

Latitude 70° - 79°

Declination SAME name as Latitude

Sight-Reduction Tables for Latitude 70° - 79°

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 70°

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°	20 00.0 +60.0 180.0	19 59.8 +60.0 178.9	19 59.2 +60.0 177.9	19 58.3 +60.0 176.8	19 57.0 +59.9 175.7
1°	21 00.0 +60.0 180.0	20 59.8 +60.0 178.9	20 59.2 +60.0 177.9	20 58.3 +60.0 176.8	20 56.9 +60.0 175.7
2°	22 00.0 +60.0 180.0	21 59.8 +60.0 178.9	21 59.2 +60.0 177.8	21 58.3 +60.0 176.8	21 56.9 +60.0 175.7
3°	23 00.0 +60.0 180.0	22 59.8 +60.0 178.9	22 59.2 +60.0 177.8	22 58.3 +59.9 176.7	22 56.9 +60.0 175.7
4°	24 00.0 +60.0 180.0	23 59.8 +60.0 178.9	23 59.2 +60.0 177.8	23 58.2 +60.0 176.7	23 56.9 +60.0 175.6
5°	25 00.0 +60.0 180.0	24 59.8 +60.0 178.9	24 59.2 +60.0 177.8	24 58.2 +60.0 176.7	24 56.9 +59.9 175.6
6°	26 00.0 +60.0 180.0	25 59.8 +60.0 178.9	25 59.2 +60.0 177.8	25 58.2 +60.0 176.7	25 56.8 +60.0 175.6
7°	27 00.0 +60.0 180.0	26 59.8 +60.0 178.9	26 59.2 +60.0 177.8	26 58.2 +60.0 176.7	26 56.8 +60.0 175.5
8°	28 00.0 +60.0 180.0	27 59.8 +60.0 178.9	27 59.2 +60.0 177.8	27 58.2 +60.0 176.6	27 56.8 +60.0 175.5
9°	29 00.0 +60.0 180.0	28 59.8 +60.0 178.9	28 59.2 +60.0 177.7	28 58.2 +60.0 176.6	28 56.8 +59.9 175.5
10°	30 00.0 +60.0 180.0	29 59.8 +60.0 178.9	29 59.2 +60.0 177.7	29 58.2 +60.0 176.6	29 56.7 +60.0 175.5
11°	31 00.0 +60.0 180.0	30 59.8 +60.0 178.9	30 59.2 +60.0 177.7	30 58.2 +59.9 176.6	30 56.7 +60.0 175.4
12°	32 00.0 +60.0 180.0	31 59.8 +60.0 178.8	31 59.2 +60.0 177.7	31 58.1 +60.0 176.5	31 56.7 +60.0 175.4
13°	33 00.0 +60.0 180.0	32 59.8 +60.0 178.8	32 59.2 +60.0 177.7	32 58.1 +60.0 176.5	32 56.7 +59.9 175.4
14°	34 00.0 +60.0 180.0	33 59.8 +60.0 178.8	33 59.2 +60.0 177.7	33 58.1 +60.0 176.5	33 56.6 +60.0 175.3
15°	35 00.0 +60.0 180.0	34 59.8 +60.0 178.8	34 59.2 +59.9 177.6	34 58.1 +60.0 176.5	34 56.6 +60.0 175.3
16°	36 00.0 +60.0 180.0	35 59.8 +60.0 178.8	35 59.1 +60.0 177.6	35 58.1 +60.0 176.4	35 56.6 +60.0 175.2
17°	37 00.0 +60.0 180.0	36 59.8 +60.0 178.8	36 59.1 +60.0 177.6	36 58.1 +60.0 176.4	36 56.6 +59.9 175.2
18°	38 00.0 +60.0 180.0	37 59.8 +60.0 178.8	37 59.1 +60.0 177.6	37 58.1 +59.9 176.4	37 56.5 +60.0 175.2
19°	39 00.0 +60.0 180.0	38 59.8 +60.0 178.8	38 59.1 +60.0 177.6	38 58.0 +60.0 176.4	38 56.5 +60.0 175.1
20°	40 00.0 +60.0 180.0	39 59.8 +60.0 178.8	39 59.1 +60.0 177.5	39 58.0 +60.0 176.3	39 56.5 +60.0 175.1
21°	41 00.0 +60.0 180.0	40 59.8 +60.0 178.8	40 59.1 +60.0 177.5	40 58.0 +60.0 176.3	40 56.5 +59.9 175.1
22°	42 00.0 +60.0 180.0	41 59.8 +60.0 178.8	41 59.1 +60.0 177.5	41 58.0 +60.0 176.3	41 56.4 +60.0 175.0
23°	43 00.0 +60.0 180.0	42 59.8 +60.0 178.7	42 59.1 +60.0 177.5	42 58.0 +60.0 176.2	42 56.4 +60.0 175.0
24°	44 00.0 +60.0 180.0	43 59.8 +60.0 178.7	43 59.1 +60.0 177.5	43 58.0 +59.9 176.2	43 56.4 +59.9 174.9
25°	45 00.0 +60.0 180.0	44 59.8 +60.0 178.7	44 59.1 +60.0 177.4	44 57.9 +60.0 176.2	44 56.3 +60.0 174.9
26°	46 00.0 +60.0 180.0	45 59.8 +60.0 178.7	45 59.1 +60.0 177.4	45 57.9 +60.0 176.1	45 56.3 +60.0 174.8
27°	47 00.0 +60.0 180.0	46 59.8 +60.0 178.7	46 59.1 +60.0 177.4	46 57.9 +60.0 176.1	46 56.3 +59.9 174.8
28°	48 00.0 +60.0 180.0	47 59.8 +60.0 178.7	47 59.1 +59.9 177.4	47 57.9 +60.0 176.0	47 56.2 +60.0 174.7
29°	49 00.0 +60.0 180.0	48 59.8 +60.0 178.7	48 59.0 +60.0 177.3	48 57.9 +59.9 176.0	48 56.2 +59.9 174.7

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	19 55.2 +60.0 174.7	19 53.1 +60.0 173.6	19 50.7 +59.9 172.6	19 47.8 +60.0 171.5	19 44.6 +59.9 170.4
1°	20 55.2 +60.0 174.6	20 53.1 +60.0 173.6	20 50.6 +60.0 172.5	20 47.8 +59.9 171.4	20 44.5 +59.9 170.4
2°	21 55.2 +59.9 174.6	21 53.1 +59.9 173.5	21 50.6 +59.9 172.5	21 47.7 +59.9 171.4	21 44.4 +59.9 170.3
3°	22 55.1 +60.0 174.6	22 53.0 +60.0 173.5	22 50.5 +59.9 172.4	22 47.6 +59.9 171.3	22 44.3 +59.9 170.2
4°	23 55.1 +60.0 174.5	23 53.0 +59.9 173.5	23 50.4 +60.0 172.4	23 47.5 +59.9 171.3	23 44.2 +59.9 170.2
5°	24 55.1 +60.0 174.5	24 52.9 +60.0 173.4	24 50.4 +59.9 172.3	24 47.4 +60.0 171.2	24 44.1 +59.9 170.1
6°	25 55.1 +59.9 174.5	25 52.9 +59.9 173.4	25 50.3 +59.9 172.3	25 47.4 +59.9 171.2	25 44.0 +59.9 170.1
7°	26 55.0 +60.0 174.4	26 52.8 +60.0 173.3	26 50.2 +60.0 172.2	26 47.3 +59.9 171.1	26 43.9 +59.9 170.0
8°	27 55.0 +59.9 174.4	27 52.8 +59.9 173.3	27 50.2 +59.9 172.2	27 47.2 +59.9 171.0	27 43.8 +59.9 169.9
9°	28 54.9 +60.0 174.4	28 52.7 +60.0 173.2	28 50.1 +59.9 172.1	28 47.1 +59.9 171.0	28 43.7 +59.9 169.9
10°	29 54.9 +60.0 174.3	29 52.7 +59.9 173.2	29 50.0 +60.0 172.0	29 47.0 +59.9 170.9	29 43.6 +59.8 169.8
11°	30 54.9 +59.9 174.3	30 52.6 +60.0 173.1	30 50.0 +59.9 172.0	30 46.9 +59.9 170.9	30 43.4 +59.9 169.7
12°	31 54.8 +60.0 174.2	31 52.6 +59.9 173.1	31 49.9 +59.9 171.9	31 46.8 +59.9 170.8	31 43.3 +59.9 169.6
13°	32 54.8 +60.0 174.2	32 52.5 +60.0 173.0	32 49.8 +60.0 171.9	32 46.7 +59.9 170.7	32 43.2 +59.9 169.6
14°	33 54.8 +59.9 174.2	33 52.5 +59.9 173.0	33 49.8 +59.9 171.8	33 46.6 +59.9 170.7	33 43.1 +59.9 169.5
15°	34 54.7 +60.0 174.1	34 52.4 +60.0 172.9	34 49.7 +59.9 171.8	34 46.5 +59.9 170.6	34 43.0 +59.8 169.4
16°	35 54.7 +59.9 174.1	35 52.4 +59.9 172.9	35 49.6 +59.9 171.7	35 46.4 +59.9 170.5	35 42.8 +59.9 169.3
17°	36 54.6 +60.0 174.0	36 52.3 +59.9 172.8	36 49.5 +59.9 171.6	36 46.3 +59.9 170.4	36 42.7 +59.9 169.2
18°	37 54.6 +60.0 174.0	37 52.2 +60.0 172.8	37 49.4 +60.0 171.6	37 46.2 +59.9 170.4	37 42.6 +59.8 169.2
19°	38 54.6 +59.9 173.9	38 52.2 +59.9 172.7	38 49.4 +59.9 171.5	38 46.1 +59.9 170.3	38 42.4 +59.9 169.1
20°	39 54.5 +60.0 173.9	39 52.1 +59.9 172.6	39 49.3 +59.9 171.4	39 46.0 +59.9 170.2	39 42.3 +59.8 169.0
21°	40 54.5 +59.9 173.8	40 52.0 +60.0 172.6	40 49.2 +59.9 171.4	40 45.9 +59.9 170.1	40 42.1 +59.9 168.9
22°	41 54.4 +60.0 173.8	41 52.0 +59.9 172.5	41 49.1 +59.9 171.3	41 45.8 +59.8 170.0	41 42.0 +59.8 168.8
23°	42 54.4 +59.9 173.7	42 51.9 +59.9 172.5	42 49.0 +59.9 171.2	42 45.6 +59.9 170.0	42 41.8 +59.9 168.7
24°	43 54.3 +60.0 173.7	43 51.8 +60.0 172.4	43 48.9 +59.9 171.1	43 45.5 +59.9 169.9	43 41.7 +59.8 168.6
25°	44 54.3 +59.9 173.6	44 51.8 +59.9 172.3	44 48.8 +59.9 171.0	44 45.4 +59.8 169.8	44 41.5 +59.8 168.5
26°	45 54.2 +60.0 173.5	45 51.7 +59.9 172.2	45 48.7 +59.9 171.0	45 45.2 +59.9 169.7	45 41.3 +59.8 168.4
27°	46 54.2 +59.9 173.5	46 51.6 +59.9 172.2	46 48.6 +59.9 170.9	46 45.1 +59.8 169.6	46 41.1 +59.9 168.3
28°	47 54.1 +59.9 173.4	47 51.5 +59.9 172.1	47 48.5 +59.8 170.8	47 44.9 +59.9 169.5	47 41.0 +59.8 168.2
29°	48 54.0 +60.0 173.3	48 51.4 +59.9 172.0	48 48.3 +59.9 170.7	48 44.8 +59.8 169.4	48 40.8 +59.8 168.0

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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°	19 41.0 +59.9 169.4	19 37.0 +59.9 168.3	19 32.7 +59.8 167.3	19 28.0 +59.8 166.2	19 22.9 +59.8 165.1
1°	20 40.9 +59.9 169.3	20 36.9 +59.8 168.2	20 32.5 +59.9 167.2	20 27.8 +59.8 166.1	20 22.7 +59.7 165.0
2°	21 40.8 +59.8 169.2	21 36.7 +59.9 168.2	21 32.4 +59.8 167.1	21 27.6 +59.8 166.0	21 22.4 +59.8 165.0
3°	22 40.6 +59.9 169.2	22 36.6 +59.8 168.1	22 32.2 +59.8 167.0	22 27.4 +59.8 165.9	22 22.2 +59.8 164.9
4°	23 40.5 +59.9 169.1	23 36.4 +59.9 168.0	23 32.0 +59.8 166.9	23 27.2 +59.7 165.8	23 22.0 +59.7 164.8
5°	24 40.4 +59.9 169.0	24 36.3 +59.8 167.9	24 31.8 +59.8 166.8	24 26.9 +59.8 165.7	24 21.7 +59.8 164.7
6°	25 40.3 +59.8 169.0	25 36.1 +59.9 167.9	25 31.6 +59.8 166.8	25 26.7 +59.8 165.7	25 21.5 +59.7 164.6
7°	26 40.1 +59.9 168.9	26 36.0 +59.8 167.8	26 31.4 +59.8 166.7	26 26.5 +59.8 165.6	26 21.2 +59.7 164.5
8°	27 40.0 +59.9 168.8	27 35.8 +59.9 167.7	27 31.2 +59.9 166.6	27 26.3 +59.8 165.5	27 20.9 +59.8 164.4
9°	28 39.9 +59.8 168.7	28 35.7 +59.8 167.6	28 31.1 +59.8 166.5	28 26.1 +59.7 165.4	28 20.7 +59.7 164.2
10°	29 39.7 +59.9 168.7	29 35.5 +59.8 167.5	29 30.9 +59.8 166.4	29 25.8 +59.8 165.3	29 20.4 +59.7 164.1
11°	30 39.6 +59.8 168.6	30 35.3 +59.8 167.4	30 30.7 +59.7 166.3	30 25.6 +59.8 165.2	30 20.1 +59.8 164.0
12°	31 39.4 +59.9 168.5	31 35.1 +59.9 167.3	31 30.4 +59.8 166.2	31 25.4 +59.7 165.1	31 19.9 +59.7 163.9
13°	32 39.3 +59.8 168.4	32 35.0 +59.8 167.3	32 30.2 +59.8 166.1	32 25.1 +59.8 165.0	32 19.6 +59.7 163.8
14°	33 39.1 +59.9 168.3	33 34.8 +59.8 167.2	33 30.0 +59.8 166.0	33 24.9 +59.7 164.8	33 19.3 +59.7 163.7
15°	34 39.0 +59.8 168.2	34 34.6 +59.8 167.1	34 29.8 +59.8 165.9	34 24.6 +59.7 164.7	34 19.0 +59.7 163.6
16°	35 38.8 +59.9 168.1	35 34.4 +59.8 167.0	35 29.6 +59.7 165.8	35 24.3 +59.8 164.6	35 18.7 +59.7 163.4
17°	36 38.7 +59.8 168.1	36 34.2 +59.8 166.9	36 29.3 +59.8 165.7	36 24.1 +59.7 164.5	36 18.4 +59.6 163.3
18°	37 38.5 +59.8 168.0	37 34.0 +59.8 166.8	37 29.1 +59.8 165.6	37 23.8 +59.7 164.4	37 18.0 +59.7 163.2
19°	38 38.3 +59.8 167.9	38 33.8 +59.8 166.7	38 28.9 +59.7 165.5	38 23.5 +59.7 164.3	38 17.7 +59.7 163.1
20°	39 38.1 +59.9 167.8	39 33.6 +59.8 166.6	39 28.6 +59.7 165.3	39 23.2 +59.7 164.1	39 17.4 +59.6 162.9
21°	40 38.0 +59.8 167.7	40 33.4 +59.7 166.4	40 28.3 +59.8 165.2	40 22.9 +59.7 164.0	40 17.0 +59.7 162.8
22°	41 37.8 +59.8 167.6	41 33.1 +59.8 166.3	41 28.1 +59.7 165.1	41 22.6 +59.7 163.9	41 16.7 +59.6 162.6
23°	42 37.6 +59.8 167.5	42 32.9 +59.8 166.2	42 27.8 +59.7 165.0	42 22.3 +59.6 163.7	42 16.3 +59.6 162.5
24°	43 37.4 +59.8 167.3	43 32.7 +59.7 166.1	43 27.5 +59.7 164.8	43 21.9 +59.7 163.6	43 15.9 +59.6 162.3
25°	44 37.2 +59.8 167.2	44 32.4 +59.8 166.0	44 27.2 +59.7 164.7	44 21.6 +59.6 163.4	44 15.5 +59.6 162.2
26°	45 37.0 +59.7 167.1	45 32.2 +59.7 165.8	45 26.9 +59.7 164.6	45 21.2 +59.7 163.3	45 15.1 +59.6 162.0
27°	46 36.7 +59.8 167.0	46 31.9 +59.7 165.7	46 26.6 +59.7 164.4	46 20.9 +59.6 163.1	46 14.7 +59.6 161.8
28°	47 36.5 +59.8 166.9	47 31.6 +59.7 165.6	47 26.3 +59.6 164.3	47 20.5 +59.6 163.0	47 14.3 +59.5 161.7
29°	48 36.3 +59.7 166.7	48 31.3 +59.7 165.4	48 25.9 +59.7 164.1	48 20.1 +59.6 162.8	48 13.8 +59.5 161.5

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°	19 17.5 +59.7 164.1	19 11.7 +59.6 163.0	19 05.5 +59.6 162.0	18 59.0 +59.6 160.9	18 52.1 +59.6 159.9
1°	20 17.2 +59.7 164.0	20 11.3 +59.7 162.9	20 05.1 +59.7 161.9	19 58.6 +59.6 160.8	19 51.7 +59.5 159.8
2°	21 16.9 +59.8 163.9	21 11.0 +59.7 162.8	21 04.8 +59.7 161.8	20 58.2 +59.6 160.7	20 51.2 +59.6 159.6
3°	22 16.7 +59.7 163.8	22 10.7 +59.7 162.7	22 04.5 +59.6 161.6	21 57.8 +59.6 160.6	21 50.8 +59.6 159.5
4°	23 16.4 +59.7 163.7	23 10.4 +59.7 162.6	23 04.1 +59.6 161.5	22 57.4 +59.6 160.4	22 50.4 +59.5 159.4
5°	24 16.1 +59.7 163.6	24 10.1 +59.7 162.5	24 03.7 +59.7 161.4	23 57.0 +59.6 160.3	23 49.9 +59.6 159.2
6°	25 15.8 +59.7 163.5	25 09.8 +59.6 162.4	25 03.4 +59.6 161.3	24 56.6 +59.6 160.2	24 49.5 +59.5 159.1
7°	26 15.5 +59.7 163.4	26 09.4 +59.7 162.3	26 03.0 +59.6 161.2	25 56.2 +59.6 160.1	25 49.0 +59.5 159.0
8°	27 15.2 +59.7 163.2	27 09.1 +59.7 162.1	27 02.6 +59.6 161.0	26 55.8 +59.5 159.9	26 48.5 +59.6 158.8
9°	28 14.9 +59.7 163.1	28 08.8 +59.6 162.0	28 02.2 +59.7 160.9	27 55.3 +59.6 159.8	27 48.1 +59.5 158.7
10°	29 14.6 +59.7 163.0	29 08.4 +59.7 161.9	29 01.9 +59.6 160.8	28 54.9 +59.6 159.7	28 47.6 +59.5 158.5
11°	30 14.3 +59.7 162.9	30 08.1 +59.6 161.8	30 01.5 +59.6 160.6	29 54.5 +59.5 159.5	29 47.1 +59.5 158.4
12°	31 14.0 +59.7 162.8	31 07.7 +59.6 161.6	31 01.1 +59.5 160.5	30 54.0 +59.6 159.4	30 46.6 +59.5 158.2
13°	32 13.7 +59.6 162.7	32 07.3 +59.7 161.5	32 00.6 +59.6 160.4	31 53.6 +59.5 159.2	31 46.1 +59.5 158.1
14°	33 13.3 +59.7 162.5	33 07.0 +59.6 161.4	33 00.2 +59.6 160.2	32 53.1 +59.5 159.1	32 45.6 +59.4 157.9
15°	34 13.0 +59.6 162.4	34 06.6 +59.6 161.2	33 59.8 +59.5 160.1	33 52.6 +59.5 158.9	33 45.0 +59.5 157.8
16°	35 12.6 +59.7 162.3	35 06.2 +59.6 161.1	34 59.3 +59.6 159.9	34 52.1 +59.5 158.8	34 44.5 +59.4 157.6
17°	36 12.3 +59.6 162.1	36 05.8 +59.6 161.0	35 58.9 +59.5 159.8	35 51.6 +59.5 158.6	35 43.9 +59.4 157.4
18°	37 11.9 +59.6 162.0	37 05.4 +59.5 160.8	36 58.4 +59.5 159.6	36 51.1 +59.4 158.5	36 43.3 +59.5 157.3
19°	38 11.5 +59.6 161.9	38 04.9 +59.6 160.7	37 57.9 +59.6 159.5	37 50.5 +59.5 158.3	37 42.8 +59.4 157.1
20°	39 11.1 +59.6 161.7	39 04.5 +59.6 160.5	38 57.5 +59.4 159.3	38 50.0 +59.4 158.1	38 42.2 +59.3 156.9
21°	40 10.7 +59.6 161.6	40 04.1 +59.5 160.4	39 56.9 +59.5 159.1	39 49.4 +59.5 157.9	39 41.5 +59.4 156.7
22°	41 10.3 +59.6 161.4	41 03.6 +59.5 160.2	40 56.4 +59.5 159.0	40 48.9 +59.4 157.8	40 40.9 +59.3 156.5
23°	42 09.9 +59.6 161.3	42 03.1 +59.5 160.0	41 55.9 +59.4 158.8	41 48.3 +59.3 157.6	41 40.2 +59.3 156.3
24°	43 09.5 +59.5 161.1	43 02.6 +59.5 159.8	42 55.3 +59.5 158.6	42 47.6 +59.4 157.4	42 39.5 +59.3 156.1
25°	44 09.0 +59.6 160.9	44 02.1 +59.5 159.7	43 54.8 +59.4 158.4	43 47.0 +59.4 157.2	43 38.8 +59.3 155.9
26°	45 08.6 +59.5 160.7	45 01.6 +59.4 159.5	44 54.2 +59.4 158.2	44 46.4 +59.3 157.0	44 38.1 +59.3 155.7
27°	46 08.1 +59.5 160.6	46 01.0 +59.5 159.3	45 53.6 +59.3 158.0	45 45.7 +59.3 156.8	45 37.4 +59.2 155.5
28°	47 07.6 +59.5 160.4	47 00.5 +59.4 159.1	46 52.9 +59.4 157.8	46 45.0 +59.2 156.5	46 36.6 +59.2 155.3
29°	48 07.1 +59.4 160.2	47 59.9 +59.4 158.9	47 52.3 +59.3 157.6	47 44.2 +59.3 156.3	47 35.8 +59.1 155.0

Declination SAME name as Latitude

Latitude 70°

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°	18 44.8 +59.6 158.8	18 37.2 +59.5 157.8	18 29.3 +59.5 156.7	18 21.0 +59.4 155.7	18 12.4 +59.4 154.6
1°	19 44.4 +59.5 158.7	19 36.7 +59.5 157.6	19 28.8 +59.4 156.6	19 20.4 +59.4 155.5	19 11.8 +59.3 154.5
2°	20 43.9 +59.5 158.6	20 36.2 +59.5 157.5	20 28.2 +59.4 156.4	20 19.8 +59.4 155.4	20 11.1 +59.3 154.3
3°	21 43.4 +59.5 158.4	21 35.7 +59.5 157.4	21 27.6 +59.5 156.3	21 19.2 +59.4 155.2	21 10.4 +59.4 154.2
4°	22 42.9 +59.6 158.3	22 35.2 +59.4 157.2	22 27.1 +59.4 156.2	22 18.6 +59.4 155.1	22 09.8 +59.3 154.0
5°	23 42.5 +59.5 158.2	23 34.6 +59.5 157.1	23 26.5 +59.4 156.0	23 18.0 +59.3 154.9	23 09.1 +59.3 153.9
6°	24 42.0 +59.5 158.0	24 34.1 +59.5 156.9	24 25.9 +59.4 155.8	24 17.3 +59.4 154.8	24 08.4 +59.3 153.7
7°	25 41.5 +59.4 157.9	25 33.6 +59.4 156.8	25 25.3 +59.4 155.7	25 16.7 +59.3 154.6	25 07.7 +59.3 153.5
8°	26 40.9 +59.5 157.7	26 33.0 +59.4 156.6	26 24.7 +59.3 155.5	26 16.0 +59.3 154.4	26 07.0 +59.2 153.3
9°	27 40.4 +59.5 157.6	27 32.4 +59.4 156.5	27 24.0 +59.4 155.4	27 15.3 +59.3 154.3	27 06.2 +59.3 153.2
10°	28 39.9 +59.5 157.4	28 31.8 +59.4 156.3	28 23.4 +59.4 155.2	28 14.6 +59.3 154.1	28 05.5 +59.2 153.0
11°	29 39.4 +59.4 157.3	29 31.2 +59.4 156.2	29 22.8 +59.3 155.0	29 13.9 +59.3 153.9	29 04.7 +59.3 152.8
12°	30 38.8 +59.4 157.1	30 30.6 +59.4 156.0	30 22.1 +59.3 154.9	30 13.2 +59.3 153.7	30 04.0 +59.2 152.6
13°	31 38.2 +59.5 157.0	31 30.0 +59.4 155.8	31 21.4 +59.3 154.7	31 12.5 +59.2 153.6	31 03.2 +59.2 152.4
14°	32 37.7 +59.4 156.8	32 29.4 +59.3 155.7	32 20.7 +59.3 154.5	32 11.7 +59.3 153.4	32 02.4 +59.1 152.3
15°	33 37.1 +59.4 156.6	33 28.7 +59.4 155.5	33 20.0 +59.3 154.3	33 11.0 +59.2 153.2	33 01.5 +59.2 152.1
16°	34 36.5 +59.4 156.5	34 28.1 +59.3 155.3	34 19.3 +59.3 154.2	34 10.2 +59.2 153.0	34 00.7 +59.1 151.9
17°	35 35.9 +59.3 156.3	35 27.4 +59.3 155.1	35 18.6 +59.2 154.0	35 09.4 +59.2 152.8	34 59.8 +59.2 151.7
18°	36 35.2 +59.4 156.1	36 26.7 +59.3 154.9	36 17.8 +59.3 153.8	36 08.6 +59.1 152.6	35 59.0 +59.1 151.4
19°	37 34.6 +59.3 155.9	37 26.0 +59.3 154.7	37 17.1 +59.2 153.6	37 07.7 +59.2 152.4	36 58.1 +59.0 151.2
20°	38 33.9 +59.3 155.7	38 25.3 +59.2 154.5	38 16.3 +59.2 153.4	38 06.9 +59.1 152.2	37 57.1 +59.1 151.0
21°	39 33.2 +59.3 155.5	39 24.5 +59.3 154.3	39 15.5 +59.1 153.1	39 06.0 +59.1 152.0	38 56.2 +59.0 150.8
22°	40 32.5 +59.3 155.3	40 23.8 +59.2 154.1	40 14.6 +59.2 152.9	40 05.1 +59.1 151.7	39 55.2 +59.0 150.5
23°	41 31.8 +59.2 155.1	41 23.0 +59.2 153.9	41 13.8 +59.1 152.7	41 04.2 +59.0 151.5	40 54.2 +58.9 150.3
24°	42 31.0 +59.3 154.9	42 22.2 +59.1 153.7	42 12.9 +59.0 152.5	42 03.2 +59.0 151.3	41 53.1 +59.0 150.1
25°	43 30.3 +59.2 154.7	43 21.3 +59.1 153.5	43 11.9 +59.1 152.2	43 02.2 +59.0 151.0	42 52.1 +58.9 149.8
26°	44 29.5 +59.2 154.5	44 20.4 +59.1 153.2	44 11.0 +59.0 152.0	44 01.2 +58.9 150.8	43 51.0 +58.8 149.5
27°	45 28.7 +59.1 154.2	45 19.5 +59.1 153.0	45 10.0 +59.0 151.7	45 00.1 +58.9 150.5	44 49.8 +58.8 149.3
28°	46 27.8 +59.1 154.0	46 18.6 +59.0 152.7	46 09.0 +58.9 151.5	45 59.0 +58.9 150.2	45 48.6 +58.8 149.0
29°	47 26.9 +59.1 153.7	47 17.6 +59.0 152.5	47 07.9 +58.9 151.2	46 57.9 +58.8 150.0	46 47.4 +58.7 148.7

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 03.5 +59.3 153.6	17 54.2 +59.2 152.6	17 44.6 +59.2 151.5	17 34.6 +59.2 150.5	17 24.3 +59.1 149.5
1°	19 02.8 +59.3 153.4	18 53.4 +59.3 152.4	18 43.8 +59.1 151.4	18 33.8 +59.1 150.3	18 23.4 +59.1 149.3
2°	20 02.1 +59.2 153.3	19 52.7 +59.2 152.2	19 42.9 +59.2 151.2	19 32.9 +59.1 150.1	19 22.5 +59.1 149.1
3°	21 01.3 +59.3 153.1	20 51.9 +59.2 152.1	20 42.1 +59.2 151.0	20 32.0 +59.1 150.0	20 21.6 +59.0 148.9
4°	22 00.6 +59.3 153.0	21 51.1 +59.2 151.9	21 41.3 +59.1 150.8	21 31.1 +59.1 149.8	21 20.6 +59.0 148.7
5°	22 59.9 +59.2 152.8	22 50.3 +59.2 151.7	22 40.4 +59.2 150.6	22 30.2 +59.1 149.6	22 19.6 +59.1 148.5
6°	23 59.1 +59.3 152.6	23 49.5 +59.2 151.5	23 39.6 +59.1 150.5	23 29.3 +59.0 149.4	23 18.7 +59.0 148.3
7°	24 58.4 +59.2 152.4	24 48.7 +59.2 151.4	24 38.7 +59.1 150.3	24 28.3 +59.1 149.2	24 17.7 +59.0 148.1
8°	25 57.6 +59.2 152.3	25 47.9 +59.1 151.2	25 37.8 +59.1 150.1	25 27.4 +59.0 149.0	25 16.7 +58.9 147.9
9°	26 56.8 +59.2 152.1	26 47.0 +59.2 151.0	26 36.9 +59.1 149.9	26 26.4 +59.0 148.8	26 15.6 +59.0 147.7
10°	27 56.0 +59.2 151.9	27 46.2 +59.1 150.8	27 36.0 +59.0 149.7	27 25.4 +59.0 148.6	27 14.6 +58.9 147.5
11°	28 55.2 +59.1 151.7	28 45.3 +59.1 150.6	28 35.0 +59.1 149.5	28 24.4 +59.0 148.4	28 13.5 +58.9 147.3
12°	29 54.3 +59.2 151.5	29 44.4 +59.1 150.4	29 34.1 +59.0 149.3	29 23.4 +59.0 148.2	29 12.4 +58.9 147.1
13°	30 53.5 +59.1 151.3	30 43.5 +59.0 150.2	30 33.1 +59.0 149.1	30 22.4 +58.9 148.0	30 11.3 +58.9 146.9
14°	31 52.6 +59.1 151.1	31 42.5 +59.1 150.0	31 32.1 +59.0 148.9	31 21.3 +59.0 147.8	31 10.2 +58.9 146.6
15°	32 51.7 +59.1 150.9	32 41.6 +59.0 149.8	32 31.1 +59.0 148.7	32 20.3 +58.8 147.5	32 09.1 +58.8 146.4
16°	33 50.8 +59.1 150.7	33 40.6 +59.0 149.6	33 30.1 +58.9 148.4	33 19.1 +58.9 147.3	33 07.9 +58.8 146.2
17°	34 49.9 +59.1 150.5	34 39.6 +59.0 149.4	34 29.0 +58.9 148.2	34 18.0 +58.9 147.1	34 06.7 +58.8 145.9
18°	35 49.0 +59.0 150.3	35 38.6 +59.0 149.1	35 27.9 +58.9 148.0	35 16.9 +58.8 146.8	35 05.5 +58.7 145.7
19°	36 48.0 +59.0 150.1	36 37.6 +58.9 148.9	36 26.8 +58.9 147.7	36 15.7 +58.8 146.6	36 04.2 +58.7 145.5
20°	37 47.0 +59.0 149.8	37 36.5 +58.9 148.7	37 25.7 +58.8 147.5	37 14.5 +58.7 146.3	37 02.9 +58.7 145.2
21°	38 46.0 +58.9 149.6	38 35.4 +58.9 148.4	38 24.5 +58.8 147.3	38 13.2 +58.7 146.1	38 01.6 +58.6 144.9
22°	39 44.9 +58.9 149.4	39 34.3 +58.8 148.2	39 23.3 +58.7 147.0	39 11.9 +58.7 145.8	39 00.2 +58.6 144.7
23°	40 43.8 +58.9 149.1	40 33.1 +58.8 147.9	40 22.0 +58.8 146.7	40 10.6 +58.6 145.6	39 58.8 +58.6 144.4
24°	41 42.7 +58.9 148.9	41 31.9 +58.8 147.7	41 20.8 +58.6 146.5	41 09.2 +58.6 145.3	40 57.4 +58.5 144.1
25°	42 41.6 +58.8 148.6	42 30.7 +58.7 147.4	42 19.4 +58.7 146.2	42 07.8 +58.6 145.0	41 55.9 +58.5 143.8
26°	43 40.4 +58.7 148.3	43 29.4 +58.7 147.1	43 18.1 +58.6 145.9	43 06.4 +58.5 144.7	42 54.4 +58.4 143.5
27°	44 39.1 +58.8 148.0	44 28.1 +58.6 146.8	44 16.7 +58.5 145.6	44 04.9 +58.5 144.4	43 52.8 +58.3 143.2
28°	45 37.9 +58.6 147.7	45 26.7 +58.6 146.5	45 15.2 +58.5 145.3	45 03.4 +58.4 144.1	44 51.1 +58.3 142.9
29°	46 36.5 +58.7 147.4	46 25.3 +58.5 146.2	46 13.7 +58.5 145.0	46 01.8 +58.3 143.7	45 49.4 +58.3 142.5

