.1 +52.5 100.2
9°	17 29.6 +52.7 103.3	17 01.2 +52.7 102.4	16 32.8 +52.5 101.5	16 04.2 +52.5 100.6	15 35.6 +52.5 99.7
10°	18 22.3 +52.6 102.8	17 53.9 +52.5 101.9	17 25.3 +52.5 101.0	16 56.7 +52.5 100.1	16 28.1 +52.4 99.2
11°	19 14.9 +52.5 102.3	18 46.4 +52.5 101.4	18 17.8 +52.4 100.5	17 49.2 +52.4 99.6	17 20.5 +52.3 98.7
12°	20 07.4 +52.4 101.8	19 38.9 +52.3 100.9	19 10.2 +52.4 100.0	18 41.6 +52.2 99.1	18 12.8 +52.2 98.2
13°	20 59.8 +52.3 101.3	20 31.2 +52.3 100.4	20 02.6 +52.2 99.5	19 33.8 +52.2 98.6	19 05.0 +52.2 97.7
14°	21 52.1 +52.2 100.7	21 23.5 +52.2 99.8	20 54.8 +52.1 98.9	20 26.0 +52.1 98.0	19 57.2 +52.0 97.1
15°	22 44.3 +52.2 100.2	22 15.7 +52.0 99.3	21 46.9 +52.1 98.4	21 18.1 +52.0 97.5	20 49.2 +52.0 96.6
16°	23 36.5 +52.0 99.7	23 07.7 +52.0 98.8	22 39.0 +51.9 97.9	22 10.1 +51.9 97.0	21 41.2 +51.9 96.1
17°	24 28.5 +51.8 99.1	23 59.7 +51.8 98.2	23 30.9 +51.8 97.3	23 02.0 +51.8 96.4	22 33.1 +51.7 95.5
18°	25 20.3 +51.8 98.6	24 51.5 +51.8 97.7	24 22.7 +51.7 96.8	23 53.8 +51.6 95.9	23 24.8 +51.6 95.0
19°	26 12.1 +51.6 98.0	25 43.3 +51.5 97.1	25 14.4 +51.5 96.2	24 45.4 +51.5 95.3	24 16.4 +51.5 94.4
20°	27 03.7 +51.5 97.4	26 34.8 +51.5 96.5	26 05.9 +51.4 95.6	25 36.9 +51.4 94.7	25 07.9 +51.4 93.8
21°	27 55.2 +51.3 96.9	27 26.3 +51.3 96.0	26 57.3 +51.3 95.1	26 28.3 +51.3 94.2	25 59.3 +51.2 93.3
22°	28 46.5 +51.2 96.3	28 17.6 +51.1 95.4	27 48.6 +51.1 94.5	27 19.6 +51.1 93.6	26 50.5 +51.1 92.7
23°	29 37.7 +51.0 95.7	29 08.7 +51.0 94.8	28 39.7 +51.0 93.9	28 10.7 +51.0 93.0	27 41.6 +51.0 92.1
24°	30 28.7 +50.9 95.1	29 59.7 +50.9 94.2	29 30.7 +50.8 93.3	29 01.7 +50.7 92.4	28 32.6 +50.8 91.5
25°	31 19.6 +50.6 94.4	30 50.6 +50.6 93.6	30 21.5 +50.6 92.7	29 52.4 +50.7 91.8	29 23.4 +50.6 90.9
26°	32 10.2 +50.5 93.8	31 41.2 +50.4 92.9	31 12.1 +50.5 92.0	30 43.1 +50.4 91.2	30 14.0 +50.4 90.3
27°	33 00.7 +50.3 93.2	32 31.6 +50.3 92.3	32 02.6 +50.2 91.4	31 33.5 +50.2 90.5	31 04.4 +50.2 89.6
28°	33 51.0 +50.0 92.5	33 21.9 +50.1 91.6	32 52.8 +50.1 90.8	32 23.7 +50.1 89.9	31 54.6 +50.1 89.0
29°	34 41.0 +49.9 91.9	34 12.0 +49.8 91.0	33 42.9 +49.8 90.1	33 13.8 +49.8 89.2	32 44.7 +49.8 88.4

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°	7 12.5 +52.9 103.2	6 44.1 +52.9 102.3	6 15.7 +52.7 101.4	5 47.1 +52.7 100.5	5 18.5 +52.7 99.6
1°	8 05.4 +52.8 102.7	7 37.0 +52.8 101.8	7 08.4 +52.8 100.9	6 39.8 +52.7 100.1	6 11.2 +52.6 99.2
2°	8 58.2 +52.8 102.2	8 29.8 +52.7 101.3	8 01.2 +52.7 100.5	7 32.5 +52.7 99.6	7 03.8 +52.7 98.7
3°	9 51.0 +52.8 101.8	9 22.5 +52.7 100.9	8 53.9 +52.7 100.0	8 25.2 +52.7 99.1	7 56.5 +52.6 98.2
4°	10 43.8 +52.7 101.3	10 15.2 +52.7 100.4	9 46.6 +52.6 99.5	9 17.9 +52.6 98.6	8 49.1 +52.5 97.7
5°	11 36.5 +52.7 100.8	11 07.9 +52.6 99.9	10 39.2 +52.6 99.0	10 10.5 +52.5 98.1	9 41.6 +52.5 97.2
6°	12 29.2 +52.6 100.3	12 00.5 +52.6 99.4	11 31.8 +52.6 98.5	11 03.0 +52.5 97.6	10 34.1 +52.5 96.7
7°	13 21.8 +52.6 99.8	12 53.1 +52.5 98.9	12 24.4 +52.4 98.0	11 55.5 +52.5 97.1	11 26.6 +52.5 96.2
8°	14 14.4 +52.5 99.3	13 45.6 +52.5 98.4	13 16.8 +52.5 97.5	12 48.0 +52.4 96.6	12 19.1 +52.3 95.7
9°	15 06.9 +52.4 98.8	14 38.1 +52.4 97.9	14 09.3 +52.3 97.0	13 40.4 +52.3 96.1	13 11.4 +52.3 95.2
10°	15 59.3 +52.4 98.3	15 30.5 +52.3 97.4	15 01.6 +52.3 96.5	14 32.7 +52.3 95.6	14 03.7 +52.3 94.7
11°	16 51.7 +52.3 97.8	16 22.8 +52.3 96.9	15 53.9 +52.3 96.0	15 25.0 +52.2 95.1	14 56.0 +52.2 94.2
12°	17 44.0 +52.2 97.3	17 15.1 +52.2 96.4	16 46.2 +52.1 95.5	16 17.2 +52.1 94.6	15 48.2 +52.1 93.7
13°	18 36.2 +52.1 96.8	18 07.3 +52.1 95.9	17 38.3 +52.1 95.0	17 09.3 +52.1 94.1	16 40.3 +52.0 93.2
14°	19 28.3 +52.0 96.2	18 59.4 +52.0 95.3	18 30.4 +52.0 94.5	18 01.4 +51.9 93.6	17 32.3 +52.0 92.7
15°	20 20.3 +52.0 95.7	19 51.4 +51.9 94.8	19 22.4 +51.8 93.9	18 53.3 +51.9 93.0	18 24.3 +51.8 92.2
16°	21 12.3 +51.8 95.2	20 43.3 +51.8 94.3	20 14.2 +51.8 93.4	19 45.2 +51.8 92.5	19 16.1 +51.8 91.6
17°	22 04.1 +51.7 94.6	21 35.1 +51.7 93.7	21 06.0 +51.7 92.9	20 37.0 +51.7 92.0	20 07.9 +51.7 91.1
18°	22 55.8 +51.6 94.1	22 26.8 +51.6 93.2	21 57.7 +51.6 92.3	21 28.7 +51.5 91.4	20 59.6 +51.5 90.5
19°	23 47.4 +51.5 93.5	23 18.4 +51.4 92.6	22 49.3 +51.5 91.8	22 20.2 +51.5 90.9	21 51.1 +51.5 90.0
20°	24 38.9 +51.4 93.0	24 09.8 +51.4 92.1	23 40.8 +51.3 91.2	23 11.7 +51.3 90.3	22 42.6 +51.3 89.4
21°	25 30.3 +51.2 92.4	25 01.2 +51.2 91.5	24 32.1 +51.2 90.6	24 03.0 +51.2 89.8	23 33.9 +51.2 88.9
22°	26 21.5 +51.1 91.8	25 52.4 +51.1 90.9	25 23.3 +51.1 90.1	24 54.2 +51.1 89.2	24 25.1 +51.1 88.3
23°	27 12.6 +50.9 91.2	26 43.5 +50.9 90.3	26 14.4 +50.9 89.5	25 45.3 +50.9 88.6	25 16.2 +51.0 87.7
24°	28 03.5 +50.8 90.6	27 34.4 +50.8 89.7	27 05.3 +50.8 88.9	26 36.2 +50.8 88.0	26 07.2 +50.8 87.1
25°	28 54.3 +50.6 90.0	28 25.2 +50.6 89.1	27 56.1 +50.6 88.3	27 27.0 +50.7 87.4	26 58.0 +50.6 86.5
26°	29 44.9 +50.4 89.4	29 15.8 +50.4 88.5	28 46.7 +50.5 87.7	28 17.7 +50.4 86.8	27 48.6 +50.5 85.9
27°	30 35.3 +50.3 88.8	30 06.2 +50.3 87.9	29 37.2 +50.3 87.0	29 08.1 +50.3 86.2	28 39.1 +50.4 85.3
28°	31 25.6 +50.0 88.1	30 56.5 +50.1 87.3	30 27.5 +50.1 86.4	29 58.4 +50.2 85.6	29 29.5 +50.1 84.7
29°	32 15.6 +49.9 87.5	31 46.6 +49.9 86.6	31 17.6 +49.9 85.8	30 48.6 +49.9 84.9	30 19.6 +50.0 84.1

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°	4 49.8 +52.6 98.8	4 21.0 +52.6 97.9	3 52.1 +52.6 97.0	3 23.2 +52.6 96.1	2 54.3 +52.5 95.3
1°	5 42.4 +52.6 98.3	5 13.6 +52.6 97.4	4 44.7 +52.6 96.5	4 15.8 +52.5 95.6	3 46.8 +52.5 94.8
2°	6 35.0 +52.6 97.8	6 06.2 +52.6 96.9	5 37.3 +52.5 96.0	5 08.3 +52.6 95.2	4 39.3 +52.5 94.3
3°	7 27.6 +52.6 97.3	6 58.8 +52.5 96.4	6 29.8 +52.5 95.6	6 00.9 +52.5 94.7	5 31.8 +52.5 93.8
4°	8 20.2 +52.5 96.8	7 51.3 +52.5 95.9	7 22.3 +52.5 95.1	6 53.4 +52.4 94.2	6 24.3 +52.5 93.3
5°	9 12.7 +52.5 96.3	8 43.8 +52.5 95.5	8 14.8 +52.5 94.6	7 45.8 +52.4 93.7	7 16.8 +52.4 92.8
6°	10 05.2 +52.5 95.9	9 36.3 +52.4 95.0	9 07.3 +52.4 94.1	8 38.2 +52.4 93.2	8 09.2 +52.4 92.3
7°	10 57.7 +52.4 95.4	10 28.7 +52.4 94.5	9 59.7 +52.4 93.6	9 30.6 +52.4 92.7	9 01.6 +52.3 91.8
8°	11 50.1 +52.3 94.9	11 21.1 +52.3 94.0	10 52.1 +52.3 93.1	10 23.0 +52.3 92.2	9 53.9 +52.3 91.3
9°	12 42.4 +52.3 94.4	12 13.4 +52.3 93.5	11 44.4 +52.2 92.6	11 15.3 +52.3 91.7	10 46.2 +52.3 90.8
10°	13 34.7 +52.3 93.9	13 05.7 +52.2 93.0	12 36.6 +52.2 92.1	12 07.6 +52.2 91.2	11 38.5 +52.2 90.3
11°	14 27.0 +52.1 93.3	13 57.9 +52.2 92.5	13 28.8 +52.2 91.6	12 59.8 +52.1 90.7	12 30.7 +52.1 89.8
12°	15 19.1 +52.1 92.8	14 50.1 +52.1 92.0	14 21.0 +52.1 91.1	13 51.9 +52.1 90.2	13 22.8 +52.1 89.3
13°	16 11.2 +52.0 92.3	15 42.2 +52.0 91.4	15 13.1 +52.0 90.6	14 44.0 +52.0 89.7	14 14.9 +52.0 88.8
14°	17 03.2 +52.0 91.8	16 34.2 +51.9 90.9	16 05.1 +51.9 90.0	15 36.0 +51.9 89.2	15 06.9 +52.0 88.3
15°	17 55.2 +51.8 91.3	17 26.1 +51.9 90.4	16 57.0 +51.9 89.5	16 27.9 +51.9 88.7	15 58.9 +51.8 87.8
16°	18 47.0 +51.8 90.7	18 18.0 +51.7 89.9	17 48.9 +51.7 89.0	17 19.8 +51.8 88.1	16 50.7 +51.8 87.3
17°	19 38.8 +51.7 90.2	19 09.7 +51.7 89.3	18 40.6 +51.7 88.5	18 11.6 +51.7 87.6	17 42.5 +51.7 86.7
18°	20 30.5 +51.5 89.7	20 01.4 +51.6 88.8	19 32.3 +51.6 87.9	19 03.3 +51.6 87.1	18 34.2 +51.6 86.2
19°	21 22.0 +51.5 89.1	20 53.0 +51.4 88.3	20 23.9 +51.5 87.4	19 54.9 +51.4 86.5	19 25.8 +51.5 85.7
20°	22 13.5 +51.4 88.6	21 44.4 +51.4 87.7	21 15.4 +51.4 86.8	20 46.3 +51.4 86.0	20 17.3 +51.5 85.1
21°	23 04.9 +51.2 88.0	22 35.8 +51.2 87.1	22 06.8 +51.2 86.3	21 37.7 +51.3 85.4	21 08.8 +51.3 84.6
22°	23 56.1 +51.1 87.4	23 27.0 +51.1 86.6	22 58.0 +51.1 85.7	22 29.0 +51.2 84.9	22 00.1 +51.2 84.0
23°	24 47.2 +50.9 86.9	24 18.1 +51.0 86.0	23 49.1 +51.1 85.1	23 20.2 +51.0 84.3	22 51.3 +51.0 83.4
24°	25 38.1 +50.9 86.3	25 09.1 +50.9 85.4	24 40.2 +50.8 84.6	24 11.2 +50.9 83.7	23 42.3 +51.0 82.9
25°	26 29.0 +50.6 85.7	26 00.0 +50.7 84.8	25 31.0 +50.8 84.0	25 02.1 +50.8 83.1	24 33.3 +50.8 82.3
26°	27 19.6 +50.6 85.1	26 50.7 +50.5 84.2	26 21.8 +50.5 83.4	25 52.9 +50.6 82.5	25 24.1 +50.6 81.7
27°	28 10.2 +50.3 84.5	27 41.2 +50.4 83.6	27 12.3 +50.5 82.8	26 43.5 +50.5 81.9	26 14.7 +50.6 81.1
28°	29 00.5 +50.2 83.9	28 31.6 +50.2 83.0	28 02.8 +50.2 82.2	27 34.0 +50.3 81.3	27 05.3 +50.3 80.5
29°	29 50.7 +50.0 83.2	29 21.8 +50.1 82.4	28 53.0 +50.1 81.6	28 24.3 +50.1 80.7	27 55.6 +50.2 79.9

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°	2 25.3 +52.5 94.4	1 56.3 +52.5 93.5	1 27.2 +52.5 92.6	0 58.2 +52.5 91.7	0 29.1 +52.5 90.9
1°	3 17.8 +52.5 93.9	2 48.8 +52.5 93.0	2 19.7 +52.5 92.1	1 50.7 +52.4 91.3	1 21.6 +52.4 90.4
2°	4 10.3 +52.5 93.4	3 41.3 +52.4 92.5	3 12.2 +52.5 91.7	2 43.1 +52.5 90.8	2 14.0 +52.5 89.9
3°	5 02.8 +52.5 92.9	4 33.7 +52.5 92.0	4 04.7 +52.4 91.2	3 35.6 +52.4 90.3	3 06.5 +52.4 89.4
4°	5 55.3 +52.4 92.4	5 26.2 +52.4 91.6	4 57.1 +52.4 90.7	4 28.0 +52.5 89.8	3 58.9 +52.5 88.9
5°	6 47.7 +52.4 91.9	6 18.6 +52.4 91.1	5 49.5 +52.5 90.2	5 20.5 +52.4 89.3	4 51.4 +52.4 88.4
6°	7 40.1 +52.4 91.5	7 11.0 +52.4 90.6	6 42.0 +52.3 89.7	6 12.9 +52.3 88.8	5 43.8 +52.4 88.0
7°	8 32.5 +52.3 91.0	8 03.4 +52.3 90.1	7 34.3 +52.4 89.2	7 05.2 +52.4 88.3	6 36.2 +52.3 87.5
8°	9 24.8 +52.3 90.5	8 55.7 +52.3 89.6	8 26.7 +52.3 88.7	7 57.6 +52.3 87.8	7 28.5 +52.4 87.0
9°	10 17.1 +52.3 90.0	9 48.0 +52.3 89.1	9 19.0 +52.2 88.2	8 49.9 +52.3 87.3	8 20.9 +52.2 86.5
10°	11 09.4 +52.2 89.5	10 40.3 +52.2 88.6	10 11.2 +52.2 87.7	9 42.2 +52.2 86.9	9 13.1 +52.3 86.0
11°	12 01.6 +52.1 89.0	11 32.5 +52.2 88.1	11 03.4 +52.2 87.2	10 34.4 +52.2 86.4	10 05.4 +52.2 85.5
12°	12 53.7 +52.1 88.5	12 24.7 +52.1 87.6	11 55.6 +52.1 86.7	11 26.6 +52.1 85.8	10 57.6 +52.1 85.0
13°	13 45.8 +52.0 87.9	13 16.8 +52.0 87.1	12 47.7 +52.1 86.2	12 18.7 +52.1 85.3	11 49.7 +52.1 84.5
14°	14 37.8 +52.0 87.4	14 08.8 +52.0 86.6	13 39.8 +52.0 85.7	13 10.8 +52.0 84.8	12 41.8 +52.1 84.0
15°	15 29.8 +51.9 86.9	15 00.8 +51.9 86.0	14 31.8 +51.9 85.2	14 02.8 +51.9 84.3	13 33.9 +52.0 83.5
16°	16 21.7 +51.8 86.4	15 52.7 +51.8 85.5	15 23.7 +51.8 84.7	14 54.7 +51.9 83.8	14 25.9 +51.9 82.9
17°	17 13.5 +51.7 85.9	16 44.5 +51.7 85.0	16 15.5 +51.8 84.1	15 46.6 +51.8 83.3	15 17.8 +51.8 82.4
18°	18 05.2 +51.6 85.3	17 36.2 +51.7 84.5	17 07.3 +51.7 83.6	16 38.4 +51.7 82.8	16 09.6 +51.8 81.9
19°	18 56.8 +51.6 84.8	18 27.9 +51.6 83.9	17 59.0 +51.6 83.1	17 30.1 +51.7 82.2	17 01.4 +51.6 81.4
20°	19 48.4 +51.4 84.3	19 19.5 +51.4 83.4	18 50.6 +51.5 82.5	18 21.8 +51.5 81.7	17 53.0 +51.6 80.8
21°	20 39.8 +51.4 83.7	20 10.9 +51.4 82.9	19 42.1 +51.4 82.0	19 13.3 +51.5 81.2	18 44.6 +51.5 80.3
22°	21 31.2 +51.2 83.2	21 02.3 +51.3 82.3	20 33.5 +51.3 81.5	20 04.8 +51.3 80.6	19 36.1 +51.4 79.8
23°	22 22.4 +51.1 82.6	21 53.6 +51.1 81.7	21 24.8 +51.2 80.9	20 56.1 +51.3 80.1	20 27.5 +51.3 79.2
24°	23 13.5 +51.0 82.0	22 44.7 +51.0 81.2	22 16.0 +51.1 80.3	21 47.4 +51.1 79.5	21 18.8 +51.2 78.7
25°	24 04.5 +50.8 81.4	23 35.7 +50.9 80.6	23 07.1 +50.9 79.8	22 38.5 +51.0 78.9	22 10.0 +51.1 78.1
26°	24 55.3 +50.7 80.9	24 26.6 +50.8 80.0	23 58.0 +50.9 79.2	23 29.5 +50.9 78.4	23 01.1 +50.9 77.5
27°	25 46.0 +50.6 80.3	25 17.4 +50.6 79.4	24 48.9 +50.6 78.6	24 20.4 +50.7 77.8	23 52.0 +50.8 76.9
28°	26 36.6 +50.4 79.7	26 08.0 +50.5 78.8	25 39.5 +50.6 78.0	25 11.1 +50.6 77.2	24 42.8 +50.7 76.4
29°	27 27.0 +50.3 79.1	26 58.5 +50.3 78.2	26 30.1 +50.4 77.4	26 01.7 +50.5 76.6	25 33.5 +50.5 75.8

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 +52.5 90.0	-0 29.1 +52.5	-0 58.2 +52.5	-1 27.2 +52.5	-1 56.3 +52.5
1°	0 52.5 +52.4 89.5	0 23.4 +52.5 88.6	-0 05.7 +52.5	-0 34.7 +52.5	-1 03.8 +52.5
2°	1 44.9 +52.5 89.0	1 15.9 +52.4 88.2	0 46.8 +52.5 87.3	0 17.8 +52.5 86.4	-0 11.3 +52.6
3°	2 37.4 +52.5 88.5	2 08.3 +52.5 87.7	1 39.3 +52.5 86.8	1 10.3 +52.5 85.9	0 41.3 +52.5 85.0
4°	3 29.9 +52.4 88.1	3 00.8 +52.5 87.2	2 31.8 +52.4 86.3	2 02.8 +52.4 85.4	1 33.8 +52.5 84.6
5°	4 22.3 +52.4 87.6	3 53.3 +52.4 86.7	3 24.2 +52.5 85.8	2 55.2 +52.5 85.0	2 26.3 +52.5 84.1
6°	5 14.7 +52.4 87.1	4 45.7 +52.4 86.2	4 16.7 +52.4 85.3	3 47.7 +52.5 84.5	3 18.8 +52.5 83.6
7°	6 07.1 +52.4 86.6	5 38.1 +52.4 85.7	5 09.1 +52.4 84.9	4 40.2 +52.4 84.0	4 11.3 +52.4 83.1
8°	6 59.5 +52.3 86.1	6 30.5 +52.3 85.2	6 01.5 +52.4 84.4	5 32.6 +52.4 83.5	5 03.7 +52.5 82.6
9°	7 51.8 +52.3 85.6	7 22.8 +52.4 84.7	6 53.9 +52.4 83.9	6 25.0 +52.4 83.0	5 56.2 +52.4 82.1
10°	8 44.1 +52.3 85.1	8 15.2 +52.3 84.2	7 46.3 +52.3 83.4	7 17.4 +52.3 82.5	6 48.6 +52.4 81.6
11°	9 36.4 +52.2 84.6	9 07.5 +52.2 83.7	8 38.6 +52.3 82.9	8 09.7 +52.4 82.0	7 41.0 +52.3 81.2
12°	10 28.6 +52.2 84.1	9 59.7 +52.2 83.3	9 30.9 +52.2 82.4	9 02.1 +52.2 81.5	8 33.3 +52.3 80.7
13°	11 20.8 +52.1 83.6	10 51.9 +52.2 82.8	10 23.1 +52.2 81.9	9 54.3 +52.3 81.0	9 25.6 +52.3 80.2
14°	12 12.9 +52.1 83.1	11 44.1 +52.1 82.2	11 15.3 +52.1 81.4	10 46.6 +52.1 80.5	10 17.9 +52.2 79.7
15°	13 05.0 +52.0 82.6	12 36.2 +52.0 81.7	12 07.4 +52.1 80.9	11 38.7 +52.2 80.0	11 10.1 +52.2 79.2
16°	13 57.0 +52.0 82.1	13 28.2 +52.0 81.2	12 59.5 +52.0 80.4	12 30.9 +52.0 79.5	12 02.3 +52.1 78.7
17°	14 49.0 +51.8 81.6	14 20.2 +51.9 80.7	13 51.5 +52.0 79.9	13 22.9 +52.1 79.0	12 54.4 +52.1 78.2
18°	15 40.8 +51.8 81.0	15 12.1 +51.9 80.2	14 43.5 +51.9 79.3	14 15.0 +51.9 78.5	13 46.5 +52.0 77.6
19°	16 32.6 +51.7 80.5	16 04.0 +51.7 79.7	15 35.4 +51.8 78.8	15 06.9 +51.9 78.0	14 38.5 +51.9 77.1
20°	17 24.3 +51.7 80.0	16 55.7 +51.7 79.1	16 27.2 +51.8 78.3	15 58.8 +51.8 77.5	15 30.4 +51.9 76.6
21°	18 16.0 +51.5 79.5	17 47.4 +51.6 78.6	17 19.0 +51.6 77.8	16 50.6 +51.7 76.9	16 22.3 +51.8 76.1
22°	19 07.5 +51.5 78.9	18 39.0 +51.5 78.1	18 10.6 +51.6 77.2	17 42.3 +51.6 76.4	17 14.1 +51.7 75.6
23°	19 59.0 +51.3 78.4	19 30.5 +51.4 77.5	19 02.2 +51.4 76.7	18 33.9 +51.6 75.9	18 05.8 +51.6 75.0
24°	20 50.3 +51.3 77.8	20 21.9 +51.3 77.0	19 53.6 +51.4 76.2	19 25.5 +51.4 75.3	18 57.4 +51.5 74.5
25°	21 41.6 +51.1 77.3	21 13.2 +51.2 76.4	20 45.0 +51.3 75.6	20 16.9 +51.3 74.8	19 48.9 +51.4 73.9
26°	22 32.7 +51.0 76.7	22 04.4 +51.1 75.9	21 36.3 +51.1 75.0	21 08.2 +51.3 74.2	20 40.3 +51.3 73.4
27°	23 23.7 +50.9 76.1	22 55.5 +51.0 75.3	22 27.4 +51.1 74.5	21 59.5 +51.1 73.7	21 31.6 +51.2 72.8
28°	24 14.6 +50.7 75.5	23 46.5 +50.8 74.7	23 18.5 +50.9 73.9	22 50.6 +51.0 73.1	22 22.8 +51.1 72.3
29°	25 05.3 +50.6 75.0	24 37.3 +50.7 74.1	24 09.4 +50.7 73.3	23 41.6 +50.8 72.5	23 13.9 +50.9 71.7

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°	-2 25.3 +52.5	-2 54.3 +52.6	-3 23.2 +52.5	-3 52.1 +52.6	-4 21.0 +52.7
1°	-1 32.8 +52.6	-2 01.7 +52.5	-2 30.7 +52.6	-2 59.5 +52.6	-3 28.3 +52.6
2°	-0 40.2 +52.5	-1 09.2 +52.6	-1 38.1 +52.6	-2 06.9 +52.6	-2 35.7 +52.7
3°	0 12.3 +52.5 84.2	-0 16.6 +52.6	-0 45.5 +52.6	-1 14.3 +52.6	-1 43.0 +52.6
4°	1 04.8 +52.6 83.7	0 36.0 +52.5 82.8	0 07.1 +52.6 81.9	-0 21.7 +52.7	-0 50.4 +52.7
5°	1 57.4 +52.5 83.2	1 28.5 +52.6 82.3	0 59.7 +52.6 81.5	0 31.0 +52.6 80.6	0 02.3 +52.7 79.7
6°	2 49.9 +52.5 82.7	2 21.1 +52.5 81.9	1 52.3 +52.6 81.0	1 23.6 +52.6 80.1	0 55.0 +52.7 79.2
7°	3 42.4 +52.5 82.2	3 13.6 +52.5 81.4	2 44.9 +52.6 80.5	2 16.2 +52.7 79.6	1 47.7 +52.6 78.8
8°	4 34.9 +52.5 81.8	4 06.1 +52.6 80.9	3 37.5 +52.5 80.0	3 08.9 +52.6 79.1	2 40.3 +52.7 78.3
9°	5 27.4 +52.4 81.3	4 58.7 +52.5 80.4	4 30.0 +52.6 79.5	4 01.5 +52.5 78.7	3 33.0 +52.6 77.8
10°	6 19.8 +52.5 80.8	5 51.2 +52.4 79.9	5 22.6 +52.5 79.0	4 54.0 +52.6 78.2	4 25.6 +52.6 77.3
11°	7 12.3 +52.4 80.3	6 43.6 +52.5 79.4	6 15.1 +52.5 78.6	5 46.6 +52.5 77.7	5 18.2 +52.6 76.8
12°	8 04.7 +52.3 79.8	7 36.1 +52.4 78.9	7 07.6 +52.4 78.1	6 39.1 +52.6 77.2	6 10.8 +52.6 76.3
13°	8 57.0 +52.3 79.3	8 28.5 +52.3 78.4	8 00.0 +52.4 77.6	7 31.7 +52.4 76.7	7 03.4 +52.5 75.9
14°	9 49.3 +52.3 78.8	9 20.8 +52.4 78.0	8 52.4 +52.4 77.1	8 24.1 +52.5 76.2	7 55.9 +52.5 75.4
15°	10 41.6 +52.2 78.3	10 13.2 +52.2 77.5	9 44.8 +52.4 76.6	9 16.6 +52.4 75.7	8 48.4 +52.5 74.9
16°	11 33.8 +52.2 77.8	11 05.4 +52.3 77.0	10 37.2 +52.3 76.1	10 09.0 +52.3 75.2	9 40.9 +52.4 74.4
17°	12 26.0 +52.1 77.3	11 57.7 +52.2 76.5	11 29.5 +52.2 75.6	11 01.3 +52.3 74.8	10 33.3 +52.4 73.9
18°	13 18.1 +52.1 76.8	12 49.9 +52.1 75.9	12 21.7 +52.2 75.1	11 53.6 +52.3 74.3	11 25.7 +52.3 73.4
19°	14 10.2 +52.0 76.3	13 42.0 +52.0 75.4	13 13.9 +52.1 74.6	12 45.9 +52.2 73.7	12 18.0 +52.3 72.9
20°	15 02.2 +51.9 75.8	14 34.0 +52.0 74.9	14 06.0 +52.1 74.1	13 38.1 +52.1 73.2	13 10.3 +52.2 72.4
21°	15 54.1 +51.9 75.2	15 26.0 +51.9 74.4	14 58.1 +52.0 73.6	14 30.2 +52.1 72.7	14 02.5 +52.2 71.9
22°	16 46.0 +51.7 74.7	16 17.9 +51.9 73.9	15 50.1 +51.9 73.1	15 22.3 +52.0 72.2	14 54.7 +52.0 71.4
23°	17 37.7 +51.7 74.2	17 09.8 +51.7 73.4	16 42.0 +51.8 72.5	16 14.3 +51.9 71.7	15 46.7 +52.1 70.9
24°	18 29.4 +51.6 73.7	18 01.5 +51.7 72.8	17 33.8 +51.8 72.0	17 06.2 +51.9 71.2	16 38.8 +51.9 70.3
25°	19 21.0 +51.5 73.1	18 53.2 +51.6 72.3	18 25.6 +51.6 71.5	17 58.1 +51.7 70.6	17 30.7 +51.8 69.8
26°	20 12.5 +51.4 72.6	19 44.8 +51.5 71.8	19 17.2 +51.6 70.9	18 49.8 +51.7 70.1	18 22.5 +51.8 69.3
27°	21 03.9 +51.3 72.0	20 36.3 +51.3 71.2	20 08.8 +51.5 70.4	19 41.5 +51.5 69.6	19 14.3 +51.6 68.8
28°	21 55.2 +51.1 71.5	21 27.6 +51.3 70.7	21 00.3 +51.3 69.8	20 33.0 +51.5 69.0	20 05.9 +51.6 68.2
29°	22 46.3 +51.1 70.9	22 18.9 +51.2 70.1	21 51.6 +51.3 69.3	21 24.5 +51.3 68.5	20 57.5 +51.5 67.7

Declination SAME name as Latitude

Latitude 61°

Dec	LHA 100° / 260°	LHA 101° / 259°	LHA 102° / 258°	LHA 103° / 257°	LHA 104° / 256°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-4 49.8 +52.7	-5 18.5 +52.7	-5 47.1 +52.8	-6 15.7 +52.8	-6 44.1 +52.8
1°	-3 57.1 +52.7	-4 25.8 +52.8	-4 54.3 +52.7	-5 22.9 +52.9	-5 51.3 +52.9
2°	-3 04.4 +52.7	-3 33.0 +52.7	-4 01.6 +52.8	-4 30.0 +52.8	-4 58.4 +52.9
3°	-2 11.7 +52.7	-2 40.3 +52.8	-3 08.8 +52.8	-3 37.2 +52.9	-4 05.5 +52.9
4°	-1 19.0 +52.7	-1 47.5 +52.7	-2 16.0 +52.8	-2 44.3 +52.8	-3 12.6 +52.9
5°	-0 26.3 +52.8	-0 54.8 +52.8	-1 23.2 +52.9	-1 51.5 +52.9	-2 19.7 +53.0
6°	0 26.5 +52.7 78.4	-0 02.0 +52.8	-0 30.3 +52.8	-0 58.6 +52.9	-1 26.7 +52.9
7°	1 19.2 +52.7 77.9	0 50.8 +52.8 77.0	0 22.5 +52.8 76.1	-0 05.7 +52.9	-0 33.8 +53.0
8°	2 11.9 +52.7 77.4	1 43.6 +52.7 76.5	1 15.3 +52.8 75.7	0 47.2 +52.9 74.8	0 19.2 +52.9 73.9
9°	3 04.6 +52.7 76.9	2 36.3 +52.8 76.1	2 08.1 +52.8 75.2	1 40.1 +52.8 74.3	1 12.1 +53.0 73.4
10°	3 57.3 +52.7 76.4	3 29.1 +52.7 75.6	3 00.9 +52.8 74.7	2 32.9 +52.9 73.8	2 05.1 +52.9 73.0
11°	4 50.0 +52.6 76.0	4 21.8 +52.7 75.1	3 53.7 +52.8 74.2	3 25.8 +52.9 73.4	2 58.0 +52.9 72.5
12°	5 42.6 +52.6 75.5	5 14.5 +52.7 74.6	4 46.5 +52.8 73.8	4 18.7 +52.8 72.9	3 50.9 +52.9 72.0
13°	6 35.2 +52.6 75.0	6 07.2 +52.7 74.1	5 39.3 +52.7 73.3	5 11.5 +52.8 72.4	4 43.8 +52.9 71.6
14°	7 27.8 +52.6 74.5	6 59.9 +52.6 73.7	6 32.0 +52.7 72.8	6 04.3 +52.8 71.9	5 36.7 +52.9 71.1
15°	8 20.4 +52.5 74.0	7 52.5 +52.6 73.2	7 24.7 +52.7 72.3	6 57.1 +52.7 71.5	6 29.6 +52.8 70.6
16°	9 12.9 +52.5 73.5	8 45.1 +52.6 72.7	8 17.4 +52.6 71.8	7 49.8 +52.8 71.0	7 22.4 +52.8 70.1
17°	10 05.4 +52.5 73.1	9 37.7 +52.5 72.2	9 10.0 +52.7 71.4	8 42.6 +52.6 70.5	8 15.2 +52.8 69.7
18°	10 57.9 +52.4 72.6	10 30.2 +52.5 71.7	10 02.7 +52.5 70.9	9 35.2 +52.7 70.0	9 08.0 +52.7 69.2
19°	11 50.3 +52.3 72.1	11 22.7 +52.4 71.2	10 55.2 +52.5 70.4	10 27.9 +52.6 69.5	10 00.7 +52.7 68.7
20°	12 42.6 +52.3 71.6	12 15.1 +52.4 70.7	11 47.7 +52.5 69.9	11 20.5 +52.5 69.0	10 53.4 +52.6 68.2
21°	13 34.9 +52.3 71.1	13 07.5 +52.3 70.2	12 40.2 +52.4 69.4	12 13.0 +52.5 68.5	11 46.0 +52.6 67.7
22°	14 27.2 +52.1 70.6	13 59.8 +52.3 69.7	13 32.6 +52.3 68.9	13 05.5 +52.5 68.1	12 38.6 +52.6 67.2
23°	15 19.3 +52.1 70.0	14 52.1 +52.2 69.2	14 24.9 +52.3 68.4	13 58.0 +52.4 67.6	13 31.2 +52.5 66.7
24°	16 11.4 +52.1 69.5	15 44.3 +52.1 68.7	15 17.2 +52.2 67.9	14 50.4 +52.3 67.0	14 23.7 +52.4 66.2
25°	17 03.5 +51.9 69.0	16 36.4 +52.0 68.2	16 09.4 +52.2 67.4	15 42.7 +52.2 66.5	15 16.1 +52.3 65.7
26°	17 55.4 +51.8 68.5	17 28.4 +52.0 67.7	17 01.6 +52.0 66.8	16 34.9 +52.2 66.0	16 08.4 +52.3 65.2
27°	18 47.2 +51.8 67.9	18 20.4 +51.8 67.1	17 53.6 +52.0 66.3	17 27.1 +52.1 65.5	17 00.7 +52.2 64.7
28°	19 39.0 +51.7 67.4	19 12.2 +51.8 66.6	18 45.6 +51.9 65.8	18 19.2 +52.0 65.0	17 52.9 +52.1 64.2
29°	20 30.7 +51.5 66.9	20 04.0 +51.7 66.1	19 37.5 +51.8 65.3	19 11.2 +51.9 64.5	18 45.0 +52.0 63.7

Dec	LHA 105° / 255°	LHA 106° / 254°	LHA 107° / 253°	LHA 108° / 252°	LHA 109° / 251°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-7 12.5 +52.9	-7 40.8 +53.0	-8 08.9 +53.0	-8 37.0 +53.1	-9 04.9 +53.2
1°	-6 19.6 +52.9	-6 47.8 +53.0	-7 15.9 +53.1	-7 43.9 +53.1	-8 11.7 +53.2
2°	-5 26.7 +53.0	-5 54.8 +53.0	-6 22.8 +53.0	-6 50.8 +53.2	-7 18.5 +53.2
3°	-4 33.7 +53.0	-5 01.8 +53.0	-5 29.8 +53.1	-5 57.6 +53.2	-6 25.3 +53.2
4°	-3 40.7 +53.0	-4 08.8 +53.1	-4 36.7 +53.2	-5 04.4 +53.2	-5 32.1 +53.3
5°	-2 47.7 +53.0	-3 15.7 +53.1	-3 43.5 +53.1	-4 11.2 +53.2	-4 38.8 +53.3
6°	-1 54.7 +53.0	-2 22.6 +53.0	-2 50.4 +53.2	-3 18.0 +53.2	-3 45.5 +53.3
7°	-1 01.7 +53.0	-1 29.6 +53.1	-1 57.2 +53.1	-2 24.8 +53.2	-2 52.2 +53.3
8°	-0 08.7 +53.0	-0 36.5 +53.1	-1 04.1 +53.2	-1 31.6 +53.3	-1 58.9 +53.3
9°	0 44.3 +53.0 72.6	0 16.6 +53.1 71.7	-0 10.9 +53.1	-0 38.3 +53.2	-1 05.6 +53.3
10°	1 37.3 +53.0 72.1	1 09.7 +53.1 71.2	0 42.2 +53.2 70.4	0 14.9 +53.3 69.5	-0 12.3 +53.4
11°	2 30.3 +53.0 71.6	2 02.8 +53.1 70.8	1 35.4 +53.1 69.9	1 08.2 +53.2 69.0	0 41.1 +53.3 68.2
12°	3 23.3 +53.0 71.2	2 55.9 +53.0 70.3	2 28.5 +53.2 69.4	2 01.4 +53.2 68.6	1 34.4 +53.3 67.7
13°	4 16.3 +53.0 70.7	3 48.9 +53.1 69.8	3 21.7 +53.1 69.0	2 54.6 +53.2 68.1	2 27.7 +53.3 67.2
14°	5 09.3 +52.9 70.2	4 42.0 +53.0 69.4	4 14.8 +53.1 68.5	3 47.8 +53.2 67.6	3 21.0 +53.3 66.8
15°	6 02.2 +52.9 69.8	5 35.0 +53.0 68.9	5 07.9 +53.1 68.0	4 41.0 +53.2 67.2	4 14.3 +53.3 66.3
16°	6 55.1 +52.9 69.3	6 28.0 +53.0 68.4	6 01.0 +53.1 67.6	5 34.2 +53.2 66.7	5 07.6 +53.2 65.9
17°	7 48.0 +52.9 68.8	7 21.0 +52.9 68.0	6 54.1 +53.0 67.1	6 27.4 +53.1 66.2	6 00.8 +53.3 65.4
18°	8 40.9 +52.8 68.3	8 13.9 +52.9 67.5	7 47.1 +53.0 66.6	7 20.5 +53.1 65.8	6 54.1 +53.2 64.9
19°	9 33.7 +52.8 67.8	9 06.8 +52.9 67.0	8 40.1 +53.0 66.2	8 13.6 +53.1 65.3	7 47.3 +53.2 64.5
20°	10 26.5 +52.7 67.4	9 59.7 +52.8 66.5	9 33.1 +53.0 65.7	9 06.7 +53.0 64.8	8 40.5 +53.1 64.0
21°	11 19.2 +52.7 66.9	10 52.5 +52.8 66.0	10 26.1 +52.8 65.2	9 59.7 +53.0 64.4	9 33.6 +53.1 63.5
22°	12 11.9 +52.6 66.4	11 45.3 +52.8 65.6	11 18.9 +52.9 64.7	10 52.7 +53.0 63.9	10 26.7 +53.1 63.1
23°	13 04.5 +52.6 65.9	12 38.1 +52.7 65.1	12 11.8 +52.8 64.2	11 45.7 +52.9 63.4	11 19.8 +53.0 62.6
24°	13 57.1 +52.5 65.4	13 30.8 +52.6 64.6	13 04.6 +52.7 63.8	12 38.6 +52.8 62.9	12 12.8 +52.9 62.1
25°	14 49.6 +52.5 64.9	14 23.4 +52.6 64.1	13 57.3 +52.7 63.3	13 31.4 +52.8 62.4	13 05.7 +53.0 61.6
26°	15 42.1 +52.4 64.4	15 16.0 +52.5 63.6	14 50.0 +52.6 62.8	14 24.2 +52.8 62.0	13 58.7 +52.8 61.1
27°	16 34.5 +52.3 63.9	16 08.5 +52.4 63.1	15 42.6 +52.6 62.3	15 17.0 +52.6 61.5	14 51.5 +52.8 60.6
28°	17 26.8 +52.2 63.4	17 00.9 +52.3 62.6	16 35.2 +52.4 61.8	16 09.6 +52.6 61.0	15 44.3 +52.7 60.2
29°	18 19.0 +52.2 62.9	17 53.2 +52.3 62.1	17 27.6 +52.4 61.3	17 02.2 +52.6 60.5	16 37.0 +52.7 59.7

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Latitude 61°**Declination SAME name as Latitude**

Dec	LHA 110° / 250°	LHA 111° / 249°	LHA 112° / 248°	LHA 113° / 247°	LHA 114° / 246°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-9 32.7 +53.3				
1°	-8 39.4 +53.2	-9 07.0 +53.3	-9 34.4 +53.4		
2°	-7 46.2 +53.3	-8 13.7 +53.4	-8 41.0 +53.4	-9 08.2 +53.5	-9 35.2 +53.6
3°	-6 52.9 +53.3	-7 20.3 +53.4	-7 47.6 +53.5	-8 14.7 +53.6	-8 41.6 +53.7
4°	-5 59.6 +53.4	-6 26.9 +53.4	-6 54.1 +53.5	-7 21.1 +53.6	-7 47.9 +53.6
5°	-5 06.2 +53.4	-5 33.5 +53.5	-6 00.6 +53.6	-6 27.5 +53.6	-6 54.3 +53.8
6°	-4 12.8 +53.3	-4 40.0 +53.4	-5 07.0 +53.5	-5 33.9 +53.7	-6 00.5 +53.7
7°	-3 19.5 +53.4	-3 46.6 +53.5	-4 13.5 +53.6	-4 40.2 +53.6	-5 06.8 +53.7
8°	-2 26.1 +53.4	-2 53.1 +53.5	-3 19.9 +53.6	-3 46.6 +53.7	-4 13.1 +53.8
9°	-1 32.7 +53.4	-1 59.6 +53.5	-2 26.3 +53.5	-2 52.9 +53.7	-3 19.3 +53.8
10°	-0 39.3 +53.5	-1 06.1 +53.5	-1 32.8 +53.6	-1 59.2 +53.7	-2 25.5 +53.8
11°	0 14.2 +53.4 67.3	-0 12.6 +53.5	-0 39.2 +53.6	-1 05.5 +53.6	-1 31.7 +53.8
12°	1 07.6 +53.4 66.8	0 40.9 +53.5 66.0	0 14.4 +53.6 65.1	-0 11.9 +53.7	-0 37.9 +53.8
13°	2 01.0 +53.4 66.4	1 34.4 +53.5 65.5	1 08.0 +53.6 64.6	0 41.8 +53.7 63.8	0 15.9 +53.7 62.9
14°	2 54.4 +53.4 65.9	2 27.9 +53.5 65.1	2 01.6 +53.6 64.2	1 35.5 +53.7 63.3	1 09.6 +53.8 62.4
15°	3 47.8 +53.3 65.5	3 21.4 +53.5 64.6	2 55.2 +53.6 63.7	2 29.2 +53.7 62.9	2 03.4 +53.8 62.0
16°	4 41.1 +53.4 65.0	4 14.9 +53.4 64.1	3 48.8 +53.5 63.3	3 22.9 +53.7 62.4	2 57.2 +53.8 61.6
17°	5 34.5 +53.3 64.5	5 08.3 +53.5 63.7	4 42.3 +53.6 62.8	4 16.6 +53.6 62.0	3 51.0 +53.7 61.1
18°	6 27.8 +53.3 64.1	6 01.8 +53.4 63.2	5 35.9 +53.5 62.4	5 10.2 +53.6 61.5	4 44.7 +53.8 60.7
19°	7 21.1 +53.3 63.6	6 55.2 +53.4 62.8	6 29.4 +53.5 61.9	6 03.8 +53.6 61.1	5 38.5 +53.7 60.2
20°	8 14.4 +53.3 63.2	7 48.6 +53.3 62.3	7 22.9 +53.5 61.5	6 57.4 +53.6 60.6	6 32.2 +53.7 59.8
21°	9 07.7 +53.2 62.7	8 41.9 +53.3 61.8	8 16.4 +53.4 61.0	7 51.0 +53.6 60.2	7 25.9 +53.7 59.3
22°	10 00.9 +53.1 62.2	9 35.2 +53.3 61.4	9 09.8 +53.4 60.5	8 44.6 +53.5 59.7	8 19.6 +53.6 58.9
23°	10 54.0 +53.2 61.7	10 28.5 +53.3 60.9	10 03.2 +53.4 60.1	9 38.1 +53.5 59.3	9 13.2 +53.6 58.4
24°	11 47.2 +53.1 61.3	11 21.8 +53.2 60.4	10 56.6 +53.3 59.6	10 31.6 +53.4 58.8	10 06.8 +53.6 58.0
25°	12 40.3 +53.0 60.8	12 15.0 +53.1 60.0	11 49.9 +53.3 59.2	11 25.0 +53.4 58.3	11 00.4 +53.5 57.5
26°	13 33.3 +53.0 60.3	13 08.1 +53.1 59.5	12 43.2 +53.2 58.7	12 18.4 +53.4 57.9	11 53.9 +53.5 57.0
27°	14 26.3 +52.9 59.8	14 01.2 +53.1 59.0	13 36.4 +53.2 58.2	13 11.8 +53.3 57.4	12 47.4 +53.4 56.6
28°	15 19.2 +52.8 59.3	14 54.3 +52.9 58.5	14 29.6 +53.1 57.7	14 05.1 +53.2 56.9	13 40.8 +53.4 56.1
29°	16 12.0 +52.8 58.9	15 47.2 +53.0 58.1	15 22.7 +53.0 57.3	14 58.3 +53.2 56.4	14 34.2 +53.3 55.6

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°	-9 08.4 +53.8	-9 34.9 +53.8			
4°	-8 14.6 +53.8	-8 41.1 +53.9	-9 07.4 +54.0	-9 33.5 +54.1	-9 59.3 +54.1
5°	-7 20.8 +53.8	-7 47.2 +53.9	-8 13.4 +54.0	-8 39.4 +54.1	-9 05.2 +54.2
6°	-6 27.0 +53.8	-6 53.3 +53.9	-7 19.4 +54.0	-7 45.3 +54.1	-8 11.0 +54.3
7°	-5 33.2 +53.8	-5 59.4 +54.0	-6 25.4 +54.1	-6 51.2 +54.2	-7 16.7 +54.2
8°	-4 39.4 +53.9	-5 05.4 +53.9	-5 31.3 +54.0	-5 57.0 +54.2	-6 22.5 +54.3
9°	-3 45.5 +53.9	-4 11.5 +54.0	-4 37.3 +54.1	-5 02.8 +54.1	-5 28.2 +54.3
10°	-2 51.6 +53.9	-3 17.5 +54.0	-3 43.2 +54.1	-4 08.7 +54.2	-4 33.9 +54.3
11°	-1 57.7 +53.9	-2 23.5 +54.0	-2 49.1 +54.1	-3 14.5 +54.2	-3 39.6 +54.3
12°	-1 03.8 +53.9	-1 29.5 +54.0	-1 55.0 +54.1	-2 20.3 +54.3	-2 45.3 +54.3
13°	-0 09.9 +53.9	-0 35.5 +54.0	-1 00.9 +54.1	-1 26.0 +54.2	-1 51.0 +54.4
14°	0 44.0 +53.9 61.6	0 18.5 +54.0 60.7	-0 06.8 +54.1	-0 31.8 +54.2	-0 56.6 +54.3
15°	1 37.9 +53.8 61.1	1 12.5 +54.0 60.3	0 47.3 +54.1 59.4	0 22.4 +54.2 58.5	-0 02.3 +54.4
16°	2 31.7 +53.9 60.7	2 06.5 +54.0 59.8	1 41.4 +54.2 59.0	1 16.6 +54.3 58.1	0 52.1 +54.3 57.2
17°	3 25.6 +53.9 60.3	3 00.5 +54.0 59.4	2 35.6 +54.0 58.5	2 10.9 +54.2 57.7	1 46.4 +54.3 56.8
18°	4 19.5 +53.8 59.8	3 54.5 +53.9 59.0	3 29.6 +54.1 58.1	3 05.1 +54.2 57.2	2 40.7 +54.3 56.4
19°	5 13.3 +53.9 59.4	4 48.4 +54.0 58.5	4 23.7 +54.1 57.7	3 59.3 +54.2 56.8	3 35.0 +54.4 56.0
20°	6 07.2 +53.8 58.9	5 42.4 +53.9 58.1	5 17.8 +54.0 57.2	4 53.5 +54.1 56.4	4 29.4 +54.2 55.5
21°	7 01.0 +53.8 58.5	6 36.3 +53.9 57.6	6 11.8 +54.1 56.8	5 47.6 +54.2 55.9	5 23.6 +54.3 55.1
22°	7 54.8 +53.7 58.0	7 30.2 +53.9 57.2	7 05.9 +54.0 56.4	6 41.8 +54.1 55.5	6 17.9 +54.3 54.7
23°	8 48.5 +53.8 57.6	8 24.1 +53.8 56.8	7 59.9 +54.0 55.9	7 35.9 +54.1 55.1	7 12.2 +54.2 54.2
24°	9 42.3 +53.7 57.1	9 17.9 +53.9 56.3	8 53.9 +53.9 55.5	8 30.0 +54.1 54.6	8 06.4 +54.2 53.8
25°	10 36.0 +53.6 56.7	10 11.8 +53.7 55.9	9 47.8 +53.9 55.0	9 24.1 +54.0 54.2	9 00.6 +54.2 53.4
26°	11 29.6 +53.6 56.2	11 05.5 +53.8 55.4	10 41.7 +53.9 54.6	10 18.1 +54.0 53.8	9 54.8 +54.1 52.9
27°	12 23.2 +53.6 55.8	11 59.3 +53.7 55.0	11 35.6 +53.8 54.1	11 12.1 +54.0 53.3	10 48.9 +54.1 52.5
28°	13 16.8 +53.5 55.3	12 53.0 +53.6 54.5	12 29.4 +53.8 53.7	12 06.1 +53.9 52.9	11 43.0 +54.1 52.1
29°	14 10.3 +53.4 54.8	13 46.6 +53.6 54.0	13 23.2 +53.7 53.2	13 00.0 +53.9 52.4	12 37.1 +54.0 51.6

Declination SAME name as Latitude

Latitude 61°

Dec	LHA 120° / 240°	LHA 121° / 239°	LHA 122° / 238°	LHA 123° / 237°	LHA 124° / 236°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°	-9 30.7 +54.3	-9 56.1 +54.5			
6°	-8 36.4 +54.3	-9 01.6 +54.4	-9 26.6 +54.5	-9 51.4 +54.7	
7°	-7 42.1 +54.4	-8 07.2 +54.5	-8 32.1 +54.6	-8 56.7 +54.7	-9 21.1 +54.8
8°	-6 47.7 +54.4	-7 12.7 +54.5	-7 37.5 +54.6	-8 02.0 +54.7	-8 26.3 +54.9
9°	-5 53.3 +54.4	-6 18.2 +54.5	-6 42.9 +54.6	-7 07.3 +54.7	-7 31.4 +54.8
10°	-4 58.9 +54.4	-5 23.7 +54.5	-5 48.3 +54.7	-6 12.6 +54.8	-6 36.6 +54.9
11°	-4 04.5 +54.4	-4 29.2 +54.6	-4 53.6 +54.6	-5 17.8 +54.8	-5 41.7 +54.9
12°	-3 10.1 +54.5	-3 34.6 +54.5	-3 59.0 +54.7	-4 23.0 +54.8	-4 46.8 +54.9
13°	-2 15.6 +54.4	-2 40.1 +54.6	-3 04.3 +54.7	-3 28.2 +54.8	-3 51.9 +54.9
14°	-1 21.2 +54.5	-1 45.5 +54.6	-2 09.6 +54.7	-2 33.4 +54.8	-2 57.0 +54.9
15°	-0 26.7 +54.4	-0 50.9 +54.5	-1 14.9 +54.7	-1 38.6 +54.8	-2 02.1 +55.0
16°	0 27.7 +54.5 56.4	0 03.6 +54.6 55.5	-0 20.2 +54.7	-0 43.8 +54.8	-1 07.1 +54.9
17°	1 22.2 +54.4 55.9	0 58.2 +54.6 55.1	0 34.5 +54.7 54.2	0 11.0 +54.8 53.3	-0 12.2 +55.0
18°	2 16.6 +54.5 55.5	1 52.8 +54.5 54.7	1 29.2 +54.7 53.8	1 05.8 +54.8 52.9	0 42.8 +54.9 52.0
19°	3 11.1 +54.4 55.1	2 47.3 +54.6 54.2	2 23.9 +54.6 53.4	2 00.6 +54.9 52.5	1 37.7 +54.9 51.6
20°	4 05.5 +54.4 54.7	3 41.9 +54.5 53.8	3 18.5 +54.7 53.0	2 55.5 +54.8 52.1	2 32.6 +55.0 51.2
21°	4 59.9 +54.4 54.3	4 36.4 +54.6 53.4	4 13.2 +54.7 52.5	3 50.3 +54.7 51.7	3 27.6 +54.9 50.8
22°	5 54.3 +54.4 53.8	5 31.0 +54.5 53.0	5 07.9 +54.6 52.1	4 45.0 +54.8 51.3	4 22.5 +54.9 50.4
23°	6 48.7 +54.4 53.4	6 25.5 +54.5 52.6	6 02.5 +54.6 51.7	5 39.8 +54.8 50.9	5 17.4 +54.9 50.0
24°	7 43.1 +54.3 53.0	7 20.0 +54.4 52.1	6 57.1 +54.6 51.3	6 34.6 +54.7 50.5	6 12.3 +54.8 49.6
25°	8 37.4 +54.3 52.5	8 14.4 +54.5 51.7	7 51.7 +54.6 50.9	7 29.3 +54.7 50.1	7 07.1 +54.9 49.2
26°	9 31.7 +54.3 52.1	9 08.9 +54.4 51.3	8 46.3 +54.6 50.5	8 24.0 +54.7 49.6	8 02.0 +54.8 48.8
27°	10 26.0 +54.2 51.7	10 03.3 +54.4 50.9	9 40.9 +54.5 50.0	9 18.7 +54.6 49.2	8 56.8 +54.8 48.4
28°	11 20.2 +54.2 51.2	10 57.7 +54.3 50.4	10 35.4 +54.5 49.6	10 13.3 +54.7 48.8	9 51.6 +54.8 48.0
29°	12 14.4 +54.2 50.8	11 52.0 +54.3 50.0	11 29.9 +54.4 49.2	11 08.0 +54.6 48.4	10 46.4 +54.7 47.6

Dec	LHA 125° / 235°	LHA 126° / 234°	LHA 127° / 233°	LHA 128° / 232°	LHA 129° / 231°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°	-9 45.2 +54.9				
8°	-8 50.3 +55.0	-9 14.0 +55.0	-9 37.5 +55.2		
9°	-7 55.3 +54.9	-8 19.0 +55.1	-8 42.3 +55.2	-9 05.4 +55.3	-9 28.2 +55.5
10°	-7 00.4 +55.0	-7 23.9 +55.1	-7 47.1 +55.2	-8 10.1 +55.4	-8 32.7 +55.5
11°	-6 05.4 +55.0	-6 28.8 +55.2	-6 51.9 +55.3	-7 14.7 +55.4	-7 37.2 +55.5
12°	-5 10.4 +55.1	-5 33.6 +55.1	-5 56.6 +55.3	-6 19.3 +55.4	-6 41.7 +55.5
13°	-4 15.3 +55.0	-4 38.5 +55.2	-5 01.3 +55.3	-5 23.9 +55.4	-5 46.2 +55.5
14°	-3 20.3 +55.1	-3 43.3 +55.2	-4 06.0 +55.3	-4 28.5 +55.4	-4 50.7 +55.6
15°	-2 25.2 +55.0	-2 48.1 +55.2	-3 10.7 +55.3	-3 33.1 +55.5	-3 55.1 +55.6
16°	-1 30.2 +55.1	-1 52.9 +55.1	-2 15.4 +55.3	-2 37.6 +55.4	-2 59.5 +55.5
17°	-0 35.1 +55.1	-0 57.8 +55.2	-1 20.1 +55.3	-1 42.2 +55.5	-2 04.0 +55.6
18°	0 20.0 +55.0 51.2	-0 02.6 +55.2	-0 24.8 +55.3	-0 46.7 +55.4	-1 08.4 +55.6
19°	1 15.0 +55.1 50.8	0 52.6 +55.2 49.9	0 30.5 +55.3 49.0	0 08.7 +55.5 48.2	-0 12.8 +55.6
20°	2 10.1 +55.0 50.4	1 47.8 +55.2 49.5	1 25.8 +55.4 48.7	1 04.2 +55.4 47.8	0 42.8 +55.5 46.9
21°	3 05.1 +55.1 50.0	2 43.0 +55.2 49.1	2 21.2 +55.3 48.3	1 59.6 +55.4 47.4	1 38.3 +55.6 46.5
22°	4 00.2 +55.0 49.6	3 38.2 +55.1 48.7	3 16.5 +55.3 47.9	2 55.0 +55.5 47.0	2 33.9 +55.6 46.2
23°	4 55.2 +55.0 49.2	4 33.3 +55.2 48.3	4 11.8 +55.3 47.5	3 50.5 +55.4 46.6	3 29.5 +55.5 45.8
24°	5 50.2 +55.0 48.8	5 28.5 +55.1 47.9	5 07.1 +55.2 47.1	4 45.9 +55.4 46.3	4 25.0 +55.6 45.4
25°	6 45.2 +55.0 48.4	6 23.6 +55.2 47.5	6 02.3 +55.3 46.7	5 41.3 +55.4 45.9	5 20.6 +55.5 45.0
26°	7 40.2 +55.0 48.0	7 18.8 +55.1 47.1	6 57.6 +55.2 46.3	6 36.7 +55.4 45.5	6 16.1 +55.5 44.6
27°	8 35.2 +54.9 47.6	8 13.9 +55.0 46.7	7 52.8 +55.2 45.9	7 32.1 +55.3 45.1	7 11.6 +55.5 44.3
28°	9 30.1 +54.9 47.2	9 08.9 +55.1 46.3	8 48.0 +55.2 45.5	8 27.4 +55.4 44.7	8 07.1 +55.5 43.9
29°	10 25.0 +54.9 46.8	10 04.0 +55.0 45.9	9 43.2 +55.2 45.1	9 22.8 +55.3 44.3	9 02.6 +55.4 43.5

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Latitude 61°

Declination SAME name as Latitude

Dec	LHA 130° / 230°	LHA 131° / 229°	LHA 132° / 228°	LHA 133° / 227°	LHA 134° / 226°
	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°	-9 50.7 +55.6				
10°	-8 55.1 +55.6	-9 17.1 +55.7	-9 38.9 +55.9		
11°	-7 59.5 +55.7	-8 21.4 +55.8	-8 43.0 +55.9	-9 04.3 +56.0	-9 25.3 +56.1
12°	-7 03.8 +55.6	-7 25.6 +55.7	-7 47.1 +55.9	-8 08.3 +56.0	-8 29.2 +56.2
13°	-6 08.2 +55.7	-6 29.9 +55.8	-6 51.2 +55.9	-7 12.3 +56.1	-7 33.0 +56.1
14°	-5 12.5 +55.7	-5 34.1 +55.8	-5 55.3 +55.9	-6 16.2 +56.0	-6 36.9 +56.2
15°	-4 16.8 +55.6	-4 38.3 +55.8	-4 59.4 +56.0	-5 20.2 +56.1	-5 40.7 +56.2
16°	-3 21.2 +55.7	-3 42.5 +55.9	-4 03.4 +55.9	-4 24.1 +56.1	-4 44.5 +56.2
17°	-2 25.5 +55.7	-2 46.6 +55.8	-3 07.5 +56.0	-3 28.0 +56.1	-3 48.3 +56.3
18°	-1 29.8 +55.8	-1 50.8 +55.8	-2 11.5 +55.9	-2 31.9 +56.1	-2 52.0 +56.2
19°	-0 34.0 +55.7	-0 55.0 +55.9	-1 15.6 +56.0	-1 35.8 +56.1	-1 55.8 +56.2
20°	0 21.7 +55.7 46.0	0 00.9 +55.8 45.2	-0 19.6 +56.0	-0 39.7 +56.1	-0 59.6 +56.3
21°	1 17.4 +55.7 45.7	0 56.7 +55.9 44.8	0 36.4 +55.9 43.9	0 16.4 +56.1 43.1	-0 03.3 +56.2
22°	2 13.1 +55.7 45.3	1 52.6 +55.8 44.4	1 32.3 +56.0 43.6	1 12.5 +56.1 42.7	0 52.9 +56.2 41.8
23°	3 08.8 +55.7 44.9	2 48.4 +55.8 44.1	2 28.3 +56.0 43.2	2 08.6 +56.0 42.4	1 49.1 +56.2 41.5
24°	4 04.5 +55.6 44.6	3 44.2 +55.8 43.7	3 24.3 +55.9 42.9	3 04.6 +56.1 42.0	2 45.3 +56.3 41.1
25°	5 00.1 +55.7 44.2	4 40.0 +55.8 43.3	4 20.2 +56.0 42.5	4 00.7 +56.1 41.6	3 41.6 +56.2 40.8
26°	5 55.8 +55.7 43.8	5 35.8 +55.8 43.0	5 16.2 +55.9 42.1	4 56.8 +56.1 41.3	4 37.8 +56.2 40.4
27°	6 51.5 +55.6 43.4	6 31.6 +55.8 42.6	6 12.1 +55.9 41.8	5 52.9 +56.0 40.9	5 34.0 +56.2 40.1
28°	7 47.1 +55.6 43.1	7 27.4 +55.8 42.2	7 08.0 +55.9 41.4	6 48.9 +56.1 40.6	6 30.2 +56.1 39.7
29°	8 42.7 +55.6 42.7	8 23.2 +55.7 41.9	8 03.9 +55.9 41.0	7 45.0 +56.0 40.2	7 26.3 +56.2 39.4

Dec	LHA 135° / 225°	LHA 136° / 224°	LHA 137° / 223°	LHA 138° / 222°	LHA 139° / 221°
	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°	-9 46.0 +56.3				
12°	-8 49.7 +56.3	-9 09.9 +56.4	-9 29.7 +56.5	-9 49.2 +56.6	
13°	-7 53.4 +56.3	-8 13.5 +56.4	-8 33.2 +56.5	-8 52.6 +56.7	-9 11.6 +56.8
14°	-6 57.1 +56.3	-7 17.1 +56.5	-7 36.7 +56.6	-7 55.9 +56.7	-8 14.8 +56.8
15°	-6 00.8 +56.3	-6 20.6 +56.4	-6 40.1 +56.6	-6 59.2 +56.7	-7 18.0 +56.9
16°	-5 04.5 +56.4	-5 24.2 +56.5	-5 43.5 +56.6	-6 02.5 +56.7	-6 21.1 +56.8
17°	-4 08.1 +56.3	-4 27.7 +56.5	-4 46.9 +56.6	-5 05.8 +56.8	-5 24.3 +56.9
18°	-3 11.8 +56.4	-3 31.2 +56.5	-3 50.3 +56.6	-4 09.0 +56.7	-4 27.4 +56.9
19°	-2 15.4 +56.3	-2 34.7 +56.5	-2 53.7 +56.6	-3 12.3 +56.8	-3 30.5 +56.8
20°	-1 19.1 +56.4	-1 38.2 +56.5	-1 57.1 +56.7	-2 15.5 +56.7	-2 33.7 +56.9
21°	-0 22.7 +56.4	-0 41.7 +56.4	-1 00.4 +56.6	-1 18.8 +56.8	-1 36.8 +56.9
22°	0 33.7 +56.3 41.0	0 14.7 +56.5 40.1	-0 03.8 +56.6	-0 22.0 +56.7	-0 39.9 +56.9
23°	1 30.0 +56.4 40.6	1 11.2 +56.5 39.8	0 52.8 +56.6 38.9	0 34.7 +56.8 38.0	0 17.0 +56.9 37.2
24°	2 26.4 +56.3 40.3	2 07.7 +56.5 39.4	1 49.4 +56.6 38.6	1 31.5 +56.7 37.7	1 13.9 +56.8 36.8
25°	3 22.7 +56.4 39.9	3 04.2 +56.5 39.1	2 46.0 +56.7 38.2	2 28.2 +56.8 37.4	2 10.7 +56.9 36.5
26°	4 19.1 +56.3 39.6	4 00.7 +56.5 38.7	3 42.7 +56.6 37.9	3 25.0 +56.7 37.0	3 07.6 +56.9 36.2
27°	5 15.4 +56.3 39.2	4 57.2 +56.4 38.4	4 39.3 +56.6 37.6	4 21.7 +56.7 36.7	4 04.5 +56.9 35.9
28°	6 11.7 +56.4 38.9	5 53.6 +56.5 38.1	5 35.9 +56.6 37.2	5 18.4 +56.8 36.4	5 01.4 +56.8 35.6
29°	7 08.1 +56.2 38.6	6 50.1 +56.4 37.7	6 32.5 +56.5 36.9	6 15.2 +56.7 36.1	5 58.2 +56.8 35.2

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Dec	LHA 140° / 220°	LHA 141° / 219°	LHA 142° / 218°	LHA 143° / 217°	LHA 144° / 216°
	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°	-9 30.3 +57.0	-9 48.5 +57.0			
14°	-8 33.3 +56.9	-8 51.5 +57.1	-9 09.3 +57.2	-9 26.7 +57.3	-9 43.7 +57.4
15°	-7 36.4 +57.0	-7 54.4 +57.1	-8 12.1 +57.2	-8 29.4 +57.4	-8 46.3 +57.5
16°	-6 39.4 +57.0	-6 57.3 +57.1	-7 14.9 +57.3	-7 32.0 +57.3	-7 48.8 +57.5
17°	-5 42.4 +57.0	-6 00.2 +57.1	-6 17.6 +57.2	-6 34.7 +57.4	-6 51.3 +57.4
18°	-4 45.4 +57.0	-5 03.1 +57.1	-5 20.4 +57.2	-5 37.3 +57.4	-5 53.9 +57.5
19°	-3 48.4 +57.0	-4 06.0 +57.1	-4 23.2 +57.3	-4 39.9 +57.3	-4 56.4 +57.5
20°	-2 51.4 +57.0	-3 08.9 +57.2	-3 25.9 +57.3	-3 42.6 +57.4	-3 58.9 +57.5
21°	-1 54.4 +57.0	-2 11.7 +57.1	-2 28.6 +57.2	-2 45.2 +57.4	-3 01.4 +57.5
22°	-0 57.4 +57.0	-1 14.6 +57.2	-1 31.4 +57.3	-1 47.8 +57.4	-2 03.9 +57.6
23°	-0 00.4 +57.0	-0 17.4 +57.1	-0 34.1 +57.2	-0 50.4 +57.4	-1 06.3 +57.5
24°	0 56.6 +57.0 36.0	0 39.7 +57.1 35.1	0 23.1 +57.3 34.2	0 07.0 +57.4 33.4	-0 08.8 +57.5
25°	1 53.6 +57.0 35.7	1 36.8 +57.2 34.8	1 20.4 +57.3 33.9	1 04.4 +57.3 33.1	0 48.7 +57.5 32.2
26°	2 50.6 +57.0 35.3	2 34.0 +57.1 34.5	2 17.7 +57.2 33.6	2 01.7 +57.4 32.8	1 46.2 +57.5 31.9
27°	3 47.6 +57.0 35.0	3 31.1 +57.1 34.2	3 14.9 +57.3 33.3	2 59.1 +57.4 32.5	2 43.7 +57.5 31.6
28°	4 44.6 +57.0 34.7	4 28.2 +57.1 33.9	4 12.2 +57.2 33.0	3 56.5 +57.4 32.2	3 41.2 +57.5 31.3
29°	5 41.6 +57.0 34.4	5 25.3 +57.1 33.6	5 09.4 +57.3 32.7	4 53.9 +57.3 31.9	4 38.7 +57.5 31.0

Dec	LHA 145° / 215°	LHA 146° / 214°	LHA 147° / 213°	LHA 148° / 212°	LHA 149° / 211°
	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°	-9 02.8 +57.6	-9 18.9 +57.7	-9 34.6 +57.8	-9 49.9 +57.9	
16°	-8 05.2 +57.6	-8 21.2 +57.7	-8 36.8 +57.8	-8 52.0 +57.9	-9 06.8 +58.1
17°	-7 07.6 +57.6	-7 23.5 +57.7	-7 39.0 +57.9	-7 54.1 +58.0	-8 08.7 +58.0
18°	-6 10.0 +57.6	-6 25.8 +57.8	-6 41.1 +57.8	-6 56.1 +57.9	-7 10.7 +58.1
19°	-5 12.4 +57.6	-5 28.0 +57.7	-5 43.3 +57.9	-5 58.2 +58.0	-6 12.6 +58.1
20°	-4 14.8 +57.6	-4 30.3 +57.7	-4 45.4 +57.8	-5 00.2 +58.0	-5 14.5 +58.1
21°	-3 17.2 +57.7	-3 32.6 +57.8	-3 47.6 +57.9	-4 02.2 +58.0	-4 16.4 +58.1
22°	-2 19.5 +57.6	-2 34.8 +57.7	-2 49.7 +57.8	-3 04.2 +57.9	-3 18.3 +58.0
23°	-1 21.9 +57.6	-1 37.1 +57.8	-1 51.9 +57.9	-2 06.3 +58.0	-2 20.3 +58.1
24°	-0 24.3 +57.7	-0 39.3 +57.7	-0 54.0 +57.9	-1 08.3 +58.0	-1 22.2 +58.1
25°	0 33.4 +57.6 31.3	0 18.4 +57.8 30.5	0 03.9 +57.9 29.6	-0 10.3 +58.0	-0 24.1 +58.1
26°	1 31.0 +57.6 31.0	1 16.2 +57.7 30.2	1 01.8 +57.8 29.3	0 47.7 +58.0 28.4	0 34.0 +58.1 27.6
27°	2 28.6 +57.7 30.8	2 13.9 +57.8 29.9	1 59.6 +57.9 29.0	1 45.7 +58.0 28.2	1 32.1 +58.1 27.3
28°	3 26.3 +57.6 30.5	3 11.7 +57.7 29.6	2 57.5 +57.9 28.8	2 43.7 +58.0 27.9	2 30.2 +58.1 27.1
29°	4 23.9 +57.6 30.2	4 09.4 +57.8 29.4	3 55.4 +57.8 28.5	3 41.7 +57.9 27.7	3 28.3 +58.1 26.8

Dec	LHA 150° / 210°	LHA 151° / 209°	LHA 152° / 208°	LHA 153° / 207°	LHA 154° / 206°
	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°	-9 21.2 +58.2	-9 35.1 +58.2	-9 48.7 +58.4		
17°	-8 23.0 +58.2	-8 36.9 +58.3	-8 50.3 +58.4	-9 03.3 +58.5	-9 15.9 +58.6
18°	-7 24.8 +58.2	-7 38.6 +58.3	-7 51.9 +58.4	-8 04.8 +58.5	-8 17.3 +58.6
19°	-6 26.6 +58.1	-6 40.3 +58.3	-6 53.5 +58.4	-7 06.3 +58.5	-7 18.7 +58.6
20°	-5 28.5 +58.2	-5 42.0 +58.3	-5 55.1 +58.4	-6 07.8 +58.5	-6 20.1 +58.7
21°	-4 30.3 +58.2	-4 43.7 +58.3	-4 56.7 +58.4	-5 09.3 +58.5	-5 21.4 +58.6
22°	-3 32.1 +58.2	-3 45.4 +58.3	-3 58.3 +58.5	-4 10.8 +58.6	-4 22.8 +58.6
23°	-2 33.9 +58.3	-2 47.1 +58.4	-2 59.8 +58.4	-3 12.2 +58.5	-3 24.2 +58.6
24°	-1 35.6 +58.2	-1 48.7 +58.3	-2 01.4 +58.4	-2 13.7 +58.5	-2 25.6 +58.7
25°	-0 37.4 +58.2	-0 50.4 +58.3	-1 03.0 +58.4	-1 15.2 +58.6	-1 26.9 +58.6
26°	0 20.8 +58.2 26.7	0 07.9 +58.3 25.8	-0 04.6 +58.4	-0 16.6 +58.5	-0 28.3 +58.6
27°	1 19.0 +58.2 26.5	1 06.2 +58.3 25.6	0 53.8 +58.5 24.7	0 41.9 +58.5 23.9	0 30.3 +58.6 23.0
28°	2 17.2 +58.2 26.2	2 04.5 +58.4 25.4	1 52.3 +58.4 24.5	1 40.4 +58.5 23.6	1 28.9 +58.7 22.8
29°	3 15.4 +58.2 26.0	3 02.9 +58.3 25.1	2 50.7 +58.4 24.3	2 38.9 +58.6 23.4	2 27.6 +58.6 22.6

Dec	LHA 155° / 205°	LHA 156° / 204°	LHA 157° / 203°	LHA 158° / 202°	LHA 159° / 201°
	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°	-9 28.0 +58.7	-9 39.7 +58.8	-9 51.0 +58.9		
18°	-8 29.3 +58.7	-8 40.9 +58.8	-8 52.1 +58.9	-9 02.8 +59.0	-9 13.1 +59.1
19°	-7 30.6 +58.7	-7 42.1 +58.8	-7 53.2 +58.9	-8 03.8 +59.0	-8 14.0 +59.1
20°	-6 31.9 +58.7	-6 43.3 +58.8	-6 54.3 +58.9	-7 04.8 +59.0	-7 14.9 +59.1
21°	-5 33.2 +58.7	-5 44.5 +58.8	-5 55.4 +58.9	-6 05.8 +59.0	-6 15.8 +59.0
22°	-4 34.5 +58.8	-4 45.7 +58.8	-4 56.5 +58.9	-5 06.8 +59.0	-5 16.8 +59.1
23°	-3 35.7 +58.7	-3 46.9 +58.8	-3 57.6 +58.9	-4 07.8 +59.0	-4 17.7 +59.1
24°	-2 37.0 +58.7	-2 48.1 +58.9	-2 58.7 +58.9	-3 08.8 +59.0	-3 18.6 +59.1
25°	-1 38.3 +58.7	-1 49.2 +58.8	-1 59.8 +59.0	-2 09.8 +59.0	-2 19.5 +59.1
26°	-0 39.6 +58.8	-0 50.4 +58.8	-1 00.8 +58.9	-1 10.8 +59.0	-1 20.4 +59.1
27°	0 19.2 +58.7 22.1	0 08.4 +58.8 21.2	-0 01.9 +58.9	-0 11.8 +59.0	-0 21.3 +59.0
28°	1 17.9 +58.7 21.9	1 07.2 +58.9 21.1	0 57.0 +58.9 20.2	0 47.2 +59.0 19.3	0 37.7 +59.1 18.4
29°	2 16.6 +58.7 21.7	2 06.1 +58.8 20.9	1 55.9 +58.9 20.0	1 46.2 +59.0 19.1	1 36.8 +59.1 18.3

Dec	LHA 160° / 200°	LHA 161° / 199°	LHA 162° / 198°	LHA 163° / 197°	LHA 164° / 196°
	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°	-9 22.9 +59.2	-9 32.2 +59.2	-9 41.1 +59.3	-9 49.6 +59.4	-9 57.6 +59.5
19°	-8 23.7 +59.1	-8 33.0 +59.2	-8 41.8 +59.3	-8 50.2 +59.4	-8 58.1 +59.4
20°	-7 24.6 +59.2	-7 33.8 +59.3	-7 42.5 +59.3	-7 50.8 +59.4	-7 58.7 +59.5
21°	-6 25.4 +59.1	-6 34.5 +59.2	-6 43.2 +59.3	-6 51.4 +59.4	-6 59.2 +59.4
22°	-5 26.3 +59.2	-5 35.3 +59.2	-5 43.9 +59.3	-5 52.0 +59.3	-5 59.8 +59.5
23°	-4 27.1 +59.2	-4 36.1 +59.3	-4 44.6 +59.3	-4 52.7 +59.4	-5 00.3 +59.5
24°	-3 27.9 +59.1	-3 36.8 +59.2	-3 45.3 +59.4	-3 53.3 +59.4	-4 00.8 +59.4
25°	-2 28.8 +59.2	-2 37.6 +59.3	-2 45.9 +59.3	-2 53.9 +59.4	-3 01.4 +59.5
26°	-1 29.6 +59.2	-1 38.3 +59.2	-1 46.6 +59.3	-1 54.5 +59.4	-2 01.9 +59.4
27°	-0 30.4 +59.1	-0 39.1 +59.3	-0 47.3 +59.3	-0 55.1 +59.4	-1 02.5 +59.5
28°	0 28.7 +59.2 17.6	0 20.2 +59.2 16.7	0 12.0 +59.3 15.8	0 04.3 +59.4 15.0	-0 03.0 +59.5
29°	1 27.9 +59.2 17.4	1 19.4 +59.3 16.5	1 11.3 +59.4 15.7	1 03.7 +59.4 14.8	0 56.5 +59.4 14.0

Dec	LHA 165° / 195°	LHA 166° / 194°	LHA 167° / 193°	LHA 168° / 192°	LHA 169° / 191°
	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°	-9 05.5 +59.5	-9 12.5 +59.6	-9 19.0 +59.6	-9 25.1 +59.7	-9 30.6 +59.7
20°	-8 06.0 +59.5	-8 12.9 +59.5	-8 19.4 +59.6	-8 25.4 +59.7	-8 30.9 +59.8
21°	-7 06.5 +59.5	-7 13.4 +59.6	-7 19.8 +59.7	-7 25.7 +59.7	-7 31.1 +59.7
22°	-6 07.0 +59.5	-6 13.8 +59.6	-6 20.1 +59.6	-6 26.0 +59.7	-6 31.4 +59.7
23°	-5 07.5 +59.5	-5 14.2 +59.6	-5 20.5 +59.7	-5 26.3 +59.7	-5 31.7 +59.8
24°	-4 08.0 +59.6	-4 14.6 +59.6	-4 20.8 +59.6	-4 26.6 +59.7	-4 31.9 +59.7
25°	-3 08.4 +59.5	-3 15.0 +59.5	-3 21.2 +59.6	-3 26.9 +59.7	-3 32.2 +59.8
26°	-2 08.9 +59.5	-2 15.5 +59.6	-2 21.6 +59.7	-2 27.2 +59.7	-2 32.4 +59.7
27°	-1 09.4 +59.5	-1 15.9 +59.6	-1 21.9 +59.6	-1 27.5 +59.7	-1 32.7 +59.7
28°	-0 09.9 +59.6	-0 16.3 +59.6	-0 22.3 +59.7	-0 27.8 +59.7	-0 33.0 +59.8
29°	0 49.7 +59.5 13.1	0 43.3 +59.6 12.2	0 37.4 +59.6 11.3	0 31.9 +59.6 10.5	0 26.8 +59.7 9.6

Dec	LHA 170° / 190°	LHA 171° / 189°	LHA 172° / 188°	LHA 173° / 187°	LHA 174° / 186°
	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°	-9 35.7 +59.8	-9 40.3 +59.8	-9 44.4 +59.8	-9 48.1 +59.9	-9 51.2 +59.9
20°	-8 35.9 +59.8	-8 40.5 +59.8	-8 44.6 +59.9	-8 48.2 +59.9	-8 51.3 +59.9
21°	-7 36.1 +59.7	-7 40.7 +59.9	-7 44.7 +59.8	-7 48.3 +59.9	-7 51.4 +59.9
22°	-6 36.4 +59.8	-6 40.8 +59.8	-6 44.9 +59.9	-6 48.4 +59.9	-6 51.5 +59.9
23°	-5 36.6 +59.8	-5 41.0 +59.8	-5 45.0 +59.9	-5 48.5 +59.9	-5 51.6 +60.0
24°	-4 36.8 +59.8	-4 41.2 +59.8	-4 45.1 +59.8	-4 48.6 +59.9	-4 51.6 +59.9
25°	-3 37.0 +59.8	-3 41.4 +59.9	-3 45.3 +59.9	-3 48.7 +59.9	-3 51.7 +59.9
26°	-2 37.2 +59.8	-2 41.5 +59.8	-2 45.4 +59.9	-2 48.8 +59.9	-2 51.8 +59.9
27°	-1 37.4 +59.8	-1 41.7 +59.8	-1 45.5 +59.8	-1 48.9 +59.9	-1 51.9 +60.0
28°	-0 37.6 +59.7	-0 41.9 +59.8	-0 45.7 +59.9	-0 49.0 +59.9	-0 51.9 +59.9
29°	0 22.1 +59.8 8.7	0 17.9 +59.9 7.9	0 14.2 +59.8 7.0	0 10.9 +59.9 6.1	0 08.0 +59.9 5.2

Dec	LHA 175° / 185°	LHA 176° / 184°	LHA 177° / 183°	LHA 178° / 182°	LHA 179° / 181°
	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°	-9 53.9 +59.9	-9 56.1 +60.0	-9 57.8 +60.0	-9 59.0 +60.0	-9 59.8 +60.0
20°	-8 54.0 +60.0	-8 56.1 +59.9	-8 57.8 +60.0	-8 59.0 +60.0	-8 59.8 +60.0
21°	-7 54.0 +59.9	-7 56.2 +60.0	-7 57.8 +59.9	-7 59.0 +59.9	-7 59.8 +60.0
22°	-6 54.1 +60.0	-6 56.2 +60.0	-6 57.9 +60.0	-6 59.1 +60.0	-6 59.8 +60.0
23°	-5 54.1 +59.9	-5 56.2 +59.9	-5 57.9 +60.0	-5 59.1 +60.0	-5 59.8 +60.0
24°	-4 54.2 +60.0	-4 56.3 +60.0	-4 57.9 +60.0	-4 59.1 +60.0	-4 59.8 +60.0
25°	-3 54.2 +59.9	-3 56.3 +60.0	-3 57.9 +60.0	-3 59.1 +60.0	-3 59.8 +60.0
26°	-2 54.3 +60.0	-2 56.3 +59.9	-2 57.9 +59.9	-2 59.1 +60.0	-2 59.8 +60.0
27°	-1 54.3 +59.9	-1 56.4 +60.0	-1 58.0 +60.0	-1 59.1 +60.0	-1 59.8 +60.0
28°	-0 54.4 +59.9	-0 56.4 +60.0	-0 58.0 +60.0	-0 59.1 +60.0	-0 59.8 +60.0
29°	0 05.5 +60.0 4.4	0 03.6 +59.9 3.5	0 02.0 +60.0 2.6	0 00.9 +60.0 1.7	0 00.2 +60.0 0.9

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°	28 00.0 +60.0 180.0	27 59.7 +60.0 178.9	27 58.9 +60.0 177.7	27 57.5 +60.0 176.6	27 55.5 +60.0 175.5
1°	29 00.0 +60.0 180.0	28 59.7 +60.0 178.9	28 58.9 +60.0 177.7	28 57.5 +59.9 176.6	28 55.5 +60.0 175.4
2°	30 00.0 +60.0 180.0	29 59.7 +60.0 178.8	29 58.9 +60.0 177.7	29 57.4 +60.0 176.5	29 55.5 +59.9 175.4
3°	31 00.0 +60.0 180.0	30 59.7 +60.0 178.8	30 58.9 +59.9 177.7	30 57.4 +60.0 176.5	30 55.4 +60.0 175.3
4°	32 00.0 +60.0 180.0	31 59.7 +60.0 178.8	31 58.8 +60.0 177.6	31 57.4 +60.0 176.5	31 55.4 +59.9 175.3
5°	33 00.0 +60.0 180.0	32 59.7 +60.0 178.8	32 58.8 +60.0 177.6	32 57.4 +59.9 176.4	32 55.3 +60.0 175.3
6°	34 00.0 +60.0 180.0	33 59.7 +60.0 178.8	33 58.8 +60.0 177.6	33 57.3 +60.0 176.4	33 55.3 +59.9 175.2
7°	35 00.0 +60.0 180.0	34 59.7 +60.0 178.8	34 58.8 +60.0 177.6	34 57.3 +60.0 176.4	34 55.2 +60.0 175.2
8°	36 00.0 +60.0 180.0	35 59.7 +60.0 178.8	35 58.8 +60.0 177.6	35 57.3 +60.0 176.3	35 55.2 +59.9 175.1
9°	37 00.0 +60.0 180.0	36 59.7 +60.0 178.8	36 58.8 +60.0 177.5	36 57.3 +59.9 176.3	36 55.1 +60.0 175.1
10°	38 00.0 +60.0 180.0	37 59.7 +60.0 178.8	37 58.8 +60.0 177.5	37 57.2 +60.0 176.3	37 55.1 +59.9 175.0
11°	39 00.0 +60.0 180.0	38 59.7 +60.0 178.7	38 58.8 +59.9 177.5	38 57.2 +60.0 176.2	38 55.0 +60.0 175.0
12°	40 00.0 +60.0 180.0	39 59.7 +60.0 178.7	39 58.7 +60.0 177.4	39 57.2 +59.9 176.2	39 55.0 +59.9 174.9
13°	41 00.0 +60.0 180.0	40 59.7 +60.0 178.7	40 58.7 +60.0 177.4	40 57.1 +60.0 176.1	40 54.9 +60.0 174.8
14°	42 00.0 +60.0 180.0	41 59.7 +60.0 178.7	41 58.7 +60.0 177.4	41 57.1 +60.0 176.1	41 54.9 +59.9 174.8
15°	43 00.0 +60.0 180.0	42 59.7 +60.0 178.7	42 58.7 +60.0 177.4	42 57.1 +59.9 176.0	42 54.8 +60.0 174.7
16°	44 00.0 +60.0 180.0	43 59.7 +60.0 178.7	43 58.7 +60.0 177.3	43 57.0 +60.0 176.0	43 54.8 +59.9 174.7
17°	45 00.0 +60.0 180.0	44 59.7 +60.0 178.6	44 58.7 +60.0 177.3	44 57.0 +60.0 175.9	44 54.7 +59.9 174.6
18°	46 00.0 +60.0 180.0	45 59.7 +60.0 178.6	45 58.7 +59.9 177.3	45 57.0 +59.9 175.9	45 54.6 +60.0 174.5
19°	47 00.0 +60.0 180.0	46 59.7 +60.0 178.6	46 58.6 +60.0 177.2	46 56.9 +60.0 175.8	46 54.6 +59.9 174.5
20°	48 00.0 +60.0 180.0	47 59.7 +60.0 178.6	47 58.6 +60.0 177.2	47 56.9 +60.0 175.8	47 54.5 +59.9 174.4
21°	49 00.0 +60.0 180.0	48 59.7 +59.9 178.6	48 58.6 +60.0 177.2	48 56.9 +59.9 175.7	48 54.4 +59.9 174.3
22°	50 00.0 +60.0 180.0	49 59.6 +60.0 178.6	49 58.6 +60.0 177.1	49 56.8 +60.0 175.7	49 54.3 +60.0 174.2
23°	51 00.0 +60.0 180.0	50 59.6 +60.0 178.5	50 58.6 +59.9 177.1	50 56.8 +59.9 175.6	50 54.3 +59.9 174.2
24°	52 00.0 +60.0 180.0	51 59.6 +60.0 178.5	51 58.5 +60.0 177.0	51 56.7 +60.0 175.6	51 54.2 +59.9 174.1
25°	53 00.0 +60.0 180.0	52 59.6 +60.0 178.5	52 58.5 +60.0 177.0	52 56.7 +59.9 175.5	52 54.1 +59.9 174.0
26°	54 00.0 +60.0 180.0	53 59.6 +60.0 178.5	53 58.5 +60.0 176.9	53 56.6 +60.0 175.4	53 54.0 +59.9 173.9
27°	55 00.0 +60.0 180.0	54 59.6 +60.0 178.4	54 58.5 +59.9 176.9	54 56.6 +59.9 175.3	54 53.9 +59.9 173.8
28°	56 00.0 +60.0 180.0	55 59.6 +60.0 178.4	55 58.4 +60.0 176.8	55 56.5 +60.0 175.3	55 53.8 +59.9 173.7
29°	57 00.0 +60.0 180.0	56 59.6 +60.0 178.4	56 58.4 +60.0 176.8	56 56.5 +59.9 175.2	56 53.7 +59.9 173.6

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°	27 53.0 +60.0 174.3	27 50.0 +59.9 173.2	27 46.4 +59.9 172.1	27 42.2 +59.9 171.0	27 37.5 +59.8 169.8
1°	28 53.0 +59.9 174.3	28 49.9 +59.9 173.1	28 46.3 +59.8 172.0	28 42.1 +59.8 170.9	28 37.3 +59.8 169.7
2°	29 52.9 +59.9 174.2	29 49.8 +59.9 173.1	29 46.1 +59.9 171.9	29 41.9 +59.8 170.8	29 37.1 +59.8 169.6
3°	30 52.8 +60.0 174.2	30 49.7 +59.9 173.0	30 46.0 +59.9 171.9	30 41.7 +59.9 170.7	30 36.9 +59.8 169.5
4°	31 52.8 +59.9 174.1	31 49.6 +59.9 173.0	31 45.9 +59.8 171.8	31 41.6 +59.8 170.6	31 36.7 +59.7 169.4
5°	32 52.7 +59.9 174.1	32 49.5 +59.9 172.9	32 45.7 +59.9 171.7	32 41.4 +59.8 170.5	32 36.4 +59.8 169.3
6°	33 52.6 +60.0 174.0	33 49.4 +59.9 172.8	33 45.6 +59.8 171.6	33 41.2 +59.8 170.4	33 36.2 +59.8 169.2
7°	34 52.6 +59.9 173.9	34 49.3 +59.9 172.7	34 45.4 +59.9 171.5	34 41.0 +59.8 170.3	34 36.0 +59.7 169.1
8°	35 52.5 +59.9 173.9	35 49.2 +59.9 172.7	35 45.3 +59.8 171.4	35 40.8 +59.8 170.2	35 35.7 +59.8 169.0
9°	36 52.4 +59.9 173.8	36 49.1 +59.9 172.6	36 45.1 +59.9 171.4	36 40.6 +59.8 170.1	36 35.5 +59.7 168.9
10°	37 52.3 +59.9 173.8	37 49.0 +59.8 172.5	37 45.0 +59.8 171.3	37 40.4 +59.8 170.0	37 35.2 +59.8 168.8
11°	38 52.2 +60.0 173.7	38 48.8 +59.9 172.4	38 44.8 +59.9 171.2	38 40.2 +59.8 169.9	38 35.0 +59.7 168.7
12°	39 52.2 +59.9 173.6	39 48.7 +59.9 172.4	39 44.7 +59.8 171.1	39 40.0 +59.8 169.8	39 34.7 +59.7 168.5
13°	40 52.1 +59.9 173.6	40 48.6 +59.9 172.3	40 44.5 +59.8 171.0	40 39.8 +59.7 169.7	40 34.4 +59.7 168.4
14°	41 52.0 +59.9 173.5	41 48.5 +59.8 172.2	41 44.3 +59.8 170.9	41 39.5 +59.8 169.6	41 34.1 +59.7 168.3
15°	42 51.9 +59.9 173.4	42 48.3 +59.9 172.1	42 44.1 +59.9 170.8	42 39.3 +59.8 169.5	42 33.8 +59.7 168.2
16°	43 51.8 +59.9 173.3	43 48.2 +59.9 172.0	43 44.0 +59.8 170.7	43 39.1 +59.7 169.3	43 33.5 +59.7 168.0
17°	44 51.7 +59.9 173.2	44 48.1 +59.8 171.9	44 43.8 +59.8 170.6	44 38.8 +59.8 169.2	44 33.2 +59.7 167.9
18°	45 51.6 +59.9 173.2	45 47.9 +59.9 171.8	45 43.6 +59.8 170.4	45 38.6 +59.7 169.1	45 32.9 +59.7 167.7
19°	46 51.5 +59.9 173.1	46 47.8 +59.8 171.7	46 43.4 +59.8 170.3	46 38.3 +59.7 169.0	46 32.6 +59.6 167.6
20°	47 51.4 +59.9 173.0	47 47.6 +59.8 171.6	47 43.2 +59.7 170.2	47 38.0 +59.7 168.8	47 32.2 +59.7 167.4
21°	48 51.3 +59.9 172.9	48 47.4 +59.9 171.5	48 42.9 +59.8 170.1	48 37.7 +59.7 168.7	48 31.9 +59.6 167.3
22°	49 51.2 +59.8 172.8	49 47.3 +59.8 171.4	49 42.7 +59.8 169.9	49 37.4 +59.7 168.5	49 31.5 +59.6 167.1
23°	50 51.0 +59.9 172.7	50 47.1 +59.8 171.2	50 42.5 +59.7 169.8	50 37.1 +59.7 168.4	50 31.1 +59.6 166.9
24°	51 50.9 +59.9 172.6	51 46.9 +59.8 171.1	51 42.2 +59.7 169.7	51 36.8 +59.7 168.2	51 30.7 +59.5 166.7
25°	52 50.8 +59.8 172.5	52 46.7 +59.8 171.0	52 41.9 +59.8 169.5	52 36.5 +59.6 168.0	52 30.2 +59.6 166.5
26°	53 50.6 +59.9 172.4	53 46.5 +59.8 170.9	53 41.7 +59.7 169.3	53 36.1 +59.6 167.8	53 29.8 +59.5 166.3
27°	54 50.5 +59.8 172.2	54 46.3 +59.8 170.7	54 41.4 +59.7 169.2	54 35.7 +59.6 167.6	54 29.3 +59.5 166.1
28°	55 50.3 +59.9 172.1	55 46.1 +59.7 170.6	55 41.1 +59.7 169.0	55 35.3 +59.6 167.4	55 28.8 +59.5 165.9
29°	56 50.2 +59.8 172.0	56 45.8 +59.8 170.4	56 40.8 +59.6 168.8	56 34.9 +59.6 167.2	56 28.3 +59.5 165.7

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°	27 32.3 +59.7 168.7	27 26.5 +59.7 167.6	27 20.2 +59.6 166.5	27 13.3 +59.6 165.3	27 05.9 +59.5 164.2
1°	28 32.0 +59.8 168.6	28 26.2 +59.7 167.5	28 19.8 +59.6 166.3	28 12.9 +59.6 165.2	28 05.4 +59.5 164.1
2°	29 31.8 +59.7 168.5	29 25.9 +59.7 167.4	29 19.4 +59.7 166.2	29 12.5 +59.5 165.1	29 04.9 +59.5 163.9
3°	30 31.5 +59.7 168.4	30 25.6 +59.6 167.2	30 19.1 +59.6 166.1	30 12.0 +59.6 164.9	30 04.4 +59.5 163.8
4°	31 31.2 +59.8 168.3	31 25.2 +59.7 167.1	31 18.7 +59.6 166.0	31 11.6 +59.5 164.8	31 03.9 +59.5 163.6
5°	32 31.0 +59.7 168.2	32 24.9 +59.7 167.0	32 18.3 +59.6 165.8	32 11.1 +59.5 164.6	32 03.4 +59.4 163.5
6°	33 30.7 +59.7 168.0	33 24.6 +59.6 166.9	33 17.9 +59.5 165.7	33 10.6 +59.5 164.5	33 02.8 +59.4 163.3
7°	34 30.4 +59.7 167.9	34 24.2 +59.6 166.7	34 17.4 +59.6 165.5	34 10.1 +59.5 164.3	34 02.2 +59.5 163.2
8°	35 30.1 +59.7 167.8	35 23.8 +59.7 166.6	35 17.0 +59.6 165.4	35 09.6 +59.5 164.2	35 01.7 +59.4 163.0
9°	36 29.8 +59.7 167.7	36 23.5 +59.6 166.5	36 16.6 +59.5 165.2	36 09.1 +59.5 164.0	36 01.1 +59.4 162.8
10°	37 29.5 +59.6 167.6	37 23.1 +59.6 166.3	37 16.1 +59.6 165.1	37 08.6 +59.5 163.9	37 00.5 +59.4 162.6
11°	38 29.1 +59.7 167.4	38 22.7 +59.6 166.2	38 15.7 +59.5 164.9	38 08.1 +59.4 163.7	37 59.9 +59.3 162.5
12°	39 28.8 +59.7 167.3	39 22.3 +59.6 166.0	39 15.2 +59.5 164.8	39 07.5 +59.4 163.5	38 59.2 +59.4 162.3
13°	40 28.5 +59.6 167.1	40 21.9 +59.6 165.9	40 14.7 +59.5 164.6	40 06.9 +59.5 163.3	39 58.6 +59.3 162.1
14°	41 28.1 +59.7 167.0	41 21.5 +59.5 165.7	41 14.2 +59.5 164.4	41 06.4 +59.4 163.2	40 57.9 +59.3 161.9
15°	42 27.8 +59.6 166.9	42 21.0 +59.6 165.6	42 13.7 +59.5 164.3	42 05.8 +59.3 163.0	41 57.2 +59.3 161.7
16°	43 27.4 +59.6 166.7	43 20.6 +59.5 165.4	43 13.2 +59.4 164.1	43 05.1 +59.4 162.8	42 56.5 +59.3 161.5
17°	44 27.0 +59.6 166.5	44 20.1 +59.5 165.2	44 12.6 +59.5 163.9	44 04.5 +59.3 162.6	43 55.8 +59.2 161.3
18°	45 26.6 +59.6 166.4	45 19.6 +59.5 165.0	45 12.1 +59.4 163.7	45 03.8 +59.4 162.4	44 55.0 +59.2 161.0
19°	46 26.2 +59.6 166.2	46 19.1 +59.5 164.9	46 11.5 +59.4 163.5	46 03.2 +59.2 162.2	45 54.2 +59.2 160.8
20°	47 25.8 +59.5 166.0	47 18.6 +59.5 164.7	47 10.9 +59.3 163.3	47 02.4 +59.3 161.9	46 53.4 +59.1 160.6
21°	48 25.3 +59.5 165.9	48 18.1 +59.4 164.5	48 10.2 +59.4 163.1	48 01.7 +59.2 161.7	47 52.5 +59.2 160.3
22°	49 24.8 +59.6 165.7	49 17.5 +59.4 164.3	49 09.6 +59.3 162.9	49 00.9 +59.2 161.5	48 51.7 +59.0 160.1
23°	50 24.4 +59.5 165.5	50 17.0 +59.4 164.0	50 08.9 +59.3 162.6	50 00.1 +59.2 161.2	49 50.7 +59.1 159.8
24°	51 23.9 +59.4 165.3	51 16.4 +59.3 163.8	51 08.2 +59.2 162.4	50 59.3 +59.1 160.9	50 49.8 +59.0 159.5
25°	52 23.3 +59.5 165.1	52 15.7 +59.4 163.6	52 07.4 +59.2 162.1	51 58.4 +59.1 160.7	51 48.8 +58.9 159.2
26°	53 22.8 +59.4 164.8	53 15.1 +59.3 163.3	53 06.6 +59.2 161.9	52 57.5 +59.1 160.4	52 47.7 +58.9 158.9
27°	54 22.2 +59.4 164.6	54 14.4 +59.2 163.1	54 05.8 +59.2 161.6	53 56.6 +59.0 160.1	53 46.6 +58.9 158.6
28°	55 21.6 +59.4 164.4	55 13.6 +59.3 162.8	55 05.0 +59.1 161.3	54 55.6 +58.9 159.8	54 45.5 +58.8 158.3
29°	56 21.0 +59.3 164.1	56 12.9 +59.2 162.5	56 04.1 +59.0 161.0	55 54.5 +58.9 159.5	55 44.3 +58.7 157.9

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°	26 58.0 +59.4 163.1	26 49.6 +59.3 162.0	26 40.6 +59.3 160.9	26 31.1 +59.2 159.8	26 21.2 +59.1 158.7
1°	27 57.4 +59.5 163.0	27 48.9 +59.4 161.8	27 39.9 +59.3 160.7	27 30.3 +59.2 159.6	27 20.3 +59.1 158.5
2°	28 56.9 +59.4 162.8	28 48.3 +59.3 161.7	28 39.2 +59.2 160.6	28 29.5 +59.2 159.4	28 19.4 +59.0 158.3
3°	29 56.3 +59.4 162.6	29 47.6 +59.3 161.5	29 38.4 +59.3 160.4	29 28.7 +59.1 159.2	29 18.4 +59.1 158.1
4°	30 55.7 +59.4 162.5	30 46.9 +59.3 161.3	30 37.7 +59.2 160.2	30 27.8 +59.2 159.0	30 17.5 +59.1 157.9
5°	31 55.1 +59.3 162.3	31 46.2 +59.3 161.2	31 36.9 +59.2 160.0	31 27.0 +59.1 158.8	31 16.6 +59.0 157.7
6°	32 54.4 +59.4 162.1	32 45.5 +59.3 161.0	32 36.1 +59.2 159.8	32 26.1 +59.1 158.6	32 15.6 +59.0 157.5
7°	33 53.8 +59.4 162.0	33 44.8 +59.3 160.8	33 35.3 +59.1 159.6	33 25.2 +59.1 158.4	33 14.6 +59.0 157.3
8°	34 53.2 +59.3 161.8	34 44.1 +59.2 160.6	34 34.4 +59.2 159.4	34 24.3 +59.0 158.2	34 13.6 +58.9 157.1
9°	35 52.5 +59.3 161.6	35 43.3 +59.2 160.4	35 33.6 +59.1 159.2	35 23.3 +59.1 158.0	35 12.5 +58.9 156.8
10°	36 51.8 +59.3 161.4	36 42.5 +59.2 160.2	36 32.7 +59.1 159.0	36 22.4 +59.0 157.8	36 11.4 +58.9 156.6
11°	37 51.1 +59.3 161.2	37 41.7 +59.2 160.0	37 31.8 +59.1 158.8	37 21.4 +58.9 157.6	37 10.3 +58.9 156.4
12°	38 50.4 +59.2 161.0	38 40.9 +59.2 159.8	38 30.9 +59.1 158.6	38 20.3 +59.0 157.3	38 09.2 +58.8 156.1
13°	39 49.6 +59.3 160.8	39 40.1 +59.1 159.6	39 30.0 +59.0 158.3	39 19.3 +58.9 157.1	39 08.0 +58.9 155.9
14°	40 48.9 +59.2 160.6	40 39.2 +59.1 159.4	40 29.0 +59.0 158.1	40 18.2 +58.9 156.8	40 06.9 +58.7 155.6
15°	41 48.1 +59.1 160.4	41 38.3 +59.1 159.1	41 28.0 +59.0 157.9	41 17.1 +58.8 156.6	41 05.6 +58.8 155.3
16°	42 47.2 +59.2 160.2	42 37.4 +59.1 158.9	42 27.0 +58.9 157.6	42 15.9 +58.9 156.3	42 04.4 +58.6 155.1
17°	43 46.4 +59.1 160.0	43 36.5 +59.0 158.7	43 25.9 +58.9 157.4	43 14.8 +58.7 156.1	43 03.0 +58.7 154.8
18°	44 45.5 +59.1 159.7	44 35.5 +59.0 158.4	44 24.8 +58.9 157.1	44 13.5 +58.8 155.8	44 01.7 +58.6 154.5
19°	45 44.6 +59.1 159.5	45 34.5 +58.9 158.1	45 23.7 +58.8 156.8	45 12.3 +58.7 155.5	45 00.3 +58.6 154.2
20°	46 43.7 +59.0 159.2	46 33.4 +58.9 157.9	46 22.5 +58.8 156.5	46 11.0 +58.6 155.2	45 58.9 +58.5 153.9
21°	47 42.7 +59.0 159.0	47 32.3 +58.9 157.6	47 21.3 +58.7 156.2	47 09.6 +58.6 154.9	46 57.4 +58.4 153.6
22°	48 41.7 +59.0 158.7	48 31.2 +58.8 157.3	48 20.0 +58.7 155.9	48 08.2 +58.5 154.6	47 55.8 +58.4 153.2
23°	49 40.7 +58.9 158.4	49 30.0 +58.8 157.0	49 18.7 +58.6 155.6	49 06.7 +58.5 154.2	48 54.2 +58.3 152.9
24°	50 39.6 +58.9 158.1	50 28.8 +58.7 156.7	50 17.3 +58.6 155.3	50 05.2 +58.4 153.9	49 52.5 +58.3 152.5
25°	51 38.5 +58.8 157.8	51 27.5 +58.6 156.4	51 15.9 +58.5 154.9	51 03.6 +58.4 153.5	50 50.8 +58.2 152.1
26°	52 37.3 +58.7 157.5	52 26.1 +58.7 156.0	52 14.4 +58.4 154.6	52 02.0 +58.2 153.2	51 49.0 +58.0 151.7
27°	53 36.0 +58.7 157.1	53 24.8 +58.5 155.7	53 12.8 +58.4 154.2	53 00.2 +58.2 152.8	52 47.0 +58.1 151.3
28°	54 34.7 +58.7 156.8	54 23.3 +58.4 155.3	54 11.2 +58.3 153.8	53 58.4 +58.1 152.4	53 45.1 +57.9 150.9
29°	55 33.4 +58.5 156.4	55 21.7 +58.4 154.9	55 09.5 +58.2 153.4	54 56.5 +58.0 151.9	54 43.0 +57.8 150.5

Declination SAME name as Latitude

Latitude 62°

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°	26 10.7 +59.0 157.6	25 59.7 +58.9 156.5	25 48.2 +58.8 155.4	25 36.2 +58.8 154.3	25 23.8 +58.6 153.2
1°	27 09.7 +59.0 157.4	26 58.6 +58.9 156.3	26 47.0 +58.9 155.2	26 35.0 +58.7 154.1	26 22.4 +58.6 153.0
2°	28 08.7 +59.0 157.2	27 57.5 +58.9 156.1	27 45.9 +58.8 155.0	27 33.7 +58.7 153.9	27 21.0 +58.6 152.8
3°	29 07.7 +59.0 157.0	28 56.4 +58.9 155.9	28 44.7 +58.7 154.7	28 32.4 +58.7 153.6	28 19.6 +58.6 152.5
4°	30 06.7 +58.9 156.8	29 55.3 +58.8 155.6	29 43.4 +58.8 154.5	29 31.1 +58.6 153.4	29 18.2 +58.5 152.3
5°	31 05.6 +58.9 156.6	30 54.1 +58.9 155.4	30 42.2 +58.7 154.3	30 29.7 +58.6 153.1	30 16.7 +58.5 152.0
6°	32 04.5 +58.9 156.3	31 53.0 +58.8 155.2	31 40.9 +58.7 154.0	31 28.3 +58.6 152.9	31 15.2 +58.5 151.8
7°	33 03.4 +58.9 156.1	32 51.8 +58.7 154.9	32 39.6 +58.6 153.8	32 26.9 +58.5 152.6	32 13.7 +58.4 151.5
8°	34 02.3 +58.9 155.9	33 50.5 +58.8 154.7	33 38.2 +58.7 153.5	33 25.4 +58.5 152.4	33 12.1 +58.4 151.2
9°	35 01.2 +58.8 155.6	34 49.3 +58.7 154.5	34 36.9 +58.6 153.3	34 23.9 +58.5 152.1	34 10.5 +58.4 150.9
10°	36 00.0 +58.8 155.4	35 48.0 +58.7 154.2	35 35.5 +58.5 153.0	35 22.4 +58.5 151.8	35 08.9 +58.3 150.7
11°	36 58.8 +58.7 155.1	36 46.7 +58.6 153.9	36 34.0 +58.5 152.8	36 20.9 +58.4 151.6	36 07.2 +58.3 150.4
12°	37 57.5 +58.7 154.9	37 45.3 +58.6 153.7	37 32.5 +58.5 152.5	37 19.3 +58.3 151.3	37 05.5 +58.2 150.1
13°	38 56.2 +58.7 154.6	38 43.9 +58.6 153.4	38 31.0 +58.5 152.2	38 17.6 +58.3 151.0	38 03.7 +58.2 149.8
14°	39 54.9 +58.7 154.4	39 42.5 +58.5 153.1	39 29.5 +58.4 151.9	39 15.9 +58.3 150.7	39 01.9 +58.1 149.5
15°	40 53.6 +58.6 154.1	40 41.0 +58.5 152.8	40 27.9 +58.3 151.6	40 14.2 +58.2 150.4	40 00.0 +58.1 149.1
16°	41 52.2 +58.6 153.8	41 39.5 +58.4 152.5	41 26.2 +58.3 151.3	41 12.4 +58.2 150.1	40 58.1 +58.0 148.8
17°	42 50.8 +58.5 153.5	42 37.9 +58.4 152.2	42 24.5 +58.3 151.0	42 10.6 +58.1 149.7	41 56.1 +58.0 148.5
18°	43 49.3 +58.5 153.2	43 36.3 +58.3 151.9	43 22.8 +58.2 150.6	43 08.7 +58.0 149.4	42 54.1 +57.9 148.1
19°	44 47.8 +58.4 152.9	44 34.6 +58.3 151.6	44 21.0 +58.1 150.3	44 06.7 +58.0 149.0	43 52.0 +57.8 147.8
20°	45 46.2 +58.3 152.6	45 32.9 +58.2 151.3	45 19.1 +58.0 150.0	45 04.7 +57.9 148.7	44 49.8 +57.7 147.4
21°	46 44.5 +58.3 152.2	46 31.1 +58.2 150.9	46 17.1 +58.0 149.6	46 02.6 +57.8 148.3	45 47.5 +57.7 147.0
22°	47 42.8 +58.3 151.9	47 29.3 +58.0 150.5	47 15.1 +57.9 149.2	47 00.4 +57.8 147.9	46 45.2 +57.6 146.6
23°	48 41.1 +58.1 151.5	48 27.3 +58.0 150.2	48 13.0 +57.9 148.8	47 58.2 +57.6 147.5	47 42.8 +57.5 146.2
24°	49 39.2 +58.1 151.1	49 25.3 +58.0 149.8	49 10.9 +57.7 148.4	48 55.8 +57.6 147.1	48 40.3 +57.4 145.8
25°	50 37.3 +58.0 150.8	50 23.3 +57.8 149.4	50 08.6 +57.7 148.0	49 53.4 +57.5 146.7	49 37.7 +57.2 145.3
26°	51 35.3 +57.9 150.3	51 21.1 +57.7 149.0	51 06.3 +57.5 147.6	50 50.9 +57.3 146.2	50 34.9 +57.2 144.8
27°	52 33.2 +57.9 149.9	52 18.8 +57.6 148.5	52 03.8 +57.4 147.1	51 48.2 +57.3 145.7	51 32.1 +57.0 144.4
28°	53 31.1 +57.7 149.5	53 16.4 +57.6 148.1	53 01.2 +57.4 146.6	52 45.5 +57.1 145.2	52 29.1 +56.9 143.9
29°	54 28.8 +57.6 149.0	54 14.0 +57.4 147.6	53 58.6 +57.2 146.1	53 42.6 +57.0 144.7	53 26.0 +56.8 143.3

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°	25 10.9 +58.5 152.2	24 57.5 +58.4 151.1	24 43.6 +58.4 150.0	24 29.3 +58.2 148.9	24 14.6 +58.1 147.9
1°	26 09.4 +58.5 151.9	25 55.9 +58.4 150.8	25 42.0 +58.2 149.8	25 27.5 +58.2 148.7	25 12.7 +58.0 147.6
2°	27 07.9 +58.5 151.7	26 54.3 +58.4 150.6	26 40.2 +58.3 149.5	26 25.7 +58.1 148.4	26 10.7 +58.0 147.3
3°	28 06.4 +58.4 151.4	27 52.7 +58.3 150.3	27 38.5 +58.2 149.2	27 23.8 +58.2 148.1	27 08.7 +58.0 147.0
4°	29 04.8 +58.5 151.2	28 51.0 +58.3 150.0	28 36.7 +58.2 148.9	28 22.0 +58.0 147.8	28 06.7 +58.0 146.7
5°	30 03.3 +58.3 150.9	29 49.3 +58.3 149.8	29 34.9 +58.2 148.7	29 20.0 +58.1 147.6	29 04.7 +57.9 146.5
6°	31 01.6 +58.4 150.6	30 47.6 +58.2 149.5	30 33.1 +58.1 148.4	30 18.1 +57.9 147.3	30 02.6 +57.9 146.2
7°	32 00.0 +58.3 150.4	31 45.8 +58.2 149.2	31 31.2 +58.0 148.1	31 16.0 +58.0 147.0	31 00.5 +57.8 145.8
8°	32 58.3 +58.3 150.1	32 44.0 +58.2 148.9	32 29.2 +58.1 147.8	32 14.0 +57.9 146.7	31 58.3 +57.8 145.5
9°	33 56.6 +58.2 149.8	33 42.2 +58.1 148.6	33 27.3 +58.0 147.5	33 11.9 +57.9 146.3	32 56.1 +57.7 145.2
10°	34 54.8 +58.2 149.5	34 40.3 +58.1 148.3	34 25.3 +57.9 147.2	34 09.8 +57.8 146.0	33 53.8 +57.7 144.9
11°	35 53.0 +58.2 149.2	35 38.4 +58.0 148.0	35 23.2 +57.9 146.9	35 07.6 +57.7 145.7	34 51.5 +57.6 144.6
12°	36 51.2 +58.1 148.9	36 36.4 +57.9 147.7	36 21.1 +57.8 146.5	36 05.3 +57.7 145.4	35 49.1 +57.5 144.2
13°	37 49.3 +58.0 148.6	37 34.3 +58.0 147.4	37 18.9 +57.8 146.2	37 03.0 +57.6 145.0	36 46.6 +57.5 143.9
14°	38 47.3 +58.0 148.3	38 32.3 +57.8 147.1	38 16.7 +57.7 145.9	38 00.6 +57.6 144.7	37 44.1 +57.5 143.5
15°	39 45.3 +58.0 147.9	39 30.1 +57.8 146.7	39 14.4 +57.7 145.5	38 58.2 +57.5 144.3	38 41.6 +57.3 143.1
16°	40 43.3 +57.8 147.6	40 27.9 +57.7 146.4	40 12.1 +57.5 145.2	39 55.7 +57.5 143.9	39 38.9 +57.3 142.8
17°	41 41.1 +57.8 147.2	41 25.6 +57.7 146.0	41 09.6 +57.6 144.8	40 53.2 +57.3 143.6	40 36.2 +57.2 142.4
18°	42 38.9 +57.8 146.9	42 23.3 +57.6 145.6	42 07.2 +57.4 144.4	41 50.5 +57.3 143.2	41 33.4 +57.1 142.0
19°	43 36.7 +57.7 146.5	43 20.9 +57.5 145.3	43 04.6 +57.3 144.0	42 47.8 +57.2 142.8	42 30.5 +57.0 141.6
20°	44 34.4 +57.5 146.1	44 18.4 +57.4 144.9	44 01.9 +57.3 143.6	43 45.0 +57.1 142.4	43 27.5 +56.9 141.1
21°	45 31.9 +57.5 145.7	45 15.8 +57.3 144.4	44 59.2 +57.1 143.2	44 42.1 +56.9 141.9	44 24.4 +56.9 140.7
22°	46 29.4 +57.4 145.3	46 13.1 +57.3 144.0	45 56.3 +57.1 142.8	45 39.0 +56.9 141.5	45 21.3 +56.7 140.2
23°	47 26.8 +57.4 144.9	47 10.4 +57.1 143.6	46 53.4 +57.0 142.3	46 35.9 +56.8 141.0	46 18.0 +56.6 139.8
24°	48 24.2 +57.2 144.4	48 07.5 +57.0 143.1	47 50.4 +56.8 141.8	47 32.7 +56.7 140.6	47 14.6 +56.4 139.3
25°	49 21.4 +57.0 144.0	49 04.5 +56.9 142.7	48 47.2 +56.7 141.4	48 29.4 +56.5 140.1	48 11.0 +56.4 138.8
26°	50 18.4 +57.0 143.5	50 01.4 +56.8 142.2	49 43.9 +56.6 140.9	49 25.9 +56.4 139.5	49 07.4 +56.1 138.3
27°	51 15.4 +56.9 143.0	50 58.2 +56.6 141.7	50 40.5 +56.4 140.3	50 22.3 +56.2 139.0	50 03.5 +56.1 137.7
28°	52 12.3 +56.7 142.5	51 54.8 +56.5 141.1	51 36.9 +56.3 139.8	51 18.5 +56.0 138.5	50 59.6 +55.8 137.1
29°	53 09.0 +56.5 142.0	52 51.3 +56.4 140.6	52 33.2 +56.1 139.2	52 14.5 +55.9 137.9	51 55.4 +55.7 136.6

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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°	23 59.4 +58.0 146.8	23 43.8 +57.8 145.8	23 27.7 +57.7 144.7	23 11.2 +57.6 143.7	22 54.3 +57.5 142.6
1°	24 57.4 +57.9 146.5	24 41.6 +57.8 145.5	24 25.4 +57.7 144.4	24 08.8 +57.6 143.4	23 51.8 +57.5 142.3
2°	25 55.3 +57.9 146.2	25 39.4 +57.8 145.2	25 23.1 +57.7 144.1	25 06.4 +57.5 143.1	24 49.3 +57.4 142.0
3°	26 53.2 +57.9 146.0	26 37.2 +57.8 144.9	26 20.8 +57.6 143.8	26 03.9 +57.5 142.7	25 46.7 +57.4 141.7
4°	27 51.1 +57.8 145.7	27 35.0 +57.7 144.6	27 18.4 +57.6 143.5	27 01.4 +57.5 142.4	26 44.1 +57.3 141.3
5°	28 48.9 +57.8 145.4	28 32.7 +57.6 144.3	28 16.0 +57.5 143.2	27 58.9 +57.4 142.1	27 41.4 +57.3 141.0
6°	29 46.7 +57.7 145.0	29 30.3 +57.6 143.9	29 13.5 +57.5 142.9	28 56.3 +57.4 141.8	28 38.7 +57.2 140.7
7°	30 44.4 +57.7 144.7	30 27.9 +57.6 143.6	30 11.0 +57.4 142.5	29 53.7 +57.3 141.4	29 35.9 +57.2 140.3
8°	31 42.1 +57.7 144.4	31 25.5 +57.5 143.3	31 08.4 +57.4 142.2	30 51.0 +57.2 141.1	30 33.1 +57.1 140.0
9°	32 39.8 +57.6 144.1	32 23.0 +57.5 143.0	32 05.8 +57.4 141.8	31 48.2 +57.2 140.7	31 30.2 +57.0 139.6
10°	33 37.4 +57.5 143.7	33 20.5 +57.4 142.6	33 03.2 +57.2 141.5	32 45.4 +57.1 140.4	32 27.2 +57.0 139.3
11°	34 34.9 +57.5 143.4	34 17.9 +57.3 142.3	34 00.4 +57.2 141.1	33 42.5 +57.1 140.0	33 24.2 +56.9 138.9
12°	35 32.4 +57.4 143.1	35 15.2 +57.3 141.9	34 57.6 +57.2 140.8	34 39.6 +57.0 139.6	34 21.1 +56.9 138.5
13°	36 29.8 +57.3 142.7	36 12.5 +57.2 141.5	35 54.8 +57.0 140.4	35 36.6 +56.9 139.3	35 18.0 +56.8 138.1
14°	37 27.1 +57.3 142.3	37 09.7 +57.1 141.2	36 51.8 +57.0 140.0	36 33.5 +56.8 138.9	36 14.8 +56.6 137.7
15°	38 24.4 +57.2 142.0	38 06.8 +57.1 140.8	37 48.8 +56.9 139.6	37 30.3 +56.8 138.5	37 11.4 +56.7 137.3
16°	39 21.6 +57.2 141.6	39 03.9 +57.0 140.4	38 45.7 +56.8 139.2	38 27.1 +56.7 138.0	38 08.1 +56.5 136.9
17°	40 18.8 +57.0 141.2	40 00.9 +56.9 140.0	39 42.5 +56.8 138.8	39 23.8 +56.5 137.6	39 04.6 +56.4 136.5
18°	41 15.8 +57.0 140.8	40 57.8 +56.7 139.6	40 39.3 +56.6 138.4	40 20.3 +56.5 137.2	40 01.0 +56.3 136.0
19°	42 12.8 +56.8 140.3	41 54.5 +56.7 139.1	41 35.9 +56.5 137.9	41 16.8 +56.4 136.7	40 57.3 +56.2 135.6
20°	43 09.6 +56.8 139.9	42 51.2 +56.6 138.7	42 32.4 +56.4 137.5	42 13.2 +56.2 136.3	41 53.5 +56.1 135.1
21°	44 06.4 +56.6 139.5	43 47.8 +56.5 138.2	43 28.8 +56.3 137.0	43 09.4 +56.2 135.8	42 49.6 +55.9 134.6
22°	45 03.0 +56.5 139.0	44 44.3 +56.4 137.8	44 25.1 +56.2 136.5	44 05.6 +56.0 135.3	43 45.5 +55.9 134.1
23°	45 59.5 +56.5 138.5	45 40.7 +56.2 137.3	45 21.3 +56.1 136.0	45 01.6 +55.8 134.8	44 41.4 +55.7 133.6
24°	46 56.0 +56.2 138.0	46 36.9 +56.1 136.8	46 17.4 +55.9 135.5	45 57.4 +55.7 134.3	45 37.1 +55.5 133.1
25°	47 52.2 +56.2 137.5	47 33.0 +55.9 136.2	47 13.3 +55.7 135.0	46 53.1 +55.6 133.8	46 32.6 +55.4 132.5
26°	48 48.4 +55.9 137.0	48 28.9 +55.8 135.7	48 09.0 +55.6 134.4	47 48.7 +55.4 133.2	47 28.0 +55.2 132.0
27°	49 44.3 +55.9 136.4	49 24.7 +55.6 135.1	49 04.6 +55.4 133.9	48 44.1 +55.2 132.6	48 23.2 +55.0 131.4
28°	50 40.2 +55.6 135.8	50 20.3 +55.5 134.6	50 00.0 +55.3 133.3	49 39.3 +55.0 132.0	49 18.2 +54.8 130.8
29°	51 35.8 +55.5 135.3	51 15.8 +55.2 134.0	50 55.3 +55.0 132.7	50 34.3 +54.9 131.4	50 13.0 +54.6 130.2

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°	22 37.0 +57.4 141.6	22 19.3 +57.3 140.6	22 01.2 +57.1 139.5	21 42.7 +57.0 138.5	21 23.9 +56.9 137.5
1°	23 34.4 +57.3 141.3	23 16.6 +57.2 140.2	22 58.3 +57.1 139.2	22 39.7 +57.0 138.2	22 20.8 +56.8 137.1
2°	24 31.7 +57.3 140.9	24 13.8 +57.1 139.9	23 55.4 +57.1 138.9	23 36.7 +56.9 137.8	23 17.6 +56.8 136.8
3°	25 29.0 +57.3 140.6	25 10.9 +57.2 139.6	24 52.5 +57.0 138.5	24 33.6 +56.9 137.5	24 14.4 +56.7 136.4
4°	26 26.3 +57.2 140.3	26 08.1 +57.0 139.2	25 49.5 +56.9 138.2	25 30.5 +56.8 137.1	25 11.1 +56.7 136.1
5°	27 23.5 +57.1 139.9	27 05.1 +57.0 138.9	26 46.4 +56.9 137.8	26 27.3 +56.8 136.8	26 07.8 +56.6 135.7
6°	28 20.6 +57.1 139.6	28 02.1 +57.0 138.5	27 43.3 +56.8 137.5	27 24.1 +56.7 136.4	27 04.4 +56.6 135.3
7°	29 17.7 +57.0 139.2	28 59.1 +56.9 138.2	28 40.1 +56.8 137.1	28 20.8 +56.6 136.0	28 01.0 +56.5 135.0
8°	30 14.7 +57.0 138.9	29 56.0 +56.9 137.8	29 36.9 +56.7 136.7	29 17.4 +56.6 135.7	28 57.5 +56.5 134.6
9°	31 11.7 +56.9 138.5	30 52.9 +56.7 137.4	30 33.6 +56.7 136.3	30 14.0 +56.5 135.3	29 54.0 +56.3 134.2
10°	32 08.6 +56.9 138.2	31 49.6 +56.8 137.1	31 30.3 +56.5 136.0	31 10.5 +56.4 134.9	30 50.3 +56.3 133.8
11°	33 05.5 +56.8 137.8	32 46.4 +56.6 136.7	32 26.8 +56.5 135.6	32 06.9 +56.4 134.5	31 46.6 +56.3 133.4
12°	34 02.3 +56.7 137.4	33 43.0 +56.6 136.3	33 23.3 +56.5 135.2	33 03.3 +56.3 134.1	32 42.9 +56.1 133.0
13°	34 59.0 +56.6 137.0	34 39.6 +56.4 135.9	34 19.8 +56.3 134.8	33 59.6 +56.2 133.7	33 39.0 +56.0 132.6
14°	35 55.6 +56.5 136.6	35 36.0 +56.4 135.5	35 16.1 +56.2 134.3	34 55.8 +56.1 133.2	34 35.0 +56.0 132.1
15°	36 52.1 +56.5 136.2	36 32.4 +56.3 135.0	36 12.3 +56.2 133.9	35 51.9 +56.0 132.8	35 31.0 +55.9 131.7
16°	37 48.6 +56.4 135.7	37 28.7 +56.2 134.6	37 08.5 +56.0 133.5	36 47.9 +55.9 132.3	36 26.9 +55.7 131.2
17°	38 45.0 +56.2 135.3	38 24.9 +56.1 134.2	38 04.5 +56.0 133.0	37 43.8 +55.8 131.9	37 22.6 +55.7 130.8
18°	39 41.2 +56.2 134.9	39 21.0 +56.0 133.7	39 00.5 +55.8 132.6	38 39.6 +55.6 131.4	38 18.3 +55.5 130.3
19°	40 37.4 +56.0 134.4	40 17.0 +55.9 133.2	39 56.3 +55.7 132.1	39 35.2 +55.6 130.9	39 13.8 +55.4 129.8
20°	41 33.4 +55.9 133.9	41 12.9 +55.8 132.8	40 52.0 +55.6 131.6	40 30.8 +55.4 130.5	40 09.2 +55.2 129.3
21°	42 29.3 +55.8 133.4	42 08.7 +55.6 132.3	41 47.6 +55.5 131.1	41 26.2 +55.3 129.9	41 04.4 +55.2 128.8
22°	43 25.1 +55.7 132.9	43 04.3 +55.5 131.8	42 43.1 +55.3 130.6	42 21.5 +55.2 129.4	41 59.6 +55.0 128.3
23°	44 20.8 +55.5 132.4	43 59.8 +55.3 131.2	43 38.4 +55.2 130.0	43 16.7 +54.9 128.9	42 54.6 +54.8 127.7
24°	45 16.3 +55.3 131.9	44 55.1 +55.2 130.7	44 33.6 +55.0 129.5	44 11.6 +54.9 128.3	43 49.4 +54.6 127.2
25°	46 11.6 +55.2 131.3	45 50.3 +55.0 130.1	45 28.6 +54.8 128.9	45 06.5 +54.6 127.8	44 44.0 +54.5 126.6
26°	47 06.8 +55.0 130.8	46 45.3 +54.8 129.5	46 23.4 +54.6 128.4	46 01.1 +54.5 127.2	45 38.5 +54.3 126.0
27°	48 01.8 +54.9 130.2	47 40.1 +54.7 128.9	47 18.0 +54.5 127.7	46 55.6 +54.2 126.6	46 32.8 +54.1 125.4
28°	48 56.7 +54.6 129.5	48 34.8 +54.4 128.3	48 12.5 +54.2 127.1	47 49.8 +54.1 125.9	47 26.9 +53.8 124.7
29°	49 51.3 +54.4 128.9	49 29.2 +54.2 127.7	49 06.7 +54.0 126.5	48 43.9 +53.8 125.3	48 20.7 +53.6 124.1

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°	21 04.7 +56.7 136.5	20 45.1 +56.6 135.4	20 25.1 +56.6 134.4	20 04.9 +56.3 133.4	19 44.2 +56.3 132.4
1°	22 01.4 +56.7 136.1	21 41.7 +56.6 135.1	21 21.7 +56.4 134.1	21 01.2 +56.4 133.1	20 40.5 +56.2 132.1
2°	22 58.1 +56.7 135.8	22 38.3 +56.5 134.7	22 18.1 +56.4 133.7	21 57.6 +56.3 132.7	21 36.7 +56.2 131.7
3°	23 54.8 +56.6 135.4	23 34.8 +56.5 134.4	23 14.5 +56.4 133.3	22 53.9 +56.2 132.3	22 32.9 +56.1 131.3
4°	24 51.4 +56.6 135.0	24 31.3 +56.5 134.0	24 10.9 +56.3 133.0	23 50.1 +56.2 131.9	23 29.0 +56.0 130.9
5°	25 48.0 +56.5 134.7	25 27.8 +56.3 133.6	25 07.2 +56.2 132.6	24 46.3 +56.1 131.6	24 25.0 +56.0 130.5
6°	26 44.5 +56.4 134.3	26 24.1 +56.3 133.2	26 03.4 +56.2 132.2	25 42.4 +56.0 131.2	25 21.0 +55.9 130.1
7°	27 40.9 +56.4 133.9	27 20.4 +56.3 132.9	26 59.6 +56.1 131.8	26 38.4 +56.0 130.8	26 16.9 +55.9 129.7
8°	28 37.3 +56.3 133.5	28 16.7 +56.2 132.5	27 55.7 +56.1 131.4	27 34.4 +55.9 130.4	27 12.8 +55.8 129.3
9°	29 33.6 +56.2 133.1	29 12.9 +56.1 132.1	28 51.8 +55.9 131.0	28 30.3 +55.9 130.0	28 08.6 +55.7 128.9
10°	30 29.8 +56.2 132.7	30 09.0 +56.0 131.7	29 47.7 +55.9 130.6	29 26.2 +55.7 129.5	29 04.3 +55.6 128.5
11°	31 26.0 +56.1 132.3	31 05.0 +55.9 131.2	30 43.6 +55.8 130.2	30 21.9 +55.7 129.1	29 59.9 +55.6 128.1
12°	32 22.1 +56.0 131.9	32 00.9 +55.9 130.8	31 39.4 +55.8 129.7	31 17.6 +55.6 128.7	30 55.5 +55.4 127.6
13°	33 18.1 +55.9 131.5	32 56.8 +55.7 130.4	32 35.2 +55.6 129.3	32 13.2 +55.5 128.2	31 50.9 +55.4 127.2
14°	34 14.0 +55.8 131.0	33 52.5 +55.7 129.9	33 30.8 +55.5 128.9	33 08.7 +55.4 127.8	32 46.3 +55.2 126.7
15°	35 09.8 +55.7 130.6	34 48.2 +55.6 129.5	34 26.3 +55.4 128.4	34 04.1 +55.3 127.3	33 41.5 +55.2 126.3
16°	36 05.5 +55.6 130.1	35 43.8 +55.4 129.0	35 21.7 +55.3 127.9	34 59.4 +55.1 126.8	34 36.7 +55.0 125.8
17°	37 01.1 +55.5 129.7	36 39.2 +55.4 128.6	36 17.0 +55.2 127.5	35 54.5 +55.1 126.4	35 31.7 +54.9 125.3
18°	37 56.6 +55.4 129.2	37 34.6 +55.2 128.1	37 12.2 +55.1 127.0	36 49.6 +54.9 125.9	36 26.6 +54.8 124.8
19°	38 52.0 +55.2 128.7	38 29.8 +55.1 127.6	38 07.3 +55.0 126.5	37 44.5 +54.8 125.4	37 21.4 +54.6 124.3
20°	39 47.2 +55.1 128.2	39 24.9 +55.0 127.1	39 02.3 +54.8 126.0	38 39.3 +54.7 124.8	38 16.0 +54.5 123.8
21°	40 42.3 +55.0 127.7	40 19.9 +54.8 126.5	39 57.1 +54.6 125.4	39 34.0 +54.5 124.3	39 10.5 +54.4 123.2
22°	41 37.3 +54.8 127.1	41 14.7 +54.6 126.0	40 51.7 +54.5 124.9	40 28.5 +54.3 123.8	40 04.9 +54.2 122.7
23°	42 32.1 +54.7 126.6	42 09.3 +54.5 125.4	41 46.2 +54.4 124.3	41 22.8 +54.2 123.2	40 59.1 +54.0 122.1
24°	43 26.8 +54.4 126.0	43 03.8 +54.3 124.9	42 40.6 +54.1 123.8	42 17.0 +54.0 122.6	41 53.1 +53.9 121.5
25°	44 21.2 +54.3 125.4	43 58.1 +54.2 124.3	43 34.7 +54.0 123.2	43 11.0 +53.8 122.0	42 47.0 +53.6 120.9
26°	45 15.5 +54.2 124.8	44 52.3 +53.9 123.7	44 28.7 +53.7 122.6	44 04.8 +53.6 121.4	43 40.6 +53.5 120.3
27°	46 09.7 +53.9 124.2	45 46.2 +53.7 123.1	45 22.4 +53.6 121.9	44 58.4 +53.4 120.8	44 34.1 +53.2 119.7
28°	47 03.6 +53.6 123.6	46 39.9 +53.5 122.4	46 16.0 +53.3 121.3	45 51.8 +53.2 120.1	45 27.3 +53.0 119.0
29°	47 57.2 +53.5 122.9	47 33.4 +53.3 121.8	47 09.3 +53.1 120.6	46 45.0 +52.9 119.5	46 20.3 +52.8 118.4

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°	19 23.3 +56.1 131.4	19 02.0 +56.0 130.5	18 40.4 +55.9 129.5	18 18.5 +55.8 128.5	17 56.3 +55.7 127.5
1°	20 19.4 +56.1 131.1	19 58.0 +56.0 130.1	19 36.3 +55.9 129.1	19 14.3 +55.7 128.1	18 52.0 +55.6 127.1
2°	21 15.5 +56.1 130.7	20 54.0 +55.9 129.7	20 32.2 +55.8 128.7	20 10.0 +55.7 127.7	19 47.6 +55.6 126.7
3°	22 11.6 +55.9 130.3	21 49.9 +55.9 129.3	21 28.0 +55.7 128.3	21 05.7 +55.6 127.3	20 43.2 +55.5 126.3
4°	23 07.5 +56.0 129.9	22 45.8 +55.8 128.9	22 23.7 +55.7 127.9	22 01.3 +55.6 126.9	21 38.7 +55.4 125.9
5°	24 03.5 +55.8 129.5	23 41.6 +55.7 128.5	23 19.4 +55.6 127.5	22 56.9 +55.5 126.5	22 34.1 +55.4 125.5
6°	24 59.3 +55.8 129.1	24 37.3 +55.7 128.1	24 15.0 +55.5 127.1	23 52.4 +55.4 126.1	23 29.5 +55.3 125.1
7°	25 55.1 +55.8 128.7	25 33.0 +55.6 127.7	25 10.5 +55.5 126.7	24 47.8 +55.4 125.7	24 24.8 +55.2 124.7
8°	26 50.9 +55.6 128.3	26 28.6 +55.5 127.3	26 06.0 +55.4 126.2	25 43.2 +55.2 125.2	25 20.0 +55.2 124.2
9°	27 46.5 +55.6 127.9	27 24.1 +55.5 126.8	27 01.4 +55.4 125.8	26 38.4 +55.2 124.8	26 15.2 +55.0 123.8
10°	28 42.1 +55.5 127.4	28 19.6 +55.3 126.4	27 56.8 +55.2 125.4	27 33.6 +55.2 124.4	27 10.2 +55.0 123.3
11°	29 37.6 +55.4 127.0	29 14.9 +55.3 126.0	28 52.0 +55.1 124.9	28 28.8 +55.0 123.9	28 05.2 +54.9 122.9
12°	30 33.0 +55.3 126.6	30 10.2 +55.2 125.5	29 47.1 +55.1 124.5	29 23.8 +54.9 123.5	29 00.1 +54.8 122.4
13°	31 28.3 +55.2 126.1	31 05.4 +55.1 125.1	30 42.2 +55.0 124.0	30 18.7 +54.8 123.0	29 54.9 +54.8 122.0
14°	32 23.5 +55.1 125.7	32 00.5 +55.0 124.6	31 37.2 +54.8 123.6	31 13.5 +54.8 122.5	30 49.7 +54.6 121.5
15°	33 18.6 +55.0 125.2	32 55.5 +54.8 124.1	32 32.0 +54.8 123.1	32 08.3 +54.6 122.0	31 44.3 +54.4 121.0
16°	34 13.6 +54.9 124.7	33 50.3 +54.8 123.6	33 26.8 +54.6 122.6	33 02.9 +54.5 121.5	32 38.7 +54.4 120.5
17°	35 08.5 +54.8 124.2	34 45.1 +54.6 123.1	34 21.4 +54.5 122.1	33 57.4 +54.3 121.0	33 33.1 +54.3 120.0
18°	36 03.3 +54.7 123.7	35 39.7 +54.5 122.6	35 15.9 +54.3 121.6	34 51.7 +54.3 120.5	34 27.4 +54.1 119.5
19°	36 58.0 +54.5 123.2	36 34.2 +54.4 122.1	36 10.2 +54.3 121.1	35 46.0 +54.1 120.0	35 21.5 +53.9 119.0
20°	37 52.5 +54.3 122.7	37 28.6 +54.2 121.6	37 04.5 +54.1 120.5	36 40.1 +53.9 119.5	36 15.4 +53.9 118.4
21°	38 46.8 +54.2 122.1	38 22.8 +54.1 121.1	37 58.6 +53.9 120.0	37 34.0 +53.8 118.9	37 09.3 +53.6 117.9
22°	39 41.0 +54.1 121.6	39 16.9 +53.9 120.5	38 52.5 +53.8 119.4	38 27.8 +53.7 118.4	38 02.9 +53.5 117.3
23°	40 35.1 +53.9 121.0	40 10.8 +53.7 119.9	39 46.3 +53.6 118.8	39 21.5 +53.4 117.8	38 56.4 +53.3 116.7
24°	41 29.0 +53.7 120.4	41 04.5 +53.6 119.3	40 39.9 +53.4 118.3	40 14.9 +53.3 117.2	39 49.7 +53.2 116.1
25°	42 22.7 +53.5 119.8	41 58.1 +53.3 118.7	41 33.3 +53.2 117.7	41 08.2 +53.1 116.6	40 42.9 +52.9 115.5
26°	43 16.2 +53.3 119.2	42 51.4 +53.2 118.1	42 26.5 +53.0 117.0	42 01.3 +52.8 116.0	41 35.8 +52.8 114.9
27°	44 09.5 +53.0 118.6	43 44.6 +52.9 117.5	43 19.5 +52.8 116.4	42 54.1 +52.7 115.3	42 28.6 +52.5 114.3
28°	45 02.5 +52.9 117.9	44 37.5 +52.7 116.8	44 12.3 +52.5 115.7	43 46.8 +52.4 114.7	43 21.1 +52.2 113.6
29°	45 55.4 +52.6 117.2	45 30.2 +52.5 116.1	45 04.8 +52.3 115.1	44 39.2 +52.1 114.0	44 13.3 +52.1 112.9

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°	17 33.8 +55.6 126.5	17 11.1 +55.4 125.6	16 48.0 +55.3 124.6	16 24.7 +55.2 123.6	16 01.1 +55.1 122.7
1°	18 29.4 +55.5 126.1	18 06.5 +55.4 125.2	17 43.3 +55.3 124.2	17 19.9 +55.1 123.2	16 56.2 +55.0 122.3
2°	19 24.9 +55.4 125.7	19 01.9 +55.3 124.8	18 38.6 +55.2 123.8	18 15.0 +55.1 122.8	17 51.2 +55.0 121.8
3°	20 20.3 +55.4 125.3	19 57.2 +55.3 124.3	19 33.8 +55.2 123.4	19 10.1 +55.1 122.4	18 46.2 +55.0 121.4
4°	21 15.7 +55.3 124.9	20 52.5 +55.2 123.9	20 29.0 +55.0 123.0	20 05.2 +55.0 122.0	19 41.2 +54.8 121.0
5°	22 11.0 +55.3 124.5	21 47.7 +55.1 123.5	21 24.0 +55.1 122.5	21 00.2 +54.9 121.5	20 36.0 +54.8 120.6
6°	23 06.3 +55.2 124.1	22 42.8 +55.1 123.1	22 19.1 +54.9 122.1	21 55.1 +54.8 121.1	21 30.8 +54.8 120.1
7°	24 01.5 +55.1 123.6	23 37.9 +55.0 122.7	23 14.0 +54.9 121.7	22 49.9 +54.8 120.7	22 25.6 +54.6 119.7
8°	24 56.6 +55.0 123.2	24 32.9 +54.9 122.2	24 08.9 +54.8 121.2	23 44.7 +54.7 120.2	23 20.2 +54.6 119.2
9°	25 51.6 +55.0 122.8	25 27.8 +54.8 121.8	25 03.7 +54.8 120.8	24 39.4 +54.6 119.8	24 14.8 +54.5 118.8
10°	26 46.6 +54.9 122.3	26 22.6 +54.8 121.3	25 58.5 +54.6 120.3	25 34.0 +54.5 119.3	25 09.3 +54.5 118.3
11°	27 41.5 +54.7 121.9	27 17.4 +54.7 120.9	26 53.1 +54.5 119.9	26 28.5 +54.5 118.9	26 03.8 +54.3 117.9
12°	28 36.2 +54.7 121.4	28 12.1 +54.5 120.4	27 47.6 +54.5 119.4	27 23.0 +54.3 118.4	26 58.1 +54.2 117.4
13°	29 30.9 +54.6 120.9	29 06.6 +54.5 119.9	28 42.1 +54.3 118.9	28 17.3 +54.3 117.9	27 52.3 +54.1 116.9
14°	30 25.5 +54.5 120.5	30 01.1 +54.4 119.4	29 36.4 +54.3 118.4	29 11.6 +54.1 117.4	28 46.4 +54.1 116.4
15°	31 20.0 +54.3 120.0	30 55.5 +54.2 118.9	30 30.7 +54.1 117.9	30 05.7 +54.0 116.9	29 40.5 +53.9 115.9
16°	32 14.3 +54.3 119.5	31 49.7 +54.1 118.4	31 24.8 +54.0 117.4	30 59.7 +53.9 116.4	30 34.4 +53.8 115.4
17°	33 08.6 +54.1 119.0	32 43.8 +54.0 117.9	32 18.8 +53.9 116.9	31 53.6 +53.8 115.9	31 28.2 +53.6 114.9
18°	34 02.7 +54.0 118.4	33 37.8 +53.9 117.4	33 12.7 +53.8 116.4	32 47.4 +53.6 115.4	32 21.8 +53.5 114.4
19°	34 56.7 +53.8 117.9	34 31.7 +53.7 116.9	34 06.5 +53.6 115.9	33 41.0 +53.5 114.8	33 15.3 +53.4 113.8
20°	35 50.5 +53.7 117.4	35 25.4 +53.6 116.3	35 00.1 +53.4 115.3	34 34.5 +53.3 114.3	34 08.7 +53.2 113.3
21°	36 44.2 +53.6 116.8	36 19.0 +53.4 115.8	35 53.5 +53.3 114.8	35 27.8 +53.2 113.7	35 01.9 +53.1 112.7
22°	37 37.8 +53.3 116.3	37 12.4 +53.3 115.2	36 46.8 +53.1 114.2	36 21.0 +53.0 113.2	35 55.0 +52.9 112.1
23°	38 31.1 +53.2 115.7	38 05.7 +53.0 114.6	37 39.9 +53.0 113.6	37 14.0 +52.9 112.6	36 47.9 +52.8 111.6
24°	39 24.3 +53.1 115.1	38 58.7 +52.9 114.0	38 32.9 +52.8 113.0	38 06.9 +52.6 112.0	37 40.7 +52.5 111.0
25°	40 17.4 +52.8 114.5	39 51.6 +52.7 113.4	39 25.7 +52.5 112.4	38 59.5 +52.5 111.4	38 33.2 +52.4 110.3
26°	41 10.2 +52.6 113.8	40 44.3 +52.5 112.8	40 18.2 +52.4 111.8	39 52.0 +52.2 110.7	39 25.6 +52.1 109.7
27°	42 02.8 +52.4 113.2	41 36.8 +52.2 112.2	41 10.6 +52.1 111.1	40 44.2 +52.1 110.1	40 17.7 +51.9 109.1
28°	42 55.2 +52.1 112.5	42 29.0 +52.1 111.5	42 02.7 +51.9 110.5	41 36.3 +51.8 109.4	41 09.6 +51.7 108.4
29°	43 47.3 +51.9 111.9	43 21.1 +51.7 110.8	42 54.6 +51.7 109.8	42 28.1 +51.5 108.8	42 01.3 +51.4 107.7

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°	15 37.3 +55.0 121.7	15 13.2 +54.9 120.8	14 48.9 +54.8 119.8	14 24.3 +54.7 118.9	13 59.6 +54.5 117.9
1°	16 32.3 +54.9 121.3	16 08.1 +54.8 120.4	15 43.7 +54.7 119.4	15 19.0 +54.6 118.5	14 54.1 +54.6 117.5
2°	17 27.2 +54.9 120.9	17 02.9 +54.8 119.9	16 38.4 +54.7 119.0	16 13.6 +54.6 118.0	15 48.7 +54.4 117.1
3°	18 22.1 +54.8 120.5	17 57.7 +54.7 119.5	17 33.1 +54.6 118.5	17 08.2 +54.5 117.6	16 43.1 +54.4 116.6
4°	19 16.9 +54.8 120.0	18 52.4 +54.7 119.1	18 27.7 +54.5 118.1	18 02.7 +54.5 117.2	17 37.5 +54.4 116.2
5°	20 11.7 +54.7 119.6	19 47.1 +54.6 118.6	19 22.2 +54.5 117.7	18 57.2 +54.4 116.7	18 31.9 +54.3 115.8
6°	21 06.4 +54.6 119.2	20 41.7 +54.5 118.2	20 16.7 +54.4 117.2	19 51.6 +54.3 116.3	19 26.2 +54.2 115.3
7°	22 01.0 +54.6 118.7	21 36.2 +54.4 117.7	21 11.1 +54.4 116.8	20 45.9 +54.2 115.8	20 20.4 +54.2 114.9
8°	22 55.6 +54.4 118.3	22 30.6 +54.4 117.3	22 05.5 +54.3 116.3	21 40.1 +54.2 115.4	21 14.6 +54.1 114.4
9°	23 50.0 +54.4 117.8	23 25.0 +54.3 116.8	22 59.8 +54.2 115.9	22 34.3 +54.1 114.9	22 08.7 +54.0 113.9
10°	24 44.4 +54.3 117.3	24 19.3 +54.2 116.4	23 54.0 +54.1 115.4	23 28.4 +54.0 114.4	23 02.7 +53.9 113.5
11°	25 38.7 +54.3 116.9	25 13.5 +54.1 115.9	24 48.1 +54.0 114.9	24 22.4 +53.9 113.9	23 56.6 +53.8 113.0
12°	26 33.0 +54.1 116.4	26 07.6 +54.0 115.4	25 42.1 +53.9 114.4	25 16.3 +53.9 113.5	24 50.4 +53.7 112.5
13°	27 27.1 +54.0 115.9	27 01.6 +54.0 114.9	26 36.0 +53.8 113.9	26 10.2 +53.7 113.0	25 44.1 +53.7 112.0
14°	28 21.1 +53.9 115.4	27 55.6 +53.8 114.4	27 29.8 +53.7 113.5	27 03.9 +53.6 112.5	26 37.8 +53.5 111.5
15°	29 15.0 +53.8 114.9	28 49.4 +53.7 113.9	28 23.5 +53.6 112.9	27 57.5 +53.5 112.0	27 31.3 +53.4 111.0
16°	30 08.8 +53.7 114.4	29 43.1 +53.5 113.4	29 17.1 +53.5 112.4	28 51.0 +53.4 111.5	28 24.7 +53.3 110.5
17°	31 02.5 +53.5 113.9	30 36.6 +53.5 112.9	30 10.6 +53.4 111.9	29 44.4 +53.2 110.9	29 18.0 +53.2 110.0
18°	31 56.0 +53.5 113.4	31 30.1 +53.3 112.4	31 04.0 +53.2 111.4	30 37.6 +53.2 110.4	30 11.2 +53.0 109.4
19°	32 49.5 +53.2 112.8	32 23.4 +53.2 111.8	31 57.2 +53.1 110.8	31 30.8 +52.9 109.9	31 04.2 +52.9 108.9
20°	33 42.7 +53.2 112.3	33 16.6 +53.0 111.3	32 50.3 +52.9 110.3	32 23.7 +52.9 109.3	31 57.1 +52.7 108.3
21°	34 35.9 +52.9 111.7	34 09.6 +52.9 110.7	33 43.2 +52.8 109.7	33 16.6 +52.7 108.7	32 49.8 +52.6 107.8
22°	35 28.8 +52.8 111.1	35 02.5 +52.7 110.1	34 36.0 +52.6 109.1	34 09.3 +52.5 108.2	33 42.4 +52.5 107.2
23°	36 21.6 +52.7 110.6	35 55.2 +52.5 109.6	35 28.6 +52.4 108.6	35 01.8 +52.3 107.6	34 34.9 +52.2 106.6
24°	37 14.3 +52.4 110.0	36 47.7 +52.4 109.0	36 21.0 +52.2 108.0	35 54.1 +52.2 107.0	35 27.1 +52.1 106.0
25°	38 06.7 +52.3 109.3	37 40.1 +52.1 108.3	37 13.2 +52.1 107.3	36 46.3 +51.9 106.4	36 19.2 +51.9 105.4
26°	38 59.0 +52.0 108.7	38 32.2 +51.9 107.7	38 05.3 +51.8 106.7	37 38.2 +51.8 105.7	37 11.1 +51.6 104.8
27°	39 51.0 +51.8 108.1	39 24.1 +51.8 107.1	38 57.1 +51.7 106.1	38 30.0 +51.6 105.1	38 02.7 +51.5 104.1
28°	40 42.8 +51.6 107.4	40 15.9 +51.5 106.4	39 48.8 +51.4 105.4	39 21.6 +51.3 104.4	38 54.2 +51.3 103.5
29°	41 34.4 +51.3 106.7	41 07.4 +51.2 105.7	40 40.2 +51.1 104.7	40 12.9 +51.0 103.8	39 45.5 +51.0 102.8

Declination SAME name as Latitude

Latitude 62°

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°	13 34.6 +54.4 117.0	13 09.4 +54.3 116.1	12 44.0 +54.3 115.1	12 18.4 +54.2 114.2	11 52.6 +54.1 113.3
1°	14 29.0 +54.5 116.6	14 03.7 +54.4 115.6	13 38.3 +54.2 114.7	13 12.6 +54.1 113.8	12 46.7 +54.1 112.9
2°	15 23.5 +54.3 116.1	14 58.1 +54.3 115.2	14 32.5 +54.2 114.3	14 06.7 +54.1 113.3	13 40.8 +54.0 112.4
3°	16 17.8 +54.4 115.7	15 52.4 +54.2 114.8	15 26.7 +54.1 113.8	15 00.8 +54.1 112.9	14 34.8 +54.0 112.0
4°	17 12.2 +54.2 115.3	16 46.6 +54.2 114.3	16 20.8 +54.1 113.4	15 54.9 +54.0 112.4	15 28.8 +53.9 111.5
5°	18 06.4 +54.2 114.8	17 40.8 +54.1 113.9	17 14.9 +54.0 112.9	16 48.9 +53.9 112.0	16 22.7 +53.8 111.1
6°	19 00.6 +54.2 114.4	18 34.9 +54.0 113.4	18 08.9 +54.0 112.5	17 42.8 +53.9 111.5	17 16.5 +53.8 110.6
7°	19 54.8 +54.0 113.9	19 28.9 +54.0 113.0	19 02.9 +53.9 112.0	18 36.7 +53.8 111.1	18 10.3 +53.8 110.1
8°	20 48.8 +54.0 113.4	20 22.9 +53.9 112.5	19 56.8 +53.8 111.5	19 30.5 +53.7 110.6	19 04.1 +53.6 109.7
9°	21 42.8 +53.9 113.0	21 16.8 +53.8 112.0	20 50.6 +53.7 111.1	20 24.2 +53.7 110.1	19 57.7 +53.6 109.2
10°	22 36.7 +53.9 112.5	22 10.6 +53.8 111.5	21 44.3 +53.7 110.6	21 17.9 +53.6 109.6	20 51.3 +53.5 108.7
11°	23 30.6 +53.7 112.0	23 04.4 +53.6 111.1	22 38.0 +53.5 110.1	22 11.5 +53.4 109.2	21 44.8 +53.4 108.2
12°	24 24.3 +53.6 111.5	23 58.0 +53.6 110.6	23 31.5 +53.5 109.6	23 04.9 +53.4 108.7	22 38.2 +53.3 107.7
13°	25 17.9 +53.6 111.0	24 51.6 +53.4 110.1	24 25.0 +53.4 109.1	23 58.3 +53.3 108.2	23 31.5 +53.2 107.2
14°	26 11.5 +53.4 110.5	25 45.0 +53.4 109.6	25 18.4 +53.3 108.6	24 51.6 +53.2 107.7	24 24.7 +53.1 106.7
15°	27 04.9 +53.3 110.0	26 38.4 +53.2 109.1	26 11.7 +53.1 108.1	25 44.8 +53.1 107.2	25 17.8 +53.0 106.2
16°	27 58.2 +53.2 109.5	27 31.6 +53.1 108.5	27 04.8 +53.1 107.6	26 37.9 +53.0 106.6	26 10.8 +52.9 105.7
17°	28 51.4 +53.1 109.0	28 24.7 +53.0 108.0	27 57.9 +52.9 107.1	27 30.9 +52.8 106.1	27 03.7 +52.8 105.2
18°	29 44.5 +53.0 108.5	29 17.7 +52.9 107.5	28 50.8 +52.8 106.5	28 23.7 +52.7 105.6	27 56.5 +52.7 104.6
19°	30 37.5 +52.8 107.9	30 10.6 +52.7 106.9	29 43.6 +52.6 106.0	29 16.4 +52.6 105.0	28 49.2 +52.5 104.1
20°	31 30.3 +52.6 107.4	31 03.3 +52.6 106.4	30 36.2 +52.5 105.4	30 09.0 +52.4 104.5	29 41.7 +52.4 103.5
21°	32 22.9 +52.5 106.8	31 55.9 +52.4 105.8	31 28.7 +52.4 104.9	31 01.4 +52.3 103.9	30 34.1 +52.2 103.0
22°	33 15.4 +52.4 106.2	32 48.3 +52.3 105.2	32 21.1 +52.2 104.3	31 53.7 +52.2 103.3	31 26.3 +52.0 102.4
23°	34 07.8 +52.2 105.6	33 40.6 +52.1 104.7	33 13.3 +52.0 103.7	32 45.9 +51.9 102.7	32 18.3 +52.0 101.8
24°	35 00.0 +52.0 105.0	34 32.7 +51.9 104.1	34 05.3 +51.9 103.1	33 37.8 +51.8 102.1	33 10.3 +51.7 101.2
25°	35 52.0 +51.8 104.4	35 24.6 +51.8 103.4	34 57.2 +51.6 102.5	34 29.6 +51.6 101.5	34 02.0 +51.5 100.6
26°	36 43.8 +51.6 103.8	36 16.4 +51.5 102.8	35 48.8 +51.5 101.9	35 21.2 +51.4 100.9	34 53.5 +51.4 100.0
27°	37 35.4 +51.4 103.1	37 07.9 +51.3 102.2	36 40.3 +51.3 101.2	36 12.6 +51.2 100.3	35 44.9 +51.1 99.3
28°	38 26.8 +51.1 102.5	37 59.2 +51.1 101.5	37 31.6 +51.0 100.6	37 03.8 +51.0 99.6	36 36.0 +51.0 98.7
29°	39 17.9 +51.0 101.8	38 50.3 +50.9 100.9	38 22.6 +50.8 99.9	37 54.8 +50.8 99.0	37 27.0 +50.7 98.0

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°	11 26.6 +54.1 112.4	11 00.5 +53.9 111.5	10 34.2 +53.9 110.5	10 07.7 +53.8 109.6	9 41.1 +53.8 108.7
1°	12 20.7 +53.9 111.9	11 54.4 +54.0 111.0	11 28.1 +53.8 110.1	11 01.5 +53.8 109.2	10 34.9 +53.7 108.3
2°	13 14.6 +54.0 111.5	12 48.4 +53.8 110.6	12 21.9 +53.8 109.6	11 55.3 +53.7 108.7	11 28.6 +53.6 107.8
3°	14 08.6 +53.9 111.0	13 42.2 +53.8 110.1	13 15.7 +53.7 109.2	12 49.0 +53.7 108.3	12 22.2 +53.6 107.4
4°	15 02.5 +53.8 110.6	14 36.0 +53.8 109.7	14 09.4 +53.7 108.7	13 42.7 +53.6 107.8	13 15.8 +53.5 106.9
5°	15 56.3 +53.8 110.1	15 29.8 +53.7 109.2	15 03.1 +53.6 108.3	14 36.3 +53.6 107.4	14 09.3 +53.5 106.4
6°	16 50.1 +53.7 109.7	16 23.5 +53.6 108.7	15 56.7 +53.6 107.8	15 29.9 +53.5 106.9	15 02.8 +53.5 106.0
7°	17 43.8 +53.6 109.2	17 17.1 +53.6 108.3	16 50.3 +53.5 107.3	16 23.4 +53.4 106.4	15 56.3 +53.3 105.5
8°	18 37.4 +53.6 108.7	18 10.7 +53.5 107.8	17 43.8 +53.4 106.9	17 16.8 +53.4 105.9	16 49.6 +53.3 105.0
9°	19 31.0 +53.5 108.2	19 04.2 +53.4 107.3	18 37.2 +53.4 106.4	18 10.2 +53.3 105.5	17 42.9 +53.3 104.5
10°	20 24.5 +53.4 107.8	19 57.6 +53.4 106.8	19 30.6 +53.3 105.9	19 03.5 +53.2 105.0	18 36.2 +53.1 104.1
11°	21 17.9 +53.4 107.3	20 51.0 +53.2 106.3	20 23.9 +53.2 105.4	19 56.7 +53.1 104.5	19 29.3 +53.1 103.6
12°	22 11.3 +53.2 106.8	21 44.2 +53.2 105.8	21 17.1 +53.1 104.9	20 49.8 +53.1 104.0	20 22.4 +53.0 103.1
13°	23 04.5 +53.2 106.3	22 37.4 +53.1 105.3	22 10.2 +53.0 104.4	21 42.9 +52.9 103.5	21 15.4 +52.9 102.6
14°	23 57.7 +53.0 105.8	23 30.5 +53.0 104.8	23 03.2 +52.9 103.9	22 35.8 +52.9 103.0	22 08.3 +52.8 102.1
15°	24 50.7 +53.0 105.3	24 23.5 +52.9 104.3	23 56.1 +52.9 103.4	23 28.7 +52.7 102.5	23 01.1 +52.7 101.5
16°	25 43.7 +52.8 104.7	25 16.4 +52.7 103.8	24 49.0 +52.7 102.9	24 21.4 +52.7 101.9	23 53.8 +52.6 101.0
17°	26 36.5 +52.7 104.2	26 09.1 +52.7 103.3	25 41.7 +52.6 102.3	25 14.1 +52.5 101.4	24 46.4 +52.5 100.5
18°	27 29.2 +52.6 103.7	27 01.8 +52.5 102.7	26 34.3 +52.4 101.8	26 06.6 +52.5 100.9	25 38.9 +52.4 100.0
19°	28 21.8 +52.4 103.1	27 54.3 +52.4 102.2	27 26.7 +52.4 101.3	26 59.1 +52.2 100.3	26 31.3 +52.2 99.4
20°	29 14.2 +52.4 102.6	28 46.7 +52.3 101.6	28 19.1 +52.2 100.7	27 51.3 +52.2 99.8	27 23.5 +52.2 98.9
21°	30 06.6 +52.1 102.0	29 39.0 +52.1 101.1	29 11.3 +52.0 100.1	28 43.5 +52.0 99.2	28 15.7 +51.9 98.3
22°	30 58.7 +52.0 101.4	30 31.1 +51.9 100.5	30 03.3 +51.9 99.6	29 35.5 +51.9 98.7	29 07.6 +51.9 97.7
23°	31 50.7 +51.9 100.9	31 23.0 +51.8 99.9	30 55.2 +51.8 99.0	30 27.4 +51.7 98.1	29 59.5 +51.6 97.2
24°	32 42.6 +51.7 100.3	32 14.8 +51.6 99.3	31 47.0 +51.6 98.4	31 19.1 +51.5 97.5	30 51.1 +51.5 96.6
25°	33 34.3 +51.4 99.7	33 06.4 +51.5 98.7	32 38.6 +51.4 97.8	32 10.6 +51.4 96.9	31 42.6 +51.4 96.0
26°	34 25.7 +51.3 99.0	33 57.9 +51.3 98.1	33 30.0 +51.2 97.2	33 02.0 +51.2 96.3	32 34.0 +51.1 95.4
27°	35 17.0 +51.2 98.4	34 49.2 +51.0 97.5	34 21.2 +51.0 96.6	33 53.2 +51.0 95.6	33 25.1 +51.0 94.7
28°	36 08.2 +50.8 97.8	35 40.2 +50.9 96.8	35 12.2 +50.8 95.9	34 44.2 +50.8 95.0	34 16.1 +50.8 94.1
29°	36 59.0 +50.7 97.1	36 31.1 +50.6 96.2	36 03.0 +50.6 95.3	35 35.0 +50.5 94.3	35 06.9 +50.5 93.4

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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°	9 14.4 +53.7 107.8	8 47.5 +53.6 106.9	8 20.5 +53.5 106.0	7 53.4 +53.4 105.1	7 26.1 +53.4 104.2
1°	10 08.1 +53.6 107.4	9 41.1 +53.6 106.5	9 14.0 +53.5 105.6	8 46.8 +53.5 104.6	8 19.5 +53.4 103.7
2°	11 01.7 +53.5 106.9	10 34.7 +53.5 106.0	10 07.5 +53.5 105.1	9 40.3 +53.4 104.2	9 12.9 +53.3 103.3
3°	11 55.2 +53.6 106.4	11 28.2 +53.4 105.5	11 01.0 +53.4 104.6	10 33.7 +53.3 103.7	10 06.2 +53.3 102.8
4°	12 48.8 +53.5 106.0	12 21.6 +53.5 105.1	11 54.4 +53.3 104.2	11 27.0 +53.3 103.3	10 59.5 +53.3 102.4
5°	13 42.3 +53.4 105.5	13 15.1 +53.3 104.6	12 47.7 +53.4 103.7	12 20.3 +53.3 102.8	11 52.8 +53.2 101.9
6°	14 35.7 +53.4 105.0	14 08.4 +53.3 104.1	13 41.1 +53.2 103.2	13 13.6 +53.2 102.3	12 46.0 +53.2 101.4
7°	15 29.1 +53.3 104.6	15 01.7 +53.3 103.7	14 34.3 +53.2 102.7	14 06.8 +53.2 101.8	13 39.2 +53.1 100.9
8°	16 22.4 +53.2 104.1	15 55.0 +53.2 103.2	15 27.5 +53.2 102.3	15 00.0 +53.1 101.4	14 32.3 +53.0 100.5
9°	17 15.6 +53.2 103.6	16 48.2 +53.1 102.7	16 20.7 +53.0 101.8	15 53.1 +53.0 100.9	15 25.3 +53.0 100.0
10°	18 08.8 +53.1 103.1	17 41.3 +53.1 102.2	17 13.7 +53.0 101.3	16 46.1 +52.9 100.4	16 18.3 +53.0 99.5
11°	19 01.9 +53.0 102.6	18 34.4 +52.9 101.7	18 06.7 +53.0 100.8	17 39.0 +52.9 99.9	17 11.3 +52.8 99.0
12°	19 54.9 +53.0 102.1	19 27.3 +52.9 101.2	18 59.7 +52.8 100.3	18 31.9 +52.8 99.4	18 04.1 +52.8 98.5
13°	20 47.9 +52.8 101.6	20 20.2 +52.8 100.7	19 52.5 +52.8 99.8	19 24.7 +52.8 98.9	18 56.9 +52.7 98.0
14°	21 40.7 +52.8 101.1	21 13.0 +52.8 100.2	20 45.3 +52.7 99.3	20 17.5 +52.6 98.4	19 49.6 +52.6 97.5
15°	22 33.5 +52.7 100.6	22 05.8 +52.6 99.7	21 38.0 +52.5 98.8	21 10.1 +52.5 97.9	20 42.2 +52.5 97.0
16°	23 26.2 +52.5 100.1	22 58.4 +52.5 99.2	22 30.5 +52.5 98.3	22 02.6 +52.5 97.4	21 34.7 +52.4 96.5
17°	24 18.7 +52.5 99.6	23 50.9 +52.4 98.7	23 23.0 +52.4 97.7	22 55.1 +52.3 96.8	22 27.1 +52.3 95.9
18°	25 11.2 +52.3 99.0	24 43.3 +52.3 98.1	24 15.4 +52.2 97.2	23 47.4 +52.2 96.3	23 19.4 +52.2 95.4
19°	26 03.5 +52.2 98.5	25 35.6 +52.2 97.6	25 07.6 +52.2 96.7	24 39.6 +52.1 95.8	24 11.6 +52.1 94.9
20°	26 55.7 +52.1 97.9	26 27.8 +52.0 97.0	25 59.8 +52.0 96.1	25 31.7 +52.0 95.2	25 03.7 +51.9 94.3
21°	27 47.8 +51.9 97.4	27 19.8 +51.9 96.5	26 51.8 +51.9 95.6	26 23.7 +51.9 94.7	25 55.6 +51.9 93.8
22°	28 39.7 +51.8 96.8	28 11.7 +51.8 95.9	27 43.7 +51.7 95.0	27 15.6 +51.7 94.1	26 47.5 +51.7 93.2
23°	29 31.5 +51.6 96.2	29 03.5 +51.6 95.3	28 35.4 +51.6 94.4	28 07.3 +51.6 93.5	27 39.2 +51.5 92.6
24°	30 23.1 +51.5 95.6	29 55.1 +51.4 94.7	29 27.0 +51.4 93.8	28 58.9 +51.4 92.9	28 30.7 +51.4 92.0
25°	31 14.6 +51.3 95.1	30 46.5 +51.3 94.1	30 18.4 +51.3 93.2	29 50.3 +51.2 92.3	29 22.1 +51.3 91.5
26°	32 05.9 +51.1 94.4	31 37.8 +51.1 93.5	31 09.7 +51.1 92.6	30 41.5 +51.1 91.7	30 13.4 +51.1 90.9
27°	32 57.0 +51.0 93.8	32 28.9 +51.0 92.9	32 00.8 +50.9 92.0	31 32.6 +50.9 91.1	31 04.5 +50.9 90.2
28°	33 48.0 +50.7 93.2	33 19.9 +50.7 92.3	32 51.7 +50.7 91.4	32 23.5 +50.8 90.5	31 55.4 +50.7 89.6
29°	34 38.7 +50.6 92.5	34 10.6 +50.5 91.6	33 42.4 +50.5 90.8	33 14.3 +50.5 89.9	32 46.1 +50.5 89.0