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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°	17 13.8 +59.0 148.4	17 02.9 +58.9 147.4	16 51.7 +58.9 146.4	16 40.1 +58.9 145.4	16 28.3 +58.8 144.3
1°	18 12.8 +59.0 148.2	18 01.8 +59.0 147.2	17 50.6 +58.9 146.2	17 39.0 +58.8 145.1	17 27.1 +58.8 144.1
2°	19 11.8 +59.0 148.1	19 00.8 +58.9 147.0	18 49.5 +58.8 146.0	18 37.8 +58.8 144.9	18 25.9 +58.7 143.9
3°	20 10.8 +59.0 147.9	19 59.7 +59.0 146.8	19 48.3 +58.9 145.8	19 36.6 +58.9 144.7	19 24.6 +58.8 143.7
4°	21 09.8 +59.0 147.7	20 58.7 +58.9 146.6	20 47.2 +58.9 145.6	20 35.5 +58.7 144.5	20 23.4 +58.7 143.5
5°	22 08.8 +58.9 147.5	21 57.6 +58.9 146.4	21 46.1 +58.8 145.4	21 34.2 +58.8 144.3	21 22.1 +58.7 143.3
6°	23 07.7 +59.0 147.3	22 56.5 +58.9 146.2	22 44.9 +58.8 145.1	22 33.0 +58.8 144.1	22 20.8 +58.7 143.0
7°	24 06.7 +58.9 147.1	23 55.4 +58.8 146.0	23 43.7 +58.8 144.9	23 31.8 +58.7 143.9	23 19.5 +58.7 142.8
8°	25 05.6 +58.9 146.9	24 54.2 +58.9 145.8	24 42.5 +58.8 144.7	24 30.5 +58.7 143.6	24 18.2 +58.7 142.6
9°	26 04.5 +58.9 146.6	25 53.1 +58.8 145.6	25 41.3 +58.8 144.5	25 29.2 +58.7 143.4	25 16.9 +58.6 142.4
10°	27 03.4 +58.9 146.4	26 51.9 +58.8 145.3	26 40.1 +58.7 144.3	26 27.9 +58.7 143.2	26 15.5 +58.6 142.1
11°	28 02.3 +58.8 146.2	27 50.7 +58.8 145.1	27 38.8 +58.7 144.0	27 26.6 +58.7 143.0	27 14.1 +58.6 141.9
12°	29 01.1 +58.9 146.0	28 49.5 +58.8 144.9	28 37.5 +58.7 143.8	28 25.3 +58.6 142.7	28 12.7 +58.5 141.6
13°	30 00.0 +58.8 145.8	29 48.3 +58.7 144.7	29 36.2 +58.7 143.6	29 23.9 +58.6 142.5	29 11.2 +58.6 141.4
14°	30 58.8 +58.8 145.5	30 47.0 +58.7 144.4	30 34.9 +58.6 143.3	30 22.5 +58.6 142.2	30 09.8 +58.5 141.1
15°	31 57.6 +58.7 145.3	31 45.7 +58.7 144.2	31 33.5 +58.7 143.1	31 21.1 +58.5 142.0	31 08.3 +58.4 140.9
16°	32 56.3 +58.7 145.1	32 44.4 +58.6 143.9	32 32.2 +58.5 142.8	32 19.6 +58.5 141.7	32 06.7 +58.5 140.6
17°	33 55.0 +58.7 144.8	33 43.0 +58.7 143.7	33 30.7 +58.6 142.6	33 18.1 +58.5 141.5	33 05.2 +58.4 140.3
18°	34 53.7 +58.7 144.6	34 41.7 +58.6 143.4	34 29.3 +58.5 142.3	34 16.6 +58.4 141.2	34 03.6 +58.3 140.1
19°	35 52.4 +58.6 144.3	35 40.3 +58.5 143.2	35 27.8 +58.5 142.0	35 15.0 +58.4 140.9	35 01.9 +58.3 139.8
20°	36 51.0 +58.6 144.0	36 38.8 +58.5 142.9	36 26.3 +58.4 141.8	36 13.4 +58.4 140.6	36 00.2 +58.3 139.5
21°	37 49.6 +58.6 143.8	37 37.3 +58.5 142.6	37 24.7 +58.4 141.5	37 11.8 +58.3 140.3	36 58.5 +58.2 139.2
22°	38 48.2 +58.5 143.5	38 35.8 +58.4 142.3	38 23.1 +58.4 141.2	38 10.1 +58.3 140.0	37 56.7 +58.2 138.9
23°	39 46.7 +58.5 143.2	39 34.2 +58.4 142.0	39 21.5 +58.3 140.9	39 08.4 +58.2 139.7	38 54.9 +58.2 138.6
24°	40 45.2 +58.4 142.9	40 32.6 +58.4 141.7	40 19.8 +58.2 140.6	40 06.6 +58.1 139.4	39 53.1 +58.0 138.3
25°	41 43.6 +58.4 142.6	41 31.0 +58.3 141.4	41 18.0 +58.2 140.3	41 04.7 +58.1 139.1	40 51.1 +58.1 137.9
26°	42 42.0 +58.3 142.3	42 29.3 +58.2 141.1	42 16.2 +58.2 139.9	42 02.8 +58.1 138.8	41 49.2 +57.9 137.6
27°	43 40.3 +58.3 142.0	43 27.5 +58.2 140.8	43 14.4 +58.0 139.6	43 00.9 +58.0 138.4	42 47.1 +57.9 137.2
28°	44 38.6 +58.2 141.6	44 25.7 +58.1 140.4	44 12.4 +58.1 139.3	43 58.9 +57.9 138.1	43 45.0 +57.8 136.9
29°	45 36.8 +58.1 141.3	45 23.8 +58.0 140.1	45 10.5 +57.9 138.9	44 56.8 +57.9 137.7	44 42.8 +57.8 136.5

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	16 16.2 +58.7 143.3	16 03.8 +58.7 142.3	15 51.1 +58.6 141.3	15 38.1 +58.6 140.3	15 24.9 +58.4 139.2
1°	17 14.9 +58.7 143.1	17 02.5 +58.6 142.1	16 49.7 +58.6 141.0	16 36.7 +58.5 140.0	16 23.3 +58.5 139.0
2°	18 13.6 +58.7 142.9	18 01.1 +58.7 141.8	17 48.3 +58.6 140.8	17 35.2 +58.5 139.8	17 21.8 +58.5 138.8
3°	19 12.3 +58.7 142.7	18 59.8 +58.6 141.6	18 46.9 +58.5 140.6	18 33.7 +58.5 139.6	18 20.3 +58.4 138.5
4°	20 11.0 +58.7 142.4	19 58.4 +58.6 141.4	19 45.4 +58.6 140.4	19 32.2 +58.5 139.3	19 18.7 +58.4 138.3
5°	21 09.7 +58.6 142.2	20 57.0 +58.6 141.2	20 44.0 +58.5 140.1	20 30.7 +58.4 139.1	20 17.1 +58.4 138.1
6°	22 08.3 +58.7 142.0	21 55.6 +58.5 140.9	21 42.5 +58.5 139.9	21 29.1 +58.5 138.9	21 15.5 +58.3 137.8
7°	23 07.0 +58.6 141.8	22 54.1 +58.6 140.7	22 41.0 +58.5 139.7	22 27.6 +58.4 138.6	22 13.8 +58.4 137.6
8°	24 05.6 +58.6 141.5	23 52.7 +58.5 140.5	23 39.5 +58.4 139.4	23 26.0 +58.4 138.4	23 12.2 +58.3 137.3
9°	25 04.2 +58.5 141.3	24 51.2 +58.5 140.2	24 37.9 +58.4 139.2	24 24.4 +58.3 138.1	24 10.5 +58.3 137.1
10°	26 02.7 +58.6 141.0	25 49.7 +58.5 140.0	25 36.3 +58.4 138.9	25 22.7 +58.3 137.9	25 08.8 +58.3 136.8
11°	27 01.3 +58.5 140.8	26 48.2 +58.4 139.7	26 34.7 +58.4 138.7	26 21.0 +58.4 137.6	26 07.1 +58.2 136.5
12°	27 59.8 +58.5 140.6	27 46.6 +58.4 139.5	27 33.1 +58.4 138.4	27 19.4 +58.2 137.3	27 05.3 +58.2 136.3
13°	28 58.3 +58.4 140.3	28 45.0 +58.4 139.2	28 31.5 +58.3 138.1	28 17.6 +58.3 137.1	28 03.5 +58.2 136.0
14°	29 56.7 +58.5 140.0	29 43.4 +58.4 138.9	29 29.8 +58.3 137.9	29 15.9 +58.2 136.8	29 01.7 +58.1 135.7
15°	30 55.2 +58.4 139.8	30 41.8 +58.3 138.7	30 28.1 +58.2 137.6	30 14.1 +58.2 136.5	29 59.8 +58.1 135.4
16°	31 53.6 +58.3 139.5	31 40.1 +58.3 138.4	31 26.3 +58.2 137.3	31 12.3 +58.1 136.2	30 57.9 +58.1 135.1
17°	32 51.9 +58.3 139.2	32 38.4 +58.2 138.1	32 24.5 +58.2 137.0	32 10.4 +58.1 135.9	31 56.0 +58.0 134.8
18°	33 50.2 +58.3 138.9	33 36.6 +58.2 137.8	33 22.7 +58.1 136.7	33 08.5 +58.0 135.6	32 54.0 +58.0 134.5
19°	34 48.5 +58.3 138.7	34 34.8 +58.2 137.5	34 20.8 +58.1 136.4	34 06.5 +58.0 135.3	33 52.0 +57.9 134.2
20°	35 46.8 +58.2 138.4	35 33.0 +58.1 137.2	35 18.9 +58.0 136.1	35 04.5 +58.0 135.0	34 49.9 +57.9 133.9
21°	36 45.0 +58.1 138.1	36 31.1 +58.1 136.9	36 16.9 +58.0 135.8	36 02.5 +57.9 134.7	35 47.8 +57.8 133.6
22°	37 43.1 +58.1 137.8	37 29.2 +58.0 136.6	37 14.9 +57.9 135.5	37 00.4 +57.8 134.4	36 45.6 +57.7 133.3
23°	38 41.2 +58.1 137.4	38 27.2 +57.9 136.3	38 12.8 +57.9 135.2	37 58.2 +57.8 134.0	37 43.3 +57.8 132.9
24°	39 39.3 +57.9 137.1	39 25.1 +57.9 136.0	39 10.7 +57.8 134.8	38 56.0 +57.8 133.7	38 41.1 +57.6 132.6
25°	40 37.2 +58.0 136.8	40 23.0 +57.9 135.6	40 08.5 +57.8 134.5	39 53.8 +57.6 133.3	39 38.7 +57.6 132.2
26°	41 35.2 +57.8 136.4	41 20.9 +57.8 135.3	41 06.3 +57.7 134.1	40 51.4 +57.6 133.0	40 36.3 +57.5 131.8
27°	42 33.0 +57.8 136.1	42 18.7 +57.7 134.9	42 04.0 +57.6 133.8	41 49.0 +57.5 132.6	41 33.8 +57.4 131.5
28°	43 30.8 +57.8 135.7	43 16.4 +57.6 134.5	43 01.6 +57.5 133.4	42 46.5 +57.5 132.2	42 31.2 +57.3 131.1
29°	44 28.6 +57.6 135.3	44 14.0 +57.5 134.2	43 59.1 +57.5 133.0	43 44.0 +57.3 131.8	43 28.5 +57.3 130.7

Declination SAME name as Latitude

Latitude 70°

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 11.3 +58.5 138.2	14 57.5 +58.4 137.2	14 43.5 +58.3 136.2	14 29.1 +58.3 135.2	14 14.6 +58.1 134.2
1°	16 09.8 +58.3 138.0	15 55.9 +58.3 137.0	15 41.8 +58.2 136.0	15 27.4 +58.2 135.0	15 12.7 +58.2 134.0
2°	17 08.1 +58.4 137.8	16 54.2 +58.3 136.7	16 40.0 +58.3 135.7	16 25.6 +58.2 134.7	16 10.9 +58.1 133.7
3°	18 06.5 +58.4 137.5	17 52.5 +58.3 136.5	17 38.3 +58.2 135.5	17 23.8 +58.1 134.5	17 09.0 +58.1 133.4
4°	19 04.9 +58.3 137.3	18 50.8 +58.3 136.2	18 36.5 +58.2 135.2	18 21.9 +58.2 134.2	18 07.1 +58.1 133.2
5°	20 03.2 +58.4 137.0	19 49.1 +58.3 136.0	19 34.7 +58.2 135.0	19 20.1 +58.1 133.9	19 05.2 +58.0 132.9
6°	21 01.6 +58.3 136.8	20 47.4 +58.2 135.7	20 32.9 +58.2 134.7	20 18.2 +58.1 133.7	20 03.2 +58.1 132.7
7°	21 59.9 +58.2 136.5	21 45.6 +58.2 135.5	21 31.1 +58.1 134.4	21 16.3 +58.1 133.4	21 01.3 +58.0 132.4
8°	22 58.1 +58.3 136.3	22 43.8 +58.2 135.2	22 29.2 +58.1 134.2	22 14.4 +58.0 133.1	21 59.3 +58.0 132.1
9°	23 56.4 +58.2 136.0	23 42.0 +58.2 135.0	23 27.3 +58.1 133.9	23 12.4 +58.1 132.9	22 57.3 +57.9 131.8
10°	24 54.6 +58.2 135.7	24 40.2 +58.1 134.7	24 25.4 +58.1 133.6	24 10.5 +57.9 132.6	23 55.2 +57.9 131.5
11°	25 52.8 +58.2 135.5	25 38.3 +58.1 134.4	25 23.5 +58.0 133.4	25 08.4 +58.0 132.3	24 53.1 +57.9 131.3
12°	26 51.0 +58.1 135.2	26 36.4 +58.0 134.1	26 21.5 +58.0 133.1	26 06.4 +57.9 132.0	25 51.0 +57.9 131.0
13°	27 49.1 +58.1 134.9	27 34.4 +58.1 133.8	27 19.5 +58.0 132.8	27 04.3 +57.9 131.7	26 48.9 +57.8 130.7
14°	28 47.2 +58.1 134.6	28 32.5 +58.0 133.6	28 17.5 +57.9 132.5	28 02.2 +57.9 131.4	27 46.7 +57.8 130.4
15°	29 45.3 +58.0 134.3	29 30.5 +57.9 133.3	29 15.4 +57.9 132.2	29 00.1 +57.8 131.1	28 44.5 +57.7 130.1
16°	30 43.3 +58.0 134.0	30 28.4 +57.9 133.0	30 13.3 +57.8 131.9	29 57.9 +57.7 130.8	29 42.2 +57.7 129.8
17°	31 41.3 +57.9 133.7	31 26.3 +57.9 132.7	31 11.1 +57.8 131.6	30 55.6 +57.7 130.5	30 39.9 +57.6 129.4
18°	32 39.2 +57.9 133.4	32 24.2 +57.8 132.4	32 08.9 +57.7 131.3	31 53.3 +57.7 130.2	31 37.5 +57.6 129.1
19°	33 37.1 +57.9 133.1	33 22.0 +57.8 132.0	33 06.6 +57.7 130.9	32 51.0 +57.6 129.9	32 35.1 +57.6 128.8
20°	34 35.0 +57.8 132.8	34 19.8 +57.7 131.7	34 04.3 +57.7 130.6	33 48.6 +57.6 129.5	33 32.7 +57.5 128.4
21°	35 32.8 +57.7 132.5	35 17.5 +57.7 131.4	35 02.0 +57.5 130.3	34 46.2 +57.5 129.2	34 30.2 +57.4 128.1
22°	36 30.5 +57.7 132.1	36 15.2 +57.6 131.0	35 59.5 +57.6 129.9	35 43.7 +57.4 128.8	35 27.6 +57.3 127.7
23°	37 28.2 +57.6 131.8	37 12.8 +57.5 130.7	36 57.1 +57.4 129.6	36 41.1 +57.4 128.5	36 24.9 +57.3 127.4
24°	38 25.8 +57.6 131.4	38 10.3 +57.5 130.3	37 54.5 +57.4 129.2	37 38.5 +57.3 128.1	37 22.2 +57.2 127.0
25°	39 23.4 +57.4 131.1	39 07.8 +57.4 130.0	38 51.9 +57.3 128.8	38 35.8 +57.2 127.7	38 19.4 +57.2 126.6
26°	40 20.8 +57.5 130.7	40 05.2 +57.3 129.6	39 49.2 +57.2 128.5	39 33.0 +57.2 127.3	39 16.6 +57.1 126.2
27°	41 18.3 +57.3 130.3	41 02.5 +57.2 129.2	40 46.4 +57.2 128.1	40 30.2 +57.0 126.9	40 13.7 +56.9 125.8
28°	42 15.6 +57.2 129.9	41 59.7 +57.2 128.8	41 43.6 +57.1 127.7	41 27.2 +57.0 126.5	41 10.6 +56.9 125.4
29°	43 12.8 +57.2 129.5	42 56.9 +57.0 128.4	42 40.7 +56.9 127.2	42 24.2 +56.9 126.1	42 07.5 +56.8 125.0

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°	13 59.7 +58.1 133.2	13 44.7 +58.0 132.2	13 29.3 +58.0 131.2	13 13.8 +57.9 130.2	12 58.0 +57.9 129.2
1°	14 57.8 +58.1 133.0	14 42.7 +58.0 132.0	14 27.3 +58.0 131.0	14 11.7 +57.9 130.0	13 55.9 +57.8 129.0
2°	15 55.9 +58.1 132.7	15 40.7 +58.0 131.7	15 25.3 +57.9 130.7	15 09.6 +57.9 129.7	14 53.7 +57.8 128.7
3°	16 54.0 +58.0 132.4	16 38.7 +58.0 131.4	16 23.2 +57.9 130.4	16 07.5 +57.8 129.4	15 51.5 +57.8 128.4
4°	17 52.0 +58.0 132.2	17 36.7 +57.9 131.2	17 21.1 +57.9 130.2	17 05.3 +57.8 129.1	16 49.3 +57.7 128.1
5°	18 50.0 +58.0 131.9	18 34.6 +58.0 130.9	18 19.0 +57.9 129.9	18 03.1 +57.8 128.9	17 47.0 +57.8 127.9
6°	19 48.0 +58.0 131.6	19 32.6 +57.9 130.6	19 16.9 +57.8 129.6	19 00.9 +57.8 128.6	18 44.8 +57.7 127.6
7°	20 46.0 +57.9 131.4	20 30.5 +57.9 130.3	20 14.7 +57.8 129.3	19 58.7 +57.8 128.3	19 42.5 +57.7 127.3
8°	21 43.9 +58.0 131.1	21 28.4 +57.8 130.1	21 12.5 +57.8 129.0	20 56.5 +57.7 128.0	20 40.2 +57.6 127.0
9°	22 41.9 +57.8 130.8	22 26.2 +57.8 129.8	22 10.3 +57.8 128.7	21 54.2 +57.7 127.7	21 37.8 +57.7 126.7
10°	23 39.7 +57.9 130.5	23 24.0 +57.8 129.5	23 08.1 +57.7 128.4	22 51.9 +57.6 127.4	22 35.5 +57.6 126.4
11°	24 37.6 +57.8 130.2	24 21.8 +57.8 129.2	24 05.8 +57.7 128.1	23 49.5 +57.7 127.1	23 33.1 +57.5 126.1
12°	25 35.4 +57.8 129.9	25 19.6 +57.7 128.9	25 03.5 +57.6 127.8	24 47.2 +57.5 126.8	24 30.6 +57.5 125.8
13°	26 33.2 +57.7 129.6	26 17.3 +57.7 128.6	26 01.1 +57.6 127.5	25 44.7 +57.6 126.5	25 28.1 +57.5 125.5
14°	27 30.9 +57.8 129.3	27 15.0 +57.6 128.3	26 58.7 +57.6 127.2	26 42.3 +57.5 126.2	26 25.6 +57.4 125.1
15°	28 28.7 +57.6 129.0	28 12.6 +57.6 128.0	27 56.3 +57.5 126.9	27 39.8 +57.4 125.9	27 23.0 +57.4 124.8
16°	29 26.3 +57.6 128.7	29 10.2 +57.5 127.6	28 53.8 +57.5 126.6	28 37.2 +57.4 125.5	28 20.4 +57.4 124.5
17°	30 23.9 +57.6 128.4	30 07.7 +57.5 127.3	29 51.3 +57.4 126.3	29 34.6 +57.4 125.2	29 17.8 +57.2 124.1
18°	31 21.5 +57.5 128.0	31 05.2 +57.5 127.0	30 48.7 +57.4 125.9	30 32.0 +57.3 124.9	30 15.0 +57.3 123.8
19°	32 19.0 +57.5 127.7	32 02.7 +57.4 126.6	31 46.1 +57.3 125.6	31 29.3 +57.2 124.5	31 12.3 +57.1 123.5
20°	33 16.5 +57.4 127.4	33 00.1 +57.3 126.3	32 43.4 +57.3 125.2	32 26.5 +57.2 124.2	32 09.4 +57.2 123.1
21°	34 13.9 +57.3 127.0	33 57.4 +57.3 125.9	33 40.7 +57.2 124.9	33 23.7 +57.1 123.8	33 06.6 +57.0 122.7
22°	35 11.2 +57.3 126.7	34 54.7 +57.2 125.6	34 37.9 +57.1 124.5	34 20.8 +57.1 123.4	34 03.6 +57.0 122.4
23°	36 08.5 +57.2 126.3	35 51.9 +57.1 125.2	35 35.0 +57.0 124.1	35 17.9 +57.0 123.1	35 00.6 +56.9 122.0
24°	37 05.7 +57.2 125.9	36 49.0 +57.0 124.8	36 32.0 +57.0 123.7	36 14.9 +56.9 122.7	35 57.5 +56.8 121.6
25°	38 02.9 +57.0 125.5	37 46.0 +57.0 124.4	37 29.0 +56.9 123.4	37 11.8 +56.8 122.3	36 54.3 +56.8 121.2
26°	38 59.9 +57.0 125.1	38 43.0 +56.9 124.0	38 25.9 +56.8 123.0	38 08.6 +56.7 121.9	37 51.1 +56.6 120.8
27°	39 56.9 +56.9 124.7	39 39.9 +56.8 123.6	39 22.7 +56.8 122.5	39 05.3 +56.7 121.5	38 47.7 +56.6 120.4
28°	40 53.8 +56.8 124.3	40 36.7 +56.7 123.2	40 19.5 +56.6 122.1	40 02.0 +56.5 121.0	39 44.3 +56.5 119.9
29°	41 50.6 +56.7 123.9	41 33.4 +56.7 122.8	41 16.1 +56.5 121.7	40 58.5 +56.5 120.6	40 40.8 +56.3 119.5

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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°	12 42.0 +57.8 128.3	12 25.8 +57.7 127.3	12 09.3 +57.7 126.3	11 52.7 +57.6 125.3	11 35.8 +57.6 124.3
1°	13 39.8 +57.8 128.0	13 23.5 +57.7 127.0	13 07.0 +57.7 126.0	12 50.3 +57.6 125.0	12 33.4 +57.5 124.0
2°	14 37.6 +57.7 127.7	14 21.2 +57.7 126.7	14 04.7 +57.6 125.7	13 47.9 +57.6 124.7	13 30.9 +57.5 123.7
3°	15 35.3 +57.7 127.4	15 18.9 +57.7 126.4	15 02.3 +57.6 125.4	14 45.5 +57.5 124.4	14 28.4 +57.5 123.4
4°	16 33.0 +57.7 127.1	16 16.6 +57.6 126.1	15 59.9 +57.6 125.1	15 43.0 +57.5 124.1	15 25.9 +57.5 123.2
5°	17 30.7 +57.7 126.8	17 14.2 +57.6 125.8	16 57.5 +57.5 124.8	16 40.5 +57.5 123.8	16 23.4 +57.4 122.9
6°	18 28.4 +57.7 126.6	18 11.8 +57.6 125.6	17 55.0 +57.6 124.5	17 38.0 +57.5 123.5	17 20.8 +57.4 122.5
7°	19 26.1 +57.6 126.3	19 09.4 +57.6 125.3	18 52.6 +57.5 124.3	18 35.5 +57.4 123.2	18 18.2 +57.4 122.2
8°	20 23.7 +57.6 126.0	20 07.0 +57.5 125.0	19 50.1 +57.4 123.9	19 32.9 +57.4 122.9	19 15.6 +57.4 121.9
9°	21 21.3 +57.5 125.7	21 04.5 +57.5 124.7	20 47.5 +57.5 123.6	20 30.3 +57.4 122.6	20 13.0 +57.3 121.6
10°	22 18.8 +57.6 125.4	22 02.0 +57.5 124.3	21 45.0 +57.4 123.3	21 27.7 +57.4 122.3	21 10.3 +57.3 121.3
11°	23 16.4 +57.5 125.1	22 59.5 +57.4 124.0	22 42.4 +57.3 123.0	22 25.1 +57.3 122.0	22 07.6 +57.2 121.0
12°	24 13.9 +57.4 124.7	23 56.9 +57.4 123.7	23 39.7 +57.3 122.7	23 22.4 +57.2 121.7	23 04.8 +57.2 120.7
13°	25 11.3 +57.4 124.4	24 54.3 +57.3 123.4	24 37.0 +57.3 122.4	24 19.6 +57.2 121.4	24 02.0 +57.2 120.3
14°	26 08.7 +57.4 124.1	25 51.6 +57.3 123.1	25 34.3 +57.3 122.0	25 16.8 +57.2 121.0	24 59.2 +57.1 120.0
15°	27 06.1 +57.3 123.8	26 48.9 +57.3 122.7	26 31.6 +57.1 121.7	26 14.0 +57.1 120.7	25 56.3 +57.0 119.7
16°	28 03.4 +57.3 123.4	27 46.2 +57.2 122.4	27 28.7 +57.2 121.4	27 11.1 +57.1 120.3	26 53.3 +57.0 119.3
17°	29 00.7 +57.2 123.1	28 43.4 +57.1 122.1	28 25.9 +57.1 121.0	28 08.2 +57.0 120.0	27 50.3 +57.0 119.0
18°	29 57.9 +57.1 122.8	29 40.5 +57.1 121.7	29 23.0 +57.0 120.7	29 05.2 +57.0 119.6	28 47.3 +56.9 118.6
19°	30 55.0 +57.2 122.4	30 37.6 +57.1 121.4	30 20.0 +57.0 120.3	30 02.2 +56.9 119.3	29 44.2 +56.8 118.2
20°	31 52.2 +57.0 122.0	31 34.7 +56.9 121.0	31 17.0 +56.9 120.0	30 59.1 +56.8 118.9	30 41.0 +56.8 117.9
21°	32 49.2 +57.0 121.7	32 31.6 +56.9 120.6	32 13.9 +56.8 119.6	31 55.9 +56.8 118.5	31 37.8 +56.7 117.5
22°	33 46.2 +56.9 121.3	33 28.5 +56.9 120.2	33 10.7 +56.8 119.2	32 52.7 +56.7 118.2	32 34.5 +56.7 117.1
23°	34 43.1 +56.8 120.9	34 25.4 +56.7 119.9	34 07.5 +56.7 118.8	33 49.4 +56.6 117.8	33 31.2 +56.6 116.7
24°	35 39.9 +56.8 120.5	35 22.1 +56.7 119.5	35 04.2 +56.6 118.4	34 46.0 +56.6 117.4	34 27.7 +56.5 116.3
25°	36 36.7 +56.6 120.1	36 18.8 +56.6 119.1	36 00.8 +56.5 118.0	35 42.6 +56.4 116.9	35 24.2 +56.4 115.9
26°	37 33.3 +56.6 119.7	37 15.4 +56.5 118.6	36 57.3 +56.5 117.6	36 39.0 +56.4 116.5	36 20.6 +56.3 115.5
27°	38 29.9 +56.5 119.3	38 11.9 +56.4 118.2	37 53.8 +56.3 117.2	37 35.4 +56.3 116.1	37 16.9 +56.2 115.0
28°	39 26.4 +56.4 118.9	39 08.3 +56.4 117.8	38 50.1 +56.2 116.7	38 31.7 +56.2 115.7	38 13.1 +56.1 114.6
29°	40 22.8 +56.3 118.4	40 04.7 +56.2 117.3	39 46.3 +56.2 116.3	39 27.9 +56.0 115.2	39 09.2 +56.0 114.2

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°	11 18.8 +57.5 123.3	11 01.6 +57.4 122.4	10 44.1 +57.4 121.4	10 26.5 +57.4 120.4	10 08.7 +57.3 119.5
1°	12 16.3 +57.5 123.1	11 59.0 +57.4 122.1	11 41.5 +57.4 121.1	11 23.9 +57.3 120.1	11 06.0 +57.3 119.1
2°	13 13.8 +57.4 122.8	12 56.4 +57.4 121.8	12 38.9 +57.3 120.8	12 21.2 +57.2 119.8	12 03.3 +57.2 118.8
3°	14 11.2 +57.4 122.5	13 53.8 +57.4 121.5	13 36.2 +57.3 120.5	13 18.4 +57.3 119.5	13 00.5 +57.2 118.5
4°	15 08.6 +57.4 122.2	14 51.2 +57.3 121.2	14 33.5 +57.3 120.2	14 15.7 +57.2 119.2	13 57.7 +57.2 118.2
5°	16 06.0 +57.4 121.9	15 48.5 +57.3 120.9	15 30.8 +57.3 119.9	15 12.9 +57.3 118.9	14 54.9 +57.1 117.9
6°	17 03.4 +57.4 121.6	16 45.8 +57.3 120.6	16 28.1 +57.2 119.6	16 10.2 +57.1 118.6	15 52.0 +57.2 117.6
7°	18 00.8 +57.3 121.2	17 43.1 +57.3 120.2	17 25.3 +57.2 119.3	17 07.3 +57.2 118.3	16 49.2 +57.1 117.3
8°	18 58.1 +57.3 120.9	18 40.4 +57.2 119.9	18 22.5 +57.2 118.9	18 04.5 +57.1 117.9	17 46.3 +57.1 117.0
9°	19 55.4 +57.2 120.6	19 37.6 +57.2 119.6	19 19.7 +57.2 118.6	19 01.6 +57.1 117.6	18 43.4 +57.0 116.6
10°	20 52.6 +57.3 120.3	20 34.8 +57.2 119.3	20 16.9 +57.1 118.3	19 58.7 +57.1 117.3	19 40.4 +57.0 116.3
11°	21 49.9 +57.2 120.0	21 32.0 +57.1 119.0	21 14.0 +57.0 118.0	20 55.8 +57.0 117.0	20 37.4 +56.9 116.0
12°	22 47.1 +57.1 119.6	22 29.1 +57.1 118.6	22 11.0 +57.1 117.6	21 52.8 +56.9 116.6	21 34.3 +57.0 115.6
13°	23 44.2 +57.1 119.3	23 26.2 +57.1 118.3	23 08.1 +56.9 117.3	22 49.7 +57.0 116.3	22 31.3 +56.8 115.3
14°	24 41.3 +57.0 119.0	24 23.3 +56.9 118.0	24 05.0 +57.0 117.0	23 46.7 +56.9 115.9	23 28.1 +56.9 114.9
15°	25 38.3 +57.0 118.6	25 20.2 +57.0 117.6	25 02.0 +56.9 116.6	24 43.6 +56.8 115.6	24 25.0 +56.8 114.6
16°	26 35.3 +57.0 118.3	26 17.2 +56.9 117.3	25 58.9 +56.8 116.3	25 40.4 +56.8 115.2	25 21.8 +56.7 114.2
17°	27 32.3 +56.9 117.9	27 14.1 +56.8 116.9	26 55.7 +56.8 115.9	26 37.2 +56.7 114.9	26 18.5 +56.7 113.9
18°	28 29.2 +56.8 117.6	28 10.9 +56.8 116.6	27 52.5 +56.7 115.5	27 33.9 +56.7 114.5	27 15.2 +56.6 113.5
19°	29 26.0 +56.8 117.2	29 07.7 +56.7 116.2	28 49.2 +56.7 115.2	28 30.6 +56.6 114.1	28 11.8 +56.5 113.1
20°	30 22.8 +56.7 116.8	30 04.4 +56.7 115.8	29 45.9 +56.6 114.8	29 27.2 +56.5 113.8	29 08.3 +56.5 112.8
21°	31 19.5 +56.7 116.5	31 01.1 +56.6 115.4	30 42.5 +56.5 114.4	30 23.7 +56.5 113.4	30 04.8 +56.4 112.4
22°	32 16.2 +56.6 116.1	31 57.7 +56.5 115.0	31 39.0 +56.5 114.0	31 20.2 +56.4 113.0	31 01.2 +56.4 112.0
23°	33 12.8 +56.5 115.7	32 54.2 +56.4 114.6	32 35.5 +56.3 113.6	32 16.6 +56.3 112.6	31 57.6 +56.2 111.6
24°	34 09.3 +56.4 115.3	33 50.6 +56.4 114.2	33 31.8 +56.3 113.2	33 12.9 +56.2 112.2	32 53.8 +56.2 111.2
25°	35 05.7 +56.3 114.9	34 47.0 +56.2 113.8	34 28.1 +56.2 112.8	34 09.1 +56.2 111.8	33 50.0 +56.1 110.7
26°	36 02.0 +56.2 114.4	35 43.2 +56.2 113.4	35 24.3 +56.1 112.4	35 05.3 +56.0 111.3	34 46.1 +56.0 110.3
27°	36 58.2 +56.2 114.0	36 39.4 +56.1 113.0	36 20.4 +56.1 111.9	36 01.3 +56.0 110.9	35 42.1 +55.9 109.9
28°	37 54.4 +56.0 113.6	37 35.5 +56.0 112.5	37 16.5 +55.9 111.5	36 57.3 +55.9 110.4	36 38.0 +55.8 109.4
29°	38 50.4 +55.9 113.1	38 31.5 +55.8 112.1	38 12.4 +55.8 111.0	37 53.2 +55.7 110.0	37 33.8 +55.7 109.0

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 50.8 +57.2 118.5	9 32.7 +57.1 117.5	9 14.4 +57.1 116.5	8 56.0 +57.0 115.6	8 37.4 +57.0 114.6
1°	10 48.0 +57.2 118.2	10 29.8 +57.2 117.2	10 11.5 +57.1 116.2	9 53.0 +57.1 115.3	9 34.4 +57.0 114.3
2°	11 45.2 +57.2 117.9	11 27.0 +57.1 116.9	11 08.6 +57.1 115.9	10 50.1 +57.0 115.0	10 31.4 +57.0 114.0
3°	12 42.4 +57.1 117.6	12 24.1 +57.1 116.6	12 05.7 +57.0 115.6	11 47.1 +57.0 114.6	11 28.4 +56.9 113.7
4°	13 39.5 +57.2 117.2	13 21.2 +57.1 116.3	13 02.7 +57.1 115.3	12 44.1 +57.0 114.3	12 25.3 +57.0 113.4
5°	14 36.7 +57.1 116.9	14 18.3 +57.1 116.0	13 59.8 +57.0 115.0	13 41.1 +57.0 114.0	13 22.3 +56.9 113.0
6°	15 33.8 +57.1 116.6	15 15.4 +57.0 115.6	14 56.8 +57.0 114.7	14 38.1 +56.9 113.7	14 19.2 +56.9 112.7
7°	16 30.9 +57.0 116.3	16 12.4 +57.0 115.3	15 53.8 +56.9 114.3	15 35.0 +56.9 113.3	15 16.1 +56.8 112.4
8°	17 27.9 +57.0 116.0	17 09.4 +57.0 115.0	16 50.7 +56.9 114.0	16 31.9 +56.9 113.0	16 12.9 +56.9 112.0
9°	18 24.9 +57.0 115.6	18 06.4 +56.9 114.7	17 47.6 +56.9 113.7	17 28.8 +56.8 112.7	17 09.8 +56.8 111.7
10°	19 21.9 +57.0 115.3	19 03.3 +56.9 114.3	18 44.5 +56.9 113.3	18 25.6 +56.8 112.3	18 06.6 +56.7 111.4
11°	20 18.9 +56.9 115.0	20 00.2 +56.8 114.0	19 41.4 +56.8 113.0	19 22.4 +56.8 112.0	19 03.3 +56.7 111.0
12°	21 15.8 +56.8 114.6	20 57.0 +56.9 113.6	20 38.2 +56.7 112.7	20 19.2 +56.7 111.7	20 00.0 +56.7 110.7
13°	22 12.6 +56.9 114.3	21 53.9 +56.7 113.3	21 34.9 +56.8 112.3	21 15.9 +56.7 111.3	20 56.7 +56.6 110.3
14°	23 09.5 +56.7 113.9	22 50.6 +56.8 112.9	22 31.7 +56.6 112.0	22 12.6 +56.6 111.0	21 53.3 +56.6 110.0
15°	24 06.2 +56.8 113.6	23 47.4 +56.6 112.6	23 28.3 +56.7 111.6	23 09.2 +56.6 110.6	22 49.9 +56.6 109.6
16°	25 03.0 +56.6 113.2	24 44.0 +56.7 112.2	24 25.0 +56.6 111.2	24 05.8 +56.5 110.2	23 46.5 +56.5 109.2
17°	25 59.6 +56.7 112.9	25 40.7 +56.5 111.9	25 21.6 +56.5 110.9	25 02.3 +56.5 109.9	24 43.0 +56.4 108.9
18°	26 56.3 +56.5 112.5	26 37.2 +56.5 111.5	26 18.1 +56.4 110.5	25 58.8 +56.4 109.5	25 39.4 +56.4 108.5
19°	27 52.8 +56.5 112.1	27 33.7 +56.5 111.1	27 14.5 +56.4 110.1	26 55.2 +56.4 109.1	26 35.8 +56.3 108.1
20°	28 49.3 +56.5 111.7	28 30.2 +56.4 110.7	28 10.9 +56.4 109.7	27 51.6 +56.3 108.7	27 32.1 +56.2 107.7
21°	29 45.8 +56.3 111.4	29 26.6 +56.3 110.3	29 07.3 +56.2 109.3	28 47.9 +56.2 108.3	28 28.3 +56.2 107.3
22°	30 42.1 +56.3 111.0	30 22.9 +56.2 109.9	30 03.5 +56.2 108.9	29 44.1 +56.1 107.9	29 24.5 +56.1 106.9
23°	31 38.4 +56.2 110.6	31 19.1 +56.2 109.5	30 59.7 +56.1 108.5	30 40.2 +56.1 107.5	30 20.6 +56.0 106.5
24°	32 34.6 +56.2 110.1	32 15.3 +56.1 109.1	31 55.8 +56.1 108.1	31 36.3 +56.0 107.1	31 16.6 +56.0 106.1
25°	33 30.8 +56.0 109.7	33 11.4 +56.0 108.7	32 51.9 +55.9 107.7	32 32.3 +55.9 106.7	32 12.6 +55.8 105.7
26°	34 26.8 +55.9 109.3	34 07.4 +55.9 108.3	33 47.8 +55.9 107.3	33 28.2 +55.8 106.3	33 08.4 +55.8 105.3
27°	35 22.7 +55.9 108.8	35 03.3 +55.8 107.8	34 43.7 +55.7 106.8	34 24.0 +55.7 105.8	34 04.2 +55.7 104.8
28°	36 18.6 +55.7 108.4	35 59.1 +55.7 107.4	35 39.4 +55.7 106.4	35 19.7 +55.6 105.4	34 59.9 +55.5 104.4
29°	37 14.3 +55.7 107.9	36 54.8 +55.5 106.9	36 35.1 +55.5 105.9	36 15.3 +55.5 104.9	35 55.4 +55.5 103.9

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 18.7 +56.9 113.7	7 59.8 +56.9 112.7	7 40.8 +56.9 111.7	7 21.7 +56.8 110.8	7 02.4 +56.8 109.8
1°	9 15.6 +57.0 113.3	8 56.7 +56.9 112.4	8 37.7 +56.8 111.4	8 18.5 +56.8 110.5	7 59.2 +56.8 109.5
2°	10 12.6 +56.9 113.0	9 53.6 +56.9 112.1	9 34.5 +56.9 111.1	9 15.3 +56.8 110.1	8 56.0 +56.8 109.2
3°	11 09.5 +56.9 112.7	10 50.5 +56.9 111.7	10 31.4 +56.8 110.8	10 12.1 +56.8 109.8	9 52.8 +56.7 108.9
4°	12 06.4 +56.9 112.4	11 47.4 +56.8 111.4	11 28.2 +56.8 110.5	11 08.9 +56.8 109.5	10 49.5 +56.8 108.5
5°	13 03.3 +56.9 112.1	12 44.2 +56.9 111.1	12 25.0 +56.8 110.1	12 05.7 +56.8 109.2	11 46.3 +56.7 108.2
6°	14 00.2 +56.8 111.7	13 41.1 +56.8 110.8	13 21.8 +56.8 109.8	13 02.5 +56.7 108.8	12 43.0 +56.7 107.9
7°	14 57.0 +56.8 111.4	14 37.9 +56.7 110.4	14 18.6 +56.7 109.5	13 59.2 +56.7 108.5	13 39.7 +56.6 107.5
8°	15 53.8 +56.8 111.1	15 34.6 +56.8 110.1	15 15.3 +56.7 109.1	14 55.9 +56.6 108.2	14 36.3 +56.6 107.2
9°	16 50.6 +56.8 110.7	16 31.4 +56.7 109.8	16 12.0 +56.7 108.8	15 52.5 +56.7 107.8	15 32.9 +56.6 106.8
10°	17 47.4 +56.7 110.4	17 28.1 +56.7 109.4	17 08.7 +56.6 108.4	16 49.2 +56.5 107.5	16 29.5 +56.6 106.5
11°	18 44.1 +56.7 110.0	18 24.8 +56.6 109.1	18 05.3 +56.6 108.1	17 45.7 +56.6 107.1	17 26.1 +56.5 106.1
12°	19 40.8 +56.6 109.7	19 21.4 +56.6 108.7	19 01.9 +56.6 107.7	18 42.3 +56.5 106.8	18 22.6 +56.5 105.8
13°	20 37.4 +56.6 109.3	20 18.0 +56.5 108.4	19 58.5 +56.5 107.4	19 38.8 +56.5 106.4	19 19.1 +56.4 105.4
14°	21 34.0 +56.5 109.0	21 14.5 +56.5 108.0	20 55.0 +56.4 107.0	20 35.3 +56.4 106.0	20 15.5 +56.4 105.1
15°	22 30.5 +56.5 108.6	22 11.0 +56.5 107.6	21 51.4 +56.5 106.7	21 31.7 +56.4 105.7	21 11.9 +56.4 104.7
16°	23 27.0 +56.5 108.3	23 07.5 +56.4 107.3	22 47.9 +56.3 106.3	22 28.1 +56.3 105.3	22 08.3 +56.3 104.3
17°	24 23.5 +56.4 107.9	24 03.9 +56.4 106.9	23 44.2 +56.3 105.9	23 24.4 +56.3 104.9	23 04.6 +56.2 104.0
18°	25 19.9 +56.3 107.5	25 00.3 +56.2 106.5	24 40.5 +56.3 105.5	24 20.7 +56.2 104.6	24 00.8 +56.2 103.6
19°	26 16.2 +56.3 107.1	25 56.5 +56.3 106.1	25 36.8 +56.2 105.2	25 16.9 +56.2 104.2	24 57.0 +56.1 103.2
20°	27 12.5 +56.2 106.7	26 52.8 +56.1 105.8	26 33.0 +56.1 104.8	26 13.1 +56.1 103.8	25 53.1 +56.1 102.8
21°	28 08.7 +56.1 106.3	27 48.9 +56.1 105.4	27 29.1 +56.1 104.4	27 09.2 +56.0 103.4	26 49.2 +56.0 102.4
22°	29 04.8 +56.1 105.9	28 45.0 +56.1 105.0	28 25.2 +56.0 104.0	28 05.2 +56.0 103.0	27 45.2 +55.9 102.0
23°	30 00.9 +56.0 105.5	29 41.1 +55.9 104.5	29 21.2 +55.9 103.6	29 01.2 +55.8 102.6	28 41.1 +55.8 101.6
24°	30 56.9 +55.9 105.1	30 37.0 +55.9 104.1	30 17.1 +55.8 103.1	29 57.0 +55.8 102.2	29 36.9 +55.8 101.2
25°	31 52.8 +55.8 104.7	31 32.9 +55.7 103.7	31 12.9 +55.7 102.7	30 52.8 +55.7 101.7	30 32.7 +55.7 100.8
26°	32 48.6 +55.7 104.3	32 28.6 +55.7 103.3	32 08.6 +55.7 102.3	31 48.5 +55.7 101.3	31 28.4 +55.6 100.3
27°	33 44.3 +55.6 103.8	33 24.3 +55.6 102.8	33 04.3 +55.5 101.8	32 44.2 +55.5 100.9	32 24.0 +55.5 99.9
28°	34 39.9 +55.6 103.4	34 19.9 +55.5 102.4	33 59.8 +55.5 101.4	33 39.7 +55.4 100.4	33 19.5 +55.4 99.4
29°	35 35.5 +55.4 102.9	35 15.4 +55.4 101.9	34 55.3 +55.3 100.9	34 35.1 +55.3 99.9	34 14.9 +55.3 99.0

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	6 43.1 +56.7 108.9	6 23.6 +56.7 107.9	6 04.0 +56.7 107.0	5 44.3 +56.7 106.0	5 24.6 +56.6 105.1
1°	7 39.8 +56.8 108.6	7 20.3 +56.7 107.6	7 00.7 +56.7 106.6	6 41.0 +56.6 105.7	6 21.2 +56.6 104.7
2°	8 36.6 +56.7 108.2	8 17.0 +56.7 107.3	7 57.4 +56.7 106.3	7 37.6 +56.7 105.4	7 17.8 +56.6 104.4
3°	9 33.3 +56.7 107.9	9 13.7 +56.7 106.9	8 54.1 +56.6 106.0	8 34.3 +56.6 105.0	8 14.4 +56.6 104.1
4°	10 30.0 +56.7 107.6	10 10.4 +56.7 106.6	9 50.7 +56.6 105.7	9 30.9 +56.6 104.7	9 11.0 +56.6 103.7
5°	11 26.7 +56.7 107.2	11 07.1 +56.6 106.3	10 47.3 +56.6 105.3	10 27.5 +56.6 104.4	10 07.6 +56.5 103.4
6°	12 23.4 +56.6 106.9	12 03.7 +56.6 105.9	11 43.9 +56.6 105.0	11 24.1 +56.5 104.0	11 04.1 +56.5 103.1
7°	13 20.0 +56.7 106.6	13 00.3 +56.6 105.6	12 40.5 +56.6 104.6	12 20.6 +56.5 103.7	12 00.6 +56.5 102.7
8°	14 16.7 +56.5 106.2	13 56.9 +56.6 105.3	13 37.1 +56.5 104.3	13 17.1 +56.5 103.3	12 57.1 +56.5 102.4
9°	15 13.2 +56.6 105.9	14 53.5 +56.5 104.9	14 33.6 +56.5 103.9	14 13.6 +56.5 103.0	13 53.6 +56.4 102.0
10°	16 09.8 +56.5 105.5	15 50.0 +56.5 104.6	15 30.1 +56.4 103.6	15 10.1 +56.4 102.6	14 50.0 +56.4 101.7
11°	17 06.3 +56.5 105.2	16 46.5 +56.4 104.2	16 26.5 +56.5 103.2	16 06.5 +56.4 102.3	15 46.4 +56.4 101.3
12°	18 02.8 +56.5 104.8	17 42.9 +56.4 103.9	17 23.0 +56.4 102.9	17 02.9 +56.4 101.9	16 42.8 +56.3 101.0
13°	18 59.3 +56.4 104.5	18 39.3 +56.4 103.5	18 19.4 +56.3 102.5	17 59.3 +56.3 101.6	17 39.1 +56.3 100.6
14°	19 55.7 +56.3 104.1	19 35.7 +56.4 103.1	19 15.7 +56.3 102.2	18 55.6 +56.3 101.2	18 35.4 +56.3 100.2
15°	20 52.0 +56.3 103.7	20 32.1 +56.2 102.8	20 12.0 +56.3 101.8	19 51.9 +56.2 100.8	19 31.7 +56.2 99.9
16°	21 48.3 +56.3 103.4	21 28.3 +56.3 102.4	21 08.3 +56.2 101.4	20 48.1 +56.2 100.5	20 27.9 +56.2 99.5
17°	22 44.6 +56.2 103.0	22 24.6 +56.2 102.0	22 04.5 +56.1 101.1	21 44.3 +56.1 100.1	21 24.1 +56.1 99.1
18°	23 40.8 +56.2 102.6	23 20.8 +56.1 101.6	23 00.6 +56.1 100.7	22 40.4 +56.1 99.7	22 20.2 +56.0 98.7
19°	24 37.0 +56.1 102.2	24 16.9 +56.1 101.3	23 56.7 +56.1 100.3	23 36.5 +56.0 99.3	23 16.2 +56.0 98.4
20°	25 33.1 +56.0 101.8	25 13.0 +56.0 100.9	24 52.8 +55.9 99.9	24 32.5 +56.0 98.9	24 12.2 +56.0 98.0
21°	26 29.1 +56.0 101.4	26 09.0 +55.9 100.5	25 48.7 +56.0 99.5	25 28.5 +55.9 98.5	25 08.2 +55.8 97.6
22°	27 25.1 +55.9 101.0	27 04.9 +55.9 100.1	26 44.7 +55.8 99.1	26 24.4 +55.8 98.1	26 04.0 +55.8 97.2
23°	28 21.0 +55.8 100.6	28 00.8 +55.7 99.6	27 40.5 +55.8 98.7	27 20.2 +55.7 97.7	26 59.8 +55.8 96.8
24°	29 16.8 +55.7 100.2	28 56.5 +55.8 99.2	28 36.3 +55.7 98.3	28 15.9 +55.7 97.3	27 55.6 +55.6 96.3
25°	30 12.5 +55.7 99.8	29 52.3 +55.6 98.8	29 32.0 +55.6 97.8	29 11.6 +55.6 96.9	28 51.2 +55.6 95.9
26°	31 08.2 +55.5 99.3	30 47.9 +55.5 98.4	30 27.6 +55.5 97.4	30 07.2 +55.5 96.4	29 46.8 +55.5 95.5
27°	32 03.7 +55.5 98.9	31 43.4 +55.5 97.9	31 23.1 +55.4 97.0	31 02.7 +55.4 96.0	30 42.3 +55.4 95.0
28°	32 59.2 +55.4 98.4	32 38.9 +55.3 97.5	32 18.5 +55.3 96.5	31 58.1 +55.3 95.5	31 37.7 +55.3 94.6
29°	33 54.6 +55.2 98.0	33 34.2 +55.3 97.0	33 13.8 +55.3 96.0	32 53.4 +55.2 95.1	32 33.0 +55.2 94.1

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 04.7 +56.6 104.1	4 44.8 +56.5 103.2	4 24.8 +56.5 102.2	4 04.7 +56.5 101.3	3 44.5 +56.5 100.4
1°	6 01.3 +56.6 103.8	5 41.3 +56.6 102.9	5 21.3 +56.5 101.9	5 01.2 +56.5 101.0	4 41.0 +56.5 100.0
2°	6 57.9 +56.6 103.5	6 37.9 +56.5 102.5	6 17.8 +56.6 101.6	5 57.7 +56.5 100.6	5 37.5 +56.5 99.7
3°	7 54.5 +56.5 103.1	7 34.4 +56.6 102.2	7 14.4 +56.5 101.2	6 54.2 +56.5 100.3	6 34.0 +56.4 99.3
4°	8 51.0 +56.6 102.8	8 31.0 +56.5 101.8	8 10.9 +56.4 100.9	7 50.7 +56.4 99.9	7 30.4 +56.5 99.0
5°	9 47.6 +56.5 102.5	9 27.5 +56.5 101.5	9 07.3 +56.5 100.5	8 47.1 +56.5 99.6	8 26.9 +56.4 98.7
6°	10 44.1 +56.5 102.1	10 24.0 +56.5 101.2	10 03.8 +56.5 100.2	9 43.6 +56.4 99.3	9 23.3 +56.4 98.3
7°	11 40.6 +56.4 101.8	11 20.5 +56.4 100.8	11 00.3 +56.4 99.9	10 40.0 +56.4 98.9	10 19.7 +56.4 98.0
8°	12 37.0 +56.5 101.4	12 16.9 +56.4 100.5	11 56.7 +56.4 99.5	11 36.4 +56.4 98.6	11 16.1 +56.4 97.6
9°	13 33.5 +56.4 101.1	13 13.3 +56.4 100.1	12 53.1 +56.4 99.2	12 32.8 +56.4 98.2	12 12.5 +56.3 97.3
10°	14 29.9 +56.4 100.7	14 09.7 +56.4 99.8	13 49.5 +56.3 98.8	13 29.2 +56.3 97.9	13 08.8 +56.3 96.9
11°	15 26.3 +56.3 100.4	15 06.1 +56.3 99.4	14 45.8 +56.3 98.5	14 25.5 +56.3 97.5	14 05.1 +56.3 96.6
12°	16 22.6 +56.3 100.0	16 02.4 +56.3 99.1	15 42.1 +56.3 98.1	15 21.8 +56.2 97.1	15 01.4 +56.2 96.2
13°	17 18.9 +56.3 99.7	16 58.7 +56.2 98.7	16 38.4 +56.2 97.7	16 18.0 +56.2 96.8	15 57.6 +56.2 95.8
14°	18 15.2 +56.2 99.3	17 54.9 +56.3 98.3	17 34.6 +56.2 97.4	17 14.2 +56.2 96.4	16 53.8 +56.2 95.5
15°	19 11.4 +56.2 98.9	18 51.2 +56.1 98.0	18 30.8 +56.2 97.0	18 10.4 +56.2 96.1	17 50.0 +56.1 95.1
16°	20 07.6 +56.2 98.5	19 47.3 +56.1 97.6	19 27.0 +56.1 96.6	19 06.6 +56.0 95.7	18 46.1 +56.1 94.7
17°	21 03.8 +56.1 98.2	20 43.4 +56.1 97.2	20 23.1 +56.0 96.3	20 02.6 +56.1 95.3	19 42.2 +56.0 94.4
18°	21 59.9 +56.0 97.8	21 39.5 +56.0 96.8	21 19.1 +56.0 95.9	20 58.7 +56.0 94.9	20 38.2 +56.0 94.0
19°	22 55.9 +56.0 97.4	22 35.5 +56.0 96.4	22 15.1 +56.0 95.5	21 54.7 +55.9 94.5	21 34.2 +55.9 93.6
20°	23 51.9 +55.9 97.0	23 31.5 +55.9 96.1	23 11.1 +55.9 95.1	22 50.6 +55.9 94.1	22 30.1 +55.9 93.2
21°	24 47.8 +55.8 96.6	24 27.4 +55.8 95.7	24 07.0 +55.8 94.7	23 46.5 +55.8 93.7	23 26.0 +55.8 92.8
22°	25 43.6 +55.8 96.2	25 23.2 +55.8 95.2	25 02.8 +55.7 94.3	24 42.3 +55.8 93.3	24 21.8 +55.8 92.4
23°	26 39.4 +55.7 95.8	26 19.0 +55.7 94.8	25 58.5 +55.7 93.9	25 38.1 +55.6 92.9	25 17.6 +55.6 92.0
24°	27 35.1 +55.7 95.4	27 14.7 +55.6 94.4	26 54.2 +55.6 93.5	26 33.7 +55.6 92.5	26 13.2 +55.6 91.6
25°	28 30.8 +55.5 95.0	28 10.3 +55.6 94.0	27 49.8 +55.6 93.0	27 29.3 +55.6 92.1	27 08.8 +55.6 91.2
26°	29 26.3 +55.5 94.5	29 05.9 +55.4 93.6	28 45.4 +55.4 92.6	28 24.9 +55.4 91.7	28 04.4 +55.4 90.7
27°	30 21.8 +55.4 94.1	30 01.3 +55.4 93.1	29 40.8 +55.4 92.2	29 20.3 +55.4 91.2	28 59.8 +55.4 90.3
28°	31 17.2 +55.3 93.6	30 56.7 +55.3 92.7	30 36.2 +55.3 91.7	30 15.7 +55.3 90.8	29 55.2 +55.2 89.9
29°	32 12.5 +55.2 93.2	31 52.0 +55.2 92.2	31 31.5 +55.1 91.3	31 11.0 +55.1 90.3	30 50.4 +55.2 89.4

Declination SAME name as Latitude

Latitude 70°

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 24.3 +56.5 99.4	3 04.0 +56.5 98.5	2 43.7 +56.4 97.5	2 23.3 +56.5 96.6	2 02.9 +56.4 95.6
1°	4 20.8 +56.4 99.1	4 00.5 +56.4 98.1	3 40.1 +56.5 97.2	3 19.8 +56.4 96.2	2 59.3 +56.5 95.3
2°	5 17.2 +56.5 98.7	4 56.9 +56.5 97.8	4 36.6 +56.4 96.8	4 16.2 +56.4 95.9	3 55.8 +56.4 95.0
3°	6 13.7 +56.4 98.4	5 53.4 +56.4 97.4	5 33.0 +56.4 96.5	5 12.6 +56.4 95.6	4 52.2 +56.3 94.6
4°	7 10.1 +56.5 98.0	6 49.8 +56.4 97.1	6 29.4 +56.4 96.2	6 09.0 +56.4 95.2	5 48.5 +56.4 94.3
5°	8 06.6 +56.4 97.7	7 46.2 +56.4 96.8	7 25.8 +56.4 95.8	7 05.4 +56.4 94.9	6 44.9 +56.4 93.9
6°	9 03.0 +56.4 97.4	8 42.6 +56.4 96.4	8 22.2 +56.4 95.5	8 01.8 +56.3 94.5	7 41.3 +56.3 93.6
7°	9 59.4 +56.3 97.0	9 39.0 +56.3 96.1	9 18.6 +56.3 95.1	8 58.1 +56.3 94.2	8 37.6 +56.4 93.2
8°	10 55.7 +56.4 96.7	10 35.3 +56.4 95.7	10 14.9 +56.3 94.8	9 54.4 +56.4 93.8	9 34.0 +56.3 92.9
9°	11 52.1 +56.3 96.3	11 31.7 +56.3 95.4	11 11.2 +56.3 94.4	10 50.8 +56.2 93.5	10 30.3 +56.2 92.5
10°	12 48.4 +56.3 96.0	12 28.0 +56.3 95.0	12 07.5 +56.3 94.1	11 47.0 +56.3 93.1	11 26.5 +56.3 92.2
11°	13 44.7 +56.3 95.6	13 24.3 +56.2 94.7	13 03.8 +56.2 93.7	12 43.3 +56.2 92.8	12 22.8 +56.2 91.8
12°	14 41.0 +56.2 95.2	14 20.5 +56.2 94.3	14 00.0 +56.2 93.4	13 39.5 +56.2 92.4	13 19.0 +56.2 91.5
13°	15 37.2 +56.2 94.9	15 16.7 +56.2 93.9	14 56.2 +56.2 93.0	14 35.7 +56.2 92.1	14 15.2 +56.2 91.1
14°	16 33.4 +56.1 94.5	16 12.9 +56.2 93.6	15 52.4 +56.2 92.6	15 31.9 +56.2 91.7	15 11.4 +56.1 90.7
15°	17 29.5 +56.2 94.2	17 09.1 +56.1 93.2	16 48.6 +56.1 92.3	16 28.1 +56.0 91.3	16 07.5 +56.1 90.4
16°	18 25.7 +56.0 93.8	18 05.2 +56.0 92.8	17 44.7 +56.0 91.9	17 24.1 +56.1 90.9	17 03.6 +56.1 90.0
17°	19 21.7 +56.0 93.4	19 01.2 +56.0 92.5	18 40.7 +56.0 91.5	18 20.2 +56.0 90.6	17 59.7 +56.0 89.6
18°	20 17.7 +56.0 93.0	19 57.2 +56.0 92.1	19 36.7 +56.0 91.1	19 16.2 +56.0 90.2	18 55.7 +56.0 89.3
19°	21 13.7 +55.9 92.6	20 53.2 +55.9 91.7	20 32.7 +55.9 90.8	20 12.2 +55.9 89.8	19 51.7 +55.9 88.9
20°	22 09.6 +55.9 92.2	21 49.1 +55.9 91.3	21 28.6 +55.9 90.4	21 08.1 +55.8 89.4	20 47.6 +55.8 88.5
21°	23 05.5 +55.8 91.9	22 45.0 +55.8 90.9	22 24.5 +55.8 90.0	22 03.9 +55.8 89.0	21 43.4 +55.8 88.1
22°	24 01.3 +55.7 91.5	23 40.8 +55.7 90.5	23 20.3 +55.7 89.6	22 59.7 +55.8 88.6	22 39.2 +55.8 87.7
23°	24 57.0 +55.7 91.0	24 36.5 +55.7 90.1	24 16.0 +55.7 89.2	23 55.5 +55.7 88.2	23 35.0 +55.7 87.3
24°	25 52.7 +55.6 90.6	25 32.2 +55.6 89.7	25 11.7 +55.6 88.8	24 51.2 +55.6 87.8	24 30.7 +55.6 86.9
25°	26 48.3 +55.5 90.2	26 27.8 +55.5 89.3	26 07.3 +55.5 88.3	25 46.8 +55.5 87.4	25 26.3 +55.5 86.5
26°	27 43.8 +55.5 89.8	27 23.3 +55.5 88.9	27 02.8 +55.5 87.9	26 42.3 +55.5 87.0	26 21.8 +55.5 86.1
27°	28 39.3 +55.3 89.4	28 18.8 +55.3 88.4	27 58.3 +55.3 87.5	27 37.8 +55.3 86.6	27 17.3 +55.4 85.6
28°	29 34.6 +55.3 88.9	29 14.1 +55.3 88.0	28 53.6 +55.3 87.0	28 33.1 +55.3 86.1	28 12.7 +55.3 85.2
29°	30 29.9 +55.2 88.5	30 09.4 +55.2 87.5	29 48.9 +55.2 86.6	29 28.4 +55.2 85.7	29 08.0 +55.2 84.8

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	1 42.5 +56.4 94.7	1 22.0 +56.4 93.8	1 01.5 +56.4 92.8	0 41.0 +56.4 91.9	0 20.5 +56.4 90.9
1°	2 38.9 +56.4 94.4	2 18.4 +56.4 93.4	1 57.9 +56.4 92.5	1 37.4 +56.4 91.5	1 16.9 +56.4 90.6
2°	3 35.3 +56.4 94.0	3 14.8 +56.4 93.1	2 54.3 +56.4 92.1	2 33.8 +56.4 91.2	2 13.3 +56.4 90.3
3°	4 31.7 +56.4 93.7	4 11.2 +56.4 92.7	3 50.7 +56.4 91.8	3 30.2 +56.3 90.9	3 09.7 +56.3 89.9
4°	5 28.1 +56.3 93.3	5 07.6 +56.3 92.4	4 47.1 +56.3 91.4	4 26.5 +56.4 90.5	4 06.0 +56.4 89.6
5°	6 24.4 +56.4 93.0	6 03.9 +56.4 92.0	5 43.4 +56.4 91.1	5 22.9 +56.3 90.2	5 02.4 +56.3 89.2
6°	7 20.8 +56.3 92.6	7 00.3 +56.3 91.7	6 39.8 +56.3 90.8	6 19.2 +56.4 89.8	5 58.7 +56.4 88.9
7°	8 17.1 +56.4 92.3	7 56.6 +56.3 91.4	7 36.1 +56.3 90.4	7 15.6 +56.3 89.5	6 55.1 +56.3 88.5
8°	9 13.5 +56.3 91.9	8 52.9 +56.3 91.0	8 32.4 +56.3 90.1	8 11.9 +56.3 89.1	7 51.4 +56.3 88.2
9°	10 09.8 +56.2 91.6	9 49.2 +56.3 90.7	9 28.7 +56.3 89.7	9 08.2 +56.3 88.8	8 47.7 +56.3 87.8
10°	11 06.0 +56.3 91.2	10 45.5 +56.3 90.3	10 25.0 +56.2 89.4	10 04.5 +56.2 88.4	9 44.0 +56.2 87.5
11°	12 02.3 +56.2 90.9	11 41.8 +56.2 89.9	11 21.2 +56.3 89.0	11 00.7 +56.3 88.1	10 40.2 +56.3 87.1
12°	12 58.5 +56.2 90.5	12 38.0 +56.2 89.6	12 17.5 +56.2 88.7	11 57.0 +56.2 87.7	11 36.5 +56.2 86.8
13°	13 54.7 +56.2 90.2	13 34.2 +56.2 89.2	13 13.7 +56.1 88.3	12 53.2 +56.1 87.4	12 32.7 +56.2 86.4
14°	14 50.9 +56.1 89.8	14 30.4 +56.1 88.9	14 09.8 +56.2 87.9	13 49.3 +56.2 87.0	13 28.9 +56.1 86.1
15°	15 47.0 +56.1 89.4	15 26.5 +56.1 88.5	15 06.0 +56.1 87.6	14 45.5 +56.1 86.6	14 25.0 +56.1 85.7
16°	16 43.1 +56.1 89.1	16 22.6 +56.0 88.1	16 02.1 +56.1 87.2	15 41.6 +56.1 86.3	15 21.1 +56.1 85.3
17°	17 39.2 +56.0 88.7	17 18.6 +56.1 87.8	16 58.2 +56.0 86.8	16 37.7 +56.0 85.9	16 17.2 +56.1 85.0
18°	18 35.2 +55.9 88.3	18 14.7 +55.9 87.4	17 54.2 +56.0 86.5	17 33.7 +56.0 85.5	17 13.3 +56.0 84.6
19°	19 31.1 +56.0 87.9	19 10.6 +56.0 87.0	18 50.2 +55.9 86.1	18 29.7 +55.9 85.1	18 09.3 +55.9 84.2
20°	20 27.1 +55.8 87.6	20 06.6 +55.8 86.6	19 46.1 +55.9 85.7	19 25.6 +55.9 84.8	19 05.2 +55.9 83.8
21°	21 22.9 +55.8 87.2	21 02.4 +55.9 86.2	20 42.0 +55.8 85.3	20 21.5 +55.9 84.4	20 01.1 +55.9 83.4
22°	22 18.7 +55.8 86.8	21 58.3 +55.7 85.8	21 37.8 +55.8 84.9	21 17.4 +55.8 84.0	20 57.0 +55.8 83.1
23°	23 14.5 +55.7 86.4	22 54.0 +55.7 85.4	22 33.6 +55.7 84.5	22 13.2 +55.7 83.6	21 52.8 +55.7 82.7
24°	24 10.2 +55.6 86.0	23 49.7 +55.7 85.0	23 29.3 +55.6 84.1	23 08.9 +55.7 83.2	22 48.5 +55.7 82.3
25°	25 05.8 +55.6 85.5	24 45.4 +55.5 84.6	24 24.9 +55.6 83.7	24 04.6 +55.6 82.8	23 44.2 +55.7 81.9
26°	26 01.4 +55.4 85.1	25 40.9 +55.5 84.2	25 20.5 +55.5 83.3	25 00.2 +55.5 82.4	24 39.9 +55.5 81.4
27°	26 56.8 +55.4 84.7	26 36.4 +55.4 83.8	26 16.0 +55.5 82.9	25 55.7 +55.5 81.9	25 35.4 +55.5 81.0
28°	27 52.2 +55.4 84.3	27 31.8 +55.4 83.3	27 11.5 +55.3 82.4	26 51.2 +55.3 81.5	26 30.9 +55.4 80.6
29°	28 47.6 +55.2 83.8	28 27.2 +55.2 82.9	28 06.8 +55.3 82.0	27 46.5 +55.3 81.1	27 26.3 +55.3 80.2