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°	6 58.7 +53.4 103.3	6 31.3 +53.3 102.4	6 03.7 +53.3 101.5	5 36.1 +53.2 100.6	5 08.4 +53.1 99.7
1°	7 52.1 +53.3 102.8	7 24.6 +53.3 102.0	6 57.0 +53.2 101.1	6 29.3 +53.2 100.2	6 01.5 +53.2 99.3
2°	8 45.4 +53.3 102.4	8 17.9 +53.2 101.5	7 50.2 +53.2 100.6	7 22.5 +53.2 99.7	6 54.7 +53.1 98.8
3°	9 38.7 +53.3 101.9	9 11.1 +53.2 101.0	8 43.4 +53.2 100.1	8 15.7 +53.1 99.2	7 47.8 +53.1 98.3
4°	10 32.0 +53.2 101.5	10 04.3 +53.2 100.6	9 36.6 +53.1 99.7	9 08.8 +53.1 98.8	8 40.9 +53.1 97.9
5°	11 25.2 +53.2 101.0	10 57.5 +53.1 100.1	10 29.7 +53.1 99.2	10 01.9 +53.1 98.3	9 34.0 +53.0 97.4
6°	12 18.4 +53.1 100.5	11 50.6 +53.1 99.6	11 22.8 +53.1 98.7	10 55.0 +53.0 97.8	10 27.0 +53.0 96.9
7°	13 11.5 +53.1 100.0	12 43.7 +53.0 99.1	12 15.9 +53.0 98.2	11 48.0 +52.9 97.3	11 20.0 +52.9 96.4
8°	14 04.6 +53.0 99.6	13 36.7 +53.0 98.7	13 08.9 +52.9 97.8	12 40.9 +52.9 96.9	12 12.9 +52.9 96.0
9°	14 57.6 +52.9 99.1	14 29.7 +52.9 98.2	14 01.8 +52.9 97.3	13 33.8 +52.9 96.4	13 05.8 +52.8 95.5
10°	15 50.5 +52.9 98.6	15 22.6 +52.9 97.7	14 54.7 +52.8 96.8	14 26.7 +52.8 95.9	13 58.6 +52.8 95.0
11°	16 43.4 +52.8 98.1	16 15.5 +52.8 97.2	15 47.5 +52.8 96.3	15 19.5 +52.7 95.4	14 51.4 +52.7 94.5
12°	17 36.2 +52.7 97.6	17 08.3 +52.7 96.7	16 40.3 +52.6 95.8	16 12.2 +52.7 94.9	15 44.1 +52.7 94.0
13°	18 28.9 +52.7 97.1	18 01.0 +52.6 96.2	17 32.9 +52.6 95.3	17 04.9 +52.6 94.4	16 36.8 +52.5 93.5
14°	19 21.6 +52.6 96.6	18 53.6 +52.5 95.7	18 25.5 +52.6 94.8	17 57.5 +52.5 93.9	17 29.3 +52.5 93.0
15°	20 14.2 +52.5 96.1	19 46.1 +52.5 95.2	19 18.1 +52.4 94.3	18 50.0 +52.4 93.4	18 21.8 +52.4 92.5
16°	21 06.7 +52.3 95.6	20 38.6 +52.4 94.7	20 10.5 +52.4 93.8	19 42.4 +52.3 92.9	19 14.2 +52.4 92.0
17°	21 59.0 +52.3 95.0	21 31.0 +52.2 94.1	21 02.9 +52.2 93.2	20 34.7 +52.3 92.3	20 06.6 +52.2 91.5
18°	22 51.3 +52.2 94.5	22 23.2 +52.2 93.6	21 55.1 +52.1 92.7	21 27.0 +52.1 91.8	20 58.8 +52.1 90.9
19°	23 43.5 +52.1 94.0	23 15.4 +52.0 93.1	22 47.2 +52.1 92.2	22 19.1 +52.0 91.3	21 50.9 +52.1 90.4
20°	24 35.6 +51.9 93.4	24 07.4 +52.0 92.5	23 39.3 +51.9 91.6	23 11.1 +51.9 90.7	22 43.0 +51.9 89.9
21°	25 27.5 +51.8 92.9	24 59.4 +51.8 92.0	24 31.2 +51.8 91.1	24 03.0 +51.8 90.2	23 34.9 +51.8 89.3
22°	26 19.3 +51.7 92.3	25 51.2 +51.7 91.4	25 23.0 +51.7 90.5	24 54.8 +51.7 89.6	24 26.7 +51.7 88.8
23°	27 11.0 +51.6 91.7	26 42.9 +51.5 90.8	26 14.7 +51.5 90.0	25 46.5 +51.6 89.1	25 18.4 +51.5 88.2
24°	28 02.6 +51.4 91.2	27 34.4 +51.4 90.3	27 06.2 +51.4 89.4	26 38.1 +51.4 88.5	26 09.9 +51.4 87.6
25°	28 54.0 +51.2 90.6	28 25.8 +51.2 89.7	27 57.6 +51.3 88.8	27 29.5 +51.2 87.9	27 01.3 +51.3 87.1
26°	29 45.2 +51.1 90.0	29 17.0 +51.1 89.1	28 48.9 +51.1 88.2	28 20.7 +51.1 87.3	27 52.6 +51.1 86.5
27°	30 36.3 +50.9 89.4	30 08.1 +50.9 88.5	29 40.0 +50.9 87.6	29 11.8 +51.0 86.7	28 43.7 +51.0 85.9
28°	31 27.2 +50.7 88.7	30 59.0 +50.8 87.9	30 30.9 +50.8 87.0	30 02.8 +50.8 86.1	29 34.7 +50.8 85.3
29°	32 17.9 +50.6 88.1	31 49.8 +50.5 87.2	31 21.7 +50.5 86.4	30 53.6 +50.6 85.5	30 25.5 +50.6 84.7

Declination SAME name as Latitude

Latitude 62°

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°	4 40.6 +53.1 98.8	4 12.7 +53.1 98.0	3 44.8 +53.1 97.1	3 16.8 +53.1 96.2	2 48.8 +53.0 95.3
1°	5 33.7 +53.1 98.4	5 05.8 +53.1 97.5	4 37.9 +53.0 96.6	4 09.9 +53.0 95.7	3 41.8 +53.0 94.8
2°	6 26.8 +53.1 97.9	5 58.9 +53.1 97.0	5 30.9 +53.1 96.1	5 02.9 +53.0 95.3	4 34.8 +53.0 94.4
3°	7 19.9 +53.1 97.4	6 52.0 +53.0 96.6	6 24.0 +53.0 95.7	5 55.9 +53.0 94.8	5 27.8 +53.0 93.9
4°	8 13.0 +53.0 97.0	7 45.0 +53.0 96.1	7 17.0 +53.0 95.2	6 48.9 +53.0 94.3	6 20.8 +53.0 93.4
5°	9 06.0 +53.0 96.5	8 38.0 +53.0 95.6	8 10.0 +52.9 94.7	7 41.9 +52.9 93.8	7 13.8 +52.9 92.9
6°	9 59.0 +53.0 96.0	9 31.0 +52.9 95.1	9 02.9 +52.9 94.2	8 34.8 +52.9 93.4	8 06.7 +52.9 92.5
7°	10 52.0 +52.9 95.5	10 23.9 +52.9 94.7	9 55.8 +52.9 93.8	9 27.7 +52.9 92.9	8 59.6 +52.8 92.0
8°	11 44.9 +52.9 95.1	11 16.8 +52.9 94.2	10 48.7 +52.8 93.3	10 20.6 +52.8 92.4	9 52.4 +52.8 91.5
9°	12 37.8 +52.8 94.6	12 09.7 +52.8 93.7	11 41.5 +52.8 92.8	11 13.4 +52.8 91.9	10 45.2 +52.8 91.0
10°	13 30.6 +52.7 94.1	13 02.5 +52.7 93.2	12 34.3 +52.8 92.3	12 06.2 +52.7 91.4	11 38.0 +52.7 90.5
11°	14 23.3 +52.7 93.6	13 55.2 +52.7 92.7	13 27.1 +52.6 91.8	12 58.9 +52.7 90.9	12 30.7 +52.7 90.1
12°	15 16.0 +52.6 93.1	14 47.9 +52.6 92.2	14 19.7 +52.6 91.3	13 51.6 +52.6 90.5	13 23.4 +52.6 89.6
13°	16 08.6 +52.6 92.6	15 40.5 +52.5 91.7	15 12.3 +52.6 90.8	14 44.2 +52.5 90.0	14 16.0 +52.5 89.1
14°	17 01.2 +52.5 92.1	16 33.0 +52.5 91.2	16 04.9 +52.5 90.3	15 36.7 +52.5 89.5	15 08.5 +52.5 88.6
15°	17 53.7 +52.4 91.6	17 25.5 +52.4 90.7	16 57.4 +52.4 89.8	16 29.2 +52.4 89.0	16 01.0 +52.4 88.1
16°	18 46.1 +52.3 91.1	18 17.9 +52.3 90.2	17 49.8 +52.3 89.3	17 21.6 +52.3 88.4	16 53.4 +52.4 87.6
17°	19 38.4 +52.2 90.6	19 10.2 +52.3 89.7	18 42.1 +52.2 88.8	18 13.9 +52.3 87.9	17 45.8 +52.2 87.1
18°	20 30.6 +52.2 90.0	20 02.5 +52.1 89.2	19 34.3 +52.1 88.3	19 06.2 +52.1 87.4	18 38.0 +52.2 86.5
19°	21 22.8 +52.0 89.5	20 54.6 +52.0 88.6	20 26.4 +52.1 87.8	19 58.3 +52.1 86.9	19 30.2 +52.1 86.0
20°	22 14.8 +51.9 89.0	21 46.6 +52.0 88.1	21 18.5 +51.9 87.2	20 50.4 +51.9 86.4	20 22.3 +51.9 85.5
21°	23 06.7 +51.8 88.4	22 38.6 +51.8 87.6	22 10.4 +51.9 86.7	21 42.3 +51.9 85.8	21 14.2 +51.9 84.9
22°	23 58.5 +51.7 87.9	23 30.4 +51.7 87.0	23 02.3 +51.7 86.1	22 34.2 +51.7 85.3	22 06.1 +51.8 84.4
23°	24 50.2 +51.6 87.3	24 22.1 +51.6 86.5	23 54.0 +51.6 85.6	23 25.9 +51.6 84.7	22 57.9 +51.6 83.9
24°	25 41.8 +51.4 86.8	25 13.7 +51.4 85.9	24 45.6 +51.5 85.0	24 17.5 +51.6 84.2	23 49.5 +51.6 83.3
25°	26 33.2 +51.3 86.2	26 05.1 +51.3 85.3	25 37.1 +51.3 84.5	25 09.1 +51.3 83.6	24 41.1 +51.4 82.7
26°	27 24.5 +51.2 85.6	26 56.4 +51.2 84.7	26 28.4 +51.2 83.9	26 00.4 +51.3 83.0	25 32.5 +51.3 82.2
27°	28 15.7 +50.9 85.0	27 47.6 +51.0 84.2	27 19.6 +51.1 83.3	26 51.7 +51.1 82.4	26 23.8 +51.1 81.6
28°	29 06.6 +50.9 84.4	28 38.6 +50.9 83.6	28 10.7 +50.9 82.7	27 42.8 +50.9 81.9	27 14.9 +51.0 81.0
29°	29 57.5 +50.6 83.8	29 29.5 +50.7 83.0	29 01.6 +50.7 82.1	28 33.7 +50.8 81.3	28 05.9 +50.8 80.4

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°	2 20.7 +53.0 94.4	1 52.6 +53.0 93.5	1 24.5 +53.0 92.6	0 56.3 +53.0 91.8	0 28.2 +52.9 90.9
1°	3 13.7 +53.0 93.9	2 45.6 +53.0 93.1	2 17.5 +52.9 92.2	1 49.3 +53.0 91.3	1 21.1 +53.0 90.4
2°	4 06.7 +53.0 93.5	3 38.6 +53.0 92.6	3 10.4 +53.0 91.7	2 42.3 +52.9 90.8	2 14.1 +53.0 89.9
3°	4 59.7 +53.0 93.0	4 31.6 +52.9 92.1	4 03.4 +53.0 91.2	3 35.2 +53.0 90.4	3 07.1 +52.9 89.5
4°	5 52.7 +52.9 92.5	5 24.5 +53.0 91.7	4 56.4 +52.9 90.8	4 28.2 +52.9 89.9	4 00.0 +53.0 89.0
5°	6 45.6 +52.9 92.1	6 17.5 +52.9 91.2	5 49.3 +52.9 90.3	5 21.1 +52.9 89.4	4 53.0 +52.9 88.5
6°	7 38.5 +52.9 91.6	7 10.4 +52.8 90.7	6 42.2 +52.9 89.8	6 14.0 +52.9 88.9	5 45.9 +52.9 88.1
7°	8 31.4 +52.9 91.1	8 03.2 +52.9 90.2	7 35.1 +52.8 89.3	7 06.9 +52.9 88.5	6 38.8 +52.8 87.6
8°	9 24.3 +52.8 90.6	8 56.1 +52.8 89.7	8 27.9 +52.8 88.9	7 59.8 +52.8 88.0	7 31.6 +52.9 87.1
9°	10 17.1 +52.7 90.1	9 48.9 +52.8 89.3	9 20.7 +52.8 88.4	8 52.6 +52.8 87.5	8 24.5 +52.8 86.6
10°	11 09.8 +52.8 89.7	10 41.7 +52.7 88.8	10 13.5 +52.7 87.9	9 45.4 +52.7 87.0	9 17.3 +52.7 86.1
11°	12 02.6 +52.6 89.2	11 34.4 +52.7 88.3	11 06.2 +52.7 87.4	10 38.1 +52.7 86.5	10 10.0 +52.7 85.7
12°	12 55.2 +52.6 88.7	12 27.1 +52.6 87.8	11 58.9 +52.7 86.9	11 30.8 +52.7 86.1	11 02.7 +52.7 85.2
13°	13 47.8 +52.6 88.2	13 19.7 +52.6 87.3	12 51.6 +52.5 86.4	12 23.5 +52.6 85.6	11 55.4 +52.6 84.7
14°	14 40.4 +52.5 87.7	14 12.3 +52.5 86.8	13 44.1 +52.6 85.9	13 16.1 +52.5 85.1	12 48.0 +52.6 84.2
15°	15 32.9 +52.4 87.2	15 04.8 +52.4 86.3	14 36.7 +52.4 85.4	14 08.6 +52.5 84.6	13 40.6 +52.5 83.7
16°	16 25.3 +52.4 86.7	15 57.2 +52.4 85.8	15 29.1 +52.4 84.9	15 01.1 +52.4 84.1	14 33.1 +52.4 83.2
17°	17 17.7 +52.2 86.2	16 49.6 +52.3 85.3	16 21.5 +52.3 84.4	15 53.5 +52.3 83.6	15 25.5 +52.4 82.7
18°	18 09.9 +52.2 85.7	17 41.9 +52.2 84.8	17 13.8 +52.3 83.9	16 45.8 +52.3 83.1	16 17.9 +52.3 82.2
19°	19 02.1 +52.1 85.1	18 34.1 +52.1 84.3	18 06.1 +52.1 83.4	17 38.1 +52.2 82.5	17 10.2 +52.2 81.7
20°	19 54.2 +52.0 84.6	19 26.2 +52.0 83.7	18 58.2 +52.1 82.9	18 30.3 +52.1 82.0	18 02.4 +52.2 81.2
21°	20 46.2 +51.9 84.1	20 18.2 +51.9 83.2	19 50.3 +51.9 82.4	19 22.4 +52.0 81.5	18 54.6 +52.0 80.6
22°	21 38.1 +51.8 83.5	21 10.1 +51.9 82.7	20 42.2 +51.9 81.8	20 14.4 +51.9 81.0	19 46.6 +52.0 80.1
23°	22 29.9 +51.7 83.0	22 02.0 +51.7 82.1	21 34.1 +51.8 81.3	21 06.3 +51.8 80.4	20 38.6 +51.8 79.6
24°	23 21.6 +51.6 82.4	22 53.7 +51.6 81.6	22 25.9 +51.6 80.7	21 58.1 +51.7 79.9	21 30.4 +51.8 79.0
25°	24 13.2 +51.4 81.9	23 45.3 +51.5 81.0	23 17.5 +51.6 80.2	22 49.8 +51.6 79.3	22 22.2 +51.6 78.5
26°	25 04.6 +51.3 81.3	24 36.8 +51.4 80.5	24 09.1 +51.4 79.6	23 41.4 +51.5 78.8	23 13.8 +51.5 77.9
27°	25 55.9 +51.2 80.7	25 28.2 +51.2 79.9	25 00.5 +51.3 79.1	24 32.9 +51.3 78.2	24 05.3 +51.4 77.4
28°	26 47.1 +51.0 80.2	26 19.4 +51.1 79.3	25 51.8 +51.1 78.5	25 24.2 +51.2 77.7	24 56.7 +51.3 76.8
29°	27 38.1 +50.9 79.6	27 10.5 +50.9 78.7	26 42.9 +51.0 77.9	26 15.4 +51.1 77.1	25 48.0 +51.1 76.2

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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 +53.0 90.0	-0 28.2 +53.0	-0 56.3 +53.0	-1 24.5 +53.0	-1 52.6 +53.0
1°	0 53.0 +52.9 89.5	0 24.8 +53.0 88.6	-0 03.3 +52.9	-0 31.5 +53.0	-0 59.6 +53.0
2°	1 45.9 +53.0 89.1	1 17.8 +53.0 88.2	0 49.6 +53.0 87.3	0 21.5 +53.0 86.4	-0 06.6 +53.0
3°	2 38.9 +53.0 88.6	2 10.8 +52.9 87.7	1 42.6 +53.0 86.8	1 14.5 +53.0 85.9	0 46.4 +53.0 85.1
4°	3 31.9 +52.9 88.1	3 03.7 +53.0 87.2	2 35.6 +53.0 86.4	2 07.5 +53.0 85.5	1 39.4 +53.0 84.6
5°	4 24.8 +52.9 87.6	3 56.7 +52.9 86.8	3 28.6 +52.9 85.9	3 00.5 +53.0 85.0	2 32.4 +53.0 84.1
6°	5 17.7 +52.9 87.2	4 49.6 +52.9 86.3	4 21.5 +52.9 85.4	3 53.5 +52.9 84.5	3 25.4 +53.0 83.7
7°	6 10.6 +52.9 86.7	5 42.5 +52.9 85.8	5 14.4 +53.0 84.9	4 46.4 +52.9 84.1	4 18.4 +53.0 83.2
8°	7 03.5 +52.9 86.2	6 35.4 +52.9 85.3	6 07.4 +52.8 84.5	5 39.3 +53.0 83.6	5 11.4 +52.9 82.7
9°	7 56.4 +52.8 85.7	7 28.3 +52.8 84.9	7 00.2 +52.9 84.0	6 32.3 +52.8 83.1	6 04.3 +52.9 82.2
10°	8 49.2 +52.7 85.3	8 21.1 +52.8 84.4	7 53.1 +52.8 83.5	7 25.1 +52.9 82.6	6 57.2 +52.9 81.8
11°	9 41.9 +52.8 84.8	9 13.9 +52.8 83.9	8 45.9 +52.8 83.0	8 18.0 +52.8 82.2	7 50.1 +52.9 81.3
12°	10 34.7 +52.7 84.3	10 06.7 +52.7 83.4	9 38.7 +52.8 82.6	9 10.8 +52.8 81.7	8 43.0 +52.8 80.8
13°	11 27.4 +52.6 83.8	10 59.4 +52.7 82.9	10 31.5 +52.7 82.1	10 03.6 +52.7 81.2	9 35.8 +52.8 80.3
14°	12 20.0 +52.6 83.3	11 52.1 +52.6 82.5	11 24.2 +52.6 81.6	10 56.3 +52.7 80.7	10 28.6 +52.7 79.8
15°	13 12.6 +52.5 82.8	12 44.7 +52.6 82.0	12 16.8 +52.6 81.1	11 49.0 +52.7 80.2	11 21.3 +52.7 79.4
16°	14 05.1 +52.5 82.3	13 37.3 +52.5 81.5	13 09.4 +52.6 80.6	12 41.7 +52.6 79.7	12 14.0 +52.6 78.9
17°	14 57.6 +52.4 81.8	14 29.8 +52.4 81.0	14 02.0 +52.5 80.1	13 34.3 +52.5 79.2	13 06.6 +52.6 78.4
18°	15 50.0 +52.4 81.3	15 22.2 +52.4 80.5	14 54.5 +52.4 79.6	14 26.8 +52.5 78.7	13 59.2 +52.5 77.9
19°	16 42.4 +52.2 80.8	16 14.6 +52.3 80.0	15 46.9 +52.3 79.1	15 19.3 +52.4 78.2	14 51.7 +52.5 77.4
20°	17 34.6 +52.2 80.3	17 06.9 +52.2 79.4	16 39.2 +52.3 78.6	16 11.7 +52.3 77.7	15 44.2 +52.4 76.9
21°	18 26.8 +52.1 79.8	17 59.1 +52.2 78.9	17 31.5 +52.2 78.1	17 04.0 +52.2 77.2	16 36.6 +52.3 76.4
22°	19 18.9 +52.0 79.3	18 51.3 +52.0 78.4	18 23.7 +52.1 77.6	17 56.2 +52.2 76.7	17 28.9 +52.2 75.9
23°	20 10.9 +51.9 78.7	19 43.3 +52.0 77.9	19 15.8 +52.0 77.0	18 48.4 +52.1 76.2	18 21.1 +52.1 75.3
24°	21 02.8 +51.8 78.2	20 35.3 +51.8 77.3	20 07.8 +52.0 76.5	19 40.5 +52.0 75.7	19 13.2 +52.1 74.8
25°	21 54.6 +51.7 77.7	21 27.1 +51.8 76.8	20 59.8 +51.8 76.0	20 32.5 +51.9 75.1	20 05.3 +52.0 74.3
26°	22 46.3 +51.6 77.1	22 18.9 +51.6 76.3	21 51.6 +51.7 75.4	21 24.4 +51.7 74.6	20 57.3 +51.8 73.8
27°	23 37.9 +51.4 76.5	23 10.5 +51.6 75.7	22 43.3 +51.6 74.9	22 16.1 +51.7 74.0	21 49.1 +51.8 73.2
28°	24 29.3 +51.4 76.0	24 02.1 +51.4 75.2	23 34.9 +51.5 74.3	23 07.8 +51.6 73.5	22 40.9 +51.6 72.7
29°	25 20.7 +51.2 75.4	24 53.5 +51.2 74.6	24 26.4 +51.3 73.8	23 59.4 +51.4 72.9	23 32.5 +51.5 72.1

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°	-2 20.7 +53.0	-2 48.8 +53.1	-3 16.8 +53.1	-3 44.8 +53.1	-4 12.7 +53.1
1°	-1 27.7 +53.1	-1 55.7 +53.0	-2 23.7 +53.1	-2 51.7 +53.1	-3 19.6 +53.2
2°	-0 34.6 +53.0	-1 02.7 +53.1	-1 30.6 +53.0	-1 58.6 +53.1	-2 26.4 +53.1
3°	0 18.4 +53.0 84.2	-0 09.6 +53.0	-0 37.6 +53.1	-1 05.5 +53.2	-1 33.3 +53.2
4°	1 11.4 +53.0 83.7	0 43.4 +53.1 82.8	0 15.5 +53.1 81.9	-0 12.3 +53.1	-0 40.1 +53.1
5°	2 04.4 +53.1 83.2	1 36.5 +53.1 82.4	1 08.6 +53.1 81.5	0 40.8 +53.1 80.6	0 13.0 +53.2 79.7
6°	2 57.5 +53.0 82.8	2 29.6 +53.0 81.9	2 01.7 +53.1 81.0	1 33.9 +53.1 80.1	1 06.2 +53.1 79.3
7°	3 50.5 +53.0 82.3	3 22.6 +53.0 81.4	2 54.8 +53.0 80.5	2 27.0 +53.1 79.7	1 59.3 +53.2 78.8
8°	4 43.5 +52.9 81.8	4 15.6 +53.0 81.0	3 47.8 +53.1 80.1	3 20.1 +53.1 79.2	2 52.5 +53.1 78.3
9°	5 36.4 +53.0 81.4	5 08.6 +53.0 80.5	4 40.9 +53.0 79.6	4 13.2 +53.1 78.7	3 45.6 +53.2 77.9
10°	6 29.4 +52.9 80.9	6 01.6 +53.0 80.0	5 33.9 +53.0 79.1	5 06.3 +53.0 78.3	4 38.8 +53.1 77.4
11°	7 22.3 +52.9 80.4	6 54.6 +52.9 79.5	6 26.9 +53.0 78.7	5 59.3 +53.1 77.8	5 31.9 +53.0 76.9
12°	8 15.2 +52.9 79.9	7 47.5 +52.9 79.1	7 19.9 +52.9 78.2	6 52.4 +53.0 77.3	6 24.9 +53.1 76.5
13°	9 08.1 +52.8 79.5	8 40.4 +52.9 78.6	8 12.8 +53.0 77.7	7 45.4 +52.9 76.9	7 18.0 +53.0 76.0
14°	10 00.9 +52.8 79.0	9 33.3 +52.8 78.1	9 05.8 +52.8 77.2	8 38.3 +53.0 76.4	8 11.0 +53.0 75.5
15°	10 53.7 +52.7 78.5	10 26.1 +52.8 77.6	9 58.6 +52.9 76.8	9 31.3 +52.9 75.9	9 04.0 +53.0 75.0
16°	11 46.4 +52.7 78.0	11 18.9 +52.7 77.1	10 51.5 +52.8 76.3	10 24.2 +52.8 75.4	9 57.0 +52.9 74.6
17°	12 39.1 +52.6 77.5	12 11.6 +52.7 76.7	11 44.3 +52.7 75.8	11 17.0 +52.8 74.9	10 49.9 +52.8 74.1
18°	13 31.7 +52.6 77.0	13 04.3 +52.6 76.2	12 37.0 +52.7 75.3	12 09.8 +52.8 74.5	11 42.7 +52.9 73.6
19°	14 24.3 +52.5 76.5	13 56.9 +52.6 75.7	13 29.7 +52.6 74.8	13 02.6 +52.7 74.0	12 35.6 +52.7 73.1
20°	15 16.8 +52.4 76.0	14 49.5 +52.5 75.2	14 22.3 +52.6 74.3	13 55.3 +52.6 73.5	13 28.3 +52.7 72.6
21°	16 09.2 +52.4 75.5	15 42.0 +52.5 74.7	15 14.9 +52.5 73.8	14 47.9 +52.6 73.0	14 21.0 +52.7 72.1
22°	17 01.6 +52.3 75.0	16 34.5 +52.3 74.2	16 07.4 +52.4 73.3	15 40.5 +52.5 72.5	15 13.7 +52.6 71.6
23°	17 53.9 +52.2 74.5	17 26.8 +52.3 73.7	16 59.8 +52.4 72.8	16 33.0 +52.4 72.0	16 06.3 +52.5 71.1
24°	18 46.1 +52.1 74.0	18 19.1 +52.2 73.1	17 52.2 +52.3 72.3	17 25.4 +52.4 71.5	16 58.8 +52.4 70.6
25°	19 38.2 +52.1 73.5	19 11.3 +52.1 72.6	18 44.5 +52.2 71.8	18 17.8 +52.3 71.0	17 51.2 +52.4 70.1
26°	20 30.3 +51.9 72.9	20 03.4 +52.0 72.1	19 36.7 +52.1 71.3	19 10.1 +52.1 70.4	18 43.6 +52.3 69.6
27°	21 22.2 +51.8 72.4	20 55.4 +51.9 71.6	20 28.8 +52.0 70.7	20 02.2 +52.1 69.9	19 35.9 +52.1 69.1
28°	22 14.0 +51.8 71.8	21 47.3 +51.9 71.0	21 20.8 +51.9 70.2	20 54.3 +52.0 69.4	20 28.0 +52.1 68.6
29°	23 05.8 +51.6 71.3	22 39.2 +51.6 70.5	22 12.7 +51.8 69.7	21 46.3 +51.9 68.8	21 20.1 +52.0 68.0

Declination SAME name as Latitude

Latitude 62°

Dec	LHA 100° / 260°	LHA 101° / 259°	LHA 102° / 258°	LHA 103° / 257°	LHA 104° / 256°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-4 40.6 +53.2	-5 08.4 +53.2	-5 36.1 +53.3	-6 03.7 +53.3	-6 31.3 +53.3
1°	-3 47.4 +53.2	-4 15.2 +53.3	-4 42.8 +53.2	-5 10.4 +53.3	-5 38.0 +53.4
2°	-2 54.2 +53.2	-3 21.9 +53.2	-3 49.6 +53.3	-4 17.1 +53.3	-4 44.6 +53.4
3°	-2 01.0 +53.2	-2 28.7 +53.2	-2 56.3 +53.3	-3 23.8 +53.3	-3 51.2 +53.4
4°	-1 07.8 +53.2	-1 35.5 +53.3	-2 03.0 +53.3	-2 30.5 +53.4	-2 57.8 +53.4
5°	-0 14.6 +53.2	-0 42.2 +53.2	-1 09.7 +53.3	-1 37.1 +53.3	-2 04.4 +53.4
6°	0 38.6 +53.2 78.4	0 11.0 +53.3 77.5	-0 16.4 +53.3	-0 43.8 +53.4	-1 11.0 +53.4
7°	1 31.8 +53.2 77.9	1 04.3 +53.2 77.0	0 36.9 +53.3 76.1	0 09.6 +53.3 75.3	-0 17.6 +53.4
8°	2 25.0 +53.1 77.4	1 57.5 +53.2 76.6	1 30.2 +53.3 75.7	1 02.9 +53.4 74.8	0 35.8 +53.4 73.9
9°	3 18.1 +53.2 77.0	2 50.7 +53.3 76.1	2 23.5 +53.2 75.2	1 56.3 +53.3 74.3	1 29.2 +53.4 73.5
10°	4 11.3 +53.2 76.5	3 44.0 +53.2 75.6	3 16.7 +53.3 74.8	2 49.6 +53.3 73.9	2 22.6 +53.4 73.0
11°	5 04.5 +53.1 76.1	4 37.2 +53.2 75.2	4 10.0 +53.3 74.3	3 42.9 +53.4 73.4	3 16.0 +53.4 72.6
12°	5 57.6 +53.1 75.6	5 30.4 +53.1 74.7	5 03.3 +53.2 73.8	4 36.3 +53.3 73.0	4 09.4 +53.4 72.1
13°	6 50.7 +53.1 75.1	6 23.5 +53.2 74.2	5 56.5 +53.2 73.4	5 29.6 +53.2 72.5	5 02.8 +53.3 71.6
14°	7 43.8 +53.0 74.6	7 16.7 +53.1 73.8	6 49.7 +53.2 72.9	6 22.8 +53.3 72.0	5 56.1 +53.3 71.2
15°	8 36.8 +53.1 74.2	8 09.8 +53.1 73.3	7 42.9 +53.1 72.4	7 16.1 +53.2 71.6	6 49.4 +53.3 70.7
16°	9 29.9 +52.9 73.7	9 02.9 +53.0 72.8	8 36.0 +53.2 72.0	8 09.3 +53.2 71.1	7 42.7 +53.3 70.3
17°	10 22.8 +53.0 73.2	9 55.9 +53.0 72.4	9 29.2 +53.0 71.5	9 02.5 +53.2 70.7	8 36.0 +53.2 69.8
18°	11 15.8 +52.9 72.7	10 48.9 +53.0 71.9	10 22.2 +53.1 71.0	9 55.7 +53.1 70.2	9 29.2 +53.2 69.3
19°	12 08.7 +52.8 72.3	11 41.9 +52.9 71.4	11 15.3 +53.0 70.6	10 48.8 +53.1 69.7	10 22.4 +53.2 68.9
20°	13 01.5 +52.8 71.8	12 34.8 +52.9 70.9	12 08.3 +52.9 70.1	11 41.9 +53.0 69.2	11 15.6 +53.1 68.4
21°	13 54.3 +52.7 71.3	13 27.7 +52.8 70.4	13 01.2 +52.9 69.6	12 34.9 +53.0 68.8	12 08.7 +53.1 67.9
22°	14 47.0 +52.7 70.8	14 20.5 +52.7 70.0	13 54.1 +52.8 69.1	13 27.9 +52.9 68.3	13 01.8 +53.0 67.4
23°	15 39.7 +52.6 70.3	15 13.2 +52.7 69.5	14 46.9 +52.8 68.6	14 20.8 +52.8 67.8	13 54.8 +52.9 66.9
24°	16 32.3 +52.5 69.8	16 05.9 +52.6 69.0	15 39.7 +52.7 68.1	15 13.6 +52.8 67.3	14 47.7 +52.9 66.5
25°	17 24.8 +52.5 69.3	16 58.5 +52.6 68.5	16 32.4 +52.6 67.6	16 06.4 +52.8 66.8	15 40.6 +52.9 66.0
26°	18 17.3 +52.3 68.8	17 51.1 +52.4 68.0	17 25.0 +52.6 67.1	16 59.2 +52.6 66.3	16 33.5 +52.7 65.5
27°	19 09.6 +52.3 68.3	18 43.5 +52.4 67.4	18 17.6 +52.5 66.6	17 51.8 +52.6 65.8	17 26.2 +52.7 65.0
28°	20 01.9 +52.2 67.7	19 35.9 +52.3 66.9	19 10.1 +52.4 66.1	18 44.4 +52.5 65.3	18 18.9 +52.6 64.5
29°	20 54.1 +52.1 67.2	20 28.2 +52.2 66.4	20 02.5 +52.3 65.6	19 36.9 +52.4 64.8	19 11.5 +52.5 64.0

Dec	LHA 105° / 255°	LHA 106° / 254°	LHA 107° / 253°	LHA 108° / 252°	LHA 109° / 251°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-6 58.7 +53.3	-7 26.1 +53.4	-7 53.4 +53.5	-8 20.5 +53.6	-8 47.5 +53.6
1°	-6 05.4 +53.4	-6 32.7 +53.5	-6 59.9 +53.6	-7 26.9 +53.5	-7 53.9 +53.7
2°	-5 12.0 +53.5	-5 39.2 +53.5	-6 06.3 +53.5	-6 33.4 +53.7	-7 00.2 +53.6
3°	-4 18.5 +53.4	-4 45.7 +53.5	-5 12.8 +53.6	-5 39.7 +53.6	-6 06.6 +53.7
4°	-3 25.1 +53.5	-3 52.2 +53.5	-4 19.2 +53.6	-4 46.1 +53.6	-5 12.9 +53.8
5°	-2 31.6 +53.4	-2 58.7 +53.5	-3 25.6 +53.6	-3 52.5 +53.7	-4 19.1 +53.7
6°	-1 38.2 +53.5	-2 05.2 +53.6	-2 32.0 +53.6	-2 58.8 +53.7	-3 25.4 +53.7
7°	-0 44.7 +53.5	-1 11.6 +53.5	-1 38.4 +53.6	-2 05.1 +53.7	-2 31.7 +53.8
8°	0 08.8 +53.5 73.0	-0 18.1 +53.6	-0 44.8 +53.6	-1 11.4 +53.6	-1 37.9 +53.8
9°	1 02.3 +53.4 72.6	0 35.5 +53.5 71.7	0 08.8 +53.6 70.8	-0 17.8 +53.7	-0 44.1 +53.7
10°	1 55.7 +53.5 72.1	1 29.0 +53.5 71.3	1 02.4 +53.6 70.4	0 35.9 +53.7 69.5	0 09.6 +53.8 68.6
11°	2 49.2 +53.5 71.7	2 22.5 +53.6 70.8	1 56.0 +53.6 69.9	1 29.6 +53.7 69.1	1 03.4 +53.7 68.2
12°	3 42.7 +53.4 71.2	3 16.1 +53.5 70.4	2 49.6 +53.6 69.5	2 23.3 +53.7 68.6	1 57.1 +53.8 67.7
13°	4 36.1 +53.4 70.8	4 09.6 +53.5 69.9	3 43.2 +53.6 69.0	3 17.0 +53.6 68.2	2 50.9 +53.7 67.3
14°	5 29.5 +53.4 70.3	5 03.1 +53.4 69.4	4 36.8 +53.5 68.6	4 10.6 +53.7 67.7	3 44.6 +53.8 66.8
15°	6 22.9 +53.4 69.9	5 56.5 +53.5 69.0	5 30.3 +53.6 68.1	5 04.3 +53.6 67.3	4 38.4 +53.7 66.4
16°	7 16.3 +53.3 69.4	6 50.0 +53.4 68.5	6 23.9 +53.5 67.7	5 57.9 +53.6 66.8	5 32.1 +53.7 65.9
17°	8 09.6 +53.4 68.9	7 43.4 +53.4 68.1	7 17.4 +53.5 67.2	6 51.5 +53.6 66.4	6 25.8 +53.6 65.5
18°	9 03.0 +53.2 68.5	8 36.8 +53.4 67.6	8 10.9 +53.4 66.8	7 45.1 +53.5 65.9	7 19.4 +53.7 65.0
19°	9 56.2 +53.3 68.0	9 30.2 +53.3 67.2	9 04.3 +53.4 66.3	8 38.6 +53.5 65.4	8 13.1 +53.6 64.6
20°	10 49.5 +53.2 67.5	10 23.5 +53.3 66.7	9 57.7 +53.4 65.8	9 32.1 +53.5 65.0	9 06.7 +53.6 64.1
21°	11 42.7 +53.1 67.1	11 16.8 +53.3 66.2	10 51.1 +53.4 65.4	10 25.6 +53.5 64.5	10 00.3 +53.5 63.7
22°	12 35.8 +53.1 66.6	12 10.1 +53.2 65.7	11 44.5 +53.3 64.9	11 19.1 +53.4 64.1	10 53.8 +53.5 63.2
23°	13 28.9 +53.1 66.1	13 03.3 +53.1 65.3	12 37.8 +53.2 64.4	12 12.5 +53.3 63.6	11 47.3 +53.5 62.8
24°	14 22.0 +53.0 65.6	13 56.4 +53.1 64.8	13 31.0 +53.2 64.0	13 05.8 +53.3 63.1	12 40.8 +53.4 62.3
25°	15 15.0 +52.9 65.1	14 49.5 +53.0 64.3	14 24.2 +53.1 63.5	13 59.1 +53.2 62.7	13 34.2 +53.3 61.8
26°	16 07.9 +52.9 64.7	15 42.5 +53.0 63.8	15 17.3 +53.1 63.0	14 52.3 +53.2 62.2	14 27.5 +53.3 61.4
27°	17 00.8 +52.8 64.2	16 35.5 +52.9 63.3	16 10.4 +53.0 62.5	15 45.5 +53.1 61.7	15 20.8 +53.3 60.9
28°	17 53.6 +52.7 63.7	17 28.4 +52.8 62.8	17 03.4 +53.0 62.0	16 38.6 +53.1 61.2	16 14.1 +53.1 60.4
29°	18 46.3 +52.6 63.2	18 21.2 +52.8 62.3	17 56.4 +52.8 61.5	17 31.7 +53.0 60.7	17 07.2 +53.1 59.9

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Dec	LHA 110° / 250°	LHA 111° / 249°	LHA 112° / 248°	LHA 113° / 247°	LHA 114° / 246°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-9 14.4 +53.7	-9 41.1 +53.7			
1°	-8 20.7 +53.7	-8 47.4 +53.8	-9 13.9 +53.9	-9 40.3 +54.0	
2°	-7 27.0 +53.8	-7 53.6 +53.8	-8 20.0 +53.8	-8 46.3 +53.9	-9 12.5 +54.1
3°	-6 33.2 +53.7	-6 59.8 +53.9	-7 26.2 +54.0	-7 52.4 +54.0	-8 18.4 +54.1
4°	-5 39.5 +53.8	-6 05.9 +53.8	-6 32.2 +53.9	-6 58.4 +54.1	-7 24.3 +54.1
5°	-4 45.7 +53.8	-5 12.1 +53.9	-5 38.3 +54.0	-6 04.3 +54.0	-6 30.2 +54.1
6°	-3 51.9 +53.9	-4 18.2 +53.9	-4 44.3 +54.0	-5 10.3 +54.1	-5 36.1 +54.2
7°	-2 58.0 +53.8	-3 24.3 +53.9	-3 50.3 +54.0	-4 16.2 +54.0	-4 41.9 +54.1
8°	-2 04.2 +53.8	-2 30.4 +54.0	-2 56.3 +54.0	-3 22.2 +54.1	-3 47.8 +54.2
9°	-1 10.4 +53.9	-1 36.4 +53.9	-2 02.3 +54.0	-2 28.1 +54.1	-2 53.6 +54.2
10°	-0 16.5 +53.8	-0 42.5 +53.9	-1 08.3 +54.0	-1 34.0 +54.1	-1 59.4 +54.2
11°	0 37.3 +53.9 67.3	0 11.4 +53.9 66.4	-0 14.3 +54.0	-0 39.9 +54.2	-1 05.2 +54.2
12°	1 31.2 +53.8 66.9	1 05.3 +54.0 66.0	0 39.7 +54.0 65.1	0 14.3 +54.1 64.2	-0 11.0 +54.2
13°	2 25.0 +53.8 66.4	1 59.3 +53.9 65.5	1 33.7 +54.0 64.7	1 08.4 +54.1 63.8	0 43.2 +54.2 62.9
14°	3 18.8 +53.8 66.0	2 53.2 +53.9 65.1	2 27.7 +54.0 64.2	2 02.5 +54.1 63.3	1 37.4 +54.2 62.5
15°	4 12.6 +53.9 65.5	3 47.1 +53.9 64.7	3 21.7 +54.0 63.8	2 56.6 +54.0 62.9	2 31.6 +54.2 62.0
16°	5 06.5 +53.7 65.1	4 41.0 +53.9 64.2	4 15.7 +54.0 63.3	3 50.6 +54.1 62.5	3 25.8 +54.1 61.6
17°	6 00.2 +53.8 64.6	5 34.9 +53.8 63.8	5 09.7 +54.0 62.9	4 44.7 +54.1 62.0	4 19.9 +54.2 61.2
18°	6 54.0 +53.7 64.2	6 28.7 +53.9 63.3	6 03.7 +53.9 62.5	5 38.8 +54.0 61.6	5 14.1 +54.1 60.7
19°	7 47.7 +53.7 63.7	7 22.6 +53.8 62.9	6 57.6 +53.9 62.0	6 32.8 +54.0 61.2	6 08.2 +54.2 60.3
20°	8 41.4 +53.7 63.3	8 16.4 +53.8 62.4	7 51.5 +53.9 61.6	7 26.8 +54.0 60.7	7 02.4 +54.1 59.9
21°	9 35.1 +53.7 62.8	9 10.2 +53.7 62.0	8 45.4 +53.8 61.1	8 20.8 +54.0 60.3	7 56.5 +54.0 59.4
22°	10 28.8 +53.6 62.4	10 03.9 +53.7 61.5	9 39.2 +53.9 60.7	9 14.8 +53.9 59.8	8 50.5 +54.1 59.0
23°	11 22.4 +53.5 61.9	10 57.6 +53.7 61.1	10 33.1 +53.7 60.2	10 08.7 +53.9 59.4	9 44.6 +54.0 58.6
24°	12 15.9 +53.5 61.5	11 51.3 +53.6 60.6	11 26.8 +53.8 59.8	11 02.6 +53.8 59.0	10 38.6 +53.9 58.1
25°	13 09.4 +53.5 61.0	12 44.9 +53.6 60.2	12 20.6 +53.7 59.3	11 56.4 +53.8 58.5	11 32.5 +54.0 57.7
26°	14 02.9 +53.4 60.5	13 38.5 +53.5 59.7	13 14.3 +53.6 58.9	12 50.2 +53.8 58.1	12 26.5 +53.8 57.2
27°	14 56.3 +53.4 60.1	14 32.0 +53.5 59.2	14 07.9 +53.6 58.4	13 44.0 +53.7 57.6	13 20.3 +53.9 56.8
28°	15 49.7 +53.2 59.6	15 25.5 +53.4 58.8	15 01.5 +53.5 58.0	14 37.7 +53.7 57.1	14 14.2 +53.7 56.3
29°	16 42.9 +53.3 59.1	16 18.9 +53.3 58.3	15 55.0 +53.5 57.5	15 31.4 +53.6 56.7	15 07.9 +53.8 55.9

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°	-9 38.5 +54.2				
3°	-8 44.3 +54.2	-9 10.0 +54.2	-9 35.5 +54.3		
4°	-7 50.1 +54.2	-8 15.8 +54.3	-8 41.2 +54.4	-9 06.4 +54.5	-9 31.4 +54.5
5°	-6 55.9 +54.2	-7 21.5 +54.3	-7 46.8 +54.4	-8 11.9 +54.5	-8 36.9 +54.6
6°	-6 01.7 +54.2	-6 27.2 +54.4	-6 52.4 +54.4	-7 17.4 +54.5	-7 42.3 +54.6
7°	-5 07.5 +54.3	-5 32.8 +54.3	-5 58.0 +54.5	-6 22.9 +54.5	-6 47.7 +54.7
8°	-4 13.2 +54.2	-4 38.5 +54.4	-5 03.5 +54.4	-5 28.4 +54.6	-5 53.0 +54.6
9°	-3 19.0 +54.3	-3 44.1 +54.4	-4 09.1 +54.5	-4 33.8 +54.6	-4 58.4 +54.7
10°	-2 24.7 +54.3	-2 49.7 +54.4	-3 14.6 +54.5	-3 39.2 +54.5	-4 03.7 +54.7
11°	-1 30.4 +54.3	-1 55.3 +54.3	-2 20.1 +54.5	-2 44.7 +54.6	-3 09.0 +54.7
12°	-0 36.1 +54.3	-1 01.0 +54.4	-1 25.6 +54.5	-1 50.1 +54.6	-2 14.3 +54.7
13°	0 18.2 +54.3 62.0	-0 06.6 +54.4	-0 31.1 +54.5	-0 55.5 +54.6	-1 19.6 +54.7
14°	1 12.5 +54.3 61.6	0 47.8 +54.4 60.7	0 23.4 +54.5 59.8	-0 00.9 +54.6	-0 24.9 +54.7
15°	2 06.8 +54.3 61.2	1 42.2 +54.4 60.3	1 17.9 +54.5 59.4	0 53.7 +54.6 58.5	0 29.8 +54.7 57.7
16°	3 01.1 +54.3 60.7	2 36.6 +54.4 59.9	2 12.4 +54.5 59.0	1 48.3 +54.6 58.1	1 24.5 +54.7 57.2
17°	3 55.4 +54.2 60.3	3 31.0 +54.4 59.4	3 06.9 +54.4 58.6	2 42.9 +54.6 57.7	2 19.2 +54.7 56.8
18°	4 49.6 +54.3 59.9	4 25.4 +54.3 59.0	4 01.3 +54.5 58.2	3 37.5 +54.6 57.3	3 13.9 +54.7 56.4
19°	5 43.9 +54.2 59.5	5 19.7 +54.4 58.6	4 55.8 +54.4 57.7	4 32.1 +54.5 56.9	4 08.6 +54.7 56.0
20°	6 38.1 +54.2 59.0	6 14.1 +54.3 58.2	5 50.2 +54.5 57.3	5 26.6 +54.6 56.5	5 03.3 +54.6 55.6
21°	7 32.3 +54.2 58.6	7 08.4 +54.3 57.7	6 44.7 +54.4 56.9	6 21.2 +54.5 56.0	5 57.9 +54.7 55.2
22°	8 26.5 +54.1 58.2	8 02.7 +54.2 57.3	7 39.1 +54.4 56.5	7 15.7 +54.5 55.6	6 52.6 +54.6 54.8
23°	9 20.6 +54.2 57.7	8 56.9 +54.3 56.9	8 33.5 +54.3 56.0	8 10.2 +54.5 55.2	7 47.2 +54.6 54.3
24°	10 14.8 +54.0 57.3	9 51.2 +54.2 56.4	9 27.8 +54.3 55.6	9 04.7 +54.4 54.8	8 41.8 +54.6 53.9
25°	11 08.8 +54.1 56.8	10 45.4 +54.1 56.0	10 22.1 +54.3 55.2	9 59.1 +54.4 54.3	9 36.4 +54.5 53.5
26°	12 02.9 +54.0 56.4	11 39.5 +54.2 55.6	11 16.4 +54.3 54.7	10 53.5 +54.4 53.9	10 30.9 +54.5 53.1
27°	12 56.9 +53.9 56.0	12 33.7 +54.0 55.1	12 10.7 +54.2 54.3	11 47.9 +54.3 53.5	11 25.4 +54.4 52.7
28°	13 50.8 +53.9 55.5	13 27.7 +54.1 54.7	13 04.9 +54.1 53.9	12 42.2 +54.3 53.1	12 19.8 +54.5 52.2
29°	14 44.7 +53.9 55.1	14 21.8 +54.0 54.2	13 59.0 +54.1 53.4	13 36.5 +54.3 52.6	13 14.3 +54.4 51.8

Declination SAME name as Latitude

Latitude 62°

Dec	LHA 120° / 240°	LHA 121° / 239°	LHA 122° / 238°	LHA 123° / 237°	LHA 124° / 236°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°	-9 56.2 +54.6				
5°	-9 01.6 +54.7	-9 26.1 +54.8	-9 50.3 +54.9		
6°	-8 06.9 +54.7	-8 31.3 +54.8	-8 55.4 +54.9	-9 19.4 +55.1	-9 43.1 +55.2
7°	-7 12.2 +54.8	-7 36.5 +54.9	-8 00.5 +54.9	-8 24.3 +55.0	-8 47.9 +55.1
8°	-6 17.4 +54.7	-6 41.6 +54.8	-7 05.6 +55.0	-7 29.3 +55.1	-7 52.8 +55.2
9°	-5 22.7 +54.8	-5 46.8 +54.9	-6 10.6 +55.0	-6 34.2 +55.1	-6 57.6 +55.2
10°	-4 27.9 +54.8	-4 51.9 +54.9	-5 15.6 +55.0	-5 39.1 +55.1	-6 02.4 +55.2
11°	-3 33.1 +54.8	-3 57.0 +54.9	-4 20.6 +55.0	-4 44.0 +55.1	-5 07.2 +55.3
12°	-2 38.3 +54.8	-3 02.1 +54.9	-3 25.6 +55.0	-3 48.9 +55.2	-4 11.9 +55.2
13°	-1 43.5 +54.8	-2 07.2 +55.0	-2 30.6 +55.1	-2 53.7 +55.1	-3 16.7 +55.3
14°	-0 48.7 +54.8	-1 12.2 +54.9	-1 35.5 +55.0	-1 58.6 +55.1	-2 21.4 +55.3
15°	0 06.1 +54.9 56.8	-0 17.3 +54.9	-0 40.5 +55.0	-1 03.5 +55.2	-1 26.1 +55.2
16°	1 01.0 +54.8 56.4	0 37.6 +55.0 55.5	0 14.5 +55.1 54.6	-0 08.3 +55.2	-0 30.9 +55.3
17°	1 55.8 +54.8 56.0	1 32.6 +54.9 55.1	1 09.6 +55.0 54.2	0 46.9 +55.1 53.3	0 24.4 +55.3 52.5
18°	2 50.6 +54.8 55.6	2 27.5 +54.9 54.7	2 04.6 +55.0 53.8	1 42.0 +55.2 52.9	1 19.7 +55.2 52.1
19°	3 45.4 +54.8 55.1	3 22.4 +54.9 54.3	2 59.6 +55.1 53.4	2 37.2 +55.1 52.5	2 14.9 +55.3 51.7
20°	4 40.2 +54.7 54.7	4 17.3 +54.9 53.9	3 54.7 +55.0 53.0	3 32.3 +55.1 52.1	3 10.2 +55.2 51.3
21°	5 34.9 +54.8 54.3	5 12.2 +54.9 53.5	4 49.7 +55.0 52.6	4 27.4 +55.1 51.8	4 05.4 +55.3 50.9
22°	6 29.7 +54.7 53.9	6 07.1 +54.8 53.1	5 44.7 +54.9 52.2	5 22.5 +55.1 51.4	5 00.7 +55.2 50.5
23°	7 24.4 +54.7 53.5	7 01.9 +54.8 52.7	6 39.6 +55.0 51.8	6 17.6 +55.1 51.0	5 55.9 +55.2 50.1
24°	8 19.1 +54.7 53.1	7 56.7 +54.9 52.2	7 34.6 +54.9 51.4	7 12.7 +55.1 50.6	6 51.1 +55.2 49.7
25°	9 13.8 +54.7 52.7	8 51.6 +54.7 51.8	8 29.5 +54.9 51.0	8 07.8 +55.0 50.2	7 46.3 +55.2 49.3
26°	10 08.5 +54.6 52.3	9 46.3 +54.8 51.4	9 24.4 +54.9 50.6	9 02.8 +55.0 49.8	8 41.5 +55.1 48.9
27°	11 03.1 +54.6 51.8	10 41.1 +54.7 51.0	10 19.3 +54.9 50.2	9 57.8 +55.0 49.4	9 36.6 +55.1 48.5
28°	11 57.7 +54.6 51.4	11 35.8 +54.7 50.6	11 14.2 +54.8 49.8	10 52.8 +55.0 48.9	10 31.7 +55.1 48.1
29°	12 52.3 +54.5 51.0	12 30.5 +54.6 50.2	12 09.0 +54.8 49.4	11 47.8 +54.9 48.5	11 26.8 +55.0 47.7

Dec	LHA 125° / 235°	LHA 126° / 234°	LHA 127° / 233°	LHA 128° / 232°	LHA 129° / 231°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°	-9 11.3 +55.3	-9 34.3 +55.4	-9 57.1 +55.5		
8°	-8 16.0 +55.3	-8 38.9 +55.4	-9 01.6 +55.5	-9 24.0 +55.6	-9 46.2 +55.8
9°	-7 20.7 +55.3	-7 43.5 +55.4	-8 06.1 +55.5	-8 28.4 +55.6	-8 50.4 +55.7
10°	-6 25.4 +55.4	-6 48.1 +55.4	-7 10.6 +55.6	-7 32.8 +55.7	-7 54.7 +55.8
11°	-5 30.0 +55.3	-5 52.7 +55.5	-6 15.0 +55.6	-6 37.1 +55.7	-6 58.9 +55.8
12°	-4 34.7 +55.4	-4 57.2 +55.5	-5 19.4 +55.6	-5 41.4 +55.7	-6 03.1 +55.9
13°	-3 39.3 +55.3	-4 01.7 +55.5	-4 23.8 +55.6	-4 45.7 +55.7	-5 07.2 +55.8
14°	-2 44.0 +55.4	-3 06.2 +55.5	-3 28.2 +55.6	-3 50.0 +55.8	-4 11.4 +55.8
15°	-1 48.6 +55.4	-2 10.7 +55.5	-2 32.6 +55.6	-2 54.2 +55.7	-3 15.6 +55.9
16°	-0 53.2 +55.4	-1 15.2 +55.5	-1 37.0 +55.6	-1 58.5 +55.7	-2 19.7 +55.8
17°	0 02.2 +55.4 51.6	-0 19.7 +55.5	-0 41.4 +55.6	-1 02.8 +55.8	-1 23.9 +55.9
18°	0 57.6 +55.4 51.2	0 35.8 +55.5 50.3	0 14.2 +55.7 49.4	-0 07.0 +55.7	-0 28.0 +55.9
19°	1 53.0 +55.3 50.8	1 31.3 +55.5 49.9	1 09.9 +55.6 49.0	0 48.7 +55.8 48.2	0 27.9 +55.8 47.3
20°	2 48.3 +55.4 50.4	2 26.8 +55.5 49.5	2 05.5 +55.6 48.7	1 44.5 +55.7 47.8	1 23.7 +55.9 46.9
21°	3 43.7 +55.4 50.0	3 22.3 +55.4 49.2	3 01.1 +55.6 48.3	2 40.2 +55.7 47.4	2 19.6 +55.8 46.6
22°	4 39.1 +55.3 49.6	4 17.7 +55.5 48.8	3 56.7 +55.6 47.9	3 35.9 +55.7 47.1	3 15.4 +55.9 46.2
23°	5 34.4 +55.3 49.3	5 13.2 +55.5 48.4	4 52.3 +55.6 47.5	4 31.6 +55.8 46.7	4 11.3 +55.8 45.8
24°	6 29.7 +55.4 48.9	6 08.7 +55.4 48.0	5 47.9 +55.5 47.2	5 27.4 +55.7 46.3	5 07.1 +55.9 45.5
25°	7 25.1 +55.3 48.5	7 04.1 +55.4 47.6	6 43.4 +55.6 46.8	6 23.1 +55.6 45.9	6 03.0 +55.8 45.1
26°	8 20.4 +55.2 48.1	7 59.5 +55.4 47.2	7 39.0 +55.5 46.4	7 18.7 +55.7 45.6	6 58.8 +55.8 44.7
27°	9 15.6 +55.3 47.7	8 54.9 +55.4 46.9	8 34.5 +55.5 46.0	8 14.4 +55.6 45.2	7 54.6 +55.7 44.4
28°	10 10.9 +55.2 47.3	9 50.3 +55.4 46.5	9 30.0 +55.5 45.6	9 10.0 +55.6 44.8	8 50.3 +55.8 44.0
29°	11 06.1 +55.2 46.9	10 45.7 +55.3 46.1	10 25.5 +55.5 45.3	10 05.6 +55.6 44.4	9 46.1 +55.7 43.6

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Latitude 62°

Declination SAME name as Latitude

Dec	LHA 130° / 230°	LHA 131° / 229°	LHA 132° / 228°	LHA 133° / 227°	LHA 134° / 226°
	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°	-9 12.2 +55.9	-9 33.6 +56.0	-9 54.8 +56.2		
10°	-8 16.3 +55.9	-8 37.6 +56.0	-8 58.6 +56.1	-9 19.4 +56.3	-9 39.8 +56.4
11°	-7 20.4 +55.9	-7 41.6 +56.1	-8 02.5 +56.2	-8 23.1 +56.3	-8 43.4 +56.4
12°	-6 24.5 +56.0	-6 45.5 +56.0	-7 06.3 +56.1	-7 26.8 +56.3	-7 47.0 +56.4
13°	-5 28.5 +55.9	-5 49.5 +56.1	-6 10.2 +56.2	-6 30.5 +56.3	-6 50.6 +56.5
14°	-4 32.6 +56.0	-4 53.4 +56.1	-5 14.0 +56.2	-5 34.2 +56.3	-5 54.1 +56.4
15°	-3 36.6 +56.0	-3 57.3 +56.1	-4 17.8 +56.2	-4 37.9 +56.3	-4 57.7 +56.5
16°	-2 40.6 +56.0	-3 01.2 +56.1	-3 21.6 +56.3	-3 41.6 +56.4	-4 01.2 +56.4
17°	-1 44.6 +55.9	-2 05.1 +56.1	-2 25.3 +56.2	-2 45.2 +56.3	-3 04.8 +56.5
18°	-0 48.7 +56.0	-1 09.0 +56.1	-1 29.1 +56.2	-1 48.9 +56.4	-2 08.3 +56.5
19°	0 07.3 +56.0 46.4	-0 12.9 +56.1	-0 32.9 +56.3	-0 52.5 +56.3	-1 11.8 +56.4
20°	1 03.3 +56.0 46.1	0 43.2 +56.1 45.2	0 23.4 +56.2 44.3	0 03.8 +56.4 43.4	-0 15.4 +56.5
21°	1 59.3 +56.0 45.7	1 39.3 +56.1 44.8	1 19.6 +56.2 43.9	1 00.2 +56.3 43.1	0 41.1 +56.5 42.2
22°	2 55.3 +55.9 45.3	2 35.4 +56.1 44.5	2 15.8 +56.2 43.6	1 56.5 +56.4 42.7	1 37.6 +56.5 41.9
23°	3 51.2 +56.0 45.0	3 31.5 +56.1 44.1	3 12.0 +56.2 43.2	2 52.9 +56.3 42.4	2 34.1 +56.4 41.5
24°	4 47.2 +56.0 44.6	4 27.6 +56.0 43.8	4 08.2 +56.2 42.9	3 49.2 +56.4 42.0	3 30.5 +56.5 41.2
25°	5 43.2 +55.9 44.2	5 23.6 +56.1 43.4	5 04.4 +56.2 42.5	4 45.6 +56.3 41.7	4 27.0 +56.4 40.8
26°	6 39.1 +55.9 43.9	6 19.7 +56.1 43.0	6 00.6 +56.2 42.2	5 41.9 +56.3 41.3	5 23.4 +56.5 40.5
27°	7 35.0 +55.9 43.5	7 15.8 +56.0 42.7	6 56.8 +56.2 41.8	6 38.2 +56.3 41.0	6 19.9 +56.4 40.2
28°	8 30.9 +55.9 43.2	8 11.8 +56.0 42.3	7 53.0 +56.1 41.5	7 34.5 +56.3 40.6	7 16.3 +56.4 39.8
29°	9 26.8 +55.8 42.8	9 07.8 +56.0 42.0	8 49.1 +56.2 41.1	8 30.8 +56.2 40.3	8 12.7 +56.4 39.5

Dec	LHA 135° / 225°	LHA 136° / 224°	LHA 137° / 223°	LHA 138° / 222°	LHA 139° / 221°
	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°	-9 59.8 +56.5				
11°	-9 03.3 +56.5	-9 23.0 +56.7	-9 42.3 +56.8		
12°	-8 06.8 +56.5	-8 26.3 +56.6	-8 45.5 +56.8	-9 04.4 +56.9	-9 22.9 +57.1
13°	-7 10.3 +56.6	-7 29.7 +56.7	-7 48.7 +56.7	-8 07.5 +56.9	-8 25.8 +57.0
14°	-6 13.7 +56.5	-6 33.0 +56.7	-6 52.0 +56.8	-7 10.6 +57.0	-7 28.8 +57.0
15°	-5 17.2 +56.6	-5 36.3 +56.7	-5 55.2 +56.9	-6 13.6 +56.9	-6 31.8 +57.1
16°	-4 20.6 +56.6	-4 39.6 +56.7	-4 58.3 +56.8	-5 16.7 +56.9	-5 34.7 +57.0
17°	-3 24.0 +56.6	-3 42.9 +56.7	-4 01.5 +56.8	-4 19.8 +57.0	-4 37.7 +57.1
18°	-2 27.4 +56.6	-2 46.2 +56.7	-3 04.7 +56.8	-3 22.8 +56.9	-3 40.6 +57.1
19°	-1 30.8 +56.6	-1 49.5 +56.7	-2 07.9 +56.9	-2 25.9 +57.0	-2 43.5 +57.0
20°	-0 34.2 +56.6	-0 52.8 +56.7	-1 11.0 +56.8	-1 28.9 +57.0	-1 46.5 +57.1
21°	0 22.4 +56.6 41.3	0 03.9 +56.7 40.4	-0 14.2 +56.9	-0 31.9 +56.9	-0 49.4 +57.1
22°	1 19.0 +56.5 41.0	1 00.6 +56.8 40.1	0 42.7 +56.8 39.2	0 25.0 +57.0 38.3	0 07.7 +57.1 37.5
23°	2 15.5 +56.6 40.6	1 57.4 +56.7 39.8	1 39.5 +56.8 38.9	1 22.0 +56.9 38.0	1 04.8 +57.1 37.2
24°	3 12.1 +56.6 40.3	2 54.1 +56.7 39.5	2 36.3 +56.9 38.6	2 18.9 +57.0 37.7	2 01.9 +57.1 36.8
25°	4 08.7 +56.6 40.0	3 50.8 +56.7 39.1	3 33.2 +56.8 38.3	3 15.9 +56.9 37.4	2 59.0 +57.0 36.5
26°	5 05.3 +56.6 39.6	4 47.5 +56.7 38.8	4 30.0 +56.8 37.9	4 12.8 +57.0 37.1	3 56.0 +57.1 36.2
27°	6 01.9 +56.5 39.3	5 44.2 +56.7 38.5	5 26.8 +56.8 37.6	5 09.8 +56.9 36.8	4 53.1 +57.0 35.9
28°	6 58.4 +56.5 39.0	6 40.9 +56.6 38.1	6 23.6 +56.8 37.3	6 06.7 +56.9 36.5	5 50.1 +57.1 35.6
29°	7 54.9 +56.6 38.6	7 37.5 +56.7 37.8	7 20.4 +56.8 37.0	7 03.6 +56.9 36.1	6 47.2 +57.0 35.3

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Dec	LHA 140° / 220°	LHA 141° / 219°	LHA 142° / 218°	LHA 143° / 217°	LHA 144° / 216°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
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10°					
11°					
12°	-9 41.0 +57.1	-9 58.8 +57.3			
13°	-8 43.9 +57.2	-9 01.5 +57.2	-9 18.8 +57.3	-9 35.8 +57.5	-9 52.3 +57.6
14°	-7 46.7 +57.1	-8 04.3 +57.3	-8 21.5 +57.4	-8 38.3 +57.5	-8 54.7 +57.6
15°	-6 49.6 +57.2	-7 07.0 +57.3	-7 24.1 +57.4	-7 40.8 +57.5	-7 57.1 +57.6
16°	-5 52.4 +57.2	-6 09.7 +57.3	-6 26.7 +57.4	-6 43.3 +57.6	-6 59.5 +57.6
17°	-4 55.2 +57.2	-5 12.4 +57.3	-5 29.3 +57.4	-5 45.7 +57.5	-6 01.9 +57.7
18°	-3 58.0 +57.1	-4 15.1 +57.3	-4 31.9 +57.5	-4 48.2 +57.5	-5 04.2 +57.6
19°	-3 00.9 +57.2	-3 17.8 +57.3	-3 34.4 +57.4	-3 50.7 +57.6	-4 06.6 +57.7
20°	-2 03.7 +57.2	-2 20.5 +57.3	-2 37.0 +57.4	-2 53.1 +57.5	-3 08.9 +57.7
21°	-1 06.5 +57.2	-1 23.2 +57.3	-1 39.6 +57.5	-1 55.6 +57.6	-2 11.2 +57.6
22°	-0 09.3 +57.3	-0 25.9 +57.4	-0 42.1 +57.4	-0 58.0 +57.5	-1 13.6 +57.7
23°	0 48.0 +57.2 36.3	0 31.5 +57.3 35.4	0 15.3 +57.5 34.5	-0 00.5 +57.6	-0 15.9 +57.7
24°	1 45.2 +57.2 36.0	1 28.8 +57.3 35.1	1 12.8 +57.4 34.2	0 57.1 +57.5 33.4	0 41.8 +57.6 32.5
25°	2 42.4 +57.1 35.7	2 26.1 +57.3 34.8	2 10.2 +57.4 33.9	1 54.6 +57.6 33.1	1 39.4 +57.7 32.2
26°	3 39.5 +57.2 35.4	3 23.4 +57.3 34.5	3 07.6 +57.5 33.7	2 52.2 +57.5 32.8	2 37.1 +57.7 31.9
27°	4 36.7 +57.2 35.1	4 20.7 +57.3 34.2	4 05.1 +57.4 33.4	3 49.7 +57.6 32.5	3 34.8 +57.6 31.7
28°	5 33.9 +57.2 34.8	5 18.0 +57.3 33.9	5 02.5 +57.4 33.1	4 47.3 +57.5 32.2	4 32.4 +57.7 31.4
29°	6 31.1 +57.1 34.5	6 15.3 +57.3 33.6	5 59.9 +57.4 32.8	5 44.8 +57.5 31.9	5 30.1 +57.6 31.1

Dec	LHA 145° / 215°	LHA 146° / 214°	LHA 147° / 213°	LHA 148° / 212°	LHA 149° / 211°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
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10°					
11°					
12°					
13°					
14°	-9 10.8 +57.7	-9 26.5 +57.8	-9 41.8 +58.0	-9 56.7 +58.1	
15°	-8 13.1 +57.8	-8 28.7 +57.9	-8 43.8 +57.9	-8 58.6 +58.0	-9 13.0 +58.1
16°	-7 15.3 +57.7	-7 30.8 +57.9	-7 45.9 +58.0	-8 00.6 +58.1	-8 14.9 +58.2
17°	-6 17.6 +57.8	-6 32.9 +57.8	-6 47.9 +58.0	-7 02.5 +58.1	-7 16.7 +58.2
18°	-5 19.8 +57.7	-5 35.1 +57.9	-5 49.9 +58.0	-6 04.4 +58.1	-6 18.5 +58.2
19°	-4 22.1 +57.8	-4 37.2 +57.9	-4 51.9 +57.9	-5 06.3 +58.1	-5 20.3 +58.2
20°	-3 24.3 +57.8	-3 39.3 +57.9	-3 54.0 +58.0	-4 08.2 +58.1	-4 22.1 +58.2
21°	-2 26.5 +57.8	-2 41.4 +57.9	-2 56.0 +58.0	-3 10.1 +58.1	-3 23.9 +58.2
22°	-1 28.7 +57.8	-1 43.5 +57.9	-1 58.0 +58.1	-2 12.0 +58.1	-2 25.7 +58.3
23°	-0 30.9 +57.7	-0 45.6 +57.9	-0 59.9 +58.0	-1 13.9 +58.1	-1 27.4 +58.2
24°	0 26.8 +57.8 31.6	0 12.3 +57.9 30.7	-0 01.9 +58.0	-0 15.8 +58.1	-0 29.2 +58.2
25°	1 24.6 +57.8 31.3	1 10.2 +57.8 30.5	0 56.1 +58.0 29.6	0 42.3 +58.2 28.7	0 29.0 +58.2 27.8
26°	2 22.4 +57.8 31.1	2 08.0 +57.9 30.2	1 54.1 +58.0 29.3	1 40.5 +58.1 28.5	1 27.2 +58.2 27.6
27°	3 20.2 +57.8 30.8	3 05.9 +57.9 29.9	2 52.1 +58.0 29.1	2 38.6 +58.1 28.2	2 25.4 +58.3 27.3
28°	4 18.0 +57.7 30.5	4 03.8 +57.9 29.7	3 50.1 +58.0 28.8	3 36.7 +58.1 28.0	3 23.7 +58.2 27.1
29°	5 15.7 +57.8 30.3	5 01.7 +57.9 29.4	4 48.1 +57.9 28.6	4 34.8 +58.1 27.7	4 21.9 +58.2 26.9

Dec	LHA 150° / 210°	LHA 151° / 209°	LHA 152° / 208°	LHA 153° / 207°	LHA 154° / 206°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
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12°					
13°					
14°					
15°	-9 27.0 +58.2	-9 40.6 +58.4	-9 53.8 +58.5		
16°	-8 28.8 +58.3	-8 42.2 +58.4	-8 55.3 +58.5	-9 08.0 +58.6	-9 20.2 +58.7
17°	-7 30.5 +58.3	-7 43.8 +58.4	-7 56.8 +58.5	-8 09.4 +58.6	-8 21.5 +58.7
18°	-6 32.2 +58.3	-6 45.4 +58.4	-6 58.3 +58.5	-7 10.8 +58.6	-7 22.8 +58.7
19°	-5 33.9 +58.3	-5 47.0 +58.4	-5 59.8 +58.5	-6 12.2 +58.6	-6 24.1 +58.7
20°	-4 35.6 +58.4	-4 48.6 +58.4	-5 01.3 +58.5	-5 13.6 +58.6	-5 25.4 +58.7
21°	-3 37.2 +58.3	-3 50.2 +58.4	-4 02.8 +58.5	-4 15.0 +58.6	-4 26.7 +58.7
22°	-2 38.9 +58.3	-2 51.8 +58.4	-3 04.3 +58.5	-3 16.4 +58.7	-3 28.0 +58.7
23°	-1 40.6 +58.3	-1 53.4 +58.5	-2 05.8 +58.6	-2 17.7 +58.6	-2 29.3 +58.7
24°	-0 42.3 +58.3	-0 54.9 +58.4	-1 07.2 +58.5	-1 19.1 +58.6	-1 30.6 +58.7
25°	0 16.0 +58.4 26.9	0 03.5 +58.4 26.1	-0 08.7 +58.5	-0 20.5 +58.6	-0 31.9 +58.7
26°	1 14.4 +58.3 26.7	1 01.9 +58.4 25.8	0 49.8 +58.5 25.0	0 38.1 +58.7 24.1	0 26.8 +58.7 23.2
27°	2 12.7 +58.3 26.5	2 00.3 +58.4 25.6	1 48.3 +58.6 24.7	1 36.8 +58.6 23.9	1 25.5 +58.8 23.0
28°	3 11.0 +58.3 26.2	2 58.7 +58.5 25.4	2 46.9 +58.5 24.5	2 35.4 +58.6 23.7	2 24.3 +58.7 22.8
29°	4 09.3 +58.3 26.0	3 57.2 +58.4 25.2	3 45.4 +58.5 24.3	3 34.0 +58.6 23.4	3 23.0 +58.7 22.6

Dec	LHA 155° / 205°	LHA 156° / 204°	LHA 157° / 203°	LHA 158° / 202°	LHA 159° / 201°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
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4°					
5°					
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12°					
13°					
14°					
15°					
16°	-9 32.0 +58.7	-9 43.4 +58.8	-9 54.4 +59.0		
17°	-8 33.3 +58.8	-8 44.6 +58.9	-8 55.4 +58.9	-9 05.9 +59.1	-9 15.9 +59.2
18°	-7 34.5 +58.8	-7 45.7 +58.9	-7 56.5 +59.0	-8 06.8 +59.0	-8 16.7 +59.1
19°	-6 35.7 +58.8	-6 46.8 +58.9	-6 57.5 +59.0	-7 07.8 +59.1	-7 17.6 +59.1
20°	-5 36.9 +58.8	-5 47.9 +58.9	-5 58.5 +58.9	-6 08.7 +59.0	-6 18.5 +59.2
21°	-4 38.1 +58.8	-4 49.0 +58.9	-4 59.6 +59.0	-5 09.7 +59.1	-5 19.3 +59.1
22°	-3 39.3 +58.8	-3 50.1 +58.8	-4 00.6 +59.0	-4 10.6 +59.1	-4 20.2 +59.1
23°	-2 40.5 +58.8	-2 51.3 +58.9	-3 01.6 +59.0	-3 11.5 +59.0	-3 21.1 +59.2
24°	-1 41.7 +58.8	-1 52.4 +58.9	-2 02.6 +59.0	-2 12.5 +59.1	-2 21.9 +59.1
25°	-0 42.9 +58.8	-0 53.5 +58.9	-1 03.6 +58.9	-1 13.4 +59.1	-1 22.8 +59.2
26°	0 15.9 +58.8 22.3	0 05.4 +58.9 21.4	-0 04.7 +59.0	-0 14.3 +59.0	-0 23.6 +59.1
27°	1 14.7 +58.8 22.1	1 04.3 +58.9 21.3	0 54.3 +59.0 20.4	0 44.7 +59.1 19.5	0 35.5 +59.2 18.6
28°	2 13.5 +58.9 21.9	2 03.2 +58.9 21.1	1 53.3 +59.0 20.2	1 43.8 +59.0 19.3	1 34.7 +59.1 18.5
29°	3 12.4 +58.8 21.7	3 02.1 +58.9 20.9	2 52.3 +59.0 20.0	2 42.8 +59.1 19.1	2 33.8 +59.1 18.3

Dec	LHA 160° / 200°	LHA 161° / 199°	LHA 162° / 198°	LHA 163° / 197°	LHA 164° / 196°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
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5°					
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8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°	-9 25.4 +59.2	-9 34.5 +59.2	-9 43.2 +59.3	-9 51.4 +59.4	-9 59.2 +59.5
18°	-8 26.2 +59.2	-8 35.3 +59.3	-8 43.9 +59.4	-8 52.0 +59.4	-8 59.7 +59.5
19°	-7 27.0 +59.2	-7 36.0 +59.3	-7 44.5 +59.3	-7 52.6 +59.4	-8 00.2 +59.5
20°	-6 27.8 +59.2	-6 36.7 +59.3	-6 45.2 +59.4	-6 53.2 +59.5	-7 00.7 +59.4
21°	-5 28.6 +59.2	-5 37.4 +59.3	-5 45.8 +59.4	-5 53.7 +59.4	-6 01.3 +59.5
22°	-4 29.4 +59.2	-4 38.1 +59.3	-4 46.4 +59.3	-4 54.3 +59.4	-5 01.8 +59.5
23°	-3 30.2 +59.3	-3 38.8 +59.3	-3 47.1 +59.4	-3 54.9 +59.4	-4 02.3 +59.5
24°	-2 30.9 +59.2	-2 39.5 +59.3	-2 47.7 +59.4	-2 55.5 +59.5	-3 02.8 +59.5
25°	-1 31.7 +59.2	-1 40.2 +59.3	-1 48.3 +59.3	-1 56.0 +59.4	-2 03.3 +59.5
26°	-0 32.5 +59.2	-0 40.9 +59.2	-0 49.0 +59.4	-0 56.6 +59.4	-1 03.8 +59.5
27°	0 26.7 +59.2 17.7	0 18.3 +59.3 16.9	0 10.4 +59.3 16.0	0 02.8 +59.5 15.1	-0 04.3 +59.5
28°	1 25.9 +59.3 17.6	1 17.6 +59.3 16.7	1 09.7 +59.4 15.8	1 02.3 +59.4 15.0	0 55.2 +59.5 14.1
29°	2 25.2 +59.2 17.4	2 16.9 +59.3 16.6	2 09.1 +59.4 15.7	2 01.7 +59.4 14.8	1 54.7 +59.5 14.0

Dec	LHA 165° / 195°	LHA 166° / 194°	LHA 167° / 193°	LHA 168° / 192°	LHA 169° / 191°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
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15°					
16°					
17°					
18°	-9 07.0 +59.6	-9 13.8 +59.6	-9 20.1 +59.7	-9 26.0 +59.7	-9 31.4 +59.8
19°	-8 07.4 +59.5	-8 14.2 +59.7	-8 20.4 +59.6	-8 26.3 +59.7	-8 31.6 +59.7
20°	-7 07.9 +59.6	-7 14.5 +59.6	-7 20.8 +59.7	-7 26.6 +59.8	-7 31.9 +59.8
21°	-6 08.3 +59.5	-6 14.9 +59.6	-6 21.1 +59.6	-6 26.8 +59.7	-6 32.1 +59.7
22°	-5 08.8 +59.6	-5 15.3 +59.6	-5 21.5 +59.7	-5 27.1 +59.7	-5 32.4 +59.8
23°	-4 09.2 +59.5	-4 15.7 +59.6	-4 21.8 +59.7	-4 27.4 +59.7	-4 32.6 +59.7
24°	-3 09.7 +59.6	-3 16.1 +59.6	-3 22.1 +59.6	-3 27.7 +59.7	-3 32.9 +59.8
25°	-2 10.1 +59.5	-2 16.5 +59.6	-2 22.5 +59.7	-2 28.0 +59.7	-2 33.1 +59.8
26°	-1 10.6 +59.6	-1 16.9 +59.6	-1 22.8 +59.7	-1 28.3 +59.7	-1 33.3 +59.7
27°	-0 11.0 +59.6	-0 17.3 +59.6	-0 23.1 +59.6	-0 28.6 +59.7	-0 33.6 +59.8
28°	0 48.6 +59.5 13.2	0 42.3 +59.6 12.3	0 36.5 +59.7 11.5	0 31.1 +59.8 10.6	0 26.2 +59.7 9.7
29°	1 48.1 +59.6 13.1	1 41.9 +59.7 12.2	1 36.2 +59.7 11.4	1 30.9 +59.7 10.5	1 25.9 +59.8 9.6

Dec	LHA 170° / 190°	LHA 171° / 189°	LHA 172° / 188°	LHA 173° / 187°	LHA 174° / 186°
	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°	-9 36.3 +59.8	-9 40.8 +59.8	-9 44.8 +59.8	-9 48.4 +59.9	-9 51.5 +60.0
19°	-8 36.5 +59.8	-8 41.0 +59.8	-8 45.0 +59.9	-8 48.5 +59.9	-8 51.5 +59.9
20°	-7 36.7 +59.8	-7 41.2 +59.9	-7 45.1 +59.9	-7 48.6 +59.9	-7 51.6 +59.9
21°	-6 36.9 +59.8	-6 41.3 +59.8	-6 45.2 +59.8	-6 48.7 +59.9	-6 51.7 +59.9
22°	-5 37.1 +59.7	-5 41.5 +59.9	-5 45.4 +59.9	-5 48.8 +59.9	-5 51.8 +60.0
23°	-4 37.4 +59.8	-4 41.6 +59.8	-4 45.5 +59.9	-4 48.9 +59.9	-4 51.8 +59.9
24°	-3 37.6 +59.8	-3 41.8 +59.8	-3 45.6 +59.9	-3 49.0 +59.9	-3 51.9 +59.9
25°	-2 37.8 +59.8	-2 42.0 +59.9	-2 45.7 +59.8	-2 49.1 +59.9	-2 52.0 +60.0
26°	-1 38.0 +59.8	-1 42.1 +59.8	-1 45.9 +59.9	-1 49.2 +59.9	-1 52.0 +59.9
27°	-0 38.2 +59.8	-0 42.3 +59.8	-0 46.0 +59.9	-0 49.3 +59.9	-0 52.1 +59.9
28°	0 21.6 +59.8 8.8	0 17.5 +59.9 7.9	0 13.9 +59.8 7.1	0 10.6 +59.9 6.2	0 07.8 +59.9 5.3
29°	1 21.4 +59.8 8.7	1 17.4 +59.8 7.9	1 13.7 +59.9 7.0	1 10.5 +59.9 6.1	1 07.7 +60.0 5.2

Dec	LHA 175° / 185°	LHA 176° / 184°	LHA 177° / 183°	LHA 178° / 182°	LHA 179° / 181°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
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7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°	-9 54.1 +60.0	-9 56.2 +60.0	-9 57.9 +60.0	-9 59.1 +60.0	-9 59.8 +60.0
19°	-8 54.1 +59.9	-8 56.2 +59.9	-8 57.9 +60.0	-8 59.1 +60.0	-8 59.8 +60.0
20°	-7 54.2 +60.0	-7 56.3 +60.0	-7 57.9 +60.0	-7 59.1 +60.0	-7 59.8 +60.0
21°	-6 54.2 +59.9	-6 56.3 +60.0	-6 57.9 +60.0	-6 59.1 +60.0	-6 59.8 +60.0
22°	-5 54.3 +60.0	-5 56.3 +59.9	-5 57.9 +59.9	-5 59.1 +60.0	-5 59.8 +60.0
23°	-4 54.3 +59.9	-4 56.4 +60.0	-4 58.0 +60.0	-4 59.1 +60.0	-4 59.8 +60.0
24°	-3 54.4 +60.0	-3 56.4 +60.0	-3 58.0 +60.0	-3 59.1 +60.0	-3 59.8 +60.0
25°	-2 54.4 +59.9	-2 56.4 +59.9	-2 58.0 +60.0	-2 59.1 +60.0	-2 59.8 +60.0
26°	-1 54.5 +60.0	-1 56.5 +60.0	-1 58.0 +60.0	-1 59.1 +60.0	-1 59.8 +60.0
27°	-0 54.5 +59.9	-0 56.5 +60.0	-0 58.0 +60.0	-0 59.1 +60.0	-0 59.8 +60.0
28°	0 05.4 +60.0 4.4	0 03.5 +59.9 3.5	0 02.0 +59.9 2.6	0 00.9 +60.0 1.8	0 00.2 +60.0 0.9
29°	1 05.4 +59.9 4.4	1 03.4 +60.0 3.5	1 01.9 +60.0 2.6	1 00.9 +60.0 1.7	1 00.2 +60.0 0.9

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°	27 00.0 +60.0 180.0	26 59.7 +60.0 178.9	26 58.9 +60.0 177.8	26 57.6 +60.0 176.6	26 55.7 +60.0 175.5
1°	28 00.0 +60.0 180.0	27 59.7 +60.0 178.9	27 58.9 +60.0 177.7	27 57.6 +60.0 176.6	27 55.7 +60.0 175.5
2°	29 00.0 +60.0 180.0	28 59.7 +60.0 178.9	28 58.9 +60.0 177.7	28 57.6 +59.9 176.6	28 55.7 +59.9 175.4
3°	30 00.0 +60.0 180.0	29 59.7 +60.0 178.8	29 58.9 +60.0 177.7	29 57.5 +60.0 176.5	29 55.6 +60.0 175.4
4°	31 00.0 +60.0 180.0	30 59.7 +60.0 178.8	30 58.9 +60.0 177.7	30 57.5 +60.0 176.5	30 55.6 +59.9 175.3
5°	32 00.0 +60.0 180.0	31 59.7 +60.0 178.8	31 58.9 +60.0 177.7	31 57.5 +60.0 176.5	31 55.5 +60.0 175.3
6°	33 00.0 +60.0 180.0	32 59.7 +60.0 178.8	32 58.9 +60.0 177.6	32 57.5 +59.9 176.4	32 55.5 +60.0 175.3
7°	34 00.0 +60.0 180.0	33 59.7 +60.0 178.8	33 58.9 +60.0 177.6	33 57.4 +60.0 176.4	33 55.5 +59.9 175.2
8°	35 00.0 +60.0 180.0	34 59.7 +60.0 178.8	34 58.9 +59.9 177.6	34 57.4 +60.0 176.4	34 55.4 +60.0 175.2
9°	36 00.0 +60.0 180.0	35 59.7 +60.0 178.8	35 58.8 +60.0 177.6	35 57.4 +60.0 176.3	35 55.4 +59.9 175.1
10°	37 00.0 +60.0 180.0	36 59.7 +60.0 178.8	36 58.8 +60.0 177.5	36 57.4 +59.9 176.3	36 55.3 +60.0 175.1
11°	38 00.0 +60.0 180.0	37 59.7 +60.0 178.8	37 58.8 +60.0 177.5	37 57.3 +60.0 176.3	37 55.3 +59.9 175.0
12°	39 00.0 +60.0 180.0	38 59.7 +60.0 178.7	38 58.8 +60.0 177.5	38 57.3 +60.0 176.2	38 55.2 +60.0 175.0
13°	40 00.0 +60.0 180.0	39 59.7 +60.0 178.7	39 58.8 +60.0 177.5	39 57.3 +60.0 176.2	39 55.2 +59.9 174.9
14°	41 00.0 +60.0 180.0	40 59.7 +60.0 178.7	40 58.8 +60.0 177.4	40 57.3 +59.9 176.1	40 55.1 +60.0 174.9
15°	42 00.0 +60.0 180.0	41 59.7 +60.0 178.7	41 58.8 +60.0 177.4	41 57.2 +60.0 176.1	41 55.1 +59.9 174.8
16°	43 00.0 +60.0 180.0	42 59.7 +60.0 178.7	42 58.8 +59.9 177.4	42 57.2 +60.0 176.1	42 55.0 +59.9 174.7
17°	44 00.0 +60.0 180.0	43 59.7 +60.0 178.7	43 58.7 +60.0 177.3	43 57.2 +59.9 176.0	43 54.9 +60.0 174.7
18°	45 00.0 +60.0 180.0	44 59.7 +60.0 178.7	44 58.7 +60.0 177.3	44 57.1 +60.0 176.0	44 54.9 +59.9 174.6
19°	46 00.0 +60.0 180.0	45 59.7 +60.0 178.6	45 58.7 +60.0 177.3	45 57.1 +60.0 175.9	45 54.8 +60.0 174.6
20°	47 00.0 +60.0 180.0	46 59.7 +60.0 178.6	46 58.7 +60.0 177.2	46 57.1 +59.9 175.9	46 54.8 +59.9 174.5
21°	48 00.0 +60.0 180.0	47 59.7 +60.0 178.6	47 58.7 +60.0 177.2	47 57.0 +60.0 175.8	47 54.7 +59.9 174.4
22°	49 00.0 +60.0 180.0	48 59.7 +60.0 178.6	48 58.7 +59.9 177.2	48 57.0 +59.9 175.8	48 54.6 +60.0 174.4
23°	50 00.0 +60.0 180.0	49 59.7 +60.0 178.6	49 58.6 +60.0 177.1	49 56.9 +60.0 175.7	49 54.6 +59.9 174.3
24°	51 00.0 +60.0 180.0	50 59.7 +60.0 178.5	50 58.6 +60.0 177.1	50 56.9 +60.0 175.6	50 54.5 +59.9 174.2
25°	52 00.0 +60.0 180.0	51 59.7 +59.9 178.5	51 58.6 +60.0 177.1	51 56.9 +59.9 175.6	51 54.4 +59.9 174.1
26°	53 00.0 +60.0 180.0	52 59.6 +60.0 178.5	52 58.6 +60.0 177.0	52 56.8 +60.0 175.5	52 54.3 +59.9 174.0
27°	54 00.0 +60.0 180.0	53 59.6 +60.0 178.5	53 58.6 +59.9 177.0	53 56.8 +59.9 175.5	53 54.2 +60.0 173.9
28°	55 00.0 +60.0 180.0	54 59.6 +60.0 178.5	54 58.5 +60.0 176.9	54 56.7 +60.0 175.4	54 54.2 +59.9 173.9
29°	56 00.0 +60.0 180.0	55 59.6 +60.0 178.4	55 58.5 +60.0 176.9	55 56.7 +59.9 175.3	55 54.1 +59.9 173.8

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°	26 53.3 +60.0 174.4	26 50.4 +59.9 173.3	26 47.0 +59.8 172.2	26 43.0 +59.8 171.0	26 38.5 +59.8 169.9
1°	27 53.3 +59.9 174.3	27 50.3 +59.9 173.2	27 46.8 +59.9 172.1	27 42.8 +59.9 171.0	27 38.3 +59.8 169.8
2°	28 53.2 +60.0 174.3	28 50.2 +59.9 173.2	28 46.7 +59.9 172.0	28 42.7 +59.8 170.9	28 38.1 +59.8 169.7
3°	29 53.2 +59.9 174.2	29 50.1 +60.0 173.1	29 46.6 +59.9 171.9	29 42.5 +59.9 170.8	29 37.9 +59.8 169.6
4°	30 53.1 +59.9 174.2	30 50.1 +59.9 173.0	30 46.5 +59.9 171.9	30 42.4 +59.8 170.7	30 37.7 +59.8 169.6
5°	31 53.0 +60.0 174.1	31 50.0 +59.9 173.0	31 46.4 +59.8 171.8	31 42.2 +59.8 170.6	31 37.5 +59.8 169.5
6°	32 53.0 +59.9 174.1	32 49.9 +59.9 172.9	32 46.2 +59.9 171.7	32 42.0 +59.8 170.5	32 37.3 +59.7 169.4
7°	33 52.9 +59.9 174.0	33 49.8 +59.9 172.8	33 46.1 +59.9 171.6	33 41.8 +59.9 170.4	33 37.0 +59.8 169.3
8°	34 52.8 +60.0 174.0	34 49.7 +59.9 172.8	34 46.0 +59.8 171.6	34 41.7 +59.8 170.4	34 36.8 +59.8 169.2
9°	35 52.8 +59.9 173.9	35 49.6 +59.9 172.7	35 45.8 +59.9 171.5	35 41.5 +59.8 170.3	35 36.6 +59.8 169.0
10°	36 52.7 +59.9 173.8	36 49.5 +59.9 172.6	36 45.7 +59.8 171.4	36 41.3 +59.8 170.2	36 36.4 +59.7 168.9
11°	37 52.6 +59.9 173.8	37 49.4 +59.9 172.5	37 45.5 +59.9 171.3	37 41.1 +59.8 170.1	37 36.1 +59.8 168.8
12°	38 52.5 +60.0 173.7	38 49.3 +59.8 172.5	38 45.4 +59.8 171.2	38 40.9 +59.8 170.0	38 35.9 +59.7 168.7
13°	39 52.5 +59.9 173.6	39 49.1 +59.9 172.4	39 45.2 +59.9 171.1	39 40.7 +59.8 169.9	39 35.6 +59.8 168.6
14°	40 52.4 +59.9 173.6	40 49.0 +59.9 172.3	40 45.1 +59.8 171.0	40 40.5 +59.8 169.7	40 35.4 +59.7 168.5
15°	41 52.3 +59.9 173.5	41 48.9 +59.9 172.2	41 44.9 +59.8 170.9	41 40.3 +59.8 169.6	41 35.1 +59.7 168.3
16°	42 52.2 +59.9 173.4	42 48.8 +59.9 172.1	42 44.7 +59.9 170.8	42 40.1 +59.8 169.5	42 34.8 +59.7 168.2
17°	43 52.1 +59.9 173.4	43 48.7 +59.8 172.0	43 44.6 +59.8 170.7	43 39.9 +59.7 169.4	43 34.5 +59.8 168.1
18°	44 52.0 +59.9 173.3	44 48.5 +59.9 171.9	44 44.4 +59.8 170.6	44 39.6 +59.8 169.3	44 34.3 +59.6 167.9
19°	45 51.9 +59.9 173.2	45 48.4 +59.8 171.8	45 44.2 +59.8 170.5	45 39.4 +59.7 169.1	45 33.9 +59.7 167.8
20°	46 51.8 +59.9 173.1	46 48.2 +59.9 171.7	46 44.0 +59.8 170.4	46 39.1 +59.8 169.0	46 33.6 +59.7 167.7
21°	47 51.7 +59.9 173.0	47 48.1 +59.8 171.6	47 43.8 +59.8 170.3	47 38.9 +59.7 168.9	47 33.3 +59.7 167.5
22°	48 51.6 +59.9 172.9	48 47.9 +59.9 171.5	48 43.6 +59.8 170.1	48 38.6 +59.7 168.7	48 33.0 +59.6 167.3
23°	49 51.5 +59.9 172.9	49 47.8 +59.8 171.4	49 43.4 +59.8 170.0	49 38.3 +59.7 168.6	49 32.6 +59.6 167.2
24°	50 51.4 +59.9 172.8	50 47.6 +59.8 171.3	50 43.2 +59.7 169.9	50 38.0 +59.7 168.4	50 32.2 +59.7 167.0
25°	51 51.3 +59.8 172.7	51 47.4 +59.9 171.2	51 42.9 +59.8 169.7	51 37.7 +59.7 168.3	51 31.9 +59.6 166.8
26°	52 51.1 +59.9 172.5	52 47.3 +59.8 171.1	52 42.7 +59.7 169.6	52 37.4 +59.7 168.1	52 31.5 +59.5 166.6
27°	53 51.0 +59.9 172.4	53 47.1 +59.8 170.9	53 42.4 +59.8 169.4	53 37.1 +59.6 167.9	53 31.0 +59.6 166.4
28°	54 50.9 +59.8 172.3	54 46.9 +59.8 170.8	54 42.2 +59.7 169.3	54 36.7 +59.7 167.7	54 30.6 +59.5 166.2
29°	55 50.7 +59.9 172.2	55 46.7 +59.7 170.6	55 41.9 +59.7 169.1	55 36.4 +59.6 167.6	55 30.1 +59.6 166.0

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°	26 33.4 +59.8 168.8	26 27.9 +59.7 167.7	26 21.8 +59.7 166.6	26 15.3 +59.6 165.5	26 08.2 +59.5 164.4
1°	27 33.2 +59.8 168.7	27 27.6 +59.7 167.6	27 21.5 +59.7 166.5	27 14.9 +59.6 165.3	27 07.7 +59.5 164.2
2°	28 33.0 +59.7 168.6	28 27.3 +59.7 167.5	28 21.2 +59.6 166.3	28 14.5 +59.6 165.2	28 07.2 +59.6 164.1
3°	29 32.7 +59.8 168.5	29 27.0 +59.7 167.4	29 20.8 +59.6 166.2	29 14.1 +59.5 165.1	29 06.8 +59.5 163.9
4°	30 32.5 +59.7 168.4	30 26.7 +59.7 167.2	30 20.4 +59.7 166.1	30 13.6 +59.6 164.9	30 06.3 +59.5 163.8
5°	31 32.2 +59.8 168.3	31 26.4 +59.7 167.1	31 20.1 +59.6 166.0	31 13.2 +59.6 164.8	31 05.8 +59.5 163.7
6°	32 32.0 +59.7 168.2	32 26.1 +59.7 167.0	32 19.7 +59.6 165.8	32 12.8 +59.5 164.7	32 05.3 +59.5 163.5
7°	33 31.7 +59.7 168.1	33 25.8 +59.7 166.9	33 19.3 +59.6 165.7	33 12.3 +59.6 164.5	33 04.8 +59.5 163.3
8°	34 31.4 +59.7 168.0	34 25.5 +59.6 166.8	34 18.9 +59.6 165.6	34 11.9 +59.5 164.4	34 04.3 +59.4 163.2
9°	35 31.1 +59.8 167.8	35 25.1 +59.7 166.6	35 18.5 +59.6 165.4	35 11.4 +59.5 164.2	35 03.7 +59.5 163.0
10°	36 30.9 +59.7 167.7	36 24.8 +59.6 166.5	36 18.1 +59.6 165.3	36 10.9 +59.5 164.1	36 03.2 +59.4 162.9
11°	37 30.6 +59.7 167.6	37 24.4 +59.7 166.4	37 17.7 +59.6 165.1	37 10.4 +59.5 163.9	37 02.6 +59.4 162.7
12°	38 30.3 +59.7 167.5	38 24.1 +59.6 166.2	38 17.3 +59.5 165.0	38 09.9 +59.5 163.7	38 02.0 +59.4 162.5
13°	39 30.0 +59.6 167.3	39 23.7 +59.6 166.1	39 16.8 +59.6 164.8	39 09.4 +59.5 163.6	39 01.4 +59.4 162.3
14°	40 29.6 +59.7 167.2	40 23.3 +59.6 165.9	40 16.4 +59.5 164.7	40 08.9 +59.5 163.4	40 00.8 +59.4 162.2
15°	41 29.3 +59.7 167.1	41 22.9 +59.6 165.8	41 15.9 +59.5 164.5	41 08.4 +59.4 163.2	41 00.2 +59.4 162.0
16°	42 29.0 +59.6 166.9	42 22.5 +59.6 165.6	42 15.4 +59.5 164.3	42 07.8 +59.4 163.0	41 59.6 +59.3 161.8
17°	43 28.6 +59.7 166.8	43 22.1 +59.5 165.5	43 14.9 +59.5 164.2	43 07.2 +59.4 162.9	42 58.9 +59.3 161.6
18°	44 28.3 +59.6 166.6	44 21.6 +59.6 165.3	44 14.4 +59.5 164.0	44 06.6 +59.4 162.7	43 58.2 +59.3 161.4
19°	45 27.9 +59.6 166.5	45 21.2 +59.5 165.1	45 13.9 +59.4 163.8	45 06.0 +59.3 162.5	44 57.5 +59.2 161.1
20°	46 27.5 +59.6 166.3	46 20.7 +59.5 164.9	46 13.3 +59.5 163.6	46 05.3 +59.4 162.3	45 56.7 +59.3 160.9
21°	47 27.1 +59.6 166.1	47 20.2 +59.5 164.8	47 12.8 +59.4 163.4	47 04.7 +59.3 162.0	46 56.0 +59.2 160.7
22°	48 26.7 +59.5 166.0	48 19.7 +59.5 164.6	48 12.2 +59.4 163.2	48 04.0 +59.3 161.8	47 55.2 +59.2 160.4
23°	49 26.2 +59.6 165.8	49 19.2 +59.5 164.4	49 11.6 +59.3 163.0	49 03.3 +59.2 161.6	48 54.4 +59.1 160.2
24°	50 25.8 +59.5 165.6	50 18.7 +59.4 164.2	50 10.9 +59.4 162.7	50 02.5 +59.2 161.3	49 53.5 +59.1 159.9
25°	51 25.3 +59.5 165.4	51 18.1 +59.4 163.9	51 10.3 +59.3 162.5	51 01.7 +59.2 161.1	50 52.6 +59.1 159.7
26°	52 24.8 +59.5 165.2	52 17.5 +59.4 163.7	52 09.6 +59.2 162.3	52 00.9 +59.2 160.8	51 51.7 +59.0 159.4
27°	53 24.3 +59.5 165.0	53 16.9 +59.4 163.5	53 08.8 +59.3 162.0	53 00.1 +59.1 160.5	52 50.7 +59.0 159.1
28°	54 23.8 +59.4 164.7	54 16.3 +59.3 163.2	54 08.1 +59.2 161.7	53 59.2 +59.1 160.3	53 49.7 +58.9 158.8
29°	55 23.2 +59.4 164.5	55 15.6 +59.3 163.0	55 07.3 +59.1 161.5	54 58.3 +59.0 160.0	54 48.6 +58.9 158.5

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°	26 00.6 +59.5 163.3	25 52.5 +59.4 162.2	25 43.9 +59.3 161.1	25 34.8 +59.3 160.0	25 25.2 +59.2 158.9
1°	27 00.1 +59.4 163.1	26 51.9 +59.4 162.0	26 43.2 +59.4 160.9	26 34.1 +59.2 159.8	26 24.4 +59.2 158.7
2°	27 59.5 +59.5 163.0	27 51.3 +59.4 161.8	27 42.6 +59.3 160.7	27 33.3 +59.3 159.6	27 23.6 +59.1 158.5
3°	28 59.0 +59.4 162.8	28 50.7 +59.4 161.7	28 41.9 +59.3 160.6	28 32.6 +59.2 159.4	28 22.7 +59.2 158.3
4°	29 58.4 +59.5 162.7	29 50.1 +59.3 161.5	29 41.2 +59.3 160.4	29 31.8 +59.2 159.3	29 21.9 +59.1 158.1
5°	30 57.9 +59.4 162.5	30 49.4 +59.4 161.4	30 40.5 +59.2 160.2	30 31.0 +59.2 159.1	30 21.0 +59.1 157.9
6°	31 57.3 +59.4 162.3	31 48.8 +59.3 161.2	31 39.7 +59.3 160.0	31 30.2 +59.1 158.9	31 20.1 +59.1 157.7
7°	32 56.7 +59.4 162.2	32 48.1 +59.3 161.0	32 39.0 +59.2 159.8	32 29.3 +59.2 158.7	32 19.2 +59.0 157.5
8°	33 56.1 +59.4 162.0	33 47.4 +59.4 160.8	33 38.2 +59.3 159.7	33 28.5 +59.1 158.5	33 18.2 +59.1 157.3
9°	34 55.5 +59.4 161.8	34 46.8 +59.2 160.6	34 37.5 +59.2 159.5	34 27.6 +59.1 158.3	34 17.3 +59.0 157.1
10°	35 54.9 +59.3 161.7	35 46.0 +59.3 160.5	35 36.7 +59.1 159.3	35 26.7 +59.1 158.1	35 16.3 +59.0 156.9
11°	36 54.2 +59.4 161.5	36 45.3 +59.3 160.3	36 35.8 +59.2 159.1	36 25.8 +59.1 157.9	36 15.3 +59.0 156.7
12°	37 53.6 +59.3 161.3	37 44.6 +59.2 160.1	37 35.0 +59.1 158.8	37 24.9 +59.1 157.6	37 14.3 +58.9 156.4
13°	38 52.9 +59.3 161.1	38 43.8 +59.2 159.9	38 34.1 +59.2 158.6	38 24.0 +59.0 157.4	38 13.2 +58.9 156.2
14°	39 52.2 +59.3 160.9	39 43.0 +59.2 159.7	39 33.3 +59.1 158.4	39 23.0 +59.0 157.2	39 12.1 +58.9 155.9
15°	40 51.5 +59.2 160.7	40 42.2 +59.2 159.4	40 32.4 +59.0 158.2	40 22.0 +58.9 156.9	40 11.0 +58.9 155.7
16°	41 50.7 +59.3 160.5	41 41.4 +59.1 159.2	41 31.4 +59.1 158.0	41 20.9 +58.9 156.7	41 09.9 +58.8 155.4
17°	42 50.0 +59.2 160.3	42 40.5 +59.1 159.0	42 30.5 +59.0 157.7	42 19.8 +58.9 156.4	42 08.7 +58.8 155.2
18°	43 49.2 +59.2 160.1	43 39.6 +59.1 158.8	43 29.5 +58.9 157.5	43 18.7 +58.9 156.2	43 07.5 +58.7 154.9
19°	44 48.4 +59.1 159.8	44 38.7 +59.0 158.5	44 28.4 +59.0 157.2	44 17.6 +58.8 155.9	44 06.2 +58.7 154.6
20°	45 47.5 +59.2 159.6	45 37.7 +59.1 158.3	45 27.4 +58.9 156.9	45 16.4 +58.8 155.6	45 04.9 +58.6 154.3
21°	46 46.7 +59.1 159.3	46 36.8 +58.9 158.0	46 26.3 +58.8 156.7	46 15.2 +58.7 155.3	46 03.5 +58.6 154.0
22°	47 45.8 +59.0 159.1	47 35.7 +59.0 157.7	47 25.1 +58.8 156.4	47 13.9 +58.7 155.0	47 02.1 +58.6 153.7
23°	48 44.8 +59.0 158.8	48 34.7 +58.9 157.4	48 23.9 +58.8 156.1	48 12.6 +58.6 154.7	48 00.7 +58.5 153.4
24°	49 43.8 +59.0 158.5	49 33.6 +58.8 157.2	49 22.7 +58.7 155.8	49 11.2 +58.6 154.4	48 59.2 +58.4 153.0
25°	50 42.8 +59.0 158.3	50 32.4 +58.8 156.9	50 21.4 +58.7 155.5	50 09.8 +58.5 154.1	49 57.6 +58.4 152.7
26°	51 41.8 +58.8 158.0	51 31.2 +58.8 156.5	51 20.1 +58.6 155.1	51 08.3 +58.5 153.7	50 56.0 +58.2 152.3
27°	52 40.6 +58.9 157.6	52 30.0 +58.7 156.2	52 18.7 +58.5 154.8	52 06.8 +58.3 153.4	51 54.2 +58.3 152.0
28°	53 39.5 +58.8 157.3	53 28.7 +58.6 155.9	53 17.2 +58.5 154.4	53 05.1 +58.3 153.0	52 52.5 +58.1 151.6
29°	54 38.3 +58.7 157.0	54 27.3 +58.5 155.5	54 15.7 +58.4 154.0	54 03.4 +58.3 152.6	53 50.6 +58.0 151.1

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°	25 15.2 +59.1 157.8	25 04.6 +59.0 156.7	24 53.6 +58.9 155.6	24 42.1 +58.9 154.5	24 30.2 +58.7 153.4
1°	26 14.3 +59.1 157.6	26 03.6 +59.0 156.5	25 52.5 +58.9 155.4	25 41.0 +58.8 154.3	25 28.9 +58.7 153.2
2°	27 13.4 +59.0 157.4	27 02.6 +59.0 156.3	26 51.4 +58.9 155.2	26 39.8 +58.8 154.1	26 27.6 +58.7 153.0
3°	28 12.4 +59.1 157.2	28 01.6 +59.0 156.1	27 50.3 +58.9 155.0	27 38.6 +58.7 153.9	27 26.3 +58.7 152.8
4°	29 11.5 +59.0 157.0	29 00.6 +58.9 155.9	28 49.2 +58.9 154.8	28 37.3 +58.8 153.6	28 25.0 +58.7 152.5
5°	30 10.5 +59.0 156.8	29 59.5 +58.9 155.7	29 48.1 +58.8 154.5	29 36.1 +58.7 153.4	29 23.7 +58.6 152.3
6°	31 09.5 +59.0 156.6	30 58.4 +58.9 155.4	30 46.9 +58.8 154.3	30 34.8 +58.7 153.2	30 22.3 +58.6 152.0
7°	32 08.5 +59.0 156.4	31 57.3 +58.9 155.2	31 45.7 +58.8 154.1	31 33.5 +58.7 152.9	31 20.9 +58.6 151.8
8°	33 07.5 +58.9 156.1	32 56.2 +58.9 155.0	32 44.5 +58.7 153.8	32 32.2 +58.6 152.7	32 19.5 +58.5 151.5
9°	34 06.4 +59.0 155.9	33 55.1 +58.8 154.8	33 43.2 +58.7 153.6	33 30.8 +58.6 152.4	33 18.0 +58.5 151.3
10°	35 05.4 +58.9 155.7	34 53.9 +58.8 154.5	34 41.9 +58.7 153.3	34 29.4 +58.6 152.2	34 16.5 +58.4 151.0
11°	36 04.3 +58.8 155.5	35 52.7 +58.7 154.3	35 40.6 +58.7 153.1	35 28.0 +58.6 151.9	35 14.9 +58.5 150.7
12°	37 03.1 +58.9 155.2	36 51.4 +58.8 154.0	36 39.3 +58.6 152.8	36 26.6 +58.5 151.6	36 13.4 +58.4 150.5
13°	38 02.0 +58.8 155.0	37 50.2 +58.7 153.8	37 37.9 +58.6 152.6	37 25.1 +58.4 151.4	37 11.8 +58.3 150.2
14°	39 00.8 +58.7 154.7	38 48.9 +58.6 153.5	38 36.5 +58.5 152.3	38 23.5 +58.5 151.1	38 10.1 +58.3 149.9
15°	39 59.5 +58.8 154.5	39 47.5 +58.6 153.2	39 35.0 +58.5 152.0	39 22.0 +58.3 150.8	39 08.4 +58.3 149.6
16°	40 58.3 +58.7 154.2	40 46.1 +58.6 152.9	40 33.5 +58.5 151.7	40 20.3 +58.4 150.5	40 06.7 +58.2 149.3
17°	41 57.0 +58.6 153.9	41 44.7 +58.6 152.7	41 32.0 +58.4 151.4	41 18.7 +58.2 150.2	41 04.9 +58.1 148.9
18°	42 55.6 +58.6 153.6	42 43.3 +58.4 152.4	42 30.4 +58.3 151.1	42 16.9 +58.3 149.8	42 03.0 +58.1 148.6
19°	43 54.2 +58.6 153.3	43 41.7 +58.5 152.1	43 28.7 +58.3 150.8	43 15.2 +58.1 149.5	43 01.1 +58.0 148.3
20°	44 52.8 +58.5 153.0	44 40.2 +58.4 151.7	44 27.0 +58.3 150.5	44 13.3 +58.1 149.2	43 59.1 +58.0 147.9
21°	45 51.3 +58.5 152.7	45 38.6 +58.3 151.4	45 25.3 +58.1 150.1	45 11.4 +58.1 148.8	44 57.1 +57.8 147.6
22°	46 49.8 +58.4 152.4	46 36.9 +58.2 151.1	46 23.4 +58.2 149.8	46 09.5 +57.9 148.5	45 54.9 +57.9 147.2
23°	47 48.2 +58.3 152.0	47 35.1 +58.2 150.7	47 21.6 +58.0 149.4	47 07.4 +57.9 148.1	46 52.8 +57.7 146.8
24°	48 46.5 +58.3 151.7	48 33.3 +58.2 150.4	48 19.6 +58.0 149.0	48 05.3 +57.8 147.7	47 50.5 +57.6 146.4
25°	49 44.8 +58.2 151.3	49 31.5 +58.0 150.0	49 17.6 +57.8 148.6	49 03.1 +57.7 147.3	48 48.1 +57.6 146.0
26°	50 43.0 +58.1 151.0	50 29.5 +58.0 149.6	50 15.4 +57.8 148.2	50 00.8 +57.6 146.9	49 45.7 +57.4 145.5
27°	51 41.1 +58.1 150.6	51 27.5 +57.8 149.2	51 13.2 +57.7 147.8	50 58.4 +57.6 146.4	50 43.1 +57.3 145.1
28°	52 39.2 +57.9 150.1	52 25.3 +57.8 148.7	52 10.9 +57.6 147.4	51 56.0 +57.4 146.0	51 40.4 +57.3 144.6
29°	53 37.1 +57.9 149.7	53 23.1 +57.7 148.3	53 08.5 +57.5 146.9	52 53.4 +57.3 145.5	52 37.7 +57.1 144.1

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°	24 17.8 +58.6 152.4	24 04.9 +58.6 151.3	23 51.6 +58.5 150.2	23 37.9 +58.3 149.2	23 23.7 +58.2 148.1
1°	25 16.4 +58.6 152.1	25 03.5 +58.5 151.1	24 50.1 +58.4 150.0	24 36.2 +58.3 148.9	24 21.9 +58.2 147.9
2°	26 15.0 +58.6 151.9	26 02.0 +58.5 150.8	25 48.5 +58.4 149.7	25 34.5 +58.3 148.7	25 20.1 +58.2 147.6
3°	27 13.6 +58.6 151.7	27 00.5 +58.5 150.6	26 46.9 +58.3 149.5	26 32.8 +58.3 148.4	26 18.3 +58.2 147.3
4°	28 12.2 +58.6 151.4	27 59.0 +58.4 150.3	27 45.2 +58.4 149.2	27 31.1 +58.2 148.1	27 16.5 +58.1 147.0
5°	29 10.8 +58.5 151.2	28 57.4 +58.4 150.1	28 43.6 +58.3 149.0	28 29.3 +58.2 147.9	28 14.6 +58.1 146.8
6°	30 09.3 +58.5 150.9	29 55.8 +58.4 149.8	29 41.9 +58.2 148.7	29 27.5 +58.2 147.6	29 12.7 +58.0 146.5
7°	31 07.8 +58.4 150.7	30 54.2 +58.3 149.5	30 40.1 +58.3 148.4	30 25.7 +58.1 147.3	30 10.7 +58.0 146.2
8°	32 06.2 +58.5 150.4	31 52.5 +58.3 149.3	31 38.4 +58.2 148.1	31 23.8 +58.1 147.0	31 08.7 +58.0 145.9
9°	33 04.7 +58.3 150.1	32 50.8 +58.3 149.0	32 36.6 +58.1 147.8	32 21.9 +58.0 146.7	32 06.7 +57.9 145.6
10°	34 03.0 +58.4 149.8	33 49.1 +58.3 148.7	33 34.7 +58.1 147.5	33 19.9 +58.0 146.4	33 04.6 +57.9 145.3
11°	35 01.4 +58.3 149.6	34 47.4 +58.1 148.4	34 32.8 +58.1 147.2	34 17.9 +57.9 146.1	34 02.5 +57.8 144.9
12°	35 59.7 +58.3 149.3	35 45.5 +58.2 148.1	35 30.9 +58.0 146.9	35 15.8 +57.9 145.8	35 00.3 +57.7 144.6
13°	36 58.0 +58.2 149.0	36 43.7 +58.1 147.8	36 28.9 +58.0 146.6	36 13.7 +57.9 145.5	35 58.0 +57.8 144.3
14°	37 56.2 +58.2 148.7	37 41.8 +58.0 147.5	37 26.9 +57.9 146.3	37 11.6 +57.7 145.1	36 55.8 +57.6 144.0
15°	38 54.4 +58.1 148.4	38 39.8 +58.0 147.2	38 24.8 +57.9 146.0	38 09.3 +57.8 144.8	37 53.4 +57.6 143.6
16°	39 52.5 +58.0 148.0	39 37.8 +58.0 146.8	39 22.7 +57.8 145.6	39 07.1 +57.6 144.4	38 51.0 +57.5 143.2
17°	40 50.5 +58.1 147.7	40 35.8 +57.8 146.5	40 20.5 +57.7 145.3	40 04.7 +57.6 144.1	39 48.5 +57.5 142.9
18°	41 48.6 +57.9 147.4	41 33.6 +57.8 146.1	41 18.2 +57.7 144.9	41 02.3 +57.5 143.7	40 46.0 +57.3 142.5
19°	42 46.5 +57.9 147.0	42 31.4 +57.8 145.8	42 15.9 +57.6 144.5	41 59.8 +57.5 143.3	41 43.3 +57.3 142.1
20°	43 44.4 +57.8 146.7	43 29.2 +57.6 145.4	43 13.5 +57.5 144.2	42 57.3 +57.3 142.9	42 40.6 +57.2 141.7
21°	44 42.2 +57.7 146.3	44 26.8 +57.6 145.0	44 11.0 +57.4 143.8	43 54.6 +57.3 142.5	43 37.8 +57.1 141.3
22°	45 39.9 +57.7 145.9	45 24.4 +57.5 144.6	45 08.4 +57.3 143.4	44 51.9 +57.2 142.1	44 34.9 +57.1 140.9
23°	46 37.6 +57.5 145.5	46 21.9 +57.4 144.2	46 05.7 +57.3 142.9	45 49.1 +57.0 141.7	45 32.0 +56.9 140.4
24°	47 35.1 +57.5 145.1	47 19.3 +57.3 143.8	47 03.0 +57.1 142.5	46 46.1 +57.0 141.2	46 28.9 +56.8 140.0
25°	48 32.6 +57.4 144.7	48 16.6 +57.2 143.3	48 00.1 +57.0 142.1	47 43.1 +56.9 140.8	47 25.7 +56.6 139.5
26°	49 30.0 +57.3 144.2	49 13.8 +57.1 142.9	48 57.1 +56.9 141.6	48 40.0 +56.7 140.3	48 22.3 +56.6 139.0
27°	50 27.3 +57.1 143.7	50 10.9 +57.0 142.4	49 54.0 +56.8 141.1	49 36.7 +56.6 139.8	49 18.9 +56.4 138.5
28°	51 24.4 +57.0 143.3	51 07.9 +56.8 141.9	50 50.8 +56.7 140.6	50 33.3 +56.4 139.3	50 15.3 +56.2 138.0
29°	52 21.4 +56.9 142.8	52 04.7 +56.7 141.4	51 47.5 +56.5 140.1	51 29.7 +56.3 138.7	51 11.5 +56.1 137.4

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°	23 09.1 +58.1 147.1	22 54.1 +58.0 146.0	22 38.6 +58.0 145.0	22 22.8 +57.8 143.9	22 06.6 +57.6 142.9
1°	24 07.2 +58.1 146.8	23 52.1 +58.0 145.7	23 36.6 +57.8 144.7	23 20.6 +57.8 143.6	23 04.2 +57.7 142.6
2°	25 05.3 +58.1 146.5	24 50.1 +57.9 145.4	24 34.4 +57.9 144.4	24 18.4 +57.7 143.3	24 01.9 +57.6 142.3
3°	26 03.4 +58.0 146.2	25 48.0 +58.0 145.2	25 32.3 +57.8 144.1	25 16.1 +57.7 143.0	24 59.5 +57.6 142.0
4°	27 01.4 +58.0 146.0	26 46.0 +57.9 144.9	26 30.1 +57.8 143.8	26 13.8 +57.7 142.7	25 57.1 +57.5 141.7
5°	27 59.4 +58.0 145.7	27 43.9 +57.8 144.6	27 27.9 +57.7 143.5	27 11.5 +57.6 142.4	26 54.6 +57.5 141.3
6°	28 57.4 +57.9 145.4	28 41.7 +57.8 144.3	28 25.6 +57.7 143.2	28 09.1 +57.5 142.1	27 52.1 +57.5 141.0
7°	29 55.3 +57.9 145.1	29 39.5 +57.8 144.0	29 23.3 +57.6 142.9	29 06.6 +57.6 141.8	28 49.6 +57.4 140.7
8°	30 53.2 +57.9 144.8	30 37.3 +57.7 143.7	30 20.9 +57.6 142.5	30 04.2 +57.4 141.4	29 47.0 +57.3 140.4
9°	31 51.1 +57.7 144.5	31 35.0 +57.7 143.3	31 18.5 +57.6 142.2	31 01.6 +57.5 141.1	30 44.3 +57.3 140.0
10°	32 48.8 +57.8 144.1	32 32.7 +57.6 143.0	32 16.1 +57.5 141.9	31 59.1 +57.3 140.8	31 41.6 +57.3 139.7
11°	33 46.6 +57.7 143.8	33 30.3 +57.6 142.7	33 13.6 +57.4 141.5	32 56.4 +57.3 140.4	32 38.9 +57.1 139.3
12°	34 44.3 +57.6 143.5	34 27.9 +57.5 142.3	34 11.0 +57.4 141.2	33 53.7 +57.3 140.1	33 36.0 +57.2 139.0
13°	35 41.9 +57.6 143.1	35 25.4 +57.4 142.0	35 08.4 +57.3 140.8	34 51.0 +57.1 139.7	34 33.2 +57.0 138.6
14°	36 39.5 +57.5 142.8	36 22.8 +57.4 141.6	36 05.7 +57.2 140.5	35 48.1 +57.2 139.3	35 30.2 +57.0 138.2
15°	37 37.0 +57.5 142.4	37 20.2 +57.3 141.3	37 02.9 +57.2 140.1	36 45.3 +57.0 139.0	36 27.2 +56.9 137.8
16°	38 34.5 +57.3 142.1	38 17.5 +57.2 140.9	38 00.1 +57.1 139.7	37 42.3 +56.9 138.6	37 24.1 +56.8 137.4
17°	39 31.8 +57.4 141.7	39 14.7 +57.2 140.5	38 57.2 +57.0 139.3	38 39.2 +56.9 138.2	38 20.9 +56.7 137.0
18°	40 29.2 +57.2 141.3	40 11.9 +57.1 140.1	39 54.2 +56.9 138.9	39 36.1 +56.8 137.8	39 17.6 +56.6 136.6
19°	41 26.4 +57.1 140.9	41 09.0 +57.0 139.7	40 51.1 +56.9 138.5	40 32.9 +56.7 137.3	40 14.2 +56.6 136.2
20°	42 23.5 +57.1 140.5	42 06.0 +56.9 139.3	41 48.0 +56.7 138.1	41 29.6 +56.6 136.9	41 10.8 +56.4 135.7
21°	43 20.6 +56.9 140.1	43 02.9 +56.8 138.9	42 44.7 +56.7 137.6	42 26.2 +56.4 136.5	42 07.2 +56.3 135.3
22°	44 17.5 +56.9 139.6	43 59.7 +56.6 138.4	43 41.4 +56.5 137.2	43 22.6 +56.4 136.0	43 03.5 +56.2 134.8
23°	45 14.4 +56.7 139.2	44 56.3 +56.6 138.0	44 37.9 +56.4 136.7	44 19.0 +56.2 135.5	43 59.7 +56.1 134.3
24°	46 11.1 +56.6 138.7	45 52.9 +56.5 137.5	45 34.3 +56.3 136.2	45 15.2 +56.2 135.0	44 55.8 +55.9 133.8
25°	47 07.7 +56.5 138.2	46 49.4 +56.3 137.0	46 30.6 +56.1 135.7	46 11.4 +55.9 134.5	45 51.7 +55.8 133.3
26°	48 04.2 +56.4 137.7	47 45.7 +56.2 136.5	47 26.7 +56.0 135.2	47 07.3 +55.9 134.0	46 47.5 +55.7 132.8
27°	49 00.6 +56.2 137.2	48 41.9 +56.0 136.0	48 22.7 +55.9 134.7	48 03.2 +55.6 133.5	47 43.2 +55.5 132.2
28°	49 56.8 +56.1 136.7	49 37.9 +55.9 135.4	49 18.6 +55.6 134.1	48 58.8 +55.5 132.9	48 38.7 +55.3 131.6
29°	50 52.9 +55.9 136.1	50 33.8 +55.7 134.8	50 14.2 +55.6 133.6	49 54.3 +55.3 132.3	49 34.0 +55.1 131.1

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°	21 49.9 +57.6 141.8	21 32.9 +57.5 140.8	21 15.5 +57.3 139.8	20 57.7 +57.3 138.8	20 39.6 +57.1 137.7
1°	22 47.5 +57.5 141.5	22 30.4 +57.4 140.5	22 12.8 +57.4 139.5	21 55.0 +57.1 138.4	21 36.7 +57.1 137.4
2°	23 45.0 +57.5 141.2	23 27.8 +57.4 140.2	23 10.2 +57.2 139.1	22 52.1 +57.2 138.1	22 33.8 +57.0 137.1
3°	24 42.5 +57.5 140.9	24 25.2 +57.3 139.9	24 07.4 +57.2 138.8	23 49.3 +57.1 137.8	23 30.8 +57.0 136.7
4°	25 40.0 +57.4 140.6	25 22.5 +57.3 139.5	25 04.6 +57.2 138.5	24 46.4 +57.1 137.4	24 27.8 +56.9 136.4
5°	26 37.4 +57.4 140.3	26 19.8 +57.3 139.2	26 01.8 +57.2 138.1	25 43.5 +57.0 137.1	25 24.7 +56.9 136.0
6°	27 34.8 +57.3 139.9	27 17.1 +57.2 138.9	26 59.0 +57.1 137.8	26 40.5 +56.9 136.7	26 21.6 +56.9 135.7
7°	28 32.1 +57.3 139.6	28 14.3 +57.1 138.5	27 56.1 +57.0 137.5	27 37.4 +57.0 136.4	27 18.5 +56.8 135.3
8°	29 29.4 +57.2 139.3	29 11.4 +57.1 138.2	28 53.1 +57.0 137.1	28 34.4 +56.8 136.0	28 15.3 +56.7 135.0
9°	30 26.6 +57.2 138.9	30 08.5 +57.1 137.8	29 50.1 +56.9 136.7	29 31.2 +56.8 135.7	29 12.0 +56.7 134.6
10°	31 23.8 +57.1 138.6	31 05.6 +57.0 137.5	30 47.0 +56.8 136.4	30 28.0 +56.7 135.3	30 08.7 +56.6 134.2
11°	32 20.9 +57.1 138.2	32 02.6 +56.9 137.1	31 43.8 +56.8 136.0	31 24.7 +56.7 134.9	31 05.3 +56.5 133.8
12°	33 18.0 +56.9 137.8	32 59.5 +56.8 136.7	32 40.6 +56.7 135.6	32 21.4 +56.6 134.5	32 01.8 +56.4 133.4
13°	34 14.9 +56.9 137.5	33 56.3 +56.8 136.3	33 37.3 +56.7 135.2	33 18.0 +56.5 134.1	33 58.2 +56.4 133.0
14°	35 11.8 +56.9 137.1	34 53.1 +56.7 136.0	34 34.0 +56.5 134.8	34 14.5 +56.4 133.7	34 54.6 +56.3 132.6
15°	36 08.7 +56.7 136.7	35 49.8 +56.6 135.6	35 30.5 +56.5 134.4	35 10.9 +56.3 133.3	34 50.9 +56.2 132.2
16°	37 05.4 +56.7 136.3	36 46.4 +56.5 135.1	36 27.0 +56.4 134.0	36 07.2 +56.3 132.9	35 47.1 +56.1 131.8
17°	38 02.1 +56.6 135.9	37 42.9 +56.5 134.7	37 23.4 +56.3 133.6	37 03.5 +56.1 132.5	36 43.2 +56.0 131.3
18°	38 58.7 +56.5 135.4	38 39.4 +56.3 134.3	38 19.7 +56.2 133.1	37 59.6 +56.1 132.0	37 39.2 +55.9 130.9
19°	39 55.2 +56.3 135.0	39 35.7 +56.2 133.8	39 15.9 +56.1 132.7	38 55.7 +55.9 131.6	38 35.1 +55.8 130.4
20°	40 51.5 +56.3 134.5	40 31.9 +56.2 133.4	40 12.0 +55.9 132.2	39 51.6 +55.8 131.1	39 30.9 +55.7 130.0
21°	41 47.8 +56.2 134.1	41 28.1 +56.0 132.9	41 07.9 +55.9 131.8	40 47.4 +55.7 130.6	40 26.6 +55.5 129.5
22°	42 44.0 +56.0 133.6	42 24.1 +55.9 132.4	42 03.8 +55.7 131.3	41 43.1 +55.6 130.1	41 22.1 +55.4 129.0
23°	43 40.0 +55.9 133.1	43 20.0 +55.7 131.9	42 59.5 +55.6 130.8	42 38.7 +55.4 129.6	42 17.5 +55.3 128.5
24°	44 35.9 +55.8 132.6	44 15.7 +55.6 131.4	43 55.1 +55.4 130.2	43 34.1 +55.3 129.1	43 12.8 +55.1 127.9
25°	45 31.7 +55.6 132.1	45 11.3 +55.5 130.9	44 50.5 +55.3 129.7	44 29.4 +55.1 128.5	44 07.9 +55.0 127.4
26°	46 27.3 +55.5 131.6	46 06.8 +55.3 130.4	45 45.8 +55.2 129.2	45 24.5 +55.0 128.0	45 02.9 +54.8 126.8
27°	47 22.8 +55.3 131.0	47 02.1 +55.1 129.8	46 41.0 +55.0 128.6	46 19.5 +54.8 127.4	45 57.7 +54.6 126.2
28°	48 18.1 +55.1 130.4	47 57.2 +54.9 129.2	47 35.9 +54.8 128.0	47 14.3 +54.5 126.8	46 52.3 +54.4 125.6
29°	49 13.2 +55.0 129.8	48 52.1 +54.8 128.6	48 30.7 +54.5 127.4	48 08.8 +54.4 126.2	47 46.7 +54.2 125.0

Declination SAME name as Latitude

Latitude 63°

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°	4 31.3 +53.6 98.9	4 04.4 +53.5 98.0	3 37.4 +53.5 97.1	3 10.3 +53.5 96.2	2 43.2 +53.5 95.4
1°	5 24.9 +53.6 98.5	4 57.9 +53.6 97.6	4 30.9 +53.6 96.7	4 03.8 +53.6 95.8	3 36.7 +53.5 94.9
2°	6 18.5 +53.6 98.0	5 51.5 +53.6 97.1	5 24.5 +53.5 96.2	4 57.4 +53.5 95.3	4 30.2 +53.5 94.4
3°	7 12.1 +53.5 97.6	6 45.1 +53.5 96.7	6 18.0 +53.5 95.8	5 50.9 +53.4 94.9	5 23.7 +53.5 94.0
4°	8 05.6 +53.6 97.1	7 38.6 +53.5 96.2	7 11.5 +53.5 95.3	6 44.3 +53.5 94.4	6 17.2 +53.4 93.5
5°	8 59.2 +53.4 96.7	8 32.1 +53.4 95.8	8 05.0 +53.4 94.9	7 37.8 +53.4 94.0	7 10.6 +53.4 93.1
6°	9 52.6 +53.5 96.2	9 25.5 +53.5 95.3	8 58.4 +53.4 94.4	8 31.2 +53.4 93.5	8 04.0 +53.4 92.6
7°	10 46.1 +53.4 95.7	10 19.0 +53.3 94.8	9 51.8 +53.4 93.9	9 24.6 +53.4 93.0	8 57.4 +53.3 92.2
8°	11 39.5 +53.3 95.3	11 12.3 +53.4 94.4	10 45.2 +53.3 93.5	10 18.0 +53.3 92.6	9 50.7 +53.4 91.7
9°	12 32.8 +53.4 94.8	12 05.7 +53.3 93.9	11 38.5 +53.3 93.0	11 11.3 +53.3 92.1	10 44.1 +53.2 91.2
10°	13 26.2 +53.2 94.3	12 59.0 +53.2 93.4	12 31.8 +53.2 92.5	12 04.6 +53.2 91.6	11 37.3 +53.2 90.8
11°	14 19.4 +53.2 93.9	13 52.2 +53.2 93.0	13 25.0 +53.2 92.1	12 57.8 +53.2 91.2	12 30.5 +53.2 90.3
12°	15 12.6 +53.2 93.4	14 45.4 +53.1 92.5	14 18.2 +53.1 91.6	13 51.0 +53.1 90.7	13 23.7 +53.1 89.8
13°	16 05.8 +53.0 92.9	15 38.5 +53.1 92.0	15 11.3 +53.1 91.1	14 44.1 +53.0 90.2	14 16.8 +53.1 89.3
14°	16 58.8 +53.0 92.4	16 31.6 +53.0 91.5	16 04.4 +53.0 90.6	15 37.1 +53.0 89.7	15 09.9 +53.0 88.8
15°	17 51.8 +53.0 91.9	17 24.6 +52.9 91.0	16 57.4 +52.9 90.1	16 30.1 +53.0 89.2	16 02.9 +52.9 88.4
16°	18 44.8 +52.8 91.4	18 17.5 +52.9 90.5	17 50.3 +52.8 89.6	17 23.1 +52.8 88.8	16 55.8 +52.9 87.9
17°	19 37.6 +52.8 90.9	19 10.4 +52.7 90.0	18 43.1 +52.8 89.1	18 15.9 +52.8 88.3	17 48.7 +52.8 87.4
18°	20 30.4 +52.7 90.4	20 03.1 +52.7 89.5	19 35.9 +52.7 88.6	19 08.7 +52.7 87.8	18 41.5 +52.7 86.9
19°	21 23.1 +52.5 89.9	20 55.8 +52.6 89.0	20 28.6 +52.6 88.1	20 01.4 +52.6 87.2	19 34.2 +52.6 86.4
20°	22 15.6 +52.5 89.4	21 48.4 +52.5 88.5	21 21.2 +52.5 87.6	20 54.0 +52.5 86.7	20 26.8 +52.5 85.9
21°	23 08.1 +52.4 88.9	22 40.9 +52.4 88.0	22 13.7 +52.4 87.1	21 46.5 +52.4 86.2	21 19.3 +52.5 85.3
22°	24 00.5 +52.3 88.3	23 33.3 +52.3 87.4	23 06.1 +52.3 86.6	22 38.9 +52.3 85.7	22 11.8 +52.3 84.8
23°	24 52.8 +52.1 87.8	24 25.6 +52.1 86.9	23 58.4 +52.2 86.0	23 31.2 +52.2 85.2	23 04.1 +52.2 84.3
24°	25 44.9 +52.0 87.2	25 17.7 +52.1 86.4	24 50.6 +52.0 85.5	24 23.4 +52.1 84.6	23 56.3 +52.1 83.7
25°	26 36.9 +51.9 86.7	26 09.8 +51.9 85.8	25 42.6 +51.9 84.9	25 15.5 +52.0 84.1	24 48.4 +52.0 83.2
26°	27 28.8 +51.8 86.1	27 01.7 +51.7 85.3	26 34.5 +51.8 84.4	26 07.5 +51.8 83.5	25 40.4 +51.9 82.6
27°	28 20.6 +51.6 85.6	27 53.4 +51.7 84.7	27 26.3 +51.7 83.8	26 59.3 +51.7 83.0	26 32.3 +51.7 82.1
28°	29 12.2 +51.4 85.0	28 45.1 +51.5 84.1	28 18.0 +51.5 83.2	27 51.0 +51.5 82.4	27 24.0 +51.6 81.5
29°	30 03.6 +51.3 84.4	29 36.6 +51.3 83.5	29 09.5 +51.4 82.7	28 42.5 +51.4 81.8	28 15.6 +51.4 80.9

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°	2 16.1 +53.5 94.5	1 48.9 +53.5 93.6	1 21.7 +53.5 92.7	0 54.5 +53.4 91.8	0 27.2 +53.5 90.9
1°	3 09.6 +53.4 94.0	2 42.4 +53.4 93.1	2 15.2 +53.4 92.2	1 47.9 +53.5 91.3	1 20.7 +53.5 90.4
2°	4 03.0 +53.5 93.6	3 35.8 +53.5 92.7	3 08.6 +53.5 91.8	2 41.4 +53.4 90.9	2 14.2 +53.4 90.0
3°	4 56.5 +53.5 93.1	4 29.3 +53.4 92.2	4 02.1 +53.4 91.3	3 34.8 +53.5 90.4	3 07.6 +53.4 89.5
4°	5 50.0 +53.4 92.6	5 22.7 +53.5 91.7	4 55.5 +53.4 90.9	4 28.3 +53.4 90.0	4 01.0 +53.5 89.1
5°	6 43.4 +53.4 92.2	6 16.2 +53.4 91.3	5 48.9 +53.4 90.4	5 21.7 +53.4 89.5	4 54.5 +53.4 88.6
6°	7 36.8 +53.4 91.7	7 09.6 +53.3 90.8	6 42.3 +53.4 89.9	6 15.1 +53.4 89.0	5 47.9 +53.3 88.2
7°	8 30.2 +53.3 91.3	8 02.9 +53.4 90.4	7 35.7 +53.3 89.5	7 08.5 +53.3 88.6	6 41.2 +53.4 87.7
8°	9 23.5 +53.3 90.8	8 56.3 +53.3 89.9	8 29.0 +53.3 89.0	8 01.8 +53.3 88.1	7 34.6 +53.3 87.2
9°	10 16.8 +53.3 90.3	9 49.6 +53.2 89.4	9 22.3 +53.3 88.6	8 55.1 +53.3 87.7	8 27.9 +53.3 86.8
10°	11 10.1 +53.2 89.9	10 42.8 +53.3 89.0	10 15.6 +53.3 88.1	9 48.4 +53.2 87.2	9 21.2 +53.3 86.3
11°	12 03.3 +53.2 89.4	11 36.1 +53.2 88.5	11 08.9 +53.1 87.6	10 41.6 +53.2 86.7	10 14.5 +53.2 85.8
12°	12 56.5 +53.1 88.9	12 29.3 +53.1 88.0	12 02.0 +53.2 87.1	11 34.8 +53.2 86.3	11 07.7 +53.1 85.4
13°	13 49.6 +53.1 88.4	13 22.4 +53.1 87.6	12 55.2 +53.1 86.7	12 28.0 +53.1 85.8	12 00.8 +53.2 84.9
14°	14 42.7 +53.0 88.0	14 15.5 +53.0 87.1	13 48.3 +53.0 86.2	13 21.1 +53.0 85.3	12 54.0 +53.0 84.4
15°	15 35.7 +52.9 87.5	15 08.5 +52.9 86.6	14 41.3 +53.0 85.7	14 14.1 +53.0 84.8	13 47.0 +53.1 83.9
16°	16 28.6 +52.9 87.0	16 01.4 +52.9 86.1	15 34.3 +52.9 85.2	15 07.1 +53.0 84.3	14 40.1 +52.9 83.5
17°	17 21.5 +52.8 86.5	16 54.3 +52.8 85.6	16 27.2 +52.8 84.7	16 00.1 +52.8 83.8	15 33.0 +52.9 83.0
18°	18 14.3 +52.7 86.0	17 47.1 +52.8 85.1	17 20.0 +52.8 84.2	16 52.9 +52.8 83.4	16 25.9 +52.8 82.5
19°	19 07.0 +52.6 85.5	18 39.9 +52.6 84.6	18 12.8 +52.7 83.7	17 45.7 +52.7 82.9	17 18.7 +52.8 82.0
20°	19 59.6 +52.6 85.0	19 32.5 +52.6 84.1	19 05.5 +52.6 83.2	18 38.4 +52.7 82.4	18 11.5 +52.6 81.5
21°	20 52.2 +52.5 84.5	20 25.1 +52.5 83.6	19 58.1 +52.5 82.7	19 31.1 +52.5 81.8	19 04.1 +52.6 81.0
22°	21 44.7 +52.3 83.9	21 17.6 +52.4 83.1	20 50.6 +52.4 82.2	20 23.6 +52.5 81.3	19 56.7 +52.5 80.5
23°	22 37.0 +52.3 83.4	22 10.0 +52.3 82.5	21 43.0 +52.3 81.7	21 16.1 +52.3 80.8	20 49.2 +52.4 80.0
24°	23 29.3 +52.1 82.9	23 02.3 +52.1 82.0	22 35.3 +52.2 81.1	22 08.4 +52.3 80.3	21 41.6 +52.3 79.4
25°	24 21.4 +52.0 82.3	23 54.4 +52.1 81.5	23 27.5 +52.1 80.6	23 00.7 +52.1 79.8	22 33.9 +52.2 78.9
26°	25 13.4 +51.9 81.8	24 46.5 +51.9 80.9	24 19.6 +52.0 80.1	23 52.8 +52.1 79.2	23 26.1 +52.1 78.4
27°	26 05.3 +51.8 81.2	25 38.4 +51.9 80.4	25 11.6 +51.9 79.5	24 44.9 +51.9 78.7	24 18.2 +52.0 77.8
28°	26 57.1 +51.6 80.7	26 30.3 +51.6 79.8	26 03.5 +51.7 79.0	25 36.8 +51.8 78.1	25 10.2 +51.8 77.3
29°	27 48.7 +51.5 80.1	27 21.9 +51.6 79.2	26 55.2 +51.6 78.4	26 28.6 +51.6 77.6	26 02.0 +51.7 76.7

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Latitude 63°

Declination SAME name as 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 +53.5 90.0	-0 27.2 +53.4	-0 54.5 +53.5	-1 21.7 +53.5	-1 48.9 +53.5
1°	0 53.5 +53.4 89.5	0 26.2 +53.5 88.7	-0 01.0 +53.5	-0 28.2 +53.5	-0 55.4 +53.5
2°	1 46.9 +53.5 89.1	1 19.7 +53.4 88.2	0 52.5 +53.4 87.3	0 25.3 +53.4 86.4	-0 01.9 +53.5
3°	2 40.4 +53.4 88.6	2 13.1 +53.5 87.7	1 45.9 +53.5 86.9	1 18.7 +53.5 86.0	0 51.6 +53.5 85.1
4°	3 33.8 +53.4 88.2	3 06.6 +53.4 87.3	2 39.4 +53.4 86.4	2 12.2 +53.5 85.5	1 45.1 +53.5 84.6
5°	4 27.2 +53.4 87.7	4 00.0 +53.4 86.8	3 32.8 +53.5 85.9	3 05.7 +53.4 85.1	2 38.6 +53.4 84.2
6°	5 20.6 +53.4 87.3	4 53.4 +53.4 86.4	4 26.3 +53.4 85.5	3 59.1 +53.5 84.6	3 32.0 +53.5 83.7
7°	6 14.0 +53.4 86.8	5 46.8 +53.4 85.9	5 19.7 +53.4 85.0	4 52.6 +53.4 84.1	4 25.5 +53.4 83.3
8°	7 07.4 +53.3 86.3	6 40.2 +53.4 85.5	6 13.1 +53.4 84.6	5 46.0 +53.4 83.7	5 18.9 +53.5 82.8
9°	8 00.7 +53.3 85.9	7 33.6 +53.3 85.0	7 06.5 +53.3 84.1	6 39.4 +53.4 83.2	6 12.4 +53.4 82.3
10°	8 54.0 +53.3 85.4	8 26.9 +53.3 84.5	7 59.8 +53.3 83.7	7 32.8 +53.3 82.8	7 05.8 +53.3 81.9
11°	9 47.3 +53.2 85.0	9 20.2 +53.3 84.1	8 53.1 +53.3 83.2	8 26.1 +53.3 82.3	7 59.1 +53.4 81.4
12°	10 40.5 +53.2 84.5	10 13.5 +53.2 83.6	9 46.4 +53.3 82.7	9 19.4 +53.3 81.8	8 52.5 +53.3 81.0
13°	11 33.7 +53.2 84.0	11 06.7 +53.1 83.1	10 39.7 +53.2 82.3	10 12.7 +53.2 81.4	9 45.8 +53.3 80.5
14°	12 26.9 +53.1 83.5	11 59.8 +53.2 82.7	11 32.9 +53.1 81.8	11 05.9 +53.2 80.9	10 39.1 +53.2 80.0
15°	13 20.0 +53.0 83.1	12 53.0 +53.0 82.2	12 26.0 +53.1 81.3	11 59.1 +53.2 80.4	11 32.3 +53.2 79.6
16°	14 13.0 +53.0 82.6	13 46.0 +53.1 81.7	13 19.1 +53.1 80.8	12 52.3 +53.0 80.0	12 25.5 +53.1 79.1
17°	15 06.0 +52.9 82.1	14 39.1 +52.9 81.2	14 12.2 +53.0 80.4	13 45.3 +53.1 79.5	13 18.6 +53.1 78.6
18°	15 58.9 +52.9 81.6	15 32.0 +52.9 80.7	15 05.2 +52.9 79.9	14 38.4 +53.0 79.0	14 11.7 +53.0 78.1
19°	16 51.8 +52.8 81.1	16 24.9 +52.8 80.2	15 58.1 +52.9 79.4	15 31.4 +52.9 78.5	15 04.7 +53.0 77.6
20°	17 44.6 +52.7 80.6	17 17.7 +52.8 79.8	16 51.0 +52.7 78.9	16 24.3 +52.8 78.0	15 57.7 +52.9 77.2
21°	18 37.3 +52.6 80.1	18 10.5 +52.6 79.3	17 43.7 +52.8 78.4	17 17.1 +52.8 77.5	16 50.6 +52.8 76.7
22°	19 29.9 +52.5 79.6	19 03.1 +52.6 78.7	18 36.5 +52.6 77.9	18 09.9 +52.7 77.0	17 43.4 +52.7 76.2
23°	20 22.4 +52.5 79.1	19 55.7 +52.5 78.2	19 29.1 +52.5 77.4	19 02.6 +52.6 76.5	18 36.1 +52.7 75.7
24°	21 14.9 +52.3 78.6	20 48.2 +52.4 77.7	20 21.6 +52.5 76.9	19 55.2 +52.5 76.0	19 28.8 +52.6 75.2
25°	22 07.2 +52.3 78.0	21 40.6 +52.3 77.2	21 14.1 +52.4 76.3	20 47.7 +52.4 75.5	20 21.4 +52.5 74.6
26°	22 59.5 +52.1 77.5	22 32.9 +52.2 76.7	22 06.5 +52.2 75.8	21 40.1 +52.3 75.0	21 13.9 +52.3 74.1
27°	23 51.6 +52.0 77.0	23 25.1 +52.1 76.1	22 58.7 +52.2 75.3	22 32.4 +52.3 74.4	22 06.2 +52.3 73.6
28°	24 43.6 +52.0 76.4	24 17.2 +52.0 75.6	23 50.9 +52.0 74.7	23 24.7 +52.1 73.9	22 58.5 +52.2 73.1
29°	25 35.6 +51.7 75.9	25 09.2 +51.8 75.0	24 42.9 +51.9 74.2	24 16.8 +52.0 73.4	23 50.7 +52.1 72.5

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°	-2 16.1 +53.5	-2 43.2 +53.5	-3 10.3 +53.5	-3 37.4 +53.6	-4 04.4 +53.6
1°	-1 22.6 +53.6	-1 49.7 +53.6	-2 16.8 +53.6	-2 43.8 +53.6	-3 10.8 +53.7
2°	-0 29.0 +53.5	-0 56.1 +53.5	-1 23.2 +53.6	-1 50.2 +53.6	-2 17.1 +53.6
3°	0 24.5 +53.5 84.2	-0 02.6 +53.5	-0 29.6 +53.5	-0 56.6 +53.6	-1 23.5 +53.6
4°	1 18.0 +53.5 83.7	0 50.9 +53.6 82.8	0 23.9 +53.6 82.0	-0 03.0 +53.6	-0 29.9 +53.6
5°	2 11.5 +53.5 83.3	1 44.5 +53.5 82.4	1 17.5 +53.5 81.5	0 50.6 +53.6 80.6	0 23.7 +53.7 79.7
6°	3 05.0 +53.5 82.8	2 38.0 +53.5 81.9	2 11.0 +53.6 81.1	1 44.2 +53.6 80.2	1 17.4 +53.6 79.3
7°	3 58.5 +53.4 82.4	3 31.5 +53.5 81.5	3 04.6 +53.5 80.6	2 37.8 +53.5 79.7	2 11.0 +53.6 78.8
8°	4 51.9 +53.5 81.9	4 25.0 +53.5 81.0	3 58.1 +53.6 80.1	3 31.3 +53.6 79.3	3 04.6 +53.6 78.4
9°	5 45.4 +53.4 81.5	5 18.5 +53.5 80.6	4 51.7 +53.5 79.7	4 24.9 +53.5 78.8	3 58.2 +53.6 77.9
10°	6 38.8 +53.4 81.0	6 12.0 +53.4 80.1	5 45.2 +53.4 79.2	5 18.4 +53.6 78.4	4 51.8 +53.6 77.5
11°	7 32.2 +53.4 80.5	7 05.4 +53.4 79.7	6 38.6 +53.5 78.8	6 12.0 +53.5 77.9	5 45.4 +53.5 77.0
12°	8 25.6 +53.4 80.1	7 58.8 +53.4 79.2	7 32.1 +53.4 78.3	7 05.5 +53.4 77.4	6 38.9 +53.6 76.6
13°	9 19.0 +53.3 79.6	8 52.2 +53.4 78.7	8 25.5 +53.4 77.9	7 58.9 +53.5 77.0	7 32.5 +53.4 76.1
14°	10 12.3 +53.2 79.2	9 45.6 +53.3 78.3	9 18.9 +53.4 77.4	8 52.4 +53.4 76.5	8 25.9 +53.5 75.7
15°	11 05.5 +53.3 78.7	10 38.9 +53.2 77.8	10 12.3 +53.3 76.9	9 45.8 +53.4 76.1	9 19.4 +53.4 75.2
16°	11 58.8 +53.1 78.2	11 32.1 +53.3 77.3	11 05.6 +53.3 76.5	10 39.2 +53.3 75.6	10 12.8 +53.4 74.7
17°	12 51.9 +53.2 77.7	12 25.4 +53.1 76.9	11 58.9 +53.2 76.0	11 32.5 +53.3 75.1	11 06.2 +53.4 74.3
18°	13 45.1 +53.0 77.3	13 18.5 +53.2 76.4	12 52.1 +53.2 75.5	12 25.8 +53.2 74.7	11 59.6 +53.3 73.8
19°	14 38.1 +53.0 76.8	14 11.7 +53.0 75.9	13 45.3 +53.1 75.1	13 19.0 +53.2 74.2	12 52.9 +53.2 73.3
20°	15 31.1 +53.0 76.3	15 04.7 +53.0 75.4	14 38.4 +53.1 74.6	14 12.2 +53.1 73.7	13 46.1 +53.2 72.9
21°	16 24.1 +52.9 75.8	15 57.7 +53.0 75.0	15 31.5 +53.0 74.1	15 05.3 +53.1 73.2	14 39.3 +53.2 72.4
22°	17 17.0 +52.8 75.3	16 50.7 +52.8 74.5	16 24.5 +52.9 73.6	15 58.4 +53.0 72.8	15 32.5 +53.0 71.9
23°	18 09.8 +52.7 74.8	17 43.5 +52.8 74.0	17 17.4 +52.9 73.1	16 51.4 +53.0 72.3	16 25.5 +53.0 71.4
24°	19 02.5 +52.7 74.3	18 36.3 +52.8 73.5	18 10.3 +52.8 72.6	17 44.4 +52.8 71.8	17 18.5 +53.0 70.9
25°	19 55.2 +52.5 73.8	19 29.1 +52.6 73.0	19 03.1 +52.7 72.1	18 37.2 +52.8 71.3	18 11.5 +52.8 70.4
26°	20 47.7 +52.5 73.3	20 21.7 +52.5 72.4	19 55.8 +52.6 71.6	19 30.0 +52.7 70.8	19 04.3 +52.8 69.9
27°	21 40.2 +52.3 72.8	21 14.2 +52.5 71.9	20 48.4 +52.5 71.1	20 22.7 +52.6 70.3	19 57.1 +52.7 69.4
28°	22 32.5 +52.3 72.2	22 06.7 +52.3 71.4	21 40.9 +52.4 70.6	21 15.3 +52.5 69.7	20 49.8 +52.6 68.9
29°	23 24.8 +52.2 71.7	22 59.0 +52.2 70.9	22 33.3 +52.3 70.1	22 07.8 +52.4 69.2	21 42.4 +52.5 68.4

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Declination SAME name as Latitude**Latitude 63°**

Dec	LHA 100° / 260°	LHA 101° / 259°	LHA 102° / 258°	LHA 103° / 257°	LHA 104° / 256°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-4 31.3 +53.6	-4 58.2 +53.7	-5 25.0 +53.7	-5 51.7 +53.8	-6 18.3 +53.8
1°	-3 37.7 +53.7	-4 04.5 +53.7	-4 31.3 +53.8	-4 57.9 +53.7	-5 24.5 +53.8
2°	-2 44.0 +53.6	-3 10.8 +53.7	-3 37.5 +53.7	-4 04.2 +53.8	-4 30.7 +53.8
3°	-1 50.4 +53.7	-2 17.1 +53.7	-2 43.8 +53.8	-3 10.4 +53.8	-3 36.9 +53.9
4°	-0 56.7 +53.7	-1 23.4 +53.7	-1 50.0 +53.7	-2 16.6 +53.8	-2 43.0 +53.8
5°	-0 03.0 +53.6	-0 29.7 +53.7	-0 56.3 +53.8	-1 22.8 +53.8	-1 49.2 +53.9
6°	0 50.6 +53.7 78.4	0 24.0 +53.7 77.5	-0 02.5 +53.7	-0 29.0 +53.8	-0 55.3 +53.8
7°	1 44.3 +53.7 77.9	1 17.7 +53.7 77.0	0 51.2 +53.8 76.2	0 24.8 +53.8 75.3	-0 01.5 +53.9
8°	2 38.0 +53.6 77.5	2 11.4 +53.7 76.6	1 45.0 +53.7 75.7	1 18.6 +53.8 74.8	0 52.4 +53.9 73.9
9°	3 31.6 +53.7 77.0	3 05.1 +53.7 76.2	2 38.7 +53.8 75.3	2 12.4 +53.8 74.4	1 46.3 +53.8 73.5
10°	4 25.3 +53.6 76.6	3 58.8 +53.7 75.7	3 32.5 +53.7 74.8	3 06.2 +53.8 73.9	2 40.1 +53.9 73.1
11°	5 18.9 +53.6 76.1	4 52.5 +53.6 75.3	4 26.2 +53.7 74.4	4 00.0 +53.8 73.5	3 34.0 +53.8 72.6
12°	6 12.5 +53.6 75.7	5 46.1 +53.7 74.8	5 19.9 +53.7 73.9	4 53.8 +53.7 73.1	4 27.8 +53.8 72.2
13°	7 06.1 +53.5 75.2	6 39.8 +53.6 74.4	6 13.6 +53.7 73.5	5 47.5 +53.8 72.6	5 21.6 +53.8 71.7
14°	7 59.6 +53.5 74.8	7 33.4 +53.6 73.9	7 07.3 +53.6 73.0	6 41.3 +53.7 72.2	6 15.4 +53.8 71.3
15°	8 53.1 +53.5 74.3	8 27.0 +53.5 73.5	8 00.9 +53.6 72.6	7 35.0 +53.7 71.7	7 09.2 +53.7 70.8
16°	9 46.6 +53.5 73.9	9 20.5 +53.5 73.0	8 54.5 +53.6 72.1	8 28.7 +53.6 71.3	8 02.9 +53.8 70.4
17°	10 40.1 +53.4 73.4	10 14.0 +53.5 72.5	9 48.1 +53.5 71.7	9 22.3 +53.6 70.8	8 56.7 +53.6 69.9
18°	11 33.5 +53.3 72.9	11 07.5 +53.4 72.1	10 41.6 +53.6 71.2	10 15.9 +53.6 70.3	9 50.3 +53.7 69.5
19°	12 26.8 +53.4 72.5	12 00.9 +53.4 71.6	11 35.2 +53.4 70.8	11 09.5 +53.5 69.9	10 44.0 +53.6 69.0
20°	13 20.2 +53.2 72.0	12 54.3 +53.4 71.1	12 28.6 +53.4 70.3	12 03.0 +53.5 69.4	11 37.6 +53.6 68.6
21°	14 13.4 +53.2 71.5	13 47.7 +53.2 70.7	13 22.0 +53.4 69.8	12 56.5 +53.5 69.0	12 31.2 +53.5 68.1
22°	15 06.6 +53.2 71.0	14 40.9 +53.3 70.2	14 15.4 +53.3 69.3	13 50.0 +53.3 68.5	13 24.7 +53.5 67.6
23°	15 59.8 +53.1 70.6	15 34.2 +53.1 69.7	15 08.7 +53.2 68.9	14 43.3 +53.4 68.0	14 18.2 +53.4 67.2
24°	16 52.9 +53.0 70.1	16 27.3 +53.1 69.2	16 01.9 +53.2 68.4	15 36.7 +53.2 67.6	15 11.6 +53.3 66.7
25°	17 45.9 +52.9 69.6	17 20.4 +53.0 68.8	16 55.1 +53.1 67.9	16 29.9 +53.2 67.1	16 04.9 +53.3 66.2
26°	18 38.8 +52.9 69.1	18 13.4 +53.0 68.3	17 48.2 +53.1 67.4	17 23.1 +53.2 66.6	16 58.2 +53.2 65.8
27°	19 31.7 +52.8 68.6	19 06.4 +52.9 67.8	18 41.3 +52.9 66.9	18 16.3 +53.0 66.1	17 51.4 +53.2 65.3
28°	20 24.5 +52.6 68.1	19 59.3 +52.7 67.3	19 34.2 +52.9 66.4	19 09.3 +53.0 65.6	18 44.6 +53.1 64.8
29°	21 17.1 +52.6 67.6	20 52.0 +52.7 66.8	20 27.1 +52.8 65.9	20 02.3 +52.9 65.1	19 37.7 +53.0 64.3

Dec	LHA 105° / 255°	LHA 106° / 254°	LHA 107° / 253°	LHA 108° / 252°	LHA 109° / 251°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-6 44.9 +53.9	-7 11.3 +53.9	-7 37.7 +54.0	-8 03.9 +54.0	-8 30.0 +54.1
1°	-5 51.0 +53.8	-6 17.4 +53.9	-6 43.7 +54.0	-7 09.9 +54.1	-7 35.9 +54.1
2°	-4 57.2 +53.9	-5 23.5 +53.9	-5 49.7 +54.0	-6 15.8 +54.0	-6 41.8 +54.1
3°	-4 03.3 +53.9	-4 29.6 +54.0	-4 55.7 +54.0	-5 21.8 +54.1	-5 47.7 +54.1
4°	-3 09.4 +53.9	-3 35.6 +54.0	-4 01.7 +54.0	-4 27.7 +54.1	-4 53.6 +54.2
5°	-2 15.5 +53.9	-2 41.6 +53.9	-3 07.7 +54.0	-3 33.6 +54.1	-3 59.4 +54.2
6°	-1 21.6 +54.0	-1 47.7 +54.0	-2 13.7 +54.1	-2 39.5 +54.1	-3 05.2 +54.1
7°	-0 27.6 +53.9	-0 53.7 +54.0	-1 19.6 +54.0	-1 45.4 +54.1	-2 11.1 +54.2
8°	0 26.3 +53.9 73.0	0 00.3 +54.0 72.2	-0 25.6 +54.1	-0 51.3 +54.1	-1 16.9 +54.2
9°	1 20.2 +53.9 72.6	0 54.3 +54.0 71.7	0 28.5 +54.0 70.8	0 02.8 +54.1 69.9	-0 22.7 +54.2
10°	2 14.1 +53.9 72.2	1 48.3 +53.9 71.3	1 22.5 +54.1 70.4	0 56.9 +54.2 69.5	0 31.5 +54.2 68.6
11°	3 08.0 +53.9 71.7	2 42.2 +54.0 70.8	2 16.6 +54.0 70.0	1 51.1 +54.1 69.1	1 25.7 +54.2 68.2
12°	4 01.9 +53.9 71.3	3 36.2 +54.0 70.4	3 10.6 +54.0 69.5	2 45.2 +54.1 68.6	2 19.9 +54.1 67.8
13°	4 55.8 +53.9 70.9	4 30.2 +53.9 70.0	4 04.6 +54.0 69.1	3 39.3 +54.0 68.2	3 14.0 +54.2 67.3
14°	5 49.7 +53.8 70.4	5 24.1 +53.9 69.5	4 58.6 +54.0 68.7	4 33.3 +54.1 67.8	4 08.2 +54.2 66.9
15°	6 43.5 +53.8 70.0	6 18.0 +53.9 69.1	5 52.6 +54.0 68.2	5 27.4 +54.1 67.3	5 02.4 +54.1 66.5
16°	7 37.3 +53.8 69.5	7 11.9 +53.9 68.6	6 46.6 +54.0 67.8	6 21.5 +54.0 66.9	5 56.5 +54.1 66.0
17°	8 31.1 +53.8 69.1	8 05.8 +53.8 68.2	7 40.6 +53.9 67.3	7 15.5 +54.0 66.5	6 50.6 +54.1 65.6
18°	9 24.9 +53.7 68.6	8 59.6 +53.8 67.8	8 34.5 +53.9 66.9	8 09.5 +54.0 66.0	7 44.7 +54.1 65.2
19°	10 18.6 +53.7 68.2	9 53.4 +53.8 67.3	9 28.4 +53.8 66.4	9 03.5 +53.9 65.6	8 38.8 +54.0 64.7
20°	11 12.3 +53.7 67.7	10 47.2 +53.7 66.9	10 22.2 +53.9 66.0	9 57.4 +53.9 65.1	9 32.8 +54.0 64.3
21°	12 06.0 +53.6 67.3	11 40.9 +53.7 66.4	11 16.1 +53.7 65.6	10 51.3 +53.9 64.7	10 26.8 +54.0 63.8
22°	12 59.6 +53.5 66.8	12 34.6 +53.7 65.9	12 09.8 +53.8 65.1	11 45.2 +53.8 64.2	11 20.8 +53.9 63.4
23°	13 53.1 +53.5 66.3	13 28.3 +53.6 65.5	13 03.6 +53.7 64.6	12 39.0 +53.8 63.8	12 14.7 +53.9 63.0
24°	14 46.6 +53.5 65.9	14 21.9 +53.5 65.0	13 57.3 +53.6 64.2	13 32.8 +53.8 63.3	13 08.6 +53.8 62.5
25°	15 40.1 +53.4 65.4	15 15.4 +53.5 64.6	14 50.9 +53.6 63.7	14 26.6 +53.6 62.9	14 02.4 +53.8 62.0
26°	16 33.5 +53.3 64.9	16 08.9 +53.4 64.1	15 44.5 +53.5 63.3	15 20.2 +53.7 62.4	14 56.2 +53.7 61.6
27°	17 26.8 +53.2 64.4	17 02.3 +53.3 63.6	16 38.0 +53.4 62.8	16 13.9 +53.5 62.0	15 49.9 +53.7 61.1
28°	18 20.0 +53.2 64.0	17 55.6 +53.3 63.1	17 31.4 +53.4 62.3	17 07.4 +53.5 61.5	16 43.6 +53.6 60.7
29°	19 13.2 +53.1 63.5	18 48.9 +53.2 62.6	18 24.8 +53.3 61.8	18 00.9 +53.4 61.0	17 37.2 +53.5 60.2

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Latitude 63°

Declination SAME name as Latitude

Dec	LHA 110° / 250°	LHA 111° / 249°	LHA 112° / 248°	LHA 113° / 247°	LHA 114° / 246°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-8 56.0 +54.2	-9 21.8 +54.2	-9 47.5 +54.3		
1°	-8 01.8 +54.1	-8 27.6 +54.2	-8 53.2 +54.3	-9 18.7 +54.3	-9 44.0 +54.4
2°	-7 07.7 +54.2	-7 33.4 +54.3	-7 58.9 +54.3	-8 24.4 +54.4	-8 49.6 +54.5
3°	-6 13.5 +54.2	-6 39.1 +54.2	-7 04.6 +54.3	-7 30.0 +54.5	-7 55.1 +54.5
4°	-5 19.3 +54.2	-5 44.9 +54.3	-6 10.3 +54.4	-6 35.5 +54.4	-7 00.6 +54.5
5°	-4 25.1 +54.3	-4 50.6 +54.3	-5 15.9 +54.4	-5 41.1 +54.5	-6 06.1 +54.5
6°	-3 30.8 +54.2	-3 56.3 +54.4	-4 21.5 +54.4	-4 46.6 +54.4	-5 11.6 +54.6
7°	-2 36.6 +54.3	-3 01.9 +54.3	-3 27.1 +54.4	-3 52.2 +54.5	-4 17.0 +54.6
8°	-1 42.3 +54.2	-2 07.6 +54.3	-2 32.7 +54.4	-2 57.7 +54.5	-3 22.4 +54.5
9°	-0 48.1 +54.3	-1 13.3 +54.4	-1 38.3 +54.4	-2 03.2 +54.5	-2 27.9 +54.6
10°	0 06.2 +54.3 67.7	-0 18.9 +54.3	-0 43.9 +54.4	-1 08.7 +54.5	-1 33.3 +54.6
11°	1 00.5 +54.2 67.3	0 35.4 +54.4 66.4	0 10.5 +54.5 65.5	-0 14.2 +54.6	-0 38.7 +54.6
12°	1 54.7 +54.3 66.9	1 29.8 +54.3 66.0	1 05.0 +54.4 65.1	0 40.4 +54.5 64.2	0 15.9 +54.6 63.3
13°	2 49.0 +54.2 66.5	2 24.1 +54.3 65.6	1 59.4 +54.4 64.7	1 34.9 +54.5 63.8	1 10.5 +54.6 62.9
14°	3 43.2 +54.3 66.0	3 18.4 +54.4 65.1	2 53.8 +54.4 64.3	2 29.4 +54.5 63.4	2 05.1 +54.6 62.5
15°	4 37.5 +54.2 65.6	4 12.8 +54.3 64.7	3 48.2 +54.4 63.8	3 23.9 +54.4 63.0	2 59.7 +54.6 62.1
16°	5 31.7 +54.2 65.2	5 07.1 +54.2 64.3	4 42.6 +54.4 63.4	4 18.3 +54.5 62.5	3 54.3 +54.5 61.7
17°	6 25.9 +54.2 64.7	6 01.3 +54.3 63.9	5 37.0 +54.3 63.0	5 12.8 +54.5 62.1	4 48.8 +54.6 61.2
18°	7 20.1 +54.1 64.3	6 55.6 +54.3 63.4	6 31.3 +54.4 62.6	6 07.3 +54.4 61.7	5 43.4 +54.5 60.8
19°	8 14.2 +54.1 63.9	7 49.9 +54.2 63.0	7 25.7 +54.3 62.1	7 01.7 +54.4 61.3	6 37.9 +54.5 60.4
20°	9 08.3 +54.1 63.4	8 44.1 +54.2 62.6	8 20.0 +54.3 61.7	7 56.1 +54.4 60.9	7 32.4 +54.5 60.0
21°	10 02.4 +54.1 63.0	9 38.3 +54.1 62.1	9 14.3 +54.2 61.3	8 50.5 +54.3 60.4	8 26.9 +54.5 59.6
22°	10 56.5 +54.0 62.5	10 32.4 +54.1 61.7	10 08.5 +54.3 60.8	9 44.8 +54.4 60.0	9 21.4 +54.4 59.1
23°	11 50.5 +54.0 62.1	11 26.5 +54.1 61.3	11 02.8 +54.1 60.4	10 39.2 +54.3 59.6	10 15.8 +54.4 58.7
24°	12 44.5 +53.9 61.7	12 20.6 +54.1 60.8	11 56.9 +54.2 60.0	11 33.5 +54.2 59.1	11 10.2 +54.3 58.3
25°	13 38.4 +53.9 61.2	13 14.7 +53.9 60.4	12 51.1 +54.1 59.5	12 27.7 +54.2 58.7	12 04.5 +54.4 57.9
26°	14 32.3 +53.8 60.8	14 08.6 +54.0 59.9	13 45.2 +54.0 59.1	13 21.9 +54.2 58.3	12 58.9 +54.2 57.4
27°	15 26.1 +53.8 60.3	15 02.6 +53.9 59.5	14 39.2 +54.0 58.6	14 16.1 +54.1 57.8	13 53.1 +54.2 57.0
28°	16 19.9 +53.7 59.8	15 56.5 +53.8 59.0	15 33.2 +54.0 58.2	15 10.2 +54.0 57.4	14 47.3 +54.2 56.5
29°	17 13.6 +53.7 59.4	16 50.3 +53.8 58.6	16 27.2 +53.8 57.7	16 04.2 +54.0 56.9	15 41.5 +54.1 56.1