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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 +56.4 90.0	-0 20.5 +56.4	-0 41.0 +56.4	-1 01.5 +56.4	-1 22.0 +56.4
1°	0 56.4 +56.4 89.7	0 35.9 +56.3 88.7	0 15.4 +56.3 87.8	-0 05.1 +56.3	-0 25.6 +56.4
2°	1 52.8 +56.3 89.3	1 32.2 +56.4 88.4	1 11.7 +56.4 87.4	0 51.2 +56.4 86.5	0 30.8 +56.4 85.6
3°	2 49.1 +56.4 89.0	2 28.6 +56.4 88.0	2 08.1 +56.4 87.1	1 47.6 +56.4 86.2	1 27.2 +56.4 85.2
4°	3 45.5 +56.4 88.6	3 25.0 +56.4 87.7	3 04.5 +56.4 86.8	2 44.0 +56.4 85.8	2 23.6 +56.4 84.9
5°	4 41.9 +56.3 88.3	4 21.4 +56.3 87.3	4 00.9 +56.3 86.4	3 40.4 +56.4 85.5	3 20.0 +56.3 84.5
6°	5 38.2 +56.4 87.9	5 17.7 +56.4 87.0	4 57.2 +56.4 86.1	4 36.8 +56.3 85.1	4 16.3 +56.4 84.2
7°	6 34.6 +56.3 87.6	6 14.1 +56.3 86.7	5 53.6 +56.3 85.7	5 33.1 +56.4 84.8	5 12.7 +56.4 83.8
8°	7 30.9 +56.3 87.2	7 10.4 +56.3 86.3	6 49.9 +56.3 85.4	6 29.5 +56.3 84.4	6 09.1 +56.3 83.5
9°	8 27.2 +56.3 86.9	8 06.7 +56.3 86.0	7 46.2 +56.4 85.0	7 25.8 +56.3 84.1	7 05.4 +56.4 83.2
10°	9 23.5 +56.2 86.5	9 03.0 +56.3 85.6	8 42.6 +56.2 84.7	8 22.1 +56.3 83.7	8 01.8 +56.3 82.8
11°	10 19.7 +56.3 86.2	9 59.3 +56.2 85.3	9 38.8 +56.3 84.3	9 18.4 +56.3 83.4	8 58.1 +56.3 82.5
12°	11 16.0 +56.2 85.8	10 55.5 +56.3 84.9	10 35.1 +56.3 84.0	10 14.7 +56.3 83.0	9 54.4 +56.2 82.1
13°	12 12.2 +56.2 85.5	11 51.8 +56.2 84.6	11 31.4 +56.2 83.6	11 11.0 +56.2 82.7	10 50.6 +56.3 81.8
14°	13 08.4 +56.2 85.1	12 48.0 +56.1 84.2	12 27.6 +56.2 83.3	12 07.2 +56.2 82.3	11 46.9 +56.2 81.4
15°	14 04.6 +56.1 84.8	13 44.1 +56.2 83.8	13 23.8 +56.1 82.9	13 03.4 +56.2 82.0	12 43.1 +56.2 81.0
16°	15 00.7 +56.1 84.4	14 40.3 +56.1 83.5	14 19.9 +56.1 82.5	13 59.6 +56.1 81.6	13 39.3 +56.2 80.7
17°	15 56.8 +56.0 84.0	15 36.4 +56.1 83.1	15 16.0 +56.1 82.2	14 55.7 +56.1 81.2	14 35.5 +56.1 80.3
18°	16 52.8 +56.1 83.7	16 32.5 +56.0 82.7	16 12.1 +56.1 81.8	15 51.8 +56.1 80.9	15 31.6 +56.1 80.0
19°	17 48.9 +55.9 83.3	17 28.5 +56.0 82.4	17 08.2 +56.0 81.4	16 47.9 +56.0 80.5	16 27.7 +56.1 79.6
20°	18 44.8 +56.0 82.9	18 24.5 +55.9 82.0	18 04.2 +56.0 81.1	17 43.9 +56.0 80.1	17 23.8 +56.0 79.2
21°	19 40.8 +55.8 82.5	19 20.4 +55.9 81.6	19 00.2 +55.9 80.7	18 39.9 +56.0 79.8	18 19.8 +55.9 78.8
22°	20 36.6 +55.9 82.1	20 16.3 +55.9 81.2	19 56.1 +55.8 80.3	19 35.9 +55.9 79.4	19 15.7 +56.0 78.5
23°	21 32.5 +55.7 81.7	21 12.2 +55.8 80.8	20 51.9 +55.9 79.9	20 31.8 +55.8 79.0	20 11.7 +55.8 78.1
24°	22 28.2 +55.7 81.3	22 08.0 +55.7 80.4	21 47.8 +55.7 79.5	21 27.6 +55.8 78.6	21 07.5 +55.8 77.7
25°	23 23.9 +55.7 80.9	23 03.7 +55.7 80.0	22 43.5 +55.7 79.1	22 23.4 +55.7 78.2	22 03.3 +55.8 77.3
26°	24 19.6 +55.6 80.5	23 59.4 +55.6 79.6	23 39.2 +55.6 78.7	23 19.1 +55.7 77.8	22 59.1 +55.7 76.9
27°	25 15.2 +55.5 80.1	24 55.0 +55.5 79.2	24 34.8 +55.6 78.3	24 14.8 +55.6 77.4	23 54.8 +55.6 76.5
28°	26 10.7 +55.4 79.7	25 50.5 +55.5 78.8	25 30.4 +55.5 77.9	25 10.4 +55.5 77.0	24 50.4 +55.6 76.1
29°	27 06.1 +55.4 79.3	26 46.0 +55.4 78.4	26 25.9 +55.4 77.5	26 05.9 +55.5 76.6	25 46.0 +55.5 75.7

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 42.5 +56.4	-2 02.9 +56.4	-2 23.3 +56.4	-2 43.7 +56.4	-3 04.0 +56.4
1°	-0 46.1 +56.4	-1 06.5 +56.4	-1 26.9 +56.4	-1 47.3 +56.5	-2 07.6 +56.5
2°	0 10.3 +56.4 84.6	-0 10.1 +56.4	-0 30.5 +56.5	-0 50.8 +56.5	-1 11.1 +56.5
3°	1 06.7 +56.4 84.3	0 46.3 +56.5 83.3	0 26.0 +56.4 82.4	0 05.7 +56.4 81.5	-0 14.6 +56.5
4°	2 03.1 +56.4 83.9	1 42.8 +56.4 83.0	1 22.4 +56.4 82.1	1 02.1 +56.5 81.1	0 41.9 +56.4 80.2
5°	2 59.5 +56.4 83.6	2 39.2 +56.4 82.7	2 18.8 +56.5 81.7	1 58.6 +56.4 80.8	1 38.3 +56.5 79.8
6°	3 55.9 +56.4 83.3	3 35.6 +56.4 82.3	3 15.3 +56.4 81.4	2 55.0 +56.4 80.4	2 34.8 +56.5 79.5
7°	4 52.3 +56.4 82.9	4 32.0 +56.4 82.0	4 11.7 +56.4 81.0	3 51.4 +56.5 80.1	3 31.3 +56.4 79.2
8°	5 48.7 +56.4 82.6	5 28.4 +56.4 81.6	5 08.1 +56.4 80.7	4 47.9 +56.4 79.8	4 27.7 +56.5 78.8
9°	6 45.1 +56.3 82.2	6 24.8 +56.3 81.3	6 04.5 +56.4 80.4	5 44.3 +56.4 79.4	5 24.2 +56.4 78.5
10°	7 41.4 +56.4 81.9	7 21.1 +56.4 80.9	7 00.9 +56.4 80.0	6 40.7 +56.4 79.1	6 20.6 +56.4 78.1
11°	8 37.8 +56.3 81.5	8 17.5 +56.3 80.6	7 57.3 +56.3 79.7	7 37.1 +56.4 78.7	7 17.0 +56.4 77.8
12°	9 34.1 +56.3 81.2	9 13.8 +56.3 80.2	8 53.6 +56.4 79.3	8 33.5 +56.4 78.4	8 13.4 +56.4 77.5
13°	10 30.4 +56.2 80.8	10 10.1 +56.3 79.9	9 50.0 +56.3 79.0	9 29.9 +56.3 78.0	9 09.8 +56.4 77.1
14°	11 26.6 +56.3 80.5	11 06.4 +56.3 79.5	10 46.3 +56.3 78.6	10 26.2 +56.3 77.7	10 06.2 +56.3 76.8
15°	12 22.9 +56.2 80.1	12 02.7 +56.2 79.2	11 42.6 +56.2 78.3	11 22.5 +56.3 77.3	11 02.5 +56.3 76.4
16°	13 19.1 +56.2 79.8	12 58.9 +56.2 78.8	12 38.8 +56.3 77.9	12 18.8 +56.3 77.0	11 58.8 +56.3 76.1
17°	14 15.3 +56.1 79.4	13 55.1 +56.2 78.5	13 35.1 +56.2 77.6	13 15.1 +56.2 76.6	12 55.1 +56.3 75.7
18°	15 11.4 +56.2 79.0	14 51.3 +56.2 78.1	14 31.3 +56.1 77.2	14 11.3 +56.2 76.3	13 51.4 +56.2 75.4
19°	16 07.6 +56.0 78.7	15 47.5 +56.1 77.7	15 27.4 +56.2 76.8	15 07.5 +56.2 75.9	14 47.6 +56.2 75.0
20°	17 03.6 +56.1 78.3	16 43.6 +56.0 77.4	16 23.6 +56.1 76.5	16 03.7 +56.1 75.5	15 43.8 +56.2 74.6
21°	17 59.7 +56.0 77.9	17 39.6 +56.1 77.0	17 19.7 +56.0 76.1	16 59.8 +56.1 75.2	16 40.0 +56.1 74.3
22°	18 55.7 +55.9 77.5	18 35.7 +55.9 76.6	18 15.7 +56.1 75.7	17 55.9 +56.0 74.8	17 36.1 +56.1 73.9
23°	19 51.6 +55.9 77.2	19 31.6 +56.0 76.2	19 11.8 +55.9 75.3	18 51.9 +56.0 74.4	18 32.2 +56.1 73.5
24°	20 47.5 +55.9 76.8	20 27.6 +55.9 75.9	20 07.7 +55.9 75.0	19 47.9 +56.0 74.0	19 28.3 +56.0 73.1
25°	21 43.4 +55.8 76.4	21 23.5 +55.8 75.5	21 03.6 +55.9 74.6	20 43.9 +55.9 73.7	20 24.3 +55.9 72.8
26°	22 39.2 +55.7 76.0	22 19.3 +55.8 75.1	21 59.5 +55.8 74.2	21 39.8 +55.8 73.3	21 20.2 +55.9 72.4
27°	23 34.9 +55.7 75.6	23 15.1 +55.7 74.7	22 55.3 +55.7 73.8	22 35.6 +55.8 72.9	22 16.1 +55.8 72.0
28°	24 30.6 +55.6 75.2	24 10.8 +55.6 74.3	23 51.0 +55.7 73.4	23 31.4 +55.8 72.5	23 11.9 +55.8 71.6
29°	25 26.2 +55.5 74.8	25 06.4 +55.6 73.9	24 46.7 +55.6 73.0	24 27.2 +55.6 72.1	24 07.7 +55.7 71.2

Declination SAME name as Latitude

Latitude 70°

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 24.3 +56.5	-3 44.5 +56.5	-4 04.7 +56.6	-4 24.8 +56.6	-4 44.8 +56.6
1°	-2 27.8 +56.5	-2 48.0 +56.5	-3 08.1 +56.5	-3 28.2 +56.6	-3 48.2 +56.6
2°	-1 31.3 +56.5	-1 51.5 +56.5	-2 11.6 +56.5	-2 31.6 +56.5	-2 51.6 +56.6
3°	-0 34.8 +56.5	-0 55.0 +56.5	-1 15.1 +56.6	-1 35.1 +56.6	-1 55.0 +56.6
4°	0 21.7 +56.5 79.2	0 01.5 +56.6 78.3	-0 18.5 +56.5	-0 38.5 +56.6	-0 58.4 +56.6
5°	1 18.2 +56.5 78.9	0 58.1 +56.5 78.0	0 38.0 +56.6 77.0	0 18.1 +56.5 76.1	-0 01.8 +56.6
6°	2 14.7 +56.4 78.6	1 54.6 +56.5 77.6	1 34.6 +56.5 76.7	1 14.6 +56.6 75.8	0 54.8 +56.6 74.8
7°	3 11.1 +56.5 78.2	2 51.1 +56.5 77.3	2 31.1 +56.5 76.4	2 11.2 +56.6 75.4	1 51.4 +56.6 74.5
8°	4 07.6 +56.5 77.9	3 47.6 +56.5 77.0	3 27.6 +56.6 76.0	3 07.8 +56.5 75.1	2 48.0 +56.6 74.2
9°	5 04.1 +56.4 77.6	4 44.1 +56.5 76.6	4 24.2 +56.5 75.7	4 04.3 +56.6 74.8	3 44.6 +56.5 73.8
10°	6 00.5 +56.5 77.2	5 40.6 +56.4 76.3	5 20.7 +56.5 75.4	5 00.9 +56.5 74.4	4 41.1 +56.6 73.5
11°	6 57.0 +56.4 76.9	6 37.0 +56.5 75.9	6 17.2 +56.5 75.0	5 57.4 +56.5 74.1	5 37.7 +56.6 73.2
12°	7 53.4 +56.4 76.5	7 33.5 +56.5 75.6	7 13.7 +56.5 74.7	6 53.9 +56.5 73.7	6 34.3 +56.5 72.8
13°	8 49.8 +56.4 76.2	8 30.0 +56.4 75.3	8 10.2 +56.4 74.3	7 50.4 +56.5 73.4	7 30.8 +56.6 72.5
14°	9 46.2 +56.4 75.8	9 26.4 +56.4 74.9	9 06.6 +56.5 74.0	8 46.9 +56.5 73.1	8 27.4 +56.5 72.1
15°	10 42.6 +56.4 75.5	10 22.8 +56.4 74.6	10 03.1 +56.4 73.6	9 43.4 +56.5 72.7	9 23.9 +56.5 71.8
16°	11 39.0 +56.3 75.1	11 19.2 +56.3 74.2	10 59.5 +56.4 73.3	10 39.9 +56.4 72.4	10 20.4 +56.4 71.5
17°	12 35.3 +56.3 74.8	12 15.5 +56.4 73.9	11 55.9 +56.3 73.0	11 36.3 +56.4 72.0	11 16.8 +56.5 71.1
18°	13 31.6 +56.3 74.4	13 11.9 +56.3 73.5	12 52.2 +56.4 72.6	12 32.7 +56.4 71.7	12 13.3 +56.4 70.8
19°	14 27.9 +56.2 74.1	14 08.2 +56.2 73.2	13 48.6 +56.3 72.2	13 29.1 +56.3 71.3	13 09.7 +56.4 70.4
20°	15 24.1 +56.2 73.7	15 04.4 +56.3 72.8	14 44.9 +56.3 71.9	14 25.4 +56.4 71.0	14 06.1 +56.4 70.1
21°	16 20.3 +56.2 73.4	16 00.7 +56.2 72.4	15 41.2 +56.2 71.5	15 21.8 +56.2 70.6	15 02.5 +56.3 69.7
22°	17 16.5 +56.1 73.0	16 56.9 +56.2 72.1	16 37.4 +56.2 71.2	16 18.0 +56.3 70.3	16 58.8 +56.3 69.4
23°	18 12.6 +56.1 72.6	17 53.1 +56.1 71.7	17 33.6 +56.2 70.8	17 14.3 +56.2 69.9	17 55.1 +56.2 69.0
24°	19 08.7 +56.0 72.2	18 49.2 +56.0 71.3	18 29.8 +56.1 70.4	18 10.5 +56.2 69.5	18 51.3 +56.2 68.6
25°	20 04.7 +56.0 71.9	19 45.2 +56.1 71.0	19 25.9 +56.1 70.1	19 06.7 +56.1 69.2	19 47.5 +56.2 68.3
26°	21 00.7 +55.9 71.5	20 41.3 +56.0 70.6	20 22.0 +56.0 69.7	20 02.8 +56.1 68.8	20 43.7 +56.1 67.9
27°	21 56.6 +55.9 71.1	21 37.3 +55.9 70.2	21 18.0 +56.0 69.3	20 58.9 +56.0 68.4	21 39.8 +56.1 67.5
28°	22 52.5 +55.8 70.7	22 33.2 +55.8 69.8	22 14.0 +55.9 68.9	21 54.9 +56.0 68.0	22 35.9 +56.0 67.1
29°	23 48.3 +55.8 70.3	23 29.0 +55.8 69.4	23 09.9 +55.8 68.5	22 50.9 +55.9 67.6	23 31.9 +56.0 66.7

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 04.7 +56.6	-5 24.6 +56.7	-5 44.3 +56.6	-6 04.0 +56.7	-6 23.6 +56.7
1°	-4 08.1 +56.6	-4 27.9 +56.6	-4 47.7 +56.7	-5 07.3 +56.7	-5 26.9 +56.8
2°	-3 11.5 +56.6	-3 31.3 +56.7	-3 51.0 +56.7	-4 10.6 +56.7	-4 30.1 +56.8
3°	-2 14.9 +56.7	-2 34.6 +56.6	-2 54.3 +56.7	-3 13.9 +56.8	-3 33.3 +56.7
4°	-1 18.2 +56.6	-1 38.0 +56.7	-1 57.6 +56.7	-2 17.1 +56.7	-2 36.6 +56.8
5°	-0 21.6 +56.6	-0 41.3 +56.7	-1 00.9 +56.7	-1 20.4 +56.7	-1 39.8 +56.8
6°	0 35.0 +56.7 73.9	0 15.4 +56.6 72.9	-0 04.2 +56.7	-0 23.7 +56.8	-0 43.0 +56.7
7°	1 31.7 +56.6 73.5	1 12.0 +56.7 72.6	0 52.5 +56.7 71.7	0 33.1 +56.7 70.7	0 13.7 +56.8 69.8
8°	2 28.3 +56.6 73.2	2 08.7 +56.6 72.3	1 49.2 +56.7 71.3	1 29.8 +56.7 70.4	1 10.5 +56.8 69.5
9°	3 24.9 +56.6 72.9	3 05.3 +56.7 72.0	2 45.9 +56.7 71.0	2 26.5 +56.8 70.1	2 07.3 +56.8 69.2
10°	4 21.5 +56.6 72.6	4 02.0 +56.6 71.6	3 42.6 +56.7 70.7	3 23.3 +56.7 69.8	3 04.1 +56.7 68.8
11°	5 18.1 +56.6 72.2	4 58.6 +56.7 71.3	4 39.3 +56.6 70.4	4 20.0 +56.7 69.4	4 00.8 +56.8 68.5
12°	6 14.7 +56.6 71.9	5 55.3 +56.6 71.0	5 35.9 +56.7 70.0	5 16.7 +56.7 69.1	4 57.6 +56.7 68.2
13°	7 11.3 +56.6 71.6	6 51.9 +56.6 70.6	6 32.6 +56.6 69.7	6 13.4 +56.7 68.8	5 54.3 +56.8 67.9
14°	8 07.9 +56.5 71.2	7 48.5 +56.6 70.3	7 29.2 +56.7 69.4	7 10.1 +56.7 68.4	6 51.1 +56.7 67.5
15°	9 04.4 +56.6 70.9	8 45.1 +56.6 70.0	8 25.9 +56.6 69.0	8 06.8 +56.6 68.1	7 47.8 +56.7 67.2
16°	10 01.0 +56.5 70.5	9 41.7 +56.5 69.6	9 22.5 +56.6 68.7	9 03.4 +56.7 67.8	8 44.5 +56.7 66.9
17°	10 57.5 +56.5 70.2	10 38.2 +56.5 69.3	10 19.1 +56.6 68.4	10 00.1 +56.6 67.4	9 41.2 +56.6 66.5
18°	11 54.0 +56.4 69.9	11 34.7 +56.6 68.9	11 15.7 +56.5 68.0	10 56.7 +56.6 67.1	10 37.8 +56.7 66.2
19°	12 50.4 +56.5 69.5	12 31.3 +56.4 68.6	12 12.2 +56.5 67.7	11 53.3 +56.6 66.8	11 34.5 +56.6 65.9
20°	13 46.9 +56.4 69.2	13 27.7 +56.5 68.3	13 08.7 +56.5 67.3	12 49.9 +56.5 66.4	12 31.1 +56.6 65.5
21°	14 43.3 +56.3 68.8	14 24.2 +56.4 67.9	14 05.2 +56.5 67.0	13 46.4 +56.5 66.1	13 27.7 +56.6 65.2
22°	15 39.6 +56.4 68.5	15 20.6 +56.4 67.5	15 01.7 +56.4 66.6	14 42.9 +56.5 65.7	14 24.3 +56.5 64.8
23°	16 36.0 +56.3 68.1	16 17.0 +56.4 67.2	15 58.1 +56.5 66.3	15 39.4 +56.5 65.4	15 20.8 +56.5 64.5
24°	17 32.3 +56.2 67.7	17 13.4 +56.3 66.8	16 54.6 +56.3 65.9	16 35.9 +56.4 65.0	16 17.3 +56.5 64.1
25°	18 28.5 +56.3 67.4	18 09.7 +56.2 66.5	17 50.9 +56.3 65.6	17 32.3 +56.4 64.7	17 13.8 +56.5 63.8
26°	19 24.8 +56.1 67.0	19 05.9 +56.3 66.1	18 47.2 +56.3 65.2	18 28.7 +56.3 64.3	18 10.3 +56.4 63.4
27°	20 20.9 +56.2 66.6	20 02.2 +56.2 65.7	19 43.5 +56.3 64.8	19 25.0 +56.3 64.0	19 06.7 +56.3 63.1
28°	21 17.1 +56.0 66.2	20 58.4 +56.1 65.4	20 39.8 +56.2 64.5	20 21.3 +56.3 63.6	20 03.0 +56.3 62.7
29°	22 13.1 +56.1 65.9	21 54.5 +56.1 65.0	21 36.0 +56.1 64.1	21 17.6 +56.2 63.2	20 59.3 +56.3 62.3

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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°	-6 43.1 +56.8	-7 02.4 +56.8	-7 21.7 +56.9	-7 40.8 +56.9	-7 59.8 +57.0
1°	-5 46.3 +56.8	-6 05.6 +56.8	-6 24.8 +56.9	-6 43.9 +56.9	-7 02.8 +56.9
2°	-4 49.5 +56.8	-5 08.8 +56.9	-5 27.9 +56.8	-5 47.0 +56.9	-6 05.9 +57.0
3°	-3 52.7 +56.8	-4 11.9 +56.8	-4 31.1 +56.9	-4 50.1 +57.0	-5 08.9 +57.0
4°	-2 55.9 +56.8	-3 15.1 +56.9	-3 34.2 +56.9	-3 53.1 +56.9	-4 11.9 +56.9
5°	-1 59.1 +56.8	-2 18.2 +56.8	-2 37.3 +56.9	-2 56.2 +57.0	-3 15.0 +57.0
6°	-1 02.3 +56.8	-1 21.4 +56.9	-1 40.4 +56.9	-1 59.2 +56.9	-2 18.0 +57.0
7°	-0 05.5 +56.9	-0 24.5 +56.8	-0 43.5 +56.9	-1 02.3 +56.9	-1 21.0 +57.0
8°	0 51.4 +56.8 68.5	0 32.3 +56.9 67.6	0 13.4 +56.9 66.7	-0 05.4 +57.0	-0 24.0 +57.0
9°	1 48.2 +56.8 68.2	1 29.2 +56.8 67.3	1 10.3 +56.9 66.3	0 51.6 +56.9 65.4	0 33.0 +57.0 64.5
10°	2 45.0 +56.8 67.9	2 26.0 +56.9 67.0	2 07.2 +56.9 66.0	1 48.5 +57.0 65.1	1 30.0 +57.0 64.2
11°	3 41.8 +56.8 67.6	3 22.9 +56.8 66.6	3 04.1 +56.9 65.7	2 45.5 +56.9 64.8	2 27.0 +57.0 63.8
12°	4 38.6 +56.8 67.2	4 19.7 +56.9 66.3	4 01.0 +56.9 65.4	3 42.4 +57.0 64.5	3 24.0 +57.0 63.5
13°	5 35.4 +56.8 66.9	5 16.6 +56.8 66.0	4 57.9 +56.9 65.1	4 39.4 +56.9 64.1	4 21.0 +56.9 63.2
14°	6 32.2 +56.7 66.6	6 13.4 +56.8 65.7	5 54.8 +56.8 64.7	5 36.3 +56.9 63.8	5 17.9 +57.0 62.9
15°	7 28.9 +56.8 66.3	7 10.2 +56.8 65.4	6 51.6 +56.9 64.4	6 33.2 +56.9 63.5	6 14.9 +57.0 62.6
16°	8 25.7 +56.7 65.9	8 07.0 +56.8 65.0	7 48.5 +56.8 64.1	7 30.1 +56.9 63.2	7 11.9 +56.9 62.3
17°	9 22.4 +56.7 65.6	9 03.8 +56.8 64.7	8 45.3 +56.8 63.8	8 27.0 +56.9 62.9	8 08.8 +56.9 61.9
18°	10 19.1 +56.7 65.3	10 00.6 +56.7 64.4	9 42.1 +56.8 63.5	9 23.9 +56.8 62.5	9 05.7 +56.9 61.6
19°	11 15.8 +56.7 65.0	10 57.3 +56.7 64.0	10 38.9 +56.8 63.1	10 20.7 +56.8 62.2	10 02.6 +56.9 61.3
20°	12 12.5 +56.7 64.6	11 54.0 +56.7 63.7	11 35.7 +56.8 62.8	11 17.5 +56.9 61.9	10 59.5 +56.9 61.0
21°	13 09.2 +56.6 64.3	12 50.7 +56.7 63.4	12 32.5 +56.7 62.5	12 14.4 +56.7 61.6	11 56.4 +56.8 60.7
22°	14 05.8 +56.6 63.9	13 47.4 +56.7 63.0	13 29.2 +56.7 62.1	13 11.1 +56.8 61.2	12 53.2 +56.9 60.3
23°	15 02.4 +56.5 63.6	14 44.1 +56.6 62.7	14 25.9 +56.7 61.8	14 07.9 +56.7 60.9	13 50.1 +56.7 60.0
24°	15 58.9 +56.6 63.2	15 40.7 +56.6 62.4	15 22.6 +56.6 61.5	15 04.6 +56.7 60.6	14 46.8 +56.8 59.7
25°	16 55.5 +56.5 62.9	16 37.3 +56.5 62.0	16 19.2 +56.7 61.1	16 01.3 +56.7 60.2	15 43.6 +56.8 59.3
26°	17 52.0 +56.4 62.5	17 33.8 +56.6 61.7	17 15.9 +56.5 60.8	16 58.0 +56.7 59.9	16 40.4 +56.7 59.0
27°	18 48.4 +56.4 62.2	18 30.4 +56.4 61.3	18 12.4 +56.6 60.4	17 54.7 +56.6 59.5	17 37.1 +56.6 58.7
28°	19 44.8 +56.4 61.8	19 26.8 +56.5 60.9	19 09.0 +56.5 60.1	18 51.3 +56.5 59.2	18 33.7 +56.6 58.3
29°	20 41.2 +56.3 61.5	20 23.3 +56.4 60.6	20 05.5 +56.4 59.7	19 47.8 +56.5 58.8	19 30.3 +56.6 58.0

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 18.7 +57.0	-8 37.4 +57.1	-8 56.0 +57.1	-9 14.4 +57.1	-9 32.7 +57.2
1°	-7 21.7 +57.0	-7 40.3 +57.0	-7 58.9 +57.1	-8 17.3 +57.2	-8 35.5 +57.2
2°	-6 24.7 +57.0	-6 43.3 +57.1	-7 01.8 +57.1	-7 20.1 +57.1	-7 38.3 +57.2
3°	-5 27.7 +57.1	-5 46.2 +57.0	-6 04.7 +57.1	-6 23.0 +57.2	-6 41.1 +57.2
4°	-4 30.6 +57.0	-4 49.2 +57.1	-5 07.6 +57.2	-5 25.8 +57.2	-5 43.9 +57.3
5°	-3 33.6 +57.0	-3 52.1 +57.1	-4 10.4 +57.1	-4 28.6 +57.2	-4 46.6 +57.2
6°	-2 36.6 +57.1	-2 55.0 +57.1	-3 13.3 +57.1	-3 31.4 +57.2	-3 49.4 +57.2
7°	-1 39.5 +57.0	-1 57.9 +57.1	-2 16.2 +57.2	-2 34.2 +57.2	-2 52.2 +57.3
8°	-0 42.5 +57.1	-1 00.8 +57.1	-1 19.0 +57.1	-1 37.0 +57.2	-1 54.9 +57.2
9°	0 14.6 +57.0 63.5	-0 03.7 +57.1	-0 21.9 +57.2	-0 39.8 +57.1	-0 57.7 +57.3
10°	1 11.6 +57.0 63.2	0 53.4 +57.1 62.3	0 35.3 +57.1 61.3	0 17.3 +57.2 60.4	-0 00.4 +57.2
11°	2 08.6 +57.1 62.9	1 50.5 +57.0 62.0	1 32.4 +57.2 61.0	1 14.5 +57.2 60.1	0 56.8 +57.3 59.2
12°	3 05.7 +57.0 62.6	2 47.5 +57.1 61.7	2 29.6 +57.1 60.7	2 11.7 +57.2 59.8	1 54.1 +57.2 58.9
13°	4 02.7 +57.0 62.3	3 44.6 +57.1 61.4	3 26.7 +57.1 60.4	3 08.9 +57.2 59.5	2 51.3 +57.3 58.6
14°	4 59.7 +57.1 62.0	4 41.7 +57.1 61.0	4 23.8 +57.2 60.1	4 06.1 +57.2 59.2	3 48.6 +57.2 58.3
15°	5 56.8 +57.0 61.7	5 38.8 +57.0 60.7	5 21.0 +57.1 59.8	5 03.3 +57.2 58.9	4 45.8 +57.2 58.0
16°	6 53.8 +57.0 61.3	6 35.8 +57.1 60.4	6 18.1 +57.1 59.5	6 00.5 +57.1 58.6	5 43.0 +57.3 57.7
17°	7 50.8 +56.9 61.0	7 32.9 +57.0 60.1	7 15.2 +57.1 59.2	6 57.6 +57.2 58.3	6 40.3 +57.2 57.4
18°	8 47.7 +57.0 60.7	8 29.9 +57.0 59.8	8 12.3 +57.0 58.9	7 54.8 +57.1 58.0	7 37.5 +57.2 57.1
19°	9 44.7 +57.0 60.4	9 26.9 +57.0 59.5	9 09.3 +57.1 58.6	8 51.9 +57.1 57.7	8 34.7 +57.2 56.8
20°	10 41.7 +56.9 60.1	10 23.9 +57.0 59.2	10 06.4 +57.1 58.3	9 49.0 +57.1 57.4	9 31.9 +57.1 56.4
21°	11 38.6 +56.9 59.8	11 20.9 +57.0 58.9	11 03.5 +57.0 57.9	10 46.1 +57.1 57.0	10 29.0 +57.2 56.1
22°	12 35.5 +56.9 59.4	12 17.9 +56.9 58.5	12 00.5 +57.0 57.6	11 43.2 +57.1 56.7	11 26.2 +57.1 55.8
23°	13 32.4 +56.8 59.1	13 14.8 +57.0 58.2	12 57.5 +57.0 57.3	12 40.3 +57.0 56.4	12 23.3 +57.1 55.5
24°	14 29.2 +56.8 58.8	14 11.8 +56.8 57.9	13 54.5 +56.9 57.0	13 37.3 +57.1 56.1	13 20.4 +57.1 55.2
25°	15 26.0 +56.8 58.4	15 08.6 +56.9 57.6	14 51.4 +56.9 56.7	14 34.4 +56.9 55.8	14 17.5 +57.0 54.9
26°	16 22.8 +56.8 58.1	16 05.5 +56.8 57.2	15 48.3 +56.9 56.3	15 31.3 +57.0 55.4	15 14.5 +57.1 54.6
27°	17 19.6 +56.7 57.8	17 02.3 +56.8 56.9	16 45.2 +56.9 56.0	16 28.3 +56.9 55.1	16 11.6 +57.0 54.2
28°	18 16.3 +56.7 57.4	17 59.1 +56.8 56.5	17 42.1 +56.8 55.7	17 25.2 +56.9 54.8	17 08.6 +56.9 53.9
29°	19 13.0 +56.7 57.1	18 55.9 +56.7 56.2	18 38.9 +56.8 55.3	18 22.1 +56.9 54.5	18 05.5 +57.0 53.6

Declination SAME name as Latitude

Latitude 70°

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°	-9 50.8 +57.2				
1°	-8 53.6 +57.3	-9 11.5 +57.3	-9 29.2 +57.4	-9 46.7 +57.4	
2°	-7 56.3 +57.2	-8 14.2 +57.4	-8 31.8 +57.3	-8 49.3 +57.4	-9 06.6 +57.4
3°	-6 59.1 +57.3	-7 16.8 +57.3	-7 34.5 +57.4	-7 51.9 +57.4	-8 09.2 +57.5
4°	-6 01.8 +57.3	-6 19.5 +57.3	-6 37.1 +57.4	-6 54.5 +57.5	-7 11.7 +57.5
5°	-5 04.5 +57.3	-5 22.2 +57.4	-5 39.7 +57.4	-5 57.0 +57.4	-6 14.2 +57.5
6°	-4 07.2 +57.3	-4 24.8 +57.3	-4 42.3 +57.4	-4 59.6 +57.5	-5 16.7 +57.6
7°	-3 09.9 +57.3	-3 27.5 +57.4	-3 44.9 +57.4	-4 02.1 +57.5	-4 19.1 +57.5
8°	-2 12.6 +57.3	-2 30.1 +57.3	-2 47.5 +57.4	-3 04.6 +57.4	-3 21.6 +57.5
9°	-1 15.3 +57.3	-1 32.8 +57.4	-1 50.1 +57.5	-2 07.2 +57.5	-2 24.1 +57.5
10°	-0 18.0 +57.3	-0 35.4 +57.3	-0 52.6 +57.4	-1 09.7 +57.5	-1 26.6 +57.6
11°	0 39.3 +57.3 58.2	0 21.9 +57.4 57.3	0 04.8 +57.4 56.4	-0 12.2 +57.5	-0 29.0 +57.5
12°	1 36.6 +57.3 57.9	1 19.3 +57.4 57.0	1 02.2 +57.4 56.1	0 45.3 +57.4 55.1	0 28.5 +57.6 54.2
13°	2 33.9 +57.3 57.6	2 16.7 +57.3 56.7	1 59.6 +57.4 55.8	1 42.7 +57.5 54.8	1 26.1 +57.5 53.9
14°	3 31.2 +57.3 57.3	3 14.0 +57.4 56.4	2 57.0 +57.4 55.5	2 40.2 +57.5 54.6	2 23.6 +57.5 53.6
15°	4 28.5 +57.3 57.0	4 11.4 +57.3 56.1	3 54.4 +57.4 55.2	3 37.7 +57.5 54.3	3 21.1 +57.6 53.3
16°	5 25.8 +57.3 56.7	5 08.7 +57.4 55.8	4 51.8 +57.4 54.9	4 35.2 +57.4 54.0	4 18.7 +57.5 53.1
17°	6 23.1 +57.2 56.4	6 06.1 +57.3 55.5	5 49.2 +57.4 54.6	5 32.6 +57.5 53.7	5 16.2 +57.5 52.8
18°	7 20.3 +57.3 56.1	7 03.4 +57.3 55.2	6 46.6 +57.4 54.3	6 30.1 +57.4 53.4	6 13.7 +57.5 52.5
19°	8 17.6 +57.2 55.8	8 00.7 +57.3 54.9	7 44.0 +57.4 54.0	7 27.5 +57.4 53.1	7 11.2 +57.5 52.2
20°	9 14.8 +57.3 55.5	8 58.0 +57.3 54.6	8 41.4 +57.3 53.7	8 24.9 +57.4 52.8	8 08.7 +57.5 51.9
21°	10 12.1 +57.2 55.2	9 55.3 +57.3 54.3	9 38.7 +57.4 53.4	9 22.3 +57.4 52.5	9 06.2 +57.4 51.6
22°	11 09.3 +57.2 54.9	10 52.6 +57.2 54.0	10 36.1 +57.3 53.1	10 19.7 +57.4 52.2	10 03.6 +57.5 51.3
23°	12 06.5 +57.1 54.6	11 49.8 +57.3 53.7	11 33.4 +57.3 52.8	11 17.1 +57.4 51.9	11 01.1 +57.4 51.0
24°	13 03.6 +57.2 54.3	12 47.1 +57.2 53.4	12 30.7 +57.3 52.5	12 14.5 +57.3 51.6	11 58.5 +57.4 50.7
25°	14 00.8 +57.1 54.0	13 44.3 +57.2 53.1	13 28.0 +57.2 52.2	13 11.8 +57.4 51.3	12 55.9 +57.4 50.4
26°	14 57.9 +57.1 53.7	14 41.5 +57.1 52.8	14 25.2 +57.3 51.9	14 09.2 +57.3 51.0	13 53.3 +57.4 50.1
27°	15 55.0 +57.1 53.4	15 38.6 +57.2 52.5	15 22.5 +57.2 51.6	15 06.5 +57.2 50.7	14 50.7 +57.3 49.8
28°	16 52.1 +57.0 53.0	16 35.8 +57.1 52.2	16 19.7 +57.1 51.3	16 03.7 +57.3 50.4	15 48.0 +57.4 49.5
29°	17 49.1 +57.0 52.7	17 32.9 +57.1 51.8	17 16.8 +57.2 51.0	17 01.0 +57.2 50.1	16 45.4 +57.3 49.2

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°	-9 23.8 +57.6	-9 40.7 +57.6	-9 57.4 +57.6		
3°	-8 26.2 +57.5	-8 43.1 +57.6	-8 59.8 +57.7	-9 16.2 +57.7	-9 32.5 +57.8
4°	-7 28.7 +57.6	-7 45.5 +57.6	-8 02.1 +57.7	-8 18.5 +57.7	-8 34.7 +57.8
5°	-6 31.1 +57.5	-6 47.9 +57.6	-7 04.4 +57.7	-7 20.8 +57.8	-7 36.9 +57.8
6°	-5 33.6 +57.6	-5 50.3 +57.7	-6 06.7 +57.6	-6 23.0 +57.7	-6 39.1 +57.8
7°	-4 36.0 +57.6	-4 52.6 +57.6	-5 09.1 +57.7	-5 25.3 +57.8	-5 41.3 +57.8
8°	-3 38.4 +57.6	-3 55.0 +57.7	-4 11.4 +57.8	-4 27.5 +57.8	-4 43.5 +57.9
9°	-2 40.8 +57.6	-2 57.3 +57.6	-3 13.6 +57.7	-3 29.7 +57.7	-3 45.6 +57.8
10°	-1 43.2 +57.6	-1 59.7 +57.7	-2 15.9 +57.7	-2 32.0 +57.8	-2 47.8 +57.8
11°	-0 45.6 +57.6	-1 02.0 +57.6	-1 18.2 +57.7	-1 34.2 +57.8	-1 50.0 +57.9
12°	0 12.0 +57.6 53.3	-0 04.4 +57.7	-0 20.5 +57.7	-0 36.4 +57.8	-0 52.1 +57.8
13°	1 09.6 +57.6 53.0	0 53.3 +57.7 52.0	0 37.2 +57.7 51.1	0 21.4 +57.7 50.2	0 05.7 +57.9 49.2
14°	2 07.2 +57.6 52.7	1 51.0 +57.6 51.8	1 34.9 +57.8 50.8	1 19.1 +57.8 49.9	1 03.6 +57.8 49.0
15°	3 04.8 +57.6 52.4	2 48.6 +57.7 51.5	2 32.7 +57.7 50.6	2 16.9 +57.8 49.6	2 01.4 +57.8 48.7
16°	4 02.4 +57.5 52.1	3 46.3 +57.6 51.2	3 30.4 +57.7 50.3	3 14.7 +57.8 49.3	2 59.2 +57.9 48.4
17°	4 59.9 +57.6 51.8	4 43.9 +57.6 50.9	4 28.1 +57.7 50.0	4 12.5 +57.7 49.1	3 57.1 +57.8 48.2
18°	5 57.5 +57.6 51.6	5 41.5 +57.7 50.6	5 25.8 +57.7 49.7	5 10.2 +57.8 48.8	4 54.9 +57.8 47.9
19°	6 55.1 +57.5 51.3	6 39.2 +57.6 50.4	6 23.5 +57.7 49.5	6 08.0 +57.7 48.5	5 52.7 +57.8 47.6
20°	7 52.6 +57.6 51.0	7 36.8 +57.6 50.1	7 21.2 +57.6 49.2	7 05.7 +57.8 48.3	6 50.5 +57.8 47.4
21°	8 50.2 +57.5 50.7	8 34.4 +57.6 49.8	8 18.8 +57.7 48.9	8 03.5 +57.7 48.0	7 48.3 +57.8 47.1
22°	9 47.7 +57.5 50.4	9 32.0 +57.6 49.5	9 16.5 +57.6 48.6	9 01.2 +57.7 47.7	8 46.1 +57.8 46.8
23°	10 45.2 +57.5 50.1	10 29.6 +57.5 49.2	10 14.1 +57.7 48.3	9 58.9 +57.7 47.4	9 43.9 +57.8 46.5
24°	11 42.7 +57.5 49.8	11 27.1 +57.6 48.9	11 11.8 +57.6 48.1	10 56.6 +57.7 47.2	10 41.7 +57.7 46.3
25°	12 40.2 +57.5 49.5	12 24.7 +57.5 48.7	12 09.4 +57.6 47.8	11 54.3 +57.7 46.9	11 39.4 +57.8 46.0
26°	13 37.7 +57.4 49.3	13 22.2 +57.5 48.4	13 07.0 +57.6 47.5	12 52.0 +57.6 46.6	12 37.2 +57.7 45.7
27°	14 35.1 +57.4 49.0	14 19.7 +57.5 48.1	14 04.6 +57.5 47.2	13 49.6 +57.7 46.3	13 34.9 +57.7 45.4
28°	15 32.5 +57.4 48.7	15 17.2 +57.5 47.8	15 02.1 +57.6 46.9	14 47.3 +57.6 46.0	14 32.6 +57.7 45.1
29°	16 29.9 +57.4 48.3	16 14.7 +57.4 47.5	15 59.7 +57.5 46.6	15 44.9 +57.6 45.7	15 30.3 +57.6 44.9

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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°	-9 48.5 +57.8				
4°	-8 50.7 +57.9	-9 06.5 +58.0	-9 22.0 +58.0	-9 37.3 +58.1	-9 52.4 +58.1
5°	-7 52.8 +57.8	-8 08.5 +57.9	-8 24.0 +58.0	-8 39.2 +58.0	-8 54.3 +58.2
6°	-6 55.0 +57.9	-7 10.6 +57.9	-7 26.0 +58.0	-7 41.2 +58.1	-7 56.1 +58.1
7°	-5 57.1 +57.9	-6 12.7 +58.0	-6 28.0 +58.0	-6 43.1 +58.0	-6 58.0 +58.1
8°	-4 59.2 +57.9	-5 14.7 +57.9	-5 30.0 +58.0	-5 45.1 +58.1	-5 59.9 +58.2
9°	-4 01.3 +57.9	-4 16.8 +58.0	-4 32.0 +58.0	-4 47.0 +58.1	-5 01.7 +58.1
10°	-3 03.4 +57.9	-3 18.8 +57.9	-3 34.0 +58.0	-3 48.9 +58.1	-4 03.6 +58.1
11°	-2 05.5 +57.9	-2 20.9 +58.0	-2 36.0 +58.1	-2 50.8 +58.1	-3 05.5 +58.2
12°	-1 07.6 +57.9	-1 22.9 +58.0	-1 37.9 +58.0	-1 52.7 +58.1	-2 07.3 +58.2
13°	-0 09.7 +57.9	-0 24.9 +57.9	-0 39.9 +58.0	-0 54.6 +58.1	-1 09.1 +58.1
14°	0 48.2 +57.9 48.0	0 33.0 +58.0 47.1	0 18.1 +58.1 46.1	0 03.5 +58.0 45.2	-0 11.0 +58.2
15°	1 46.1 +57.9 47.8	1 31.0 +58.0 46.8	1 16.2 +58.0 45.9	1 01.5 +58.1 45.0	0 47.2 +58.1 44.0
16°	2 44.0 +57.9 47.5	2 29.0 +57.9 46.6	2 14.2 +58.0 45.6	1 59.6 +58.1 44.7	1 45.3 +58.2 43.8
17°	3 41.9 +57.9 47.2	3 26.9 +58.0 46.3	3 12.2 +58.0 45.4	2 57.7 +58.1 44.5	2 43.5 +58.1 43.5
18°	4 39.8 +57.9 47.0	4 24.9 +57.9 46.0	4 10.2 +58.1 45.1	3 55.8 +58.1 44.2	3 41.6 +58.2 43.3
19°	5 37.7 +57.8 46.7	5 22.8 +58.0 45.8	5 08.3 +58.0 44.9	4 53.9 +58.1 44.0	4 39.8 +58.1 43.0
20°	6 35.5 +57.9 46.4	6 20.8 +57.9 45.5	6 06.3 +58.0 44.6	5 52.0 +58.0 43.7	5 37.9 +58.1 42.8
21°	7 33.4 +57.9 46.2	7 18.7 +58.0 45.3	7 04.3 +58.0 44.4	6 50.0 +58.1 43.4	6 36.0 +58.2 42.5
22°	8 31.3 +57.8 45.9	8 16.7 +57.9 45.0	8 02.3 +57.9 44.1	7 48.1 +58.0 43.2	7 34.2 +58.1 42.3
23°	9 29.1 +57.9 45.6	9 14.6 +57.9 44.7	9 00.2 +58.0 43.8	8 46.1 +58.1 42.9	8 32.3 +58.1 42.0
24°	10 27.0 +57.8 45.4	10 12.5 +57.9 44.5	9 58.2 +58.0 43.6	9 44.2 +58.0 42.7	9 30.4 +58.1 41.8
25°	11 24.8 +57.8 45.1	11 10.4 +57.8 44.2	10 56.2 +57.9 43.3	10 42.2 +58.0 42.4	10 28.5 +58.1 41.5
26°	12 22.6 +57.8 44.8	12 08.2 +57.9 43.9	11 54.1 +58.0 43.0	11 40.2 +58.0 42.2	11 26.6 +58.0 41.3
27°	13 20.4 +57.8 44.5	13 06.1 +57.9 43.7	12 52.1 +57.9 42.8	12 38.2 +58.0 41.9	12 24.6 +58.1 41.0
28°	14 18.2 +57.7 44.3	14 04.0 +57.8 43.4	13 50.0 +57.9 42.5	13 36.2 +58.0 41.6	13 22.7 +58.0 40.8
29°	15 15.9 +57.8 44.0	15 01.8 +57.8 43.1	14 47.9 +57.9 42.2	14 34.2 +57.9 41.4	14 20.7 +58.1 40.5

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°	-9 09.0 +58.2	-9 23.5 +58.2	-9 37.8 +58.3	-9 51.8 +58.3	
6°	-8 10.8 +58.1	-8 25.3 +58.3	-8 39.5 +58.3	-8 53.5 +58.4	-9 07.1 +58.4
7°	-7 12.7 +58.2	-7 27.0 +58.2	-7 41.2 +58.3	-7 55.1 +58.4	-8 08.7 +58.4
8°	-6 14.5 +58.2	-6 28.8 +58.3	-6 42.9 +58.4	-6 56.7 +58.4	-7 10.3 +58.5
9°	-5 16.3 +58.2	-5 30.5 +58.2	-5 44.5 +58.3	-5 58.3 +58.4	-6 11.8 +58.4
10°	-4 18.1 +58.3	-4 32.3 +58.3	-4 46.2 +58.3	-4 59.9 +58.4	-5 13.4 +58.5
11°	-3 19.8 +58.2	-3 34.0 +58.3	-3 47.9 +58.4	-4 01.5 +58.4	-4 14.9 +58.5
12°	-2 21.6 +58.2	-2 35.7 +58.3	-2 49.5 +58.3	-3 03.1 +58.4	-3 16.4 +58.4
13°	-1 23.4 +58.2	-1 37.4 +58.2	-1 51.2 +58.3	-2 04.7 +58.4	-2 18.0 +58.5
14°	-0 25.2 +58.2	-0 39.2 +58.3	-0 52.9 +58.4	-1 06.3 +58.4	-1 19.5 +58.5
15°	0 33.0 +58.2 43.1	0 19.1 +58.3 42.1	0 05.5 +58.3 41.2	-0 07.9 +58.4	-0 21.0 +58.4
16°	1 31.2 +58.3 42.8	1 17.4 +58.3 41.9	1 03.8 +58.4 41.0	0 50.5 +58.4 40.0	0 37.4 +58.5 39.1
17°	2 29.5 +58.2 42.6	2 15.7 +58.3 41.7	2 02.2 +58.3 40.7	1 48.9 +58.4 39.8	1 35.9 +58.5 38.9
18°	3 27.7 +58.2 42.4	3 14.0 +58.2 41.4	3 00.5 +58.4 40.5	2 47.3 +58.4 39.6	2 34.4 +58.4 38.7
19°	4 25.9 +58.2 42.1	4 12.2 +58.3 41.2	3 58.9 +58.3 40.3	3 45.7 +58.4 39.3	3 32.8 +58.5 38.4
20°	5 24.1 +58.2 41.9	5 10.5 +58.3 41.0	4 57.2 +58.3 40.0	4 44.1 +58.4 39.1	4 31.3 +58.5 38.2
21°	6 22.3 +58.2 41.6	6 08.8 +58.2 40.7	5 55.5 +58.3 39.8	5 42.5 +58.4 38.9	5 29.8 +58.4 38.0
22°	7 20.5 +58.2 41.4	7 07.0 +58.3 40.5	6 53.8 +58.4 39.6	6 40.9 +58.4 38.7	6 28.2 +58.5 37.7
23°	8 18.7 +58.1 41.1	8 05.3 +58.2 40.2	7 52.2 +58.3 39.3	7 39.3 +58.4 38.4	7 26.7 +58.4 37.5
24°	9 16.8 +58.2 40.9	9 03.5 +58.3 40.0	8 50.5 +58.3 39.1	8 37.7 +58.3 38.2	8 25.1 +58.4 37.3
25°	10 15.0 +58.2 40.6	10 01.8 +58.2 39.7	9 48.8 +58.3 38.8	9 36.0 +58.4 38.0	9 23.5 +58.4 37.1
26°	11 13.2 +58.1 40.4	11 00.0 +58.2 39.5	10 47.1 +58.2 38.6	10 34.4 +58.3 37.7	10 21.9 +58.5 36.8
27°	12 11.3 +58.1 40.1	11 58.2 +58.2 39.2	11 45.3 +58.3 38.4	11 32.7 +58.4 37.5	11 20.4 +58.4 36.6
28°	13 09.4 +58.1 39.9	12 56.4 +58.2 39.0	12 43.6 +58.3 38.1	12 31.1 +58.3 37.2	12 18.8 +58.4 36.4
29°	14 07.5 +58.1 39.6	13 54.6 +58.1 38.7	13 41.9 +58.2 37.9	13 29.4 +58.3 37.0	13 17.2 +58.3 36.1

Declination SAME name as Latitude

Latitude 70°

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°	-9 20.6 +58.5	-9 33.7 +58.5	-9 46.6 +58.6	-9 59.2 +58.6	
7°	-8 22.1 +58.5	-8 35.2 +58.6	-8 48.0 +58.6	-9 00.6 +58.7	-9 12.8 +58.7
8°	-7 23.6 +58.5	-7 36.6 +58.6	-7 49.4 +58.7	-8 01.9 +58.7	-8 14.1 +58.8
9°	-6 25.1 +58.6	-6 38.0 +58.5	-6 50.7 +58.6	-7 03.2 +58.7	-7 15.3 +58.7
10°	-5 26.5 +58.5	-5 39.5 +58.6	-5 52.1 +58.6	-6 04.5 +58.7	-6 16.6 +58.8
11°	-4 28.0 +58.5	-4 40.9 +58.6	-4 53.5 +58.7	-5 05.8 +58.7	-5 17.8 +58.8
12°	-3 29.5 +58.5	-3 42.3 +58.6	-3 54.8 +58.6	-4 07.1 +58.7	-4 19.0 +58.7
13°	-2 31.0 +58.6	-2 43.7 +58.6	-2 56.2 +58.7	-3 08.4 +58.8	-3 20.3 +58.8
14°	-1 32.4 +58.5	-1 45.1 +58.6	-1 57.5 +58.6	-2 09.6 +58.7	-2 21.5 +58.8
15°	-0 33.9 +58.5	-0 46.5 +58.6	-0 58.9 +58.7	-1 10.9 +58.7	-1 22.7 +58.7
16°	0 24.6 +58.6 38.2	0 12.1 +58.6 37.2	-0 00.2 +58.6	-0 12.2 +58.7	-0 24.0 +58.8
17°	1 23.2 +58.5 37.9	1 10.7 +58.6 37.0	0 58.4 +58.7 36.1	0 46.5 +58.7 35.1	0 34.8 +58.8 34.2
18°	2 21.7 +58.5 37.7	2 09.3 +58.5 36.8	1 57.1 +58.7 35.9	1 45.2 +58.7 34.9	1 33.6 +58.8 34.0
19°	3 20.2 +58.5 37.5	3 07.8 +58.6 36.6	2 55.8 +58.6 35.7	2 43.9 +58.7 34.7	2 32.4 +58.7 33.8
20°	4 18.7 +58.6 37.3	4 06.4 +58.6 36.4	3 54.4 +58.6 35.4	3 42.6 +58.7 34.5	3 31.1 +58.8 33.6
21°	5 17.3 +58.5 37.1	5 05.0 +58.6 36.1	4 53.0 +58.7 35.2	4 41.3 +58.8 34.3	4 29.9 +58.8 33.4
22°	6 15.8 +58.5 36.8	6 03.6 +58.6 35.9	5 51.7 +58.6 35.0	5 40.1 +58.7 34.1	5 28.7 +58.7 33.2
23°	7 14.3 +58.5 36.6	7 02.2 +58.5 35.7	6 50.3 +58.7 34.8	6 38.8 +58.6 33.9	6 27.4 +58.8 33.0
24°	8 12.8 +58.5 36.4	8 00.7 +58.6 35.5	7 49.0 +58.6 34.6	7 37.4 +58.7 33.7	7 26.2 +58.7 32.8
25°	9 11.3 +58.5 36.2	8 59.3 +58.6 35.3	8 47.6 +58.6 34.4	8 36.1 +58.7 33.5	8 24.9 +58.8 32.6
26°	10 09.8 +58.5 35.9	9 57.9 +58.5 35.1	9 46.2 +58.6 34.2	9 34.8 +58.7 33.3	9 23.7 +58.7 32.4
27°	11 08.3 +58.4 35.7	10 56.4 +58.5 34.8	10 44.8 +58.6 33.9	10 33.5 +58.7 33.1	10 22.4 +58.8 32.2
28°	12 06.7 +58.5 35.5	11 54.9 +58.6 34.6	11 43.4 +58.6 33.7	11 32.2 +58.6 32.8	11 21.2 +58.7 32.0
29°	13 05.2 +58.4 35.3	12 53.5 +58.5 34.4	12 42.0 +58.6 33.5	12 30.8 +58.7 32.6	12 19.9 +58.7 31.8

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°	-9 24.8 +58.8	-9 36.5 +58.9	-9 47.9 +58.9	-9 59.0 +59.0	
8°	-8 26.0 +58.8	-8 37.6 +58.8	-8 49.0 +58.9	-9 00.0 +58.9	-9 10.8 +59.0
9°	-7 27.2 +58.8	-7 38.8 +58.9	-7 50.1 +59.0	-8 01.1 +59.0	-8 11.8 +59.1
10°	-6 28.4 +58.8	-6 39.9 +58.9	-6 51.1 +58.9	-7 02.1 +59.0	-7 12.7 +59.0
11°	-5 29.6 +58.9	-5 41.0 +58.9	-5 52.2 +58.9	-6 03.1 +59.0	-6 13.7 +59.1
12°	-4 30.7 +58.8	-4 42.1 +58.8	-4 53.3 +59.0	-5 04.1 +59.0	-5 14.6 +59.0
13°	-3 31.9 +58.8	-3 43.3 +58.9	-3 54.3 +58.9	-4 05.1 +59.0	-4 15.6 +59.1
14°	-2 33.1 +58.9	-2 44.4 +58.9	-2 55.4 +59.0	-3 06.1 +59.0	-3 16.5 +59.1
15°	-1 34.2 +58.8	-1 45.5 +58.9	-1 56.4 +58.9	-2 07.1 +59.0	-2 17.4 +59.0
16°	-0 35.4 +58.8	-0 46.6 +58.9	-0 57.5 +59.0	-1 08.1 +59.0	-1 18.4 +59.1
17°	0 23.4 +58.9 33.3	0 12.3 +58.9 32.3	0 01.5 +58.9 31.4	-0 09.1 +59.0	-0 19.3 +59.0
18°	1 22.3 +58.8 33.1	1 11.2 +58.9 32.1	1 00.4 +59.0 31.2	0 49.9 +59.0 30.3	0 39.7 +59.1 29.3
19°	2 21.1 +58.8 32.9	2 10.1 +58.9 31.9	1 59.4 +58.9 31.0	1 48.9 +59.1 30.1	1 38.8 +59.1 29.2
20°	3 19.9 +58.9 32.7	3 09.0 +58.9 31.8	2 58.3 +59.0 30.8	2 48.0 +59.0 29.9	2 37.9 +59.0 29.0
21°	4 18.8 +58.8 32.5	4 07.9 +58.9 31.6	3 57.3 +58.9 30.6	3 47.0 +59.0 29.7	3 36.9 +59.1 28.8
22°	5 17.6 +58.8 32.3	5 06.8 +58.8 31.4	4 56.2 +59.0 30.5	4 46.0 +59.0 29.5	4 36.0 +59.0 28.6
23°	6 16.4 +58.8 32.1	6 05.6 +58.9 31.2	5 55.2 +58.9 30.3	5 45.0 +58.9 29.4	5 35.0 +59.1 28.4
24°	7 15.2 +58.8 31.9	7 04.5 +58.9 31.0	6 54.1 +58.9 30.1	6 43.9 +59.0 29.2	6 34.1 +59.0 28.3
25°	8 14.0 +58.8 31.7	8 03.4 +58.9 30.8	7 53.0 +59.0 29.9	7 42.9 +59.0 29.0	7 33.1 +59.1 28.1
26°	9 12.8 +58.8 31.5	9 02.3 +58.8 30.6	8 52.0 +58.9 29.7	8 41.9 +59.0 28.8	8 32.2 +59.0 27.9
27°	10 11.6 +58.8 31.3	10 01.1 +58.9 30.4	9 50.9 +58.9 29.5	9 40.9 +59.0 28.6	9 31.2 +59.0 27.7
28°	11 10.4 +58.8 31.1	11 00.0 +58.8 30.2	10 49.8 +58.9 29.3	10 39.9 +58.9 28.4	10 30.2 +59.1 27.5
29°	12 09.2 +58.8 30.9	11 58.8 +58.9 30.0	11 48.7 +58.9 29.1	11 38.8 +59.0 28.2	11 29.3 +59.0 27.4

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Latitude 70°

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 21.2 +59.0	-9 31.4 +59.2	-9 41.2 +59.2	-9 50.7 +59.2	
9°	-8 22.2 +59.1	-8 32.2 +59.1	-8 42.0 +59.2	-8 51.5 +59.3	-9 00.6 +59.3
10°	-7 23.1 +59.2	-7 33.1 +59.2	-7 42.8 +59.2	-7 52.2 +59.2	-8 01.3 +59.3
11°	-6 23.9 +59.1	-6 33.9 +59.1	-6 43.6 +59.2	-6 53.0 +59.3	-7 02.0 +59.3
12°	-5 24.8 +59.1	-5 34.8 +59.2	-5 44.4 +59.2	-5 53.7 +59.3	-6 02.7 +59.3
13°	-4 25.7 +59.1	-4 35.6 +59.2	-4 45.2 +59.2	-4 54.4 +59.2	-5 03.4 +59.3
14°	-3 26.6 +59.1	-3 36.4 +59.1	-3 46.0 +59.3	-3 55.2 +59.3	-4 04.1 +59.3
15°	-2 27.5 +59.1	-2 37.3 +59.2	-2 46.7 +59.2	-2 55.9 +59.3	-3 04.8 +59.4
16°	-1 28.4 +59.1	-1 38.1 +59.2	-1 47.5 +59.2	-1 56.6 +59.2	-2 05.4 +59.3
17°	-0 29.3 +59.1	-0 38.9 +59.1	-0 48.3 +59.2	-0 57.4 +59.3	-1 06.1 +59.3
18°	0 29.8 +59.2 28.4	0 20.2 +59.2 27.5	0 10.9 +59.2 26.5	0 01.9 +59.3 25.6	-0 06.8 +59.3
19°	1 29.0 +59.1 28.2	1 19.4 +59.2 27.3	1 10.1 +59.3 26.4	1 01.2 +59.2 25.4	0 52.5 +59.3 24.5
20°	2 28.1 +59.1 28.1	2 18.6 +59.1 27.1	2 09.4 +59.2 26.2	2 00.4 +59.3 25.3	1 51.8 +59.4 24.3
21°	3 27.2 +59.1 27.9	3 17.7 +59.2 27.0	3 08.6 +59.2 26.0	2 59.7 +59.3 25.1	2 51.2 +59.3 24.2
22°	4 26.3 +59.1 27.7	4 16.9 +59.2 26.8	4 07.8 +59.2 25.9	3 59.0 +59.3 25.0	3 50.5 +59.3 24.0
23°	5 25.4 +59.1 27.5	5 16.1 +59.1 26.6	5 07.0 +59.2 25.7	4 58.3 +59.2 24.8	4 49.8 +59.3 23.9
24°	6 24.5 +59.1 27.4	6 15.2 +59.2 26.5	6 06.2 +59.2 25.6	5 57.5 +59.3 24.6	5 49.1 +59.3 23.7
25°	7 23.6 +59.1 27.2	7 14.4 +59.1 26.3	7 05.4 +59.2 25.4	6 56.8 +59.2 24.5	6 48.4 +59.3 23.6
26°	8 22.7 +59.1 27.0	8 13.5 +59.2 26.1	8 04.6 +59.2 25.2	7 56.0 +59.3 24.3	7 47.7 +59.3 23.4
27°	9 21.8 +59.1 26.8	9 12.7 +59.1 26.0	9 03.8 +59.2 25.1	8 55.3 +59.3 24.2	8 47.0 +59.3 23.3
28°	10 20.9 +59.1 26.7	10 11.8 +59.2 25.8	10 03.0 +59.2 24.9	9 54.6 +59.2 24.0	9 46.3 +59.3 23.1
29°	11 20.0 +59.1 26.5	11 11.0 +59.1 25.6	11 02.2 +59.2 24.7	10 53.8 +59.2 23.9	10 45.6 +59.3 23.0

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°	-9 09.5 +59.4	-9 18.0 +59.4	-9 26.2 +59.5	-9 34.1 +59.5	-9 41.6 +59.5
10°	-8 10.1 +59.3	-8 18.6 +59.4	-8 26.7 +59.4	-8 34.6 +59.5	-8 42.1 +59.6
11°	-7 10.8 +59.4	-7 19.2 +59.4	-7 27.3 +59.5	-7 35.1 +59.5	-7 42.5 +59.5
12°	-6 11.4 +59.4	-6 19.8 +59.4	-6 27.8 +59.4	-6 35.6 +59.5	-6 43.0 +59.6
13°	-5 12.0 +59.3	-5 20.4 +59.4	-5 28.4 +59.5	-5 36.1 +59.5	-5 43.4 +59.5
14°	-4 12.7 +59.4	-4 21.0 +59.5	-4 28.9 +59.4	-4 36.6 +59.5	-4 43.9 +59.6
15°	-3 13.3 +59.4	-3 21.5 +59.4	-3 29.5 +59.5	-3 37.1 +59.5	-3 44.3 +59.5
16°	-2 13.9 +59.3	-2 22.1 +59.4	-2 30.0 +59.5	-2 37.6 +59.5	-2 44.8 +59.5
17°	-1 14.6 +59.4	-1 22.7 +59.4	-1 30.5 +59.4	-1 38.1 +59.5	-1 45.3 +59.6
18°	-0 15.2 +59.4	-0 23.3 +59.4	-0 31.1 +59.5	-0 38.6 +59.6	-0 45.7 +59.5
19°	0 44.2 +59.3 23.6	0 36.1 +59.4 22.6	0 28.4 +59.4 21.7	0 21.0 +59.5 20.7	0 13.8 +59.6 19.8
20°	1 43.5 +59.4 23.4	1 35.5 +59.4 22.5	1 27.8 +59.5 21.5	1 20.5 +59.5 20.6	1 13.4 +59.5 19.7
21°	2 42.9 +59.4 23.3	2 34.9 +59.5 22.3	2 27.3 +59.5 21.4	2 20.0 +59.5 20.5	2 12.9 +59.6 19.6
22°	3 42.3 +59.3 23.1	3 34.4 +59.4 22.2	3 26.8 +59.4 21.3	3 19.5 +59.5 20.4	3 12.5 +59.5 19.4
23°	4 41.6 +59.4 23.0	4 33.8 +59.4 22.1	4 26.2 +59.5 21.1	4 19.0 +59.5 20.2	4 12.0 +59.6 19.3
24°	5 41.0 +59.4 22.8	5 33.2 +59.4 21.9	5 25.7 +59.4 21.0	5 18.5 +59.5 20.1	5 11.6 +59.5 19.2
25°	6 40.4 +59.3 22.7	6 32.6 +59.4 21.8	6 25.1 +59.5 20.9	6 18.0 +59.5 20.0	6 11.1 +59.6 19.1
26°	7 39.7 +59.4 22.5	7 32.0 +59.4 21.6	7 24.6 +59.4 20.7	7 17.5 +59.5 19.8	7 10.7 +59.5 18.9
27°	8 39.1 +59.3 22.4	8 31.4 +59.4 21.5	8 24.0 +59.5 20.6	8 17.0 +59.5 19.7	8 10.2 +59.5 18.8
28°	9 38.4 +59.4 22.2	9 30.8 +59.4 21.4	9 23.5 +59.4 20.5	9 16.5 +59.5 19.6	9 09.7 +59.6 18.7
29°	10 37.8 +59.3 22.1	10 30.2 +59.4 21.2	10 22.9 +59.5 20.3	10 16.0 +59.4 19.4	10 09.3 +59.5 18.6