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°	-9 14.7 +54.6	-9 39.6 +54.6			
3°	-8 20.1 +54.5	-8 45.0 +54.7	-9 09.6 +54.7	-9 34.1 +54.9	-9 58.3 +54.9
4°	-7 25.6 +54.6	-7 50.3 +54.7	-8 14.9 +54.8	-8 39.2 +54.8	-9 03.4 +55.0
5°	-6 31.0 +54.7	-6 55.6 +54.7	-7 20.1 +54.8	-7 44.4 +54.9	-8 08.4 +54.9
6°	-5 36.3 +54.6	-6 00.9 +54.7	-6 25.3 +54.8	-6 49.5 +54.9	-7 13.5 +55.0
7°	-4 41.7 +54.7	-5 06.2 +54.8	-5 30.5 +54.9	-5 54.6 +54.9	-6 18.5 +55.0
8°	-3 47.0 +54.6	-4 11.4 +54.7	-4 35.6 +54.8	-4 59.7 +55.0	-5 23.5 +55.1
9°	-2 52.4 +54.7	-3 16.7 +54.8	-3 40.8 +54.8	-4 04.7 +54.9	-4 28.4 +55.0
10°	-1 57.7 +54.7	-2 21.9 +54.8	-2 46.0 +54.9	-3 09.8 +55.0	-3 33.4 +55.1
11°	-1 03.0 +54.7	-1 27.1 +54.7	-1 51.1 +54.9	-2 14.8 +54.9	-2 38.3 +55.0
12°	-0 08.3 +54.7	-0 32.4 +54.8	-0 56.2 +54.9	-1 19.9 +55.0	-1 43.3 +55.1
13°	0 46.4 +54.6 62.0	0 22.4 +54.8 61.1	-0 01.3 +54.8	-0 24.9 +55.0	-0 48.2 +55.1
14°	1 41.0 +54.7 61.6	1 17.2 +54.8 60.7	0 53.5 +54.9 59.8	0 30.1 +54.9 59.0	0 06.9 +55.0 58.1
15°	2 35.7 +54.7 61.2	2 12.0 +54.7 60.3	1 48.4 +54.9 59.4	1 25.0 +55.0 58.6	1 01.9 +55.1 57.7
16°	3 30.4 +54.7 60.8	3 06.7 +54.8 59.9	2 43.3 +54.8 59.0	2 20.0 +55.0 58.2	1 57.0 +55.0 57.3
17°	4 25.1 +54.6 60.4	4 01.5 +54.7 59.5	3 38.1 +54.9 58.6	3 15.0 +54.9 57.7	2 52.0 +55.1 56.9
18°	5 19.7 +54.6 60.0	4 56.2 +54.7 59.1	4 33.0 +54.8 58.2	4 09.9 +54.9 57.3	3 47.1 +55.0 56.5
19°	6 14.3 +54.6 59.5	5 50.9 +54.8 58.7	5 27.8 +54.8 57.8	5 04.8 +55.0 56.9	4 42.1 +55.1 56.1
20°	7 08.9 +54.6 59.1	6 45.7 +54.6 58.3	6 22.6 +54.8 57.4	5 59.8 +54.9 56.5	5 37.2 +55.0 55.7
21°	8 03.5 +54.6 58.7	7 40.3 +54.7 57.9	7 17.4 +54.8 57.0	6 54.7 +54.8 56.1	6 32.2 +55.0 55.3
22°	8 58.1 +54.5 58.3	8 35.0 +54.7 57.4	8 12.2 +54.7 56.6	7 49.5 +54.9 55.7	7 27.2 +54.9 54.9
23°	9 52.6 +54.5 57.9	9 29.7 +54.6 57.0	9 06.9 +54.7 56.2	8 44.4 +54.8 55.3	8 22.1 +55.0 54.5
24°	10 47.1 +54.5 57.4	10 24.3 +54.5 56.6	10 01.6 +54.7 55.8	9 39.2 +54.8 54.9	9 17.1 +54.9 54.1
25°	11 41.6 +54.4 57.0	11 18.8 +54.6 56.2	10 56.3 +54.7 55.3	10 34.0 +54.8 54.5	10 12.0 +54.9 53.6
26°	12 36.0 +54.4 56.6	12 13.4 +54.5 55.7	11 51.0 +54.6 54.9	11 28.8 +54.7 54.1	11 06.9 +54.8 53.2
27°	13 30.4 +54.3 56.1	13 07.9 +54.4 55.3	12 45.6 +54.6 54.5	12 23.5 +54.7 53.7	12 01.7 +54.8 52.8
28°	14 24.7 +54.3 55.7	14 02.3 +54.4 54.9	13 40.2 +54.5 54.1	13 18.2 +54.7 53.2	12 56.5 +54.8 52.4
29°	15 19.0 +54.3 55.3	14 56.7 +54.4 54.5	14 34.7 +54.5 53.6	14 12.9 +54.6 52.8	13 51.3 +54.7 52.0

Dec	LHA 120° / 240°	LHA 121° / 239°	LHA 122° / 238°	LHA 123° / 237°	LHA 124° / 236°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°	-9 27.4 +55.1	-9 51.1 +55.1			
5°	-8 32.3 +55.1	-8 56.0 +55.2	-9 19.4 +55.3	-9 42.6 +55.3	
6°	-7 37.2 +55.0	-8 00.8 +55.2	-8 24.1 +55.2	-8 47.3 +55.4	-9 10.1 +55.5
7°	-6 42.2 +55.1	-7 05.6 +55.2	-7 28.9 +55.3	-7 51.9 +55.4	-8 14.6 +55.5
8°	-5 47.1 +55.2	-6 10.4 +55.2	-6 33.6 +55.4	-6 56.5 +55.4	-7 19.1 +55.5
9°	-4 51.9 +55.1	-5 15.2 +55.2	-5 38.2 +55.3	-6 01.1 +55.5	-6 23.6 +55.5
10°	-3 56.8 +55.2	-4 20.0 +55.3	-4 42.9 +55.3	-5 05.6 +55.4	-5 28.1 +55.6
11°	-3 01.6 +55.1	-3 24.7 +55.2	-3 47.6 +55.4	-4 10.2 +55.5	-4 32.5 +55.5
12°	-2 06.5 +55.2	-2 29.5 +55.3	-2 52.2 +55.4	-3 14.7 +55.5	-3 37.0 +55.6
13°	-1 11.3 +55.1	-1 34.2 +55.3	-1 56.8 +55.3	-2 19.2 +55.4	-2 41.4 +55.6
14°	-0 16.2 +55.2	-0 38.9 +55.2	-1 01.5 +55.4	-1 23.8 +55.5	-1 45.8 +55.6
15°	0 39.0 +55.2 56.8	0 16.3 +55.3 55.9	-0 06.1 +55.4	-0 28.3 +55.5	-0 50.2 +55.6
16°	1 34.2 +55.1 56.4	1 11.6 +55.3 55.5	0 49.3 +55.4 54.6	0 27.2 +55.5 53.7	0 05.4 +55.6 52.8
17°	2 29.3 +55.2 56.0	2 06.9 +55.2 55.1	1 44.7 +55.3 54.2	1 22.7 +55.5 53.3	1 01.0 +55.5 52.5
18°	3 24.5 +55.1 55.6	3 02.1 +55.3 54.7	2 40.0 +55.4 53.8	2 18.2 +55.4 53.0	1 56.5 +55.6 52.1
19°	4 19.6 +55.2 55.2	3 57.4 +55.2 54.3	3 35.4 +55.3 53.5	3 13.6 +55.5 52.6	2 52.1 +55.6 51.7
20°	5 14.8 +55.1 54.8	4 52.6 +55.3 53.9	4 30.7 +55.4 53.1	4 09.1 +55.4 52.2	3 47.7 +55.6 51.3
21°	6 09.9 +55.1 54.4	5 47.9 +55.2 53.5	5 26.1 +55.3 52.7	5 04.5 +55.5 51.8	4 43.3 +55.5 51.0
22°	7 05.0 +55.1 54.0	6 43.1 +55.2 53.2	6 21.4 +55.3 52.3	6 00.0 +55.4 51.4	5 38.8 +55.5 50.6
23°	8 00.1 +55.0 53.6	7 38.3 +55.1 52.8	7 16.7 +55.3 51.9	6 55.4 +55.4 51.0	6 34.3 +55.6 50.2
24°	8 55.1 +55.1 53.2	8 33.4 +55.2 52.4	8 12.0 +55.3 51.5	7 50.8 +55.4 50.7	7 29.9 +55.5 49.8
25°	9 50.2 +55.0 52.8	9 28.6 +55.1 52.0	9 07.3 +55.2 51.1	8 46.2 +55.3 50.3	8 25.4 +55.4 49.4
26°	10 45.2 +54.9 52.4	10 23.7 +55.1 51.6	10 02.5 +55.2 50.7	9 41.5 +55.4 49.9	9 20.8 +55.5 49.0
27°	11 40.1 +55.0 52.0	11 18.8 +55.0 51.2	10 57.7 +55.2 50.3	10 36.9 +55.3 49.5	10 16.3 +55.4 48.7
28°	12 35.1 +54.9 51.6	12 13.8 +55.1 50.8	11 52.9 +55.1 49.9	11 32.2 +55.2 49.1	11 11.7 +55.4 48.3
29°	13 30.0 +54.8 51.2	13 08.9 +54.9 50.3	12 48.0 +55.1 49.5	12 27.4 +55.3 48.7	12 07.1 +55.4 47.9

Dec	LHA 125° / 235°	LHA 126° / 234°	LHA 127° / 233°	LHA 128° / 232°	LHA 129° / 231°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°	-9 32.7 +55.5	-9 55.1 +55.7			
7°	-8 37.2 +55.6	-8 59.4 +55.7	-9 21.5 +55.9	-9 43.2 +55.9	
8°	-7 41.6 +55.7	-8 03.7 +55.7	-8 25.6 +55.8	-8 47.3 +56.0	-9 08.7 +56.1
9°	-6 45.9 +55.6	-7 08.0 +55.7	-7 29.8 +55.8	-7 51.3 +55.9	-8 12.6 +56.1
10°	-5 50.3 +55.7	-6 12.3 +55.8	-6 34.0 +55.9	-6 55.4 +56.0	-7 16.5 +56.0
11°	-4 54.6 +55.6	-5 16.5 +55.8	-5 38.1 +55.9	-5 59.4 +56.0	-6 20.5 +56.1
12°	-3 59.0 +55.7	-4 20.7 +55.8	-4 42.2 +55.9	-5 03.4 +56.0	-5 24.4 +56.2
13°	-3 03.3 +55.7	-3 24.9 +55.8	-3 46.3 +55.9	-4 07.4 +56.0	-4 28.2 +56.1
14°	-2 07.6 +55.7	-2 29.1 +55.8	-2 50.4 +55.9	-3 11.4 +56.0	-3 32.1 +56.1
15°	-1 11.9 +55.7	-1 33.3 +55.8	-1 54.5 +55.9	-2 15.4 +56.0	-2 36.0 +56.1
16°	-0 16.2 +55.7	-0 37.5 +55.8	-0 58.6 +55.9	-1 19.4 +56.1	-1 39.9 +56.2
17°	0 39.5 +55.7 51.6	0 18.3 +55.8 50.7	-0 02.7 +56.0	-0 23.3 +56.0	-0 43.7 +56.1
18°	1 35.2 +55.7 51.2	1 14.1 +55.8 50.3	0 53.3 +55.9 49.4	0 32.7 +56.0 48.5	0 12.4 +56.2 47.7
19°	2 30.9 +55.7 50.8	2 09.9 +55.8 50.0	1 49.2 +55.9 49.1	1 28.7 +56.1 48.2	1 08.6 +56.1 47.3
20°	3 26.6 +55.6 50.5	3 05.7 +55.8 49.6	2 45.1 +55.9 48.7	2 24.8 +56.0 47.8	2 04.7 +56.1 47.0
21°	4 22.2 +55.7 50.1	4 01.5 +55.8 49.2	3 41.0 +55.9 48.3	3 20.8 +56.0 47.5	3 00.8 +56.2 46.6
22°	5 17.9 +55.6 49.7	4 57.3 +55.7 48.8	4 36.9 +55.9 48.0	4 16.8 +56.0 47.1	3 57.0 +56.1 46.2
23°	6 13.5 +55.7 49.3	5 53.0 +55.8 48.5	5 32.8 +55.8 47.6	5 12.8 +56.0 46.8	4 53.1 +56.1 45.9
24°	7 09.2 +55.6 49.0	6 48.8 +55.7 48.1	6 28.6 +55.9 47.2	6 08.8 +55.9 46.4	5 49.2 +56.1 45.5
25°	8 04.8 +55.6 48.6	7 44.5 +55.7 47.7	7 24.5 +55.8 46.9	7 04.7 +56.0 46.0	6 45.3 +56.1 45.2
26°	9 00.4 +55.6 48.2	8 40.2 +55.7 47.4	8 20.3 +55.8 46.5	8 00.7 +55.9 45.7	7 41.4 +56.0 44.8
27°	9 56.0 +55.5 47.8	9 35.9 +55.7 47.0	9 16.1 +55.8 46.1	8 56.6 +56.0 45.3	8 37.4 +56.1 44.5
28°	10 51.5 +55.5 47.4	10 31.6 +55.6 46.6	10 11.9 +55.8 45.8	9 52.6 +55.8 44.9	9 33.5 +56.0 44.1
29°	11 47.0 +55.5 47.0	11 27.2 +55.6 46.2	11 07.7 +55.7 45.4	10 48.4 +55.9 44.6	10 29.5 +56.0 43.7

Latitude 63°

Declination SAME name as Latitude

Dec	LHA 130° / 230°	LHA 131° / 229°	LHA 132° / 228°	LHA 133° / 227°	LHA 134° / 226°
	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 29.7 +56.1	-9 50.6 +56.3			
9°	-8 33.6 +56.2	-8 54.3 +56.3	-9 14.7 +56.4	-9 34.8 +56.5	-9 54.6 +56.6
10°	-7 37.4 +56.2	-7 58.0 +56.3	-8 18.3 +56.4	-8 38.3 +56.5	-8 58.0 +56.6
11°	-6 41.2 +56.2	-7 01.7 +56.3	-7 21.9 +56.4	-7 41.8 +56.6	-8 01.4 +56.7
12°	-5 45.0 +56.2	-6 05.4 +56.3	-6 25.5 +56.5	-6 45.2 +56.5	-7 04.7 +56.7
13°	-4 48.8 +56.2	-5 09.1 +56.4	-5 29.0 +56.4	-5 48.7 +56.6	-6 08.0 +56.6
14°	-3 52.6 +56.3	-4 12.7 +56.3	-4 32.6 +56.5	-4 52.1 +56.6	-5 11.4 +56.7
15°	-2 56.3 +56.2	-3 16.4 +56.4	-3 36.1 +56.5	-3 55.5 +56.5	-4 14.7 +56.7
16°	-2 00.1 +56.3	-2 20.0 +56.4	-2 39.6 +56.5	-2 59.0 +56.6	-3 18.0 +56.7
17°	-1 03.8 +56.2	-1 23.6 +56.3	-1 43.1 +56.4	-2 02.4 +56.6	-2 21.3 +56.7
18°	-0 07.6 +56.3	-0 27.3 +56.4	-0 46.7 +56.5	-1 05.8 +56.6	-1 24.6 +56.7
19°	0 48.7 +56.2 46.4	0 29.1 +56.4 45.5	0 09.8 +56.5 44.6	-0 09.2 +56.6	-0 27.9 +56.8
20°	1 44.9 +56.3 46.1	1 25.5 +56.3 45.2	1 06.3 +56.5 44.3	0 47.4 +56.6 43.4	0 28.9 +56.7 42.5
21°	2 41.2 +56.2 45.7	2 21.8 +56.4 44.8	2 02.8 +56.4 44.0	1 44.0 +56.6 43.1	1 25.6 +56.7 42.2
22°	3 37.4 +56.3 45.4	3 18.2 +56.3 44.5	2 59.2 +56.5 43.6	2 40.6 +56.6 42.8	2 22.3 +56.7 41.9
23°	4 33.7 +56.2 45.0	4 14.5 +56.4 44.2	3 55.7 +56.5 43.3	3 37.2 +56.6 42.4	3 19.0 +56.7 41.5
24°	5 29.9 +56.2 44.7	5 10.9 +56.3 43.8	4 52.2 +56.4 42.9	4 33.8 +56.5 42.1	4 15.7 +56.7 41.2
25°	6 26.1 +56.2 44.3	6 07.2 +56.3 43.5	5 48.6 +56.5 42.6	5 30.3 +56.6 41.8	5 12.4 +56.6 40.9
26°	7 22.3 +56.2 44.0	7 03.5 +56.3 43.1	6 45.1 +56.4 42.3	6 26.9 +56.5 41.4	6 09.0 +56.7 40.6
27°	8 18.5 +56.1 43.6	7 59.8 +56.3 42.8	7 41.5 +56.4 41.9	7 23.4 +56.6 41.1	7 05.7 +56.6 40.2
28°	9 14.6 +56.2 43.3	8 56.1 +56.3 42.4	8 37.9 +56.4 41.6	8 20.0 +56.5 40.7	8 02.3 +56.7 39.9
29°	10 10.8 +56.1 42.9	9 52.4 +56.2 42.1	9 34.3 +56.4 41.2	9 16.5 +56.5 40.4	8 59.0 +56.6 39.6

Dec	LHA 135° / 225°	LHA 136° / 224°	LHA 137° / 223°	LHA 138° / 222°	LHA 139° / 221°
	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°	-9 17.4 +56.8	-9 36.4 +56.8	-9 55.2 +57.0		
11°	-8 20.6 +56.7	-8 39.6 +56.9	-8 58.2 +57.0	-9 16.5 +57.1	-9 34.4 +57.2
12°	-7 23.9 +56.8	-7 42.7 +56.9	-8 01.2 +57.0	-8 19.4 +57.1	-8 37.2 +57.2
13°	-6 27.1 +56.8	-6 45.8 +56.9	-7 04.2 +57.0	-7 22.3 +57.1	-7 40.0 +57.2
14°	-5 30.3 +56.8	-5 48.9 +56.9	-6 07.2 +57.0	-6 25.2 +57.2	-6 42.8 +57.3
15°	-4 33.5 +56.8	-4 52.0 +56.9	-5 10.2 +57.1	-5 28.0 +57.1	-5 45.5 +57.2
16°	-3 36.7 +56.8	-3 55.1 +56.9	-4 13.1 +57.0	-4 30.9 +57.2	-4 48.3 +57.3
17°	-2 39.9 +56.8	-2 58.2 +57.0	-3 16.1 +57.0	-3 33.7 +57.1	-3 51.0 +57.2
18°	-1 43.1 +56.9	-2 01.2 +56.9	-2 19.1 +57.1	-2 36.6 +57.2	-2 53.8 +57.3
19°	-0 46.2 +56.8	-1 04.3 +57.0	-1 22.0 +57.0	-1 39.4 +57.1	-1 56.5 +57.3
20°	0 10.6 +56.8 41.6	-0 07.3 +56.9	-0 25.0 +57.1	-0 42.3 +57.2	-0 59.2 +57.3
21°	1 07.4 +56.8 41.3	0 49.6 +56.9 40.4	0 32.1 +57.0 39.5	0 14.9 +57.2 38.7	-0 01.9 +57.2
22°	2 04.2 +56.9 41.0	1 46.5 +57.0 40.1	1 29.1 +57.1 39.2	1 12.1 +57.1 38.4	0 55.3 +57.3 37.5
23°	3 01.1 +56.8 40.7	2 43.5 +56.9 39.8	2 26.2 +57.0 38.9	2 09.2 +57.2 38.1	1 52.6 +57.3 37.2
24°	3 57.9 +56.8 40.4	3 40.4 +56.9 39.5	3 23.2 +57.1 38.6	3 06.4 +57.1 37.7	2 49.9 +57.2 36.9
25°	4 54.7 +56.8 40.0	4 37.3 +56.9 39.2	4 20.3 +57.0 38.3	4 03.5 +57.2 37.4	3 47.1 +57.3 36.6
26°	5 51.5 +56.8 39.7	5 34.2 +56.9 38.9	5 17.3 +57.0 38.0	5 00.7 +57.1 37.1	4 44.4 +57.3 36.3
27°	6 48.3 +56.7 39.4	6 31.1 +56.9 38.5	6 14.3 +57.0 37.7	5 57.8 +57.2 36.8	5 41.7 +57.2 36.0
28°	7 45.0 +56.8 39.1	7 28.0 +56.9 38.2	7 11.3 +57.0 37.4	6 55.0 +57.1 36.5	6 38.9 +57.2 35.7
29°	8 41.8 +56.7 38.7	8 24.9 +56.9 37.9	8 08.3 +57.0 37.1	7 52.1 +57.1 36.2	7 36.1 +57.3 35.4

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Dec	LHA 140° / 220°	LHA 141° / 219°	LHA 142° / 218°	LHA 143° / 217°	LHA 144° / 216°
	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°	-9 52.1 +57.3				
12°	-8 54.8 +57.4	-9 11.9 +57.4	-9 28.7 +57.5	-9 45.2 +57.7	
13°	-7 57.4 +57.3	-8 14.5 +57.5	-8 31.2 +57.6	-8 47.5 +57.6	-9 03.5 +57.8
14°	-7 00.1 +57.4	-7 17.0 +57.4	-7 33.6 +57.6	-7 49.9 +57.7	-8 05.7 +57.8
15°	-6 02.7 +57.3	-6 19.6 +57.5	-6 36.0 +57.5	-6 52.2 +57.7	-7 07.9 +57.8
16°	-5 05.4 +57.4	-5 22.1 +57.5	-5 38.5 +57.6	-5 54.5 +57.7	-6 10.1 +57.8
17°	-4 08.0 +57.4	-4 24.6 +57.5	-4 40.9 +57.6	-4 56.8 +57.7	-5 12.3 +57.8
18°	-3 10.6 +57.4	-3 27.1 +57.5	-3 43.3 +57.6	-3 59.1 +57.7	-4 14.5 +57.8
19°	-2 13.2 +57.4	-2 29.6 +57.5	-2 45.7 +57.6	-3 01.4 +57.7	-3 16.7 +57.8
20°	-1 15.8 +57.3	-1 32.1 +57.5	-1 48.1 +57.6	-2 03.7 +57.8	-2 18.9 +57.8
21°	-0 18.5 +57.4	-0 34.6 +57.5	-0 50.5 +57.6	-1 05.9 +57.7	-1 21.1 +57.8
22°	0 38.9 +57.4 36.6	0 22.9 +57.5 35.7	0 07.1 +57.7 34.8	-0 08.2 +57.7	-0 23.3 +57.9
23°	1 36.3 +57.4 36.3	1 20.4 +57.5 35.4	1 04.8 +57.6 34.5	0 49.5 +57.7 33.6	0 34.6 +57.8 32.8
24°	2 33.7 +57.4 36.0	2 17.9 +57.5 35.1	2 02.4 +57.6 34.2	1 47.2 +57.7 33.4	1 32.4 +57.8 32.5
25°	3 31.1 +57.4 35.7	3 15.4 +57.4 34.8	3 00.0 +57.6 34.0	2 44.9 +57.7 33.1	2 30.2 +57.8 32.2
26°	4 28.5 +57.3 35.4	4 12.8 +57.5 34.6	3 57.6 +57.6 33.7	3 42.6 +57.7 32.8	3 28.0 +57.8 32.0
27°	5 25.8 +57.4 35.1	5 10.3 +57.5 34.3	4 55.2 +57.5 33.4	4 40.3 +57.7 32.5	4 25.8 +57.9 31.7
28°	6 23.2 +57.3 34.8	6 07.8 +57.5 34.0	5 52.7 +57.6 33.1	5 38.0 +57.7 32.3	5 23.7 +57.8 31.4
29°	7 20.5 +57.4 34.5	7 05.3 +57.4 33.7	6 50.3 +57.6 32.8	6 35.7 +57.7 32.0	6 21.5 +57.7 31.1

Dec	LHA 145° / 215°	LHA 146° / 214°	LHA 147° / 213°	LHA 148° / 212°	LHA 149° / 211°
	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°	-9 19.1 +57.9	-9 34.4 +58.0	-9 49.2 +58.1		
14°	-8 21.2 +57.9	-8 36.4 +58.0	-8 51.1 +58.1	-9 05.5 +58.2	-9 19.5 +58.3
15°	-7 23.3 +57.9	-7 38.4 +58.0	-7 53.0 +58.1	-8 07.3 +58.2	-8 21.2 +58.3
16°	-6 25.4 +57.9	-6 40.4 +58.0	-6 54.9 +58.1	-7 09.1 +58.2	-7 22.9 +58.3
17°	-5 27.5 +57.9	-5 42.4 +58.1	-5 56.8 +58.1	-6 10.9 +58.2	-6 24.6 +58.3
18°	-4 29.6 +57.9	-4 44.3 +58.0	-4 58.7 +58.1	-5 12.7 +58.3	-5 26.3 +58.4
19°	-3 31.7 +57.9	-3 46.3 +58.0	-4 00.6 +58.2	-4 14.4 +58.2	-4 27.9 +58.3
20°	-2 33.8 +57.9	-2 48.3 +58.0	-3 02.4 +58.1	-3 16.2 +58.2	-3 29.6 +58.3
21°	-1 35.9 +58.0	-1 50.3 +58.1	-2 04.3 +58.1	-2 18.0 +58.3	-2 31.3 +58.4
22°	-0 37.9 +57.9	-0 52.2 +58.0	-1 06.2 +58.2	-1 19.7 +58.2	-1 32.9 +58.3
23°	0 20.0 +57.9 31.9	0 05.8 +58.0 31.0	-0 08.0 +58.1	-0 21.5 +58.2	-0 34.6 +58.3
24°	1 17.9 +58.0 31.6	1 03.8 +58.1 30.7	0 50.1 +58.1 29.8	0 36.7 +58.3 29.0	0 23.7 +58.4 28.1
25°	2 15.9 +57.9 31.3	2 01.9 +58.0 30.5	1 48.2 +58.2 29.6	1 35.0 +58.2 28.7	1 22.1 +58.3 27.8
26°	3 13.8 +57.9 31.1	2 59.9 +58.0 30.2	2 46.4 +58.1 29.3	2 33.2 +58.2 28.5	2 20.4 +58.3 27.6
27°	4 11.7 +57.9 30.8	3 57.9 +58.1 30.0	3 44.5 +58.1 29.1	3 31.4 +58.3 28.2	3 18.7 +58.4 27.4
28°	5 09.6 +57.9 30.6	4 56.0 +58.0 29.7	4 42.6 +58.2 28.8	4 29.7 +58.2 28.0	4 17.1 +58.3 27.1
29°	6 07.5 +57.9 30.3	5 54.0 +58.0 29.5	5 40.8 +58.1 28.6	5 27.9 +58.2 27.7	5 15.4 +58.3 26.9

Dec	LHA 150° / 210°	LHA 151° / 209°	LHA 152° / 208°	LHA 153° / 207°	LHA 154° / 206°
	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°	-9 33.1 +58.4	-9 46.3 +58.5	-9 59.1 +58.6		
15°	-8 34.7 +58.4	-8 47.8 +58.5	-9 00.5 +58.6	-9 12.8 +58.7	-9 24.7 +58.8
16°	-7 36.3 +58.4	-7 49.3 +58.5	-8 01.9 +58.6	-8 14.1 +58.7	-8 25.9 +58.7
17°	-6 37.9 +58.4	-6 50.8 +58.5	-7 03.3 +58.6	-7 15.4 +58.6	-7 27.2 +58.8
18°	-5 39.5 +58.4	-5 52.3 +58.5	-6 04.7 +58.6	-6 16.8 +58.7	-6 28.4 +58.8
19°	-4 41.1 +58.5	-4 53.8 +58.5	-5 06.1 +58.6	-5 18.1 +58.7	-5 29.6 +58.8
20°	-3 42.6 +58.4	-3 55.3 +58.6	-4 07.5 +58.6	-4 19.4 +58.8	-4 30.8 +58.8
21°	-2 44.2 +58.4	-2 56.7 +58.5	-3 08.9 +58.6	-3 20.6 +58.7	-3 32.0 +58.8
22°	-1 45.8 +58.5	-1 58.2 +58.5	-2 10.3 +58.7	-2 21.9 +58.7	-2 33.2 +58.8
23°	-0 47.3 +58.4	-0 59.7 +58.5	-1 11.6 +58.6	-1 23.2 +58.7	-1 34.4 +58.8
24°	0 11.1 +58.4 27.2	-0 01.2 +58.6	-0 13.0 +58.6	-0 24.5 +58.7	-0 35.6 +58.8
25°	1 09.5 +58.5 27.0	0 57.4 +58.5 26.1	0 45.6 +58.6 25.2	0 34.2 +58.7 24.3	0 23.2 +58.8 23.4
26°	2 08.0 +58.4 26.7	1 55.9 +58.5 25.8	1 44.2 +58.6 25.0	1 32.9 +58.7 24.1	1 22.0 +58.8 23.2
27°	3 06.4 +58.4 26.5	2 54.4 +58.6 25.6	2 42.8 +58.7 24.8	2 31.6 +58.7 23.9	2 20.8 +58.8 23.0
28°	4 04.8 +58.4 26.3	3 53.0 +58.5 25.4	3 41.5 +58.6 24.5	3 30.3 +58.7 23.7	3 19.6 +58.8 22.8
29°	5 03.2 +58.5 26.0	4 51.5 +58.5 25.2	4 40.1 +58.6 24.3	4 29.0 +58.7 23.5	4 18.4 +58.8 22.6

Dec	LHA 155° / 205°	LHA 156° / 204°	LHA 157° / 203°	LHA 158° / 202°	LHA 159° / 201°
	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°	-9 36.2 +58.9	-9 47.3 +59.0	-9 57.9 +59.0		
16°	-8 37.3 +58.8	-8 48.3 +58.9	-8 58.9 +59.0	-9 09.0 +59.1	-9 18.8 +59.2
17°	-7 38.5 +58.9	-7 49.4 +59.0	-7 59.9 +59.1	-8 09.9 +59.1	-8 19.6 +59.2
18°	-6 39.6 +58.9	-6 50.4 +58.9	-7 00.8 +59.0	-7 10.8 +59.1	-7 20.4 +59.2
19°	-5 40.7 +58.8	-5 51.5 +59.0	-6 01.8 +59.0	-6 11.7 +59.1	-6 21.2 +59.2
20°	-4 41.9 +58.9	-4 52.5 +58.9	-5 02.8 +59.1	-5 12.6 +59.1	-5 22.0 +59.2
21°	-3 43.0 +58.9	-3 53.6 +59.0	-4 03.7 +59.0	-4 13.5 +59.1	-4 22.8 +59.2
22°	-2 44.1 +58.9	-2 54.6 +59.0	-3 04.7 +59.1	-3 14.4 +59.2	-3 23.6 +59.2
23°	-1 45.2 +58.9	-1 55.6 +58.9	-2 05.6 +59.0	-2 15.2 +59.1	-2 24.4 +59.2
24°	-0 46.3 +58.9	-0 56.7 +59.0	-1 06.6 +59.1	-1 16.1 +59.1	-1 25.2 +59.2
25°	0 12.6 +58.8 22.5	0 02.3 +59.0 21.6	-0 07.5 +59.0	-0 17.0 +59.1	-0 26.0 +59.2
26°	1 11.4 +58.9 22.3	1 01.3 +58.9 21.4	0 51.5 +59.1 20.6	0 42.1 +59.2 19.7	0 33.2 +59.2 18.8
27°	2 10.3 +58.9 22.1	2 00.2 +59.0 21.3	1 50.6 +59.0 20.4	1 41.3 +59.1 19.5	1 32.4 +59.2 18.6
28°	3 09.2 +58.9 21.9	2 59.2 +59.0 21.1	2 49.6 +59.1 20.2	2 40.4 +59.1 19.3	2 31.6 +59.2 18.5
29°	4 08.1 +58.9 21.8	3 58.2 +58.9 20.9	3 48.7 +59.0 20.0	3 39.5 +59.1 19.2	3 30.8 +59.2 18.3

Dec	LHA 160° / 200°	LHA 161° / 199°	LHA 162° / 198°	LHA 163° / 197°	LHA 164° / 196°
	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°	-9 28.1 +59.3	-9 36.9 +59.3	-9 45.4 +59.4	-9 53.3 +59.4	
17°	-8 28.8 +59.3	-8 37.6 +59.3	-8 46.0 +59.4	-8 53.9 +59.5	-9 01.4 +59.5
18°	-7 29.5 +59.2	-7 38.3 +59.4	-7 46.6 +59.4	-7 54.4 +59.4	-8 01.9 +59.6
19°	-6 30.3 +59.3	-6 38.9 +59.3	-6 47.2 +59.4	-6 55.0 +59.5	-7 02.3 +59.5
20°	-5 31.0 +59.2	-5 39.6 +59.3	-5 47.8 +59.4	-5 55.5 +59.5	-6 02.8 +59.5
21°	-4 31.8 +59.3	-4 40.3 +59.4	-4 48.4 +59.4	-4 56.0 +59.4	-5 03.3 +59.5
22°	-3 32.5 +59.3	-3 40.9 +59.3	-3 49.0 +59.4	-3 56.6 +59.5	-4 03.8 +59.6
23°	-2 33.2 +59.3	-2 41.6 +59.3	-2 49.6 +59.4	-2 57.1 +59.5	-3 04.2 +59.5
24°	-1 33.9 +59.2	-1 42.3 +59.4	-1 50.2 +59.5	-1 57.6 +59.4	-2 04.7 +59.5
25°	-0 34.7 +59.3	-0 42.9 +59.3	-0 50.7 +59.4	-0 58.2 +59.5	-1 05.2 +59.5
26°	0 24.6 +59.3 17.9	0 16.4 +59.4 17.0	0 08.7 +59.4 16.1	0 01.3 +59.5 15.2	-0 05.7 +59.6
27°	1 23.9 +59.2 17.7	1 15.8 +59.3 16.9	1 08.1 +59.4 16.0	1 00.8 +59.4 15.1	0 53.9 +59.5 14.2
28°	2 23.1 +59.3 17.6	2 15.1 +59.3 16.7	2 07.5 +59.4 15.8	2 00.2 +59.5 15.0	1 53.4 +59.5 14.1
29°	3 22.4 +59.3 17.4	3 14.4 +59.4 16.6	3 06.9 +59.4 15.7	2 59.7 +59.5 14.8	2 52.9 +59.6 14.0

Dec	LHA 165° / 195°	LHA 166° / 194°	LHA 167° / 193°	LHA 168° / 192°	LHA 169° / 191°
	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°	-9 08.4 +59.5	-9 15.0 +59.6	-9 21.2 +59.7	-9 26.9 +59.7	-9 32.2 +59.8
18°	-8 08.9 +59.6	-8 15.4 +59.6	-8 21.5 +59.7	-8 27.2 +59.7	-8 32.4 +59.8
19°	-7 09.3 +59.6	-7 15.8 +59.7	-7 21.8 +59.6	-7 27.5 +59.8	-7 32.6 +59.7
20°	-6 09.7 +59.6	-6 16.1 +59.6	-6 22.2 +59.7	-6 27.7 +59.7	-6 32.9 +59.8
21°	-5 10.1 +59.6	-5 16.5 +59.6	-5 22.5 +59.7	-5 28.0 +59.7	-5 33.1 +59.8
22°	-4 10.5 +59.5	-4 16.9 +59.7	-4 22.8 +59.7	-4 28.3 +59.8	-4 33.3 +59.8
23°	-3 11.0 +59.6	-3 17.2 +59.6	-3 23.1 +59.7	-3 28.5 +59.7	-3 33.5 +59.7
24°	-2 11.4 +59.6	-2 17.6 +59.6	-2 23.4 +59.7	-2 28.8 +59.7	-2 33.8 +59.8
25°	-1 11.8 +59.6	-1 18.0 +59.7	-1 23.7 +59.7	-1 29.1 +59.8	-1 34.0 +59.8
26°	-0 12.2 +59.6	-0 18.3 +59.6	-0 24.0 +59.6	-0 29.3 +59.7	-0 34.2 +59.7
27°	0 47.4 +59.6 13.3	0 41.3 +59.6 12.4	0 35.6 +59.7 11.6	0 30.4 +59.7 10.7	0 25.5 +59.8 9.8
28°	1 47.0 +59.6 13.2	1 40.9 +59.7 12.3	1 35.3 +59.7 11.5	1 30.1 +59.8 10.6	1 25.3 +59.8 9.7
29°	2 46.6 +59.5 13.1	2 40.6 +59.6 12.2	2 35.0 +59.7 11.4	2 29.9 +59.7 10.5	2 25.1 +59.8 9.6

Dec	LHA 170° / 190°	LHA 171° / 189°	LHA 172° / 188°	LHA 173° / 187°	LHA 174° / 186°
	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°	-9 37.0 +59.8	-9 41.4 +59.9	-9 45.3 +59.9	-9 48.7 +59.9	-9 51.7 +59.9
18°	-8 37.2 +59.8	-8 41.5 +59.8	-8 45.4 +59.9	-8 48.8 +59.9	-8 51.8 +60.0
19°	-7 37.4 +59.8	-7 41.7 +59.9	-7 45.5 +59.9	-7 48.9 +59.9	-7 51.8 +59.9
20°	-6 37.6 +59.9	-6 41.8 +59.8	-6 45.6 +59.9	-6 49.0 +59.9	-6 51.9 +59.9
21°	-5 37.7 +59.8	-5 42.0 +59.9	-5 45.7 +59.8	-5 49.1 +59.9	-5 52.0 +60.0
22°	-4 37.9 +59.8	-4 42.1 +59.8	-4 45.9 +59.9	-4 49.2 +59.9	-4 52.0 +59.9
23°	-3 38.1 +59.8	-3 42.3 +59.9	-3 46.0 +59.9	-3 49.3 +59.9	-3 52.1 +59.9
24°	-2 38.3 +59.8	-2 42.4 +59.8	-2 46.1 +59.9	-2 49.4 +59.9	-2 52.2 +60.0
25°	-1 38.5 +59.8	-1 42.6 +59.9	-1 46.2 +59.9	-1 49.5 +60.0	-1 52.2 +59.9
26°	-0 38.7 +59.8	-0 42.7 +59.8	-0 46.3 +59.8	-0 49.5 +59.9	-0 52.3 +59.9
27°	0 21.1 +59.8 8.9	0 17.1 +59.9 8.0	0 13.5 +59.9 7.1	0 10.4 +59.9 6.2	0 07.6 +60.0 5.3
28°	1 20.9 +59.9 8.8	1 17.0 +59.8 7.9	1 13.4 +59.9 7.1	1 10.3 +59.9 6.2	1 07.6 +59.9 5.3
29°	2 20.8 +59.8 8.7	2 16.8 +59.9 7.9	2 13.3 +59.9 7.0	2 10.2 +59.9 6.1	2 07.5 +59.9 5.2

Dec	LHA 175° / 185°	LHA 176° / 184°	LHA 177° / 183°	LHA 178° / 182°	LHA 179° / 181°
	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°	-9 54.2 +59.9	-9 56.3 +60.0	-9 57.9 +60.0	-9 59.1 +60.0	-9 59.8 +60.0
18°	-8 54.3 +60.0	-8 56.3 +59.9	-8 57.9 +59.9	-8 59.1 +60.0	-8 59.8 +60.0
19°	-7 54.3 +59.9	-7 56.4 +60.0	-7 58.0 +60.0	-7 59.1 +60.0	-7 59.8 +60.0
20°	-6 54.4 +60.0	-6 56.4 +60.0	-6 58.0 +60.0	-6 59.1 +60.0	-6 59.8 +60.0
21°	-5 54.4 +59.9	-5 56.4 +59.9	-5 58.0 +60.0	-5 59.1 +60.0	-5 59.8 +60.0
22°	-4 54.5 +60.0	-4 56.5 +60.0	-4 58.0 +60.0	-4 59.1 +60.0	-4 59.8 +60.0
23°	-3 54.5 +59.9	-3 56.5 +60.0	-3 58.0 +60.0	-3 59.1 +60.0	-3 59.8 +60.0
24°	-2 54.6 +60.0	-2 56.5 +59.9	-2 58.0 +59.9	-2 59.1 +60.0	-2 59.8 +60.0
25°	-1 54.6 +59.9	-1 56.6 +60.0	-1 58.1 +60.0	-1 59.1 +60.0	-1 59.8 +60.0
26°	-0 54.7 +60.0	-0 56.6 +60.0	-0 58.1 +60.0	-0 59.1 +59.9	-0 59.8 +60.0
27°	0 05.3 +59.9 4.5	0 03.4 +60.0 3.6	0 01.9 +60.0 2.7	0 00.8 +60.0 1.8	0 00.2 +60.0 0.9
28°	1 05.2 +60.0 4.4	1 03.4 +59.9 3.5	1 01.9 +60.0 2.6	1 00.8 +60.0 1.8	1 00.2 +60.0 0.9
29°	2 05.2 +60.0 4.4	2 03.3 +60.0 3.5	2 01.9 +60.0 2.6	2 00.8 +60.0 1.8	2 00.2 +60.0 0.9

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°	26 00.0 +60.0 180.0	25 59.7 +60.0 178.9	25 59.0 +60.0 177.8	25 57.7 +60.0 176.7	25 55.9 +60.0 175.6
1°	27 00.0 +60.0 180.0	26 59.7 +60.0 178.9	26 59.0 +60.0 177.8	26 57.7 +60.0 176.6	26 55.9 +59.9 175.5
2°	28 00.0 +60.0 180.0	27 59.7 +60.0 178.9	27 59.0 +60.0 177.7	27 57.7 +59.9 176.6	27 55.8 +60.0 175.5
3°	29 00.0 +60.0 180.0	28 59.7 +60.0 178.9	28 59.0 +59.9 177.7	28 57.6 +60.0 176.6	28 55.8 +60.0 175.4
4°	30 00.0 +60.0 180.0	29 59.7 +60.0 178.8	29 58.9 +60.0 177.7	29 57.6 +60.0 176.5	29 55.8 +59.9 175.4
5°	31 00.0 +60.0 180.0	30 59.7 +60.0 178.8	30 58.9 +60.0 177.7	30 57.6 +60.0 176.5	30 55.7 +60.0 175.4
6°	32 00.0 +60.0 180.0	31 59.7 +60.0 178.8	31 58.9 +60.0 177.7	31 57.6 +60.0 176.5	31 55.7 +60.0 175.3
7°	33 00.0 +60.0 180.0	32 59.7 +60.0 178.8	32 58.9 +60.0 177.6	32 57.6 +59.9 176.5	32 55.7 +59.9 175.3
8°	34 00.0 +60.0 180.0	33 59.7 +60.0 178.8	33 58.9 +60.0 177.6	33 57.5 +60.0 176.4	33 55.6 +60.0 175.2
9°	35 00.0 +60.0 180.0	34 59.7 +60.0 178.8	34 58.9 +60.0 177.6	34 57.5 +60.0 176.4	34 55.6 +59.9 175.2
10°	36 00.0 +60.0 180.0	35 59.7 +60.0 178.8	35 58.9 +60.0 177.6	35 57.5 +60.0 176.3	35 55.5 +60.0 175.1
11°	37 00.0 +60.0 180.0	36 59.7 +60.0 178.8	36 58.9 +60.0 177.5	36 57.5 +59.9 176.3	36 55.5 +59.9 175.1
12°	38 00.0 +60.0 180.0	37 59.7 +60.0 178.8	37 58.9 +59.9 177.5	37 57.4 +60.0 176.3	37 55.4 +60.0 175.0
13°	39 00.0 +60.0 180.0	38 59.7 +60.0 178.7	38 58.8 +60.0 177.5	38 57.4 +60.0 176.2	38 55.4 +60.0 175.0
14°	40 00.0 +60.0 180.0	39 59.7 +60.0 178.7	39 58.8 +60.0 177.5	39 57.4 +60.0 176.2	39 55.4 +59.9 174.9
15°	41 00.0 +60.0 180.0	40 59.7 +60.0 178.7	40 58.8 +60.0 177.4	40 57.4 +59.9 176.2	40 55.3 +60.0 174.9
16°	42 00.0 +60.0 180.0	41 59.7 +60.0 178.7	41 58.8 +60.0 177.4	41 57.3 +60.0 176.1	41 55.3 +59.9 174.8
17°	43 00.0 +60.0 180.0	42 59.7 +60.0 178.7	42 58.8 +60.0 177.4	42 57.3 +60.0 176.1	42 55.2 +59.9 174.8
18°	44 00.0 +60.0 180.0	43 59.7 +60.0 178.7	43 58.8 +60.0 177.4	43 57.3 +59.9 176.0	43 55.1 +60.0 174.7
19°	45 00.0 +60.0 180.0	44 59.7 +60.0 178.7	44 58.8 +60.0 177.3	44 57.2 +60.0 176.0	44 55.1 +59.9 174.7
20°	46 00.0 +60.0 180.0	45 59.7 +60.0 178.6	45 58.8 +59.9 177.3	45 57.2 +60.0 175.9	45 55.0 +60.0 174.6
21°	47 00.0 +60.0 180.0	46 59.7 +60.0 178.6	46 58.7 +60.0 177.3	46 57.2 +59.9 175.9	46 55.0 +59.9 174.5
22°	48 00.0 +60.0 180.0	47 59.7 +60.0 178.6	47 58.7 +60.0 177.2	47 57.1 +60.0 175.8	47 54.9 +60.0 174.5
23°	49 00.0 +60.0 180.0	48 59.7 +60.0 178.6	48 58.7 +60.0 177.2	48 57.1 +60.0 175.8	48 54.9 +59.9 174.4
24°	50 00.0 +60.0 180.0	49 59.7 +60.0 178.6	49 58.7 +60.0 177.2	49 57.1 +59.9 175.7	49 54.8 +59.9 174.3
25°	51 00.0 +60.0 180.0	50 59.7 +60.0 178.6	50 58.7 +60.0 177.1	50 57.0 +60.0 175.7	50 54.7 +59.9 174.2
26°	52 00.0 +60.0 180.0	51 59.7 +60.0 178.5	51 58.7 +59.9 177.1	51 57.0 +59.9 175.6	51 54.6 +60.0 174.2
27°	53 00.0 +60.0 180.0	52 59.7 +60.0 178.5	52 58.6 +60.0 177.0	52 56.9 +60.0 175.6	52 54.6 +59.9 174.1
28°	54 00.0 +60.0 180.0	53 59.7 +60.0 178.5	53 58.6 +60.0 177.0	53 56.9 +60.0 175.5	53 54.5 +59.9 174.0
29°	55 00.0 +60.0 180.0	54 59.7 +59.9 178.5	54 58.6 +60.0 177.0	54 56.9 +59.9 175.4	54 54.4 +59.9 173.9

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°	25 53.6 +60.0 174.4	25 50.8 +59.9 173.3	25 47.5 +59.9 172.2	25 43.7 +59.9 171.1	25 39.4 +59.8 170.0
1°	26 53.6 +59.9 174.4	26 50.7 +60.0 173.3	26 47.4 +59.9 172.2	26 43.6 +59.8 171.0	26 39.2 +59.8 169.9
2°	27 53.5 +60.0 174.3	27 50.7 +59.9 173.2	27 47.3 +59.9 172.1	27 43.4 +59.9 171.0	27 39.0 +59.9 169.8
3°	28 53.5 +59.9 174.3	28 50.6 +59.9 173.2	28 47.2 +59.9 172.0	28 43.3 +59.8 170.9	28 38.9 +59.8 169.7
4°	29 53.4 +59.9 174.2	29 50.5 +59.9 173.1	29 47.1 +59.9 171.9	29 43.1 +59.9 170.8	29 38.7 +59.8 169.7
5°	30 53.3 +60.0 174.2	30 50.4 +59.9 173.0	30 47.0 +59.8 171.9	30 43.0 +59.8 170.7	30 38.5 +59.8 169.6
6°	31 53.3 +59.9 174.1	31 50.3 +59.9 173.0	31 46.8 +59.9 171.8	31 42.8 +59.9 170.6	31 38.3 +59.8 169.5
7°	32 53.2 +60.0 174.1	32 50.2 +59.9 172.9	32 46.7 +59.9 171.7	32 42.7 +59.8 170.6	32 38.1 +59.8 169.4
8°	33 53.2 +59.9 174.0	33 50.1 +60.0 172.8	33 46.6 +59.9 171.7	33 42.5 +59.8 170.5	33 37.9 +59.8 169.3
9°	34 53.1 +59.9 174.0	34 50.1 +59.9 172.8	34 46.5 +59.8 171.6	34 42.3 +59.9 170.4	34 37.7 +59.8 169.2
10°	35 53.0 +60.0 173.9	35 50.0 +59.9 172.7	35 46.3 +59.9 171.5	35 42.2 +59.8 170.3	35 37.5 +59.8 169.1
11°	36 53.0 +59.9 173.9	36 49.9 +59.9 172.6	36 46.2 +59.9 171.4	36 42.0 +59.8 170.2	36 37.3 +59.7 169.0
12°	37 52.9 +59.9 173.8	37 49.8 +59.9 172.6	37 46.1 +59.8 171.3	37 41.8 +59.9 170.1	37 37.0 +59.8 168.9
13°	38 52.8 +59.9 173.7	38 49.7 +59.9 172.5	38 45.9 +59.9 171.2	38 41.7 +59.8 170.0	38 36.8 +59.8 168.8
14°	39 52.7 +60.0 173.7	39 49.6 +59.8 172.4	39 45.8 +59.8 171.2	39 41.5 +59.8 169.9	39 36.6 +59.7 168.6
15°	40 52.7 +59.9 173.6	40 49.4 +59.9 172.3	40 45.6 +59.9 171.1	40 41.3 +59.8 169.8	40 36.3 +59.8 168.5
16°	41 52.6 +59.9 173.5	41 49.3 +59.9 172.3	41 45.5 +59.8 171.0	41 41.1 +59.8 169.7	41 36.1 +59.7 168.4
17°	42 52.5 +59.9 173.5	42 49.2 +59.9 172.2	42 45.3 +59.9 170.9	42 40.9 +59.8 169.6	42 35.8 +59.8 168.3
18°	43 52.4 +59.9 173.4	43 49.1 +59.9 172.1	43 45.2 +59.8 170.8	43 40.7 +59.7 169.5	43 35.6 +59.7 168.1
19°	44 52.3 +60.0 173.3	44 49.0 +59.9 172.0	44 45.0 +59.8 170.7	44 40.4 +59.8 169.3	44 35.3 +59.7 168.0
20°	45 52.3 +59.9 173.2	45 48.9 +59.8 171.9	45 44.8 +59.9 170.6	45 40.2 +59.8 169.2	45 35.0 +59.7 167.9
21°	46 52.2 +59.9 173.2	46 48.7 +59.9 171.8	46 44.7 +59.8 170.4	46 40.0 +59.7 169.1	46 34.7 +59.7 167.7
22°	47 52.1 +59.9 173.1	47 48.6 +59.8 171.7	47 44.5 +59.8 170.3	47 39.7 +59.8 169.0	47 34.4 +59.7 167.6
23°	48 52.0 +59.9 173.0	48 48.4 +59.9 171.6	48 44.3 +59.8 170.2	48 39.5 +59.7 168.8	48 34.1 +59.7 167.4
24°	49 51.9 +59.9 172.9	49 48.3 +59.8 171.5	49 44.1 +59.8 170.1	49 39.2 +59.8 168.7	49 33.8 +59.6 167.3
25°	50 51.8 +59.8 172.8	50 48.1 +59.9 171.4	50 43.9 +59.8 170.0	50 39.0 +59.7 168.5	50 33.4 +59.6 167.1
26°	51 51.6 +59.9 172.7	51 48.0 +59.8 171.3	51 43.7 +59.7 169.8	51 38.7 +59.7 168.4	51 33.0 +59.7 166.9
27°	52 51.5 +59.9 172.6	52 47.8 +59.8 171.1	52 43.4 +59.8 169.7	52 38.4 +59.7 168.2	52 32.7 +59.6 166.8
28°	53 51.4 +59.9 172.5	53 47.6 +59.8 171.0	53 43.2 +59.7 169.5	53 38.1 +59.6 168.0	53 32.3 +59.6 166.6
29°	54 51.3 +59.8 172.4	54 47.4 +59.8 170.9	54 42.9 +59.8 169.4	54 37.7 +59.7 167.9	54 31.9 +59.5 166.4

Latitude 64°

Declination SAME name as 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°	25 34.6 +59.8 168.9	25 29.3 +59.7 167.8	25 23.5 +59.6 166.7	25 17.2 +59.6 165.6	25 10.4 +59.6 164.5
1°	26 34.4 +59.7 168.8	26 29.0 +59.7 167.7	26 23.1 +59.7 166.6	26 16.8 +59.6 165.5	26 10.0 +59.5 164.4
2°	27 34.1 +59.8 168.7	27 28.7 +59.8 167.6	27 22.8 +59.7 166.5	27 16.4 +59.7 165.3	27 09.5 +59.6 164.2
3°	28 33.9 +59.8 168.6	28 28.5 +59.7 167.5	28 22.5 +59.7 166.4	28 16.1 +59.6 165.2	28 09.1 +59.6 164.1
4°	29 33.7 +59.8 168.5	29 28.2 +59.7 167.4	29 22.2 +59.7 166.2	29 15.7 +59.6 165.1	29 08.7 +59.5 164.0
5°	30 33.5 +59.7 168.4	30 27.9 +59.7 167.3	30 21.9 +59.6 166.1	30 15.3 +59.6 165.0	30 08.2 +59.5 163.8
6°	31 33.2 +59.8 168.3	31 27.6 +59.7 167.1	31 21.5 +59.7 166.0	31 14.9 +59.6 164.8	31 07.7 +59.6 163.7
7°	32 33.0 +59.7 168.2	32 27.3 +59.7 167.0	32 21.2 +59.6 165.9	32 14.5 +59.6 164.7	32 07.3 +59.5 163.5
8°	33 32.7 +59.8 168.1	33 27.0 +59.7 166.9	33 20.8 +59.7 165.7	33 14.1 +59.5 164.6	33 06.8 +59.5 163.4
9°	34 32.5 +59.7 168.0	34 26.7 +59.7 166.8	34 20.5 +59.6 165.6	34 13.6 +59.6 164.4	34 06.3 +59.5 163.2
10°	35 32.2 +59.7 167.9	35 26.4 +59.7 166.7	35 20.1 +59.6 165.5	35 13.2 +59.6 164.3	35 05.8 +59.5 163.1
11°	36 31.9 +59.8 167.8	36 26.1 +59.7 166.5	36 19.7 +59.6 165.3	36 12.8 +59.5 164.1	36 05.3 +59.5 162.9
12°	37 31.7 +59.7 167.6	37 25.8 +59.6 166.4	37 19.3 +59.6 165.2	37 12.3 +59.5 164.0	37 04.8 +59.4 162.7
13°	38 31.4 +59.7 167.5	38 25.4 +59.7 166.3	38 18.9 +59.6 165.0	38 11.8 +59.6 163.8	38 04.2 +59.5 162.6
14°	39 31.1 +59.7 167.4	39 25.1 +59.6 166.1	39 18.5 +59.6 164.9	39 11.4 +59.5 163.6	39 03.7 +59.4 162.4
15°	40 30.8 +59.7 167.3	40 24.7 +59.7 166.0	40 18.1 +59.5 164.7	40 10.9 +59.5 163.5	40 03.1 +59.4 162.2
16°	41 30.5 +59.7 167.1	41 24.4 +59.6 165.8	41 17.6 +59.6 164.6	41 10.4 +59.4 163.3	41 02.5 +59.4 162.0
17°	42 30.2 +59.7 167.0	42 24.0 +59.6 165.7	42 17.2 +59.5 164.4	42 09.8 +59.5 163.1	42 01.9 +59.4 161.9
18°	43 29.9 +59.6 166.8	43 23.6 +59.6 165.5	43 16.7 +59.5 164.2	43 09.3 +59.4 162.9	43 01.3 +59.4 161.7
19°	44 29.5 +59.7 166.7	44 23.2 +59.6 165.4	44 16.2 +59.5 164.1	44 08.7 +59.5 162.8	44 00.7 +59.3 161.5
20°	45 29.2 +59.6 166.5	45 22.8 +59.5 165.2	45 15.7 +59.5 163.9	45 08.2 +59.4 162.6	45 00.0 +59.3 161.2
21°	46 28.8 +59.6 166.4	46 22.3 +59.6 165.0	46 15.2 +59.5 163.7	46 07.6 +59.3 162.4	45 59.3 +59.3 161.0
22°	47 28.4 +59.6 166.2	47 21.9 +59.5 164.9	47 14.7 +59.4 163.5	47 06.9 +59.4 162.2	46 58.6 +59.2 160.8
23°	48 28.0 +59.6 166.0	48 21.4 +59.5 164.7	48 14.1 +59.5 163.3	48 06.3 +59.3 161.9	47 57.8 +59.3 160.6
24°	49 27.6 +59.6 165.9	49 20.9 +59.5 164.5	49 13.6 +59.4 163.1	49 05.6 +59.3 161.7	48 57.1 +59.2 160.3
25°	50 27.2 +59.6 165.7	50 20.4 +59.5 164.3	50 13.0 +59.3 162.9	50 04.9 +59.3 161.5	49 56.3 +59.1 160.1
26°	51 26.8 +59.5 165.5	51 19.9 +59.4 164.1	51 12.3 +59.4 162.6	51 04.2 +59.2 161.2	50 55.4 +59.1 159.8
27°	52 26.3 +59.5 165.3	52 19.3 +59.4 163.9	52 11.7 +59.3 162.4	52 03.4 +59.2 161.0	51 54.5 +59.1 159.5
28°	53 25.8 +59.5 165.1	53 18.7 +59.4 163.6	53 11.0 +59.3 162.2	53 02.6 +59.2 160.7	52 53.6 +59.1 159.3
29°	54 25.3 +59.5 164.9	54 18.1 +59.4 163.4	54 10.0 +59.2 161.9	54 01.8 +59.1 160.4	53 52.7 +59.0 159.0

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°	25 03.1 +59.5 163.4	24 55.3 +59.5 162.3	24 47.1 +59.4 161.2	24 38.4 +59.3 160.1	24 29.2 +59.3 159.0
1°	26 02.6 +59.5 163.3	25 54.8 +59.5 162.2	25 46.5 +59.4 161.1	25 37.7 +59.3 160.0	25 28.5 +59.2 158.9
2°	27 02.1 +59.5 163.1	26 54.3 +59.4 162.0	26 45.9 +59.4 160.9	26 37.0 +59.3 159.8	26 27.7 +59.2 158.7
3°	28 01.6 +59.5 163.0	27 53.7 +59.4 161.9	27 45.3 +59.3 160.7	27 36.3 +59.3 159.6	27 26.9 +59.3 158.5
4°	29 01.1 +59.5 162.8	28 53.1 +59.4 161.7	28 44.6 +59.4 160.6	28 35.6 +59.3 159.4	28 26.2 +59.2 158.3
5°	30 00.6 +59.5 162.7	29 52.5 +59.5 161.5	29 44.0 +59.3 160.4	29 34.9 +59.3 159.3	29 25.4 +59.1 158.1
6°	31 00.1 +59.5 162.5	30 52.0 +59.4 161.4	30 43.3 +59.3 160.2	30 34.2 +59.2 159.1	30 24.5 +59.2 157.9
7°	31 59.6 +59.4 162.4	31 51.4 +59.3 161.2	31 42.6 +59.3 160.1	31 33.4 +59.2 158.9	31 23.7 +59.1 157.8
8°	32 59.0 +59.5 162.2	32 50.7 +59.4 161.0	32 41.9 +59.3 159.9	32 32.6 +59.2 158.7	32 22.8 +59.2 157.6
9°	33 58.5 +59.4 162.0	33 50.1 +59.4 160.9	33 41.2 +59.3 159.7	33 31.8 +59.2 158.5	33 22.0 +59.1 157.4
10°	34 57.9 +59.4 161.9	34 49.5 +59.3 160.7	34 40.5 +59.3 159.5	34 31.0 +59.2 158.3	34 21.1 +59.1 157.1
11°	35 57.3 +59.4 161.7	35 48.8 +59.3 160.5	35 39.8 +59.2 159.3	35 30.2 +59.2 158.1	35 20.2 +59.0 156.9
12°	36 56.7 +59.4 161.5	36 48.1 +59.3 160.3	36 39.0 +59.2 159.1	36 29.4 +59.1 157.9	36 19.2 +59.1 156.7
13°	37 56.1 +59.4 161.4	37 47.4 +59.3 160.1	37 38.2 +59.2 158.9	37 28.5 +59.1 157.7	37 18.3 +59.0 156.5
14°	38 55.5 +59.3 161.2	38 46.7 +59.3 159.9	38 37.4 +59.2 158.7	38 27.6 +59.1 157.5	38 17.3 +59.0 156.3
15°	39 54.8 +59.3 161.0	39 46.0 +59.2 159.7	39 36.6 +59.1 158.5	39 26.7 +59.0 157.3	39 16.3 +58.9 156.0
16°	40 54.1 +59.4 160.8	40 45.2 +59.2 159.5	40 35.7 +59.2 158.3	40 25.7 +59.1 157.0	40 15.2 +58.9 155.8
17°	41 53.5 +59.2 160.6	41 44.4 +59.2 159.3	41 34.9 +59.1 158.1	41 24.8 +59.0 156.8	41 14.1 +58.9 155.5
18°	42 52.7 +59.3 160.4	42 43.6 +59.2 159.1	42 34.0 +59.0 157.8	42 23.8 +58.9 156.5	42 13.0 +58.9 155.3
19°	43 52.0 +59.2 160.2	43 42.8 +59.1 158.9	43 33.0 +59.1 157.6	43 22.7 +59.0 156.3	43 11.9 +58.8 155.0
20°	44 51.2 +59.3 159.9	44 41.9 +59.2 158.6	44 32.1 +59.0 157.3	44 21.7 +58.9 156.0	44 10.7 +58.8 154.7
21°	45 50.5 +59.1 159.7	45 41.1 +59.0 158.4	45 31.1 +59.0 157.1	45 20.6 +58.8 155.8	45 09.5 +58.7 154.5
22°	46 49.6 +59.2 159.5	46 40.1 +59.1 158.1	46 30.1 +58.9 156.8	46 19.4 +58.8 155.5	46 08.2 +58.7 154.2
23°	47 48.8 +59.1 159.2	47 39.2 +59.0 157.9	47 29.0 +58.9 156.5	47 18.2 +58.8 155.2	47 06.9 +58.7 153.9
24°	48 47.9 +59.1 159.0	48 38.2 +59.0 157.6	48 27.9 +58.8 156.2	48 17.0 +58.7 154.9	48 05.6 +58.5 153.6
25°	49 47.0 +59.0 158.7	49 37.2 +58.9 157.3	49 26.7 +58.8 155.9	49 15.7 +58.7 154.6	49 04.1 +58.6 153.2
26°	50 46.0 +59.1 158.4	50 36.1 +58.9 157.0	50 25.5 +58.8 155.6	50 14.4 +58.6 154.3	50 02.7 +58.4 152.9
27°	51 45.1 +58.9 158.1	51 35.0 +58.8 156.7	51 24.3 +58.7 155.3	51 13.0 +58.5 153.9	51 01.1 +58.4 152.5
28°	52 44.0 +58.9 157.8	52 33.8 +58.8 156.4	52 23.0 +58.6 155.0	52 11.5 +58.5 153.6	51 59.5 +58.4 152.2
29°	53 42.9 +58.9 157.5	53 32.6 +58.7 156.1	53 21.6 +58.6 154.6	53 10.0 +58.4 153.2	52 57.9 +58.2 151.8

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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°	24 19.6 +59.2 158.0	24 09.5 +59.1 156.9	23 58.9 +59.0 155.8	23 47.9 +58.9 154.7	23 36.5 +58.8 153.6
1°	25 18.8 +59.1 157.8	25 08.6 +59.1 156.7	24 57.9 +59.0 155.6	24 46.8 +59.0 154.5	24 35.3 +58.8 153.4
2°	26 17.9 +59.2 157.6	26 07.7 +59.0 156.5	25 56.9 +59.0 155.4	25 45.8 +58.9 154.3	25 34.1 +58.8 153.2
3°	27 17.1 +59.1 157.4	27 06.7 +59.1 156.3	26 55.9 +59.0 155.2	26 44.7 +58.8 154.1	26 32.9 +58.8 153.0
4°	28 16.2 +59.1 157.2	28 05.8 +59.0 156.1	27 54.9 +58.9 155.0	27 43.5 +58.9 153.9	27 31.7 +58.8 152.8
5°	29 15.3 +59.1 157.0	29 04.8 +59.0 155.9	28 53.8 +59.0 154.8	28 42.4 +58.8 153.7	28 30.5 +58.7 152.5
6°	30 14.4 +59.1 156.8	30 03.8 +59.0 155.7	29 52.8 +58.9 154.6	29 41.2 +58.8 153.4	29 29.2 +58.7 152.3
7°	31 13.5 +59.1 156.6	31 02.8 +59.0 155.5	30 51.7 +58.8 154.3	30 40.0 +58.8 153.2	30 27.9 +58.7 152.1
8°	32 12.6 +59.0 156.4	32 01.8 +58.9 155.3	31 50.5 +58.9 154.1	31 38.8 +58.8 153.0	31 26.6 +58.7 151.8
9°	33 11.6 +59.0 156.2	33 00.7 +59.0 155.0	32 49.4 +58.8 153.9	32 37.6 +58.7 152.7	32 25.3 +58.6 151.6
10°	34 10.6 +59.0 156.0	33 59.7 +58.9 154.8	33 48.2 +58.8 153.6	33 36.3 +58.7 152.5	33 23.9 +58.6 151.3
11°	35 09.6 +59.0 155.8	34 58.6 +58.8 154.6	34 47.0 +58.8 153.4	34 35.0 +58.7 152.2	34 22.5 +58.6 151.1
12°	36 08.6 +58.9 155.5	35 57.4 +58.9 154.3	35 45.8 +58.7 153.2	35 33.7 +58.6 152.0	35 21.1 +58.5 150.8
13°	37 07.5 +58.9 155.3	36 56.3 +58.8 154.1	36 44.5 +58.8 152.9	36 32.3 +58.6 151.7	36 19.6 +58.5 150.5
14°	38 06.4 +58.9 155.1	37 55.1 +58.8 153.8	37 43.3 +58.6 152.6	37 30.9 +58.6 151.4	37 18.1 +58.5 150.3
15°	39 05.3 +58.9 154.8	38 53.9 +58.7 153.6	38 41.9 +58.7 152.4	38 29.5 +58.5 151.2	38 16.6 +58.4 150.0
16°	40 04.2 +58.8 154.6	39 52.6 +58.7 153.3	39 40.6 +58.6 152.1	39 28.0 +58.5 150.9	39 15.0 +58.3 149.7
17°	41 03.0 +58.8 154.3	40 51.3 +58.7 153.1	40 39.2 +58.5 151.8	40 26.5 +58.4 150.6	40 13.3 +58.4 149.4
18°	42 01.8 +58.7 154.0	41 50.0 +58.6 152.8	41 37.7 +58.5 151.5	41 24.9 +58.4 150.3	41 11.7 +58.2 149.1
19°	43 00.5 +58.7 153.8	42 48.6 +58.6 152.5	42 36.2 +58.5 151.2	42 23.3 +58.4 150.0	42 09.9 +58.2 148.7
20°	43 59.2 +58.7 153.5	43 47.2 +58.6 152.2	43 34.7 +58.4 150.9	43 21.7 +58.2 149.7	43 08.1 +58.2 148.4
21°	44 57.9 +58.6 153.2	44 45.8 +58.4 151.9	44 33.1 +58.4 150.6	44 19.9 +58.3 149.3	44 06.3 +58.1 148.1
22°	45 56.5 +58.6 152.9	45 44.2 +58.5 151.6	45 31.5 +58.3 150.3	45 18.2 +58.1 149.0	45 04.4 +58.0 147.7
23°	46 55.1 +58.5 152.6	46 42.7 +58.4 151.2	46 29.8 +58.2 149.9	46 16.3 +58.1 148.6	46 02.4 +57.9 147.4
24°	47 53.6 +58.4 152.2	47 41.1 +58.3 150.9	47 28.0 +58.2 149.6	47 14.4 +58.0 148.3	47 00.3 +57.9 147.0
25°	48 52.0 +58.4 151.9	48 39.4 +58.2 150.5	48 26.2 +58.1 149.2	48 12.4 +58.0 147.9	47 58.2 +57.8 146.6
26°	49 50.4 +58.3 151.5	49 37.6 +58.2 150.2	49 24.3 +58.0 148.8	49 10.4 +57.9 147.5	48 56.0 +57.7 146.2
27°	50 48.7 +58.3 151.2	50 35.8 +58.1 149.8	50 22.3 +57.9 148.4	50 08.3 +57.7 147.1	49 53.7 +57.6 145.8
28°	51 47.0 +58.2 150.8	51 33.9 +58.0 149.4	51 20.2 +57.9 148.0	51 06.0 +57.7 146.7	50 51.3 +57.5 145.3
29°	52 45.2 +58.0 150.4	52 31.9 +57.9 149.0	52 18.1 +57.7 147.6	52 03.7 +57.6 146.2	51 48.8 +57.4 144.9

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°	23 24.6 +58.7 152.6	23 12.2 +58.7 151.5	22 59.5 +58.5 150.5	22 46.3 +58.5 149.4	22 32.7 +58.4 148.3
1°	24 23.3 +58.8 152.4	24 10.9 +58.6 151.3	23 58.0 +58.6 150.2	23 44.8 +58.4 149.1	23 31.1 +58.3 148.1
2°	25 22.1 +58.7 152.1	25 09.5 +58.7 151.1	24 56.6 +58.5 150.0	24 43.2 +58.5 148.9	24 29.4 +58.4 147.8
3°	26 20.8 +58.7 151.9	26 08.2 +58.6 150.8	25 55.1 +58.5 149.7	25 41.7 +58.4 148.6	25 27.8 +58.3 147.6
4°	27 19.5 +58.6 151.7	27 06.8 +58.5 150.6	26 53.6 +58.5 149.5	26 40.1 +58.3 148.4	26 26.1 +58.2 147.3
5°	28 18.1 +58.7 151.4	28 05.3 +58.6 150.3	27 52.1 +58.4 149.2	27 38.4 +58.4 148.1	27 24.3 +58.3 147.0
6°	29 16.8 +58.6 151.2	29 03.9 +58.5 150.1	28 50.5 +58.5 149.0	28 36.8 +58.3 147.9	28 22.6 +58.2 146.8
7°	30 15.4 +58.6 150.9	30 02.4 +58.5 149.8	29 49.0 +58.3 148.7	29 35.1 +58.3 147.6	29 20.8 +58.1 146.5
8°	31 14.0 +58.5 150.7	31 00.9 +58.4 149.6	30 47.3 +58.4 148.4	30 33.4 +58.2 147.3	30 18.9 +58.2 146.2
9°	32 12.5 +58.6 150.4	31 59.3 +58.5 149.3	31 45.7 +58.3 148.2	31 31.6 +58.2 147.0	31 17.1 +58.1 145.9
10°	33 11.1 +58.5 150.2	32 57.8 +58.4 149.0	32 44.0 +58.3 147.9	32 29.8 +58.2 146.8	32 15.2 +58.0 145.6
11°	34 09.6 +58.4 149.9	33 56.2 +58.3 148.8	33 42.3 +58.2 147.6	33 28.0 +58.1 146.5	33 13.2 +58.0 145.3
12°	35 08.0 +58.4 149.6	34 54.5 +58.3 148.5	34 40.5 +58.2 147.3	34 26.1 +58.1 146.2	34 11.2 +58.0 145.0
13°	36 06.4 +58.4 149.4	35 52.8 +58.3 148.2	35 38.7 +58.2 147.0	35 24.2 +58.0 145.9	35 09.2 +57.9 144.7
14°	37 04.8 +58.4 149.1	36 51.1 +58.2 147.9	36 36.9 +58.1 146.7	36 22.2 +58.0 145.5	36 07.1 +57.9 144.4
15°	38 03.2 +58.3 148.8	37 49.3 +58.2 147.6	37 35.0 +58.0 146.4	37 20.2 +57.9 145.2	37 05.0 +57.8 144.1
16°	39 01.5 +58.2 148.5	38 47.5 +58.1 147.3	38 33.0 +58.0 146.1	38 18.1 +57.9 144.9	38 02.8 +57.7 143.7
17°	39 59.7 +58.2 148.2	39 45.6 +58.1 147.0	39 31.0 +58.0 145.8	39 16.0 +57.8 144.6	39 00.5 +57.7 143.4
18°	40 57.9 +58.1 147.8	40 43.7 +58.0 146.6	40 29.0 +57.8 145.4	40 13.8 +57.7 144.2	39 58.2 +57.6 143.0
19°	41 56.0 +58.1 147.5	41 41.7 +57.9 146.3	41 26.8 +57.8 145.1	41 11.5 +57.7 143.9	40 55.8 +57.5 142.6
20°	42 54.1 +58.0 147.2	42 39.6 +57.9 145.9	42 24.6 +57.8 144.7	42 09.2 +57.6 143.5	41 53.3 +57.5 142.3
21°	43 52.1 +58.0 146.8	43 37.5 +57.8 145.6	43 22.4 +57.7 144.3	43 06.8 +57.6 143.1	42 50.8 +57.4 141.9
22°	44 50.1 +57.9 146.5	44 35.3 +57.7 145.2	44 20.1 +57.6 143.9	44 04.4 +57.4 142.7	43 48.2 +57.3 141.5
23°	45 48.0 +57.8 146.1	45 33.0 +57.7 144.8	45 17.7 +57.5 143.6	45 01.8 +57.4 142.3	44 45.5 +57.2 141.1
24°	46 45.8 +57.7 145.7	46 30.7 +57.6 144.4	46 15.2 +57.4 143.1	45 59.2 +57.2 141.9	45 42.7 +57.1 140.6
25°	47 43.5 +57.6 145.3	47 28.3 +57.4 144.0	47 12.6 +57.3 142.7	46 56.4 +57.2 141.5	46 39.8 +57.0 140.2
26°	48 41.1 +57.6 144.9	48 25.7 +57.4 143.6	48 09.9 +57.2 142.3	47 53.6 +57.0 141.0	47 36.8 +56.9 139.7
27°	49 38.7 +57.4 144.4	49 23.1 +57.3 143.1	49 07.1 +57.1 141.8	48 50.6 +56.9 140.5	48 33.7 +56.7 139.3
28°	50 36.1 +57.3 144.0	50 20.4 +57.2 142.7	50 04.2 +57.0 141.4	49 47.5 +56.9 140.1	49 30.4 +56.7 138.8
29°	51 33.4 +57.2 143.5	51 17.6 +57.0 142.2	51 01.2 +56.8 140.9	50 44.4 +56.6 139.5	50 27.1 +56.4 138.2

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Latitude 64°

Declination SAME name as 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°	22 18.7 +58.3 147.3	22 04.3 +58.1 146.2	21 49.5 +58.0 145.2	21 34.2 +58.0 144.2	21 18.6 +57.9 143.1
1°	23 17.0 +58.2 147.0	23 02.4 +58.2 146.0	22 47.5 +58.1 144.9	22 32.2 +58.0 143.9	22 16.5 +57.9 142.8
2°	24 15.2 +58.2 146.8	24 00.6 +58.1 145.7	23 45.6 +58.0 144.6	23 30.2 +57.9 143.6	23 14.4 +57.8 142.5
3°	25 13.4 +58.2 146.5	24 58.7 +58.1 145.4	24 43.6 +58.0 144.4	24 28.1 +57.9 143.3	24 12.2 +57.7 142.2
4°	26 11.6 +58.2 146.2	25 56.8 +58.1 145.2	25 41.6 +57.9 144.1	25 26.0 +57.8 143.0	25 09.9 +57.8 142.0
5°	27 09.8 +58.1 146.0	26 54.9 +58.0 144.9	26 39.5 +58.0 143.8	26 23.8 +57.8 142.7	26 07.7 +57.7 141.6
6°	28 07.9 +58.1 145.7	27 52.9 +58.0 144.6	27 37.5 +57.8 143.5	27 21.6 +57.8 142.4	27 05.4 +57.6 141.3
7°	29 06.0 +58.1 145.4	28 50.9 +58.0 144.3	28 35.3 +57.9 143.2	28 19.4 +57.7 142.1	28 03.0 +57.7 141.0
8°	30 04.1 +58.0 145.1	29 48.9 +57.9 144.0	29 33.2 +57.8 142.9	29 17.1 +57.7 141.8	29 00.7 +57.5 140.7
9°	31 02.1 +58.0 144.8	30 46.8 +57.8 143.7	30 31.0 +57.7 142.6	30 14.8 +57.6 141.5	29 58.2 +57.6 140.4
10°	32 00.1 +58.0 144.5	31 44.6 +57.9 143.4	31 28.7 +57.7 142.3	31 12.4 +57.6 141.2	30 55.8 +57.4 140.1
11°	32 58.1 +57.8 144.2	32 42.5 +57.7 143.1	32 26.4 +57.7 141.9	32 10.0 +57.6 140.8	31 53.2 +57.4 139.7
12°	33 55.9 +57.9 143.9	33 40.2 +57.8 142.7	33 24.1 +57.6 141.6	33 07.6 +57.5 140.5	32 50.6 +57.4 139.4
13°	34 53.8 +57.8 143.6	34 38.0 +57.6 142.4	34 21.7 +57.6 141.3	34 05.1 +57.4 140.2	33 48.0 +57.3 139.0
14°	35 51.6 +57.7 143.2	35 35.6 +57.6 142.1	35 19.3 +57.4 140.9	35 02.5 +57.3 139.8	34 45.3 +57.2 138.7
15°	36 49.3 +57.7 142.9	36 33.2 +57.6 141.7	36 16.7 +57.5 140.6	35 59.8 +57.3 139.4	35 42.5 +57.2 138.3
16°	37 47.0 +57.6 142.5	37 30.8 +57.5 141.4	37 14.2 +57.3 140.2	36 57.1 +57.3 139.1	36 39.7 +57.1 137.9
17°	38 44.6 +57.6 142.2	38 28.3 +57.4 141.0	38 11.5 +57.3 139.9	37 54.4 +57.1 138.7	37 36.8 +57.0 137.5
18°	39 42.2 +57.4 141.8	39 25.7 +57.3 140.6	39 08.8 +57.2 139.5	38 51.5 +57.1 138.3	38 33.8 +56.9 137.1
19°	40 39.6 +57.4 141.4	40 23.0 +57.3 140.3	40 06.0 +57.1 139.1	39 48.6 +57.0 137.9	39 30.7 +56.9 136.7
20°	41 37.0 +57.4 141.1	41 20.3 +57.2 139.9	41 03.1 +57.1 138.7	40 45.6 +56.9 137.5	40 27.6 +56.7 136.3
21°	42 34.4 +57.2 140.7	42 17.5 +57.1 139.5	42 00.2 +56.9 138.3	41 42.5 +56.8 137.1	41 24.3 +56.7 135.9
22°	43 31.6 +57.1 140.3	43 14.6 +57.0 139.0	42 57.1 +56.9 137.8	42 39.3 +56.7 136.6	42 21.0 +56.5 135.4
23°	44 28.7 +57.1 139.8	44 11.6 +56.9 138.6	43 54.0 +56.7 137.4	43 36.0 +56.5 136.2	43 17.5 +56.5 135.0
24°	45 25.8 +56.9 139.4	45 08.5 +56.7 138.2	44 50.7 +56.6 136.9	44 32.5 +56.5 135.7	44 14.0 +56.3 134.5
25°	46 22.7 +56.9 138.9	46 05.2 +56.7 137.7	45 47.3 +56.5 136.5	45 29.0 +56.4 135.2	45 10.3 +56.2 134.0
26°	47 19.6 +56.7 138.5	47 01.9 +56.6 137.2	46 43.8 +56.4 136.0	46 25.4 +56.2 134.8	46 06.5 +56.0 133.5
27°	48 16.3 +56.6 138.0	47 58.5 +56.4 136.7	47 40.2 +56.3 135.5	47 21.6 +56.1 134.2	47 02.5 +56.0 133.0
28°	49 12.9 +56.4 137.5	48 54.9 +56.3 136.2	48 36.5 +56.1 135.0	48 17.7 +55.9 133.7	47 58.5 +55.7 132.5
29°	50 09.3 +56.3 137.0	49 51.2 +56.1 135.7	49 32.6 +55.9 134.4	49 13.6 +55.8 133.2	48 54.2 +55.6 131.9

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°	21 02.7 +57.7 142.1	20 46.3 +57.7 141.0	20 29.6 +57.6 140.0	20 12.5 +57.5 139.0	19 55.1 +57.3 138.0
1°	22 00.4 +57.8 141.8	21 44.0 +57.6 140.8	21 27.2 +57.5 139.7	21 10.0 +57.4 138.7	20 52.4 +57.3 137.7
2°	22 58.2 +57.7 141.5	22 41.6 +57.6 140.5	22 24.7 +57.5 139.4	22 07.4 +57.4 138.4	21 49.7 +57.3 137.4
3°	23 55.9 +57.6 141.2	23 39.2 +57.6 140.1	23 22.2 +57.4 139.1	23 04.8 +57.3 138.1	22 47.0 +57.2 137.0
4°	24 53.5 +57.7 140.9	24 36.8 +57.5 139.8	24 19.6 +57.4 138.8	24 02.1 +57.3 137.7	23 44.2 +57.2 136.7
5°	25 51.2 +57.6 140.6	25 34.3 +57.5 139.5	25 17.0 +57.4 138.5	24 59.4 +57.3 137.4	24 41.4 +57.2 136.4
6°	26 48.8 +57.5 140.3	26 31.8 +57.4 139.2	26 14.4 +57.3 138.1	25 56.7 +57.2 137.1	25 38.6 +57.1 136.0
7°	27 46.3 +57.5 140.0	27 29.2 +57.4 138.9	27 11.7 +57.3 137.8	26 53.9 +57.1 136.7	26 35.7 +57.0 135.7
8°	28 43.8 +57.5 139.6	28 26.6 +57.3 138.5	28 09.0 +57.2 137.5	27 51.0 +57.1 136.4	27 32.7 +57.0 135.3
9°	29 41.3 +57.4 139.3	29 23.9 +57.3 138.2	29 06.2 +57.2 137.1	28 48.1 +57.1 136.1	28 29.7 +57.0 135.0
10°	30 38.7 +57.3 139.0	30 21.2 +57.3 137.9	30 03.4 +57.1 136.8	29 45.2 +57.0 135.7	29 26.7 +56.8 134.6
11°	31 36.0 +57.3 138.6	31 18.5 +57.1 137.5	31 00.5 +57.1 136.4	30 42.2 +56.9 135.3	30 23.5 +56.9 134.3
12°	32 33.3 +57.3 138.3	32 15.6 +57.1 137.2	31 57.6 +57.0 136.1	31 39.1 +56.9 135.0	31 20.4 +56.7 133.9
13°	33 30.6 +57.1 137.9	33 12.7 +57.1 136.8	32 54.6 +56.9 135.7	32 36.0 +56.8 134.6	32 17.1 +56.7 133.5
14°	34 27.7 +57.1 137.5	34 09.8 +57.0 136.4	33 51.5 +56.8 135.3	33 32.8 +56.7 134.2	33 13.8 +56.6 133.1
15°	35 24.8 +57.1 137.2	35 06.8 +56.9 136.0	34 48.3 +56.8 134.9	34 29.5 +56.7 133.8	34 10.4 +56.5 132.7
16°	36 21.9 +56.9 136.8	36 03.7 +56.8 135.7	35 45.1 +56.7 134.5	35 26.2 +56.6 133.4	35 06.9 +56.5 132.3
17°	37 18.8 +56.9 136.4	37 00.5 +56.8 135.3	36 41.8 +56.6 134.1	36 22.8 +56.4 133.0	36 03.4 +56.3 131.9
18°	38 15.7 +56.8 136.0	37 57.3 +56.6 134.8	37 38.4 +56.6 133.7	37 19.2 +56.4 132.6	36 59.7 +56.3 131.5
19°	39 12.5 +56.7 135.6	38 53.9 +56.6 134.4	38 35.0 +56.4 133.3	38 15.6 +56.3 132.2	37 56.0 +56.1 131.0
20°	40 09.2 +56.6 135.2	39 50.5 +56.5 134.0	39 31.4 +56.3 132.8	39 11.9 +56.2 131.7	38 52.1 +56.1 130.6
21°	41 05.8 +56.6 134.7	40 47.0 +56.3 133.6	40 27.7 +56.2 132.4	40 08.1 +56.1 131.3	39 48.2 +55.9 130.1
22°	42 02.4 +56.4 134.3	41 43.3 +56.3 133.1	41 23.9 +56.2 131.9	41 04.2 +56.0 130.8	40 44.1 +55.8 129.6
23°	42 58.8 +56.2 133.8	42 39.6 +56.1 132.6	42 20.1 +55.9 131.5	42 00.2 +55.8 130.3	41 39.9 +55.7 129.2
24°	43 55.0 +56.2 133.3	43 35.7 +56.0 132.1	43 16.0 +55.9 131.0	42 56.0 +55.7 129.8	42 35.6 +55.6 128.7
25°	44 51.2 +56.0 132.8	44 31.7 +55.9 131.6	44 11.9 +55.7 130.5	43 51.7 +55.6 129.3	43 31.2 +55.4 128.1
26°	45 47.2 +55.9 132.3	45 27.6 +55.7 131.1	45 07.6 +55.6 129.9	44 47.3 +55.4 128.8	44 26.6 +55.3 127.6
27°	46 43.1 +55.8 131.8	46 23.3 +55.6 130.6	46 03.2 +55.4 129.4	45 42.7 +55.3 128.2	45 21.9 +55.1 127.1
28°	47 38.9 +55.6 131.3	47 18.9 +55.4 130.0	46 58.6 +55.3 128.8	46 38.0 +55.0 127.7	46 17.0 +54.9 126.5
29°	48 34.5 +55.4 130.7	48 14.3 +55.3 129.5	47 53.9 +55.0 128.3	47 33.0 +54.9 127.1	47 11.9 +54.7 125.9

Declination SAME name as Latitude

Latitude 64°

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°	19 37.3 +57.2 137.0	19 19.2 +57.1 136.0	19 00.7 +57.1 134.9	18 42.0 +56.9 133.9	18 22.9 +56.8 132.9
1°	20 34.5 +57.2 136.6	20 16.3 +57.1 135.6	19 57.8 +57.0 134.6	19 38.9 +56.9 133.6	19 19.7 +56.8 132.6
2°	21 31.7 +57.2 136.3	21 13.4 +57.1 135.3	20 54.8 +56.9 134.3	20 35.8 +56.8 133.3	20 16.5 +56.7 132.3
3°	22 28.9 +57.1 136.0	22 10.5 +57.0 135.0	21 51.7 +56.9 133.9	21 32.6 +56.8 132.9	21 13.2 +56.7 131.9
4°	23 26.0 +57.1 135.7	23 07.5 +57.0 134.6	22 48.6 +56.9 133.6	22 29.4 +56.7 132.6	22 09.9 +56.6 131.6
5°	24 23.1 +57.0 135.3	24 04.5 +56.9 134.3	23 45.5 +56.8 133.3	23 26.1 +56.7 132.2	23 06.5 +56.6 131.2
6°	25 20.1 +57.0 135.0	25 01.4 +56.8 133.9	24 42.3 +56.7 132.9	24 22.8 +56.7 131.9	24 03.1 +56.5 130.8
7°	26 17.1 +57.0 134.6	25 58.2 +56.9 133.6	25 39.0 +56.7 132.5	25 19.5 +56.6 131.5	24 59.6 +56.5 130.5
8°	27 14.1 +56.8 134.3	26 55.1 +56.7 133.2	26 35.7 +56.7 132.2	26 16.1 +56.5 131.1	25 56.1 +56.4 130.1
9°	28 10.9 +56.9 133.9	27 51.8 +56.7 132.9	27 32.4 +56.6 131.8	27 12.6 +56.5 130.8	26 52.5 +56.4 129.7
10°	29 07.8 +56.7 133.6	28 48.5 +56.7 132.5	28 29.0 +56.5 131.4	28 09.1 +56.4 130.4	27 48.9 +56.3 129.3
11°	30 04.5 +56.7 133.2	29 45.2 +56.6 132.1	29 25.5 +56.5 131.1	29 05.5 +56.4 130.0	28 45.2 +56.2 128.9
12°	31 01.2 +56.7 132.8	30 41.8 +56.5 131.7	30 22.0 +56.4 130.7	30 01.9 +56.2 129.6	29 41.4 +56.2 128.5
13°	31 57.9 +56.5 132.4	31 38.3 +56.4 131.3	31 18.4 +56.3 130.3	30 58.1 +56.2 129.2	30 37.6 +56.1 128.1
14°	32 54.4 +56.5 132.0	32 34.7 +56.4 130.9	32 14.7 +56.2 129.9	31 54.3 +56.1 128.8	31 33.7 +56.0 127.7
15°	33 50.9 +56.4 131.6	33 31.1 +56.2 130.5	33 10.9 +56.2 129.4	32 50.4 +56.1 128.4	32 29.7 +55.9 127.3
16°	34 47.3 +56.3 131.2	34 27.3 +56.2 130.1	34 07.1 +56.0 129.0	33 46.5 +55.9 127.9	33 25.6 +55.8 126.9
17°	35 43.6 +56.2 130.8	35 23.5 +56.1 129.7	35 03.1 +56.0 128.6	34 42.4 +55.9 127.5	34 21.4 +55.7 126.4
18°	36 39.8 +56.2 130.3	36 19.6 +56.0 129.2	35 59.1 +55.9 128.1	35 38.3 +55.7 127.1	35 17.1 +55.6 126.0
19°	37 36.0 +56.0 129.9	37 15.6 +55.9 128.8	36 55.0 +55.7 127.7	36 34.0 +55.6 126.6	36 12.7 +55.5 125.5
20°	38 32.0 +55.9 129.5	38 11.5 +55.8 128.3	37 50.7 +55.7 127.2	37 29.6 +55.5 126.1	37 08.2 +55.4 125.0
21°	39 27.9 +55.8 129.0	39 07.3 +55.7 127.9	38 46.4 +55.5 126.7	38 25.1 +55.4 125.6	38 03.6 +55.3 124.5
22°	40 23.7 +55.7 128.5	40 03.0 +55.5 127.4	39 41.9 +55.4 126.3	39 20.5 +55.3 125.2	38 58.9 +55.1 124.0
23°	41 19.4 +55.5 128.0	40 58.5 +55.4 126.9	40 37.3 +55.3 125.8	40 15.8 +55.1 124.6	39 54.0 +55.0 123.5
24°	42 14.9 +55.4 127.5	41 53.9 +55.3 126.4	41 32.6 +55.1 125.2	41 10.9 +55.0 124.1	40 49.0 +54.9 123.0
25°	43 10.3 +55.3 127.0	42 49.2 +55.1 125.8	42 27.7 +55.0 124.7	42 05.9 +54.9 123.6	41 43.9 +54.7 122.5
26°	44 05.6 +55.1 126.4	43 44.3 +55.0 125.3	43 22.7 +54.8 124.2	43 00.8 +54.6 123.0	42 38.6 +54.5 121.9
27°	45 00.7 +55.0 125.9	44 39.3 +54.7 124.7	44 17.5 +54.6 123.6	43 55.4 +54.5 122.5	43 33.1 +54.4 121.3
28°	45 55.7 +54.7 125.3	45 34.0 +54.7 124.2	45 12.1 +54.5 123.0	44 49.9 +54.4 121.9	44 27.5 +54.1 120.8
29°	46 50.4 +54.6 124.7	46 28.7 +54.4 123.6	46 06.6 +54.3 122.4	45 44.3 +54.1 121.3	45 21.6 +54.0 120.2

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°	18 03.5 +56.7 131.9	17 43.8 +56.5 131.0	17 23.7 +56.5 130.0	17 03.4 +56.4 129.0	16 42.9 +56.2 128.0
1°	19 00.2 +56.6 131.6	18 40.3 +56.6 130.6	18 20.2 +56.5 129.6	17 59.8 +56.4 128.6	17 39.1 +56.3 127.6
2°	19 56.8 +56.7 131.3	19 36.9 +56.5 130.3	19 16.7 +56.4 129.3	18 56.2 +56.3 128.3	18 35.4 +56.2 127.3
3°	20 53.5 +56.5 130.9	20 33.4 +56.5 129.9	20 13.1 +56.4 128.9	19 52.5 +56.2 127.9	19 31.6 +56.1 126.9
4°	21 50.0 +56.6 130.5	21 29.9 +56.4 129.5	21 09.5 +56.3 128.5	20 48.7 +56.3 127.5	20 27.7 +56.2 126.5
5°	22 46.6 +56.4 130.2	22 26.3 +56.4 129.2	22 05.8 +56.3 128.2	21 45.0 +56.1 127.2	21 23.9 +56.0 126.1
6°	23 43.0 +56.5 129.8	23 22.7 +56.3 128.8	23 02.1 +56.2 127.8	22 41.1 +56.1 126.8	22 19.9 +56.0 125.8
7°	24 39.5 +56.4 129.4	24 19.0 +56.3 128.4	23 58.3 +56.1 127.4	23 37.2 +56.1 126.4	23 15.9 +56.0 125.4
8°	25 35.9 +56.3 129.1	25 15.3 +56.2 128.0	24 54.4 +56.1 127.0	24 33.3 +56.0 126.0	24 11.9 +55.8 125.0
9°	26 32.2 +56.2 128.7	26 11.5 +56.1 127.6	25 50.5 +56.0 126.6	25 29.3 +55.9 125.6	25 07.7 +55.9 124.6
10°	27 28.4 +56.2 128.3	27 07.6 +56.1 127.3	26 46.5 +56.0 126.2	26 25.2 +55.8 125.2	26 03.6 +55.7 124.2
11°	28 24.6 +56.1 127.9	28 03.7 +56.0 126.9	27 42.5 +55.9 125.8	27 21.0 +55.8 124.8	26 59.3 +55.7 123.8
12°	29 20.7 +56.1 127.5	28 59.7 +55.9 126.4	28 38.4 +55.8 125.4	28 16.8 +55.7 124.4	27 55.0 +55.6 123.3
13°	30 16.8 +55.9 127.1	29 55.6 +55.9 126.0	29 34.2 +55.7 125.0	29 12.5 +55.7 123.9	28 50.6 +55.5 122.9
14°	31 12.7 +55.9 126.7	30 51.5 +55.7 125.6	30 29.9 +55.7 124.6	30 08.2 +55.5 123.5	29 46.1 +55.4 122.5
15°	32 08.6 +55.8 126.2	31 47.2 +55.7 125.2	31 25.6 +55.6 124.1	31 03.7 +55.4 123.1	30 41.5 +55.4 122.0
16°	33 04.4 +55.7 125.8	32 42.9 +55.6 124.7	32 21.2 +55.4 123.7	31 59.1 +55.4 122.6	31 36.9 +55.2 121.6
17°	34 00.1 +55.6 125.3	33 38.5 +55.5 124.3	33 16.6 +55.4 123.2	32 54.5 +55.2 122.2	32 32.1 +55.1 121.1
18°	34 55.7 +55.5 124.9	34 34.0 +55.3 123.8	34 12.0 +55.2 122.8	33 49.7 +55.2 121.7	33 27.2 +55.1 120.7
19°	35 51.2 +55.4 124.4	35 29.3 +55.3 123.3	35 07.2 +55.2 122.3	34 44.9 +55.0 121.2	34 22.3 +54.9 120.2
20°	36 46.6 +55.2 123.9	36 24.6 +55.1 122.9	36 02.4 +55.0 121.8	35 39.9 +54.9 120.7	35 17.2 +54.8 119.7
21°	37 41.8 +55.2 123.5	37 19.7 +55.1 122.4	36 57.4 +54.9 121.3	36 34.8 +54.8 120.2	36 12.0 +54.6 119.2
22°	38 37.0 +55.0 123.0	38 14.8 +54.8 121.9	37 52.3 +54.8 120.8	37 29.6 +54.6 119.7	37 06.6 +54.5 118.7
23°	39 32.0 +54.8 122.4	39 09.6 +54.8 121.4	38 47.1 +54.6 120.3	38 24.2 +54.5 119.2	38 01.1 +54.4 118.1
24°	40 26.8 +54.8 121.9	40 04.4 +54.6 120.8	39 41.7 +54.4 119.7	39 18.7 +54.4 118.7	38 55.5 +54.2 117.6
25°	41 21.6 +54.5 121.4	40 59.0 +54.4 120.3	40 36.1 +54.3 119.2	40 13.1 +54.1 118.1	39 49.7 +54.1 117.0
26°	42 16.1 +54.4 120.8	41 53.4 +54.3 119.7	41 30.4 +54.2 118.6	41 07.2 +54.0 117.5	40 43.8 +53.9 116.5
27°	43 10.5 +54.2 120.2	42 47.7 +54.1 119.1	42 24.6 +53.9 118.0	42 01.2 +53.9 117.0	41 37.7 +53.7 115.9
28°	44 04.7 +54.1 119.6	43 41.8 +53.9 118.5	43 18.5 +53.8 117.4	42 55.1 +53.6 116.4	42 31.4 +53.5 115.3
29°	44 58.8 +53.8 119.0	44 35.7 +53.6 117.9	44 12.3 +53.6 116.8	43 48.7 +53.5 115.7	43 24.9 +53.3 114.7

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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°	16 22.0 +56.2 127.0	16 00.9 +56.0 126.0	15 39.5 +55.9 125.1	15 17.8 +55.9 124.1	14 55.9 +55.8 123.1
1°	17 18.2 +56.1 126.7	16 56.9 +56.1 125.7	16 35.4 +56.0 124.7	16 13.7 +55.8 123.7	15 51.7 +55.7 122.8
2°	18 14.3 +56.1 126.3	17 53.0 +56.0 125.3	17 31.4 +55.9 124.3	17 09.5 +55.8 123.3	16 47.4 +55.8 122.4
3°	19 10.4 +56.1 125.9	18 49.0 +55.9 124.9	18 27.3 +55.8 123.9	18 05.3 +55.8 123.0	17 43.2 +55.6 122.0
4°	20 06.5 +56.0 125.5	19 44.9 +55.9 124.5	19 23.1 +55.9 123.6	19 01.1 +55.7 122.6	18 38.8 +55.6 121.6
5°	21 02.5 +55.9 125.1	20 40.8 +55.9 124.2	20 19.0 +55.7 123.2	19 56.8 +55.7 122.2	19 34.4 +55.6 121.2
6°	21 58.4 +55.9 124.8	21 36.7 +55.8 123.8	21 14.7 +55.7 122.8	20 52.5 +55.6 121.8	20 30.0 +55.5 120.8
7°	22 54.3 +55.9 124.4	22 32.5 +55.7 123.4	22 10.4 +55.6 122.4	21 48.1 +55.5 121.4	21 25.5 +55.4 120.4
8°	23 50.2 +55.8 124.0	23 28.2 +55.7 123.0	23 06.0 +55.6 122.0	22 43.6 +55.5 121.0	22 20.9 +55.4 120.0
9°	24 46.0 +55.7 123.6	24 23.9 +55.6 122.6	24 01.6 +55.5 121.6	23 39.1 +55.4 120.6	23 16.3 +55.3 119.6
10°	25 41.7 +55.6 123.2	25 19.5 +55.6 122.1	24 57.1 +55.5 121.1	24 34.5 +55.3 120.1	24 11.6 +55.3 119.1
11°	26 37.3 +55.6 122.7	26 15.1 +55.4 121.7	25 52.6 +55.3 120.7	25 29.8 +55.3 119.7	25 06.9 +55.2 118.7
12°	27 32.9 +55.5 122.3	27 10.5 +55.4 121.3	26 47.9 +55.3 120.3	26 25.1 +55.2 119.3	26 02.1 +55.0 118.3
13°	28 28.4 +55.4 121.9	28 05.9 +55.3 120.9	27 43.2 +55.2 119.8	27 20.3 +55.1 118.8	26 57.1 +55.0 117.8
14°	29 23.8 +55.3 121.4	29 01.2 +55.2 120.4	28 38.4 +55.1 119.4	28 15.4 +55.0 118.4	27 52.1 +55.0 117.4
15°	30 19.1 +55.2 121.0	29 56.4 +55.2 120.0	29 33.5 +55.0 118.9	29 10.4 +54.9 117.9	28 47.1 +54.8 116.9
16°	31 14.3 +55.2 120.5	30 51.6 +55.0 119.5	30 28.5 +55.0 118.5	30 05.3 +54.8 117.5	29 41.9 +54.7 116.5
17°	32 09.5 +55.0 120.1	31 46.6 +54.9 119.0	31 23.5 +54.8 118.0	31 00.1 +54.8 117.0	30 36.6 +54.6 116.0
18°	33 04.5 +54.9 119.6	32 41.5 +54.8 118.6	32 18.3 +54.7 117.5	31 54.9 +54.6 116.5	31 31.2 +54.5 115.5
19°	33 59.4 +54.8 119.1	33 36.3 +54.7 118.1	33 13.0 +54.6 117.1	32 49.5 +54.4 116.0	32 25.7 +54.4 115.0
20°	34 54.2 +54.7 118.6	34 31.0 +54.6 117.6	34 07.6 +54.4 116.6	33 43.9 +54.4 115.5	33 20.1 +54.3 114.5
21°	35 48.9 +54.5 118.1	35 25.6 +54.4 117.1	35 02.0 +54.4 116.0	34 38.3 +54.2 115.0	34 14.4 +54.1 114.0
22°	36 43.4 +54.4 117.6	36 20.0 +54.3 116.6	35 56.4 +54.2 115.5	35 32.5 +54.1 114.5	35 08.5 +54.0 113.5
23°	37 37.8 +54.3 117.1	37 14.3 +54.2 116.0	36 50.6 +54.0 115.0	36 26.6 +54.0 114.0	36 02.5 +53.8 112.9
24°	38 32.1 +54.1 116.5	38 08.5 +54.0 115.5	37 44.6 +53.9 114.4	37 20.6 +53.8 113.4	36 56.3 +53.7 112.4
25°	39 26.2 +54.0 116.0	39 02.5 +53.8 114.9	38 38.5 +53.7 113.9	38 14.4 +53.6 112.8	37 50.0 +53.6 111.8
26°	40 20.2 +53.7 115.4	39 56.3 +53.7 114.4	39 32.2 +53.6 113.3	39 08.0 +53.4 112.3	38 43.6 +53.3 111.2
27°	41 13.9 +53.6 114.8	40 50.0 +53.4 113.8	40 25.8 +53.4 112.7	40 01.4 +53.3 111.7	39 36.9 +53.2 110.7
28°	42 07.5 +53.4 114.2	41 43.4 +53.3 113.2	41 19.2 +53.1 112.1	40 54.7 +53.1 111.1	40 30.1 +53.0 110.0
29°	43 00.9 +53.2 113.6	42 36.7 +53.1 112.5	42 12.3 +53.0 111.5	41 47.8 +52.8 110.5	41 23.1 +52.7 109.4

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°	14 33.8 +55.7 122.2	14 11.4 +55.6 121.2	13 48.8 +55.5 120.3	13 26.0 +55.4 119.3	13 02.9 +55.4 118.4
1°	15 29.5 +55.6 121.8	15 07.0 +55.6 120.8	14 44.3 +55.5 119.9	14 21.4 +55.4 118.9	13 58.3 +55.3 118.0
2°	16 25.1 +55.6 121.4	16 02.6 +55.5 120.4	15 39.8 +55.4 119.5	15 16.8 +55.3 118.5	14 53.6 +55.2 117.6
3°	17 20.7 +55.6 121.0	16 58.1 +55.5 120.1	16 35.2 +55.4 119.1	16 12.1 +55.3 118.1	15 48.8 +55.2 117.2
4°	18 16.3 +55.5 120.6	17 53.6 +55.4 119.7	17 30.6 +55.3 118.7	17 07.4 +55.3 117.7	16 44.0 +55.2 116.8
5°	19 11.8 +55.5 120.2	18 49.0 +55.4 119.2	18 25.9 +55.3 118.3	18 02.7 +55.2 117.3	17 39.2 +55.1 116.3
6°	20 07.3 +55.4 119.8	19 44.4 +55.3 118.8	19 21.2 +55.2 117.9	18 57.9 +55.1 116.9	18 34.3 +55.1 115.9
7°	21 02.7 +55.3 119.4	20 39.7 +55.2 118.4	20 16.4 +55.2 117.5	19 53.0 +55.1 116.5	19 29.4 +55.0 115.5
8°	21 58.0 +55.3 119.0	21 34.9 +55.2 118.0	21 11.6 +55.1 117.0	20 48.1 +55.0 116.1	20 24.4 +54.9 115.1
9°	22 53.3 +55.3 118.6	22 30.1 +55.2 117.6	22 06.7 +55.1 116.6	21 43.1 +55.0 115.6	21 19.3 +54.9 114.7
10°	23 48.6 +55.1 118.1	23 25.3 +55.0 117.2	23 01.8 +54.9 116.2	22 38.1 +54.8 115.2	22 14.2 +54.8 114.2
11°	24 43.7 +55.1 117.7	24 20.3 +55.0 116.7	23 56.7 +54.9 115.7	23 32.9 +54.8 114.8	23 09.0 +54.7 113.8
12°	25 38.8 +55.0 117.3	25 15.3 +54.9 116.3	24 51.6 +54.8 115.3	24 27.7 +54.8 114.3	24 03.7 +54.6 113.3
13°	26 33.8 +54.9 116.8	26 10.2 +54.8 115.8	25 46.4 +54.8 114.8	25 22.5 +54.6 113.9	24 58.3 +54.6 112.9
14°	27 28.7 +54.8 116.4	27 05.0 +54.7 115.4	26 41.2 +54.6 114.4	26 17.1 +54.6 113.4	25 52.9 +54.5 112.4
15°	28 23.5 +54.7 115.9	27 59.7 +54.7 114.9	27 35.8 +54.5 113.9	27 11.7 +54.4 112.9	26 47.4 +54.3 112.0
16°	29 18.2 +54.7 115.4	28 54.4 +54.5 114.4	28 30.3 +54.5 113.5	28 06.1 +54.4 112.5	27 41.7 +54.3 111.5
17°	30 12.9 +54.5 115.0	29 48.9 +54.4 114.0	29 24.8 +54.3 113.0	29 00.5 +54.2 112.0	28 36.0 +54.2 111.0
18°	31 07.4 +54.4 114.5	30 43.3 +54.4 113.5	30 19.1 +54.3 112.5	29 54.7 +54.2 111.5	29 30.2 +54.0 110.5
19°	32 01.8 +54.3 114.0	31 37.7 +54.2 113.0	31 13.4 +54.1 112.0	30 48.9 +54.0 111.0	30 24.2 +54.0 110.0
20°	32 56.1 +54.1 113.5	32 31.9 +54.0 112.5	32 07.5 +54.0 111.5	31 42.9 +53.9 110.5	31 18.2 +53.8 109.5
21°	33 50.2 +54.1 113.0	33 25.9 +54.0 112.0	33 01.5 +53.8 111.0	32 36.8 +53.8 110.0	32 12.0 +53.7 109.0
22°	34 44.3 +53.9 112.4	34 19.9 +53.8 111.4	33 55.3 +53.7 110.4	33 30.6 +53.6 109.4	33 05.7 +53.6 108.4
23°	35 38.2 +53.7 111.9	35 13.7 +53.6 110.9	34 49.0 +53.6 109.9	34 24.2 +53.5 108.9	33 59.3 +53.4 107.9
24°	36 31.9 +53.6 111.4	36 07.3 +53.6 110.3	35 42.6 +53.4 109.3	35 17.7 +53.4 108.3	34 52.7 +53.2 107.3
25°	37 25.5 +53.5 110.8	37 00.9 +53.3 109.8	36 36.0 +53.3 108.8	36 11.1 +53.1 107.8	35 45.9 +53.1 106.8
26°	38 19.0 +53.2 110.2	37 54.2 +53.2 109.2	37 29.3 +53.1 108.2	37 04.2 +53.0 107.2	36 39.0 +53.0 106.2
27°	39 12.2 +53.1 109.6	38 47.4 +53.0 108.6	38 22.4 +52.9 107.6	37 57.2 +52.8 106.6	37 32.0 +52.7 105.6
28°	40 05.3 +52.9 109.0	39 40.4 +52.7 108.0	39 15.3 +52.7 107.0	38 50.0 +52.7 106.0	38 24.7 +52.6 105.0
29°	40 58.2 +52.6 108.4	40 33.1 +52.6 107.4	40 08.0 +52.5 106.4	39 42.7 +52.4 105.4	39 17.3 +52.3 104.4

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°	8 37.4 +54.5 108.1	8 12.3 +54.5 107.2	7 47.1 +54.4 106.3	7 21.8 +54.4 105.4	6 56.4 +54.3 104.5
1°	9 31.9 +54.5 107.7	9 06.8 +54.4 106.8	8 41.5 +54.4 105.9	8 16.2 +54.3 104.9	7 50.7 +54.3 104.0
2°	10 26.4 +54.5 107.3	10 01.2 +54.4 106.3	9 35.9 +54.4 105.4	9 10.5 +54.3 104.5	8 45.0 +54.3 103.6
3°	11 20.9 +54.4 106.8	10 55.6 +54.4 105.9	10 30.3 +54.3 105.0	10 04.8 +54.3 104.1	9 39.3 +54.2 103.2
4°	12 15.3 +54.4 106.4	11 50.0 +54.3 105.5	11 24.6 +54.3 104.6	10 59.1 +54.2 103.6	10 33.5 +54.2 102.7
5°	13 09.7 +54.3 106.0	12 44.3 +54.3 105.1	12 18.9 +54.2 104.1	11 53.3 +54.2 103.2	11 27.7 +54.1 102.3
6°	14 04.0 +54.3 105.5	13 38.6 +54.3 104.6	13 13.1 +54.2 103.7	12 47.5 +54.2 102.8	12 21.8 +54.1 101.8
7°	14 58.3 +54.3 105.1	14 32.9 +54.2 104.2	14 07.3 +54.2 103.2	13 41.7 +54.1 102.3	13 15.9 +54.1 101.4
8°	15 52.6 +54.2 104.7	15 27.1 +54.1 103.7	15 01.5 +54.1 102.8	14 35.8 +54.0 101.9	14 10.0 +54.0 101.0
9°	16 46.8 +54.1 104.2	16 21.2 +54.1 103.3	15 55.6 +54.0 102.4	15 29.8 +54.0 101.4	15 04.0 +54.0 100.5
10°	17 40.9 +54.1 103.8	17 15.3 +54.0 102.8	16 49.6 +54.0 101.9	16 23.8 +54.0 101.0	15 58.0 +53.9 100.1
11°	18 35.0 +54.0 103.3	18 09.3 +54.0 102.4	17 43.6 +53.9 101.4	17 17.8 +53.8 100.5	16 51.9 +53.8 99.6
12°	19 29.0 +53.9 102.8	19 03.3 +53.9 101.9	18 37.5 +53.8 101.0	18 11.6 +53.9 100.1	17 45.7 +53.8 99.1
13°	20 22.9 +53.9 102.4	19 57.2 +53.8 101.4	19 31.3 +53.8 100.5	19 05.5 +53.7 99.6	18 39.5 +53.7 98.7
14°	21 16.8 +53.7 101.9	20 51.0 +53.7 101.0	20 25.1 +53.7 100.0	19 59.2 +53.6 99.1	19 33.2 +53.6 98.2
15°	22 10.5 +53.7 101.4	21 44.7 +53.7 100.5	21 18.8 +53.6 99.6	20 52.8 +53.6 98.6	20 26.8 +53.6 97.7
16°	23 04.2 +53.6 100.9	22 38.4 +53.5 100.0	22 12.4 +53.6 99.1	21 46.4 +53.5 98.2	21 20.4 +53.4 97.2
17°	23 57.8 +53.5 100.5	23 31.9 +53.5 99.5	23 06.0 +53.4 98.6	22 39.9 +53.4 97.7	22 13.8 +53.4 96.7
18°	24 51.3 +53.5 100.0	24 25.4 +53.4 99.0	23 59.4 +53.3 98.1	23 33.3 +53.3 97.2	23 07.2 +53.3 96.3
19°	25 44.8 +53.3 99.5	25 18.8 +53.2 98.5	24 52.7 +53.3 97.6	24 26.6 +53.2 96.7	24 00.5 +53.2 95.8
20°	26 38.1 +53.2 98.9	26 12.0 +53.2 98.0	25 46.0 +53.1 97.1	25 19.8 +53.1 96.2	24 53.7 +53.1 95.2
21°	27 31.3 +53.0 98.4	27 05.2 +53.0 97.5	26 39.1 +53.0 96.6	26 12.9 +53.0 95.6	25 46.8 +52.9 94.7
22°	28 24.3 +53.0 97.9	27 58.2 +53.0 97.0	27 32.1 +52.9 96.0	27 05.9 +52.9 95.1	26 39.7 +52.9 94.2
23°	29 17.3 +52.8 97.4	28 51.2 +52.8 96.4	28 25.0 +52.8 95.5	27 58.8 +52.8 94.6	27 32.6 +52.7 93.7
24°	30 10.1 +52.7 96.8	29 44.0 +52.6 95.9	29 17.8 +52.6 95.0	28 51.6 +52.6 94.0	28 25.3 +52.6 93.1
25°	31 02.8 +52.5 96.3	30 36.6 +52.5 95.3	30 10.4 +52.5 94.4	29 44.2 +52.4 93.5	29 17.9 +52.5 92.6
26°	31 55.3 +52.4 95.7	31 29.1 +52.4 94.8	31 02.9 +52.3 93.8	30 36.6 +52.4 92.9	30 10.4 +52.3 92.0
27°	32 47.7 +52.2 95.1	32 21.5 +52.2 94.2	31 55.2 +52.2 93.3	31 29.0 +52.1 92.4	31 02.7 +52.1 91.5
28°	33 39.9 +52.1 94.5	33 13.7 +52.0 93.6	32 47.4 +52.0 92.7	32 21.1 +52.0 91.8	31 54.8 +52.0 90.9
29°	34 32.0 +51.8 93.9	34 05.7 +51.9 93.0	33 39.4 +51.9 92.1	33 13.1 +51.9 91.2	32 46.8 +51.9 90.3

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°	6 30.9 +54.3 103.5	6 05.3 +54.2 102.6	5 39.6 +54.1 101.7	5 13.8 +54.1 100.8	4 47.9 +54.1 99.9
1°	7 25.2 +54.2 103.1	6 59.5 +54.2 102.2	6 33.7 +54.2 101.3	6 07.9 +54.1 100.4	5 42.0 +54.1 99.5
2°	8 19.4 +54.2 102.7	7 53.7 +54.2 101.8	7 27.9 +54.1 100.9	7 02.0 +54.1 99.9	6 36.1 +54.1 99.0
3°	9 13.6 +54.2 102.2	8 47.9 +54.1 101.3	8 22.0 +54.1 100.4	7 56.1 +54.1 99.5	7 30.2 +54.0 98.6
4°	10 07.8 +54.1 101.8	9 42.0 +54.1 100.9	9 16.1 +54.1 100.0	8 50.2 +54.0 99.1	8 24.2 +54.0 98.2
5°	11 01.9 +54.1 101.4	10 36.1 +54.1 100.5	10 10.2 +54.0 99.5	9 44.2 +54.0 98.6	9 18.2 +54.0 97.7
6°	11 56.0 +54.1 100.9	11 30.2 +54.0 100.0	11 04.2 +54.0 99.1	10 38.2 +54.0 98.2	10 12.2 +53.9 97.3
7°	12 50.1 +54.0 100.5	12 24.2 +54.0 99.6	11 58.2 +54.0 98.7	11 32.2 +53.9 97.7	11 06.1 +53.9 96.8
8°	13 44.1 +54.0 100.0	13 18.2 +53.9 99.1	12 52.2 +53.9 98.2	12 26.1 +53.9 97.3	12 00.0 +53.9 96.4
9°	14 38.1 +53.9 99.6	14 12.1 +53.9 98.7	13 46.1 +53.9 97.8	13 20.0 +53.9 96.8	12 53.9 +53.8 95.9
10°	15 32.0 +53.9 99.1	15 06.0 +53.9 98.2	14 40.0 +53.8 97.3	14 13.9 +53.7 96.4	13 47.7 +53.8 95.5
11°	16 25.9 +53.8 98.7	15 59.9 +53.7 97.8	15 33.8 +53.7 96.8	15 07.6 +53.8 95.9	14 41.5 +53.7 95.0
12°	17 19.7 +53.7 98.2	16 53.6 +53.8 97.3	16 27.5 +53.7 96.4	16 01.4 +53.6 95.5	15 35.2 +53.6 94.6
13°	18 13.4 +53.7 97.7	17 47.4 +53.6 96.8	17 21.2 +53.6 95.9	16 55.0 +53.6 95.0	16 28.8 +53.6 94.1
14°	19 07.1 +53.6 97.3	18 41.0 +53.6 96.4	18 14.8 +53.6 95.4	17 48.6 +53.6 94.5	17 22.4 +53.5 93.6
15°	20 00.7 +53.5 96.8	19 34.6 +53.5 95.9	19 08.4 +53.5 95.0	18 42.2 +53.4 94.1	18 15.9 +53.5 93.2
16°	20 54.2 +53.5 96.3	20 28.1 +53.4 95.4	20 01.9 +53.4 94.5	19 35.6 +53.4 93.6	19 09.4 +53.4 92.7
17°	21 47.7 +53.3 95.8	21 21.5 +53.3 94.9	20 55.3 +53.3 94.0	20 29.0 +53.3 93.1	20 02.8 +53.2 92.2
18°	22 41.0 +53.3 95.3	22 14.8 +53.3 94.4	21 48.6 +53.2 93.5	21 22.3 +53.2 92.6	20 56.0 +53.3 91.7
19°	23 34.3 +53.2 94.8	23 08.1 +53.1 93.9	22 41.8 +53.2 93.0	22 15.5 +53.2 92.1	21 49.3 +53.1 91.2
20°	24 27.5 +53.0 94.3	24 01.2 +53.1 93.4	23 35.0 +53.0 92.5	23 08.7 +53.0 91.6	22 42.4 +53.0 90.7
21°	25 20.5 +53.0 93.8	24 54.3 +52.9 92.9	24 28.0 +52.9 92.0	24 01.7 +52.9 91.1	23 35.4 +52.9 90.2
22°	26 13.5 +52.8 93.3	25 47.2 +52.8 92.4	25 20.9 +52.8 91.5	24 54.6 +52.8 90.6	24 28.3 +52.8 89.7
23°	27 06.3 +52.7 92.8	26 40.0 +52.7 91.9	26 13.7 +52.7 90.9	25 47.4 +52.7 90.0	25 21.1 +52.7 89.1
24°	27 59.0 +52.6 92.2	27 32.7 +52.6 91.3	27 06.4 +52.6 90.4	26 40.1 +52.6 89.5	26 13.8 +52.6 88.6
25°	28 51.6 +52.5 91.7	28 25.3 +52.5 90.8	27 59.0 +52.5 89.9	27 32.7 +52.5 89.0	27 06.4 +52.5 88.1
26°	29 44.1 +52.3 91.1	29 17.8 +52.3 90.2	28 51.5 +52.3 89.3	28 25.2 +52.3 88.4	27 58.9 +52.3 87.5
27°	30 36.4 +52.1 90.5	30 10.1 +52.1 89.7	29 43.8 +52.1 88.8	29 17.5 +52.2 87.9	28 51.2 +52.2 87.0
28°	31 28.5 +52.0 90.0	31 02.2 +52.0 89.1	30 35.9 +52.1 88.2	30 09.7 +52.0 87.3	29 43.4 +52.0 86.4
29°	32 20.5 +51.9 89.4	31 54.2 +51.9 88.5	31 28.0 +51.8 87.6	31 01.7 +51.9 86.7	30 35.4 +51.9 85.8

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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°	4 21.9 +54.1 99.0	3 55.9 +54.1 98.1	3 29.9 +54.0 97.2	3 03.7 +54.0 96.3	2 37.6 +54.0 95.4
1°	5 16.0 +54.1 98.6	4 50.0 +54.0 97.7	4 23.9 +54.0 96.8	3 57.7 +54.0 95.9	3 31.6 +53.9 95.0
2°	6 10.1 +54.0 98.1	5 44.0 +54.0 97.2	5 17.9 +54.0 96.3	4 51.7 +54.0 95.4	4 25.5 +54.0 94.5
3°	7 04.1 +54.0 97.7	6 38.0 +54.0 96.8	6 11.9 +53.9 95.9	5 45.7 +53.9 95.0	5 19.5 +53.9 94.1
4°	7 58.1 +54.0 97.3	7 32.0 +54.0 96.4	7 05.8 +54.0 95.4	6 39.6 +54.0 94.5	6 13.4 +53.9 93.6
5°	8 52.1 +54.0 96.8	8 26.0 +53.9 95.9	7 59.8 +53.9 95.0	7 33.6 +53.9 94.1	7 07.3 +53.9 93.2
6°	9 46.1 +53.9 96.4	9 19.9 +53.9 95.5	8 53.7 +53.9 94.6	8 27.5 +53.8 93.7	8 01.2 +53.9 92.8
7°	10 40.0 +53.9 95.9	10 13.8 +53.9 95.0	9 47.6 +53.8 94.1	9 21.3 +53.9 93.2	8 55.1 +53.8 92.3
8°	11 33.9 +53.8 95.5	11 07.7 +53.8 94.6	10 41.4 +53.8 93.7	10 15.2 +53.8 92.8	9 48.9 +53.8 91.9
9°	12 27.7 +53.8 95.0	12 01.5 +53.8 94.1	11 35.2 +53.8 93.2	11 09.0 +53.7 92.3	10 42.7 +53.7 91.4
10°	13 21.5 +53.7 94.6	12 55.3 +53.7 93.7	12 29.0 +53.7 92.8	12 02.7 +53.7 91.9	11 36.4 +53.7 91.0
11°	14 15.2 +53.7 94.1	13 49.0 +53.7 93.2	13 22.7 +53.7 92.3	12 56.4 +53.7 91.4	12 30.1 +53.7 90.5
12°	15 08.9 +53.7 93.7	14 42.7 +53.6 92.7	14 16.4 +53.6 91.8	13 50.1 +53.6 90.9	13 23.8 +53.6 90.0
13°	16 02.6 +53.5 93.2	15 36.3 +53.6 92.3	15 10.0 +53.6 91.4	14 43.7 +53.6 90.5	14 17.4 +53.6 89.6
14°	16 56.1 +53.6 92.7	16 29.9 +53.5 91.8	16 03.6 +53.5 90.9	15 37.3 +53.5 90.0	15 11.0 +53.5 89.1
15°	17 49.7 +53.4 92.2	17 23.4 +53.4 91.3	16 57.1 +53.4 90.4	16 30.8 +53.4 89.5	16 04.5 +53.4 88.6
16°	18 43.1 +53.4 91.8	18 16.8 +53.4 90.9	17 50.5 +53.4 90.0	17 24.2 +53.4 89.1	16 57.9 +53.4 88.2
17°	19 36.5 +53.3 91.3	19 10.2 +53.2 90.4	18 43.9 +53.2 89.5	18 17.6 +53.3 88.6	17 51.3 +53.3 87.7
18°	20 29.8 +53.2 90.8	20 03.4 +53.3 89.9	19 37.1 +53.3 89.0	19 10.9 +53.2 88.1	18 44.6 +53.2 87.2
19°	21 23.0 +53.1 90.3	20 56.7 +53.1 89.4	20 30.4 +53.1 88.5	20 04.1 +53.1 87.6	19 37.8 +53.1 86.7
20°	22 16.1 +53.0 89.8	21 49.8 +53.0 88.9	21 23.5 +53.0 88.0	20 57.2 +53.0 87.1	20 30.9 +53.1 86.2
21°	23 09.1 +52.9 89.3	22 42.8 +52.9 88.4	22 16.5 +53.0 87.5	21 50.2 +53.0 86.6	21 24.0 +53.0 85.7
22°	24 02.0 +52.8 88.8	23 35.7 +52.9 87.9	23 09.5 +52.8 87.0	22 43.2 +52.9 86.1	22 17.0 +52.8 85.2
23°	24 54.8 +52.8 88.3	24 28.6 +52.7 87.4	24 02.3 +52.7 86.5	23 36.1 +52.7 85.6	23 09.8 +52.8 84.7
24°	25 47.6 +52.5 87.7	25 21.3 +52.6 86.8	24 55.0 +52.7 86.0	24 28.8 +52.7 85.1	24 02.6 +52.7 84.2
25°	26 40.1 +52.5 87.2	26 13.9 +52.5 86.3	25 47.7 +52.5 85.4	25 21.5 +52.5 84.5	24 55.3 +52.5 83.7
26°	27 32.6 +52.4 86.6	27 06.4 +52.3 85.8	26 40.2 +52.3 84.9	26 14.0 +52.4 84.0	25 47.8 +52.5 83.1
27°	28 25.0 +52.2 86.1	27 58.7 +52.3 85.2	27 32.5 +52.3 84.3	27 06.4 +52.3 83.5	26 40.3 +52.3 82.6
28°	29 17.2 +52.0 85.5	28 51.0 +52.0 84.7	28 24.8 +52.1 83.8	27 58.7 +52.1 82.9	27 32.6 +52.2 82.0
29°	30 09.2 +51.9 85.0	29 43.0 +52.0 84.1	29 16.8 +52.0 83.2	28 50.8 +52.0 82.3	28 24.8 +52.0 81.5

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°	2 11.4 +53.9 94.5	1 45.1 +54.0 93.6	1 18.9 +53.9 92.7	0 52.6 +53.9 91.8	0 26.3 +53.9 90.9
1°	3 05.3 +54.0 94.1	2 39.1 +53.9 93.2	2 12.8 +53.9 92.3	1 46.5 +54.0 91.4	1 20.2 +54.0 90.5
2°	3 59.3 +53.9 93.6	3 33.0 +54.0 92.7	3 06.7 +54.0 91.8	2 40.5 +53.9 90.9	2 14.2 +53.9 90.0
3°	4 53.2 +53.9 93.2	4 27.0 +53.9 92.3	4 00.7 +53.9 91.4	3 34.4 +53.9 90.5	3 08.1 +53.9 89.6
4°	5 47.1 +53.9 92.7	5 20.9 +53.9 91.8	4 54.6 +53.9 90.9	4 28.3 +53.9 90.0	4 02.0 +53.9 89.1
5°	6 41.0 +53.9 92.3	6 14.8 +53.8 91.4	5 48.5 +53.8 90.5	5 22.2 +53.8 89.6	4 55.9 +53.8 88.7
6°	7 34.9 +53.9 91.9	7 08.6 +53.9 91.0	6 42.3 +53.9 90.1	6 16.0 +53.9 89.2	5 49.7 +53.9 88.3
7°	8 28.8 +53.8 91.4	8 02.5 +53.8 90.5	7 36.2 +53.8 89.6	7 09.9 +53.8 88.7	6 43.6 +53.8 87.8
8°	9 22.6 +53.8 91.0	8 56.3 +53.8 90.1	8 30.0 +53.8 89.2	8 03.7 +53.8 88.3	7 37.4 +53.8 87.4
9°	10 16.4 +53.7 90.5	9 50.1 +53.7 89.6	9 23.8 +53.7 88.7	8 57.5 +53.7 87.8	8 31.2 +53.8 86.9
10°	11 10.1 +53.7 90.1	10 43.8 +53.7 89.2	10 17.5 +53.7 88.3	9 51.2 +53.8 87.4	9 25.0 +53.7 86.5
11°	12 03.8 +53.7 89.6	11 37.5 +53.7 88.7	11 11.2 +53.7 87.8	10 45.0 +53.7 86.9	10 18.7 +53.7 86.0
12°	12 57.5 +53.6 89.1	12 31.2 +53.6 88.2	12 04.9 +53.6 87.4	11 38.7 +53.6 86.5	11 12.4 +53.7 85.6
13°	13 51.1 +53.6 88.7	13 24.8 +53.6 87.8	12 58.5 +53.6 86.9	12 32.3 +53.6 86.0	12 06.1 +53.6 85.1
14°	14 44.7 +53.5 88.2	14 18.4 +53.5 87.3	13 52.1 +53.6 86.4	13 25.9 +53.5 85.5	12 59.7 +53.5 84.7
15°	15 38.2 +53.4 87.8	15 11.9 +53.5 86.9	14 45.7 +53.4 86.0	14 19.4 +53.5 85.1	13 53.2 +53.6 84.2
16°	16 31.6 +53.4 87.3	16 05.4 +53.4 86.4	15 39.1 +53.4 85.5	15 12.9 +53.4 84.6	14 46.8 +53.4 83.7
17°	17 25.0 +53.3 86.8	16 58.8 +53.3 85.9	16 32.5 +53.4 85.0	16 06.3 +53.4 84.1	15 40.2 +53.4 83.3
18°	18 18.3 +53.3 86.3	17 52.1 +53.2 85.4	17 25.9 +53.3 84.5	16 59.7 +53.3 83.7	16 33.6 +53.3 82.8
19°	19 11.6 +53.1 85.8	18 45.3 +53.2 84.9	18 19.2 +53.2 84.1	17 53.0 +53.2 83.2	17 26.9 +53.3 82.3
20°	20 04.7 +53.1 85.3	19 38.5 +53.1 84.5	19 12.4 +53.1 83.6	18 46.2 +53.2 82.7	18 20.2 +53.2 81.8
21°	20 57.8 +53.0 84.8	20 31.6 +53.0 84.0	20 05.5 +53.0 83.1	19 39.4 +53.1 82.2	19 13.4 +53.1 81.3
22°	21 50.8 +52.9 84.3	21 24.6 +53.0 83.5	20 58.5 +53.0 82.6	20 32.5 +53.0 81.7	20 06.5 +53.0 80.8
23°	22 43.7 +52.8 83.8	22 17.6 +52.8 82.9	21 51.5 +52.8 82.1	21 25.5 +52.8 81.2	20 59.5 +52.9 80.3
24°	23 36.5 +52.7 83.3	23 10.4 +52.7 82.4	22 44.3 +52.8 81.6	22 18.3 +52.8 80.7	21 52.4 +52.9 79.8
25°	24 29.2 +52.6 82.8	24 03.1 +52.6 81.9	23 37.1 +52.6 81.0	23 11.1 +52.7 80.2	22 45.3 +52.7 79.3
26°	25 21.8 +52.4 82.3	24 55.7 +52.5 81.4	24 29.7 +52.6 80.5	24 03.8 +52.6 79.7	23 38.0 +52.6 78.8
27°	26 14.2 +52.4 81.7	25 48.2 +52.4 80.9	25 22.3 +52.4 80.0	24 56.4 +52.5 79.1	24 30.6 +52.6 78.3
28°	27 06.6 +52.2 81.2	26 40.6 +52.3 80.3	26 14.7 +52.3 79.4	25 48.9 +52.4 78.6	25 23.2 +52.4 77.7
29°	27 58.8 +52.1 80.6	27 32.9 +52.1 79.8	27 07.0 +52.2 78.9	26 41.3 +52.2 78.0	26 15.6 +52.2 77.2

Declination SAME name as Latitude

Latitude 64°

Dec	LHA 100° / 260°	LHA 101° / 259°	LHA 102° / 258°	LHA 103° / 257°	LHA 104° / 256°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-4 21.9 +54.0	-4 47.9 +54.1	-5 13.8 +54.2	-5 39.6 +54.2	-6 05.3 +54.3
1°	-3 27.9 +54.2	-3 53.8 +54.2	-4 19.6 +54.2	-4 45.4 +54.3	-5 11.0 +54.2
2°	-2 33.7 +54.1	-2 59.6 +54.1	-3 25.4 +54.2	-3 51.1 +54.2	-4 16.8 +54.3
3°	-1 39.6 +54.1	-2 05.5 +54.2	-2 31.2 +54.2	-2 56.9 +54.2	-3 22.5 +54.3
4°	-0 45.5 +54.1	-1 11.3 +54.1	-1 37.0 +54.2	-2 02.7 +54.3	-2 28.2 +54.3
5°	0 08.6 +54.1 78.8	-0 17.2 +54.2	-0 42.8 +54.2	-1 08.4 +54.2	-1 33.9 +54.3
6°	1 02.7 +54.1 78.4	0 37.0 +54.2 77.5	0 11.4 +54.2 76.6	-0 14.2 +54.3	-0 39.6 +54.3
7°	1 56.8 +54.1 78.0	1 31.2 +54.1 77.1	1 05.6 +54.2 76.2	0 40.1 +54.2 75.3	0 14.7 +54.3 74.4
8°	2 50.9 +54.1 77.5	2 25.3 +54.2 76.6	1 59.8 +54.2 75.7	1 34.3 +54.3 74.9	1 09.0 +54.3 74.0
9°	3 45.0 +54.1 77.1	3 19.5 +54.1 76.2	2 54.0 +54.1 75.3	2 28.6 +54.2 74.4	2 03.3 +54.3 73.5
10°	4 39.1 +54.1 76.7	4 13.6 +54.1 75.8	3 48.1 +54.2 74.9	3 22.8 +54.2 74.0	2 57.6 +54.3 73.1
11°	5 33.2 +54.1 76.2	5 07.7 +54.1 75.3	4 42.3 +54.2 74.5	4 17.0 +54.2 73.6	3 51.9 +54.2 72.7
12°	6 27.3 +54.0 75.8	6 01.8 +54.1 74.9	5 36.5 +54.1 74.0	5 11.2 +54.2 73.1	4 46.1 +54.3 72.2
13°	7 21.3 +54.0 75.4	6 55.9 +54.0 74.5	6 30.6 +54.1 73.6	6 05.4 +54.2 72.7	5 40.4 +54.2 71.8
14°	8 15.3 +54.0 74.9	7 49.9 +54.1 74.0	7 24.7 +54.1 73.2	6 59.6 +54.2 72.3	6 34.6 +54.2 71.4
15°	9 09.3 +53.9 74.5	8 44.0 +54.0 73.6	8 18.8 +54.1 72.7	7 53.8 +54.1 71.8	7 28.8 +54.2 71.0
16°	10 03.2 +53.9 74.0	9 38.0 +53.9 73.2	9 12.9 +54.0 72.3	8 47.9 +54.1 71.4	8 23.0 +54.2 70.5
17°	10 57.1 +53.9 73.6	10 31.9 +54.0 72.7	10 06.9 +54.0 71.8	9 42.0 +54.0 71.0	9 17.2 +54.1 70.1
18°	11 51.0 +53.8 73.1	11 25.9 +53.9 72.3	11 00.9 +53.9 71.4	10 36.0 +54.0 70.5	10 11.3 +54.1 69.7
19°	12 44.8 +53.8 72.7	12 19.8 +53.8 71.8	11 54.8 +53.9 70.9	11 30.0 +54.0 70.1	11 05.4 +54.0 69.2
20°	13 38.6 +53.7 72.2	13 13.6 +53.8 71.4	12 48.7 +53.9 70.5	12 24.0 +54.0 69.6	11 59.4 +54.0 68.8
21°	14 32.3 +53.7 71.8	14 07.4 +53.7 70.9	13 42.6 +53.8 70.0	13 18.0 +53.8 69.2	12 53.4 +54.0 68.3
22°	15 26.0 +53.6 71.3	15 01.1 +53.7 70.4	14 36.4 +53.8 69.6	14 11.8 +53.9 68.7	13 47.4 +53.9 67.9
23°	16 19.6 +53.6 70.8	15 54.8 +53.7 70.0	15 30.2 +53.7 69.1	15 05.7 +53.8 68.3	14 41.3 +53.9 67.4
24°	17 13.2 +53.5 70.4	16 48.5 +53.5 69.5	16 23.9 +53.6 68.7	15 59.5 +53.7 67.8	15 35.2 +53.8 67.0
25°	18 06.7 +53.4 69.9	17 42.0 +53.5 69.0	17 17.5 +53.6 68.2	16 53.2 +53.6 67.3	16 29.0 +53.7 66.5
26°	19 00.1 +53.3 69.4	18 35.5 +53.4 68.6	18 11.1 +53.5 67.7	17 46.8 +53.6 66.9	17 22.7 +53.7 66.0
27°	19 53.4 +53.3 68.9	19 28.9 +53.4 68.1	19 04.6 +53.4 67.2	18 40.4 +53.5 66.4	18 16.4 +53.6 65.6
28°	20 46.7 +53.2 68.4	20 22.3 +53.2 67.6	19 58.0 +53.4 66.8	19 33.9 +53.5 65.9	19 10.0 +53.5 65.1
29°	21 39.9 +53.0 67.9	21 15.5 +53.2 67.1	20 51.4 +53.3 66.3	20 27.4 +53.4 65.4	20 03.5 +53.5 64.6

Dec	LHA 105° / 255°	LHA 106° / 254°	LHA 107° / 253°	LHA 108° / 252°	LHA 109° / 251°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-6 30.9 +54.3	-6 56.4 +54.3	-7 21.8 +54.4	-7 47.1 +54.4	-8 12.3 +54.5
1°	-5 36.6 +54.3	-6 02.1 +54.4	-6 27.4 +54.4	-6 52.7 +54.5	-7 17.8 +54.5
2°	-4 42.3 +54.3	-5 07.7 +54.4	-5 33.0 +54.4	-5 58.2 +54.5	-6 23.3 +54.5
3°	-3 48.0 +54.4	-4 13.3 +54.3	-4 38.6 +54.4	-5 03.7 +54.5	-5 28.8 +54.6
4°	-2 53.6 +54.3	-3 19.0 +54.4	-3 44.2 +54.5	-4 09.2 +54.5	-4 34.2 +54.6
5°	-1 59.3 +54.4	-2 24.6 +54.5	-2 49.7 +54.5	-3 14.7 +54.5	-3 39.6 +54.6
6°	-1 04.9 +54.3	-1 30.1 +54.4	-1 55.2 +54.4	-2 20.2 +54.5	-2 45.0 +54.6
7°	-0 10.6 +54.4	-0 35.7 +54.4	-1 00.8 +54.5	-1 25.7 +54.6	-1 50.4 +54.6
8°	0 43.8 +54.3 73.1	0 18.7 +54.4 72.2	-0 06.3 +54.5	-0 31.1 +54.5	-0 55.8 +54.6
9°	1 38.1 +54.4 72.6	1 13.1 +54.4 71.7	0 48.2 +54.4 70.8	0 23.4 +54.5 69.9	-0 01.2 +54.6
10°	2 32.5 +54.3 72.2	2 07.5 +54.4 71.3	1 42.6 +54.5 70.4	1 17.9 +54.6 69.5	0 53.4 +54.6 68.6
11°	3 26.8 +54.3 71.8	3 01.9 +54.4 70.9	2 37.1 +54.5 70.0	2 12.5 +54.5 69.1	1 48.0 +54.6 68.2
12°	4 21.1 +54.4 71.4	3 56.3 +54.4 70.5	3 31.6 +54.4 69.6	3 07.0 +54.5 68.7	2 42.6 +54.5 67.8
13°	5 15.5 +54.3 70.9	4 50.7 +54.3 70.0	4 26.0 +54.4 69.2	4 01.5 +54.5 68.3	3 37.1 +54.6 67.4
14°	6 09.8 +54.2 70.5	5 45.0 +54.4 69.6	5 20.4 +54.5 68.7	4 56.0 +54.5 67.9	4 31.7 +54.6 67.0
15°	7 04.0 +54.3 70.1	6 39.4 +54.3 69.2	6 14.9 +54.3 68.3	5 50.5 +54.5 67.4	5 26.3 +54.5 66.6
16°	7 58.3 +54.2 69.6	7 33.7 +54.3 68.8	7 09.2 +54.4 67.9	6 45.0 +54.4 67.0	6 20.8 +54.5 66.1
17°	8 52.5 +54.2 69.2	8 28.0 +54.3 68.3	8 03.6 +54.4 67.5	7 39.4 +54.4 66.6	7 15.3 +54.5 65.7
18°	9 46.7 +54.2 68.8	9 22.3 +54.2 67.9	8 58.0 +54.3 67.0	8 33.8 +54.4 66.2	8 09.8 +54.5 65.3
19°	10 40.9 +54.1 68.3	10 16.5 +54.2 67.5	9 52.3 +54.3 66.6	9 28.2 +54.4 65.7	9 04.3 +54.5 64.9
20°	11 35.0 +54.1 67.9	11 10.7 +54.2 67.0	10 46.6 +54.2 66.2	10 22.6 +54.3 65.3	9 58.8 +54.4 64.4
21°	12 29.1 +54.0 67.5	12 04.9 +54.1 66.6	11 40.8 +54.2 65.7	11 16.9 +54.3 64.9	10 53.2 +54.3 64.0
22°	13 23.1 +54.0 67.0	12 59.0 +54.1 66.2	12 35.0 +54.2 65.3	12 11.2 +54.2 64.4	11 47.5 +54.4 63.6
23°	14 17.1 +54.0 66.6	13 53.1 +54.0 65.7	13 29.2 +54.1 64.9	13 05.4 +54.2 64.0	12 41.9 +54.3 63.1
24°	15 11.1 +53.8 66.1	14 47.1 +54.0 65.3	14 23.3 +54.0 64.4	13 59.6 +54.2 63.6	13 36.2 +54.2 62.7
25°	16 04.9 +53.9 65.7	15 41.1 +53.9 64.8	15 17.3 +54.0 64.0	14 53.8 +54.1 63.1	14 30.4 +54.2 62.3
26°	16 58.8 +53.7 65.2	16 35.0 +53.8 64.4	16 11.3 +54.0 63.5	15 47.9 +54.0 62.7	15 24.6 +54.2 61.8
27°	17 52.5 +53.7 64.7	17 28.8 +53.8 63.9	17 05.3 +53.9 63.1	16 41.9 +54.0 62.2	16 18.8 +54.1 61.4
28°	18 46.2 +53.7 64.3	18 22.6 +53.8 63.4	17 59.2 +53.8 62.6	17 35.9 +54.0 61.8	17 12.9 +54.0 60.9
29°	19 39.9 +53.5 63.8	19 16.4 +53.6 63.0	18 53.0 +53.8 62.1	18 29.9 +53.8 61.3	18 06.9 +53.9 60.5

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Latitude 64°

Declination SAME name as Latitude

Dec	LHA 110° / 250°	LHA 111° / 249°	LHA 112° / 248°	LHA 113° / 247°	LHA 114° / 246°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-8 37.4 +54.6	-9 02.3 +54.6	-9 27.1 +54.7	-9 51.8 +54.8	
1°	-7 42.8 +54.6	-8 07.7 +54.7	-8 32.4 +54.7	-8 57.0 +54.8	-9 21.4 +54.8
2°	-6 48.2 +54.6	-7 13.0 +54.6	-7 37.7 +54.7	-8 02.2 +54.8	-8 26.6 +54.9
3°	-5 53.6 +54.6	-6 18.4 +54.7	-6 43.0 +54.8	-7 07.4 +54.8	-7 31.7 +54.9
4°	-4 59.0 +54.6	-5 23.7 +54.7	-5 48.2 +54.8	-6 12.6 +54.8	-6 36.8 +54.9
5°	-4 04.4 +54.7	-4 29.0 +54.7	-4 53.4 +54.7	-5 17.8 +54.9	-5 41.9 +54.9
6°	-3 09.7 +54.6	-3 34.3 +54.8	-3 58.7 +54.8	-4 22.9 +54.9	-4 47.0 +55.0
7°	-2 15.1 +54.7	-2 39.5 +54.7	-3 03.9 +54.8	-3 28.0 +54.9	-3 52.0 +55.0
8°	-1 20.4 +54.7	-1 44.8 +54.7	-2 09.1 +54.9	-2 33.1 +54.9	-2 57.0 +54.9
9°	-0 25.7 +54.6	-0 50.1 +54.8	-1 14.2 +54.8	-1 38.2 +54.9	-2 02.1 +55.0
10°	0 28.9 +54.7 67.7	0 04.7 +54.7 66.8	-0 19.4 +54.8	-0 43.3 +54.8	-1 07.1 +55.0
11°	1 23.6 +54.7 67.3	0 59.4 +54.8 66.4	0 35.4 +54.8 65.5	0 11.5 +54.9 64.6	-0 12.1 +55.0
12°	2 18.3 +54.6 66.9	1 54.2 +54.7 66.0	1 30.2 +54.8 65.1	1 06.4 +54.9 64.2	0 42.9 +54.9 63.3
13°	3 12.9 +54.7 66.5	2 48.9 +54.7 65.6	2 25.0 +54.8 64.7	2 01.3 +54.9 63.8	1 37.8 +55.0 62.9
14°	4 07.6 +54.6 66.1	3 43.6 +54.7 65.2	3 19.8 +54.8 64.3	2 56.2 +54.9 63.4	2 32.8 +55.0 62.5
15°	5 02.2 +54.7 65.7	4 38.3 +54.7 64.8	4 14.6 +54.8 63.9	3 51.1 +54.9 63.0	3 27.8 +54.9 62.1
16°	5 56.9 +54.6 65.3	5 33.0 +54.7 64.4	5 09.4 +54.8 63.5	4 46.0 +54.8 62.6	4 22.7 +55.0 61.7
17°	6 51.5 +54.5 64.8	6 27.7 +54.7 64.0	6 04.2 +54.7 63.1	5 40.8 +54.9 62.2	5 17.7 +54.9 61.3
18°	7 46.0 +54.6 64.4	7 22.4 +54.6 63.5	6 58.9 +54.8 62.7	6 35.7 +54.8 61.8	6 12.6 +54.9 60.9
19°	8 40.6 +54.5 64.0	8 17.0 +54.7 63.1	7 53.7 +54.7 62.3	7 30.5 +54.8 61.4	7 07.5 +54.9 60.5
20°	9 35.1 +54.5 63.6	9 11.7 +54.5 62.7	8 48.4 +54.6 61.8	8 25.3 +54.7 61.0	8 02.4 +54.8 60.1
21°	10 29.6 +54.5 63.2	10 06.2 +54.6 62.3	9 43.0 +54.7 61.4	9 20.0 +54.8 60.6	8 57.2 +54.9 59.7
22°	11 24.1 +54.4 62.7	11 00.8 +54.5 61.9	10 37.7 +54.6 61.0	10 14.8 +54.7 60.1	9 52.1 +54.8 59.3
23°	12 18.5 +54.4 62.3	11 55.3 +54.5 61.4	11 32.3 +54.6 60.6	11 09.5 +54.7 59.7	10 46.9 +54.7 58.9
24°	13 12.9 +54.3 61.9	12 49.8 +54.4 61.0	12 26.9 +54.5 60.2	12 04.2 +54.6 59.3	11 41.6 +54.8 58.5
25°	14 07.2 +54.3 61.4	13 44.2 +54.4 60.6	13 21.4 +54.5 59.7	12 58.8 +54.6 58.9	12 36.4 +54.7 58.0
26°	15 01.5 +54.3 61.0	14 38.6 +54.4 60.1	14 15.9 +54.4 59.3	13 53.4 +54.5 58.5	13 31.1 +54.6 57.6
27°	15 55.8 +54.2 60.5	15 33.0 +54.3 59.7	15 10.3 +54.4 58.9	14 47.9 +54.5 58.0	14 25.7 +54.6 57.2
28°	16 50.0 +54.1 60.1	16 27.3 +54.2 59.3	16 04.7 +54.4 58.4	15 42.4 +54.5 57.6	15 20.3 +54.6 56.8
29°	17 44.1 +54.1 59.6	17 21.5 +54.2 58.8	16 59.1 +54.3 58.0	16 36.9 +54.4 57.2	16 14.9 +54.5 56.3

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°	-9 45.7 +54.9				
2°	-8 50.8 +55.0	-9 14.8 +55.0	-9 38.6 +55.1		
3°	-7 55.8 +54.9	-8 19.8 +55.1	-8 43.5 +55.1	-9 07.1 +55.2	-9 30.5 +55.3
4°	-7 00.9 +55.0	-7 24.7 +55.0	-7 48.4 +55.1	-8 11.9 +55.2	-8 35.2 +55.3
5°	-6 05.9 +55.1	-6 29.7 +55.1	-6 53.3 +55.2	-7 16.7 +55.3	-7 39.9 +55.3
6°	-5 10.8 +55.0	-5 34.6 +55.1	-5 58.1 +55.2	-6 21.4 +55.2	-6 44.6 +55.4
7°	-4 15.8 +55.0	-4 39.5 +55.2	-5 02.9 +55.2	-5 26.2 +55.3	-5 49.2 +55.4
8°	-3 20.8 +55.1	-3 44.3 +55.1	-4 07.7 +55.2	-4 30.9 +55.3	-4 53.8 +55.3
9°	-2 25.7 +55.0	-2 49.2 +55.1	-3 12.5 +55.2	-3 35.6 +55.3	-3 58.5 +55.4
10°	-1 30.7 +55.1	-1 54.1 +55.2	-2 17.3 +55.3	-2 40.3 +55.4	-3 03.1 +55.4
11°	-0 35.6 +55.0	-0 58.9 +55.1	-1 22.0 +55.2	-1 44.9 +55.3	-2 07.7 +55.5
12°	0 19.4 +55.1 62.4	-0 03.8 +55.2	-0 26.8 +55.2	-0 49.6 +55.3	-1 12.2 +55.4
13°	1 14.5 +55.1 62.0	0 51.4 +55.1 61.1	0 28.4 +55.3 60.3	0 05.7 +55.3 59.4	-0 16.8 +55.4
14°	2 09.6 +55.0 61.6	1 46.5 +55.1 60.8	1 23.7 +55.2 59.9	1 01.0 +55.3 59.0	0 38.6 +55.4 58.1
15°	3 04.6 +55.0 61.2	2 41.6 +55.2 60.4	2 18.9 +55.2 59.5	1 56.3 +55.4 58.6	1 34.0 +55.4 57.7
16°	3 59.6 +55.1 60.8	3 36.8 +55.1 60.0	3 14.1 +55.2 59.1	2 51.7 +55.3 58.2	2 29.4 +55.4 57.3
17°	4 54.7 +55.0 60.4	4 31.9 +55.1 59.6	4 09.3 +55.2 58.7	3 47.0 +55.3 57.8	3 24.8 +55.4 56.9
18°	5 49.7 +55.0 60.0	5 27.0 +55.1 59.2	5 04.5 +55.2 58.3	4 42.3 +55.2 57.4	4 20.2 +55.4 56.5
19°	6 44.7 +55.0 59.6	6 22.1 +55.1 58.8	5 59.7 +55.2 57.9	5 37.5 +55.3 57.0	5 15.6 +55.4 56.1
20°	7 39.7 +54.9 59.2	7 17.2 +55.0 58.4	6 54.9 +55.1 57.5	6 32.8 +55.3 56.6	6 11.0 +55.3 55.8
21°	8 34.6 +55.0 58.8	8 12.2 +55.1 58.0	7 50.0 +55.2 57.1	7 28.1 +55.2 56.2	7 06.3 +55.3 55.4
22°	9 29.6 +54.9 58.4	9 07.3 +55.0 57.6	8 45.2 +55.1 56.7	8 23.3 +55.2 55.8	8 01.6 +55.3 55.0
23°	10 24.5 +54.8 58.0	10 02.3 +54.9 57.2	9 40.3 +55.0 56.3	9 18.5 +55.2 55.4	8 56.9 +55.3 54.6
24°	11 19.3 +54.9 57.6	10 57.2 +55.0 56.8	10 35.3 +55.1 55.9	10 13.7 +55.1 55.0	9 52.2 +55.3 54.2
25°	12 14.2 +54.8 57.2	11 52.2 +54.9 56.3	11 30.4 +55.0 55.5	11 08.8 +55.1 54.6	10 47.5 +55.2 53.8
26°	13 09.0 +54.7 56.8	12 47.1 +54.8 55.9	12 25.4 +55.0 55.1	12 03.9 +55.1 54.2	11 42.7 +55.2 53.4
27°	14 03.7 +54.7 56.4	13 41.9 +54.9 55.5	13 20.4 +54.9 54.7	12 59.0 +55.1 53.8	12 37.9 +55.2 53.0
28°	14 58.4 +54.7 55.9	14 36.8 +54.7 55.1	14 15.3 +54.9 54.3	13 54.1 +55.0 53.4	13 33.1 +55.1 52.6
29°	15 53.1 +54.6 55.5	15 31.5 +54.8 54.7	15 10.2 +54.8 53.8	14 49.1 +54.9 53.0	14 28.2 +55.0 52.2

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Latitude 64°

Dec	LHA 120° / 240°	LHA 121° / 239°	LHA 122° / 238°	LHA 123° / 237°	LHA 124° / 236°
0°	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
1°					
2°					
3°	-9 53.7 +55.4				
4°	-8 58.3 +55.4	-9 21.2 +55.5	-9 43.9 +55.6		
5°	-8 02.9 +55.4	-8 25.7 +55.5	-8 48.3 +55.6	-9 10.7 +55.7	-9 32.9 +55.8
6°	-7 07.5 +55.4	-7 30.2 +55.5	-7 52.7 +55.6	-8 15.0 +55.7	-8 37.1 +55.8
7°	-6 12.1 +55.5	-6 34.7 +55.6	-6 57.1 +55.6	-7 19.3 +55.7	-7 41.3 +55.9
8°	-5 16.6 +55.5	-5 39.1 +55.5	-6 01.5 +55.7	-6 23.6 +55.8	-6 45.4 +55.8
9°	-4 21.1 +55.5	-4 43.6 +55.6	-5 05.8 +55.7	-5 27.8 +55.8	-5 49.6 +55.9
10°	-3 25.6 +55.5	-3 48.0 +55.6	-4 10.1 +55.6	-4 32.0 +55.7	-4 53.7 +55.9
11°	-2 30.1 +55.5	-2 52.4 +55.6	-3 14.5 +55.7	-3 36.3 +55.8	-3 57.8 +55.8
12°	-1 34.6 +55.5	-1 56.8 +55.6	-2 18.8 +55.7	-2 40.5 +55.8	-3 02.0 +55.9
13°	-0 39.1 +55.5	-1 01.2 +55.6	-1 23.1 +55.7	-1 44.7 +55.8	-2 06.1 +55.9
14°	0 16.4 +55.5 57.2	-0 05.6 +55.6	-0 27.4 +55.7	-0 48.9 +55.8	-1 10.2 +55.9
15°	1 11.9 +55.5 56.8	0 50.0 +55.6 55.9	0 28.3 +55.7 55.0	0 06.9 +55.8 54.1	-0 14.3 +55.9
16°	2 07.4 +55.5 56.4	1 45.6 +55.6 55.5	1 24.0 +55.7 54.6	1 02.7 +55.8 53.7	0 41.6 +55.9 52.8
17°	3 02.9 +55.5 56.0	2 41.2 +55.6 55.1	2 19.7 +55.7 54.3	1 58.5 +55.8 53.4	1 37.5 +55.9 52.5
18°	3 58.4 +55.5 55.7	3 36.8 +55.6 54.8	3 15.4 +55.7 53.9	2 54.3 +55.8 53.0	2 33.4 +55.9 52.1
19°	4 53.9 +55.4 55.3	4 32.4 +55.5 54.4	4 11.1 +55.7 53.5	3 50.1 +55.7 52.6	3 29.3 +55.9 51.8
20°	5 49.3 +55.5 54.9	5 27.9 +55.6 54.0	5 06.8 +55.6 53.1	4 45.8 +55.8 52.3	4 25.2 +55.8 51.4
21°	6 44.8 +55.4 54.5	6 23.5 +55.5 53.6	6 02.4 +55.7 52.8	5 41.6 +55.7 51.9	5 21.0 +55.9 51.0
22°	7 40.2 +55.4 54.1	7 19.0 +55.5 53.3	6 58.1 +55.6 52.4	6 37.3 +55.8 51.5	6 16.9 +55.8 50.7
23°	8 35.6 +55.4 53.7	8 14.5 +55.5 52.9	7 53.7 +55.6 52.0	7 33.1 +55.7 51.1	7 12.7 +55.8 50.3
24°	9 31.0 +55.4 53.3	9 10.0 +55.5 52.5	8 49.3 +55.6 51.6	8 28.8 +55.7 50.8	8 08.5 +55.8 49.9
25°	10 26.4 +55.3 52.9	10 05.5 +55.4 52.1	9 44.9 +55.5 51.2	9 24.5 +55.6 50.4	9 04.3 +55.8 49.5
26°	11 21.7 +55.3 52.6	11 00.9 +55.5 51.7	10 40.4 +55.5 50.9	10 20.1 +55.7 50.0	10 00.1 +55.8 49.2
27°	12 17.0 +55.3 52.2	11 56.4 +55.3 51.3	11 35.9 +55.5 50.5	11 15.8 +55.6 49.6	10 55.9 +55.7 48.8
28°	13 12.3 +55.2 51.8	12 51.7 +55.4 50.9	12 31.4 +55.5 50.1	12 11.4 +55.6 49.3	11 51.6 +55.7 48.4
29°	14 07.5 +55.2 51.4	13 47.1 +55.3 50.5	13 26.9 +55.4 49.7	13 07.0 +55.5 48.9	12 47.3 +55.6 48.0

Dec	LHA 125° / 235°	LHA 126° / 234°	LHA 127° / 233°	LHA 128° / 232°	LHA 129° / 231°
0°	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
1°					
2°					
3°					
4°					
5°	-9 54.8 +55.9				
6°	-8 58.9 +55.9	-9 20.4 +56.0	-9 41.8 +56.1		
7°	-8 03.0 +56.0	-8 24.4 +56.0	-8 45.7 +56.1	-9 06.6 +56.2	-9 27.3 +56.3
8°	-7 07.0 +55.9	-7 28.4 +56.0	-7 49.6 +56.2	-8 10.4 +56.2	-8 31.0 +56.3
9°	-6 11.1 +55.9	-6 32.4 +56.1	-6 53.4 +56.1	-7 14.2 +56.3	-7 34.7 +56.4
10°	-5 15.2 +56.0	-5 36.3 +56.0	-5 57.3 +56.2	-6 17.9 +56.2	-6 38.3 +56.3
11°	-4 19.2 +56.0	-4 40.3 +56.1	-5 01.1 +56.2	-5 21.7 +56.3	-5 42.0 +56.4
12°	-3 23.2 +56.0	-3 44.2 +56.1	-4 04.9 +56.2	-4 25.4 +56.3	-4 45.6 +56.4
13°	-2 27.2 +56.0	-2 48.1 +56.1	-3 08.7 +56.2	-3 29.1 +56.3	-3 49.2 +56.4
14°	-1 31.2 +56.0	-1 52.0 +56.1	-2 12.5 +56.2	-2 32.8 +56.3	-2 52.8 +56.4
15°	-0 35.2 +56.0	-0 55.9 +56.1	-1 16.3 +56.2	-1 36.5 +56.3	-1 56.4 +56.4
16°	0 20.8 +56.0 51.9	0 00.2 +56.1 51.0	-0 20.1 +56.2	-0 40.2 +56.3	-1 00.0 +56.4
17°	1 16.8 +56.0 51.6	0 56.3 +56.1 50.7	0 36.1 +56.2 49.8	0 16.1 +56.3 48.9	-0 03.6 +56.4
18°	2 12.8 +56.0 51.2	1 52.4 +56.1 50.3	1 32.3 +56.2 49.4	1 12.4 +56.3 48.6	0 52.8 +56.4 47.7
19°	3 08.8 +55.9 50.9	2 48.5 +56.1 50.0	2 28.5 +56.2 49.1	2 08.7 +56.3 48.2	1 49.2 +56.5 47.3
20°	4 04.7 +56.0 50.5	3 44.6 +56.0 49.6	3 24.7 +56.1 48.7	3 05.0 +56.3 47.9	2 45.7 +56.3 47.0
21°	5 00.7 +56.0 50.1	4 40.6 +56.1 49.3	4 20.8 +56.2 48.4	4 01.3 +56.3 47.5	3 42.0 +56.4 46.6
22°	5 56.7 +55.9 49.8	5 36.7 +56.1 48.9	5 17.0 +56.2 48.0	4 57.6 +56.3 47.2	4 38.4 +56.4 46.3
23°	6 52.6 +55.9 49.4	6 32.8 +56.0 48.6	6 13.2 +56.1 47.7	5 53.9 +56.2 46.8	5 34.8 +56.4 46.0
24°	7 48.5 +56.0 49.1	7 28.8 +56.0 48.2	7 09.3 +56.2 47.3	6 50.1 +56.3 46.5	6 31.2 +56.3 45.6
25°	8 44.5 +55.8 48.7	8 24.8 +56.0 47.8	8 05.5 +56.1 47.0	7 46.4 +56.2 46.1	7 27.5 +56.4 45.3
26°	9 40.3 +55.9 48.3	9 20.8 +56.0 47.5	9 01.6 +56.1 46.6	8 42.6 +56.2 45.8	8 23.9 +56.3 44.9
27°	10 36.2 +55.8 47.9	10 16.8 +56.0 47.1	9 57.7 +56.0 46.3	9 38.8 +56.2 45.4	9 20.2 +56.3 44.6
28°	11 32.0 +55.9 47.6	11 12.8 +55.9 46.7	10 53.7 +56.1 45.9	10 35.0 +56.1 45.1	10 16.5 +56.3 44.2
29°	12 27.9 +55.7 47.2	12 08.7 +55.9 46.4	11 49.8 +56.0 45.5	11 31.1 +56.2 44.7	11 12.8 +56.2 43.9

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 its correctness. Use it only for training and exercising!

Latitude 64°

Declination SAME name as Latitude

Dec	LHA 130° / 230°	LHA 131° / 229°	LHA 132° / 228°	LHA 133° / 227°	LHA 134° / 226°
	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 47.8 +56.4				
9°	-8 51.4 +56.5	-9 11.4 +56.5	-9 31.2 +56.7	-9 50.7 +56.8	
10°	-7 54.9 +56.4	-8 14.9 +56.6	-8 34.5 +56.6	-8 53.9 +56.7	-9 13.0 +56.9
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

Dec	LHA 135° / 225°	LHA 136° / 224°	LHA 137° / 223°	LHA 138° / 222°	LHA 139° / 221°
	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°	-9 31.8 +57.0	-9 50.2 +57.0			
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
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 its correctness. Use it only for training and exercising!