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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°	-9 48.8 +59.6	-9 55.7 +59.7			
10°	-8 49.2 +59.6	-8 56.0 +59.6	-9 02.5 +59.6	-9 08.7 +59.7	-9 14.5 +59.7
11°	-7 49.6 +59.5	-7 56.4 +59.6	-8 02.9 +59.7	-8 09.0 +59.7	-8 14.8 +59.8
12°	-6 50.1 +59.6	-6 56.8 +59.6	-7 03.2 +59.6	-7 09.3 +59.7	-7 15.0 +59.7
13°	-5 50.5 +59.6	-5 57.2 +59.6	-6 03.6 +59.7	-6 09.6 +59.7	-6 15.3 +59.7
14°	-4 50.9 +59.6	-4 57.6 +59.7	-5 03.9 +59.7	-5 09.9 +59.7	-5 15.6 +59.7
15°	-3 51.3 +59.6	-3 57.9 +59.6	-4 04.2 +59.6	-4 10.2 +59.7	-4 15.9 +59.8
16°	-2 51.7 +59.6	-2 58.3 +59.6	-3 04.6 +59.7	-3 10.5 +59.7	-3 16.1 +59.7
17°	-1 52.1 +59.6	-1 58.7 +59.6	-2 04.9 +59.7	-2 10.8 +59.7	-2 16.4 +59.7
18°	-0 52.5 +59.5	-0 59.1 +59.7	-1 05.2 +59.6	-1 11.1 +59.7	-1 16.7 +59.8
19°	0 07.0 +59.6 18.9	0 00.6 +59.6 17.9	-0 05.6 +59.7	-0 11.4 +59.7	-0 16.9 +59.7
20°	1 06.6 +59.6 18.8	1 00.2 +59.6 17.8	0 54.1 +59.6 16.9	0 48.3 +59.7 15.9	0 42.8 +59.7 15.0
21°	2 06.2 +59.6 18.6	1 59.8 +59.7 17.7	1 53.7 +59.7 16.8	1 48.0 +59.7 15.8	1 42.5 +59.8 14.9
22°	3 05.8 +59.6 18.5	2 59.5 +59.6 17.6	2 53.4 +59.7 16.7	2 47.7 +59.7 15.7	2 42.3 +59.7 14.8
23°	4 05.4 +59.6 18.4	3 59.1 +59.6 17.5	3 53.1 +59.6 16.6	3 47.4 +59.7 15.6	3 42.0 +59.7 14.7
24°	5 05.0 +59.6 18.3	4 58.7 +59.6 17.4	4 52.7 +59.7 16.5	4 47.1 +59.7 15.5	4 41.7 +59.8 14.6
25°	6 04.6 +59.5 18.2	5 58.3 +59.6 17.3	5 52.4 +59.7 16.4	5 46.8 +59.7 15.4	5 41.5 +59.7 14.5
26°	7 04.1 +59.6 18.0	6 57.9 +59.7 17.1	6 52.1 +59.6 16.2	6 46.5 +59.7 15.3	6 41.2 +59.7 14.4
27°	8 03.7 +59.6 17.9	7 57.6 +59.6 17.0	7 51.7 +59.7 16.1	7 46.2 +59.7 15.2	7 40.9 +59.7 14.3
28°	9 03.3 +59.6 17.8	8 57.2 +59.6 16.9	8 51.4 +59.6 16.0	8 45.9 +59.6 15.1	8 40.6 +59.8 14.3
29°	10 02.9 +59.6 17.7	9 56.8 +59.6 16.8	9 51.0 +59.7 15.9	9 45.5 +59.7 15.0	9 40.4 +59.7 14.2

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°	-9 20.0 +59.8	-9 25.1 +59.8	-9 29.9 +59.8	-9 34.3 +59.8	-9 38.4 +59.9
11°	-8 20.2 +59.7	-8 25.3 +59.8	-8 30.1 +59.8	-8 34.5 +59.9	-8 38.5 +59.8
12°	-7 20.5 +59.8	-7 25.5 +59.8	-7 30.3 +59.9	-7 34.6 +59.8	-7 38.7 +59.9
13°	-6 20.7 +59.8	-6 25.7 +59.8	-6 30.4 +59.8	-6 34.8 +59.9	-6 38.8 +59.9
14°	-5 20.9 +59.7	-5 25.9 +59.8	-5 30.6 +59.8	-5 34.9 +59.8	-5 38.9 +59.8
15°	-4 21.2 +59.8	-4 26.1 +59.7	-4 30.8 +59.8	-4 35.1 +59.9	-4 39.1 +59.9
16°	-3 21.4 +59.8	-3 26.4 +59.8	-3 31.0 +59.9	-3 35.2 +59.8	-3 39.2 +59.9
17°	-2 21.6 +59.7	-2 26.6 +59.8	-2 31.1 +59.8	-2 35.4 +59.8	-2 39.3 +59.9
18°	-1 21.9 +59.8	-1 26.8 +59.8	-1 31.3 +59.8	-1 35.6 +59.9	-1 39.4 +59.8
19°	-0 22.1 +59.7	-0 27.0 +59.8	-0 31.5 +59.8	-0 35.7 +59.8	-0 39.6 +59.9
20°	0 37.6 +59.8 14.1	0 32.8 +59.8 13.1	0 28.3 +59.8 12.2	0 24.1 +59.9 11.3	0 20.3 +59.9 10.3
21°	1 37.4 +59.8 14.0	1 32.6 +59.8 13.1	1 28.1 +59.9 12.1	1 24.0 +59.8 11.2	1 20.2 +59.8 10.3
22°	2 37.2 +59.7 13.9	2 32.4 +59.8 13.0	2 28.0 +59.8 12.0	2 23.8 +59.9 11.1	2 20.0 +59.9 10.2
23°	3 36.9 +59.8 13.8	3 32.2 +59.8 12.9	3 27.8 +59.8 12.0	3 23.7 +59.8 11.1	3 19.9 +59.9 10.1
24°	4 36.7 +59.8 13.7	4 32.0 +59.8 12.8	4 27.6 +59.8 11.9	4 23.5 +59.9 11.0	4 19.8 +59.9 10.1
25°	5 36.5 +59.7 13.6	5 31.8 +59.8 12.7	5 27.4 +59.8 11.8	5 23.4 +59.8 10.9	5 19.7 +59.8 10.0
26°	6 36.2 +59.8 13.5	6 31.6 +59.8 12.6	6 27.2 +59.9 11.7	6 23.2 +59.9 10.8	6 19.5 +59.9 9.9
27°	7 36.0 +59.7 13.5	7 31.4 +59.8 12.6	7 27.1 +59.8 11.7	7 23.1 +59.8 10.8	7 19.4 +59.9 9.9
28°	8 35.7 +59.8 13.4	8 31.2 +59.7 12.5	8 26.9 +59.8 11.6	8 22.9 +59.9 10.7	8 19.3 +59.8 9.8
29°	9 35.5 +59.8 13.3	9 30.9 +59.8 12.4	9 26.7 +59.8 11.5	9 22.8 +59.8 10.6	9 19.1 +59.9 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°	-9 42.1	+59.8	-9 45.5	+59.9	-9 48.6	+60.0	-9 51.2	+59.9	-9 53.6	+60.0
11°	-8 42.3	+59.9	-8 45.6	+59.9	-8 48.6	+59.9	-8 51.3	+60.0	-8 53.6	+60.0
12°	-7 42.4	+59.9	-7 45.7	+59.9	-7 48.7	+59.9	-7 51.3	+59.9	-7 53.6	+59.9
13°	-6 42.5	+59.9	-6 45.8	+59.9	-6 48.8	+60.0	-6 51.4	+59.9	-6 53.7	+60.0
14°	-5 42.6	+59.9	-5 45.9	+59.9	-5 48.8	+59.9	-5 51.5	+60.0	-5 53.7	+59.9
15°	-4 42.7	+59.9	-4 46.0	+59.9	-4 48.9	+59.9	-4 51.5	+59.9	-4 53.8	+60.0
16°	-3 42.8	+59.9	-3 46.1	+60.0	-3 49.0	+60.0	-3 51.6	+60.0	-3 53.8	+60.0
17°	-2 42.9	+59.9	-2 46.1	+59.9	-2 49.0	+59.9	-2 51.6	+59.9	-2 53.8	+59.9
18°	-1 43.0	+59.9	-1 46.2	+59.9	-1 49.1	+59.9	-1 51.7	+60.0	-1 53.9	+60.0
19°	-0 43.1	+59.9	-0 46.3	+59.9	-0 49.2	+60.0	-0 51.7	+59.9	-0 53.9	+60.0
20°	0 16.8	+59.9 9.4	0 13.6	+59.9 8.5	0 10.8	+59.9 7.5	0 08.2	+60.0 6.6	0 06.1	+59.9 5.6
21°	1 16.7	+59.9 9.3	1 13.5	+59.9 8.4	1 10.7	+59.9 7.5	1 08.2	+59.9 6.5	1 06.0	+60.0 5.6
22°	2 16.6	+59.9 9.3	2 13.4	+59.9 8.3	2 10.6	+59.9 7.4	2 08.1	+60.0 6.5	2 06.0	+59.9 5.6
23°	3 16.5	+59.9 9.2	3 13.3	+60.0 8.3	3 10.5	+60.0 7.4	3 08.1	+59.9 6.5	3 05.9	+60.0 5.5
24°	4 16.4	+59.9 9.2	4 13.3	+59.9 8.2	4 10.5	+59.9 7.3	4 08.0	+60.0 6.4	4 05.9	+60.0 5.5
25°	5 16.3	+59.8 9.1	5 13.2	+59.9 8.2	5 10.4	+59.9 7.3	5 08.0	+59.9 6.4	5 05.9	+59.9 5.5
26°	6 16.1	+59.9 9.0	6 13.1	+59.9 8.1	6 10.3	+60.0 7.2	6 07.9	+60.0 6.3	6 05.8	+60.0 5.4
27°	7 16.0	+59.9 9.0	7 13.0	+59.9 8.1	7 10.3	+59.9 7.2	7 07.9	+59.9 6.3	7 05.8	+59.9 5.4
28°	8 15.9	+59.9 8.9	8 12.9	+59.9 8.0	8 10.2	+59.9 7.1	8 07.8	+60.0 6.2	8 05.7	+60.0 5.3
29°	9 15.8	+59.9 8.9	9 12.8	+59.9 8.0	9 10.1	+60.0 7.1	9 07.8	+59.9 6.2	9 05.7	+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°	-9 55.5	+59.9	-9 57.1	+59.9	-9 58.4	+60.0	-9 59.3	+60.0	-9 59.8	+60.0
11°	-8 55.6	+60.0	-8 57.2	+60.0	-8 58.4	+60.0	-8 59.3	+60.0	-8 59.8	+60.0
12°	-7 55.6	+60.0	-7 57.2	+60.0	-7 58.4	+60.0	-7 59.3	+60.0	-7 59.8	+60.0
13°	-6 55.6	+60.0	-6 57.2	+60.0	-6 58.4	+60.0	-6 59.3	+60.0	-6 59.8	+60.0
14°	-5 55.6	+59.9	-5 57.2	+60.0	-5 58.4	+60.0	-5 59.3	+60.0	-5 59.8	+60.0
15°	-4 55.7	+60.0	-4 57.2	+60.0	-4 58.4	+60.0	-4 59.3	+60.0	-4 59.8	+60.0
16°	-3 55.7	+60.0	-3 57.2	+59.9	-3 58.4	+59.9	-3 59.3	+60.0	-3 59.8	+60.0
17°	-2 55.7	+60.0	-2 57.3	+60.0	-2 58.5	+60.0	-2 59.3	+60.0	-2 59.8	+60.0
18°	-1 55.7	+59.9	-1 57.3	+60.0	-1 58.5	+60.0	-1 59.3	+60.0	-1 59.8	+60.0
19°	-0 55.8	+60.0	-0 57.3	+60.0	-0 58.5	+60.0	-0 59.3	+60.0	-0 59.8	+60.0
20°	0 04.2	+60.0 4.7	0 02.7	+60.0 3.8	0 01.5	+60.0 2.8	0 00.7	+60.0 1.9	0 00.2	+60.0 0.9
21°	1 04.2	+60.0 4.7	1 02.7	+60.0 3.7	1 01.5	+60.0 2.8	1 00.7	+60.0 1.9	1 00.2	+60.0 0.9
22°	2 04.2	+59.9 4.6	2 02.7	+59.9 3.7	2 01.5	+60.0 2.8	2 00.7	+60.0 1.9	2 00.2	+60.0 0.9
23°	3 04.1	+60.0 4.6	3 02.6	+60.0 3.7	3 01.5	+60.0 2.8	3 00.7	+60.0 1.8	3 00.2	+60.0 0.9
24°	4 04.1	+60.0 4.6	4 02.6	+60.0 3.7	4 01.5	+60.0 2.7	4 00.7	+60.0 1.8	4 00.2	+60.0 0.9
25°	5 04.1	+59.9 4.5	5 02.6	+60.0 3.6	5 01.5	+60.0 2.7	5 00.7	+59.9 1.8	5 00.2	+60.0 0.9
26°	6 04.0	+60.0 4.5	6 02.6	+60.0 3.6	6 01.5	+59.9 2.7	6 00.6	+60.0 1.8	6 00.2	+60.0 0.9
27°	7 04.0	+60.0 4.5	7 02.6	+60.0 3.6	7 01.4	+60.0 2.7	7 00.6	+60.0 1.8	7 00.2	+60.0 0.9
28°	8 04.0	+60.0 4.5	8 02.6	+59.9 3.6	8 01.4	+60.0 2.7	8 00.6	+60.0 1.8	8 00.2	+60.0 0.9
29°	9 04.0	+59.9 4.4	9 02.5	+60.0 3.5	9 01.4	+60.0 2.7	9 00.6	+60.0 1.8	9 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°	19 00.0 +60.0 180.0	18 59.8 +60.0 178.9	18 59.3 +60.0 177.9	18 58.4 +60.0 176.8	18 57.1 +60.0 175.8
1°	20 00.0 +60.0 180.0	19 59.8 +60.0 178.9	19 59.3 +60.0 177.9	19 58.4 +60.0 176.8	19 57.1 +60.0 175.7
2°	21 00.0 +60.0 180.0	20 59.8 +60.0 178.9	20 59.3 +60.0 177.9	20 58.4 +59.9 176.8	20 57.1 +60.0 175.7
3°	22 00.0 +60.0 180.0	21 59.8 +60.0 178.9	21 59.3 +60.0 177.8	21 58.3 +60.0 176.8	21 57.1 +59.9 175.7
4°	23 00.0 +60.0 180.0	22 59.8 +60.0 178.9	22 59.3 +60.0 177.8	22 58.3 +60.0 176.7	22 57.0 +60.0 175.7
5°	24 00.0 +60.0 180.0	23 59.8 +60.0 178.9	23 59.3 +60.0 177.8	23 58.3 +60.0 176.7	23 57.0 +60.0 175.6
6°	25 00.0 +60.0 180.0	24 59.8 +60.0 178.9	24 59.3 +59.9 177.8	24 58.3 +60.0 176.7	24 57.0 +60.0 175.6
7°	26 00.0 +60.0 180.0	25 59.8 +60.0 178.9	25 59.2 +60.0 177.8	25 58.3 +60.0 176.7	25 57.0 +60.0 175.6
8°	27 00.0 +60.0 180.0	26 59.8 +60.0 178.9	26 59.2 +60.0 177.8	26 58.3 +60.0 176.7	26 57.0 +60.0 175.6
9°	28 00.0 +60.0 180.0	27 59.8 +60.0 178.9	27 59.2 +60.0 177.8	27 58.3 +60.0 176.6	27 57.0 +59.9 175.5
10°	29 00.0 +60.0 180.0	28 59.8 +60.0 178.9	28 59.2 +60.0 177.7	28 58.3 +60.0 176.6	28 56.9 +60.0 175.5
11°	30 00.0 +60.0 180.0	29 59.8 +60.0 178.9	29 59.2 +60.0 177.7	29 58.3 +59.9 176.6	29 56.9 +60.0 175.5
12°	31 00.0 +60.0 180.0	30 59.8 +60.0 178.9	30 59.2 +60.0 177.7	30 58.2 +60.0 176.6	30 56.9 +60.0 175.4
13°	32 00.0 +60.0 180.0	31 59.8 +60.0 178.9	31 59.2 +60.0 177.7	31 58.2 +60.0 176.6	31 56.9 +59.9 175.4
14°	33 00.0 +60.0 180.0	32 59.8 +60.0 178.8	32 59.2 +60.0 177.7	32 58.2 +60.0 176.5	32 56.8 +60.0 175.4
15°	34 00.0 +60.0 180.0	33 59.8 +60.0 178.8	33 59.2 +60.0 177.7	33 58.2 +60.0 176.5	33 56.8 +60.0 175.3
16°	35 00.0 +60.0 180.0	34 59.8 +60.0 178.8	34 59.2 +60.0 177.7	34 58.2 +60.0 176.5	34 56.8 +60.0 175.3
17°	36 00.0 +60.0 180.0	35 59.8 +60.0 178.8	35 59.2 +60.0 177.6	35 58.2 +60.0 176.5	35 56.8 +60.0 175.3
18°	37 00.0 +60.0 180.0	36 59.8 +60.0 178.8	36 59.2 +60.0 177.6	36 58.2 +60.0 176.4	36 56.8 +59.9 175.2
19°	38 00.0 +60.0 180.0	37 59.8 +60.0 178.8	37 59.2 +60.0 177.6	37 58.2 +59.9 176.4	37 56.7 +60.0 175.2
20°	39 00.0 +60.0 180.0	38 59.8 +60.0 178.8	38 59.2 +60.0 177.6	38 58.1 +60.0 176.4	38 56.7 +60.0 175.2
21°	40 00.0 +60.0 180.0	39 59.8 +60.0 178.8	39 59.2 +60.0 177.6	39 58.1 +60.0 176.3	39 56.7 +60.0 175.1
22°	41 00.0 +60.0 180.0	40 59.8 +60.0 178.8	40 59.2 +60.0 177.5	40 58.1 +60.0 176.3	40 56.7 +59.9 175.1
23°	42 00.0 +60.0 180.0	41 59.8 +60.0 178.8	41 59.2 +59.9 177.5	41 58.1 +60.0 176.3	41 56.6 +60.0 175.0
24°	43 00.0 +60.0 180.0	42 59.8 +60.0 178.8	42 59.1 +60.0 177.5	42 58.1 +60.0 176.3	42 56.6 +60.0 175.0
25°	44 00.0 +60.0 180.0	43 59.8 +60.0 178.7	43 59.1 +60.0 177.5	43 58.1 +60.0 176.2	43 56.6 +59.9 175.0
26°	45 00.0 +60.0 180.0	44 59.8 +60.0 178.7	44 59.1 +60.0 177.5	44 58.1 +59.9 176.2	44 56.5 +60.0 174.9
27°	46 00.0 +60.0 180.0	45 59.8 +60.0 178.7	45 59.1 +60.0 177.4	45 58.0 +60.0 176.2	45 56.5 +60.0 174.9
28°	47 00.0 +60.0 180.0	46 59.8 +60.0 178.7	46 59.1 +60.0 177.4	46 58.0 +60.0 176.1	46 56.5 +59.9 174.8
29°	48 00.0 +60.0 180.0	47 59.8 +60.0 178.7	47 59.1 +60.0 177.4	47 58.0 +60.0 176.1	47 56.4 +60.0 174.8

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°	18 55.5 +60.0 174.7	18 53.5 +60.0 173.7	18 51.2 +59.9 172.6	18 48.5 +59.9 171.5	18 45.4 +59.9 170.5
1°	19 55.5 +59.9 174.7	19 53.5 +59.9 173.6	19 51.1 +60.0 172.6	19 48.4 +59.9 171.5	19 45.3 +60.0 170.4
2°	20 55.4 +60.0 174.6	20 53.4 +60.0 173.6	20 51.1 +59.9 172.5	20 48.3 +60.0 171.4	20 45.3 +59.9 170.4
3°	21 55.4 +60.0 174.6	21 53.4 +60.0 173.5	21 51.0 +60.0 172.5	21 48.3 +59.9 171.4	21 45.2 +59.9 170.3
4°	22 55.4 +60.0 174.6	22 53.4 +59.9 173.5	22 51.0 +59.9 172.4	22 48.2 +59.9 171.3	22 45.1 +59.9 170.3
5°	23 55.4 +59.9 174.5	23 53.3 +60.0 173.5	23 50.9 +60.0 172.4	23 48.1 +60.0 171.3	23 45.0 +59.9 170.2
6°	24 55.3 +60.0 174.5	24 53.3 +59.9 173.4	24 50.9 +59.9 172.3	24 48.1 +59.9 171.2	24 44.9 +59.9 170.1
7°	25 55.3 +60.0 174.5	25 53.2 +60.0 173.4	25 50.8 +59.9 172.3	25 48.0 +59.9 171.2	25 44.8 +59.9 170.1
8°	26 55.3 +59.9 174.4	26 53.2 +59.9 173.3	26 50.7 +60.0 172.2	26 47.9 +59.9 171.1	26 44.7 +59.9 170.0
9°	27 55.2 +60.0 174.4	27 53.1 +60.0 173.3	27 50.7 +59.9 172.2	27 47.8 +59.9 171.1	27 44.6 +59.9 169.9
10°	28 55.2 +60.0 174.4	28 53.1 +60.0 173.2	28 50.6 +60.0 172.1	28 47.7 +60.0 171.0	28 44.5 +59.9 169.9
11°	29 55.2 +59.9 174.3	29 53.1 +59.9 173.2	29 50.6 +59.9 172.1	29 47.7 +59.9 170.9	29 44.4 +59.9 169.8
12°	30 55.1 +60.0 174.3	30 53.0 +60.0 173.2	30 50.5 +59.9 172.0	30 47.6 +59.9 170.9	30 44.3 +59.9 169.7
13°	31 55.1 +60.0 174.3	31 53.0 +59.9 173.1	31 50.4 +60.0 172.0	31 47.5 +59.9 170.8	31 44.2 +59.9 169.7
14°	32 55.1 +59.9 174.2	32 52.9 +60.0 173.1	32 50.4 +59.9 171.9	32 47.4 +59.9 170.8	32 44.1 +59.9 169.6
15°	33 55.0 +60.0 174.2	33 52.9 +59.9 173.0	33 50.3 +59.9 171.9	33 47.3 +59.9 170.7	33 44.0 +59.9 169.5
16°	34 55.0 +60.0 174.1	34 52.8 +60.0 173.0	34 50.2 +59.9 171.8	34 47.2 +59.9 170.6	34 43.9 +59.8 169.5
17°	35 55.0 +59.9 174.1	35 52.8 +59.9 172.9	35 50.1 +60.0 171.7	35 47.1 +59.9 170.6	35 43.7 +59.9 169.4
18°	36 54.9 +60.0 174.0	36 52.7 +59.9 172.9	36 50.1 +59.9 171.7	36 47.0 +60.0 170.5	36 43.6 +59.9 169.3
19°	37 54.9 +60.0 174.0	37 52.6 +60.0 172.8	37 50.0 +59.9 171.6	37 47.0 +59.8 170.4	37 43.5 +59.9 169.2
20°	38 54.9 +59.9 174.0	38 52.6 +59.9 172.8	38 49.9 +59.9 171.5	38 46.8 +59.9 170.3	38 43.4 +59.8 169.1
21°	39 54.8 +60.0 173.9	39 52.5 +60.0 172.7	39 49.8 +60.0 171.5	39 46.7 +59.9 170.3	39 43.2 +59.9 169.1
22°	40 54.8 +59.9 173.9	40 52.5 +59.9 172.6	40 49.8 +59.9 171.4	40 46.6 +59.9 170.2	40 43.1 +59.9 169.0
23°	41 54.7 +60.0 173.8	41 52.4 +59.9 172.6	41 49.7 +59.9 171.3	41 46.5 +59.9 170.1	41 43.0 +59.8 168.9
24°	42 54.7 +59.9 173.8	42 52.3 +60.0 172.5	42 49.6 +59.9 171.3	42 46.4 +59.9 170.0	42 42.8 +59.9 168.8
25°	43 54.6 +60.0 173.7	43 52.3 +59.9 172.4	43 49.5 +59.9 171.2	43 46.3 +59.9 169.9	43 42.7 +59.8 168.7
26°	44 54.6 +59.9 173.6	44 52.2 +59.9 172.4	44 49.4 +59.9 171.1	44 46.2 +59.9 169.9	44 42.5 +59.9 168.6
27°	45 54.5 +60.0 173.6	45 52.1 +60.0 172.3	45 49.3 +59.9 171.0	45 46.1 +59.8 169.8	45 42.4 +59.8 168.5
28°	46 54.5 +59.9 173.5	46 52.1 +59.9 172.2	46 49.2 +59.9 171.0	46 45.9 +59.9 169.7	46 42.2 +59.8 168.4
29°	47 54.4 +60.0 173.5	47 52.0 +59.9 172.2	47 49.1 +59.9 170.9	47 45.8 +59.9 169.6	47 42.0 +59.9 168.3

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°	18 42.0 +59.9 169.4	18 38.3 +59.8 168.4	18 34.2 +59.8 167.3	18 29.7 +59.8 166.3	18 24.9 +59.8 165.2
1°	19 41.9 +59.9 169.4	19 38.1 +59.9 168.3	19 34.0 +59.9 167.3	19 29.5 +59.8 166.2	19 24.7 +59.8 165.1
2°	20 41.8 +59.9 169.3	20 38.0 +59.9 168.2	20 33.9 +59.8 167.2	20 29.3 +59.9 166.1	20 24.5 +59.8 165.1
3°	21 41.7 +59.9 169.2	21 37.9 +59.8 168.2	21 33.7 +59.8 167.1	21 29.2 +59.8 166.0	21 24.3 +59.8 165.0
4°	22 41.6 +59.9 169.2	22 37.7 +59.9 168.1	22 33.5 +59.9 167.0	22 29.0 +59.8 165.9	22 24.1 +59.7 164.9
5°	23 41.5 +59.9 169.1	23 37.6 +59.9 168.0	23 33.4 +59.8 166.9	23 28.8 +59.8 165.9	23 23.8 +59.8 164.8
6°	24 41.4 +59.8 169.0	24 37.5 +59.8 168.0	24 33.2 +59.8 166.9	24 28.6 +59.8 165.8	24 23.6 +59.8 164.7
7°	25 41.2 +59.9 169.0	25 37.3 +59.9 167.9	25 33.0 +59.9 166.8	25 28.4 +59.8 165.7	25 23.4 +59.8 164.6
8°	26 41.1 +59.9 168.9	26 37.2 +59.8 167.8	26 32.9 +59.8 166.7	26 28.2 +59.8 165.6	26 23.2 +59.7 164.5
9°	27 41.0 +59.9 168.8	27 37.0 +59.9 167.7	27 32.7 +59.8 166.6	27 28.0 +59.8 165.5	27 22.9 +59.8 164.4
10°	28 40.9 +59.9 168.8	28 36.9 +59.8 167.6	28 32.5 +59.8 166.5	28 27.8 +59.8 165.4	28 22.7 +59.7 164.3
11°	29 40.8 +59.8 168.7	29 36.7 +59.9 167.6	29 32.3 +59.9 166.4	29 27.6 +59.8 165.3	29 22.4 +59.8 164.2
12°	30 40.6 +59.9 168.6	30 36.6 +59.8 167.5	30 32.2 +59.8 166.3	30 27.4 +59.7 165.2	30 22.2 +59.7 164.1
13°	31 40.5 +59.9 168.5	31 36.4 +59.9 167.4	31 32.0 +59.8 166.3	31 27.1 +59.8 165.1	31 21.9 +59.8 164.0
14°	32 40.4 +59.8 168.5	32 36.3 +59.8 167.3	32 31.8 +59.8 166.2	32 26.9 +59.8 165.0	32 21.7 +59.7 163.9
15°	33 40.2 +59.9 168.4	33 36.1 +59.8 167.2	33 31.6 +59.8 166.1	33 26.7 +59.8 164.9	33 21.4 +59.7 163.8
16°	34 40.1 +59.8 168.3	34 35.9 +59.9 167.1	34 31.4 +59.8 166.0	34 26.5 +59.7 164.8	34 21.1 +59.8 163.6
17°	35 39.9 +59.9 168.2	35 35.8 +59.8 167.0	35 31.2 +59.8 165.9	35 26.2 +59.8 164.7	35 20.9 +59.7 163.5
18°	36 39.8 +59.8 168.1	36 35.6 +59.8 166.9	36 31.0 +59.8 165.8	36 26.0 +59.7 164.6	36 20.6 +59.7 163.4
19°	37 39.6 +59.9 168.0	37 35.4 +59.8 166.8	37 30.8 +59.7 165.7	37 25.7 +59.8 164.5	37 20.3 +59.7 163.3
20°	38 39.5 +59.8 167.9	38 35.2 +59.8 166.7	38 30.5 +59.8 165.5	38 25.5 +59.7 164.3	38 20.0 +59.7 163.2
21°	39 39.3 +59.9 167.8	39 35.0 +59.8 166.6	39 30.3 +59.8 165.4	39 25.2 +59.7 164.2	39 19.7 +59.7 163.0
22°	40 39.2 +59.8 167.7	40 34.8 +59.8 166.5	40 30.1 +59.7 165.3	40 24.9 +59.7 164.1	40 19.4 +59.6 162.9
23°	41 39.0 +59.8 167.6	41 34.6 +59.8 166.4	41 29.8 +59.8 165.2	41 24.6 +59.7 164.0	41 19.0 +59.7 162.8
24°	42 38.8 +59.8 167.5	42 34.4 +59.8 166.3	42 29.6 +59.7 165.1	42 24.3 +59.7 163.8	42 18.7 +59.7 162.6
25°	43 38.6 +59.9 167.4	43 34.2 +59.8 166.2	43 29.3 +59.8 164.9	43 24.0 +59.7 163.7	43 18.4 +59.6 162.5
26°	44 38.5 +59.8 167.3	44 34.0 +59.7 166.1	44 29.1 +59.7 164.8	44 23.7 +59.7 163.6	44 18.0 +59.6 162.3
27°	45 38.3 +59.8 167.2	45 33.7 +59.8 165.9	45 28.8 +59.7 164.7	45 23.4 +59.7 163.4	45 17.6 +59.6 162.2
28°	46 38.1 +59.8 167.1	46 33.5 +59.7 165.8	46 28.5 +59.7 164.5	46 23.1 +59.6 163.3	46 17.2 +59.6 162.0
29°	47 37.9 +59.7 167.0	47 33.2 +59.8 165.7	47 28.2 +59.7 164.4	47 22.7 +59.7 163.1	47 16.8 +59.6 161.8

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°	18 19.7 +59.8 164.2	18 14.2 +59.8 163.1	18 08.4 +59.7 162.1	18 02.2 +59.7 161.0	17 55.7 +59.6 160.0
1°	19 19.5 +59.8 164.1	19 14.0 +59.7 163.0	19 08.1 +59.7 162.0	19 01.9 +59.6 160.9	18 55.3 +59.7 159.9
2°	20 19.3 +59.7 164.0	20 13.7 +59.7 162.9	20 07.8 +59.7 161.9	20 01.5 +59.7 160.8	19 55.0 +59.6 159.8
3°	21 19.0 +59.8 163.9	21 13.4 +59.7 162.8	21 07.5 +59.7 161.8	21 01.2 +59.6 160.7	20 54.6 +59.6 159.6
4°	22 18.8 +59.7 163.8	22 13.1 +59.8 162.7	22 07.2 +59.7 161.6	22 00.8 +59.7 160.6	21 54.2 +59.6 159.5
5°	23 18.5 +59.8 163.7	23 12.9 +59.7 162.6	23 06.9 +59.6 161.5	23 00.5 +59.6 160.5	22 53.8 +59.6 159.4
6°	24 18.3 +59.7 163.6	24 12.6 +59.7 162.5	24 06.5 +59.7 161.4	24 00.1 +59.7 160.3	23 53.4 +59.6 159.3
7°	25 18.0 +59.7 163.5	25 12.3 +59.7 162.4	25 06.2 +59.7 161.3	24 59.8 +59.6 160.2	24 53.0 +59.6 159.1
8°	26 17.7 +59.8 163.4	26 12.0 +59.7 162.3	26 05.9 +59.6 161.2	25 59.4 +59.6 160.1	25 52.6 +59.5 159.0
9°	27 17.5 +59.7 163.3	27 11.7 +59.7 162.2	27 05.5 +59.7 161.1	26 59.0 +59.6 160.0	26 52.1 +59.6 158.9
10°	28 17.2 +59.7 163.2	28 11.4 +59.7 162.1	28 05.2 +59.6 161.0	27 58.6 +59.6 159.8	27 51.7 +59.6 158.7
11°	29 16.9 +59.7 163.1	29 11.1 +59.6 161.9	29 04.8 +59.7 160.8	28 58.2 +59.6 159.7	28 51.3 +59.5 158.6
12°	30 16.6 +59.8 163.0	30 10.7 +59.7 161.8	30 04.5 +59.6 160.7	29 57.8 +59.6 159.6	29 50.8 +59.6 158.5
13°	31 16.4 +59.7 162.8	31 10.4 +59.7 161.7	31 04.1 +59.6 160.6	30 57.4 +59.6 159.4	30 50.4 +59.5 158.3
14°	32 16.1 +59.7 162.7	32 10.1 +59.6 161.6	32 03.7 +59.6 160.4	31 57.0 +59.6 159.3	31 49.9 +59.5 158.2
15°	33 15.8 +59.6 162.6	33 09.7 +59.7 161.5	33 03.3 +59.6 160.3	32 56.6 +59.5 159.2	32 49.4 +59.6 158.0
16°	34 15.4 +59.7 162.5	34 09.4 +59.6 161.3	34 02.9 +59.6 160.2	33 56.1 +59.6 159.0	33 49.0 +59.5 157.9
17°	35 15.1 +59.7 162.4	35 09.0 +59.7 161.2	35 02.5 +59.6 160.0	34 55.7 +59.5 158.9	34 48.5 +59.4 157.7
18°	36 14.8 +59.7 162.2	36 08.7 +59.6 161.1	36 02.1 +59.6 159.9	35 55.2 +59.6 158.7	35 47.9 +59.5 157.6
19°	37 14.5 +59.6 162.1	37 08.3 +59.6 160.9	37 01.7 +59.6 159.7	36 54.8 +59.5 158.6	36 47.4 +59.5 157.4
20°	38 14.1 +59.7 162.0	38 07.9 +59.6 160.8	38 01.3 +59.5 159.6	37 54.3 +59.5 158.4	37 46.9 +59.4 157.2
21°	39 13.8 +59.6 161.8	39 07.5 +59.6 160.6	39 00.8 +59.6 159.4	38 53.8 +59.5 158.2	38 46.3 +59.5 157.1
22°	40 13.4 +59.6 161.7	40 07.1 +59.6 160.5	40 00.4 +59.5 159.3	39 53.3 +59.4 158.1	39 45.8 +59.4 156.9
23°	41 13.0 +59.7 161.5	41 06.7 +59.5 160.3	40 59.9 +59.5 159.1	40 52.7 +59.5 157.9	40 45.2 +59.4 156.7
24°	42 12.7 +59.6 161.4	42 06.2 +59.6 160.2	41 59.4 +59.5 158.9	41 52.2 +59.4 157.7	41 44.6 +59.4 156.5
25°	43 12.3 +59.6 161.2	43 05.8 +59.5 160.0	42 58.9 +59.5 158.8	42 51.6 +59.5 157.5	42 44.0 +59.3 156.3
26°	44 11.9 +59.5 161.1	44 05.3 +59.5 159.8	43 58.4 +59.5 158.6	43 51.1 +59.4 157.3	43 43.3 +59.4 156.1
27°	45 11.4 +59.6 160.9	45 04.8 +59.5 159.6	44 57.9 +59.4 158.4	44 50.5 +59.3 157.2	44 42.7 +59.3 155.9
28°	46 11.0 +59.5 160.7	46 04.3 +59.5 159.5	45 57.3 +59.4 158.2	45 49.8 +59.4 156.9	45 42.0 +59.3 155.7
29°	47 10.5 +59.6 160.5	47 03.8 +59.5 159.3	46 56.7 +59.4 158.0	46 49.2 +59.3 156.7	46 41.3 +59.3 155.5

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°	17 48.9 +59.5 158.9	17 41.7 +59.5 157.9	17 34.2 +59.5 156.9	17 26.3 +59.5 155.8	17 18.2 +59.4 154.8
1°	18 48.4 +59.6 158.8	18 41.2 +59.6 157.8	18 33.7 +59.5 156.7	18 25.8 +59.4 155.7	18 17.6 +59.4 154.6
2°	19 48.0 +59.6 158.7	19 40.8 +59.5 157.6	19 33.2 +59.5 156.6	19 25.2 +59.5 155.5	19 17.0 +59.4 154.5
3°	20 47.6 +59.6 158.6	20 40.3 +59.5 157.5	20 32.7 +59.4 156.5	20 24.7 +59.4 155.4	20 16.4 +59.4 154.3
4°	21 47.2 +59.5 158.4	21 39.8 +59.6 157.4	21 32.1 +59.5 156.3	21 24.1 +59.5 155.3	21 15.8 +59.4 154.2
5°	22 46.7 +59.6 158.3	22 39.4 +59.5 157.2	22 31.6 +59.5 156.2	22 23.6 +59.4 155.1	22 15.2 +59.4 154.0
6°	23 46.3 +59.5 158.2	23 38.9 +59.5 157.1	23 31.1 +59.5 156.0	23 23.0 +59.4 155.0	23 14.6 +59.3 153.9
7°	24 45.8 +59.6 158.0	24 38.4 +59.5 157.0	24 30.6 +59.4 155.9	24 22.4 +59.4 154.8	24 13.9 +59.4 153.7
8°	25 45.4 +59.5 157.9	25 37.9 +59.5 156.8	25 30.0 +59.5 155.7	25 21.8 +59.4 154.6	25 13.3 +59.3 153.6
9°	26 44.9 +59.6 157.8	26 37.4 +59.4 156.7	26 29.5 +59.4 155.6	26 21.2 +59.4 154.5	26 12.6 +59.4 153.4
10°	27 44.5 +59.5 157.6	27 36.8 +59.5 156.5	27 28.9 +59.4 155.4	27 20.6 +59.4 154.3	27 12.0 +59.3 153.2
11°	28 44.0 +59.5 157.5	28 36.3 +59.5 156.4	28 28.3 +59.4 155.3	28 20.0 +59.3 154.2	28 11.3 +59.3 153.1
12°	29 43.5 +59.5 157.3	29 35.8 +59.4 156.2	29 27.7 +59.4 155.1	29 19.3 +59.4 154.0	29 10.6 +59.3 152.9
13°	30 43.0 +59.5 157.2	30 35.2 +59.5 156.1	30 27.1 +59.4 154.9	30 18.7 +59.3 153.8	30 09.9 +59.3 152.7
14°	31 42.5 +59.4 157.0	31 34.7 +59.4 155.9	31 26.5 +59.4 154.8	31 18.0 +59.4 153.7	31 09.2 +59.3 152.5
15°	32 41.9 +59.5 156.9	32 34.1 +59.4 155.7	32 25.9 +59.4 154.6	32 17.4 +59.3 153.5	32 08.5 +59.2 152.4
16°	33 41.4 +59.5 156.7	33 33.5 +59.4 155.6	33 25.3 +59.3 154.4	33 16.7 +59.3 153.3	33 07.7 +59.3 152.2
17°	34 40.9 +59.4 156.6	34 32.9 +59.4 155.4	34 24.6 +59.3 154.3	34 16.0 +59.2 153.1	34 07.0 +59.2 152.0
18°	35 40.3 +59.4 156.4	35 32.3 +59.4 155.2	35 23.9 +59.4 154.1	35 15.2 +59.3 152.9	35 06.2 +59.2 151.8
19°	36 39.7 +59.4 156.2	36 31.7 +59.3 155.1	36 23.3 +59.3 153.9	36 14.5 +59.2 152.7	36 05.4 +59.1 151.6
20°	37 39.1 +59.4 156.1	37 31.0 +59.4 154.9	37 22.6 +59.2 153.7	37 13.7 +59.2 152.5	37 04.5 +59.2 151.4
21°	38 38.5 +59.4 155.9	38 30.4 +59.3 154.7	38 21.8 +59.3 153.5	38 12.9 +59.2 152.3	38 03.7 +59.1 151.2
22°	39 37.9 +59.4 155.7	39 29.7 +59.3 154.5	39 21.1 +59.2 153.3	39 12.1 +59.2 152.1	39 02.8 +59.1 150.9
23°	40 37.3 +59.3 155.5	40 29.0 +59.3 154.3	40 20.3 +59.3 153.1	40 11.3 +59.2 151.9	40 01.9 +59.1 150.7
24°	41 36.6 +59.3 155.3	41 28.3 +59.2 154.1	41 19.6 +59.1 152.9	41 10.5 +59.1 151.7	41 01.0 +59.1 150.5
25°	42 35.9 +59.3 155.1	42 27.5 +59.3 153.9	42 18.7 +59.2 152.7	42 09.6 +59.1 151.5	42 00.1 +59.0 150.3
26°	43 35.2 +59.3 154.9	43 26.8 +59.2 153.7	43 17.9 +59.1 152.4	43 08.7 +59.1 151.2	42 59.1 +59.0 150.0
27°	44 34.5 +59.3 154.7	44 26.0 +59.1 153.4	44 17.0 +59.2 152.2	44 07.8 +59.0 151.0	44 58.1 +59.0 149.8
28°	45 33.8 +59.2 154.4	45 25.1 +59.2 153.2	45 16.2 +59.0 152.0	45 06.8 +59.0 150.7	44 57.1 +58.9 149.5
29°	46 33.0 +59.2 154.2	46 24.3 +59.1 153.0	46 15.2 +59.1 151.7	46 05.8 +59.0 150.5	45 56.0 +58.9 149.2

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°	17 09.7 +59.4 153.7	17 00.9 +59.3 152.7	16 51.8 +59.3 151.7	16 42.4 +59.2 150.6	16 32.6 +59.2 149.6
1°	18 09.1 +59.3 153.6	18 00.2 +59.3 152.6	17 51.1 +59.2 151.5	17 41.6 +59.2 150.5	17 31.8 +59.2 149.4
2°	19 08.4 +59.4 153.4	18 59.5 +59.3 152.4	18 50.3 +59.3 151.4	18 40.8 +59.2 150.3	18 31.0 +59.1 149.3
3°	20 07.8 +59.3 153.3	19 58.8 +59.3 152.2	19 49.6 +59.2 151.2	19 40.0 +59.2 150.1	19 30.1 +59.2 149.1
4°	21 07.1 +59.4 153.1	20 58.1 +59.3 152.1	20 48.8 +59.3 151.0	20 39.2 +59.2 150.0	20 29.3 +59.1 148.9
5°	22 06.5 +59.3 153.0	21 57.4 +59.3 151.9	21 48.1 +59.2 150.8	21 38.4 +59.2 149.8	21 28.4 +59.1 148.7
6°	23 05.8 +59.3 152.8	22 56.7 +59.3 151.7	22 47.3 +59.2 150.7	22 37.6 +59.1 149.6	22 27.5 +59.2 148.6
7°	24 05.1 +59.3 152.6	23 56.0 +59.2 151.6	23 46.5 +59.2 150.5	23 36.7 +59.2 149.4	23 26.7 +59.0 148.4
8°	25 04.4 +59.3 152.5	24 55.2 +59.3 151.4	24 45.7 +59.2 150.3	24 35.9 +59.1 149.2	24 25.7 +59.1 148.2
9°	26 03.7 +59.3 152.3	25 54.5 +59.2 151.2	25 44.9 +59.2 150.1	25 35.0 +59.2 149.1	25 24.8 +59.1 148.0
10°	27 03.0 +59.3 152.1	26 53.7 +59.2 151.0	26 44.1 +59.2 150.0	26 34.2 +59.1 148.9	26 23.9 +59.1 147.8
11°	28 02.3 +59.2 152.0	27 52.9 +59.2 150.9	27 43.3 +59.1 149.8	27 33.3 +59.1 148.7	27 23.0 +59.0 147.6
12°	29 01.5 +59.3 151.8	28 52.1 +59.2 150.7	28 42.4 +59.1 149.6	28 32.4 +59.0 148.5	28 22.0 +59.0 147.4
13°	30 00.8 +59.2 151.6	29 51.3 +59.2 150.5	29 41.5 +59.2 149.4	29 31.4 +59.1 148.3	29 21.0 +59.0 147.2
14°	31 00.0 +59.2 151.4	30 50.5 +59.2 150.3	30 40.7 +59.1 149.2	30 30.5 +59.0 148.1	30 20.0 +59.0 147.0
15°	31 59.2 +59.2 151.2	31 49.7 +59.1 150.1	31 39.8 +59.0 149.0	31 29.5 +59.1 147.9	31 19.0 +58.9 146.8
16°	32 58.4 +59.2 151.0	32 48.8 +59.1 149.9	32 38.8 +59.1 148.8	32 28.6 +58.9 147.7	32 17.9 +59.0 146.5
17°	33 57.6 +59.2 150.8	33 47.9 +59.1 149.7	33 37.9 +59.0 148.6	33 27.5 +59.0 147.4	33 16.9 +58.9 146.3
18°	34 56.8 +59.1 150.6	34 47.0 +59.1 149.5	34 36.9 +59.0 148.4	34 26.5 +59.0 147.2	34 15.8 +58.9 146.1
19°	35 55.9 +59.1 150.4	35 46.1 +59.0 149.3	35 35.9 +59.0 148.1	35 25.5 +58.9 147.0	35 14.7 +58.8 145.9
20°	36 55.0 +59.1 150.2	36 45.1 +59.1 149.1	36 34.9 +59.0 147.9	36 24.4 +58.9 146.8	36 13.5 +58.8 145.6
21°	37 54.1 +59.1 150.0	37 44.2 +59.0 148.8	37 33.9 +58.9 147.7	37 23.3 +58.8 146.5	37 12.3 +58.8 145.4
22°	38 53.2 +59.0 149.8	38 43.2 +58.9 148.6	38 32.8 +58.9 147.4	38 22.1 +58.9 146.3	38 11.1 +58.8 145.1
23°	39 52.2 +59.0 149.5	39 42.1 +59.0 148.4	39 31.7 +58.9 147.2	39 21.0 +58.8 146.0	39 09.9 +58.7 144.9
24°	40 51.2 +59.0 149.3	40 41.1 +58.9 148.1	40 30.6 +58.8 146.9	40 19.8 +58.7 145.8	40 08.6 +58.7 144.6
25°	41 50.2 +59.0 149.1	41 40.0 +58.9 147.9	41 29.4 +58.8 146.7	41 18.5 +58.8 145.5	41 07.3 +58.7 144.3
26°	42 49.2 +58.9 148.8	42 38.9 +58.8 147.6	42 28.2 +58.8 146.4	42 17.3 +58.7 145.2	42 06.0 +58.6 144.0
27°	43 48.1 +58.9 148.6	43 37.7 +58.8 147.3	43 27.0 +58.7 146.1	43 16.0 +58.6 144.9	43 04.6 +58.5 143.7
28°	44 47.0 +58.8 148.3	44 36.5 +58.8 147.1	44 25.7 +58.7 145.9	44 14.6 +58.6 144.6	44 03.1 +58.5 143.4
29°	45 45.8 +58.8 148.0	45 35.3 +58.7 146.8	45 24.4 +58.6 145.6	45 13.2 +58.5 144.3	45 01.6 +58.5 143.1

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	16 22.6 +59.1 148.6	16 12.3 +59.0 147.6	16 01.6 +59.1 146.5	15 50.7 +59.0 145.5	15 39.5 +58.9 144.5
1°	17 21.7 +59.1 148.4	17 11.3 +59.1 147.4	17 00.7 +59.0 146.4	16 49.7 +59.0 145.3	16 38.4 +58.9 144.3
2°	18 20.8 +59.1 148.2	18 10.4 +59.1 147.2	17 59.7 +59.0 146.2	17 48.7 +58.9 145.1	17 37.3 +58.9 144.1
3°	19 19.9 +59.1 148.1	19 09.5 +59.0 147.0	18 58.7 +59.0 146.0	18 47.6 +58.9 144.9	18 36.2 +58.9 143.9
4°	20 19.0 +59.1 147.9	20 08.5 +59.0 146.8	19 57.7 +58.9 145.8	19 46.5 +58.9 144.7	19 35.1 +58.9 143.7
5°	21 18.1 +59.1 147.7	21 07.5 +59.0 146.6	20 56.6 +59.0 145.6	20 45.4 +59.0 144.5	20 34.0 +58.8 143.5
6°	22 17.2 +59.1 147.5	22 06.5 +59.0 146.4	21 55.6 +58.9 145.4	21 44.4 +58.8 144.3	21 32.8 +58.8 143.3
7°	23 16.3 +59.0 147.3	23 05.5 +59.0 146.2	22 54.5 +59.0 145.2	22 43.2 +58.9 144.1	22 31.6 +58.9 143.1
8°	24 15.3 +59.0 147.1	24 04.5 +59.0 146.0	23 53.5 +58.9 145.0	23 42.1 +58.9 143.9	23 30.5 +58.8 142.9
9°	25 14.3 +59.0 146.9	25 03.5 +59.0 145.8	24 52.4 +58.9 144.8	24 41.0 +58.8 143.7	24 29.3 +58.7 142.6
10°	26 13.3 +59.0 146.7	26 02.5 +58.9 145.6	25 51.3 +58.9 144.6	25 39.8 +58.8 143.5	25 28.0 +58.8 142.4
11°	27 12.3 +59.0 146.5	27 01.4 +58.9 145.4	26 50.2 +58.8 144.3	26 38.6 +58.8 143.3	26 26.8 +58.7 142.2
12°	28 11.3 +59.0 146.3	28 00.3 +58.9 145.2	27 49.0 +58.9 144.1	27 37.4 +58.8 143.0	27 25.5 +58.7 142.0
13°	29 10.3 +58.9 146.1	28 59.2 +58.9 145.0	28 47.9 +58.8 143.9	28 36.2 +58.7 142.8	28 24.2 +58.7 141.7
14°	30 09.2 +58.9 145.9	29 58.1 +58.8 144.8	29 46.7 +58.8 143.7	29 34.9 +58.8 142.6	29 22.9 +58.7 141.5
15°	31 08.1 +58.9 145.7	30 56.9 +58.9 144.5	30 45.5 +58.7 143.4	30 33.7 +58.7 142.3	30 21.6 +58.6 141.2
16°	32 07.0 +58.9 145.4	31 55.8 +58.8 144.3	31 44.2 +58.8 143.2	31 32.4 +58.6 142.1	31 20.2 +58.6 141.0
17°	33 05.9 +58.8 145.2	32 54.6 +58.8 144.1	32 43.0 +58.7 143.0	32 31.0 +58.7 141.9	32 18.8 +58.6 140.7
18°	34 04.7 +58.8 145.0	33 53.4 +58.7 143.8	33 41.7 +58.7 142.7	33 29.7 +58.6 141.6	33 17.4 +58.6 140.5
19°	35 03.5 +58.8 144.7	34 52.1 +58.7 143.6	34 40.4 +58.6 142.5	34 28.3 +58.6 141.3	34 16.0 +58.5 140.2
20°	36 02.3 +58.8 144.5	35 50.8 +58.7 143.3	35 39.0 +58.6 142.2	35 26.9 +58.5 141.1	35 14.5 +58.4 140.0
21°	37 01.1 +58.7 144.2	36 49.5 +58.7 143.1	36 37.6 +58.6 141.9	36 25.4 +58.5 140.8	36 12.9 +58.5 139.7
22°	37 59.8 +58.7 144.0	37 48.2 +58.6 142.8	37 36.2 +58.5 141.7	37 23.9 +58.5 140.5	37 11.4 +58.4 139.4
23°	38 58.5 +58.6 143.7	38 46.8 +58.5 142.5	38 34.7 +58.5 141.4	38 22.4 +58.4 140.2	38 09.8 +58.3 139.1
24°	39 57.1 +58.7 143.4	39 45.3 +58.6 142.3	39 33.2 +58.5 141.1	39 20.8 +58.4 140.0	39 08.1 +58.3 138.8
25°	40 55.8 +58.5 143.1	40 43.9 +58.5 142.0	40 31.7 +58.4 140.8	40 19.2 +58.3 139.7	40 06.4 +58.3 138.5
26°	41 54.3 +58.6 142.9	41 42.4 +58.4 141.7	41 30.1 +58.4 140.5	41 17.5 +58.3 139.3	41 04.7 +58.1 138.2
27°	42 52.9 +58.4 142.6	42 40.8 +58.4 141.4	42 28.5 +58.3 140.2	42 15.8 +58.2 139.0	42 02.8 +58.2 137.9
28°	43 51.3 +58.5 142.2	43 39.2 +58.3 141.1	43 26.8 +58.2 139.9	43 14.0 +58.2 138.7	43 01.0 +58.1 137.5
29°	44 49.8 +58.3 141.9	44 37.5 +58.3 140.7	44 25.0 +58.2 139.5	44 12.2 +58.1 138.4	43 59.1 +58.0 137.2

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°	15 28.0 +58.9 143.5	15 16.3 +58.8 142.5	15 04.2 +58.8 141.4	14 51.9 +58.7 140.4	14 39.4 +58.6 139.4
1°	16 26.9 +58.8 143.3	16 15.1 +58.8 142.3	16 03.0 +58.7 141.2	15 50.6 +58.7 140.2	15 38.0 +58.6 139.2
2°	17 25.7 +58.9 143.1	17 13.9 +58.7 142.0	17 01.7 +58.7 141.0	16 49.3 +58.7 140.0	16 36.6 +58.6 139.0
3°	18 24.6 +58.8 142.9	18 12.6 +58.8 141.8	18 00.4 +58.7 140.8	17 48.0 +58.6 139.8	17 35.2 +58.6 138.8
4°	19 23.4 +58.8 142.7	19 11.4 +58.8 141.6	18 59.1 +58.7 140.6	18 46.6 +58.6 139.6	18 33.8 +58.6 138.5
5°	20 22.2 +58.8 142.4	20 10.2 +58.7 141.4	19 57.8 +58.7 140.4	19 45.2 +58.7 139.3	19 32.4 +58.5 138.3
6°	21 21.0 +58.8 142.2	21 08.9 +58.7 141.2	20 56.5 +58.7 140.1	20 43.9 +58.6 139.1	20 30.9 +58.6 138.1
7°	22 19.8 +58.7 142.0	22 07.6 +58.7 141.0	21 55.2 +58.6 139.9	21 42.5 +58.5 138.9	21 29.5 +58.5 137.8
8°	23 18.5 +58.8 141.8	23 06.3 +58.7 140.7	22 53.8 +58.6 139.7	22 41.0 +58.6 138.6	22 28.0 +58.5 137.6
9°	24 17.3 +58.7 141.6	24 05.0 +58.6 140.5	23 52.4 +58.6 139.5	23 39.6 +58.5 138.4	23 26.5 +58.5 137.4
10°	25 16.0 +58.7 141.3	25 03.6 +58.7 140.3	24 51.0 +58.6 139.2	24 38.1 +58.5 138.2	24 25.0 +58.4 137.1
11°	26 14.7 +58.6 141.1	26 02.3 +58.6 140.0	25 49.6 +58.5 139.0	25 36.6 +58.5 137.9	25 23.4 +58.4 136.9
12°	27 13.3 +58.7 140.9	27 00.9 +58.6 139.8	26 48.1 +58.6 138.7	26 35.1 +58.5 137.7	26 21.8 +58.4 136.6
13°	28 12.0 +58.6 140.6	27 59.5 +58.5 139.6	27 46.7 +58.5 138.5	27 33.6 +58.4 137.4	27 20.2 +58.4 136.3
14°	29 10.6 +58.6 140.4	28 58.0 +58.6 139.3	28 45.2 +58.4 138.2	28 32.0 +58.4 137.2	28 18.6 +58.3 136.1
15°	30 09.2 +58.6 140.2	29 56.6 +58.5 139.1	29 43.6 +58.5 138.0	29 30.4 +58.4 136.9	29 16.9 +58.3 135.8
16°	31 07.8 +58.5 139.9	30 55.1 +58.4 138.8	30 42.1 +58.4 137.7	30 28.8 +58.3 136.6	30 15.2 +58.3 135.5
17°	32 06.3 +58.5 139.6	31 53.5 +58.5 138.5	31 40.5 +58.3 137.4	31 27.1 +58.3 136.4	31 13.5 +58.2 135.3
18°	33 04.8 +58.5 139.4	32 52.0 +58.4 138.3	32 38.8 +58.4 137.2	32 25.4 +58.3 136.1	32 11.7 +58.2 135.0
19°	34 03.3 +58.4 139.1	33 50.4 +58.3 138.0	33 37.2 +58.3 136.9	33 23.7 +58.2 135.8	33 09.9 +58.2 134.7
20°	35 01.7 +58.4 138.8	34 48.7 +58.4 137.7	34 35.5 +58.2 136.6	34 21.9 +58.2 135.5	34 08.1 +58.1 134.4
21°	36 00.1 +58.4 138.6	35 47.1 +58.3 137.4	35 33.7 +58.2 136.3	35 20.1 +58.1 135.2	35 06.2 +58.1 134.1
22°	36 58.5 +58.3 138.3	36 45.4 +58.2 137.1	36 31.9 +58.2 136.0	36 18.2 +58.1 134.9	36 04.3 +58.0 133.8
23°	37 56.8 +58.3 138.0	37 43.6 +58.2 136.8	37 30.1 +58.1 135.7	37 16.3 +58.1 134.6	37 02.3 +57.9 133.5
24°	38 55.1 +58.2 137.7	38 41.8 +58.1 136.5	38 28.2 +58.1 135.4	38 14.4 +57.9 134.3	38 00.2 +57.9 133.1
25°	39 53.3 +58.2 137.4	39 39.9 +58.1 136.2	39 26.3 +58.0 135.1	39 12.3 +58.0 133.9	38 58.1 +57.9 132.8
26°	40 51.5 +58.1 137.0	40 38.0 +58.1 135.9	40 24.3 +57.9 134.7	40 10.3 +57.8 133.6	39 56.0 +57.8 132.5
27°	41 49.6 +58.1 136.7	41 36.1 +57.9 135.5	41 22.2 +57.9 134.4	41 08.1 +57.8 133.3	40 53.8 +57.7 132.1
28°	42 47.7 +57.9 136.4	42 34.0 +57.9 135.2	42 20.1 +57.8 134.0	42 05.9 +57.8 132.9	41 51.5 +57.7 131.8
29°	43 45.6 +58.0 136.0	43 31.9 +57.9 134.8	43 17.9 +57.8 133.7	43 03.7 +57.6 132.5	42 49.2 +57.5 131.4

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°	14 26.5 +58.6 138.4	14 13.4 +58.5 137.4	14 00.1 +58.4 136.4	13 46.5 +58.4 135.4	13 32.6 +58.4 134.4
1°	15 25.1 +58.6 138.2	15 11.9 +58.5 137.2	14 58.5 +58.5 136.2	14 44.9 +58.4 135.2	14 31.0 +58.3 134.2
2°	16 23.7 +58.5 138.0	16 10.4 +58.5 136.9	15 57.0 +58.4 135.9	15 43.3 +58.4 134.9	15 29.3 +58.3 133.9
3°	17 22.2 +58.5 137.7	17 08.9 +58.5 136.7	16 55.4 +58.4 135.7	16 41.7 +58.3 134.7	16 27.6 +58.3 133.7
4°	18 20.7 +58.6 137.5	18 07.4 +58.5 136.5	17 53.8 +58.4 135.5	17 40.0 +58.3 134.4	17 25.9 +58.3 133.4
5°	19 19.3 +58.4 137.3	19 05.9 +58.4 136.2	18 52.2 +58.4 135.2	18 38.3 +58.4 134.2	18 24.2 +58.3 133.2
6°	20 17.7 +58.5 137.0	20 04.3 +58.4 136.0	19 50.6 +58.4 135.0	19 36.7 +58.3 133.9	19 22.5 +58.2 132.9
7°	21 16.2 +58.5 136.8	21 02.7 +58.4 135.8	20 49.0 +58.3 134.7	20 35.0 +58.2 133.7	20 20.7 +58.2 132.7
8°	22 14.7 +58.4 136.6	22 01.1 +58.4 135.5	21 47.3 +58.3 134.5	21 33.2 +58.3 133.4	21 18.9 +58.2 132.4
9°	23 13.1 +58.4 136.3	22 59.5 +58.3 135.3	22 45.6 +58.3 134.2	22 31.5 +58.2 133.2	22 17.1 +58.2 132.1
10°	24 11.5 +58.4 136.1	23 57.8 +58.4 135.0	23 43.9 +58.3 134.0	23 29.7 +58.2 132.9	23 15.3 +58.1 131.9
11°	25 09.9 +58.4 135.8	24 56.2 +58.3 134.7	24 42.2 +58.2 133.7	24 27.9 +58.2 132.6	24 13.4 +58.1 131.6
12°	26 08.3 +58.3 135.5	25 54.5 +58.2 134.5	25 40.4 +58.2 133.4	25 26.1 +58.1 132.4	25 11.5 +58.1 131.3
13°	27 06.6 +58.3 135.3	26 52.7 +58.3 134.2	26 38.6 +58.2 133.2	26 24.2 +58.2 132.1	26 09.6 +58.1 131.1
14°	28 04.9 +58.3 135.0	27 51.0 +58.2 133.9	27 36.8 +58.1 132.9	27 22.4 +58.0 131.8	27 07.7 +58.0 130.8
15°	29 03.2 +58.2 134.7	28 49.2 +58.2 133.7	28 34.9 +58.1 132.6	28 20.4 +58.1 131.5	28 05.7 +58.0 130.5
16°	30 01.4 +58.2 134.5	29 47.4 +58.1 133.4	29 33.0 +58.1 132.3	29 18.5 +58.0 131.3	29 03.7 +57.9 130.2
17°	30 59.6 +58.2 134.2	30 45.5 +58.1 133.1	30 31.1 +58.0 132.0	30 16.5 +57.9 131.0	30 01.6 +57.9 129.9
18°	31 57.8 +58.1 133.9	31 43.6 +58.0 132.8	31 29.1 +58.0 131.7	31 14.4 +58.0 130.7	30 59.5 +57.9 129.6
19°	32 55.9 +58.1 133.6	32 41.6 +58.1 132.5	32 27.1 +58.0 131.4	32 12.4 +57.8 130.4	31 57.4 +57.8 129.3
20°	33 54.0 +58.0 133.3	33 39.7 +57.9 132.2	33 25.1 +57.9 131.1	33 10.2 +57.9 130.0	32 55.2 +57.7 129.0
21°	34 52.0 +58.0 133.0	34 37.6 +57.9 131.9	34 23.0 +57.8 130.8	34 08.1 +57.7 129.7	33 52.9 +57.7 128.6
22°	35 50.0 +58.0 132.7	35 35.5 +57.9 131.6	35 20.8 +57.8 130.5	35 05.8 +57.8 129.4	34 50.6 +57.7 128.3
23°	36 48.0 +57.9 132.4	36 33.4 +57.8 131.3	36 18.6 +57.7 130.2	36 03.6 +57.6 129.1	35 48.3 +57.6 128.0
24°	37 45.9 +57.8 132.0	37 31.2 +57.8 130.9	37 16.3 +57.7 129.8	37 01.2 +57.6 128.7	36 45.9 +57.5 127.6
25°	38 43.7 +57.8 131.7	38 29.0 +57.7 130.6	38 14.0 +57.6 129.5	37 58.8 +57.6 128.4	37 43.4 +57.4 127.3
26°	39 41.5 +57.7 131.3	39 26.7 +57.6 130.2	39 11.6 +57.6 129.1	38 56.4 +57.4 128.0	38 40.8 +57.4 126.9
27°	40 39.2 +57.6 131.0	40 24.3 +57.6 129.9	40 09.2 +57.5 128.7	39 53.8 +57.4 127.6	39 38.2 +57.4 126.5
28°	41 36.8 +57.6 130.6	41 21.9 +57.4 129.5	41 06.7 +57.4 128.4	40 51.2 +57.3 127.2	40 35.6 +57.2 126.1
29°	42 34.4 +57.5 130.2	42 19.3 +57.4 129.1	42 04.1 +57.3 128.0	41 48.5 +57.3 126.8	41 32.8 +57.1 125.7

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°	13 18.6 +58.3 133.4	13 04.3 +58.2 132.4	12 49.7 +58.2 131.4	12 35.0 +58.1 130.4	12 20.0 +58.0 129.4
1°	14 16.9 +58.2 133.2	14 02.5 +58.2 132.2	13 47.9 +58.2 131.2	13 33.1 +58.1 130.2	13 18.0 +58.1 129.2
2°	15 15.1 +58.3 132.9	15 00.7 +58.2 131.9	14 46.1 +58.1 130.9	14 31.2 +58.1 129.9	14 16.1 +58.0 128.9
3°	16 13.4 +58.2 132.7	15 58.9 +58.2 131.6	15 44.2 +58.1 130.6	15 29.3 +58.0 129.6	15 14.1 +58.0 128.6
4°	17 11.6 +58.3 132.4	16 57.1 +58.2 131.4	16 42.3 +58.1 130.4	16 27.3 +58.1 129.4	16 12.1 +58.0 128.4
5°	18 09.9 +58.2 132.2	17 55.3 +58.1 131.1	17 40.4 +58.1 130.1	17 25.4 +58.0 129.1	17 10.1 +58.0 128.1
6°	19 08.1 +58.1 131.9	18 53.4 +58.1 130.9	18 38.5 +58.1 129.9	18 23.4 +58.0 128.8	18 08.1 +57.9 127.8
7°	20 06.2 +58.2 131.6	19 51.5 +58.1 130.6	19 36.6 +58.0 129.6	19 21.4 +58.0 128.6	19 06.0 +58.0 127.6
8°	21 04.4 +58.1 131.4	20 49.6 +58.1 130.3	20 34.6 +58.0 129.3	20 19.4 +58.0 128.3	20 04.0 +57.9 127.3
9°	22 02.5 +58.1 131.1	21 47.7 +58.0 130.1	21 32.6 +58.0 129.0	21 17.4 +57.9 128.0	21 01.9 +57.8 127.0
10°	23 00.6 +58.1 130.8	22 45.7 +58.1 129.8	22 30.6 +58.0 128.8	22 15.3 +57.9 127.7	21 59.7 +57.9 126.7
11°	23 58.7 +58.1 130.6	23 43.8 +57.9 129.5	23 28.6 +57.9 128.5	23 13.2 +57.9 127.5	22 57.6 +57.8 126.4
12°	24 56.8 +58.0 130.3	24 41.7 +58.0 129.2	24 26.5 +57.9 128.2	24 11.1 +57.8 127.2	23 55.4 +57.8 126.1
13°	25 54.8 +58.0 130.0	25 39.7 +57.9 129.0	25 24.4 +57.9 127.9	25 08.9 +57.8 126.9	24 53.2 +57.7 125.8
14°	26 52.8 +57.9 129.7	26 37.6 +57.9 128.7	26 22.3 +57.8 127.6	26 06.7 +57.7 126.6	25 50.9 +57.7 125.5
15°	27 50.7 +57.9 129.4	27 35.5 +57.9 128.4	27 20.1 +57.8 127.3	27 04.4 +57.8 126.3	26 48.6 +57.7 125.2
16°	28 48.6 +57.9 129.1	28 33.4 +57.8 128.1	28 17.9 +57.7 127.0	28 02.2 +57.7 126.0	27 46.3 +57.6 124.9
17°	29 46.5 +57.8 128.8	29 31.2 +57.7 127.8	29 15.6 +57.7 126.7	28 59.9 +57.6 125.7	28 43.9 +57.5 124.6
18°	30 44.3 +57.8 128.5	30 28.9 +57.8 127.5	30 13.3 +57.7 126.4	29 57.5 +57.6 125.3	29 41.4 +57.6 124.3
19°	31 42.1 +57.8 128.2	31 26.7 +57.6 127.1	31 11.0 +57.6 126.1	30 55.1 +57.5 125.0	30 39.0 +57.4 124.0
20°	32 39.9 +57.6 127.9	32 24.3 +57.6 126.8	32 08.6 +57.5 125.7	31 52.6 +57.5 124.7	31 36.4 +57.5 123.6
21°	33 37.5 +57.7 127.6	33 21.9 +57.6 126.5	33 06.1 +57.5 125.4	32 50.1 +57.4 124.3	32 33.9 +57.3 123.3
22°	34 35.2 +57.6 127.2	34 19.5 +57.5 126.1	34 03.6 +57.5 125.1	33 47.5 +57.4 124.0	33 31.2 +57.3 122.9
23°	35 32.8 +57.5 126.9	35 17.0 +57.5 125.8	35 01.1 +57.3 124.7	34 44.9 +57.3 123.6	34 28.5 +57.3 122.6
24°	36 30.3 +57.4 126.5	36 14.5 +57.3 125.4	35 58.4 +57.4 124.4	35 42.2 +57.3 123.3	35 25.8 +57.2 122.2
25°	37 27.7 +57.4 126.2	37 11.8 +57.4 125.1	36 55.8 +57.2 124.0	36 39.5 +57.1 122.9	36 23.0 +57.1 121.8
26°	38 25.1 +57.3 125.8	38 09.2 +57.2 124.7	37 53.0 +57.2 123.6	37 36.6 +57.1 122.5	37 20.1 +57.0 121.4
27°	39 22.4 +57.3 125.4	39 06.4 +57.2 124.3	38 50.2 +57.0 123.2	38 33.7 +57.0 122.1	38 17.1 +56.9 121.1
28°	40 19.7 +57.1 125.0	40 03.6 +57.0 123.9	39 47.2 +57.0 122.8	39 30.7 +57.0 121.7	39 14.0 +56.9 120.6
29°	41 16.8 +57.1 124.6	41 00.6 +57.0 123.5	40 44.2 +57.0 122.4	40 27.7 +56.8 121.3	40 10.9 +56.7 120.2