Dec	LHA 140° / 220°	LHA 141° / 219°	LHA 142° / 218°	LHA 143° / 217°	LHA 144° / 216°
	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°	-9 06.0 +57.6	-9 22.6 +57.6	-9 38.9 +57.7	-9 54.8 +57.8	
12°	-8 08.4 +57.5	-8 25.0 +57.6	-8 41.2 +57.8	-8 57.0 +57.8	-9 12.5 +57.9
13°	-7 10.9 +57.5	-7 27.4 +57.7	-7 43.4 +57.7	-7 59.2 +57.8	-8 14.6 +57.9
14°	-6 13.4 +57.6	-6 29.7 +57.6	-6 45.7 +57.7	-7 01.4 +57.9	-7 16.7 +58.0
15°	-5 15.8 +57.5	-5 32.1 +57.7	-5 48.0 +57.8	-6 03.5 +57.8	-6 18.7 +57.9
16°	-4 18.3 +57.6	-4 34.4 +57.6	-4 50.2 +57.8	-5 05.7 +57.9	-5 20.8 +58.0
17°	-3 20.7 +57.5	-3 36.8 +57.7	-3 52.4 +57.7	-4 07.8 +57.9	-4 22.8 +58.0
18°	-2 23.2 +57.6	-2 39.1 +57.7	-2 54.7 +57.8	-3 09.9 +57.8	-3 24.8 +57.9
19°	-1 25.6 +57.6	-1 41.4 +57.6	-1 56.9 +57.8	-2 12.1 +57.9	-2 26.9 +58.0
20°	-0 28.0 +57.5	-0 43.8 +57.7	-0 59.1 +57.7	-1 14.2 +57.9	-1 28.9 +58.0
21°	0 29.5 +57.6 36.9	0 13.9 +57.7 36.0	-0 01.4 +57.8	-0 16.3 +57.9	-0 30.9 +58.0
22°	1 27.1 +57.6 36.6	1 11.6 +57.7 35.7	0 56.4 +57.8 34.8	0 41.6 +57.8 33.9	0 27.1 +57.9 33.0
23°	2 24.7 +57.5 36.3	2 09.3 +57.6 35.4	1 54.2 +57.7 34.5	1 39.4 +57.9 33.7	1 25.0 +58.0 32.8
24°	3 22.2 +57.6 36.0	3 06.9 +57.7 35.2	2 51.9 +57.8 34.3	2 37.3 +57.9 33.4	2 23.0 +58.0 32.5
25°	4 19.8 +57.5 35.7	4 04.6 +57.6 34.9	3 49.7 +57.8 34.0	3 35.2 +57.8 33.1	3 21.0 +57.9 32.3
26°	5 17.3 +57.6 35.5	5 02.2 +57.7 34.6	4 47.5 +57.7 33.7	4 33.0 +57.9 32.9	4 18.9 +58.0 32.0
27°	6 14.9 +57.5 35.2	5 59.9 +57.6 34.3	5 45.2 +57.8 33.5	5 30.9 +57.8 32.6	5 16.9 +57.9 31.7
28°	7 12.4 +57.5 34.9	6 57.5 +57.7 34.0	6 43.0 +57.7 33.2	6 28.7 +57.9 32.3	6 14.8 +58.0 31.5
29°	8 09.9 +57.6 34.6	7 55.2 +57.6 33.8	7 40.7 +57.7 32.9	7 26.6 +57.8 32.1	7 12.8 +57.9 31.2

Dec	LHA 145° / 215°	LHA 146° / 214°	LHA 147° / 213°	LHA 148° / 212°	LHA 149° / 211°
	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°	-9 27.7 +58.1	-9 42.4 +58.1	-9 56.8 +58.2		
13°	-8 29.6 +58.0	-8 44.3 +58.1	-8 58.6 +58.2	-9 12.6 +58.3	-9 26.1 +58.4
14°	-7 31.6 +58.0	-7 46.2 +58.2	-8 00.4 +58.2	-8 14.3 +58.4	-8 27.7 +58.4
15°	-6 33.6 +58.1	-6 48.0 +58.1	-7 02.2 +58.3	-7 15.9 +58.3	-7 29.3 +58.4
16°	-5 35.5 +58.0	-5 49.9 +58.2	-6 03.9 +58.2	-6 17.6 +58.3	-6 30.9 +58.4
17°	-4 37.5 +58.1	-4 51.7 +58.1	-5 05.7 +58.3	-5 19.3 +58.4	-5 32.5 +58.5
18°	-3 39.4 +58.1	-3 53.6 +58.2	-4 07.4 +58.2	-4 20.9 +58.3	-4 34.0 +58.4
19°	-2 41.3 +58.0	-2 55.4 +58.1	-3 09.2 +58.3	-3 22.6 +58.4	-3 35.6 +58.5
20°	-1 43.3 +58.1	-1 57.3 +58.2	-2 10.9 +58.3	-2 24.2 +58.4	-2 37.1 +58.4
21°	-0 45.2 +58.1	-0 59.1 +58.2	-1 12.6 +58.2	-1 25.8 +58.3	-1 38.7 +58.5
22°	0 12.9 +58.1 32.1	-0 00.9 +58.1	-0 14.4 +58.3	-0 27.5 +58.4	-0 40.2 +58.4
23°	1 11.0 +58.0 31.9	0 57.2 +58.2 31.0	0 43.9 +58.2 30.1	0 30.9 +58.3 29.2	0 18.2 +58.5 28.3
24°	2 09.0 +58.1 31.6	1 55.4 +58.2 30.7	1 42.1 +58.3 29.9	1 29.2 +58.4 29.0	1 16.7 +58.4 28.1
25°	3 07.1 +58.1 31.4	2 53.6 +58.1 30.5	2 40.4 +58.3 29.6	2 27.6 +58.3 28.7	2 15.1 +58.5 27.8
26°	4 05.2 +58.0 31.1	3 51.7 +58.2 30.2	3 38.7 +58.2 29.4	3 25.9 +58.4 28.5	3 13.6 +58.4 27.6
27°	5 03.2 +58.1 30.9	4 49.9 +58.2 30.0	4 36.9 +58.3 29.1	4 24.3 +58.3 28.3	4 12.0 +58.5 27.4
28°	6 01.3 +58.0 30.6	5 48.1 +58.1 29.8	5 35.2 +58.2 28.9	5 22.6 +58.4 28.0	5 10.5 +58.4 27.2
29°	6 59.3 +58.1 30.4	6 46.2 +58.1 29.5	6 33.4 +58.3 28.7	6 21.0 +58.3 27.8	6 08.9 +58.4 26.9

Dec	LHA 150° / 210°	LHA 151° / 209°	LHA 152° / 208°	LHA 153° / 207°	LHA 154° / 206°
	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°	-9 39.3 +58.5	-9 52.1 +58.5			
14°	-8 40.8 +58.5	-8 53.6 +58.6	-9 05.9 +58.7	-9 17.8 +58.8	-9 29.4 +58.9
15°	-7 42.3 +58.5	-7 55.0 +58.7	-8 07.2 +58.7	-8 19.0 +58.7	-8 30.5 +58.9
16°	-6 43.8 +58.5	-6 56.3 +58.6	-7 08.5 +58.7	-7 20.3 +58.8	-7 31.6 +58.8
17°	-5 45.3 +58.5	-5 57.7 +58.6	-6 09.8 +58.7	-6 21.5 +58.8	-6 32.8 +58.9
18°	-4 46.8 +58.6	-4 59.1 +58.6	-5 11.1 +58.7	-5 22.7 +58.8	-5 33.9 +58.9
19°	-3 48.2 +58.5	-4 00.5 +58.6	-4 12.4 +58.7	-4 23.9 +58.8	-4 35.0 +58.8
20°	-2 49.7 +58.6	-3 01.9 +58.7	-3 13.7 +58.7	-3 25.1 +58.8	-3 36.2 +58.9
21°	-1 51.1 +58.5	-2 03.2 +58.6	-2 15.0 +58.7	-2 26.3 +58.8	-2 37.3 +58.9
22°	-0 52.6 +58.5	-1 04.6 +58.6	-1 16.3 +58.8	-1 27.5 +58.8	-1 38.4 +58.9
23°	0 05.9 +58.6 27.4	-0 06.0 +58.6	-0 17.5 +58.7	-0 28.7 +58.8	-0 39.5 +58.9
24°	1 04.5 +58.5 27.2	0 52.6 +58.7 26.3	0 41.2 +58.7 25.4	0 30.1 +58.8 24.5	0 19.4 +58.8 23.6
25°	2 03.0 +58.6 27.0	1 51.3 +58.6 26.1	1 39.9 +58.7 25.2	1 28.9 +58.8 24.3	1 18.2 +58.9 23.4
26°	3 01.6 +58.5 26.7	2 49.9 +58.6 25.9	2 38.6 +58.7 25.0	2 27.7 +58.8 24.1	2 17.1 +58.9 23.2
27°	4 00.1 +58.5 26.5	3 48.5 +58.6 25.7	3 37.3 +58.7 24.8	3 26.5 +58.8 23.9	3 16.0 +58.9 23.0
28°	4 58.6 +58.5 26.3	4 47.1 +58.7 25.4	4 36.0 +58.7 24.6	4 25.3 +58.8 23.7	4 14.9 +58.8 22.8
29°	5 57.1 +58.6 26.1	5 45.8 +58.6 25.2	5 34.7 +58.7 24.4	5 24.1 +58.7 23.5	5 13.7 +58.9 22.6

Dec	LHA 155° / 205°	LHA 156° / 204°	LHA 157° / 203°	LHA 158° / 202°	LHA 159° / 201°
	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°	-9 40.5 +58.9	-9 51.2 +59.0			
15°	-8 41.6 +59.0	-8 52.2 +59.0	-9 02.5 +59.1	-9 12.3 +59.1	-9 21.8 +59.3
16°	-7 42.6 +58.9	-7 53.2 +59.0	-8 03.4 +59.1	-8 13.2 +59.2	-8 22.5 +59.2
17°	-6 43.7 +59.0	-6 54.2 +59.0	-7 04.3 +59.1	-7 14.0 +59.2	-7 23.3 +59.3
18°	-5 44.7 +58.9	-5 55.2 +59.1	-6 05.2 +59.1	-6 14.8 +59.2	-6 24.0 +59.2
19°	-4 45.8 +59.0	-4 56.1 +59.0	-5 06.1 +59.1	-5 15.6 +59.1	-5 24.8 +59.3
20°	-3 46.8 +58.9	-3 57.1 +59.0	-4 07.0 +59.1	-4 16.5 +59.2	-4 25.5 +59.2
21°	-2 47.9 +59.0	-2 58.1 +59.1	-3 07.9 +59.1	-3 17.3 +59.2	-3 26.3 +59.3
22°	-1 48.9 +59.0	-1 59.0 +59.0	-2 08.8 +59.2	-2 18.1 +59.2	-2 27.0 +59.2
23°	-0 49.9 +58.9	-1 00.0 +59.0	-1 09.6 +59.1	-1 18.9 +59.2	-1 27.8 +59.3
24°	0 09.0 +59.0 22.7	-0 01.0 +59.1	-0 10.5 +59.1	-0 19.7 +59.2	-0 28.5 +59.2
25°	1 08.0 +58.9 22.5	0 58.1 +59.0 21.6	0 48.6 +59.1 20.7	0 39.5 +59.1 19.8	0 30.7 +59.3 19.0
26°	2 06.9 +59.0 22.3	1 57.1 +59.1 21.5	1 47.7 +59.1 20.6	1 38.6 +59.2 19.7	1 30.0 +59.2 18.8
27°	3 05.9 +59.0 22.2	2 56.2 +59.0 21.3	2 46.8 +59.1 20.4	2 37.8 +59.2 19.5	2 29.2 +59.3 18.6
28°	4 04.9 +58.9 22.0	3 55.2 +59.0 21.1	3 45.9 +59.1 20.2	3 37.0 +59.2 19.4	3 28.5 +59.2 18.5
29°	5 03.8 +59.0 21.8	4 54.2 +59.1 20.9	4 45.0 +59.1 20.1	4 36.2 +59.2 19.2	4 27.7 +59.3 18.3

Dec	LHA 160° / 200°	LHA 161° / 199°	LHA 162° / 198°	LHA 163° / 197°	LHA 164° / 196°
	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°	-9 30.8 +59.3	-9 39.4 +59.4	-9 47.6 +59.5	-9 55.3 +59.5	
16°	-8 31.5 +59.3	-8 40.0 +59.4	-8 48.1 +59.4	-8 55.8 +59.5	-9 03.1 +59.6
17°	-7 32.2 +59.3	-7 40.6 +59.3	-7 48.7 +59.4	-7 56.3 +59.5	-8 03.5 +59.5
18°	-6 32.9 +59.4	-6 41.3 +59.4	-6 49.3 +59.5	-6 56.8 +59.5	-7 04.0 +59.6
19°	-5 33.5 +59.3	-5 41.9 +59.4	-5 49.8 +59.4	-5 57.3 +59.5	-6 04.4 +59.5
20°	-4 34.2 +59.3	-4 42.5 +59.4	-4 50.4 +59.5	-4 57.8 +59.5	-5 04.9 +59.6
21°	-3 34.9 +59.3	-3 43.1 +59.4	-3 50.9 +59.4	-3 58.3 +59.5	-4 05.3 +59.5
22°	-2 35.6 +59.3	-2 43.7 +59.3	-2 51.5 +59.5	-2 58.8 +59.5	-3 05.8 +59.6
23°	-1 36.3 +59.4	-1 44.4 +59.4	-1 52.0 +59.4	-1 59.3 +59.5	-2 06.2 +59.6
24°	-0 36.9 +59.3	-0 45.0 +59.4	-0 52.6 +59.5	-0 59.8 +59.5	-1 06.6 +59.5
25°	0 22.4 +59.3 18.1	0 14.4 +59.4 17.2	0 06.9 +59.4 16.3	-0 00.3 +59.5	-0 07.1 +59.6
26°	1 21.7 +59.3 17.9	1 13.8 +59.4 17.0	1 06.3 +59.4 16.1	0 59.2 +59.5 15.2	0 52.5 +59.5 14.3
27°	2 21.0 +59.3 17.8	2 13.2 +59.4 16.9	2 05.7 +59.5 16.0	1 58.7 +59.5 15.1	1 52.0 +59.6 14.2
28°	3 20.3 +59.4 17.6	3 12.6 +59.4 16.7	3 05.2 +59.4 15.9	2 58.2 +59.5 15.0	2 51.6 +59.6 14.1
29°	4 19.7 +59.3 17.5	4 12.0 +59.3 16.6	4 04.6 +59.5 15.7	3 57.7 +59.5 14.9	3 51.2 +59.5 14.0

Dec	LHA 165° / 195°	LHA 166° / 194°	LHA 167° / 193°	LHA 168° / 192°	LHA 169° / 191°
	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°	-9 09.9 +59.6	-9 16.4 +59.7	-9 22.3 +59.7	-9 27.9 +59.8	-9 33.0 +59.8
17°	-8 10.3 +59.6	-8 16.7 +59.7	-8 22.6 +59.7	-8 28.1 +59.7	-8 33.2 +59.8
18°	-7 10.7 +59.6	-7 17.0 +59.6	-7 22.9 +59.7	-7 28.4 +59.8	-7 33.4 +59.8
19°	-6 11.1 +59.6	-6 17.4 +59.7	-6 23.2 +59.7	-6 28.6 +59.7	-6 33.6 +59.8
20°	-5 11.5 +59.6	-5 17.7 +59.6	-5 23.5 +59.7	-5 28.9 +59.8	-5 33.8 +59.7
21°	-4 11.9 +59.6	-4 18.1 +59.7	-4 23.8 +59.7	-4 29.1 +59.7	-4 34.1 +59.8
22°	-3 12.3 +59.6	-3 18.4 +59.7	-3 24.1 +59.7	-3 29.4 +59.7	-3 34.3 +59.8
23°	-2 12.7 +59.6	-2 18.7 +59.6	-2 24.4 +59.7	-2 29.7 +59.8	-2 34.5 +59.8
24°	-1 13.1 +59.6	-1 19.1 +59.7	-1 24.7 +59.7	-1 29.9 +59.7	-1 34.7 +59.8
25°	-0 13.5 +59.7	-0 19.4 +59.6	-0 25.0 +59.7	-0 30.2 +59.8	-0 34.9 +59.8
26°	0 46.2 +59.6 13.5	0 40.2 +59.7 12.6	0 34.7 +59.7 11.7	0 29.6 +59.7 10.8	0 24.9 +59.8 9.9
27°	1 45.8 +59.6 13.3	1 39.9 +59.7 12.5	1 34.4 +59.7 11.6	1 29.3 +59.8 10.7	1 24.7 +59.8 9.8
28°	2 45.4 +59.6 13.2	2 39.6 +59.6 12.3	2 34.1 +59.7 11.5	2 29.1 +59.7 10.6	2 24.5 +59.8 9.7
29°	3 45.0 +59.6 13.1	3 39.2 +59.7 12.2	3 33.8 +59.7 11.4	3 28.8 +59.8 10.5	3 24.3 +59.7 9.6

Dec	LHA 170° / 190°	LHA 171° / 189°	LHA 172° / 188°	LHA 173° / 187°	LHA 174° / 186°
	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°	-9 37.7 +59.9	-9 41.9 +59.9	-9 45.7 +59.9	-9 49.0 +59.9	-9 51.9 +59.9
17°	-8 37.8 +59.8	-8 42.0 +59.8	-8 45.8 +59.9	-8 49.1 +59.9	-8 52.0 +59.9
18°	-7 38.0 +59.8	-7 42.2 +59.9	-7 45.9 +59.9	-7 49.2 +59.9	-7 52.1 +60.0
19°	-6 38.2 +59.8	-6 42.3 +59.8	-6 46.0 +59.9	-6 49.3 +59.9	-6 52.1 +59.9
20°	-5 38.4 +59.9	-5 42.5 +59.9	-5 46.1 +59.8	-5 49.4 +59.9	-5 52.2 +59.9
21°	-4 38.5 +59.8	-4 42.6 +59.8	-4 46.3 +59.9	-4 49.5 +59.9	-4 52.3 +60.0
22°	-3 38.7 +59.8	-3 42.8 +59.9	-3 46.4 +59.9	-3 49.6 +60.0	-3 52.3 +59.9
23°	-2 38.9 +59.8	-2 42.9 +59.9	-2 46.5 +59.9	-2 49.6 +59.9	-2 52.4 +59.9
24°	-1 39.1 +59.9	-1 43.0 +59.8	-1 46.6 +59.9	-1 49.7 +59.9	-1 52.5 +60.0
25°	-0 39.2 +59.8	-0 43.2 +59.9	-0 46.7 +59.9	-0 49.8 +59.9	-0 52.5 +59.9
26°	0 20.6 +59.8 9.0	0 16.7 +59.8 8.1	0 13.2 +59.9 7.2	0 10.1 +59.9 6.3	0 07.4 +60.0 5.4
27°	1 20.4 +59.8 8.9	1 16.5 +59.9 8.0	1 13.1 +59.9 7.1	1 10.0 +59.9 6.2	1 07.4 +59.9 5.3
28°	2 20.2 +59.9 8.8	2 16.4 +59.9 7.9	2 13.0 +59.8 7.1	2 09.9 +59.9 6.2	2 07.3 +59.9 5.3
29°	3 20.1 +59.8 8.8	3 16.3 +59.8 7.9	3 12.8 +59.9 7.0	3 09.8 +60.0 6.1	3 07.2 +60.0 5.3

Dec	LHA 175° / 185°	LHA 176° / 184°	LHA 177° / 183°	LHA 178° / 182°	LHA 179° / 181°
	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°	-9 54.4 +60.0	-9 56.4 +60.0	-9 58.0 +60.0	-9 59.1 +60.0	-9 59.8 +60.0
17°	-8 54.4 +59.9	-8 56.4 +59.9	-8 58.0 +60.0	-8 59.1 +60.0	-8 59.8 +60.0
18°	-7 54.5 +60.0	-7 56.5 +60.0	-7 58.0 +60.0	-7 59.1 +60.0	-7 59.8 +60.0
19°	-6 54.5 +59.9	-6 56.5 +60.0	-6 58.0 +60.0	-6 59.1 +60.0	-6 59.8 +60.0
20°	-5 54.6 +60.0	-5 56.5 +59.9	-5 58.0 +59.9	-5 59.1 +60.0	-5 59.8 +60.0
21°	-4 54.6 +59.9	-4 56.6 +60.0	-4 58.1 +60.0	-4 59.1 +60.0	-4 59.8 +60.0
22°	-3 54.7 +60.0	-3 56.6 +60.0	-3 58.1 +60.0	-3 59.1 +59.9	-3 59.8 +60.0
23°	-2 54.7 +59.9	-2 56.6 +60.0	-2 58.1 +60.0	-2 59.2 +60.0	-2 59.8 +60.0
24°	-1 54.8 +60.0	-1 56.6 +59.9	-1 58.1 +60.0	-1 59.2 +60.0	-1 59.8 +60.0
25°	-0 54.8 +60.0	-0 56.7 +60.0	-0 58.1 +60.0	-0 59.2 +60.0	-0 59.8 +60.0
26°	0 05.2 +59.9 4.5	0 03.3 +60.0 3.6	0 01.9 +59.9 2.7	0 00.8 +60.0 1.8	0 00.2 +60.0 0.9
27°	1 05.1 +60.0 4.5	1 03.3 +59.9 3.6	1 01.8 +60.0 2.7	1 00.8 +60.0 1.8	1 00.2 +60.0 0.9
28°	2 05.1 +59.9 4.4	2 03.2 +60.0 3.5	2 01.8 +60.0 2.7	2 00.8 +60.0 1.8	2 00.2 +60.0 0.9
29°	3 05.0 +60.0 4.4	3 03.2 +60.0 3.5	3 01.8 +60.0 2.6	3 00.8 +60.0 1.8	3 00.2 +60.0 0.9

Declination SAME name as Latitude

Latitude 65°

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°	25 00.0 +60.0 180.0	24 59.8 +60.0 178.9	24 59.0 +60.0 177.8	24 57.8 +60.0 176.7	24 56.1 +60.0 175.6
1°	26 00.0 +60.0 180.0	25 59.8 +60.0 178.9	25 59.0 +60.0 177.8	25 57.8 +60.0 176.7	25 56.1 +59.9 175.6
2°	27 00.0 +60.0 180.0	26 59.8 +59.9 178.9	26 59.0 +60.0 177.8	26 57.8 +59.9 176.6	26 56.0 +60.0 175.5
3°	28 00.0 +60.0 180.0	27 59.7 +60.0 178.9	27 59.0 +60.0 177.7	27 57.7 +60.0 176.6	27 56.0 +60.0 175.5
4°	29 00.0 +60.0 180.0	28 59.7 +60.0 178.9	28 59.0 +60.0 177.7	28 57.7 +60.0 176.6	28 56.0 +59.9 175.4
5°	30 00.0 +60.0 180.0	29 59.7 +60.0 178.8	29 59.0 +60.0 177.7	29 57.7 +60.0 176.5	29 55.9 +60.0 175.4
6°	31 00.0 +60.0 180.0	30 59.7 +60.0 178.8	30 59.0 +60.0 177.7	30 57.7 +60.0 176.5	30 55.9 +60.0 175.4
7°	32 00.0 +60.0 180.0	31 59.7 +60.0 178.8	31 59.0 +60.0 177.7	31 57.7 +59.9 176.5	31 55.9 +59.9 175.3
8°	33 00.0 +60.0 180.0	32 59.7 +60.0 178.8	32 59.0 +59.9 177.6	32 57.6 +60.0 176.5	32 55.8 +60.0 175.3
9°	34 00.0 +60.0 180.0	33 59.7 +60.0 178.8	33 58.9 +60.0 177.6	33 57.6 +60.0 176.4	33 55.8 +59.9 175.2
10°	35 00.0 +60.0 180.0	34 59.7 +60.0 178.8	34 58.9 +60.0 177.6	34 57.6 +60.0 176.4	34 55.7 +60.0 175.2
11°	36 00.0 +60.0 180.0	35 59.7 +60.0 178.8	35 58.9 +60.0 177.6	35 57.6 +60.0 176.4	35 55.7 +60.0 175.1
12°	37 00.0 +60.0 180.0	36 59.7 +60.0 178.8	36 58.9 +60.0 177.6	36 57.6 +59.9 176.3	36 55.7 +59.9 175.1
13°	38 00.0 +60.0 180.0	37 59.7 +60.0 178.8	37 58.9 +60.0 177.5	37 57.5 +60.0 176.3	37 55.6 +60.0 175.1
14°	39 00.0 +60.0 180.0	38 59.7 +60.0 178.8	38 58.9 +60.0 177.5	38 57.5 +60.0 176.3	38 55.6 +59.9 175.0
15°	40 00.0 +60.0 180.0	39 59.7 +60.0 178.7	39 58.9 +60.0 177.5	39 57.5 +60.0 176.2	39 55.5 +60.0 175.0
16°	41 00.0 +60.0 180.0	40 59.7 +60.0 178.7	40 58.9 +60.0 177.5	40 57.5 +59.9 176.2	40 55.5 +59.9 174.9
17°	42 00.0 +60.0 180.0	41 59.7 +60.0 178.7	41 58.9 +59.9 177.4	41 57.4 +60.0 176.1	41 55.4 +60.0 174.9
18°	43 00.0 +60.0 180.0	42 59.7 +60.0 178.7	42 58.8 +60.0 177.4	42 57.4 +60.0 176.1	42 55.4 +60.0 174.8
19°	44 00.0 +60.0 180.0	43 59.7 +60.0 178.7	43 58.8 +60.0 177.4	43 57.4 +60.0 176.1	43 55.4 +59.9 174.7
20°	45 00.0 +60.0 180.0	44 59.7 +60.0 178.7	44 58.8 +60.0 177.3	44 57.4 +59.9 176.0	44 55.3 +59.9 174.7
21°	46 00.0 +60.0 180.0	45 59.7 +60.0 178.7	45 58.8 +60.0 177.3	45 57.3 +60.0 176.0	45 55.2 +60.0 174.6
22°	47 00.0 +60.0 180.0	46 59.7 +60.0 178.6	46 58.8 +60.0 177.3	46 57.3 +60.0 175.9	46 55.2 +59.9 174.6
23°	48 00.0 +60.0 180.0	47 59.7 +60.0 178.6	47 58.8 +60.0 177.2	47 57.3 +59.9 175.9	47 55.1 +60.0 174.5
24°	49 00.0 +60.0 180.0	48 59.7 +60.0 178.6	48 58.8 +60.0 177.2	48 57.2 +60.0 175.8	48 55.1 +59.9 174.4
25°	50 00.0 +60.0 180.0	49 59.7 +60.0 178.6	49 58.8 +59.9 177.2	49 57.2 +60.0 175.8	49 55.0 +60.0 174.4
26°	51 00.0 +60.0 180.0	50 59.7 +60.0 178.6	50 58.7 +60.0 177.1	50 57.2 +59.9 175.7	50 55.0 +59.9 174.3
27°	52 00.0 +60.0 180.0	51 59.7 +60.0 178.6	51 58.7 +60.0 177.1	51 57.1 +60.0 175.7	51 54.9 +59.9 174.2
28°	53 00.0 +60.0 180.0	52 59.7 +60.0 178.5	52 58.7 +60.0 177.1	52 57.1 +59.9 175.6	52 54.8 +59.9 174.1
29°	54 00.0 +60.0 180.0	53 59.7 +60.0 178.5	53 58.7 +60.0 177.0	53 57.0 +60.0 175.5	53 54.7 +60.0 174.1

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°	24 53.9 +60.0 174.5	24 51.2 +60.0 173.4	24 48.1 +59.9 172.3	24 44.4 +59.9 171.2	24 40.3 +59.8 170.1
1°	25 53.9 +59.9 174.4	25 51.2 +59.9 173.3	25 48.0 +59.9 172.2	25 44.3 +59.9 171.1	25 40.1 +59.9 170.0
2°	26 53.8 +60.0 174.4	26 51.1 +59.9 173.3	26 47.9 +59.9 172.2	26 44.2 +59.8 171.0	26 40.0 +59.8 169.9
3°	27 53.8 +59.9 174.3	27 51.0 +59.9 173.2	27 47.8 +59.9 172.1	27 44.0 +59.9 171.0	27 39.8 +59.8 169.8
4°	28 53.7 +59.9 174.3	28 50.9 +60.0 173.2	28 47.7 +59.9 172.0	28 43.9 +59.9 170.9	28 39.6 +59.9 169.8
5°	29 53.6 +60.0 174.3	29 50.9 +59.9 173.1	29 47.6 +59.8 172.0	29 43.8 +59.8 170.8	29 39.5 +59.8 169.7
6°	30 53.6 +59.9 174.2	30 50.8 +59.9 173.0	30 47.4 +59.9 171.9	30 43.6 +59.9 170.7	30 39.3 +59.8 169.6
7°	31 53.5 +60.0 174.2	31 50.7 +59.9 173.0	31 47.3 +59.9 171.8	31 43.5 +59.8 170.7	31 39.1 +59.8 169.5
8°	32 53.5 +59.9 174.1	32 50.6 +59.9 172.9	32 47.2 +59.9 171.7	32 43.3 +59.9 170.6	32 38.9 +59.8 169.4
9°	33 53.4 +60.0 174.0	33 50.5 +59.9 172.9	33 47.1 +59.9 171.7	33 43.2 +59.8 170.5	33 38.7 +59.8 169.3
10°	34 53.4 +59.9 174.0	34 50.4 +60.0 172.8	34 47.0 +59.9 171.6	34 43.0 +59.9 170.4	34 38.5 +59.8 169.2
11°	35 53.3 +59.9 173.9	35 50.4 +59.9 172.7	35 46.9 +59.9 171.5	35 42.9 +59.8 170.3	35 38.3 +59.8 169.1
12°	36 53.2 +60.0 173.9	36 50.3 +59.9 172.7	36 46.8 +59.8 171.4	36 42.7 +59.9 170.2	36 38.1 +59.8 169.0
13°	37 53.2 +59.9 173.8	37 50.2 +59.9 172.6	37 46.6 +59.9 171.4	37 42.6 +59.8 170.1	37 37.9 +59.8 168.9
14°	38 53.1 +59.9 173.8	38 50.1 +59.9 172.5	38 46.5 +59.9 171.3	38 42.4 +59.8 170.0	38 37.7 +59.8 168.8
15°	39 53.0 +60.0 173.7	39 50.0 +59.9 172.4	39 46.4 +59.8 171.2	39 42.2 +59.8 169.9	39 37.5 +59.8 168.7
16°	40 53.0 +59.9 173.6	40 49.9 +59.9 172.4	40 46.2 +59.9 171.1	40 42.0 +59.8 169.8	40 37.3 +59.8 168.6
17°	41 52.9 +59.9 173.6	41 49.8 +59.9 172.3	41 46.1 +59.8 171.0	41 41.8 +59.9 169.7	41 37.1 +59.7 168.5
18°	42 52.8 +59.9 173.5	42 49.7 +59.9 172.2	42 45.9 +59.9 170.9	42 41.7 +59.8 169.6	42 36.8 +59.8 168.3
19°	43 52.7 +60.0 173.4	43 49.6 +59.8 172.1	43 45.8 +59.8 170.8	43 41.5 +59.8 169.5	43 36.6 +59.7 168.2
20°	44 52.7 +59.9 173.4	44 49.4 +59.9 172.0	44 45.6 +59.9 170.7	44 41.3 +59.8 169.4	44 36.3 +59.7 168.1
21°	45 52.6 +59.9 173.3	45 49.3 +59.9 172.0	45 45.5 +59.8 170.6	45 41.1 +59.7 169.3	45 36.0 +59.8 168.0
22°	46 52.5 +59.9 173.2	46 49.2 +59.9 171.9	46 45.3 +59.8 170.5	46 40.8 +59.8 169.2	46 35.8 +59.7 167.8
23°	47 52.4 +59.9 173.1	47 49.1 +59.8 171.8	47 45.1 +59.9 170.4	47 40.6 +59.8 169.0	47 35.5 +59.7 167.7
24°	48 52.3 +59.9 173.0	48 48.9 +59.9 171.7	48 45.0 +59.8 170.3	48 40.4 +59.7 168.9	48 35.2 +59.7 167.5
25°	49 52.2 +59.9 173.0	49 48.8 +59.9 171.6	49 44.8 +59.8 170.2	49 40.1 +59.8 168.8	49 34.9 +59.7 167.4
26°	50 52.1 +59.9 172.9	50 48.7 +59.8 171.4	50 44.6 +59.8 170.0	50 39.9 +59.7 168.6	50 34.6 +59.6 167.2
27°	51 52.0 +59.9 172.8	51 48.5 +59.8 171.3	51 44.4 +59.8 169.9	51 39.6 +59.7 168.5	51 34.2 +59.7 167.0
28°	52 51.9 +59.9 172.7	52 48.3 +59.9 171.2	52 44.2 +59.7 169.8	52 39.3 +59.7 168.3	52 33.9 +59.6 166.9
29°	53 51.8 +59.9 172.6	53 48.2 +59.8 171.1	53 43.9 +59.8 169.6	53 39.0 +59.7 168.1	53 33.5 +59.6 166.7

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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°	24 35.7 +59.8 169.0	24 30.6 +59.8 167.9	24 25.1 +59.7 166.8	24 19.0 +59.7 165.7	24 12.5 +59.7 164.6
1°	25 35.5 +59.8 168.9	25 30.4 +59.7 167.8	25 24.8 +59.7 166.7	25 18.7 +59.7 165.6	25 12.2 +59.6 164.5
2°	26 35.3 +59.8 168.8	26 30.1 +59.8 167.7	26 24.5 +59.7 166.6	26 18.4 +59.6 165.5	26 11.8 +59.6 164.4
3°	27 35.1 +59.8 168.7	27 29.9 +59.7 167.6	27 24.2 +59.7 166.5	27 18.0 +59.7 165.4	27 11.4 +59.6 164.2
4°	28 34.9 +59.8 168.6	28 29.6 +59.8 167.5	28 23.9 +59.7 166.4	28 17.7 +59.6 165.2	28 11.0 +59.6 164.1
5°	29 34.7 +59.7 168.5	29 29.4 +59.7 167.4	29 23.6 +59.7 166.2	29 17.3 +59.7 165.1	29 10.6 +59.5 164.0
6°	30 34.4 +59.8 168.4	30 29.1 +59.7 167.3	30 23.3 +59.7 166.1	30 17.0 +59.6 165.0	30 10.1 +59.6 163.8
7°	31 34.2 +59.8 168.3	31 28.8 +59.8 167.2	31 23.0 +59.6 166.0	31 16.6 +59.6 164.9	31 09.7 +59.6 163.7
8°	32 34.0 +59.8 168.2	32 28.6 +59.7 167.1	32 22.6 +59.7 165.9	32 16.2 +59.6 164.7	32 09.3 +59.5 163.6
9°	33 33.8 +59.7 168.1	33 28.3 +59.7 166.9	33 22.3 +59.7 165.8	33 15.8 +59.6 164.6	33 08.8 +59.6 163.4
10°	34 33.5 +59.8 168.0	34 28.0 +59.7 166.8	34 22.0 +59.6 165.6	34 15.4 +59.6 164.5	34 08.4 +59.5 163.3
11°	35 33.3 +59.7 167.9	35 27.7 +59.7 166.7	35 21.6 +59.7 165.5	35 15.0 +59.6 164.3	35 07.9 +59.5 163.1
12°	36 33.0 +59.8 167.8	36 27.4 +59.7 166.6	36 21.3 +59.6 165.4	36 14.6 +59.6 164.2	36 07.4 +59.6 163.0
13°	37 32.8 +59.7 167.7	37 27.1 +59.7 166.5	37 20.9 +59.6 165.2	37 14.2 +59.6 164.0	37 07.0 +59.5 162.8
14°	38 32.5 +59.8 167.6	38 26.8 +59.7 166.3	38 20.5 +59.7 165.1	38 13.8 +59.5 163.9	38 06.5 +59.4 162.6
15°	39 32.3 +59.7 167.4	39 26.5 +59.6 166.2	39 20.2 +59.6 165.0	39 13.3 +59.6 163.7	39 05.9 +59.5 162.5
16°	40 32.0 +59.7 167.3	40 26.1 +59.7 166.1	40 19.8 +59.6 164.8	40 12.9 +59.5 163.6	40 05.4 +59.5 162.3
17°	41 31.7 +59.7 167.2	41 25.8 +59.6 165.9	41 19.4 +59.5 164.6	41 12.4 +59.5 163.4	41 04.9 +59.4 162.1
18°	42 31.4 +59.7 167.1	42 25.4 +59.7 165.8	42 18.9 +59.6 164.5	42 11.9 +59.5 163.2	42 04.3 +59.4 161.9
19°	43 31.1 +59.7 166.9	43 25.1 +59.6 165.6	43 18.5 +59.6 164.3	43 11.4 +59.5 163.0	43 03.7 +59.4 161.8
20°	44 30.8 +59.7 166.8	44 24.7 +59.6 165.5	44 18.1 +59.5 164.2	44 10.9 +59.4 162.9	44 03.1 +59.4 161.6
21°	45 30.5 +59.6 166.6	45 24.3 +59.6 165.3	45 17.6 +59.5 164.0	45 10.3 +59.5 162.7	45 02.5 +59.4 161.4
22°	46 30.1 +59.7 166.5	46 23.9 +59.6 165.1	46 17.1 +59.5 163.8	46 09.8 +59.4 162.5	46 01.9 +59.3 161.2
23°	47 29.8 +59.6 166.3	47 23.5 +59.6 165.0	47 16.6 +59.5 163.6	47 09.2 +59.4 162.3	47 01.2 +59.3 160.9
24°	48 29.4 +59.6 166.2	48 23.1 +59.5 164.8	48 16.1 +59.5 163.4	48 08.6 +59.4 162.1	48 00.5 +59.3 160.7
25°	49 29.0 +59.7 166.0	49 22.6 +59.5 164.6	49 15.6 +59.4 163.2	49 08.0 +59.3 161.8	48 59.8 +59.2 160.5
26°	50 28.7 +59.5 165.8	50 22.1 +59.5 164.4	50 15.0 +59.4 163.0	50 07.3 +59.3 161.6	49 59.0 +59.2 160.2
27°	51 28.2 +59.6 165.6	51 21.6 +59.5 164.2	51 14.4 +59.4 162.8	51 06.6 +59.3 161.4	50 58.2 +59.2 160.0
28°	52 27.8 +59.6 165.4	52 21.1 +59.5 164.0	52 13.8 +59.4 162.6	52 05.9 +59.3 161.1	51 57.4 +59.2 159.7
29°	53 27.4 +59.5 165.2	53 20.6 +59.4 163.8	53 13.2 +59.3 162.3	53 05.2 +59.2 160.9	52 56.6 +59.1 159.4

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°	24 05.6 +59.5 163.5	23 58.2 +59.5 162.4	23 50.3 +59.4 161.4	23 41.9 +59.4 160.3	23 33.2 +59.3 159.2
1°	25 05.1 +59.6 163.4	24 57.7 +59.5 162.3	24 49.7 +59.5 161.2	24 41.3 +59.4 160.1	24 32.5 +59.3 159.0
2°	26 04.7 +59.5 163.3	25 57.2 +59.5 162.2	25 49.2 +59.4 161.1	25 40.7 +59.4 160.0	25 31.8 +59.3 158.9
3°	27 04.2 +59.6 163.1	26 56.7 +59.4 162.0	26 48.6 +59.4 160.9	26 40.1 +59.3 159.8	26 31.1 +59.3 158.7
4°	28 03.8 +59.5 163.0	27 56.1 +59.5 161.9	27 48.0 +59.4 160.7	27 39.4 +59.4 159.6	27 30.4 +59.2 158.5
5°	29 03.3 +59.5 162.8	28 55.6 +59.5 161.7	28 47.4 +59.4 160.6	28 38.8 +59.3 159.5	28 29.6 +59.3 158.3
6°	30 02.8 +59.6 162.7	29 55.1 +59.4 161.6	29 46.8 +59.4 160.4	29 38.1 +59.3 159.3	29 28.9 +59.2 158.2
7°	31 02.4 +59.5 162.6	30 54.5 +59.5 161.4	30 46.2 +59.4 160.3	30 37.4 +59.3 159.1	30 28.1 +59.2 158.0
8°	32 01.9 +59.5 162.4	31 54.0 +59.4 161.2	31 45.6 +59.3 160.1	31 36.7 +59.3 158.9	31 27.3 +59.2 157.8
9°	33 01.4 +59.4 162.2	32 53.4 +59.4 161.1	32 44.9 +59.4 159.9	32 36.0 +59.2 158.8	32 26.5 +59.2 157.6
10°	34 00.8 +59.5 162.1	33 52.8 +59.4 160.9	33 44.3 +59.3 159.7	33 35.2 +59.3 158.6	33 25.7 +59.2 157.4
11°	35 00.3 +59.5 161.9	34 52.2 +59.4 160.7	34 43.6 +59.3 159.6	34 34.5 +59.2 158.4	34 24.9 +59.2 157.2
12°	35 59.8 +59.4 161.8	35 51.6 +59.3 160.6	35 42.9 +59.3 159.4	35 33.7 +59.2 158.2	35 24.1 +59.1 157.0
13°	36 59.2 +59.4 161.6	36 50.9 +59.4 160.4	36 42.2 +59.3 159.2	36 32.9 +59.2 158.0	36 23.2 +59.1 156.8
14°	37 58.6 +59.4 161.4	37 50.3 +59.3 160.2	37 41.5 +59.2 159.0	37 32.1 +59.2 157.8	37 22.3 +59.1 156.6
15°	38 58.0 +59.4 161.2	38 49.6 +59.3 160.0	38 40.7 +59.2 158.8	38 31.3 +59.1 157.6	38 21.4 +59.0 156.4
16°	39 57.4 +59.4 161.1	39 48.9 +59.3 159.8	39 39.9 +59.3 158.6	39 30.4 +59.2 157.4	39 20.4 +59.1 156.1
17°	40 56.8 +59.4 160.9	40 48.2 +59.3 159.6	40 39.2 +59.1 158.4	40 29.6 +59.1 157.1	40 19.5 +59.0 155.9
18°	41 56.2 +59.3 160.7	41 47.5 +59.3 159.4	41 38.3 +59.2 158.2	41 28.7 +59.0 156.9	41 18.5 +58.9 155.7
19°	42 55.5 +59.3 160.5	42 46.8 +59.2 159.2	42 37.5 +59.1 157.9	42 27.7 +59.1 156.7	42 17.4 +59.0 155.4
20°	43 54.8 +59.3 160.3	43 46.0 +59.2 159.0	43 36.6 +59.1 157.7	43 26.8 +59.0 156.4	43 16.4 +58.9 155.2
21°	44 54.1 +59.3 160.1	44 45.2 +59.2 158.8	44 35.7 +59.1 157.5	44 25.8 +58.9 156.2	44 15.3 +58.8 154.9
22°	45 53.4 +59.2 159.8	45 44.4 +59.1 158.5	45 34.8 +59.1 157.2	45 24.7 +59.0 155.9	45 14.1 +58.8 154.6
23°	46 52.6 +59.2 159.6	46 43.5 +59.1 158.3	46 33.9 +59.0 157.0	46 23.7 +58.9 155.6	46 12.9 +58.8 154.3
24°	47 51.8 +59.2 159.4	47 42.6 +59.1 158.0	47 32.9 +58.9 156.7	47 22.6 +58.8 155.4	47 11.7 +58.8 154.0
25°	48 51.0 +59.2 159.1	48 41.7 +59.0 157.8	48 31.8 +59.0 156.4	48 21.4 +58.8 155.1	48 10.5 +58.6 153.7
26°	49 50.2 +59.1 158.9	49 40.7 +59.0 157.5	49 30.8 +58.8 156.1	49 20.2 +58.8 154.8	49 09.1 +58.7 153.4
27°	50 49.3 +59.1 158.6	50 39.7 +59.0 157.2	50 29.6 +58.9 155.8	50 19.0 +58.7 154.5	50 07.8 +58.5 153.1
28°	51 48.4 +59.0 158.3	51 38.7 +58.9 156.9	51 28.5 +58.7 155.5	51 17.7 +58.6 154.1	51 06.3 +58.6 152.8
29°	52 47.4 +59.0 158.0	52 37.6 +58.9 156.6	52 27.2 +58.8 155.2	52 16.3 +58.6 153.8	52 04.9 +58.4 152.4

Declination SAME name as Latitude

Latitude 65°

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°	23 23.9 +59.3 158.1	23 14.3 +59.1 157.0	23 04.2 +59.1 156.0	22 53.6 +59.0 154.9	22 42.7 +58.9 153.8
1°	24 23.2 +59.2 157.9	24 13.4 +59.2 156.9	24 03.3 +59.0 155.8	23 52.6 +59.0 154.7	23 41.6 +58.9 153.6
2°	25 22.4 +59.2 157.8	25 12.6 +59.1 156.7	25 02.3 +59.1 155.6	24 51.6 +59.0 154.5	24 40.5 +58.9 153.4
3°	26 21.6 +59.2 157.6	26 11.7 +59.2 156.5	26 01.4 +59.1 155.4	25 50.6 +59.0 154.3	25 39.4 +58.9 153.2
4°	27 20.8 +59.2 157.4	27 10.9 +59.1 156.3	27 00.5 +59.0 155.2	26 49.6 +59.0 154.1	26 38.3 +58.9 153.0
5°	28 20.0 +59.2 157.2	28 10.0 +59.1 156.1	27 59.5 +59.0 155.0	27 48.6 +58.9 153.9	27 37.2 +58.8 152.8
6°	29 19.2 +59.2 157.0	29 09.1 +59.1 155.9	28 58.5 +59.0 154.8	28 47.5 +58.9 153.7	28 36.0 +58.9 152.6
7°	30 18.4 +59.1 156.8	30 08.2 +59.0 155.7	29 57.5 +59.0 154.6	29 46.4 +58.9 153.5	29 34.9 +58.8 152.3
8°	31 17.5 +59.1 156.6	31 07.2 +59.1 155.5	30 56.5 +59.0 154.4	30 45.3 +58.9 153.2	30 33.7 +58.7 152.1
9°	32 16.6 +59.2 156.4	32 06.3 +59.0 155.3	31 55.5 +58.9 154.2	31 44.2 +58.8 153.0	31 32.4 +58.8 151.9
10°	33 15.8 +59.0 156.2	33 05.3 +59.0 155.1	32 54.4 +58.9 153.9	32 43.0 +58.8 152.8	32 31.2 +58.7 151.6
11°	34 14.8 +59.1 156.0	34 04.3 +59.0 154.9	33 53.3 +58.9 153.7	33 41.8 +58.8 152.5	33 29.9 +58.7 151.4
12°	35 13.9 +59.0 155.8	35 03.3 +58.9 154.6	34 52.2 +58.8 153.5	34 40.6 +58.8 152.3	34 28.6 +58.7 151.1
13°	36 12.9 +59.1 155.6	36 02.2 +59.0 154.4	35 51.0 +58.9 153.2	35 39.4 +58.7 152.1	35 27.3 +58.6 150.9
14°	37 12.0 +59.0 155.4	37 01.2 +58.9 154.2	36 49.9 +58.8 153.0	36 38.1 +58.7 151.8	36 25.9 +58.6 150.6
15°	38 11.0 +58.9 155.1	38 00.1 +58.8 153.9	37 48.7 +58.7 152.7	37 36.8 +58.7 151.5	37 24.5 +58.6 150.4
16°	39 09.9 +58.9 154.9	38 58.9 +58.9 153.7	38 47.4 +58.8 152.5	38 35.5 +58.6 151.3	38 23.1 +58.5 150.1
17°	40 08.8 +59.0 154.7	39 57.8 +58.8 153.4	39 46.2 +58.7 152.2	39 34.1 +58.6 151.0	39 21.6 +58.5 149.8
18°	41 07.8 +58.8 154.4	40 56.6 +58.7 153.2	40 44.9 +58.6 151.9	40 32.7 +58.6 150.7	40 20.1 +58.4 149.5
19°	42 06.6 +58.8 154.2	41 55.3 +58.7 152.9	41 43.5 +58.6 151.7	41 31.3 +58.5 150.4	41 18.5 +58.4 149.2
20°	43 05.4 +58.8 153.9	42 54.0 +58.7 152.6	42 42.1 +58.6 151.4	42 29.8 +58.4 150.1	42 16.9 +58.3 148.9
21°	44 04.2 +58.8 153.6	43 52.7 +58.7 152.3	43 40.7 +58.5 151.1	43 28.2 +58.4 149.8	43 15.2 +58.3 148.6
22°	45 03.0 +58.7 153.3	44 51.4 +58.6 152.0	44 39.2 +58.5 150.8	44 26.6 +58.3 149.5	44 13.5 +58.2 148.2
23°	46 01.7 +58.7 153.0	45 50.0 +58.5 151.7	45 37.7 +58.4 150.5	45 24.9 +58.3 149.2	45 11.7 +58.2 147.9
24°	47 00.4 +58.6 152.7	46 48.5 +58.5 151.4	46 36.1 +58.4 150.1	46 23.2 +58.3 148.8	46 09.9 +58.1 147.6
25°	47 59.0 +58.5 152.4	47 47.0 +58.4 151.1	47 34.5 +58.3 149.8	47 21.5 +58.1 148.5	47 08.0 +58.0 147.2
26°	48 57.5 +58.5 152.1	48 45.4 +58.4 150.8	48 32.8 +58.2 149.4	48 19.6 +58.1 148.1	48 06.0 +57.9 146.8
27°	49 56.0 +58.5 151.7	49 43.8 +58.3 150.4	49 31.0 +58.1 149.1	49 17.7 +58.0 147.7	49 03.9 +57.9 146.4
28°	50 54.5 +58.3 151.4	50 42.1 +58.2 150.0	50 29.1 +58.1 148.7	50 15.7 +57.9 147.3	50 01.8 +57.7 146.0
29°	51 52.8 +58.3 151.0	51 40.3 +58.1 149.6	51 27.2 +58.0 148.3	51 13.6 +57.9 146.9	50 59.5 +57.7 145.6

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°	22 31.3 +58.8 152.8	22 19.5 +58.7 151.7	22 07.2 +58.7 150.7	21 54.6 +58.6 149.6	21 41.6 +58.5 148.5
1°	23 30.1 +58.9 152.6	23 18.2 +58.8 151.5	23 05.9 +58.7 150.4	22 53.2 +58.6 149.4	22 40.1 +58.5 148.3
2°	24 29.0 +58.8 152.3	24 17.0 +58.7 151.3	24 04.6 +58.6 150.2	23 51.8 +58.5 149.1	23 38.6 +58.4 148.1
3°	25 27.8 +58.8 152.1	25 15.7 +58.7 151.0	25 03.2 +58.7 150.0	24 50.3 +58.6 148.9	24 37.0 +58.5 147.8
4°	26 26.6 +58.8 151.9	26 14.4 +58.7 150.8	26 01.9 +58.6 149.7	25 48.9 +58.5 148.7	25 35.5 +58.4 147.6
5°	27 25.4 +58.7 151.7	27 13.1 +58.7 150.6	27 00.5 +58.6 149.5	26 47.4 +58.5 148.4	26 33.9 +58.4 147.3
6°	28 24.1 +58.8 151.5	28 11.8 +58.7 150.4	27 59.1 +58.5 149.3	27 45.9 +58.4 148.2	27 32.3 +58.4 147.1
7°	29 22.9 +58.7 151.2	29 10.5 +58.6 150.1	28 57.6 +58.5 149.0	28 44.3 +58.5 147.9	28 30.7 +58.3 146.8
8°	30 21.6 +58.7 151.0	30 09.1 +58.6 149.9	29 56.1 +58.5 148.7	29 42.8 +58.4 147.6	29 29.0 +58.3 146.5
9°	31 20.3 +58.6 150.7	31 07.7 +58.5 149.6	30 54.6 +58.5 148.5	30 41.2 +58.3 147.4	30 27.3 +58.2 146.3
10°	32 18.9 +58.7 150.5	32 06.2 +58.6 149.4	31 53.1 +58.4 148.2	31 39.5 +58.4 147.1	31 25.5 +58.3 146.0
11°	33 17.6 +58.6 150.2	33 04.8 +58.5 149.1	32 51.5 +58.4 148.0	32 37.9 +58.2 146.8	32 23.8 +58.2 145.7
12°	34 16.2 +58.5 150.0	34 03.3 +58.4 148.8	33 49.9 +58.4 147.7	33 36.1 +58.3 146.5	33 22.0 +58.1 145.4
13°	35 14.7 +58.6 149.7	35 01.7 +58.4 148.6	34 48.3 +58.3 147.4	34 34.4 +58.2 146.3	34 20.1 +58.1 145.1
14°	36 13.3 +58.4 149.4	36 00.1 +58.4 148.3	35 46.6 +58.3 147.1	35 32.6 +58.2 146.0	35 18.2 +58.1 144.8
15°	37 11.7 +58.5 149.2	36 58.5 +58.4 148.0	36 44.9 +58.2 146.8	36 30.8 +58.1 145.7	36 16.3 +58.0 144.5
16°	38 10.2 +58.4 148.9	37 56.9 +58.3 147.7	37 43.1 +58.2 146.5	37 28.9 +58.1 145.3	37 14.3 +57.9 144.2
17°	39 08.6 +58.4 148.6	38 55.2 +58.2 147.4	38 41.3 +58.1 146.2	38 27.0 +58.0 145.0	38 12.2 +57.9 143.8
18°	40 07.0 +58.3 148.3	39 53.4 +58.2 147.1	39 39.4 +58.1 145.9	39 25.0 +57.9 144.7	39 10.1 +57.8 143.5
19°	41 05.3 +58.3 148.0	40 51.6 +58.2 146.8	40 37.5 +58.0 145.6	40 22.9 +57.9 144.4	40 07.9 +57.8 143.2
20°	42 03.6 +58.2 147.7	41 49.8 +58.0 146.4	41 35.5 +58.0 145.2	41 20.8 +57.9 144.0	41 05.7 +57.7 142.8
21°	43 01.8 +58.1 147.3	42 47.8 +58.1 146.1	42 33.5 +57.9 144.9	42 18.7 +57.7 143.7	42 03.4 +57.7 142.4
22°	43 59.9 +58.1 147.0	43 45.9 +57.9 145.8	43 31.4 +57.8 144.5	43 16.4 +57.7 143.3	43 01.1 +57.5 142.1
23°	44 58.0 +58.0 146.6	44 43.8 +57.9 145.4	44 29.2 +57.8 144.1	44 14.1 +57.6 142.9	43 58.6 +57.5 141.7
24°	45 56.0 +58.0 146.3	45 41.7 +57.8 145.0	45 27.0 +57.6 143.8	45 11.7 +57.6 142.5	44 56.1 +57.4 141.3
25°	46 54.0 +57.9 145.9	46 39.5 +57.8 144.6	46 24.6 +57.6 143.4	46 09.3 +57.4 142.1	45 53.5 +57.3 140.9
26°	47 51.9 +57.7 145.5	47 37.3 +57.6 144.2	47 22.2 +57.5 143.0	47 06.7 +57.4 141.7	46 50.8 +57.2 140.4
27°	48 49.6 +57.8 145.1	48 34.9 +57.6 143.8	48 19.7 +57.4 142.5	48 04.1 +57.2 141.2	47 48.0 +57.1 140.0
28°	49 47.4 +57.6 144.7	49 32.5 +57.4 143.4	49 17.1 +57.3 142.1	49 01.3 +57.1 140.8	48 45.1 +56.9 139.5
29°	50 45.0 +57.5 144.3	50 29.9 +57.4 142.9	50 14.4 +57.2 141.6	49 58.4 +57.0 140.3	49 42.0 +56.9 139.0

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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°	21 28.1 +58.5 147.5	21 14.3 +58.4 146.5	21 00.1 +58.3 145.4	20 45.5 +58.2 144.4	20 30.6 +58.0 143.3
1°	22 26.6 +58.4 147.3	22 12.7 +58.3 146.2	21 58.4 +58.2 145.2	21 43.7 +58.1 144.1	21 28.6 +58.0 143.1
2°	23 25.0 +58.3 147.0	23 11.0 +58.2 145.9	22 56.6 +58.2 144.9	22 41.8 +58.1 143.8	22 26.6 +58.0 142.8
3°	24 23.3 +58.4 146.8	24 09.2 +58.3 145.7	23 54.8 +58.1 144.6	23 39.9 +58.0 143.6	23 24.6 +58.0 142.5
4°	25 21.7 +58.3 146.5	25 07.5 +58.2 145.4	24 52.9 +58.1 144.4	24 37.9 +58.1 143.3	24 22.6 +57.9 142.2
5°	26 20.0 +58.3 146.2	26 05.7 +58.2 145.2	25 51.0 +58.1 144.1	25 36.0 +58.0 143.0	25 20.5 +57.9 141.9
6°	27 18.3 +58.3 146.0	27 03.9 +58.2 144.9	26 49.1 +58.1 143.8	26 34.0 +57.9 142.7	26 18.4 +57.9 141.7
7°	28 16.6 +58.2 145.7	28 02.1 +58.1 144.6	27 47.2 +58.0 143.5	27 31.9 +58.0 142.4	27 16.3 +57.8 141.4
8°	29 14.8 +58.2 145.4	29 00.2 +58.1 144.3	28 45.2 +58.0 143.2	28 29.9 +57.8 142.1	28 14.1 +57.8 141.1
9°	30 13.0 +58.2 145.1	29 58.3 +58.1 144.0	29 43.2 +58.0 142.9	29 27.7 +57.9 141.8	29 11.9 +57.7 140.8
10°	31 11.2 +58.1 144.9	30 56.4 +58.0 143.7	30 41.2 +57.9 142.6	30 25.6 +57.8 141.5	30 09.6 +57.7 140.4
11°	32 09.3 +58.1 144.6	31 54.4 +57.9 143.4	31 39.1 +57.8 142.3	31 23.4 +57.7 141.2	31 07.3 +57.7 140.1
12°	33 07.4 +58.0 144.3	32 52.3 +58.0 143.1	32 36.9 +57.9 142.0	32 21.1 +57.7 140.9	32 05.0 +57.6 139.8
13°	34 05.4 +58.0 144.0	33 50.3 +57.9 142.8	33 34.8 +57.7 141.7	33 18.8 +57.7 140.6	33 02.6 +57.5 139.5
14°	35 03.4 +57.9 143.7	34 48.2 +57.8 142.5	34 32.5 +57.7 141.4	34 16.5 +57.6 140.2	34 00.1 +57.5 139.1
15°	36 01.3 +57.9 143.3	35 46.0 +57.8 142.2	35 30.2 +57.7 141.0	35 14.1 +57.5 139.9	34 57.6 +57.4 138.8
16°	36 59.2 +57.8 143.0	36 43.8 +57.7 141.9	36 27.9 +57.6 140.7	36 11.6 +57.5 139.6	35 55.0 +57.3 138.4
17°	37 57.0 +57.8 142.7	37 41.5 +57.6 141.5	37 25.5 +57.5 140.3	37 09.1 +57.4 139.2	36 52.3 +57.3 138.1
18°	38 54.8 +57.7 142.3	38 39.1 +57.6 141.2	38 23.0 +57.5 140.0	38 06.5 +57.4 138.8	37 49.6 +57.2 137.7
19°	39 52.5 +57.7 142.0	39 36.7 +57.5 140.8	39 20.5 +57.4 139.6	39 03.9 +57.2 138.5	38 46.8 +57.2 137.3
20°	40 50.2 +57.6 141.6	40 34.2 +57.5 140.4	40 17.9 +57.3 139.2	40 01.1 +57.2 138.1	39 44.0 +57.0 136.9
21°	41 47.8 +57.5 141.2	41 31.7 +57.3 140.0	41 15.2 +57.2 138.8	40 58.3 +57.1 137.7	40 41.0 +57.0 136.5
22°	42 45.3 +57.4 140.8	42 29.0 +57.3 139.6	42 12.4 +57.2 138.4	41 55.4 +57.0 137.3	41 38.0 +56.9 136.1
23°	43 42.7 +57.3 140.5	43 26.3 +57.2 139.2	43 09.6 +57.0 138.0	42 52.4 +56.9 136.8	42 34.9 +56.8 135.6
24°	44 40.0 +57.3 140.0	44 23.5 +57.1 138.8	44 06.6 +57.0 137.6	43 49.3 +56.8 136.4	43 31.7 +56.6 135.2
25°	45 37.3 +57.1 139.6	45 20.6 +57.0 138.4	45 03.6 +56.8 137.2	44 46.1 +56.8 136.0	44 28.3 +56.6 134.7
26°	46 34.4 +57.0 139.2	46 17.6 +56.9 137.9	46 00.4 +56.8 136.7	45 42.9 +56.5 135.5	45 24.9 +56.4 134.3
27°	47 31.4 +57.0 138.7	47 14.5 +56.8 137.5	46 57.2 +56.6 136.2	46 39.4 +56.5 135.0	46 21.3 +56.3 133.8
28°	48 28.4 +56.8 138.2	48 11.3 +56.6 137.0	47 53.8 +56.5 135.7	47 35.9 +56.3 134.5	47 17.6 +56.2 133.3
29°	49 25.2 +56.7 137.8	49 07.9 +56.5 136.5	48 50.3 +56.3 135.2	48 32.2 +56.2 134.0	48 13.8 +56.0 132.8

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°	20 15.3 +57.9 142.3	19 59.6 +57.8 141.3	19 43.5 +57.8 140.3	19 27.2 +57.6 139.2	19 10.4 +57.6 138.2
1°	21 13.2 +57.9 142.0	20 57.4 +57.9 141.0	20 41.3 +57.7 140.0	20 24.8 +57.6 138.9	20 08.0 +57.5 137.9
2°	22 11.1 +57.9 141.8	21 55.3 +57.7 140.7	21 39.0 +57.7 139.7	21 22.4 +57.6 138.6	21 05.5 +57.5 137.6
3°	23 09.0 +57.9 141.5	22 53.0 +57.8 140.4	22 36.7 +57.7 139.4	22 20.0 +57.6 138.3	22 03.0 +57.5 137.3
4°	24 06.9 +57.8 141.2	23 50.8 +57.7 140.1	23 34.4 +57.6 139.1	23 17.6 +57.5 138.0	23 00.5 +57.4 137.0
5°	25 04.7 +57.8 140.9	24 48.5 +57.7 139.8	24 32.0 +57.6 138.8	24 15.1 +57.5 137.7	23 57.9 +57.4 136.7
6°	26 02.5 +57.8 140.6	25 46.2 +57.7 139.5	25 29.6 +57.5 138.5	25 12.6 +57.4 137.4	24 55.3 +57.3 136.4
7°	27 00.3 +57.7 140.3	26 43.9 +57.6 139.2	26 27.1 +57.5 138.2	26 10.0 +57.5 137.1	25 52.6 +57.3 136.0
8°	27 58.0 +57.7 140.0	27 41.5 +57.6 138.9	27 24.6 +57.5 137.8	27 07.5 +57.3 136.8	26 49.9 +57.3 135.7
9°	28 55.7 +57.6 139.7	28 39.1 +57.5 138.6	28 22.1 +57.4 137.5	28 04.8 +57.3 136.4	27 47.2 +57.2 135.4
10°	29 53.3 +57.6 139.3	29 36.6 +57.5 138.3	29 19.5 +57.4 137.2	29 02.1 +57.3 136.1	28 44.4 +57.1 135.0
11°	30 50.9 +57.5 139.0	30 34.1 +57.4 137.9	30 16.9 +57.3 136.8	29 59.4 +57.2 135.8	29 41.5 +57.1 134.7
12°	31 48.4 +57.5 138.7	31 31.5 +57.3 137.6	31 14.2 +57.3 136.5	30 56.6 +57.1 135.4	30 38.6 +57.0 134.3
13°	32 45.9 +57.4 138.3	32 28.8 +57.4 137.2	32 11.5 +57.2 136.1	31 53.7 +57.1 135.0	31 35.6 +57.0 134.0
14°	33 43.3 +57.4 138.0	33 26.2 +57.2 136.9	33 08.7 +57.1 135.8	32 50.8 +57.0 134.7	32 32.6 +56.9 133.6
15°	34 40.7 +57.3 137.6	34 23.4 +57.2 136.5	34 05.8 +57.1 135.4	33 47.8 +57.0 134.3	33 29.5 +56.8 133.2
16°	35 38.0 +57.2 137.3	35 20.6 +57.1 136.2	35 02.9 +56.9 135.0	34 44.8 +56.8 133.9	34 26.3 +56.8 132.8
17°	36 35.2 +57.2 136.9	36 17.7 +57.0 135.8	35 59.8 +57.0 134.7	35 41.6 +56.8 133.5	35 23.1 +56.7 132.4
18°	37 32.4 +57.1 136.5	37 14.7 +57.0 135.4	36 56.8 +56.8 134.3	36 38.4 +56.7 133.1	36 19.8 +56.6 132.0
19°	38 29.5 +57.0 136.1	38 11.7 +56.9 135.0	37 53.6 +56.8 133.9	37 35.1 +56.7 132.7	37 16.4 +56.5 131.6
20°	39 26.5 +56.9 135.7	39 08.6 +56.8 134.6	38 50.4 +56.6 133.4	38 31.8 +56.5 132.3	38 12.9 +56.4 131.2
21°	40 23.4 +56.8 135.3	40 05.4 +56.7 134.2	39 47.0 +56.6 133.0	39 28.3 +56.5 131.9	39 09.3 +56.3 130.7
22°	41 20.2 +56.8 134.9	41 02.1 +56.6 133.7	40 43.6 +56.5 132.6	40 24.8 +56.3 131.4	40 05.6 +56.2 130.3
23°	42 17.0 +56.6 134.5	41 58.7 +56.5 133.3	41 40.1 +56.3 132.1	41 21.1 +56.2 131.0	41 01.8 +56.1 129.8
24°	43 13.6 +56.5 134.0	42 55.2 +56.4 132.8	42 36.4 +56.3 131.7	42 17.3 +56.1 130.5	41 57.9 +55.9 129.4
25°	44 10.1 +56.4 133.6	43 51.6 +56.2 132.4	43 32.7 +56.1 131.2	43 13.4 +56.0 130.0	42 53.8 +55.9 128.9
26°	45 06.5 +56.3 133.1	44 47.8 +56.2 131.9	44 28.8 +56.0 130.7	44 09.4 +55.8 129.5	43 49.7 +55.7 128.4
27°	46 02.8 +56.2 132.6	45 44.0 +56.0 131.4	45 24.8 +55.8 130.2	45 05.2 +55.8 129.0	44 45.4 +55.5 127.8
28°	46 59.0 +56.0 132.1	46 40.0 +55.8 130.9	46 20.6 +55.7 129.7	46 01.0 +55.5 128.5	45 40.9 +55.4 127.3
29°	47 55.0 +55.9 131.5	47 35.8 +55.7 130.3	47 16.3 +55.6 129.1	46 56.5 +55.4 127.9	46 36.3 +55.3 126.8

Declination SAME name as Latitude

Latitude 65°

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°	18 53.4 +57.4 137.2	18 36.0 +57.3 136.2	18 18.3 +57.2 135.2	18 00.2 +57.2 134.2	17 41.9 +57.1 133.2
1°	19 50.8 +57.5 136.9	19 33.3 +57.4 135.9	19 15.5 +57.3 134.9	18 57.4 +57.1 133.9	18 39.0 +57.0 132.9
2°	20 48.3 +57.4 136.6	20 30.7 +57.3 135.6	20 12.8 +57.2 134.6	19 54.5 +57.1 133.5	19 36.0 +57.0 132.5
3°	21 45.7 +57.3 136.3	21 28.0 +57.2 135.3	21 10.0 +57.1 134.2	20 51.6 +57.1 133.2	20 33.0 +56.9 132.2
4°	22 43.0 +57.3 136.0	22 25.2 +57.2 134.9	22 07.1 +57.1 133.9	21 48.7 +57.0 132.9	21 29.9 +57.0 131.9
5°	23 40.3 +57.3 135.6	23 22.4 +57.2 134.6	23 04.2 +57.1 133.6	22 45.7 +57.0 132.5	22 26.9 +56.8 131.5
6°	24 37.6 +57.2 135.3	24 19.6 +57.1 134.3	24 01.3 +57.0 133.2	23 42.7 +56.9 132.2	23 23.7 +56.9 131.2
7°	25 34.8 +57.2 135.0	25 16.7 +57.1 133.9	24 58.3 +57.0 132.9	24 39.6 +56.9 131.9	24 20.6 +56.7 130.8
8°	26 32.0 +57.2 134.6	26 13.8 +57.1 133.6	25 55.3 +56.9 132.5	25 36.5 +56.8 131.5	25 17.3 +56.8 130.5
9°	27 29.2 +57.1 134.3	27 10.9 +57.0 133.2	26 52.2 +56.9 132.2	26 33.3 +56.8 131.1	26 14.1 +56.6 130.1
10°	28 26.3 +57.0 134.0	28 07.9 +56.9 132.9	27 49.1 +56.8 131.8	27 30.1 +56.7 130.8	27 10.7 +56.6 129.7
11°	29 23.3 +57.0 133.6	29 04.8 +56.9 132.5	28 45.9 +56.8 131.5	28 26.8 +56.6 130.4	28 07.3 +56.6 129.4
12°	30 20.3 +56.9 133.2	30 01.7 +56.8 132.2	29 42.7 +56.7 131.1	29 23.4 +56.6 130.0	29 03.9 +56.5 129.0
13°	31 17.2 +56.9 132.9	30 58.5 +56.7 131.8	30 39.4 +56.6 130.7	30 20.0 +56.5 129.7	30 00.4 +56.4 128.6
14°	32 14.1 +56.7 132.5	31 55.2 +56.7 131.4	31 36.0 +56.6 130.3	31 16.5 +56.5 129.3	30 56.8 +56.3 128.2
15°	33 10.8 +56.8 132.1	32 51.9 +56.6 131.0	32 32.6 +56.5 129.9	32 13.0 +56.4 128.9	31 53.1 +56.3 127.8
16°	34 07.6 +56.6 131.7	33 48.5 +56.5 130.6	33 29.1 +56.4 129.5	33 09.4 +56.3 128.5	32 49.4 +56.1 127.4
17°	35 04.2 +56.6 131.3	34 45.0 +56.4 130.2	34 25.5 +56.3 129.1	34 05.7 +56.2 128.0	33 45.5 +56.1 127.0
18°	36 00.8 +56.4 130.9	35 41.4 +56.4 129.8	35 21.8 +56.2 128.7	35 01.9 +56.1 127.6	34 41.6 +56.0 126.5
19°	36 57.2 +56.4 130.5	36 37.8 +56.2 129.4	36 18.0 +56.2 128.3	35 58.0 +56.0 127.2	35 37.6 +55.9 126.1
20°	37 53.6 +56.3 130.1	37 34.0 +56.2 128.9	37 14.2 +56.0 127.8	36 54.0 +55.9 126.7	36 33.5 +55.8 125.6
21°	38 49.9 +56.2 129.6	38 30.2 +56.1 128.5	38 10.2 +55.9 127.4	37 49.9 +55.8 126.3	37 29.3 +55.7 125.2
22°	39 46.1 +56.0 129.2	39 26.3 +55.9 128.0	39 06.1 +55.9 126.9	38 45.7 +55.7 125.8	38 25.0 +55.6 124.7
23°	40 42.1 +56.0 128.7	40 22.2 +55.8 127.6	40 02.0 +55.6 126.4	39 41.4 +55.6 125.3	39 20.6 +55.4 124.2
24°	41 38.1 +55.8 128.2	41 18.0 +55.7 127.1	40 57.6 +55.6 126.0	40 37.0 +55.4 124.8	40 16.0 +55.3 123.7
25°	42 33.9 +55.7 127.7	42 13.7 +55.6 126.6	41 53.2 +55.5 125.5	41 32.4 +55.3 124.3	41 11.3 +55.2 123.2
26°	43 29.6 +55.6 127.2	43 09.3 +55.4 126.1	42 48.7 +55.2 124.9	42 27.7 +55.2 123.8	42 06.5 +55.0 122.7
27°	44 25.2 +55.4 126.7	44 04.7 +55.3 125.5	43 43.9 +55.2 124.4	43 22.9 +55.0 123.3	43 01.5 +54.9 122.2
28°	45 20.6 +55.3 126.1	45 00.0 +55.1 125.0	44 39.1 +54.9 123.9	44 17.9 +54.8 122.7	44 56.4 +54.7 121.6
29°	46 15.9 +55.1 125.6	45 55.1 +54.9 124.4	45 34.0 +54.8 123.3	45 12.7 +54.7 122.1	44 51.1 +54.5 121.0

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°	17 23.3 +56.9 132.2	17 04.3 +56.9 131.2	16 45.1 +56.8 130.2	16 25.6 +56.7 129.2	16 05.8 +56.6 128.2
1°	18 20.2 +57.0 131.9	18 01.2 +56.8 130.9	17 41.9 +56.7 129.9	17 22.3 +56.6 128.9	17 02.4 +56.5 127.9
2°	19 17.2 +56.9 131.5	18 58.0 +56.8 130.5	18 38.6 +56.7 129.5	18 18.9 +56.6 128.5	17 58.9 +56.5 127.5
3°	20 14.1 +56.8 131.2	19 54.8 +56.8 130.2	19 35.3 +56.7 129.2	19 15.5 +56.6 128.2	18 55.4 +56.5 127.2
4°	21 10.9 +56.8 130.8	20 51.6 +56.7 129.8	20 32.0 +56.6 128.8	20 12.1 +56.5 127.8	19 51.9 +56.4 126.8
5°	22 07.7 +56.8 130.5	21 48.3 +56.7 129.5	21 28.6 +56.6 128.5	21 08.6 +56.5 127.5	20 48.3 +56.4 126.5
6°	23 04.5 +56.7 130.1	22 45.0 +56.6 129.1	22 25.2 +56.5 128.1	22 05.1 +56.4 127.1	21 44.7 +56.3 126.1
7°	24 01.2 +56.7 129.8	23 41.6 +56.6 128.8	23 21.7 +56.4 127.7	23 01.5 +56.4 126.7	22 41.0 +56.3 125.7
8°	24 57.9 +56.6 129.4	24 38.2 +56.5 128.4	24 18.1 +56.5 127.4	23 57.9 +56.3 126.4	23 37.3 +56.2 125.3
9°	25 54.5 +56.6 129.1	25 34.7 +56.4 128.0	25 14.6 +56.3 127.0	24 54.2 +56.2 126.0	24 33.5 +56.2 125.0
10°	26 51.1 +56.5 128.7	26 31.1 +56.4 127.7	26 10.9 +56.3 126.6	25 50.4 +56.2 125.6	25 29.7 +56.1 124.6
11°	27 47.6 +56.4 128.3	27 27.5 +56.4 127.3	27 07.2 +56.3 126.2	26 46.6 +56.2 125.2	26 25.8 +56.0 124.2
12°	28 44.0 +56.4 127.9	28 23.9 +56.2 126.9	28 03.5 +56.1 125.8	27 42.8 +56.0 124.8	27 21.8 +56.0 123.8
13°	29 40.4 +56.3 127.5	29 20.1 +56.2 126.5	28 59.6 +56.1 125.4	28 38.8 +56.0 124.4	28 17.8 +55.9 123.4
14°	30 36.7 +56.2 127.1	30 16.3 +56.2 126.1	29 55.7 +56.0 125.0	29 34.8 +55.9 124.0	29 13.7 +55.8 123.0
15°	31 32.9 +56.2 126.7	31 12.5 +56.0 125.7	30 51.7 +56.0 124.6	30 30.7 +55.9 123.6	30 09.5 +55.7 122.5
16°	32 29.1 +56.0 126.3	32 08.5 +56.0 125.3	31 47.7 +55.8 124.2	31 26.6 +55.7 123.1	31 05.2 +55.6 122.1
17°	33 25.1 +56.0 125.9	33 04.5 +55.8 124.8	32 43.5 +55.8 123.8	32 22.3 +55.7 122.7	32 00.8 +55.6 121.7
18°	34 21.1 +55.9 125.5	34 00.3 +55.8 124.4	33 39.3 +55.6 123.3	33 18.0 +55.5 122.3	32 56.4 +55.4 121.2
19°	35 17.0 +55.8 125.0	34 56.1 +55.7 123.9	34 34.9 +55.6 122.9	34 13.5 +55.5 121.8	33 51.8 +55.4 120.8
20°	36 12.8 +55.7 124.6	35 51.8 +55.5 123.5	35 30.5 +55.4 122.4	35 09.0 +55.3 121.3	34 47.2 +55.2 120.3
21°	37 08.5 +55.5 124.1	36 47.3 +55.5 123.0	36 25.9 +55.4 121.9	36 04.3 +55.2 120.9	35 42.4 +55.1 119.8
22°	38 04.0 +55.5 123.6	37 42.8 +55.3 122.5	37 21.3 +55.2 121.5	36 59.5 +55.1 120.4	36 37.5 +55.0 119.3
23°	38 59.5 +55.3 123.1	38 38.1 +55.2 122.0	38 16.5 +55.1 121.0	37 54.6 +55.0 119.9	37 32.5 +54.9 118.8
24°	39 54.8 +55.2 122.6	39 33.3 +55.1 121.5	39 11.6 +54.9 120.4	38 49.6 +54.8 119.4	38 27.4 +54.7 118.3
25°	40 50.0 +55.0 122.1	40 28.4 +54.9 121.0	40 06.5 +54.8 119.9	39 44.4 +54.7 118.8	39 22.1 +54.6 117.8
26°	41 45.0 +54.9 121.6	41 23.3 +54.8 120.5	41 01.3 +54.7 119.4	40 39.1 +54.6 118.3	40 16.7 +54.4 117.2
27°	42 39.9 +54.8 121.0	42 18.1 +54.6 119.9	41 56.0 +54.5 118.8	41 33.7 +54.3 117.8	41 11.1 +54.3 116.7
28°	43 34.7 +54.6 120.5	43 12.7 +54.5 119.4	42 50.5 +54.3 118.3	42 28.0 +54.3 117.2	42 05.4 +54.1 116.1
29°	44 29.3 +54.3 119.9	44 07.2 +54.2 118.8	43 44.8 +54.2 117.7	43 22.3 +54.0 116.6	42 59.5 +53.9 115.5

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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°	15 45.8 +56.4 127.3	15 25.4 +56.4 126.3	15 04.9 +56.3 125.3	14 44.1 +56.2 124.3	14 23.0 +56.1 123.4
1°	16 42.2 +56.5 126.9	16 21.8 +56.4 125.9	16 01.2 +56.2 124.9	15 40.3 +56.1 124.0	15 19.1 +56.1 123.0
2°	17 38.7 +56.4 126.5	17 18.2 +56.3 125.6	16 57.4 +56.3 124.6	16 36.4 +56.2 123.6	16 15.2 +56.1 122.6
3°	18 35.1 +56.4 126.2	18 14.5 +56.3 125.2	17 53.7 +56.2 124.2	17 32.6 +56.1 123.2	17 11.3 +56.0 122.3
4°	19 31.5 +56.3 125.8	19 10.8 +56.2 124.8	18 49.9 +56.1 123.8	18 28.7 +56.0 122.9	18 07.3 +55.9 121.9
5°	20 27.8 +56.3 125.5	20 07.0 +56.2 124.5	19 46.0 +56.1 123.5	19 24.7 +56.0 122.5	19 03.2 +55.9 121.5
6°	21 24.1 +56.2 125.1	21 03.2 +56.1 124.1	20 42.1 +56.0 123.1	20 20.7 +56.0 122.1	19 59.1 +55.9 121.1
7°	22 20.3 +56.2 124.7	21 59.3 +56.1 123.7	21 38.1 +56.0 122.7	21 16.7 +55.9 121.7	20 55.0 +55.8 120.7
8°	23 16.5 +56.1 124.3	22 55.4 +56.1 123.3	22 34.1 +56.0 122.3	22 12.6 +55.8 121.3	21 50.8 +55.8 120.3
9°	24 12.6 +56.1 123.9	23 51.5 +55.9 122.9	23 30.1 +55.8 121.9	23 08.4 +55.8 120.9	22 46.6 +55.6 119.9
10°	25 08.7 +56.0 123.6	24 47.4 +55.9 122.5	24 25.9 +55.8 121.5	24 04.2 +55.7 120.5	23 42.2 +55.7 119.5
11°	26 04.7 +55.9 123.2	25 43.3 +55.9 122.1	25 21.7 +55.8 121.1	24 59.9 +55.7 120.1	24 37.9 +55.5 119.1
12°	27 00.6 +55.9 122.7	26 39.2 +55.7 121.7	26 17.5 +55.7 120.7	25 55.6 +55.5 119.7	25 33.4 +55.5 118.7
13°	27 56.5 +55.8 122.3	27 34.9 +55.7 121.3	27 13.2 +55.5 120.3	26 51.1 +55.5 119.3	26 28.9 +55.4 118.3
14°	28 52.3 +55.7 121.9	28 30.6 +55.6 120.9	28 08.7 +55.6 119.9	27 46.6 +55.5 118.9	27 24.3 +55.4 117.8
15°	29 48.0 +55.6 121.5	29 26.2 +55.6 120.5	29 04.7 +55.4 119.4	28 42.1 +55.3 118.4	28 19.7 +55.2 117.4
16°	30 43.6 +55.5 121.1	30 21.8 +55.4 120.0	29 59.7 +55.3 119.0	29 37.4 +55.3 118.0	29 14.9 +55.2 117.0
17°	31 39.1 +55.5 120.6	31 17.2 +55.3 119.6	30 55.0 +55.3 118.6	30 32.7 +55.1 117.5	30 10.1 +55.0 116.5
18°	32 34.6 +55.3 120.2	32 12.5 +55.3 119.1	31 50.3 +55.1 118.1	31 27.8 +55.1 117.1	31 05.1 +55.0 116.0
19°	33 29.9 +55.3 119.7	33 07.8 +55.1 118.7	32 45.4 +55.1 117.6	32 22.9 +54.9 116.6	32 00.1 +54.8 115.6
20°	34 25.2 +55.1 119.2	34 02.9 +55.1 118.2	33 40.5 +54.9 117.2	33 17.8 +54.8 116.1	32 54.9 +54.8 115.1
21°	35 20.3 +55.0 118.8	34 58.0 +54.9 117.7	34 35.4 +54.8 116.7	34 12.6 +54.8 115.6	33 49.7 +54.6 114.6
22°	36 15.3 +54.9 118.3	35 52.9 +54.8 117.2	35 30.2 +54.7 116.2	35 07.4 +54.5 115.1	34 44.3 +54.5 114.1
23°	37 10.2 +54.8 117.8	36 47.7 +54.6 116.7	36 24.9 +54.5 115.7	36 01.9 +54.5 114.6	35 38.8 +54.4 113.6
24°	38 05.0 +54.6 117.2	37 42.3 +54.5 116.2	37 19.4 +54.5 115.1	36 56.4 +54.3 114.1	36 33.2 +54.2 113.1
25°	38 59.6 +54.4 116.7	38 36.8 +54.4 115.7	38 13.9 +54.2 114.6	37 50.7 +54.2 113.6	37 27.4 +54.1 112.5
26°	39 54.0 +54.4 116.2	39 31.2 +54.2 115.1	39 08.1 +54.1 114.1	38 44.9 +54.0 113.0	38 21.5 +53.9 112.0
27°	40 48.4 +54.1 115.6	40 25.4 +54.0 114.6	40 02.2 +54.0 113.5	39 38.9 +53.8 112.5	39 15.4 +53.7 111.4
28°	41 42.5 +54.0 115.0	41 19.4 +53.9 114.0	40 56.2 +53.7 112.9	40 32.7 +53.7 111.9	40 09.1 +53.6 110.8
29°	42 36.5 +53.8 114.5	42 13.3 +53.7 113.4	41 49.9 +53.6 112.3	41 26.4 +53.5 111.3	41 02.7 +53.4 110.2

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°	14 01.7 +56.0 122.4	13 40.2 +55.9 121.4	13 18.4 +55.9 120.5	12 56.5 +55.8 119.5	12 34.3 +55.7 118.6
1°	14 57.7 +56.0 122.0	14 36.1 +55.9 121.1	14 14.3 +55.8 120.1	13 52.3 +55.7 119.1	13 30.0 +55.7 118.2
2°	15 53.7 +56.0 121.7	15 32.0 +55.9 120.7	15 10.1 +55.8 119.7	14 48.0 +55.7 118.8	14 25.7 +55.6 117.8
3°	16 49.7 +55.9 121.3	16 27.9 +55.8 120.3	16 05.9 +55.8 119.3	15 43.7 +55.7 118.4	15 21.3 +55.6 117.4
4°	17 45.6 +55.9 120.9	17 23.7 +55.8 119.9	17 01.7 +55.7 119.0	16 39.4 +55.6 118.0	16 16.9 +55.5 117.0
5°	18 41.5 +55.8 120.5	18 19.5 +55.8 119.5	17 57.4 +55.6 118.6	17 35.0 +55.6 117.6	17 12.4 +55.5 116.6
6°	19 37.3 +55.8 120.1	19 15.3 +55.7 119.1	18 53.0 +55.6 118.2	18 30.6 +55.5 117.2	18 07.9 +55.5 116.2
7°	20 33.1 +55.7 119.7	20 11.0 +55.6 118.8	19 48.6 +55.6 117.8	19 26.1 +55.5 116.8	19 03.4 +55.4 115.8
8°	21 28.8 +55.7 119.3	21 06.6 +55.6 118.4	20 44.2 +55.5 117.4	20 21.6 +55.4 116.4	19 58.8 +55.3 115.4
9°	22 24.5 +55.6 118.9	22 02.2 +55.5 117.9	21 39.7 +55.4 117.0	21 17.0 +55.3 116.0	20 54.1 +55.3 115.0
10°	23 20.1 +55.5 118.5	22 57.7 +55.4 117.5	22 35.1 +55.4 116.6	22 12.3 +55.3 115.6	21 49.4 +55.2 114.6
11°	24 15.6 +55.5 118.1	23 53.1 +55.4 117.1	23 30.5 +55.3 116.1	23 07.6 +55.2 115.1	22 44.6 +55.1 114.2
12°	25 11.1 +55.4 117.7	24 48.5 +55.3 116.7	24 25.8 +55.2 115.7	24 02.8 +55.2 114.7	23 39.7 +55.1 113.7
13°	26 06.5 +55.3 117.3	25 43.8 +55.3 116.3	25 21.0 +55.2 115.3	24 58.0 +55.1 114.3	24 34.8 +55.0 113.3
14°	27 01.8 +55.3 116.8	26 39.1 +55.1 115.8	26 16.2 +55.0 114.8	25 53.1 +55.0 113.8	25 29.8 +54.9 112.9
15°	27 57.1 +55.1 116.4	27 34.2 +55.1 115.4	27 11.2 +55.0 114.4	26 48.1 +54.9 113.4	26 24.7 +54.8 112.4
16°	28 52.2 +55.1 116.0	28 29.3 +55.0 114.9	28 06.2 +54.9 113.9	27 43.0 +54.8 112.9	27 19.5 +54.8 112.0
17°	29 47.3 +54.9 115.5	29 24.3 +54.9 114.5	29 01.1 +54.8 113.5	28 37.8 +54.7 112.5	28 14.3 +54.6 111.5
18°	30 42.2 +54.9 115.0	30 19.2 +54.8 114.0	29 55.9 +54.7 113.0	29 32.5 +54.6 112.0	29 08.9 +54.6 111.0
19°	31 37.1 +54.8 114.6	31 14.0 +54.6 113.5	30 50.6 +54.6 112.5	30 27.1 +54.5 111.5	30 03.5 +54.4 110.5
20°	32 31.9 +54.6 114.1	32 08.6 +54.6 113.1	31 45.2 +54.5 112.1	31 21.6 +54.4 111.1	30 57.9 +54.3 110.1
21°	33 26.5 +54.6 113.6	33 03.2 +54.4 112.6	32 39.7 +54.4 111.6	32 16.0 +54.3 110.6	31 52.2 +54.2 109.6
22°	34 21.1 +54.4 113.1	33 57.6 +54.4 112.1	33 34.1 +54.2 111.1	33 10.3 +54.2 110.1	32 46.4 +54.1 109.1
23°	35 15.5 +54.2 112.6	34 52.0 +54.2 111.6	34 28.3 +54.1 110.5	34 04.5 +54.0 109.5	33 40.5 +54.0 108.5
24°	36 09.7 +54.2 112.0	35 46.2 +54.0 111.0	35 22.4 +54.0 110.0	34 58.5 +53.9 109.0	34 34.5 +53.8 108.0
25°	37 03.9 +54.0 111.5	36 40.2 +53.9 110.5	36 16.4 +53.8 109.5	35 52.4 +53.7 108.5	35 28.3 +53.6 107.5
26°	37 57.9 +53.8 111.0	37 34.1 +53.7 109.9	37 10.2 +53.6 108.9	36 46.1 +53.6 107.9	36 21.9 +53.5 106.9
27°	38 51.7 +53.6 110.4	38 27.8 +53.6 109.4	38 03.8 +53.5 108.4	37 39.7 +53.4 107.3	37 15.4 +53.4 106.3
28°	39 45.3 +53.5 109.8	39 21.4 +53.4 108.8	38 57.3 +53.4 107.8	38 33.1 +53.3 106.8	38 08.8 +53.1 105.8
29°	40 38.8 +53.3 109.2	40 14.8 +53.2 108.2	39 50.7 +53.1 107.2	39 26.4 +53.0 106.2	39 01.9 +53.0 105.2

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°	12 11.9 +55.7 117.6	11 49.4 +55.5 116.7	11 26.6 +55.5 115.7	11 03.7 +55.4 114.8	10 40.6 +55.3 113.8
1°	13 07.6 +55.5 117.2	12 44.9 +55.5 116.3	12 22.1 +55.4 115.3	11 59.1 +55.3 114.4	11 35.9 +55.3 113.5
2°	14 03.1 +55.6 116.8	13 40.4 +55.5 115.9	13 17.5 +55.4 114.9	12 54.4 +55.4 114.0	12 31.2 +55.3 113.1
3°	14 58.7 +55.5 116.5	14 35.9 +55.4 115.5	14 12.9 +55.4 114.6	13 49.8 +55.3 113.6	13 26.5 +55.2 112.7
4°	15 54.2 +55.5 116.1	15 31.3 +55.4 115.1	15 08.3 +55.3 114.2	14 45.1 +55.2 113.2	14 21.7 +55.1 112.3
5°	16 49.7 +55.4 115.7	16 26.7 +55.4 114.7	16 03.6 +55.3 113.8	15 40.3 +55.2 112.8	15 16.8 +55.2 111.8
6°	17 45.1 +55.3 115.3	17 22.1 +55.3 114.3	16 58.9 +55.2 113.3	16 35.5 +55.1 112.4	16 12.0 +55.1 111.4
7°	18 40.4 +55.4 114.9	18 17.4 +55.2 113.9	17 54.1 +55.2 112.9	17 30.6 +55.1 112.0	17 07.1 +55.0 111.0
8°	19 35.8 +55.2 114.5	19 12.6 +55.2 113.5	18 49.3 +55.1 112.5	18 25.7 +55.1 111.6	18 02.1 +55.0 110.6
9°	20 31.0 +55.2 114.0	20 07.8 +55.1 113.1	19 44.4 +55.0 112.1	19 20.8 +55.0 111.1	18 57.1 +54.9 110.2
10°	21 26.2 +55.2 113.6	21 02.9 +55.1 112.6	20 39.4 +55.0 111.7	20 15.8 +54.9 110.7	19 52.0 +54.8 109.8
11°	22 21.4 +55.0 113.2	21 58.0 +55.0 112.2	21 34.4 +54.9 111.2	21 10.7 +54.9 110.3	20 46.8 +54.8 109.3
12°	23 16.4 +55.0 112.8	22 53.0 +54.9 111.8	22 29.3 +54.9 110.8	22 05.6 +54.7 109.8	21 41.6 +54.8 108.9
13°	24 11.4 +54.9 112.3	23 47.9 +54.8 111.3	23 24.2 +54.8 110.4	23 00.3 +54.8 109.4	22 36.4 +54.6 108.4
14°	25 06.3 +54.9 111.9	24 42.7 +54.8 110.9	24 19.0 +54.7 109.9	23 55.1 +54.6 109.0	23 31.0 +54.6 108.0
15°	26 01.2 +54.7 111.4	25 37.5 +54.7 110.5	25 13.7 +54.6 109.5	24 49.7 +54.5 108.5	24 25.6 +54.5 107.5
16°	26 55.9 +54.7 111.0	26 32.2 +54.6 110.0	26 08.3 +54.5 109.0	25 44.2 +54.5 108.0	25 20.1 +54.4 107.1
17°	27 50.6 +54.6 110.5	27 26.8 +54.5 109.5	27 02.8 +54.4 108.5	26 38.7 +54.4 107.6	26 14.5 +54.3 106.6
18°	28 45.2 +54.4 110.0	28 21.3 +54.4 109.1	27 57.2 +54.4 108.1	27 33.1 +54.2 107.1	27 08.8 +54.2 106.1
19°	29 39.6 +54.4 109.6	29 15.7 +54.3 108.6	28 51.6 +54.2 107.6	28 27.3 +54.2 106.6	28 03.0 +54.1 105.6
20°	30 34.0 +54.3 109.1	30 10.0 +54.1 108.1	29 45.8 +54.1 107.1	29 21.5 +54.1 106.1	28 57.1 +54.0 105.2
21°	31 28.3 +54.1 108.6	31 04.1 +54.1 107.6	30 39.9 +54.0 106.6	30 15.6 +53.9 105.6	29 51.1 +53.9 104.7
22°	32 22.4 +54.0 108.1	31 58.2 +54.0 107.1	31 33.9 +53.9 106.1	31 09.5 +53.8 105.1	30 45.0 +53.7 104.1
23°	33 16.4 +53.9 107.5	32 52.2 +53.8 106.6	32 27.8 +53.7 105.6	32 03.3 +53.7 104.6	31 38.7 +53.6 103.6
24°	34 10.3 +53.7 107.0	33 46.0 +53.6 106.0	33 21.5 +53.6 105.0	32 57.0 +53.5 104.1	32 32.3 +53.5 103.1
25°	35 04.0 +53.6 106.5	34 39.6 +53.6 105.5	34 15.1 +53.5 104.5	33 50.5 +53.5 103.5	33 25.8 +53.4 102.6
26°	35 57.6 +53.4 105.9	35 33.2 +53.3 104.9	35 08.6 +53.3 104.0	34 44.0 +53.2 103.0	34 19.2 +53.2 102.0
27°	36 51.0 +53.3 105.4	36 26.5 +53.2 104.4	36 01.9 +53.2 103.4	35 37.2 +53.1 102.4	35 12.4 +53.0 101.4
28°	37 44.3 +53.1 104.8	37 19.7 +53.1 103.8	36 55.1 +52.9 102.8	36 30.3 +52.9 101.8	36 05.4 +52.9 100.9
29°	38 37.4 +52.9 104.2	38 12.8 +52.8 103.2	37 48.0 +52.8 102.2	37 23.2 +52.8 101.2	36 58.3 +52.7 100.3

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°	10 17.3 +55.3 112.9	9 53.9 +55.2 112.0	9 30.3 +55.1 111.0	9 06.5 +55.1 110.1	8 42.7 +55.0 109.2
1°	11 12.6 +55.2 112.5	10 49.1 +55.1 111.6	10 25.4 +55.1 110.6	10 01.6 +55.0 109.7	9 37.7 +54.9 108.8
2°	12 07.8 +55.2 112.1	11 44.2 +55.1 111.2	11 20.5 +55.1 110.2	10 56.6 +55.0 109.3	10 32.6 +55.0 108.4
3°	13 03.0 +55.1 111.7	12 39.3 +55.1 110.8	12 15.6 +55.0 109.8	11 51.6 +55.0 108.9	11 27.6 +54.9 108.0
4°	13 58.1 +55.1 111.3	13 34.4 +55.1 110.4	13 10.6 +55.0 109.4	12 46.6 +54.9 108.5	12 22.5 +54.9 107.5
5°	14 53.2 +55.1 110.9	14 29.5 +55.0 110.0	14 05.6 +54.9 109.0	13 41.5 +54.9 108.1	13 17.4 +54.8 107.1
6°	15 48.3 +55.0 110.5	15 24.5 +54.9 109.5	15 00.5 +54.9 108.6	14 36.4 +54.8 107.7	14 12.2 +54.8 106.7
7°	16 43.3 +55.0 110.1	16 19.4 +54.9 109.1	15 55.4 +54.8 108.2	15 31.2 +54.8 107.2	15 07.0 +54.7 106.3
8°	17 38.3 +54.9 109.7	17 14.3 +54.9 108.7	16 50.2 +54.8 107.8	16 26.0 +54.8 106.8	16 01.7 +54.7 105.9
9°	18 33.2 +54.8 109.2	18 09.2 +54.8 108.3	17 45.0 +54.8 107.3	17 20.8 +54.7 106.4	16 56.4 +54.6 105.4
10°	19 28.0 +54.8 108.8	19 04.0 +54.7 107.8	18 39.8 +54.7 106.9	18 15.5 +54.6 105.9	17 51.0 +54.6 105.0
11°	20 22.8 +54.8 108.4	19 58.7 +54.7 107.4	19 34.5 +54.6 106.5	19 10.1 +54.5 105.5	18 45.6 +54.5 104.6
12°	21 17.6 +54.6 107.9	20 53.4 +54.6 107.0	20 29.1 +54.5 106.0	20 04.6 +54.5 105.1	19 40.1 +54.4 104.1
13°	22 12.2 +54.6 107.5	21 48.0 +54.5 106.5	21 23.6 +54.5 105.6	20 59.1 +54.5 104.6	20 34.5 +54.4 103.7
14°	23 06.8 +54.5 107.0	22 42.5 +54.5 106.1	22 18.1 +54.4 105.1	21 53.6 +54.3 104.2	21 28.9 +54.3 103.2
15°	24 01.3 +54.5 106.6	23 37.0 +54.3 105.6	23 12.5 +54.3 104.7	22 47.9 +54.3 103.7	22 23.2 +54.2 102.8
16°	24 55.8 +54.3 106.1	24 31.3 +54.3 105.2	24 06.8 +54.2 104.2	23 42.2 +54.2 103.3	23 17.4 +54.2 102.3
17°	25 50.1 +54.2 105.6	25 25.6 +54.2 104.7	25 01.0 +54.2 103.7	24 36.4 +54.1 102.8	24 11.6 +54.0 101.8
18°	26 44.3 +54.2 105.2	26 19.8 +54.1 104.2	25 55.2 +54.0 103.3	25 30.5 +54.0 102.3	25 05.6 +54.0 101.4
19°	27 38.5 +54.0 104.7	27 13.9 +54.0 103.7	26 49.2 +54.0 102.8	26 24.5 +53.9 101.8	25 59.6 +53.9 100.9
20°	28 32.5 +54.0 104.2	28 07.9 +53.9 103.2	27 43.2 +53.8 102.3	27 18.4 +53.8 101.3	26 53.5 +53.7 100.4
21°	29 26.5 +53.8 103.7	29 01.8 +53.8 102.7	28 37.0 +53.8 101.8	28 12.2 +53.6 100.8	27 47.2 +53.7 99.9
22°	30 20.3 +53.7 103.2	29 55.6 +53.6 102.2	29 30.8 +53.6 101.3	29 05.8 +53.6 100.3	28 40.9 +53.5 99.4
23°	31 14.0 +53.6 102.7	30 49.2 +53.6 101.7	30 24.4 +53.5 100.7	29 59.4 +53.5 99.8	29 34.4 +53.4 98.9
24°	32 07.6 +53.4 102.1	31 42.8 +53.4 101.2	31 17.9 +53.3 100.2	30 52.9 +53.3 99.3	30 27.8 +53.3 98.3
25°	33 01.0 +53.3 101.6	32 36.2 +53.2 100.6	32 11.2 +53.2 99.7	31 46.2 +53.2 98.7	31 21.1 +53.1 97.8
26°	33 54.3 +53.2 101.0	33 29.4 +53.1 100.1	33 04.4 +53.1 99.1	32 39.4 +53.0 98.2	32 14.2 +53.0 97.2
27°	34 47.5 +53.0 100.5	34 22.5 +53.0 99.5	33 57.5 +52.9 98.6	33 32.4 +52.9 97.6	33 07.2 +52.9 96.7
28°	35 40.5 +52.8 99.9	35 15.5 +52.8 99.0	34 50.4 +52.7 98.0	34 25.3 +52.7 97.1	34 00.1 +52.7 96.1
29°	36 33.3 +52.7 99.3	36 08.3 +52.6 98.4	35 43.1 +52.6 97.4	35 18.0 +52.5 96.5	34 52.8 +52.5 95.5

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°	8 18.7 +54.9 108.3	7 54.5 +54.9 107.3	7 30.2 +54.9 106.4	7 05.9 +54.7 105.5	6 41.4 +54.7 104.6
1°	9 13.6 +54.9 107.8	8 49.4 +54.9 106.9	8 25.1 +54.8 106.0	8 00.6 +54.8 105.1	7 36.1 +54.7 104.2
2°	10 08.5 +54.9 107.4	9 44.3 +54.8 106.5	9 19.9 +54.8 105.6	8 55.4 +54.7 104.7	8 30.8 +54.7 103.7
3°	11 03.4 +54.8 107.0	10 39.1 +54.8 106.1	10 14.7 +54.7 105.2	9 50.1 +54.8 104.2	9 25.5 +54.7 103.3
4°	11 58.2 +54.9 106.6	11 33.9 +54.8 105.7	11 09.4 +54.7 104.8	10 44.9 +54.6 103.8	10 20.2 +54.6 102.9
5°	12 53.1 +54.7 106.2	12 28.7 +54.7 105.3	12 04.1 +54.7 104.3	11 39.5 +54.7 103.4	11 14.8 +54.6 102.5
6°	13 47.8 +54.8 105.8	13 23.4 +54.7 104.8	12 58.8 +54.7 103.9	12 34.2 +54.5 103.0	12 09.4 +54.6 102.1
7°	14 42.6 +54.7 105.4	14 18.1 +54.6 104.4	13 53.5 +54.5 103.5	13 28.7 +54.6 102.6	13 04.0 +54.5 101.6
8°	15 37.3 +54.6 104.9	15 12.7 +54.6 104.0	14 48.0 +54.6 103.1	14 23.3 +54.5 102.1	13 58.5 +54.4 101.2
9°	16 31.9 +54.6 104.5	16 07.3 +54.5 103.6	15 42.6 +54.5 102.6	15 17.8 +54.5 101.7	14 52.9 +54.5 100.8
10°	17 26.5 +54.5 104.1	17 01.8 +54.5 103.1	16 37.1 +54.4 102.2	16 12.3 +54.4 101.3	15 47.4 +54.3 100.3
11°	18 21.0 +54.5 103.6	17 56.3 +54.4 102.7	17 31.5 +54.4 101.8	17 06.7 +54.3 100.8	16 41.7 +54.3 99.9
12°	19 15.5 +54.4 103.2	18 50.7 +54.4 102.2	18 25.9 +54.3 101.3	18 01.0 +54.3 100.4	17 36.0 +54.3 99.4
13°	20 09.9 +54.3 102.7	19 45.1 +54.3 101.8	19 20.2 +54.3 100.9	18 55.3 +54.2 99.9	18 30.3 +54.2 99.0
14°	21 04.2 +54.2 102.3	20 39.4 +54.2 101.3	20 14.5 +54.2 100.4	19 49.5 +54.1 99.5	19 24.5 +54.1 98.5
15°	21 58.4 +54.2 101.8	21 33.6 +54.1 100.9	21 08.7 +54.1 99.9	20 43.6 +54.1 99.0	20 18.6 +54.0 98.1
16°	22 52.6 +54.1 101.4	22 27.7 +54.1 100.4	22 02.8 +54.0 99.5	21 37.7 +54.0 98.6	21 12.6 +54.0 97.6
17°	23 46.7 +54.0 100.9	23 21.8 +54.0 99.9	22 56.8 +53.9 99.0	22 31.7 +53.9 98.1	22 06.6 +53.9 97.2
18°	24 40.7 +54.0 100.4	24 15.8 +53.8 99.5	23 50.7 +53.9 98.5	23 25.6 +53.8 97.6	23 00.5 +53.7 96.7
19°	25 34.7 +53.8 99.9	25 09.6 +53.8 99.0	24 44.6 +53.7 98.1	24 19.4 +53.8 97.1	23 54.2 +53.8 96.2
20°	26 28.5 +53.7 99.4	26 03.4 +53.7 98.5	25 38.3 +53.7 97.6	25 13.2 +53.6 96.6	24 48.0 +53.6 95.7
21°	27 22.2 +53.6 98.9	26 57.1 +53.6 98.0	26 32.0 +53.5 97.1	26 06.8 +53.5 96.1	25 41.6 +53.5 95.2
22°	28 15.8 +53.5 98.4	27 50.7 +53.5 97.5	27 25.5 +53.5 96.6	27 00.3 +53.4 95.6	26 35.1 +53.4 94.7
23°	29 09.3 +53.4 97.9	28 44.2 +53.3 97.0	28 19.0 +53.3 96.0	27 53.7 +53.3 95.1	27 28.5 +53.2 94.2
24°	30 02.7 +53.2 97.4	29 37.5 +53.2 96.5	29 12.3 +53.2 95.5	28 47.0 +53.2 94.6	28 21.7 +53.2 93.7
25°	30 55.9 +53.1 96.9	30 30.7 +53.1 95.9	30 05.5 +53.1 95.0	29 40.2 +53.1 94.1	29 14.9 +53.0 93.1
26°	31 49.0 +53.0 96.3	31 23.8 +53.0 95.4	30 58.6 +52.9 94.4	30 33.3 +52.9 93.5	30 07.9 +52.9 92.6
27°	32 42.0 +52.8 95.8	32 16.8 +52.8 94.8	31 51.5 +52.8 93.9	31 26.2 +52.7 93.0	31 00.8 +52.8 92.1
28°	33 34.8 +52.7 95.2	33 09.6 +52.6 94.3	32 44.3 +52.6 93.3	32 18.9 +52.7 92.4	31 53.6 +52.6 91.5
29°	34 27.5 +52.5 94.6	34 02.2 +52.5 93.7	33 36.9 +52.5 92.8	33 11.6 +52.4 91.8	32 46.2 +52.5 90.9

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°	6 16.8 +54.7 103.6	5 52.1 +54.6 102.7	5 27.3 +54.6 101.8	5 02.5 +54.5 100.9	4 37.5 +54.6 100.0
1°	7 11.5 +54.7 103.2	6 46.7 +54.7 102.3	6 21.9 +54.6 101.4	5 57.0 +54.6 100.5	5 32.1 +54.5 99.6
2°	8 06.2 +54.6 102.8	7 41.4 +54.6 101.9	7 16.5 +54.6 101.0	6 51.6 +54.5 100.1	6 26.6 +54.5 99.2
3°	9 00.8 +54.6 102.4	8 36.0 +54.6 101.5	8 11.1 +54.6 100.6	7 46.1 +54.6 99.6	7 21.1 +54.5 98.7
4°	9 55.4 +54.6 102.0	9 30.6 +54.5 101.1	9 05.7 +54.5 100.1	8 40.7 +54.4 99.2	8 15.6 +54.5 98.3
5°	10 50.0 +54.6 101.6	10 25.1 +54.5 100.6	10 00.2 +54.5 99.7	9 35.1 +54.5 98.8	9 10.1 +54.4 97.9
6°	11 44.6 +54.5 101.1	11 19.6 +54.5 100.2	10 54.7 +54.4 99.3	10 29.6 +54.4 98.4	10 04.5 +54.4 97.5
7°	12 39.1 +54.5 100.7	12 14.1 +54.5 99.8	11 49.1 +54.4 98.9	11 24.0 +54.4 97.9	10 58.9 +54.3 97.0
8°	13 33.6 +54.4 100.3	13 08.6 +54.4 99.4	12 43.5 +54.4 98.4	12 18.4 +54.3 97.5	11 53.2 +54.4 96.6
9°	14 28.0 +54.4 99.8	14 03.0 +54.3 98.9	13 37.9 +54.3 98.0	13 12.7 +54.3 97.1	12 47.6 +54.2 96.2
10°	15 22.4 +54.3 99.4	14 57.3 +54.3 98.5	14 32.2 +54.3 97.6	14 07.0 +54.3 96.6	13 41.8 +54.3 95.7
11°	16 16.7 +54.3 99.0	15 51.6 +54.3 98.0	15 26.5 +54.2 97.1	15 01.3 +54.2 96.2	14 36.1 +54.2 95.3
12°	17 11.0 +54.2 98.5	16 45.9 +54.2 97.6	16 20.7 +54.2 96.7	15 55.5 +54.1 95.8	15 30.3 +54.1 94.8
13°	18 05.2 +54.1 98.1	17 40.1 +54.1 97.1	17 14.9 +54.1 96.2	16 49.6 +54.1 95.3	16 24.4 +54.0 94.4
14°	18 59.3 +54.1 97.6	18 34.2 +54.0 96.7	18 09.0 +54.0 95.8	17 43.7 +54.1 94.9	17 18.4 +54.1 93.9
15°	19 53.4 +54.0 97.2	19 28.2 +54.0 96.2	19 03.0 +54.0 95.3	18 37.8 +53.9 94.4	18 12.5 +53.9 93.5
16°	20 47.4 +54.0 96.7	20 22.2 +54.0 95.8	19 57.0 +53.9 94.9	19 31.7 +53.9 93.9	19 06.4 +53.9 93.0
17°	21 41.4 +53.8 96.2	21 16.2 +53.8 95.3	20 50.9 +53.8 94.4	20 25.6 +53.8 93.5	20 00.3 +53.8 92.6
18°	22 35.2 +53.8 95.7	22 10.0 +53.8 94.8	21 44.7 +53.8 93.9	21 19.4 +53.7 93.0	20 54.1 +53.7 92.1
19°	23 29.0 +53.7 95.3	23 03.8 +53.6 94.3	22 38.5 +53.6 93.4	22 13.1 +53.7 92.5	21 47.8 +53.6 91.6
20°	24 22.7 +53.6 94.8	23 57.4 +53.6 93.9	23 32.1 +53.6 92.9	23 06.8 +53.5 92.0	22 41.4 +53.6 91.1
21°	25 16.3 +53.5 94.3	24 51.0 +53.5 93.4	24 25.7 +53.4 92.4	24 00.3 +53.5 91.5	23 35.0 +53.4 90.6
22°	26 09.8 +53.4 93.8	25 44.5 +53.3 92.9	25 19.1 +53.4 91.9	24 53.8 +53.3 91.0	24 28.4 +53.4 90.1
23°	27 03.2 +53.2 93.3	26 37.8 +53.3 92.4	26 12.5 +53.2 91.4	25 47.1 +53.3 90.5	25 21.8 +53.2 89.6
24°	27 56.4 +53.2 92.8	27 31.1 +53.1 91.8	27 05.7 +53.2 90.9	26 40.4 +53.1 90.0	26 15.0 +53.2 89.1
25°	28 49.6 +53.0 92.2	28 24.2 +53.1 91.3	27 58.9 +53.0 90.4	27 33.5 +53.0 89.5	27 08.2 +53.0 88.6
26°	29 42.6 +52.9 91.7	29 17.3 +52.8 90.8	28 51.9 +52.9 89.9	28 26.5 +52.9 89.0	28 01.2 +52.9 88.1
27°	30 35.5 +52.7 91.1	30 10.1 +52.8 90.2	29 44.8 +52.7 89.3	29 19.4 +52.8 88.4	28 54.1 +52.8 87.5
28°	31 28.2 +52.7 90.6	31 02.9 +52.6 89.7	30 37.5 +52.6 88.8	30 12.2 +52.6 87.9	29 46.9 +52.6 87.0
29°	32 20.9 +52.4 90.0	31 55.5 +52.5 89.1	31 30.1 +52.5 88.2	31 04.8 +52.5 87.3	30 39.5 +52.5 86.4

Declination SAME name as Latitude

Latitude 65°

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°	4 12.5 +54.5 99.1	3 47.4 +54.5 98.2	3 22.3 +54.5 97.3	2 57.1 +54.5 96.3	2 31.9 +54.4 95.4
1°	5 07.0 +54.5 98.7	4 41.9 +54.5 97.7	4 16.8 +54.4 96.8	3 51.6 +54.4 95.9	3 26.3 +54.5 95.0
2°	6 01.5 +54.5 98.2	5 36.4 +54.5 97.3	5 11.2 +54.5 96.4	4 46.0 +54.4 95.5	4 20.8 +54.4 94.6
3°	6 56.0 +54.5 97.8	6 30.9 +54.4 96.9	6 05.7 +54.4 96.0	5 40.4 +54.4 95.1	5 15.2 +54.3 94.2
4°	7 50.5 +54.4 97.4	7 25.3 +54.4 96.5	7 00.1 +54.4 95.6	6 34.8 +54.4 94.7	6 09.5 +54.4 93.7
5°	8 44.9 +54.4 97.0	8 19.7 +54.4 96.1	7 54.5 +54.3 95.1	7 29.2 +54.4 94.2	7 03.9 +54.3 93.3
6°	9 39.3 +54.4 96.5	9 14.1 +54.4 95.6	8 48.8 +54.4 94.7	8 23.6 +54.3 93.8	7 58.2 +54.4 92.9
7°	10 33.7 +54.3 96.1	10 08.5 +54.3 95.2	9 43.2 +54.3 94.3	9 17.9 +54.3 93.4	8 52.6 +54.2 92.5
8°	11 28.0 +54.3 95.7	11 02.8 +54.3 94.8	10 37.5 +54.3 93.9	10 12.2 +54.2 92.9	9 46.8 +54.3 92.0
9°	12 22.3 +54.3 95.2	11 57.1 +54.2 94.3	11 31.8 +54.2 93.4	11 06.4 +54.3 92.5	10 41.1 +54.2 91.6
10°	13 16.6 +54.2 94.8	12 51.3 +54.2 93.9	12 26.0 +54.2 93.0	12 00.7 +54.1 92.1	11 35.3 +54.2 91.2
11°	14 10.8 +54.2 94.4	13 45.5 +54.2 93.5	13 20.2 +54.1 92.5	12 54.8 +54.2 91.6	12 29.5 +54.1 90.7
12°	15 05.0 +54.1 93.9	14 39.7 +54.1 93.0	14 14.3 +54.1 92.1	13 49.0 +54.1 91.2	13 23.6 +54.1 90.3
13°	15 59.1 +54.0 93.5	15 33.8 +54.0 92.6	15 08.4 +54.1 91.7	14 43.1 +54.0 90.7	14 17.7 +54.1 89.8
14°	16 53.1 +54.0 93.0	16 27.8 +54.0 92.1	16 02.5 +53.9 91.2	15 37.1 +54.0 90.3	15 11.8 +53.9 89.4
15°	17 47.1 +54.0 92.6	17 21.8 +53.9 91.7	16 56.4 +54.0 90.7	16 31.1 +53.9 89.8	16 05.7 +54.0 88.9
16°	18 41.1 +53.8 92.1	18 15.7 +53.9 91.2	17 50.4 +53.8 90.3	17 25.0 +53.9 89.4	16 59.7 +53.8 88.5
17°	19 34.9 +53.8 91.6	19 09.6 +53.8 90.7	18 44.2 +53.8 89.8	18 18.9 +53.8 88.9	17 53.5 +53.8 88.0
18°	20 28.7 +53.7 91.2	20 03.4 +53.7 90.3	19 38.0 +53.7 89.4	19 12.7 +53.7 88.4	18 47.3 +53.7 87.5
19°	21 22.4 +53.7 90.7	20 57.1 +53.6 89.8	20 31.7 +53.7 88.9	20 06.4 +53.6 88.0	19 41.0 +53.7 87.1
20°	22 16.1 +53.5 90.2	21 50.7 +53.6 89.3	21 25.4 +53.5 88.4	21 00.0 +53.6 87.5	20 34.7 +53.6 86.6
21°	23 09.6 +53.5 89.7	22 44.3 +53.4 88.8	22 18.9 +53.5 87.9	21 53.6 +53.5 87.0	21 28.3 +53.5 86.1
22°	24 03.1 +53.3 89.2	23 37.7 +53.4 88.3	23 12.4 +53.4 87.4	22 47.1 +53.3 86.5	22 21.8 +53.4 85.6
23°	24 56.4 +53.3 88.7	24 31.1 +53.2 87.8	24 05.8 +53.2 86.9	23 40.4 +53.3 86.0	23 15.2 +53.3 85.1
24°	25 49.7 +53.1 88.2	25 24.3 +53.2 87.3	24 59.0 +53.2 86.4	24 33.7 +53.2 85.5	24 08.5 +53.2 84.6
25°	26 42.8 +53.1 87.7	26 17.5 +53.0 86.8	25 52.2 +53.1 85.9	25 26.9 +53.1 85.0	25 01.7 +53.1 84.1
26°	27 35.9 +52.9 87.2	27 10.5 +53.0 86.3	26 45.3 +52.9 85.4	26 20.0 +53.0 84.5	25 54.8 +53.0 83.6
27°	28 28.8 +52.7 86.6	28 03.5 +52.8 85.7	27 38.2 +52.8 84.9	27 13.0 +52.8 84.0	26 47.8 +52.8 83.1
28°	29 21.5 +52.7 86.1	28 56.3 +52.6 85.2	28 31.0 +52.7 84.3	28 05.8 +52.7 83.4	27 40.6 +52.8 82.6
29°	30 14.2 +52.5 85.5	29 48.9 +52.6 84.7	29 23.7 +52.6 83.8	28 58.5 +52.6 82.9	28 33.4 +52.6 82.0

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°	2 06.7 +54.4 94.5	1 41.4 +54.4 93.6	1 16.0 +54.4 92.7	0 50.7 +54.4 91.8	0 25.4 +54.3 90.9
1°	3 01.1 +54.4 94.1	2 35.8 +54.3 93.2	2 10.4 +54.4 92.3	1 45.1 +54.4 91.4	1 19.7 +54.4 90.5
2°	3 55.5 +54.4 93.7	3 30.1 +54.4 92.8	3 04.8 +54.4 91.9	2 39.5 +54.3 91.0	2 14.1 +54.4 90.1
3°	4 49.9 +54.3 93.3	4 24.5 +54.4 92.4	3 59.2 +54.3 91.5	3 33.8 +54.4 90.5	3 08.5 +54.3 89.6
4°	5 44.2 +54.4 92.8	5 18.9 +54.3 91.9	4 53.5 +54.4 91.0	4 28.2 +54.3 90.1	4 02.8 +54.4 89.2
5°	6 38.6 +54.3 92.4	6 13.2 +54.4 91.5	5 47.9 +54.3 90.6	5 22.5 +54.4 89.7	4 57.2 +54.3 88.8
6°	7 32.9 +54.3 92.0	7 07.6 +54.3 91.1	6 42.2 +54.3 90.2	6 16.9 +54.3 89.3	5 51.5 +54.3 88.4
7°	8 27.2 +54.3 91.6	8 01.9 +54.2 90.7	7 36.5 +54.3 89.7	7 11.2 +54.2 88.8	6 45.8 +54.3 87.9
8°	9 21.5 +54.2 91.1	8 56.1 +54.3 90.2	8 30.8 +54.2 89.3	8 05.4 +54.3 88.4	7 40.1 +54.3 87.5
9°	10 15.7 +54.3 90.7	9 50.4 +54.2 89.8	9 25.0 +54.3 88.9	8 59.7 +54.2 88.0	8 34.4 +54.2 87.1
10°	11 10.0 +54.1 90.3	10 44.6 +54.2 89.4	10 19.3 +54.1 88.4	9 53.9 +54.2 87.5	9 28.6 +54.2 86.6
11°	12 04.1 +54.2 89.8	11 38.8 +54.1 88.9	11 13.4 +54.2 88.0	10 48.1 +54.2 87.1	10 22.8 +54.1 86.2
12°	12 58.3 +54.1 89.4	12 32.9 +54.1 88.5	12 07.6 +54.1 87.6	11 42.3 +54.1 86.7	11 16.9 +54.2 85.8
13°	13 52.4 +54.0 88.9	13 27.0 +54.1 88.0	13 01.7 +54.0 87.1	12 36.4 +54.0 86.2	12 11.1 +54.1 85.3
14°	14 46.4 +54.0 88.5	14 21.1 +54.0 87.6	13 55.7 +54.0 86.7	13 30.4 +54.0 85.8	13 05.2 +54.0 84.9
15°	15 40.4 +53.9 88.0	15 15.1 +53.9 87.1	14 49.7 +54.0 86.2	14 24.4 +54.0 85.3	13 59.2 +54.0 84.4
16°	16 34.3 +53.9 87.6	16 09.0 +53.9 86.7	15 43.7 +53.9 85.8	15 18.4 +53.9 84.9	14 53.2 +53.9 84.0
17°	17 28.2 +53.8 87.1	17 02.9 +53.8 86.2	16 37.6 +53.8 85.3	16 12.3 +53.9 84.4	15 47.1 +53.9 83.5
18°	18 22.0 +53.7 86.6	17 56.7 +53.7 85.8	17 31.4 +53.8 84.9	17 06.2 +53.8 84.0	16 41.0 +53.8 83.1
19°	19 15.7 +53.7 86.2	18 50.4 +53.7 85.3	18 25.2 +53.7 84.4	18 00.0 +53.7 83.5	17 34.8 +53.8 82.6
20°	20 09.4 +53.6 85.7	19 44.1 +53.6 84.8	19 18.9 +53.6 83.9	18 53.7 +53.7 83.0	18 28.6 +53.6 82.1
21°	21 03.0 +53.5 85.2	20 37.7 +53.6 84.3	20 12.5 +53.6 83.4	19 47.4 +53.5 82.6	19 22.2 +53.6 81.7
22°	21 56.5 +53.4 84.7	21 31.3 +53.4 83.8	21 06.1 +53.4 83.0	20 40.9 +53.5 82.1	20 15.8 +53.6 81.2
23°	22 49.9 +53.3 84.2	22 24.7 +53.4 83.4	21 59.5 +53.4 82.5	21 34.4 +53.4 81.6	21 09.4 +53.4 80.7
24°	23 43.2 +53.3 83.7	23 18.1 +53.2 82.9	22 52.9 +53.3 82.0	22 27.8 +53.4 81.1	22 02.8 +53.4 80.2
25°	24 36.5 +53.1 83.2	24 11.3 +53.2 82.4	23 46.2 +53.2 81.5	23 21.2 +53.2 80.6	22 56.2 +53.2 79.7
26°	25 29.6 +53.0 82.7	25 04.5 +53.0 81.8	24 39.4 +53.1 81.0	24 14.4 +53.1 80.1	23 49.4 +53.2 79.2
27°	26 22.6 +52.9 82.2	25 57.5 +53.0 81.3	25 32.5 +53.0 80.5	25 07.5 +53.0 79.6	24 42.6 +53.1 78.7
28°	27 15.5 +52.8 81.7	26 50.5 +52.8 80.8	26 25.5 +52.8 79.9	26 00.5 +52.9 79.1	25 35.7 +52.9 78.2
29°	28 08.3 +52.7 81.1	27 43.3 +52.7 80.3	27 18.3 +52.8 79.4	26 53.4 +52.8 78.5	26 28.6 +52.9 77.7

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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 +54.4 90.0	-0 25.4 +54.4	-0 50.7 +54.4	-1 16.0 +54.4	-1 41.4 +54.4
1°	0 54.4 +54.4 89.6	0 29.0 +54.4 88.7	0 03.7 +54.4 87.8	-0 21.6 +54.3	-0 47.0 +54.5
2°	1 48.8 +54.3 89.2	1 23.4 +54.4 88.2	0 58.1 +54.3 87.3	0 32.7 +54.4 86.4	0 07.5 +54.4 85.5
3°	2 43.1 +54.4 88.7	2 17.8 +54.3 87.8	1 52.4 +54.4 86.9	1 27.1 +54.4 86.0	1 01.9 +54.4 85.1
4°	3 37.5 +54.3 88.3	3 12.1 +54.4 87.4	2 46.8 +54.4 86.5	2 21.5 +54.4 85.6	1 56.3 +54.4 84.7
5°	4 31.8 +54.4 87.9	4 06.5 +54.3 87.0	3 41.2 +54.3 86.1	3 15.9 +54.4 85.2	2 50.7 +54.3 84.3
6°	5 26.2 +54.3 87.5	5 00.8 +54.4 86.6	4 35.5 +54.4 85.6	4 10.3 +54.3 84.7	3 45.0 +54.4 83.8
7°	6 20.5 +54.3 87.0	5 55.2 +54.3 86.1	5 29.9 +54.3 85.2	5 04.6 +54.4 84.3	4 39.4 +54.4 83.4
8°	7 14.8 +54.2 86.6	6 49.5 +54.3 85.7	6 24.2 +54.3 84.8	5 59.0 +54.3 83.9	5 33.8 +54.3 83.0
9°	8 09.0 +54.3 86.2	7 43.8 +54.2 85.3	7 18.5 +54.3 84.4	6 53.3 +54.3 83.5	6 28.1 +54.3 82.6
10°	9 03.3 +54.2 85.7	8 38.0 +54.2 84.8	8 12.8 +54.2 83.9	7 47.6 +54.3 83.0	7 22.4 +54.3 82.1
11°	9 57.5 +54.2 85.3	9 32.2 +54.2 84.4	9 07.0 +54.2 83.5	8 41.9 +54.2 82.6	8 16.7 +54.3 81.7
12°	10 51.7 +54.1 84.9	10 26.4 +54.2 84.0	10 01.2 +54.2 83.1	9 36.1 +54.2 82.2	9 11.0 +54.2 81.3
13°	11 45.8 +54.1 84.4	11 20.6 +54.1 83.5	10 55.4 +54.2 82.6	10 30.3 +54.2 81.7	10 05.2 +54.2 80.8
14°	12 39.9 +54.1 84.0	12 14.7 +54.1 83.1	11 49.6 +54.1 82.2	11 24.5 +54.1 81.3	10 59.4 +54.2 80.4
15°	13 34.0 +54.0 83.5	13 08.8 +54.0 82.6	12 43.7 +54.0 81.8	12 18.6 +54.1 80.9	11 53.6 +54.1 80.0
16°	14 28.0 +53.9 83.1	14 02.8 +54.0 82.2	13 37.7 +54.1 81.3	13 12.7 +54.1 80.4	12 47.7 +54.1 79.5
17°	15 21.9 +53.9 82.6	14 56.8 +53.9 81.7	14 31.8 +53.9 80.9	14 06.8 +53.9 80.0	13 41.8 +54.0 79.1
18°	16 15.8 +53.9 82.2	15 50.7 +53.9 81.3	15 25.7 +53.9 80.4	15 00.7 +54.0 79.5	14 35.8 +54.0 78.6
19°	17 09.7 +53.8 81.7	16 44.6 +53.8 80.8	16 19.6 +53.9 79.9	15 54.7 +53.9 79.1	15 29.8 +54.0 78.2
20°	18 03.5 +53.7 81.3	17 38.4 +53.8 80.4	17 13.5 +53.8 79.5	16 48.6 +53.8 78.6	16 23.8 +53.8 77.7
21°	18 57.2 +53.6 80.8	18 32.2 +53.7 79.9	18 07.3 +53.7 79.0	17 42.4 +53.8 78.1	17 17.6 +53.8 77.3
22°	19 50.8 +53.6 80.3	19 25.9 +53.6 79.4	19 01.0 +53.6 78.6	18 36.2 +53.6 77.7	18 11.4 +53.8 76.8
23°	20 44.4 +53.5 79.8	20 19.5 +53.5 79.0	19 54.6 +53.6 78.1	19 29.8 +53.7 77.2	19 05.2 +53.6 76.3
24°	21 37.9 +53.4 79.3	21 13.0 +53.4 78.5	20 48.2 +53.5 77.6	20 23.5 +53.5 76.7	19 58.8 +53.6 75.9
25°	22 31.3 +53.3 78.9	22 06.4 +53.4 78.0	21 41.7 +53.4 77.1	21 17.0 +53.4 76.2	20 52.4 +53.5 75.4
26°	23 24.6 +53.2 78.4	22 59.8 +53.2 77.5	22 35.1 +53.3 76.6	22 10.4 +53.4 75.8	21 45.9 +53.4 74.9
27°	24 17.8 +53.1 77.8	23 53.0 +53.2 77.0	23 28.4 +53.2 76.1	23 03.8 +53.3 75.3	22 39.3 +53.4 74.4
28°	25 10.9 +53.0 77.3	24 46.2 +53.0 76.5	24 21.6 +53.1 75.6	23 57.1 +53.1 74.8	23 32.7 +53.2 73.9
29°	26 03.9 +52.9 76.8	25 39.2 +53.0 76.0	25 14.7 +53.0 75.1	24 50.2 +53.1 74.2	24 25.9 +53.1 73.4

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°	-2 06.7 +54.5	-2 31.9 +54.4	-2 57.1 +54.4	-3 22.3 +54.5	-3 47.4 +54.5
1°	-1 12.2 +54.4	-1 37.5 +54.5	-2 02.7 +54.5	-2 27.8 +54.4	-2 52.9 +54.5
2°	-0 17.8 +54.4	-0 43.0 +54.4	-1 08.2 +54.4	-1 33.4 +54.5	-1 58.4 +54.5
3°	0 36.6 +54.4 84.2	0 11.4 +54.4 83.3	-0 13.8 +54.5	-0 38.9 +54.5	-1 03.9 +54.5
4°	1 31.0 +54.4 83.8	1 05.8 +54.5 82.9	0 40.7 +54.5 82.0	0 15.6 +54.5 81.1	-0 09.4 +54.5
5°	2 25.4 +54.5 83.4	2 00.3 +54.4 82.5	1 35.2 +54.4 81.6	1 10.1 +54.5 80.6	0 45.1 +54.6 79.7
6°	3 19.9 +54.4 82.9	2 54.7 +54.4 82.0	2 29.6 +54.5 81.1	2 04.6 +54.5 80.2	1 39.7 +54.5 79.3
7°	4 14.3 +54.3 82.5	3 49.1 +54.5 81.6	3 24.1 +54.4 80.7	2 59.1 +54.5 79.8	2 34.2 +54.5 78.9
8°	5 08.6 +54.4 82.1	4 43.6 +54.3 81.2	4 18.5 +54.4 80.3	3 53.6 +54.4 79.4	3 28.7 +54.5 78.5
9°	6 03.0 +54.4 81.7	5 37.9 +54.4 80.8	5 12.9 +54.5 79.9	4 48.0 +54.5 79.0	4 23.2 +54.5 78.1
10°	6 57.4 +54.3 81.2	6 32.3 +54.4 80.3	6 07.4 +54.3 79.4	5 42.5 +54.4 78.5	5 17.7 +54.4 77.6
11°	7 51.7 +54.3 80.8	7 26.7 +54.3 79.9	7 01.7 +54.4 79.0	6 36.9 +54.4 78.1	6 12.1 +54.5 77.2
12°	8 46.0 +54.2 80.4	8 21.0 +54.3 79.5	7 56.1 +54.4 78.6	7 31.3 +54.4 77.7	7 06.6 +54.4 76.8
13°	9 40.2 +54.3 79.9	9 15.3 +54.3 79.1	8 50.5 +54.3 78.2	8 25.7 +54.3 77.3	8 01.0 +54.4 76.4
14°	10 34.5 +54.2 79.5	10 09.6 +54.2 78.6	9 44.8 +54.2 77.7	9 20.0 +54.3 76.8	8 55.4 +54.3 76.0
15°	11 28.7 +54.1 79.1	11 03.8 +54.2 78.2	10 39.0 +54.3 77.3	10 14.3 +54.3 76.4	9 49.7 +54.4 75.5
16°	12 22.8 +54.2 78.6	11 58.0 +54.2 77.8	11 33.3 +54.2 76.9	11 08.6 +54.3 76.0	10 44.1 +54.3 75.1
17°	13 17.0 +54.0 78.2	12 52.2 +54.1 77.3	12 27.5 +54.1 76.4	12 02.9 +54.2 75.5	11 38.4 +54.2 74.7
18°	14 11.0 +54.1 77.7	13 46.3 +54.1 76.9	13 21.6 +54.2 76.0	12 57.1 +54.2 75.1	12 32.6 +54.3 74.2
19°	15 05.1 +53.9 77.3	14 40.4 +54.0 76.4	14 15.8 +54.0 75.5	13 51.3 +54.1 74.7	13 26.9 +54.1 73.8
20°	15 59.0 +53.9 76.8	15 34.4 +53.9 76.0	15 09.8 +54.0 75.1	14 45.4 +54.0 74.2	14 21.0 +54.1 73.3
21°	16 52.9 +53.9 76.4	16 28.3 +53.9 75.5	16 03.8 +54.0 74.6	15 39.4 +54.0 73.8	15 15.1 +54.1 72.9
22°	17 46.8 +53.8 75.9	17 22.2 +53.9 75.1	16 57.8 +53.9 74.2	16 33.4 +54.0 73.3	16 09.2 +54.0 72.4
23°	18 40.6 +53.7 75.5	18 16.1 +53.7 74.6	17 51.7 +53.8 73.7	17 27.4 +53.9 72.9	17 03.2 +54.0 72.0
24°	19 34.3 +53.6 75.0	19 09.8 +53.7 74.1	18 45.5 +53.8 73.3	18 21.3 +53.8 72.4	17 57.2 +53.8 71.5
25°	20 27.9 +53.6 74.5	20 03.5 +53.7 73.6	19 39.3 +53.6 72.8	19 15.1 +53.7 71.9	18 51.0 +53.9 71.1
26°	21 21.5 +53.5 74.0	20 57.2 +53.5 73.2	20 32.9 +53.6 72.3	20 08.8 +53.7 71.5	19 44.9 +53.7 70.6
27°	22 15.0 +53.3 73.5	21 50.7 +53.4 72.7	21 26.5 +53.6 71.8	21 02.5 +53.6 71.0	20 38.6 +53.7 70.1
28°	23 08.3 +53.3 73.0	22 44.1 +53.4 72.2	22 20.1 +53.4 71.3	21 56.1 +53.5 70.5	21 32.3 +53.5 69.6
29°	24 01.6 +53.2 72.5	23 37.5 +53.3 71.7	23 13.5 +53.3 70.8	22 49.6 +53.4 70.0	22 25.8 +53.5 69.2

Dec	LHA 100° / 260°	LHA 101° / 259°	LHA 102° / 258°	LHA 103° / 257°	LHA 104° / 256°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-4 12.5 +54.5	-4 37.5 +54.5	-5 02.5 +54.6	-5 27.3 +54.6	-5 52.1 +54.7
1°	-3 18.0 +54.6	-3 43.0 +54.6	-4 07.9 +54.7	-4 32.7 +54.7	-4 57.4 +54.7
2°	-2 23.4 +54.5	-2 48.4 +54.6	-3 13.2 +54.6	-3 38.0 +54.6	-4 02.7 +54.7
3°	-1 28.9 +54.6	-1 53.8 +54.6	-2 18.6 +54.6	-2 43.4 +54.7	-3 08.0 +54.7
4°	-0 34.3 +54.5	-0 59.2 +54.6	-1 24.0 +54.6	-1 48.7 +54.7	-2 13.3 +54.7
5°	0 20.2 +54.6 78.8	-0 04.6 +54.6	-0 29.4 +54.7	-0 54.0 +54.6	-1 18.6 +54.7
6°	1 14.8 +54.5 78.4	0 50.0 +54.6 77.5	0 25.3 +54.6 76.6	0 00.6 +54.7 75.7	-0 23.9 +54.7
7°	2 09.3 +54.6 78.0	1 44.6 +54.6 77.1	1 19.9 +54.6 76.2	0 55.3 +54.7 75.3	0 30.8 +54.8 74.4
8°	3 03.9 +54.5 77.6	2 39.2 +54.5 76.7	2 14.5 +54.6 75.8	1 50.0 +54.7 74.9	1 25.6 +54.7 74.0
9°	3 58.4 +54.5 77.2	3 33.7 +54.6 76.3	3 09.1 +54.7 75.4	2 44.7 +54.6 74.5	2 20.3 +54.7 73.6
10°	4 52.9 +54.5 76.7	4 28.3 +54.5 75.9	4 03.8 +54.6 75.0	3 39.3 +54.7 74.1	3 15.0 +54.7 73.2
11°	5 47.4 +54.5 76.3	5 22.8 +54.6 75.4	4 58.4 +54.5 74.5	4 34.0 +54.6 73.6	4 09.7 +54.7 72.7
12°	6 41.9 +54.5 75.9	6 17.4 +54.5 75.0	5 52.9 +54.6 74.1	5 28.6 +54.6 73.2	5 04.4 +54.7 72.3
13°	7 36.4 +54.4 75.5	7 11.9 +54.5 74.6	6 47.5 +54.5 73.7	6 23.2 +54.6 72.8	5 59.1 +54.6 71.9
14°	8 30.8 +54.4 75.1	8 06.4 +54.4 74.2	7 42.0 +54.6 73.3	7 17.8 +54.6 72.4	6 53.7 +54.6 71.5
15°	9 25.2 +54.4 74.6	9 00.8 +54.5 73.7	8 36.6 +54.4 72.9	8 12.4 +54.5 72.0	7 48.3 +54.6 71.1
16°	10 19.6 +54.4 74.2	9 55.3 +54.4 73.3	9 31.0 +54.5 72.4	9 06.9 +54.6 71.6	8 42.9 +54.6 70.7
17°	11 14.0 +54.3 73.8	10 49.7 +54.4 72.9	10 25.5 +54.4 72.0	10 01.5 +54.4 71.1	9 37.5 +54.6 70.2
18°	12 08.3 +54.3 73.3	11 44.1 +54.3 72.5	11 19.9 +54.4 71.6	10 55.9 +54.5 70.7	10 32.1 +54.5 69.8
19°	13 02.6 +54.2 72.9	12 38.4 +54.3 72.0	12 14.3 +54.4 71.1	11 50.4 +54.4 70.3	11 26.6 +54.5 69.4
20°	13 56.8 +54.2 72.5	13 32.7 +54.2 71.6	13 08.7 +54.3 70.7	12 44.8 +54.4 69.8	12 21.1 +54.4 69.0
21°	14 51.0 +54.1 72.0	14 26.9 +54.2 71.1	14 03.0 +54.2 70.3	13 39.2 +54.3 69.4	13 15.5 +54.4 68.5
22°	15 45.1 +54.1 71.6	15 21.1 +54.1 70.7	14 57.2 +54.2 69.8	14 33.5 +54.3 69.0	14 09.9 +54.3 68.1
23°	16 39.2 +54.0 71.1	16 15.2 +54.1 70.3	15 51.4 +54.2 69.4	15 27.8 +54.2 68.5	15 04.2 +54.3 67.7
24°	17 33.2 +53.9 70.7	17 09.3 +54.0 69.8	16 45.6 +54.1 68.9	16 22.0 +54.1 68.1	15 58.5 +54.3 67.2
25°	18 27.1 +53.9 70.2	18 03.3 +54.0 69.3	17 39.7 +54.0 68.5	17 16.1 +54.2 67.6	16 52.8 +54.2 66.8
26°	19 21.0 +53.8 69.7	18 57.3 +53.9 68.9	18 33.7 +54.0 68.0	18 10.3 +54.0 67.2	17 47.0 +54.1 66.3
27°	20 14.8 +53.8 69.3	19 51.2 +53.8 68.4	19 27.7 +53.8 67.6	19 04.3 +54.0 66.7	18 41.1 +54.0 65.9
28°	21 08.6 +53.6 68.8	20 45.0 +53.7 67.9	20 21.5 +53.9 67.1	19 58.3 +53.9 66.3	19 35.1 +54.0 65.4
29°	22 02.2 +53.6 68.3	21 38.7 +53.7 67.5	21 15.4 +53.7 66.6	20 52.2 +53.8 65.8	20 29.1 +53.9 64.9

Dec	LHA 105° / 255°	LHA 106° / 254°	LHA 107° / 253°	LHA 108° / 252°	LHA 109° / 251°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-6 16.8 +54.7	-6 41.4 +54.8	-7 05.9 +54.8	-7 30.2 +54.8	-7 54.5 +54.9
1°	-5 22.1 +54.8	-5 46.6 +54.8	-6 11.1 +54.9	-6 35.4 +54.9	-6 59.6 +54.9
2°	-4 27.3 +54.7	-4 51.8 +54.8	-5 16.2 +54.8	-5 40.5 +54.9	-6 04.7 +55.0
3°	-3 32.6 +54.8	-3 57.0 +54.8	-4 21.4 +54.9	-4 45.6 +54.9	-5 09.7 +55.0
4°	-2 37.8 +54.7	-3 02.2 +54.8	-3 26.5 +54.8	-3 50.7 +54.9	-4 14.7 +54.9
5°	-1 43.1 +54.8	-2 07.4 +54.8	-2 31.7 +54.9	-2 55.8 +55.0	-3 19.8 +55.0
6°	-0 48.3 +54.8	-1 12.6 +54.8	-1 36.8 +54.9	-2 00.8 +54.9	-2 24.8 +55.0
7°	0 06.5 +54.8 73.5	-0 17.8 +54.9	-0 41.9 +54.9	-1 05.9 +54.9	-1 29.8 +55.0
8°	1 01.3 +54.7 73.1	0 37.1 +54.8 72.2	0 13.0 +54.9 71.3	-0 11.0 +55.0	-0 34.8 +55.0
9°	1 56.0 +54.8 72.7	1 31.9 +54.8 71.8	1 07.9 +54.8 70.9	0 44.0 +54.9 70.0	0 20.2 +55.0 69.1
10°	2 50.8 +54.7 72.3	2 26.7 +54.8 71.4	2 02.7 +54.9 70.5	1 38.9 +54.9 69.6	1 15.2 +55.0 68.7
11°	3 45.5 +54.8 71.8	3 21.5 +54.8 70.9	2 57.6 +54.9 70.0	2 33.8 +55.0 69.2	2 10.2 +55.0 68.3
12°	4 40.3 +54.7 71.4	4 16.3 +54.8 70.5	3 52.5 +54.8 69.6	3 28.8 +54.9 68.7	3 05.2 +55.0 67.9
13°	5 35.0 +54.7 71.0	5 11.1 +54.8 70.1	4 47.3 +54.9 69.2	4 23.7 +54.9 68.3	4 00.2 +55.0 67.4
14°	6 29.7 +54.7 70.6	6 05.9 +54.7 69.7	5 42.2 +54.8 68.8	5 18.6 +54.9 67.9	4 55.2 +54.9 67.0
15°	7 24.4 +54.7 70.2	7 00.6 +54.8 69.3	6 37.0 +54.8 68.4	6 13.5 +54.8 67.5	5 50.1 +54.9 66.6
16°	8 19.1 +54.6 69.8	7 55.4 +54.7 68.9	7 31.8 +54.7 68.0	7 08.3 +54.9 67.1	6 45.0 +55.0 66.2
17°	9 13.7 +54.6 69.4	8 50.1 +54.6 68.5	8 26.5 +54.8 67.6	8 03.2 +54.8 66.7	7 40.0 +54.9 65.8
18°	10 08.3 +54.6 68.9	9 44.7 +54.7 68.1	9 21.3 +54.7 67.2	8 58.0 +54.8 66.3	8 34.9 +54.8 65.4
19°	11 02.9 +54.6 68.5	10 39.4 +54.6 67.6	10 16.0 +54.7 66.8	9 52.8 +54.8 65.9	9 29.7 +54.9 65.0
20°	11 57.5 +54.5 68.1	11 34.0 +54.6 67.2	11 10.7 +54.7 66.3	10 47.6 +54.7 65.5	10 24.6 +54.8 64.6
21°	12 52.0 +54.4 67.7	12 28.6 +54.5 66.8	12 05.4 +54.6 65.9	11 42.3 +54.7 65.1	11 19.4 +54.8 64.2
22°	13 46.4 +54.5 67.2	13 23.1 +54.5 66.4	13 00.0 +54.6 65.5	12 37.0 +54.6 64.6	12 14.2 +54.7 63.8
23°	14 40.9 +54.3 66.8	14 17.6 +54.5 65.9	13 54.6 +54.5 65.1	13 31.6 +54.6 64.2	13 08.9 +54.7 63.4
24°	15 35.2 +54.3 66.4	15 12.1 +54.4 65.5	14 49.1 +54.5 64.6	14 26.2 +54.6 63.8	14 03.6 +54.6 62.9
25°	16 29.5 +54.3 65.9	16 06.5 +54.3 65.1	15 43.6 +54.4 64.2	15 20.8 +54.5 63.4	14 58.2 +54.6 62.5
26°	17 23.8 +54.2 65.5	17 00.8 +54.3 64.6	16 38.0 +54.4 63.8	16 15.3 +54.5 62.9	15 52.8 +54.6 62.1
27°	18 18.0 +54.1 65.0	17 55.1 +54.2 64.2	17 32.4 +54.3 63.3	17 09.8 +54.4 62.5	16 47.4 +54.5 61.6
28°	19 12.1 +54.1 64.6	18 49.3 +54.2 63.7	18 26.7 +54.2 62.9	18 04.2 +54.3 62.0	17 41.9 +54.4 61.2
29°	20 06.2 +54.0 64.1	19 43.5 +54.1 63.3	19 20.9 +54.2 62.4	18 58.5 +54.3 61.6	18 36.3 +54.4 60.8

Dec	LHA 110° / 250°	LHA 111° / 249°	LHA 112° / 248°	LHA 113° / 247°	LHA 114° / 246°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-8 18.7 +55.0	-8 42.7 +55.1	-9 06.5 +55.0	-9 30.3 +55.2	-9 53.9 +55.2
1°	-7 23.7 +55.0	-7 47.6 +55.0	-8 11.5 +55.1	-8 35.1 +55.1	-8 58.7 +55.3
2°	-6 28.7 +55.0	-6 52.6 +55.1	-7 16.4 +55.2	-7 40.0 +55.2	-8 03.4 +55.2
3°	-5 33.7 +55.0	-5 57.5 +55.1	-6 21.2 +55.1	-6 44.8 +55.2	-7 08.2 +55.3
4°	-4 38.7 +55.1	-5 02.4 +55.1	-5 26.1 +55.2	-5 49.6 +55.3	-6 12.9 +55.3
5°	-3 43.6 +55.0	-4 07.3 +55.1	-4 30.9 +55.2	-4 54.3 +55.2	-5 17.6 +55.3
6°	-2 48.6 +55.1	-3 12.2 +55.1	-3 35.7 +55.2	-3 59.1 +55.3	-4 22.3 +55.4
7°	-1 53.5 +55.0	-2 17.1 +55.1	-2 40.5 +55.1	-3 03.8 +55.2	-3 26.9 +55.3
8°	-0 58.5 +55.1	-1 22.0 +55.1	-1 45.4 +55.2	-2 08.6 +55.3	-2 31.6 +55.3
9°	-0 03.4 +55.1	-0 26.9 +55.2	-0 50.2 +55.2	-1 13.3 +55.3	-1 36.3 +55.4
10°	0 51.7 +55.0 67.7	0 28.3 +55.1 66.8	0 05.0 +55.2 65.9	-0 18.0 +55.3	-0 40.9 +55.3
11°	1 46.7 +55.1 67.3	1 23.4 +55.1 66.4	1 00.2 +55.2 65.5	0 37.3 +55.2 64.6	0 14.4 +55.4 63.7
12°	2 41.8 +55.0 67.0	2 18.5 +55.2 66.1	1 55.4 +55.2 65.2	1 32.5 +55.3 64.3	1 09.8 +55.4 63.4
13°	3 36.8 +55.1 66.6	3 13.7 +55.1 65.7	2 50.6 +55.2 64.8	2 27.8 +55.3 63.9	2 05.1 +55.4 63.0
14°	4 31.9 +55.0 66.2	4 08.8 +55.1 65.3	3 45.8 +55.2 64.4	3 23.1 +55.2 63.5	3 00.5 +55.3 62.6
15°	5 26.9 +55.0 65.8	5 03.9 +55.1 64.9	4 41.0 +55.2 64.0	4 18.3 +55.2 63.1	3 55.8 +55.3 62.2
16°	6 21.9 +55.0 65.4	5 59.0 +55.0 64.5	5 36.2 +55.1 63.6	5 13.5 +55.3 62.7	4 51.1 +55.3 61.8
17°	7 16.9 +55.0 65.0	6 54.0 +55.1 64.1	6 31.3 +55.1 63.2	6 08.8 +55.2 62.3	5 46.4 +55.3 61.4
18°	8 11.9 +54.9 64.5	7 49.1 +55.0 63.7	7 26.4 +55.1 62.8	7 04.0 +55.2 61.9	6 41.7 +55.3 61.0
19°	9 06.8 +54.9 64.1	8 44.1 +55.0 63.3	8 21.5 +55.1 62.4	7 59.2 +55.1 61.5	7 37.0 +55.2 60.6
20°	10 01.7 +54.9 63.7	9 39.1 +55.0 62.9	9 16.6 +55.1 62.0	8 54.3 +55.2 61.1	8 32.2 +55.2 60.2
21°	10 56.6 +54.9 63.3	10 34.1 +54.9 62.5	10 11.7 +55.0 61.6	9 49.5 +55.1 60.7	9 27.4 +55.2 59.8
22°	11 51.5 +54.8 62.9	11 29.0 +54.9 62.0	11 06.7 +55.0 61.2	10 44.6 +55.1 60.3	10 22.6 +55.2 59.4
23°	12 46.3 +54.8 62.5	12 23.9 +54.9 61.6	12 01.7 +54.9 60.8	11 39.7 +55.0 59.9	11 17.8 +55.2 59.0
24°	13 41.1 +54.7 62.1	13 18.8 +54.8 61.2	12 56.6 +55.0 60.4	12 34.7 +55.0 59.5	12 13.0 +55.1 58.6
25°	14 35.8 +54.7 61.6	14 13.6 +54.8 60.8	13 51.6 +54.8 59.9	13 29.7 +55.0 59.1	13 08.1 +55.0 58.2
26°	15 30.5 +54.7 61.2	15 08.4 +54.7 60.4	14 46.4 +54.9 59.5	14 24.7 +54.9 58.7	14 03.1 +55.0 57.8
27°	16 25.2 +54.6 60.8	16 03.1 +54.7 59.9	15 41.3 +54.7 59.1	15 19.6 +54.9 58.3	14 58.1 +55.0 57.4
28°	17 19.8 +54.5 60.4	16 57.8 +54.6 59.5	16 36.0 +54.8 58.7	16 14.5 +54.8 57.8	15 53.1 +54.9 57.0
29°	18 14.3 +54.5 59.9	17 52.4 +54.6 59.1	17 30.8 +54.6 58.2	17 09.3 +54.8 57.4	16 48.0 +54.9 56.6

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°	-9 22.0 +55.3	-9 45.2 +55.3			
2°	-8 26.7 +55.3	-8 49.9 +55.4	-9 12.8 +55.4	-9 35.6 +55.5	-9 58.2 +55.6
3°	-7 31.4 +55.4	-7 54.5 +55.5	-8 17.4 +55.5	-8 40.1 +55.6	-9 02.6 +55.7
4°	-6 36.0 +55.3	-6 59.0 +55.4	-7 21.9 +55.6	-7 44.5 +55.6	-8 06.9 +55.6
5°	-5 40.7 +55.4	-6 03.6 +55.5	-6 26.3 +55.5	-6 48.9 +55.6	-7 11.3 +55.7
6°	-4 45.3 +55.4	-5 08.1 +55.4	-5 30.8 +55.5	-5 53.3 +55.6	-6 15.6 +55.7
7°	-3 49.9 +55.4	-4 12.7 +55.5	-4 35.3 +55.6	-4 57.7 +55.7	-5 19.9 +55.8
8°	-2 54.5 +55.4	-3 17.2 +55.5	-3 39.7 +55.6	-4 02.0 +55.6	-4 24.1 +55.7
9°	-1 59.1 +55.4	-2 21.7 +55.5	-2 44.1 +55.5	-3 06.4 +55.7	-3 28.4 +55.7
10°	-1 03.7 +55.5	-1 26.2 +55.5	-1 48.6 +55.6	-2 10.7 +55.6	-2 32.7 +55.8
11°	-0 08.2 +55.4	-0 30.7 +55.5	-0 53.0 +55.6	-1 15.1 +55.7	-1 36.9 +55.7
12°	0 47.2 +55.4 62.4	0 24.8 +55.5 61.5	0 02.6 +55.6 60.6	-0 19.4 +55.7	-0 41.2 +55.8
13°	1 42.6 +55.4 62.1	1 20.3 +55.5 61.2	0 58.2 +55.6 60.3	0 36.3 +55.6 59.4	0 14.6 +55.7 58.5
14°	2 38.0 +55.4 61.7	2 15.8 +55.5 60.8	1 53.8 +55.6 59.9	1 31.9 +55.7 59.0	1 10.3 +55.8 58.1
15°	3 33.4 +55.4 61.3	3 11.3 +55.5 60.4	2 49.4 +55.5 59.5	2 27.6 +55.7 58.6	2 06.1 +55.7 57.7
16°	4 28.8 +55.4 60.9	4 06.8 +55.5 60.0	3 44.9 +55.6 59.1	3 23.3 +55.6 58.2	3 01.8 +55.7 57.3
17°	5 24.2 +55.4 60.5	5 02.3 +55.4 59.6	4 40.5 +55.5 58.8	4 18.9 +55.6 57.9	3 57.5 +55.8 57.0
18°	6 19.6 +55.4 60.1	5 57.7 +55.5 59.3	5 36.0 +55.6 58.4	5 14.5 +55.7 57.5	4 53.3 +55.7 56.6
19°	7 15.0 +55.3 59.8	6 53.2 +55.4 58.9	6 31.6 +55.5 58.0	6 10.2 +55.6 57.1	5 49.0 +55.7 56.2
20°	8 10.3 +55.3 59.4	7 48.6 +55.4 58.5	7 27.1 +55.5 57.6	7 05.8 +55.6 56.7	6 44.7 +55.7 55.9
21°	9 05.6 +55.3 59.0	8 44.0 +55.4 58.1	8 22.6 +55.4 57.2	8 01.4 +55.5 56.4	7 40.4 +55.6 55.5
22°	10 00.9 +55.3 58.6	9 39.4 +55.3 57.7	9 18.0 +55.5 56.8	8 56.9 +55.6 56.0	8 36.0 +55.7 55.1
23°	10 56.2 +55.2 58.2	10 34.7 +55.3 57.3	10 13.5 +55.4 56.5	9 52.5 +55.5 55.6	9 31.7 +55.6 54.7
24°	11 51.4 +55.2 57.8	11 30.0 +55.3 56.9	11 08.9 +55.4 56.1	10 48.0 +55.5 55.2	10 27.3 +55.5 54.3
25°	12 46.6 +55.2 57.4	12 25.3 +55.3 56.5	12 04.3 +55.4 55.7	11 43.5 +55.4 54.8	11 22.8 +55.6 54.0
26°	13 41.8 +55.1 57.0	13 20.6 +55.2 56.1	12 59.7 +55.3 55.3	12 38.9 +55.4 54.4	12 18.4 +55.5 53.6
27°	14 36.9 +55.1 56.6	14 15.8 +55.2 55.7	13 55.0 +55.3 54.9	13 34.3 +55.4 54.0	13 13.9 +55.5 53.2
28°	15 32.0 +55.0 56.2	15 11.0 +55.1 55.3	14 50.3 +55.2 54.5	14 29.7 +55.4 53.6	14 09.4 +55.5 52.8
29°	16 27.0 +55.0 55.7	16 06.1 +55.1 54.9	15 45.5 +55.2 54.1	15 25.1 +55.3 53.2	15 04.9 +55.4 52.4

Dec	LHA 120° / 240°	LHA 121° / 239°	LHA 122° / 238°	LHA 123° / 237°	LHA 124° / 236°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°	-9 24.9 +55.7	-9 47.0 +55.8			
4°	-8 29.2 +55.8	-8 51.2 +55.8	-9 13.1 +56.0	-9 34.7 +56.0	-9 56.1 +56.1
5°	-7 33.4 +55.7	-7 55.4 +55.9	-8 17.1 +55.9	-8 38.7 +56.0	-9 00.0 +56.1
6°	-6 37.7 +55.8	-6 59.5 +55.8	-7 21.2 +55.9	-7 42.7 +56.1	-8 03.9 +56.1
7°	-5 41.9 +55.8	-6 03.7 +55.9	-6 25.3 +56.0	-6 46.6 +56.0	-7 07.8 +56.2
8°	-4 46.1 +55.8	-5 07.8 +55.9	-5 29.3 +56.0	-5 50.6 +56.1	-6 11.6 +56.1
9°	-3 50.3 +55.9	-4 11.9 +55.9	-4 33.3 +56.0	-4 54.5 +56.1	-5 15.5 +56.2
10°	-2 54.4 +55.8	-3 16.0 +55.9	-3 37.3 +56.0	-3 58.4 +56.1	-4 19.3 +56.2
11°	-1 58.6 +55.8	-2 20.1 +55.9	-2 41.3 +56.0	-3 02.3 +56.1	-3 23.1 +56.2
12°	-1 02.8 +55.9	-1 24.2 +56.0	-1 45.3 +56.0	-2 06.2 +56.1	-2 26.9 +56.2
13°	-0 06.9 +55.8	-0 28.2 +55.9	-0 49.3 +56.0	-1 10.1 +56.1	-1 30.7 +56.2
14°	0 48.9 +55.8 57.2	0 27.7 +55.9 56.3	0 06.7 +56.0 55.4	-0 14.0 +56.1	-0 34.5 +56.1
15°	1 44.7 +55.9 56.8	1 23.6 +55.9 55.9	1 02.7 +56.0 55.0	0 42.1 +56.1 54.1	0 21.6 +56.2 53.2
16°	2 40.6 +55.8 56.4	2 19.5 +56.0 55.6	1 58.7 +56.1 54.7	1 38.2 +56.1 53.8	1 17.8 +56.2 52.9
17°	3 36.4 +55.8 56.1	3 15.5 +55.9 55.2	2 54.8 +55.9 54.3	2 34.3 +56.1 53.4	2 14.0 +56.2 52.5
18°	4 32.2 +55.8 55.7	4 11.4 +55.9 54.8	3 50.7 +56.0 53.9	3 30.4 +56.1 53.0	3 10.2 +56.2 52.2
19°	5 28.0 +55.8 55.3	5 07.3 +55.8 54.5	4 46.7 +56.0 53.6	4 26.5 +56.0 52.7	4 06.4 +56.2 51.8
20°	6 23.8 +55.8 55.0	6 03.1 +55.9 54.1	5 42.7 +56.0 53.2	5 22.5 +56.1 52.3	5 02.6 +56.1 51.5
21°	7 19.6 +55.7 54.6	6 59.0 +55.9 53.7	6 38.7 +55.9 52.9	6 18.6 +56.0 52.0	5 58.7 +56.2 51.1
22°	8 15.3 +55.8 54.2	7 54.9 +55.8 53.4	7 34.6 +56.0 52.5	7 14.6 +56.1 51.6	6 54.9 +56.1 50.7
23°	9 11.1 +55.7 53.9	8 50.7 +55.8 53.0	8 30.6 +55.9 52.1	8 10.7 +56.0 51.3	7 51.0 +56.1 50.4
24°	10 06.8 +55.7 53.5	9 46.5 +55.8 52.6	9 26.5 +55.9 51.8	9 06.7 +56.0 50.9	8 47.1 +56.1 50.0
25°	11 02.5 +55.6 53.1	10 42.3 +55.8 52.2	10 22.4 +55.8 51.4	10 02.7 +55.9 50.5	9 43.2 +56.1 49.7
26°	11 58.1 +55.6 52.7	11 38.1 +55.7 51.9	11 18.2 +55.9 51.0	10 58.6 +56.0 50.2	10 39.3 +56.0 49.3
27°	12 53.7 +55.6 52.3	12 33.8 +55.7 51.5	12 14.1 +55.8 50.6	11 54.6 +55.9 49.8	11 35.3 +56.1 48.9
28°	13 49.3 +55.6 51.9	13 29.5 +55.6 51.1	13 09.9 +55.7 50.3	12 50.5 +55.9 49.4	12 31.4 +55.9 48.6
29°	14 44.9 +55.5 51.6	14 25.1 +55.7 50.7	14 05.6 +55.8 49.9	13 46.4 +55.8 49.0	13 27.3 +56.0 48.2

Dec	LHA 125° / 235°	LHA 126° / 234°	LHA 127° / 233°	LHA 128° / 232°	LHA 129° / 231°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°	-9 21.1 +56.2	-9 41.9 +56.2			
6°	-8 24.9 +56.2	-8 45.7 +56.3	-9 06.2 +56.4	-9 26.5 +56.5	-9 46.5 +56.6
7°	-7 28.7 +56.3	-7 49.4 +56.4	-8 09.8 +56.4	-8 30.0 +56.5	-8 49.9 +56.6
8°	-6 32.4 +56.2	-6 53.0 +56.3	-7 13.4 +56.5	-7 33.5 +56.6	-7 53.3 +56.6
9°	-5 36.2 +56.3	-5 56.7 +56.4	-6 16.9 +56.4	-6 36.9 +56.5	-6 56.7 +56.6
10°	-4 39.9 +56.2	-5 00.3 +56.3	-5 20.5 +56.5	-5 40.4 +56.5	-6 00.1 +56.7
11°	-3 43.7 +56.3	-4 04.0 +56.4	-4 24.0 +56.4	-4 43.9 +56.6	-5 03.4 +56.6
12°	-2 47.4 +56.3	-3 07.6 +56.4	-3 27.6 +56.5	-3 47.3 +56.6	-4 06.8 +56.7
13°	-1 51.1 +56.3	-2 11.2 +56.3	-2 31.1 +56.5	-2 50.7 +56.5	-3 10.1 +56.7
14°	-0 54.8 +56.3	-1 14.9 +56.4	-1 34.6 +56.4	-1 54.2 +56.6	-2 13.4 +56.6
15°	0 01.5 +56.3 52.3	-0 18.5 +56.4	-0 38.2 +56.5	-0 57.6 +56.6	-1 16.8 +56.7
16°	0 57.8 +56.2 52.0	0 37.9 +56.4 51.1	0 18.3 +56.5 50.1	-0 01.0 +56.5	-0 20.1 +56.7
17°	1 54.0 +56.3 51.6	1 34.3 +56.4 50.7	1 14.8 +56.5 49.8	0 55.5 +56.6 48.9	0 36.6 +56.6 48.0
18°	2 50.3 +56.3 51.3	2 30.7 +56.3 50.4	2 11.3 +56.4 49.5	1 52.1 +56.6 48.6	1 33.2 +56.7 47.7
19°	3 46.6 +56.3 50.9	3 27.0 +56.4 50.0	3 07.7 +56.5 49.1	2 48.7 +56.6 48.2	2 29.9 +56.7 47.3
20°	4 42.9 +56.2 50.6	4 23.4 +56.4 49.7	4 04.2 +56.5 48.8	3 45.3 +56.5 47.9	3 26.6 +56.6 47.0
21°	5 39.1 +56.3 50.2	5 19.8 +56.3 49.3	5 00.7 +56.4 48.5	4 41.8 +56.6 47.6	4 23.2 +56.7 46.7
22°	6 35.4 +56.2 49.9	6 16.1 +56.3 49.0	5 57.1 +56.4 48.1	5 38.4 +56.5 47.2	5 19.9 +56.6 46.4
23°	7 31.6 +56.2 49.5	7 12.4 +56.4 48.6	6 53.5 +56.5 47.8	6 34.9 +56.5 46.9	6 16.5 +56.6 46.0
24°	8 27.8 +56.2 49.2	8 08.8 +56.3 48.3	7 50.0 +56.4 47.4	7 31.4 +56.5 46.6	7 13.1 +56.6 45.7
25°	9 24.0 +56.2 48.8	9 05.1 +56.2 47.9	8 46.4 +56.3 47.1	8 27.9 +56.5 46.2	8 09.7 +56.6 45.4
26°	10 20.2 +56.1 48.5	10 01.3 +56.3 47.6	9 42.7 +56.4 46.7	9 24.4 +56.5 45.9	9 06.3 +56.6 45.0
27°	11 16.3 +56.2 48.1	10 57.6 +56.2 47.2	10 39.1 +56.3 46.4	10 20.9 +56.4 45.5	10 02.9 +56.6 44.7
28°	12 12.5 +56.1 47.7	11 53.8 +56.2 46.9	11 35.4 +56.4 46.0	11 17.3 +56.4 45.2	10 59.5 +56.5 44.3
29°	13 08.6 +56.0 47.4	12 50.0 +56.2 46.5	12 31.8 +56.2 45.7	12 13.7 +56.4 44.8	11 56.0 +56.5 44.0

Latitude 65°

Declination SAME name as Latitude

Dec	LHA 130° / 230°	LHA 131° / 229°	LHA 132° / 228°	LHA 133° / 227°	LHA 134° / 226°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°	-9 09.6 +56.7	-9 28.9 +56.7	-9 48.1 +56.9		
8°	-8 12.9 +56.7	-8 32.2 +56.8	-8 51.2 +56.9	-9 09.9 +57.0	-9 28.4 +57.1
9°	-7 16.2 +56.8	-7 35.4 +56.9	-7 54.3 +56.9	-8 12.9 +57.0	-8 31.3 +57.1
10°	-6 19.4 +56.7	-6 38.5 +56.8	-6 57.4 +56.9	-7 15.9 +57.0	-7 34.2 +57.1
11°	-5 22.7 +56.7	-5 41.7 +56.8	-6 00.5 +57.0	-6 18.9 +57.0	-6 37.1 +57.1
12°	-4 26.0 +56.8	-4 44.9 +56.9	-5 03.5 +56.9	-5 21.9 +57.1	-5 40.0 +57.2
13°	-3 29.2 +56.8	-3 48.0 +56.8	-4 06.6 +57.0	-4 24.8 +57.0	-4 42.8 +57.1
14°	-2 32.4 +56.7	-2 51.2 +56.9	-3 09.6 +56.9	-3 27.8 +57.1	-3 45.7 +57.2
15°	-1 35.7 +56.8	-1 54.3 +56.9	-2 12.7 +57.0	-2 30.7 +57.0	-2 48.5 +57.1
16°	-0 38.9 +56.8	-0 57.4 +56.8	-1 15.7 +57.0	-1 33.7 +57.1	-1 51.4 +57.2
17°	0 17.9 +56.7 47.1	-0 00.6 +56.9	-0 18.7 +56.9	-0 36.6 +57.0	-0 54.2 +57.1
18°	1 14.6 +56.8 46.8	0 56.3 +56.9 45.9	0 38.2 +57.0 45.0	0 20.4 +57.1 44.1	0 02.9 +57.2 43.2
19°	2 11.4 +56.8 46.5	1 53.2 +56.8 45.6	1 35.2 +56.9 44.7	1 17.5 +57.1 43.8	1 00.1 +57.2 42.9
20°	3 08.2 +56.7 46.1	2 50.0 +56.9 45.2	2 32.1 +57.0 44.3	2 14.6 +57.0 43.5	1 57.3 +57.1 42.6
21°	4 04.9 +56.8 45.8	3 46.9 +56.8 44.9	3 29.1 +56.9 44.0	3 11.6 +57.1 43.1	2 54.4 +57.2 42.3
22°	5 01.7 +56.7 45.5	4 43.7 +56.9 44.6	4 26.0 +57.0 43.7	4 08.7 +57.0 42.8	3 51.6 +57.1 41.9
23°	5 58.4 +56.7 45.2	5 40.6 +56.8 44.3	5 23.0 +56.9 43.4	5 05.7 +57.0 42.5	4 48.7 +57.2 41.6
24°	6 55.1 +56.7 44.8	6 37.4 +56.8 44.0	6 19.9 +56.9 43.1	6 02.7 +57.1 42.2	5 45.9 +57.1 41.3
25°	7 51.8 +56.7 44.5	7 34.2 +56.8 43.6	7 16.8 +56.9 42.8	6 59.8 +57.0 41.9	6 43.0 +57.1 41.0
26°	8 48.5 +56.7 44.2	8 31.0 +56.8 43.3	8 13.7 +56.9 42.4	7 56.8 +57.0 41.6	7 40.1 +57.1 40.7
27°	9 45.2 +56.7 43.8	9 27.8 +56.8 43.0	9 10.6 +56.9 42.1	8 53.8 +57.0 41.3	8 37.2 +57.1 40.4
28°	10 41.9 +56.6 43.5	10 24.6 +56.7 42.7	10 07.5 +56.9 41.8	9 50.8 +56.9 40.9	9 34.3 +57.0 40.1
29°	11 38.5 +56.6 43.2	11 21.3 +56.7 42.3	11 04.4 +56.8 41.5	10 47.7 +57.0 40.6	10 31.3 +57.1 39.8

Dec	LHA 135° / 225°	LHA 136° / 224°	LHA 137° / 223°	LHA 138° / 222°	LHA 139° / 221°
	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 46.6 +57.2				
9°	-8 49.4 +57.2	-9 07.1 +57.3	-9 24.6 +57.4	-9 41.8 +57.5	-9 58.6 +57.6
10°	-7 52.2 +57.2	-8 09.8 +57.3	-8 27.2 +57.4	-8 44.3 +57.5	-9 01.0 +57.6
11°	-6 55.0 +57.3	-7 12.5 +57.3	-7 29.8 +57.4	-7 46.8 +57.5	-8 03.4 +57.6
12°	-5 57.7 +57.2	-6 15.2 +57.3	-6 32.4 +57.4	-6 49.3 +57.5	-7 05.8 +57.6
13°	-5 00.5 +57.2	-5 17.9 +57.3	-5 35.0 +57.5	-5 51.8 +57.6	-6 08.2 +57.6
14°	-4 03.3 +57.3	-4 20.6 +57.4	-4 37.5 +57.4	-4 54.2 +57.5	-5 10.6 +57.6
15°	-3 06.0 +57.2	-3 23.2 +57.3	-3 40.1 +57.4	-3 56.7 +57.6	-4 13.0 +57.7
16°	-2 08.8 +57.3	-2 25.9 +57.4	-2 42.7 +57.5	-2 59.1 +57.5	-3 15.3 +57.6
17°	-1 11.5 +57.2	-1 28.5 +57.3	-1 45.2 +57.4	-2 01.6 +57.5	-2 17.7 +57.7
18°	-0 14.3 +57.3	-0 31.2 +57.4	-0 47.8 +57.5	-1 04.1 +57.6	-1 20.0 +57.6
19°	0 43.0 +57.3 42.0	0 26.2 +57.4 41.1	0 09.7 +57.5 40.2	-0 06.5 +57.6	-0 22.4 +57.7
20°	1 40.3 +57.2 41.7	1 23.6 +57.3 40.8	1 07.2 +57.4 39.9	0 51.1 +57.5 39.0	0 35.3 +57.6 38.1
21°	2 37.5 +57.3 41.4	2 20.9 +57.4 40.5	2 04.6 +57.5 39.6	1 48.6 +57.5 38.7	1 32.9 +57.7 37.8
22°	3 34.8 +57.2 41.1	3 18.3 +57.3 40.2	3 02.1 +57.4 39.3	2 46.1 +57.6 38.4	2 30.6 +57.6 37.5
23°	4 32.0 +57.2 40.8	4 15.6 +57.3 39.9	3 59.5 +57.4 39.0	3 43.7 +57.5 38.1	3 28.2 +57.6 37.2
24°	5 29.2 +57.3 40.5	5 12.9 +57.4 39.6	4 56.9 +57.5 38.7	4 41.2 +57.6 37.8	4 25.8 +57.7 37.0
25°	6 26.5 +57.2 40.2	6 10.3 +57.3 39.3	5 54.4 +57.4 38.4	5 38.8 +57.5 37.5	5 23.5 +57.6 36.7
26°	7 23.7 +57.2 39.9	7 07.6 +57.3 39.0	6 51.8 +57.4 38.1	6 36.3 +57.5 37.3	6 21.1 +57.6 36.4
27°	8 20.9 +57.2 39.6	8 04.9 +57.3 38.7	7 49.2 +57.4 37.8	7 33.8 +57.5 37.0	7 18.7 +57.6 36.1
28°	9 18.1 +57.2 39.2	9 02.2 +57.3 38.4	8 46.6 +57.4 37.5	8 31.3 +57.5 36.7	8 16.3 +57.6 35.8
29°	10 15.3 +57.1 38.9	9 59.5 +57.2 38.1	9 44.0 +57.3 37.2	9 28.8 +57.5 36.4	9 13.9 +57.6 35.5

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Dec	LHA 140° / 220°	LHA 141° / 219°	LHA 142° / 218°	LHA 143° / 217°	LHA 144° / 216°
	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°	-9 17.5 +57.7	-9 33.6 +57.8	-9 49.3 +57.9		
11°	-8 19.8 +57.7	-8 35.8 +57.8	-8 51.4 +57.8	-9 06.8 +58.0	-9 21.8 +58.1
12°	-7 22.1 +57.7	-7 38.0 +57.8	-7 53.6 +57.9	-8 08.8 +58.0	-8 23.7 +58.1
13°	-6 24.4 +57.8	-6 40.2 +57.8	-6 55.7 +57.9	-7 10.8 +58.0	-7 25.6 +58.1
14°	-5 26.6 +57.7	-5 42.4 +57.9	-5 57.8 +58.0	-6 12.8 +58.0	-6 27.5 +58.1
15°	-4 28.9 +57.7	-4 44.5 +57.8	-4 59.8 +57.9	-5 14.8 +58.0	-5 29.4 +58.1
16°	-3 31.2 +57.8	-3 46.7 +57.8	-4 01.9 +57.9	-4 16.8 +58.0	-4 31.3 +58.1
17°	-2 33.4 +57.7	-2 48.9 +57.9	-3 04.0 +57.9	-3 18.8 +58.0	-3 33.2 +58.1
18°	-1 35.7 +57.7	-1 51.0 +57.8	-2 06.1 +58.0	-2 20.8 +58.1	-2 35.1 +58.1
19°	-0 38.0 +57.8	-0 53.2 +57.8	-1 08.1 +57.9	-1 22.7 +58.0	-1 37.0 +58.1
20°	0 19.8 +57.7 37.2	0 04.6 +57.9 36.3	-0 10.2 +57.9	-0 24.7 +58.0	-0 38.9 +58.1
21°	1 17.5 +57.8 36.9	1 02.5 +57.8 36.0	0 47.7 +58.0 35.1	0 33.3 +58.0 34.2	0 19.2 +58.2 33.3
22°	2 15.3 +57.7 36.6	2 00.3 +57.8 35.7	1 45.7 +57.9 34.8	1 31.3 +58.1 33.9	1 17.4 +58.1 33.0
23°	3 13.0 +57.7 36.3	2 58.1 +57.9 35.5	2 43.6 +57.9 34.6	2 29.4 +58.0 33.7	2 15.5 +58.1 32.8
24°	4 10.7 +57.8 36.1	3 56.0 +57.8 35.2	3 41.5 +57.9 34.3	3 27.4 +58.0 33.4	3 13.6 +58.1 32.5
25°	5 08.5 +57.7 35.8	4 53.8 +57.8 34.9	4 39.4 +58.0 34.0	4 25.4 +58.0 33.2	4 11.7 +58.1 32.3
26°	6 06.2 +57.7 35.5	5 51.6 +57.8 34.7	5 37.4 +57.9 33.8	5 23.4 +58.0 32.9	5 09.8 +58.1 32.0
27°	7 03.9 +57.7 35.2	6 49.4 +57.8 34.4	6 35.3 +57.9 33.5	6 21.4 +58.0 32.7	6 07.9 +58.1 31.8
28°	8 01.6 +57.7 35.0	7 47.2 +57.8 34.1	7 33.2 +57.9 33.3	7 19.4 +58.0 32.4	7 06.0 +58.1 31.5
29°	8 59.3 +57.7 34.7	8 45.0 +57.8 33.8	8 31.1 +57.8 33.0	8 17.4 +58.0 32.1	8 04.1 +58.1 31.3

Dec	LHA 145° / 215°	LHA 146° / 214°	LHA 147° / 213°	LHA 148° / 212°	LHA 149° / 211°
	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°	-9 36.4 +58.1	-9 50.7 +58.2			
12°	-8 38.3 +58.2	-8 52.5 +58.3	-9 06.4 +58.4	-9 19.9 +58.5	-9 33.0 +58.5
13°	-7 40.1 +58.2	-7 54.2 +58.2	-8 08.0 +58.4	-8 21.4 +58.4	-8 34.5 +58.6
14°	-6 41.9 +58.2	-6 56.0 +58.3	-7 09.6 +58.3	-7 23.0 +58.5	-7 35.9 +58.5
15°	-5 43.7 +58.2	-5 57.7 +58.3	-6 11.3 +58.4	-6 24.5 +58.4	-6 37.4 +58.5
16°	-4 45.5 +58.2	-4 59.4 +58.3	-5 12.9 +58.4	-5 26.1 +58.5	-5 38.9 +58.6
17°	-3 47.3 +58.2	-4 01.1 +58.3	-4 14.5 +58.4	-4 27.6 +58.5	-4 40.3 +58.5
18°	-2 49.1 +58.2	-3 02.8 +58.3	-3 16.1 +58.3	-3 29.1 +58.4	-3 41.8 +58.6
19°	-1 50.9 +58.2	-2 04.5 +58.3	-2 17.8 +58.4	-2 30.7 +58.5	-2 43.2 +58.6
20°	-0 52.7 +58.2	-1 06.2 +58.3	-1 19.4 +58.4	-1 32.2 +58.5	-1 44.6 +58.5
21°	0 05.5 +58.2 32.4	-0 07.9 +58.3	-0 21.0 +58.4	-0 33.7 +58.5	-0 46.1 +58.6
22°	1 03.7 +58.2 32.1	0 50.4 +58.3 31.2	0 37.4 +58.4 30.3	0 24.8 +58.4 29.4	0 12.5 +58.5 28.5
23°	2 01.9 +58.2 31.9	1 48.7 +58.3 31.0	1 35.8 +58.4 30.1	1 23.2 +58.5 29.2	1 11.0 +58.6 28.3
24°	3 00.1 +58.2 31.6	2 47.0 +58.3 30.8	2 34.2 +58.4 29.9	2 21.7 +58.5 29.0	2 09.6 +58.6 28.1
25°	3 58.3 +58.2 31.4	3 45.3 +58.3 30.5	3 32.6 +58.3 29.6	3 20.2 +58.5 28.8	3 08.2 +58.5 27.9
26°	4 56.5 +58.2 31.2	4 43.6 +58.3 30.3	4 30.9 +58.4 29.4	4 18.7 +58.4 28.5	4 06.7 +58.6 27.7
27°	5 54.7 +58.2 30.9	5 41.9 +58.2 30.0	5 29.3 +58.4 29.2	5 17.1 +58.5 28.3	5 05.3 +58.5 27.4
28°	6 52.9 +58.2 30.7	6 40.1 +58.3 29.8	6 27.7 +58.4 28.9	6 15.6 +58.4 28.1	6 03.8 +58.6 27.2
29°	7 51.1 +58.2 30.4	7 38.4 +58.3 29.6	7 26.1 +58.3 28.7	7 14.0 +58.5 27.9	7 02.4 +58.5 27.0

Dec	LHA 150° / 210°	LHA 151° / 209°	LHA 152° / 208°	LHA 153° / 207°	LHA 154° / 206°
	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°	-9 45.8 +58.6	-9 58.2 +58.7			
13°	-8 47.2 +58.7	-8 59.5 +58.7	-9 11.4 +58.8	-9 23.0 +58.9	-9 34.1 +58.9
14°	-7 48.5 +58.6	-8 00.8 +58.7	-8 12.6 +58.8	-8 24.1 +58.9	-8 35.2 +58.9
15°	-6 49.9 +58.6	-7 02.1 +58.7	-7 13.8 +58.7	-7 25.2 +58.8	-7 36.3 +59.0
16°	-5 51.3 +58.6	-6 03.4 +58.8	-6 15.1 +58.8	-6 26.4 +58.9	-6 37.3 +58.9
17°	-4 52.7 +58.7	-5 04.6 +58.7	-5 16.3 +58.8	-5 27.5 +58.9	-5 38.4 +59.0
18°	-3 54.0 +58.6	-4 05.9 +58.7	-4 17.5 +58.8	-4 28.6 +58.9	-4 39.4 +58.9
19°	-2 55.4 +58.7	-3 07.2 +58.7	-3 18.7 +58.8	-3 29.7 +58.8	-3 40.5 +59.0
20°	-1 56.7 +58.6	-2 08.5 +58.8	-2 19.9 +58.9	-2 30.9 +58.9	-2 41.5 +59.0
21°	-0 58.1 +58.7	-1 09.7 +58.7	-1 21.0 +58.8	-1 32.0 +58.9	-1 42.5 +58.9
22°	0 00.6 +58.6 27.6	-0 11.0 +58.7	-0 22.2 +58.8	-0 33.1 +58.9	-0 43.6 +59.0
23°	0 59.2 +58.6 27.4	0 47.7 +58.7 26.5	0 36.6 +58.8 25.6	0 25.8 +58.9 24.7	0 15.4 +58.9 23.8
24°	1 57.8 +58.7 27.2	1 46.4 +58.8 26.3	1 35.4 +58.8 25.4	1 24.7 +58.9 24.5	1 14.3 +59.0 23.6
25°	2 56.5 +58.6 27.0	2 45.2 +58.7 26.1	2 34.2 +58.8 25.2	2 23.6 +58.8 24.3	2 13.3 +59.0 23.4
26°	3 55.1 +58.7 26.8	3 43.9 +58.7 25.9	3 33.0 +58.8 25.0	3 22.4 +58.9 24.1	3 12.3 +58.9 23.2
27°	4 53.8 +58.6 26.6	4 42.6 +58.7 25.7	4 31.8 +58.8 24.8	4 21.3 +58.9 23.9	4 11.2 +59.0 23.1
28°	5 52.4 +58.6 26.3	5 41.3 +58.7 25.5	5 30.6 +58.8 24.6	5 20.2 +58.9 23.7	5 10.2 +58.9 22.9
29°	6 51.0 +58.6 26.1	6 40.0 +58.7 25.3	6 29.4 +58.8 24.4	6 19.1 +58.8 23.5	6 09.1 +59.0 22.7

Dec	LHA 155° / 205°	LHA 156° / 204°	LHA 157° / 203°	LHA 158° / 202°	LHA 159° / 201°
	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°	-9 44.9 +59.0	-9 55.3 +59.0			
14°	-8 45.9 +59.0	-8 56.3 +59.1	-9 06.2 +59.2	-9 15.7 +59.2	-9 24.9 +59.3
15°	-7 46.9 +59.0	-7 57.2 +59.1	-8 07.0 +59.1	-8 16.5 +59.2	-8 25.6 +59.3
16°	-6 47.9 +59.0	-6 58.1 +59.1	-7 07.9 +59.2	-7 17.3 +59.3	-7 26.3 +59.3
17°	-5 48.9 +59.1	-5 59.0 +59.1	-6 08.7 +59.2	-6 18.0 +59.2	-6 27.0 +59.3
18°	-4 49.8 +59.0	-4 59.9 +59.1	-5 09.5 +59.1	-5 18.8 +59.2	-5 27.7 +59.3
19°	-3 50.8 +59.0	-4 00.8 +59.1	-4 10.4 +59.2	-4 19.6 +59.3	-4 28.4 +59.3
20°	-2 51.8 +59.1	-3 01.7 +59.1	-3 11.2 +59.2	-3 20.3 +59.2	-3 29.1 +59.3
21°	-1 52.7 +59.0	-2 02.6 +59.1	-2 12.0 +59.2	-2 21.1 +59.3	-2 29.8 +59.3
22°	-0 53.7 +59.0	-1 03.5 +59.1	-1 12.8 +59.1	-1 21.8 +59.2	-1 30.5 +59.4
23°	0 05.3 +59.1 22.9	-0 04.4 +59.2	-0 13.7 +59.2	-0 22.6 +59.2	-0 31.1 +59.3
24°	1 04.4 +59.0 22.7	0 54.8 +59.1 21.8	0 45.5 +59.2 20.9	0 36.6 +59.3 20.0	0 28.2 +59.3 19.1
25°	2 03.4 +59.0 22.5	1 53.9 +59.1 21.6	1 44.7 +59.2 20.7	1 35.9 +59.2 19.9	1 27.5 +59.3 19.0
26°	3 02.4 +59.1 22.4	2 53.0 +59.1 21.5	2 43.9 +59.1 20.6	2 35.1 +59.3 19.7	2 26.8 +59.3 18.8
27°	4 01.5 +59.0 22.2	3 52.1 +59.1 21.3	3 43.0 +59.2 20.4	3 34.4 +59.2 19.5	3 26.1 +59.3 18.7
28°	5 00.5 +59.0 22.0	4 51.2 +59.1 21.1	4 42.2 +59.2 20.3	4 33.6 +59.3 19.4	4 25.4 +59.3 18.5
29°	5 59.5 +59.0 21.8	5 50.3 +59.1 21.0	5 41.4 +59.1 20.1	5 32.9 +59.2 19.2	5 24.7 +59.3 18.4

Dec	LHA 160° / 200°	LHA 161° / 199°	LHA 162° / 198°	LHA 163° / 197°	LHA 164° / 196°
	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°	-9 33.6 +59.4	-9 41.9 +59.4	-9 49.8 +59.4	-9 57.4 +59.6	
15°	-8 34.2 +59.3	-8 42.5 +59.4	-8 50.4 +59.5	-8 57.8 +59.5	-9 04.9 +59.6
16°	-7 34.9 +59.4	-7 43.1 +59.4	-7 50.9 +59.5	-7 58.3 +59.5	-8 05.3 +59.6
17°	-6 35.5 +59.3	-6 43.7 +59.4	-6 51.4 +59.5	-6 58.8 +59.6	-7 05.7 +59.6
18°	-5 36.2 +59.4	-5 44.3 +59.5	-5 51.9 +59.4	-5 59.2 +59.5	-6 06.1 +59.6
19°	-4 36.8 +59.4	-4 44.8 +59.4	-4 52.5 +59.5	-4 59.7 +59.5	-5 06.5 +59.6
20°	-3 37.4 +59.3	-3 45.4 +59.4	-3 53.0 +59.5	-4 00.2 +59.6	-4 06.9 +59.5
21°	-2 38.1 +59.4	-2 46.0 +59.5	-2 53.5 +59.5	-3 00.6 +59.5	-3 07.4 +59.6
22°	-1 38.7 +59.4	-1 46.5 +59.4	-1 54.0 +59.5	-2 01.1 +59.6	-2 07.8 +59.6
23°	-0 39.3 +59.3	-0 47.1 +59.4	-0 54.5 +59.5	-1 01.5 +59.5	-1 08.2 +59.6
24°	0 20.0 +59.4 18.2	0 12.3 +59.4 17.3	0 05.0 +59.4 16.4	-0 02.0 +59.5	-0 08.6 +59.6
25°	1 19.4 +59.4 18.1	1 11.7 +59.5 17.2	1 04.4 +59.5 16.3	0 57.5 +59.6 15.4	0 51.0 +59.6 14.5
26°	2 18.8 +59.4 17.9	2 11.2 +59.4 17.0	2 03.9 +59.5 16.1	1 57.1 +59.5 15.2	1 50.6 +59.6 14.4
27°	3 18.2 +59.3 17.8	3 10.6 +59.4 16.9	3 03.4 +59.5 16.0	2 56.6 +59.6 15.1	2 50.2 +59.6 14.2
28°	4 17.5 +59.4 17.6	4 10.0 +59.5 16.8	4 02.9 +59.5 15.9	3 56.2 +59.5 15.0	3 49.8 +59.6 14.1
29°	5 16.9 +59.3 17.5	5 09.5 +59.4 16.6	5 02.4 +59.5 15.7	4 55.7 +59.5 14.9	4 49.4 +59.6 14.0

Dec	LHA 165° / 195°	LHA 166° / 194°	LHA 167° / 193°	LHA 168° / 192°	LHA 169° / 191°
	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°	-9 11.5 +59.6	-9 17.7 +59.7	-9 23.5 +59.7	-9 28.9 +59.8	-9 33.8 +59.8
16°	-8 11.9 +59.7	-8 18.0 +59.6	-8 23.8 +59.7	-8 29.1 +59.7	-8 34.0 +59.8
17°	-7 12.2 +59.6	-7 18.4 +59.7	-7 24.1 +59.8	-7 29.4 +59.8	-7 34.2 +59.8
18°	-6 12.6 +59.6	-6 18.7 +59.7	-6 24.3 +59.7	-6 29.6 +59.8	-6 34.4 +59.8
19°	-5 13.0 +59.7	-5 19.0 +59.7	-5 24.6 +59.7	-5 29.8 +59.7	-5 34.6 +59.8
20°	-4 13.3 +59.6	-4 19.3 +59.7	-4 24.9 +59.7	-4 30.1 +59.8	-4 34.8 +59.8
21°	-3 13.7 +59.6	-3 19.6 +59.7	-3 25.2 +59.8	-3 30.3 +59.8	-3 35.0 +59.8
22°	-2 14.1 +59.7	-2 19.9 +59.6	-2 25.4 +59.7	-2 30.5 +59.7	-2 35.2 +59.8
23°	-1 14.4 +59.6	-1 20.3 +59.7	-1 25.7 +59.7	-1 30.8 +59.8	-1 35.4 +59.8
24°	-0 14.8 +59.7	-0 20.6 +59.7	-0 26.0 +59.7	-0 31.0 +59.8	-0 35.6 +59.8
25°	0 44.9 +59.6 13.6	0 39.1 +59.7 12.7	0 33.7 +59.8 11.8	0 28.8 +59.7 10.9	0 24.2 +59.8 10.0
26°	1 44.5 +59.6 13.5	1 38.8 +59.7 12.6	1 33.5 +59.7 11.7	1 28.5 +59.8 10.8	1 24.0 +59.8 9.9
27°	2 44.1 +59.7 13.3	2 38.5 +59.7 12.5	2 33.2 +59.7 11.6	2 28.3 +59.8 10.7	2 23.8 +59.8 9.8
28°	3 43.8 +59.6 13.2	3 38.2 +59.7 12.4	3 32.9 +59.8 11.5	3 28.1 +59.7 10.6	3 23.6 +59.8 9.7
29°	4 43.4 +59.7 13.1	4 37.9 +59.6 12.3	4 32.7 +59.7 11.4	4 27.8 +59.8 10.5	4 23.4 +59.8 9.6

Dec	LHA 170° / 190°	LHA 171° / 189°	LHA 172° / 188°	LHA 173° / 187°	LHA 174° / 186°
	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°	-9 38.4 +59.9	-9 42.5 +59.9	-9 46.1 +59.9	-9 49.4 +59.9	-9 52.2 +59.9
16°	-8 38.5 +59.8	-8 42.6 +59.9	-8 46.2 +59.9	-8 49.5 +60.0	-8 52.3 +60.0
17°	-7 38.7 +59.8	-7 42.7 +59.8	-7 46.3 +59.8	-7 49.5 +59.9	-7 52.3 +59.9
18°	-6 38.9 +59.9	-6 42.9 +59.9	-6 46.5 +59.9	-6 49.6 +59.9	-6 52.4 +60.0
19°	-5 39.0 +59.8	-5 43.0 +59.9	-5 46.6 +59.9	-5 49.7 +59.9	-5 52.4 +59.9
20°	-4 39.2 +59.9	-4 43.1 +59.8	-4 46.7 +59.9	-4 49.8 +59.9	-4 52.5 +59.9
21°	-3 39.3 +59.8	-3 43.3 +59.9	-3 46.8 +59.9	-3 49.9 +60.0	-3 52.6 +60.0
22°	-2 39.5 +59.8	-2 43.4 +59.9	-2 46.9 +59.9	-2 49.9 +59.9	-2 52.6 +59.9
23°	-1 39.7 +59.9	-1 43.5 +59.8	-1 47.0 +59.9	-1 50.0 +59.9	-1 52.7 +60.0
24°	-0 39.8 +59.8	-0 43.7 +59.9	-0 47.1 +59.9	-0 50.1 +59.9	-0 52.7 +59.9
25°	0 20.0 +59.8 9.1	0 16.2 +59.9 8.2	0 12.8 +59.9 7.2	0 09.8 +59.9 6.3	0 07.2 +60.0 5.4
26°	1 19.8 +59.9 9.0	1 16.1 +59.8 8.1	1 12.7 +59.9 7.2	1 09.7 +60.0 6.3	1 07.2 +59.9 5.4
27°	2 19.7 +59.8 8.9	2 15.9 +59.9 8.0	2 12.6 +59.9 7.1	2 09.7 +59.9 6.2	2 07.1 +59.9 5.3
28°	3 19.5 +59.9 8.8	3 15.8 +59.9 8.0	3 12.5 +59.9 7.1	3 09.6 +59.9 6.2	3 07.0 +60.0 5.3
29°	4 19.4 +59.8 8.8	4 15.7 +59.9 7.9	4 12.4 +59.9 7.0	4 09.5 +59.9 6.1	4 07.0 +59.9 5.3

Dec	LHA 175° / 185°	LHA 176° / 184°	LHA 177° / 183°	LHA 178° / 182°	LHA 179° / 181°
	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°	-9 54.6 +60.0	-9 56.5 +59.9	-9 58.0 +59.9	-9 59.1 +60.0	-9 59.8 +60.0
16°	-8 54.6 +59.9	-8 56.6 +60.0	-8 58.1 +60.0	-8 59.1 +60.0	-8 59.8 +60.0
17°	-7 54.7 +60.0	-7 56.6 +60.0	-7 58.1 +60.0	-7 59.1 +59.9	-7 59.8 +60.0
18°	-6 54.7 +60.0	-6 56.6 +60.0	-6 58.1 +60.0	-6 59.2 +60.0	-6 59.8 +60.0
19°	-5 54.7 +59.9	-5 56.6 +59.9	-5 58.1 +60.0	-5 59.2 +60.0	-5 59.8 +60.0
20°	-4 54.8 +60.0	-4 56.7 +60.0	-4 58.1 +60.0	-4 59.2 +60.0	-4 59.8 +60.0
21°	-3 54.8 +59.9	-3 56.7 +60.0	-3 58.1 +59.9	-3 59.2 +60.0	-3 59.8 +60.0
22°	-2 54.9 +60.0	-2 56.7 +60.0	-2 58.2 +60.0	-2 59.2 +60.0	-2 59.8 +60.0
23°	-1 54.9 +60.0	-1 56.7 +59.9	-1 58.2 +60.0	-1 59.2 +60.0	-1 59.8 +60.0
24°	-0 54.9 +59.9	-0 56.8 +60.0	-0 58.2 +60.0	-0 59.2 +60.0	-0 59.8 +60.0
25°	0 05.0 +60.0 4.5	0 03.2 +60.0 3.6	0 01.8 +60.0 2.7	0 00.8 +60.0 1.8	0 00.2 +60.0 0.9
26°	1 05.0 +59.9 4.5	1 03.2 +60.0 3.6	1 01.8 +60.0 2.7	1 00.8 +60.0 1.8	1 00.2 +60.0 0.9
27°	2 04.9 +60.0 4.5	2 03.2 +59.9 3.6	2 01.8 +60.0 2.7	2 00.8 +60.0 1.8	2 00.2 +60.0 0.9
28°	3 04.9 +59.9 4.4	3 03.1 +60.0 3.5	3 01.8 +59.9 2.7	3 00.8 +60.0 1.8	3 00.2 +60.0 0.9
29°	4 04.8 +60.0 4.4	4 03.1 +60.0 3.5	4 01.7 +60.0 2.6	4 00.8 +60.0 1.8	4 00.2 +60.0 0.9

Declination SAME name as Latitude

Latitude 66°

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°	24 00.0 +60.0 180.0	23 59.8 +60.0 178.9	23 59.1 +60.0 177.8	23 57.9 +60.0 176.7	23 56.3 +59.9 175.6
1°	25 00.0 +60.0 180.0	24 59.8 +60.0 178.9	24 59.1 +60.0 177.8	24 57.9 +60.0 176.7	24 56.2 +60.0 175.6
2°	26 00.0 +60.0 180.0	25 59.8 +60.0 178.9	25 59.1 +59.9 177.8	25 57.9 +60.0 176.7	25 56.2 +60.0 175.6
3°	27 00.0 +60.0 180.0	26 59.8 +60.0 178.9	26 59.0 +60.0 177.8	26 57.9 +59.9 176.6	26 56.2 +60.0 175.5
4°	28 00.0 +60.0 180.0	27 59.8 +60.0 178.9	27 59.0 +60.0 177.7	27 57.8 +60.0 176.6	27 56.2 +59.9 175.5
5°	29 00.0 +60.0 180.0	28 59.8 +60.0 178.9	28 59.0 +60.0 177.7	28 57.8 +60.0 176.6	28 56.1 +60.0 175.4
6°	30 00.0 +60.0 180.0	29 59.8 +60.0 178.9	29 59.0 +60.0 177.7	29 57.8 +60.0 176.6	29 56.1 +60.0 175.4
7°	31 00.0 +60.0 180.0	30 59.8 +60.0 178.8	30 59.0 +60.0 177.7	30 57.8 +60.0 176.5	30 56.1 +59.9 175.4
8°	32 00.0 +60.0 180.0	31 59.8 +59.9 178.8	31 59.0 +60.0 177.7	31 57.8 +59.9 176.5	31 56.0 +60.0 175.3
9°	33 00.0 +60.0 180.0	32 59.7 +60.0 178.8	32 59.0 +60.0 177.6	32 57.7 +60.0 176.5	32 56.0 +60.0 175.3
10°	34 00.0 +60.0 180.0	33 59.7 +60.0 178.8	33 59.0 +60.0 177.6	33 57.7 +60.0 176.4	33 56.0 +59.9 175.3
11°	35 00.0 +60.0 180.0	34 59.7 +60.0 178.8	34 59.0 +60.0 177.6	34 57.7 +60.0 176.4	34 55.9 +60.0 175.2
12°	36 00.0 +60.0 180.0	35 59.7 +60.0 178.8	35 59.0 +60.0 177.6	35 57.7 +60.0 176.4	35 55.9 +59.9 175.2
13°	37 00.0 +60.0 180.0	36 59.7 +60.0 178.8	36 59.0 +60.0 177.6	36 57.7 +59.9 176.3	36 55.8 +60.0 175.1
14°	38 00.0 +60.0 180.0	37 59.7 +60.0 178.8	37 59.0 +59.9 177.5	37 57.6 +60.0 176.3	37 55.8 +60.0 175.1
15°	39 00.0 +60.0 180.0	38 59.7 +60.0 178.8	38 58.9 +60.0 177.5	38 57.6 +60.0 176.3	38 55.8 +59.9 175.0
16°	40 00.0 +60.0 180.0	39 59.7 +60.0 178.7	39 58.9 +60.0 177.5	39 57.6 +60.0 176.2	39 55.7 +60.0 175.0
17°	41 00.0 +60.0 180.0	40 59.7 +60.0 178.7	40 58.9 +60.0 177.5	40 57.6 +59.9 176.2	40 55.7 +59.9 174.9
18°	42 00.0 +60.0 180.0	41 59.7 +60.0 178.7	41 58.9 +60.0 177.4	41 57.5 +60.0 176.2	41 55.6 +60.0 174.9
19°	43 00.0 +60.0 180.0	42 59.7 +60.0 178.7	42 58.9 +60.0 177.4	42 57.5 +60.0 176.1	42 55.6 +60.0 174.8
20°	44 00.0 +60.0 180.0	43 59.7 +60.0 178.7	43 58.9 +60.0 177.4	43 57.5 +60.0 176.1	43 55.6 +59.9 174.8
21°	45 00.0 +60.0 180.0	44 59.7 +60.0 178.7	44 58.9 +60.0 177.4	44 57.5 +59.9 176.0	44 55.5 +60.0 174.7
22°	46 00.0 +60.0 180.0	45 59.7 +60.0 178.7	45 58.9 +60.0 177.3	45 57.4 +60.0 176.0	45 55.5 +59.9 174.7
23°	47 00.0 +60.0 180.0	46 59.7 +60.0 178.7	46 58.9 +59.9 177.3	46 57.4 +60.0 176.0	46 55.4 +60.0 174.6
24°	48 00.0 +60.0 180.0	47 59.7 +60.0 178.6	47 58.8 +60.0 177.3	47 57.4 +60.0 175.9	47 55.4 +59.9 174.5
25°	49 00.0 +60.0 180.0	48 59.7 +60.0 178.6	48 58.8 +60.0 177.2	48 57.4 +59.9 175.9	48 55.3 +59.9 174.5
26°	50 00.0 +60.0 180.0	49 59.7 +60.0 178.6	49 58.8 +60.0 177.2	49 57.3 +60.0 175.8	49 55.2 +60.0 174.4
27°	51 00.0 +60.0 180.0	50 59.7 +60.0 178.6	50 58.8 +60.0 177.2	50 57.3 +60.0 175.8	50 55.2 +59.9 174.3
28°	52 00.0 +60.0 180.0	51 59.7 +60.0 178.6	51 58.8 +60.0 177.1	51 57.3 +59.9 175.7	51 55.1 +60.0 174.3
29°	53 00.0 +60.0 180.0	52 59.7 +60.0 178.5	52 58.8 +59.9 177.1	52 57.2 +60.0 175.6	52 55.1 +59.9 174.2

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°	23 54.2 +59.9 174.5	23 51.6 +60.0 173.4	23 48.6 +59.9 172.3	23 45.1 +59.9 171.3	23 41.2 +59.8 170.2
1°	24 54.1 +60.0 174.5	24 51.6 +59.9 173.4	24 48.5 +59.9 172.3	24 45.0 +59.9 171.2	24 41.0 +59.9 170.1
2°	25 54.1 +59.9 174.4	25 51.5 +59.9 173.3	25 48.4 +59.9 172.2	25 44.9 +59.9 171.1	25 40.9 +59.8 170.0
3°	26 54.0 +60.0 174.4	26 51.4 +60.0 173.3	26 48.3 +59.9 172.2	26 44.8 +59.8 171.0	26 40.7 +59.9 169.9
4°	27 54.0 +59.9 174.4	27 51.4 +59.9 173.2	27 48.2 +59.9 172.1	27 44.6 +59.9 171.0	27 40.6 +59.8 169.9
5°	28 53.9 +60.0 174.3	28 51.3 +59.9 173.2	28 48.1 +59.9 172.0	28 44.5 +59.9 170.9	28 40.4 +59.9 169.8
6°	29 53.9 +59.9 174.3	29 51.2 +59.9 173.1	29 48.0 +59.9 172.0	29 44.4 +59.9 170.8	29 40.3 +59.8 169.7
7°	30 53.8 +60.0 174.2	30 51.1 +60.0 173.1	30 47.9 +59.9 171.9	30 44.3 +59.8 170.8	30 40.1 +59.8 169.6
8°	31 53.8 +59.9 174.2	31 51.1 +59.9 173.0	31 47.8 +59.9 171.8	31 44.1 +59.9 170.7	31 39.9 +59.9 169.5
9°	32 53.7 +60.0 174.1	32 51.0 +59.9 172.9	32 47.7 +59.9 171.8	32 44.0 +59.9 170.6	32 39.8 +59.8 169.4
10°	33 53.7 +59.9 174.1	33 50.9 +59.9 172.9	33 47.6 +59.9 171.7	33 43.9 +59.8 170.5	33 39.6 +59.8 169.3
11°	34 53.6 +60.0 174.0	34 50.8 +59.9 172.8	34 47.5 +59.9 171.6	34 43.7 +59.9 170.4	34 39.4 +59.8 169.2
12°	35 53.6 +59.9 174.0	35 50.7 +60.0 172.8	35 47.4 +59.9 171.5	35 43.6 +59.8 170.3	35 39.2 +59.8 169.1
13°	36 53.5 +60.0 173.9	36 50.7 +59.9 172.7	36 47.3 +59.9 171.5	36 43.4 +59.9 170.3	36 39.0 +59.9 169.0
14°	37 53.5 +59.9 173.8	37 50.6 +59.9 172.6	37 47.2 +59.9 171.4	37 43.3 +59.8 170.2	37 38.9 +59.8 168.9
15°	38 53.4 +59.9 173.8	38 50.5 +59.9 172.6	38 47.1 +59.8 171.3	38 43.1 +59.9 170.1	38 38.7 +59.8 168.8
16°	39 53.3 +60.0 173.7	39 50.4 +59.9 172.5	39 46.9 +59.9 171.2	39 43.0 +59.8 170.0	39 38.5 +59.7 168.7
17°	40 53.3 +59.9 173.7	40 50.3 +59.9 172.4	40 46.8 +59.9 171.1	40 42.8 +59.8 169.9	40 38.2 +59.8 168.6
18°	41 53.2 +59.9 173.6	41 50.2 +59.9 172.3	41 46.7 +59.9 171.1	41 42.6 +59.8 169.8	41 38.0 +59.8 168.5
19°	42 53.1 +60.0 173.5	42 50.1 +59.9 172.3	42 46.6 +59.8 171.0	42 42.4 +59.9 169.7	42 37.8 +59.8 168.4
20°	43 53.1 +59.9 173.5	43 50.0 +59.9 172.2	43 46.4 +59.9 170.9	43 42.3 +59.8 169.6	43 37.6 +59.7 168.3
21°	44 53.0 +59.9 173.4	44 49.9 +59.9 172.1	44 46.3 +59.8 170.8	44 42.1 +59.8 169.5	44 37.3 +59.8 168.2
22°	45 52.9 +59.9 173.3	45 49.8 +59.9 172.0	45 46.1 +59.9 170.7	45 41.9 +59.8 169.4	45 37.1 +59.7 168.0
23°	46 52.8 +59.9 173.3	46 49.7 +59.9 171.9	46 46.0 +59.8 170.6	46 41.7 +59.8 169.2	46 36.8 +59.8 167.9
24°	47 52.7 +60.0 173.2	47 49.6 +59.8 171.8	47 45.8 +59.8 170.5	47 41.5 +59.8 169.1	47 36.6 +59.7 167.8
25°	48 52.7 +59.9 173.1	48 49.4 +59.9 171.7	48 45.6 +59.9 170.4	48 41.3 +59.7 169.0	48 36.3 +59.7 167.6
26°	49 52.6 +59.9 173.0	49 49.3 +59.9 171.6	49 45.5 +59.8 170.2	49 41.0 +59.8 168.9	49 36.0 +59.7 167.5
27°	50 52.5 +59.9 172.9	50 49.2 +59.8 171.5	50 45.3 +59.8 170.1	50 40.8 +59.8 168.7	50 35.7 +59.7 167.3
28°	51 52.4 +59.9 172.8	51 49.0 +59.9 171.4	51 45.1 +59.8 170.0	51 40.6 +59.7 168.6	51 35.4 +59.7 167.2
29°	52 52.3 +59.9 172.7	52 48.9 +59.8 171.3	52 44.9 +59.8 169.9	52 40.3 +59.7 168.4	52 35.1 +59.7 167.0

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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°	23 36.8 +59.8 169.1	23 31.9 +59.8 168.0	23 26.6 +59.8 166.9	23 20.9 +59.7 165.8	23 14.7 +59.6 164.7
1°	24 36.6 +59.8 169.0	24 31.7 +59.8 167.9	24 26.4 +59.7 166.8	24 20.6 +59.7 165.7	24 14.3 +59.7 164.6
2°	25 36.4 +59.8 168.9	25 31.5 +59.8 167.8	25 26.1 +59.7 166.7	25 20.3 +59.7 165.6	25 14.0 +59.6 164.5
3°	26 36.2 +59.8 168.8	26 31.3 +59.7 167.7	26 25.8 +59.8 166.6	26 20.0 +59.6 165.5	26 13.6 +59.6 164.4
4°	27 36.0 +59.9 168.7	27 31.0 +59.8 167.6	27 25.6 +59.7 166.5	27 19.6 +59.7 165.4	27 13.2 +59.7 164.3
5°	28 35.9 +59.8 168.6	28 30.8 +59.8 167.5	28 25.3 +59.7 166.4	28 19.3 +59.7 165.3	28 12.9 +59.6 164.1
6°	29 35.7 +59.8 168.5	29 30.6 +59.7 167.4	29 25.0 +59.7 166.3	29 19.0 +59.7 165.1	29 12.5 +59.6 164.0
7°	30 35.5 +59.8 168.5	30 30.3 +59.8 167.3	30 24.7 +59.7 166.2	30 18.7 +59.6 165.0	30 12.1 +59.6 163.9
8°	31 35.3 +59.7 168.4	31 30.1 +59.7 167.2	31 24.4 +59.7 166.0	31 18.3 +59.7 164.9	31 11.7 +59.6 163.7
9°	32 35.0 +59.8 168.3	32 29.8 +59.8 167.1	32 24.1 +59.7 165.9	32 18.0 +59.6 164.8	32 11.3 +59.6 163.6
10°	33 34.8 +59.8 168.2	33 29.6 +59.7 167.0	33 23.8 +59.7 165.8	33 17.6 +59.6 164.6	33 10.9 +59.6 163.5
11°	34 34.6 +59.8 168.1	34 29.3 +59.7 166.9	34 23.5 +59.7 165.7	34 17.2 +59.7 164.5	34 10.5 +59.5 163.3
12°	35 34.4 +59.8 167.9	35 29.0 +59.8 166.7	35 23.2 +59.7 165.6	35 16.9 +59.6 164.4	35 10.0 +59.6 163.2
13°	36 34.2 +59.7 167.8	36 28.8 +59.7 166.6	36 22.9 +59.6 165.4	36 16.5 +59.6 164.2	36 09.6 +59.5 163.0
14°	37 33.9 +59.8 167.7	37 28.5 +59.7 166.5	37 22.5 +59.7 165.3	37 16.1 +59.6 164.1	37 09.1 +59.6 162.9
15°	38 33.7 +59.7 167.6	38 28.2 +59.7 166.4	38 22.2 +59.6 165.2	38 15.7 +59.6 163.9	38 08.7 +59.5 162.7
16°	39 33.4 +59.8 167.5	39 27.9 +59.7 166.3	39 21.8 +59.7 165.0	39 15.3 +59.5 163.8	39 08.2 +59.5 162.6
17°	40 33.2 +59.7 167.4	40 27.6 +59.7 166.1	40 21.5 +59.6 164.9	40 14.8 +59.6 163.6	40 07.7 +59.5 162.4
18°	41 32.9 +59.7 167.3	41 27.3 +59.6 166.0	41 21.1 +59.6 164.7	41 14.4 +59.6 163.5	41 07.2 +59.5 162.2
19°	42 32.6 +59.8 167.1	42 26.9 +59.7 165.8	42 20.7 +59.6 164.6	42 14.0 +59.5 163.3	42 06.7 +59.4 162.0
20°	43 32.4 +59.7 167.0	43 26.6 +59.6 165.7	43 20.3 +59.6 164.4	43 13.5 +59.5 163.1	43 06.1 +59.5 161.9
21°	44 32.1 +59.7 166.9	44 26.2 +59.7 165.6	44 19.9 +59.6 164.3	44 13.0 +59.5 163.0	44 05.6 +59.4 161.7
22°	45 31.8 +59.7 166.7	45 25.9 +59.6 165.4	45 19.5 +59.5 164.1	45 12.5 +59.5 162.8	45 05.0 +59.4 161.5
23°	46 31.5 +59.6 166.6	46 25.5 +59.6 165.2	46 19.0 +59.6 163.9	46 12.0 +59.5 162.6	46 04.4 +59.4 161.3
24°	47 31.1 +59.7 166.4	47 25.1 +59.6 165.1	47 18.6 +59.5 163.7	47 11.5 +59.4 162.4	47 03.8 +59.4 161.1
25°	48 30.8 +59.6 166.3	48 24.7 +59.6 164.9	48 18.1 +59.5 163.5	48 10.9 +59.4 162.2	48 03.2 +59.3 160.9
26°	49 30.4 +59.7 166.1	49 24.3 +59.6 164.7	49 17.6 +59.5 163.3	49 10.3 +59.4 162.0	49 02.5 +59.3 160.6
27°	50 30.1 +59.6 165.9	50 23.9 +59.5 164.5	50 17.1 +59.4 163.1	50 09.7 +59.4 161.8	50 01.8 +59.3 160.4
28°	51 29.7 +59.6 165.7	51 23.4 +59.5 164.3	51 16.5 +59.5 162.9	51 09.1 +59.3 161.5	51 01.1 +59.2 160.2
29°	52 29.3 +59.6 165.6	52 22.9 +59.5 164.1	52 16.0 +59.4 162.7	52 08.4 +59.3 161.3	52 00.3 +59.2 159.9

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°	23 08.0 +59.6 163.7	23 00.9 +59.6 162.6	22 53.4 +59.5 161.5	22 45.4 +59.5 160.4	22 37.0 +59.4 159.3
1°	24 07.6 +59.6 163.5	24 00.5 +59.5 162.4	23 52.9 +59.5 161.4	23 44.9 +59.4 160.3	23 36.4 +59.4 159.2
2°	25 07.2 +59.6 163.4	25 00.0 +59.6 162.3	24 52.4 +59.5 161.2	24 44.3 +59.4 160.1	24 35.8 +59.3 159.0
3°	26 06.8 +59.6 163.3	25 59.6 +59.5 162.2	25 51.9 +59.4 161.1	25 43.7 +59.4 160.0	25 35.1 +59.4 158.9
4°	27 06.4 +59.6 163.1	26 59.1 +59.5 162.0	26 51.3 +59.5 160.9	26 43.1 +59.4 159.8	26 34.5 +59.3 158.7
5°	28 06.0 +59.5 163.0	27 58.6 +59.5 161.9	27 50.8 +59.4 160.8	27 42.5 +59.4 159.7	27 33.8 +59.3 158.5
6°	29 05.5 +59.6 162.9	28 58.1 +59.5 161.7	28 50.2 +59.5 160.6	28 41.9 +59.4 159.5	28 33.1 +59.3 158.4
7°	30 05.1 +59.5 162.7	29 57.6 +59.5 161.6	29 49.7 +59.4 160.5	29 41.3 +59.4 159.3	29 32.4 +59.3 158.2
8°	31 04.6 +59.6 162.6	30 57.1 +59.5 161.4	30 49.1 +59.4 160.3	30 40.7 +59.3 159.2	30 31.7 +59.3 158.0
9°	32 04.2 +59.5 162.4	31 56.6 +59.5 161.3	31 48.5 +59.4 160.1	31 40.0 +59.3 159.0	31 31.0 +59.3 157.8
10°	33 03.7 +59.5 162.3	32 56.1 +59.4 161.1	32 47.9 +59.4 160.0	32 39.3 +59.4 158.8	32 30.3 +59.2 157.7
11°	34 03.2 +59.5 162.1	33 55.5 +59.5 161.0	33 47.3 +59.4 159.8	33 38.7 +59.3 158.6	33 29.5 +59.3 157.5
12°	35 02.7 +59.5 162.0	34 55.0 +59.4 160.8	34 46.7 +59.4 159.6	34 38.0 +59.2 158.4	34 28.8 +59.2 157.3
13°	36 02.2 +59.5 161.8	35 54.4 +59.4 160.6	35 46.1 +59.3 159.4	35 37.2 +59.3 158.3	35 28.0 +59.2 157.1
14°	37 01.7 +59.5 161.7	36 53.8 +59.4 160.5	36 45.4 +59.3 159.3	36 36.5 +59.3 158.1	36 27.2 +59.1 156.9
15°	38 01.2 +59.4 161.5	37 53.2 +59.4 160.3	37 44.7 +59.3 159.1	37 35.8 +59.2 157.9	37 26.3 +59.2 156.7
16°	39 00.6 +59.5 161.3	38 52.6 +59.3 160.1	38 44.0 +59.3 158.9	38 35.0 +59.2 157.7	38 25.5 +59.1 156.5
17°	40 00.1 +59.4 161.1	39 51.9 +59.4 159.9	39 43.3 +59.3 158.7	39 34.2 +59.2 157.5	39 24.6 +59.1 156.2
18°	40 59.5 +59.4 161.0	40 51.3 +59.3 159.7	40 42.6 +59.2 158.5	40 33.4 +59.2 157.2	40 23.7 +59.1 156.0
19°	41 58.9 +59.4 160.8	41 50.6 +59.3 159.5	41 41.8 +59.3 158.3	41 32.6 +59.1 157.0	41 22.8 +59.0 155.8
20°	42 58.3 +59.4 160.6	42 49.9 +59.3 159.3	42 41.1 +59.2 158.1	42 31.7 +59.1 156.8	42 21.8 +59.0 155.5
21°	43 57.7 +59.3 160.4	43 49.2 +59.3 159.1	43 40.3 +59.1 157.8	43 30.8 +59.1 156.6	43 20.8 +59.0 155.3
22°	44 57.0 +59.3 160.2	44 48.5 +59.2 158.9	44 39.4 +59.2 157.6	44 29.9 +59.0 156.3	44 19.8 +59.0 155.0
23°	45 56.3 +59.3 160.0	45 47.7 +59.2 158.7	45 38.6 +59.1 157.4	45 28.9 +59.0 156.1	45 18.8 +58.9 154.8
24°	46 55.6 +59.3 159.7	46 46.9 +59.2 158.4	46 37.7 +59.0 157.1	46 27.9 +59.0 155.8	46 17.7 +58.8 154.5
25°	47 54.9 +59.2 159.5	47 46.1 +59.1 158.2	47 36.7 +59.1 156.9	47 26.9 +58.9 155.5	47 16.5 +58.9 154.2
26°	48 54.1 +59.2 159.3	48 45.2 +59.1 157.9	48 35.8 +59.0 156.6	48 25.8 +58.9 155.3	48 15.4 +58.7 153.9
27°	49 53.3 +59.2 159.0	49 44.3 +59.1 157.7	49 34.8 +59.0 156.3	49 24.7 +58.9 155.0	49 14.1 +58.8 153.6
28°	50 52.5 +59.2 158.8	50 43.4 +59.0 157.4	50 33.8 +58.9 156.0	50 23.6 +58.8 154.7	50 12.9 +58.6 153.3
29°	51 51.7 +59.1 158.5	51 42.4 +59.0 157.1	51 32.7 +58.8 155.7	51 22.4 +58.7 154.3	51 11.5 +58.7 153.0

Declination SAME name as Latitude

Latitude 66°

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°	22 28.2 +59.3 158.3	22 19.0 +59.2 157.2	22 09.3 +59.2 156.1	21 59.2 +59.2 155.1	21 48.8 +59.0 154.0
1°	23 27.5 +59.3 158.1	23 18.2 +59.3 157.0	23 08.5 +59.2 156.0	22 58.4 +59.0 154.9	22 47.8 +59.0 153.8
2°	24 26.8 +59.3 157.9	24 17.5 +59.2 156.9	24 07.7 +59.1 155.8	23 57.4 +59.1 154.7	23 46.8 +59.0 153.6
3°	25 26.1 +59.3 157.8	25 16.7 +59.2 156.7	25 06.8 +59.2 155.6	24 56.5 +59.1 154.5	24 45.8 +59.0 153.4
4°	26 25.4 +59.3 157.6	26 15.9 +59.2 156.5	26 06.0 +59.1 155.4	25 55.6 +59.0 154.3	25 44.8 +59.0 153.2
5°	27 24.7 +59.2 157.4	27 15.1 +59.2 156.3	27 05.1 +59.1 155.2	26 54.6 +59.1 154.1	26 43.8 +58.9 153.0
6°	28 23.9 +59.3 157.3	28 14.3 +59.1 156.1	28 04.2 +59.1 155.0	27 53.7 +59.0 153.9	27 42.7 +59.0 152.8
7°	29 23.2 +59.2 157.1	29 13.4 +59.2 155.9	29 03.3 +59.0 154.8	28 52.7 +59.0 153.7	28 41.7 +58.9 152.6
8°	30 22.4 +59.2 156.9	30 12.6 +59.1 155.8	30 02.3 +59.1 154.6	29 51.7 +58.9 153.5	29 40.6 +58.9 152.4
9°	31 21.6 +59.2 156.7	31 11.7 +59.1 155.6	31 01.4 +59.0 154.4	30 50.6 +59.0 153.3	30 39.5 +58.8 152.2
10°	32 20.8 +59.2 156.5	32 10.8 +59.1 155.4	32 00.4 +59.0 154.2	31 49.6 +58.9 153.1	31 38.3 +58.9 151.9
11°	33 20.0 +59.1 156.3	33 09.9 +59.1 155.2	32 59.4 +59.0 154.0	32 48.5 +58.9 152.8	32 37.2 +58.8 151.7
12°	34 19.1 +59.1 156.1	34 09.0 +59.0 154.9	33 58.4 +59.0 153.8	33 47.4 +58.9 152.6	33 36.0 +58.8 151.5
13°	35 18.2 +59.2 155.9	35 08.0 +59.1 154.7	34 57.4 +58.9 153.6	34 46.3 +58.9 152.4	34 34.8 +58.7 151.2
14°	36 17.4 +59.0 155.7	36 07.1 +59.0 154.5	35 56.3 +59.0 153.3	35 45.2 +58.8 152.1	35 33.5 +58.8 151.0
15°	37 16.4 +59.1 155.5	37 06.1 +59.0 154.3	36 55.3 +58.8 153.1	36 44.0 +58.8 151.9	36 32.3 +58.7 150.7
16°	38 15.5 +59.0 155.2	38 05.1 +58.9 154.0	37 54.1 +58.9 152.8	37 42.8 +58.7 151.7	37 31.0 +58.6 150.5
17°	39 14.5 +59.0 155.0	39 04.0 +58.9 153.8	38 53.0 +58.8 152.6	38 41.5 +58.8 151.4	38 29.6 +58.7 150.2
18°	40 13.5 +59.0 154.8	40 02.9 +58.9 153.6	39 51.8 +58.8 152.3	39 40.3 +58.7 151.1	39 28.3 +58.5 149.9
19°	41 12.5 +59.0 154.5	41 01.8 +58.9 153.3	40 50.6 +58.8 152.1	40 39.0 +58.6 150.9	40 26.8 +58.6 149.6
20°	42 11.5 +58.9 154.3	42 00.7 +58.8 153.0	41 49.4 +58.7 151.8	41 37.6 +58.6 150.6	41 25.4 +58.5 149.4
21°	43 10.4 +58.9 154.0	42 59.5 +58.7 152.8	42 48.1 +58.6 151.5	42 36.2 +58.6 150.3	42 23.9 +58.4 149.1
22°	44 09.3 +58.8 153.8	43 58.2 +58.8 152.5	43 46.7 +58.7 151.2	43 34.8 +58.5 150.0	43 22.3 +58.4 148.7
23°	45 08.1 +58.8 153.5	44 57.0 +58.7 152.2	44 45.4 +58.5 150.9	44 33.3 +58.4 149.7	44 20.7 +58.4 148.4
24°	46 06.9 +58.8 153.2	45 55.7 +58.6 151.9	45 43.9 +58.6 150.6	45 31.7 +58.5 149.4	45 19.1 +58.3 148.1
25°	47 05.7 +58.7 152.9	46 54.3 +58.6 151.6	46 42.5 +58.4 150.3	46 30.2 +58.3 149.0	46 17.4 +58.2 147.8
26°	48 04.4 +58.6 152.6	47 52.9 +58.5 151.3	47 40.9 +58.5 150.0	47 28.5 +58.3 148.7	47 15.6 +58.1 147.4
27°	49 03.0 +58.6 152.3	48 51.4 +58.5 151.0	48 39.4 +58.3 149.7	48 26.8 +58.2 148.3	48 13.7 +58.1 147.0
28°	50 01.6 +58.6 152.0	49 49.9 +58.4 150.6	49 37.7 +58.3 149.3	49 25.0 +58.2 148.0	49 11.8 +58.0 146.7
29°	51 00.2 +58.5 151.6	50 48.3 +58.4 150.3	50 36.0 +58.2 148.9	50 23.2 +58.0 147.6	50 09.8 +58.0 146.3

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°	21 37.9 +58.9 153.0	21 26.6 +58.9 151.9	21 14.9 +58.8 150.8	21 02.8 +58.7 149.8	20 50.3 +58.7 148.8
1°	22 36.8 +59.0 152.8	22 25.5 +58.8 151.7	22 13.7 +58.8 150.6	22 01.5 +58.7 149.6	21 49.0 +58.6 148.5
2°	23 35.8 +58.9 152.6	23 24.3 +58.9 151.5	23 12.5 +58.7 150.4	23 00.2 +58.7 149.4	22 47.6 +58.6 148.3
3°	24 34.7 +58.9 152.3	24 23.2 +58.8 151.3	24 11.2 +58.8 150.2	23 58.9 +58.7 149.1	23 46.2 +58.6 148.1
4°	25 33.6 +58.9 152.1	25 22.0 +58.8 151.1	25 10.0 +58.7 150.0	24 57.6 +58.6 148.9	24 44.8 +58.5 147.8
5°	26 32.5 +58.9 151.9	26 20.8 +58.8 150.8	26 08.7 +58.7 149.7	25 56.2 +58.6 148.7	25 43.3 +58.6 147.6
6°	27 31.4 +58.8 151.7	27 19.6 +58.8 150.6	27 07.4 +58.7 149.5	26 54.8 +58.6 148.4	26 41.9 +58.5 147.3
7°	28 30.2 +58.8 151.5	28 18.4 +58.7 150.4	28 06.1 +58.7 149.3	27 53.4 +58.6 148.2	27 40.4 +58.4 147.1
8°	29 29.0 +58.9 151.3	29 17.1 +58.7 150.2	29 04.8 +58.6 149.0	28 52.0 +58.5 147.9	28 38.8 +58.5 146.8
9°	30 27.9 +58.7 151.0	30 15.8 +58.7 149.9	30 03.4 +58.6 148.8	29 50.5 +58.6 147.7	29 37.3 +58.4 146.6
10°	31 26.6 +58.8 150.8	31 14.5 +58.7 149.7	31 02.0 +58.6 148.5	30 49.1 +58.4 147.4	30 35.7 +58.4 146.3
11°	32 25.4 +58.7 150.6	32 13.2 +58.6 149.4	32 00.6 +58.5 148.3	31 47.5 +58.5 147.2	31 34.1 +58.4 146.0
12°	33 24.1 +58.7 150.3	33 11.8 +58.6 149.2	32 59.1 +58.5 148.0	32 46.0 +58.4 146.9	32 32.5 +58.3 145.8
13°	34 22.8 +58.7 150.1	34 10.4 +58.6 148.9	33 57.6 +58.5 147.8	33 44.4 +58.4 146.6	33 30.8 +58.3 145.5
14°	35 21.5 +58.6 149.8	35 09.0 +58.5 148.7	34 56.1 +58.4 147.5	34 42.8 +58.3 146.3	34 29.1 +58.2 145.2
15°	36 20.1 +58.6 149.6	36 07.5 +58.5 148.4	35 54.5 +58.4 147.2	35 41.1 +58.3 146.1	35 27.3 +58.2 144.9
16°	37 18.7 +58.6 149.3	37 06.0 +58.5 148.1	36 52.9 +58.4 146.9	36 39.4 +58.3 145.8	36 25.5 +58.1 144.6
17°	38 17.3 +58.5 149.0	38 04.5 +58.4 147.8	37 51.3 +58.3 146.6	37 37.7 +58.2 145.5	37 23.6 +58.1 144.3
18°	39 15.8 +58.5 148.7	39 02.9 +58.4 147.5	38 49.6 +58.3 146.3	38 35.9 +58.1 145.2	38 21.7 +58.1 144.0
19°	40 14.3 +58.4 148.4	40 01.3 +58.3 147.2	39 47.9 +58.2 146.0	39 34.0 +58.1 144.8	39 19.8 +58.0 143.7
20°	41 12.7 +58.4 148.1	40 59.6 +58.3 146.9	40 46.1 +58.2 145.7	40 32.1 +58.1 144.5	40 17.8 +57.9 143.3
21°	42 11.1 +58.4 147.8	41 57.9 +58.2 146.6	41 44.3 +58.1 145.4	41 30.2 +58.0 144.2	41 15.7 +57.9 143.0
22°	43 09.5 +58.2 147.5	42 56.1 +58.2 146.3	42 42.4 +58.0 145.1	42 28.2 +57.9 143.8	42 13.6 +57.8 142.6
23°	44 07.7 +58.3 147.2	43 54.3 +58.1 145.9	43 40.4 +58.0 144.7	43 26.1 +57.8 143.5	43 11.4 +57.7 142.3
24°	45 06.0 +58.1 146.8	44 52.4 +58.0 145.6	44 38.4 +57.9 144.3	44 23.9 +57.8 143.1	44 09.1 +57.6 141.9
25°	46 04.1 +58.1 146.5	45 50.4 +58.0 145.2	45 36.3 +57.8 144.0	45 21.7 +57.7 142.7	45 06.7 +57.6 141.5
26°	47 02.2 +58.0 146.1	46 48.4 +57.9 144.9	46 34.1 +57.8 143.6	46 19.4 +57.6 142.3	46 04.3 +57.5 141.1
27°	48 00.2 +58.0 145.8	47 46.3 +57.8 144.5	47 31.9 +57.6 143.2	47 17.0 +57.6 141.9	47 01.8 +57.4 140.7
28°	48 58.2 +57.9 145.4	48 44.1 +57.7 144.1	48 29.5 +57.6 142.8	48 14.6 +57.4 141.5	47 59.2 +57.3 140.2
29°	49 56.1 +57.7 145.0	49 41.8 +57.6 143.6	49 27.1 +57.5 142.4	49 12.0 +57.3 141.1	48 56.5 +57.1 139.8

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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°	20 37.5 +58.5 147.7	20 24.3 +58.4 146.7	20 10.7 +58.3 145.6	19 56.7 +58.3 144.6	19 42.4 +58.2 143.6
1°	21 36.0 +58.6 147.5	21 22.7 +58.5 146.4	21 09.0 +58.4 145.4	20 55.0 +58.3 144.3	20 40.6 +58.2 143.3
2°	22 34.6 +58.5 147.2	22 21.2 +58.4 146.2	22 07.4 +58.4 145.1	21 53.3 +58.2 144.1	21 38.8 +58.1 143.0
3°	23 33.1 +58.5 147.0	23 19.6 +58.4 145.9	23 05.8 +58.3 144.9	22 51.5 +58.3 143.8	22 36.9 +58.2 142.8
4°	24 31.6 +58.5 146.8	24 18.0 +58.4 145.7	24 04.1 +58.3 144.6	23 49.8 +58.2 143.6	23 35.1 +58.1 142.5
5°	25 30.1 +58.4 146.5	25 16.4 +58.3 145.4	25 02.4 +58.2 144.4	24 48.0 +58.1 143.3	24 33.2 +58.1 142.2
6°	26 28.5 +58.4 146.3	26 14.7 +58.4 145.2	26 00.6 +58.3 144.1	25 46.1 +58.2 143.0	25 31.3 +58.0 142.0
7°	27 26.9 +58.4 146.0	27 13.1 +58.3 144.9	26 58.9 +58.2 143.8	26 44.3 +58.1 142.7	26 29.3 +58.0 141.7
8°	28 25.3 +58.4 145.7	28 11.4 +58.2 144.6	27 57.1 +58.1 143.6	27 42.4 +58.1 142.5	27 27.3 +58.0 141.4
9°	29 23.7 +58.3 145.5	29 09.6 +58.3 144.4	28 55.2 +58.2 143.3	28 40.5 +58.0 142.2	28 25.3 +57.9 141.1
10°	30 22.0 +58.3 145.2	30 07.9 +58.2 144.1	29 53.4 +58.1 143.0	29 38.5 +58.0 141.9	29 23.2 +57.9 140.8
11°	31 20.3 +58.2 144.9	31 06.1 +58.1 143.8	30 51.5 +58.0 142.7	30 36.5 +57.9 141.6	30 21.1 +57.9 140.5
12°	32 18.5 +58.3 144.6	32 04.2 +58.1 143.5	31 49.5 +58.0 142.4	31 34.4 +58.0 141.3	31 19.0 +57.8 140.2
13°	33 16.8 +58.1 144.4	33 02.3 +58.1 143.2	32 47.5 +58.0 142.1	32 32.4 +57.8 141.0	32 16.8 +57.8 139.9
14°	34 14.9 +58.2 144.1	34 00.4 +58.0 142.9	33 45.5 +57.9 141.8	33 30.2 +57.8 140.7	33 14.6 +57.7 139.6
15°	35 13.1 +58.1 143.8	34 58.4 +58.0 142.6	34 43.4 +57.9 141.5	34 28.0 +57.8 140.3	34 12.3 +57.6 139.2
16°	36 11.2 +58.0 143.5	35 56.4 +58.0 142.3	35 41.3 +57.8 141.2	35 25.8 +57.7 140.0	35 09.9 +57.7 138.9
17°	37 09.2 +58.0 143.1	36 54.4 +57.8 142.0	36 39.1 +57.8 140.8	36 23.5 +57.7 139.7	36 07.6 +57.5 138.5
18°	38 07.2 +57.9 142.8	37 52.2 +57.8 141.6	37 36.9 +57.7 140.5	37 21.2 +57.6 139.3	37 05.1 +57.5 138.2
19°	39 05.1 +57.9 142.5	38 50.0 +57.8 141.3	38 34.6 +57.6 140.1	38 18.8 +57.5 139.0	38 02.6 +57.4 137.8
20°	40 03.0 +57.8 142.1	39 47.8 +57.7 141.0	39 32.2 +57.6 139.8	39 16.3 +57.5 138.6	39 00.0 +57.3 137.5
21°	41 00.8 +57.7 141.8	40 45.5 +57.6 140.6	40 29.8 +57.5 139.4	40 13.8 +57.3 138.2	39 57.3 +57.3 137.1
22°	41 58.5 +57.7 141.4	41 43.1 +57.6 140.2	41 27.3 +57.4 139.0	41 11.1 +57.3 137.9	40 54.6 +57.1 136.7
23°	42 56.2 +57.6 141.0	42 40.7 +57.4 139.8	42 24.7 +57.4 138.6	42 08.4 +57.2 137.5	41 51.7 +57.1 136.3
24°	43 53.8 +57.5 140.7	43 38.1 +57.4 139.5	43 22.1 +57.2 138.2	43 05.6 +57.2 137.0	42 48.8 +57.0 135.9
25°	44 51.3 +57.5 140.3	44 35.5 +57.3 139.0	44 19.3 +57.2 137.8	44 02.8 +57.0 136.6	43 45.8 +56.9 135.4
26°	45 48.8 +57.3 139.9	45 32.8 +57.2 138.6	45 16.5 +57.1 137.4	44 59.8 +56.9 136.2	44 42.7 +56.8 135.0
27°	46 46.1 +57.3 139.4	46 30.0 +57.1 138.2	46 13.6 +56.9 137.0	45 56.7 +56.9 135.7	45 39.5 +56.7 134.5
28°	47 43.4 +57.1 139.0	47 27.1 +57.0 137.7	47 10.5 +56.9 136.5	46 53.6 +56.7 135.3	46 36.2 +56.5 134.1
29°	48 40.5 +57.0 138.5	48 24.1 +56.9 137.3	48 07.4 +56.7 136.0	47 50.3 +56.5 134.8	47 32.7 +56.5 133.6

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°	19 27.7 +58.1 142.5	19 12.7 +58.0 141.5	18 57.3 +58.0 140.5	18 41.6 +57.9 139.5	18 25.6 +57.8 138.4
1°	20 25.8 +58.1 142.3	20 10.7 +58.0 141.2	19 55.3 +57.9 140.2	19 39.5 +57.8 139.2	19 23.4 +57.7 138.2
2°	21 23.9 +58.1 142.0	21 08.7 +58.0 141.0	20 53.2 +57.9 139.9	20 37.3 +57.8 138.9	20 21.1 +57.7 137.9
3°	22 22.0 +58.1 141.7	22 06.7 +58.0 140.7	21 51.1 +57.8 139.6	21 35.1 +57.8 138.6	21 18.8 +57.7 137.6
4°	23 20.1 +58.0 141.5	23 04.7 +57.9 140.4	22 48.9 +57.9 139.4	22 32.9 +57.7 138.3	22 16.5 +57.6 137.3
5°	24 18.1 +58.0 141.2	24 02.6 +57.9 140.1	23 46.8 +57.8 139.1	23 30.6 +57.7 138.0	23 14.1 +57.6 137.0
6°	25 16.1 +57.9 140.9	25 00.5 +57.8 139.8	24 44.6 +57.7 138.8	24 28.3 +57.7 137.7	24 11.7 +57.6 136.7
7°	26 14.0 +57.9 140.6	25 58.3 +57.9 139.5	25 42.3 +57.8 138.5	25 26.0 +57.6 137.4	25 09.3 +57.5 136.4
8°	27 11.9 +57.9 140.3	26 56.2 +57.7 139.2	26 40.1 +57.6 138.2	26 23.6 +57.6 137.1	26 06.8 +57.5 136.0
9°	28 09.8 +57.8 140.0	27 53.9 +57.8 138.9	27 37.7 +57.7 137.9	27 21.2 +57.5 136.8	27 04.3 +57.5 135.7
10°	29 07.6 +57.8 139.7	28 51.7 +57.7 138.6	28 35.4 +57.6 137.5	28 18.7 +57.5 136.5	28 01.8 +57.4 135.4
11°	30 05.4 +57.8 139.4	29 49.4 +57.6 138.3	29 33.0 +57.5 137.2	29 16.2 +57.5 136.1	28 59.2 +57.3 135.1
12°	31 03.2 +57.7 139.1	30 47.0 +57.6 138.0	30 30.5 +57.5 136.9	30 13.7 +57.4 135.8	29 56.5 +57.3 134.7
13°	32 00.9 +57.7 138.8	31 44.6 +57.6 137.7	31 28.0 +57.5 136.6	31 11.1 +57.3 135.5	30 53.8 +57.3 134.4
14°	32 58.6 +57.6 138.4	32 42.2 +57.5 137.3	32 25.5 +57.4 136.2	32 08.4 +57.3 135.1	31 51.1 +57.1 134.0
15°	33 56.2 +57.5 138.1	33 39.7 +57.4 137.0	33 22.9 +57.3 135.9	33 05.7 +57.2 134.8	32 48.2 +57.2 133.7
16°	34 53.7 +57.5 137.8	34 37.1 +57.4 136.6	34 20.2 +57.3 135.5	34 02.9 +57.2 134.4	33 45.4 +57.0 133.3
17°	35 51.2 +57.4 137.4	35 34.5 +57.3 136.3	35 17.5 +57.2 135.2	35 00.1 +57.1 134.0	34 42.4 +57.0 132.9
18°	36 48.6 +57.4 137.1	36 31.8 +57.3 135.9	36 14.7 +57.1 134.8	35 57.2 +57.0 133.7	35 39.4 +56.9 132.6
19°	37 46.0 +57.3 136.7	37 29.1 +57.2 135.5	37 11.8 +57.1 134.4	36 54.2 +57.0 133.3	36 36.3 +56.8 132.2
20°	38 43.3 +57.2 136.3	38 26.3 +57.1 135.2	38 08.9 +57.0 134.0	37 51.2 +56.8 132.9	37 33.1 +56.8 131.8
21°	39 40.5 +57.1 135.9	39 23.4 +57.0 134.8	39 05.9 +56.9 133.6	38 48.0 +56.8 132.5	38 29.9 +56.6 131.3
22°	40 37.6 +57.1 135.5	40 20.4 +56.9 134.4	40 02.8 +56.8 133.2	39 44.8 +56.7 132.1	39 26.5 +56.6 130.9
23°	41 34.7 +57.0 135.1	41 17.3 +56.8 133.9	40 59.6 +56.7 132.8	40 41.5 +56.6 131.6	40 23.1 +56.4 130.5
24°	42 31.7 +56.8 134.7	42 14.1 +56.8 133.5	41 56.3 +56.6 132.3	41 38.1 +56.4 131.2	41 19.5 +56.4 130.0
25°	43 28.5 +56.8 134.2	43 10.9 +56.6 133.1	42 52.9 +56.5 131.9	42 34.5 +56.4 130.7	42 15.9 +56.2 129.6
26°	44 25.3 +56.6 133.8	44 07.5 +56.5 132.6	43 49.4 +56.4 131.4	43 30.9 +56.3 130.3	43 12.1 +56.1 129.1
27°	45 21.9 +56.6 133.3	45 04.0 +56.4 132.1	44 45.8 +56.2 131.0	44 27.2 +56.1 129.8	44 08.2 +56.0 128.6
28°	46 18.5 +56.4 132.8	46 00.4 +56.3 131.7	45 42.0 +56.1 130.5	45 23.3 +56.0 129.3	45 04.2 +55.9 128.1
29°	47 14.9 +56.3 132.4	46 56.7 +56.1 131.1	46 38.1 +56.0 130.0	46 19.3 +55.8 128.8	46 00.1 +55.7 127.6

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°	11 44.0 +56.0 117.8	11 22.4 +55.9 116.9	11 00.5 +55.8 115.9	10 38.5 +55.7 115.0	10 16.3 +55.6 114.0
1°	12 40.0 +55.9 117.4	12 18.3 +55.8 116.5	11 56.3 +55.8 115.5	11 34.2 +55.7 114.6	11 11.9 +55.7 113.6
2°	13 35.9 +55.9 117.1	13 14.1 +55.9 116.1	12 52.1 +55.8 115.2	12 29.9 +55.7 114.2	12 07.6 +55.6 113.3
3°	14 31.8 +55.9 116.7	14 10.0 +55.8 115.7	13 47.9 +55.7 114.8	13 25.6 +55.7 113.8	13 03.2 +55.6 112.9
4°	15 27.7 +55.8 116.3	15 05.8 +55.7 115.4	14 43.6 +55.7 114.4	14 21.3 +55.6 113.4	13 58.8 +55.6 112.5
5°	16 23.5 +55.8 115.9	16 01.5 +55.7 115.0	15 39.3 +55.7 114.0	15 16.9 +55.6 113.1	14 54.4 +55.5 112.1
6°	17 19.3 +55.8 115.6	16 57.2 +55.7 114.6	16 35.0 +55.6 113.6	16 12.5 +55.6 112.7	15 49.9 +55.5 111.7
7°	18 15.1 +55.7 115.2	17 52.9 +55.6 114.2	17 30.6 +55.5 113.2	17 08.1 +55.4 112.3	16 45.4 +55.4 111.3
8°	19 10.8 +55.6 114.8	18 48.5 +55.6 113.8	18 26.1 +55.5 112.8	18 03.5 +55.5 111.9	17 40.8 +55.4 110.9
9°	20 06.4 +55.6 114.4	19 44.1 +55.5 113.4	19 21.6 +55.5 112.4	18 59.0 +55.4 111.5	18 36.2 +55.3 110.5
10°	21 02.0 +55.5 114.0	20 39.6 +55.5 113.0	20 17.1 +55.4 112.0	19 54.4 +55.3 111.1	19 31.5 +55.3 110.1
11°	21 57.5 +55.5 113.6	21 35.1 +55.4 112.6	21 12.5 +55.3 111.6	20 49.7 +55.3 110.6	20 26.8 +55.2 109.7
12°	22 53.0 +55.4 113.2	22 30.5 +55.3 112.2	22 07.8 +55.3 111.2	21 45.0 +55.2 110.2	21 22.0 +55.2 109.3
13°	23 48.4 +55.4 112.7	23 25.8 +55.3 111.8	23 03.1 +55.2 110.8	22 40.2 +55.2 109.8	22 17.2 +55.1 108.8
14°	24 43.8 +55.2 112.3	24 21.1 +55.2 111.3	23 58.3 +55.1 110.3	23 35.4 +55.0 109.4	23 12.3 +55.0 108.4
15°	25 39.0 +55.2 111.9	25 16.3 +55.1 110.9	24 53.4 +55.1 109.9	24 30.4 +55.0 108.9	24 07.3 +54.9 108.0
16°	26 34.2 +55.1 111.4	26 11.4 +55.1 110.5	25 48.5 +55.0 109.5	25 25.4 +54.9 108.5	25 02.2 +54.9 107.5
17°	27 29.3 +55.1 111.0	27 06.5 +54.9 110.0	26 43.5 +54.9 109.0	26 20.3 +54.9 108.1	25 57.1 +54.7 107.1
18°	28 24.4 +54.9 110.5	28 01.4 +54.9 109.6	27 38.4 +54.8 108.6	27 15.2 +54.7 107.6	26 51.8 +54.7 106.6
19°	29 19.3 +54.8 110.1	28 56.3 +54.8 109.1	28 33.2 +54.7 108.1	28 09.9 +54.7 107.1	27 46.5 +54.6 106.2
20°	30 14.1 +54.8 109.6	29 51.1 +54.6 108.6	29 27.9 +54.6 107.6	29 04.6 +54.5 106.7	28 41.1 +54.5 105.7
21°	31 08.9 +54.6 109.1	30 45.7 +54.6 108.2	30 22.5 +54.5 107.2	29 59.1 +54.4 106.2	29 35.6 +54.4 105.2
22°	32 03.5 +54.5 108.7	31 40.3 +54.5 107.7	31 17.0 +54.4 106.7	30 53.5 +54.4 105.7	30 30.0 +54.3 104.7
23°	32 58.0 +54.4 108.2	32 34.8 +54.3 107.2	32 11.4 +54.2 106.2	31 47.9 +54.2 105.2	31 24.3 +54.1 104.2
24°	33 52.4 +54.3 107.7	33 29.1 +54.2 106.7	33 05.6 +54.2 105.7	32 42.1 +54.1 104.7	32 18.4 +54.1 103.7
25°	34 46.7 +54.1 107.1	34 23.3 +54.1 106.1	33 59.8 +54.0 105.2	33 36.2 +53.9 104.2	33 12.5 +53.9 103.2
26°	35 40.8 +54.0 106.6	35 17.4 +53.9 105.6	34 53.8 +53.9 104.6	34 30.1 +53.9 103.6	34 06.4 +53.7 102.7
27°	36 34.8 +53.8 106.1	36 11.3 +53.8 105.1	35 47.7 +53.7 104.1	35 24.0 +53.6 103.1	35 00.1 +53.7 102.1
28°	37 28.6 +53.7 105.5	37 05.1 +53.6 104.5	36 41.4 +53.6 103.5	36 17.6 +53.5 102.6	35 53.8 +53.4 101.6
29°	38 22.3 +53.5 105.0	37 58.7 +53.4 104.0	37 35.0 +53.4 103.0	37 11.1 +53.4 102.0	36 47.2 +53.3 101.0

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°	9 53.9 +55.6 113.1	9 31.3 +55.6 112.1	9 08.7 +55.5 111.2	8 45.8 +55.5 110.3	8 22.9 +55.4 109.3
1°	10 49.5 +55.6 112.7	10 26.9 +55.6 111.8	10 04.2 +55.5 110.8	9 41.3 +55.4 109.9	9 18.3 +55.3 108.9
2°	11 45.1 +55.6 112.3	11 22.5 +55.5 111.4	10 59.7 +55.4 110.4	10 36.7 +55.4 109.5	10 13.6 +55.4 108.5
3°	12 40.7 +55.5 111.9	12 18.0 +55.4 111.0	11 55.1 +55.4 110.0	11 32.1 +55.4 109.1	11 09.0 +55.3 108.2
4°	13 36.2 +55.5 111.5	13 13.4 +55.5 110.6	12 50.5 +55.4 109.6	12 27.5 +55.3 108.7	12 04.3 +55.3 107.8
5°	14 31.7 +55.5 111.1	14 08.9 +55.4 110.2	13 45.9 +55.3 109.2	13 22.8 +55.3 108.3	12 59.6 +55.2 107.4
6°	15 27.2 +55.4 110.7	15 04.3 +55.3 109.8	14 41.2 +55.3 108.8	14 18.1 +55.2 107.9	13 54.8 +55.2 107.0
7°	16 22.6 +55.4 110.3	15 59.6 +55.3 109.4	15 36.5 +55.3 108.4	15 13.3 +55.2 107.5	14 50.0 +55.2 106.6
8°	17 18.0 +55.3 109.9	16 54.9 +55.3 109.0	16 31.8 +55.2 108.0	16 08.5 +55.2 107.1	15 45.2 +55.1 106.1
9°	18 13.3 +55.2 109.5	17 50.2 +55.2 108.6	17 27.0 +55.2 107.6	17 03.7 +55.1 106.7	16 40.3 +55.0 105.7
10°	19 08.5 +55.3 109.1	18 45.4 +55.2 108.2	18 22.2 +55.1 107.2	17 58.8 +55.1 106.3	17 35.3 +55.0 105.3
11°	20 03.8 +55.1 108.7	19 40.6 +55.1 107.8	19 17.3 +55.0 106.8	18 53.9 +55.0 105.8	18 30.3 +55.0 104.9
12°	20 58.9 +55.1 108.3	20 35.7 +55.0 107.3	20 12.3 +55.0 106.4	19 48.9 +54.9 105.4	19 25.3 +54.9 104.5
13°	21 54.0 +55.0 107.9	21 30.7 +55.0 106.9	21 07.3 +54.9 105.9	20 43.8 +54.9 105.0	20 20.2 +54.8 104.0
14°	22 49.0 +55.0 107.4	22 25.7 +54.9 106.5	22 02.2 +54.9 105.5	21 38.7 +54.8 104.6	21 15.0 +54.8 103.6
15°	23 44.0 +54.9 107.0	23 20.6 +54.8 106.0	22 57.1 +54.8 105.1	22 33.5 +54.7 104.1	22 09.8 +54.6 103.2
16°	24 38.9 +54.8 106.6	24 15.4 +54.8 105.6	23 51.9 +54.7 104.6	23 28.2 +54.7 103.7	23 04.4 +54.7 102.7
17°	25 33.7 +54.7 106.1	25 10.2 +54.7 105.1	24 46.6 +54.6 104.2	24 22.9 +54.5 103.2	23 59.1 +54.5 102.3
18°	26 28.4 +54.6 105.7	26 04.9 +54.5 104.7	25 41.2 +54.5 103.7	25 17.4 +54.5 102.8	24 53.6 +54.4 101.8
19°	27 23.0 +54.6 105.2	26 59.4 +54.5 104.2	26 35.7 +54.5 103.3	26 11.9 +54.4 102.3	25 48.0 +54.4 101.3
20°	28 17.6 +54.4 104.7	27 53.9 +54.4 103.7	27 30.2 +54.3 102.8	27 06.3 +54.3 101.8	26 42.4 +54.3 100.9
21°	29 12.0 +54.3 104.2	28 48.3 +54.3 103.3	28 24.5 +54.2 102.3	28 00.6 +54.2 101.3	27 36.7 +54.1 100.4
22°	30 06.3 +54.3 103.7	29 42.6 +54.2 102.8	29 18.7 +54.2 101.8	28 54.8 +54.1 100.9	28 30.8 +54.1 99.9
23°	31 00.6 +54.1 103.3	30 36.8 +54.0 102.3	30 12.9 +54.0 101.3	29 48.9 +54.0 100.4	29 24.9 +53.9 99.4
24°	31 54.7 +54.0 102.7	31 30.8 +54.0 101.8	31 06.9 +53.9 100.8	30 42.9 +53.8 99.9	30 18.8 +53.8 98.9
25°	32 48.7 +53.8 102.2	32 24.8 +53.8 101.3	32 00.8 +53.8 100.3	31 36.7 +53.8 99.3	31 12.6 +53.7 98.4
26°	33 42.5 +53.7 101.7	33 18.6 +53.7 100.7	32 54.6 +53.6 99.8	32 30.5 +53.6 98.8	32 06.3 +53.6 97.9
27°	34 36.2 +53.6 101.2	34 12.3 +53.5 100.2	33 48.2 +53.5 99.2	33 24.1 +53.4 98.3	32 59.9 +53.4 97.3
28°	35 29.8 +53.4 100.6	35 05.8 +53.4 99.6	34 41.7 +53.3 98.7	34 17.5 +53.3 97.7	33 53.3 +53.3 96.8
29°	36 23.2 +53.3 100.1	35 59.2 +53.2 99.1	35 35.0 +53.2 98.1	35 10.8 +53.2 97.2	34 46.6 +53.1 96.2

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°	7 59.8 +55.3 108.4	7 36.6 +55.3 107.5	7 13.2 +55.3 106.5	6 49.8 +55.2 105.6	6 26.2 +55.2 104.7
1°	8 55.1 +55.3 108.0	8 31.9 +55.2 107.1	8 08.5 +55.2 106.1	7 45.0 +55.1 105.2	7 21.4 +55.1 104.3
2°	9 50.4 +55.3 107.6	9 27.1 +55.3 106.7	9 03.7 +55.2 105.7	8 40.1 +55.2 104.8	8 16.5 +55.1 103.9
3°	10 45.7 +55.3 107.2	10 22.4 +55.2 106.3	9 58.9 +55.1 105.3	9 35.3 +55.1 104.4	9 11.6 +55.1 103.5
4°	11 41.0 +55.2 106.8	11 17.6 +55.1 105.9	10 54.0 +55.2 104.9	10 30.4 +55.1 104.0	10 06.7 +55.0 103.1
5°	12 36.2 +55.2 106.4	12 12.7 +55.2 105.5	11 49.2 +55.1 104.5	11 25.5 +55.1 103.6	11 01.7 +55.1 102.7
6°	13 31.4 +55.2 106.0	13 07.9 +55.1 105.1	12 44.3 +55.0 104.1	12 20.6 +55.0 103.2	11 56.8 +54.9 102.3
7°	14 26.6 +55.1 105.6	14 03.0 +55.1 104.7	13 39.3 +55.1 103.7	13 15.6 +55.0 102.8	12 51.7 +55.0 101.9
8°	15 21.7 +55.0 105.2	14 58.1 +55.0 104.3	14 34.4 +54.9 103.3	14 10.6 +54.9 102.4	13 46.7 +54.9 101.4
9°	16 16.7 +55.0 104.8	15 53.1 +54.9 103.8	15 29.3 +55.0 102.9	15 05.5 +54.9 102.0	14 41.6 +54.8 101.0
10°	17 11.7 +55.0 104.4	16 48.0 +55.0 103.4	16 24.3 +54.8 102.5	16 00.4 +54.8 101.5	15 36.4 +54.9 100.6
11°	18 06.7 +54.9 103.9	17 43.0 +54.8 103.0	17 19.1 +54.9 102.1	16 55.2 +54.8 101.1	16 31.3 +54.7 100.2
12°	19 01.6 +54.9 103.5	18 37.8 +54.8 102.6	18 14.0 +54.7 101.6	17 50.0 +54.8 100.7	17 26.0 +54.7 99.8
13°	19 56.5 +54.7 103.1	19 32.6 +54.8 102.1	19 08.7 +54.7 101.2	18 44.8 +54.6 100.3	18 20.7 +54.7 99.3
14°	20 51.2 +54.8 102.7	20 27.4 +54.7 101.7	20 03.4 +54.7 100.8	19 39.4 +54.6 99.8	19 15.4 +54.5 98.9
15°	21 46.0 +54.6 102.2	21 22.1 +54.6 101.3	20 58.1 +54.6 100.3	20 34.0 +54.6 99.4	20 09.9 +54.5 98.5
16°	22 40.6 +54.6 101.8	22 16.7 +54.5 100.8	21 52.7 +54.5 99.9	21 28.6 +54.5 98.9	21 04.4 +54.5 98.0
17°	23 35.2 +54.5 101.3	23 11.2 +54.5 100.4	22 47.2 +54.4 99.4	22 23.1 +54.4 98.5	21 58.9 +54.4 97.6
18°	24 29.7 +54.4 100.9	24 05.7 +54.3 99.9	23 41.6 +54.3 99.0	23 17.5 +54.3 98.0	22 53.3 +54.2 97.1
19°	25 24.1 +54.3 100.4	25 00.0 +54.3 99.4	24 35.9 +54.3 98.5	24 11.8 +54.2 97.6	23 47.5 +54.3 96.6
20°	26 18.4 +54.2 99.9	25 54.3 +54.2 99.0	25 30.2 +54.1 98.0	25 06.0 +54.1 97.1	24 41.8 +54.1 96.2
21°	27 12.6 +54.1 99.4	26 48.5 +54.1 98.5	26 24.3 +54.1 97.6	26 00.1 +54.1 96.6	25 35.9 +54.0 95.7
22°	28 06.7 +54.1 99.0	27 42.6 +54.0 98.0	27 18.4 +54.0 97.1	26 54.2 +53.9 96.1	26 29.9 +53.9 95.2
23°	29 00.8 +53.9 98.5	28 36.6 +53.9 97.5	28 12.4 +53.8 96.6	27 48.1 +53.8 95.6	27 23.8 +53.8 94.7
24°	29 54.7 +53.8 98.0	29 30.5 +53.7 97.0	29 06.2 +53.8 96.1	28 41.9 +53.8 95.1	28 17.6 +53.7 94.2
25°	30 48.5 +53.6 97.4	30 24.2 +53.7 96.5	30 00.0 +53.6 95.6	29 35.7 +53.6 94.6	29 11.3 +53.6 93.7
26°	31 42.1 +53.6 96.9	31 17.9 +53.5 96.0	30 53.6 +53.5 95.0	30 29.3 +53.4 94.1	30 04.9 +53.5 93.2
27°	32 35.7 +53.4 96.4	32 11.4 +53.4 95.4	31 47.1 +53.3 94.5	31 22.7 +53.4 93.6	30 58.4 +53.3 92.7
28°	33 29.1 +53.2 95.8	33 04.8 +53.2 94.9	32 40.4 +53.3 94.0	32 16.1 +53.2 93.0	31 51.7 +53.2 92.1
29°	34 22.3 +53.1 95.3	33 58.0 +53.1 94.4	33 33.7 +53.0 93.4	33 09.3 +53.0 92.5	32 44.9 +53.1 91.6

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°	6 02.6 +55.1 103.8	5 38.8 +55.1 102.8	5 15.0 +55.0 101.9	4 51.1 +55.0 101.0	4 27.1 +54.9 100.1
1°	6 57.7 +55.1 103.4	6 33.9 +55.0 102.4	6 10.0 +55.0 101.5	5 46.1 +54.9 100.6	5 22.0 +55.0 99.7
2°	7 52.8 +55.0 103.0	7 28.9 +55.1 102.0	7 05.0 +55.0 101.1	6 41.0 +55.0 100.2	6 17.0 +54.9 99.3
3°	8 47.8 +55.1 102.6	8 24.0 +55.0 101.6	8 00.0 +55.0 100.7	7 36.0 +55.0 99.8	7 11.9 +54.9 98.9
4°	9 42.9 +55.0 102.2	9 19.0 +55.0 101.2	8 55.0 +54.9 100.3	8 31.0 +54.9 99.4	8 06.8 +54.9 98.5
5°	10 37.9 +55.0 101.7	10 14.0 +54.9 100.8	9 49.9 +55.0 99.9	9 25.9 +54.9 99.0	9 01.7 +54.9 98.0
6°	11 32.9 +54.9 101.3	11 08.9 +54.9 100.4	10 44.9 +54.9 99.5	10 20.8 +54.8 98.6	9 56.6 +54.8 97.6
7°	12 27.8 +54.9 100.9	12 03.8 +54.9 100.0	11 39.8 +54.8 99.1	11 15.6 +54.8 98.1	10 51.4 +54.8 97.2
8°	13 22.7 +54.9 100.5	12 58.7 +54.8 99.6	12 34.6 +54.8 98.7	12 10.4 +54.8 97.7	11 46.2 +54.8 96.8
9°	14 17.6 +54.8 100.1	13 53.5 +54.8 99.2	13 29.4 +54.8 98.2	13 05.2 +54.8 97.3	12 41.0 +54.7 96.4
10°	15 12.4 +54.8 99.7	14 48.3 +54.8 98.7	14 24.2 +54.7 97.8	14 00.0 +54.7 96.9	13 35.7 +54.7 96.0
11°	16 07.2 +54.7 99.3	15 43.1 +54.7 98.3	15 18.9 +54.7 97.4	14 54.7 +54.6 96.5	14 30.4 +54.6 95.5
12°	17 01.9 +54.7 98.8	16 37.8 +54.6 97.9	16 13.6 +54.6 97.0	15 49.3 +54.6 96.0	15 25.0 +54.6 95.1
13°	17 56.6 +54.6 98.4	17 32.4 +54.6 97.5	17 08.2 +54.6 96.5	16 43.9 +54.6 95.6	16 19.6 +54.6 94.7
14°	18 51.2 +54.6 98.0	18 27.0 +54.5 97.0	18 02.8 +54.5 96.1	17 38.5 +54.5 95.2	17 14.2 +54.4 94.2
15°	19 45.8 +54.5 97.5	19 21.5 +54.5 96.6	18 57.3 +54.4 95.7	18 33.0 +54.4 94.7	18 08.6 +54.5 93.8
16°	20 40.3 +54.4 97.1	20 16.0 +54.4 96.1	19 51.7 +54.4 95.2	19 27.4 +54.4 94.3	19 03.1 +54.3 93.4
17°	21 34.7 +54.3 96.6	21 10.4 +54.3 95.7	20 46.1 +54.3 94.8	20 21.8 +54.3 93.8	19 57.4 +54.3 92.9
18°	22 29.0 +54.3 96.2	22 04.7 +54.3 95.2	21 40.4 +54.2 94.3	21 16.1 +54.2 93.4	20 51.7 +54.2 92.5
19°	23 23.3 +54.2 95.7	22 59.0 +54.1 94.8	22 34.6 +54.2 93.8	22 10.3 +54.1 92.9	21 45.9 +54.1 92.0
20°	24 17.5 +54.1 95.2	23 53.1 +54.1 94.3	23 28.8 +54.1 93.4	23 04.4 +54.1 92.5	22 40.0 +54.1 91.5
21°	25 11.6 +54.0 94.8	24 47.2 +54.0 93.8	24 22.9 +53.9 92.9	23 58.5 +54.0 92.0	23 34.1 +54.0 91.1
22°	26 05.6 +53.9 94.3	25 41.2 +53.9 93.3	25 16.8 +53.9 92.4	24 52.5 +53.8 91.5	24 28.1 +53.8 90.6
23°	26 59.5 +53.8 93.8	26 35.1 +53.8 92.9	26 10.7 +53.8 91.9	25 46.3 +53.8 91.0	25 21.9 +53.8 90.1
24°	27 53.3 +53.7 93.3	27 28.9 +53.7 92.4	27 04.5 +53.7 91.4	26 40.1 +53.7 90.5	26 15.7 +53.7 89.6
25°	28 47.0 +53.5 92.8	28 22.6 +53.5 91.9	27 58.2 +53.5 90.9	27 33.8 +53.5 90.0	27 09.4 +53.5 89.1
26°	29 40.5 +53.5 92.3	29 16.1 +53.5 91.3	28 51.7 +53.5 90.4	28 27.3 +53.5 89.5	28 02.9 +53.5 88.6
27°	30 34.0 +53.3 91.7	30 09.6 +53.3 90.8	29 45.2 +53.3 89.9	29 20.8 +53.3 89.0	28 56.4 +53.3 88.1
28°	31 27.3 +53.2 91.2	31 02.9 +53.2 90.3	30 38.5 +53.2 89.4	30 14.1 +53.2 88.5	29 49.7 +53.2 87.6
29°	32 20.5 +53.0 90.7	31 56.1 +53.0 89.7	31 31.7 +53.0 88.8	31 07.3 +53.1 87.9	30 42.9 +53.1 87.0

Latitude 66°

Declination SAME name as Latitude

Dec	LHA 110° / 250°	LHA 111° / 249°	LHA 112° / 248°	LHA 113° / 247°	LHA 114° / 246°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-7 59.8 +55.4	-8 22.9 +55.4	-8 45.8 +55.4	-9 08.7 +55.6	-9 31.3 +55.5
1°	-7 04.4 +55.4	-7 27.5 +55.5	-7 50.4 +55.5	-8 13.1 +55.5	-8 35.8 +55.7
2°	-6 09.0 +55.4	-6 32.0 +55.4	-6 54.9 +55.5	-7 17.6 +55.6	-7 40.1 +55.6
3°	-5 13.6 +55.4	-5 36.6 +55.5	-5 59.4 +55.6	-6 22.0 +55.6	-6 44.5 +55.6
4°	-4 18.2 +55.4	-4 41.1 +55.5	-5 03.8 +55.5	-5 26.4 +55.6	-5 48.9 +55.7
5°	-3 22.8 +55.4	-3 45.6 +55.5	-4 08.3 +55.5	-4 30.8 +55.6	-4 53.2 +55.7
6°	-2 27.4 +55.5	-2 50.1 +55.5	-3 12.8 +55.6	-3 35.2 +55.6	-3 57.5 +55.7
7°	-1 31.9 +55.4	-1 54.6 +55.5	-2 17.2 +55.6	-2 39.6 +55.6	-3 01.8 +55.7
8°	-0 36.5 +55.4	-0 59.1 +55.5	-1 21.6 +55.5	-1 44.0 +55.7	-2 06.1 +55.7
9°	0 18.9 +55.5 68.1	-0 03.6 +55.5	-0 26.1 +55.6	-0 48.3 +55.6	-1 10.4 +55.7
10°	1 14.4 +55.4 67.8	0 51.9 +55.5 66.9	0 29.5 +55.6 65.9	0 07.3 +55.6 65.0	-0 14.7 +55.7
11°	2 09.8 +55.5 67.4	1 47.4 +55.5 66.5	1 25.1 +55.5 65.6	1 02.9 +55.7 64.7	0 41.0 +55.7 63.7
12°	3 05.3 +55.4 67.0	2 42.9 +55.5 66.1	2 20.6 +55.6 65.2	1 58.6 +55.6 64.3	1 36.7 +55.7 63.4
13°	4 00.7 +55.4 66.6	3 38.4 +55.4 65.7	3 16.2 +55.6 64.8	2 54.2 +55.6 63.9	2 32.4 +55.7 63.0
14°	4 56.1 +55.4 66.2	4 33.8 +55.5 65.3	4 11.8 +55.5 64.4	3 49.8 +55.6 63.5	3 28.1 +55.6 62.6
15°	5 51.5 +55.4 65.8	5 29.3 +55.5 64.9	5 07.3 +55.5 64.1	4 45.4 +55.6 63.2	4 23.7 +55.7 62.3
16°	6 46.9 +55.4 65.5	6 24.8 +55.4 64.6	6 02.8 +55.5 63.7	5 41.0 +55.6 62.8	5 19.4 +55.7 61.9
17°	7 42.3 +55.3 65.1	7 20.2 +55.4 64.2	6 58.3 +55.5 63.3	6 36.6 +55.6 62.4	6 15.1 +55.6 61.5
18°	8 37.6 +55.3 64.7	8 15.6 +55.4 63.8	7 53.8 +55.5 62.9	7 32.2 +55.5 62.0	7 10.7 +55.6 61.1
19°	9 32.9 +55.3 64.3	9 11.0 +55.4 63.4	8 49.3 +55.4 62.5	8 27.7 +55.5 61.6	8 06.3 +55.6 60.7
20°	10 28.2 +55.3 63.9	10 06.4 +55.3 63.0	9 44.7 +55.5 62.1	9 23.2 +55.5 61.3	9 01.9 +55.6 60.4
21°	11 23.5 +55.2 63.5	11 01.7 +55.4 62.6	10 40.2 +55.3 61.7	10 18.7 +55.5 60.9	9 57.5 +55.6 60.0
22°	12 18.7 +55.2 63.1	11 57.1 +55.2 62.2	11 35.5 +55.4 61.4	11 14.2 +55.5 60.5	10 53.1 +55.5 59.6
23°	13 13.9 +55.2 62.7	12 52.3 +55.3 61.8	12 30.9 +55.3 61.0	12 09.7 +55.4 60.1	11 48.6 +55.5 59.2
24°	14 09.1 +55.1 62.3	13 47.6 +55.2 61.4	13 26.2 +55.3 60.6	13 05.1 +55.3 59.7	12 44.1 +55.5 58.8
25°	15 04.2 +55.1 61.9	14 42.8 +55.1 61.0	14 21.5 +55.3 60.2	14 00.4 +55.4 59.3	13 39.6 +55.4 58.4
26°	15 59.3 +55.0 61.5	15 37.9 +55.2 60.6	15 16.8 +55.2 59.8	14 55.8 +55.3 58.9	14 35.0 +55.4 58.0
27°	16 54.3 +55.0 61.1	16 33.1 +55.0 60.2	16 12.0 +55.1 59.3	15 51.1 +55.2 58.5	15 30.4 +55.3 57.6
28°	17 49.3 +54.9 60.6	17 28.1 +55.0 59.8	17 07.1 +55.1 58.9	16 46.3 +55.2 58.1	16 25.7 +55.3 57.2
29°	18 44.2 +54.9 60.2	18 23.1 +55.0 59.4	18 02.2 +55.1 58.5	17 41.5 +55.2 57.7	17 21.0 +55.2 56.8

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-9 53.9 +55.7				
1°	-8 58.2 +55.7		-9 42.7 +55.8		
2°	-8 02.5 +55.6	-9 20.5 +55.7	-8 46.9 +55.9	-9 08.8 +55.9	-9 30.5 +56.0
3°	-7 06.9 +55.8	-8 24.8 +55.8	-7 51.0 +55.8	-8 12.9 +56.0	-8 34.5 +56.0
4°	-6 11.1 +55.7	-7 29.0 +55.8	-6 55.2 +55.9	-7 16.9 +55.9	-7 38.5 +56.0
5°	-5 15.4 +55.7	-6 33.2 +55.8			
6°	-4 19.7 +55.8	-5 37.4 +55.8	-5 59.3 +55.9	-6 21.0 +55.9	-6 42.5 +56.0
7°	-3 23.9 +55.8	-4 41.6 +55.8	-5 03.4 +55.9	-5 25.1 +56.0	-5 46.5 +56.1
8°	-2 28.1 +55.7	-3 45.8 +55.8	-4 07.5 +55.9	-4 29.1 +56.0	-4 50.4 +56.0
9°	-1 32.4 +55.8	-2 50.0 +55.9	-3 11.6 +55.9	-3 33.1 +56.0	-3 54.4 +56.1
10°		-1 54.1 +55.8	-2 15.7 +55.9	-2 37.1 +56.0	-2 58.3 +56.0
11°	-0 36.6 +55.8				
12°	0 19.2 +55.7 62.8	-0 58.3 +55.8	-1 19.8 +55.9	-1 41.1 +56.0	-2 02.3 +56.1
13°	1 14.9 +55.8 62.5	-0 02.5 +55.9	-0 23.9 +55.9	-0 45.1 +56.0	-1 06.2 +56.1
14°	2 10.7 +55.8 62.1	0 53.4 +55.8 61.6	0 32.0 +56.0 60.6	0 10.9 +56.0 59.7	-0 10.1 +56.1
15°	3 06.5 +55.7 61.7	1 49.2 +55.9 61.2	1 28.0 +55.9 60.3	1 06.9 +55.9 59.4	0 46.0 +56.0 58.5
16°		2 45.1 +55.8 60.8	2 23.9 +55.9 59.9	2 02.8 +56.0 59.0	1 42.0 +56.1 58.1
17°	4 02.2 +55.8 61.4	3 40.9 +55.8 60.5	3 19.8 +55.9 59.6	2 58.8 +56.0 58.7	2 38.1 +56.1 57.7
18°	4 58.0 +55.7 61.0	4 36.7 +55.9 60.1	4 15.7 +55.9 59.2	3 54.8 +56.0 58.3	3 34.2 +56.0 57.4
19°	5 53.7 +55.7 60.6	5 32.6 +55.7 59.7	5 11.6 +55.9 58.8	4 50.8 +56.0 57.9	4 30.2 +56.1 57.0
20°	6 49.4 +55.7 60.2	6 28.3 +55.8 59.3	6 07.5 +55.8 58.5	5 46.8 +55.9 57.6	5 26.3 +56.0 56.7
21°	7 45.1 +55.7 59.9	7 24.1 +55.8 59.0	7 03.3 +55.9 58.1	6 42.7 +55.9 57.2	6 22.3 +56.0 56.3
22°	8 40.8 +55.7 59.5	8 19.9 +55.7 58.6	7 59.2 +55.8 57.7	7 38.6 +55.9 56.8	7 18.3 +56.0 56.0
23°	9 36.5 +55.6 59.1	9 15.6 +55.8 58.2	8 55.0 +55.8 57.4	8 34.5 +55.9 56.5	8 14.3 +56.0 55.6
24°	10 32.1 +55.6 58.7	10 11.4 +55.7 57.9	9 50.8 +55.8 57.0	9 30.4 +55.9 56.1	9 10.3 +55.9 55.2
25°	11 27.7 +55.6 58.3	11 07.1 +55.6 57.5	10 46.6 +55.7 56.6	10 26.3 +55.8 55.7	10 06.2 +56.0 54.9
26°	12 23.3 +55.6 58.0	12 02.7 +55.7 57.1	11 42.3 +55.8 56.2	11 22.1 +55.9 55.4	11 02.2 +55.9 54.5
27°	13 18.9 +55.5 57.6	12 58.4 +55.6 56.7	12 38.1 +55.6 55.8	12 18.0 +55.7 55.0	11 58.1 +55.9 54.1
28°	14 14.4 +55.4 57.2	13 54.0 +55.5 56.3	13 33.7 +55.7 55.5	13 13.7 +55.8 54.6	12 54.0 +55.8 53.8
29°	15 09.8 +55.5 56.8	14 49.5 +55.5 55.9	14 29.4 +55.6 55.1	14 09.5 +55.7 54.2	13 49.8 +55.8 53.4
30°	16 05.3 +55.4 56.4	15 45.0 +55.5 55.5	15 25.0 +55.6 54.7	15 05.2 +55.7 53.8	14 45.6 +55.8 53.0
31°	17 00.7 +55.3 56.0	16 40.5 +55.5 55.1	16 20.6 +55.5 54.3	16 00.9 +55.6 53.5	15 41.4 +55.7 52.6

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Declination SAME name as Latitude

Latitude 66°

Dec	LHA 120° / 240°	LHA 121° / 239°	LHA 122° / 238°	LHA 123° / 237°	LHA 124° / 236°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°	-9 52.0 +56.0				
4°	-8 56.0 +56.1	-9 17.2 +56.1	-9 38.3 +56.2	-9 59.2 +56.3	
	-7 59.9 +56.1	-8 21.1 +56.2	-8 42.1 +56.2	-9 02.9 +56.3	-9 23.4 +56.4
5°	-7 03.8 +56.1	-7 24.9 +56.1	-7 45.9 +56.3	-8 06.6 +56.4	-8 27.0 +56.4
6°	-6 07.7 +56.1	-6 28.8 +56.2	-6 49.6 +56.3	-7 10.2 +56.3	-7 30.6 +56.4
7°	-5 11.6 +56.1	-5 32.6 +56.2	-5 53.3 +56.3	-6 13.9 +56.4	-6 34.2 +56.4
8°	-4 15.5 +56.2	-4 36.4 +56.2	-4 57.0 +56.3	-5 17.5 +56.4	-5 37.8 +56.5
9°	-3 19.3 +56.1	-3 40.2 +56.3	-4 00.7 +56.3	-4 21.1 +56.4	-4 41.3 +56.5
10°	-2 23.2 +56.1	-2 43.9 +56.2	-3 04.4 +56.3	-3 24.7 +56.3	-3 44.8 +56.4
11°	-1 27.1 +56.2	-1 47.7 +56.2	-2 08.1 +56.3	-2 28.4 +56.4	-2 48.4 +56.5
12°	-0 30.9 +56.2	-0 51.5 +56.3	-1 11.8 +56.3	-1 32.0 +56.4	-1 51.9 +56.5
13°	0 25.3 +56.1 57.5	0 04.8 +56.2 56.6	-0 15.5 +56.3	-0 35.6 +56.4	-0 55.4 +56.5
14°	1 21.4 +56.2 57.2	1 01.0 +56.2 56.3	0 40.8 +56.3 55.4	0 20.8 +56.4 54.5	0 01.1 +56.5 53.6
15°	2 17.6 +56.1 56.8	1 57.2 +56.3 55.9	1 37.1 +56.3 55.0	1 17.2 +56.4 54.1	0 57.6 +56.5 53.2
16°	3 13.7 +56.1 56.5	2 53.5 +56.2 55.6	2 33.4 +56.3 54.7	2 13.6 +56.4 53.8	1 54.1 +56.4 52.9
17°	4 09.8 +56.2 56.1	3 49.7 +56.2 55.2	3 29.7 +56.3 54.3	3 10.0 +56.4 53.4	2 50.5 +56.5 52.5
18°	5 06.0 +56.1 55.8	4 45.9 +56.2 54.9	4 26.0 +56.3 54.0	4 06.4 +56.4 53.1	3 47.0 +56.5 52.2
19°	6 02.1 +56.1 55.4	5 42.1 +56.2 54.5	5 22.3 +56.3 53.6	5 02.8 +56.4 52.8	4 43.5 +56.4 51.9
20°	6 58.2 +56.1 55.1	6 38.3 +56.2 54.2	6 18.6 +56.3 53.3	5 59.2 +56.3 52.4	5 39.9 +56.5 51.5
21°	7 54.3 +56.0 54.7	7 34.5 +56.1 53.8	7 14.9 +56.2 52.9	6 55.5 +56.4 52.1	6 36.4 +56.4 51.2
22°	8 50.3 +56.1 54.4	8 30.6 +56.2 53.5	8 11.1 +56.3 52.6	7 51.9 +56.3 51.7	7 32.8 +56.4 50.8
23°	9 46.4 +56.0 54.0	9 26.8 +56.1 53.1	9 07.4 +56.2 52.2	8 48.2 +56.3 51.4	8 29.2 +56.4 50.5
24°	10 42.4 +56.0 53.6	10 22.9 +56.1 52.8	10 03.6 +56.1 51.9	9 44.5 +56.3 51.0	9 25.6 +56.4 50.2
25°	11 38.4 +56.0 53.3	11 19.0 +56.0 52.4	10 59.7 +56.2 51.5	10 40.8 +56.2 50.7	10 22.0 +56.4 49.8
26°	12 34.4 +55.9 52.9	12 15.0 +56.1 52.0	11 55.9 +56.1 51.2	11 37.0 +56.2 50.3	11 18.4 +56.3 49.5
27°	13 30.3 +55.9 52.5	13 11.1 +56.0 51.7	12 52.0 +56.1 50.8	12 33.2 +56.2 50.0	12 14.7 +56.3 49.1
28°	14 26.2 +55.9 52.1	14 07.1 +56.0 51.3	13 48.1 +56.1 50.4	13 29.4 +56.2 49.6	13 11.0 +56.3 48.7
29°	15 22.1 +55.8 51.8	15 03.1 +55.9 50.9	14 44.2 +56.1 50.1	14 25.6 +56.2 49.2	14 07.3 +56.2 48.4

Dec	LHA 125° / 235°	LHA 126° / 234°	LHA 127° / 233°	LHA 128° / 232°	LHA 129° / 231°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°	-9 43.8 +56.5				
5°	-8 47.3 +56.5	-9 07.3 +56.5	-9 27.1 +56.6	-9 46.7 +56.7	
6°	-7 50.8 +56.5	-8 10.8 +56.6	-8 30.5 +56.7	-8 50.0 +56.8	-9 09.2 +56.9
7°	-6 54.3 +56.5	-7 14.2 +56.6	-7 33.8 +56.7	-7 53.2 +56.8	-8 12.3 +56.8
8°	-5 57.8 +56.6	-6 17.6 +56.7	-6 37.1 +56.7	-6 56.4 +56.8	-7 15.5 +56.9
9°	-5 01.2 +56.5	-5 20.9 +56.6	-5 40.4 +56.7	-5 59.6 +56.8	-6 18.6 +56.9
10°	-4 04.7 +56.6	-4 24.3 +56.6	-4 43.7 +56.7	-5 02.8 +56.8	-5 21.7 +56.9
11°	-3 08.1 +56.5	-3 27.7 +56.7	-3 47.0 +56.8	-4 06.0 +56.8	-4 24.8 +56.9
12°	-2 11.6 +56.6	-2 31.0 +56.6	-2 50.2 +56.7	-3 09.2 +56.8	-3 27.9 +56.9
13°	-1 15.0 +56.6	-1 34.4 +56.7	-1 53.5 +56.8	-2 12.4 +56.9	-2 31.0 +56.9
14°	-0 18.4 +56.6	-0 37.7 +56.7	-0 56.7 +56.7	-1 15.5 +56.8	-1 34.1 +57.0
15°	0 38.2 +56.5 52.3	0 19.0 +56.6 51.4	0 00.0 +56.8 50.5	-0 18.7 +56.8	-0 37.1 +56.9
16°	1 34.7 +56.6 52.0	1 15.6 +56.7 51.1	0 56.8 +56.7 50.2	0 38.1 +56.9 49.2	0 19.8 +56.9 48.3
17°	2 31.3 +56.6 51.6	2 12.3 +56.6 50.7	1 53.5 +56.7 49.8	1 35.0 +56.8 48.9	1 16.7 +56.9 48.0
18°	3 27.9 +56.5 51.3	3 08.9 +56.7 50.4	2 50.2 +56.8 49.5	2 31.8 +56.8 48.6	2 13.6 +56.9 47.7
19°	4 24.4 +56.6 51.0	4 05.6 +56.6 50.1	3 47.0 +56.7 49.2	3 28.6 +56.9 48.3	3 10.5 +57.0 47.4
20°	5 21.0 +56.5 50.6	5 02.2 +56.6 49.7	4 43.7 +56.7 48.9	4 25.5 +56.8 48.0	4 07.5 +56.9 47.1
21°	6 17.5 +56.5 50.3	5 58.8 +56.6 49.4	5 40.4 +56.7 48.5	5 22.3 +56.8 47.6	5 04.4 +56.9 46.8
22°	7 14.0 +56.5 50.0	6 55.4 +56.6 49.1	6 37.1 +56.7 48.2	6 19.1 +56.8 47.3	6 01.3 +56.8 46.4
23°	8 10.5 +56.5 49.6	7 52.0 +56.6 48.7	7 33.8 +56.7 47.9	7 15.9 +56.7 47.0	6 58.1 +56.9 46.1
24°	9 07.0 +56.5 49.3	8 48.6 +56.6 48.4	8 30.5 +56.7 47.5	8 12.6 +56.8 46.7	7 55.0 +56.9 45.8
25°	10 03.5 +56.4 48.9	9 45.2 +56.5 48.1	9 27.2 +56.6 47.2	9 09.4 +56.7 46.3	8 51.9 +56.8 45.5
26°	10 59.9 +56.5 48.6	10 41.7 +56.6 47.7	10 23.8 +56.6 46.9	10 06.1 +56.7 46.0	9 48.7 +56.8 45.1
27°	11 56.4 +56.4 48.2	11 38.3 +56.5 47.4	11 20.4 +56.6 46.5	11 02.8 +56.7 45.7	10 45.5 +56.8 44.8
28°	12 52.8 +56.3 47.9	12 34.8 +56.4 47.0	12 17.0 +56.6 46.2	11 59.5 +56.7 45.3	11 42.3 +56.8 44.5
29°	13 49.1 +56.4 47.5	13 31.2 +56.5 46.7	13 13.6 +56.6 45.9	12 56.2 +56.7 45.0	12 39.1 +56.7 44.2

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Latitude 66°

Declination SAME name as Latitude

Dec	LHA 130° / 230°	LHA 131° / 229°	LHA 132° / 228°	LHA 133° / 227°	LHA 134° / 226°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°	-9 28.2 +57.0	-9 46.9 +57.0			
7°	-8 31.2 +56.9	-8 49.9 +57.1	-9 08.2 +57.1	-9 26.3 +57.2	-9 44.1 +57.3
8°	-7 34.3 +57.0	-7 52.8 +57.0	-8 11.1 +57.1	-8 29.1 +57.2	-8 46.8 +57.3
9°	-6 37.3 +57.0	-6 55.8 +57.1	-7 14.0 +57.2	-7 31.9 +57.3	-7 49.5 +57.3
10°	-5 40.3 +57.0	-5 58.7 +57.1	-6 16.8 +57.2	-6 34.6 +57.2	-6 52.2 +57.3
11°	-4 43.3 +56.9	-5 01.6 +57.1	-5 19.6 +57.1	-5 37.4 +57.3	-5 54.9 +57.4
12°	-3 46.4 +57.1	-4 04.5 +57.0	-4 22.5 +57.2	-4 40.1 +57.2	-4 57.5 +57.4
13°	-2 49.3 +57.0	-3 07.5 +57.1	-3 25.3 +57.2	-3 42.9 +57.3	-4 00.1 +57.3
14°	-1 52.3 +57.0	-2 10.4 +57.1	-2 28.1 +57.2	-2 45.6 +57.3	-3 02.8 +57.4
15°	-0 55.3 +57.0	-1 13.3 +57.1	-1 30.9 +57.2	-1 48.3 +57.3	-2 05.4 +57.4
16°	0 01.7 +57.0 47.4	-0 16.2 +57.1	-0 33.7 +57.2	-0 51.0 +57.3	-1 08.0 +57.3
17°	0 58.7 +57.0 47.1	0 40.9 +57.2 46.2	0 23.5 +57.2 45.3	0 06.3 +57.2 44.4	-0 10.7 +57.4
18°	1 55.7 +57.0 46.8	1 38.1 +57.1 45.9	1 20.7 +57.2 45.0	1 03.5 +57.3 44.1	0 46.7 +57.4 43.2
19°	2 52.7 +57.0 46.5	2 35.2 +57.0 45.6	2 17.9 +57.1 44.7	2 00.8 +57.3 43.8	1 44.1 +57.4 42.9
20°	3 49.7 +57.0 46.2	3 32.2 +57.1 45.3	3 15.0 +57.2 44.4	2 58.1 +57.3 43.5	2 41.5 +57.3 42.6
21°	4 46.7 +57.0 45.9	4 29.3 +57.1 45.0	4 12.2 +57.2 44.1	3 55.4 +57.2 43.2	3 38.8 +57.4 42.3
22°	5 43.7 +57.0 45.5	5 26.4 +57.1 44.7	5 09.4 +57.2 43.8	4 52.6 +57.3 42.9	4 36.2 +57.3 42.0
23°	6 40.7 +56.9 45.2	6 23.5 +57.0 44.4	6 06.6 +57.1 43.5	5 49.9 +57.3 42.6	5 33.5 +57.4 41.7
24°	7 37.6 +57.0 44.9	7 20.5 +57.1 44.0	7 03.7 +57.2 43.2	6 47.2 +57.2 42.3	6 30.9 +57.3 41.4
25°	8 34.6 +56.9 44.6	8 17.6 +57.0 43.7	8 00.9 +57.1 42.9	7 44.4 +57.2 42.0	7 28.2 +57.3 41.1
26°	9 31.5 +56.9 44.3	9 14.6 +57.0 43.4	8 58.0 +57.1 42.5	8 41.6 +57.2 41.7	8 25.5 +57.3 40.8
27°	10 28.4 +56.9 44.0	10 11.6 +57.0 43.1	9 55.1 +57.1 42.2	9 38.8 +57.2 41.4	9 22.8 +57.3 40.5
28°	11 25.3 +56.9 43.6	11 08.6 +57.0 42.8	10 52.2 +57.1 41.9	10 36.0 +57.2 41.1	10 20.1 +57.3 40.2
29°	12 22.2 +56.9 43.3	12 05.6 +57.0 42.5	11 49.3 +57.0 41.6	11 33.2 +57.2 40.8	11 17.4 +57.3 39.9

Dec	LHA 135° / 225°	LHA 136° / 224°	LHA 137° / 223°	LHA 138° / 222°	LHA 139° / 221°
	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 04.3 +57.4	-9 21.4 +57.4	-9 38.3 +57.6	-9 54.9 +57.7	
9°	-8 06.9 +57.4	-8 24.0 +57.6	-8 40.7 +57.6	-8 57.2 +57.7	-9 13.4 +57.8
10°	-7 09.5 +57.5	-7 26.4 +57.5	-7 43.1 +57.6	-7 59.5 +57.7	-8 15.6 +57.8
11°	-6 12.0 +57.4	-6 28.9 +57.5	-6 45.5 +57.6	-7 01.8 +57.7	-7 17.8 +57.8
12°	-5 14.6 +57.5	-5 31.4 +57.5	-5 47.9 +57.6	-6 04.1 +57.7	-6 20.0 +57.8
13°	-4 17.1 +57.4	-4 33.9 +57.6	-4 50.3 +57.6	-5 06.4 +57.7	-5 22.2 +57.8
14°	-3 19.7 +57.5	-3 36.3 +57.5	-3 52.7 +57.7	-4 08.7 +57.7	-4 24.4 +57.8
15°	-2 22.2 +57.4	-2 38.8 +57.6	-2 55.0 +57.6	-3 11.0 +57.8	-3 26.6 +57.8
16°	-1 24.8 +57.5	-1 41.2 +57.5	-1 57.4 +57.7	-2 13.2 +57.7	-2 28.8 +57.8
17°	-0 27.3 +57.5	-0 43.7 +57.6	-0 59.7 +57.6	-1 15.5 +57.7	-1 31.0 +57.8
18°	0 30.2 +57.4 42.3	0 13.9 +57.5 41.4	-0 02.1 +57.7	-0 17.8 +57.8	-0 33.2 +57.9
19°	1 27.6 +57.5 42.0	1 11.4 +57.6 41.1	0 55.6 +57.6 40.2	0 40.0 +57.7 39.3	0 24.7 +57.8 38.3
20°	2 25.1 +57.4 41.7	2 09.0 +57.5 40.8	1 53.2 +57.6 39.9	1 37.7 +57.7 39.0	1 22.5 +57.8 38.1
21°	3 22.5 +57.5 41.4	3 06.5 +57.6 40.5	2 50.8 +57.7 39.6	2 35.4 +57.8 38.7	2 20.3 +57.8 37.8
22°	4 20.0 +57.4 41.1	4 04.1 +57.5 40.2	3 48.5 +57.6 39.3	3 33.2 +57.7 38.4	3 18.1 +57.9 37.5
23°	5 17.4 +57.5 40.8	5 01.6 +57.6 39.9	4 46.1 +57.6 39.0	4 30.9 +57.7 38.2	4 16.0 +57.8 37.3
24°	6 14.9 +57.4 40.5	5 59.2 +57.5 39.6	5 43.7 +57.7 38.8	5 28.6 +57.7 37.9	5 13.8 +57.8 37.0
25°	7 12.3 +57.4 40.2	6 56.7 +57.5 39.4	6 41.4 +57.6 38.5	6 26.3 +57.7 37.6	6 11.6 +57.8 36.7
26°	8 09.7 +57.4 39.9	7 54.2 +57.5 39.1	7 39.0 +57.6 38.2	7 24.0 +57.7 37.3	7 09.4 +57.7 36.5
27°	9 07.1 +57.4 39.7	8 51.7 +57.5 38.8	8 36.6 +57.5 37.9	8 21.7 +57.7 37.1	8 07.1 +57.8 36.2
28°	10 04.5 +57.4 39.4	9 49.2 +57.5 38.5	9 34.1 +57.6 37.6	9 19.4 +57.6 36.8	9 04.9 +57.8 35.9
29°	11 01.9 +57.4 39.1	10 46.7 +57.4 38.2	10 31.7 +57.6 37.4	10 17.0 +57.7 36.5	10 02.7 +57.7 35.6

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Latitude 66°

Dec	LHA 140° / 220°	LHA 141° / 219°	LHA 142° / 218°	LHA 143° / 217°	LHA 144° / 216°
	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°	-9 29.2 +57.8	-9 44.8 +57.9			
10°	-8 31.4 +57.9	-8 46.9 +58.0	-9 02.0 +58.0	-9 16.8 +58.1	-9 31.3 +58.2
11°	-7 33.5 +57.9	-7 48.9 +58.0	-8 04.0 +58.1	-8 18.7 +58.2	-8 33.1 +58.2
12°	-6 35.6 +57.8	-6 50.9 +57.9	-7 05.9 +58.1	-7 20.5 +58.1	-7 34.9 +58.3
13°	-5 37.8 +57.9	-5 53.0 +58.0	-6 07.8 +58.0	-6 22.4 +58.2	-6 36.6 +58.2
14°	-4 39.9 +57.9	-4 55.0 +58.0	-5 09.8 +58.1	-5 24.2 +58.1	-5 38.4 +58.3
15°	-3 42.0 +58.0	-3 57.0 +58.0	-4 11.7 +58.1	-4 26.1 +58.2	-4 40.1 +58.2
16°	-2 44.0 +57.9	-2 59.0 +58.0	-3 13.6 +58.1	-3 27.9 +58.2	-3 41.9 +58.3
17°	-1 46.1 +57.9	-2 01.0 +58.0	-2 15.5 +58.1	-2 29.7 +58.1	-2 43.6 +58.2
18°	-0 48.2 +57.9	-1 03.0 +58.0	-1 17.4 +58.0	-1 31.6 +58.2	-1 45.4 +58.3
19°	0 09.7 +57.9 37.4	-0 05.0 +58.0	-0 19.4 +58.1	-0 33.4 +58.2	-0 47.1 +58.2
20°	1 07.6 +57.9 37.2	0 53.0 +58.0 36.3	0 38.7 +58.1 35.3	0 24.8 +58.1 34.4	0 11.1 +58.3 33.5
21°	2 05.5 +57.9 36.9	1 51.0 +58.0 36.0	1 36.8 +58.1 35.1	1 22.9 +58.2 34.2	1 09.4 +58.3 33.3
22°	3 03.4 +57.9 36.6	2 49.0 +58.0 35.7	2 34.9 +58.1 34.8	2 21.1 +58.2 33.9	2 07.7 +58.2 33.0
23°	4 01.3 +57.9 36.4	3 47.0 +58.0 35.5	3 33.0 +58.1 34.6	3 19.3 +58.2 33.7	3 05.9 +58.3 32.8
24°	4 59.2 +57.9 36.1	4 45.0 +58.0 35.2	4 31.1 +58.0 34.3	4 17.5 +58.1 33.5	4 04.2 +58.2 32.6
25°	5 57.1 +57.9 35.9	5 43.0 +58.0 35.0	5 29.1 +58.1 34.1	5 15.6 +58.2 33.2	5 02.4 +58.3 32.3
26°	6 55.0 +57.9 35.6	6 41.0 +57.9 34.7	6 27.2 +58.1 33.8	6 13.8 +58.1 33.0	6 00.7 +58.2 32.1
27°	7 52.9 +57.8 35.3	7 38.9 +58.0 34.5	7 25.3 +58.0 33.6	7 11.9 +58.2 32.7	6 58.9 +58.2 31.8
28°	8 50.7 +57.9 35.1	8 36.9 +57.9 34.2	8 23.3 +58.1 33.3	8 10.1 +58.1 32.5	7 57.1 +58.2 31.6
29°	9 48.6 +57.8 34.8	9 34.8 +58.0 33.9	9 21.4 +58.0 33.1	9 08.2 +58.1 32.2	8 55.3 +58.3 31.4

Dec	LHA 145° / 215°	LHA 146° / 214°	LHA 147° / 213°	LHA 148° / 212°	LHA 149° / 211°
	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°	-9 45.5 +58.3	-9 59.3 +58.4			
11°	-8 47.2 +58.3	-9 00.9 +58.4	-9 14.3 +58.5	-9 27.3 +58.5	-9 40.0 +58.6
12°	-7 48.9 +58.4	-8 02.5 +58.4	-8 15.8 +58.5	-8 28.8 +58.6	-8 41.4 +58.6
13°	-6 50.5 +58.3	-7 04.1 +58.4	-7 17.3 +58.5	-7 30.2 +58.6	-7 42.8 +58.7
14°	-5 52.2 +58.3	-6 05.7 +58.4	-6 18.8 +58.4	-6 31.6 +58.5	-6 44.1 +58.6
15°	-4 53.9 +58.4	-5 07.3 +58.4	-5 20.4 +58.5	-5 33.1 +58.6	-5 45.5 +58.7
16°	-3 55.5 +58.3	-4 08.9 +58.5	-4 21.9 +58.5	-4 34.5 +58.6	-4 46.8 +58.7
17°	-2 57.2 +58.3	-3 10.4 +58.4	-3 23.4 +58.6	-3 35.9 +58.6	-3 48.1 +58.6
18°	-1 58.9 +58.4	-2 12.0 +58.4	-2 24.8 +58.5	-2 37.3 +58.6	-2 49.5 +58.7
19°	-1 00.5 +58.3	-1 13.6 +58.4	-1 26.3 +58.5	-1 38.7 +58.5	-1 50.8 +58.7
20°	-0 02.2 +58.4	-0 15.2 +58.5	-0 27.8 +58.5	-0 40.2 +58.6	-0 52.1 +58.6
21°	0 56.2 +58.3 32.4	0 43.3 +58.4 31.5	0 30.7 +58.5 30.6	0 18.4 +58.6 29.7	0 06.5 +58.7 28.7
22°	1 54.5 +58.3 32.1	1 41.7 +58.4 31.2	1 29.2 +58.5 30.3	1 17.0 +58.6 29.4	1 05.2 +58.7 28.5
23°	2 52.8 +58.4 31.9	2 40.1 +58.4 31.0	2 27.7 +58.5 30.1	2 15.6 +58.6 29.2	2 03.9 +58.6 28.3
24°	3 51.2 +58.3 31.7	3 38.5 +58.4 30.8	3 26.2 +58.5 29.9	3 14.2 +58.6 29.0	3 02.5 +58.7 28.1
25°	4 49.5 +58.3 31.4	4 36.9 +58.5 30.6	4 24.7 +58.5 29.7	4 12.8 +58.6 28.8	4 01.2 +58.7 27.9
26°	5 47.8 +58.4 31.2	5 35.4 +58.4 30.3	5 23.2 +58.5 29.5	5 11.4 +58.5 28.6	4 59.9 +58.6 27.7
27°	6 46.2 +58.3 31.0	6 33.8 +58.4 30.1	6 21.7 +58.5 29.2	6 09.9 +58.6 28.4	5 58.5 +58.7 27.5
28°	7 44.5 +58.3 30.7	7 32.2 +58.4 29.9	7 20.2 +58.5 29.0	7 08.5 +58.6 28.1	6 57.2 +58.6 27.3
29°	8 42.8 +58.3 30.5	8 30.6 +58.4 29.6	8 18.7 +58.4 28.8	8 07.1 +58.5 27.9	7 55.8 +58.7 27.1

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Dec	LHA 150° / 210°	LHA 151° / 209°	LHA 152° / 208°	LHA 153° / 207°	LHA 154° / 206°
	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°	-9 52.4 +58.7				
12°	-8 53.7 +58.8	-9 05.6 +58.8	-9 17.1 +58.9	-9 28.3 +59.0	-9 39.1 +59.1
13°	-7 54.9 +58.7	-8 06.8 +58.8	-8 18.2 +58.9	-8 29.3 +58.9	-8 40.0 +59.0
14°	-6 56.2 +58.7	-7 08.0 +58.8	-7 19.3 +58.8	-7 30.4 +59.0	-7 41.0 +59.0
15°	-5 57.5 +58.8	-6 09.2 +58.9	-6 20.5 +58.9	-6 31.4 +58.9	-6 42.0 +59.0
16°	-4 58.7 +58.7	-5 10.3 +58.8	-5 21.6 +58.9	-5 32.5 +59.0	-5 43.0 +59.0
17°	-4 00.0 +58.7	-4 11.5 +58.8	-4 22.7 +58.9	-4 33.5 +59.0	-4 44.0 +59.1
18°	-3 01.3 +58.8	-3 12.7 +58.8	-3 23.8 +58.9	-3 34.5 +58.9	-3 44.9 +59.0
19°	-2 02.5 +58.7	-2 13.9 +58.8	-2 24.9 +58.9	-2 35.6 +59.0	-2 45.9 +59.1
20°	-1 03.8 +58.8	-1 15.1 +58.9	-1 26.0 +58.9	-1 36.6 +59.0	-1 46.8 +59.0
21°	-0 05.0 +58.7	-0 16.2 +58.8	-0 27.1 +58.9	-0 37.6 +58.9	-0 47.8 +59.0
22°	0 53.7 +58.8 27.6	0 42.6 +58.8 26.7	0 31.8 +58.9 25.8	0 21.3 +59.0 24.9	0 11.2 +59.1 24.0
23°	1 52.5 +58.7 27.4	1 41.4 +58.8 26.5	1 30.7 +58.9 25.6	1 20.3 +59.0 24.7	1 10.3 +59.0 23.8
24°	2 51.2 +58.7 27.2	2 40.2 +58.8 26.3	2 29.6 +58.9 25.4	2 19.3 +58.9 24.5	2 09.3 +59.0 23.6
25°	3 49.9 +58.8 27.0	3 39.0 +58.8 26.1	3 28.5 +58.9 25.2	3 18.2 +59.0 24.3	3 08.3 +59.1 23.4
26°	4 48.7 +58.7 26.8	4 37.8 +58.9 25.9	4 27.4 +58.8 25.0	4 17.2 +59.0 24.2	4 07.4 +59.0 23.3
27°	5 47.4 +58.8 26.6	5 36.7 +58.8 25.7	5 26.2 +58.9 24.8	5 16.2 +58.9 24.0	5 06.4 +59.0 23.1
28°	6 46.2 +58.7 26.4	6 35.5 +58.8 25.5	6 25.1 +58.9 24.7	6 15.1 +59.0 23.8	6 05.4 +59.1 22.9
29°	7 44.9 +58.7 26.2	7 34.3 +58.8 25.3	7 24.0 +58.9 24.5	7 14.1 +58.9 23.6	7 04.5 +59.0 22.7

Dec	LHA 155° / 205°	LHA 156° / 204°	LHA 157° / 203°	LHA 158° / 202°	LHA 159° / 201°
	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°	-9 49.5 +59.1	-9 59.5 +59.1			
13°	-8 50.4 +59.1	-9 00.4 +59.2	-9 10.0 +59.2	-9 19.2 +59.3	-9 28.0 +59.3
14°	-7 51.3 +59.1	-8 01.2 +59.1	-8 10.8 +59.3	-8 19.9 +59.3	-8 28.7 +59.3
15°	-6 52.2 +59.1	-7 02.1 +59.2	-7 11.5 +59.2	-7 20.6 +59.2	-7 29.4 +59.4
16°	-5 53.1 +59.1	-6 02.9 +59.2	-6 12.3 +59.2	-6 21.4 +59.3	-6 30.0 +59.3
17°	-4 54.0 +59.1	-5 03.7 +59.1	-5 13.1 +59.2	-5 22.1 +59.3	-5 30.7 +59.4
18°	-3 54.9 +59.1	-4 04.6 +59.2	-4 13.9 +59.3	-4 22.8 +59.3	-4 31.3 +59.4
19°	-2 55.8 +59.1	-3 05.4 +59.2	-3 14.6 +59.2	-3 23.5 +59.3	-3 31.9 +59.3
20°	-1 56.7 +59.1	-2 06.2 +59.1	-2 15.4 +59.2	-2 24.2 +59.3	-2 32.6 +59.4
21°	-0 57.6 +59.1	-1 07.1 +59.2	-1 16.2 +59.3	-1 24.9 +59.3	-1 33.2 +59.3
22°	0 01.5 +59.1 23.1	-0 07.9 +59.2	-0 16.9 +59.2	-0 25.6 +59.3	-0 33.9 +59.4
23°	1 00.6 +59.1 22.9	0 51.3 +59.2 22.0	0 42.3 +59.3 21.1	0 33.7 +59.3 20.2	0 25.5 +59.4 19.3
24°	1 59.7 +59.1 22.7	1 50.5 +59.1 21.8	1 41.6 +59.2 20.9	1 33.0 +59.3 20.0	1 24.9 +59.3 19.1
25°	2 58.8 +59.1 22.6	2 49.6 +59.2 21.7	2 40.8 +59.2 20.8	2 32.3 +59.3 19.9	2 24.2 +59.4 19.0
26°	3 57.9 +59.1 22.4	3 48.8 +59.2 21.5	3 40.0 +59.3 20.6	3 31.6 +59.3 19.7	3 23.6 +59.3 18.8
27°	4 57.0 +59.1 22.2	4 48.0 +59.1 21.3	4 39.3 +59.2 20.4	4 30.9 +59.3 19.6	4 22.9 +59.4 18.7
28°	5 56.1 +59.1 22.0	5 47.1 +59.2 21.2	5 38.5 +59.2 20.3	5 30.2 +59.3 19.4	5 22.3 +59.3 18.5
29°	6 55.2 +59.1 21.9	6 46.3 +59.2 21.0	6 37.7 +59.2 20.1	6 29.5 +59.3 19.3	6 21.6 +59.4 18.4

Dec	LHA 160° / 200°	LHA 161° / 199°	LHA 162° / 198°	LHA 163° / 197°	LHA 164° / 196°
	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°	-9 36.5 +59.4	-9 44.5 +59.4	-9 52.2 +59.5	-9 59.5 +59.6	
14°	-8 37.1 +59.4	-8 45.1 +59.5	-8 52.7 +59.5	-8 59.9 +59.6	-9 06.7 +59.6
15°	-7 37.7 +59.4	-7 45.6 +59.4	-7 53.2 +59.5	-8 00.3 +59.5	-8 07.1 +59.6
16°	-6 38.3 +59.4	-6 46.2 +59.5	-6 53.7 +59.6	-7 00.8 +59.6	-7 07.5 +59.6
17°	-5 38.9 +59.4	-5 46.7 +59.5	-5 54.1 +59.5	-6 01.2 +59.6	-6 07.9 +59.7
18°	-4 39.5 +59.5	-4 47.2 +59.4	-4 54.6 +59.5	-5 01.6 +59.5	-5 08.2 +59.6
19°	-3 40.0 +59.4	-3 47.8 +59.5	-3 55.1 +59.5	-4 02.1 +59.6	-4 08.6 +59.6
20°	-2 40.6 +59.4	-2 48.3 +59.5	-2 55.6 +59.6	-3 02.5 +59.6	-3 09.0 +59.6
21°	-1 41.2 +59.4	-1 48.8 +59.5	-1 56.0 +59.5	-2 02.9 +59.6	-2 09.4 +59.6
22°	-0 41.8 +59.4	-0 49.3 +59.4	-0 56.5 +59.5	-1 03.3 +59.5	-1 09.8 +59.7
23°	0 17.6 +59.4 18.4	0 10.1 +59.5 17.4	0 03.0 +59.5 16.5	-0 03.8 +59.6	-0 10.1 +59.6
24°	1 17.0 +59.5 18.2	1 09.6 +59.5 17.3	1 02.5 +59.5 16.4	0 55.8 +59.6 15.5	0 49.5 +59.6 14.6
25°	2 16.5 +59.4 18.1	2 09.1 +59.4 17.2	2 02.0 +59.6 16.3	1 55.4 +59.6 15.4	1 49.1 +59.6 14.5
26°	3 15.9 +59.4 17.9	3 08.5 +59.5 17.0	3 01.6 +59.5 16.1	2 55.0 +59.5 15.3	2 48.7 +59.6 14.4
27°	4 15.3 +59.4 17.8	4 08.0 +59.5 16.9	4 01.1 +59.5 16.0	3 54.5 +59.6 15.1	3 48.3 +59.7 14.2
28°	5 14.7 +59.4 17.7	5 07.5 +59.4 16.8	5 00.6 +59.5 15.9	4 54.1 +59.6 15.0	4 48.0 +59.6 14.1
29°	6 14.1 +59.4 17.5	6 06.9 +59.5 16.6	6 00.1 +59.6 15.8	5 53.7 +59.5 14.9	5 47.6 +59.6 14.0

Dec	LHA 165° / 195°	LHA 166° / 194°	LHA 167° / 193°	LHA 168° / 192°	LHA 169° / 191°
	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°	-9 13.1 +59.6	-9 19.1 +59.7	-9 24.7 +59.7	-9 29.9 +59.8	-9 34.7 +59.8
15°	-8 13.5 +59.7	-8 19.4 +59.7	-8 25.0 +59.8	-8 30.1 +59.7	-8 34.9 +59.8
16°	-7 13.8 +59.7	-7 19.7 +59.7	-7 25.2 +59.7	-7 30.4 +59.8	-7 35.1 +59.8
17°	-6 14.1 +59.6	-6 20.0 +59.7	-6 25.5 +59.8	-6 30.6 +59.8	-6 35.3 +59.9
18°	-5 14.5 +59.7	-5 20.3 +59.7	-5 25.7 +59.7	-5 30.8 +59.8	-5 35.4 +59.8
19°	-4 14.8 +59.7	-4 20.6 +59.7	-4 26.0 +59.7	-4 31.0 +59.8	-4 35.6 +59.8
20°	-3 15.1 +59.6	-3 20.9 +59.7	-3 26.3 +59.8	-3 31.2 +59.8	-3 35.8 +59.8
21°	-2 15.5 +59.7	-2 21.2 +59.7	-2 26.5 +59.7	-2 31.4 +59.7	-2 36.0 +59.8
22°	-1 15.8 +59.7	-1 21.5 +59.7	-1 26.8 +59.8	-1 31.7 +59.8	-1 36.2 +59.9
23°	-0 16.1 +59.6	-0 21.8 +59.7	-0 27.0 +59.7	-0 31.9 +59.8	-0 36.3 +59.8
24°	0 43.5 +59.7 13.7	0 37.9 +59.8 12.8	0 32.7 +59.8 11.9	0 27.9 +59.8 10.9	0 23.5 +59.8 10.0
25°	1 43.2 +59.7 13.6	1 37.7 +59.7 12.7	1 32.5 +59.7 11.8	1 27.7 +59.8 10.9	1 23.3 +59.8 10.0
26°	2 42.9 +59.6 13.5	2 37.4 +59.7 12.6	2 32.2 +59.8 11.7	2 27.5 +59.8 10.8	2 23.1 +59.8 9.9
27°	3 42.5 +59.7 13.4	3 37.1 +59.7 12.5	3 32.0 +59.7 11.6	3 27.3 +59.8 10.7	3 22.9 +59.8 9.8
28°	4 42.2 +59.7 13.3	4 36.8 +59.7 12.4	4 31.7 +59.8 11.5	4 27.1 +59.7 10.6	4 22.7 +59.9 9.7
29°	5 41.9 +59.6 13.1	5 36.5 +59.7 12.3	5 31.5 +59.7 11.4	5 26.8 +59.8 10.5	5 22.6 +59.8 9.6

Dec	LHA 170° / 190°	LHA 171° / 189°	LHA 172° / 188°	LHA 173° / 187°	LHA 174° / 186°
	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°	-9 39.1 +59.9	-9 43.0 +59.8	-9 46.6 +59.9	-9 49.7 +59.9	-9 52.5 +60.0
15°	-8 39.2 +59.8	-8 43.2 +59.9	-8 46.7 +59.9	-8 49.8 +59.9	-8 52.5 +59.9
16°	-7 39.4 +59.9	-7 43.3 +59.9	-7 46.8 +59.9	-7 49.9 +59.9	-7 52.6 +60.0
17°	-6 39.5 +59.8	-6 43.4 +59.9	-6 46.9 +59.9	-6 50.0 +60.0	-6 52.6 +59.9
18°	-5 39.7 +59.9	-5 43.5 +59.8	-5 47.0 +59.9	-5 50.0 +59.9	-5 52.7 +60.0
19°	-4 39.8 +59.8	-4 43.7 +59.9	-4 47.1 +59.9	-4 50.1 +59.9	-4 52.7 +59.9
20°	-3 40.0 +59.9	-3 43.8 +59.9	-3 47.2 +59.9	-3 50.2 +59.9	-3 52.8 +60.0
21°	-2 40.1 +59.8	-2 43.9 +59.9	-2 47.3 +59.9	-2 50.3 +60.0	-2 52.8 +59.9
22°	-1 40.3 +59.9	-1 44.0 +59.8	-1 47.4 +59.9	-1 50.3 +59.9	-1 52.9 +60.0
23°	-0 40.4 +59.8	-0 44.2 +59.9	-0 47.5 +59.9	-0 50.4 +59.9	-0 52.9 +59.9
24°	0 19.4 +59.9 9.1	0 15.7 +59.9 8.2	0 12.4 +59.9 7.3	0 09.5 +59.9 6.4	0 07.0 +59.9 5.5
25°	1 19.3 +59.8 9.1	1 15.6 +59.9 8.2	1 12.3 +59.9 7.2	1 09.4 +60.0 6.3	1 06.9 +60.0 5.4
26°	2 19.1 +59.9 9.0	2 15.5 +59.9 8.1	2 12.2 +59.9 7.2	2 09.4 +59.9 6.3	2 06.9 +59.9 5.4
27°	3 19.0 +59.8 8.9	3 15.4 +59.8 8.0	3 12.1 +59.9 7.1	3 09.3 +59.9 6.2	3 06.8 +60.0 5.4
28°	4 18.8 +59.9 8.8	4 15.2 +59.9 8.0	4 12.0 +59.9 7.1	4 09.2 +60.0 6.2	4 06.8 +59.9 5.3
29°	5 18.7 +59.8 8.8	5 15.1 +59.9 7.9	5 11.9 +60.0 7.0	5 09.2 +59.9 6.1	5 06.7 +60.0 5.3

Dec	LHA 175° / 185°	LHA 176° / 184°	LHA 177° / 183°	LHA 178° / 182°	LHA 179° / 181°
	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°	-9 54.8 +60.0	-9 56.6 +59.9	-9 58.1 +60.0	-9 59.2 +60.0	-9 59.8 +60.0
15°	-8 54.8 +60.0	-8 56.7 +60.0	-8 58.1 +60.0	-8 59.2 +60.0	-8 59.8 +60.0
16°	-7 54.8 +59.9	-7 56.7 +60.0	-7 58.1 +59.9	-7 59.2 +60.0	-7 59.8 +60.0
17°	-6 54.9 +60.0	-6 56.7 +60.0	-6 58.2 +60.0	-6 59.2 +60.0	-6 59.8 +60.0
18°	-5 54.9 +59.9	-5 56.7 +59.9	-5 58.2 +60.0	-5 59.2 +60.0	-5 59.8 +60.0
19°	-4 55.0 +60.0	-4 56.8 +60.0	-4 58.2 +60.0	-4 59.2 +60.0	-4 59.8 +60.0
20°	-3 55.0 +60.0	-3 56.8 +60.0	-3 58.2 +60.0	-3 59.2 +60.0	-3 59.8 +60.0
21°	-2 55.0 +59.9	-2 56.8 +60.0	-2 58.2 +60.0	-2 59.2 +60.0	-2 59.8 +60.0
22°	-1 55.1 +60.0	-1 56.8 +59.9	-1 58.2 +60.0	-1 59.2 +60.0	-1 59.8 +60.0
23°	-0 55.1 +60.0	-0 56.9 +60.0	-0 58.2 +60.0	-0 59.2 +60.0	-0 59.8 +60.0
24°	0 04.9 +59.9 4.6	0 03.1 +60.0 3.7	0 01.8 +59.9 2.7	0 00.8 +60.0 1.8	0 00.2 +60.0 0.9
25°	1 04.8 +60.0 4.5	1 03.1 +60.0 3.6	1 01.7 +60.0 2.7	1 00.8 +60.0 1.8	1 00.2 +60.0 0.9
26°	2 04.8 +59.9 4.5	2 03.1 +59.9 3.6	2 01.7 +60.0 2.7	2 00.8 +60.0 1.8	2 00.2 +60.0 0.9
27°	3 04.7 +60.0 4.5	3 03.0 +60.0 3.6	3 01.7 +60.0 2.7	3 00.8 +60.0 1.8	3 00.2 +60.0 0.9
28°	4 04.7 +60.0 4.4	4 03.0 +60.0 3.5	4 01.7 +60.0 2.7	4 00.8 +59.9 1.8	4 00.2 +60.0 0.9
29°	5 04.7 +59.9 4.4	5 03.0 +60.0 3.5	5 01.7 +60.0 2.6	5 00.7 +60.0 1.8	5 00.2 +60.0 0.9

Declination SAME name as Latitude

Latitude 67°

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°	23 00.0 +60.0 180.0	22 59.8 +60.0 178.9	22 59.1 +60.0 177.8	22 58.0 +60.0 176.7	22 56.4 +60.0 175.7
1°	24 00.0 +60.0 180.0	23 59.8 +60.0 178.9	23 59.1 +60.0 177.8	23 58.0 +60.0 176.7	23 56.4 +60.0 175.6
2°	25 00.0 +60.0 180.0	24 59.8 +60.0 178.9	24 59.1 +60.0 177.8	24 58.0 +60.0 176.7	24 56.4 +60.0 175.6
3°	26 00.0 +60.0 180.0	25 59.8 +60.0 178.9	25 59.1 +60.0 177.8	25 58.0 +59.9 176.7	25 56.4 +59.9 175.6
4°	27 00.0 +60.0 180.0	26 59.8 +60.0 178.9	26 59.1 +60.0 177.8	26 57.9 +60.0 176.6	26 56.3 +60.0 175.5
5°	28 00.0 +60.0 180.0	27 59.8 +60.0 178.9	27 59.1 +60.0 177.7	27 57.9 +60.0 176.6	27 56.3 +60.0 175.5
6°	29 00.0 +60.0 180.0	28 59.8 +60.0 178.9	28 59.1 +60.0 177.7	28 57.9 +60.0 176.6	28 56.3 +60.0 175.5
7°	30 00.0 +60.0 180.0	29 59.8 +60.0 178.9	29 59.1 +60.0 177.7	29 57.9 +60.0 176.6	29 56.3 +59.9 175.4
8°	31 00.0 +60.0 180.0	30 59.8 +60.0 178.8	30 59.1 +59.9 177.7	30 57.9 +60.0 176.5	30 56.2 +60.0 175.4
9°	32 00.0 +60.0 180.0	31 59.8 +60.0 178.8	31 59.0 +60.0 177.7	31 57.9 +59.9 176.5	31 56.2 +60.0 175.3
10°	33 00.0 +60.0 180.0	32 59.8 +60.0 178.8	32 59.0 +60.0 177.7	32 57.8 +60.0 176.5	32 56.2 +59.9 175.3
11°	34 00.0 +60.0 180.0	33 59.8 +60.0 178.8	33 59.0 +60.0 177.6	33 57.8 +60.0 176.4	33 56.1 +60.0 175.3
12°	35 00.0 +60.0 180.0	34 59.8 +60.0 178.8	34 59.0 +60.0 177.6	34 57.8 +60.0 176.4	34 56.1 +60.0 175.2
13°	36 00.0 +60.0 180.0	35 59.8 +60.0 178.8	35 59.0 +60.0 177.6	35 57.8 +60.0 176.4	35 56.1 +59.9 175.2
14°	37 00.0 +60.0 180.0	36 59.8 +59.9 178.8	36 59.0 +60.0 177.6	36 57.8 +59.9 176.4	36 56.0 +60.0 175.1
15°	38 00.0 +60.0 180.0	37 59.7 +60.0 178.8	37 59.0 +60.0 177.5	37 57.7 +60.0 176.3	37 56.0 +60.0 175.1
16°	39 00.0 +60.0 180.0	38 59.7 +60.0 178.8	38 59.0 +60.0 177.5	38 57.7 +60.0 176.3	38 56.0 +59.9 175.1
17°	40 00.0 +60.0 180.0	39 59.7 +60.0 178.8	39 59.0 +60.0 177.5	39 57.7 +60.0 176.3	39 55.9 +60.0 175.0
18°	41 00.0 +60.0 180.0	40 59.7 +60.0 178.7	40 59.0 +60.0 177.5	40 57.7 +60.0 176.2	40 55.9 +59.9 175.0
19°	42 00.0 +60.0 180.0	41 59.7 +60.0 178.7	41 59.0 +59.9 177.5	41 57.7 +59.9 176.2	41 55.8 +60.0 174.9
20°	43 00.0 +60.0 180.0	42 59.7 +60.0 178.7	42 58.9 +60.0 177.4	42 57.6 +60.0 176.1	42 55.8 +60.0 174.9
21°	44 00.0 +60.0 180.0	43 59.7 +60.0 178.7	43 58.9 +60.0 177.4	43 57.6 +60.0 176.1	43 55.8 +59.9 174.8
22°	45 00.0 +60.0 180.0	44 59.7 +60.0 178.7	44 58.9 +60.0 177.4	44 57.6 +60.0 176.1	44 55.7 +60.0 174.8
23°	46 00.0 +60.0 180.0	45 59.7 +60.0 178.7	45 58.9 +60.0 177.4	45 57.6 +59.9 176.0	45 55.7 +59.9 174.7
24°	47 00.0 +60.0 180.0	46 59.7 +60.0 178.7	46 58.9 +60.0 177.3	46 57.5 +60.0 176.0	46 55.6 +60.0 174.6
25°	48 00.0 +60.0 180.0	47 59.7 +60.0 178.6	47 58.9 +60.0 177.3	47 57.5 +60.0 175.9	47 55.6 +59.9 174.6
26°	49 00.0 +60.0 180.0	48 59.7 +60.0 178.6	48 58.9 +60.0 177.3	48 57.5 +59.9 175.9	48 55.5 +60.0 174.5
27°	50 00.0 +60.0 180.0	49 59.7 +60.0 178.6	49 58.9 +60.0 177.2	49 57.4 +60.0 175.8	49 55.5 +59.9 174.5
28°	51 00.0 +60.0 180.0	50 59.7 +60.0 178.6	50 58.9 +59.9 177.2	50 57.4 +60.0 175.8	50 55.4 +60.0 174.4
29°	52 00.0 +60.0 180.0	51 59.7 +60.0 178.6	51 58.8 +60.0 177.2	51 57.4 +60.0 175.7	51 55.4 +59.9 174.3

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°	22 54.4 +60.0 174.6	22 52.0 +60.0 173.5	22 49.1 +59.9 172.4	22 45.8 +59.9 171.3	22 42.1 +59.8 170.2
1°	23 54.4 +60.0 174.5	23 52.0 +59.9 173.4	23 49.0 +60.0 172.3	23 45.7 +59.9 171.3	23 41.9 +59.9 170.2
2°	24 54.4 +59.9 174.5	24 51.9 +59.9 173.4	24 49.0 +59.9 172.3	24 45.6 +59.9 171.2	24 41.8 +59.8 170.1
3°	25 54.3 +60.0 174.4	25 51.8 +60.0 173.3	25 48.9 +59.9 172.2	25 45.5 +59.9 171.1	25 41.6 +59.9 170.0
4°	26 54.3 +59.9 174.4	26 51.8 +59.9 173.3	26 48.8 +59.9 172.2	26 45.4 +59.9 171.1	26 41.5 +59.9 169.9
5°	27 54.2 +60.0 174.4	27 51.7 +59.9 173.2	27 48.7 +59.9 172.1	27 45.3 +59.9 171.0	27 41.4 +59.8 169.9
6°	28 54.2 +59.9 174.3	28 51.6 +60.0 173.2	28 48.6 +59.9 172.0	28 45.2 +59.8 170.9	28 41.2 +59.9 169.8
7°	29 54.1 +60.0 174.3	29 51.6 +59.9 173.1	29 48.5 +59.9 172.0	29 45.0 +59.9 170.8	29 41.1 +59.8 169.7
8°	30 54.1 +60.0 174.2	30 51.5 +59.9 173.1	30 48.4 +60.0 171.9	30 44.9 +59.9 170.8	30 40.9 +59.9 169.6
9°	31 54.1 +59.9 174.2	31 51.4 +60.0 173.0	31 48.4 +59.9 171.9	31 44.8 +59.9 170.7	31 40.8 +59.8 169.5
10°	32 54.0 +60.0 174.1	32 51.4 +59.9 173.0	32 48.3 +59.9 171.8	32 44.7 +59.8 170.6	32 40.6 +59.9 169.5
11°	33 54.0 +59.9 174.1	33 51.3 +59.9 172.9	33 48.2 +59.9 171.7	33 44.5 +59.9 170.5	33 40.5 +59.8 169.4
12°	34 53.9 +59.9 174.0	34 51.2 +59.9 172.8	34 48.1 +59.9 171.7	34 44.4 +59.9 170.5	34 40.3 +59.8 169.3
13°	35 53.8 +60.0 174.0	35 51.1 +60.0 172.8	35 48.0 +59.9 171.6	35 44.3 +59.8 170.4	35 40.1 +59.9 169.2
14°	36 53.8 +59.9 173.9	36 51.1 +59.9 172.7	36 47.9 +59.8 171.5	36 44.1 +59.9 170.3	36 40.0 +59.8 169.1
15°	37 53.7 +60.0 173.9	37 51.0 +59.9 172.7	37 47.7 +59.9 171.4	37 44.0 +59.9 170.2	37 39.8 +59.8 169.0
16°	38 53.7 +59.9 173.8	38 50.9 +59.9 172.6	38 47.6 +59.9 171.4	38 43.9 +59.8 170.1	38 39.6 +59.8 168.9
17°	39 53.6 +60.0 173.8	39 50.8 +59.9 172.5	39 47.5 +59.9 171.3	39 43.7 +59.9 170.0	39 39.4 +59.8 168.8
18°	40 53.6 +59.9 173.7	40 50.7 +59.9 172.4	40 47.4 +59.9 171.2	40 43.6 +59.8 169.9	40 39.2 +59.8 168.7
19°	41 53.5 +59.9 173.6	41 50.6 +60.0 172.4	41 47.3 +59.9 171.1	41 43.4 +59.8 169.8	41 39.0 +59.8 168.6
20°	42 53.4 +60.0 173.6	42 50.6 +59.9 172.3	42 47.2 +59.8 171.0	42 43.2 +59.9 169.7	42 38.8 +59.8 168.5
21°	43 53.4 +59.9 173.5	43 50.5 +59.9 172.2	43 47.0 +59.9 170.9	43 43.1 +59.8 169.6	43 38.6 +59.8 168.4
22°	44 53.3 +59.9 173.5	44 50.4 +59.9 172.1	44 46.9 +59.9 170.8	44 42.9 +59.8 169.5	44 38.4 +59.8 168.2
23°	45 53.2 +60.0 173.4	45 50.3 +59.9 172.1	45 46.8 +59.8 170.7	45 42.7 +59.8 169.4	45 38.2 +59.7 168.1
24°	46 53.2 +59.9 173.3	46 50.2 +59.8 172.0	46 46.6 +59.9 170.6	46 42.5 +59.8 169.3	46 37.9 +59.8 168.0
25°	47 53.1 +59.9 173.2	47 50.0 +59.9 171.9	47 46.5 +59.8 170.5	47 42.3 +59.8 169.2	47 37.7 +59.7 167.9
26°	48 53.0 +59.9 173.2	48 49.9 +59.9 171.8	48 46.3 +59.9 170.4	48 42.1 +59.8 169.1	48 37.4 +59.8 167.7
27°	49 52.9 +59.9 173.1	49 49.8 +59.9 171.7	49 46.2 +59.8 170.3	49 41.9 +59.8 168.9	49 37.2 +59.7 167.6
28°	50 52.8 +59.9 173.0	50 49.7 +59.9 171.6	50 46.0 +59.8 170.2	50 41.7 +59.8 168.8	50 36.9 +59.7 167.4
29°	51 52.7 +60.0 172.9	51 49.6 +59.8 171.5	51 45.8 +59.8 170.1	51 41.5 +59.8 168.7	51 36.6 +59.7 167.3

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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°	22 37.9 +59.8 169.2	22 33.2 +59.8 168.1	22 28.2 +59.7 167.0	22 22.7 +59.7 165.9	22 16.8 +59.7 164.8
1°	23 37.7 +59.8 169.1	23 33.0 +59.8 168.0	23 27.9 +59.8 166.9	23 22.4 +59.7 165.8	23 16.5 +59.6 164.7
2°	24 37.5 +59.9 169.0	24 32.8 +59.8 167.9	24 27.7 +59.8 166.8	24 22.1 +59.8 165.7	24 16.1 +59.7 164.6
3°	25 37.4 +59.8 168.9	25 32.6 +59.8 167.8	25 27.5 +59.7 166.7	25 21.9 +59.7 165.6	25 15.8 +59.7 164.5
4°	26 37.2 +59.8 168.8	26 32.4 +59.8 167.7	26 27.2 +59.8 166.6	26 21.6 +59.7 165.5	26 15.5 +59.6 164.4
5°	27 37.0 +59.8 168.7	27 32.2 +59.8 167.6	27 27.0 +59.7 166.5	27 21.3 +59.7 165.4	27 15.1 +59.7 164.3
6°	28 36.8 +59.9 168.7	28 32.0 +59.8 167.5	28 26.7 +59.8 166.4	28 21.0 +59.7 165.3	28 14.8 +59.6 164.1
7°	29 36.7 +59.8 168.6	29 31.8 +59.8 167.4	29 26.5 +59.7 166.3	29 20.7 +59.7 165.2	29 14.4 +59.7 164.0
8°	30 36.5 +59.8 168.5	30 31.6 +59.7 167.3	30 26.2 +59.7 166.2	30 20.4 +59.6 165.0	30 14.1 +59.6 163.9
9°	31 36.3 +59.8 168.4	31 31.3 +59.8 167.2	31 25.9 +59.7 166.1	31 20.0 +59.7 164.9	31 13.7 +59.7 163.8
10°	32 36.1 +59.8 168.3	32 31.1 +59.8 167.1	32 25.6 +59.8 166.0	32 19.7 +59.7 164.8	32 13.4 +59.6 163.6
11°	33 35.9 +59.8 168.2	33 30.9 +59.7 167.0	33 25.4 +59.7 165.8	33 19.4 +59.7 164.7	33 13.0 +59.6 163.5
12°	34 35.7 +59.8 168.1	34 30.6 +59.8 166.9	34 25.1 +59.7 165.7	34 19.1 +59.6 164.5	34 12.6 +59.6 163.4
13°	35 35.5 +59.8 168.0	35 30.4 +59.7 166.8	35 24.8 +59.7 165.6	35 18.7 +59.7 164.4	35 12.2 +59.6 163.2
14°	36 35.3 +59.8 167.9	36 30.1 +59.8 166.7	36 24.5 +59.7 165.5	36 18.4 +59.6 164.3	36 11.8 +59.6 163.1
15°	37 35.1 +59.7 167.8	37 29.9 +59.7 166.6	37 24.2 +59.6 165.4	37 18.0 +59.6 164.1	37 11.4 +59.5 162.9
16°	38 34.8 +59.8 167.7	38 29.6 +59.7 166.4	38 23.8 +59.7 165.2	38 17.6 +59.6 164.0	38 10.9 +59.6 162.8
17°	39 34.6 +59.8 167.6	39 29.3 +59.7 166.3	39 23.5 +59.7 165.1	39 17.2 +59.7 163.9	39 10.5 +59.5 162.6
18°	40 34.4 +59.7 167.4	40 29.0 +59.7 166.2	40 23.2 +59.6 165.0	40 16.9 +59.5 163.7	40 10.0 +59.6 162.5
19°	41 34.1 +59.8 167.3	41 28.7 +59.7 166.1	41 22.8 +59.7 164.8	41 16.4 +59.6 163.6	41 09.6 +59.5 162.3
20°	42 33.9 +59.7 167.2	42 28.4 +59.7 165.9	42 22.5 +59.6 164.7	42 16.0 +59.6 163.4	42 09.1 +59.5 162.1
21°	43 33.6 +59.7 167.1	43 28.1 +59.7 165.8	43 22.1 +59.6 164.5	43 15.6 +59.5 163.2	43 08.6 +59.5 162.0
22°	44 33.3 +59.8 166.9	44 27.8 +59.7 165.6	44 21.7 +59.6 164.4	44 15.1 +59.6 163.1	44 08.1 +59.4 161.8
23°	45 33.1 +59.7 166.8	45 27.5 +59.6 165.5	45 21.3 +59.6 164.2	45 14.7 +59.5 162.9	45 07.5 +59.5 161.6
24°	46 32.8 +59.7 166.7	46 27.1 +59.7 165.3	46 20.9 +59.6 164.0	46 14.2 +59.5 162.7	46 07.0 +59.4 161.4
25°	47 32.5 +59.7 166.5	47 26.8 +59.6 165.2	47 20.5 +59.6 163.9	47 13.7 +59.5 162.5	47 06.4 +59.4 161.2
26°	48 32.2 +59.7 166.4	48 26.4 +59.6 165.0	48 20.1 +59.5 163.7	48 13.2 +59.5 162.3	48 05.8 +59.4 161.0
27°	49 31.9 +59.6 166.2	49 26.0 +59.6 164.8	49 19.6 +59.5 163.5	49 12.7 +59.4 162.1	49 05.2 +59.4 160.8
28°	50 31.5 +59.7 166.0	50 25.6 +59.6 164.7	50 19.1 +59.5 163.3	50 12.1 +59.4 161.9	50 04.6 +59.3 160.6
29°	51 31.2 +59.6 165.9	51 25.2 +59.5 164.5	51 18.6 +59.5 163.1	51 11.5 +59.4 161.7	51 03.9 +59.3 160.3

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°	22 10.4 +59.7 163.8	22 03.7 +59.6 162.7	21 56.5 +59.5 161.6	21 48.9 +59.5 160.6	21 40.9 +59.4 159.5
1°	23 10.1 +59.6 163.7	23 03.3 +59.5 162.6	22 56.0 +59.6 161.5	22 48.4 +59.5 160.4	22 40.3 +59.4 159.3
2°	24 09.7 +59.6 163.5	24 02.8 +59.6 162.4	23 55.6 +59.5 161.4	23 47.9 +59.4 160.3	23 39.7 +59.4 159.2
3°	25 09.3 +59.6 163.4	25 02.4 +59.6 162.3	24 55.1 +59.5 161.2	24 47.3 +59.5 160.1	24 39.1 +59.5 159.0
4°	26 08.9 +59.7 163.3	26 02.0 +59.6 162.2	25 54.6 +59.5 161.1	25 46.8 +59.4 160.0	25 38.6 +59.3 158.9
5°	27 08.6 +59.6 163.2	27 01.6 +59.5 162.0	26 54.1 +59.5 160.9	26 46.2 +59.5 159.8	26 37.9 +59.4 158.7
6°	28 08.2 +59.6 163.0	28 01.1 +59.6 161.9	27 53.6 +59.5 160.8	27 45.7 +59.4 159.7	27 37.3 +59.4 158.6
7°	29 07.8 +59.6 162.9	29 00.7 +59.5 161.8	28 53.1 +59.5 160.6	28 45.1 +59.4 159.5	28 36.7 +59.4 158.4
8°	30 07.4 +59.5 162.8	30 00.2 +59.5 161.6	29 52.6 +59.5 160.5	29 44.5 +59.5 159.4	29 36.1 +59.3 158.2
9°	31 06.9 +59.6 162.6	30 59.7 +59.5 161.5	30 52.1 +59.4 160.3	30 44.0 +59.4 159.2	30 35.4 +59.3 158.1
10°	32 06.5 +59.6 162.5	31 59.2 +59.6 161.3	31 51.5 +59.5 160.2	31 43.4 +59.3 159.0	31 34.7 +59.4 157.9
11°	33 06.1 +59.5 162.3	32 58.8 +59.5 161.2	32 51.0 +59.4 160.0	32 42.7 +59.4 158.9	32 34.1 +59.3 157.7
12°	34 05.6 +59.6 162.2	33 58.3 +59.4 161.0	33 50.4 +59.4 159.9	33 42.1 +59.4 158.7	33 33.4 +59.3 157.5
13°	35 05.2 +59.5 162.0	34 57.7 +59.5 160.9	34 49.8 +59.4 159.7	34 41.5 +59.3 158.5	34 32.7 +59.2 157.3
14°	36 04.7 +59.5 161.9	35 57.2 +59.5 160.7	35 49.2 +59.4 159.5	35 40.8 +59.3 158.3	35 31.9 +59.3 157.2
15°	37 04.2 +59.6 161.7	36 56.7 +59.4 160.5	36 48.6 +59.4 159.3	36 40.1 +59.3 158.2	36 31.2 +59.2 157.0
16°	38 03.8 +59.5 161.6	37 56.1 +59.4 160.4	37 48.0 +59.4 159.2	37 39.4 +59.3 158.0	37 30.4 +59.2 156.8
17°	39 03.3 +59.4 161.4	38 55.5 +59.5 160.2	38 47.4 +59.3 159.0	38 38.7 +59.3 157.8	38 29.6 +59.2 156.6
18°	40 02.7 +59.5 161.2	39 55.0 +59.4 160.0	39 46.7 +59.3 158.8	39 38.0 +59.2 157.6	39 28.8 +59.2 156.3
19°	41 02.2 +59.5 161.1	40 54.4 +59.3 159.8	40 46.0 +59.3 158.6	40 37.2 +59.3 157.4	40 28.0 +59.1 156.1
20°	42 01.7 +59.4 160.9	41 53.7 +59.4 159.6	41 45.3 +59.3 158.4	41 36.5 +59.2 157.1	41 27.1 +59.1 155.9
21°	43 01.1 +59.4 160.7	42 53.1 +59.3 159.4	42 44.6 +59.3 158.2	42 35.7 +59.1 156.9	42 26.2 +59.1 155.7
22°	44 00.5 +59.4 160.5	43 52.4 +59.3 159.2	43 43.9 +59.2 158.0	43 34.8 +59.2 156.7	43 25.3 +59.1 155.4
23°	44 59.9 +59.4 160.3	44 51.7 +59.3 159.0	44 43.1 +59.2 157.7	44 34.0 +59.1 156.5	44 24.4 +59.0 155.2
24°	45 59.3 +59.3 160.1	45 51.0 +59.3 158.8	45 42.3 +59.2 157.5	45 33.1 +59.1 156.2	45 23.4 +59.0 154.9
25°	46 58.6 +59.3 159.9	46 50.3 +59.2 158.6	46 41.5 +59.1 157.3	46 32.2 +59.0 156.0	46 22.4 +59.0 154.7
26°	47 57.9 +59.3 159.7	47 49.5 +59.2 158.3	47 40.6 +59.2 157.0	47 31.2 +59.1 155.7	47 21.4 +58.9 154.4
27°	48 57.2 +59.3 159.4	48 48.7 +59.2 158.1	48 39.8 +59.0 156.8	48 30.3 +58.9 155.4	48 20.3 +58.8 154.1
28°	49 56.5 +59.2 159.2	49 47.9 +59.2 157.8	49 38.8 +59.1 156.5	49 29.2 +59.0 155.2	49 19.1 +58.9 153.8
29°	50 55.7 +59.2 159.0	50 47.1 +59.1 157.6	50 37.9 +59.0 156.2	50 28.2 +58.9 154.9	50 18.0 +58.7 153.5

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°	21 32.5 +59.3 158.4	21 23.6 +59.4 157.4	21 14.4 +59.3 156.3	21 04.8 +59.2 155.2	20 54.8 +59.1 154.2
1°	22 31.8 +59.4 158.3	22 23.0 +59.3 157.2	22 13.7 +59.2 156.1	22 04.0 +59.2 155.1	21 53.9 +59.1 154.0
2°	23 31.2 +59.4 158.1	23 22.3 +59.2 157.0	23 12.9 +59.2 156.0	23 03.2 +59.1 154.9	22 53.0 +59.1 153.8
3°	24 30.6 +59.3 158.0	24 21.5 +59.3 156.9	24 12.1 +59.3 155.8	24 02.3 +59.2 154.7	23 52.1 +59.1 153.6
4°	25 29.9 +59.3 157.8	25 20.8 +59.3 156.7	25 11.4 +59.2 155.6	25 01.5 +59.1 154.5	24 51.2 +59.0 153.4
5°	26 29.2 +59.4 157.6	26 20.1 +59.3 156.5	26 10.6 +59.1 155.4	26 00.6 +59.1 154.3	25 50.2 +59.1 153.2
6°	27 28.6 +59.3 157.5	27 19.4 +59.2 156.3	27 09.7 +59.2 155.2	26 59.7 +59.1 154.1	26 49.3 +59.0 153.0
7°	28 27.9 +59.3 157.3	28 18.6 +59.2 156.2	28 08.9 +59.2 155.1	27 58.8 +59.1 154.0	27 48.3 +59.0 152.8
8°	29 27.2 +59.2 157.1	29 17.8 +59.2 156.0	29 08.1 +59.1 154.9	28 57.9 +59.1 153.8	28 47.3 +59.0 152.6
9°	30 26.4 +59.3 156.9	30 17.0 +59.2 155.8	30 07.2 +59.1 154.7	29 57.0 +59.0 153.6	29 46.3 +59.0 152.4
10°	31 25.7 +59.3 156.8	31 16.2 +59.2 155.6	31 06.3 +59.2 154.5	30 56.0 +59.1 153.3	30 45.3 +59.0 152.2
11°	32 25.0 +59.3 156.6	32 15.4 +59.2 155.4	32 05.5 +59.0 154.3	31 55.1 +59.0 153.1	31 44.3 +58.9 152.0
12°	33 24.2 +59.2 156.4	33 14.6 +59.1 155.2	33 04.5 +59.1 154.1	32 54.1 +59.0 152.9	32 43.2 +58.9 151.8
13°	34 23.4 +59.2 156.2	34 13.7 +59.1 155.0	34 03.6 +59.1 153.9	33 53.1 +58.9 152.7	33 42.1 +58.9 151.6
14°	35 22.6 +59.2 156.0	35 12.8 +59.1 154.8	35 02.7 +59.0 153.6	34 52.0 +59.0 152.5	34 41.0 +58.8 151.3
15°	36 21.8 +59.1 155.8	36 11.9 +59.1 154.6	36 01.7 +59.0 153.4	35 51.0 +58.9 152.2	35 39.8 +58.9 151.1
16°	37 20.9 +59.2 155.6	37 11.0 +59.1 154.4	37 00.7 +58.9 153.2	36 49.9 +58.9 152.0	36 38.7 +58.8 150.8
17°	38 20.1 +59.1 155.4	38 10.1 +59.0 154.2	37 59.6 +59.0 153.0	37 48.8 +58.8 151.8	37 37.5 +58.7 150.6
18°	39 19.2 +59.1 155.1	39 09.1 +59.0 153.9	38 58.6 +58.9 152.7	38 47.6 +58.8 151.5	38 36.2 +58.8 150.3
19°	40 18.3 +59.0 154.9	40 08.1 +59.0 153.7	39 57.5 +58.9 152.5	39 46.4 +58.8 151.3	39 35.0 +58.7 150.1
20°	41 17.3 +59.1 154.7	41 07.1 +58.9 153.4	40 56.4 +58.8 152.2	40 45.2 +58.8 151.0	40 33.7 +58.6 149.8
21°	42 16.4 +59.0 154.4	42 06.0 +58.9 153.2	41 55.2 +58.8 152.0	41 44.0 +58.7 150.7	41 32.3 +58.6 149.5
22°	43 15.4 +58.9 154.2	43 04.9 +58.9 152.9	42 54.0 +58.8 151.7	42 42.7 +58.7 150.5	42 30.9 +58.6 149.2
23°	44 14.3 +59.0 153.9	44 03.8 +58.8 152.7	43 52.8 +58.7 151.4	43 41.4 +58.6 150.2	43 29.5 +58.5 148.9
24°	45 13.3 +58.8 153.7	45 02.6 +58.8 152.4	44 51.5 +58.7 151.1	44 40.0 +58.6 149.9	44 28.0 +58.5 148.6
25°	46 12.1 +58.9 153.4	46 01.4 +58.8 152.1	45 50.2 +58.6 150.8	45 38.6 +58.5 149.6	45 26.5 +58.4 148.3
26°	47 11.0 +58.8 153.1	47 00.2 +58.6 151.8	46 48.8 +58.6 150.5	46 37.1 +58.5 149.2	46 24.9 +58.3 148.0
27°	48 09.8 +58.8 152.8	47 58.8 +58.7 151.5	47 47.4 +58.6 150.2	47 35.6 +58.4 148.9	47 23.2 +58.3 147.6
28°	49 08.6 +58.7 152.5	48 57.5 +58.6 151.2	48 46.0 +58.4 149.9	48 34.0 +58.3 148.6	48 21.5 +58.2 147.3
29°	50 07.3 +58.6 152.2	49 56.1 +58.5 150.9	49 44.4 +58.4 149.5	49 32.3 +58.3 148.2	49 19.7 +58.2 146.9

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°	20 44.4 +59.0 153.1	20 33.6 +59.0 152.1	20 22.4 +58.9 151.0	20 10.9 +58.8 150.0	19 59.0 +58.7 148.9
1°	21 43.4 +59.1 152.9	21 32.6 +58.9 151.9	21 21.3 +58.9 150.8	21 09.7 +58.8 149.8	20 57.7 +58.8 148.7
2°	22 42.5 +59.0 152.8	22 31.5 +59.0 151.7	22 20.2 +58.9 150.6	22 08.5 +58.8 149.6	21 56.5 +58.7 148.5
3°	23 41.5 +59.0 152.6	23 30.5 +58.9 151.5	23 19.1 +58.9 150.4	23 07.3 +58.8 149.4	22 55.2 +58.7 148.3
4°	24 40.5 +59.0 152.4	24 29.4 +58.9 151.3	24 18.0 +58.8 150.2	24 06.1 +58.8 149.1	23 53.9 +58.7 148.1
5°	25 39.5 +59.0 152.2	25 28.3 +59.0 151.1	25 16.8 +58.8 150.0	25 04.9 +58.7 148.9	24 52.6 +58.7 147.8
6°	26 38.5 +58.9 152.0	26 27.3 +58.8 150.9	26 15.6 +58.8 149.8	26 03.6 +58.8 148.7	25 51.3 +58.6 147.6
7°	27 37.4 +59.0 151.7	27 26.1 +58.9 150.6	27 14.4 +58.8 149.5	27 02.4 +58.7 148.5	26 49.9 +58.6 147.4
8°	28 36.4 +58.9 151.5	28 25.0 +58.8 150.4	28 13.2 +58.8 149.3	28 01.1 +58.7 148.2	27 48.5 +58.6 147.1
9°	29 35.3 +58.9 151.3	29 23.8 +58.9 150.2	29 12.0 +58.7 149.1	28 59.8 +58.6 148.0	28 47.1 +58.6 146.9
10°	30 34.2 +58.9 151.1	30 22.7 +58.7 150.0	30 10.7 +58.7 148.9	29 58.4 +58.6 147.7	29 45.7 +58.5 146.6
11°	31 33.1 +58.8 150.9	31 21.4 +58.8 149.7	31 09.4 +58.7 148.6	30 57.0 +58.6 147.5	30 44.2 +58.5 146.4
12°	32 31.9 +58.8 150.6	32 20.2 +58.8 149.5	32 08.1 +58.7 148.4	31 55.6 +58.6 147.2	31 42.7 +58.5 146.1
13°	33 30.7 +58.8 150.4	33 19.0 +58.7 149.3	33 06.8 +58.6 148.1	32 54.2 +58.5 147.0	32 41.2 +58.5 145.9
14°	34 29.5 +58.8 150.2	34 17.7 +58.6 149.0	34 05.4 +58.6 147.9	33 52.7 +58.5 146.7	33 39.7 +58.4 145.6
15°	35 28.3 +58.7 149.9	35 16.3 +58.7 148.8	35 04.0 +58.5 147.6	34 51.2 +58.5 146.5	34 38.1 +58.4 145.3
16°	36 27.0 +58.7 149.7	36 15.0 +58.6 148.5	36 02.5 +58.6 147.3	35 49.7 +58.4 146.2	35 36.4 +58.4 145.0
17°	37 25.7 +58.7 149.4	37 13.6 +58.6 148.2	37 01.1 +58.4 147.1	36 48.1 +58.4 145.9	36 34.8 +58.3 144.7
18°	38 24.4 +58.6 149.1	38 12.2 +58.5 148.0	37 59.5 +58.5 146.8	37 46.5 +58.3 145.6	37 33.1 +58.2 144.4
19°	39 23.0 +58.6 148.9	39 10.7 +58.5 147.7	38 58.0 +58.4 146.5	38 44.8 +58.3 145.3	38 31.3 +58.2 144.1
20°	40 21.6 +58.6 148.6	40 09.2 +58.5 147.4	39 56.4 +58.3 146.2	39 43.1 +58.3 145.0	39 29.5 +58.1 143.8
21°	41 20.2 +58.5 148.3	41 07.7 +58.4 147.1	40 54.7 +58.3 145.9	40 41.4 +58.2 144.7	40 27.6 +58.1 143.5
22°	42 18.7 +58.5 148.0	42 06.1 +58.3 146.8	41 53.0 +58.3 145.6	41 39.6 +58.1 144.4	41 25.7 +58.0 143.2
23°	43 17.2 +58.4 147.7	43 04.4 +58.3 146.5	42 51.3 +58.2 145.2	42 37.7 +58.1 144.0	42 23.7 +58.0 142.8
24°	44 15.6 +58.3 147.4	44 02.7 +58.3 146.1	43 49.5 +58.1 144.9	43 35.8 +58.0 143.7	43 21.7 +57.9 142.5
25°	45 13.9 +58.3 147.1	45 01.0 +58.1 145.8	44 47.6 +58.0 144.6	44 33.8 +57.9 143.3	44 19.6 +57.8 142.1
26°	46 12.2 +58.3 146.7	45 59.1 +58.2 145.5	45 45.6 +58.0 144.2	45 31.7 +57.9 143.0	45 17.4 +57.7 141.7
27°	47 10.5 +58.1 146.4	46 57.3 +58.0 145.1	46 43.6 +58.0 143.8	46 29.6 +57.8 142.6	46 15.1 +57.7 141.3
28°	48 08.6 +58.1 146.0	47 55.3 +58.0 144.7	47 41.6 +57.8 143.5	47 27.4 +57.7 142.2	47 12.8 +57.6 140.9
29°	49 06.7 +58.0 145.6	48 53.3 +57.9 144.3	48 39.4 +57.7 143.1	48 25.1 +57.6 141.8	48 10.4 +57.5 140.5

Latitude 67°

Declination SAME name as 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°	19 46.7 +58.7 147.9	19 34.1 +58.6 146.9	19 21.1 +58.5 145.8	19 07.7 +58.5 144.8	18 54.0 +58.4 143.8
1°	20 45.4 +58.7 147.7	20 32.7 +58.6 146.6	20 19.6 +58.5 145.6	20 06.2 +58.4 144.6	19 52.4 +58.4 143.5
2°	21 44.1 +58.6 147.5	21 31.3 +58.5 146.4	21 18.1 +58.5 145.4	21 04.6 +58.4 144.3	20 50.8 +58.3 143.3
3°	22 42.7 +58.6 147.2	22 29.8 +58.6 146.2	22 16.6 +58.5 145.1	22 03.0 +58.4 144.1	21 49.1 +58.3 143.0
4°	23 41.3 +58.6 147.0	23 28.4 +58.5 145.9	23 15.1 +58.4 144.9	23 01.4 +58.4 143.8	22 47.4 +58.3 142.8
5°	24 39.9 +58.6 146.8	24 26.9 +58.5 145.7	24 13.5 +58.4 144.6	23 59.8 +58.3 143.6	23 45.7 +58.2 142.5
6°	25 38.5 +58.6 146.5	25 25.4 +58.5 145.4	25 11.9 +58.4 144.4	24 58.1 +58.3 143.3	24 43.9 +58.2 142.2
7°	26 37.1 +58.5 146.3	26 23.9 +58.4 145.2	26 10.3 +58.4 144.1	25 56.4 +58.3 143.0	25 42.1 +58.2 142.0
8°	27 35.6 +58.5 146.0	27 22.3 +58.5 144.9	27 08.7 +58.3 143.9	26 54.7 +58.2 142.8	26 40.3 +58.2 141.7
9°	28 34.1 +58.5 145.8	28 20.8 +58.4 144.7	28 07.0 +58.3 143.6	27 52.9 +58.3 142.5	27 38.5 +58.1 141.4
10°	29 32.6 +58.5 145.5	29 19.2 +58.3 144.4	29 05.3 +58.3 143.3	28 51.2 +58.1 142.2	28 36.6 +58.1 141.1
11°	30 31.1 +58.4 145.3	30 17.5 +58.4 144.2	30 03.6 +58.3 143.1	29 49.3 +58.2 142.0	29 34.7 +58.1 140.9
12°	31 29.5 +58.4 145.0	31 15.9 +58.3 143.9	31 01.9 +58.2 142.8	30 47.5 +58.1 141.7	30 32.8 +58.0 140.6
13°	32 27.9 +58.3 144.7	32 14.2 +58.2 143.6	32 00.1 +58.1 142.5	31 45.6 +58.1 141.4	31 30.8 +58.0 140.3
14°	33 26.2 +58.3 144.5	33 12.4 +58.2 143.3	32 58.2 +58.1 142.2	32 43.7 +58.0 141.1	32 28.8 +57.9 140.0
15°	34 24.5 +58.3 144.2	34 10.6 +58.2 143.0	33 56.3 +58.1 141.9	33 41.7 +58.0 140.8	33 26.7 +57.9 139.7
16°	35 22.8 +58.2 143.9	35 08.8 +58.1 142.7	34 54.4 +58.1 141.6	34 39.7 +57.9 140.5	34 24.6 +57.8 139.3
17°	36 21.0 +58.2 143.6	36 06.9 +58.1 142.4	35 52.5 +57.9 141.3	35 37.6 +57.9 140.2	35 22.4 +57.8 139.0
18°	37 19.2 +58.2 143.3	37 05.0 +58.1 142.1	36 50.4 +58.0 141.0	36 35.5 +57.8 139.8	36 20.2 +57.7 138.7
19°	38 17.4 +58.1 143.0	38 03.1 +57.9 141.8	37 48.4 +57.8 140.6	37 33.3 +57.8 139.5	37 17.9 +57.7 138.3
20°	39 15.5 +58.0 142.6	39 01.0 +58.0 141.5	38 46.2 +57.9 140.3	38 31.1 +57.7 139.1	38 15.6 +57.6 138.0
21°	40 13.5 +58.0 142.3	39 59.0 +57.8 141.1	39 44.1 +57.7 140.0	39 28.8 +57.6 138.8	39 13.2 +57.5 137.6
22°	41 11.5 +57.9 142.0	40 56.8 +57.8 140.8	40 41.8 +57.7 139.6	40 26.4 +57.6 138.4	40 10.7 +57.5 137.3
23°	42 09.4 +57.8 141.6	41 54.6 +57.8 140.4	41 39.5 +57.6 139.2	41 24.0 +57.5 138.1	41 08.2 +57.3 136.9
24°	43 07.2 +57.8 141.3	42 52.4 +57.6 140.1	42 37.1 +57.6 138.9	42 21.5 +57.4 137.7	42 05.5 +57.3 136.5
25°	44 05.0 +57.7 140.9	43 50.0 +57.6 139.7	43 34.7 +57.4 138.5	43 18.9 +57.4 137.3	43 02.8 +57.3 136.1
26°	45 02.7 +57.6 140.5	44 47.6 +57.5 139.3	44 32.1 +57.4 138.1	44 16.3 +57.2 136.9	44 00.1 +57.1 135.7
27°	46 00.3 +57.5 140.1	45 45.1 +57.4 138.9	45 29.5 +57.3 137.7	45 13.5 +57.1 136.4	44 57.2 +57.0 135.2
28°	46 57.8 +57.5 139.7	46 42.5 +57.3 138.5	46 26.8 +57.1 137.2	46 10.6 +57.1 136.0	45 54.2 +56.9 134.8
29°	47 55.3 +57.3 139.3	47 39.8 +57.2 138.0	47 23.9 +57.1 136.8	47 07.7 +56.9 135.6	46 51.1 +56.8 134.3

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°	18 40.0 +58.3 142.7	18 25.7 +58.2 141.7	18 11.0 +58.1 140.7	17 56.0 +58.0 139.7	17 40.6 +58.0 138.7
1°	19 38.3 +58.3 142.5	19 23.9 +58.2 141.5	19 09.1 +58.1 140.4	18 54.0 +58.0 139.4	18 38.6 +57.9 138.4
2°	20 36.6 +58.2 142.2	20 22.1 +58.1 141.2	20 07.2 +58.1 140.2	19 52.0 +58.0 139.1	19 36.5 +57.9 138.1
3°	21 34.8 +58.2 142.0	21 20.2 +58.1 140.9	21 05.3 +58.0 139.9	20 50.0 +58.0 138.9	20 34.4 +57.9 137.8
4°	22 33.0 +58.2 141.7	22 18.3 +58.2 140.7	22 03.3 +58.0 139.6	21 48.0 +57.9 138.6	21 32.3 +57.9 137.6
5°	23 31.2 +58.2 141.5	23 16.5 +58.0 140.4	23 01.3 +58.0 139.4	22 45.9 +57.9 138.3	22 30.2 +57.8 137.3
6°	24 29.4 +58.1 141.2	24 14.5 +58.1 140.1	23 59.3 +58.0 139.1	23 43.8 +57.9 138.0	23 28.0 +57.8 137.0
7°	25 27.5 +58.1 140.9	25 12.6 +58.0 139.8	24 57.3 +57.9 138.8	24 41.7 +57.8 137.7	24 25.8 +57.7 136.7
8°	26 25.6 +58.1 140.6	26 10.6 +58.0 139.6	25 55.2 +57.9 138.5	25 39.5 +57.8 137.4	25 23.5 +57.7 136.4
9°	27 23.7 +58.1 140.4	27 08.6 +57.9 139.3	26 53.1 +57.9 138.2	26 37.3 +57.8 137.1	26 21.2 +57.7 136.1
10°	28 21.8 +58.0 140.1	28 06.5 +57.9 139.0	27 51.0 +57.8 137.9	27 35.1 +57.7 136.8	27 18.9 +57.6 135.8
11°	29 19.8 +57.9 139.8	29 04.4 +57.9 138.7	28 48.8 +57.8 137.6	28 32.8 +57.7 136.5	28 16.5 +57.6 135.5
12°	30 17.7 +57.9 139.5	30 02.3 +57.8 138.4	29 46.6 +57.7 137.3	29 30.5 +57.7 136.2	29 14.1 +57.6 135.1
13°	31 15.6 +57.9 139.2	31 00.1 +57.8 138.1	30 44.3 +57.7 137.0	30 28.2 +57.6 135.9	30 11.7 +57.5 134.8
14°	32 13.5 +57.9 138.9	31 57.9 +57.8 137.8	31 42.0 +57.6 136.7	31 25.8 +57.5 135.6	31 09.2 +57.4 134.5
15°	33 11.4 +57.7 138.5	32 55.7 +57.6 137.4	32 39.6 +57.6 136.3	32 23.3 +57.5 135.2	32 06.6 +57.4 134.1
16°	34 09.1 +57.8 138.2	33 53.3 +57.7 137.1	33 37.2 +57.6 136.0	33 20.8 +57.4 134.9	33 04.0 +57.3 133.8
17°	35 06.9 +57.6 137.9	34 51.0 +57.6 136.8	34 34.8 +57.4 135.7	34 18.2 +57.4 134.5	34 01.3 +57.3 133.4
18°	36 04.5 +57.7 137.6	35 48.6 +57.5 136.4	35 32.2 +57.4 135.3	35 15.6 +57.3 134.2	34 58.6 +57.2 133.1
19°	37 02.2 +57.5 137.2	36 46.1 +57.4 136.1	36 29.6 +57.4 134.9	36 12.9 +57.2 133.8	35 55.8 +57.1 132.7
20°	37 59.7 +57.5 136.8	37 43.5 +57.4 135.7	37 27.0 +57.3 134.6	37 10.1 +57.2 133.4	36 52.9 +57.1 132.3
21°	38 57.2 +57.4 136.5	38 40.9 +57.3 135.3	38 24.3 +57.1 134.2	38 07.3 +57.1 133.1	37 50.0 +57.0 131.9
22°	39 54.6 +57.4 136.1	39 38.2 +57.2 135.0	39 21.4 +57.2 133.8	39 04.4 +57.0 132.7	38 47.0 +56.9 131.5
23°	40 52.0 +57.2 135.7	40 35.4 +57.2 134.6	40 18.6 +57.0 133.4	40 01.4 +56.9 132.3	39 43.9 +56.8 131.1
24°	41 49.2 +57.2 135.3	41 32.6 +57.0 134.2	41 15.6 +56.9 133.0	40 58.3 +56.8 131.8	40 40.7 +56.7 130.7
25°	42 46.4 +57.1 134.9	42 29.6 +57.0 133.7	42 12.5 +56.9 132.6	41 55.1 +56.7 131.4	41 37.4 +56.6 130.3
26°	43 43.5 +57.0 134.5	43 26.6 +56.9 133.3	43 09.4 +56.7 132.1	42 51.8 +56.7 131.0	42 34.0 +56.5 129.8
27°	44 40.5 +56.9 134.1	44 23.5 +56.7 132.9	44 06.1 +56.7 131.7	43 48.5 +56.5 130.5	43 30.5 +56.4 129.4
28°	45 37.4 +56.8 133.6	45 20.2 +56.7 132.4	45 02.8 +56.5 131.2	44 45.0 +56.4 130.1	44 26.9 +56.2 128.9
29°	46 34.2 +56.6 133.1	46 16.9 +56.5 131.9	45 59.3 +56.4 130.8	45 41.4 +56.2 129.6	45 23.1 +56.2 128.4

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Declination SAME name as Latitude

Latitude 67°

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°	17 25.0 +57.9 137.6	17 09.1 +57.7 136.6	16 52.8 +57.7 135.6	16 36.3 +57.6 134.6	16 19.4 +57.6 133.6
1°	18 22.9 +57.8 137.4	18 06.8 +57.8 136.4	17 50.5 +57.7 135.3	17 33.9 +57.6 134.3	17 17.0 +57.5 133.3
2°	19 20.7 +57.8 137.1	19 04.6 +57.7 136.1	18 48.2 +57.6 135.1	18 31.5 +57.6 134.0	18 14.5 +57.5 133.0
3°	20 18.5 +57.8 136.8	20 02.3 +57.7 135.8	19 45.8 +57.7 134.8	19 29.1 +57.5 133.7	19 12.0 +57.4 132.7
4°	21 16.3 +57.8 136.5	21 00.0 +57.7 135.5	20 43.5 +57.6 134.5	20 26.6 +57.5 133.4	20 09.4 +57.4 132.4
5°	22 14.1 +57.7 136.2	21 57.7 +57.7 135.2	21 41.1 +57.5 134.2	21 24.1 +57.5 133.1	21 06.8 +57.4 132.1
6°	23 11.8 +57.7 135.9	22 55.4 +57.6 134.9	22 38.6 +57.5 133.9	22 21.6 +57.4 132.8	22 04.2 +57.4 131.8
7°	24 09.5 +57.7 135.6	23 53.0 +57.6 134.6	23 36.1 +57.5 133.6	23 19.0 +57.4 132.5	23 01.6 +57.3 131.5
8°	25 07.2 +57.6 135.3	24 50.6 +57.5 134.3	24 33.6 +57.5 133.2	24 16.4 +57.4 132.2	23 58.9 +57.3 131.2
9°	26 04.8 +57.6 135.0	25 48.1 +57.5 134.0	25 31.1 +57.4 132.9	25 13.8 +57.3 131.9	24 56.2 +57.2 130.8
10°	27 02.4 +57.5 134.7	26 45.6 +57.4 133.6	26 28.5 +57.3 132.6	26 11.1 +57.2 131.5	25 53.4 +57.2 130.5
11°	27 59.9 +57.5 134.4	27 43.0 +57.5 133.3	27 25.8 +57.4 132.3	27 08.3 +57.3 131.2	26 50.6 +57.1 130.2
12°	28 57.4 +57.5 134.1	28 40.5 +57.3 133.0	28 23.2 +57.2 131.9	28 05.6 +57.1 130.9	27 47.7 +57.1 129.8
13°	29 54.9 +57.4 133.7	29 37.8 +57.3 132.7	29 20.4 +57.2 131.6	29 02.7 +57.2 130.5	28 44.8 +57.0 129.5
14°	30 52.3 +57.3 133.4	30 35.1 +57.3 132.3	30 17.6 +57.2 131.2	29 59.9 +57.0 130.2	29 41.8 +57.0 129.1
15°	31 49.6 +57.3 133.0	31 32.4 +57.2 132.0	31 14.8 +57.1 130.9	30 56.9 +57.0 129.8	30 38.8 +56.9 128.7
16°	32 46.9 +57.3 132.7	32 29.6 +57.1 131.6	32 11.9 +57.0 130.5	31 53.9 +57.0 129.4	31 35.7 +56.8 128.4
17°	33 44.2 +57.1 132.3	33 26.7 +57.1 131.2	33 08.9 +57.0 130.2	32 50.9 +56.8 129.1	32 32.5 +56.8 128.0
18°	34 41.3 +57.1 132.0	34 23.8 +56.9 130.9	34 05.9 +56.9 129.8	33 47.7 +56.8 128.7	33 29.3 +56.7 127.6
19°	35 38.4 +57.1 131.6	35 20.7 +57.0 130.5	35 02.8 +56.8 129.4	34 44.5 +56.7 128.3	34 26.0 +56.6 127.2
20°	36 35.5 +56.9 131.2	36 17.7 +56.8 130.1	35 59.6 +56.7 129.0	35 41.2 +56.7 127.9	35 22.6 +56.5 126.8
21°	37 32.4 +56.9 130.8	37 14.5 +56.8 129.7	36 56.3 +56.7 128.6	36 37.9 +56.5 127.5	36 19.1 +56.5 126.4
22°	38 29.3 +56.8 130.4	38 11.3 +56.7 129.3	37 53.0 +56.6 128.2	37 34.4 +56.5 127.1	37 15.6 +56.3 126.0
23°	39 26.1 +56.7 130.0	39 08.0 +56.5 128.9	38 49.6 +56.4 127.8	38 30.9 +56.3 126.6	38 11.9 +56.3 125.5
24°	40 22.8 +56.5 129.6	40 04.5 +56.5 128.4	39 46.0 +56.4 127.3	39 27.2 +56.3 126.2	39 08.2 +56.2 125.1
25°	41 19.3 +56.5 129.1	41 01.0 +56.4 128.0	40 42.4 +56.3 126.9	40 23.5 +56.2 125.8	40 04.4 +56.0 124.6
26°	42 15.8 +56.4 128.7	41 57.4 +56.3 127.5	41 38.7 +56.1 126.4	41 19.7 +56.0 125.3	41 00.4 +55.9 124.2
27°	43 12.2 +56.3 128.2	42 53.7 +56.1 127.1	42 34.8 +56.0 125.9	42 15.7 +55.9 124.8	41 56.3 +55.8 123.7
28°	44 08.5 +56.1 127.7	43 49.8 +56.0 126.6	43 30.8 +55.9 125.4	43 11.6 +55.8 124.3	42 52.1 +55.7 123.2
29°	45 04.6 +56.0 127.2	44 45.8 +55.9 126.1	44 26.7 +55.8 124.9	44 07.4 +55.6 123.8	43 47.8 +55.5 122.7

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°	16 02.3 +57.5 132.6	15 44.9 +57.4 131.6	15 27.3 +57.3 130.6	15 09.4 +57.2 129.7	14 51.2 +57.1 128.7
1°	16 59.8 +57.4 132.3	16 42.3 +57.4 131.3	16 24.6 +57.2 130.3	16 06.6 +57.2 129.3	15 48.3 +57.1 128.3
2°	17 57.2 +57.4 132.0	17 39.7 +57.3 131.0	17 21.8 +57.3 130.0	17 03.8 +57.1 129.0	16 45.4 +57.1 128.0
3°	18 54.6 +57.4 131.7	18 37.0 +57.3 130.7	18 19.1 +57.2 129.7	18 00.9 +57.1 128.7	17 42.5 +57.0 127.7
4°	19 52.0 +57.3 131.4	19 34.3 +57.2 130.4	19 16.3 +57.1 129.4	18 58.0 +57.1 128.4	18 39.5 +57.0 127.4
5°	20 49.3 +57.3 131.1	20 31.5 +57.2 130.1	20 13.4 +57.2 129.1	19 55.1 +57.1 128.1	19 36.5 +57.0 127.0
6°	21 46.6 +57.3 130.8	21 28.7 +57.2 129.8	21 10.6 +57.1 128.7	20 52.2 +57.0 127.7	20 33.5 +56.9 126.7
7°	22 43.9 +57.2 130.5	22 25.9 +57.1 129.4	22 07.7 +57.0 128.4	21 49.2 +56.9 127.4	21 30.4 +56.9 126.4
8°	23 41.1 +57.2 130.1	23 23.0 +57.1 129.1	23 04.7 +57.0 128.1	22 46.1 +57.0 127.1	22 27.3 +56.8 126.0
9°	24 38.3 +57.1 129.8	24 20.1 +57.1 128.8	24 01.7 +57.0 127.7	23 43.1 +56.8 126.7	23 24.1 +56.8 125.7
10°	25 35.4 +57.1 129.5	25 17.2 +57.0 128.4	24 58.7 +56.9 127.4	24 39.9 +56.9 126.4	24 20.9 +56.8 125.3
11°	26 32.5 +57.1 129.1	26 14.2 +56.9 128.1	25 55.6 +56.9 127.0	25 36.8 +56.7 126.0	25 17.7 +56.7 125.0
12°	27 29.6 +56.9 128.8	27 11.1 +56.9 127.7	26 52.5 +56.8 126.7	26 33.5 +56.8 125.6	26 14.4 +56.6 124.6
13°	28 26.5 +57.0 128.4	28 08.0 +56.9 127.4	27 49.3 +56.7 126.3	27 30.3 +56.6 125.3	27 11.0 +56.6 124.2
14°	29 23.5 +56.9 128.1	29 04.9 +56.8 127.0	28 46.0 +56.7 125.9	28 26.9 +56.6 124.9	28 07.6 +56.5 123.9
15°	30 20.4 +56.8 127.7	30 01.7 +56.7 126.6	29 42.7 +56.7 125.6	29 23.5 +56.6 124.5	29 04.1 +56.4 123.5
16°	31 17.2 +56.7 127.3	30 58.4 +56.6 126.2	30 39.4 +56.5 125.2	30 20.1 +56.4 124.1	30 00.5 +56.4 123.1
17°	32 13.9 +56.7 126.9	31 55.0 +56.6 125.9	31 35.9 +56.5 124.8	31 16.5 +56.4 123.7	30 56.9 +56.3 122.7
18°	33 10.6 +56.6 126.5	32 51.6 +56.5 125.5	32 32.4 +56.4 124.4	32 12.9 +56.3 123.3	31 53.2 +56.3 122.3
19°	34 07.2 +56.5 126.1	33 48.1 +56.4 125.1	33 28.8 +56.3 124.0	33 09.2 +56.3 122.9	32 49.5 +56.1 121.9
20°	35 03.7 +56.4 125.7	34 44.5 +56.4 124.7	34 25.1 +56.3 123.6	34 05.5 +56.1 122.5	33 45.6 +56.1 121.5
21°	36 00.1 +56.4 125.3	35 40.9 +56.2 124.2	35 21.4 +56.1 123.2	35 01.6 +56.1 122.1	34 41.7 +55.9 121.0
22°	36 56.5 +56.2 124.9	36 37.1 +56.2 123.8	36 17.5 +56.1 122.7	35 57.7 +55.9 121.6	35 37.6 +55.9 120.6
23°	37 52.7 +56.2 124.4	37 33.3 +56.0 123.4	37 13.6 +55.9 122.3	36 53.6 +55.9 121.2	36 33.5 +55.7 120.1
24°	38 48.9 +56.0 124.0	38 29.3 +56.0 122.9	38 09.5 +55.9 121.8	37 49.5 +55.7 120.7	37 29.2 +55.7 119.7
25°	39 44.9 +56.0 123.5	39 25.3 +55.8 122.4	39 05.4 +55.7 121.4	38 45.2 +55.7 120.3	38 24.9 +55.5 119.2
26°	40 40.9 +55.8 123.1	40 21.1 +55.7 122.0	40 01.1 +55.6 120.9	39 40.9 +55.5 119.8	39 20.4 +55.4 118.7
27°	41 36.7 +55.7 122.6	41 16.8 +55.6 121.5	40 56.7 +55.5 120.4	40 36.4 +55.3 119.3	40 15.8 +55.3 118.2
28°	42 32.4 +55.5 122.1	42 12.4 +55.4 121.0	41 52.2 +55.3 119.9	41 31.7 +55.3 118.8	41 11.1 +55.1 117.7
29°	43 27.9 +55.4 121.6	43 07.8 +55.3 120.4	42 47.5 +55.2 119.3	42 27.0 +55.0 118.3	42 06.2 +55.0 117.2

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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°	14 32.8 +57.0 127.7	14 14.1 +57.0 126.7	13 55.2 +56.9 125.7	13 36.0 +56.8 124.7	13 16.6 +56.8 123.8
1°	15 29.8 +57.0 127.4	15 11.1 +56.9 126.4	14 52.1 +56.8 125.4	14 32.8 +56.8 124.4	14 13.4 +56.7 123.4
2°	16 26.8 +57.0 127.0	16 08.0 +56.9 126.0	15 48.9 +56.8 125.1	15 29.6 +56.8 124.1	15 10.1 +56.7 123.1
3°	17 23.8 +57.0 126.7	17 04.9 +56.9 125.7	16 45.7 +56.8 124.7	16 26.4 +56.7 123.7	16 06.8 +56.6 122.8
4°	18 20.8 +56.9 126.4	18 01.8 +56.8 125.4	17 42.5 +56.8 124.4	17 23.1 +56.7 123.4	17 03.4 +56.6 122.4
5°	19 17.7 +56.9 126.0	18 58.6 +56.8 125.0	18 39.3 +56.7 124.1	18 19.8 +56.6 123.1	18 00.0 +56.6 122.1
6°	20 14.6 +56.8 125.7	19 55.4 +56.8 124.7	19 36.0 +56.7 123.7	19 16.4 +56.6 122.7	18 56.6 +56.5 121.7
7°	21 11.4 +56.8 125.4	20 52.2 +56.7 124.4	20 32.7 +56.7 123.4	20 13.0 +56.6 122.4	19 53.1 +56.5 121.4
8°	22 08.2 +56.8 125.0	21 48.9 +56.7 124.0	21 29.4 +56.6 123.0	21 09.6 +56.5 122.0	20 49.6 +56.4 121.0
9°	23 05.0 +56.7 124.7	22 45.6 +56.6 123.7	22 26.0 +56.5 122.6	22 06.1 +56.5 121.6	21 46.0 +56.4 120.6
10°	24 01.7 +56.7 124.3	23 42.2 +56.6 123.3	23 22.5 +56.5 122.3	23 02.6 +56.4 121.3	22 42.4 +56.4 120.3
11°	24 58.4 +56.6 124.0	24 38.8 +56.5 122.9	24 19.0 +56.4 121.9	23 59.0 +56.4 120.9	23 38.8 +56.3 119.9
12°	25 55.0 +56.5 123.6	25 35.3 +56.5 122.6	25 15.4 +56.4 121.5	24 55.4 +56.3 120.5	24 35.1 +56.2 119.5
13°	26 51.5 +56.5 123.2	26 31.8 +56.4 122.2	26 11.8 +56.4 121.2	25 51.7 +56.2 120.1	25 31.3 +56.2 119.1
14°	27 48.0 +56.4 122.8	27 28.2 +56.3 121.8	27 08.2 +56.2 120.8	26 47.9 +56.2 119.8	26 27.5 +56.1 118.7
15°	28 44.4 +56.4 122.4	28 24.5 +56.3 121.4	28 04.4 +56.2 120.4	27 44.1 +56.1 119.4	27 23.6 +56.0 118.3
16°	29 40.8 +56.3 122.1	29 20.8 +56.2 121.0	29 00.6 +56.1 120.0	28 40.2 +56.0 119.0	28 19.6 +55.9 117.9
17°	30 37.1 +56.2 121.7	30 17.0 +56.1 120.6	29 56.7 +56.1 119.6	29 36.2 +56.0 118.5	29 15.5 +55.9 117.5
18°	31 33.3 +56.1 121.2	31 13.1 +56.1 120.2	30 52.8 +55.9 119.2	30 32.2 +55.9 118.1	30 11.4 +55.8 117.1
19°	32 29.4 +56.1 120.8	32 09.2 +56.0 119.8	31 48.7 +55.9 118.7	31 28.1 +55.8 117.7	31 07.2 +55.7 116.7
20°	33 25.5 +56.0 120.4	33 05.2 +55.8 119.4	32 44.6 +55.8 118.3	32 23.9 +55.7 117.3	32 02.9 +55.7 116.2
21°	34 21.5 +55.8 120.0	34 01.0 +55.8 118.9	33 40.4 +55.7 117.9	33 19.6 +55.6 116.8	32 58.6 +55.5 115.8
22°	35 17.3 +55.8 119.5	34 56.8 +55.7 118.5	34 36.1 +55.6 117.4	34 15.2 +55.5 116.4	33 54.1 +55.4 115.3
23°	36 13.1 +55.7 119.1	35 52.5 +55.6 118.0	35 31.7 +55.5 117.0	35 10.7 +55.4 115.9	34 49.5 +55.3 114.9
24°	37 08.8 +55.5 118.6	36 48.1 +55.4 117.5	36 27.2 +55.4 116.5	36 06.1 +55.3 115.4	35 44.8 +55.2 114.4
25°	38 04.3 +55.4 118.1	37 43.5 +55.4 117.1	37 22.6 +55.2 116.0	37 01.4 +55.2 115.0	36 40.0 +55.1 113.9
26°	38 59.7 +55.3 117.6	38 38.9 +55.2 116.6	38 17.8 +55.1 115.5	37 56.6 +55.0 114.5	37 35.1 +55.0 113.4
27°	39 55.0 +55.2 117.1	39 34.1 +55.1 116.1	39 12.9 +55.0 115.0	38 51.6 +54.9 114.0	38 30.1 +54.8 112.9
28°	40 50.2 +55.1 116.6	40 29.2 +54.9 115.6	40 07.9 +54.9 114.5	39 46.5 +54.8 113.4	39 24.9 +54.7 112.4
29°	41 45.3 +54.8 116.1	41 24.1 +54.8 115.0	41 02.8 +54.7 114.0	40 41.3 +54.6 112.9	40 19.6 +54.5 111.9

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°	12 57.0 +56.7 122.8	12 37.2 +56.6 121.8	12 17.2 +56.5 120.9	11 57.0 +56.4 119.9	11 36.6 +56.3 118.9
1°	13 53.7 +56.6 122.5	13 33.8 +56.6 121.5	13 13.7 +56.5 120.5	12 53.4 +56.4 119.6	12 32.9 +56.4 118.6
2°	14 50.3 +56.6 122.1	14 30.4 +56.5 121.2	14 10.2 +56.5 120.2	13 49.8 +56.4 119.2	13 29.3 +56.3 118.2
3°	15 46.9 +56.6 121.8	15 26.9 +56.5 120.8	15 06.7 +56.4 119.8	14 46.2 +56.4 118.9	14 25.6 +56.3 117.9
4°	16 43.5 +56.5 121.4	16 23.4 +56.5 120.5	16 03.1 +56.4 119.5	15 42.6 +56.3 118.5	15 21.9 +56.2 117.5
5°	17 40.0 +56.5 121.1	17 19.9 +56.4 120.1	16 59.5 +56.3 119.1	16 38.9 +56.3 118.1	16 18.1 +56.2 117.2
6°	18 36.5 +56.5 120.7	18 16.3 +56.4 119.7	17 55.8 +56.3 118.8	17 35.2 +56.2 117.8	17 14.3 +56.2 116.8
7°	19 33.0 +56.4 120.4	19 12.7 +56.3 119.4	18 52.1 +56.3 118.4	18 31.4 +56.2 117.4	18 10.5 +56.1 116.4
8°	20 29.4 +56.4 120.0	20 09.0 +56.3 119.0	19 48.4 +56.2 118.0	19 27.6 +56.2 117.0	19 06.6 +56.1 116.1
9°	21 25.8 +56.3 119.6	21 05.3 +56.2 118.6	20 44.6 +56.2 117.7	20 23.8 +56.1 116.7	20 02.7 +56.0 115.7
10°	22 22.1 +56.2 119.3	22 01.5 +56.2 118.3	21 40.8 +56.1 117.3	21 19.9 +56.0 116.3	20 58.7 +56.0 115.3
11°	23 18.3 +56.3 118.9	22 57.7 +56.2 117.9	22 36.9 +56.1 116.9	22 15.9 +56.0 115.9	21 54.7 +56.0 114.9
12°	24 14.6 +56.1 118.5	23 53.9 +56.0 117.5	23 33.0 +56.0 116.5	23 11.9 +55.9 115.5	22 50.7 +55.8 114.5
13°	25 10.7 +56.1 118.1	24 49.9 +56.1 117.1	24 29.0 +55.9 116.1	24 07.8 +55.9 115.1	23 46.5 +55.8 114.1
14°	26 06.8 +56.0 117.7	25 46.0 +55.9 116.7	25 24.9 +55.9 115.7	25 03.7 +55.8 114.7	24 42.3 +55.8 113.7
15°	27 02.8 +56.0 117.3	26 41.9 +55.9 116.3	26 20.8 +55.8 115.3	25 59.5 +55.8 114.3	25 38.1 +55.6 113.3
16°	27 58.8 +55.9 116.9	27 37.8 +55.8 115.9	27 16.6 +55.7 114.9	26 55.3 +55.6 113.9	26 33.7 +55.6 112.9
17°	28 54.7 +55.8 116.5	28 33.6 +55.7 115.5	28 12.3 +55.7 114.5	27 50.9 +55.6 113.5	27 29.3 +55.6 112.5
18°	29 50.5 +55.7 116.1	29 29.3 +55.7 115.1	29 08.0 +55.6 114.1	28 46.5 +55.5 113.0	28 24.9 +55.4 112.0
19°	30 46.2 +55.6 115.7	30 25.0 +55.5 114.6	30 03.6 +55.5 113.6	29 42.0 +55.4 112.6	29 20.3 +55.3 111.6
20°	31 41.8 +55.6 115.2	31 20.5 +55.5 114.2	30 59.1 +55.4 113.2	30 37.4 +55.4 112.2	30 15.6 +55.3 111.2
21°	32 37.4 +55.4 114.8	32 16.0 +55.4 113.7	31 54.5 +55.3 112.7	31 32.8 +55.2 111.7	31 10.9 +55.2 110.7
22°	33 32.8 +55.4 114.3	33 11.4 +55.2 113.3	32 49.8 +55.2 112.3	32 28.0 +55.1 111.3	32 06.1 +55.0 110.3
23°	34 28.2 +55.2 113.8	34 06.6 +55.2 112.8	33 45.0 +55.0 111.8	33 23.1 +55.0 110.8	33 01.1 +55.0 109.8
24°	35 23.4 +55.1 113.4	35 01.8 +55.1 112.3	34 40.0 +55.0 111.3	34 18.1 +54.9 110.3	33 56.1 +54.8 109.3
25°	36 18.5 +55.0 112.9	35 56.9 +54.9 111.9	35 35.0 +54.9 110.8	35 13.0 +54.8 109.8	34 50.9 +54.7 108.8
26°	37 13.5 +54.9 112.4	36 51.8 +54.8 111.4	36 29.9 +54.7 110.3	36 07.8 +54.7 109.3	35 45.6 +54.6 108.3
27°	38 08.4 +54.7 111.9	37 46.6 +54.6 110.8	37 24.6 +54.6 109.8	37 02.5 +54.5 108.8	36 40.2 +54.5 107.8
28°	39 03.1 +54.6 111.4	38 41.2 +54.6 110.3	38 19.2 +54.4 109.3	37 57.0 +54.4 108.3	37 34.7 +54.3 107.3
29°	39 57.7 +54.5 110.8	39 35.8 +54.3 109.8	39 13.6 +54.3 108.8	38 51.4 +54.2 107.7	38 29.0 +54.1 106.7

Declination SAME name as Latitude

Latitude 67°

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°	11 16.0 +56.3 118.0	10 55.2 +56.2 117.0	10 34.2 +56.2 116.1	10 13.1 +56.1 115.1	9 51.8 +56.0 114.2
1°	12 12.3 +56.2 117.6	11 51.4 +56.2 116.7	11 30.4 +56.1 115.7	11 09.2 +56.1 114.8	10 47.8 +56.0 113.8
2°	13 08.5 +56.3 117.3	12 47.6 +56.2 116.3	12 26.5 +56.1 115.4	12 05.3 +56.0 114.4	11 43.8 +56.0 113.5
3°	14 04.8 +56.2 116.9	13 43.8 +56.1 116.0	13 22.6 +56.1 115.0	13 01.3 +56.0 114.0	12 39.8 +56.0 113.1
4°	15 01.0 +56.2 116.6	14 39.9 +56.2 115.6	14 18.7 +56.1 114.6	13 57.3 +56.0 113.7	13 35.8 +55.9 112.7
5°	15 57.2 +56.1 116.2	15 36.1 +56.0 115.2	15 14.8 +56.0 114.3	14 53.3 +56.0 113.3	14 31.7 +55.9 112.3
6°	16 53.3 +56.1 115.8	16 32.1 +56.1 114.9	16 10.8 +56.0 113.9	15 49.3 +55.9 112.9	15 27.6 +55.9 112.0
7°	17 49.4 +56.1 115.5	17 28.2 +56.0 114.5	17 06.8 +55.9 113.5	16 45.2 +55.9 112.5	16 23.5 +55.8 111.6
8°	18 45.5 +56.0 115.1	18 24.2 +55.9 114.1	18 02.7 +55.9 113.1	17 41.1 +55.8 112.2	17 19.3 +55.7 111.2
9°	19 41.5 +56.0 114.7	19 20.1 +55.9 113.7	18 58.6 +55.8 112.8	18 36.9 +55.8 111.8	18 15.0 +55.8 110.8
10°	20 37.5 +55.9 114.3	20 16.0 +55.9 113.3	19 54.4 +55.8 112.4	19 32.7 +55.7 111.4	19 10.8 +55.6 110.4
11°	21 33.4 +55.8 113.9	21 11.9 +55.8 112.9	20 50.2 +55.7 112.0	20 28.4 +55.7 111.0	20 06.4 +55.7 110.0
12°	22 29.2 +55.8 113.5	22 07.7 +55.7 112.6	21 45.9 +55.7 111.6	21 24.1 +55.6 110.6	21 02.1 +55.5 109.6
13°	23 25.0 +55.8 113.1	23 03.4 +55.7 112.2	22 41.6 +55.6 111.2	22 19.7 +55.5 110.2	21 57.6 +55.5 109.2
14°	24 20.8 +55.7 112.7	23 59.1 +55.6 111.7	23 37.2 +55.6 110.8	23 15.2 +55.5 109.8	22 53.1 +55.5 108.8
15°	25 16.5 +55.6 112.3	24 54.7 +55.5 111.3	24 32.8 +55.5 110.3	24 10.7 +55.5 109.4	23 48.6 +55.3 108.4
16°	26 12.1 +55.5 111.9	25 50.2 +55.5 110.9	25 28.3 +55.4 109.9	25 06.2 +55.3 108.9	24 43.9 +55.3 108.0
17°	27 07.6 +55.5 111.5	26 45.7 +55.4 110.5	26 23.7 +55.3 109.5	26 01.5 +55.3 108.5	25 39.2 +55.2 107.5
18°	28 03.1 +55.3 111.0	27 41.1 +55.3 110.1	27 19.0 +55.3 109.1	26 56.8 +55.2 108.1	26 34.4 +55.2 107.1
19°	28 58.4 +55.3 110.6	28 36.4 +55.2 109.6	28 14.3 +55.1 108.6	27 52.0 +55.1 107.6	27 29.6 +55.0 106.7
20°	29 53.7 +55.2 110.2	29 31.6 +55.2 109.2	29 09.4 +55.1 108.2	28 47.1 +55.0 107.2	28 24.6 +55.0 106.2
21°	30 48.9 +55.1 109.7	30 26.8 +55.0 108.7	30 04.5 +55.0 107.7	29 42.1 +54.9 106.7	29 19.6 +54.9 105.8
22°	31 44.0 +55.0 109.2	31 21.8 +54.9 108.2	30 59.5 +54.8 107.3	30 37.0 +54.8 106.3	30 14.5 +54.7 105.3
23°	32 39.0 +54.9 108.8	32 16.7 +54.9 107.8	31 54.3 +54.8 106.8	31 31.8 +54.8 105.8	31 09.2 +54.7 104.8
24°	33 33.9 +54.8 108.3	33 11.6 +54.7 107.3	32 49.1 +54.7 106.3	32 26.6 +54.6 105.3	32 03.9 +54.5 104.3
25°	34 28.7 +54.6 107.8	34 06.3 +54.6 106.8	33 43.8 +54.5 105.8	33 21.2 +54.4 104.8	32 58.4 +54.5 103.8
26°	35 23.3 +54.5 107.3	35 00.9 +54.4 106.3	34 38.3 +54.4 105.3	34 15.6 +54.4 104.3	33 52.9 +54.3 103.3
27°	36 17.8 +54.4 106.8	35 55.3 +54.3 105.8	35 32.7 +54.3 104.8	35 10.0 +54.2 103.8	34 47.2 +54.1 102.8
28°	37 12.2 +54.3 106.3	36 49.6 +54.2 105.3	36 27.0 +54.1 104.3	36 04.2 +54.1 103.3	35 41.3 +54.1 102.3
29°	38 06.5 +54.0 105.7	37 43.8 +54.1 104.7	37 21.1 +54.0 103.7	36 58.3 +53.9 102.7	36 35.4 +53.9 101.7

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°	9 30.3 +56.0 113.2	9 08.7 +55.9 112.3	8 46.9 +55.9 111.3	8 25.0 +55.8 110.4	8 03.0 +55.7 109.5
1°	10 26.3 +55.9 112.9	10 04.6 +55.9 111.9	9 42.8 +55.8 111.0	9 20.8 +55.8 110.0	8 58.7 +55.8 109.1
2°	11 22.2 +56.0 112.5	11 00.5 +55.9 111.5	10 38.6 +55.9 110.6	10 16.6 +55.8 109.7	9 54.5 +55.7 108.7
3°	12 18.2 +55.9 112.1	11 56.4 +55.8 111.2	11 34.5 +55.7 110.2	11 12.4 +55.7 109.3	10 50.2 +55.7 108.3
4°	13 14.1 +55.8 111.8	12 52.2 +55.8 110.8	12 30.2 +55.8 109.9	12 08.1 +55.7 108.9	11 45.9 +55.7 108.0
5°	14 09.9 +55.9 111.4	13 48.0 +55.8 110.4	13 26.0 +55.7 109.5	13 03.8 +55.7 108.5	12 41.6 +55.6 107.6
6°	15 05.8 +55.8 111.0	14 43.8 +55.8 110.0	14 21.7 +55.7 109.1	13 59.5 +55.7 108.1	13 37.2 +55.6 107.2
7°	16 01.6 +55.7 110.6	15 39.6 +55.7 109.7	15 17.4 +55.7 108.7	14 55.2 +55.6 107.8	14 32.8 +55.5 106.8
8°	16 57.3 +55.8 110.2	16 35.3 +55.6 109.3	16 13.1 +55.6 108.3	15 50.8 +55.5 107.4	15 28.3 +55.6 106.4
9°	17 53.1 +55.6 109.8	17 30.9 +55.7 108.9	17 08.7 +55.6 107.9	16 46.3 +55.5 107.0	16 23.9 +55.4 106.0
10°	18 48.7 +55.6 109.5	18 26.6 +55.5 108.5	18 04.3 +55.5 107.5	17 41.8 +55.5 106.6	17 19.3 +55.4 105.6
11°	19 44.3 +55.6 109.1	19 22.1 +55.5 108.1	18 59.8 +55.4 107.1	18 37.3 +55.4 106.2	18 14.7 +55.4 105.2
12°	20 39.9 +55.5 108.7	20 17.6 +55.5 107.7	19 55.2 +55.4 106.7	19 32.7 +55.4 105.8	19 10.1 +55.3 104.8
13°	21 35.4 +55.5 108.2	21 13.1 +55.4 107.3	20 50.6 +55.4 106.3	20 28.1 +55.3 105.4	20 05.4 +55.3 104.4
14°	22 30.9 +55.3 107.8	22 08.5 +55.3 106.9	21 46.0 +55.3 105.9	21 23.4 +55.2 104.9	21 00.7 +55.2 104.0
15°	23 26.2 +55.4 107.4	23 03.8 +55.3 106.4	22 41.3 +55.2 105.5	22 18.6 +55.2 104.5	21 55.9 +55.1 103.6
16°	24 21.6 +55.2 107.0	23 59.1 +55.2 106.0	23 36.5 +55.1 105.1	23 13.8 +55.1 104.1	22 51.0 +55.1 103.1
17°	25 16.8 +55.2 106.6	24 54.3 +55.1 105.6	24 31.6 +55.1 104.6	24 08.9 +55.0 103.7	23 46.1 +55.0 102.7
18°	26 12.0 +55.1 106.1	25 49.4 +55.0 105.2	25 26.7 +55.0 104.2	25 03.9 +55.0 103.2	24 41.1 +54.9 102.3
19°	27 07.1 +55.0 105.7	26 44.4 +55.0 104.7	26 21.7 +54.9 103.7	25 58.9 +54.9 102.8	25 36.0 +54.8 101.8
20°	28 02.1 +54.9 105.2	27 39.4 +54.9 104.3	27 16.6 +54.9 103.3	26 53.8 +54.7 102.3	26 30.8 +54.8 101.4
21°	28 57.0 +54.8 104.8	28 34.3 +54.7 103.8	28 11.5 +54.7 102.8	27 48.5 +54.7 101.9	27 25.6 +54.6 100.9
22°	29 51.8 +54.7 104.3	29 29.0 +54.7 103.3	29 06.2 +54.6 102.4	28 43.2 +54.6 101.4	28 20.2 +54.6 100.4
23°	30 46.5 +54.6 103.8	30 23.7 +54.6 102.9	30 00.8 +54.5 101.9	29 37.8 +54.5 100.9	29 14.8 +54.4 100.0
24°	31 41.1 +54.5 103.3	31 18.3 +54.4 102.4	30 55.3 +54.5 101.4	30 32.3 +54.4 100.4	30 09.2 +54.4 99.5
25°	32 35.6 +54.4 102.9	32 12.7 +54.4 101.9	31 49.8 +54.3 100.9	31 26.7 +54.3 99.9	31 03.6 +54.2 99.0
26°	33 30.0 +54.3 102.4	33 07.1 +54.2 101.4	32 44.1 +54.1 100.4	32 21.0 +54.1 99.4	31 57.8 +54.1 98.5
27°	34 24.3 +54.1 101.8	34 01.3 +54.1 100.9	33 38.2 +54.1 99.9	33 15.1 +54.0 98.9	32 51.9 +54.0 98.0
28°	35 18.4 +54.0 101.3	34 55.4 +53.9 100.3	34 32.3 +53.9 99.4	34 09.1 +53.9 98.4	33 45.9 +53.8 97.5
29°	36 12.4 +53.8 100.8	35 49.3 +53.8 99.8	35 26.2 +53.7 98.8	35 03.0 +53.7 97.9	34 39.7 +53.7 96.9

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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°	7 40.8 +55.7 108.5	7 18.5 +55.7 107.6	6 56.1 +55.6 106.7	6 33.6 +55.6 105.7	6 11.0 +55.5 104.8
1°	8 36.5 +55.7 108.1	8 14.2 +55.6 107.2	7 51.7 +55.6 106.3	7 29.2 +55.5 105.3	7 06.5 +55.5 104.4
2°	9 32.2 +55.7 107.8	9 09.8 +55.7 106.8	8 47.3 +55.6 105.9	8 24.7 +55.6 105.0	8 02.0 +55.5 104.0
3°	10 27.9 +55.6 107.4	10 05.5 +55.6 106.5	9 42.9 +55.6 105.5	9 20.3 +55.5 104.6	8 57.5 +55.5 103.6
4°	11 23.5 +55.6 107.0	11 01.1 +55.5 106.1	10 38.5 +55.5 105.1	10 15.8 +55.5 104.2	9 53.0 +55.5 103.3
5°	12 19.1 +55.6 106.6	11 56.6 +55.6 105.7	11 34.0 +55.5 104.7	11 11.3 +55.4 103.8	10 48.5 +55.4 102.9
6°	13 14.7 +55.6 106.2	12 52.2 +55.5 105.3	12 29.5 +55.5 104.4	12 06.7 +55.5 103.4	11 43.9 +55.4 102.5
7°	14 10.3 +55.5 105.9	13 47.7 +55.4 104.9	13 25.0 +55.4 104.0	13 02.2 +55.4 103.0	12 39.3 +55.4 102.1
8°	15 05.8 +55.5 105.5	14 43.1 +55.5 104.5	14 20.4 +55.4 103.6	13 57.6 +55.3 102.6	13 34.7 +55.3 101.7
9°	16 01.3 +55.4 105.1	15 38.6 +55.4 104.1	15 15.8 +55.3 103.2	14 52.9 +55.3 102.2	14 30.0 +55.3 101.3
10°	16 56.7 +55.4 104.7	16 34.0 +55.3 103.7	16 11.1 +55.3 102.8	15 48.2 +55.3 101.8	15 25.3 +55.2 100.9
11°	17 52.1 +55.3 104.3	17 29.3 +55.3 103.3	17 06.4 +55.3 102.4	16 43.5 +55.2 101.4	16 20.5 +55.2 100.5
12°	18 47.4 +55.3 103.9	18 24.6 +55.2 102.9	18 01.7 +55.2 102.0	17 38.7 +55.2 101.0	17 15.7 +55.1 100.1
13°	19 42.7 +55.2 103.4	19 19.8 +55.2 102.5	18 56.9 +55.2 101.5	18 33.9 +55.1 100.6	18 10.8 +55.1 99.7
14°	20 37.9 +55.2 103.0	20 15.0 +55.1 102.1	19 52.1 +55.0 101.1	19 29.0 +55.1 100.2	19 05.9 +55.0 99.2
15°	21 33.1 +55.1 102.6	21 10.1 +55.1 101.7	20 47.1 +55.1 100.7	20 24.1 +55.0 99.8	20 00.9 +55.0 98.8
16°	22 28.2 +55.0 102.2	22 05.2 +55.0 101.2	21 42.2 +54.9 100.3	21 19.1 +54.9 99.3	20 55.9 +54.9 98.4
17°	23 23.2 +54.9 101.7	23 00.2 +54.9 100.8	22 37.1 +54.9 99.8	22 14.0 +54.8 98.9	21 50.8 +54.8 98.0
18°	24 18.1 +54.9 101.3	23 55.1 +54.8 100.4	23 32.0 +54.8 99.4	23 08.8 +54.8 98.5	22 45.6 +54.8 97.5
19°	25 13.0 +54.8 100.9	24 49.9 +54.8 99.9	24 26.8 +54.8 99.0	24 03.6 +54.7 98.0	23 40.4 +54.7 97.1
20°	26 07.8 +54.7 100.4	25 44.7 +54.7 99.5	25 21.6 +54.6 98.5	24 58.3 +54.7 97.6	24 35.1 +54.6 96.6
21°	27 02.5 +54.6 99.9	26 39.4 +54.6 99.0	26 16.2 +54.6 98.0	25 53.0 +54.5 97.1	25 29.7 +54.5 96.2
22°	27 57.1 +54.6 99.5	27 34.0 +54.5 98.5	27 10.8 +54.4 97.6	26 47.5 +54.4 96.6	26 24.2 +54.4 95.7
23°	28 51.7 +54.4 99.0	28 28.5 +54.4 98.1	28 05.2 +54.4 97.1	27 41.9 +54.4 96.2	27 18.6 +54.3 95.2
24°	29 46.1 +54.3 98.5	29 22.9 +54.2 97.6	28 59.6 +54.3 96.6	28 36.3 +54.2 95.7	28 12.9 +54.3 94.7
25°	30 40.4 +54.2 98.0	30 17.1 +54.2 97.1	29 53.9 +54.1 96.1	29 30.5 +54.2 95.2	29 07.2 +54.1 94.3
26°	31 34.6 +54.1 97.5	31 11.3 +54.1 96.6	30 48.0 +54.0 95.6	30 24.7 +54.0 94.7	30 01.3 +54.0 93.8
27°	32 28.7 +53.9 97.0	32 05.4 +53.9 96.1	31 42.0 +54.0 95.1	31 18.7 +53.9 94.2	30 55.3 +53.9 93.3
28°	33 22.6 +53.8 96.5	32 59.3 +53.8 95.6	32 36.0 +53.7 94.6	32 12.6 +53.7 93.7	31 49.2 +53.7 92.7
29°	34 16.4 +53.7 96.0	33 53.1 +53.7 95.0	33 29.7 +53.7 94.1	33 06.3 +53.7 93.1	32 42.9 +53.6 92.2

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°	5 48.3 +55.5 103.9	5 25.4 +55.5 102.9	5 02.6 +55.4 102.0	4 39.6 +55.4 101.1	4 16.5 +55.4 100.1
1°	6 43.8 +55.4 103.5	6 20.9 +55.5 102.5	5 58.0 +55.4 101.6	5 35.0 +55.4 100.7	5 11.9 +55.4 99.8
2°	7 39.2 +55.5 103.1	7 16.4 +55.4 102.2	6 53.4 +55.4 101.2	6 30.4 +55.4 100.3	6 07.3 +55.3 99.4
3°	8 34.7 +55.5 102.7	8 11.8 +55.4 101.8	7 48.8 +55.4 100.8	7 25.8 +55.3 99.9	7 02.6 +55.4 99.0
4°	9 30.2 +55.4 102.3	9 07.2 +55.4 101.4	8 44.2 +55.4 100.5	8 21.1 +55.3 99.5	7 58.0 +55.3 98.6
5°	10 25.6 +55.4 101.9	10 02.6 +55.4 101.0	9 39.6 +55.3 100.1	9 16.4 +55.3 99.1	8 53.3 +55.2 98.2
6°	11 21.0 +55.3 101.5	10 58.0 +55.3 100.6	10 34.9 +55.3 99.7	10 11.7 +55.3 98.7	9 48.5 +55.3 97.8
7°	12 16.3 +55.4 101.1	11 53.3 +55.3 100.2	11 30.2 +55.3 99.3	11 07.0 +55.3 98.3	10 43.8 +55.2 97.4
8°	13 11.7 +55.2 100.7	12 48.6 +55.3 99.8	12 25.5 +55.2 98.9	12 02.3 +55.2 97.9	11 39.0 +55.2 97.0
9°	14 06.9 +55.3 100.3	13 43.9 +55.2 99.4	13 20.7 +55.2 98.5	12 57.5 +55.2 97.5	12 34.2 +55.2 96.6
10°	15 02.2 +55.2 99.9	14 39.1 +55.2 99.0	14 15.9 +55.1 98.1	13 52.7 +55.1 97.1	13 29.4 +55.1 96.2
11°	15 57.4 +55.2 99.5	15 34.3 +55.1 98.6	15 11.0 +55.2 97.7	14 47.8 +55.1 96.7	14 24.5 +55.1 95.8
12°	16 52.6 +55.1 99.1	16 29.4 +55.1 98.2	16 06.2 +55.0 97.3	15 42.9 +55.0 96.3	15 19.6 +55.0 95.4
13°	17 47.7 +55.0 98.7	17 24.5 +55.0 97.8	17 01.2 +55.0 96.8	16 37.9 +55.0 95.9	16 14.6 +55.0 95.0
14°	18 42.7 +55.0 98.3	18 19.5 +55.0 97.4	17 56.2 +55.0 96.4	17 32.9 +55.0 95.5	17 09.6 +54.9 94.6
15°	19 37.7 +55.0 97.9	19 14.5 +54.9 96.9	18 51.2 +54.9 96.0	18 27.9 +54.8 95.1	18 04.5 +54.9 94.1
16°	20 32.7 +54.9 97.4	20 09.4 +54.9 96.5	19 46.1 +54.8 95.6	19 22.7 +54.9 94.6	18 59.4 +54.8 93.7
17°	21 27.6 +54.8 97.0	21 04.3 +54.8 96.1	20 40.9 +54.8 95.1	20 17.6 +54.7 94.2	19 54.2 +54.7 93.3
18°	22 22.4 +54.7 96.6	21 59.1 +54.7 95.6	21 35.7 +54.7 94.7	21 12.3 +54.7 93.8	20 48.9 +54.7 92.8
19°	23 17.1 +54.7 96.1	22 53.8 +54.6 95.2	22 30.4 +54.6 94.3	22 07.0 +54.6 93.3	21 43.6 +54.6 92.4
20°	24 11.8 +54.5 95.7	23 48.4 +54.6 94.7	23 25.0 +54.6 93.8	23 01.6 +54.6 92.9	22 38.2 +54.6 92.0
21°	25 06.3 +54.5 95.2	24 43.0 +54.5 94.3	24 19.6 +54.5 93.4	23 56.2 +54.4 92.4	23 32.8 +54.4 91.5
22°	26 00.8 +54.5 94.8	25 37.5 +54.4 93.8	25 14.1 +54.3 92.9	24 50.6 +54.4 92.0	24 27.2 +54.4 91.0
23°	26 55.3 +54.3 94.3	26 31.9 +54.3 93.4	26 08.4 +54.3 92.4	25 45.0 +54.3 91.5	25 21.6 +54.3 90.6
24°	27 49.6 +54.2 93.8	27 26.2 +54.2 92.9	27 02.7 +54.2 91.9	26 39.3 +54.2 91.0	26 15.9 +54.1 90.1
25°	28 43.8 +54.1 93.3	28 20.4 +54.1 92.4	27 56.9 +54.1 91.5	27 33.5 +54.1 90.5	27 10.0 +54.1 89.6
26°	29 37.9 +54.0 92.8	29 14.5 +53.9 91.9	28 51.0 +54.0 91.0	28 27.6 +54.0 90.0	28 04.1 +54.0 89.1
27°	30 31.9 +53.8 92.3	30 08.4 +53.9 91.4	29 45.0 +53.9 90.5	29 21.6 +53.8 89.5	28 58.1 +53.9 88.6
28°	31 25.7 +53.8 91.8	31 02.3 +53.7 90.9	30 38.9 +53.7 90.0	30 15.4 +53.8 89.0	29 52.0 +53.7 88.1
29°	32 19.5 +53.6 91.3	31 56.0 +53.7 90.4	31 32.6 +53.6 89.4	31 09.2 +53.6 88.5	30 45.7 +53.7 87.6

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°	3 53.4 +55.4 99.2	3 30.3 +55.3 98.3	3 07.0 +55.3 97.4	2 43.8 +55.2 96.4	2 20.4 +55.3 95.5
1°	4 48.8 +55.3 98.8	4 25.6 +55.3 97.9	4 02.3 +55.3 97.0	3 39.0 +55.3 96.1	3 15.7 +55.3 95.1
2°	5 44.1 +55.3 98.4	5 20.9 +55.3 97.5	4 57.6 +55.3 96.6	4 34.3 +55.3 95.7	4 11.0 +55.2 94.7
3°	6 39.4 +55.3 98.1	6 16.2 +55.3 97.1	5 52.9 +55.3 96.2	5 29.6 +55.2 95.3	5 06.2 +55.3 94.4
4°	7 34.7 +55.3 97.7	7 11.5 +55.3 96.7	6 48.2 +55.2 95.8	6 24.8 +55.3 94.9	6 01.5 +55.2 94.0
5°	8 30.0 +55.3 97.3	8 06.8 +55.2 96.3	7 43.4 +55.3 95.4	7 20.1 +55.2 94.5	6 56.7 +55.2 93.6
6°	9 25.3 +55.2 96.9	9 02.0 +55.2 95.9	8 38.7 +55.2 95.0	8 15.3 +55.2 94.1	7 51.9 +55.2 93.2
7°	10 20.5 +55.2 96.5	9 57.2 +55.2 95.6	9 33.9 +55.1 94.6	9 10.5 +55.1 93.7	8 47.1 +55.1 92.8
8°	11 15.7 +55.2 96.1	10 52.4 +55.2 95.2	10 29.0 +55.2 94.2	10 05.6 +55.2 93.3	9 42.2 +55.2 92.4
9°	12 10.9 +55.1 95.7	11 47.6 +55.1 94.8	11 24.2 +55.1 93.8	11 00.8 +55.1 92.9	10 37.4 +55.0 92.0
10°	13 06.0 +55.1 95.3	12 42.7 +55.1 94.3	12 19.3 +55.1 93.4	11 55.9 +55.0 92.5	11 32.4 +55.1 91.6
11°	14 01.1 +55.1 94.9	13 37.8 +55.0 93.9	13 14.4 +55.0 93.0	12 50.9 +55.1 92.1	12 27.5 +55.0 91.2
12°	14 56.2 +55.0 94.5	14 32.8 +55.0 93.5	14 09.4 +55.0 92.6	13 46.0 +55.0 91.7	13 22.5 +55.0 90.8
13°	15 51.2 +55.0 94.0	15 27.8 +55.0 93.1	15 04.4 +54.9 92.2	14 41.0 +54.9 91.3	14 17.5 +55.0 90.3
14°	16 46.2 +54.9 93.6	16 22.8 +54.9 92.7	15 59.3 +54.9 91.8	15 35.9 +54.9 90.9	15 12.5 +54.9 89.9
15°	17 41.1 +54.9 93.2	17 17.7 +54.8 92.3	16 54.2 +54.9 91.4	16 30.8 +54.9 90.4	16 07.4 +54.8 89.5
16°	18 36.0 +54.8 92.8	18 12.5 +54.8 91.9	17 49.1 +54.8 90.9	17 25.7 +54.7 90.0	17 02.2 +54.8 89.1
17°	19 30.8 +54.7 92.3	19 07.3 +54.8 91.4	18 43.9 +54.7 90.5	18 20.4 +54.8 89.6	17 57.0 +54.7 88.7
18°	20 25.5 +54.7 91.9	20 02.1 +54.6 91.0	19 38.6 +54.7 90.1	19 15.2 +54.6 89.1	18 51.7 +54.7 88.2
19°	21 20.2 +54.6 91.5	20 56.7 +54.6 90.5	20 33.3 +54.6 89.6	20 09.8 +54.7 88.7	19 46.4 +54.6 87.8
20°	22 14.8 +54.5 91.0	21 51.3 +54.6 90.1	21 27.9 +54.5 89.2	21 04.5 +54.5 88.3	20 41.0 +54.6 87.4
21°	23 09.3 +54.5 90.6	22 45.9 +54.4 89.7	22 22.4 +54.5 88.7	21 59.0 +54.5 87.8	21 35.6 +54.4 86.9
22°	24 03.8 +54.3 90.1	23 40.3 +54.4 89.2	23 16.9 +54.4 88.3	22 53.5 +54.3 87.4	22 30.0 +54.4 86.5
23°	24 58.1 +54.3 89.7	24 34.7 +54.3 88.7	24 11.3 +54.3 87.8	23 47.8 +54.3 86.9	23 24.4 +54.4 86.0
24°	25 52.4 +54.2 89.2	25 29.0 +54.2 88.3	25 05.6 +54.2 87.3	24 42.1 +54.3 86.4	24 18.8 +54.2 85.5
25°	26 46.6 +54.1 88.7	26 23.2 +54.1 87.8	25 59.8 +54.1 86.9	25 36.4 +54.1 86.0	25 13.0 +54.1 85.1
26°	27 40.7 +54.0 88.2	27 17.3 +54.0 87.3	26 53.9 +54.0 86.4	26 30.5 +54.0 85.5	26 07.1 +54.1 84.6
27°	28 34.7 +53.9 87.7	28 11.3 +53.9 86.8	27 47.9 +53.9 85.9	27 24.5 +53.9 85.0	27 01.2 +53.9 84.1
28°	29 28.6 +53.7 87.2	29 05.2 +53.7 86.3	28 41.8 +53.8 85.4	28 18.4 +53.8 84.5	27 55.1 +53.8 83.6
29°	30 22.3 +53.7 86.7	29 58.9 +53.7 85.8	29 35.6 +53.6 84.9	29 12.2 +53.7 84.0	28 48.9 +53.8 83.1

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°	1 57.1 +55.3 94.6	1 33.7 +55.3 93.7	1 10.3 +55.2 92.8	0 46.9 +55.2 91.8	0 23.4 +55.3 90.9
1°	2 52.4 +55.2 94.2	2 29.0 +55.2 93.3	2 05.5 +55.3 92.4	1 42.1 +55.2 91.5	1 18.7 +55.2 90.5
2°	3 47.6 +55.2 93.8	3 24.2 +55.2 92.9	3 00.8 +55.2 92.0	2 37.3 +55.3 91.1	2 13.9 +55.2 90.1
3°	4 42.8 +55.3 93.4	4 19.4 +55.3 92.5	3 56.0 +55.2 91.6	3 32.6 +55.2 90.7	3 09.1 +55.2 89.7
4°	5 38.1 +55.2 93.0	5 14.7 +55.2 92.1	4 51.2 +55.2 91.2	4 27.8 +55.2 90.3	4 04.3 +55.2 89.4
5°	6 33.3 +55.2 92.6	6 09.9 +55.1 91.7	5 46.4 +55.2 90.8	5 23.0 +55.2 89.9	4 59.5 +55.2 89.0
6°	7 28.5 +55.1 92.3	7 05.0 +55.2 91.3	6 41.6 +55.2 90.4	6 18.2 +55.1 89.5	5 54.7 +55.2 88.6
7°	8 23.6 +55.2 91.9	8 00.2 +55.2 90.9	7 36.8 +55.1 90.0	7 13.3 +55.2 89.1	6 49.9 +55.1 88.2
8°	9 18.8 +55.1 91.5	8 55.4 +55.1 90.5	8 31.9 +55.1 89.6	8 08.5 +55.1 88.7	7 45.0 +55.2 87.8
9°	10 13.9 +55.1 91.1	9 50.5 +55.1 90.1	9 27.0 +55.1 89.2	9 03.6 +55.1 88.3	8 40.2 +55.1 87.4
10°	11 09.0 +55.1 90.7	10 45.6 +55.0 89.7	10 22.1 +55.1 88.8	9 58.7 +55.1 87.9	9 35.3 +55.0 87.0
11°	12 04.1 +55.0 90.2	11 40.6 +55.1 89.3	11 17.2 +55.0 88.4	10 53.8 +55.0 87.5	10 30.3 +55.1 86.6
12°	12 59.1 +55.0 89.8	12 35.7 +54.9 88.9	12 12.2 +55.0 88.0	11 48.8 +55.0 87.1	11 25.4 +55.0 86.2
13°	13 54.1 +54.9 89.4	13 30.6 +55.0 88.5	13 07.2 +55.0 87.6	12 43.8 +55.0 86.7	12 20.4 +55.0 85.8
14°	14 49.0 +54.9 89.0	14 25.6 +54.9 88.1	14 02.2 +54.9 87.2	13 38.8 +54.9 86.3	13 15.4 +54.9 85.3
15°	15 43.9 +54.9 88.6	15 20.5 +54.8 87.7	14 57.1 +54.8 86.8	14 33.7 +54.9 85.8	14 10.3 +54.9 84.9
16°	16 38.8 +54.8 88.2	16 15.3 +54.9 87.3	15 51.9 +54.9 86.3	15 28.6 +54.8 85.4	15 05.2 +54.8 84.5
17°	17 33.6 +54.7 87.7	17 10.2 +54.7 86.8	16 46.8 +54.7 85.9	16 23.4 +54.8 85.0	16 00.0 +54.8 84.1
18°	18 28.3 +54.7 87.3	18 04.9 +54.7 86.4	17 41.5 +54.7 85.5	17 18.2 +54.7 84.6	16 54.8 +54.8 83.7
19°	19 23.0 +54.6 86.9	18 59.6 +54.6 86.0	18 36.2 +54.7 85.1	18 12.9 +54.7 84.1	17 49.6 +54.7 83.2
20°	20 17.6 +54.6 86.4	19 54.2 +54.6 85.5	19 30.9 +54.6 84.6	19 07.6 +54.6 83.7	18 44.3 +54.6 82.8
21°	21 12.2 +54.5 86.0	20 48.8 +54.5 85.1	20 25.5 +54.5 84.2	20 02.2 +54.5 83.3	19 38.9 +54.6 82.4
22°	22 06.7 +54.4 85.5	21 43.3 +54.4 84.6	21 20.0 +54.4 83.7	20 56.7 +54.5 82.8	20 33.5 +54.5 81.9
23°	23 01.1 +54.3 85.1	22 37.7 +54.4 84.2	22 14.4 +54.4 83.3	21 51.2 +54.4 82.4	21 28.0 +54.4 81.5
24°	23 55.4 +54.2 84.6	23 32.1 +54.2 83.7	23 08.8 +54.3 82.8	22 45.6 +54.3 81.9	22 22.4 +54.3 81.0
25°	24 49.6 +54.2 84.2	24 26.3 +54.2 83.3	24 03.1 +54.2 82.4	23 39.9 +54.2 81.5	23 16.7 +54.3 80.6
26°	25 43.8 +54.1 83.7	25 20.5 +54.1 82.8	24 57.3 +54.1 81.9	24 34.1 +54.1 81.0	24 11.0 +54.2 80.1
27°	26 37.9 +53.9 83.2	26 14.6 +54.0 82.3	25 51.4 +54.0 81.4	25 28.2 +54.1 80.5	25 05.2 +54.0 79.6
28°	27 31.8 +53.9 82.7	27 08.6 +53.9 81.8	26 45.4 +53.9 80.9	26 22.3 +53.9 80.0	25 59.2 +54.0 79.1
29°	28 25.7 +53.7 82.2	28 02.5 +53.8 81.3	27 39.3 +53.8 80.4	27 16.2 +53.9 79.5	26 53.2 +53.9 78.7

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 +55.2 90.0	-0 23.4 +55.2	-0 46.9 +55.3	-1 10.3 +55.2	-1 33.7 +55.2
1°	0 55.2 +55.3 89.6	0 31.8 +55.2 88.7	0 08.4 +55.2 87.8	-0 15.1 +55.3	-0 38.5 +55.3
2°	1 50.5 +55.2 89.2	1 27.0 +55.2 88.3	1 03.6 +55.2 87.4	0 40.2 +55.2 86.5	0 16.8 +55.2 85.5
3°	2 45.7 +55.2 88.8	2 22.2 +55.3 87.9	1 58.8 +55.3 87.0	1 35.4 +55.3 86.1	1 12.0 +55.3 85.1
4°	3 40.9 +55.2 88.4	3 17.5 +55.2 87.5	2 54.1 +55.2 86.6	2 30.7 +55.2 85.7	2 07.3 +55.2 84.8
5°	4 36.1 +55.2 88.0	4 12.7 +55.2 87.1	3 49.3 +55.2 86.2	3 25.9 +55.2 85.3	3 02.5 +55.3 84.4
6°	5 31.3 +55.2 87.6	5 07.9 +55.2 86.7	4 44.5 +55.2 85.8	4 21.1 +55.2 84.9	3 57.8 +55.2 84.0
7°	6 26.5 +55.1 87.3	6 03.1 +55.1 86.3	5 39.7 +55.2 85.4	5 16.3 +55.2 84.5	4 53.0 +55.2 83.6
8°	7 21.6 +55.2 86.9	6 58.2 +55.2 85.9	6 34.9 +55.1 85.0	6 11.5 +55.2 84.1	5 48.2 +55.2 83.2
9°	8 16.8 +55.1 86.5	7 53.4 +55.1 85.5	7 30.0 +55.2 84.6	7 06.7 +55.1 83.7	6 43.4 +55.2 82.8
10°	9 11.9 +55.1 86.1	8 48.5 +55.1 85.1	8 25.2 +55.1 84.2	8 01.8 +55.2 83.3	7 38.6 +55.1 82.4
11°	10 07.0 +55.0 85.7	9 43.6 +55.1 84.7	9 20.3 +55.1 83.8	8 57.0 +55.1 82.9	8 33.7 +55.2 82.0
12°	11 02.0 +55.0 85.3	10 38.7 +55.0 84.3	10 15.4 +55.0 83.4	9 52.1 +55.1 82.5	9 28.9 +55.1 81.6
13°	11 57.0 +55.0 84.8	11 33.7 +55.0 83.9	11 10.4 +55.0 83.0	10 47.2 +55.0 82.1	10 24.0 +55.0 81.2
14°	12 52.0 +55.0 84.4	12 28.7 +55.0 83.5	12 05.4 +55.0 82.6	11 42.2 +55.0 81.7	11 19.0 +55.1 80.8
15°	13 47.0 +54.9 84.0	13 23.7 +54.9 83.1	13 00.4 +55.0 82.2	12 37.2 +55.0 81.3	12 14.1 +55.0 80.4
16°	14 41.9 +54.8 83.6	14 18.6 +54.9 82.7	13 55.4 +54.9 81.8	13 32.2 +54.9 80.9	13 09.1 +54.9 80.0
17°	15 36.7 +54.9 83.2	15 13.5 +54.8 82.3	14 50.3 +54.9 81.4	14 27.1 +54.9 80.5	14 04.0 +55.0 79.6
18°	16 31.6 +54.7 82.8	16 08.3 +54.8 81.9	15 45.2 +54.8 81.0	15 22.0 +54.9 80.1	14 59.0 +54.8 79.2
19°	17 26.3 +54.7 82.3	17 03.1 +54.8 81.4	16 40.0 +54.7 80.5	16 16.9 +54.8 79.6	15 53.8 +54.9 78.7
20°	18 21.0 +54.7 81.9	17 57.9 +54.6 81.0	17 34.7 +54.7 80.1	17 11.7 +54.7 79.2	16 48.7 +54.7 78.3
21°	19 15.7 +54.6 81.5	18 52.5 +54.6 80.6	18 29.4 +54.7 79.7	18 06.4 +54.7 78.8	17 43.4 +54.8 77.9
22°	20 10.3 +54.5 81.0	19 47.1 +54.6 80.1	19 24.1 +54.6 79.2	19 01.1 +54.6 78.3	18 38.2 +54.6 77.4
23°	21 04.8 +54.4 80.6	20 41.7 +54.5 79.7	20 18.7 +54.5 78.8	19 55.7 +54.6 77.9	19 32.8 +54.6 77.0
24°	21 59.2 +54.4 80.1	21 36.2 +54.4 79.2	21 13.2 +54.4 78.3	20 50.3 +54.4 77.5	20 27.4 +54.5 76.6
25°	22 53.6 +54.3 79.7	22 30.6 +54.3 78.8	22 07.6 +54.4 77.9	21 44.7 +54.5 77.0	21 21.9 +54.5 76.1
26°	23 47.9 +54.2 79.2	23 24.9 +54.3 78.3	23 02.0 +54.3 77.4	22 39.2 +54.3 76.6	22 16.4 +54.4 75.7
27°	24 42.1 +54.1 78.7	24 19.2 +54.1 77.9	23 56.3 +54.2 77.0	23 33.5 +54.2 76.1	23 10.8 +54.3 75.2
28°	25 36.2 +54.1 78.3	25 13.3 +54.1 77.4	24 50.5 +54.1 76.5	24 27.7 +54.2 75.6	24 05.1 +54.2 74.8
29°	26 30.3 +53.9 77.8	26 07.4 +54.0 76.9	25 44.6 +54.0 76.0	25 21.9 +54.1 75.2	24 59.3 +54.1 74.3

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 57.1 +55.3	-2 20.4 +55.2	-2 43.8 +55.3	-3 07.0 +55.3	-3 30.3 +55.4
1°	-1 01.8 +55.2	-1 25.2 +55.3	-1 48.5 +55.3	-2 11.7 +55.3	-2 34.9 +55.3
2°	-0 06.6 +55.3	-0 29.9 +55.3	-0 53.2 +55.3	-1 16.4 +55.3	-1 39.6 +55.4
3°	0 48.7 +55.3 84.2	0 25.4 +55.3 83.3	0 02.1 +55.3 82.4	-0 21.1 +55.4	-0 44.2 +55.3
4°	1 44.0 +55.2 83.8	1 20.7 +55.3 82.9	0 57.4 +55.3 82.0	0 34.3 +55.3 81.1	0 11.1 +55.4 80.2
5°	2 39.2 +55.3 83.4	2 16.0 +55.2 82.5	1 52.7 +55.3 81.6	1 29.6 +55.3 80.7	1 06.5 +55.3 79.8
6°	3 34.5 +55.2 83.1	3 11.2 +55.3 82.1	2 48.0 +55.3 81.2	2 24.9 +55.3 80.3	2 01.8 +55.4 79.4
7°	4 29.7 +55.3 82.7	4 06.5 +55.3 81.8	3 43.3 +55.3 80.8	3 20.2 +55.3 79.9	2 57.2 +55.3 79.0
8°	5 25.0 +55.2 82.3	5 01.8 +55.2 81.4	4 38.6 +55.3 80.4	4 15.5 +55.3 79.5	3 52.5 +55.3 78.6
9°	6 20.2 +55.2 81.9	5 57.0 +55.2 81.0	5 33.9 +55.2 80.1	5 10.8 +55.3 79.1	4 47.8 +55.3 78.2
10°	7 15.4 +55.2 81.5	6 52.2 +55.2 80.6	6 29.1 +55.3 79.7	6 06.1 +55.3 78.7	5 43.1 +55.3 77.8
11°	8 10.6 +55.1 81.1	7 47.4 +55.2 80.2	7 24.4 +55.2 79.3	7 01.4 +55.2 78.4	6 38.4 +55.3 77.4
12°	9 05.7 +55.1 80.7	8 42.6 +55.2 79.8	8 19.6 +55.2 78.9	7 56.6 +55.2 78.0	7 33.7 +55.3 77.1
13°	10 00.8 +55.1 80.3	9 37.8 +55.1 79.4	9 14.8 +55.1 78.5	8 51.8 +55.2 77.6	8 29.0 +55.2 76.7
14°	10 55.9 +55.1 79.9	10 32.9 +55.1 79.0	10 09.9 +55.1 78.1	9 47.0 +55.2 77.2	9 24.2 +55.2 76.3
15°	11 51.0 +55.0 79.5	11 28.0 +55.0 78.6	11 05.0 +55.1 77.7	10 42.2 +55.1 76.8	10 19.4 +55.2 75.9
16°	12 46.0 +55.0 79.1	12 23.0 +55.1 78.2	12 00.1 +55.1 77.3	11 37.3 +55.1 76.4	11 14.6 +55.1 75.5
17°	13 41.0 +55.0 78.7	13 18.1 +55.0 77.8	12 55.2 +55.0 76.9	12 32.4 +55.1 76.0	12 09.7 +55.1 75.1
18°	14 36.0 +54.9 78.3	14 13.1 +54.9 77.4	13 50.2 +55.0 76.5	13 27.5 +55.0 75.6	13 04.8 +55.1 74.7
19°	15 30.9 +54.9 77.8	15 08.0 +54.9 76.9	14 45.2 +55.0 76.0	14 22.5 +55.0 75.1	13 59.9 +55.0 74.3
20°	16 25.8 +54.8 77.4	16 02.9 +54.9 76.5	15 40.2 +54.9 75.6	15 17.5 +54.9 74.7	14 54.9 +55.0 73.8
21°	17 20.6 +54.7 77.0	16 57.8 +54.8 76.1	16 35.1 +54.8 75.2	16 12.4 +54.9 74.3	15 49.9 +54.9 73.4
22°	18 15.3 +54.7 76.6	17 52.6 +54.7 75.7	17 29.9 +54.8 74.8	17 07.3 +54.9 73.9	16 44.8 +54.9 73.0
23°	19 10.0 +54.7 76.1	18 47.3 +54.7 75.2	18 24.7 +54.7 74.4	18 02.2 +54.7 73.5	17 39.7 +54.9 72.6
24°	20 04.7 +54.5 75.7	19 42.0 +54.6 74.8	19 19.4 +54.7 73.9	18 56.9 +54.8 73.0	18 34.6 +54.7 72.2
25°	20 59.2 +54.5 75.2	20 36.6 +54.6 74.4	20 14.1 +54.6 73.5	19 51.7 +54.6 72.6	19 29.3 +54.7 71.7
26°	21 53.7 +54.5 74.8	21 31.2 +54.4 73.9	21 08.7 +54.5 73.0	20 46.3 +54.6 72.2	20 24.0 +54.7 71.3
27°	22 48.2 +54.3 74.3	22 25.6 +54.4 73.5	22 03.2 +54.5 72.6	21 40.9 +54.5 71.7	21 18.7 +54.6 70.8
28°	23 42.5 +54.3 73.9	23 20.0 +54.4 73.0	22 57.7 +54.3 72.1	22 35.4 +54.4 71.3	22 13.3 +54.5 70.4
29°	24 36.8 +54.1 73.4	24 14.4 +54.2 72.5	23 52.0 +54.3 71.7	23 29.8 +54.4 70.8	23 07.8 +54.4 69.9

Dec	LHA 100° / 260°	LHA 101° / 259°	LHA 102° / 258°	LHA 103° / 257°	LHA 104° / 256°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-3 53.4 +55.3	-4 16.5 +55.4	-4 39.6 +55.4	-5 02.6 +55.5	-5 25.4 +55.4
1°	-2 58.1 +55.4	-3 21.1 +55.3	-3 44.2 +55.5	-4 07.1 +55.5	-4 30.0 +55.5
2°	-2 02.7 +55.4	-2 25.8 +55.5	-2 48.7 +55.4	-3 11.6 +55.4	-3 34.5 +55.5
3°	-1 07.3 +55.4	-1 30.3 +55.4	-1 53.3 +55.4	-2 16.2 +55.5	-2 39.0 +55.6
4°	-0 11.9 +55.3	-0 34.9 +55.4	-0 57.9 +55.5	-1 20.7 +55.5	-1 43.4 +55.5
5°	0 43.4 +55.4	0 20.5 +55.4	-0 02.4 +55.4	-0 25.2 +55.5	-0 47.9 +55.5
6°	1 38.8 +55.4	1 15.9 +55.4	0 53.0 +55.5	0 30.3 +55.5	0 07.6 +55.5
7°	2 34.2 +55.4	2 11.3 +55.4	1 48.5 +55.4	1 25.8 +55.4	1 03.1 +55.5
8°	3 29.6 +55.3	3 06.7 +55.4	2 43.9 +55.4	2 21.2 +55.5	1 58.6 +55.5
9°	4 24.9 +55.4	4 02.1 +55.4	3 39.3 +55.5	3 16.7 +55.5	2 54.1 +55.6
10°	5 20.3 +55.3	4 57.5 +55.3	4 34.8 +55.4	4 12.2 +55.4	3 49.7 +55.4
11°	6 15.6 +55.3	5 52.8 +55.4	5 30.2 +55.4	5 07.6 +55.4	4 45.1 +55.5
12°	7 10.9 +55.3	6 48.2 +55.3	6 25.6 +55.3	6 03.0 +55.5	5 40.6 +55.5
13°	8 06.2 +55.3	7 43.5 +55.3	7 20.9 +55.4	6 58.5 +55.4	6 36.1 +55.4
14°	9 01.5 +55.2	8 38.8 +55.3	8 16.3 +55.3	7 53.9 +55.3	7 31.5 +55.5
15°	9 56.7 +55.2	9 34.1 +55.3	9 11.6 +55.3	8 49.2 +55.4	8 27.0 +55.4
16°	10 51.9 +55.2	10 29.4 +55.2	10 06.9 +55.3	9 44.6 +55.3	9 22.4 +55.4
17°	11 47.1 +55.2	11 24.6 +55.2	11 02.2 +55.3	10 39.9 +55.3	10 17.8 +55.3
18°	12 42.3 +55.1	12 19.8 +55.2	11 57.5 +55.2	11 35.2 +55.3	11 13.1 +55.3
19°	13 37.4 +55.1	13 15.0 +55.1	12 52.7 +55.2	12 30.5 +55.2	12 08.4 +55.3
20°	14 32.5 +55.0	14 10.1 +55.1	13 47.9 +55.1	13 25.7 +55.2	13 03.7 +55.3
21°	15 27.5 +55.0	15 05.2 +55.0	14 43.0 +55.1	14 20.9 +55.2	13 59.0 +55.2
22°	16 22.5 +54.9	16 00.2 +55.0	15 38.1 +55.0	15 16.1 +55.1	14 54.2 +55.1
23°	17 17.4 +54.9	16 55.2 +55.0	16 33.1 +55.0	16 11.2 +55.0	15 49.3 +55.2
24°	18 12.3 +54.8	17 50.2 +54.8	17 28.1 +55.0	17 06.2 +55.0	16 44.5 +55.0
25°	19 07.1 +54.8	18 45.0 +54.9	18 23.1 +54.9	18 01.2 +55.0	17 39.5 +55.1
26°	20 01.9 +54.7	19 39.9 +54.7	19 18.0 +54.8	18 56.2 +54.9	18 34.6 +54.9
27°	20 56.6 +54.6	20 34.6 +54.7	20 12.8 +54.8	19 51.1 +54.8	19 29.5 +54.9
28°	21 51.2 +54.6	21 29.3 +54.7	21 07.6 +54.7	20 45.9 +54.8	20 24.4 +54.9
29°	22 45.8 +54.5	22 24.0 +54.5	22 02.3 +54.6	21 40.7 +54.7	21 19.3 +54.7

Dec	LHA 105° / 255°	LHA 106° / 254°	LHA 107° / 253°	LHA 108° / 252°	LHA 109° / 251°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-5 48.3 +55.6	-6 11.0 +55.6	-6 33.6 +55.6	-6 56.1 +55.6	-7 18.5 +55.7
1°	-4 52.7 +55.5	-5 15.4 +55.6	-5 38.0 +55.6	-6 00.5 +55.7	-6 22.8 +55.7
2°	-3 57.2 +55.6	-4 19.8 +55.6	-4 42.4 +55.7	-5 04.8 +55.7	-5 27.1 +55.7
3°	-3 01.6 +55.5	-3 24.2 +55.6	-3 46.7 +55.6	-4 09.1 +55.7	-4 31.4 +55.8
4°	-2 06.1 +55.6	-2 28.6 +55.6	-2 51.1 +55.7	-3 13.4 +55.7	-3 35.6 +55.7
5°	-1 10.5 +55.5	-1 33.0 +55.6	-1 55.4 +55.6	-2 17.7 +55.7	-2 39.9 +55.7
6°	-0 15.0 +55.6	-0 37.4 +55.6	-0 59.8 +55.7	-1 22.0 +55.7	-1 44.2 +55.8
7°	0 40.6 +55.5	0 18.2 +55.6	-0 04.1 +55.6	-0 26.3 +55.7	-0 48.4 +55.7
8°	1 36.1 +55.6	1 13.8 +55.6	0 51.5 +55.7	0 29.4 +55.7	0 07.3 +55.8
9°	2 31.7 +55.6	2 09.4 +55.6	1 47.2 +55.6	1 25.1 +55.7	1 03.1 +55.8
10°	3 27.3 +55.5	3 05.0 +55.6	2 42.8 +55.6	2 20.8 +55.7	1 58.9 +55.7
11°	4 22.8 +55.5	4 00.6 +55.5	3 38.4 +55.7	3 16.5 +55.6	2 54.6 +55.7
12°	5 18.3 +55.5	4 56.1 +55.6	4 34.1 +55.6	4 12.1 +55.7	3 50.3 +55.8
13°	6 13.8 +55.5	5 51.7 +55.6	5 29.7 +55.6	5 07.8 +55.7	4 46.1 +55.7
14°	7 09.3 +55.5	6 47.3 +55.5	6 25.3 +55.6	6 03.5 +55.6	5 41.8 +55.7
15°	8 04.8 +55.5	7 42.8 +55.5	7 20.9 +55.6	6 59.1 +55.6	6 37.5 +55.7
16°	9 00.3 +55.4	8 38.3 +55.5	8 16.5 +55.5	7 54.7 +55.7	7 33.2 +55.6
17°	9 55.7 +55.4	9 33.8 +55.5	9 12.0 +55.5	8 50.4 +55.5	8 28.8 +55.7
18°	10 51.1 +55.4	10 29.3 +55.4	10 07.5 +55.5	9 45.9 +55.6	9 24.5 +55.6
19°	11 46.5 +55.3	11 24.7 +55.4	11 03.0 +55.5	10 41.5 +55.5	10 20.1 +55.6
20°	12 41.8 +55.4	12 20.1 +55.4	11 58.5 +55.4	11 37.0 +55.5	11 15.7 +55.6
21°	13 37.2 +55.2	13 15.5 +55.3	12 53.9 +55.4	12 32.5 +55.5	12 11.3 +55.5
22°	14 32.4 +55.3	14 10.8 +55.3	13 49.3 +55.4	13 28.0 +55.4	13 06.8 +55.5
23°	15 27.7 +55.1	15 06.1 +55.2	14 44.7 +55.3	14 23.4 +55.4	14 02.3 +55.5
24°	16 22.8 +55.2	16 01.3 +55.3	15 40.0 +55.3	15 18.8 +55.4	14 57.8 +55.4
25°	17 18.0 +55.1	16 56.6 +55.1	16 35.3 +55.2	16 14.2 +55.3	15 53.2 +55.4
26°	18 13.1 +55.0	17 51.7 +55.1	17 30.5 +55.2	17 09.5 +55.2	16 48.6 +55.3
27°	19 08.1 +55.0	18 46.8 +55.1	18 25.7 +55.1	18 04.7 +55.2	17 43.9 +55.3
28°	20 03.1 +54.9	19 41.9 +54.9	19 20.8 +55.1	18 59.9 +55.1	18 39.2 +55.2
29°	20 58.0 +54.8	20 36.8 +55.0	20 15.9 +55.0	19 55.0 +55.1	19 34.4 +55.2

Dec	LHA 110° / 250°	LHA 111° / 249°	LHA 112° / 248°	LHA 113° / 247°	LHA 114° / 246°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-7 40.8 +55.7	-8 03.0 +55.8	-8 25.0 +55.8	-8 46.9 +55.9	-9 08.7 +56.0
1°	-6 45.1 +55.8	-7 07.2 +55.8	-7 29.2 +55.9	-7 51.0 +55.9	-8 12.7 +56.0
2°	-5 49.3 +55.8	-6 11.4 +55.9	-6 33.3 +55.9	-6 55.1 +55.9	-7 16.7 +55.9
3°	-4 53.5 +55.8	-5 15.5 +55.8	-5 37.4 +55.9	-5 59.2 +56.0	-6 20.8 +56.0
4°	-3 57.7 +55.8	-4 19.7 +55.8	-4 41.5 +55.9	-5 03.2 +55.9	-5 24.8 +56.1
5°	-3 01.9 +55.8	-3 23.9 +55.9	-3 45.6 +55.9	-4 07.3 +56.0	-4 28.7 +56.0
6°	-2 06.1 +55.8	-2 28.0 +55.9	-2 49.7 +55.9	-3 11.3 +56.0	-3 32.7 +56.0
7°	-1 10.3 +55.8	-1 32.1 +55.8	-1 53.8 +55.9	-2 15.3 +56.0	-2 36.7 +56.1
8°	-0 14.5 +55.8	-0 36.3 +55.9	-0 57.9 +55.9	-1 19.3 +55.9	-1 40.6 +56.0
9°	0 41.3 +55.8 68.2	0 19.6 +55.9 67.2	-0 02.0 +56.0	-0 23.4 +56.0	-0 44.6 +56.1
10°	1 37.1 +55.8 67.8	1 15.5 +55.8 66.9	0 54.0 +55.9 66.0	0 32.6 +56.0 65.0	0 11.5 +56.0 64.1
11°	2 32.9 +55.8 67.4	2 11.3 +55.9 66.5	1 49.9 +55.9 65.6	1 28.6 +56.0 64.7	1 07.5 +56.1 63.8
12°	3 28.7 +55.8 67.1	3 07.2 +55.8 66.1	2 45.8 +55.9 65.2	2 24.6 +56.0 64.3	2 03.6 +56.0 63.4
13°	4 24.5 +55.7 66.7	4 03.0 +55.9 65.8	3 41.7 +55.9 64.9	3 20.6 +55.9 64.0	2 59.6 +56.0 63.0
14°	5 20.2 +55.8 66.3	4 58.9 +55.8 65.4	4 37.6 +55.9 64.5	4 16.5 +56.0 63.6	3 55.6 +56.0 62.7
15°	6 16.0 +55.8 65.9	5 54.7 +55.8 65.0	5 33.5 +55.9 64.1	5 12.5 +55.9 63.2	4 51.6 +56.1 62.3
16°	7 11.8 +55.7 65.6	6 50.5 +55.8 64.7	6 29.4 +55.8 63.8	6 08.4 +56.0 62.9	5 47.7 +56.0 62.0
17°	8 07.5 +55.7 65.2	7 46.3 +55.8 64.3	7 25.2 +55.9 63.4	7 04.4 +55.9 62.5	6 43.7 +55.9 61.6
18°	9 03.2 +55.7 64.8	8 42.1 +55.7 63.9	8 21.1 +55.8 63.0	8 00.3 +55.9 62.1	7 39.6 +56.0 61.2
19°	9 58.9 +55.7 64.4	9 37.8 +55.7 63.6	9 16.9 +55.8 62.7	8 56.2 +55.8 61.8	8 35.6 +55.9 60.9
20°	10 54.6 +55.6 64.1	10 33.5 +55.8 63.2	10 12.7 +55.8 62.3	9 52.0 +55.9 61.4	9 31.5 +56.0 60.5
21°	11 50.2 +55.6 63.7	11 29.3 +55.6 62.8	11 08.5 +55.7 61.9	10 47.9 +55.8 61.0	10 27.5 +55.9 60.1
22°	12 45.8 +55.6 63.3	12 24.9 +55.7 62.4	12 04.2 +55.7 61.5	11 43.7 +55.8 60.7	11 23.4 +55.8 59.8
23°	13 41.4 +55.5 62.9	13 20.6 +55.6 62.0	12 59.9 +55.7 61.2	12 39.5 +55.8 60.3	12 19.2 +55.9 59.4
24°	14 36.9 +55.5 62.5	14 16.2 +55.5 61.6	13 55.6 +55.7 60.8	13 35.3 +55.7 59.9	13 15.1 +55.8 59.0
25°	15 32.4 +55.4 62.1	15 11.7 +55.6 61.3	14 51.3 +55.6 60.4	14 31.0 +55.7 59.5	14 10.9 +55.7 58.6
26°	16 27.8 +55.4 61.7	16 07.3 +55.5 60.9	15 46.9 +55.5 60.0	15 26.7 +55.6 59.1	15 06.6 +55.8 58.3
27°	17 23.2 +55.4 61.3	17 02.8 +55.4 60.5	16 42.4 +55.6 59.6	16 22.3 +55.6 58.7	16 02.4 +55.6 57.9
28°	18 18.6 +55.3 60.9	17 58.2 +55.4 60.1	17 38.0 +55.4 59.2	17 17.9 +55.6 58.3	16 58.0 +55.7 57.5
29°	19 13.9 +55.2 60.5	18 53.6 +55.3 59.7	18 33.4 +55.5 58.8	18 13.5 +55.5 58.0	17 53.7 +55.6 57.1

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-9 30.3 +56.0	-9 51.8 +56.1	-9 16.9 +56.1	-9 38.0 +56.2	-9 58.9 +56.3
1°	-8 34.3 +56.1	-8 55.7 +56.1	-8 20.8 +56.2	-8 41.8 +56.2	-9 02.6 +56.3
2°	-7 38.2 +56.0	-7 59.6 +56.1	-7 24.6 +56.2	-7 45.6 +56.3	-8 06.3 +56.3
3°	-6 42.2 +56.1	-7 03.5 +56.1	-6 28.4 +56.2	-6 49.3 +56.3	-7 10.0 +56.3
4°	-5 46.1 +56.0	-6 07.4 +56.2	-5 32.2 +56.2	-5 53.0 +56.3	-6 13.7 +56.4
5°	-4 50.1 +56.1	-5 11.2 +56.1	-4 36.0 +56.2	-4 56.7 +56.2	-5 17.3 +56.3
6°	-3 54.0 +56.1	-4 15.1 +56.2	-3 39.8 +56.3	-4 00.5 +56.3	-4 21.0 +56.4
7°	-2 57.9 +56.1	-3 18.9 +56.2	-2 43.5 +56.2	-3 04.2 +56.4	-3 24.6 +56.4
8°	-2 01.8 +56.1	-2 22.7 +56.1	-1 47.3 +56.2	-2 07.8 +56.3	-2 28.2 +56.4
9°	-1 05.7 +56.2	-1 26.6 +56.2	-0 51.1 +56.3	-1 11.5 +56.3	-1 31.8 +56.4
10°	-0 09.5 +56.1	-0 30.4 +56.2	0 05.2 +56.2 61.0	-0 15.2 +56.3	-0 35.4 +56.3
11°	0 46.6 +56.1 62.8	0 25.8 +56.2 61.9	1 01.4 +56.3 60.7	0 41.1 +56.3 59.7	0 20.9 +56.4 58.8
12°	1 42.7 +56.1 62.5	1 22.0 +56.1 61.6	1 57.7 +56.2 60.3	1 37.4 +56.3 59.4	1 17.3 +56.4 58.5
13°	2 38.8 +56.1 62.1	2 18.1 +56.2 61.2	2 53.9 +56.3 60.0	2 33.7 +56.3 59.0	2 13.7 +56.4 58.1
14°	3 34.9 +56.1 61.8	3 14.3 +56.2 60.9	3 50.2 +56.2 59.6	3 30.0 +56.3 58.7	3 10.1 +56.4 57.8
15°	4 31.0 +56.1 61.4	4 10.5 +56.1 60.5	4 46.4 +56.2 59.3	4 26.3 +56.3 58.4	4 06.5 +56.3 57.4
16°	5 27.1 +56.0 61.1	5 06.6 +56.2 60.2	5 42.6 +56.2 58.9	5 22.6 +56.3 58.0	5 02.8 +56.4 57.1
17°	6 23.1 +56.1 60.7	6 02.8 +56.1 59.8	6 38.8 +56.2 58.6	6 18.9 +56.3 57.7	5 59.2 +56.3 56.8
18°	7 19.2 +56.0 60.3	6 58.9 +56.1 59.5	7 35.0 +56.2 58.2	7 15.2 +56.2 57.3	6 55.5 +56.3 56.4
19°	8 15.2 +56.0 60.0	7 55.0 +56.1 59.1	8 31.2 +56.1 57.8	8 11.4 +56.2 57.0	7 51.8 +56.4 56.1
20°	9 11.2 +56.0 59.6	8 51.1 +56.1 58.7	9 27.3 +56.1 57.5	9 07.6 +56.2 56.6	8 48.2 +56.2 55.7
21°	10 07.2 +56.0 59.3	9 47.2 +56.0 58.4	10 23.4 +56.1 57.1	10 03.8 +56.2 56.2	9 44.4 +56.3 55.4
22°	11 03.2 +55.9 58.9	10 43.2 +56.0 58.0	11 19.5 +56.1 56.8	11 00.0 +56.2 55.9	10 40.7 +56.3 55.0
23°	11 59.1 +56.0 58.5	11 39.2 +56.0 57.6	12 15.6 +56.1 56.4	11 56.2 +56.1 55.5	11 37.0 +56.2 54.7
24°	12 55.1 +55.8 58.2	12 35.2 +56.0 57.3	13 11.7 +56.0 56.0	12 52.3 +56.1 55.2	12 33.2 +56.2 54.3
25°	13 50.9 +55.9 57.8	14 27.1 +55.9 56.5	14 07.7 +56.0 55.7	13 48.4 +56.1 54.8	13 29.4 +56.1 53.9
26°	14 46.8 +55.8 57.4	15 23.0 +55.9 56.2	15 03.7 +55.9 55.3	14 44.5 +56.0 54.4	14 25.5 +56.1 53.6
27°	15 42.6 +55.8 57.0	16 18.9 +55.8 55.8	15 59.6 +55.9 54.9	15 40.5 +56.0 54.1	15 21.6 +56.1 53.2
28°	16 38.4 +55.7 56.6	17 14.7 +55.8 55.4	16 55.5 +55.9 54.5	16 36.5 +56.0 53.7	16 17.7 +56.1 52.8
29°	17 34.1 +55.7 56.2				

Declination SAME name as Latitude

Latitude 67°

Dec	LHA 120° / 240°	LHA 121° / 239°	LHA 122° / 238°	LHA 123° / 237°	LHA 124° / 236°
0°	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
1°					
2°	-9 23.3 +56.4	-9 43.8 +56.5			
3°	-8 26.9 +56.4	-8 47.3 +56.4	-9 07.5 +56.5	-9 27.5 +56.6	-9 47.3 +56.6
4°	-7 30.5 +56.4	-7 50.9 +56.5	-8 11.0 +56.5	-8 30.9 +56.6	-8 50.7 +56.7
5°	-6 34.1 +56.4	-6 54.4 +56.5	-7 14.5 +56.6	-7 34.3 +56.6	-7 54.0 +56.7
6°	-5 37.7 +56.4	-5 57.9 +56.5	-6 17.9 +56.6	-6 37.7 +56.7	-6 57.3 +56.8
7°	-4 41.3 +56.5	-5 01.4 +56.5	-5 21.3 +56.6	-5 41.0 +56.6	-6 00.5 +56.7
8°	-3 44.8 +56.4	-4 04.9 +56.5	-4 24.7 +56.6	-4 44.4 +56.7	-5 03.8 +56.7
9°	-2 48.4 +56.5	-3 08.4 +56.6	-3 28.1 +56.6	-3 47.7 +56.7	-4 07.1 +56.8
10°	-1 51.9 +56.4	-2 11.8 +56.5	-2 31.5 +56.6	-2 51.0 +56.6	-3 10.3 +56.7
11°	-0 55.5 +56.5	-1 15.3 +56.5	-1 34.9 +56.6	-1 54.4 +56.7	-2 13.6 +56.8
12°	0 01.0 +56.4 57.9	-0 18.8 +56.6	-0 38.3 +56.6	-0 57.7 +56.7	-1 16.8 +56.8
13°	0 57.4 +56.5 57.6	0 37.8 +56.5 56.6	0 18.3 +56.6 55.7	-0 01.0 +56.7	-0 20.0 +56.7
14°	1 53.9 +56.5 57.2	1 34.3 +56.5 56.3	1 14.9 +56.6 55.4	0 55.7 +56.7 54.5	0 36.7 +56.8 53.6
15°	2 50.4 +56.4 56.9	2 30.8 +56.6 56.0	2 11.5 +56.6 55.1	1 52.4 +56.7 54.1	1 33.5 +56.8 53.2
16°	3 46.8 +56.4 56.5	3 27.4 +56.5 55.6	3 08.1 +56.6 54.7	2 49.1 +56.6 53.8	2 30.3 +56.7 52.9
17°	4 43.2 +56.5 56.2	4 23.9 +56.5 55.3	4 04.7 +56.6 54.4	3 45.7 +56.7 53.5	3 27.0 +56.8 52.6
18°	5 39.7 +56.4 55.9	5 20.4 +56.5 55.0	5 01.3 +56.6 54.1	4 42.4 +56.7 53.2	4 23.8 +56.7 52.3
19°	6 36.1 +56.4 55.5	6 16.9 +56.5 54.6	5 57.9 +56.5 53.7	5 39.1 +56.6 52.8	5 20.5 +56.7 51.9
20°	7 32.5 +56.4 55.2	7 13.4 +56.4 54.3	6 54.4 +56.6 53.4	6 35.7 +56.7 52.5	6 17.2 +56.8 51.6
21°	8 28.9 +56.4 54.8	8 09.8 +56.5 53.9	7 51.0 +56.5 53.1	7 32.4 +56.6 52.2	7 14.0 +56.7 51.3
22°	9 25.3 +56.3 54.5	9 06.3 +56.4 53.6	8 47.5 +56.5 52.7	8 29.0 +56.6 51.8	8 10.7 +56.6 50.9
23°	10 21.6 +56.3 54.1	10 02.7 +56.4 53.3	9 44.0 +56.5 52.4	9 25.6 +56.6 51.5	9 07.3 +56.7 50.6
24°	11 17.9 +56.3 53.8	10 59.1 +56.4 52.9	10 40.5 +56.5 52.0	10 22.2 +56.5 51.2	10 04.0 +56.7 50.3
25°	12 14.2 +56.3 53.4	11 55.5 +56.4 52.6	11 37.0 +56.5 51.7	11 18.7 +56.6 50.8	11 00.7 +56.6 49.9
26°	13 10.5 +56.3 53.1	12 51.9 +56.3 52.2	12 33.5 +56.4 51.3	12 15.3 +56.5 50.5	11 57.3 +56.6 49.6
27°	14 06.8 +56.2 52.7	13 48.2 +56.3 51.9	13 29.9 +56.4 51.0	13 11.8 +56.5 50.1	12 53.9 +56.6 49.3
28°	15 03.0 +56.1 52.4	14 44.5 +56.3 51.5	14 26.3 +56.3 50.6	14 08.3 +56.4 49.8	13 50.5 +56.5 48.9
29°	15 59.1 +56.2 52.0	15 40.8 +56.2 51.1	15 22.6 +56.4 50.3	15 04.7 +56.4 49.4	14 47.0 +56.5 48.6

Dec	LHA 125° / 235°	LHA 126° / 234°	LHA 127° / 233°	LHA 128° / 232°	LHA 129° / 231°
0°	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
1°					
2°					
3°					
4°	-9 10.2 +56.8	-9 29.5 +56.9	-9 48.5 +56.9		
5°	-8 13.4 +56.8	-8 32.6 +56.8	-8 51.6 +56.9	-9 10.4 +57.0	-9 28.9 +57.1
6°	-7 16.6 +56.8	-7 35.8 +56.9	-7 54.7 +57.0	-8 13.4 +57.1	-8 31.8 +57.1
7°	-6 19.8 +56.8	-6 38.9 +56.9	-6 57.7 +56.9	-7 16.3 +57.0	-7 34.7 +57.1
8°	-5 23.0 +56.8	-5 42.0 +56.9	-6 00.8 +57.0	-6 19.3 +57.1	-6 37.6 +57.2
9°	-4 26.2 +56.8	-4 45.1 +56.9	-5 03.8 +57.0	-5 22.2 +57.0	-5 40.4 +57.1
10°	-3 29.4 +56.9	-3 48.2 +56.9	-4 06.8 +57.0	-4 25.2 +57.1	-4 43.3 +57.2
11°	-2 32.5 +56.8	-2 51.3 +56.9	-3 09.8 +57.0	-3 28.1 +57.1	-3 46.1 +57.1
12°	-1 35.7 +56.8	-1 54.4 +56.9	-2 12.8 +57.0	-2 31.0 +57.1	-2 49.0 +57.2
13°	-0 38.9 +56.9	-0 57.5 +57.0	-1 15.8 +57.0	-1 33.9 +57.0	-1 51.8 +57.1
14°	0 18.0 +56.8 52.6	-0 00.5 +56.9	-0 18.8 +57.0	-0 36.9 +57.1	-0 54.7 +57.2
15°	1 14.8 +56.9 52.3	0 56.4 +56.9 51.4	0 38.2 +57.0 50.5	0 20.2 +57.1 49.6	0 02.5 +57.2 48.6
16°	2 11.7 +56.8 52.0	1 53.3 +56.9 51.1	1 35.2 +57.0 50.2	1 17.3 +57.1 49.3	0 59.7 +57.1 48.3
17°	3 08.5 +56.8 51.7	2 50.2 +56.9 50.8	2 32.2 +57.0 49.9	2 14.4 +57.1 49.0	1 56.8 +57.2 48.0
18°	4 05.3 +56.9 51.4	3 47.1 +57.0 50.5	3 29.2 +57.0 49.5	3 11.5 +57.0 48.6	2 54.0 +57.2 47.7
19°	5 02.2 +56.8 51.0	4 44.1 +56.8 50.1	4 26.2 +57.0 49.2	4 08.5 +57.1 48.3	3 51.2 +57.1 47.4
20°	5 59.0 +56.8 50.7	5 40.9 +56.9 49.8	5 23.2 +56.9 48.9	5 05.6 +57.1 48.0	4 48.3 +57.1 47.1
21°	6 55.8 +56.8 50.4	6 37.8 +56.9 49.5	6 20.1 +57.0 48.6	6 02.7 +57.0 47.7	5 45.4 +57.2 46.8
22°	7 52.6 +56.7 50.1	7 34.7 +56.9 49.2	7 17.1 +56.9 48.3	6 59.7 +57.0 47.4	6 42.6 +57.1 46.5
23°	8 49.3 +56.8 49.7	8 31.6 +56.8 48.9	8 14.0 +57.0 48.0	7 56.7 +57.1 47.1	7 39.7 +57.1 46.2
24°	9 46.1 +56.7 49.4	9 28.4 +56.8 48.5	9 11.0 +56.9 47.7	8 53.8 +57.0 46.8	8 36.8 +57.1 45.9
25°	10 42.8 +56.8 49.1	10 25.2 +56.8 48.2	10 07.9 +56.9 47.3	9 50.8 +57.0 46.5	9 33.9 +57.1 45.6
26°	11 39.6 +56.6 48.7	11 22.0 +56.8 47.9	11 04.8 +56.9 47.0	10 47.8 +56.9 46.1	10 31.0 +57.0 45.3
27°	12 36.2 +56.7 48.4	12 18.8 +56.8 47.5	12 01.7 +56.8 46.7	11 44.7 +57.0 45.8	11 28.0 +57.1 45.0
28°	13 32.9 +56.7 48.1	13 15.6 +56.7 47.2	12 58.5 +56.8 46.4	12 41.7 +56.9 45.5	12 25.1 +57.0 44.6
29°	14 29.6 +56.6 47.7	14 12.3 +56.7 46.9	13 55.3 +56.8 46.0	13 38.6 +56.9 45.2	13 22.1 +57.0 44.3

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Dec	LHA 130° / 230°	LHA 131° / 229°	LHA 132° / 228°	LHA 133° / 227°	LHA 134° / 226°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°	-9 47.2 +57.2				
6°	-8 50.0 +57.2	-9 08.0 +57.3	-9 25.6 +57.3	-9 43.1 +57.4	
7°	-7 52.8 +57.2	-8 10.7 +57.3	-8 28.3 +57.4	-8 45.7 +57.5	-9 02.7 +57.5
8°	-6 55.6 +57.2	-7 13.4 +57.3	-7 30.9 +57.3	-7 48.2 +57.4	-8 05.2 +57.5
9°	-5 58.4 +57.2	-6 16.1 +57.3	-6 33.6 +57.4	-6 50.8 +57.5	-7 07.7 +57.6
10°	-5 01.2 +57.3	-5 18.8 +57.3	-5 36.2 +57.4	-5 53.3 +57.5	-6 10.1 +57.5
11°	-4 03.9 +57.2	-4 21.5 +57.3	-4 38.8 +57.4	-4 55.8 +57.5	-5 12.6 +57.6
12°	-3 06.7 +57.2	-3 24.2 +57.3	-3 41.4 +57.4	-3 58.3 +57.5	-4 15.0 +57.6
13°	-2 09.5 +57.3	-2 26.9 +57.4	-2 44.0 +57.4	-3 00.8 +57.5	-3 17.4 +57.5
14°	-1 12.2 +57.2	-1 29.5 +57.3	-1 46.6 +57.4	-2 03.3 +57.5	-2 19.9 +57.6
15°	-0 15.0 +57.3	-0 32.2 +57.3	-0 49.2 +57.5	-1 05.8 +57.4	-1 22.3 +57.6
16°	0 42.3 +57.2 47.4	0 25.1 +57.4 46.5	0 08.3 +57.4 45.6	-0 08.4 +57.5	-0 24.7 +57.6
17°	1 39.5 +57.3 47.1	1 22.5 +57.3 46.2	1 05.7 +57.4 45.3	0 49.1 +57.5 44.4	0 32.9 +57.6 43.5
18°	2 36.8 +57.2 46.8	2 19.8 +57.3 45.9	2 03.1 +57.4 45.0	1 46.6 +57.5 44.1	1 30.5 +57.5 43.2
19°	3 34.0 +57.2 46.5	3 17.1 +57.3 45.6	3 00.5 +57.4 44.7	2 44.1 +57.5 43.8	2 28.0 +57.6 42.9
20°	4 31.2 +57.3 46.2	4 14.4 +57.4 45.3	3 57.9 +57.4 44.4	3 41.6 +57.5 43.5	3 25.6 +57.6 42.6
21°	5 28.5 +57.2 45.9	5 11.8 +57.3 45.0	4 55.3 +57.4 44.1	4 39.1 +57.5 43.2	4 23.2 +57.5 42.3
22°	6 25.7 +57.2 45.6	6 09.1 +57.3 44.7	5 52.7 +57.4 43.8	5 36.6 +57.5 43.0	5 20.7 +57.6 42.1
23°	7 22.9 +57.2 45.3	7 06.4 +57.2 44.4	6 50.1 +57.3 43.5	6 34.1 +57.4 42.7	6 18.3 +57.6 41.8
24°	8 20.1 +57.2 45.0	8 03.6 +57.3 44.1	7 47.4 +57.4 43.3	7 31.5 +57.5 42.4	7 15.9 +57.5 41.5
25°	9 17.3 +57.1 44.7	9 00.9 +57.3 43.8	8 44.8 +57.4 43.0	8 29.0 +57.4 42.1	8 13.4 +57.5 41.2
26°	10 14.4 +57.2 44.4	9 58.2 +57.2 43.5	9 42.2 +57.3 42.7	9 26.4 +57.4 41.8	9 10.9 +57.5 40.9
27°	11 11.6 +57.1 44.1	10 55.4 +57.2 43.2	10 39.5 +57.3 42.4	10 23.8 +57.4 41.5	10 08.4 +57.5 40.6
28°	12 08.7 +57.1 43.8	11 52.6 +57.2 42.9	11 36.8 +57.3 42.1	11 21.2 +57.4 41.2	11 05.9 +57.5 40.3
29°	13 05.8 +57.1 43.5	12 49.8 +57.2 42.6	12 34.1 +57.3 41.8	12 18.6 +57.4 40.9	12 03.4 +57.4 40.0

Dec	LHA 135° / 225°	LHA 136° / 224°	LHA 137° / 223°	LHA 138° / 222°	LHA 139° / 221°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°	-9 19.5 +57.6	-9 36.1 +57.7	-9 52.3 +57.7		
8°	-8 21.9 +57.6	-8 38.4 +57.7	-8 54.6 +57.8	-9 10.4 +57.8	-9 26.0 +57.9
9°	-7 24.3 +57.6	-7 40.7 +57.7	-7 56.8 +57.8	-8 12.6 +57.9	-8 28.1 +58.0
10°	-6 26.7 +57.6	-6 43.0 +57.7	-6 59.0 +57.8	-7 14.7 +57.9	-7 30.1 +57.9
11°	-5 29.1 +57.7	-5 45.3 +57.8	-6 01.2 +57.8	-6 16.8 +57.9	-6 32.2 +58.0
12°	-4 31.4 +57.6	-4 47.5 +57.7	-5 03.4 +57.8	-5 18.9 +57.9	-5 34.2 +58.0
13°	-3 33.8 +57.7	-3 49.8 +57.7	-4 05.6 +57.9	-4 21.0 +57.9	-4 36.2 +58.0
14°	-2 36.1 +57.7	-2 52.1 +57.8	-3 07.7 +57.8	-3 23.1 +57.9	-3 38.2 +58.0
15°	-1 38.4 +57.6	-1 54.3 +57.7	-2 09.9 +57.8	-2 25.2 +57.9	-2 40.2 +57.9
16°	-0 40.8 +57.7	-0 56.6 +57.8	-1 12.1 +57.8	-1 27.3 +57.9	-1 42.3 +58.0
17°	0 16.9 +57.7 42.5	0 01.2 +57.7 41.6	-0 14.3 +57.9	-0 29.4 +57.9	-0 44.3 +58.0
18°	1 14.6 +57.6 42.3	0 58.9 +57.8 41.4	0 43.6 +57.8 40.4	0 28.5 +57.9 39.5	0 13.7 +58.0 38.6
19°	2 12.2 +57.7 42.0	1 56.7 +57.7 41.1	1 41.4 +57.8 40.2	1 26.4 +57.9 39.3	1 11.7 +58.0 38.3
20°	3 09.9 +57.6 41.7	2 54.4 +57.8 40.8	2 39.2 +57.9 39.9	2 24.3 +57.9 39.0	2 09.7 +58.0 38.1
21°	4 07.5 +57.7 41.4	3 52.2 +57.7 40.5	3 37.1 +57.8 39.6	3 22.2 +57.9 38.7	3 07.7 +58.0 37.8
22°	5 05.2 +57.6 41.2	4 49.9 +57.7 40.3	4 34.9 +57.8 39.4	4 20.1 +57.9 38.5	4 05.7 +58.0 37.6
23°	6 02.8 +57.7 40.9	5 47.6 +57.7 40.0	5 32.7 +57.8 39.1	5 18.0 +57.9 38.2	5 03.7 +58.0 37.3
24°	7 00.5 +57.6 40.6	6 45.3 +57.7 39.7	6 30.5 +57.8 38.8	6 15.9 +57.9 37.9	6 01.7 +57.9 37.1
25°	7 58.1 +57.6 40.3	7 43.0 +57.7 39.4	7 28.3 +57.8 38.6	7 13.8 +57.9 37.7	6 59.6 +58.0 36.8
26°	8 55.7 +57.6 40.0	8 40.7 +57.7 39.2	8 26.1 +57.8 38.3	8 11.7 +57.9 37.4	7 57.6 +57.9 36.5
27°	9 53.3 +57.6 39.8	9 38.4 +57.7 38.9	9 23.9 +57.7 38.0	9 09.6 +57.8 37.1	8 55.5 +58.0 36.3
28°	10 50.9 +57.5 39.5	10 36.1 +57.7 38.6	10 21.6 +57.8 37.7	10 07.4 +57.8 36.9	9 53.5 +57.9 36.0
29°	11 48.4 +57.6 39.2	11 33.8 +57.6 38.3	11 19.4 +57.7 37.5	11 05.2 +57.9 36.6	10 51.4 +57.9 35.8

Dec	LHA 140° / 220°	LHA 141° / 219°	LHA 142° / 218°	LHA 143° / 217°	LHA 144° / 216°
	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 41.3 +58.0	-9 56.3 +58.1			
9°	-8 43.3 +58.0	-8 58.2 +58.1	-9 12.8 +58.2	-9 27.1 +58.3	-9 41.1 +58.4
10°	-7 45.3 +58.1	-8 00.1 +58.1	-8 14.6 +58.2	-8 28.8 +58.3	-8 42.7 +58.4
11°	-6 47.2 +58.0	-7 02.0 +58.2	-7 16.4 +58.2	-7 30.5 +58.3	-7 44.3 +58.3
12°	-5 49.2 +58.1	-6 03.8 +58.1	-6 18.2 +58.2	-6 32.2 +58.3	-6 46.0 +58.4
13°	-4 51.1 +58.1	-5 05.7 +58.2	-5 20.0 +58.3	-5 33.9 +58.3	-5 47.6 +58.4
14°	-3 53.0 +58.0	-4 07.5 +58.1	-4 21.7 +58.2	-4 35.6 +58.3	-4 49.2 +58.4
15°	-2 55.0 +58.1	-3 09.4 +58.2	-3 23.5 +58.2	-3 37.3 +58.3	-3 50.8 +58.4
16°	-1 56.9 +58.1	-2 11.2 +58.1	-2 25.3 +58.3	-2 39.0 +58.3	-2 52.4 +58.4
17°	-0 58.8 +58.1	-1 13.1 +58.2	-1 27.0 +58.2	-1 40.7 +58.3	-1 54.0 +58.4
18°	-0 00.7 +58.0	-0 14.9 +58.1	-0 28.8 +58.2	-0 42.4 +58.3	-0 55.6 +58.4
19°	0 57.3 +58.1 37.4	0 43.2 +58.2 36.5	0 29.4 +58.3 35.6	0 15.9 +58.4 34.7	0 02.8 +58.3 33.8
20°	1 55.4 +58.1 37.2	1 41.4 +58.1 36.3	1 27.7 +58.2 35.4	1 14.3 +58.3 34.4	1 01.1 +58.4 33.5
21°	2 53.5 +58.1 36.9	2 39.5 +58.2 36.0	2 25.9 +58.2 35.1	2 12.6 +58.3 34.2	1 59.5 +58.4 33.3
22°	3 51.6 +58.0 36.7	3 37.7 +58.1 35.8	3 24.1 +58.3 34.9	3 10.9 +58.3 34.0	2 57.9 +58.4 33.1
23°	4 49.6 +58.1 36.4	4 35.8 +58.2 35.5	4 22.4 +58.2 34.6	4 09.2 +58.3 33.7	3 56.3 +58.4 32.8
24°	5 47.7 +58.0 36.2	5 34.0 +58.1 35.3	5 20.6 +58.2 34.4	5 07.5 +58.3 33.5	4 54.7 +58.4 32.6
25°	6 45.7 +58.1 35.9	6 32.1 +58.2 35.0	6 18.8 +58.2 34.2	6 05.8 +58.3 33.3	5 53.1 +58.4 32.4
26°	7 43.8 +58.0 35.7	7 30.3 +58.1 34.8	7 17.0 +58.2 33.9	7 04.1 +58.3 33.0	6 51.5 +58.3 32.1
27°	8 41.8 +58.0 35.4	8 28.4 +58.1 34.5	8 15.2 +58.2 33.7	8 02.4 +58.3 32.8	7 49.8 +58.4 31.9
28°	9 39.8 +58.1 35.1	9 26.5 +58.1 34.3	9 13.4 +58.2 33.4	9 00.7 +58.2 32.5	8 48.2 +58.4 31.7
29°	10 37.9 +58.0 34.9	10 24.6 +58.1 34.0	10 11.6 +58.2 33.2	9 58.9 +58.3 32.3	9 46.6 +58.3 31.4

Dec	LHA 145° / 215°	LHA 146° / 214°	LHA 147° / 213°	LHA 148° / 212°	LHA 149° / 211°
	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°	-9 54.7 +58.4				
10°	-8 56.3 +58.5	-9 09.5 +58.5	-9 22.4 +58.6	-9 35.0 +58.7	-9 47.2 +58.7
11°	-7 57.8 +58.4	-8 11.0 +58.5	-8 23.8 +58.6	-8 36.3 +58.6	-8 48.5 +58.8
12°	-6 59.4 +58.5	-7 12.5 +58.6	-7 25.2 +58.6	-7 37.7 +58.7	-7 49.7 +58.7
13°	-6 00.9 +58.4	-6 13.9 +58.5	-6 26.6 +58.6	-6 39.0 +58.7	-6 51.0 +58.8
14°	-5 02.5 +58.5	-5 15.4 +58.5	-5 28.0 +58.6	-5 40.3 +58.7	-5 52.2 +58.7
15°	-4 04.0 +58.5	-4 16.9 +58.6	-4 29.4 +58.6	-4 41.6 +58.7	-4 53.5 +58.8
16°	-3 05.5 +58.4	-3 18.3 +58.5	-3 30.8 +58.6	-3 42.9 +58.7	-3 54.7 +58.8
17°	-2 07.1 +58.5	-2 19.8 +58.6	-2 32.2 +58.7	-2 44.2 +58.7	-2 55.9 +58.7
18°	-1 08.6 +58.5	-1 21.2 +58.5	-1 33.5 +58.6	-1 45.5 +58.7	-1 57.2 +58.8
19°	-0 10.1 +58.5	-0 22.7 +58.6	-0 34.9 +58.6	-0 46.8 +58.7	-0 58.4 +58.8
20°	0 48.4 +58.4 32.6	0 35.9 +58.5 31.7	0 23.7 +58.6 30.8	0 11.9 +58.7 29.9	0 00.4 +58.7 28.9
21°	1 46.8 +58.5 32.4	1 34.4 +58.6 31.5	1 22.3 +58.7 30.6	1 10.6 +58.7 29.7	0 59.1 +58.8 28.7
22°	2 45.3 +58.5 32.2	2 33.0 +58.5 31.3	2 21.0 +58.6 30.4	2 09.3 +58.7 29.5	1 57.9 +58.8 28.5
23°	3 43.8 +58.4 31.9	3 31.5 +58.6 31.0	3 19.6 +58.6 30.1	3 08.0 +58.7 29.2	2 56.7 +58.8 28.3
24°	4 42.2 +58.5 31.7	4 30.1 +58.5 30.8	4 18.2 +58.6 29.9	4 06.7 +58.7 29.0	3 55.5 +58.7 28.1
25°	5 40.7 +58.5 31.5	5 28.6 +58.5 30.6	5 16.8 +58.6 29.7	5 05.4 +58.6 28.8	4 54.2 +58.8 27.9
26°	6 39.2 +58.4 31.3	6 27.1 +58.6 30.4	6 15.4 +58.6 29.5	6 04.0 +58.7 28.6	5 53.0 +58.7 27.7
27°	7 37.6 +58.4 31.0	7 25.7 +58.5 30.2	7 14.0 +58.6 29.3	7 02.7 +58.7 28.4	6 51.7 +58.8 27.5
28°	8 36.0 +58.5 30.8	8 24.2 +58.5 29.9	8 12.6 +58.6 29.1	8 01.4 +58.7 28.2	7 50.5 +58.7 27.3
29°	9 34.5 +58.4 30.6	9 22.7 +58.5 29.7	9 11.2 +58.6 28.9	9 00.1 +58.6 28.0	8 49.2 +58.8 27.1

Dec	LHA 150° / 210°	LHA 151° / 209°	LHA 152° / 208°	LHA 153° / 207°	LHA 154° / 206°
	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°	-9 59.1 +58.8				
11°	-9 00.3 +58.8	-9 11.8 +58.9	-9 22.9 +58.9	-9 33.7 +59.0	-9 44.1 +59.1
12°	-8 01.5 +58.8	-8 12.9 +58.9	-8 24.0 +59.0	-8 34.7 +59.1	-8 45.0 +59.1
13°	-7 02.7 +58.9	-7 14.0 +58.9	-7 25.0 +59.0	-7 35.6 +59.0	-7 45.9 +59.1
14°	-6 03.8 +58.8	-6 15.1 +58.9	-6 26.0 +58.9	-6 36.6 +59.0	-6 46.8 +59.1
15°	-5 05.0 +58.8	-5 16.2 +58.9	-5 27.1 +59.0	-5 37.6 +59.1	-5 47.7 +59.1
16°	-4 06.2 +58.9	-4 17.3 +58.9	-4 28.1 +59.0	-4 38.5 +59.0	-4 48.6 +59.1
17°	-3 07.3 +58.8	-3 18.4 +58.9	-3 29.1 +59.0	-3 39.5 +59.1	-3 49.5 +59.1
18°	-2 08.5 +58.8	-2 19.5 +58.9	-2 30.1 +58.9	-2 40.4 +59.0	-2 50.4 +59.1
19°	-1 09.7 +58.9	-1 20.6 +58.9	-1 31.2 +59.0	-1 41.4 +59.1	-1 51.3 +59.1
20°	-0 10.8 +58.8	-0 21.7 +59.0	-0 32.2 +59.0	-0 42.3 +59.0	-0 52.2 +59.1
21°	0 48.0 +58.9 27.8	0 37.3 +58.9 26.9	0 26.8 +59.0 26.0	0 16.7 +59.1 25.1	0 06.9 +59.2 24.2
22°	1 46.9 +58.8 27.6	1 36.2 +58.9 26.7	1 25.8 +59.0 25.8	1 15.8 +59.0 24.9	1 06.1 +59.1 24.0
23°	2 45.7 +58.9 27.4	2 35.1 +58.9 26.5	2 24.8 +59.0 25.6	2 14.8 +59.0 24.7	2 05.2 +59.1 23.8
24°	3 44.6 +58.8 27.2	3 34.0 +58.9 26.3	3 23.8 +58.9 25.4	3 13.8 +59.1 24.5	3 04.3 +59.1 23.6
25°	4 43.4 +58.8 27.0	4 32.9 +58.9 26.2	4 22.7 +59.0 25.3	4 12.9 +59.0 24.4	4 03.4 +59.1 23.5
26°	5 42.2 +58.9 26.8	5 31.8 +58.9 26.0	5 21.7 +59.0 25.1	5 11.9 +59.1 24.2	5 02.5 +59.1 23.3
27°	6 41.1 +58.8 26.7	6 30.7 +58.9 25.8	6 20.7 +58.9 24.9	6 11.0 +59.0 24.0	6 01.6 +59.1 23.1
28°	7 39.9 +58.8 26.5	7 29.6 +58.9 25.6	7 19.6 +59.0 24.7	7 10.0 +59.0 23.8	7 00.7 +59.1 23.0
29°	8 38.7 +58.8 26.3	8 28.5 +58.9 25.4	8 18.6 +59.0 24.5	8 09.0 +59.1 23.6	7 59.8 +59.1 22.8

Dec	LHA 155° / 205°	LHA 156° / 204°	LHA 157° / 203°	LHA 158° / 202°	LHA 159° / 201°
	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°	-9 54.2 +59.2				
12°	-8 55.0 +59.1	-9 04.6 +59.2	-9 13.9 +59.3	-9 22.8 +59.3	-9 31.3 +59.4
13°	-7 55.9 +59.2	-8 05.4 +59.2	-8 14.6 +59.3	-8 23.5 +59.4	-8 31.9 +59.4
14°	-6 56.7 +59.2	-7 06.2 +59.2	-7 15.3 +59.3	-7 24.1 +59.3	-7 32.5 +59.4
15°	-5 57.5 +59.1	-6 07.0 +59.3	-6 16.0 +59.2	-6 24.8 +59.4	-6 33.1 +59.4
16°	-4 58.4 +59.2	-5 07.7 +59.2	-5 16.8 +59.3	-5 25.4 +59.3	-5 33.7 +59.4
17°	-3 59.2 +59.2	-4 08.5 +59.2	-4 17.5 +59.3	-4 26.1 +59.4	-4 34.3 +59.4
18°	-3 00.0 +59.2	-3 09.3 +59.3	-3 18.2 +59.3	-3 26.7 +59.3	-3 34.9 +59.4
19°	-2 00.8 +59.1	-2 10.0 +59.2	-2 18.9 +59.3	-2 27.4 +59.4	-2 35.5 +59.4
20°	-1 01.7 +59.2	-1 10.8 +59.2	-1 19.6 +59.3	-1 28.0 +59.3	-1 36.1 +59.4
21°	-0 02.5 +59.2	-0 11.6 +59.3	-0 20.3 +59.3	-0 28.7 +59.4	-0 36.7 +59.4
22°	0 56.7 +59.2 23.1	0 47.7 +59.2 22.2	0 39.0 +59.3 21.2	0 30.7 +59.3 20.3	0 22.7 +59.4 19.4
23°	1 55.9 +59.1 22.9	1 46.9 +59.3 22.0	1 38.3 +59.3 21.1	1 30.0 +59.4 20.2	1 22.1 +59.4 19.3
24°	2 55.0 +59.2 22.7	2 46.2 +59.2 21.8	2 37.6 +59.3 20.9	2 29.4 +59.3 20.0	2 21.5 +59.4 19.1
25°	3 54.2 +59.2 22.6	3 45.4 +59.2 21.7	3 36.9 +59.3 20.8	3 28.7 +59.4 19.9	3 20.9 +59.5 19.0
26°	4 53.4 +59.2 22.4	4 44.6 +59.2 21.5	4 36.2 +59.3 20.6	4 28.1 +59.3 19.7	4 20.4 +59.4 18.8
27°	5 52.6 +59.1 22.2	5 43.8 +59.3 21.4	5 35.5 +59.3 20.5	5 27.4 +59.4 19.6	5 19.8 +59.4 18.7
28°	6 51.7 +59.2 22.1	6 43.1 +59.2 21.2	6 34.8 +59.3 20.3	6 26.8 +59.3 19.4	6 19.2 +59.4 18.6
29°	7 50.9 +59.1 21.9	7 42.3 +59.2 21.0	7 34.1 +59.2 20.2	7 26.1 +59.4 19.3	7 18.6 +59.4 18.4

Dec	LHA 160° / 200°	LHA 161° / 199°	LHA 162° / 198°	LHA 163° / 197°	LHA 164° / 196°
	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°	-9 39.5 +59.5	-9 47.2 +59.5	-9 54.6 +59.5		
13°	-8 40.0 +59.4	-8 47.7 +59.5	-8 55.1 +59.6	-9 02.0 +59.6	-9 08.6 +59.7
14°	-7 40.6 +59.5	-7 48.2 +59.5	-7 55.5 +59.5	-8 02.4 +59.6	-8 08.9 +59.6
15°	-6 41.1 +59.5	-6 48.7 +59.5	-6 56.0 +59.6	-7 02.8 +59.6	-7 09.3 +59.7
16°	-5 41.6 +59.4	-5 49.2 +59.5	-5 56.4 +59.6	-6 03.2 +59.6	-6 09.6 +59.6
17°	-4 42.2 +59.5	-4 49.7 +59.5	-4 56.8 +59.5	-5 03.6 +59.6	-5 10.0 +59.6
18°	-3 42.7 +59.4	-3 50.2 +59.5	-3 57.3 +59.6	-4 04.0 +59.6	-4 10.4 +59.7
19°	-2 43.3 +59.5	-2 50.7 +59.5	-2 57.7 +59.5	-3 04.4 +59.6	-3 10.7 +59.6
20°	-1 43.8 +59.4	-1 51.2 +59.5	-1 58.2 +59.6	-2 04.8 +59.6	-2 11.1 +59.7
21°	-0 44.4 +59.5	-0 51.7 +59.6	-0 58.6 +59.6	-1 05.2 +59.6	-1 11.4 +59.6
22°	0 15.1 +59.5 18.5	0 07.9 +59.5 17.6	0 01.0 +59.5 16.6	-0 05.6 +59.6	-0 11.8 +59.7
23°	1 14.6 +59.4 18.4	1 07.4 +59.5 17.4	1 00.5 +59.6 16.5	0 54.0 +59.6 15.6	0 47.9 +59.7 14.7
24°	2 14.0 +59.5 18.2	2 06.9 +59.5 17.3	2 00.1 +59.5 16.4	1 53.6 +59.6 15.5	1 47.6 +59.6 14.6
25°	3 13.5 +59.5 18.1	3 06.4 +59.5 17.2	2 59.6 +59.6 16.3	2 53.2 +59.6 15.4	2 47.2 +59.7 14.5
26°	4 13.0 +59.4 18.0	4 05.9 +59.5 17.1	3 59.2 +59.6 16.2	3 52.8 +59.7 15.3	3 46.9 +59.6 14.4
27°	5 12.4 +59.5 17.8	5 05.4 +59.5 16.9	4 58.8 +59.5 16.0	4 52.5 +59.6 15.2	4 46.5 +59.6 14.3
28°	6 11.9 +59.4 17.7	6 04.9 +59.5 16.8	5 58.3 +59.6 15.9	5 52.1 +59.6 15.0	5 46.1 +59.7 14.2
29°	7 11.3 +59.5 17.5	7 04.4 +59.5 16.7	6 57.9 +59.5 15.8	6 51.7 +59.6 14.9	6 45.8 +59.6 14.0

Dec	LHA 165° / 195°	LHA 166° / 194°	LHA 167° / 193°	LHA 168° / 192°	LHA 169° / 191°
	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°	-9 14.8 +59.7	-9 20.6 +59.8	-9 26.0 +59.8	-9 31.0 +59.8	-9 35.6 +59.8
14°	-8 15.1 +59.7	-8 20.8 +59.7	-8 26.2 +59.8	-8 31.2 +59.8	-8 35.8 +59.9
15°	-7 15.4 +59.7	-7 21.1 +59.7	-7 26.4 +59.7	-7 31.4 +59.8	-7 35.9 +59.8
16°	-6 15.7 +59.7	-6 21.4 +59.7	-6 26.7 +59.8	-6 31.6 +59.8	-6 36.1 +59.8
17°	-5 16.0 +59.7	-5 21.7 +59.8	-5 26.9 +59.8	-5 31.8 +59.8	-5 36.3 +59.9
18°	-4 16.3 +59.7	-4 21.9 +59.7	-4 27.1 +59.7	-4 32.0 +59.8	-4 36.4 +59.8
19°	-3 16.6 +59.7	-3 22.2 +59.7	-3 27.4 +59.8	-3 32.2 +59.8	-3 36.6 +59.8
20°	-2 16.9 +59.6	-2 22.5 +59.8	-2 27.6 +59.8	-2 32.4 +59.8	-2 36.8 +59.9
21°	-1 17.3 +59.7	-1 22.7 +59.7	-1 27.8 +59.7	-1 32.6 +59.8	-1 36.9 +59.8
22°	-0 17.6 +59.7	-0 23.0 +59.7	-0 28.1 +59.8	-0 32.8 +59.8	-0 37.1 +59.8
23°	0 42.1 +59.7 13.8	0 36.7 +59.8 12.9	0 31.7 +59.8 12.0	0 27.0 +59.8 11.0	0 22.7 +59.9 10.1
24°	1 41.8 +59.7 13.7	1 36.5 +59.7 12.8	1 31.5 +59.7 11.9	1 26.8 +59.8 11.0	1 22.6 +59.8 10.0
25°	2 41.5 +59.7 13.6	2 36.2 +59.7 12.7	2 31.2 +59.8 11.8	2 26.6 +59.8 10.9	2 22.4 +59.8 10.0
26°	3 41.2 +59.7 13.5	3 35.9 +59.8 12.6	3 31.0 +59.8 11.7	3 26.4 +59.8 10.8	3 22.2 +59.8 9.9
27°	4 40.9 +59.7 13.4	4 35.7 +59.7 12.5	4 30.8 +59.7 11.6	4 26.2 +59.8 10.7	4 22.0 +59.9 9.8
28°	5 40.6 +59.7 13.3	5 35.4 +59.7 12.4	5 30.5 +59.8 11.5	5 26.0 +59.8 10.6	5 21.9 +59.8 9.7
29°	6 40.3 +59.7 13.2	6 35.1 +59.7 12.3	6 30.3 +59.8 11.4	6 25.8 +59.8 10.5	6 21.7 +59.8 9.7

Dec	LHA 170° / 190°	LHA 171° / 189°	LHA 172° / 188°	LHA 173° / 187°	LHA 174° / 186°
	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°	-9 39.8 +59.8	-9 43.6 +59.8	-9 47.1 +59.9	-9 50.1 +59.9	-9 52.7 +59.9
14°	-8 40.0 +59.9	-8 43.8 +59.9	-8 47.2 +59.9	-8 50.2 +60.0	-8 52.8 +60.0
15°	-7 40.1 +59.9	-7 43.9 +59.9	-7 47.3 +60.0	-7 50.2 +59.9	-7 52.8 +59.9
16°	-6 40.2 +59.8	-6 44.0 +59.9	-6 47.3 +59.9	-6 50.3 +59.9	-6 52.9 +60.0
17°	-5 40.4 +59.9	-5 44.1 +59.9	-5 47.4 +59.9	-5 50.4 +60.0	-5 52.9 +59.9
18°	-4 40.5 +59.8	-4 44.2 +59.9	-4 47.5 +59.9	-4 50.4 +59.9	-4 53.0 +60.0
19°	-3 40.7 +59.9	-3 44.3 +59.9	-3 47.6 +59.9	-3 50.5 +59.9	-3 53.0 +59.9
20°	-2 40.8 +59.9	-2 44.4 +59.8	-2 47.7 +59.9	-2 50.6 +60.0	-2 53.1 +60.0
21°	-1 40.9 +59.8	-1 44.6 +59.9	-1 47.8 +59.9	-1 50.6 +59.9	-1 53.1 +59.9
22°	-0 41.1 +59.9	-0 44.7 +59.9	-0 47.9 +59.9	-0 50.7 +59.9	-0 53.2 +60.0
23°	0 18.8 +59.8 9.2	0 15.2 +59.9 8.3	0 12.0 +59.9 7.4	0 09.2 +59.9 6.4	0 06.8 +59.9 5.5
24°	1 18.6 +59.9 9.1	1 15.1 +59.9 8.2	1 11.9 +60.0 7.3	1 09.1 +60.0 6.4	1 06.7 +60.0 5.5
25°	2 18.5 +59.9 9.1	2 15.0 +59.9 8.2	2 11.9 +59.9 7.3	2 09.1 +59.9 6.3	2 06.7 +59.9 5.4
26°	3 18.4 +59.8 9.0	3 14.9 +59.9 8.1	3 11.8 +59.9 7.2	3 09.0 +59.9 6.3	3 06.6 +60.0 5.4
27°	4 18.2 +59.9 8.9	4 14.8 +59.9 8.0	4 11.7 +59.9 7.1	4 08.9 +60.0 6.3	4 06.6 +59.9 5.4
28°	5 18.1 +59.9 8.9	5 14.7 +59.8 8.0	5 11.6 +59.9 7.1	5 08.9 +59.9 6.2	5 06.5 +60.0 5.3
29°	6 18.0 +59.8 8.8	6 14.5 +59.9 7.9	6 11.5 +59.9 7.0	6 08.8 +59.9 6.2	6 06.5 +59.9 5.3

Dec	LHA 175° / 185°	LHA 176° / 184°	LHA 177° / 183°	LHA 178° / 182°	LHA 179° / 181°
	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°	-9 54.9 +59.9	-9 56.8 +60.0	-9 58.2 +60.0	-9 59.2 +60.0	-9 59.8 +60.0
14°	-8 55.0 +60.0	-8 56.8 +60.0	-8 58.2 +60.0	-8 59.2 +60.0	-8 59.8 +60.0
15°	-7 55.0 +59.9	-7 56.8 +60.0	-7 58.2 +60.0	-7 59.2 +60.0	-7 59.8 +60.0
16°	-6 55.1 +60.0	-6 56.8 +59.9	-6 58.2 +60.0	-6 59.2 +60.0	-6 59.8 +60.0
17°	-5 55.1 +60.0	-5 56.9 +60.0	-5 58.2 +60.0	-5 59.2 +60.0	-5 59.8 +60.0
18°	-4 55.1 +59.9	-4 56.9 +60.0	-4 58.2 +59.9	-4 59.2 +60.0	-4 59.8 +60.0
19°	-3 55.2 +60.0	-3 56.9 +60.0	-3 58.3 +60.0	-3 59.2 +60.0	-3 59.8 +60.0
20°	-2 55.2 +60.0	-2 56.9 +60.0	-2 58.3 +60.0	-2 59.2 +60.0	-2 59.8 +60.0
21°	-1 55.2 +59.9	-1 56.9 +59.9	-1 58.3 +60.0	-1 59.2 +60.0	-1 59.8 +60.0
22°	-0 55.3 +60.0	-0 57.0 +60.0	-0 58.3 +60.0	-0 59.2 +60.0	-0 59.8 +60.0
23°	0 04.7 +60.0 4.6	0 03.0 +60.0 3.7	0 01.7 +60.0 2.8	0 00.8 +59.9 1.8	0 00.2 +60.0 0.9
24°	1 04.7 +59.9 4.6	1 03.0 +60.0 3.7	1 01.7 +60.0 2.7	1 00.7 +60.0 1.8	1 00.2 +60.0 0.9
25°	2 04.6 +60.0 4.5	2 03.0 +59.9 3.6	2 01.7 +60.0 2.7	2 00.7 +60.0 1.8	2 00.2 +60.0 0.9
26°	3 04.6 +60.0 4.5	3 02.9 +60.0 3.6	3 01.7 +59.9 2.7	3 00.7 +60.0 1.8	3 00.2 +60.0 0.9
27°	4 04.6 +59.9 4.5	4 02.9 +60.0 3.6	4 01.6 +60.0 2.7	4 00.7 +60.0 1.8	4 00.2 +60.0 0.9
28°	5 04.5 +60.0 4.4	5 02.9 +60.0 3.5	5 01.6 +60.0 2.7	5 00.7 +60.0 1.8	5 00.2 +60.0 0.9
29°	6 04.5 +60.0 4.4	6 02.9 +60.0 3.5	6 01.6 +60.0 2.6	6 00.7 +60.0 1.8	6 00.2 +60.0 0.9

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°	22 00.0 +60.0 180.0	21 59.8 +60.0 178.9	21 59.2 +59.9 177.8	21 58.1 +60.0 176.8	21 56.6 +60.0 175.7
1°	23 00.0 +60.0 180.0	22 59.8 +60.0 178.9	22 59.1 +60.0 177.8	22 58.1 +60.0 176.7	22 56.6 +60.0 175.7
2°	24 00.0 +60.0 180.0	23 59.8 +60.0 178.9	23 59.1 +60.0 177.8	23 58.1 +60.0 176.7	23 56.6 +59.9 175.6
3°	25 00.0 +60.0 180.0	24 59.8 +60.0 178.9	24 59.1 +60.0 177.8	24 58.1 +59.9 176.7	24 56.5 +60.0 175.6
4°	26 00.0 +60.0 180.0	25 59.8 +60.0 178.9	25 59.1 +60.0 177.8	25 58.0 +60.0 176.7	25 56.5 +60.0 175.6
5°	27 00.0 +60.0 180.0	26 59.8 +60.0 178.9	26 59.1 +60.0 177.8	26 58.0 +60.0 176.6	26 56.5 +60.0 175.5
6°	28 00.0 +60.0 180.0	27 59.8 +60.0 178.9	27 59.1 +60.0 177.7	27 58.0 +60.0 176.6	27 56.5 +59.9 175.5
7°	29 00.0 +60.0 180.0	28 59.8 +60.0 178.9	28 59.1 +60.0 177.7	28 58.0 +60.0 176.6	28 56.4 +60.0 175.5
8°	30 00.0 +60.0 180.0	29 59.8 +60.0 178.9	29 59.1 +60.0 177.7	29 58.0 +60.0 176.6	29 56.4 +60.0 175.4
9°	31 00.0 +60.0 180.0	30 59.8 +60.0 178.8	30 59.1 +60.0 177.7	30 58.0 +60.0 176.5	30 56.4 +60.0 175.4
10°	32 00.0 +60.0 180.0	31 59.8 +60.0 178.8	31 59.1 +60.0 177.7	31 58.0 +59.9 176.5	31 56.4 +59.9 175.4
11°	33 00.0 +60.0 180.0	32 59.8 +60.0 178.8	32 59.1 +60.0 177.7	32 57.9 +60.0 176.5	32 56.3 +60.0 175.3
12°	34 00.0 +60.0 180.0	33 59.8 +60.0 178.8	33 59.1 +60.0 177.6	33 57.9 +60.0 176.5	33 56.3 +60.0 175.3
13°	35 00.0 +60.0 180.0	34 59.8 +60.0 178.8	34 59.1 +60.0 177.6	34 57.9 +60.0 176.4	34 56.3 +59.9 175.2
14°	36 00.0 +60.0 180.0	35 59.8 +60.0 178.8	35 59.1 +60.0 177.6	35 57.9 +60.0 176.4	35 56.2 +60.0 175.2
15°	37 00.0 +60.0 180.0	36 59.8 +60.0 178.8	36 59.1 +59.9 177.6	36 57.9 +59.9 176.4	36 56.2 +60.0 175.2
16°	38 00.0 +60.0 180.0	37 59.8 +60.0 178.8	37 59.0 +60.0 177.6	37 57.8 +60.0 176.3	37 56.2 +59.9 175.1
17°	39 00.0 +60.0 180.0	38 59.8 +60.0 178.8	38 59.0 +60.0 177.5	38 57.8 +60.0 176.3	38 56.1 +60.0 175.1
18°	40 00.0 +60.0 180.0	39 59.8 +60.0 178.8	39 59.0 +60.0 177.5	39 57.8 +60.0 176.3	39 56.1 +60.0 175.0
19°	41 00.0 +60.0 180.0	40 59.8 +60.0 178.7	40 59.0 +60.0 177.5	40 57.8 +60.0 176.2	40 56.1 +59.9 175.0
20°	42 00.0 +60.0 180.0	41 59.8 +59.9 178.7	41 59.0 +60.0 177.5	41 57.8 +59.9 176.2	41 56.0 +60.0 174.9
21°	43 00.0 +60.0 180.0	42 59.7 +60.0 178.7	42 59.0 +60.0 177.4	42 57.7 +60.0 176.2	42 56.0 +60.0 174.9
22°	44 00.0 +60.0 180.0	43 59.7 +60.0 178.7	43 59.0 +60.0 177.4	43 57.7 +60.0 176.1	43 56.0 +59.9 174.8
23°	45 00.0 +60.0 180.0	44 59.7 +60.0 178.7	44 59.0 +60.0 177.4	44 57.7 +60.0 176.1	44 55.9 +60.0 174.8
24°	46 00.0 +60.0 180.0	45 59.7 +60.0 178.7	45 59.0 +60.0 177.4	45 57.7 +60.0 176.1	45 55.9 +59.9 174.7
25°	47 00.0 +60.0 180.0	46 59.7 +60.0 178.7	46 59.0 +59.9 177.3	46 57.7 +59.9 176.0	46 55.8 +60.0 174.7
26°	48 00.0 +60.0 180.0	47 59.7 +60.0 178.7	47 58.9 +60.0 177.3	47 57.6 +60.0 176.0	47 55.8 +59.9 174.6
27°	49 00.0 +60.0 180.0	48 59.7 +60.0 178.6	48 58.9 +60.0 177.3	48 57.6 +60.0 175.9	48 55.7 +60.0 174.6
28°	50 00.0 +60.0 180.0	49 59.7 +60.0 178.6	49 58.9 +60.0 177.3	49 57.6 +59.9 175.9	49 55.7 +59.9 174.5
29°	51 00.0 +60.0 180.0	50 59.7 +60.0 178.6	50 58.9 +60.0 177.2	50 57.5 +60.0 175.8	50 55.6 +60.0 174.4

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°	21 54.7 +60.0 174.6	21 52.4 +59.9 173.5	21 49.7 +59.9 172.5	21 46.5 +59.9 171.4	21 42.9 +59.9 170.3
1°	22 54.7 +59.9 174.6	22 52.3 +60.0 173.5	22 49.6 +59.9 172.4	22 46.4 +59.9 171.3	22 42.8 +59.9 170.2
2°	23 54.6 +60.0 174.5	23 52.3 +59.9 173.4	23 49.5 +59.9 172.3	23 46.3 +59.9 171.3	23 42.7 +59.9 170.2
3°	24 54.6 +60.0 174.5	24 52.2 +60.0 173.4	24 49.4 +60.0 172.3	24 46.2 +59.9 171.2	24 42.6 +59.8 170.1
4°	25 54.6 +59.9 174.5	25 52.2 +59.9 173.3	25 49.4 +59.9 172.2	25 46.1 +59.9 171.1	25 42.4 +59.9 170.0
5°	26 54.5 +60.0 174.4	26 52.1 +60.0 173.3	26 49.3 +59.9 172.2	26 46.0 +59.9 171.1	26 42.3 +59.9 170.0
6°	27 54.5 +59.9 174.4	27 52.1 +59.9 173.2	27 49.2 +59.9 172.1	27 45.9 +59.9 171.0	27 42.2 +59.8 169.9
7°	28 54.4 +60.0 174.3	28 52.0 +59.9 173.2	28 49.1 +59.9 172.1	28 45.8 +59.9 170.9	28 42.0 +59.9 169.8
8°	29 54.4 +60.0 174.3	29 51.9 +60.0 173.1	29 49.0 +59.9 172.0	29 45.7 +59.9 170.9	29 41.9 +59.9 169.7
9°	30 54.4 +59.9 174.2	30 51.9 +59.9 173.1	30 48.9 +60.0 171.9	30 45.6 +59.9 170.8	30 41.8 +59.8 169.6
10°	31 54.3 +60.0 174.2	31 51.8 +59.9 173.0	31 48.9 +59.9 171.9	31 45.5 +59.9 170.7	31 41.6 +59.9 169.6
11°	32 54.3 +59.9 174.2	32 51.7 +60.0 173.0	32 48.8 +59.9 171.8	32 45.4 +59.8 170.7	32 41.5 +59.8 169.5
12°	33 54.2 +60.0 174.1	33 51.7 +59.9 172.9	33 48.7 +59.9 171.8	33 45.2 +59.9 170.6	33 41.3 +59.9 169.4
13°	34 54.2 +59.9 174.1	34 51.6 +59.9 172.9	34 48.6 +59.9 171.7	34 45.1 +59.9 170.5	34 41.2 +59.8 169.3
14°	35 54.1 +60.0 174.0	35 51.5 +60.0 172.8	35 48.5 +59.9 171.6	35 45.0 +59.9 170.4	35 41.0 +59.9 169.2
15°	36 54.1 +59.9 174.0	36 51.5 +59.9 172.8	36 48.4 +59.9 171.5	36 44.9 +59.8 170.3	36 40.9 +59.8 169.1
16°	37 54.0 +60.0 173.9	37 51.4 +59.9 172.7	37 48.3 +59.9 171.5	37 44.7 +59.9 170.3	37 40.7 +59.8 169.0
17°	38 54.0 +59.9 173.9	38 51.3 +60.0 172.6	38 48.2 +59.9 171.4	38 44.6 +59.9 170.2	38 40.5 +59.9 169.0
18°	39 53.9 +60.0 173.8	39 51.3 +59.9 172.6	39 48.1 +59.9 171.3	39 44.5 +59.8 170.1	39 40.4 +59.8 168.9
19°	40 53.9 +59.9 173.7	40 51.2 +59.9 172.5	40 48.0 +59.9 171.2	40 44.3 +59.9 170.0	40 40.2 +59.8 168.8
20°	41 53.8 +59.9 173.7	41 51.1 +59.9 172.4	41 47.9 +59.9 171.2	41 44.2 +59.8 169.9	41 40.0 +59.8 168.7
21°	42 53.7 +60.0 173.6	42 51.0 +59.9 172.4	42 47.8 +59.8 171.1	42 44.0 +59.9 169.8	42 39.8 +59.8 168.5
22°	43 53.7 +59.9 173.6	43 50.9 +59.9 172.3	43 47.6 +59.9 171.0	43 43.9 +59.8 169.7	43 39.6 +59.8 168.4
23°	44 53.6 +60.0 173.5	44 50.8 +59.9 172.2	44 47.5 +59.9 170.9	44 43.7 +59.9 169.6	44 39.4 +59.8 168.3
24°	45 53.6 +59.9 173.4	45 50.7 +59.9 172.1	45 47.4 +59.9 170.8	45 43.6 +59.8 169.5	45 39.2 +59.8 168.2
25°	46 53.5 +59.9 173.4	46 50.6 +59.9 172.0	46 47.3 +59.8 170.7	46 43.4 +59.8 169.4	46 39.0 +59.8 168.1
26°	47 53.4 +60.0 173.3	47 50.5 +59.9 172.0	47 47.1 +59.9 170.6	47 43.2 +59.8 169.3	47 38.8 +59.7 168.0
27°	48 53.4 +59.9 173.2	48 50.4 +59.9 171.9	48 47.0 +59.8 170.5	48 43.0 +59.8 169.2	48 38.5 +59.8 167.8
28°	49 53.3 +59.9 173.1	49 50.3 +59.9 171.8	49 46.8 +59.9 170.4	49 42.8 +59.8 169.0	49 38.3 +59.8 167.7
29°	50 53.2 +59.9 173.1	50 50.2 +59.9 171.7	50 46.7 +59.8 170.3	50 42.6 +59.8 168.9	50 38.1 +59.7 167.5

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°	21 38.9 +59.9 169.2	21 34.5 +59.8 168.2	21 29.7 +59.8 167.1	21 24.5 +59.7 166.0	21 18.8 +59.8 164.9
1°	22 38.8 +59.8 169.2	22 34.3 +59.9 168.1	22 29.5 +59.8 167.0	22 24.2 +59.8 165.9	22 18.6 +59.7 164.8
2°	23 38.6 +59.9 169.1	23 34.2 +59.8 168.0	23 29.3 +59.8 166.9	23 24.0 +59.7 165.8	23 18.3 +59.7 164.7
3°	24 38.5 +59.8 169.0	24 34.0 +59.8 167.9	24 29.1 +59.7 166.8	24 23.7 +59.8 165.7	24 18.0 +59.7 164.6
4°	25 38.3 +59.9 168.9	25 33.8 +59.8 167.8	25 28.8 +59.8 166.7	25 23.5 +59.7 165.6	25 17.7 +59.7 164.5
5°	26 38.2 +59.8 168.8	26 33.6 +59.8 167.7	26 28.6 +59.8 166.6	26 23.2 +59.7 165.5	26 17.4 +59.7 164.4
6°	27 38.0 +59.8 168.8	27 33.4 +59.8 167.6	27 28.4 +59.7 166.5	27 22.9 +59.8 165.4	27 17.1 +59.6 164.3
7°	28 37.8 +59.9 168.7	28 33.2 +59.8 167.5	28 28.1 +59.8 166.4	28 22.7 +59.7 165.3	28 16.7 +59.7 164.2
8°	29 37.7 +59.8 168.6	29 33.0 +59.8 167.5	29 27.9 +59.8 166.3	29 22.4 +59.7 165.2	29 16.4 +59.7 164.1
9°	30 37.5 +59.8 168.5	30 32.8 +59.8 167.4	30 27.7 +59.7 166.2	30 22.1 +59.7 165.1	30 16.1 +59.7 163.9
10°	31 37.3 +59.8 168.4	31 32.6 +59.8 167.3	31 27.4 +59.8 166.1	31 21.8 +59.7 165.0	31 15.8 +59.6 163.8
11°	32 37.1 +59.9 168.3	32 32.4 +59.8 167.2	32 27.2 +59.7 166.0	32 21.5 +59.7 164.8	32 15.4 +59.7 163.7
12°	33 37.0 +59.8 168.2	33 32.2 +59.7 167.1	33 26.9 +59.7 165.9	33 21.2 +59.7 164.7	33 15.1 +59.6 163.6
13°	34 36.8 +59.8 168.1	34 31.9 +59.8 167.0	34 26.6 +59.8 165.8	34 20.9 +59.7 164.6	34 14.7 +59.6 163.4
14°	35 36.6 +59.8 168.0	35 31.7 +59.8 166.9	35 26.4 +59.7 165.7	35 20.6 +59.7 164.5	35 14.3 +59.7 163.3
15°	36 36.4 +59.8 167.9	36 31.5 +59.7 166.7	36 26.1 +59.7 165.5	36 20.3 +59.6 164.4	36 14.0 +59.6 163.2
16°	37 36.2 +59.8 167.8	37 31.2 +59.8 166.6	37 25.8 +59.7 165.4	37 19.9 +59.7 164.2	37 13.6 +59.6 163.0
17°	38 36.0 +59.8 167.7	38 31.0 +59.7 166.5	38 25.5 +59.7 165.3	38 19.6 +59.6 164.1	38 13.2 +59.6 162.9
18°	39 35.8 +59.8 167.6	39 30.7 +59.8 166.4	39 25.2 +59.7 165.2	39 19.2 +59.7 163.9	39 12.8 +59.6 162.7
19°	40 35.6 +59.7 167.5	40 30.5 +59.7 166.3	40 24.9 +59.7 165.0	40 18.9 +59.6 163.8	40 12.4 +59.5 162.6
20°	41 35.3 +59.8 167.4	41 30.2 +59.7 166.1	41 24.6 +59.6 164.9	41 18.5 +59.6 163.7	41 11.9 +59.6 162.4
21°	42 35.1 +59.8 167.3	42 29.9 +59.7 166.0	42 24.2 +59.7 164.8	42 18.1 +59.6 163.5	42 11.5 +59.5 162.3
22°	43 34.9 +59.7 167.2	43 29.6 +59.7 165.9	43 23.9 +59.7 164.6	43 17.7 +59.6 163.3	43 11.0 +59.6 162.1
23°	44 34.6 +59.8 167.0	44 29.3 +59.7 165.7	44 23.6 +59.6 164.5	44 17.3 +59.6 163.2	44 10.6 +59.5 161.9
24°	45 34.4 +59.7 166.9	45 29.0 +59.7 165.6	45 23.2 +59.6 164.3	45 16.9 +59.5 163.0	45 10.1 +59.5 161.7
25°	46 34.1 +59.7 166.8	46 28.7 +59.7 165.5	46 22.8 +59.6 164.1	46 16.4 +59.6 162.8	46 09.6 +59.4 161.5
26°	47 33.8 +59.7 166.6	47 28.4 +59.6 165.3	47 22.4 +59.6 164.0	47 16.0 +59.5 162.7	47 09.0 +59.5 161.4
27°	48 33.5 +59.7 166.5	48 28.0 +59.7 165.1	48 22.0 +59.6 163.8	48 15.5 +59.5 162.5	48 08.5 +59.4 161.2
28°	49 33.2 +59.7 166.3	49 27.7 +59.6 165.0	49 21.6 +59.6 163.6	49 15.0 +59.5 162.3	49 07.9 +59.4 160.9
29°	50 32.9 +59.7 166.2	50 27.3 +59.6 164.8	50 21.2 +59.5 163.4	50 14.5 +59.5 162.1	50 07.3 +59.4 160.7

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°	21 12.8 +59.7 163.9	21 06.4 +59.6 162.8	20 59.5 +59.6 161.8	20 52.3 +59.5 160.7	20 44.7 +59.4 159.6
1°	22 12.5 +59.6 163.8	22 06.0 +59.6 162.7	21 59.1 +59.6 161.6	21 51.8 +59.5 160.6	21 44.1 +59.5 159.5
2°	23 12.1 +59.7 163.7	23 05.6 +59.6 162.6	22 58.7 +59.6 161.5	22 51.3 +59.6 160.4	22 43.6 +59.5 159.3
3°	24 11.8 +59.7 163.5	24 05.2 +59.6 162.5	23 58.3 +59.5 161.4	23 50.9 +59.5 160.3	23 43.1 +59.4 159.2
4°	25 11.5 +59.6 163.4	25 04.8 +59.6 162.3	24 57.8 +59.6 161.2	24 50.4 +59.5 160.1	24 42.5 +59.5 159.1
5°	26 11.1 +59.7 163.3	26 04.4 +59.6 162.2	25 57.4 +59.5 161.1	25 49.9 +59.5 160.0	25 42.0 +59.4 158.9
6°	27 10.8 +59.6 163.2	27 04.0 +59.6 162.1	26 56.9 +59.6 161.0	26 49.4 +59.5 159.9	26 41.4 +59.5 158.8
7°	28 10.4 +59.6 163.1	28 03.6 +59.6 161.9	27 56.5 +59.5 160.8	27 48.9 +59.5 159.7	27 40.9 +59.4 158.6
8°	29 10.0 +59.7 162.9	29 03.2 +59.6 161.8	28 56.0 +59.5 160.7	28 48.4 +59.4 159.6	28 40.3 +59.4 158.4
9°	30 09.7 +59.6 162.8	30 02.8 +59.6 161.7	29 55.5 +59.5 160.5	29 47.8 +59.5 159.4	29 39.7 +59.4 158.3
10°	31 09.3 +59.6 162.7	31 02.4 +59.5 161.5	30 55.0 +59.5 160.4	30 47.3 +59.4 159.3	30 39.1 +59.4 158.1
11°	32 08.9 +59.6 162.5	32 01.9 +59.6 161.4	31 54.5 +59.5 160.2	31 46.7 +59.5 159.1	31 38.5 +59.4 158.0
12°	33 08.5 +59.6 162.4	33 01.5 +59.5 161.2	32 54.0 +59.5 160.1	32 46.2 +59.4 158.9	32 37.9 +59.3 157.8
13°	34 08.1 +59.6 162.3	34 01.0 +59.5 161.1	33 53.5 +59.5 159.9	33 45.6 +59.4 158.8	33 37.2 +59.4 157.6
14°	35 07.7 +59.5 162.1	35 00.5 +59.6 160.9	34 53.0 +59.4 159.8	34 45.0 +59.4 158.6	34 36.6 +59.3 157.4
15°	36 07.2 +59.6 162.0	36 00.1 +59.5 160.8	35 52.4 +59.5 159.6	35 44.4 +59.4 158.4	35 35.9 +59.3 157.2
16°	37 06.8 +59.5 161.8	36 59.6 +59.4 160.6	36 51.9 +59.4 159.4	36 43.8 +59.3 158.2	36 35.2 +59.3 157.1
17°	38 06.3 +59.6 161.7	37 59.0 +59.5 160.5	37 51.3 +59.4 159.3	37 43.1 +59.4 158.1	37 34.5 +59.3 156.9
18°	39 05.9 +59.5 161.5	38 58.5 +59.5 160.3	38 50.7 +59.4 159.1	38 42.5 +59.3 157.9	38 33.8 +59.2 156.7
19°	40 05.4 +59.5 161.3	39 58.0 +59.4 160.1	39 50.1 +59.4 158.9	39 41.8 +59.3 157.7	39 33.0 +59.3 156.5
20°	41 04.9 +59.5 161.2	40 57.4 +59.5 159.9	40 49.5 +59.4 158.7	40 41.1 +59.3 157.5	40 32.3 +59.2 156.3
21°	42 04.4 +59.5 161.0	41 56.9 +59.4 159.8	41 48.9 +59.3 158.5	41 40.4 +59.3 157.3	41 31.5 +59.2 156.0
22°	43 03.9 +59.4 160.8	42 56.3 +59.4 159.6	42 48.2 +59.3 158.3	42 39.7 +59.2 157.1	42 30.7 +59.1 155.8
23°	44 03.3 +59.5 160.6	43 55.7 +59.3 159.4	43 47.5 +59.3 158.1	43 38.9 +59.2 156.9	43 29.8 +59.2 155.6
24°	45 02.8 +59.4 160.4	44 55.0 +59.4 159.2	44 46.8 +59.3 157.9	44 38.1 +59.2 156.6	44 29.0 +59.1 155.4
25°	46 02.2 +59.4 160.3	45 54.4 +59.3 159.0	45 46.1 +59.2 157.7	45 37.3 +59.2 156.4	45 28.1 +59.0 155.1
26°	47 01.6 +59.4 160.0	46 53.7 +59.3 158.7	46 45.3 +59.2 157.4	46 36.5 +59.1 156.2	46 27.1 +59.1 154.9
27°	48 01.0 +59.3 159.8	47 53.0 +59.3 158.5	47 44.5 +59.2 157.2	47 35.6 +59.1 155.9	47 26.2 +59.0 154.6
28°	49 00.3 +59.4 159.6	48 52.3 +59.2 158.3	48 43.7 +59.2 157.0	48 34.7 +59.0 155.6	48 25.2 +58.9 154.3
29°	49 59.7 +59.3 159.4	49 51.5 +59.2 158.0	49 42.9 +59.1 156.7	49 33.7 +59.0 155.4	49 24.1 +58.9 154.1

Declination SAME name as Latitude

Latitude 68°

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°	20 36.6 +59.5 158.6	20 28.2 +59.4 157.5	20 19.4 +59.4 156.5	20 10.3 +59.2 155.4	20 00.7 +59.2 154.3
1°	21 36.1 +59.4 158.4	21 27.6 +59.4 157.4	21 18.8 +59.3 156.3	21 09.5 +59.3 155.2	20 59.9 +59.2 154.2
2°	22 35.5 +59.4 158.3	22 27.0 +59.3 157.2	22 18.1 +59.3 156.1	22 08.8 +59.2 155.1	21 59.1 +59.2 154.0
3°	23 34.9 +59.4 158.1	23 26.3 +59.4 157.0	23 17.4 +59.3 156.0	23 08.0 +59.3 154.9	22 58.3 +59.2 153.8
4°	24 34.3 +59.4 158.0	24 25.7 +59.3 156.9	24 16.7 +59.2 155.8	24 07.3 +59.2 154.7	23 57.5 +59.1 153.6
5°	25 33.7 +59.4 157.8	25 25.0 +59.4 156.7	25 15.9 +59.3 155.6	25 06.5 +59.2 154.5	24 56.6 +59.2 153.5
6°	26 33.1 +59.4 157.7	26 24.4 +59.3 156.6	26 15.2 +59.3 155.5	26 05.7 +59.2 154.4	25 55.8 +59.1 153.3
7°	27 32.5 +59.3 157.5	27 23.7 +59.3 156.4	27 14.5 +59.2 155.3	27 04.9 +59.1 154.2	26 54.9 +59.1 153.1
8°	28 31.8 +59.4 157.3	28 23.0 +59.3 156.2	28 13.7 +59.2 155.1	28 04.0 +59.2 154.0	27 54.0 +59.1 152.9
9°	29 31.2 +59.3 157.2	29 22.3 +59.2 156.0	29 12.9 +59.2 154.9	29 03.2 +59.2 153.8	28 53.1 +59.1 152.7
10°	30 30.5 +59.4 157.0	30 21.5 +59.3 155.9	30 12.1 +59.2 154.7	30 02.4 +59.1 153.6	29 52.2 +59.0 152.5
11°	31 29.9 +59.3 156.8	31 20.8 +59.2 155.7	31 11.3 +59.2 154.5	31 01.5 +59.1 153.4	30 51.2 +59.1 152.3
12°	32 29.2 +59.3 156.6	32 20.0 +59.3 155.5	32 10.5 +59.2 154.3	32 00.6 +59.1 153.2	31 50.3 +59.0 152.1
13°	33 28.5 +59.2 156.5	33 19.3 +59.2 155.3	33 09.7 +59.1 154.1	32 59.7 +59.0 153.0	32 49.3 +59.0 151.9
14°	34 27.7 +59.3 156.3	34 18.5 +59.2 155.1	34 08.8 +59.1 153.9	33 58.7 +59.1 152.8	33 48.3 +58.9 151.6
15°	35 27.0 +59.2 156.1	35 17.7 +59.2 154.9	35 07.9 +59.1 153.7	34 57.8 +59.0 152.6	34 47.2 +59.0 151.4
16°	36 26.2 +59.3 155.9	36 16.9 +59.1 154.7	36 07.0 +59.1 153.5	35 56.8 +59.0 152.4	35 46.2 +58.9 151.2
17°	37 25.5 +59.2 155.7	37 16.0 +59.1 154.5	37 06.1 +59.1 153.3	36 55.8 +59.0 152.1	36 45.1 +58.9 151.0
18°	38 24.7 +59.2 155.5	38 15.1 +59.1 154.3	38 05.2 +59.0 153.1	37 54.8 +58.9 151.9	37 44.0 +58.9 150.7
19°	39 23.9 +59.1 155.3	39 14.2 +59.1 154.1	39 04.2 +59.0 152.9	38 53.7 +58.9 151.7	38 42.9 +58.8 150.5
20°	40 23.0 +59.1 155.0	40 13.3 +59.1 153.8	40 03.2 +59.0 152.6	39 52.6 +58.9 151.4	39 41.7 +58.8 150.2
21°	41 22.1 +59.2 154.8	41 12.4 +59.0 153.6	41 02.2 +58.9 152.4	40 51.5 +58.9 151.2	40 40.5 +58.7 150.0
22°	42 21.3 +59.0 154.6	42 11.4 +59.0 153.4	42 01.1 +58.9 152.1	41 50.4 +58.8 150.9	41 39.2 +58.8 149.7
23°	43 20.3 +59.1 154.4	43 10.4 +58.9 153.1	43 00.0 +58.9 151.9	42 49.2 +58.8 150.6	42 38.0 +58.6 149.4
24°	44 19.4 +59.0 154.1	44 09.3 +59.0 152.9	43 58.9 +58.8 151.6	43 48.0 +58.7 150.4	43 36.6 +58.7 149.1
25°	45 18.4 +59.0 153.8	45 08.3 +58.8 152.6	44 57.7 +58.8 151.3	44 46.7 +58.7 150.1	44 35.3 +58.6 148.8
26°	46 17.4 +58.9 153.6	46 07.1 +58.9 152.3	45 56.5 +58.7 151.0	45 45.4 +58.6 149.8	45 33.9 +58.5 148.5
27°	47 16.3 +58.9 153.3	47 06.0 +58.8 152.0	46 55.2 +58.7 150.7	46 44.0 +58.6 149.5	46 32.4 +58.5 148.2
28°	48 15.2 +58.9 153.0	48 04.8 +58.7 151.7	47 53.9 +58.7 150.4	47 42.6 +58.5 149.2	47 30.9 +58.4 147.9
29°	49 14.1 +58.8 152.7	49 03.5 +58.7 151.4	48 52.6 +58.6 150.1	48 41.1 +58.5 148.8	48 29.3 +58.4 147.5

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°	19 50.8 +59.2 153.3	19 40.5 +59.1 152.3	19 29.9 +59.0 151.2	19 18.9 +58.9 150.2	19 07.5 +58.9 149.1
1°	20 50.0 +59.1 153.1	20 39.6 +59.1 152.1	20 28.9 +59.0 151.0	20 17.8 +59.0 150.0	20 06.4 +58.9 148.9
2°	21 49.1 +59.1 152.9	21 38.7 +59.0 151.9	21 27.9 +59.0 150.8	21 16.8 +58.9 149.8	21 05.3 +58.8 148.7
3°	22 48.2 +59.1 152.8	22 37.7 +59.1 151.7	22 26.9 +58.9 150.6	22 15.7 +58.9 149.6	22 04.1 +58.8 148.5
4°	23 47.3 +59.1 152.6	23 36.8 +59.0 151.5	23 25.8 +59.0 150.4	23 14.6 +58.9 149.4	23 02.9 +58.8 148.3
5°	24 46.4 +59.1 152.4	24 35.8 +59.0 151.3	24 24.8 +58.9 150.2	24 13.5 +58.8 149.1	24 01.7 +58.8 148.1
6°	25 45.5 +59.0 152.2	25 34.8 +59.0 151.1	25 23.7 +59.0 150.0	25 12.3 +58.9 148.9	25 00.5 +58.8 147.9
7°	26 44.5 +59.1 152.0	26 33.8 +58.9 150.9	26 22.7 +58.9 149.8	26 11.2 +58.8 148.7	25 59.3 +58.8 147.6
8°	27 43.6 +59.0 151.8	27 32.7 +59.0 150.7	27 21.6 +58.8 149.6	27 10.0 +58.8 148.5	26 58.1 +58.7 147.4
9°	28 42.6 +59.0 151.6	28 31.7 +58.9 150.5	28 20.4 +58.9 149.4	28 08.8 +58.8 148.3	27 56.8 +58.7 147.2
10°	29 41.6 +59.0 151.4	29 30.6 +58.9 150.3	29 19.3 +58.8 149.2	29 07.6 +58.7 148.0	28 55.5 +58.7 146.9
11°	30 40.6 +58.9 151.2	30 29.5 +58.9 150.0	30 18.1 +58.8 148.9	30 06.3 +58.8 147.8	29 54.2 +58.6 146.7
12°	31 39.5 +59.0 150.9	31 28.4 +58.9 149.8	31 16.9 +58.8 148.7	31 05.1 +58.7 147.6	30 52.8 +58.7 146.5
13°	32 38.5 +58.9 150.7	32 27.3 +58.8 149.6	32 15.7 +58.8 148.5	32 03.8 +58.7 147.3	31 51.5 +58.6 146.2
14°	33 37.4 +58.9 150.5	33 26.1 +58.8 149.4	33 14.5 +58.7 148.2	33 02.5 +58.6 147.1	32 50.1 +58.5 146.0
15°	34 36.3 +58.9 150.3	34 24.9 +58.8 149.1	34 13.2 +58.7 148.0	34 01.1 +58.6 146.8	33 48.6 +58.6 145.7
16°	35 35.2 +58.8 150.0	35 23.7 +58.8 148.9	35 11.9 +58.7 147.7	34 59.7 +58.6 146.6	34 47.2 +58.5 145.4
17°	36 34.0 +58.8 149.8	36 22.5 +58.7 148.6	36 10.6 +58.6 147.5	35 58.3 +58.6 146.3	35 45.7 +58.4 145.2
18°	37 32.8 +58.8 149.5	37 21.2 +58.7 148.4	37 09.2 +58.6 147.2	36 56.9 +58.5 146.0	36 44.1 +58.4 144.9
19°	38 31.6 +58.7 149.3	38 19.9 +58.6 148.1	38 07.8 +58.6 146.9	37 55.4 +58.4 145.8	37 42.5 +58.4 144.6
20°	39 30.3 +58.7 149.0	39 18.5 +58.7 147.8	39 06.4 +58.5 146.6	38 53.8 +58.5 145.5	38 40.9 +58.3 144.3
21°	40 29.0 +58.7 148.8	40 17.2 +58.5 147.6	40 04.9 +58.5 146.4	39 52.3 +58.3 145.2	39 39.2 +58.3 144.0
22°	41 27.7 +58.6 148.5	41 15.7 +58.6 147.3	41 03.4 +58.4 146.1	40 50.6 +58.4 144.9	40 37.5 +58.3 143.7
23°	42 26.3 +58.6 148.2	42 14.3 +58.4 147.0	42 01.8 +58.4 145.8	41 49.0 +58.3 144.6	41 35.8 +58.1 143.4
24°	43 24.9 +58.5 147.9	43 12.7 +58.5 146.7	43 00.2 +58.3 145.5	42 47.3 +58.2 144.2	42 33.9 +58.1 143.0
25°	44 23.4 +58.5 147.6	44 11.2 +58.4 146.4	43 58.5 +58.3 145.1	43 45.5 +58.1 143.9	43 32.0 +58.1 142.7
26°	45 21.9 +58.4 147.3	45 09.6 +58.3 146.0	44 56.8 +58.2 144.8	44 43.6 +58.1 143.6	44 30.1 +58.0 142.3
27°	46 20.3 +58.4 146.9	46 07.9 +58.2 145.7	45 55.0 +58.2 144.4	45 41.7 +58.1 143.2	45 28.1 +57.9 142.0
28°	47 18.7 +58.3 146.6	47 06.1 +58.2 145.3	46 53.2 +58.0 144.1	46 39.8 +57.9 142.8	46 26.0 +57.8 141.6
29°	48 17.0 +58.3 146.3	48 04.3 +58.2 145.0	47 51.2 +58.0 143.7	47 37.7 +57.9 142.5	47 23.8 +57.8 141.2

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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°	18 55.8 +58.8 148.1	18 43.8 +58.7 147.1	18 31.4 +58.6 146.0	18 18.6 +58.6 145.0	18 05.6 +58.5 144.0
1°	19 54.6 +58.8 147.9	19 42.5 +58.7 146.8	19 30.0 +58.7 145.8	19 17.2 +58.6 144.8	19 04.1 +58.5 143.7
2°	20 53.4 +58.8 147.7	20 41.2 +58.7 146.6	20 28.7 +58.6 145.6	20 15.8 +58.6 144.5	20 02.6 +58.5 143.5
3°	21 52.2 +58.7 147.4	21 39.9 +58.7 146.4	21 27.3 +58.6 145.3	21 14.4 +58.5 144.3	21 01.1 +58.4 143.3
4°	22 50.9 +58.8 147.2	22 38.6 +58.7 146.2	22 25.9 +58.6 145.1	22 12.9 +58.5 144.1	21 59.5 +58.5 143.0
5°	23 49.7 +58.7 147.0	23 37.3 +58.6 145.9	23 24.5 +58.6 144.9	23 11.4 +58.5 143.8	22 58.0 +58.4 142.8
6°	24 48.4 +58.7 146.8	24 35.9 +58.6 145.7	24 23.1 +58.5 144.6	24 09.9 +58.5 143.6	23 56.4 +58.4 142.5
7°	25 47.1 +58.7 146.6	25 34.5 +58.6 145.5	25 21.6 +58.6 144.4	25 08.4 +58.4 143.3	24 54.8 +58.4 142.3
8°	26 45.8 +58.6 146.3	26 33.1 +58.6 145.2	26 20.2 +58.4 144.2	26 06.8 +58.4 143.1	25 53.2 +58.3 142.0
9°	27 44.4 +58.7 146.1	27 31.7 +58.6 145.0	27 18.6 +58.5 143.9	27 05.2 +58.4 142.8	26 51.5 +58.3 141.8
10°	28 43.1 +58.6 145.8	28 30.3 +58.5 144.7	28 17.1 +58.5 143.7	28 03.6 +58.4 142.6	27 49.8 +58.3 141.5
11°	29 41.7 +58.5 145.6	29 28.8 +58.5 144.5	29 15.6 +58.4 143.4	29 02.0 +58.3 142.3	28 48.1 +58.2 141.2
12°	30 40.2 +58.6 145.3	30 27.3 +58.4 144.2	30 14.0 +58.3 143.1	30 00.3 +58.3 142.0	29 46.3 +58.2 140.9
13°	31 38.8 +58.5 145.1	31 25.7 +58.5 144.0	31 12.3 +58.4 142.9	30 58.6 +58.3 141.8	30 44.5 +58.2 140.7
14°	32 37.3 +58.5 144.8	32 24.2 +58.4 143.7	32 10.7 +58.3 142.6	31 56.9 +58.2 141.5	31 42.7 +58.1 140.4
15°	33 35.8 +58.4 144.6	33 22.6 +58.3 143.4	33 09.0 +58.3 142.3	32 55.1 +58.2 141.2	32 40.8 +58.1 140.1
16°	34 34.2 +58.4 144.3	34 20.9 +58.3 143.2	34 07.3 +58.2 142.0	33 53.3 +58.1 140.9	33 38.9 +58.1 139.8
17°	35 32.6 +58.4 144.0	35 19.2 +58.3 142.9	35 05.5 +58.2 141.7	34 51.4 +58.1 140.6	34 37.0 +58.0 139.5
18°	36 31.0 +58.3 143.7	36 17.5 +58.3 142.6	36 03.7 +58.1 141.4	35 49.5 +58.0 140.3	35 35.0 +57.9 139.2
19°	37 29.3 +58.3 143.4	37 15.8 +58.1 142.3	37 01.8 +58.1 141.1	36 47.5 +58.0 140.0	36 32.9 +57.9 138.8
20°	38 27.6 +58.2 143.1	38 13.9 +58.2 142.0	37 59.9 +58.1 140.8	37 45.5 +58.0 139.7	37 30.8 +57.9 138.5
21°	39 25.8 +58.2 142.8	39 12.1 +58.1 141.6	38 58.0 +57.9 140.5	38 43.5 +57.9 139.3	38 28.7 +57.7 138.2
22°	40 24.0 +58.2 142.5	40 10.2 +58.0 141.3	39 55.9 +58.0 140.2	39 41.4 +57.8 139.0	39 26.4 +57.8 137.8
23°	41 22.2 +58.0 142.2	41 08.2 +58.0 141.0	40 53.9 +57.8 139.8	40 39.2 +57.7 138.6	40 24.2 +57.6 137.5
24°	42 20.2 +58.0 141.8	42 06.2 +57.9 140.6	41 51.7 +57.8 139.5	41 36.9 +57.7 138.3	41 21.8 +57.6 137.1
25°	43 18.2 +58.0 141.5	43 04.1 +57.8 140.3	42 49.5 +57.7 139.1	42 34.6 +57.6 137.9	42 19.4 +57.5 136.7
26°	44 16.2 +57.9 141.1	44 01.9 +57.8 139.9	43 47.2 +57.7 138.7	43 32.2 +57.6 137.5	43 16.9 +57.4 136.3
27°	45 14.1 +57.8 140.8	44 59.7 +57.6 139.5	44 44.9 +57.6 138.3	44 29.8 +57.4 137.1	44 14.3 +57.3 135.9
28°	46 11.9 +57.7 140.4	45 57.3 +57.6 139.1	45 42.5 +57.4 137.9	45 27.2 +57.4 136.7	45 11.6 +57.3 135.5
29°	47 09.6 +57.6 140.0	46 54.9 +57.5 138.7	46 39.9 +57.4 137.5	46 24.6 +57.2 136.3	46 08.9 +57.1 135.1

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°	17 52.2 +58.4 142.9	17 38.5 +58.4 141.9	17 24.5 +58.3 140.9	17 10.2 +58.2 139.9	16 55.5 +58.2 138.9
1°	18 50.6 +58.5 142.7	18 36.9 +58.3 141.7	18 22.8 +58.2 140.6	18 08.4 +58.2 139.6	17 53.7 +58.1 138.6
2°	19 49.1 +58.4 142.5	19 35.2 +58.3 141.4	19 21.0 +58.3 140.4	19 06.6 +58.1 139.4	18 51.8 +58.1 138.3
3°	20 47.5 +58.4 142.2	20 33.5 +58.4 141.2	20 19.3 +58.2 140.1	20 04.7 +58.2 139.1	19 49.9 +58.0 138.1
4°	21 45.9 +58.3 142.0	21 31.9 +58.2 140.9	21 17.5 +58.2 139.9	21 02.9 +58.1 138.8	20 47.9 +58.1 137.8
5°	22 44.2 +58.4 141.7	22 30.1 +58.3 140.7	22 15.7 +58.2 139.6	22 01.0 +58.1 138.6	21 46.0 +58.0 137.5
6°	23 42.6 +58.3 141.5	23 28.4 +58.2 140.4	23 13.9 +58.2 139.4	22 59.1 +58.1 138.3	22 44.0 +58.0 137.3
7°	24 40.9 +58.3 141.2	24 26.6 +58.2 140.1	24 12.1 +58.1 139.1	23 57.2 +58.0 138.0	23 42.0 +58.0 137.0
8°	25 39.2 +58.2 140.9	25 24.8 +58.2 139.9	25 10.2 +58.1 138.8	24 55.2 +58.0 137.8	24 40.0 +57.9 136.7
9°	26 37.4 +58.2 140.7	26 23.0 +58.1 139.6	26 08.3 +58.0 138.5	25 53.2 +58.0 137.5	25 37.9 +57.9 136.4
10°	27 35.6 +58.2 140.4	27 21.1 +58.2 139.3	27 06.3 +58.1 138.3	26 51.2 +58.0 137.2	26 35.8 +57.9 136.1
11°	28 33.8 +58.2 140.1	28 19.3 +58.0 139.0	28 04.4 +58.0 138.0	27 49.2 +57.9 136.9	27 33.7 +57.8 135.8
12°	29 32.0 +58.1 139.8	29 17.3 +58.1 138.8	29 02.4 +57.9 137.7	28 47.1 +57.8 136.6	28 31.5 +57.7 135.5
13°	30 30.1 +58.1 139.6	30 15.4 +58.0 138.5	30 00.3 +57.9 137.4	29 44.9 +57.9 136.3	29 29.2 +57.8 135.2
14°	31 28.2 +58.0 139.3	31 13.4 +57.9 138.2	30 58.2 +57.9 137.1	30 42.8 +57.7 136.0	30 27.0 +57.7 134.9
15°	32 26.2 +58.0 139.0	32 11.3 +57.9 137.9	31 56.1 +57.8 136.8	31 40.5 +57.8 135.7	31 24.7 +57.6 134.6
16°	33 24.2 +58.0 138.7	33 09.2 +57.9 137.6	32 53.9 +57.8 136.4	32 38.3 +57.6 135.3	32 22.3 +57.6 134.3
17°	34 22.2 +57.9 138.4	34 07.1 +57.8 137.2	33 51.7 +57.7 136.1	33 35.9 +57.7 135.0	33 19.9 +57.5 133.9
18°	35 20.1 +57.9 138.0	35 04.9 +57.8 136.9	34 49.4 +57.7 135.8	34 33.6 +57.5 134.7	34 17.4 +57.5 133.6
19°	36 18.0 +57.8 137.7	36 02.7 +57.7 136.6	35 47.1 +57.6 135.5	35 31.1 +57.6 134.3	35 14.9 +57.4 133.2
20°	37 15.8 +57.7 137.4	37 00.4 +57.6 136.2	36 44.7 +57.5 135.1	36 28.7 +57.4 134.0	36 12.3 +57.4 132.9
21°	38 13.5 +57.7 137.0	37 58.0 +57.6 135.9	37 42.2 +57.5 134.8	37 26.1 +57.4 133.6	37 09.7 +57.3 132.5
22°	39 11.2 +57.6 136.7	38 55.6 +57.5 135.5	38 39.7 +57.4 134.4	38 23.5 +57.3 133.3	38 07.0 +57.2 132.1
23°	40 08.8 +57.5 136.3	39 53.1 +57.4 135.2	39 37.1 +57.3 134.0	39 20.8 +57.2 132.9	39 04.2 +57.1 131.7
24°	41 06.3 +57.5 135.9	40 50.5 +57.4 134.8	40 34.4 +57.3 133.6	40 18.0 +57.2 132.5	40 01.3 +57.0 131.3
25°	42 03.8 +57.4 135.6	41 47.9 +57.3 134.4	41 31.7 +57.2 133.2	41 15.2 +57.0 132.1	40 58.3 +57.0 130.9
26°	43 01.2 +57.3 135.2	42 45.2 +57.2 134.0	42 28.9 +57.0 132.8	42 12.2 +57.0 131.7	41 55.3 +56.8 130.5
27°	43 58.5 +57.2 134.8	43 42.4 +57.1 133.6	43 25.9 +57.0 132.4	43 09.2 +56.9 131.2	42 52.1 +56.8 130.1
28°	44 55.7 +57.1 134.3	44 39.5 +57.0 133.1	44 22.9 +56.9 132.0	44 06.1 +56.7 130.8	43 48.9 +56.7 129.6
29°	45 52.8 +57.1 133.9	45 36.5 +56.9 132.7	45 19.8 +56.8 131.5	45 02.8 +56.7 130.3	44 45.6 +56.5 129.2

Declination SAME name as Latitude

Latitude 68°

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°	16 40.6 +58.0 137.9	16 25.4 +57.9 136.8	16 09.8 +57.9 135.8	15 54.0 +57.9 134.8	15 38.0 +57.7 133.8
1°	17 38.6 +58.1 137.6	17 23.3 +58.0 136.6	17 07.7 +57.9 135.6	16 51.9 +57.8 134.6	16 35.7 +57.8 133.6
2°	18 36.7 +58.0 137.3	18 21.3 +57.9 136.3	18 05.6 +57.9 135.3	17 49.7 +57.8 134.3	17 33.5 +57.7 133.3
3°	19 34.7 +58.0 137.1	19 19.2 +58.0 136.0	19 03.5 +57.8 135.0	18 47.5 +57.7 134.0	18 31.2 +57.6 133.0
4°	20 32.7 +58.0 136.8	20 17.2 +57.9 135.8	20 01.3 +57.8 134.7	19 45.2 +57.8 133.7	19 28.8 +57.7 132.7
5°	21 30.7 +57.9 136.5	21 15.1 +57.8 135.5	20 59.1 +57.8 134.4	20 43.0 +57.7 133.4	20 26.5 +57.6 132.4
6°	22 28.6 +57.9 136.2	22 12.9 +57.8 135.2	21 56.9 +57.8 134.2	21 40.7 +57.6 133.1	21 24.1 +57.6 132.1
7°	23 26.5 +57.9 135.9	23 10.7 +57.8 134.9	22 54.7 +57.7 133.9	22 38.3 +57.7 132.8	22 21.7 +57.6 131.8
8°	24 24.4 +57.9 135.7	24 08.5 +57.8 134.6	23 52.4 +57.7 133.6	23 36.0 +57.6 132.5	23 19.3 +57.5 131.5
9°	25 22.3 +57.8 135.4	25 06.3 +57.7 134.3	24 50.1 +57.6 133.3	24 33.6 +57.5 132.2	24 16.8 +57.5 131.2
10°	26 20.1 +57.7 135.1	26 04.0 +57.7 134.0	25 47.7 +57.6 133.0	25 31.1 +57.6 131.9	25 14.3 +57.4 130.9
11°	27 17.8 +57.8 134.8	27 01.7 +57.7 133.7	26 45.3 +57.6 132.6	26 28.7 +57.5 131.6	26 11.7 +57.4 130.5
12°	28 15.6 +57.7 134.5	27 59.4 +57.6 133.4	27 42.9 +57.5 132.3	27 26.2 +57.4 131.3	27 09.1 +57.4 130.2
13°	29 13.3 +57.6 134.1	28 57.0 +57.6 133.1	28 40.4 +57.5 132.0	28 23.6 +57.4 130.9	28 06.5 +57.3 129.9
14°	30 10.9 +57.6 133.8	29 54.6 +57.5 132.7	29 37.9 +57.4 131.7	29 21.0 +57.3 130.6	29 03.8 +57.2 129.5
15°	31 08.5 +57.6 133.5	30 52.1 +57.4 132.4	30 35.3 +57.4 131.3	30 18.3 +57.3 130.3	30 01.0 +57.2 129.2
16°	32 06.1 +57.5 133.2	31 49.5 +57.4 132.1	31 32.7 +57.3 131.0	31 15.6 +57.2 129.9	30 58.2 +57.2 128.9
17°	33 03.6 +57.4 132.8	32 46.9 +57.4 131.7	32 30.0 +57.3 130.6	32 12.8 +57.2 129.6	31 55.4 +57.1 128.5
18°	34 01.0 +57.4 132.5	33 44.3 +57.3 131.4	33 27.3 +57.2 130.3	33 10.0 +57.1 129.2	32 52.5 +57.0 128.1
19°	34 58.4 +57.3 132.1	34 41.6 +57.2 131.0	34 24.5 +57.1 129.9	34 07.1 +57.0 128.8	33 49.5 +56.9 127.8
20°	35 55.7 +57.3 131.8	35 38.8 +57.2 130.7	35 21.6 +57.1 129.6	35 04.1 +57.0 128.5	34 46.4 +56.9 127.4
21°	36 53.0 +57.1 131.4	36 36.0 +57.0 130.3	36 18.7 +57.0 129.2	36 01.1 +56.9 128.1	35 43.3 +56.8 127.0
22°	37 50.1 +57.1 131.0	37 33.0 +57.0 129.9	37 15.7 +56.9 128.8	36 58.0 +56.8 127.7	36 40.1 +56.7 126.6
23°	38 47.2 +57.1 130.6	38 30.0 +57.0 129.5	38 12.6 +56.8 128.4	37 54.8 +56.7 127.3	37 36.8 +56.6 126.2
24°	39 44.3 +56.9 130.2	39 27.0 +56.8 129.1	39 09.4 +56.7 128.0	38 51.5 +56.7 126.9	38 33.4 +56.6 125.8
25°	40 41.2 +56.9 129.8	40 23.8 +56.7 128.7	40 06.1 +56.7 127.5	39 48.2 +56.5 126.4	39 30.0 +56.4 125.3
26°	41 38.1 +56.7 129.4	41 20.5 +56.7 128.2	41 02.8 +56.5 127.1	40 44.7 +56.4 126.0	40 26.4 +56.3 124.9
27°	42 34.8 +56.7 128.9	42 17.2 +56.5 127.8	41 59.3 +56.4 126.7	41 41.1 +56.4 125.5	41 22.7 +56.2 124.4
28°	43 31.5 +56.5 128.5	43 13.7 +56.5 127.3	42 55.7 +56.3 126.2	42 37.5 +56.2 125.1	42 18.9 +56.1 124.0
29°	44 28.0 +56.4 128.0	44 10.2 +56.3 126.9	43 52.0 +56.2 125.7	43 33.7 +56.0 124.6	43 15.0 +56.0 123.5

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°	15 21.6 +57.7 132.8	15 05.0 +57.6 131.8	14 48.1 +57.6 130.8	14 31.0 +57.5 129.9	14 13.6 +57.4 128.9
1°	16 19.3 +57.7 132.5	16 02.6 +57.6 131.5	15 45.7 +57.5 130.6	15 28.5 +57.4 129.6	15 11.0 +57.4 128.6
2°	17 17.0 +57.6 132.3	17 00.2 +57.5 131.3	16 43.2 +57.4 130.3	16 25.9 +57.4 129.3	16 08.4 +57.3 128.3
3°	18 14.6 +57.6 132.0	17 57.7 +57.6 131.0	17 40.6 +57.5 130.0	17 23.3 +57.4 129.0	17 05.7 +57.3 128.0
4°	19 12.2 +57.6 131.7	18 55.3 +57.5 130.7	18 38.1 +57.4 129.7	18 20.7 +57.3 128.6	18 03.0 +57.3 127.6
5°	20 09.8 +57.5 131.4	19 52.8 +57.4 130.4	19 35.5 +57.4 129.3	19 18.0 +57.3 128.3	19 00.3 +57.2 127.3
6°	21 07.3 +57.5 131.1	20 50.2 +57.5 130.1	20 32.9 +57.4 129.0	20 15.3 +57.3 128.0	19 57.5 +57.2 127.0
7°	22 04.8 +57.5 130.8	21 47.7 +57.4 129.7	21 30.3 +57.3 128.7	21 12.6 +57.2 127.7	20 54.7 +57.2 126.7
8°	23 02.3 +57.4 130.5	22 45.1 +57.3 129.4	22 27.6 +57.3 128.4	22 09.8 +57.3 127.4	21 51.9 +57.1 126.4
9°	23 59.7 +57.4 130.1	23 42.4 +57.4 129.1	23 24.9 +57.2 128.1	23 07.1 +57.1 127.1	22 49.0 +57.1 126.0
10°	24 57.1 +57.4 129.8	24 39.8 +57.2 128.8	24 22.1 +57.2 127.8	24 04.2 +57.1 126.7	23 46.1 +57.0 125.7
11°	25 54.5 +57.3 129.5	25 37.0 +57.3 128.5	25 19.3 +57.2 127.4	25 01.3 +57.1 126.4	24 43.1 +57.0 125.4
12°	26 51.8 +57.3 129.2	26 34.3 +57.2 128.1	26 16.5 +57.1 127.1	25 58.4 +57.0 126.0	25 40.1 +57.0 125.0
13°	27 49.1 +57.2 128.8	27 31.5 +57.1 127.8	27 13.6 +57.0 126.7	26 55.4 +57.0 125.7	26 37.1 +56.9 124.7
14°	28 46.3 +57.2 128.5	28 28.6 +57.1 127.4	28 10.6 +57.0 126.4	27 52.4 +56.9 125.3	27 34.0 +56.8 124.3
15°	29 43.5 +57.1 128.1	29 25.7 +57.0 127.1	29 07.6 +57.0 126.0	28 49.3 +56.9 125.0	28 30.8 +56.8 123.9
16°	30 40.6 +57.1 127.8	30 22.7 +57.0 126.7	30 04.6 +56.9 125.7	29 46.2 +56.8 124.6	29 27.6 +56.7 123.6
17°	31 37.7 +56.9 127.4	31 19.7 +56.9 126.4	31 01.5 +56.8 125.3	30 43.0 +56.7 124.2	30 24.3 +56.6 123.2
18°	32 34.6 +57.0 127.1	32 16.6 +56.8 126.0	31 58.3 +56.7 124.9	31 39.7 +56.7 123.9	31 20.9 +56.6 122.8
19°	33 31.6 +56.8 126.7	33 13.4 +56.8 125.6	32 55.0 +56.7 124.5	32 36.4 +56.6 123.5	32 17.5 +56.5 122.4
20°	34 28.4 +56.8 126.3	34 10.2 +56.7 125.2	33 51.7 +56.6 124.1	33 33.0 +56.5 123.1	33 14.0 +56.5 122.0
21°	35 25.2 +56.7 125.9	35 06.9 +56.6 124.8	34 48.3 +56.5 123.7	34 29.5 +56.4 122.7	34 10.5 +56.3 121.6
22°	36 21.9 +56.6 125.5	36 03.5 +56.5 124.4	35 44.8 +56.5 123.3	35 25.9 +56.4 122.3	35 06.8 +56.3 121.2
23°	37 18.5 +56.6 125.1	37 00.0 +56.4 124.0	36 41.3 +56.3 122.9	36 22.3 +56.2 121.8	36 03.1 +56.1 120.8
24°	38 15.1 +56.4 124.7	37 56.4 +56.4 123.6	37 37.6 +56.2 122.5	37 18.5 +56.2 121.4	36 59.2 +56.1 120.3
25°	39 11.5 +56.3 124.2	38 52.8 +56.2 123.1	38 33.8 +56.2 122.0	38 14.7 +56.0 121.0	37 55.3 +56.0 119.9
26°	40 07.8 +56.3 123.8	39 49.0 +56.2 122.7	39 30.0 +56.0 121.6	39 10.7 +56.0 120.5	38 51.3 +55.8 119.4
27°	41 04.1 +56.1 123.3	40 45.2 +56.0 122.2	40 26.0 +55.9 121.1	40 06.7 +55.8 120.0	39 47.1 +55.7 118.9
28°	42 00.2 +56.0 122.8	41 41.2 +55.9 121.7	41 21.9 +55.8 120.6	41 02.5 +55.7 119.5	40 42.8 +55.6 118.5
29°	42 56.2 +55.8 122.4	42 37.1 +55.7 121.2	42 17.7 +55.7 120.1	41 58.2 +55.6 119.0	41 38.4 +55.5 118.0

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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°	13 56.0 +57.3 127.9	13 38.1 +57.3 126.9	13 20.1 +57.1 125.9	13 01.7 +57.1 124.9	12 43.2 +57.0 124.0
1°	14 53.3 +57.3 127.6	14 35.4 +57.2 126.6	14 17.2 +57.1 125.6	13 58.8 +57.1 124.6	13 40.2 +57.0 123.6
2°	15 50.6 +57.2 127.3	15 32.6 +57.2 126.3	15 14.3 +57.2 125.3	14 55.9 +57.0 124.3	14 37.2 +57.0 123.3
3°	16 47.8 +57.3 127.0	16 29.8 +57.1 126.0	16 11.5 +57.0 125.0	15 52.9 +57.0 124.0	15 34.2 +56.9 123.0
4°	17 45.1 +57.2 126.6	17 26.9 +57.1 125.6	17 08.5 +57.1 124.7	16 49.9 +57.0 123.7	16 31.1 +56.9 122.7
5°	18 42.3 +57.1 126.3	18 24.0 +57.1 125.3	18 05.6 +57.0 124.3	17 46.9 +57.0 123.3	17 28.0 +56.9 122.3
6°	19 39.4 +57.2 126.0	19 21.1 +57.1 125.0	19 02.6 +57.0 124.0	18 43.9 +56.9 123.0	18 24.9 +56.8 122.0
7°	20 36.6 +57.0 125.7	20 18.2 +57.0 124.7	19 59.6 +56.9 123.7	19 40.8 +56.8 122.7	19 21.7 +56.8 121.7
8°	21 33.6 +57.1 125.3	21 15.2 +57.0 124.3	20 56.5 +56.9 123.3	20 37.6 +56.9 122.3	20 18.5 +56.8 121.3
9°	22 30.7 +57.0 125.0	22 12.2 +56.9 124.0	21 53.4 +56.9 123.0	21 34.5 +56.8 122.0	21 15.3 +56.7 121.0
10°	23 27.7 +57.0 124.7	23 09.1 +56.9 123.7	22 50.3 +56.8 122.6	22 31.3 +56.7 121.6	22 12.0 +56.7 120.6
11°	24 24.7 +56.9 124.3	24 06.0 +56.8 123.3	23 47.1 +56.8 122.3	23 28.0 +56.7 121.3	23 08.7 +56.6 120.3
12°	25 21.6 +56.9 124.0	25 02.8 +56.8 123.0	24 43.9 +56.7 121.9	24 24.7 +56.6 120.9	24 05.3 +56.6 119.9
13°	26 18.5 +56.8 123.6	25 59.6 +56.8 122.6	25 40.6 +56.7 121.6	25 21.3 +56.6 120.6	25 01.9 +56.5 119.5
14°	27 15.3 +56.7 123.3	26 56.4 +56.7 122.2	26 37.3 +56.6 121.2	26 17.9 +56.6 120.2	25 58.4 +56.5 119.2
15°	28 12.0 +56.7 122.9	27 53.1 +56.6 121.9	27 33.9 +56.5 120.8	27 14.5 +56.4 119.8	26 54.9 +56.4 118.8
16°	29 08.7 +56.7 122.5	28 49.7 +56.5 121.5	28 30.4 +56.5 120.5	28 10.9 +56.4 119.4	27 51.3 +56.3 118.4
17°	30 05.4 +56.5 122.1	29 46.2 +56.5 121.1	29 26.9 +56.4 120.1	29 07.3 +56.4 119.0	28 47.6 +56.3 118.0
18°	31 01.9 +56.5 121.8	30 42.7 +56.4 120.7	30 23.3 +56.3 119.7	30 03.7 +56.2 118.6	29 43.9 +56.1 117.6
19°	31 58.4 +56.5 121.4	31 39.1 +56.4 120.3	31 19.6 +56.3 119.3	30 59.9 +56.2 118.2	30 40.0 +56.2 117.2
20°	32 54.9 +56.3 121.0	32 35.5 +56.3 119.9	32 15.9 +56.2 118.9	31 56.1 +56.1 117.8	31 36.2 +56.0 116.8
21°	33 51.2 +56.3 120.6	33 31.8 +56.1 119.5	33 12.1 +56.1 118.5	32 52.2 +56.1 117.4	32 32.2 +55.9 116.4
22°	34 47.5 +56.1 120.1	34 27.9 +56.1 119.1	34 08.2 +56.0 118.0	33 48.3 +55.9 117.0	33 28.1 +55.9 115.9
23°	35 43.6 +56.1 119.7	35 24.0 +56.0 118.6	35 04.2 +55.9 117.6	34 44.2 +55.8 116.5	34 24.0 +55.7 115.5
24°	36 39.7 +56.0 119.3	36 20.0 +55.9 118.2	36 00.1 +55.8 117.1	35 40.0 +55.7 116.1	35 19.7 +55.7 115.1
25°	37 35.7 +55.9 118.8	37 15.9 +55.8 117.7	36 55.9 +55.7 116.7	36 35.7 +55.7 115.6	36 15.4 +55.5 114.6
26°	38 31.6 +55.7 118.3	38 11.7 +55.7 117.3	37 51.6 +55.6 116.2	37 31.4 +55.5 115.2	37 10.9 +55.5 114.1
27°	39 27.3 +55.7 117.9	39 07.4 +55.5 116.8	38 47.2 +55.5 115.7	38 26.9 +55.4 114.7	38 06.4 +55.3 113.6
28°	40 23.0 +55.5 117.4	40 02.9 +55.5 116.3	39 42.7 +55.3 115.2	39 22.3 +55.2 114.2	39 01.7 +55.2 113.1
29°	41 18.5 +55.4 116.9	40 58.4 +55.2 115.8	40 38.0 +55.2 114.7	40 17.5 +55.2 113.7	39 56.9 +55.0 112.6

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°	12 24.5 +56.9 123.0	12 05.5 +56.9 122.0	11 46.3 +56.9 121.1	11 27.0 +56.7 120.1	11 07.5 +56.6 119.1
1°	13 21.4 +56.9 122.7	13 02.4 +56.8 121.7	12 43.2 +56.8 120.7	12 23.7 +56.8 119.8	12 04.1 +56.7 118.8
2°	14 18.3 +56.9 122.3	13 59.2 +56.9 121.4	13 40.0 +56.7 120.4	13 20.5 +56.7 119.4	13 00.8 +56.6 118.5
3°	15 15.2 +56.9 122.0	14 56.1 +56.8 121.0	14 36.7 +56.8 120.1	14 17.2 +56.6 119.1	13 57.4 +56.6 118.1
4°	16 12.1 +56.8 121.7	15 52.9 +56.7 120.7	15 33.5 +56.7 119.7	15 13.8 +56.7 118.7	14 54.0 +56.6 117.8
5°	17 08.9 +56.8 121.4	16 49.6 +56.8 120.4	16 30.2 +56.6 119.4	16 10.5 +56.6 118.4	15 50.6 +56.6 117.4
6°	18 05.7 +56.8 121.0	17 46.4 +56.7 120.0	17 26.8 +56.7 119.0	17 07.1 +56.6 118.1	16 47.2 +56.5 117.1
7°	19 02.5 +56.7 120.7	18 43.1 +56.6 119.7	18 23.5 +56.6 118.7	18 03.7 +56.5 117.7	17 43.7 +56.4 116.7
8°	19 59.2 +56.7 120.3	19 39.7 +56.7 119.3	19 20.1 +56.5 118.3	19 00.2 +56.5 117.4	18 40.1 +56.5 116.4
9°	20 55.9 +56.7 120.0	20 36.4 +56.5 119.0	20 16.6 +56.5 118.0	19 56.7 +56.4 117.0	19 36.6 +56.3 116.0
10°	21 52.6 +56.6 119.6	21 32.9 +56.6 118.6	21 13.1 +56.5 117.6	20 53.1 +56.4 116.6	20 32.9 +56.4 115.6
11°	22 49.2 +56.5 119.3	22 29.5 +56.5 118.3	22 09.6 +56.4 117.3	21 49.5 +56.4 116.3	21 29.3 +56.3 115.3
12°	23 45.7 +56.5 118.9	23 26.0 +56.4 117.9	23 06.0 +56.4 116.9	22 45.9 +56.3 115.9	22 25.6 +56.2 114.9
13°	24 42.2 +56.5 118.5	24 22.4 +56.4 117.5	24 02.4 +56.3 116.5	23 42.2 +56.2 115.5	23 21.8 +56.2 114.5
14°	25 38.7 +56.4 118.2	25 18.8 +56.3 117.1	24 58.7 +56.2 116.1	24 38.4 +56.2 115.1	24 18.0 +56.1 114.1
15°	26 35.1 +56.3 117.8	26 15.1 +56.2 116.8	25 54.9 +56.2 115.8	25 34.6 +56.1 114.8	25 14.1 +56.1 113.7
16°	27 31.4 +56.3 117.4	27 11.3 +56.2 116.4	26 51.1 +56.1 115.4	26 30.7 +56.1 114.4	26 10.2 +56.0 113.4
17°	28 27.7 +56.1 117.0	28 07.5 +56.2 116.0	27 47.2 +56.1 115.0	27 26.8 +56.0 114.0	27 06.2 +55.9 113.0
18°	29 23.8 +56.2 116.6	29 03.7 +56.0 115.6	28 43.3 +56.0 114.6	28 22.8 +55.9 113.5	28 02.1 +55.8 112.5
19°	30 20.0 +56.0 116.2	29 59.7 +56.0 115.2	29 39.3 +55.9 114.1	29 18.7 +55.8 113.1	28 57.9 +55.8 112.1
20°	31 16.0 +56.0 115.8	30 55.7 +55.9 114.7	30 35.2 +55.8 113.7	30 14.5 +55.8 112.7	29 53.7 +55.7 111.7
21°	32 12.0 +55.8 115.3	31 51.6 +55.8 114.3	31 31.0 +55.7 113.3	31 10.3 +55.6 112.3	30 49.4 +55.6 111.3
22°	33 07.8 +55.8 114.9	32 47.4 +55.7 113.9	32 26.7 +55.7 112.9	32 05.9 +55.6 111.8	31 45.0 +55.5 110.8
23°	34 03.6 +55.7 114.5	33 43.1 +55.6 113.4	33 22.4 +55.5 112.4	33 01.5 +55.5 111.4	32 40.5 +55.4 110.4
24°	34 59.3 +55.6 114.0	34 38.7 +55.5 113.0	34 17.9 +55.5 112.0	33 57.0 +55.4 110.9	33 35.9 +55.3 109.9
25°	35 54.9 +55.4 113.6	35 34.2 +55.4 112.5	35 13.4 +55.3 111.5	34 52.4 +55.2 110.5	34 31.2 +55.2 109.5
26°	36 50.3 +55.4 113.1	36 29.6 +55.3 112.0	36 08.7 +55.2 111.0	35 47.6 +55.2 110.0	35 26.4 +55.1 109.0
27°	37 45.7 +55.2 112.6	37 24.9 +55.1 111.6	37 03.9 +55.1 110.5	36 42.8 +55.0 109.5	36 21.5 +55.0 108.5
28°	38 40.9 +55.1 112.1	38 20.0 +55.1 111.1	37 59.0 +55.0 110.0	37 37.8 +54.9 109.0	37 16.5 +54.8 108.0
29°	39 36.0 +55.0 111.6	39 15.1 +54.9 110.6	38 54.0 +54.8 109.5	38 32.7 +54.8 108.5	38 11.3 +54.7 107.5

Declination SAME name as Latitude

Latitude 68°

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°	10 47.7 +56.6 118.2	10 27.8 +56.6 117.2	10 07.7 +56.5 116.2	9 47.5 +56.4 115.3	9 27.1 +56.4 114.3
1°	11 44.3 +56.6 117.8	11 24.4 +56.5 116.9	11 04.2 +56.5 115.9	10 43.9 +56.5 114.9	10 23.5 +56.4 114.0
2°	12 40.9 +56.6 117.5	12 20.9 +56.5 116.5	12 00.7 +56.5 115.6	11 40.4 +56.4 114.6	11 19.9 +56.3 113.6
3°	13 37.5 +56.6 117.1	13 17.4 +56.5 116.2	12 57.2 +56.4 115.2	12 36.8 +56.3 114.2	12 16.2 +56.3 113.3
4°	14 34.1 +56.5 116.8	14 13.9 +56.5 115.8	13 53.6 +56.4 114.9	13 33.1 +56.4 113.9	13 12.5 +56.3 112.9
5°	15 30.6 +56.5 116.4	15 10.4 +56.4 115.5	14 50.0 +56.4 114.5	14 29.5 +56.3 113.5	14 08.8 +56.2 112.6
6°	16 27.1 +56.4 116.1	16 06.8 +56.4 115.1	15 46.4 +56.3 114.2	15 25.8 +56.2 113.2	15 05.0 +56.3 112.2
7°	17 23.5 +56.4 115.7	17 03.2 +56.3 114.8	16 42.7 +56.3 113.8	16 22.0 +56.3 112.8	16 01.3 +56.1 111.9
8°	18 19.9 +56.4 115.4	17 59.5 +56.3 114.4	17 39.0 +56.2 113.4	17 18.3 +56.2 112.5	16 57.4 +56.2 111.5
9°	19 16.3 +56.3 115.0	18 55.8 +56.3 114.0	18 35.2 +56.2 113.1	18 14.5 +56.1 112.1	17 53.6 +56.1 111.1
10°	20 12.6 +56.3 114.7	19 52.1 +56.2 113.7	19 31.4 +56.2 112.7	19 10.6 +56.1 111.7	18 49.7 +56.0 110.7
11°	21 08.9 +56.2 114.3	20 48.3 +56.2 113.3	20 27.6 +56.1 112.3	20 06.7 +56.1 111.3	19 45.7 +56.0 110.4
12°	22 05.1 +56.2 113.9	21 44.5 +56.1 112.9	21 23.7 +56.1 111.9	21 02.8 +56.0 111.0	20 41.7 +56.0 110.0
13°	23 01.3 +56.1 113.5	22 40.6 +56.1 112.5	22 19.8 +56.0 111.6	21 58.8 +55.9 110.6	21 37.7 +55.9 109.6
14°	23 57.4 +56.1 113.1	23 36.7 +56.0 112.2	23 15.8 +55.9 111.2	22 54.7 +55.9 110.2	22 33.6 +55.8 109.2
15°	24 53.5 +56.0 112.8	24 32.7 +55.9 111.8	24 11.7 +55.9 110.8	23 50.6 +55.9 109.8	23 29.4 +55.8 108.8
16°	25 49.5 +55.9 112.4	25 28.6 +55.9 111.4	25 07.6 +55.8 110.4	24 46.5 +55.7 109.4	24 25.2 +55.7 108.4
17°	26 45.4 +55.9 112.0	26 24.5 +55.8 111.0	26 03.4 +55.8 110.0	25 42.2 +55.7 109.0	25 20.9 +55.7 108.0
18°	27 41.3 +55.8 111.5	27 20.3 +55.7 110.5	26 59.2 +55.6 109.6	26 37.9 +55.6 108.6	26 16.6 +55.5 107.6
19°	28 37.1 +55.7 111.1	28 16.0 +55.7 110.1	27 54.8 +55.6 109.1	27 33.5 +55.6 108.1	27 12.1 +55.5 107.2
20°	29 32.8 +55.6 110.7	29 11.7 +55.5 109.7	28 50.4 +55.6 108.7	28 29.1 +55.5 107.7	28 07.6 +55.4 106.7
21°	30 28.4 +55.5 110.3	30 07.2 +55.5 109.3	29 46.0 +55.4 108.3	29 24.6 +55.3 107.3	29 03.0 +55.4 106.3
22°	31 23.9 +55.5 109.8	31 02.7 +55.4 108.8	30 41.4 +55.3 107.8	30 19.9 +55.3 106.8	29 58.4 +55.2 105.8
23°	32 19.4 +55.3 109.4	31 58.1 +55.3 108.4	31 36.7 +55.3 107.4	31 15.2 +55.2 106.4	30 53.6 +55.1 105.4
24°	33 14.7 +55.3 108.9	32 53.4 +55.2 107.9	32 32.0 +55.1 106.9	32 10.4 +55.1 105.9	31 48.7 +55.1 104.9
25°	34 10.0 +55.1 108.4	33 48.6 +55.1 107.4	33 27.1 +55.0 106.4	33 05.5 +55.0 105.4	32 43.8 +54.9 104.5
26°	35 05.1 +55.1 108.0	34 43.7 +55.0 107.0	34 22.1 +54.9 106.0	34 00.5 +54.8 105.0	33 38.7 +54.8 104.0
27°	36 00.2 +54.9 107.5	35 38.7 +54.8 106.5	35 17.0 +54.8 105.5	34 55.3 +54.8 104.5	34 33.5 +54.7 103.5
28°	36 55.1 +54.7 107.0	36 33.5 +54.7 106.0	36 11.8 +54.7 105.0	35 50.1 +54.6 104.0	35 28.2 +54.6 103.0
29°	37 49.8 +54.7 106.5	37 28.2 +54.6 105.5	37 06.5 +54.5 104.5	36 44.7 +54.5 103.5	36 22.8 +54.4 102.5

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°	9 06.5 +56.4 113.4	8 45.8 +56.3 112.4	8 25.0 +56.2 111.5	8 04.0 +56.2 110.5	7 42.9 +56.1 109.6
1°	10 02.9 +56.3 113.0	9 42.1 +56.3 112.1	9 21.2 +56.2 111.1	9 00.2 +56.2 110.2	8 39.0 +56.1 109.2
2°	10 59.2 +56.3 112.7	10 38.4 +56.2 111.7	10 17.4 +56.2 110.8	9 56.4 +56.1 109.8	9 35.1 +56.1 108.9
3°	11 55.5 +56.2 112.3	11 34.6 +56.2 111.4	11 13.6 +56.2 110.4	10 52.5 +56.1 109.5	10 31.2 +56.1 108.5
4°	12 51.7 +56.3 112.0	12 30.8 +56.2 111.0	12 09.8 +56.1 110.1	11 48.6 +56.1 109.1	11 27.3 +56.0 108.2
5°	13 48.0 +56.2 111.6	13 27.0 +56.1 110.7	13 05.9 +56.1 109.7	12 44.7 +56.0 108.7	12 23.3 +56.0 107.8
6°	14 44.2 +56.1 111.3	14 23.1 +56.2 110.3	14 02.0 +56.1 109.3	13 40.7 +56.0 108.4	13 19.3 +56.0 107.4
7°	15 40.3 +56.2 110.9	15 19.3 +56.0 109.9	14 58.1 +56.0 109.0	14 36.7 +56.0 108.0	14 15.3 +56.0 107.0
8°	16 36.5 +56.0 110.5	16 15.3 +56.1 109.6	15 54.1 +56.0 108.6	15 32.7 +56.0 107.6	15 11.3 +55.9 106.7
9°	17 32.5 +56.1 110.1	17 11.4 +56.0 109.2	16 50.1 +55.9 108.2	16 28.7 +55.9 107.3	16 07.2 +55.8 106.3
10°	18 28.6 +56.0 109.8	18 07.4 +55.9 108.8	17 46.0 +55.9 107.8	17 24.6 +55.8 106.9	17 03.0 +55.8 105.9
11°	19 24.6 +55.9 109.4	19 03.3 +55.9 108.4	18 41.9 +55.9 107.5	18 20.4 +55.9 106.5	17 58.8 +55.8 105.5
12°	20 20.5 +55.9 109.0	19 59.2 +55.9 108.0	19 37.8 +55.8 107.1	19 16.3 +55.7 106.1	18 54.6 +55.7 105.1
13°	21 16.4 +55.9 108.6	20 55.1 +55.8 107.6	20 33.6 +55.8 106.7	20 12.0 +55.7 105.7	19 50.3 +55.7 104.7
14°	22 12.3 +55.8 108.2	21 50.9 +55.7 107.3	21 29.4 +55.7 106.3	21 07.7 +55.7 105.3	20 46.0 +55.6 104.4
15°	23 08.1 +55.7 107.8	22 46.6 +55.7 106.9	22 25.1 +55.6 105.9	22 03.4 +55.6 104.9	21 41.6 +55.6 103.9
16°	24 03.8 +55.7 107.4	23 42.3 +55.6 106.4	23 20.7 +55.6 105.5	22 59.0 +55.5 104.5	22 37.2 +55.5 103.5
17°	24 59.5 +55.6 107.0	24 37.9 +55.6 106.0	24 16.3 +55.5 105.1	23 54.5 +55.5 104.1	23 32.7 +55.4 103.1
18°	25 55.1 +55.5 106.6	25 33.5 +55.5 105.6	25 11.8 +55.4 104.6	24 50.0 +55.4 103.7	24 28.1 +55.4 102.7
19°	26 50.6 +55.4 106.2	26 29.0 +55.4 105.2	26 07.2 +55.4 104.2	25 45.4 +55.3 103.3	25 23.5 +55.2 102.3
20°	27 46.0 +55.4 105.7	27 24.4 +55.3 104.8	27 02.6 +55.3 103.8	26 40.7 +55.2 102.8	26 18.7 +55.3 101.9
21°	28 41.4 +55.3 105.3	28 19.7 +55.2 104.3	27 57.9 +55.2 103.4	27 35.9 +55.2 102.4	27 14.0 +55.1 101.4
22°	29 36.7 +55.2 104.9	29 14.9 +55.2 103.9	28 53.1 +55.1 102.9	28 31.1 +55.1 101.9	28 09.1 +55.0 101.0
23°	30 31.9 +55.1 104.4	30 10.1 +55.0 103.4	29 48.2 +55.0 102.5	29 26.2 +54.9 101.5	29 04.1 +54.9 100.5
24°	31 27.0 +55.0 103.9	31 05.1 +55.0 103.0	30 43.2 +54.9 102.0	30 21.1 +54.9 101.0	29 59.0 +54.9 100.1
25°	32 22.0 +54.9 103.5	32 00.1 +54.8 102.5	31 38.1 +54.8 101.5	31 16.0 +54.8 100.5	30 53.9 +54.7 99.6
26°	33 16.9 +54.7 103.0	32 54.9 +54.7 102.0	32 32.9 +54.7 101.0	32 10.8 +54.6 100.1	31 48.6 +54.7 99.1
27°	34 11.6 +54.7 102.5	33 49.6 +54.7 101.5	33 27.6 +54.6 100.5	33 05.4 +54.6 99.6	32 43.3 +54.5 98.6
28°	35 06.3 +54.5 102.0	34 44.3 +54.4 101.0	34 22.2 +54.4 100.0	34 00.0 +54.4 99.1	33 37.8 +54.4 98.1
29°	36 00.8 +54.4 101.5	35 38.7 +54.4 100.5	35 16.6 +54.3 99.5	34 54.4 +54.3 98.6	34 32.2 +54.2 97.6

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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°	7 21.7 +56.1 108.6	7 00.3 +56.1 107.7	6 38.8 +56.0 106.8	6 17.3 +55.9 105.8	5 55.6 +55.9 104.9
1°	8 17.8 +56.0 108.3	7 56.4 +56.0 107.3	7 34.8 +56.0 106.4	7 13.2 +56.0 105.5	6 51.5 +55.9 104.5
2°	9 13.8 +56.1 107.9	8 52.4 +56.0 107.0	8 30.8 +56.0 106.0	8 09.2 +55.9 105.1	7 47.4 +55.9 104.2
3°	10 09.9 +56.0 107.6	9 48.4 +56.0 106.6	9 26.8 +55.9 105.7	9 05.1 +55.9 104.7	8 43.3 +55.9 103.8
4°	11 05.9 +56.0 107.2	10 44.4 +55.9 106.3	10 22.7 +55.9 105.3	10 01.0 +55.9 104.4	9 39.2 +55.8 103.4
5°	12 01.9 +55.9 106.8	11 40.3 +55.9 105.9	11 18.6 +55.9 104.9	10 56.9 +55.8 104.0	10 35.0 +55.8 103.0
6°	12 57.8 +56.0 106.5	12 36.2 +55.9 105.5	12 14.5 +55.9 104.6	11 52.7 +55.8 103.6	11 30.8 +55.8 102.7
7°	13 53.8 +55.9 106.1	13 32.1 +55.9 105.1	13 10.4 +55.8 104.2	12 48.5 +55.8 103.2	12 26.6 +55.8 102.3
8°	14 49.7 +55.8 105.7	14 28.0 +55.8 104.8	14 06.2 +55.8 103.8	13 44.3 +55.8 102.9	13 22.4 +55.7 101.9
9°	15 45.5 +55.9 105.3	15 23.8 +55.8 104.4	15 02.0 +55.7 103.4	14 40.1 +55.7 102.5	14 18.1 +55.7 101.5
10°	16 41.4 +55.7 105.0	16 19.6 +55.7 104.0	15 57.7 +55.7 103.1	15 35.8 +55.7 102.1	15 13.8 +55.6 101.2
11°	17 37.1 +55.8 104.6	17 15.3 +55.7 103.6	16 53.4 +55.7 102.7	16 31.5 +55.6 101.7	16 09.4 +55.6 100.8
12°	18 32.9 +55.7 104.2	18 11.0 +55.7 103.2	17 49.1 +55.6 102.3	17 27.1 +55.6 101.3	17 05.0 +55.6 100.4
13°	19 28.6 +55.6 103.8	19 06.7 +55.6 102.8	18 44.7 +55.6 101.9	18 22.7 +55.5 100.9	18 00.6 +55.5 100.0
14°	20 24.2 +55.6 103.4	20 02.3 +55.5 102.4	19 40.3 +55.5 101.5	19 18.2 +55.5 100.5	18 56.1 +55.5 99.6
15°	21 19.8 +55.5 103.0	20 57.8 +55.5 102.0	20 35.8 +55.5 101.1	20 13.7 +55.4 100.1	19 51.6 +55.4 99.2
16°	22 15.3 +55.4 102.6	21 53.3 +55.4 101.6	21 31.3 +55.4 100.7	21 09.1 +55.4 99.7	20 47.0 +55.3 98.8
17°	23 10.7 +55.4 102.2	22 48.7 +55.4 101.2	22 26.7 +55.3 100.3	22 04.5 +55.3 99.3	21 42.3 +55.3 98.3
18°	24 06.1 +55.4 101.7	23 44.1 +55.3 100.8	23 22.0 +55.2 99.8	22 59.8 +55.2 98.9	22 37.6 +55.2 97.9
19°	25 01.5 +55.2 101.3	24 39.4 +55.2 100.4	24 17.2 +55.2 99.4	23 55.0 +55.2 98.5	23 32.8 +55.1 97.5
20°	25 56.7 +55.2 100.9	25 34.6 +55.1 99.9	25 12.4 +55.2 99.0	24 50.2 +55.1 98.0	24 27.9 +55.1 97.1
21°	26 51.9 +55.1 100.5	26 29.7 +55.1 99.5	26 07.6 +55.0 98.5	25 45.3 +55.0 97.6	25 23.0 +55.0 96.6
22°	27 47.0 +55.0 100.0	27 24.8 +55.0 99.0	27 02.6 +54.9 98.1	26 40.3 +54.9 97.1	26 18.0 +54.9 96.2
23°	28 42.0 +54.9 99.6	28 19.8 +54.9 98.6	27 57.5 +54.9 97.6	27 35.2 +54.9 96.7	27 12.9 +54.8 95.7
24°	29 36.9 +54.8 99.1	29 14.7 +54.7 98.1	28 52.4 +54.7 97.2	28 30.1 +54.7 96.2	28 07.7 +54.7 95.3
25°	30 31.7 +54.7 98.6	30 09.4 +54.7 97.7	29 47.1 +54.7 96.7	29 24.8 +54.6 95.8	29 02.4 +54.6 94.8
26°	31 26.4 +54.6 98.1	31 04.1 +54.6 97.2	30 41.8 +54.6 96.2	30 19.4 +54.6 95.3	29 57.0 +54.6 94.3
27°	32 21.0 +54.5 97.7	31 58.7 +54.5 96.7	31 36.4 +54.4 95.7	31 14.0 +54.4 94.8	30 51.6 +54.4 93.9
28°	33 15.5 +54.4 97.2	32 53.2 +54.3 96.2	32 30.8 +54.3 95.2	32 08.4 +54.3 94.3	31 46.0 +54.3 93.4
29°	34 09.9 +54.2 96.6	33 47.5 +54.2 95.7	33 25.1 +54.2 94.7	33 02.7 +54.2 93.8	32 40.3 +54.1 92.9

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°	5 33.8 +55.9 104.0	5 12.0 +55.8 103.0	4 50.0 +55.9 102.1	4 28.0 +55.8 101.1	4 05.9 +55.8 100.2
1°	6 29.7 +55.9 103.6	6 07.8 +55.9 102.6	5 45.9 +55.8 101.7	5 23.8 +55.8 100.8	5 01.7 +55.8 99.8
2°	7 25.6 +55.8 103.2	7 03.7 +55.8 102.3	6 41.7 +55.8 101.3	6 19.6 +55.8 100.4	5 57.5 +55.7 99.5
3°	8 21.4 +55.9 102.9	7 59.5 +55.8 101.9	7 37.5 +55.7 101.0	7 15.4 +55.7 100.0	6 53.2 +55.7 99.1
4°	9 17.3 +55.8 102.5	8 55.3 +55.8 101.5	8 33.2 +55.8 100.6	8 11.1 +55.7 99.7	7 48.9 +55.7 98.7
5°	10 13.1 +55.8 102.1	9 51.1 +55.7 101.2	9 29.0 +55.7 100.2	9 06.8 +55.7 99.3	8 44.6 +55.7 98.4
6°	11 08.9 +55.7 101.7	10 46.8 +55.8 100.8	10 24.7 +55.7 99.9	10 02.5 +55.7 98.9	9 40.3 +55.7 98.0
7°	12 04.6 +55.8 101.4	11 42.6 +55.7 100.4	11 20.4 +55.7 99.5	10 58.2 +55.7 98.5	10 36.0 +55.6 97.6
8°	13 00.4 +55.6 101.0	12 38.3 +55.6 100.0	12 16.1 +55.6 99.1	11 53.9 +55.6 98.2	11 31.6 +55.6 97.2
9°	13 56.0 +55.7 100.6	13 33.9 +55.6 99.6	13 11.7 +55.6 98.7	12 49.5 +55.6 97.8	12 27.2 +55.6 96.8
10°	14 51.7 +55.6 100.2	14 29.5 +55.6 99.3	14 07.3 +55.6 98.3	13 45.1 +55.5 97.4	13 22.8 +55.5 96.4
11°	15 47.3 +55.6 99.8	15 25.1 +55.6 98.9	15 02.9 +55.5 97.9	14 40.6 +55.5 97.0	14 18.3 +55.5 96.1
12°	16 42.9 +55.5 99.4	16 20.7 +55.5 98.5	15 58.4 +55.5 97.5	15 36.1 +55.5 96.6	15 13.8 +55.4 95.7
13°	17 38.4 +55.5 99.0	17 16.2 +55.5 98.1	16 53.9 +55.5 97.1	16 31.6 +55.4 96.2	16 09.2 +55.4 95.3
14°	18 33.9 +55.4 98.6	18 11.7 +55.4 97.7	17 49.4 +55.3 96.7	17 27.0 +55.4 95.8	17 04.6 +55.4 94.9
15°	19 29.3 +55.4 98.2	19 07.1 +55.3 97.3	18 44.7 +55.4 96.3	18 22.4 +55.3 95.4	18 00.0 +55.3 94.5
16°	20 24.7 +55.3 97.8	20 02.4 +55.3 96.9	19 40.1 +55.3 95.9	19 17.7 +55.3 95.0	18 55.3 +55.3 94.0
17°	21 20.0 +55.3 97.4	20 57.7 +55.3 96.5	20 35.4 +55.2 95.5	20 13.0 +55.2 94.6	19 50.6 +55.2 93.6
18°	22 15.3 +55.2 97.0	21 53.0 +55.1 96.0	21 30.6 +55.1 95.1	21 08.2 +55.1 94.2	20 45.8 +55.1 93.2
19°	23 10.5 +55.1 96.6	22 48.1 +55.1 95.6	22 25.7 +55.1 94.7	22 03.3 +55.1 93.7	21 40.9 +55.1 92.8
20°	24 05.6 +55.0 96.1	23 43.2 +55.1 95.2	23 20.8 +55.0 94.2	22 58.4 +55.0 93.3	22 36.0 +55.0 92.4
21°	25 00.6 +55.0 95.7	24 38.3 +54.9 94.7	24 15.8 +55.0 93.8	23 53.4 +54.9 92.9	23 31.0 +54.9 91.9
22°	25 55.6 +54.9 95.2	25 33.2 +54.9 94.3	25 10.8 +54.9 93.4	24 48.3 +54.9 92.4	24 25.9 +54.8 91.5
23°	26 50.5 +54.8 94.8	26 28.1 +54.8 93.8	26 05.7 +54.7 92.9	25 43.2 +54.8 92.0	25 20.7 +54.8 91.0
24°	27 45.3 +54.7 94.3	27 22.9 +54.7 93.4	27 00.4 +54.7 92.5	26 38.0 +54.7 91.5	26 15.5 +54.7 90.6
25°	28 40.0 +54.6 93.9	28 17.6 +54.6 92.9	27 55.1 +54.6 92.0	27 32.7 +54.5 91.1	27 10.2 +54.6 90.1
26°	29 34.6 +54.5 93.4	29 12.2 +54.5 92.5	28 49.7 +54.5 91.5	28 27.2 +54.5 90.6	28 04.8 +54.5 89.7
27°	30 29.1 +54.4 92.9	30 06.7 +54.4 92.0	29 44.2 +54.4 91.0	29 21.7 +54.4 90.1	28 59.3 +54.3 89.2
28°	31 23.5 +54.3 92.4	31 01.1 +54.2 91.5	30 38.6 +54.3 90.6	30 16.1 +54.3 89.6	29 53.6 +54.3 88.7
29°	32 17.8 +54.2 91.9	31 55.3 +54.2 91.0	31 32.9 +54.1 90.1	31 10.4 +54.2 89.1	30 47.9 +54.2 88.2

Declination SAME name as Latitude

Latitude 68°

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°	3 43.8 +55.7 99.3	3 21.6 +55.7 98.4	2 59.3 +55.7 97.4	2 37.0 +55.7 96.5	2 14.6 +55.7 95.6
1°	4 39.5 +55.8 98.9	4 17.3 +55.7 98.0	3 55.0 +55.7 97.1	3 32.7 +55.7 96.1	3 10.3 +55.7 95.2
2°	5 35.3 +55.7 98.5	5 13.0 +55.7 97.6	4 50.7 +55.7 96.7	4 28.4 +55.6 95.7	4 06.0 +55.6 94.8
3°	6 31.0 +55.7 98.2	6 08.7 +55.7 97.2	5 46.4 +55.7 96.3	5 24.0 +55.7 95.4	5 01.6 +55.7 94.4
4°	7 26.7 +55.7 97.8	7 04.4 +55.7 96.9	6 42.1 +55.6 95.9	6 19.7 +55.6 95.0	5 57.3 +55.6 94.1
5°	8 22.4 +55.6 97.4	8 00.1 +55.6 96.5	7 37.7 +55.6 95.6	7 15.3 +55.6 94.6	6 52.9 +55.6 93.7
6°	9 18.0 +55.7 97.0	8 55.7 +55.6 96.1	8 33.3 +55.6 95.2	8 10.9 +55.6 94.2	7 48.5 +55.6 93.3
7°	10 13.7 +55.6 96.7	9 51.3 +55.6 95.7	9 28.9 +55.6 94.8	9 06.5 +55.6 93.9	8 44.1 +55.5 92.9
8°	11 09.3 +55.6 96.3	10 46.9 +55.6 95.3	10 24.5 +55.6 94.4	10 02.1 +55.5 93.5	9 39.6 +55.6 92.5
9°	12 04.9 +55.5 95.9	11 42.5 +55.5 95.0	11 20.1 +55.5 94.0	10 57.6 +55.6 93.1	10 35.2 +55.5 92.2
10°	13 00.4 +55.5 95.5	12 38.0 +55.5 94.6	12 15.6 +55.5 93.6	11 53.2 +55.4 92.7	11 30.7 +55.5 91.8
11°	13 55.9 +55.5 95.1	13 33.5 +55.5 94.2	13 11.1 +55.4 93.2	12 48.6 +55.5 92.3	12 26.2 +55.4 91.4
12°	14 51.4 +55.4 94.7	14 29.0 +55.4 93.8	14 06.5 +55.5 92.9	13 44.1 +55.4 91.9	13 21.6 +55.4 91.0
13°	15 46.8 +55.4 94.3	15 24.4 +55.4 93.4	15 02.0 +55.3 92.5	14 39.5 +55.4 91.5	14 17.0 +55.4 90.6
14°	16 42.2 +55.4 93.9	16 19.8 +55.3 93.0	15 57.3 +55.4 92.1	15 34.9 +55.3 91.1	15 12.4 +55.3 90.2
15°	17 37.6 +55.3 93.5	17 15.1 +55.3 92.6	16 52.7 +55.3 91.7	16 30.2 +55.3 90.7	16 07.7 +55.3 89.8
16°	18 32.9 +55.2 93.1	18 10.4 +55.3 92.2	17 48.0 +55.2 91.3	17 25.5 +55.2 90.3	17 03.0 +55.2 89.4
17°	19 28.1 +55.2 92.7	19 05.7 +55.1 91.8	18 43.2 +55.2 90.8	18 20.7 +55.2 89.9	17 58.2 +55.2 89.0
18°	20 23.3 +55.1 92.3	20 00.8 +55.2 91.4	19 38.4 +55.1 90.4	19 15.9 +55.1 89.5	18 53.4 +55.1 88.6
19°	21 18.4 +55.1 91.9	20 56.0 +55.0 90.9	20 33.5 +55.0 90.0	20 11.0 +55.1 89.1	19 48.5 +55.1 88.2
20°	22 13.5 +55.0 91.4	21 51.0 +55.0 90.5	21 28.5 +55.0 89.6	21 06.1 +55.0 88.7	20 43.6 +55.0 87.7
21°	23 08.5 +54.9 91.0	22 46.0 +54.9 90.1	22 23.5 +55.0 89.1	22 01.1 +54.9 88.2	21 38.6 +54.9 87.3
22°	24 03.4 +54.9 90.6	23 40.9 +54.9 89.6	23 18.5 +54.8 88.7	22 56.0 +54.8 87.8	22 33.5 +54.9 86.9
23°	24 58.3 +54.7 90.1	24 35.8 +54.7 89.2	24 13.3 +54.8 88.3	23 50.8 +54.8 87.3	23 28.4 +54.8 86.4
24°	25 53.0 +54.7 89.7	25 30.5 +54.7 88.7	25 08.1 +54.7 87.8	24 45.6 +54.7 86.9	24 23.2 +54.7 86.0
25°	26 47.7 +54.6 89.2	26 25.2 +54.6 88.3	26 02.8 +54.6 87.4	25 40.3 +54.6 86.4	25 17.9 +54.6 85.5
26°	27 42.3 +54.5 88.7	27 19.8 +54.5 87.8	26 57.4 +54.5 86.9	26 34.9 +54.6 86.0	26 12.5 +54.6 85.1
27°	28 36.8 +54.4 88.3	28 14.3 +54.4 87.3	27 51.9 +54.4 86.4	27 29.5 +54.4 85.5	27 07.1 +54.4 84.6
28°	29 31.2 +54.3 87.8	29 08.7 +54.3 86.9	28 46.3 +54.3 85.9	28 23.9 +54.3 85.0	28 01.5 +54.4 84.1
29°	30 25.5 +54.1 87.3	30 03.0 +54.2 86.4	29 40.6 +54.2 85.5	29 18.2 +54.2 84.6	28 55.9 +54.2 83.6

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°	1 52.3 +55.6 94.6	1 29.8 +55.7 93.7	1 07.4 +55.6 92.8	0 44.9 +55.7 91.9	0 22.5 +55.6 90.9
1°	2 47.9 +55.7 94.3	2 25.5 +55.6 93.3	2 03.0 +55.7 92.4	1 40.6 +55.6 91.5	1 18.1 +55.6 90.6
2°	3 43.6 +55.6 93.9	3 21.1 +55.7 93.0	2 58.7 +55.6 92.0	2 36.2 +55.6 91.1	2 13.7 +55.7 90.2
3°	4 39.2 +55.6 93.5	4 16.8 +55.6 92.6	3 54.3 +55.6 91.7	3 31.8 +55.6 90.7	3 09.4 +55.6 89.8
4°	5 34.8 +55.7 93.1	5 12.4 +55.6 92.2	4 49.9 +55.6 91.3	4 27.4 +55.7 90.4	4 05.0 +55.6 89.4
5°	6 30.5 +55.6 92.8	6 08.0 +55.6 91.8	5 45.5 +55.6 90.9	5 23.1 +55.5 90.0	5 00.6 +55.6 89.0
6°	7 26.1 +55.5 92.4	7 03.6 +55.6 91.5	6 41.1 +55.6 90.5	6 18.6 +55.6 89.6	5 56.2 +55.5 88.7
7°	8 21.6 +55.6 92.0	7 59.2 +55.5 91.1	7 36.7 +55.5 90.1	7 14.2 +55.6 89.2	6 51.7 +55.6 88.3
8°	9 17.2 +55.5 91.6	8 54.7 +55.5 90.7	8 32.2 +55.6 89.8	8 09.8 +55.5 88.8	7 47.3 +55.5 87.9
9°	10 12.7 +55.5 91.2	9 50.2 +55.5 90.3	9 27.8 +55.5 89.4	9 05.3 +55.5 88.5	8 42.8 +55.5 87.5
10°	11 08.2 +55.5 90.8	10 45.7 +55.5 89.9	10 23.3 +55.5 89.0	10 00.8 +55.5 88.1	9 38.3 +55.5 87.1
11°	12 03.7 +55.4 90.5	11 41.2 +55.5 89.5	11 18.8 +55.4 88.6	10 56.3 +55.4 87.7	10 33.8 +55.5 86.8
12°	12 59.1 +55.4 90.1	12 36.7 +55.4 89.1	12 14.2 +55.4 88.2	11 51.7 +55.5 87.3	11 29.3 +55.4 86.4
13°	13 54.5 +55.4 89.7	13 32.1 +55.3 88.7	13 09.6 +55.4 87.8	12 47.2 +55.3 86.9	12 24.7 +55.4 86.0
14°	14 49.9 +55.3 89.3	14 27.4 +55.4 88.4	14 05.0 +55.3 87.4	13 42.5 +55.4 86.5	13 20.1 +55.4 85.6
15°	15 45.2 +55.3 88.9	15 22.8 +55.3 88.0	15 00.3 +55.3 87.0	14 37.9 +55.3 86.1	14 15.5 +55.3 85.2
16°	16 40.5 +55.3 88.5	16 18.1 +55.2 87.5	15 55.6 +55.3 86.6	15 33.2 +55.3 85.7	15 10.8 +55.3 84.8
17°	17 35.8 +55.2 88.1	17 13.3 +55.2 87.1	16 50.9 +55.2 86.2	16 28.5 +55.2 85.3	16 06.1 +55.2 84.4
18°	18 31.0 +55.1 87.6	18 08.5 +55.1 86.7	17 46.1 +55.1 85.8	17 23.7 +55.1 84.9	17 01.3 +55.2 84.0
19°	19 26.1 +55.1 87.2	19 03.6 +55.1 86.3	18 41.2 +55.1 85.4	18 18.8 +55.1 84.5	17 56.5 +55.1 83.6
20°	20 21.2 +55.0 86.8	19 58.7 +55.0 85.9	19 36.3 +55.1 85.0	19 13.9 +55.1 84.1	18 51.6 +55.1 83.1
21°	21 16.2 +54.9 86.4	20 53.7 +55.0 85.5	20 31.4 +54.9 84.6	20 09.0 +55.0 83.6	19 46.7 +55.0 82.7
22°	22 11.1 +54.9 85.9	21 48.7 +54.9 85.0	21 26.3 +54.9 84.1	21 04.0 +54.9 83.2	20 41.7 +54.9 82.3
23°	23 06.0 +54.8 85.5	22 43.6 +54.8 84.6	22 21.2 +54.9 83.7	21 58.9 +54.9 82.8	21 36.6 +54.9 81.9
24°	24 00.8 +54.7 85.1	23 38.4 +54.8 84.2	23 16.1 +54.7 83.2	22 53.8 +54.8 82.3	22 31.5 +54.8 81.4
25°	24 55.5 +54.7 84.6	24 33.2 +54.6 83.7	24 10.8 +54.7 82.8	23 48.6 +54.7 81.9	23 26.3 +54.8 81.0
26°	25 50.2 +54.5 84.2	25 27.8 +54.6 83.3	25 05.5 +54.6 82.3	24 43.3 +54.6 81.4	24 21.1 +54.6 80.5
27°	26 44.7 +54.5 83.7	26 22.4 +54.5 82.8	26 00.1 +54.5 81.9	25 37.9 +54.5 81.0	25 15.7 +54.6 80.1
28°	27 39.2 +54.3 83.2	27 16.9 +54.4 82.3	26 54.6 +54.4 81.4	26 32.4 +54.5 80.5	26 10.3 +54.5 79.6
29°	28 33.5 +54.3 82.7	28 11.3 +54.3 81.8	27 49.0 +54.4 80.9	27 26.9 +54.3 80.1	27 04.8 +54.4 79.2

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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 +55.6 90.0	-0 22.5 +55.7	-0 44.9 +55.6	-1 07.4 +55.6	-1 29.8 +55.6
1°	0 55.6 +55.7 89.6	0 33.2 +55.6 88.7	0 10.7 +55.6 87.8	-0 11.8 +55.7	-0 34.2 +55.7
2°	1 51.3 +55.6 89.3	1 28.8 +55.6 88.3	1 06.3 +55.7 87.4	0 43.9 +55.6 86.5	0 21.5 +55.6 85.5
3°	2 46.9 +55.6 88.9	2 24.4 +55.6 87.9	2 02.0 +55.6 87.0	1 39.5 +55.7 86.1	1 17.1 +55.7 85.2
4°	3 42.5 +55.6 88.5	3 20.0 +55.6 87.6	2 57.6 +55.6 86.6	2 35.2 +55.6 85.7	2 12.8 +55.6 84.8
5°	4 38.1 +55.6 88.1	4 15.6 +55.6 87.2	3 53.2 +55.6 86.3	3 30.8 +55.6 85.3	3 08.4 +55.6 84.4
6°	5 33.7 +55.6 87.7	5 11.2 +55.6 86.8	4 48.8 +55.6 85.9	4 26.4 +55.6 85.0	4 04.0 +55.7 84.0
7°	6 29.3 +55.5 87.4	6 06.8 +55.6 86.4	5 44.4 +55.6 85.5	5 22.0 +55.6 84.6	4 59.7 +55.6 83.7
8°	7 24.8 +55.6 87.0	7 02.4 +55.6 86.1	6 40.0 +55.6 85.1	6 17.6 +55.6 84.2	5 55.3 +55.6 83.3
9°	8 20.4 +55.5 86.6	7 58.0 +55.5 85.7	7 35.6 +55.5 84.8	7 13.2 +55.6 83.8	6 50.9 +55.6 82.9
10°	9 15.9 +55.5 86.2	8 53.5 +55.5 85.3	8 31.1 +55.5 84.4	8 08.8 +55.5 83.5	7 46.5 +55.5 82.5
11°	10 11.4 +55.5 85.8	9 49.0 +55.5 84.9	9 26.6 +55.5 84.0	9 04.3 +55.5 83.1	8 42.0 +55.5 82.2
12°	11 06.9 +55.4 85.4	10 44.5 +55.4 84.5	10 22.1 +55.5 83.6	9 59.8 +55.5 82.7	9 37.5 +55.6 81.8
13°	12 02.3 +55.4 85.1	11 39.9 +55.5 84.1	11 17.6 +55.4 83.2	10 55.3 +55.5 82.3	10 33.1 +55.4 81.4
14°	12 57.7 +55.4 84.7	12 35.4 +55.4 83.7	12 13.0 +55.4 82.8	11 50.8 +55.4 81.9	11 28.5 +55.5 81.0
15°	13 53.1 +55.3 84.3	13 30.8 +55.3 83.4	13 08.4 +55.4 82.4	12 46.2 +55.4 81.5	12 24.0 +55.4 80.6
16°	14 48.4 +55.3 83.9	14 26.1 +55.3 83.0	14 03.8 +55.3 82.0	13 41.6 +55.3 81.1	13 19.4 +55.4 80.2
17°	15 43.7 +55.3 83.5	15 21.4 +55.3 82.6	14 59.1 +55.3 81.6	14 36.9 +55.4 80.7	14 14.8 +55.3 79.8
18°	16 39.0 +55.2 83.1	16 16.7 +55.2 82.1	15 54.4 +55.3 81.2	15 32.3 +55.2 80.3	15 10.1 +55.3 79.4
19°	17 34.2 +55.1 82.7	17 11.9 +55.2 81.7	16 49.7 +55.2 80.8	16 27.5 +55.2 79.9	16 05.4 +55.3 79.0
20°	18 29.3 +55.1 82.2	18 07.1 +55.1 81.3	17 44.9 +55.1 80.4	17 22.7 +55.2 79.5	17 00.7 +55.2 78.6
21°	19 24.4 +55.0 81.8	19 02.2 +55.0 80.9	18 40.0 +55.1 80.0	18 17.9 +55.1 79.1	17 55.9 +55.1 78.2
22°	20 19.4 +55.0 81.4	19 57.2 +55.0 80.5	19 35.1 +55.0 79.6	19 13.0 +55.1 78.7	18 51.0 +55.1 77.8
23°	21 14.4 +54.9 81.0	20 52.2 +55.0 80.1	20 30.1 +55.0 79.2	20 08.1 +55.0 78.3	19 46.1 +55.1 77.4
24°	22 09.3 +54.9 80.5	21 47.2 +54.9 79.6	21 25.1 +54.9 78.7	21 03.1 +54.9 77.8	20 41.2 +54.9 76.9
25°	23 04.2 +54.7 80.1	22 42.1 +54.7 79.2	22 20.0 +54.8 78.3	21 58.0 +54.9 77.4	21 36.1 +54.9 76.5
26°	23 58.9 +54.7 79.6	23 36.8 +54.8 78.7	23 14.8 +54.8 77.9	22 52.9 +54.8 77.0	22 31.0 +54.9 76.1
27°	24 53.6 +54.6 79.2	24 31.6 +54.6 78.3	24 09.6 +54.7 77.4	23 47.7 +54.7 76.5	23 25.9 +54.7 75.6
28°	25 48.2 +54.5 78.7	25 26.2 +54.6 77.8	25 04.3 +54.6 77.0	24 42.4 +54.6 76.1	24 20.6 +54.7 75.2
29°	26 42.7 +54.4 78.3	26 20.8 +54.4 77.4	25 58.9 +54.5 76.5	25 37.0 +54.6 75.6	25 15.3 +54.6 74.7

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 52.3 +55.7	-2 14.6 +55.6	-2 37.0 +55.7	-2 59.3 +55.7	-3 21.6 +55.8
1°	-0 56.6 +55.7	-1 19.0 +55.7	-1 41.3 +55.7	-2 03.6 +55.7	-2 25.8 +55.7
2°	-0 00.9 +55.6	-0 23.3 +55.7	-0 45.6 +55.7	-1 07.9 +55.7	-1 30.1 +55.7
3°	0 54.7 +55.7 84.2	0 32.4 +55.7 83.3	0 10.1 +55.7 82.4	-0 12.2 +55.8	-0 34.4 +55.8
4°	1 50.4 +55.7 83.9	1 28.1 +55.6 82.9	1 05.8 +55.7 82.0	0 43.6 +55.7 81.1	0 21.4 +55.7 80.2
5°	2 46.1 +55.6 83.5	2 23.7 +55.7 82.6	2 01.5 +55.7 81.6	1 39.3 +55.7 80.7	1 17.1 +55.8 79.8
6°	3 41.7 +55.6 83.1	3 19.4 +55.7 82.2	2 57.2 +55.7 81.3	2 35.0 +55.7 80.3	2 12.9 +55.7 79.4
7°	4 37.3 +55.7 82.7	4 15.1 +55.6 81.8	3 52.9 +55.6 80.9	3 30.7 +55.7 80.0	3 08.6 +55.7 79.1
8°	5 33.0 +55.6 82.4	5 10.7 +55.7 81.4	4 48.5 +55.7 80.5	4 26.4 +55.7 79.6	4 04.3 +55.7 78.7
9°	6 28.6 +55.6 82.0	6 06.4 +55.6 81.1	5 44.2 +55.6 80.2	5 22.1 +55.6 79.2	5 00.0 +55.7 78.3
10°	7 24.2 +55.6 81.6	7 02.0 +55.6 80.7	6 39.8 +55.7 79.8	6 17.7 +55.7 78.9	5 55.7 +55.7 77.9
11°	8 19.8 +55.5 81.2	7 57.6 +55.6 80.3	7 35.5 +55.6 79.4	7 13.4 +55.6 78.5	6 51.4 +55.7 77.6
12°	9 15.3 +55.6 80.9	8 53.2 +55.5 79.9	8 31.1 +55.6 79.0	8 09.0 +55.7 78.1	7 47.1 +55.6 77.2
13°	10 10.9 +55.5 80.5	9 48.7 +55.6 79.6	9 26.7 +55.5 78.6	9 04.7 +55.5 77.7	8 42.7 +55.7 76.8
14°	11 06.4 +55.4 80.1	10 44.3 +55.5 79.2	10 22.2 +55.6 78.3	10 00.2 +55.6 77.3	9 38.4 +55.6 76.4
15°	12 01.8 +55.5 79.7	11 39.8 +55.4 78.8	11 17.8 +55.5 77.9	10 55.8 +55.6 77.0	10 34.0 +55.5 76.0
16°	12 57.3 +55.4 79.3	12 35.2 +55.5 78.4	12 13.3 +55.4 77.5	11 51.4 +55.5 76.6	11 29.5 +55.6 75.7
17°	13 52.7 +55.4 78.9	13 30.7 +55.4 78.0	13 08.7 +55.5 77.1	12 46.9 +55.4 76.2	12 25.1 +55.5 75.3
18°	14 48.1 +55.3 78.5	14 26.1 +55.3 77.6	14 04.2 +55.4 76.7	13 42.3 +55.5 75.8	13 20.6 +55.5 74.9
19°	15 43.4 +55.3 78.1	15 21.4 +55.4 77.2	14 59.6 +55.3 76.3	14 37.8 +55.4 75.4	14 16.1 +55.4 74.5
20°	16 38.7 +55.2 77.7	16 16.8 +55.2 76.8	15 54.9 +55.3 75.9	15 33.2 +55.3 75.0	15 11.5 +55.4 74.1
21°	17 33.9 +55.2 77.3	17 12.0 +55.3 76.4	16 50.2 +55.3 75.5	16 28.5 +55.3 74.6	16 06.9 +55.3 73.7
22°	18 29.1 +55.1 76.9	18 07.3 +55.1 76.0	17 45.5 +55.2 75.1	17 23.8 +55.3 74.2	17 02.2 +55.3 73.3
23°	19 24.2 +55.1 76.5	19 02.4 +55.1 75.6	18 40.7 +55.2 74.7	18 19.1 +55.2 73.8	17 57.5 +55.3 72.9
24°	20 19.3 +55.0 76.0	19 57.5 +55.1 75.1	19 35.9 +55.1 74.3	19 14.3 +55.1 73.4	18 52.8 +55.2 72.5
25°	21 14.3 +55.0 75.6	20 52.6 +55.0 74.7	20 31.0 +55.0 73.8	20 09.4 +55.1 72.9	19 48.0 +55.1 72.1
26°	22 09.3 +54.9 75.2	21 47.6 +54.9 74.3	21 26.0 +55.0 73.4	21 04.5 +55.0 72.5	20 43.1 +55.1 71.6
27°	23 04.2 +54.8 74.7	22 42.5 +54.9 73.9	22 21.0 +54.9 73.0	21 59.5 +55.0 72.1	21 38.2 +55.0 71.2
28°	23 59.0 +54.7 74.3	23 37.4 +54.7 73.4	23 15.9 +54.8 72.5	22 54.5 +54.9 71.7	22 33.2 +54.9 70.8
29°	24 53.7 +54.6 73.9	24 32.1 +54.7 73.0	24 10.7 +54.8 72.1	23 49.4 +54.8 71.2	23 28.1 +54.9 70.3

Declination SAME name as Latitude

Latitude 68°

Dec	LHA 100° / 260°	LHA 101° / 259°	LHA 102° / 258°	LHA 103° / 257°	LHA 104° / 256°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-3 43.8 +55.8	-4 05.9 +55.7	-4 28.0 +55.8	-4 50.0 +55.8	-5 12.0 +55.9
1°	-2 48.0 +55.7	-3 10.2 +55.8	-3 32.2 +55.8	-3 54.2 +55.8	-4 16.1 +55.9
2°	-1 52.3 +55.8	-2 14.4 +55.8	-2 36.4 +55.8	-2 58.4 +55.9	-3 20.2 +55.9
3°	-0 56.5 +55.8	-1 18.6 +55.8	-1 40.6 +55.8	-2 02.5 +55.9	-2 24.3 +55.8
4°	-0 00.7 +55.7	-0 22.8 +55.8	-0 44.8 +55.9	-1 06.6 +55.8	-1 28.5 +55.9
5°	0 55.0 +55.8 78.9	0 33.0 +55.8 77.9	0 11.1 +55.8 77.0	-0 10.8 +55.9	-0 32.6 +55.9
6°	1 50.8 +55.8 78.5	1 28.8 +55.8 77.6	1 06.9 +55.8 76.6	0 45.1 +55.8 75.7	0 23.3 +55.9 74.8
7°	2 46.6 +55.7 78.1	2 24.6 +55.8 77.2	2 02.7 +55.8 76.3	1 40.9 +55.9 75.4	1 19.2 +55.9 74.4
8°	3 42.3 +55.8 77.8	3 20.4 +55.8 76.8	2 58.5 +55.9 75.9	2 36.8 +55.8 75.0	2 15.1 +55.9 74.1
9°	4 38.1 +55.7 77.4	4 16.2 +55.7 76.5	3 54.4 +55.8 75.5	3 32.6 +55.9 74.6	3 11.0 +55.9 73.7
10°	5 33.8 +55.7 77.0	5 11.9 +55.8 76.1	4 50.2 +55.7 75.2	4 28.5 +55.8 74.3	4 06.9 +55.9 73.3
11°	6 29.5 +55.7 76.6	6 07.7 +55.7 75.7	5 45.9 +55.8 74.8	5 24.3 +55.8 73.9	5 02.8 +55.8 73.0
12°	7 25.2 +55.7 76.3	7 03.4 +55.7 75.4	6 41.7 +55.8 74.4	6 20.1 +55.8 73.5	5 58.6 +55.9 72.6
13°	8 20.9 +55.7 75.9	7 59.1 +55.7 75.0	7 37.5 +55.7 74.1	7 15.9 +55.8 73.2	6 54.5 +55.8 72.2
14°	9 16.6 +55.6 75.5	8 54.8 +55.7 74.6	8 33.2 +55.7 73.7	8 11.7 +55.8 72.8	7 50.3 +55.8 71.9
15°	10 12.2 +55.6 75.1	9 50.5 +55.7 74.2	9 28.9 +55.7 73.3	9 07.5 +55.7 72.4	8 46.1 +55.8 71.5
16°	11 07.8 +55.6 74.8	10 46.2 +55.6 73.8	10 24.6 +55.7 72.9	10 03.2 +55.7 72.0	9 41.9 +55.7 71.1
17°	12 03.4 +55.5 74.4	11 41.8 +55.6 73.5	11 20.3 +55.6 72.6	10 58.9 +55.7 71.7	10 37.6 +55.8 70.8
18°	12 58.9 +55.6 74.0	12 37.4 +55.5 73.1	12 15.9 +55.6 72.2	11 54.6 +55.6 71.3	11 33.4 +55.7 70.4
19°	13 54.5 +55.4 73.6	13 32.9 +55.6 72.7	13 11.5 +55.6 71.8	12 50.2 +55.7 70.9	12 29.1 +55.6 70.0
20°	14 49.9 +55.5 73.2	14 28.5 +55.5 72.3	14 07.1 +55.5 71.4	13 45.9 +55.5 70.5	13 24.7 +55.7 69.6
21°	15 45.4 +55.4 72.8	15 24.0 +55.4 71.9	15 02.6 +55.5 71.0	14 41.4 +55.6 70.1	14 20.4 +55.6 69.2
22°	16 40.8 +55.3 72.4	16 19.4 +55.4 71.5	15 58.1 +55.5 70.6	15 37.0 +55.5 69.7	15 16.0 +55.5 68.8
23°	17 36.1 +55.3 72.0	17 14.8 +55.3 71.1	16 53.6 +55.4 70.2	16 32.5 +55.4 69.3	16 11.5 +55.5 68.4
24°	18 31.4 +55.3 71.6	18 10.1 +55.3 70.7	17 49.0 +55.3 69.8	17 27.9 +55.5 68.9	17 07.0 +55.5 68.0
25°	19 26.7 +55.1 71.2	19 05.4 +55.3 70.3	18 44.3 +55.3 69.4	18 23.4 +55.3 68.5	18 02.5 +55.4 67.6
26°	20 21.8 +55.2 70.8	20 00.7 +55.2 69.9	19 39.6 +55.3 69.0	19 18.7 +55.3 68.1	18 57.9 +55.4 67.2
27°	21 17.0 +55.0 70.3	20 55.9 +55.1 69.5	20 34.9 +55.2 68.6	20 14.0 +55.3 67.7	19 53.3 +55.3 66.8
28°	22 12.0 +55.0 69.9	21 51.0 +55.0 69.0	21 30.1 +55.1 68.2	21 09.3 +55.1 67.3	20 48.6 +55.2 66.4
29°	23 07.0 +55.0 69.5	22 46.0 +55.0 68.6	22 25.2 +55.0 67.7	22 04.4 +55.2 66.9	21 43.8 +55.2 66.0

Dec	LHA 105° / 255°	LHA 106° / 254°	LHA 107° / 253°	LHA 108° / 252°	LHA 109° / 251°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-5 33.8 +55.9	-5 55.6 +55.9	-6 17.3 +56.0	-6 38.8 +56.0	-7 00.3 +56.0
1°	-4 37.9 +55.9	-4 59.7 +56.0	-5 21.3 +56.0	-5 42.8 +56.0	-6 04.3 +56.1
2°	-3 42.0 +55.9	-4 03.7 +55.9	-4 25.3 +56.0	-4 46.8 +56.0	-5 08.2 +56.1
3°	-2 46.1 +55.9	-3 07.8 +56.0	-3 29.3 +56.0	-3 50.8 +56.1	-4 12.1 +56.1
4°	-1 50.2 +56.0	-2 11.8 +56.0	-2 33.3 +56.0	-2 54.7 +56.0	-3 16.0 +56.1
5°	-0 54.2 +55.9	-1 15.8 +56.0	-1 37.3 +56.0	-1 58.7 +56.1	-2 19.9 +56.1
6°	0 01.7 +55.9 73.9	-0 19.8 +55.9	-0 41.3 +56.0	-1 02.6 +56.1	-1 23.8 +56.1
7°	0 57.6 +56.0 73.5	0 36.1 +56.0 72.6	0 14.7 +56.1 71.7	-0 06.5 +56.0	-0 27.7 +56.1
8°	1 53.6 +55.9 73.1	1 32.1 +56.0 72.2	1 10.8 +56.0 71.3	0 49.5 +56.1 70.4	0 28.4 +56.1 69.4
9°	2 49.5 +55.9 72.8	2 28.1 +55.9 71.9	2 06.8 +56.0 70.9	1 45.6 +56.0 70.0	1 24.5 +56.1 69.1
10°	3 45.4 +55.9 72.4	3 24.0 +56.0 71.5	3 02.8 +56.0 70.6	2 41.6 +56.1 69.7	2 20.6 +56.1 68.7
11°	4 41.3 +55.9 72.1	4 20.0 +55.9 71.1	3 58.8 +56.0 70.2	3 37.7 +56.0 69.3	3 16.7 +56.1 68.4
12°	5 37.2 +55.9 71.7	5 15.9 +56.0 70.8	4 54.8 +56.0 69.9	4 33.7 +56.1 68.9	4 12.8 +56.1 68.0
13°	6 33.1 +55.9 71.3	6 11.9 +55.9 70.4	5 50.8 +55.9 69.5	5 29.8 +56.0 68.6	5 08.9 +56.1 67.7
14°	7 29.0 +55.8 71.0	7 07.8 +55.9 70.0	6 46.7 +56.0 69.1	6 25.8 +56.0 68.2	6 05.0 +56.0 67.3
15°	8 24.8 +55.9 70.6	8 03.7 +55.9 69.7	7 42.7 +55.9 68.8	7 21.8 +56.0 67.9	7 01.0 +56.1 67.0
16°	9 20.7 +55.8 70.2	8 59.6 +55.8 69.3	8 38.6 +55.9 68.4	8 17.8 +55.9 67.5	7 57.1 +56.0 66.6
17°	10 16.5 +55.7 69.8	9 55.4 +55.9 68.9	9 34.5 +55.9 68.0	9 13.7 +56.0 67.1	8 53.1 +56.0 66.2
18°	11 12.2 +55.8 69.5	10 51.3 +55.8 68.6	10 30.4 +55.9 67.7	10 09.7 +55.9 66.8	9 49.1 +56.0 65.9
19°	12 08.0 +55.7 69.1	11 47.1 +55.7 68.2	11 26.3 +55.8 67.3	11 05.6 +55.9 66.4	10 45.1 +55.9 65.5
20°	13 03.7 +55.7 68.7	12 42.8 +55.8 67.8	12 22.1 +55.8 66.9	12 01.5 +55.9 66.0	11 41.0 +56.0 65.1
21°	13 59.4 +55.7 68.3	13 38.6 +55.7 67.4	13 17.9 +55.8 66.5	12 57.4 +55.8 65.7	12 37.0 +55.8 64.8
22°	14 55.1 +55.6 67.9	14 34.3 +55.7 67.1	14 13.7 +55.7 66.2	13 53.2 +55.8 65.3	13 32.8 +55.9 64.4
23°	15 50.7 +55.6 67.6	15 30.0 +55.6 66.7	15 09.4 +55.7 65.8	14 49.0 +55.7 64.9	14 28.7 +55.8 64.0
24°	16 46.3 +55.5 67.2	16 25.6 +55.6 66.3	16 05.1 +55.7 65.4	15 44.7 +55.8 64.5	15 24.5 +55.8 63.6
25°	17 41.8 +55.5 66.8	17 21.2 +55.5 65.9	17 00.8 +55.6 65.0	16 40.5 +55.6 64.1	16 20.3 +55.8 63.3
26°	18 37.3 +55.4 66.4	18 16.7 +55.5 65.5	17 56.4 +55.5 64.6	17 36.1 +55.7 63.7	17 16.1 +55.6 62.9
27°	19 32.7 +55.4 66.0	19 12.2 +55.5 65.1	18 51.9 +55.5 64.2	18 31.8 +55.5 63.3	18 11.7 +55.7 62.5
28°	20 28.1 +55.3 65.6	20 07.7 +55.4 64.7	19 47.4 +55.5 63.8	19 27.3 +55.6 62.9	19 07.4 +55.6 62.1
29°	21 23.4 +55.2 65.1	21 03.1 +55.3 64.3	20 42.9 +55.4 63.4	20 22.9 +55.4 62.5	20 03.0 +55.5 61.7

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Dec	LHA 110° / 250°	LHA 111° / 249°	LHA 112° / 248°	LHA 113° / 247°	LHA 114° / 246°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-7 21.7 +56.1	-7 42.9 +56.1	-8 04.0 +56.2	-8 25.0 +56.2	-8 45.8 +56.3
1°	-6 25.6 +56.1	-6 46.8 +56.2	-7 07.8 +56.2	-7 28.8 +56.3	-7 49.5 +56.3
2°	-5 29.5 +56.2	-5 50.6 +56.2	-6 11.6 +56.2	-6 32.5 +56.3	-6 53.2 +56.3
3°	-4 33.3 +56.1	-4 54.4 +56.2	-5 15.4 +56.3	-5 36.2 +56.3	-5 56.9 +56.3
4°	-3 37.2 +56.2	-3 58.2 +56.2	-4 19.1 +56.2	-4 39.9 +56.3	-5 00.6 +56.4
5°	-2 41.0 +56.1	-3 02.0 +56.2	-3 22.9 +56.3	-3 43.6 +56.3	-4 04.2 +56.4
6°	-1 44.9 +56.2	-2 05.8 +56.2	-2 26.6 +56.2	-2 47.3 +56.3	-3 07.8 +56.3
7°	-0 48.7 +56.1	-1 09.6 +56.2	-1 30.4 +56.3	-1 51.0 +56.3	-2 11.5 +56.4
8°	0 07.4 +56.2 68.5	-0 13.4 +56.2	-0 34.1 +56.2	-0 54.7 +56.3	-1 15.1 +56.4
9°	1 03.6 +56.2 68.2	0 42.8 +56.2 67.2	0 22.1 +56.3 66.3	0 01.6 +56.4 65.4	-0 18.7 +56.4
10°	1 59.8 +56.1 67.8	1 39.0 +56.2 66.9	1 18.4 +56.3 66.0	0 58.0 +56.3 65.0	0 37.7 +56.3 64.1
11°	2 55.9 +56.1 67.5	2 35.2 +56.2 66.5	2 14.7 +56.2 65.6	1 54.3 +56.3 64.7	1 34.0 +56.4 63.8
12°	3 52.0 +56.2 67.1	3 31.4 +56.2 66.2	3 10.9 +56.3 65.3	2 50.6 +56.3 64.4	2 30.4 +56.4 63.4
13°	4 48.2 +56.1 66.8	4 27.6 +56.2 65.8	4 07.2 +56.2 64.9	3 46.9 +56.3 64.0	3 26.8 +56.3 63.1
14°	5 44.3 +56.1 66.4	5 23.8 +56.2 65.5	5 03.4 +56.2 64.6	4 43.2 +56.3 63.7	4 23.1 +56.4 62.7
15°	6 40.4 +56.1 66.0	6 20.0 +56.1 65.1	5 59.6 +56.3 64.2	5 39.5 +56.3 63.3	5 19.5 +56.3 62.4
16°	7 36.5 +56.1 65.7	7 16.1 +56.2 64.8	6 55.9 +56.2 63.9	6 35.8 +56.2 63.0	6 15.8 +56.3 62.1
17°	8 32.6 +56.1 65.3	8 12.3 +56.1 64.4	7 52.1 +56.1 63.5	7 32.0 +56.3 62.6	7 12.1 +56.3 61.7
18°	9 28.7 +56.0 65.0	9 08.4 +56.1 64.1	8 48.2 +56.2 63.2	8 28.3 +56.2 62.3	8 08.4 +56.3 61.4
19°	10 24.7 +56.0 64.6	10 04.5 +56.0 63.7	9 44.4 +56.1 62.8	9 24.5 +56.2 61.9	9 04.7 +56.3 61.0
20°	11 20.7 +56.0 64.2	11 00.5 +56.1 63.3	10 40.5 +56.2 62.5	10 20.7 +56.2 61.6	10 01.0 +56.3 60.7
21°	12 16.7 +56.0 63.9	11 56.6 +56.0 63.0	11 36.7 +56.0 62.1	11 16.9 +56.1 61.2	10 57.3 +56.2 60.3
22°	13 12.7 +55.9 63.5	12 52.6 +56.0 62.6	12 32.7 +56.1 61.7	12 13.0 +56.2 60.8	11 53.5 +56.2 60.0
23°	14 08.6 +55.9 63.1	13 48.6 +56.0 62.2	13 28.8 +56.0 61.4	13 09.2 +56.1 60.5	12 49.7 +56.2 59.6
24°	15 04.5 +55.8 62.8	14 44.6 +55.9 61.9	14 24.8 +56.0 61.0	14 05.3 +56.0 60.1	13 45.9 +56.1 59.2
25°	16 00.3 +55.8 62.4	15 40.5 +55.9 61.5	15 20.8 +56.0 60.6	15 01.3 +56.0 59.7	14 42.0 +56.1 58.9
26°	16 56.1 +55.8 62.0	16 36.4 +55.8 61.1	16 16.8 +55.9 60.2	15 57.3 +56.0 59.4	15 38.1 +56.1 58.5
27°	17 51.9 +55.7 61.6	17 32.2 +55.8 60.7	17 12.7 +55.9 59.9	16 53.3 +56.0 59.0	16 34.2 +56.0 58.1
28°	18 47.6 +55.7 61.2	18 28.0 +55.8 60.3	18 08.6 +55.8 59.5	17 49.3 +55.9 58.6	17 30.2 +56.0 57.8
29°	19 43.3 +55.6 60.8	19 23.8 +55.6 60.0	19 04.4 +55.8 59.1	18 45.2 +55.8 58.2	18 26.2 +55.9 57.4

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-9 06.5 +56.3	-9 27.1 +56.4	-9 47.5 +56.5		
1°	-8 10.2 +56.4	-8 30.7 +56.4	-8 51.0 +56.4	-9 11.2 +56.5	-9 31.2 +56.6
2°	-7 13.8 +56.4	-7 34.3 +56.5	-7 54.6 +56.5	-8 14.7 +56.6	-8 34.6 +56.6
3°	-6 17.4 +56.4	-6 37.8 +56.4	-6 58.1 +56.6	-7 18.1 +56.5	-7 38.0 +56.6
4°	-5 21.0 +56.4	-5 41.4 +56.5	-6 01.5 +56.5	-6 21.6 +56.6	-6 41.4 +56.7
5°	-4 24.6 +56.4	-4 44.9 +56.5	-5 05.0 +56.5	-5 25.0 +56.6	-5 44.7 +56.6
6°	-3 28.2 +56.4	-3 48.4 +56.4	-4 08.5 +56.6	-4 28.4 +56.6	-4 48.1 +56.7
7°	-2 31.8 +56.4	-2 52.0 +56.5	-3 11.9 +56.5	-3 31.8 +56.6	-3 51.4 +56.7
8°	-1 35.4 +56.5	-1 55.5 +56.5	-2 15.4 +56.6	-2 35.2 +56.7	-2 54.7 +56.6
9°	-0 38.9 +56.4	-0 59.0 +56.5	-1 18.8 +56.5	-1 38.5 +56.6	-1 58.1 +56.7
10°	0 17.5 +56.4 63.2	-0 02.5 +56.5	-0 22.3 +56.6	-0 41.9 +56.6	-1 01.4 +56.7
11°	1 13.9 +56.5 62.9	0 54.0 +56.5 61.9	0 34.3 +56.5 61.0	0 14.7 +56.6 60.1	-0 04.7 +56.7
12°	2 10.4 +56.4 62.5	1 50.5 +56.5 61.6	1 30.8 +56.6 60.7	1 11.3 +56.7 59.8	0 52.0 +56.7 58.8
13°	3 06.8 +56.4 62.2	2 47.0 +56.5 61.3	2 27.4 +56.5 60.3	2 08.0 +56.6 59.4	1 48.7 +56.7 58.5
14°	4 03.2 +56.4 61.8	3 43.5 +56.5 60.9	3 23.9 +56.6 60.0	3 04.6 +56.6 59.1	2 45.4 +56.7 58.2
15°	4 59.6 +56.4 61.5	4 40.0 +56.4 60.6	4 20.5 +56.5 59.7	4 01.2 +56.6 58.8	3 42.1 +56.6 57.8
16°	5 56.0 +56.4 61.2	5 36.4 +56.5 60.2	5 17.0 +56.5 59.3	4 57.8 +56.6 58.4	4 38.7 +56.7 57.5
17°	6 52.4 +56.4 60.8	6 32.9 +56.4 59.9	6 13.5 +56.6 59.0	5 54.4 +56.5 58.1	5 35.4 +56.6 57.2
18°	7 48.8 +56.4 60.5	7 29.3 +56.5 59.6	7 10.1 +56.4 58.7	6 50.9 +56.6 57.8	6 32.0 +56.7 56.9
19°	8 45.2 +56.3 60.1	8 25.8 +56.4 59.2	8 06.5 +56.5 58.3	7 47.5 +56.6 57.4	7 28.7 +56.6 56.5
20°	9 41.5 +56.3 59.8	9 22.2 +56.4 58.9	9 03.0 +56.5 58.0	8 44.1 +56.5 57.1	8 25.3 +56.6 56.2
21°	10 37.8 +56.3 59.4	10 18.6 +56.3 58.5	9 59.5 +56.4 57.6	9 40.6 +56.5 56.7	9 21.9 +56.6 55.8
22°	11 34.1 +56.3 59.1	11 14.9 +56.4 58.2	10 55.9 +56.4 57.3	10 37.1 +56.5 56.4	10 18.5 +56.5 55.5
23°	12 30.4 +56.2 58.7	12 11.3 +56.3 57.8	11 52.3 +56.4 56.9	11 33.6 +56.5 56.1	11 15.0 +56.6 55.2
24°	13 26.6 +56.2 58.4	13 07.6 +56.3 57.5	12 48.7 +56.4 56.6	12 30.1 +56.4 55.7	12 11.6 +56.5 54.8
25°	14 22.8 +56.2 58.0	14 03.9 +56.2 57.1	13 45.1 +56.3 56.2	13 26.5 +56.4 55.4	13 08.1 +56.5 54.5
26°	15 19.0 +56.2 57.6	15 00.1 +56.2 56.8	14 41.4 +56.3 55.9	14 22.9 +56.4 55.0	14 04.6 +56.5 54.1
27°	16 15.2 +56.1 57.3	15 56.3 +56.2 56.4	15 37.7 +56.3 55.5	15 19.3 +56.3 54.7	15 01.1 +56.4 53.8
28°	17 11.3 +56.0 56.9	16 52.5 +56.2 56.0	16 34.0 +56.2 55.2	16 15.6 +56.3 54.3	15 57.5 +56.4 53.4
29°	18 07.3 +56.0 56.5	17 48.7 +56.1 55.7	17 30.2 +56.2 54.8	17 11.9 +56.3 53.9	16 53.9 +56.3 53.1

Declination SAME name as Latitude

Latitude 68°

Dec	LHA 120° / 240°	LHA 121° / 239°	LHA 122° / 238°	LHA 123° / 237°	LHA 124° / 236°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°	-9 51.1 +56.7				
2°	-8 54.4 +56.7	-9 14.0 +56.7	-9 33.4 +56.8	-9 52.7 +56.9	
3°	-7 57.7 +56.7	-8 17.3 +56.8	-8 36.6 +56.8	-8 55.8 +56.9	-9 14.7 +56.9
4°	-7 01.0 +56.7	-7 20.5 +56.8	-7 39.8 +56.8	-7 58.9 +56.9	-8 17.8 +57.0
5°	-6 04.3 +56.7	-6 23.7 +56.7	-6 43.0 +56.9	-7 02.0 +56.9	-7 20.8 +57.0
6°	-5 07.6 +56.7	-5 27.0 +56.8	-5 46.1 +56.9	-6 05.1 +57.0	-6 23.8 +57.0
7°	-4 10.9 +56.8	-4 30.2 +56.9	-4 49.2 +56.8	-5 08.1 +56.9	-5 26.8 +57.0
8°	-3 14.1 +56.7	-3 33.3 +56.8	-3 52.4 +56.9	-4 11.2 +57.0	-4 29.8 +57.0
9°	-2 17.4 +56.8	-2 36.5 +56.8	-2 55.5 +56.9	-3 14.2 +56.9	-3 32.8 +57.0
10°	-1 20.6 +56.7	-1 39.7 +56.8	-1 58.6 +56.9	-2 17.3 +57.0	-2 35.8 +57.1
11°	-0 23.9 +56.8	-0 42.9 +56.8	-1 01.7 +56.9	-1 20.3 +56.9	-1 38.7 +57.0
12°	0 32.9 +56.7 57.9	0 13.9 +56.9 57.0	-0 04.8 +56.9	-0 23.4 +57.0	-0 41.7 +57.0
13°	1 29.6 +56.8 57.6	1 10.8 +56.8 56.7	0 52.1 +56.9 55.7	0 33.6 +57.0 54.8	0 15.3 +57.1 53.9
14°	2 26.4 +56.7 57.3	2 07.6 +56.8 56.3	1 49.0 +56.9 55.4	1 30.6 +56.9 54.5	1 12.4 +57.0 53.6
15°	3 23.1 +56.8 56.9	3 04.4 +56.8 56.0	2 45.9 +56.8 55.1	2 27.5 +57.0 54.2	2 09.4 +57.0 53.3
16°	4 19.9 +56.7 56.6	4 01.2 +56.8 55.7	3 42.7 +56.9 54.8	3 24.5 +56.9 53.9	3 06.4 +57.1 52.9
17°	5 16.6 +56.7 56.3	4 58.0 +56.8 55.4	4 39.6 +56.9 54.5	4 21.4 +57.0 53.5	4 03.5 +57.0 52.6
18°	6 13.3 +56.7 55.9	5 54.8 +56.8 55.0	5 36.5 +56.8 54.1	5 18.4 +56.9 53.2	5 00.5 +57.0 52.3
19°	7 10.0 +56.7 55.6	6 51.6 +56.7 54.7	6 33.3 +56.9 53.8	6 15.3 +56.9 52.9	5 57.5 +57.0 52.0
20°	8 06.7 +56.7 55.3	7 48.3 +56.8 54.4	7 30.2 +56.8 53.5	7 12.2 +56.9 52.6	6 54.5 +56.9 51.7
21°	9 03.4 +56.7 55.0	8 45.1 +56.7 54.1	8 27.0 +56.8 53.2	8 09.1 +56.9 52.3	7 51.4 +57.0 51.4
22°	10 00.1 +56.6 54.6	9 41.8 +56.8 53.7	9 23.8 +56.8 52.8	9 06.0 +56.9 52.0	8 48.4 +57.0 51.1
23°	10 56.7 +56.6 54.3	10 38.6 +56.6 53.4	10 20.6 +56.8 52.5	10 02.9 +56.8 51.6	9 45.4 +56.9 50.7
24°	11 53.3 +56.6 53.9	11 35.2 +56.7 53.1	11 17.4 +56.7 52.2	10 59.7 +56.9 51.3	10 42.3 +56.9 50.4
25°	12 49.9 +56.6 53.6	12 31.9 +56.7 52.7	12 14.1 +56.8 51.9	11 56.6 +56.8 51.0	11 39.2 +56.9 50.1
26°	13 46.5 +56.5 53.3	13 28.6 +56.6 52.4	13 10.9 +56.7 51.5	12 53.4 +56.8 50.6	12 36.1 +56.9 49.8
27°	14 43.0 +56.5 52.9	14 25.2 +56.6 52.1	14 07.6 +56.6 51.2	13 50.2 +56.7 50.3	13 33.0 +56.8 49.4
28°	15 39.5 +56.5 52.6	15 21.8 +56.5 51.7	15 04.2 +56.7 50.8	14 46.9 +56.8 50.0	14 29.8 +56.8 49.1
29°	16 36.0 +56.4 52.2	16 18.3 +56.6 51.4	16 00.9 +56.6 50.5	15 43.7 +56.7 49.6	15 26.6 +56.8 48.8

Dec	LHA 125° / 235°	LHA 126° / 234°	LHA 127° / 233°	LHA 128° / 232°	LHA 129° / 231°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°	-9 33.5 +57.0	-9 52.0 +57.1			
4°	-8 36.5 +57.1	-8 54.9 +57.1	-9 13.2 +57.2	-9 31.2 +57.3	-9 49.0 +57.3
5°	-7 39.4 +57.1	-7 57.8 +57.1	-8 16.0 +57.2	-8 33.9 +57.2	-8 51.7 +57.4
6°	-6 42.3 +57.0	-7 00.7 +57.2	-7 18.8 +57.2	-7 36.7 +57.3	-7 54.3 +57.3
7°	-5 45.3 +57.1	-6 03.5 +57.1	-6 21.6 +57.2	-6 39.4 +57.3	-6 57.0 +57.4
8°	-4 48.2 +57.1	-5 06.4 +57.2	-5 24.4 +57.3	-5 42.1 +57.3	-5 59.6 +57.4
9°	-3 51.1 +57.1	-4 09.2 +57.1	-4 27.1 +57.2	-4 44.8 +57.3	-5 02.2 +57.4
10°	-2 54.0 +57.1	-3 12.1 +57.2	-3 29.9 +57.3	-3 47.5 +57.3	-4 04.8 +57.3
11°	-1 56.9 +57.1	-2 14.9 +57.2	-2 32.6 +57.2	-2 50.2 +57.4	-3 07.5 +57.4
12°	-0 59.8 +57.1	-1 17.7 +57.2	-1 35.4 +57.3	-1 52.8 +57.3	-2 10.1 +57.4
13°	-0 02.7 +57.1	-0 20.5 +57.1	-0 38.1 +57.2	-0 55.5 +57.3	-1 12.7 +57.4
14°	0 54.4 +57.1 52.6	0 36.6 +57.2 51.7	0 19.1 +57.3 50.8	0 01.8 +57.3 49.9	-0 15.3 +57.4
15°	1 51.5 +57.1 52.3	1 33.8 +57.2 51.4	1 16.4 +57.2 50.5	0 59.1 +57.4 49.6	0 42.1 +57.4 48.7
16°	2 48.6 +57.1 52.0	2 31.0 +57.2 51.1	2 13.6 +57.3 50.2	1 56.5 +57.3 49.3	1 39.5 +57.4 48.4
17°	3 45.7 +57.1 51.7	3 28.2 +57.1 50.8	3 10.9 +57.2 49.9	2 53.8 +57.3 49.0	2 36.9 +57.4 48.1
18°	4 42.8 +57.1 51.4	4 25.3 +57.2 50.5	4 08.1 +57.2 49.6	3 51.1 +57.3 48.7	3 34.3 +57.4 47.8
19°	5 39.9 +57.0 51.1	5 22.5 +57.1 50.2	5 05.3 +57.3 49.3	4 48.4 +57.3 48.4	4 31.7 +57.4 47.5
20°	6 36.9 +57.1 50.8	6 19.6 +57.2 49.9	6 02.6 +57.2 49.0	5 45.7 +57.3 48.1	5 29.1 +57.4 47.2
21°	7 34.0 +57.0 50.5	7 16.8 +57.1 49.6	6 59.8 +57.2 48.7	6 43.0 +57.3 47.8	6 26.5 +57.3 46.9
22°	8 31.0 +57.1 50.2	8 13.9 +57.1 49.3	7 57.0 +57.2 48.4	7 40.3 +57.3 47.5	7 23.8 +57.4 46.6
23°	9 28.1 +57.0 49.9	9 11.0 +57.1 49.0	8 54.2 +57.1 48.1	8 37.6 +57.2 47.2	8 21.2 +57.3 46.3
24°	10 25.1 +57.0 49.5	10 08.1 +57.1 48.7	9 51.3 +57.2 47.8	9 34.8 +57.3 46.9	9 18.5 +57.3 46.0
25°	11 22.1 +57.0 49.2	11 05.2 +57.0 48.3	10 48.5 +57.1 47.5	10 32.1 +57.2 46.6	10 15.8 +57.3 45.7
26°	12 19.1 +56.9 48.9	12 02.2 +57.1 48.0	11 45.6 +57.2 47.2	11 29.3 +57.2 46.3	11 13.1 +57.3 45.4
27°	13 16.0 +56.9 48.6	12 59.3 +57.0 47.7	12 42.8 +57.1 46.8	12 26.5 +57.2 46.0	12 10.4 +57.3 45.1
28°	14 12.9 +56.9 48.3	13 56.3 +57.0 47.4	13 39.9 +57.0 46.5	13 23.7 +57.1 45.7	13 07.7 +57.2 44.8
29°	15 09.8 +56.9 47.9	14 53.3 +56.9 47.1	14 36.9 +57.1 46.2	14 20.8 +57.2 45.3	14 04.9 +57.3 44.5

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 its correctness. Use it only for training and exercising!

Dec	LHA 130° / 230°	LHA 131° / 229°	LHA 132° / 228°	LHA 133° / 227°	LHA 134° / 226°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°	-9 09.2 +57.5	-9 26.4 +57.5	-9 43.4 +57.5		
6°	-8 11.7 +57.4	-8 28.9 +57.5	-8 45.9 +57.6	-9 02.5 +57.6	-9 19.0 +57.8
7°	-7 14.3 +57.4	-7 31.4 +57.5	-7 48.3 +57.6	-8 04.9 +57.7	-8 21.2 +57.7
8°	-6 16.9 +57.5	-6 33.9 +57.5	-6 50.7 +57.6	-7 07.2 +57.6	-7 23.5 +57.7
9°	-5 19.4 +57.4	-5 36.4 +57.5	-5 53.1 +57.6	-6 09.6 +57.7	-6 25.8 +57.8
10°	-4 22.0 +57.5	-4 38.9 +57.6	-4 55.5 +57.6	-5 11.9 +57.7	-5 28.0 +57.8
11°	-3 24.5 +57.5	-3 41.3 +57.5	-3 57.9 +57.6	-4 14.2 +57.7	-4 30.2 +57.7
12°	-2 27.0 +57.4	-2 43.8 +57.6	-3 00.3 +57.7	-3 16.5 +57.7	-3 32.5 +57.8
13°	-1 29.6 +57.5	-1 46.2 +57.5	-2 02.6 +57.6	-2 18.8 +57.7	-2 34.7 +57.8
14°	-0 32.1 +57.5	-0 48.7 +57.6	-1 05.0 +57.6	-1 21.1 +57.7	-1 36.9 +57.8
15°	0 25.4 +57.5 47.7	0 08.9 +57.5 46.8	-0 07.4 +57.6	-0 23.4 +57.7	-0 39.1 +57.7
16°	1 22.9 +57.4 47.4	1 06.4 +57.6 46.5	0 50.2 +57.7 45.6	0 34.3 +57.7 44.7	0 18.6 +57.8 43.7
17°	2 20.3 +57.5 47.2	2 04.0 +57.5 46.2	1 47.9 +57.6 45.3	1 32.0 +57.7 44.4	1 16.4 +57.8 43.5
18°	3 17.8 +57.5 46.9	3 01.5 +57.6 46.0	2 45.5 +57.6 45.0	2 29.7 +57.7 44.1	2 14.2 +57.8 43.2
19°	4 15.3 +57.4 46.6	3 59.1 +57.5 45.7	3 43.1 +57.6 44.8	3 27.4 +57.7 43.8	3 12.0 +57.7 42.9
20°	5 12.7 +57.5 46.3	4 56.6 +57.5 45.4	4 40.7 +57.6 44.5	4 25.1 +57.7 43.6	4 09.7 +57.8 42.7
21°	6 10.2 +57.4 46.0	5 54.1 +57.6 45.1	5 38.3 +57.6 44.2	5 22.8 +57.7 43.3	5 07.5 +57.8 42.4
22°	7 07.6 +57.5 45.7	6 51.7 +57.5 44.8	6 35.9 +57.6 43.9	6 20.5 +57.7 43.0	6 05.3 +57.7 42.1
23°	8 05.1 +57.4 45.4	7 49.2 +57.5 44.5	7 33.5 +57.6 43.6	7 18.2 +57.6 42.7	7 03.0 +57.8 41.9
24°	9 02.5 +57.4 45.1	8 46.7 +57.5 44.2	8 31.1 +57.6 43.4	8 15.8 +57.7 42.5	8 00.8 +57.7 41.6
25°	9 59.9 +57.4 44.8	9 44.2 +57.4 43.9	9 28.7 +57.5 43.1	9 13.5 +57.6 42.2	8 58.5 +57.7 41.3
26°	10 57.3 +57.3 44.5	10 41.6 +57.5 43.7	10 26.2 +57.6 42.8	10 11.1 +57.6 41.9	9 56.2 +57.7 41.0
27°	11 54.6 +57.4 44.2	11 39.1 +57.4 43.4	11 23.8 +57.5 42.5	11 08.7 +57.6 41.6	10 53.9 +57.7 40.7
28°	12 52.0 +57.3 43.9	12 36.5 +57.4 43.1	12 21.3 +57.5 42.2	12 06.3 +57.6 41.3	11 51.6 +57.7 40.5
29°	13 49.3 +57.3 43.6	13 33.9 +57.4 42.8	13 18.8 +57.5 41.9	13 03.9 +57.6 41.0	12 49.3 +57.6 40.2

Dec	LHA 135° / 225°	LHA 136° / 224°	LHA 137° / 223°	LHA 138° / 222°	LHA 139° / 221°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°	-9 35.1 +57.8	-9 51.0 +57.9			
7°	-8 37.3 +57.8	-8 53.1 +57.8	-9 08.7 +58.0	-9 24.0 +58.1	-9 39.0 +58.2
8°	-7 39.5 +57.8	-7 55.3 +57.9	-8 10.7 +57.9	-8 25.9 +58.0	-8 40.8 +58.1
9°	-6 41.7 +57.8	-6 57.4 +57.9	-7 12.8 +58.0	-7 27.9 +58.1	-7 42.7 +58.1
10°	-5 43.9 +57.9	-5 59.5 +58.0	-6 14.8 +58.0	-6 29.8 +58.0	-6 44.6 +58.1
11°	-4 46.0 +57.8	-5 01.5 +57.9	-5 16.8 +58.0	-5 31.8 +58.1	-5 46.5 +58.2
12°	-3 48.2 +57.9	-4 03.6 +57.9	-4 18.8 +58.0	-4 33.7 +58.1	-4 48.3 +58.1
13°	-2 50.3 +57.8	-3 05.7 +57.9	-3 20.8 +58.0	-3 35.6 +58.1	-3 50.2 +58.2
14°	-1 52.5 +57.9	-2 07.8 +58.0	-2 22.8 +58.0	-2 37.5 +58.0	-2 52.0 +58.1
15°	-0 54.6 +57.8	-1 09.8 +57.9	-1 24.8 +58.0	-1 39.5 +58.1	-1 53.9 +58.2
16°	0 03.2 +57.9 42.8	-0 11.9 +57.9	-0 26.8 +58.0	-0 41.4 +58.1	-0 55.7 +58.2
17°	1 01.1 +57.8 42.6	0 46.0 +58.0 41.6	0 31.2 +58.0 40.7	0 16.7 +58.1 39.8	0 02.5 +58.1 38.9
18°	1 58.9 +57.9 42.3	1 44.0 +57.9 41.4	1 29.2 +58.0 40.5	1 14.8 +58.1 39.5	1 00.6 +58.2 38.6
19°	2 56.8 +57.8 42.0	2 41.9 +57.9 41.1	2 27.2 +58.0 40.2	2 12.9 +58.1 39.3	1 58.8 +58.1 38.4
20°	3 54.6 +57.9 41.8	3 39.8 +57.9 40.9	3 25.2 +58.0 39.9	3 11.0 +58.0 39.0	2 56.9 +58.2 38.1
21°	4 52.5 +57.8 41.5	4 37.7 +57.9 40.6	4 23.2 +58.0 39.7	4 09.0 +58.1 38.8	3 55.1 +58.1 37.9
22°	5 50.3 +57.9 41.2	5 35.6 +58.0 40.3	5 21.2 +58.0 39.4	5 07.1 +58.1 38.5	4 53.2 +58.2 37.6
23°	6 48.2 +57.8 41.0	6 33.6 +57.9 40.1	6 19.2 +58.0 39.2	6 05.2 +58.0 38.3	5 51.4 +58.1 37.4
24°	7 46.0 +57.8 40.7	7 31.5 +57.9 39.8	7 17.2 +58.0 38.9	7 03.2 +58.1 38.0	6 49.5 +58.1 37.1
25°	8 43.8 +57.8 40.4	8 29.4 +57.8 39.5	8 15.2 +57.9 38.7	8 01.3 +58.0 37.8	7 47.6 +58.2 36.9
26°	9 41.6 +57.8 40.1	9 27.2 +57.9 39.3	9 13.1 +58.0 38.4	8 59.3 +58.0 37.5	8 45.8 +58.1 36.6
27°	10 39.4 +57.7 39.9	10 25.1 +57.9 39.0	10 11.1 +57.9 38.1	9 57.3 +58.1 37.3	9 43.9 +58.1 36.4
28°	11 37.1 +57.8 39.6	11 23.0 +57.8 38.7	11 09.0 +57.9 37.9	10 55.4 +58.0 37.0	10 42.0 +58.1 36.1
29°	12 34.9 +57.7 39.3	12 20.8 +57.8 38.5	12 06.9 +58.0 37.6	11 53.4 +58.0 36.7	11 40.1 +58.0 35.9

Dec	LHA 140° / 220°	LHA 141° / 219°	LHA 142° / 218°	LHA 143° / 217°	LHA 144° / 216°
	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 53.7 +58.2				
9°	-8 55.5 +58.2	-9 09.8 +58.3	-9 23.8 +58.3	-9 37.6 +58.4	-9 51.0 +58.5
	-7 57.3 +58.2	-8 11.5 +58.2	-8 25.5 +58.3	-8 39.2 +58.5	-8 52.5 +58.5
10°	-6 59.1 +58.2	-7 13.3 +58.3	-7 27.2 +58.4	-7 40.7 +58.4	-7 54.0 +58.5
11°	-6 00.9 +58.3	-6 15.0 +58.3	-6 28.8 +58.4	-6 42.3 +58.4	-6 55.5 +58.5
12°	-5 02.6 +58.2	-5 16.7 +58.3	-5 30.4 +58.3	-5 43.9 +58.5	-5 57.0 +58.5
13°	-4 04.4 +58.2	-4 18.4 +58.3	-4 32.1 +58.4	-4 45.4 +58.4	-4 58.5 +58.5
14°	-3 06.2 +58.2	-3 20.1 +58.3	-3 33.7 +58.4	-3 47.0 +58.5	-4 00.0 +58.5
15°	-2 08.0 +58.3	-2 21.8 +58.3	-2 35.3 +58.4	-2 48.5 +58.4	-3 01.5 +58.6
16°	-1 09.7 +58.2	-1 23.5 +58.3	-1 36.9 +58.4	-1 50.1 +58.5	-2 02.9 +58.5
17°	-0 11.5 +58.2	-0 25.2 +58.3	-0 38.5 +58.3	-0 51.6 +58.4	-1 04.4 +58.5
18°	0 46.7 +58.3 37.7	0 33.1 +58.3 36.8	0 19.8 +58.4 35.8	0 06.8 +58.5 34.9	-0 05.9 +58.5
19°	1 45.0 +58.2 37.4	1 31.4 +58.4 36.5	1 18.2 +58.4 35.6	1 05.3 +58.4 34.7	0 52.6 +58.6 33.8
20°	2 43.2 +58.2 37.2	2 29.8 +58.3 36.3	2 16.6 +58.4 35.4	2 03.7 +58.5 34.5	1 51.2 +58.5 33.5
21°	3 41.4 +58.3 37.0	3 28.1 +58.3 36.1	3 15.0 +58.4 35.1	3 02.2 +58.4 34.2	2 49.7 +58.5 33.3
22°	4 39.7 +58.2 36.7	4 26.4 +58.3 35.8	4 13.4 +58.3 34.9	4 00.6 +58.5 34.0	3 48.2 +58.5 33.1
23°	5 37.9 +58.2 36.5	5 24.7 +58.2 35.6	5 11.7 +58.4 34.7	4 59.1 +58.4 33.8	4 46.7 +58.5 32.9
24°	6 36.1 +58.2 36.2	6 22.9 +58.3 35.3	6 10.1 +58.3 34.5	5 57.5 +58.5 33.6	5 45.2 +58.6 32.7
25°	7 34.3 +58.2 36.0	7 21.2 +58.3 35.1	7 08.4 +58.4 34.2	6 56.0 +58.4 33.3	6 43.8 +58.5 32.4
26°	8 32.5 +58.2 35.7	8 19.5 +58.3 34.9	8 06.8 +58.3 34.0	7 54.4 +58.4 33.1	7 42.3 +58.5 32.2
27°	9 30.7 +58.2 35.5	9 17.8 +58.2 34.6	9 05.1 +58.4 33.7	8 52.8 +58.4 32.9	8 40.8 +58.4 32.0
28°	10 28.9 +58.1 35.3	10 16.0 +58.3 34.4	10 03.5 +58.3 33.5	9 51.2 +58.4 32.6	9 39.2 +58.5 31.8
29°	11 27.0 +58.2 35.0	11 14.3 +58.2 34.1	11 01.8 +58.3 33.3	10 49.6 +58.4 32.4	10 37.7 +58.5 31.5

Dec	LHA 145° / 215°	LHA 146° / 214°	LHA 147° / 213°	LHA 148° / 212°	LHA 149° / 211°
	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°	-9 05.6 +58.6	-9 18.3 +58.6	-9 30.7 +58.7	-9 42.8 +58.7	-9 54.6 +58.8
10°	-8 07.0 +58.6	-8 19.7 +58.7	-8 32.0 +58.7	-8 44.1 +58.8	-8 55.8 +58.9
11°	-7 08.4 +58.5	-7 21.0 +58.6	-7 33.3 +58.7	-7 45.3 +58.8	-7 56.9 +58.8
12°	-6 09.9 +58.6	-6 22.4 +58.7	-6 34.6 +58.7	-6 46.5 +58.8	-6 58.1 +58.9
13°	-5 11.3 +58.6	-5 23.7 +58.6	-5 35.9 +58.7	-5 47.7 +58.8	-5 59.2 +58.9
14°	-4 12.7 +58.6	-4 25.1 +58.7	-4 37.2 +58.8	-4 48.9 +58.8	-5 00.3 +58.8
15°	-3 14.1 +58.6	-3 26.4 +58.6	-3 38.4 +58.7	-3 50.1 +58.8	-4 01.5 +58.9
16°	-2 15.5 +58.6	-2 27.8 +58.7	-2 39.7 +58.7	-2 51.3 +58.8	-3 02.6 +58.9
17°	-1 16.9 +58.6	-1 29.1 +58.7	-1 41.0 +58.8	-1 52.5 +58.8	-2 03.7 +58.8
18°	-0 18.3 +58.6	-0 30.4 +58.7	-0 42.2 +58.7	-0 53.7 +58.8	-1 04.9 +58.9
19°	0 40.3 +58.6 32.8	0 28.3 +58.6 31.9	0 16.5 +58.8 31.0	0 05.1 +58.8 30.1	-0 06.0 +58.9
20°	1 38.9 +58.6 32.6	1 26.9 +58.7 31.7	1 15.3 +58.7 30.8	1 03.9 +58.8 29.9	0 52.9 +58.8 28.9
21°	2 37.5 +58.6 32.4	2 25.6 +58.7 31.5	2 14.0 +58.7 30.6	2 02.7 +58.8 29.7	1 51.7 +58.9 28.8
22°	3 36.1 +58.6 32.2	3 24.3 +58.6 31.3	3 12.7 +58.8 30.4	3 01.5 +58.8 29.5	2 50.6 +58.9 28.6
23°	4 34.7 +58.6 32.0	4 22.9 +58.7 31.1	4 11.5 +58.7 30.2	4 00.3 +58.8 29.3	3 49.5 +58.9 28.4
24°	5 33.3 +58.5 31.8	5 21.6 +58.6 30.9	5 10.2 +58.7 30.0	4 59.1 +58.8 29.1	4 48.4 +58.8 28.2
25°	6 31.8 +58.6 31.5	6 20.2 +58.7 30.7	6 08.9 +58.7 29.8	5 57.9 +58.8 28.9	5 47.2 +58.9 28.0
26°	7 30.4 +58.6 31.3	7 18.9 +58.6 30.4	7 07.6 +58.8 29.6	6 56.7 +58.8 28.7	6 46.1 +58.8 27.8
27°	8 29.0 +58.6 31.1	8 17.5 +58.7 30.2	8 06.4 +58.7 29.4	7 55.5 +58.8 28.5	7 44.9 +58.9 27.6
28°	9 27.6 +58.5 30.9	9 16.2 +58.6 30.0	9 05.1 +58.7 29.1	8 54.3 +58.7 28.3	8 43.8 +58.8 27.4
29°	10 26.1 +58.6 30.7	10 14.8 +58.6 29.8	10 03.8 +58.7 28.9	9 53.0 +58.8 28.1	9 42.6 +58.9 27.2

Latitude 68°

Declination SAME name as Latitude

Dec	LHA 150° / 210°	LHA 151° / 209°	LHA 152° / 208°	LHA 153° / 207°	LHA 154° / 206°
	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°	-9 07.1 +58.9	-9 18.2 +59.0	-9 28.9 +59.1	-9 39.3 +59.1	-9 49.3 +59.2
11°	-8 08.2 +58.9	-8 19.2 +59.0	-8 29.8 +59.0	-8 40.2 +59.2	-8 50.1 +59.2
12°	-7 09.3 +58.9	-7 20.2 +59.0	-7 30.8 +59.0	-7 41.0 +59.1	-7 50.9 +59.1
13°	-6 10.4 +58.9	-6 21.2 +59.0	-6 31.8 +59.1	-6 41.9 +59.1	-6 51.8 +59.2
14°	-5 11.5 +59.0	-5 22.2 +59.0	-5 32.7 +59.1	-5 42.8 +59.1	-5 52.6 +59.2
15°	-4 12.5 +58.9	-4 23.2 +58.9	-4 33.6 +59.0	-4 43.7 +59.1	-4 53.4 +59.2
16°	-3 13.6 +58.9	-3 24.3 +59.0	-3 34.6 +59.1	-3 44.6 +59.1	-3 54.2 +59.1
17°	-2 14.7 +59.0	-2 25.3 +59.0	-2 35.5 +59.0	-2 45.5 +59.2	-2 55.1 +59.2
18°	-1 15.7 +58.9	-1 26.3 +59.1	-1 36.5 +59.1	-1 46.3 +59.1	-1 55.9 +59.2
19°	-0 16.8 +59.0	-0 27.2 +59.0	-0 37.4 +59.1	-0 47.2 +59.1	-0 56.7 +59.2
20°	0 42.2 +58.9 28.0	0 31.8 +59.0 27.1	0 21.7 +59.0 26.2	0 11.9 +59.1 25.3	0 02.5 +59.2 24.3
21°	1 41.1 +58.9 27.8	1 30.8 +59.0 26.9	1 20.7 +59.1 26.0	1 11.0 +59.2 25.1	1 01.7 +59.2 24.2
22°	2 40.0 +59.0 27.7	2 29.8 +59.0 26.7	2 19.8 +59.1 25.8	2 10.2 +59.1 24.9	2 00.9 +59.2 24.0
23°	3 39.0 +58.9 27.5	3 28.8 +59.0 26.6	3 18.9 +59.0 25.7	3 09.3 +59.1 24.7	3 00.1 +59.1 23.8
24°	4 37.9 +58.9 27.3	4 27.8 +58.9 26.4	4 17.9 +59.1 25.5	4 08.4 +59.1 24.6	3 59.2 +59.2 23.7
25°	5 36.8 +59.0 27.1	5 26.7 +59.0 26.2	5 17.0 +59.0 25.3	5 07.5 +59.2 24.4	4 58.4 +59.2 23.5
26°	6 35.8 +58.9 26.9	6 25.7 +59.0 26.0	6 16.0 +59.1 25.1	6 06.7 +59.1 24.2	5 57.6 +59.2 23.3
27°	7 34.7 +58.9 26.7	7 24.7 +59.0 25.8	7 15.1 +59.0 24.9	7 05.8 +59.1 24.1	6 56.8 +59.1 23.2
28°	8 33.6 +58.9 26.5	8 23.7 +59.0 25.6	8 14.1 +59.1 24.8	8 04.9 +59.1 23.9	7 55.9 +59.2 23.0
29°	9 32.5 +58.9 26.3	9 22.7 +59.0 25.5	9 13.2 +59.0 24.6	9 04.0 +59.1 23.7	8 55.1 +59.2 22.8

Dec	LHA 155° / 205°	LHA 156° / 204°	LHA 157° / 203°	LHA 158° / 202°	LHA 159° / 201°
	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°	-9 58.9 +59.2				
11°	-8 59.7 +59.2	-9 09.0 +59.3	-9 17.9 +59.3	-9 26.5 +59.4	-9 34.7 +59.5
12°	-8 00.5 +59.2	-8 09.7 +59.3	-8 18.6 +59.4	-8 27.1 +59.4	-8 35.2 +59.4
13°	-7 01.3 +59.3	-7 10.4 +59.3	-7 19.2 +59.3	-7 27.7 +59.4	-7 35.8 +59.5
14°	-6 02.0 +59.2	-6 11.1 +59.3	-6 19.9 +59.4	-6 28.3 +59.4	-6 36.3 +59.4
15°	-5 02.8 +59.2	-5 11.8 +59.3	-5 20.5 +59.3	-5 28.9 +59.4	-5 36.9 +59.5
16°	-4 03.6 +59.3	-4 12.5 +59.3	-4 21.2 +59.4	-4 29.5 +59.4	-4 37.4 +59.4
17°	-3 04.3 +59.2	-3 13.2 +59.2	-3 21.8 +59.3	-3 30.1 +59.4	-3 38.0 +59.5
18°	-2 05.1 +59.3	-2 14.0 +59.3	-2 22.5 +59.4	-2 30.7 +59.4	-2 38.5 +59.4
19°	-1 05.8 +59.2	-1 14.7 +59.3	-1 23.1 +59.3	-1 31.3 +59.4	-1 39.1 +59.5
20°	-0 06.6 +59.2	-0 15.4 +59.3	-0 23.8 +59.4	-0 31.9 +59.4	-0 39.6 +59.5
21°	0 52.6 +59.3 23.2	0 43.9 +59.3 22.3	0 35.6 +59.3 21.4	0 27.5 +59.5 20.5	0 19.9 +59.4 19.5
22°	1 51.9 +59.2 23.1	1 43.2 +59.3 22.2	1 34.9 +59.4 21.2	1 27.0 +59.4 20.3	1 19.3 +59.5 19.4
23°	2 51.1 +59.3 22.9	2 42.5 +59.3 22.0	2 34.3 +59.3 21.1	2 26.4 +59.4 20.2	2 18.8 +59.4 19.3
24°	3 50.4 +59.2 22.8	3 41.8 +59.3 21.9	3 33.6 +59.4 21.0	3 25.8 +59.4 20.0	3 18.2 +59.5 19.1
25°	4 49.6 +59.2 22.6	4 41.1 +59.3 21.7	4 33.0 +59.3 20.8	4 25.2 +59.4 19.9	4 17.7 +59.4 19.0
26°	5 48.8 +59.3 22.4	5 40.4 +59.3 21.6	5 32.3 +59.4 20.7	5 24.6 +59.4 19.8	5 17.1 +59.5 18.9
27°	6 48.1 +59.2 22.3	6 39.7 +59.3 21.4	6 31.7 +59.3 20.5	6 24.0 +59.4 19.6	6 16.6 +59.4 18.7
28°	7 47.3 +59.2 22.1	7 39.0 +59.3 21.2	7 31.0 +59.4 20.4	7 23.4 +59.4 19.5	7 16.0 +59.5 18.6
29°	8 46.5 +59.3 22.0	8 38.3 +59.3 21.1	8 30.4 +59.3 20.2	8 22.8 +59.4 19.3	8 15.5 +59.4 18.5

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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 160° / 200°	LHA 161° / 199°	LHA 162° / 198°	LHA 163° / 197°	LHA 164° / 196°
	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°	-9 42.5 +59.5	-9 50.0 +59.6	-9 57.1 +59.6		
12°	-8 43.0 +59.5	-8 50.4 +59.5	-8 57.5 +59.6	-9 04.2 +59.6	-9 10.5 +59.7
13°	-7 43.5 +59.5	-7 50.9 +59.6	-7 57.9 +59.6	-8 04.6 +59.7	-8 10.8 +59.6
14°	-6 44.0 +59.5	-6 51.3 +59.5	-6 58.3 +59.6	-7 04.9 +59.6	-7 11.2 +59.7
15°	-5 44.5 +59.5	-5 51.8 +59.5	-5 58.7 +59.6	-6 05.3 +59.6	-6 11.5 +59.7
16°	-4 45.0 +59.5	-4 52.3 +59.6	-4 59.1 +59.6	-5 05.7 +59.7	-5 11.8 +59.7
17°	-3 45.5 +59.5	-3 52.7 +59.5	-3 59.5 +59.6	-4 06.0 +59.6	-4 12.1 +59.6
18°	-2 46.0 +59.5	-2 53.2 +59.6	-2 59.9 +59.6	-3 06.4 +59.7	-3 12.5 +59.7
19°	-1 46.5 +59.5	-1 53.6 +59.6	-2 00.3 +59.5	-2 06.7 +59.6	-2 12.8 +59.7
20°	-0 47.0 +59.5	-0 54.0 +59.5	-1 00.8 +59.6	-1 07.1 +59.6	-1 13.1 +59.7
21°	0 12.5 +59.5 18.6	0 05.5 +59.6 17.7	-0 01.2 +59.6	-0 07.5 +59.7	-0 13.4 +59.7
22°	1 12.0 +59.5 18.5	1 05.1 +59.5 17.6	0 58.4 +59.6 16.7	0 52.2 +59.6 15.7	0 46.3 +59.6 14.8
23°	2 11.5 +59.5 18.4	2 04.6 +59.6 17.5	1 58.0 +59.6 16.5	1 51.8 +59.7 15.6	1 45.9 +59.7 14.7
24°	3 11.0 +59.5 18.2	3 04.2 +59.5 17.3	2 57.6 +59.6 16.4	2 51.5 +59.6 15.5	2 45.6 +59.7 14.6
25°	4 10.5 +59.5 18.1	4 03.7 +59.6 17.2	3 57.2 +59.6 16.3	3 51.1 +59.6 15.4	3 45.3 +59.7 14.5
26°	5 10.0 +59.5 18.0	5 03.3 +59.5 17.1	4 56.8 +59.6 16.2	4 50.7 +59.7 15.3	4 45.0 +59.6 14.4
27°	6 09.5 +59.5 17.8	6 02.8 +59.6 17.0	5 56.4 +59.6 16.1	5 50.4 +59.6 15.2	5 44.6 +59.7 14.3
28°	7 09.0 +59.5 17.7	7 02.4 +59.5 16.8	6 56.0 +59.6 16.0	6 50.0 +59.6 15.1	6 44.3 +59.7 14.2
29°	8 08.5 +59.5 17.6	8 01.9 +59.5 16.7	7 55.6 +59.6 15.8	7 49.6 +59.7 15.0	7 44.0 +59.7 14.1

Dec	LHA 165° / 195°	LHA 166° / 194°	LHA 167° / 193°	LHA 168° / 192°	LHA 169° / 191°
	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°	-9 16.5 +59.7	-9 22.0 +59.7	-9 27.2 +59.7	-9 32.1 +59.8	-9 36.5 +59.8
13°	-8 16.8 +59.8	-8 22.3 +59.8	-8 27.5 +59.8	-8 32.3 +59.9	-8 36.7 +59.9
14°	-7 17.0 +59.7	-7 22.5 +59.7	-7 27.7 +59.8	-7 32.4 +59.8	-7 36.8 +59.8
15°	-6 17.3 +59.7	-6 22.8 +59.8	-6 27.9 +59.8	-6 32.6 +59.8	-6 37.0 +59.9
16°	-5 17.6 +59.7	-5 23.0 +59.7	-5 28.1 +59.8	-5 32.8 +59.8	-5 37.1 +59.8
17°	-4 17.9 +59.7	-4 23.3 +59.8	-4 28.3 +59.8	-4 33.0 +59.8	-4 37.3 +59.9
18°	-3 18.2 +59.7	-3 23.5 +59.7	-3 28.5 +59.7	-3 33.2 +59.8	-3 37.4 +59.8
19°	-2 18.5 +59.8	-2 23.8 +59.8	-2 28.8 +59.8	-2 33.4 +59.9	-2 37.6 +59.8
20°	-1 18.7 +59.7	-1 24.0 +59.7	-1 29.0 +59.8	-1 33.5 +59.8	-1 37.8 +59.9
21°	-0 19.0 +59.7	-0 24.3 +59.8	-0 29.2 +59.8	-0 33.7 +59.8	-0 37.9 +59.8
22°	0 40.7 +59.7 13.9	0 35.5 +59.7 13.0	0 30.6 +59.8 12.0	0 26.1 +59.8 11.1	0 21.9 +59.9 10.2
23°	1 40.4 +59.7 13.8	1 35.2 +59.8 12.9	1 30.4 +59.8 12.0	1 25.9 +59.8 11.0	1 21.8 +59.8 10.1
24°	2 40.1 +59.7 13.7	2 35.0 +59.7 12.8	2 30.2 +59.8 11.9	2 25.7 +59.8 11.0	2 21.6 +59.9 10.0
25°	3 39.8 +59.8 13.6	3 34.7 +59.8 12.7	3 30.0 +59.7 11.8	3 25.5 +59.9 10.9	3 21.5 +59.8 10.0
26°	4 39.6 +59.7 13.5	4 34.5 +59.7 12.6	4 29.7 +59.8 11.7	4 25.4 +59.8 10.8	4 21.3 +59.9 9.9
27°	5 39.3 +59.7 13.4	5 34.2 +59.8 12.5	5 29.5 +59.8 11.6	5 25.2 +59.8 10.7	5 21.2 +59.8 9.8
28°	6 39.0 +59.7 13.3	6 34.0 +59.7 12.4	6 29.3 +59.8 11.5	6 25.0 +59.8 10.6	6 21.0 +59.9 9.8
29°	7 38.7 +59.7 13.2	7 33.7 +59.8 12.3	7 29.1 +59.8 11.4	7 24.8 +59.8 10.6	7 20.9 +59.8 9.7

Dec	LHA 170° / 190°	LHA 171° / 189°	LHA 172° / 188°	LHA 173° / 187°	LHA 174° / 186°
	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°	-9 40.6 +59.9	-9 44.3 +59.9	-9 47.6 +60.0	-9 50.5 +60.0	-9 53.0 +60.0
13°	-8 40.7 +59.9	-8 44.4 +59.9	-8 47.6 +59.9	-8 50.5 +59.9	-8 53.0 +59.9
14°	-7 40.8 +59.8	-7 44.5 +59.9	-7 47.7 +59.9	-7 50.6 +59.9	-7 53.1 +60.0
15°	-6 41.0 +59.9	-6 44.6 +59.9	-6 47.8 +59.9	-6 50.7 +60.0	-6 53.1 +59.9
16°	-5 41.1 +59.9	-5 44.7 +59.9	-5 47.9 +59.9	-5 50.7 +59.9	-5 53.2 +60.0
17°	-4 41.2 +59.8	-4 44.8 +59.9	-4 48.0 +59.9	-4 50.8 +60.0	-4 53.2 +59.9
18°	-3 41.4 +59.9	-3 44.9 +59.9	-3 48.1 +60.0	-3 50.8 +59.9	-3 53.3 +60.0
19°	-2 41.5 +59.9	-2 45.0 +59.9	-2 48.1 +59.9	-2 50.9 +59.9	-2 53.3 +59.9
20°	-1 41.6 +59.9	-1 45.1 +59.9	-1 48.2 +59.9	-1 51.0 +60.0	-1 53.4 +60.0
21°	-0 41.7 +59.8	-0 45.2 +59.9	-0 48.3 +59.9	-0 51.0 +59.9	-0 53.4 +59.9
22°	0 18.1 +59.9 9.3	0 14.7 +59.9 8.3	0 11.6 +59.9 7.4	0 08.9 +59.9 6.5	0 06.5 +60.0 5.6
23°	1 18.0 +59.9 9.2	1 14.6 +59.9 8.3	1 11.5 +60.0 7.4	1 08.8 +60.0 6.4	1 06.5 +59.9 5.5
24°	2 17.9 +59.9 9.1	2 14.5 +59.9 8.2	2 11.5 +59.9 7.3	2 08.8 +59.9 6.4	2 06.4 +60.0 5.5
25°	3 17.8 +59.8 9.1	3 14.4 +59.9 8.2	3 11.4 +59.9 7.3	3 08.7 +59.9 6.4	3 06.4 +60.0 5.4
26°	4 17.6 +59.9 9.0	4 14.3 +59.9 8.1	4 11.3 +59.9 7.2	4 08.6 +60.0 6.3	4 06.4 +59.9 5.4
27°	5 17.5 +59.9 8.9	5 14.2 +59.9 8.0	5 11.2 +59.9 7.2	5 08.6 +59.9 6.3	5 06.3 +60.0 5.4
28°	6 17.4 +59.8 8.9	6 14.1 +59.9 8.0	6 11.1 +59.9 7.1	6 08.5 +60.0 6.2	6 06.3 +59.9 5.3
29°	7 17.2 +59.9 8.8	7 14.0 +59.9 7.9	7 11.0 +60.0 7.0	7 08.5 +59.9 6.2	7 06.2 +60.0 5.3

Dec	LHA 175° / 185°	LHA 176° / 184°	LHA 177° / 183°	LHA 178° / 182°	LHA 179° / 181°
	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°	-9 55.1 +59.9	-9 56.9 +60.0	-9 58.2 +59.9	-9 59.2 +60.0	-9 59.8 +60.0
13°	-8 55.2 +60.0	-8 56.9 +60.0	-8 58.3 +60.0	-8 59.2 +60.0	-8 59.8 +60.0
14°	-7 55.2 +60.0	-7 56.9 +60.0	-7 58.3 +60.0	-7 59.2 +60.0	-7 59.8 +60.0
15°	-6 55.2 +59.9	-6 56.9 +59.9	-6 58.3 +60.0	-6 59.2 +60.0	-6 59.8 +60.0
16°	-5 55.3 +60.0	-5 57.0 +60.0	-5 58.3 +60.0	-5 59.2 +60.0	-5 59.8 +60.0
17°	-4 55.3 +60.0	-4 57.0 +60.0	-4 58.3 +60.0	-4 59.2 +59.9	-4 59.8 +60.0
18°	-3 55.3 +59.9	-3 57.0 +60.0	-3 58.3 +60.0	-3 59.3 +60.0	-3 59.8 +60.0
19°	-2 55.4 +60.0	-2 57.0 +59.9	-2 58.3 +60.0	-2 59.3 +60.0	-2 59.8 +60.0
20°	-1 55.4 +60.0	-1 57.1 +60.0	-1 58.3 +59.9	-1 59.3 +60.0	-1 59.8 +60.0
21°	-0 55.4 +59.9	-0 57.1 +60.0	-0 58.4 +60.0	-0 59.3 +60.0	-0 59.8 +60.0
22°	0 04.5 +60.0 4.6	0 02.9 +60.0 3.7	0 01.6 +60.0 2.8	0 00.7 +60.0 1.9	0 00.2 +60.0 0.9
23°	1 04.5 +60.0 4.6	1 02.9 +60.0 3.7	1 01.6 +60.0 2.8	1 00.7 +60.0 1.8	1 00.2 +60.0 0.9
24°	2 04.5 +59.9 4.6	2 02.9 +59.9 3.7	2 01.6 +60.0 2.7	2 00.7 +60.0 1.8	2 00.2 +60.0 0.9
25°	3 04.4 +60.0 4.5	3 02.8 +60.0 3.6	3 01.6 +60.0 2.7	3 00.7 +60.0 1.8	3 00.2 +60.0 0.9
26°	4 04.4 +60.0 4.5	4 02.8 +60.0 3.6	4 01.6 +60.0 2.7	4 00.7 +60.0 1.8	4 00.2 +60.0 0.9
27°	5 04.4 +60.0 4.5	5 02.8 +60.0 3.6	5 01.6 +60.0 2.7	5 00.7 +60.0 1.8	5 00.2 +60.0 0.9
28°	6 04.4 +59.9 4.4	6 02.8 +60.0 3.6	6 01.6 +60.0 2.7	6 00.7 +60.0 1.8	6 00.2 +60.0 0.9
29°	7 04.3 +60.0 4.4	7 02.8 +59.9 3.5	7 01.6 +59.9 2.6	7 00.7 +60.0 1.8	7 00.2 +60.0 0.9

Declination SAME name as Latitude

Latitude 69°

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°	21 00.0 +60.0 180.0	20 59.8 +60.0 178.9	20 59.2 +60.0 177.9	20 58.2 +60.0 176.8	20 56.8 +60.0 175.7
1°	22 00.0 +60.0 180.0	21 59.8 +60.0 178.9	21 59.2 +60.0 177.8	21 58.2 +60.0 176.8	21 56.8 +59.9 175.7
2°	23 00.0 +60.0 180.0	22 59.8 +60.0 178.9	22 59.2 +60.0 177.8	22 58.2 +60.0 176.7	22 56.7 +60.0 175.7
3°	24 00.0 +60.0 180.0	23 59.8 +60.0 178.9	23 59.2 +60.0 177.8	23 58.2 +59.9 176.7	23 56.7 +60.0 175.6
4°	25 00.0 +60.0 180.0	24 59.8 +60.0 178.9	24 59.2 +60.0 177.8	24 58.1 +60.0 176.7	24 56.7 +60.0 175.6
5°	26 00.0 +60.0 180.0	25 59.8 +60.0 178.9	25 59.2 +60.0 177.8	25 58.1 +60.0 176.7	25 56.7 +60.0 175.6
6°	27 00.0 +60.0 180.0	26 59.8 +60.0 178.9	26 59.2 +60.0 177.8	26 58.1 +60.0 176.7	26 56.7 +59.9 175.5
7°	28 00.0 +60.0 180.0	27 59.8 +60.0 178.9	27 59.2 +60.0 177.8	27 58.1 +60.0 176.6	27 56.6 +60.0 175.5
8°	29 00.0 +60.0 180.0	28 59.8 +60.0 178.9	28 59.2 +59.9 177.7	28 58.1 +60.0 176.6	28 56.6 +60.0 175.5
9°	30 00.0 +60.0 180.0	29 59.8 +60.0 178.9	29 59.1 +60.0 177.7	29 58.1 +60.0 176.6	29 56.6 +60.0 175.4
10°	31 00.0 +60.0 180.0	30 59.8 +60.0 178.9	30 59.1 +60.0 177.7	30 58.1 +59.9 176.6	30 56.6 +59.9 175.4
11°	32 00.0 +60.0 180.0	31 59.8 +60.0 178.8	31 59.1 +60.0 177.7	31 58.0 +60.0 176.5	31 56.5 +60.0 175.4
12°	33 00.0 +60.0 180.0	32 59.8 +60.0 178.8	32 59.1 +60.0 177.7	32 58.0 +60.0 176.5	32 56.5 +60.0 175.3
13°	34 00.0 +60.0 180.0	33 59.8 +60.0 178.8	33 59.1 +60.0 177.6	33 58.0 +60.0 176.5	33 56.5 +59.9 175.3
14°	35 00.0 +60.0 180.0	34 59.8 +60.0 178.8	34 59.1 +60.0 177.6	34 58.0 +60.0 176.4	34 56.4 +60.0 175.3
15°	36 00.0 +60.0 180.0	35 59.8 +60.0 178.8	35 59.1 +60.0 177.6	35 58.0 +60.0 176.4	35 56.4 +60.0 175.2
16°	37 00.0 +60.0 180.0	36 59.8 +60.0 178.8	36 59.1 +60.0 177.6	36 58.0 +60.0 176.4	36 56.4 +60.0 175.2
17°	38 00.0 +60.0 180.0	37 59.8 +60.0 178.8	37 59.1 +60.0 177.6	37 58.0 +59.9 176.4	37 56.4 +59.9 175.1
18°	39 00.0 +60.0 180.0	38 59.8 +60.0 178.8	38 59.1 +60.0 177.6	38 57.9 +60.0 176.3	38 56.3 +60.0 175.1
19°	40 00.0 +60.0 180.0	39 59.8 +60.0 178.8	39 59.1 +60.0 177.5	39 57.9 +60.0 176.3	39 56.3 +60.0 175.1
20°	41 00.0 +60.0 180.0	40 59.8 +60.0 178.8	40 59.1 +60.0 177.5	40 57.9 +60.0 176.3	40 56.3 +59.9 175.0
21°	42 00.0 +60.0 180.0	41 59.8 +60.0 178.7	41 59.1 +59.9 177.5	41 57.9 +60.0 176.2	41 56.2 +60.0 175.0
22°	43 00.0 +60.0 180.0	42 59.8 +60.0 178.7	42 59.0 +60.0 177.5	42 57.9 +59.9 176.2	42 56.2 +60.0 174.9
23°	44 00.0 +60.0 180.0	43 59.8 +60.0 178.7	43 59.0 +60.0 177.4	43 57.8 +60.0 176.2	43 56.2 +59.9 174.9
24°	45 00.0 +60.0 180.0	44 59.8 +60.0 178.7	44 59.0 +60.0 177.4	44 57.8 +60.0 176.1	44 56.1 +60.0 174.8
25°	46 00.0 +60.0 180.0	45 59.8 +60.0 178.7	45 59.0 +60.0 177.4	45 57.8 +60.0 176.1	45 56.1 +59.9 174.8
26°	47 00.0 +60.0 180.0	46 59.8 +60.0 178.7	46 59.0 +60.0 177.4	46 57.8 +60.0 176.0	46 56.0 +60.0 174.7
27°	48 00.0 +60.0 180.0	47 59.8 +59.9 178.7	47 59.0 +60.0 177.3	47 57.8 +59.9 176.0	47 56.0 +60.0 174.7
28°	49 00.0 +60.0 180.0	48 59.7 +60.0 178.7	48 59.0 +60.0 177.3	48 57.7 +60.0 176.0	48 56.0 +59.9 174.6
29°	50 00.0 +60.0 180.0	49 59.7 +60.0 178.6	49 59.0 +60.0 177.3	49 57.7 +60.0 175.9	49 55.9 +60.0 174.6

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°	20 55.0 +59.9 174.6	20 52.8 +59.9 173.6	20 50.2 +59.9 172.5	20 47.2 +59.9 171.4	20 43.8 +59.9 170.4
1°	21 54.9 +60.0 174.6	21 52.7 +60.0 173.5	21 50.1 +59.9 172.5	21 47.1 +59.9 171.4	21 43.7 +59.8 170.3
2°	22 54.9 +60.0 174.6	22 52.7 +59.9 173.5	22 50.0 +60.0 172.4	22 47.0 +59.9 171.3	22 43.5 +59.9 170.2
3°	23 54.9 +59.9 174.5	23 52.6 +60.0 173.4	23 50.0 +59.9 172.4	23 46.9 +59.9 171.3	23 43.4 +59.9 170.2
4°	24 54.8 +60.0 174.5	24 52.6 +59.9 173.4	24 49.9 +59.9 172.3	24 46.8 +59.9 171.2	24 43.3 +59.9 170.1
5°	25 54.8 +60.0 174.5	25 52.5 +60.0 173.4	25 49.8 +60.0 172.2	25 46.7 +59.9 171.1	25 43.2 +59.9 170.0
6°	26 54.8 +59.9 174.4	26 52.5 +59.9 173.3	26 49.8 +59.9 172.2	26 46.6 +59.9 171.1	26 43.1 +59.9 170.0
7°	27 54.7 +60.0 174.4	27 52.4 +60.0 173.3	27 49.7 +59.9 172.1	27 46.5 +59.9 171.0	27 43.0 +59.9 169.9
8°	28 54.7 +60.0 174.3	28 52.4 +59.9 173.2	28 49.6 +59.9 172.1	28 46.4 +59.9 171.0	28 42.9 +59.8 169.8
9°	29 54.7 +59.9 174.3	29 52.3 +60.0 173.2	29 49.5 +60.0 172.0	29 46.3 +59.9 170.9	29 42.7 +59.9 169.8
10°	30 54.6 +60.0 174.3	30 52.3 +59.9 173.1	30 49.5 +59.9 172.0	30 46.2 +59.9 170.8	30 42.6 +59.9 169.7
11°	31 54.6 +59.9 174.2	31 52.2 +59.9 173.1	31 49.4 +59.9 171.9	31 46.1 +59.9 170.8	31 42.5 +59.8 169.6
12°	32 54.5 +60.0 174.2	32 52.1 +60.0 173.0	32 49.3 +59.9 171.8	32 46.0 +59.9 170.7	32 42.3 +59.9 169.5
13°	33 54.5 +60.0 174.1	33 52.1 +59.9 173.0	33 49.2 +59.9 171.8	33 45.9 +59.9 170.6	33 42.2 +59.9 169.4
14°	34 54.5 +59.9 174.1	34 52.0 +59.9 172.9	34 49.1 +59.9 171.7	34 45.8 +59.9 170.5	34 42.1 +59.8 169.4
15°	35 54.4 +60.0 174.0	35 51.9 +60.0 172.8	35 49.0 +60.0 171.7	35 45.7 +59.9 170.5	35 41.9 +59.9 169.3
16°	36 54.4 +59.9 174.0	36 51.9 +59.9 172.8	36 49.0 +59.9 171.6	36 45.6 +59.9 170.4	36 41.8 +59.8 169.2
17°	37 54.3 +60.0 173.9	37 51.8 +59.9 172.7	37 48.9 +59.9 171.5	37 45.5 +59.9 170.3	37 41.6 +59.9 169.1
18°	38 54.3 +59.9 173.9	38 51.7 +60.0 172.7	38 48.8 +59.9 171.4	38 45.4 +59.8 170.2	38 41.5 +59.8 169.0
19°	39 54.2 +60.0 173.8	39 51.7 +59.9 172.6	39 48.7 +59.9 171.4	39 45.2 +59.9 170.1	39 41.3 +59.9 168.9
20°	40 54.2 +59.9 173.8	40 51.6 +59.9 172.5	40 48.6 +59.9 171.3	40 45.1 +59.9 170.1	40 41.2 +59.8 168.8
21°	41 54.1 +60.0 173.7	41 51.5 +60.0 172.5	41 48.5 +59.9 171.2	41 45.0 +59.8 170.0	41 41.0 +59.8 168.7
22°	42 54.1 +59.9 173.7	42 51.5 +59.9 172.4	42 48.4 +59.9 171.1	42 44.8 +59.9 169.9	42 40.8 +59.8 168.6
23°	43 54.0 +59.9 173.6	43 51.4 +59.9 172.3	43 48.3 +59.9 171.1	43 44.7 +59.8 169.8	43 40.6 +59.9 168.5
24°	44 53.9 +60.0 173.5	44 51.3 +59.9 172.3	44 48.2 +59.8 171.0	44 44.5 +59.9 169.7	44 40.5 +59.8 168.4
25°	45 53.9 +59.9 173.5	45 51.2 +59.9 172.2	45 48.0 +59.9 170.9	45 44.4 +59.8 169.6	45 40.3 +59.8 168.3
26°	46 53.8 +60.0 173.4	46 51.1 +59.9 172.1	46 47.9 +59.9 170.8	46 44.2 +59.9 169.5	46 40.1 +59.8 168.2
27°	47 53.8 +59.9 173.3	47 51.0 +59.9 172.0	47 47.8 +59.9 170.7	47 44.1 +59.8 169.4	47 39.9 +59.8 168.1
28°	48 53.7 +59.9 173.3	48 50.9 +59.9 171.9	48 47.7 +59.8 170.6	48 43.9 +59.8 169.3	48 39.7 +59.7 167.9
29°	49 53.6 +60.0 173.2	49 50.8 +59.9 171.8	49 47.5 +59.9 170.5	49 43.7 +59.8 169.1	49 39.4 +59.8 167.8

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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°	20 40.0 +59.8 169.3	20 35.8 +59.8 168.2	20 31.2 +59.8 167.2	20 26.2 +59.8 166.1	20 20.9 +59.7 165.0
1°	21 39.8 +59.9 169.2	21 35.6 +59.9 168.2	21 31.0 +59.8 167.1	21 26.0 +59.8 166.0	21 20.6 +59.8 164.9
2°	22 39.7 +59.9 169.2	22 35.5 +59.8 168.1	22 30.8 +59.8 167.0	22 25.8 +59.8 165.9	22 20.4 +59.7 164.8
3°	23 39.6 +59.8 169.1	23 35.3 +59.8 168.0	23 30.6 +59.8 166.9	23 25.6 +59.7 165.8	23 20.1 +59.7 164.7
4°	24 39.4 +59.9 169.0	24 35.1 +59.9 167.9	24 30.4 +59.8 166.8	24 25.3 +59.8 165.7	24 19.8 +59.8 164.6
5°	25 39.3 +59.8 168.9	25 35.0 +59.8 167.8	25 30.2 +59.8 166.7	25 25.1 +59.7 165.6	25 19.6 +59.7 164.5
6°	26 39.1 +59.9 168.9	26 34.8 +59.8 167.7	26 30.0 +59.8 166.6	26 24.8 +59.8 165.5	26 19.3 +59.7 164.4
7°	27 39.0 +59.8 168.8	27 34.6 +59.8 167.7	27 29.8 +59.8 166.5	27 24.6 +59.8 165.4	27 19.0 +59.7 164.3
8°	28 38.8 +59.9 168.7	28 34.4 +59.8 167.6	28 29.6 +59.8 166.5	28 24.4 +59.7 165.3	28 18.7 +59.7 164.2
9°	29 38.7 +59.8 168.6	29 34.2 +59.9 167.5	29 29.4 +59.8 166.4	29 24.1 +59.7 165.2	29 18.4 +59.7 164.1
10°	30 38.5 +59.9 168.5	30 34.1 +59.8 167.4	30 29.2 +59.7 166.3	30 23.8 +59.8 165.1	30 18.1 +59.7 164.0
11°	31 38.4 +59.8 168.5	31 33.9 +59.8 167.3	31 28.9 +59.8 166.2	31 23.6 +59.7 165.0	31 17.8 +59.7 163.9
12°	32 38.2 +59.8 168.4	32 33.7 +59.8 167.2	32 28.7 +59.8 166.1	32 23.3 +59.7 164.9	32 17.5 +59.7 163.7
13°	33 38.0 +59.9 168.3	33 33.5 +59.8 167.1	33 28.5 +59.7 165.9	33 23.0 +59.7 164.8	33 17.2 +59.6 163.6
14°	34 37.9 +59.8 168.2	34 33.3 +59.8 167.0	34 28.2 +59.8 165.8	34 22.7 +59.7 164.7	34 16.8 +59.7 163.5
15°	35 37.7 +59.8 168.1	35 33.1 +59.7 166.9	35 28.0 +59.7 165.7	35 22.4 +59.8 164.5	35 16.5 +59.7 163.4
16°	36 37.5 +59.8 168.0	36 32.8 +59.8 166.8	36 27.7 +59.7 165.6	36 22.2 +59.6 164.4	36 16.2 +59.6 163.2
17°	37 37.3 +59.9 167.9	37 32.6 +59.8 166.7	37 27.4 +59.8 165.5	37 21.8 +59.7 164.3	37 15.8 +59.6 163.1
18°	38 37.2 +59.8 167.8	38 32.4 +59.8 166.6	38 27.2 +59.7 165.4	38 21.5 +59.7 164.2	38 15.4 +59.7 163.0
19°	39 37.0 +59.8 167.7	39 32.2 +59.7 166.5	39 26.9 +59.7 165.3	39 21.2 +59.7 164.0	39 15.1 +59.6 162.8
20°	40 36.8 +59.8 167.6	40 31.9 +59.8 166.4	40 26.6 +59.7 165.1	40 20.9 +59.6 163.9	40 14.7 +59.6 162.7
21°	41 36.6 +59.7 167.5	41 31.7 +59.7 166.2	41 26.3 +59.7 165.0	41 20.5 +59.7 163.8	41 14.3 +59.6 162.5
22°	42 36.3 +59.8 167.4	42 31.4 +59.8 166.1	42 26.0 +59.7 164.9	42 20.2 +59.6 163.6	42 13.9 +59.6 162.4
23°	43 36.1 +59.8 167.2	43 31.2 +59.7 166.0	43 25.7 +59.7 164.7	43 19.8 +59.6 163.5	43 13.5 +59.5 162.2
24°	44 35.9 +59.8 167.1	44 30.9 +59.7 165.9	44 25.4 +59.7 164.6	44 19.4 +59.7 163.3	44 13.0 +59.6 162.0
25°	45 35.7 +59.7 167.0	45 30.6 +59.7 165.7	45 25.1 +59.6 164.4	45 19.1 +59.6 163.1	45 12.6 +59.5 161.9
26°	46 35.4 +59.8 166.9	46 30.3 +59.7 165.6	46 24.7 +59.7 164.3	46 18.7 +59.5 163.0	46 12.1 +59.5 161.7
27°	47 35.2 +59.7 166.7	47 30.0 +59.7 165.4	47 24.4 +59.6 164.1	47 18.2 +59.6 162.8	47 11.6 +59.5 161.5
28°	48 34.9 +59.7 166.6	48 29.7 +59.7 165.3	48 24.0 +59.6 163.9	48 17.8 +59.6 162.6	48 11.1 +59.5 161.3
29°	49 34.6 +59.8 166.5	49 29.4 +59.6 165.1	49 23.6 +59.6 163.8	49 17.4 +59.5 162.4	49 10.6 +59.5 161.1

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°	20 15.1 +59.7 164.0	20 09.0 +59.7 162.9	20 02.5 +59.6 161.9	19 55.6 +59.6 160.8	19 48.4 +59.5 159.8
1°	21 14.8 +59.8 163.9	21 08.7 +59.6 162.8	21 02.1 +59.7 161.7	20 55.2 +59.6 160.7	20 47.9 +59.5 159.6
2°	22 14.6 +59.6 163.8	22 08.3 +59.7 162.7	22 01.8 +59.6 161.6	21 54.8 +59.6 160.6	21 47.4 +59.6 159.5
3°	23 14.2 +59.7 163.7	23 08.0 +59.7 162.6	23 01.4 +59.6 161.5	22 54.4 +59.5 160.4	22 47.0 +59.5 159.4
4°	24 13.9 +59.7 163.6	24 07.7 +59.6 162.5	24 01.0 +59.6 161.4	23 53.9 +59.6 160.3	23 46.5 +59.5 159.2
5°	25 13.6 +59.7 163.4	25 07.3 +59.6 162.3	25 00.6 +59.6 161.3	24 53.5 +59.5 160.2	24 46.0 +59.5 159.1
6°	26 13.3 +59.7 163.3	26 06.9 +59.7 162.2	26 00.2 +59.6 161.1	25 53.0 +59.6 160.0	25 45.5 +59.5 158.9
7°	27 13.0 +59.6 163.2	27 06.6 +59.6 162.1	26 59.8 +59.5 161.0	26 52.6 +59.5 159.9	26 45.0 +59.5 158.8
8°	28 12.6 +59.7 163.1	28 06.2 +59.6 162.0	27 59.3 +59.6 160.9	27 52.1 +59.5 159.7	27 44.5 +59.4 158.6
9°	29 12.3 +59.7 163.0	29 05.8 +59.6 161.8	28 58.9 +59.6 160.7	28 51.6 +59.5 159.6	28 43.9 +59.5 158.5
10°	30 12.0 +59.6 162.8	30 05.4 +59.6 161.7	29 58.5 +59.5 160.6	29 51.1 +59.5 159.5	29 43.4 +59.4 158.3
11°	31 11.6 +59.7 162.7	31 05.0 +59.6 161.6	30 58.0 +59.6 160.4	30 50.6 +59.5 159.3	30 42.8 +59.5 158.2
12°	32 11.3 +59.6 162.6	32 04.6 +59.6 161.4	31 57.6 +59.5 160.3	31 50.1 +59.5 159.2	31 42.3 +59.4 158.0
13°	33 10.9 +59.6 162.5	33 04.2 +59.6 161.3	32 57.1 +59.5 160.2	32 49.6 +59.5 159.0	32 41.7 +59.4 157.9
14°	34 10.5 +59.6 162.3	34 03.8 +59.6 161.2	33 56.6 +59.6 160.0	33 49.1 +59.4 158.8	33 41.1 +59.4 157.7
15°	35 10.1 +59.6 162.2	35 03.4 +59.5 161.0	34 56.2 +59.5 159.8	34 48.5 +59.5 158.7	34 40.5 +59.4 157.5
16°	36 09.7 +59.6 162.1	36 02.9 +59.6 160.9	35 55.7 +59.4 159.7	35 48.0 +59.4 158.5	35 39.9 +59.4 157.3
17°	37 09.3 +59.6 161.9	37 02.5 +59.5 160.7	36 55.1 +59.5 159.5	36 47.4 +59.4 158.3	36 39.3 +59.3 157.2
18°	38 08.9 +59.6 161.8	38 02.0 +59.5 160.6	37 54.6 +59.5 159.4	37 46.8 +59.4 158.2	37 38.6 +59.4 157.0
19°	39 08.5 +59.6 161.6	39 01.5 +59.5 160.4	38 54.1 +59.4 159.2	38 46.2 +59.4 158.0	38 38.0 +59.3 156.8
20°	40 08.1 +59.5 161.5	40 01.0 +59.5 160.2	39 53.5 +59.5 159.0	39 45.6 +59.4 157.8	39 37.3 +59.3 156.6
21°	41 07.6 +59.6 161.3	41 00.5 +59.5 160.1	40 53.0 +59.4 158.8	40 45.0 +59.3 157.6	40 36.6 +59.3 156.4
22°	42 07.2 +59.5 161.1	42 00.0 +59.4 159.9	41 52.4 +59.4 158.7	41 44.3 +59.4 157.4	41 35.9 +59.2 156.2
23°	43 06.7 +59.5 161.0	42 59.4 +59.5 159.7	42 51.8 +59.3 158.5	42 43.7 +59.3 157.2	42 35.1 +59.2 156.0
24°	44 06.2 +59.5 160.8	43 58.9 +59.4 159.5	43 51.1 +59.4 158.3	43 43.0 +59.2 157.0	43 34.3 +59.2 155.8
25°	45 05.7 +59.4 160.6	44 58.3 +59.4 159.3	44 50.5 +59.3 158.1	44 42.2 +59.3 156.8	44 33.5 +59.2 155.5
26°	46 05.1 +59.5 160.4	45 57.7 +59.4 159.1	45 49.8 +59.3 157.8	45 41.5 +59.2 156.6	45 32.7 +59.2 155.3
27°	47 04.6 +59.4 160.2	46 57.1 +59.3 158.9	46 49.1 +59.3 157.6	46 40.7 +59.2 156.3	46 31.9 +59.1 155.1
28°	48 04.0 +59.4 160.0	47 56.4 +59.4 158.7	47 48.4 +59.3 157.4	47 39.9 +59.2 156.1	47 31.0 +59.1 154.8
29°	49 03.4 +59.4 159.8	48 55.8 +59.3 158.5	48 47.7 +59.2 157.2	48 39.1 +59.1 155.9	48 30.1 +59.0 154.5

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°	19 40.8 +59.4 158.7	19 32.8 +59.4 157.6	19 24.4 +59.4 156.6	19 15.7 +59.3 155.5	19 06.6 +59.3 154.5
1°	20 40.2 +59.5 158.6	20 32.2 +59.4 157.5	20 23.8 +59.4 156.4	20 15.0 +59.3 155.4	20 05.9 +59.3 154.3
2°	21 39.7 +59.5 158.4	21 31.6 +59.5 157.4	21 23.2 +59.3 156.3	21 14.3 +59.4 155.2	21 05.2 +59.2 154.2
3°	22 39.2 +59.5 158.3	22 31.1 +59.4 157.2	22 22.5 +59.4 156.1	22 13.7 +59.3 155.1	22 04.4 +59.3 154.0
4°	23 38.7 +59.4 158.1	23 30.5 +59.4 157.1	23 21.9 +59.3 156.0	23 13.0 +59.3 154.9	23 03.7 +59.2 153.8
5°	24 38.1 +59.5 158.0	24 29.9 +59.4 156.9	24 21.2 +59.4 155.8	24 12.3 +59.2 154.7	24 02.9 +59.2 153.7
6°	25 37.6 +59.4 157.8	25 29.3 +59.3 156.7	25 20.6 +59.3 155.7	25 11.5 +59.3 154.6	25 02.1 +59.2 153.5
7°	26 37.0 +59.4 157.7	26 28.6 +59.4 156.6	26 19.9 +59.3 155.5	26 10.8 +59.3 154.4	26 01.3 +59.2 153.3
8°	27 36.4 +59.5 157.5	27 28.0 +59.4 156.4	27 19.2 +59.3 155.3	27 10.1 +59.2 154.2	27 00.5 +59.2 153.1
9°	28 35.9 +59.4 157.4	28 27.4 +59.3 156.3	28 18.5 +59.3 155.1	28 09.3 +59.2 154.0	27 59.7 +59.2 152.9
10°	29 35.3 +59.4 157.2	29 26.7 +59.4 156.1	29 17.8 +59.3 155.0	29 08.5 +59.3 153.9	28 58.9 +59.1 152.7
11°	30 34.7 +59.3 157.0	30 26.1 +59.3 155.9	30 17.1 +59.3 154.8	30 07.8 +59.2 153.7	29 58.0 +59.2 152.6
12°	31 34.0 +59.4 156.9	31 25.4 +59.3 155.7	31 16.4 +59.2 154.6	31 07.0 +59.1 153.5	30 57.2 +59.1 152.4
13°	32 33.4 +59.4 156.7	32 24.7 +59.3 155.6	32 15.6 +59.2 154.4	32 06.1 +59.2 153.3	31 56.3 +59.1 152.2
14°	33 32.8 +59.3 156.5	33 24.0 +59.3 155.4	33 14.8 +59.3 154.2	33 05.3 +59.2 153.1	32 55.4 +59.1 152.0
15°	34 32.1 +59.3 156.4	34 23.3 +59.2 155.2	34 14.1 +59.2 154.0	34 04.5 +59.1 152.9	33 54.5 +59.0 151.7
16°	35 31.4 +59.3 156.2	35 22.5 +59.3 155.0	35 13.3 +59.1 153.8	35 03.6 +59.1 152.7	34 53.5 +59.1 151.5
17°	36 30.7 +59.3 156.0	36 21.8 +59.2 154.8	36 12.4 +59.2 153.6	36 02.7 +59.1 152.5	35 52.6 +59.0 151.3
18°	37 30.0 +59.3 155.8	37 21.0 +59.2 154.6	37 11.6 +59.1 153.4	37 01.8 +59.0 152.3	36 51.6 +59.0 151.1
19°	38 29.3 +59.2 155.6	38 20.2 +59.2 154.4	38 10.7 +59.1 153.2	38 00.8 +59.1 152.0	37 50.6 +58.9 150.9
20°	39 28.5 +59.3 155.4	39 19.4 +59.1 154.2	39 09.8 +59.1 153.0	38 59.9 +59.0 151.8	38 49.5 +58.9 150.6
21°	40 27.8 +59.2 155.2	40 18.5 +59.2 154.0	40 08.9 +59.1 152.8	39 58.9 +58.9 151.6	39 48.4 +58.9 150.4
22°	41 27.0 +59.2 155.0	41 17.7 +59.1 153.8	41 08.0 +59.0 152.5	40 57.8 +59.0 151.3	40 47.3 +58.9 150.1
23°	42 26.2 +59.1 154.7	42 16.8 +59.0 153.5	42 07.0 +59.0 152.3	41 56.8 +58.9 151.1	41 46.2 +58.8 149.9
24°	43 25.3 +59.1 154.5	43 15.8 +59.1 153.3	43 06.0 +58.9 152.1	42 55.7 +58.9 150.8	42 45.0 +58.8 149.6
25°	44 24.4 +59.1 154.3	44 14.9 +59.0 153.0	44 04.9 +59.0 151.8	43 54.6 +58.8 150.6	43 43.8 +58.7 149.3
26°	45 23.5 +59.1 154.0	45 13.9 +59.0 152.8	45 03.9 +58.8 151.5	44 53.4 +58.8 150.3	44 42.5 +58.7 149.0
27°	46 22.6 +59.0 153.8	46 12.9 +58.9 152.5	46 02.7 +58.9 151.3	45 52.2 +58.7 150.0	45 41.2 +58.7 148.7
28°	47 21.6 +59.0 153.5	47 11.8 +58.9 152.2	47 01.6 +58.8 151.0	46 50.9 +58.8 149.7	46 39.9 +58.6 148.4
29°	48 20.6 +59.0 153.3	48 10.7 +58.9 152.0	48 00.4 +58.7 150.7	47 49.7 +58.6 149.4	47 38.5 +58.6 148.1

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°	18 57.2 +59.2 153.5	18 47.4 +59.2 152.4	18 37.3 +59.1 151.4	18 26.8 +59.0 150.3	18 16.0 +59.0 149.3
1°	19 56.4 +59.2 153.3	19 46.6 +59.1 152.2	19 36.4 +59.1 151.2	19 25.8 +59.1 150.1	19 15.0 +58.9 149.1
2°	20 55.6 +59.2 153.1	20 45.7 +59.2 152.1	20 35.5 +59.0 151.0	20 24.9 +59.0 150.0	20 13.9 +59.0 148.9
3°	21 54.8 +59.2 152.9	21 44.9 +59.1 151.9	21 34.5 +59.1 150.8	21 23.9 +59.0 149.8	21 12.9 +58.9 148.7
4°	22 54.0 +59.2 152.8	22 44.0 +59.1 151.7	22 33.6 +59.1 150.6	22 22.9 +59.0 149.6	22 11.8 +59.0 148.5
5°	23 53.2 +59.1 152.6	23 43.1 +59.1 151.5	23 32.7 +59.0 150.4	23 21.9 +59.0 149.4	23 10.8 +58.9 148.3
6°	24 52.3 +59.2 152.4	24 42.2 +59.1 151.3	24 31.7 +59.0 150.2	24 20.9 +58.9 149.2	24 09.7 +58.9 148.1
7°	25 51.5 +59.1 152.2	25 41.3 +59.1 151.1	25 30.7 +59.0 150.0	25 19.8 +59.0 149.0	25 08.6 +58.8 147.9
8°	26 50.6 +59.2 152.0	26 40.4 +59.0 150.9	26 29.7 +59.0 149.8	26 18.8 +58.9 148.8	26 07.4 +58.9 147.7
9°	27 49.8 +59.1 151.8	27 39.4 +59.1 150.7	27 28.7 +59.0 149.6	27 17.7 +58.9 148.5	27 06.3 +58.8 147.5
10°	28 48.9 +59.0 151.6	28 38.5 +59.0 150.5	28 27.7 +59.0 149.4	28 16.6 +58.9 148.3	28 05.1 +58.8 147.2
11°	29 47.9 +59.1 151.4	29 37.5 +59.0 150.3	29 26.7 +58.9 149.2	29 15.5 +58.8 148.1	29 03.9 +58.8 147.0
12°	30 47.0 +59.1 151.2	30 36.5 +59.0 150.1	30 25.6 +58.9 149.0	30 14.3 +58.9 147.9	30 02.7 +58.8 146.8
13°	31 46.1 +59.0 151.0	31 35.5 +58.9 149.9	31 24.5 +58.9 148.8	31 13.2 +58.8 147.7	31 01.5 +58.7 146.5
14°	32 45.1 +59.0 150.8	32 34.4 +59.0 149.7	32 23.4 +58.9 148.6	32 12.0 +58.8 147.4	32 00.2 +58.8 146.3
15°	33 44.1 +59.0 150.6	33 33.4 +58.9 149.5	33 22.3 +58.8 148.3	33 10.8 +58.7 147.2	32 59.0 +58.6 146.1
16°	34 43.1 +58.9 150.4	34 32.3 +58.9 149.2	34 21.1 +58.8 148.1	34 09.5 +58.8 146.9	33 57.6 +58.7 145.8
17°	35 42.0 +59.0 150.2	35 31.2 +58.8 149.0	35 19.9 +58.8 147.8	35 08.3 +58.7 146.7	34 56.3 +58.6 145.6
18°	36 41.0 +58.9 149.9	36 30.0 +58.8 148.8	36 18.7 +58.7 147.6	36 07.0 +58.6 146.4	35 54.9 +58.6 145.3
19°	37 39.9 +58.9 149.7	37 28.8 +58.8 148.5	37 17.4 +58.7 147.3	37 05.6 +58.7 146.2	36 53.5 +58.5 145.0
20°	38 38.8 +58.8 149.4	38 27.6 +58.8 148.3	38 16.1 +58.7 147.1	38 04.3 +58.6 145.9	37 52.0 +58.6 144.8
21°	39 37.6 +58.8 149.2	39 26.4 +58.7 148.0	39 14.8 +58.7 146.8	39 02.9 +58.5 145.6	38 50.6 +58.4 144.5
22°	40 36.4 +58.8 148.9	40 25.1 +58.7 147.7	40 13.5 +58.6 146.5	40 01.4 +58.5 145.4	39 49.0 +58.4 144.2
23°	41 35.2 +58.7 148.7	41 23.8 +58.7 147.5	41 12.1 +58.5 146.3	40 59.9 +58.5 145.1	40 47.4 +58.4 143.9
24°	42 33.9 +58.7 148.4	42 22.5 +58.6 147.2	42 10.6 +58.5 146.0	41 58.4 +58.4 144.8	41 45.8 +58.3 143.6
25°	43 32.6 +58.7 148.1	43 21.1 +58.5 146.9	43 09.1 +58.5 145.7	42 56.8 +58.4 144.5	42 44.1 +58.3 143.3
26°	44 31.3 +58.6 147.8	44 19.6 +58.5 146.6	44 07.6 +58.4 145.4	43 55.2 +58.3 144.1	43 42.4 +58.2 142.9
27°	45 29.9 +58.5 147.5	45 18.1 +58.5 146.3	45 06.0 +58.4 145.0	44 53.5 +58.3 143.8	44 40.6 +58.2 142.6
28°	46 28.4 +58.6 147.2	46 16.6 +58.4 145.9	46 04.4 +58.3 144.7	45 51.8 +58.1 143.5	45 38.8 +58.1 142.2
29°	47 27.0 +58.4 146.9	47 15.0 +58.3 145.6	47 02.7 +58.2 144.4	46 49.9 +58.2 143.1	46 36.9 +58.0 141.9

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°	18 04.8 +59.0 148.3	17 53.4 +58.8 147.2	17 41.6 +58.8 146.2	17 29.4 +58.8 145.2	17 17.0 +58.7 144.2
1°	19 03.8 +58.9 148.1	18 52.2 +58.9 147.0	18 40.4 +58.7 146.0	18 28.2 +58.7 145.0	18 15.7 +58.6 143.9
2°	20 02.7 +58.9 147.9	19 51.1 +58.8 146.8	19 39.1 +58.8 145.8	19 26.9 +58.7 144.7	19 14.3 +58.6 143.7
3°	21 01.6 +58.8 147.7	20 49.9 +58.8 146.6	20 37.9 +58.7 145.6	20 25.6 +58.6 144.5	20 12.9 +58.6 143.5
4°	22 00.4 +58.9 147.5	21 48.7 +58.8 146.4	21 36.6 +58.8 145.3	21 24.2 +58.7 144.3	21 11.5 +58.6 143.3
5°	22 59.3 +58.8 147.2	22 47.5 +58.8 146.2	22 35.4 +58.7 145.1	22 22.9 +58.6 144.1	22 10.1 +58.6 143.0
6°	23 58.1 +58.9 147.0	23 46.3 +58.7 146.0	23 34.1 +58.7 144.9	23 21.5 +58.7 143.8	23 08.7 +58.5 142.8
7°	24 57.0 +58.8 146.8	24 45.0 +58.8 145.7	24 32.8 +58.6 144.7	24 20.2 +58.6 143.6	24 07.2 +58.6 142.5
8°	25 55.8 +58.8 146.6	25 43.8 +58.7 145.5	25 31.4 +58.7 144.4	25 18.8 +58.5 143.4	25 05.8 +58.5 142.3
9°	26 54.6 +58.7 146.4	26 42.5 +58.7 145.3	26 30.1 +58.6 144.2	26 17.3 +58.6 143.1	26 04.3 +58.4 142.1
10°	27 53.3 +58.8 146.1	27 41.2 +58.6 145.1	27 28.7 +58.6 144.0	27 15.9 +58.5 142.9	27 02.7 +58.5 141.8
11°	28 52.1 +58.7 145.9	28 39.8 +58.7 144.8	28 27.3 +58.6 143.7	28 14.4 +58.5 142.6	28 01.2 +58.4 141.6
12°	29 50.8 +58.7 145.7	29 38.5 +58.6 144.6	29 25.9 +58.5 143.5	29 12.9 +58.5 142.4	28 59.6 +58.4 141.3
13°	30 49.5 +58.6 145.4	30 37.1 +58.6 144.3	30 24.4 +58.5 143.2	30 11.4 +58.4 142.1	29 58.0 +58.4 141.0
14°	31 48.1 +58.7 145.2	31 35.7 +58.6 144.1	31 22.9 +58.5 143.0	31 09.8 +58.4 141.9	30 56.4 +58.3 140.8
15°	32 46.8 +58.6 144.9	32 34.3 +58.5 143.8	32 21.4 +58.4 142.7	32 08.2 +58.4 141.6	31 54.7 +58.3 140.5
16°	33 45.4 +58.6 144.7	33 32.8 +58.5 143.6	33 19.8 +58.5 142.4	33 06.6 +58.3 141.3	32 53.0 +58.2 140.2
17°	34 44.0 +58.5 144.4	34 31.3 +58.4 143.3	34 18.3 +58.3 142.2	34 04.9 +58.3 141.0	33 51.2 +58.2 139.9
18°	35 42.5 +58.5 144.2	35 29.7 +58.4 143.0	35 16.6 +58.4 141.9	35 03.2 +58.2 140.7	34 49.4 +58.2 139.6
19°	36 41.0 +58.5 143.9	36 28.1 +58.4 142.7	36 15.0 +58.2 141.6	36 01.4 +58.2 140.5	35 47.6 +58.1 139.3
20°	37 39.5 +58.4 143.6	37 26.5 +58.4 142.4	37 13.2 +58.3 141.3	36 59.6 +58.2 140.1	36 45.7 +58.1 139.0
21°	38 37.9 +58.4 143.3	38 24.9 +58.2 142.1	38 11.5 +58.2 141.0	37 57.8 +58.1 139.8	37 43.8 +58.0 138.7
22°	39 36.3 +58.3 143.0	39 23.1 +58.3 141.8	39 09.7 +58.1 140.7	38 55.9 +58.1 139.5	38 41.8 +57.9 138.4
23°	40 34.6 +58.3 142.7	40 21.4 +58.2 141.5	40 07.8 +58.1 140.4	39 54.0 +57.9 139.2	39 39.7 +57.9 138.0
24°	41 32.9 +58.2 142.4	41 19.6 +58.1 141.2	41 05.9 +58.1 140.0	40 51.9 +58.0 138.9	40 37.6 +57.9 137.7
25°	42 31.1 +58.2 142.1	42 17.7 +58.1 140.9	42 04.0 +57.9 139.7	41 49.9 +57.9 138.5	41 35.5 +57.7 137.3
26°	43 29.3 +58.1 141.7	43 15.8 +58.0 140.5	43 01.9 +57.9 139.3	42 47.8 +57.8 138.2	42 33.2 +57.8 137.0
27°	44 27.4 +58.0 141.4	44 13.8 +57.9 140.2	43 59.8 +57.9 139.0	43 45.6 +57.7 137.8	43 31.0 +57.6 136.6
28°	45 25.4 +58.0 141.0	45 11.7 +57.9 139.8	44 57.7 +57.7 138.6	44 43.3 +57.6 137.4	44 28.6 +57.5 136.2
29°	46 23.4 +57.9 140.7	46 09.6 +57.8 139.4	45 55.4 +57.7 138.2	45 40.9 +57.6 137.0	45 26.1 +57.5 135.8

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°	17 04.3 +58.6 143.1	16 51.2 +58.5 142.1	16 37.9 +58.4 141.1	16 24.2 +58.4 140.1	16 10.3 +58.3 139.1
1°	18 02.9 +58.5 142.9	17 49.7 +58.5 141.9	17 36.3 +58.4 140.9	17 22.6 +58.4 139.8	17 08.6 +58.3 138.8
2°	19 01.4 +58.6 142.7	18 48.2 +58.5 141.6	18 34.7 +58.5 140.6	18 21.0 +58.3 139.6	18 06.9 +58.2 138.6
3°	20 00.0 +58.5 142.4	19 46.7 +58.5 141.4	19 33.2 +58.4 140.4	19 19.3 +58.3 139.3	19 05.1 +58.3 138.3
4°	20 58.5 +58.5 142.2	20 45.2 +58.4 141.2	20 31.6 +58.3 140.1	20 17.6 +58.3 139.1	20 03.4 +58.2 138.1
5°	21 57.0 +58.5 142.0	21 43.6 +58.5 140.9	21 29.9 +58.4 139.9	21 15.9 +58.3 138.8	21 01.6 +58.2 137.8
6°	22 55.5 +58.5 141.7	22 42.1 +58.4 140.7	22 28.3 +58.3 139.6	22 14.2 +58.3 138.6	21 59.8 +58.2 137.5
7°	23 54.0 +58.5 141.5	23 40.5 +58.3 140.4	23 26.6 +58.3 139.4	23 12.5 +58.2 138.3	22 58.0 +58.2 137.3
8°	24 52.5 +58.4 141.2	24 38.8 +58.4 140.2	24 24.9 +58.3 139.1	24 10.7 +58.2 138.1	23 56.2 +58.1 137.0
9°	25 50.9 +58.4 141.0	25 37.2 +58.3 139.9	25 23.2 +58.3 138.9	25 08.9 +58.2 137.8	24 54.3 +58.1 136.7
10°	26 49.3 +58.4 140.7	26 35.5 +58.3 139.7	26 21.5 +58.2 138.6	26 07.1 +58.1 137.5	25 52.4 +58.1 136.5
11°	27 47.7 +58.3 140.5	27 33.8 +58.3 139.4	27 19.7 +58.2 138.3	27 05.2 +58.1 137.2	26 50.5 +58.0 136.2
12°	28 46.0 +58.3 140.2	28 32.1 +58.2 139.1	28 17.9 +58.1 138.0	28 03.3 +58.1 137.0	27 48.5 +58.0 135.9
13°	29 44.3 +58.3 139.9	29 30.3 +58.2 138.8	29 16.0 +58.1 137.8	29 01.4 +58.1 136.7	28 46.5 +58.0 135.6
14°	30 42.6 +58.2 139.7	30 28.5 +58.2 138.6	30 14.1 +58.1 137.5	29 59.5 +58.0 136.4	29 44.5 +57.9 135.3
15°	31 40.8 +58.2 139.4	31 26.7 +58.1 138.3	31 12.2 +58.1 137.2	30 57.5 +57.9 136.1	30 42.4 +57.9 135.0
16°	32 39.0 +58.2 139.1	32 24.8 +58.1 138.0	32 10.3 +58.0 136.9	31 55.4 +57.9 135.8	31 40.3 +57.8 134.7
17°	33 37.2 +58.1 138.8	33 22.9 +58.0 137.7	33 08.3 +57.9 136.6	32 53.3 +57.9 135.5	32 38.1 +57.8 134.4
18°	34 35.3 +58.1 138.5	34 20.9 +58.0 137.4	34 06.2 +57.9 136.3	33 51.2 +57.8 135.2	33 35.9 +57.7 134.1
19°	35 33.4 +58.0 138.2	35 18.9 +58.0 137.1	35 04.1 +57.9 136.0	34 49.0 +57.8 134.8	34 33.6 +57.7 133.7
20°	36 31.4 +58.0 137.9	36 16.9 +57.8 136.8	36 02.0 +57.8 135.6	35 46.8 +57.7 134.5	35 31.3 +57.6 133.4
21°	37 29.4 +57.9 137.6	37 14.7 +57.9 136.4	36 59.8 +57.7 135.3	36 44.5 +57.6 134.2	36 28.9 +57.6 133.1
22°	38 27.3 +57.9 137.2	38 12.6 +57.7 136.1	37 57.5 +57.7 135.0	37 42.1 +57.6 133.8	37 26.5 +57.5 132.7
23°	39 25.2 +57.8 136.9	39 10.3 +57.8 135.7	38 55.2 +57.6 134.6	38 39.7 +57.6 133.5	38 24.0 +57.4 132.3
24°	40 23.0 +57.7 136.5	40 08.1 +57.6 135.4	39 52.8 +57.6 134.2	39 37.3 +57.4 133.1	39 21.4 +57.4 132.0
25°	41 20.7 +57.7 136.2	41 05.7 +57.6 135.0	40 50.4 +57.4 133.9	40 34.7 +57.4 132.7	40 18.8 +57.2 131.6
26°	42 18.4 +57.6 135.8	42 03.3 +57.5 134.6	41 47.8 +57.4 133.5	41 32.1 +57.3 132.3	41 16.0 +57.2 131.2
27°	43 16.0 +57.5 135.4	43 00.8 +57.4 134.3	42 45.2 +57.3 133.1	42 29.4 +57.2 131.9	42 13.2 +57.1 130.8
28°	44 13.5 +57.5 135.0	43 58.2 +57.3 133.9	43 42.5 +57.3 132.7	43 26.6 +57.1 131.5	43 10.3 +57.0 130.4
29°	45 11.0 +57.3 134.6	44 55.5 +57.3 133.4	44 39.8 +57.1 132.3	44 23.7 +57.0 131.1	44 07.3 +57.0 129.9

Declination SAME name as Latitude

Latitude 69°

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°	15 56.0 +58.3 138.1	15 41.5 +58.2 137.0	15 26.7 +58.1 136.0	15 11.7 +58.0 135.0	14 56.3 +58.0 134.0
1°	16 54.3 +58.2 137.8	16 39.7 +58.1 136.8	16 24.8 +58.1 135.8	16 09.7 +58.0 134.8	15 54.3 +57.9 133.8
2°	17 52.5 +58.2 137.5	17 37.8 +58.2 136.5	17 22.9 +58.1 135.5	17 07.7 +58.0 134.5	16 52.2 +58.0 133.5
3°	18 50.7 +58.2 137.3	18 36.0 +58.1 136.3	18 21.0 +58.0 135.3	18 05.7 +58.0 134.2	17 50.2 +57.9 133.2
4°	19 48.9 +58.1 137.0	19 34.1 +58.1 136.0	19 19.0 +58.0 135.0	19 03.7 +57.9 134.0	18 48.1 +57.8 132.9
5°	20 47.0 +58.2 136.8	20 32.2 +58.0 135.7	20 17.0 +58.0 134.7	20 01.6 +57.9 133.7	19 45.9 +57.9 132.7
6°	21 45.2 +58.1 136.5	21 30.2 +58.1 135.5	21 15.0 +58.0 134.4	20 59.5 +57.9 133.4	20 43.8 +57.8 132.4
7°	22 43.3 +58.1 136.2	22 28.3 +58.0 135.2	22 13.0 +57.9 134.2	21 57.4 +57.9 133.1	21 41.6 +57.8 132.1
8°	23 41.4 +58.0 136.0	23 26.3 +58.0 134.9	23 10.9 +57.9 133.9	22 55.3 +57.8 132.8	22 39.4 +57.8 131.8
9°	24 39.4 +58.1 135.7	24 24.3 +57.9 134.6	24 08.8 +57.9 133.6	23 53.1 +57.8 132.5	23 37.2 +57.7 131.5
10°	25 37.5 +58.0 135.4	25 22.2 +57.9 134.4	25 06.7 +57.9 133.3	24 50.9 +57.8 132.3	24 34.9 +57.7 131.2
11°	26 35.5 +57.9 135.1	26 20.1 +57.9 134.1	26 04.6 +57.8 133.0	25 48.7 +57.7 132.0	25 32.6 +57.6 130.9
12°	27 33.4 +57.9 134.8	27 18.0 +57.9 133.8	27 02.4 +57.7 132.7	26 46.4 +57.7 131.7	26 30.2 +57.6 130.6
13°	28 31.3 +57.9 134.5	28 15.9 +57.8 133.5	28 00.1 +57.7 132.4	27 44.1 +57.7 131.3	27 27.8 +57.6 130.3
14°	29 29.2 +57.9 134.2	29 13.7 +57.7 133.2	28 57.8 +57.7 132.1	28 41.8 +57.6 131.0	28 25.4 +57.5 130.0
15°	30 27.1 +57.8 133.9	30 11.4 +57.7 132.8	29 55.5 +57.7 131.8	29 39.4 +57.5 130.7	29 22.9 +57.5 129.6
16°	31 24.9 +57.7 133.6	31 09.1 +57.7 132.5	30 53.2 +57.5 131.5	30 36.9 +57.5 130.4	30 20.4 +57.4 129.3
17°	32 22.6 +57.7 133.3	32 06.8 +57.6 132.2	31 50.7 +57.6 131.1	31 34.4 +57.5 130.0	31 17.8 +57.4 129.0
18°	33 20.3 +57.6 133.0	33 04.4 +57.6 131.9	32 48.3 +57.5 130.8	32 31.9 +57.4 129.7	32 15.2 +57.3 128.6
19°	34 17.9 +57.6 132.6	34 02.0 +57.5 131.5	33 45.8 +57.4 130.4	33 29.3 +57.3 129.4	33 12.5 +57.3 128.3
20°	35 15.5 +57.6 132.3	34 59.5 +57.4 131.2	34 43.2 +57.3 130.1	34 26.6 +57.3 129.0	34 09.8 +57.2 127.9
21°	36 13.1 +57.4 131.9	35 56.9 +57.4 130.8	35 40.5 +57.3 129.7	35 23.9 +57.2 128.6	35 07.0 +57.1 127.6
22°	37 10.5 +57.4 131.6	36 54.3 +57.3 130.5	36 37.8 +57.3 129.4	36 21.1 +57.1 128.3	36 04.1 +57.0 127.2
23°	38 07.9 +57.4 131.2	37 51.6 +57.3 130.1	37 35.1 +57.1 129.0	37 18.2 +57.1 127.9	37 01.1 +57.0 126.8
24°	39 05.3 +57.2 130.8	38 48.9 +57.1 129.7	38 32.2 +57.1 128.6	38 15.3 +57.0 127.5	37 58.1 +56.9 126.4
25°	40 02.5 +57.2 130.5	39 46.0 +57.1 129.3	39 29.3 +57.0 128.2	39 12.3 +56.8 127.1	38 55.0 +56.8 126.0
26°	40 59.7 +57.1 130.1	40 43.1 +57.0 128.9	40 26.3 +56.9 127.8	40 09.1 +56.8 126.7	39 51.8 +56.7 125.6
27°	41 56.8 +57.0 129.6	41 40.1 +56.9 128.5	41 23.2 +56.8 127.4	41 05.9 +56.8 126.3	40 48.5 +56.6 125.1
28°	42 53.8 +56.9 129.2	42 37.0 +56.8 128.1	42 20.0 +56.7 126.9	42 02.7 +56.6 125.8	41 45.1 +56.5 124.7
29°	43 50.7 +56.8 128.8	43 33.8 +56.7 127.6	43 16.7 +56.6 126.5	42 59.3 +56.5 125.4	42 41.6 +56.4 124.2

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°	14 40.7 +57.9 133.0	14 24.9 +57.8 132.0	14 08.8 +57.8 131.0	13 52.5 +57.7 130.1	13 35.9 +57.6 129.1
1°	15 38.6 +57.9 132.8	15 22.7 +57.8 131.8	15 06.6 +57.7 130.8	14 50.2 +57.6 129.8	14 33.5 +57.6 128.8
2°	16 36.5 +57.9 132.5	16 20.5 +57.8 131.5	16 04.3 +57.7 130.5	15 47.8 +57.7 129.5	15 31.1 +57.6 128.5
3°	17 34.4 +57.8 132.2	17 18.3 +57.8 131.2	17 02.0 +57.7 130.2	16 45.5 +57.6 129.2	16 28.7 +57.5 128.2
4°	18 32.2 +57.8 131.9	18 16.1 +57.7 130.9	17 59.7 +57.7 129.9	17 43.1 +57.6 128.9	17 26.2 +57.6 127.9
5°	19 30.0 +57.8 131.6	19 13.8 +57.7 130.6	18 57.4 +57.6 129.6	18 40.7 +57.5 128.6	18 23.8 +57.5 127.6
6°	20 27.8 +57.7 131.4	20 11.5 +57.7 130.3	19 55.0 +57.6 129.3	19 38.2 +57.6 128.3	19 21.3 +57.4 127.3
7°	21 25.5 +57.7 131.1	21 09.2 +57.6 130.0	20 52.6 +57.6 129.0	20 35.8 +57.5 128.0	20 18.7 +57.5 127.0
8°	22 23.2 +57.7 130.8	22 06.8 +57.7 129.7	21 50.2 +57.5 128.7	21 33.3 +57.5 127.7	21 16.2 +57.4 126.7
9°	23 20.9 +57.7 130.5	23 04.5 +57.5 129.4	22 47.7 +57.5 128.4	22 30.8 +57.4 127.4	22 13.6 +57.3 126.4
10°	24 18.6 +57.6 130.2	24 02.0 +57.6 129.1	23 45.2 +57.5 128.1	23 28.2 +57.4 127.1	23 10.9 +57.3 126.0
11°	25 16.2 +57.6 129.9	24 59.6 +57.5 128.8	24 42.7 +57.4 127.8	24 25.6 +57.3 126.8	24 08.2 +57.3 125.7
12°	26 13.8 +57.5 129.6	25 57.1 +57.4 128.5	25 40.1 +57.4 127.5	25 22.9 +57.4 126.4	25 05.5 +57.3 125.4
13°	27 11.3 +57.5 129.2	26 54.5 +57.4 128.2	26 37.5 +57.4 127.1	26 20.3 +57.2 126.1	26 02.8 +57.2 125.1
14°	28 08.8 +57.4 128.9	27 51.9 +57.4 127.9	27 34.9 +57.2 126.8	27 17.5 +57.2 125.8	27 00.0 +57.1 124.7
15°	29 06.2 +57.4 128.6	28 49.3 +57.3 127.5	28 32.1 +57.3 126.5	28 14.7 +57.2 125.4	27 57.1 +57.1 124.4
16°	30 03.6 +57.4 128.2	29 46.6 +57.3 127.2	29 29.4 +57.2 126.1	29 11.9 +57.1 125.1	28 54.2 +57.0 124.0
17°	31 01.0 +57.3 127.9	30 43.9 +57.2 126.8	30 26.6 +57.1 125.8	30 09.0 +57.1 124.7	29 51.2 +57.0 123.7
18°	31 58.3 +57.2 127.6	31 41.1 +57.2 126.5	31 23.7 +57.1 125.4	31 06.1 +57.0 124.4	30 48.2 +56.9 123.3
19°	32 55.5 +57.2 127.2	32 38.3 +57.0 126.1	32 20.8 +57.0 125.1	32 03.1 +56.9 124.0	31 45.1 +56.9 122.9
20°	33 52.7 +57.1 126.8	33 35.3 +57.1 125.8	33 17.8 +56.9 124.7	33 00.0 +56.9 123.6	32 42.0 +56.8 122.6
21°	34 49.8 +57.0 126.5	34 32.4 +56.9 125.4	34 14.7 +56.9 124.3	33 56.9 +56.7 123.2	33 38.8 +56.7 122.2
22°	35 46.8 +57.0 126.1	35 29.3 +56.9 125.0	35 11.6 +56.8 123.9	34 53.6 +56.7 122.9	34 35.5 +56.6 121.8
23°	36 43.8 +56.9 125.7	36 26.2 +56.8 124.6	36 08.4 +56.7 123.5	35 50.3 +56.7 122.5	35 32.1 +56.5 121.4
24°	37 40.7 +56.8 125.3	37 23.0 +56.7 124.2	37 05.1 +56.6 123.1	36 47.0 +56.5 122.0	36 28.6 +56.5 121.0
25°	38 37.5 +56.7 124.9	38 19.7 +56.6 123.8	38 01.7 +56.6 122.7	37 43.5 +56.5 121.6	37 25.1 +56.4 120.5
26°	39 34.2 +56.6 124.5	39 16.3 +56.6 123.4	38 58.3 +56.4 122.3	38 40.0 +56.3 121.2	38 21.5 +56.2 120.1
27°	40 30.8 +56.5 124.0	40 12.9 +56.4 122.9	39 54.7 +56.3 121.8	39 36.3 +56.3 120.7	39 17.7 +56.2 119.7
28°	41 27.3 +56.4 123.6	41 09.3 +56.3 122.5	40 51.0 +56.3 121.4	40 32.6 +56.1 120.3	40 13.9 +56.1 119.2
29°	42 23.7 +56.3 123.1	42 05.6 +56.2 122.0	41 47.3 +56.1 120.9	41 28.7 +56.0 119.8	41 10.0 +55.9 118.7

Latitude 69°

Declination SAME name as Latitude

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°	13 19.1 +57.5 128.1	13 02.0 +57.5 127.1	12 44.8 +57.4 126.1	12 27.3 +57.3 125.1	12 09.6 +57.3 124.1
1°	14 16.6 +57.6 127.8	13 59.5 +57.5 126.8	13 42.2 +57.4 125.8	13 24.6 +57.4 124.8	13 06.9 +57.3 123.8
2°	15 14.2 +57.5 127.5	14 57.0 +57.4 126.5	14 39.6 +57.4 125.5	14 22.0 +57.3 124.5	14 04.2 +57.2 123.5
3°	16 11.7 +57.5 127.2	15 54.4 +57.4 126.2	15 37.0 +57.3 125.2	15 19.3 +57.3 124.2	15 01.4 +57.2 123.2
4°	17 09.2 +57.4 126.9	16 51.8 +57.4 125.9	16 34.3 +57.3 124.9	16 16.6 +57.2 123.9	15 58.6 +57.2 122.9
5°	18 06.6 +57.4 126.6	17 49.2 +57.4 125.6	17 31.6 +57.3 124.6	17 13.8 +57.3 123.6	16 55.8 +57.2 122.6
6°	19 04.0 +57.4 126.3	18 46.6 +57.3 125.3	18 28.9 +57.3 124.3	18 11.1 +57.2 123.3	17 53.0 +57.1 122.3
7°	20 01.4 +57.4 126.0	19 43.9 +57.3 125.0	19 26.2 +57.2 124.0	19 08.3 +57.1 123.0	18 50.1 +57.1 122.0
8°	20 58.8 +57.3 125.7	20 41.2 +57.3 124.7	20 23.4 +57.2 123.6	20 05.4 +57.1 122.6	19 47.2 +57.1 121.6
9°	21 56.1 +57.3 125.3	21 38.5 +57.2 124.3	21 20.6 +57.2 123.3	21 02.5 +57.1 122.3	20 44.3 +57.0 121.3
10°	22 53.4 +57.3 125.0	22 35.7 +57.2 124.0	22 17.8 +57.1 123.0	21 59.6 +57.1 122.0	21 41.3 +57.0 121.0
11°	23 50.7 +57.2 124.7	23 32.9 +57.1 123.7	23 14.9 +57.1 122.7	22 56.7 +57.0 121.6	22 38.3 +56.9 120.6
12°	24 47.9 +57.2 124.4	24 30.0 +57.1 123.3	24 12.0 +57.0 122.3	23 53.7 +57.0 121.3	23 35.2 +56.9 120.3
13°	25 45.1 +57.1 124.0	25 27.1 +57.1 123.0	25 09.0 +57.0 122.0	24 50.7 +56.9 121.0	24 32.1 +56.9 119.9
14°	26 42.2 +57.1 123.7	26 24.2 +57.0 122.7	26 06.0 +56.9 121.6	25 47.6 +56.8 120.6	25 29.0 +56.8 119.6
15°	27 39.3 +57.0 123.3	27 21.2 +56.9 122.3	27 02.9 +56.9 121.3	26 44.4 +56.8 120.3	26 25.8 +56.7 119.2
16°	28 36.3 +56.9 123.0	28 18.1 +56.9 122.0	27 59.8 +56.8 120.9	27 41.2 +56.8 119.9	27 22.5 +56.7 118.9
17°	29 33.2 +56.9 122.6	29 15.0 +56.9 121.6	28 56.6 +56.8 120.6	28 38.0 +56.7 119.5	28 19.2 +56.6 118.5
18°	30 30.1 +56.9 122.3	30 11.9 +56.7 121.2	29 53.4 +56.7 120.2	29 34.7 +56.6 119.1	29 15.8 +56.6 118.1
19°	31 27.0 +56.8 121.9	31 08.6 +56.7 120.8	30 50.1 +56.6 119.8	30 31.3 +56.6 118.8	30 12.4 +56.5 117.7
20°	32 23.8 +56.7 121.5	32 05.3 +56.6 120.5	31 46.7 +56.5 119.4	31 27.9 +56.4 118.4	31 08.9 +56.4 117.3
21°	33 20.5 +56.6 121.1	33 01.9 +56.6 120.1	32 43.2 +56.5 119.0	32 24.3 +56.5 118.0	32 05.3 +56.3 116.9
22°	34 17.1 +56.5 120.7	33 58.5 +56.5 119.7	33 39.7 +56.4 118.6	33 20.8 +56.3 117.6	33 01.6 +56.3 116.5
23°	35 13.6 +56.5 120.3	34 55.0 +56.4 119.3	34 36.1 +56.3 118.2	34 17.1 +56.2 117.2	33 57.9 +56.1 116.1
24°	36 10.1 +56.4 119.9	35 51.4 +56.3 118.8	35 32.4 +56.3 117.8	35 13.3 +56.2 116.7	34 54.0 +56.1 115.7
25°	37 06.5 +56.3 119.5	36 47.7 +56.2 118.4	36 28.7 +56.1 117.4	36 09.5 +56.0 116.3	35 50.1 +56.0 115.3
26°	38 02.8 +56.2 119.0	37 43.9 +56.1 118.0	37 24.8 +56.0 116.9	37 05.5 +56.0 115.9	36 46.1 +55.9 114.8
27°	38 59.0 +56.0 118.6	38 40.0 +56.0 117.5	38 20.8 +55.9 116.5	38 01.5 +55.8 115.4	37 42.0 +55.7 114.4
28°	39 55.0 +56.0 118.1	39 36.0 +55.9 117.1	39 16.7 +55.8 116.0	38 57.3 +55.8 114.9	38 37.7 +55.7 113.9
29°	40 51.0 +55.8 117.7	40 31.9 +55.7 116.6	40 12.5 +55.7 115.5	39 53.1 +55.6 114.5	39 33.4 +55.5 113.4

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°	11 51.7 +57.2 123.2	11 33.6 +57.2 122.2	11 15.3 +57.1 121.2	10 56.8 +57.1 120.3	10 38.2 +57.0 119.3
1°	12 48.9 +57.2 122.9	12 30.8 +57.1 121.9	12 12.4 +57.1 120.9	11 53.9 +57.0 119.9	11 35.2 +56.9 119.0
2°	13 46.1 +57.2 122.6	13 27.9 +57.1 121.6	13 09.5 +57.1 120.6	12 50.9 +57.0 119.6	12 32.1 +57.0 118.7
3°	14 43.3 +57.2 122.2	14 25.0 +57.1 121.3	14 06.6 +57.0 120.3	13 47.9 +57.0 119.3	13 29.1 +56.9 118.3
4°	15 40.5 +57.1 121.9	15 22.1 +57.1 120.9	15 03.6 +57.0 120.0	14 44.9 +56.9 119.0	14 26.0 +56.9 118.0
5°	16 37.6 +57.1 121.6	16 19.2 +57.0 120.6	16 00.6 +57.0 119.6	15 41.8 +56.9 118.7	15 22.9 +56.8 117.7
6°	17 34.7 +57.1 121.3	17 16.2 +57.0 120.3	16 57.6 +56.9 119.3	16 38.7 +56.9 118.3	16 19.7 +56.9 117.3
7°	18 31.8 +57.0 121.0	18 13.2 +57.0 120.0	17 54.5 +56.9 119.0	17 35.6 +56.9 118.0	17 16.6 +56.7 117.0
8°	19 28.8 +57.0 120.6	19 10.2 +56.9 119.6	18 51.4 +56.9 118.6	18 32.5 +56.8 117.7	18 13.3 +56.8 116.7
9°	20 25.8 +57.0 120.3	20 07.1 +56.9 119.3	19 48.3 +56.8 118.3	19 29.3 +56.8 117.3	19 10.1 +56.7 116.3
10°	21 22.8 +56.9 120.0	21 04.0 +56.9 119.0	20 45.1 +56.8 118.0	20 26.1 +56.7 117.0	20 06.8 +56.7 116.0
11°	22 19.7 +56.9 119.6	22 00.9 +56.8 118.6	21 41.9 +56.8 117.6	21 22.8 +56.7 116.6	21 03.5 +56.6 115.6
12°	23 16.6 +56.8 119.3	22 57.7 +56.8 118.3	22 38.7 +56.7 117.3	22 19.5 +56.6 116.3	22 00.1 +56.6 115.3
13°	24 13.4 +56.8 118.9	23 54.5 +56.7 117.9	23 35.4 +56.7 116.9	23 16.1 +56.6 115.9	22 56.7 +56.6 114.9
14°	25 10.2 +56.7 118.6	24 51.2 +56.7 117.6	24 32.1 +56.6 116.6	24 12.7 +56.6 115.5	23 53.3 +56.4 114.5
15°	26 06.9 +56.7 118.2	25 47.9 +56.6 117.2	25 28.7 +56.5 116.2	25 09.3 +56.5 115.2	24 49.7 +56.5 114.2
16°	27 03.6 +56.6 117.8	26 44.5 +56.5 116.8	26 25.2 +56.5 115.8	26 05.8 +56.4 114.8	25 46.2 +56.3 113.8
17°	28 00.2 +56.6 117.5	27 41.0 +56.5 116.5	27 21.7 +56.4 115.4	27 02.2 +56.4 114.4	26 42.5 +56.4 113.4
18°	28 56.8 +56.4 117.1	28 37.5 +56.4 116.1	28 18.1 +56.4 115.1	27 58.6 +56.3 114.0	27 38.9 +56.2 113.0
19°	29 53.2 +56.5 116.7	29 33.9 +56.4 115.7	29 14.5 +56.3 114.7	28 54.9 +56.2 113.6	28 35.1 +56.2 112.6
20°	30 49.7 +56.3 116.3	30 30.3 +56.3 115.3	30 10.8 +56.2 114.3	29 51.1 +56.2 113.2	29 31.3 +56.1 112.2
21°	31 46.0 +56.3 115.9	31 26.6 +56.2 114.9	31 07.0 +56.1 113.9	30 47.3 +56.0 112.8	30 27.4 +56.0 111.8
22°	32 42.3 +56.2 115.5	32 22.8 +56.1 114.5	32 03.1 +56.1 113.4	31 43.3 +56.0 112.4	31 23.4 +55.9 111.4
23°	33 38.5 +56.1 115.1	33 18.9 +56.1 114.0	32 59.2 +56.0 113.0	32 39.3 +55.9 112.0	32 19.3 +55.9 111.0
24°	34 34.6 +56.0 114.7	34 15.0 +55.9 113.6	33 55.2 +55.9 112.6	33 35.2 +55.9 111.6	33 15.2 +55.7 110.5
25°	35 30.6 +55.9 114.2	35 10.9 +55.8 113.2	34 51.1 +55.7 112.1	34 31.1 +55.7 111.1	34 10.9 +55.7 110.1
26°	36 26.5 +55.8 113.8	36 06.7 +55.8 112.7	35 46.8 +55.7 111.7	35 26.8 +55.6 110.7	35 06.6 +55.6 109.6
27°	37 22.3 +55.7 113.3	37 02.5 +55.6 112.3	36 42.5 +55.6 111.2	36 22.4 +55.5 110.2	36 02.2 +55.4 109.2
28°	38 18.0 +55.6 112.8	37 58.1 +55.5 111.8	37 38.1 +55.4 110.8	37 17.9 +55.4 109.7	36 57.6 +55.3 108.7
29°	39 13.6 +55.5 112.4	38 53.6 +55.4 111.3	38 33.5 +55.4 110.3	38 13.3 +55.3 109.2	37 52.9 +55.2 108.2

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Declination SAME name as Latitude

Latitude 69°

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°	10 19.3 +57.0 118.3	10 00.3 +56.9 117.4	9 41.1 +56.9 116.4	9 21.8 +56.8 115.4	9 02.3 +56.7 114.5
1°	11 16.3 +56.9 118.0	10 57.2 +56.8 117.0	10 38.0 +56.8 116.1	10 18.6 +56.7 115.1	9 59.0 +56.7 114.2
2°	12 13.2 +56.8 117.7	11 54.0 +56.9 116.7	11 34.8 +56.7 115.7	11 15.3 +56.7 114.8	10 55.7 +56.7 113.8
3°	13 10.0 +56.9 117.4	12 50.9 +56.8 116.4	12 31.5 +56.8 115.4	12 12.0 +56.7 114.4	11 52.4 +56.6 113.5
4°	14 06.9 +56.8 117.0	13 47.7 +56.7 116.1	13 28.3 +56.7 115.1	13 08.7 +56.7 114.1	12 49.0 +56.6 113.1
5°	15 03.7 +56.8 116.7	14 44.4 +56.8 115.7	14 25.0 +56.7 114.7	14 05.4 +56.6 113.8	13 45.6 +56.6 112.8
6°	16 00.5 +56.8 116.4	15 41.2 +56.7 115.4	15 21.7 +56.6 114.4	15 02.0 +56.6 113.4	14 42.2 +56.6 112.5
7°	16 57.3 +56.7 116.0	16 37.9 +56.7 115.0	16 18.3 +56.7 114.1	15 58.6 +56.6 113.1	15 38.8 +56.5 112.1
8°	17 54.0 +56.7 115.7	17 34.6 +56.6 114.7	17 15.0 +56.6 113.7	16 55.2 +56.6 112.7	16 35.3 +56.5 111.8
9°	18 50.7 +56.7 115.3	18 31.2 +56.6 114.4	18 11.6 +56.5 113.4	17 51.8 +56.5 112.4	17 31.8 +56.5 111.4
10°	19 47.4 +56.6 115.0	19 27.8 +56.6 114.0	19 08.1 +56.5 113.0	18 48.3 +56.4 112.0	18 28.3 +56.4 111.1
11°	20 44.0 +56.6 114.6	20 24.4 +56.5 113.6	20 04.6 +56.5 112.7	19 44.7 +56.4 111.7	19 24.7 +56.3 110.7
12°	21 40.6 +56.5 114.3	21 20.9 +56.5 113.3	21 01.1 +56.4 112.3	20 41.1 +56.4 111.3	20 21.0 +56.4 110.3
13°	22 37.1 +56.5 113.9	22 17.4 +56.4 112.9	21 57.5 +56.4 111.9	21 37.5 +56.3 110.9	21 17.4 +56.3 110.0
14°	23 33.6 +56.5 113.5	23 13.8 +56.4 112.6	22 53.9 +56.3 111.6	22 33.8 +56.3 110.6	22 13.7 +56.2 109.6
15°	24 30.1 +56.3 113.2	24 10.2 +56.3 112.2	23 50.2 +56.3 111.2	23 30.1 +56.2 110.2	23 09.9 +56.1 109.2
16°	25 26.4 +56.3 112.8	25 06.5 +56.3 111.8	24 46.5 +56.2 110.8	24 26.3 +56.2 109.8	24 06.0 +56.2 108.8
17°	26 22.7 +56.3 112.4	26 02.8 +56.2 111.4	25 42.7 +56.2 110.4	25 22.5 +56.1 109.4	25 02.2 +56.0 108.4
18°	27 19.0 +56.2 112.0	26 59.0 +56.1 111.0	26 38.9 +56.0 110.0	26 18.6 +56.0 109.0	25 58.2 +56.0 108.0
19°	28 15.2 +56.1 111.6	27 55.1 +56.1 110.6	27 34.9 +56.0 109.6	27 14.6 +56.0 108.6	26 54.2 +55.9 107.6
20°	29 11.3 +56.0 111.2	28 51.2 +56.0 110.2	28 30.9 +56.0 109.2	28 10.6 +55.9 108.2	27 50.1 +55.8 107.2
21°	30 07.3 +56.0 110.8	29 47.2 +55.9 109.8	29 26.9 +55.8 108.8	29 06.5 +55.8 107.8	28 45.9 +55.8 106.8
22°	31 03.3 +55.9 110.4	30 43.1 +55.8 109.4	30 22.7 +55.8 108.4	30 02.3 +55.7 107.4	29 41.7 +55.7 106.4
23°	31 59.2 +55.8 110.0	31 38.9 +55.8 109.0	31 18.5 +55.7 108.0	30 58.0 +55.6 107.0	30 37.4 +55.6 106.0
24°	32 55.0 +55.7 109.5	32 34.7 +55.6 108.5	32 14.2 +55.6 107.5	31 53.6 +55.6 106.5	31 33.0 +55.5 105.5
25°	33 50.7 +55.6 109.1	33 30.3 +55.6 108.1	33 09.8 +55.5 107.1	32 49.2 +55.4 106.1	32 28.5 +55.4 105.1
26°	34 46.3 +55.5 108.6	34 25.9 +55.4 107.6	34 05.3 +55.4 106.6	33 44.6 +55.4 105.6	33 23.9 +55.3 104.6
27°	35 41.8 +55.4 108.2	35 21.3 +55.3 107.2	35 00.7 +55.3 106.2	34 40.0 +55.2 105.1	34 19.2 +55.2 104.2
28°	36 37.2 +55.2 107.7	36 16.6 +55.3 106.7	35 56.0 +55.2 105.7	35 35.2 +55.2 104.7	35 14.4 +55.1 103.7
29°	37 32.4 +55.2 107.2	37 11.9 +55.1 106.2	36 51.2 +55.0 105.2	36 30.4 +55.0 104.2	36 09.5 +54.9 103.2

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°	8 42.7 +56.6 113.5	8 22.9 +56.6 112.6	8 03.0 +56.5 111.6	7 42.9 +56.5 110.7	7 22.7 +56.5 109.7
1°	9 39.3 +56.7 113.2	9 19.5 +56.6 112.2	8 59.5 +56.6 111.3	8 39.4 +56.5 110.3	8 19.2 +56.5 109.4
2°	10 36.0 +56.6 112.9	10 16.1 +56.6 111.9	9 56.1 +56.5 110.9	9 35.9 +56.5 110.0	9 15.7 +56.4 109.0
3°	11 32.6 +56.6 112.5	11 12.7 +56.5 111.6	10 52.6 +56.5 110.6	10 32.4 +56.5 109.6	10 12.1 +56.4 108.7
4°	12 29.2 +56.6 112.2	12 09.2 +56.5 111.2	11 49.1 +56.5 110.3	11 28.9 +56.4 109.3	11 08.5 +56.4 108.3
5°	13 25.8 +56.5 111.8	13 05.7 +56.5 110.9	12 45.6 +56.4 109.9	12 25.3 +56.4 109.0	12 04.9 +56.4 108.0
6°	14 22.3 +56.5 111.5	14 02.2 +56.5 110.5	13 42.0 +56.4 109.6	13 21.7 +56.4 108.6	13 01.3 +56.3 107.6
7°	15 18.8 +56.5 111.1	14 58.7 +56.4 110.2	14 38.4 +56.4 109.2	14 18.1 +56.3 108.2	13 57.6 +56.3 107.3
8°	16 15.3 +56.4 110.8	15 55.1 +56.4 109.8	15 34.8 +56.4 108.9	15 14.4 +56.3 107.9	14 53.9 +56.3 106.9
9°	17 11.7 +56.4 110.4	16 51.5 +56.4 109.5	16 31.2 +56.3 108.5	16 10.7 +56.3 107.5	15 50.2 +56.2 106.6
10°	18 08.1 +56.4 110.1	17 47.9 +56.3 109.1	17 27.5 +56.3 108.1	17 07.0 +56.3 107.2	16 46.4 +56.2 106.2
11°	19 04.5 +56.3 109.7	18 44.2 +56.3 108.7	18 23.8 +56.2 107.8	18 03.3 +56.1 106.8	17 42.6 +56.2 105.8
12°	20 00.8 +56.3 109.4	19 40.5 +56.2 108.4	19 20.0 +56.2 107.4	18 59.4 +56.2 106.4	18 38.8 +56.1 105.5
13°	20 57.1 +56.2 109.0	20 36.7 +56.2 108.0	20 16.2 +56.2 107.0	19 55.6 +56.1 106.1	19 34.9 +56.1 105.1
14°	21 53.3 +56.2 108.6	21 32.9 +56.1 107.6	21 12.4 +56.0 106.7	20 51.7 +56.1 105.7	20 31.0 +56.0 104.7
15°	22 49.5 +56.1 108.2	22 29.0 +56.1 107.3	22 08.4 +56.1 106.3	21 47.8 +56.0 105.3	21 27.0 +55.9 104.3
16°	23 45.6 +56.1 107.8	23 25.1 +56.0 106.9	23 04.5 +56.0 105.9	22 43.8 +55.9 104.9	22 22.9 +55.9 103.9
17°	24 41.7 +56.0 107.5	24 21.1 +56.0 106.5	24 00.5 +55.9 105.5	23 39.7 +55.9 104.5	23 18.8 +55.9 103.6
18°	25 37.7 +55.9 107.1	25 17.1 +55.9 106.1	24 56.4 +55.8 105.1	24 35.6 +55.8 104.1	24 14.7 +55.8 103.2
19°	26 33.6 +55.9 106.7	26 13.0 +55.8 105.7	25 52.2 +55.8 104.7	25 31.4 +55.7 103.7	25 10.5 +55.7 102.7
20°	27 29.5 +55.8 106.2	27 08.8 +55.8 105.3	26 48.0 +55.7 104.3	26 27.1 +55.7 103.3	26 06.2 +55.6 102.3
21°	28 25.3 +55.7 105.8	28 04.6 +55.6 104.8	27 43.7 +55.7 103.9	27 22.8 +55.6 102.9	27 01.8 +55.6 101.9
22°	29 21.0 +55.7 105.4	29 00.2 +55.6 104.4	28 39.4 +55.5 103.4	28 18.4 +55.5 102.5	27 57.4 +55.5 101.5
23°	30 16.7 +55.5 105.0	29 55.8 +55.6 104.0	29 34.9 +55.5 103.0	29 13.9 +55.5 102.0	28 52.9 +55.4 101.1
24°	31 12.2 +55.5 104.5	30 51.4 +55.4 103.5	30 30.4 +55.4 102.6	30 09.4 +55.3 101.6	29 48.3 +55.3 100.6
25°	32 07.7 +55.3 104.1	31 46.8 +55.3 103.1	31 25.8 +55.3 102.1	31 04.7 +55.3 101.1	30 43.6 +55.2 100.2
26°	33 03.0 +55.3 103.6	32 42.1 +55.2 102.6	32 21.1 +55.2 101.7	32 00.0 +55.1 100.7	31 38.8 +55.1 99.7
27°	33 58.3 +55.1 103.2	33 37.3 +55.1 102.2	33 16.3 +55.0 101.2	32 55.1 +55.1 100.2	32 33.9 +55.1 99.2
28°	34 53.4 +55.1 102.7	34 32.4 +55.0 101.7	34 11.3 +55.0 100.7	33 50.2 +54.9 99.7	33 29.0 +54.9 98.8
29°	35 48.5 +54.9 102.2	35 27.4 +54.9 101.2	35 06.3 +54.9 100.2	34 45.1 +54.8 99.3	34 23.9 +54.7 98.3

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Latitude 69°

Declination SAME name as 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°	7 02.4 +56.5 108.8	6 42.0 +56.4 107.8	6 21.5 +56.3 106.9	6 00.9 +56.3 105.9	5 40.1 +56.3 105.0
1°	7 58.9 +56.4 108.4	7 38.4 +56.4 107.5	7 17.8 +56.4 106.5	6 57.2 +56.3 105.6	6 36.4 +56.3 104.6
2°	8 55.3 +56.4 108.1	8 34.8 +56.3 107.1	8 14.2 +56.3 106.2	7 53.5 +56.3 105.2	7 32.7 +56.2 104.3
3°	9 51.7 +56.3 107.7	9 31.1 +56.4 106.8	9 10.5 +56.3 105.8	8 49.8 +56.2 104.9	8 28.9 +56.3 103.9
4°	10 48.0 +56.4 107.4	10 27.5 +56.3 106.4	10 06.8 +56.3 105.5	9 46.0 +56.3 104.5	9 25.2 +56.2 103.6
5°	11 44.4 +56.3 107.0	11 23.8 +56.3 106.1	11 03.1 +56.2 105.1	10 42.3 +56.2 104.2	10 21.4 +56.2 103.2
6°	12 40.7 +56.3 106.7	12 20.1 +56.2 105.7	11 59.3 +56.3 104.8	11 38.5 +56.2 103.8	11 17.6 +56.1 102.9
7°	13 37.0 +56.3 106.3	13 16.3 +56.3 105.4	12 55.6 +56.2 104.4	12 34.7 +56.2 103.5	12 13.7 +56.2 102.5
8°	14 33.3 +56.2 106.0	14 12.6 +56.2 105.0	13 51.8 +56.1 104.1	13 30.9 +56.1 103.1	13 09.9 +56.1 102.2
9°	15 29.5 +56.2 105.6	15 08.8 +56.1 104.7	14 47.9 +56.1 103.7	14 27.0 +56.1 102.7	14 06.0 +56.0 101.8
10°	16 25.7 +56.2 105.2	16 04.9 +56.2 104.3	15 44.0 +56.1 103.3	15 23.1 +56.0 102.4	15 02.0 +56.1 101.4
11°	17 21.9 +56.1 104.9	17 01.1 +56.0 103.9	16 40.1 +56.1 103.0	16 19.1 +56.1 102.0	15 58.1 +56.0 101.0
12°	18 18.0 +56.1 104.5	17 57.1 +56.1 103.5	17 36.2 +56.0 102.6	17 15.2 +56.0 101.6	16 54.1 +55.9 100.7
13°	19 14.1 +56.0 104.1	18 53.2 +56.0 103.2	18 32.2 +56.0 102.2	18 11.2 +55.9 101.2	17 50.0 +55.9 100.3
14°	20 10.1 +56.0 103.8	19 49.2 +55.9 102.8	19 28.2 +55.9 101.8	19 07.1 +55.9 100.9	18 45.9 +55.9 99.9
15°	21 06.1 +55.9 103.4	20 45.1 +55.9 102.4	20 24.1 +55.9 101.4	20 03.0 +55.8 100.5	19 41.8 +55.8 99.5
16°	22 02.0 +55.9 103.0	21 41.0 +55.9 102.0	21 20.0 +55.8 101.1	20 58.8 +55.8 100.1	20 37.6 +55.8 99.1
17°	22 57.9 +55.8 102.6	22 36.9 +55.7 101.6	22 15.8 +55.7 100.7	21 54.6 +55.7 99.7	21 33.4 +55.7 98.7
18°	23 53.7 +55.8 102.2	23 32.6 +55.8 101.2	23 11.5 +55.7 100.3	22 50.3 +55.7 99.3	22 29.1 +55.6 98.3
19°	24 49.5 +55.6 101.8	24 28.4 +55.6 100.8	24 07.2 +55.6 99.8	23 46.0 +55.6 98.9	23 24.7 +55.6 97.9
20°	25 45.1 +55.6 101.4	25 24.0 +55.6 100.4	25 02.8 +55.6 99.4	24 41.6 +55.5 98.5	24 20.3 +55.5 97.5
21°	26 40.7 +55.6 100.9	26 19.6 +55.5 100.0	25 58.4 +55.5 99.0	25 37.1 +55.5 98.1	25 15.8 +55.5 97.1
22°	27 36.3 +55.4 100.5	27 15.1 +55.4 99.6	26 53.9 +55.4 98.6	26 32.6 +55.4 97.6	26 11.3 +55.3 96.7
23°	28 31.7 +55.4 100.1	28 10.5 +55.4 99.1	27 49.3 +55.3 98.2	27 28.0 +55.3 97.2	27 06.6 +55.3 96.2
24°	29 27.1 +55.3 99.6	29 05.9 +55.3 98.7	28 44.6 +55.2 97.7	28 23.3 +55.2 96.8	28 01.9 +55.2 95.8
25°	30 22.4 +55.2 99.2	30 01.2 +55.1 98.2	29 39.8 +55.2 97.3	29 18.5 +55.1 96.3	28 57.1 +55.1 95.4
26°	31 17.6 +55.1 98.7	30 56.3 +55.1 97.8	30 35.0 +55.0 96.8	30 13.6 +55.1 95.9	29 52.2 +55.0 94.9
27°	32 12.7 +55.0 98.3	31 51.4 +55.0 97.3	31 30.0 +55.0 96.4	31 08.7 +54.9 95.4	30 47.2 +54.9 94.4
28°	33 07.7 +54.9 97.8	32 46.4 +54.8 96.8	32 25.0 +54.8 95.9	32 03.6 +54.8 94.9	31 42.1 +54.8 94.0
29°	34 02.6 +54.7 97.3	33 41.2 +54.8 96.4	33 19.8 +54.7 95.4	32 58.4 +54.7 94.4	32 36.9 +54.7 93.5

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°	5 19.3 +56.3 104.0	4 58.4 +56.2 103.1	4 37.4 +56.2 102.2	4 16.4 +56.1 101.2	3 55.3 +56.1 100.3
1°	6 15.6 +56.2 103.7	5 54.6 +56.2 102.8	5 33.6 +56.2 101.8	5 12.5 +56.2 100.9	4 51.4 +56.1 99.9
2°	7 11.8 +56.2 103.3	6 50.8 +56.2 102.4	6 29.8 +56.2 101.5	6 08.7 +56.1 100.5	5 47.5 +56.1 99.6
3°	8 08.0 +56.2 103.0	7 47.0 +56.2 102.0	7 26.0 +56.1 101.1	7 04.8 +56.2 100.2	6 43.6 +56.1 99.2
4°	9 04.2 +56.2 102.6	8 43.2 +56.2 101.7	8 22.1 +56.1 100.7	8 01.0 +56.1 99.8	7 39.7 +56.1 98.9
5°	10 00.4 +56.2 102.3	9 39.4 +56.1 101.3	9 18.2 +56.2 100.4	8 57.1 +56.1 99.4	8 35.8 +56.1 98.5
6°	10 56.6 +56.1 101.9	10 35.5 +56.1 101.0	10 14.4 +56.0 100.0	9 53.2 +56.0 99.1	9 31.9 +56.0 98.1
7°	11 52.7 +56.1 101.6	11 31.6 +56.1 100.6	11 10.4 +56.1 99.7	10 49.2 +56.1 98.7	10 27.9 +56.1 97.8
8°	12 48.8 +56.1 101.2	12 27.7 +56.0 100.3	12 06.5 +56.0 99.3	11 45.3 +56.0 98.4	11 24.0 +55.9 97.4
9°	13 44.9 +56.0 100.8	13 23.7 +56.1 99.9	13 02.5 +56.0 98.9	12 41.3 +55.9 98.0	12 19.9 +56.0 97.0
10°	14 40.9 +56.0 100.5	14 19.8 +55.9 99.5	13 58.5 +56.0 98.6	13 37.2 +56.0 97.6	13 15.9 +55.9 96.7
11°	15 36.9 +56.0 100.1	15 15.7 +56.0 99.1	14 54.5 +55.9 98.2	14 33.2 +55.9 97.3	14 11.8 +55.9 96.3
12°	16 32.9 +55.9 99.7	16 11.7 +55.9 98.8	15 50.4 +55.9 97.8	15 29.1 +55.9 96.9	15 07.7 +55.9 95.9
13°	17 28.8 +55.9 99.3	17 07.6 +55.9 98.4	16 46.3 +55.8 97.4	16 25.0 +55.8 96.5	16 03.6 +55.8 95.6
14°	18 24.7 +55.9 99.0	18 03.5 +55.8 98.0	17 42.1 +55.8 97.1	17 20.8 +55.8 96.1	16 59.4 +55.8 95.2
15°	19 20.6 +55.8 98.6	18 59.3 +55.8 97.6	18 37.9 +55.8 96.7	18 16.6 +55.7 95.7	17 55.2 +55.7 94.8
16°	20 16.4 +55.7 98.2	19 55.1 +55.7 97.2	19 33.7 +55.7 96.3	19 12.3 +55.7 95.3	18 50.9 +55.7 94.4
17°	21 12.1 +55.7 97.8	20 50.8 +55.6 96.8	20 29.4 +55.7 95.9	20 08.0 +55.6 94.9	19 46.6 +55.6 94.0
18°	22 07.8 +55.6 97.4	21 46.4 +55.6 96.4	21 25.1 +55.5 95.5	21 03.6 +55.6 94.5	20 42.2 +55.6 93.6
19°	23 03.4 +55.6 97.0	22 42.0 +55.6 96.0	22 20.6 +55.6 95.1	21 59.2 +55.5 94.1	21 37.8 +55.5 93.2
20°	23 59.0 +55.5 96.6	23 37.6 +55.5 95.6	23 16.2 +55.4 94.7	22 54.7 +55.5 93.7	22 33.3 +55.4 92.8
21°	24 54.5 +55.4 96.1	24 33.1 +55.4 95.2	24 11.6 +55.4 94.3	23 50.2 +55.4 93.3	23 28.7 +55.4 92.4
22°	25 49.9 +55.3 95.7	25 28.5 +55.3 94.8	25 07.0 +55.4 93.8	24 45.6 +55.3 92.9	24 24.1 +55.3 91.9
23°	26 45.2 +55.3 95.3	26 23.8 +55.3 94.3	26 02.4 +55.2 93.4	25 40.9 +55.2 92.5	25 19.4 +55.2 91.5
24°	27 40.5 +55.2 94.9	27 19.1 +55.1 93.9	26 57.6 +55.2 93.0	26 36.1 +55.2 92.0	26 14.6 +55.2 91.1
25°	28 35.7 +55.1 94.4	28 14.2 +55.1 93.5	27 52.8 +55.0 92.5	27 31.3 +55.0 91.6	27 09.8 +55.0 90.6
26°	29 30.8 +55.0 94.0	29 09.3 +55.0 93.0	28 47.8 +55.0 92.1	28 26.3 +55.0 91.1	28 04.8 +55.0 90.2
27°	30 25.8 +54.9 93.5	30 04.3 +54.9 92.6	29 42.8 +54.9 91.6	29 21.3 +54.9 90.7	28 59.8 +54.9 89.7
28°	31 20.7 +54.8 93.0	30 59.2 +54.8 92.1	30 37.7 +54.8 91.1	30 16.2 +54.8 90.2	29 54.7 +54.8 89.3
29°	32 15.5 +54.7 92.5	31 54.0 +54.7 91.6	31 32.5 +54.7 90.7	31 11.0 +54.7 89.7	30 49.5 +54.7 88.8

Declination SAME name as Latitude

Latitude 69°

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°	3 34.1 +56.1 99.3	3 12.8 +56.1 98.4	2 51.5 +56.1 97.5	2 30.2 +56.1 96.5	2 08.8 +56.1 95.6
1°	4 30.2 +56.1 99.0	4 08.9 +56.1 98.1	3 47.6 +56.1 97.1	3 26.3 +56.0 96.2	3 04.9 +56.0 95.2
2°	5 26.3 +56.1 98.6	5 05.0 +56.1 97.7	4 43.7 +56.0 96.8	4 22.3 +56.1 95.8	4 00.9 +56.0 94.9
3°	6 22.4 +56.1 98.3	6 01.1 +56.1 97.3	5 39.7 +56.1 96.4	5 18.4 +56.0 95.5	4 56.9 +56.1 94.5
4°	7 18.5 +56.0 97.9	6 57.2 +56.0 97.0	6 35.8 +56.0 96.0	6 14.4 +56.0 95.1	5 53.0 +56.0 94.2
5°	8 14.5 +56.1 97.6	7 53.2 +56.0 96.6	7 31.8 +56.0 95.7	7 10.4 +56.0 94.7	6 49.0 +56.0 93.8
6°	9 10.6 +56.0 97.2	8 49.2 +56.0 96.3	8 27.8 +56.0 95.3	8 06.4 +56.0 94.4	7 45.0 +55.9 93.4
7°	10 06.6 +56.0 96.8	9 45.2 +56.0 95.9	9 23.8 +56.0 95.0	9 02.4 +56.0 94.0	8 40.9 +56.0 93.1
8°	11 02.6 +56.0 96.5	10 41.2 +56.0 95.5	10 19.8 +56.0 94.6	9 58.4 +55.9 93.7	9 36.9 +55.9 92.7
9°	11 58.6 +55.9 96.1	11 37.2 +55.9 95.2	11 15.8 +55.9 94.2	10 54.3 +55.9 93.3	10 32.8 +55.9 92.4
10°	12 54.5 +55.9 95.7	12 33.1 +55.9 94.8	12 11.7 +55.9 93.9	11 50.2 +55.9 92.9	11 28.7 +55.9 92.0
11°	13 50.4 +55.9 95.4	13 29.0 +55.9 94.4	13 07.6 +55.8 93.5	12 46.1 +55.8 92.5	12 24.6 +55.9 91.6
12°	14 46.3 +55.9 95.0	14 24.9 +55.8 94.0	14 03.4 +55.8 93.1	13 41.9 +55.9 92.2	13 20.5 +55.8 91.2
13°	15 42.2 +55.8 94.6	15 20.7 +55.8 93.7	14 59.2 +55.8 92.7	14 37.8 +55.7 91.8	14 16.3 +55.7 90.9
14°	16 38.0 +55.7 94.2	16 16.5 +55.8 93.3	15 55.0 +55.8 92.3	15 33.5 +55.8 91.4	15 12.0 +55.8 90.5
15°	17 33.7 +55.7 93.8	17 12.3 +55.7 92.9	16 50.8 +55.7 92.0	16 29.3 +55.7 91.0	16 07.8 +55.7 90.1
16°	18 29.4 +55.7 93.4	18 08.0 +55.6 92.5	17 46.5 +55.6 91.6	17 25.0 +55.6 90.6	17 03.5 +55.6 89.7
17°	19 25.1 +55.6 93.1	19 03.6 +55.6 92.1	18 42.1 +55.6 91.2	18 20.6 +55.6 90.2	17 59.1 +55.6 89.3
18°	20 20.7 +55.6 92.7	19 59.2 +55.6 91.7	19 37.7 +55.6 90.8	19 16.2 +55.6 89.8	18 54.7 +55.6 88.9
19°	21 16.3 +55.5 92.3	20 54.8 +55.5 91.3	20 33.3 +55.5 90.4	20 11.8 +55.5 89.4	19 50.3 +55.5 88.5
20°	22 11.8 +55.4 91.8	21 50.3 +55.4 90.9	21 28.8 +55.4 90.0	21 07.3 +55.4 89.0	20 45.8 +55.4 88.1
21°	23 07.2 +55.4 91.4	22 45.7 +55.4 90.5	22 24.2 +55.4 89.6	22 02.7 +55.4 88.6	21 41.2 +55.4 87.7
22°	24 02.6 +55.3 91.0	23 41.1 +55.3 90.1	23 19.6 +55.3 89.1	22 58.1 +55.3 88.2	22 36.6 +55.3 87.3
23°	24 57.9 +55.2 90.6	24 36.4 +55.2 89.6	24 14.9 +55.2 88.7	23 53.4 +55.2 87.8	23 31.9 +55.3 86.9
24°	25 53.1 +55.2 90.1	25 31.6 +55.2 89.2	25 10.1 +55.2 88.3	24 48.6 +55.2 87.4	24 27.2 +55.1 86.4
25°	26 48.3 +55.0 89.7	26 26.8 +55.0 88.8	26 05.3 +55.1 87.8	25 43.8 +55.1 86.9	25 22.3 +55.1 86.0
26°	27 43.3 +55.0 89.3	27 21.8 +55.0 88.3	27 00.4 +54.9 87.4	26 38.9 +55.0 86.5	26 17.4 +55.0 85.6
27°	28 38.3 +54.9 88.8	28 16.8 +54.9 87.9	27 55.3 +54.9 87.0	27 33.9 +54.9 86.0	27 12.4 +55.0 85.1
28°	29 33.2 +54.8 88.3	29 11.7 +54.8 87.4	28 50.2 +54.9 86.5	28 28.8 +54.8 85.6	28 07.4 +54.8 84.7
29°	30 28.0 +54.7 87.9	30 06.5 +54.7 87.0	29 45.1 +54.7 86.0	29 23.6 +54.7 85.1	29 02.2 +54.7 84.2

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°	1 47.4 +56.0 94.7	1 25.9 +56.1 93.7	1 04.5 +56.0 92.8	0 43.0 +56.0 91.9	0 21.5 +56.0 90.9
1°	2 43.4 +56.1 94.3	2 22.0 +56.0 93.4	2 00.5 +56.0 92.4	1 39.0 +56.0 91.5	1 17.5 +56.0 90.6
2°	3 39.5 +56.0 94.0	3 18.0 +56.0 93.0	2 56.5 +56.0 92.1	2 35.0 +56.0 91.2	2 13.5 +56.0 90.2
3°	4 35.5 +56.0 93.6	4 14.0 +56.0 92.7	3 52.5 +56.0 91.7	3 31.0 +56.0 90.8	3 09.5 +56.0 89.9
4°	5 31.5 +56.0 93.2	5 10.0 +56.0 92.3	4 48.5 +56.0 91.4	4 27.0 +56.0 90.4	4 05.5 +56.0 89.5
5°	6 27.5 +56.0 92.9	6 06.0 +56.0 91.9	5 44.5 +56.0 91.0	5 23.0 +56.0 90.1	5 01.5 +56.0 89.1
6°	7 23.5 +56.0 92.5	7 02.0 +56.0 91.6	6 40.5 +56.0 90.6	6 19.0 +56.0 89.7	5 57.5 +56.0 88.8
7°	8 19.5 +55.9 92.1	7 58.0 +55.9 91.2	7 36.5 +55.9 90.3	7 15.0 +55.9 89.3	6 53.5 +55.9 88.4
8°	9 15.4 +55.9 91.8	8 53.9 +55.9 90.8	8 32.4 +55.9 89.9	8 10.9 +55.9 89.0	7 49.4 +55.9 88.0
9°	10 11.3 +55.9 91.4	9 49.8 +55.9 90.5	9 28.3 +55.9 89.5	9 06.8 +55.9 88.6	8 45.3 +55.9 87.7
10°	11 07.2 +55.9 91.0	10 45.7 +55.9 90.1	10 24.2 +55.9 89.2	10 02.7 +55.9 88.2	9 41.2 +55.9 87.3
11°	12 03.1 +55.9 90.7	11 41.6 +55.8 89.7	11 20.1 +55.9 88.8	10 58.6 +55.9 87.9	10 37.1 +55.9 86.9
12°	12 59.0 +55.8 90.3	12 37.4 +55.9 89.4	12 16.0 +55.8 88.4	11 54.5 +55.8 87.5	11 33.0 +55.8 86.6
13°	13 54.8 +55.7 89.9	13 33.3 +55.7 89.0	13 11.8 +55.7 88.1	12 50.3 +55.8 87.1	12 28.8 +55.8 86.2
14°	14 50.5 +55.8 89.5	14 29.0 +55.8 88.6	14 07.5 +55.8 87.7	13 46.1 +55.7 86.7	13 24.6 +55.8 85.8
15°	15 46.3 +55.7 89.2	15 24.8 +55.7 88.2	15 03.3 +55.7 87.3	14 41.8 +55.7 86.4	14 20.4 +55.7 85.4
16°	16 42.0 +55.6 88.8	16 20.5 +55.6 87.8	15 59.0 +55.7 86.9	15 37.5 +55.7 86.0	15 16.1 +55.7 85.1
17°	17 37.6 +55.6 88.4	17 16.1 +55.7 87.4	16 54.7 +55.6 86.5	16 33.2 +55.7 85.6	16 11.8 +55.6 84.7
18°	18 33.2 +55.6 88.0	18 11.8 +55.5 87.1	17 50.3 +55.6 86.1	17 28.9 +55.5 85.2	17 07.4 +55.6 84.3
19°	19 28.8 +55.5 87.6	19 07.3 +55.5 86.7	18 45.9 +55.5 85.7	18 24.4 +55.6 84.8	18 03.0 +55.6 83.9
20°	20 24.3 +55.4 87.2	20 02.8 +55.5 86.3	19 41.4 +55.5 85.3	19 20.0 +55.5 84.4	18 58.6 +55.5 83.5
21°	21 19.7 +55.4 86.8	20 58.3 +55.4 85.8	20 36.9 +55.4 84.9	20 15.5 +55.4 84.0	19 54.1 +55.4 83.1
22°	22 15.1 +55.4 86.4	21 53.7 +55.3 85.4	21 32.3 +55.3 84.5	21 10.9 +55.3 83.6	20 49.5 +55.4 82.7
23°	23 10.5 +55.2 85.9	22 49.0 +55.3 85.0	22 27.6 +55.3 84.1	22 06.2 +55.4 83.2	21 44.9 +55.3 82.3
24°	24 05.7 +55.2 85.5	23 44.3 +55.2 84.6	23 22.9 +55.2 83.7	23 01.6 +55.2 82.8	22 40.2 +55.3 81.8
25°	25 00.9 +55.1 85.1	24 39.5 +55.1 84.2	24 18.1 +55.2 83.2	23 56.8 +55.2 82.3	23 35.5 +55.2 81.4
26°	25 56.0 +55.0 84.6	25 34.6 +55.1 83.7	25 13.3 +55.0 82.8	24 52.0 +55.0 81.9	24 30.7 +55.1 81.0
27°	26 51.0 +55.0 84.2	26 29.7 +54.9 83.3	26 08.3 +55.0 82.4	25 47.0 +55.1 81.5	25 25.8 +55.0 80.6
28°	27 46.0 +54.8 83.7	27 24.6 +54.9 82.8	27 03.3 +54.9 81.9	26 42.1 +54.9 81.0	26 20.8 +55.0 80.1
29°	28 40.8 +54.8 83.3	28 19.5 +54.8 82.4	27 58.2 +54.8 81.5	27 37.0 +54.8 80.6	27 15.8 +54.9 79.7

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Latitude 69°

Declination SAME name as 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	+56.0	90.0	-0 21.5	+56.0		-0 43.0	+56.0		-1 04.5	+56.0		-1 25.9	+56.0	
1°	0 56.0	+56.0	89.6	0 34.5	+56.0	88.7	0 13.0	+56.0	87.8	-0 08.5	+56.1		-0 29.9	+56.0	
2°	1 52.0	+56.0	89.3	1 30.5	+56.0	88.3	1 09.0	+56.1	87.4	0 47.6	+56.0	86.5	0 26.1	+56.1	85.5
3°	2 48.0	+56.0	88.9	2 26.5	+56.0	88.0	2 05.1	+56.0	87.1	1 43.6	+56.0	86.1	1 22.2	+56.0	85.2
4°	3 44.0	+56.0	88.6	3 22.5	+56.0	87.6	3 01.1	+56.0	86.7	2 39.6	+56.0	85.8	2 18.2	+56.0	84.8
5°	4 40.0	+56.0	88.2	4 18.5	+56.0	87.3	3 57.1	+56.0	86.3	3 35.6	+56.0	85.4	3 14.2	+56.0	84.5
6°	5 36.0	+56.0	87.8	5 14.5	+56.0	86.9	4 53.1	+56.0	86.0	4 31.6	+56.0	85.0	4 10.2	+56.0	84.1
7°	6 32.0	+55.9	87.5	6 10.5	+56.0	86.5	5 49.1	+55.9	85.6	5 27.6	+56.0	84.7	5 06.2	+56.0	83.8
8°	7 27.9	+56.0	87.1	7 06.5	+55.9	86.2	6 45.0	+56.0	85.3	6 23.6	+56.0	84.3	6 02.2	+56.0	83.4
9°	8 23.9	+55.9	86.8	8 02.4	+55.9	85.8	7 41.0	+55.9	84.9	7 19.6	+55.9	84.0	6 58.2	+56.0	83.0
10°	9 19.8	+55.9	86.4	8 58.3	+55.9	85.5	8 36.9	+55.9	84.5	8 15.5	+56.0	83.6	7 54.2	+55.9	82.7
11°	10 15.7	+55.8	86.0	9 54.2	+55.9	85.1	9 32.8	+55.9	84.2	9 11.5	+55.9	83.2	8 50.1	+55.9	82.3
12°	11 11.5	+55.9	85.6	10 50.1	+55.9	84.7	10 28.7	+55.9	83.8	10 07.4	+55.8	82.9	9 46.0	+55.9	81.9
13°	12 07.4	+55.8	85.3	11 46.0	+55.8	84.3	11 24.6	+55.8	83.4	11 03.2	+55.9	82.5	10 41.9	+55.9	81.6
14°	13 03.2	+55.8	84.9	12 41.8	+55.8	84.0	12 20.4	+55.8	83.0	11 59.1	+55.8	82.1	11 37.8	+55.9	81.2
15°	13 59.0	+55.7	84.5	13 37.6	+55.7	83.6	13 16.2	+55.8	82.7	12 54.9	+55.8	81.7	12 33.7	+55.8	80.8
16°	14 54.7	+55.7	84.1	14 33.3	+55.7	83.2	14 12.0	+55.7	82.3	13 50.7	+55.8	81.4	13 29.5	+55.8	80.4
17°	15 50.4	+55.7	83.7	15 29.0	+55.7	82.8	15 07.7	+55.7	81.9	14 46.5	+55.7	81.0	14 25.3	+55.7	80.1
18°	16 46.1	+55.6	83.4	16 24.7	+55.7	82.4	16 03.4	+55.7	81.5	15 42.2	+55.7	80.6	15 21.0	+55.7	79.7
19°	17 41.7	+55.5	83.0	17 20.4	+55.5	82.0	16 59.1	+55.6	81.1	16 37.9	+55.6	80.2	16 16.7	+55.7	79.3
20°	18 37.2	+55.6	82.6	18 15.9	+55.6	81.7	17 54.7	+55.6	80.7	17 33.5	+55.6	79.8	17 12.4	+55.6	78.9
21°	19 32.8	+55.4	82.2	19 11.5	+55.5	81.3	18 50.3	+55.5	80.3	18 29.1	+55.5	79.4	18 08.0	+55.6	78.5
22°	20 28.2	+55.4	81.8	20 07.0	+55.4	80.8	19 45.8	+55.4	79.9	19 24.6	+55.5	79.0	19 03.6	+55.5	78.1
23°	21 23.6	+55.4	81.4	21 02.4	+55.4	80.4	20 41.2	+55.4	79.5	20 20.1	+55.5	78.6	19 59.1	+55.4	77.7
24°	22 19.0	+55.3	80.9	21 57.8	+55.3	80.0	21 36.6	+55.4	79.1	21 15.6	+55.3	78.2	20 54.5	+55.4	77.3
25°	23 14.3	+55.2	80.5	22 53.1	+55.2	79.6	22 32.0	+55.2	78.7	22 10.9	+55.3	77.8	21 49.9	+55.4	76.9
26°	24 09.5	+55.1	80.1	23 48.3	+55.2	79.2	23 27.2	+55.2	78.3	23 06.2	+55.3	77.4	22 45.3	+55.3	76.5
27°	25 04.6	+55.1	79.7	24 43.5	+55.1	78.7	24 22.4	+55.2	77.8	24 01.5	+55.1	77.0	23 40.6	+55.2	76.1
28°	25 59.7	+55.0	79.2	25 38.6	+55.0	78.3	25 17.6	+55.0	77.4	24 56.6	+55.1	76.5	24 35.8	+55.1	75.6
29°	26 54.7	+54.9	78.8	26 33.6	+54.9	77.9	26 12.6	+55.0	77.0	25 51.7	+55.0	76.1	25 30.9	+55.0	75.2

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 47.4	+56.1		-2 08.8	+56.0		-2 30.2	+56.1		-2 51.5	+56.1		-3 12.8	+56.1	
1°	-0 51.3	+56.0		-1 12.8	+56.1		-1 34.1	+56.1		-1 55.4	+56.1		-2 16.7	+56.1	
2°	0 04.7	+56.0	84.6	-0 16.7	+56.1		-0 38.0	+56.0		-0 59.3	+56.0		-1 20.6	+56.1	
3°	1 00.7	+56.1	84.3	0 39.4	+56.0	83.3	0 18.0	+56.1	82.4	-0 03.3	+56.1		-0 24.5	+56.1	
4°	1 56.8	+56.0	83.9	1 35.4	+56.1	83.0	1 14.1	+56.1	82.0	0 52.8	+56.1	81.1	0 31.6	+56.1	80.2
5°	2 52.8	+56.1	83.5	2 31.5	+56.0	82.6	2 10.2	+56.0	81.7	1 48.9	+56.1	80.7	1 27.7	+56.1	79.8
6°	3 48.9	+56.0	83.2	3 27.5	+56.1	82.3	3 06.2	+56.1	81.3	2 45.0	+56.1	80.4	2 23.8	+56.2	79.5
7°	4 44.9	+56.0	82.8	4 23.6	+56.0	81.9	4 02.3	+56.1	81.0	3 41.1	+56.1	80.0	3 20.0	+56.1	79.1
8°	5 40.9	+56.0	82.5	5 19.6	+56.0	81.5	4 58.4	+56.0	80.6	4 37.2	+56.0	79.7	4 16.1	+56.0	78.8
9°	6 36.9	+56.0	82.1	6 15.6	+56.0	81.2	5 54.4	+56.0	80.3	5 33.2	+56.1	79.3	5 12.1	+56.1	78.4
10°	7 32.9	+55.9	81.7	7 11.6	+56.0	80.8	6 50.4	+56.0	79.9	6 29.3	+56.0	79.0	6 08.2	+56.1	78.0
11°	8 28.8	+56.0	81.4	8 07.6	+56.0	80.5	7 46.4	+56.0	79.5	7 25.3	+56.0	78.6	7 04.3	+56.0	77.7
12°	9 24.8	+55.9	81.0	9 03.6	+55.9	80.1	8 42.4	+56.0	79.2	8 21.3	+56.0	78.2	8 00.3	+56.0	77.3
13°	10 20.7	+55.9	80.6	9 59.5	+55.9	79.7	9 38.4	+55.9	78.8	9 17.3	+56.0	77.9	8 56.3	+56.1	77.0
14°	11 16.6	+55.9	80.3	10 55.4	+55.9	79.4	10 34.3	+56.0	78.4	10 13.3	+56.0	77.5	9 52.4	+55.9	76.6
15°	12 12.5	+55.8	79.9	11 51.3	+55.9	79.0	11 30.3	+55.9	78.1	11 09.3	+55.9	77.1	10 48.3	+56.0	76.2
16°	13 08.3	+55.8	79.5	12 47.2	+55.8	78.6	12 26.2	+55.8	77.7	12 05.2	+55.9	76.8	11 44.3	+55.9	75.9
17°	14 04.1	+55.8	79.2	13 43.0	+55.8	78.2	13 22.0	+55.8	77.3	13 01.1	+55.8	76.4	12 40.2	+55.9	75.5
18°	14 59.9	+55.7	78.8	14 38.8	+55.8	77.9	14 17.8	+55.8	76.9	13 56.9	+55.9	76.0	13 36.1	+55.9	75.1
19°	15 55.6	+55.7	78.4	15 34.6	+55.7	77.5	15 13.6	+55.8	76.6	14 52.8	+55.8	75.7	14 32.0	+55.8	74.7
20°	16 51.3	+55.7	78.0	16 30.3	+55.7	77.1	16 09.4	+55.7	76.2	15 48.6	+55.7	75.3	15 27.8	+55.8	74.4
21°	17 47.0	+55.6	77.6	17 26.0	+55.6	76.7	17 05.1	+55.7	75.8	16 44.3	+55.7	74.9	16 23.6	+55.7	74.0
22°	18 42.6	+55.5	77.2	18 21.6	+55.6	76.3	18 00.8	+55.6	75.4	17 40.0	+55.7	74.5	17 19.3	+55.7	73.6
23°	19 38.1	+55.5	76.8	19 17.2	+55.5	75.9	18 56.4	+55.6	75.0	18 35.7	+55.6	74.1	18 15.0	+55.7	73.2
24°	20 33.6	+55.4	76.4	20 12.7	+55.5	75.5	19 52.0	+55.5	74.6	19 31.3	+55.5	73.7	19 10.7	+55.6	72.8
25°	21 29.0	+55.4	76.0	21 08.2	+55.4	75.1	20 47.5	+55.4	74.2	20 26.8	+55.5	73.3	20 06.3	+55.5	72.4
26°	22 24.4	+55.3	75.6	22 03.6	+55.4	74.7	21 42.9	+55.4	73.8	21 22.3	+55.5	72.9	21 01.8	+55.5	72.0
27°	23 19.7	+55.3	75.2	22 59.0	+55.3	74.3	22 38.3	+55.4	73.4	22 17.8	+55.4	72.5	21 57.3	+55.5	71.6
28°	24 15.0	+55.1	74.7	23 54.3	+55.2	73.8	23 33.7	+55.2	73.0	23 13.2	+55.3	72.1	22 52.8	+55.3	71.2
29°	25 10.1	+55.1	74.3	24 49.5	+55.1	73.4	24 28.9	+55.2	72.5	24 08.5	+55.2	71.6	23 48.1	+55.3	70.8

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Dec	LHA 100° / 260°	LHA 101° / 259°	LHA 102° / 258°	LHA 103° / 257°	LHA 104° / 256°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-3 34.1 +56.2	-3 55.3 +56.2	-4 16.4 +56.2	-4 37.4 +56.2	-4 58.4 +56.2
1°	-2 37.9 +56.1	-2 59.1 +56.2	-3 20.2 +56.2	-3 41.2 +56.2	-4 02.2 +56.3
2°	-1 41.8 +56.1	-2 02.9 +56.1	-2 24.0 +56.2	-2 45.0 +56.2	-3 05.9 +56.2
3°	-0 45.7 +56.2	-1 06.8 +56.2	-1 27.8 +56.2	-1 48.8 +56.2	-2 09.7 +56.3
4°	0 10.5 +56.1 79.2	-0 10.6 +56.1	-0 31.6 +56.2	-0 52.6 +56.2	-1 13.4 +56.2
5°	1 06.6 +56.1 78.9	0 45.5 +56.2 78.0	0 24.6 +56.1 77.0	0 03.6 +56.3 76.1	-0 17.2 +56.3
6°	2 02.7 +56.2 78.5	1 41.7 +56.2 77.6	1 20.7 +56.2 76.7	0 59.9 +56.2 75.7	0 39.1 +56.2 74.8
7°	2 58.9 +56.1 78.2	2 37.9 +56.1 77.2	2 16.9 +56.2 76.3	1 56.1 +56.2 75.4	1 35.3 +56.3 74.5
8°	3 55.0 +56.1 77.8	3 34.0 +56.2 76.9	3 13.1 +56.2 76.0	2 52.3 +56.2 75.0	2 31.6 +56.2 74.1
9°	4 51.1 +56.1 77.5	4 30.2 +56.1 76.5	4 09.3 +56.2 75.6	3 48.5 +56.2 74.7	3 27.8 +56.3 73.8
10°	5 47.2 +56.1 77.1	5 26.3 +56.1 76.2	5 05.5 +56.1 75.3	4 44.7 +56.2 74.3	4 24.1 +56.2 73.4
11°	6 43.3 +56.1 76.8	6 22.4 +56.1 75.8	6 01.6 +56.2 74.9	5 40.9 +56.2 74.0	5 20.3 +56.2 73.1
12°	7 39.4 +56.0 76.4	7 18.5 +56.1 75.5	6 57.8 +56.1 74.6	6 37.1 +56.1 73.6	6 16.5 +56.2 72.7
13°	8 35.4 +56.1 76.0	8 14.6 +56.1 75.1	7 53.9 +56.1 74.2	7 33.2 +56.2 73.3	7 12.7 +56.2 72.4
14°	9 31.5 +56.0 75.7	9 10.7 +56.0 74.8	8 50.0 +56.1 73.8	8 29.4 +56.1 72.9	8 08.9 +56.2 72.0
15°	10 27.5 +56.0 75.3	10 06.7 +56.1 74.4	9 46.1 +56.0 73.5	9 25.5 +56.1 72.6	9 05.1 +56.1 71.6
16°	11 23.5 +55.9 74.9	11 02.8 +56.0 74.0	10 42.1 +56.1 73.1	10 21.6 +56.1 72.2	10 01.2 +56.1 71.3
17°	12 19.4 +56.0 74.6	11 58.8 +55.9 73.7	11 38.2 +56.0 72.8	11 17.7 +56.1 71.8	10 57.3 +56.1 70.9
18°	13 15.4 +55.9 74.2	12 54.7 +56.0 73.3	12 34.2 +56.0 72.4	12 13.8 +56.0 71.5	11 53.4 +56.1 70.6
19°	14 11.3 +55.8 73.8	13 50.7 +55.9 72.9	13 30.2 +55.9 72.0	13 09.8 +56.0 71.1	12 49.5 +56.0 70.2
20°	15 07.1 +55.9 73.5	14 46.6 +55.9 72.5	14 26.1 +55.9 71.6	14 05.8 +55.9 70.7	13 45.5 +56.0 69.8
21°	16 03.0 +55.8 73.1	15 42.5 +55.8 72.2	15 22.0 +55.9 71.3	15 01.7 +56.0 70.4	14 41.5 +56.0 69.5
22°	16 58.8 +55.7 72.7	16 38.3 +55.8 71.8	16 17.9 +55.8 70.9	15 57.7 +55.8 70.0	15 37.5 +55.9 69.1
23°	17 54.5 +55.7 72.3	17 34.1 +55.7 71.4	17 13.7 +55.8 70.5	16 53.5 +55.9 69.6	16 33.4 +55.9 68.7
24°	18 50.2 +55.6 71.9	18 29.8 +55.7 71.0	18 09.5 +55.8 70.1	17 49.4 +55.8 69.2	17 29.3 +55.9 68.3
25°	19 45.8 +55.6 71.5	19 25.5 +55.7 70.6	19 05.3 +55.7 69.7	18 45.2 +55.7 68.8	18 25.2 +55.8 68.0
26°	20 41.4 +55.6 71.1	20 21.2 +55.5 70.2	20 01.0 +55.6 69.3	19 40.9 +55.7 68.4	19 21.0 +55.7 67.6
27°	21 37.0 +55.5 70.7	21 16.7 +55.6 69.8	20 56.6 +55.6 68.9	20 36.6 +55.7 68.1	20 16.7 +55.7 67.2
28°	22 32.5 +55.4 70.3	22 12.3 +55.4 69.4	21 52.2 +55.5 68.5	21 32.3 +55.5 67.7	21 12.4 +55.7 66.8
29°	23 27.9 +55.3 69.9	23 07.7 +55.4 69.0	22 47.7 +55.5 68.1	22 27.8 +55.6 67.2	22 08.1 +55.6 66.4

Dec	LHA 105° / 255°	LHA 106° / 254°	LHA 107° / 253°	LHA 108° / 252°	LHA 109° / 251°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-5 19.3 +56.2	-5 40.1 +56.3	-6 00.9 +56.4	-6 21.5 +56.4	-6 42.0 +56.4
1°	-4 23.1 +56.3	-4 43.8 +56.3	-5 04.5 +56.3	-5 25.1 +56.4	-5 45.6 +56.4
2°	-3 26.8 +56.3	-3 47.5 +56.3	-4 08.2 +56.4	-4 28.7 +56.4	-4 49.2 +56.4
3°	-2 30.5 +56.3	-2 51.2 +56.3	-3 11.8 +56.3	-3 32.3 +56.3	-3 52.8 +56.5
4°	-1 34.2 +56.3	-1 54.9 +56.3	-2 15.5 +56.4	-2 36.0 +56.5	-2 56.3 +56.4
5°	-0 37.9 +56.3	-0 58.6 +56.4	-1 19.1 +56.4	-1 39.5 +56.4	-1 59.9 +56.5
6°	0 18.4 +56.3 73.9	-0 02.2 +56.3	-0 22.7 +56.3	-0 43.1 +56.4	-1 03.4 +56.4
7°	1 14.7 +56.2 73.5	0 54.1 +56.3 72.6	0 33.6 +56.4 71.7	0 13.3 +56.4 70.7	-0 07.0 +56.5
8°	2 10.9 +56.3 73.2	1 50.4 +56.3 72.3	1 30.0 +56.3 71.3	1 09.7 +56.4 70.4	0 49.5 +56.4 69.5
9°	3 07.2 +56.3 72.8	2 46.7 +56.3 71.9	2 26.3 +56.4 71.0	2 06.1 +56.4 70.0	1 45.9 +56.5 69.1
10°	4 03.5 +56.3 72.5	3 43.0 +56.4 71.6	3 22.7 +56.4 70.6	3 02.5 +56.4 69.7	2 42.4 +56.4 68.8
11°	4 59.8 +56.2 72.1	4 39.4 +56.2 71.2	4 19.1 +56.3 70.3	3 58.9 +56.4 69.4	3 38.8 +56.4 68.4
12°	5 56.0 +56.3 71.8	5 35.6 +56.3 70.9	5 15.4 +56.3 69.9	4 55.3 +56.3 69.0	4 35.2 +56.5 68.1
13°	6 52.3 +56.2 71.4	6 31.9 +56.3 70.5	6 11.7 +56.3 69.6	5 51.6 +56.4 68.7	5 31.7 +56.4 67.8
14°	7 48.5 +56.2 71.1	7 28.2 +56.3 70.2	7 08.0 +56.3 69.3	6 48.0 +56.3 68.3	6 28.1 +56.4 67.4
15°	8 44.7 +56.2 70.7	8 24.5 +56.2 69.8	8 04.3 +56.3 68.9	7 44.3 +56.4 68.0	7 24.5 +56.3 67.1
16°	9 40.9 +56.2 70.4	9 20.7 +56.2 69.5	9 00.6 +56.3 68.6	8 40.7 +56.3 67.6	8 20.8 +56.4 66.7
17°	10 37.1 +56.1 70.0	10 16.9 +56.2 69.1	9 56.9 +56.2 68.2	9 37.0 +56.3 67.3	9 17.2 +56.4 66.4
18°	11 33.2 +56.1 69.7	11 13.1 +56.2 68.8	10 53.1 +56.2 67.8	10 33.3 +56.2 66.9	10 13.6 +56.3 66.0
19°	12 29.3 +56.1 69.3	12 09.3 +56.1 68.4	11 49.3 +56.2 67.5	11 29.5 +56.3 66.6	11 09.9 +56.3 65.7
20°	13 25.4 +56.1 68.9	13 05.4 +56.1 68.0	12 45.5 +56.2 67.1	12 25.8 +56.2 66.2	12 06.2 +56.2 65.3
21°	14 21.5 +56.0 68.6	14 01.5 +56.1 67.7	13 41.7 +56.1 66.8	13 22.0 +56.2 65.9	13 02.4 +56.3 65.0
22°	15 17.5 +56.0 68.2	14 57.6 +56.0 67.3	14 37.8 +56.1 66.4	14 18.2 +56.1 65.5	13 58.7 +56.2 64.6
23°	16 13.5 +55.9 67.8	15 53.6 +56.0 66.9	15 33.9 +56.1 66.0	15 14.3 +56.1 65.1	14 54.9 +56.2 64.3
24°	17 09.4 +55.9 67.4	16 49.6 +56.0 66.6	16 30.0 +56.0 65.7	16 10.4 +56.1 64.8	15 51.1 +56.1 63.9
25°	18 05.3 +55.9 67.1	17 45.6 +55.9 66.2	17 26.0 +55.9 65.3	17 06.5 +56.0 64.4	16 47.2 +56.1 63.5
26°	19 01.2 +55.8 66.7	18 41.5 +55.9 65.8	18 21.9 +56.0 64.9	18 02.5 +56.0 64.0	17 43.3 +56.0 63.1
27°	19 57.0 +55.7 66.3	19 37.4 +55.8 65.4	19 17.9 +55.9 64.5	18 58.5 +56.0 63.6	18 39.3 +56.0 62.8
28°	20 52.7 +55.7 65.9	20 33.2 +55.7 65.0	20 13.8 +55.8 64.1	19 54.5 +55.9 63.3	19 35.3 +56.0 62.4
29°	21 48.4 +55.7 65.5	21 28.9 +55.7 64.6	21 09.6 +55.8 63.7	20 50.4 +55.8 62.9	20 31.3 +55.9 62.0

Latitude 69°**Declination SAME name as Latitude**

Dec	LHA 110° / 250°	LHA 111° / 249°	LHA 112° / 248°	LHA 113° / 247°	LHA 114° / 246°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-7 02.4 +56.4	-7 22.7 +56.5	-7 42.9 +56.5	-8 03.0 +56.6	-8 22.9 +56.6
1°	-6 06.0 +56.5	-6 26.2 +56.5	-6 46.4 +56.6	-7 06.4 +56.6	-7 26.3 +56.7
2°	-5 09.5 +56.5	-5 29.7 +56.5	-5 49.8 +56.5	-6 09.8 +56.6	-6 29.6 +56.6
3°	-4 13.0 +56.4	-4 33.2 +56.5	-4 53.3 +56.6	-5 13.2 +56.6	-5 33.0 +56.7
4°	-3 16.6 +56.5	-3 36.7 +56.5	-3 56.7 +56.6	-4 16.6 +56.7	-4 36.3 +56.7
5°	-2 20.1 +56.5	-2 40.2 +56.6	-3 00.1 +56.6	-3 19.9 +56.6	-3 39.6 +56.7
6°	-1 23.6 +56.5	-1 43.6 +56.5	-2 03.5 +56.6	-2 23.3 +56.6	-2 42.9 +56.7
7°	-0 27.1 +56.5	-0 47.1 +56.6	-1 06.9 +56.5	-1 26.7 +56.7	-1 46.2 +56.6
8°	0 29.4 +56.5 68.5	0 09.5 +56.5 67.6	-0 10.4 +56.6	-0 30.0 +56.6	-0 49.6 +56.7
9°	1 25.9 +56.5 68.2	1 06.0 +56.5 67.3	0 46.2 +56.6 66.3	0 26.6 +56.7 65.4	0 07.1 +56.7 64.5
10°	2 22.4 +56.5 67.9	2 02.5 +56.6 66.9	1 42.8 +56.6 66.0	1 23.3 +56.6 65.1	1 03.8 +56.7 64.1
11°	3 18.9 +56.5 67.5	2 59.1 +56.5 66.6	2 39.4 +56.6 65.7	2 19.9 +56.6 64.7	2 00.5 +56.7 63.8
12°	4 15.4 +56.4 67.2	3 55.6 +56.5 66.3	3 36.0 +56.6 65.3	3 16.5 +56.7 64.4	2 57.2 +56.7 63.5
13°	5 11.8 +56.5 66.8	4 52.1 +56.5 65.9	4 32.6 +56.5 65.0	4 13.2 +56.6 64.1	3 53.9 +56.7 63.2
14°	6 08.3 +56.4 66.5	5 48.6 +56.5 65.6	5 29.1 +56.6 64.7	5 09.8 +56.6 63.7	4 50.6 +56.6 62.8
15°	7 04.7 +56.5 66.2	6 45.1 +56.5 65.2	6 25.7 +56.5 64.3	6 06.4 +56.6 63.4	5 47.2 +56.7 62.5
16°	8 01.2 +56.4 65.8	7 41.6 +56.5 64.9	7 22.2 +56.5 64.0	7 03.0 +56.6 63.1	6 43.9 +56.6 62.2
17°	8 57.6 +56.4 65.5	8 38.1 +56.4 64.6	8 18.7 +56.6 63.6	7 59.6 +56.5 62.7	7 40.5 +56.6 61.8
18°	9 54.0 +56.3 65.1	9 34.5 +56.5 64.2	9 15.3 +56.4 63.3	8 56.1 +56.6 62.4	8 37.1 +56.7 61.5
19°	10 50.3 +56.4 64.8	10 31.0 +56.4 63.9	10 11.7 +56.5 63.0	9 52.7 +56.5 62.1	9 33.8 +56.5 61.2
20°	11 46.7 +56.3 64.4	11 27.4 +56.4 63.5	11 08.2 +56.5 62.6	10 49.2 +56.5 61.7	10 30.3 +56.6 60.8
21°	12 43.0 +56.3 64.1	12 23.8 +56.3 63.2	12 04.7 +56.4 62.3	11 45.7 +56.5 61.4	11 26.9 +56.5 60.5
22°	13 39.3 +56.3 63.7	13 20.1 +56.3 62.8	13 01.1 +56.4 61.9	12 42.2 +56.4 61.0	12 23.4 +56.6 60.1
23°	14 35.6 +56.2 63.4	14 16.4 +56.3 62.5	13 57.5 +56.3 61.6	13 38.6 +56.4 60.7	13 20.0 +56.4 59.8
24°	15 31.8 +56.2 63.0	15 12.7 +56.3 62.1	14 53.8 +56.3 61.2	14 35.0 +56.4 60.3	14 16.4 +56.5 59.4
25°	16 28.0 +56.2 62.6	16 09.0 +56.2 61.7	15 50.1 +56.3 60.9	15 31.4 +56.4 60.0	15 12.9 +56.4 59.1
26°	17 24.2 +56.1 62.3	17 05.2 +56.2 61.4	16 46.4 +56.3 60.5	16 27.8 +56.3 59.6	16 09.3 +56.4 58.7
27°	18 20.3 +56.1 61.9	18 01.4 +56.2 61.0	17 42.7 +56.2 60.1	17 24.1 +56.3 59.3	17 05.7 +56.4 58.4
28°	19 16.4 +56.0 61.5	18 57.6 +56.0 60.6	18 38.9 +56.2 59.8	18 20.4 +56.2 58.9	18 02.1 +56.3 58.0
29°	20 12.4 +56.0 61.1	19 53.6 +56.1 60.3	19 35.1 +56.1 59.4	19 16.6 +56.2 58.5	18 58.4 +56.2 57.7

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-8 42.7 +56.7	-9 02.3 +56.7	-9 21.8 +56.8	-9 41.1 +56.8	-9 03.4 +56.9
1°	-7 46.0 +56.7	-8 05.6 +56.8	-8 25.0 +56.8	-8 44.3 +56.8	-8 06.5 +56.9
2°	-6 49.3 +56.7	-7 08.8 +56.7	-7 28.2 +56.8	-7 47.5 +56.9	-7 09.6 +56.9
3°	-5 52.6 +56.7	-6 12.1 +56.8	-6 31.4 +56.8	-6 50.6 +56.9	-6 12.7 +57.0
4°	-4 55.9 +56.8	-5 15.3 +56.8	-5 34.6 +56.8	-5 53.7 +56.9	
5°	-3 59.1 +56.7	-4 18.5 +56.8	-4 37.8 +56.9	-4 56.8 +56.9	-5 15.7 +56.9
6°	-3 02.4 +56.7	-3 21.7 +56.7	-3 40.9 +56.8	-3 59.9 +56.9	-4 18.8 +57.0
7°	-2 05.7 +56.8	-2 25.0 +56.8	-2 44.1 +56.9	-3 03.0 +56.9	-3 21.8 +57.0
8°	-1 08.9 +56.7	-1 28.2 +56.8	-1 47.2 +56.8	-2 06.1 +56.9	-2 24.8 +56.9
9°	-0 12.2 +56.8	-0 31.4 +56.9	-0 50.4 +56.9	-1 09.2 +56.9	-1 27.9 +57.0
10°	0 44.6 +56.7 63.2	0 25.5 +56.8 62.3	0 06.5 +56.9 61.3	-0 12.3 +56.9	-0 30.9 +57.0
11°	1 41.3 +56.8 62.9	1 22.3 +56.8 61.9	1 03.4 +56.8 61.0	0 44.6 +56.9 60.1	0 26.1 +57.0 59.2
12°	2 38.1 +56.7 62.6	2 19.1 +56.7 61.6	2 00.2 +56.9 60.7	1 41.5 +57.0 59.8	1 23.1 +56.9 58.8
13°	3 34.8 +56.7 62.2	3 15.8 +56.8 61.3	2 57.1 +56.8 60.4	2 38.5 +56.9 59.5	2 20.0 +57.0 58.5
14°	4 31.5 +56.7 61.9	4 12.6 +56.8 61.0	3 53.9 +56.9 60.1	3 35.4 +56.9 59.1	3 17.0 +57.0 58.2
15°	5 28.2 +56.8 61.6	5 09.4 +56.8 60.7	4 50.8 +56.8 59.7	4 32.3 +56.9 58.8	4 14.0 +56.9 57.9
16°	6 25.0 +56.6 61.2	6 06.2 +56.7 60.3	5 47.6 +56.8 59.4	5 29.2 +56.8 58.5	5 10.9 +57.0 57.6
17°	7 21.6 +56.7 60.9	7 02.9 +56.8 60.0	6 44.4 +56.8 59.1	6 26.0 +56.9 58.2	6 07.9 +56.9 57.3
18°	8 18.3 +56.7 60.6	7 59.7 +56.7 59.7	7 41.2 +56.8 58.8	7 22.9 +56.9 57.9	7 04.8 +56.9 57.0
19°	9 15.0 +56.6 60.3	8 56.4 +56.7 59.3	8 38.0 +56.8 58.4	8 19.8 +56.8 57.5	8 01.7 +56.9 56.6
20°	10 11.6 +56.7 59.9	9 53.1 +56.7 59.0	9 34.8 +56.7 58.1	9 16.6 +56.8 57.2	8 58.6 +56.9 56.3
21°	11 08.3 +56.6 59.6	10 49.8 +56.7 58.7	10 31.5 +56.8 57.8	10 13.4 +56.8 56.9	9 55.5 +56.9 56.0
22°	12 04.9 +56.6 59.2	11 46.5 +56.6 58.3	11 28.3 +56.7 57.5	11 10.2 +56.8 56.6	10 52.4 +56.8 55.7
23°	13 01.5 +56.5 58.9	12 43.1 +56.7 58.0	12 25.0 +56.7 57.1	12 07.0 +56.8 56.2	11 49.2 +56.9 55.3
24°	13 58.0 +56.5 58.6	13 39.8 +56.6 57.7	13 21.7 +56.6 56.8	13 03.8 +56.7 55.9	12 46.1 +56.8 55.0
25°	14 54.5 +56.5 58.2	14 36.4 +56.5 57.3	14 18.3 +56.7 56.4	14 00.5 +56.7 55.6	13 42.9 +56.8 54.7
26°	15 51.0 +56.5 57.9	15 32.9 +56.5 57.0	15 15.0 +56.6 56.1	14 57.2 +56.7 55.2	14 39.7 +56.7 54.3
27°	16 47.5 +56.4 57.5	16 29.4 +56.5 56.6	16 11.6 +56.5 55.8	15 53.9 +56.6 54.9	15 36.4 +56.7 54.0
28°	17 43.9 +56.4 57.2	17 25.9 +56.5 56.3	17 08.1 +56.6 55.4	16 50.5 +56.6 54.5	16 33.1 +56.7 53.7
29°	18 40.3 +56.3 56.8	18 22.4 +56.4 55.9	18 04.7 +56.5 55.1	17 47.1 +56.6 54.2	17 29.8 +56.7 53.3

Dec	LHA 120° / 240°		LHA 121° / 239°		LHA 122° / 238°		LHA 123° / 237°		LHA 124° / 236°	
	H °	' dH ' Z °	H °	' dH ' Z °	H °	' dH ' Z °	H °	' dH ' Z °	H °	' dH ' Z °
0°										
1°	-9	22.4 +57.0	-9	41.2 +57.0	-9	59.8 +57.1				
2°	-8	25.4 +57.0	-8	44.2 +57.1	-9	02.7 +57.1	-9	21.1 +57.2	-9	39.2 +57.2
3°	-7	28.4 +56.9	-7	47.1 +57.0	-8	05.6 +57.1	-8	23.9 +57.2	-8	42.0 +57.2
4°	-6	31.5 +57.0	-6	50.1 +57.1	-7	08.5 +57.1	-7	26.7 +57.2	-7	44.8 +57.3
5°	-5	34.5 +57.1	-5	53.0 +57.1	-6	11.4 +57.2	-6	29.5 +57.1	-6	47.5 +57.2
6°	-4	37.4 +57.0	-4	55.9 +57.1	-5	14.2 +57.1	-5	32.4 +57.3	-5	50.3 +57.3
7°	-3	40.4 +57.0	-3	58.8 +57.0	-4	17.1 +57.2	-4	35.1 +57.2	-4	53.0 +57.3
8°	-2	43.4 +57.0	-3	01.8 +57.1	-3	19.9 +57.1	-3	37.9 +57.2	-3	55.7 +57.3
9°	-1	46.4 +57.1	-2	04.7 +57.1	-2	22.8 +57.2	-2	40.7 +57.2	-2	58.4 +57.2
10°	-0	49.3 +57.0	-1	07.6 +57.1	-1	25.6 +57.1	-1	43.5 +57.2	-2	01.2 +57.3
11°	0	07.7 +57.1 58.2	-0	10.5 +57.1	-0	28.5 +57.2	-0	46.3 +57.3	-1	03.9 +57.3
12°	1	04.8 +57.0 57.9	0	46.6 +57.1 57.0	0	28.7 +57.2 56.1	0	11.0 +57.2 55.1	-0	06.6 +57.3
13°	2	01.8 +57.0 57.6	1	43.7 +57.1 56.7	1	25.9 +57.1 55.7	1	08.2 +57.2 54.8	0	50.7 +57.3 53.9
14°	2	58.8 +57.0 57.3	2	40.8 +57.1 56.4	2	23.0 +57.2 55.4	2	05.4 +57.2 54.5	1	48.0 +57.3 53.6
15°	3	55.8 +57.1 57.0	3	37.9 +57.1 56.1	3	20.2 +57.1 55.1	3	02.6 +57.2 54.2	2	45.3 +57.3 53.3
16°	4	52.9 +57.0 56.7	4	35.0 +57.1 55.8	4	17.3 +57.2 54.8	3	59.8 +57.2 53.9	3	42.6 +57.2 53.0
17°	5	49.9 +57.0 56.4	5	32.1 +57.0 55.4	5	14.5 +57.1 54.5	4	57.0 +57.2 53.6	4	39.8 +57.3 52.7
18°	6	46.9 +57.0 56.0	6	29.1 +57.1 55.1	6	11.6 +57.1 54.2	5	54.2 +57.2 53.3	5	37.1 +57.3 52.4
19°	7	43.9 +56.9 55.7	7	26.2 +57.0 54.8	7	08.7 +57.1 53.9	6	51.4 +57.2 53.0	6	34.4 +57.2 52.1
20°	8	40.8 +57.0 55.4	8	23.2 +57.1 54.5	8	05.8 +57.1 53.6	7	48.6 +57.2 52.7	7	31.6 +57.3 51.8
21°	9	37.8 +56.9 55.1	9	20.3 +57.0 54.2	9	02.9 +57.1 53.3	8	45.8 +57.1 52.4	8	28.9 +57.2 51.5
22°	10	34.7 +57.0 54.8	10	17.3 +57.0 53.9	10	00.0 +57.1 53.0	9	42.9 +57.2 52.1	9	26.1 +57.2 51.2
23°	11	31.7 +56.9 54.4	11	14.3 +56.9 53.6	10	57.1 +57.0 52.7	10	40.1 +57.1 51.8	10	23.3 +57.2 50.9
24°	12	28.6 +56.8 54.1	12	11.2 +57.0 53.2	11	54.1 +57.0 52.3	11	37.2 +57.1 51.5	11	20.5 +57.1 50.6
25°	13	25.4 +56.9 53.8	13	08.2 +56.9 52.9	12	51.1 +57.0 52.0	12	34.3 +57.0 51.1	12	17.6 +57.2 50.3
26°	14	22.3 +56.8 53.5	14	05.1 +56.9 52.6	13	48.1 +57.0 51.7	13	31.3 +57.1 50.8	13	14.8 +57.1 50.0
27°	15	19.1 +56.8 53.1	15	02.0 +56.9 52.3	14	45.1 +56.9 51.4	14	28.4 +57.0 50.5	14	11.9 +57.1 49.6
28°	16	15.9 +56.8 52.8	15	58.9 +56.8 51.9	15	42.0 +57.0 51.1	15	25.4 +57.0 50.2	15	09.0 +57.1 49.3
29°	17	12.7 +56.7 52.5	16	55.7 +56.8 51.6	16	39.0 +56.8 50.7	16	22.4 +57.0 49.9	16	06.1 +57.0 49.0

Dec	LHA 125° / 235°		LHA 126° / 234°		LHA 127° / 233°		LHA 128° / 232°		LHA 129° / 231°	
	H °	' dH ' Z °	H °	' dH ' Z °	H °	' dH ' Z °	H °	' dH ' Z °	H °	' dH ' Z °
0°										
1°										
2°	-9	57.2 +57.3								
3°	-8	59.9 +57.3	-9	17.6 +57.3	-9	35.1 +57.4	-9	52.4 +57.5		
4°	-8	02.6 +57.3	-8	20.3 +57.4	-8	37.7 +57.4	-8	54.9 +57.5	-9	11.9 +57.6
5°	-7	05.3 +57.3	-7	22.9 +57.4	-7	40.3 +57.5	-7	57.4 +57.5	-8	14.3 +57.5
6°	-6	08.0 +57.3	-6	25.5 +57.4	-6	42.8 +57.5	-6	59.9 +57.5	-7	16.8 +57.6
7°	-5	10.7 +57.4	-5	28.1 +57.4	-5	45.3 +57.4	-6	02.4 +57.6	-6	19.2 +57.6
8°	-4	13.3 +57.3	-4	30.7 +57.4	-4	47.9 +57.5	-5	04.8 +57.5	-5	21.6 +57.6
9°	-3	16.0 +57.4	-3	33.3 +57.4	-3	50.4 +57.5	-4	07.3 +57.6	-4	24.0 +57.7
10°	-2	18.6 +57.3	-2	35.9 +57.4	-2	52.9 +57.5	-3	09.7 +57.5	-3	26.3 +57.6
11°	-1	21.3 +57.4	-1	38.5 +57.5	-1	55.4 +57.5	-2	12.2 +57.6	-2	28.7 +57.6
12°	-0	23.9 +57.3	-0	41.0 +57.4	-0	57.9 +57.4	-1	14.6 +57.5	-1	31.1 +57.6
13°	0	33.4 +57.4 53.0	0	16.4 +57.4 52.0	-0	00.5 +57.5	-0	17.1 +57.6	-0	33.5 +57.6
14°	1	30.8 +57.3 52.7	1	13.8 +57.4 51.7	0	57.0 +57.5 50.8	0	40.5 +57.5 49.9	0	24.1 +57.7 48.9
15°	2	28.1 +57.4 52.4	2	11.2 +57.4 51.4	1	54.5 +57.5 50.5	1	38.0 +57.6 49.6	1	21.8 +57.6 48.7
16°	3	25.5 +57.3 52.1	3	08.6 +57.5 51.2	2	52.0 +57.5 50.2	2	35.6 +57.5 49.3	2	19.4 +57.6 48.4
17°	4	22.8 +57.4 51.8	4	06.1 +57.4 50.9	3	49.5 +57.5 49.9	3	33.1 +57.6 49.0	3	17.0 +57.6 48.1
18°	5	20.2 +57.3 51.5	5	03.5 +57.4 50.6	4	47.0 +57.4 49.7	4	30.7 +57.5 48.7	4	14.6 +57.6 47.8
19°	6	17.5 +57.3 51.2	6	00.9 +57.3 50.3	5	44.4 +57.5 49.4	5	28.2 +57.6 48.5	5	12.2 +57.6 47.5
20°	7	14.8 +57.3 50.9	6	58.2 +57.4 50.0	6	41.9 +57.4 49.1	6	25.8 +57.5 48.2	6	09.8 +57.6 47.3
21°	8	12.1 +57.3 50.6	7	55.6 +57.4 49.7	7	39.3 +57.5 48.8	7	23.3 +57.5 47.9	7	07.4 +57.6 47.0
22°	9	09.4 +57.3 50.3	8	53.0 +57.3 49.4	8	36.8 +57.4 48.5	8	20.8 +57.5 47.6	8	05.0 +57.6 46.7
23°	10	06.7 +57.3 50.0	9	50.3 +57.4 49.1	9	34.2 +57.4 48.2	9	18.3 +57.5 47.3	9	02.6 +57.5 46.4
24°	11	04.0 +57.2 49.7	10	47.7 +57.3 48.8	10	31.6 +57.4 47.9	10	15.8 +57.4 47.0	10	00.1 +57.6 46.1
25°	12	01.2 +57.2 49.4	11	45.0 +57.3 48.5	11	29.0 +57.4 47.6	11	13.2 +57.5 46.7	10	57.7 +57.5 45.8
26°	12	58.4 +57.2 49.1	12	42.3 +57.3 48.2	12	26.4 +57.3 47.3	12	10.7 +57.4 46.4	11	55.2 +57.5 45.6
27°	13	55.6 +57.2 48.8	13	39.6 +57.2 47.9	13	23.7 +57.4 47.0	13	08.1 +57.4 46.1	12	52.7 +57.5 45.3
28°	14	52.8 +57.2 48.4	14	36.8 +57.3 47.6	14	21.1 +57.3 46.7	14	05.5 +57.4 45.8	13	50.2 +57.5 45.0
29°	15	50.0 +57.1 48.1	15	34.1 +57.2 47.3	15	18.4 +57.3 46.4	15	02.9 +57.4 45.5	14	47.7 +57.4 44.7

Latitude 69°

Declination SAME name as Latitude

Dec	LHA 130° / 230°	LHA 131° / 229°	LHA 132° / 228°	LHA 133° / 227°	LHA 134° / 226°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°	-9 28.7 +57.7	-9 45.2 +57.7			
5°	-8 31.0 +57.6	-8 47.5 +57.7	-9 03.8 +57.8	-9 19.8 +57.9	-9 35.5 +57.9
6°	-7 33.4 +57.7	-7 49.8 +57.7	-8 06.0 +57.8	-8 21.9 +57.9	-8 37.6 +57.9
7°	-6 35.7 +57.6	-6 52.1 +57.8	-7 08.2 +57.8	-7 24.0 +57.8	-7 39.7 +58.0
8°	-5 38.1 +57.7	-5 54.3 +57.7	-6 10.4 +57.8	-6 26.2 +57.9	-6 41.7 +57.9
9°	-4 40.4 +57.7	-4 56.6 +57.7	-5 12.6 +57.8	-5 28.3 +57.9	-5 43.8 +58.0
10°	-3 42.7 +57.7	-3 58.9 +57.8	-4 14.8 +57.9	-4 30.4 +57.9	-4 45.8 +57.9
11°	-2 45.0 +57.7	-3 01.1 +57.8	-3 16.9 +57.8	-3 32.5 +57.9	-3 47.9 +58.0
12°	-1 47.3 +57.7	-2 03.3 +57.7	-2 19.1 +57.8	-2 34.6 +57.9	-2 49.9 +58.0
13°	-0 49.6 +57.6	-1 05.6 +57.8	-1 21.3 +57.9	-1 36.7 +57.9	-1 51.9 +57.9
14°	0 08.0 +57.7 48.0	-0 07.8 +57.7	-0 23.4 +57.8	-0 38.8 +57.9	-0 54.0 +58.0
15°	1 05.7 +57.7 47.7	0 49.9 +57.8 46.8	0 34.4 +57.8 45.9	0 19.1 +57.9 44.9	0 04.0 +58.0 44.0
16°	2 03.4 +57.7 47.5	1 47.7 +57.8 46.5	1 32.2 +57.9 45.6	1 17.0 +57.9 44.7	1 02.0 +58.0 43.8
17°	3 01.1 +57.7 47.2	2 45.5 +57.7 46.3	2 30.1 +57.8 45.3	2 14.9 +57.9 44.4	2 00.0 +57.9 43.5
18°	3 58.8 +57.7 46.9	3 43.2 +57.8 46.0	3 27.9 +57.8 45.1	3 12.8 +57.9 44.2	2 57.9 +58.0 43.2
19°	4 56.5 +57.7 46.6	4 41.0 +57.7 45.7	4 25.7 +57.8 44.8	4 10.7 +57.9 43.9	3 55.9 +57.9 43.0
20°	5 54.2 +57.6 46.4	5 38.7 +57.8 45.5	5 23.5 +57.8 44.5	5 08.6 +57.8 43.6	4 53.8 +58.0 42.7
21°	6 51.8 +57.7 46.1	6 36.5 +57.7 45.2	6 21.3 +57.8 44.3	6 06.4 +57.9 43.4	5 51.8 +57.9 42.5
22°	7 49.5 +57.6 45.8	7 34.2 +57.7 44.9	7 19.1 +57.8 44.0	7 04.3 +57.9 43.1	6 49.7 +58.0 42.2
23°	8 47.1 +57.7 45.5	8 31.9 +57.7 44.6	8 16.9 +57.8 43.7	8 02.2 +57.8 42.8	7 47.7 +57.9 41.9
24°	9 44.8 +57.6 45.2	9 29.6 +57.7 44.3	9 14.7 +57.8 43.5	9 00.0 +57.9 42.6	8 45.6 +57.9 41.7
25°	10 42.4 +57.6 45.0	10 27.3 +57.7 44.1	10 12.5 +57.7 43.2	9 57.9 +57.8 42.3	9 43.5 +57.9 41.4
26°	11 40.0 +57.6 44.7	11 25.0 +57.6 43.8	11 10.2 +57.8 42.9	10 55.7 +57.8 42.0	10 41.4 +57.9 41.1
27°	12 37.6 +57.5 44.4	12 22.6 +57.7 43.5	12 08.0 +57.7 42.6	11 53.5 +57.8 41.8	11 39.3 +57.9 40.9
28°	13 35.1 +57.6 44.1	13 20.3 +57.6 43.2	13 05.7 +57.7 42.4	12 51.3 +57.8 41.5	12 37.2 +57.9 40.6
29°	14 32.7 +57.5 43.8	14 17.9 +57.6 42.9	14 03.4 +57.7 42.1	13 49.1 +57.8 41.2	13 35.1 +57.8 40.3

Dec	LHA 135° / 225°	LHA 136° / 224°	LHA 137° / 223°	LHA 138° / 222°	LHA 139° / 221°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°	-9 51.0 +58.0				
6°	-8 53.0 +58.0	-9 08.2 +58.1	-9 23.1 +58.1	-9 37.8 +58.2	-9 52.1 +58.2
7°	-7 55.0 +58.0	-8 10.1 +58.0	-8 25.0 +58.2	-8 39.6 +58.3	-8 53.9 +58.3
8°	-6 57.0 +58.0	-7 12.1 +58.1	-7 26.8 +58.1	-7 41.3 +58.2	-7 55.6 +58.3
9°	-5 59.0 +58.0	-6 14.0 +58.1	-6 28.7 +58.2	-6 43.1 +58.2	-6 57.3 +58.3
10°	-5 01.0 +58.0	-5 15.9 +58.1	-5 30.5 +58.1	-5 44.9 +58.2	-5 59.0 +58.3
11°	-4 03.0 +58.1	-4 17.8 +58.1	-4 32.4 +58.2	-4 46.7 +58.3	-5 00.7 +58.3
12°	-3 04.9 +58.0	-3 19.7 +58.1	-3 34.2 +58.2	-3 48.4 +58.2	-4 02.4 +58.3
13°	-2 06.9 +58.1	-2 21.6 +58.1	-2 36.0 +58.2	-2 50.2 +58.3	-3 04.1 +58.3
14°	-1 08.8 +58.0	-1 23.5 +58.1	-1 37.8 +58.1	-1 51.9 +58.2	-2 05.8 +58.3
15°	-0 10.8 +58.0	-0 25.4 +58.2	-0 39.7 +58.2	-0 53.7 +58.3	-1 07.5 +58.4
16°	0 47.2 +58.1 42.8	0 32.8 +58.1 41.9	0 18.5 +58.2 41.0	0 04.6 +58.2 40.0	-0 09.1 +58.3
17°	1 45.3 +58.0 42.6	1 30.9 +58.1 41.6	1 16.7 +58.2 40.7	1 02.8 +58.3 39.8	0 49.2 +58.3 38.9
18°	2 43.3 +58.1 42.3	2 29.0 +58.1 41.4	2 14.9 +58.2 40.5	2 01.1 +58.2 39.6	1 47.5 +58.3 38.6
19°	3 41.4 +58.0 42.1	3 27.1 +58.1 41.1	3 13.1 +58.1 40.2	2 59.3 +58.2 39.3	2 45.8 +58.3 38.4
20°	4 39.4 +58.0 41.8	4 25.2 +58.1 40.9	4 11.2 +58.2 40.0	3 57.5 +58.3 39.1	3 44.1 +58.3 38.2
21°	5 37.4 +58.0 41.6	5 23.3 +58.1 40.6	5 09.4 +58.2 39.7	4 55.8 +58.2 38.8	4 42.4 +58.3 37.9
22°	6 35.4 +58.0 41.3	6 21.4 +58.1 40.4	6 07.6 +58.1 39.5	5 54.0 +58.2 38.6	5 40.7 +58.3 37.7
23°	7 33.4 +58.0 41.0	7 19.5 +58.0 40.1	7 05.7 +58.2 39.2	6 52.2 +58.3 38.3	6 39.0 +58.3 37.4
24°	8 31.4 +58.0 40.8	8 17.5 +58.1 39.9	8 03.9 +58.1 39.0	7 50.5 +58.2 38.1	7 37.3 +58.3 37.2
25°	9 29.4 +58.0 40.5	9 15.6 +58.0 39.6	9 02.0 +58.1 38.7	8 48.7 +58.2 37.9	8 35.6 +58.3 37.0
26°	10 27.4 +58.0 40.3	10 13.6 +58.1 39.4	10 00.1 +58.2 38.5	9 46.9 +58.2 37.6	9 33.9 +58.3 36.7
27°	11 25.4 +57.9 40.0	11 11.7 +58.0 39.1	10 58.3 +58.1 38.2	10 45.1 +58.2 37.4	10 32.2 +58.2 36.5
28°	12 23.3 +58.0 39.7	12 09.7 +58.0 38.9	11 56.4 +58.0 38.0	11 43.3 +58.1 37.1	11 30.4 +58.2 36.2
29°	13 21.3 +57.9 39.5	13 07.7 +58.0 38.6	12 54.4 +58.1 37.7	12 41.4 +58.2 36.9	12 28.6 +58.3 36.0

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Declination SAME name as Latitude

Latitude 69°

Dec	LHA 140° / 220°	LHA 141° / 219°	LHA 142° / 218°	LHA 143° / 217°	LHA 144° / 216°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°	-9 07.9 +58.3	-9 21.7 +58.5	-9 35.1 +58.5	-9 48.3 +58.5	
8°	-8 09.6 +58.4	-8 23.2 +58.4	-8 36.6 +58.4	-8 49.8 +58.6	-9 02.6 +58.6
9°	-7 11.2 +58.4	-7 24.8 +58.4	-7 38.2 +58.5	-7 51.2 +58.6	-8 04.0 +58.7
10°	-6 12.8 +58.3	-6 26.4 +58.5	-6 39.7 +58.5	-6 52.6 +58.5	-7 05.3 +58.6
11°	-5 14.5 +58.4	-5 27.9 +58.4	-5 41.2 +58.6	-5 54.1 +58.6	-6 06.7 +58.7
12°	-4 16.1 +58.4	-4 29.5 +58.4	-4 42.6 +58.5	-4 55.5 +58.6	-5 08.0 +58.6
13°	-3 17.7 +58.4	-3 31.1 +58.5	-3 44.1 +58.5	-3 56.9 +58.6	-4 09.4 +58.6
14°	-2 19.3 +58.4	-2 32.6 +58.4	-2 45.6 +58.5	-2 58.3 +58.6	-3 10.8 +58.7
15°	-1 20.9 +58.3	-1 34.2 +58.5	-1 47.1 +58.5	-1 59.7 +58.5	-2 12.1 +58.6
16°	-0 22.6 +58.4	-0 35.7 +58.4	-0 48.6 +58.5	-1 01.2 +58.6	-1 13.5 +58.7
17°	0 35.8 +58.4 37.9	0 22.7 +58.5 37.0	0 09.9 +58.6 36.1	-0 02.6 +58.6	-0 14.8 +58.7
18°	1 34.2 +58.4 37.7	1 21.2 +58.5 36.8	1 08.5 +58.5 35.8	0 56.0 +58.6 34.9	0 43.9 +58.6 34.0
19°	2 32.6 +58.4 37.5	2 19.7 +58.4 36.6	2 07.0 +58.5 35.6	1 54.6 +58.6 34.7	1 42.5 +58.7 33.8
20°	3 31.0 +58.4 37.2	3 18.1 +58.5 36.3	3 05.5 +58.5 35.4	2 53.2 +58.6 34.5	2 41.2 +58.6 33.6
21°	4 29.4 +58.3 37.0	4 16.6 +58.4 36.1	4 04.0 +58.5 35.2	3 51.8 +58.6 34.3	3 39.8 +58.7 33.4
22°	5 27.7 +58.4 36.8	5 15.0 +58.4 35.9	5 02.5 +58.5 35.0	4 50.4 +58.5 34.1	4 38.5 +58.6 33.1
23°	6 26.1 +58.4 36.5	6 13.4 +58.5 35.6	6 01.0 +58.5 34.7	5 48.9 +58.6 33.8	5 37.1 +58.6 32.9
24°	7 24.5 +58.3 36.3	7 11.9 +58.4 35.4	6 59.5 +58.5 34.5	6 47.5 +58.6 33.6	6 35.7 +58.7 32.7
25°	8 22.8 +58.4 36.1	8 10.3 +58.4 35.2	7 58.0 +58.5 34.3	7 46.1 +58.5 33.4	7 34.4 +58.6 32.5
26°	9 21.2 +58.3 35.8	9 08.7 +58.4 35.0	8 56.5 +58.5 34.1	8 44.6 +58.6 33.2	8 33.0 +58.6 32.3
27°	10 19.5 +58.3 35.6	10 07.1 +58.4 34.7	9 55.0 +58.5 33.8	9 43.2 +58.5 33.0	9 31.6 +58.6 32.1
28°	11 17.8 +58.3 35.4	11 05.5 +58.4 34.5	10 53.5 +58.4 33.6	10 41.7 +58.5 32.7	10 30.2 +58.6 31.9
29°	12 16.1 +58.3 35.1	12 03.9 +58.4 34.3	11 51.9 +58.5 33.4	11 40.2 +58.6 32.5	11 28.8 +58.6 31.6

Dec	LHA 145° / 215°	LHA 146° / 214°	LHA 147° / 213°	LHA 148° / 212°	LHA 149° / 211°
	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 15.1 +58.7	-9 27.3 +58.7	-9 39.2 +58.8	-9 50.8 +58.8	
9°	-8 16.4 +58.7	-8 28.6 +58.8	-8 40.4 +58.8	-8 52.0 +58.9	-9 03.2 +58.9
10°	-7 17.7 +58.7	-7 29.8 +58.8	-7 41.6 +58.8	-7 53.1 +58.9	-8 04.3 +59.0
11°	-6 19.0 +58.7	-6 31.0 +58.7	-6 42.8 +58.9	-6 54.2 +58.9	-7 05.3 +58.9
12°	-5 20.3 +58.7	-5 32.3 +58.8	-5 43.9 +58.8	-5 55.3 +58.9	-6 06.4 +59.0
13°	-4 21.6 +58.7	-4 33.5 +58.8	-4 45.1 +58.8	-4 56.4 +58.9	-5 07.4 +59.0
14°	-3 22.9 +58.7	-3 34.7 +58.7	-3 46.3 +58.9	-3 57.5 +58.9	-4 08.4 +58.9
15°	-2 24.2 +58.7	-2 36.0 +58.8	-2 47.4 +58.8	-2 58.6 +58.9	-3 09.5 +59.0
16°	-1 25.5 +58.8	-1 37.2 +58.8	-1 48.6 +58.9	-1 59.7 +58.9	-2 10.5 +59.0
17°	-0 26.7 +58.7	-0 38.4 +58.8	-0 49.7 +58.8	-1 00.8 +58.9	-1 11.5 +58.9
18°	0 32.0 +58.7 33.1	0 20.4 +58.8 32.1	0 09.1 +58.9 31.2	-0 01.9 +58.9	-0 12.6 +59.0
19°	1 30.7 +58.7 32.9	1 19.2 +58.8 31.9	1 08.0 +58.8 31.0	0 57.0 +58.9 30.1	0 46.4 +59.0 29.1
20°	2 29.4 +58.7 32.6	2 18.0 +58.7 31.7	2 06.8 +58.8 30.8	1 55.9 +58.9 29.9	1 45.4 +58.9 29.0
21°	3 28.1 +58.7 32.4	3 16.7 +58.8 31.5	3 05.6 +58.9 30.6	2 54.8 +58.9 29.7	2 44.3 +59.0 28.8
22°	4 26.8 +58.8 32.2	4 15.5 +58.8 31.3	4 04.5 +58.8 30.4	3 53.7 +58.9 29.5	3 43.3 +59.0 28.6
23°	5 25.6 +58.7 32.0	5 14.3 +58.8 31.1	5 03.3 +58.9 30.2	4 52.6 +58.9 29.3	4 42.3 +58.9 28.4
24°	6 24.3 +58.7 31.8	6 13.1 +58.7 30.9	6 02.2 +58.8 30.0	5 51.5 +58.9 29.1	5 41.2 +59.0 28.2
25°	7 23.0 +58.6 31.6	7 11.8 +58.8 30.7	7 01.0 +58.8 29.8	6 50.4 +58.9 28.9	6 40.2 +58.9 28.0
26°	8 21.6 +58.7 31.4	8 10.6 +58.7 30.5	7 59.8 +58.8 29.6	7 49.3 +58.9 28.7	7 39.1 +59.0 27.8
27°	9 20.3 +58.7 31.2	9 09.3 +58.8 30.3	8 58.6 +58.8 29.4	8 48.2 +58.9 28.5	8 38.1 +58.9 27.7
28°	10 19.0 +58.7 31.0	10 08.1 +58.7 30.1	9 57.4 +58.9 29.2	9 47.1 +58.9 28.3	9 37.0 +59.0 27.5
29°	11 17.7 +58.7 30.8	11 06.8 +58.8 29.9	10 56.3 +58.8 29.0	10 46.0 +58.8 28.2	10 36.0 +58.9 27.3

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Dec	LHA 150° / 210°	LHA 151° / 209°	LHA 152° / 208°	LHA 153° / 207°	LHA 154° / 206°
	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°	-9 14.1 +59.0	-9 24.7 +59.0	-9 35.0 +59.1	-9 44.9 +59.1	-9 54.6 +59.3
10°	-8 15.1 +59.0	-8 25.7 +59.1	-8 35.9 +59.2	-8 45.8 +59.2	-8 55.3 +59.2
11°	-7 16.1 +59.0	-7 26.6 +59.1	-7 36.7 +59.1	-7 46.6 +59.2	-7 56.1 +59.3
12°	-6 17.1 +59.0	-6 27.5 +59.1	-6 37.6 +59.1	-6 47.4 +59.2	-6 56.8 +59.2
13°	-5 18.1 +59.0	-5 28.4 +59.0	-5 38.5 +59.2	-5 48.2 +59.2	-5 57.6 +59.2
14°	-4 19.1 +59.1	-4 29.4 +59.1	-4 39.3 +59.1	-4 49.0 +59.2	-4 58.4 +59.3
15°	-3 20.0 +59.0	-3 30.3 +59.1	-3 40.2 +59.1	-3 49.8 +59.2	-3 59.1 +59.3
16°	-2 21.0 +59.0	-2 31.2 +59.1	-2 41.1 +59.2	-2 50.6 +59.2	-2 59.8 +59.2
17°	-1 22.0 +59.1	-1 32.1 +59.1	-1 41.9 +59.1	-1 51.4 +59.2	-2 00.6 +59.3
18°	-0 22.9 +59.0	-0 33.0 +59.1	-0 42.8 +59.2	-0 52.2 +59.2	-1 01.3 +59.2
19°	0 36.1 +59.0 28.2	0 26.1 +59.1 27.3	0 16.4 +59.1 26.4	0 07.0 +59.2 25.4	-0 02.1 +59.3
20°	1 35.1 +59.0 28.0	1 25.2 +59.0 27.1	1 15.5 +59.2 26.2	1 06.2 +59.2 25.3	0 57.2 +59.2 24.3
21°	2 34.1 +59.1 27.9	2 24.2 +59.1 26.9	2 14.7 +59.1 26.0	2 05.4 +59.2 25.1	1 56.4 +59.3 24.2
22°	3 33.2 +59.0 27.7	3 23.3 +59.1 26.8	3 13.8 +59.1 25.8	3 04.6 +59.2 24.9	2 55.7 +59.2 24.0
23°	4 32.2 +59.0 27.5	4 22.4 +59.1 26.6	4 12.9 +59.2 25.7	4 03.8 +59.2 24.8	3 54.9 +59.3 23.9
24°	5 31.2 +59.0 27.3	5 21.5 +59.1 26.4	5 12.1 +59.1 25.5	5 03.0 +59.2 24.6	4 54.2 +59.2 23.7
25°	6 30.2 +59.0 27.1	6 20.6 +59.0 26.2	6 11.2 +59.2 25.3	6 02.2 +59.2 24.4	5 53.4 +59.3 23.5
26°	7 29.2 +59.1 27.0	7 19.6 +59.1 26.1	7 10.4 +59.1 25.2	7 01.4 +59.1 24.3	6 52.7 +59.2 23.4
27°	8 28.3 +59.0 26.8	8 18.7 +59.1 25.9	8 09.5 +59.1 25.0	8 00.5 +59.2 24.1	7 51.9 +59.3 23.2
28°	9 27.3 +59.0 26.6	9 17.8 +59.0 25.7	9 08.6 +59.1 24.8	8 59.7 +59.2 23.9	8 51.2 +59.2 23.1
29°	10 26.3 +59.0 26.4	10 16.8 +59.1 25.5	10 07.7 +59.1 24.7	9 58.9 +59.2 23.8	9 50.4 +59.2 22.9

Dec	LHA 155° / 205°	LHA 156° / 204°	LHA 157° / 203°	LHA 158° / 202°	LHA 159° / 201°
	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°	-9 04.6 +59.3	-9 13.4 +59.3	-9 22.0 +59.4	-9 30.2 +59.4	-9 38.1 +59.5
11°	-8 05.3 +59.3	-8 14.1 +59.3	-8 22.6 +59.4	-8 30.8 +59.5	-8 38.6 +59.5
12°	-7 06.0 +59.3	-7 14.8 +59.4	-7 23.2 +59.4	-7 31.3 +59.4	-7 39.1 +59.5
13°	-6 06.7 +59.3	-6 15.4 +59.3	-6 23.8 +59.4	-6 31.9 +59.5	-6 39.6 +59.5
14°	-5 07.4 +59.3	-5 16.1 +59.4	-5 24.4 +59.4	-5 32.4 +59.4	-5 40.1 +59.5
15°	-4 08.1 +59.3	-4 16.7 +59.4	-4 25.0 +59.4	-4 33.0 +59.5	-4 40.6 +59.5
16°	-3 08.8 +59.3	-3 17.3 +59.3	-3 25.6 +59.4	-3 33.5 +59.4	-3 41.1 +59.5
17°	-2 09.5 +59.4	-2 18.0 +59.4	-2 26.2 +59.4	-2 34.1 +59.5	-2 41.6 +59.5
18°	-1 10.1 +59.3	-1 18.6 +59.3	-1 26.8 +59.4	-1 34.6 +59.4	-1 42.1 +59.5
19°	-0 10.8 +59.3	-0 19.3 +59.4	-0 27.4 +59.4	-0 35.2 +59.5	-0 42.6 +59.5
20°	0 48.5 +59.3 23.4	0 40.1 +59.3 22.5	0 32.0 +59.4 21.5	0 24.3 +59.5 20.6	0 16.9 +59.5 19.7
21°	1 47.8 +59.3 23.2	1 39.4 +59.4 22.3	1 31.4 +59.5 21.4	1 23.8 +59.4 20.5	1 16.4 +59.5 19.6
22°	2 47.1 +59.3 23.1	2 38.8 +59.4 22.2	2 30.9 +59.4 21.3	2 23.2 +59.5 20.3	2 15.9 +59.5 19.4
23°	3 46.4 +59.3 22.9	3 38.2 +59.3 22.0	3 30.3 +59.4 21.1	3 22.7 +59.4 20.2	3 15.4 +59.5 19.3
24°	4 45.7 +59.3 22.8	4 37.5 +59.4 21.9	4 29.7 +59.4 21.0	4 22.1 +59.5 20.1	4 14.9 +59.5 19.2
25°	5 45.0 +59.3 22.6	5 36.9 +59.3 21.7	5 29.1 +59.4 20.8	5 21.6 +59.4 19.9	5 14.4 +59.5 19.0
26°	6 44.3 +59.3 22.5	6 36.2 +59.4 21.6	6 28.5 +59.4 20.7	6 21.0 +59.5 19.8	6 13.9 +59.5 18.9
27°	7 43.6 +59.3 22.3	7 35.6 +59.3 21.4	7 27.9 +59.4 20.6	7 20.5 +59.4 19.7	7 13.4 +59.5 18.8
28°	8 42.9 +59.3 22.2	8 34.9 +59.4 21.3	8 27.3 +59.4 20.4	8 19.9 +59.5 19.5	8 12.9 +59.5 18.6
29°	9 42.2 +59.3 22.0	9 34.3 +59.3 21.1	9 26.7 +59.4 20.3	9 19.4 +59.4 19.4	9 12.4 +59.5 18.5

Dec	LHA 160° / 200°	LHA 161° / 199°	LHA 162° / 198°	LHA 163° / 197°	LHA 164° / 196°
	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°	-9 45.6 +59.5	-9 52.8 +59.6	-9 59.6 +59.6		
11°	-8 46.1 +59.6	-8 53.2 +59.6	-9 00.0 +59.6	-9 06.4 +59.6	-9 12.5 +59.7
12°	-7 46.5 +59.5	-7 53.6 +59.6	-8 00.4 +59.7	-8 06.8 +59.7	-8 12.8 +59.7
13°	-6 47.0 +59.5	-6 54.0 +59.5	-7 00.7 +59.6	-7 07.1 +59.7	-7 13.1 +59.7
14°	-5 47.5 +59.6	-5 54.5 +59.6	-6 01.1 +59.6	-6 07.4 +59.6	-6 13.4 +59.7
15°	-4 47.9 +59.5	-4 54.9 +59.6	-5 01.5 +59.6	-5 07.8 +59.7	-5 13.7 +59.7
16°	-3 48.4 +59.6	-3 55.3 +59.6	-4 01.9 +59.7	-4 08.1 +59.7	-4 14.0 +59.7
17°	-2 48.8 +59.5	-2 55.7 +59.6	-3 02.2 +59.6	-3 08.4 +59.6	-3 14.3 +59.7
18°	-1 49.3 +59.6	-1 56.1 +59.6	-2 02.6 +59.6	-2 08.8 +59.7	-2 14.6 +59.7
19°	-0 49.7 +59.5	-0 56.5 +59.6	-1 03.0 +59.7	-1 09.1 +59.7	-1 14.9 +59.7
20°	0 09.8 +59.6 18.7	0 03.1 +59.6 17.8	-0 03.3 +59.6	-0 09.4 +59.7	-0 15.2 +59.8
21°	1 09.4 +59.5 18.6	1 02.7 +59.6 17.7	0 56.3 +59.6 16.8	0 50.3 +59.6 15.8	0 44.6 +59.7 14.9
22°	2 08.9 +59.6 18.5	2 02.3 +59.5 17.6	1 55.9 +59.7 16.7	1 49.9 +59.7 15.7	1 44.3 +59.7 14.8
23°	3 08.5 +59.5 18.4	3 01.8 +59.6 17.5	2 55.6 +59.6 16.5	2 49.6 +59.7 15.6	2 44.0 +59.7 14.7
24°	4 08.0 +59.6 18.3	4 01.4 +59.6 17.3	3 55.2 +59.6 16.4	3 49.3 +59.6 15.5	3 43.7 +59.7 14.6
25°	5 07.6 +59.5 18.1	5 01.0 +59.6 17.2	4 54.8 +59.6 16.3	4 48.9 +59.7 15.4	4 43.4 +59.7 14.5
26°	6 07.1 +59.5 18.0	6 00.6 +59.6 17.1	5 54.4 +59.7 16.2	5 48.6 +59.7 15.3	5 43.1 +59.7 14.4
27°	7 06.6 +59.6 17.9	7 00.2 +59.6 17.0	6 54.1 +59.6 16.1	6 48.3 +59.6 15.2	6 42.8 +59.7 14.3
28°	8 06.2 +59.5 17.8	7 59.8 +59.6 16.9	7 53.7 +59.6 16.0	7 47.9 +59.7 15.1	7 42.5 +59.7 14.2
29°	9 05.7 +59.5 17.6	8 59.4 +59.5 16.8	8 53.3 +59.6 15.9	8 47.6 +59.7 15.0	8 42.2 +59.7 14.1

Dec	LHA 165° / 195°	LHA 166° / 194°	LHA 167° / 193°	LHA 168° / 192°	LHA 169° / 191°
	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°	-9 18.2 +59.7	-9 23.6 +59.8	-9 28.6 +59.8	-9 33.2 +59.8	-9 37.5 +59.9
12°	-8 18.5 +59.8	-8 23.8 +59.8	-8 28.8 +59.8	-8 33.4 +59.9	-8 37.6 +59.9
13°	-7 18.7 +59.7	-7 24.0 +59.8	-7 29.0 +59.9	-7 33.5 +59.8	-7 37.7 +59.8
14°	-6 19.0 +59.7	-6 24.2 +59.7	-6 29.1 +59.8	-6 33.7 +59.8	-6 37.9 +59.9
15°	-5 19.3 +59.8	-5 24.5 +59.8	-5 29.3 +59.8	-5 33.9 +59.9	-5 38.0 +59.8
16°	-4 19.5 +59.7	-4 24.7 +59.8	-4 29.5 +59.8	-4 34.0 +59.8	-4 38.2 +59.9
17°	-3 19.8 +59.8	-3 24.9 +59.7	-3 29.7 +59.8	-3 34.2 +59.8	-3 38.3 +59.9
18°	-2 20.0 +59.7	-2 25.2 +59.8	-2 29.9 +59.8	-2 34.4 +59.9	-2 38.4 +59.8
19°	-1 20.3 +59.7	-1 25.4 +59.8	-1 30.1 +59.8	-1 34.5 +59.8	-1 38.6 +59.9
20°	-0 20.6 +59.8	-0 25.6 +59.8	-0 30.3 +59.8	-0 34.7 +59.8	-0 38.7 +59.8
21°	0 39.2 +59.7 14.0	0 34.2 +59.7 13.1	0 29.5 +59.8 12.1	0 25.1 +59.9 11.2	0 21.1 +59.9 10.3
22°	1 38.9 +59.8 13.9	1 33.9 +59.8 13.0	1 29.3 +59.8 12.0	1 25.0 +59.8 11.1	1 21.0 +59.9 10.2
23°	2 38.7 +59.7 13.8	2 33.7 +59.8 12.9	2 29.1 +59.8 12.0	2 24.8 +59.8 11.0	2 20.9 +59.8 10.1
24°	3 38.4 +59.8 13.7	3 33.5 +59.8 12.8	3 28.9 +59.8 11.9	3 24.6 +59.9 11.0	3 20.7 +59.9 10.1
25°	4 38.2 +59.7 13.6	4 33.3 +59.7 12.7	4 28.7 +59.8 11.8	4 24.5 +59.8 10.9	4 20.6 +59.8 10.0
26°	5 37.9 +59.7 13.5	5 33.0 +59.8 12.6	5 28.5 +59.8 11.7	5 24.3 +59.8 10.8	5 20.4 +59.9 9.9
27°	6 37.6 +59.8 13.4	6 32.8 +59.8 12.5	6 28.3 +59.8 11.6	6 24.1 +59.9 10.7	6 20.3 +59.8 9.8
28°	7 37.4 +59.7 13.3	7 32.6 +59.7 12.4	7 28.1 +59.8 11.6	7 24.0 +59.8 10.7	7 20.1 +59.9 9.8
29°	8 37.1 +59.7 13.2	8 32.3 +59.8 12.4	8 27.9 +59.8 11.5	8 23.8 +59.8 10.6	8 20.0 +59.9 9.7

Latitude 69°

Declination SAME name as Latitude

Dec	LHA 170° / 190°	LHA 171° / 189°	LHA 172° / 188°	LHA 173° / 187°	LHA 174° / 186°
	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°	-9 41.4 +59.9	-9 44.9 +59.9	-9 48.1 +60.0	-9 50.8 +59.9	-9 53.3 +60.0
12°	-8 41.5 +59.9	-8 45.0 +59.9	-8 48.1 +59.9	-8 50.9 +59.9	-8 53.3 +59.9
13°	-7 41.6 +59.9	-7 45.1 +59.9	-7 48.2 +59.9	-7 51.0 +60.0	-7 53.4 +60.0
14°	-6 41.7 +59.9	-6 45.2 +59.9	-6 48.3 +59.9	-6 51.0 +59.9	-6 53.4 +60.0
15°	-5 41.8 +59.9	-5 45.3 +59.9	-5 48.4 +60.0	-5 51.1 +60.0	-5 53.4 +59.9
16°	-4 41.9 +59.8	-4 45.4 +59.9	-4 48.4 +59.9	-4 51.1 +59.9	-4 53.5 +60.0
17°	-3 42.1 +59.9	-3 45.5 +59.9	-3 48.5 +59.9	-3 51.2 +59.9	-3 53.5 +59.9
18°	-2 42.2 +59.9	-2 45.6 +59.9	-2 48.6 +59.9	-2 51.3 +60.0	-2 53.6 +60.0
19°	-1 42.3 +59.9	-1 45.7 +60.0	-1 48.7 +60.0	-1 51.3 +59.9	-1 53.6 +59.9
20°	-0 42.4 +59.9	-0 45.7 +59.9	-0 48.7 +59.9	-0 51.4 +60.0	-0 53.7 +60.0
21°	0 17.5 +59.9 9.3	0 14.2 +59.9 8.4	0 11.2 +59.9 7.5	0 08.6 +59.9 6.5	0 06.3 +60.0 5.6
22°	1 17.4 +59.8 9.3	1 14.1 +59.9 8.3	1 11.1 +59.9 7.4	1 08.5 +60.0 6.5	1 06.3 +59.9 5.6
23°	2 17.2 +59.9 9.2	2 14.0 +59.9 8.3	2 11.0 +60.0 7.4	2 08.5 +59.9 6.4	2 06.2 +60.0 5.5
24°	3 17.1 +59.9 9.1	3 13.9 +59.9 8.2	3 11.0 +59.9 7.3	3 08.4 +59.9 6.4	3 06.2 +59.9 5.5
25°	4 17.0 +59.9 9.1	4 13.8 +59.9 8.2	4 10.9 +59.9 7.3	4 08.3 +60.0 6.4	4 06.1 +60.0 5.5
26°	5 16.9 +59.9 9.0	5 13.7 +59.9 8.1	5 10.8 +59.9 7.2	5 08.3 +59.9 6.3	5 06.1 +59.9 5.4
27°	6 16.8 +59.9 9.0	6 13.6 +59.9 8.1	6 10.7 +60.0 7.2	6 08.2 +60.0 6.3	6 06.0 +60.0 5.4
28°	7 16.7 +59.8 8.9	7 13.5 +59.9 8.0	7 10.7 +59.9 7.1	7 08.2 +59.9 6.2	7 06.0 +60.0 5.3
29°	8 16.5 +59.9 8.8	8 13.4 +59.9 7.9	8 10.6 +59.9 7.1	8 08.1 +60.0 6.2	8 06.0 +59.9 5.3

Dec	LHA 175° / 185°	LHA 176° / 184°	LHA 177° / 183°	LHA 178° / 182°	LHA 179° / 181°
	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°	-9 55.3 +59.9	-9 57.0 +60.0	-9 58.3 +60.0	-9 59.3 +60.0	-9 59.8 +60.0
12°	-8 55.4 +60.0	-8 57.0 +60.0	-8 58.3 +60.0	-8 59.3 +60.0	-8 59.8 +60.0
13°	-7 55.4 +60.0	-7 57.0 +59.9	-7 58.3 +60.0	-7 59.3 +60.0	-7 59.8 +60.0
14°	-6 55.4 +60.0	-6 57.1 +60.0	-6 58.3 +59.9	-6 59.3 +60.0	-6 59.8 +60.0
15°	-5 55.4 +59.9	-5 57.1 +60.0	-5 58.4 +60.0	-5 59.3 +60.0	-5 59.8 +60.0
16°	-4 55.5 +60.0	-4 57.1 +60.0	-4 58.4 +60.0	-4 59.3 +60.0	-4 59.8 +60.0
17°	-3 55.5 +60.0	-3 57.1 +60.0	-3 58.4 +60.0	-3 59.3 +60.0	-3 59.8 +60.0
18°	-2 55.5 +59.9	-2 57.1 +59.9	-2 58.4 +60.0	-2 59.3 +60.0	-2 59.8 +60.0
19°	-1 55.6 +60.0	-1 57.2 +60.0	-1 58.4 +60.0	-1 59.3 +60.0	-1 59.8 +60.0
20°	-0 55.6 +60.0	-0 57.2 +60.0	-0 58.4 +60.0	-0 59.3 +60.0	-0 59.8 +60.0
21°	0 04.4 +59.9 4.7	0 02.8 +60.0 3.7	0 01.6 +60.0 2.8	0 00.7 +60.0 1.9	0 00.2 +60.0 0.9
22°	1 04.3 +60.0 4.6	1 02.8 +60.0 3.7	1 01.6 +60.0 2.8	1 00.7 +60.0 1.9	1 00.2 +60.0 0.9
23°	2 04.3 +60.0 4.6	2 02.8 +59.9 3.7	2 01.6 +59.9 2.8	2 00.7 +60.0 1.8	2 00.2 +60.0 0.9
24°	3 04.3 +60.0 4.6	3 02.7 +60.0 3.7	3 01.5 +60.0 2.7	3 00.7 +60.0 1.8	3 00.2 +60.0 0.9
25°	4 04.3 +59.9 4.5	4 02.7 +60.0 3.6	4 01.5 +60.0 2.7	4 00.7 +60.0 1.8	4 00.2 +60.0 0.9
26°	5 04.2 +60.0 4.5	5 02.7 +60.0 3.6	5 01.5 +60.0 2.7	5 00.7 +60.0 1.8	5 00.2 +60.0 0.9
27°	6 04.2 +60.0 4.5	6 02.7 +60.0 3.6	6 01.5 +60.0 2.7	6 00.7 +60.0 1.8	6 00.2 +60.0 0.9
28°	7 04.2 +59.9 4.4	7 02.7 +60.0 3.6	7 01.5 +60.0 2.7	7 00.7 +60.0 1.8	7 00.2 +60.0 0.9
29°	8 04.1 +60.0 4.4	8 02.7 +59.9 3.5	8 01.5 +60.0 2.6	8 00.7 +60.0 1.8	8 00.2 +60.0 0.9

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