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°	12 04.8 +58.0 128.4	11 49.4 +57.9 127.4	11 33.8 +57.9 126.5	11 17.9 +57.9 125.5	11 01.9 +57.8 124.5
1°	13 02.8 +58.0 128.2	12 47.3 +58.0 127.2	12 31.7 +57.8 126.2	12 15.8 +57.8 125.2	11 59.7 +57.8 124.2
2°	14 00.8 +58.0 127.9	13 45.3 +57.9 126.9	13 29.5 +57.9 125.9	13 13.6 +57.8 124.9	12 57.5 +57.8 123.9
3°	14 58.8 +57.9 127.6	14 43.2 +57.9 126.6	14 27.4 +57.9 125.6	14 11.4 +57.8 124.6	13 55.3 +57.7 123.7
4°	15 56.7 +57.9 127.4	15 41.1 +57.9 126.4	15 25.3 +57.8 125.4	15 09.2 +57.8 124.4	14 53.0 +57.7 123.4
5°	16 54.6 +58.0 127.1	16 39.0 +57.8 126.1	16 23.1 +57.8 125.1	16 07.0 +57.7 124.1	15 50.7 +57.7 123.1
6°	17 52.6 +57.9 126.8	17 36.8 +57.9 125.8	17 20.9 +57.8 124.8	17 04.7 +57.8 123.8	16 48.4 +57.7 122.8
7°	18 50.5 +57.8 126.5	18 34.7 +57.8 125.5	18 18.7 +57.7 124.5	18 02.5 +57.7 123.5	17 46.1 +57.6 122.5
8°	19 48.3 +57.9 126.3	19 32.5 +57.8 125.3	19 16.4 +57.7 124.2	19 00.2 +57.6 123.2	18 43.7 +57.7 122.2
9°	20 46.2 +57.8 126.0	20 30.3 +57.7 125.0	20 14.1 +57.7 124.0	19 57.8 +57.7 122.9	19 41.4 +57.5 121.9
10°	21 44.0 +57.8 125.7	21 28.0 +57.7 124.7	21 11.8 +57.7 123.7	20 55.5 +57.6 122.6	20 38.9 +57.6 121.6
11°	22 41.8 +57.7 125.4	22 25.7 +57.7 124.4	22 09.5 +57.6 123.4	21 53.1 +57.6 122.3	21 36.5 +57.5 121.3
12°	23 39.5 +57.7 125.1	23 23.4 +57.7 124.1	23 07.1 +57.6 123.1	22 50.7 +57.5 122.0	22 34.0 +57.5 121.0
13°	24 37.2 +57.7 124.8	24 21.1 +57.6 123.8	24 04.7 +57.6 122.8	23 48.2 +57.5 121.7	23 31.5 +57.5 120.7
14°	25 34.9 +57.6 124.5	25 18.7 +57.6 123.5	25 02.3 +57.5 122.4	24 45.7 +57.5 121.4	24 29.0 +57.4 120.4
15°	26 32.5 +57.6 124.2	26 16.3 +57.5 123.2	25 59.8 +57.5 122.1	25 43.2 +57.4 121.1	25 26.4 +57.4 120.1
16°	27 30.1 +57.6 123.9	27 13.8 +57.5 122.8	26 57.3 +57.5 121.8	26 40.6 +57.4 120.8	26 23.8 +57.3 119.8
17°	28 27.7 +57.5 123.6	28 11.3 +57.5 122.5	27 54.8 +57.3 121.5	27 38.0 +57.3 120.4	27 21.1 +57.3 119.4
18°	29 25.2 +57.5 123.2	29 08.8 +57.4 122.2	28 52.1 +57.4 121.2	28 35.3 +57.3 120.1	28 18.4 +57.2 119.1
19°	30 22.7 +57.4 122.9	30 06.2 +57.3 121.9	29 49.5 +57.3 120.8	29 32.6 +57.3 119.8	29 15.6 +57.2 118.7
20°	31 20.1 +57.3 122.6	31 03.5 +57.3 121.5	30 46.8 +57.2 120.5	30 29.9 +57.1 119.4	30 12.8 +57.1 118.4
21°	32 17.4 +57.3 122.2	32 00.8 +57.3 121.2	31 44.0 +57.2 120.1	31 27.0 +57.1 119.1	31 09.9 +57.0 118.0
22°	33 14.7 +57.3 121.9	32 58.1 +57.1 120.8	32 41.2 +57.1 119.8	32 24.1 +57.1 118.7	32 06.9 +57.0 117.7
23°	34 12.0 +57.2 121.5	33 55.2 +57.1 120.4	33 38.3 +57.0 119.4	33 21.2 +57.0 118.3	33 03.9 +56.9 117.3
24°	35 09.2 +57.1 121.1	34 52.3 +57.1 120.1	34 35.3 +57.0 119.0	34 18.2 +56.9 118.0	34 00.8 +56.9 116.9
25°	36 06.3 +57.0 120.8	35 49.4 +56.9 119.7	35 32.3 +56.9 118.6	35 15.1 +56.8 117.6	34 57.7 +56.8 116.5
26°	37 03.3 +56.9 120.4	36 46.3 +56.9 119.3	36 29.2 +56.9 118.2	36 11.9 +56.8 117.2	35 54.5 +56.7 116.1
27°	38 00.2 +56.9 120.0	37 43.2 +56.8 118.9	37 26.1 +56.7 117.8	37 08.7 +56.7 116.8	36 51.2 +56.6 115.7
28°	38 57.1 +56.8 119.6	38 40.0 +56.8 118.5	38 22.8 +56.6 117.4	38 05.4 +56.6 116.4	37 47.8 +56.5 115.3
29°	39 53.9 +56.7 119.2	39 36.8 +56.6 118.1	39 19.4 +56.6 117.0	39 02.0 +56.4 115.9	38 44.3 +56.4 114.9

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°	10 45.7 +57.8 123.5	10 29.4 +57.7 122.5	10 12.8 +57.6 121.6	9 56.1 +57.6 120.6	9 39.2 +57.5 119.6
1°	11 43.5 +57.7 123.2	11 27.1 +57.6 122.2	11 10.4 +57.7 121.3	10 53.7 +57.5 120.3	10 36.7 +57.5 119.3
2°	12 41.2 +57.7 123.0	12 24.7 +57.7 122.0	12 08.1 +57.6 121.0	11 51.2 +57.6 120.0	11 34.2 +57.5 119.0
3°	13 38.9 +57.7 122.7	13 22.4 +57.6 121.7	13 05.7 +57.6 120.7	12 48.8 +57.5 119.7	12 31.7 +57.5 118.7
4°	14 36.6 +57.7 122.4	14 20.0 +57.6 121.4	14 03.3 +57.5 120.4	13 46.3 +57.5 119.4	13 29.2 +57.5 118.4
5°	15 34.3 +57.6 122.1	15 17.6 +57.6 121.1	15 00.8 +57.6 120.1	14 43.8 +57.5 119.1	14 26.7 +57.4 118.1
6°	16 31.9 +57.6 121.8	16 15.2 +57.6 120.8	15 58.4 +57.5 119.8	15 41.3 +57.5 118.8	15 24.1 +57.5 117.8
7°	17 29.5 +57.6 121.5	17 12.8 +57.5 120.5	16 55.9 +57.5 119.5	16 38.8 +57.4 118.5	16 21.6 +57.4 117.5
8°	18 27.1 +57.6 121.2	18 10.3 +57.5 120.2	17 53.4 +57.4 119.2	17 36.2 +57.5 118.2	17 19.0 +57.3 117.2
9°	19 24.7 +57.5 120.9	19 07.8 +57.5 119.9	18 50.8 +57.5 118.9	18 33.7 +57.3 117.9	18 16.3 +57.4 116.9
10°	20 22.2 +57.5 120.6	20 05.3 +57.5 119.6	19 48.3 +57.4 118.6	19 31.0 +57.4 117.6	19 13.7 +57.3 116.6
11°	21 19.7 +57.5 120.3	21 02.8 +57.4 119.3	20 45.7 +57.3 118.3	20 28.4 +57.3 117.3	20 11.0 +57.2 116.3
12°	22 17.2 +57.4 120.0	22 00.2 +57.4 119.0	21 43.0 +57.4 118.0	21 25.7 +57.3 117.0	21 08.2 +57.3 116.0
13°	23 14.6 +57.4 119.7	22 57.6 +57.3 118.7	22 40.4 +57.3 117.7	22 23.0 +57.2 116.7	22 05.5 +57.2 115.7
14°	24 12.0 +57.4 119.4	23 54.9 +57.3 118.4	23 37.7 +57.2 117.3	23 20.2 +57.2 116.3	23 02.7 +57.1 115.3
15°	25 09.4 +57.3 119.1	24 52.2 +57.3 118.0	24 34.9 +57.2 117.0	24 17.4 +57.2 116.0	23 59.8 +57.1 115.0
16°	26 06.7 +57.3 118.7	25 49.5 +57.2 117.7	25 32.1 +57.2 116.7	25 14.6 +57.1 115.7	24 56.9 +57.1 114.7
17°	27 04.0 +57.2 118.4	26 46.7 +57.2 117.4	26 29.3 +57.1 116.4	26 11.7 +57.1 115.3	25 54.0 +57.0 114.3
18°	28 01.2 +57.2 118.1	27 43.9 +57.1 117.0	27 26.4 +57.1 116.0	27 08.8 +57.0 115.0	26 51.0 +57.0 114.0
19°	28 58.4 +57.1 117.7	28 41.0 +57.1 116.7	28 23.5 +57.0 115.7	28 05.8 +56.9 114.6	27 48.0 +56.9 113.6
20°	29 55.5 +57.0 117.4	29 38.1 +57.0 116.3	29 20.5 +56.9 115.3	29 02.7 +56.9 114.3	28 44.9 +56.8 113.3
21°	30 52.5 +57.0 117.0	30 35.1 +56.9 116.0	30 17.4 +56.9 114.9	29 59.6 +56.9 113.9	29 41.7 +56.8 112.9
22°	31 49.5 +57.0 116.6	31 32.0 +56.9 115.6	31 14.3 +56.8 114.6	30 56.5 +56.8 113.5	30 38.5 +56.7 112.5
23°	32 46.5 +56.8 116.3	32 28.9 +56.8 115.2	32 11.1 +56.8 114.2	31 53.3 +56.7 113.2	31 35.2 +56.7 112.1
24°	33 43.3 +56.8 115.9	33 25.7 +56.7 114.8	33 07.9 +56.7 113.8	32 50.0 +56.6 112.8	32 31.9 +56.6 111.8
25°	34 40.1 +56.8 115.5	34 22.4 +56.7 114.4	34 04.6 +56.6 113.4	33 46.6 +56.5 112.4	33 28.5 +56.5 111.4
26°	35 36.9 +56.6 115.1	35 19.1 +56.6 114.0	35 01.2 +56.5 113.0	34 43.1 +56.5 112.0	34 25.0 +56.4 111.0
27°	36 33.5 +56.6 114.7	36 15.7 +56.5 113.6	35 57.7 +56.5 112.6	35 39.6 +56.4 111.6	35 21.4 +56.3 110.5
28°	37 30.1 +56.4 114.3	37 12.2 +56.4 113.2	36 54.2 +56.3 112.2	36 36.0 +56.3 111.1	36 17.7 +56.3 110.1
29°	38 26.5 +56.4 113.8	38 08.6 +56.3 112.8	37 50.5 +56.3 111.7	37 32.3 +56.2 110.7	37 14.0 +56.1 109.7

Declination SAME name as Latitude

Latitude 71°

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°	9 22.1 +57.5 118.6	9 04.9 +57.4 117.7	8 47.5 +57.4 116.7	8 30.0 +57.3 115.7	8 12.3 +57.3 114.8
1°	10 19.6 +57.5 118.3	10 02.3 +57.5 117.4	9 44.9 +57.4 116.4	9 27.3 +57.4 115.4	9 09.6 +57.3 114.5
2°	11 17.1 +57.4 118.0	10 59.8 +57.4 117.1	10 42.3 +57.4 116.1	10 24.7 +57.3 115.1	10 06.9 +57.3 114.2
3°	12 14.5 +57.5 117.8	11 57.2 +57.4 116.8	11 39.7 +57.3 115.8	11 22.0 +57.3 114.8	11 04.2 +57.3 113.9
4°	13 12.0 +57.4 117.5	12 54.6 +57.3 116.5	12 37.0 +57.3 115.5	12 19.3 +57.3 114.5	12 01.5 +57.2 113.5
5°	14 09.4 +57.4 117.2	13 51.9 +57.4 116.2	13 34.3 +57.3 115.2	13 16.6 +57.2 114.2	12 58.7 +57.2 113.2
6°	15 06.8 +57.4 116.9	14 49.3 +57.3 115.9	14 31.6 +57.3 114.9	14 13.8 +57.3 113.9	13 55.9 +57.2 112.9
7°	16 04.2 +57.3 116.6	15 46.6 +57.3 115.6	15 28.9 +57.3 114.6	15 11.1 +57.2 113.6	14 53.1 +57.2 112.6
8°	17 01.5 +57.3 116.2	16 43.9 +57.3 115.3	16 26.2 +57.2 114.3	16 08.3 +57.2 113.3	15 50.3 +57.1 112.3
9°	17 58.8 +57.3 115.9	17 41.2 +57.2 114.9	17 23.4 +57.2 114.0	17 05.5 +57.1 113.0	16 47.4 +57.1 112.0
10°	18 56.1 +57.3 115.6	18 38.4 +57.2 114.6	18 20.6 +57.2 113.6	18 02.6 +57.2 112.7	17 44.5 +57.1 111.7
11°	19 53.4 +57.2 115.3	19 35.6 +57.2 114.3	19 17.8 +57.1 113.3	18 59.8 +57.1 112.3	18 41.6 +57.1 111.3
12°	20 50.6 +57.2 115.0	20 32.8 +57.2 114.0	20 14.9 +57.1 113.0	19 56.9 +57.0 112.0	19 38.7 +57.0 111.0
13°	21 47.8 +57.1 114.7	21 30.0 +57.1 113.7	21 12.0 +57.1 112.7	20 53.9 +57.0 111.7	20 35.7 +57.0 110.7
14°	22 44.9 +57.1 114.3	22 27.1 +57.0 113.3	22 09.1 +57.0 112.3	21 50.9 +57.0 111.3	21 32.7 +56.9 110.3
15°	23 42.0 +57.1 114.0	23 24.1 +57.0 113.0	23 06.1 +56.9 112.0	22 47.9 +56.9 111.0	22 29.6 +56.9 110.0
16°	24 39.1 +57.0 113.7	24 21.1 +57.0 112.7	24 03.0 +57.0 111.7	23 44.8 +56.9 110.7	23 26.5 +56.8 109.7
17°	25 36.1 +57.0 113.3	25 18.1 +56.9 112.3	25 00.0 +56.8 111.3	24 41.7 +56.8 110.3	24 23.3 +56.8 109.3
18°	26 33.1 +56.9 113.0	26 15.0 +56.9 112.0	25 56.8 +56.9 111.0	25 38.5 +56.8 110.0	25 20.1 +56.8 109.0
19°	27 30.0 +56.9 112.6	27 11.9 +56.8 111.6	26 53.7 +56.7 110.6	26 35.3 +56.8 109.6	26 16.9 +56.7 108.6
20°	28 26.9 +56.8 112.2	28 08.7 +56.8 111.2	27 50.4 +56.7 110.2	27 32.1 +56.6 109.2	27 13.6 +56.6 108.2
21°	29 23.7 +56.7 111.9	29 05.5 +56.7 110.9	28 47.1 +56.7 109.9	28 28.7 +56.6 108.9	28 10.2 +56.5 107.9
22°	30 20.4 +56.7 111.5	30 02.2 +56.6 110.5	29 43.8 +56.6 109.5	29 25.3 +56.6 108.5	29 06.7 +56.5 107.5
23°	31 17.1 +56.6 111.1	30 58.8 +56.5 110.1	30 40.4 +56.5 109.1	30 21.9 +56.4 108.1	30 03.2 +56.5 107.1
24°	32 13.7 +56.5 110.7	31 55.3 +56.5 109.7	31 36.9 +56.4 108.7	31 18.3 +56.4 107.7	30 59.7 +56.3 106.7
25°	33 10.2 +56.5 110.3	32 51.8 +56.4 109.3	32 33.3 +56.4 108.3	32 14.7 +56.4 107.3	31 56.0 +56.3 106.3
26°	34 06.7 +56.3 109.9	33 48.2 +56.4 108.9	33 29.7 +56.3 107.9	33 11.1 +56.2 106.9	32 52.3 +56.2 105.9
27°	35 03.0 +56.3 109.5	34 44.6 +56.2 108.5	34 26.0 +56.2 107.5	34 07.3 +56.1 106.5	33 48.5 +56.1 105.5
28°	35 59.3 +56.2 109.1	35 40.8 +56.1 108.1	35 22.2 +56.1 107.0	35 03.4 +56.1 106.0	34 44.6 +56.0 105.0
29°	36 55.5 +56.1 108.7	36 36.9 +56.1 107.6	36 18.3 +56.0 106.6	35 59.5 +56.0 105.6	35 40.6 +56.0 104.6

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°	7 54.5 +57.3 113.8	7 36.6 +57.2 112.8	7 18.5 +57.2 111.9	7 00.3 +57.2 110.9	6 42.0 +57.1 109.9
1°	8 51.8 +57.2 113.5	8 33.8 +57.2 112.5	8 15.7 +57.2 111.6	7 57.5 +57.1 110.6	7 39.1 +57.1 109.6
2°	9 49.0 +57.3 113.2	9 31.0 +57.2 112.2	9 12.9 +57.1 111.3	8 54.6 +57.1 110.3	8 36.2 +57.1 109.3
3°	10 46.3 +57.2 112.9	10 28.2 +57.2 111.9	10 10.0 +57.2 110.9	9 51.7 +57.1 110.0	9 33.3 +57.1 109.0
4°	11 43.5 +57.2 112.6	11 25.4 +57.2 111.6	11 07.2 +57.1 110.6	10 48.8 +57.1 109.7	10 30.4 +57.0 108.7
5°	12 40.7 +57.2 112.3	12 22.6 +57.1 111.3	12 04.3 +57.1 110.3	11 45.9 +57.1 109.4	11 27.4 +57.1 108.4
6°	13 37.9 +57.1 112.0	13 19.7 +57.1 111.0	13 01.4 +57.1 110.0	12 43.0 +57.0 109.0	12 24.5 +57.0 108.1
7°	14 35.0 +57.2 111.6	14 16.8 +57.1 110.7	13 58.5 +57.0 109.7	13 40.0 +57.0 108.7	13 21.5 +57.0 107.8
8°	15 32.2 +57.1 111.3	15 13.9 +57.1 110.3	14 55.5 +57.1 109.4	14 37.0 +57.0 108.4	14 18.5 +56.9 107.4
9°	16 29.3 +57.0 111.0	16 11.0 +57.0 110.0	15 52.6 +57.0 109.1	15 34.0 +57.0 108.1	15 15.4 +56.9 107.1
10°	17 26.3 +57.1 110.7	17 08.0 +57.0 109.7	16 49.6 +56.9 108.7	16 31.0 +56.9 107.7	16 12.3 +56.9 106.8
11°	18 23.4 +57.0 110.4	18 05.0 +57.0 109.4	17 46.5 +57.0 108.4	17 27.9 +56.9 107.4	17 09.2 +56.9 106.4
12°	19 20.4 +57.0 110.0	19 02.0 +56.9 109.0	18 43.5 +56.9 108.1	18 24.8 +56.9 107.1	18 06.1 +56.8 106.1
13°	20 17.4 +56.9 109.7	19 58.9 +56.9 108.7	19 40.4 +56.8 107.7	19 21.7 +56.8 106.7	19 02.9 +56.8 105.8
14°	21 14.3 +56.9 109.4	20 55.8 +56.9 108.4	20 37.2 +56.8 107.4	20 18.5 +56.8 106.4	19 59.7 +56.8 105.4
15°	22 11.2 +56.8 109.0	21 52.7 +56.8 108.0	21 34.0 +56.8 107.0	21 15.3 +56.8 106.1	20 56.5 +56.7 105.1
16°	23 08.0 +56.8 108.7	22 49.5 +56.7 107.7	22 30.8 +56.7 106.7	22 12.1 +56.7 105.7	21 53.2 +56.7 104.7
17°	24 04.8 +56.8 108.3	23 46.2 +56.8 107.3	23 27.5 +56.7 106.3	23 08.8 +56.6 105.4	22 49.9 +56.6 104.4
18°	25 01.6 +56.7 108.0	24 43.0 +56.6 107.0	24 24.2 +56.7 106.0	24 05.4 +56.6 105.0	23 46.5 +56.6 104.0
19°	25 58.3 +56.6 107.6	25 39.6 +56.6 106.6	25 20.9 +56.5 105.6	25 02.0 +56.5 104.6	24 43.1 +56.5 103.7
20°	26 54.9 +56.6 107.2	26 36.2 +56.6 106.2	26 17.4 +56.6 105.2	25 58.5 +56.5 104.3	25 39.6 +56.4 103.3
21°	27 51.5 +56.6 106.9	27 32.8 +56.5 105.9	27 14.0 +56.4 104.9	26 55.0 +56.5 103.9	26 36.0 +56.4 102.9
22°	28 48.1 +56.4 106.5	28 29.3 +56.4 105.5	28 10.4 +56.4 104.5	27 51.5 +56.3 103.5	27 32.4 +56.4 102.5
23°	29 44.5 +56.4 106.1	29 25.7 +56.4 105.1	29 06.8 +56.3 104.1	28 47.8 +56.3 103.1	28 28.8 +56.2 102.1
24°	30 40.9 +56.3 105.7	30 22.1 +56.3 104.7	30 03.1 +56.3 103.7	29 44.1 +56.2 102.7	29 25.0 +56.2 101.7
25°	31 37.2 +56.3 105.3	31 18.4 +56.2 104.3	30 59.4 +56.2 103.3	30 40.3 +56.2 102.3	30 21.2 +56.1 101.3
26°	32 33.5 +56.1 104.9	32 14.6 +56.1 103.9	31 55.6 +56.1 102.9	31 36.5 +56.0 101.9	31 17.3 +56.1 100.9
27°	33 29.6 +56.1 104.5	33 10.7 +56.0 103.5	32 51.7 +56.0 102.5	32 32.5 +56.0 101.5	32 13.4 +55.9 100.5
28°	34 25.7 +56.0 104.0	34 06.7 +56.0 103.0	33 47.7 +55.9 102.0	33 28.5 +55.9 101.1	33 09.3 +55.9 100.1
29°	35 21.7 +55.9 103.6	35 02.7 +55.8 102.6	34 43.6 +55.8 101.6	34 24.4 +55.8 100.6	34 05.2 +55.7 99.6

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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°	6 23.6 +57.1 109.0	6 05.1 +57.0 108.0	5 46.4 +57.1 107.1	5 27.7 +57.0 106.1	5 08.9 +57.0 105.2
1°	7 20.7 +57.0 108.7	7 02.1 +57.0 107.7	6 43.5 +57.0 106.8	6 24.7 +57.0 105.8	6 05.9 +56.9 104.9
2°	8 17.7 +57.1 108.4	7 59.1 +57.1 107.4	7 40.5 +57.0 106.4	7 21.7 +56.9 105.5	7 02.8 +56.9 104.5
3°	9 14.8 +57.0 108.1	8 56.2 +57.0 107.1	8 37.5 +56.9 106.1	8 18.6 +57.0 105.2	7 59.7 +57.0 104.2
4°	10 11.8 +57.0 107.7	9 53.2 +57.0 106.8	9 34.4 +57.0 105.8	9 15.6 +56.9 104.9	8 56.7 +56.9 103.9
5°	11 08.8 +57.0 107.4	10 50.2 +56.9 106.5	10 31.4 +56.9 105.5	10 12.5 +56.9 104.5	9 53.6 +56.8 103.6
6°	12 05.8 +57.0 107.1	11 47.1 +57.0 106.1	11 28.3 +56.9 105.2	11 09.4 +56.9 104.2	10 50.4 +56.9 103.3
7°	13 02.8 +57.0 106.8	12 44.1 +56.9 105.8	12 25.2 +56.9 104.9	12 06.3 +56.9 103.9	11 47.3 +56.8 102.9
8°	13 59.8 +56.9 106.5	13 41.0 +56.9 105.5	13 22.1 +56.9 104.5	13 03.2 +56.8 103.6	12 44.1 +56.9 102.6
9°	14 56.7 +56.9 106.1	14 37.9 +56.9 105.2	14 19.0 +56.8 104.2	14 00.0 +56.8 103.2	13 41.0 +56.8 102.3
10°	15 53.6 +56.9 105.8	15 34.8 +56.8 104.8	15 15.8 +56.8 103.9	14 56.8 +56.8 102.9	14 37.8 +56.7 101.9
11°	16 50.5 +56.8 105.5	16 31.6 +56.8 104.5	16 12.6 +56.8 103.5	15 53.6 +56.8 102.6	15 34.5 +56.7 101.6
12°	17 47.3 +56.8 105.1	17 28.4 +56.8 104.2	17 09.4 +56.8 103.2	16 50.4 +56.7 102.2	16 31.2 +56.7 101.3
13°	18 44.1 +56.8 104.8	18 25.2 +56.7 103.8	18 06.2 +56.7 102.9	17 47.1 +56.7 101.9	17 27.9 +56.7 100.9
14°	19 40.9 +56.7 104.5	19 21.9 +56.7 103.5	19 02.9 +56.6 102.5	18 43.8 +56.6 101.5	18 24.6 +56.6 100.6
15°	20 37.6 +56.7 104.1	20 18.6 +56.7 103.1	19 59.5 +56.7 102.2	19 40.4 +56.6 101.2	19 21.2 +56.6 100.2
16°	21 34.3 +56.6 103.8	21 15.3 +56.6 102.8	20 56.2 +56.6 101.8	20 37.0 +56.6 100.8	20 17.8 +56.5 99.9
17°	22 30.9 +56.6 103.4	22 11.9 +56.5 102.4	21 52.8 +56.5 101.5	21 33.6 +56.5 100.5	21 14.3 +56.5 99.5
18°	23 27.5 +56.5 103.0	23 08.4 +56.5 102.1	22 49.3 +56.5 101.1	22 30.1 +56.5 100.1	22 10.8 +56.5 99.2
19°	24 24.0 +56.5 102.7	24 04.9 +56.5 101.7	23 45.8 +56.4 100.7	23 26.6 +56.4 99.8	23 07.3 +56.4 98.8
20°	25 20.5 +56.5 102.3	25 01.4 +56.4 101.3	24 42.2 +56.4 100.3	24 23.0 +56.3 99.4	24 03.7 +56.3 98.4
21°	26 17.0 +56.3 101.9	25 57.8 +56.4 100.9	25 38.6 +56.3 100.0	25 19.3 +56.3 99.0	25 00.0 +56.3 98.0
22°	27 13.3 +56.3 101.5	26 54.2 +56.2 100.6	26 34.9 +56.3 99.6	26 15.6 +56.3 98.6	25 56.3 +56.2 97.6
23°	28 09.6 +56.3 101.1	27 50.4 +56.2 100.2	27 31.2 +56.2 99.2	27 11.9 +56.1 98.2	26 52.5 +56.2 97.3
24°	29 05.9 +56.1 100.8	28 46.6 +56.2 99.8	28 27.4 +56.1 98.8	28 08.0 +56.1 97.8	27 48.7 +56.0 96.9
25°	30 02.0 +56.1 100.3	29 42.8 +56.1 99.4	29 23.5 +56.0 98.4	29 04.1 +56.1 97.4	28 44.7 +56.1 96.5
26°	30 58.1 +56.0 99.9	30 38.9 +55.9 99.0	30 19.5 +56.0 98.0	30 00.2 +55.9 97.0	29 40.8 +55.9 96.0
27°	31 54.1 +56.0 99.5	31 34.8 +55.9 98.5	31 15.5 +55.9 97.6	30 56.1 +55.9 96.6	30 36.7 +55.8 95.6
28°	32 50.1 +55.8 99.1	32 30.7 +55.9 98.1	32 11.4 +55.8 97.1	31 52.0 +55.8 96.2	31 32.5 +55.8 95.2
29°	33 45.9 +55.7 98.6	33 26.6 +55.7 97.7	33 07.2 +55.7 96.7	32 47.8 +55.6 95.7	32 28.3 +55.7 94.8

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 50.0 +56.9 104.2	4 31.0 +56.9 103.3	4 12.0 +56.9 102.3	3 52.9 +56.8 101.4	3 33.7 +56.8 100.4
1°	5 46.9 +57.0 103.9	5 27.9 +56.9 102.9	5 08.9 +56.8 102.0	4 49.7 +56.9 101.0	4 30.5 +56.9 100.1
2°	6 43.9 +56.9 103.6	6 24.8 +56.9 102.6	6 05.7 +56.9 101.7	5 46.6 +56.8 100.7	5 27.4 +56.8 99.8
3°	7 40.8 +56.9 103.3	7 21.7 +56.9 102.3	7 02.6 +56.8 101.4	6 43.4 +56.8 100.4	6 24.2 +56.8 99.4
4°	8 37.7 +56.8 102.9	8 18.6 +56.8 102.0	7 59.4 +56.9 101.0	7 40.2 +56.9 100.1	7 21.0 +56.8 99.1
5°	9 34.5 +56.9 102.6	9 15.4 +56.9 101.7	8 56.3 +56.8 100.7	8 37.1 +56.8 99.8	8 17.8 +56.8 98.8
6°	10 31.4 +56.8 102.3	10 12.3 +56.8 101.3	9 53.1 +56.8 100.4	9 33.9 +56.7 99.4	9 14.6 +56.7 98.5
7°	11 28.2 +56.9 102.0	11 09.1 +56.8 101.0	10 49.9 +56.8 100.1	10 30.6 +56.8 99.1	10 11.3 +56.8 98.1
8°	12 25.1 +56.7 101.6	12 05.9 +56.8 100.7	11 46.7 +56.7 99.7	11 27.4 +56.7 98.8	11 08.1 +56.7 97.8
9°	13 21.8 +56.8 101.3	13 02.7 +56.7 100.3	12 43.4 +56.7 99.4	12 24.1 +56.7 98.4	12 04.8 +56.7 97.5
10°	14 18.6 +56.7 101.0	13 59.4 +56.7 100.0	13 40.1 +56.7 99.1	13 20.8 +56.7 98.1	13 01.5 +56.6 97.1
11°	15 15.3 +56.8 100.6	14 56.1 +56.7 99.7	14 36.8 +56.7 98.7	14 17.5 +56.7 97.8	13 58.1 +56.7 96.8
12°	16 12.1 +56.6 100.3	15 52.8 +56.7 99.3	15 33.5 +56.6 98.4	15 14.2 +56.6 97.4	14 54.8 +56.6 96.5
13°	17 08.7 +56.7 100.0	16 49.5 +56.6 99.0	16 30.1 +56.6 98.0	16 10.8 +56.6 97.1	15 51.4 +56.5 96.1
14°	18 05.4 +56.6 99.6	17 46.1 +56.6 98.6	17 26.7 +56.6 97.7	17 07.4 +56.5 96.7	16 47.9 +56.6 95.8
15°	19 02.0 +56.5 99.3	18 42.7 +56.5 98.3	18 23.3 +56.5 97.3	18 03.9 +56.5 96.4	17 44.5 +56.5 95.4
16°	19 58.5 +56.6 98.9	19 39.2 +56.5 97.9	19 19.8 +56.5 97.0	19 00.4 +56.5 96.0	18 41.0 +56.5 95.1
17°	20 55.1 +56.4 98.5	20 35.7 +56.5 97.6	20 16.3 +56.5 96.6	19 56.9 +56.4 95.7	19 37.5 +56.4 94.7
18°	21 51.5 +56.5 98.2	21 32.2 +56.4 97.2	21 12.8 +56.4 96.3	20 53.3 +56.4 95.3	20 33.9 +56.3 94.3
19°	22 48.0 +56.3 97.8	22 28.6 +56.3 96.9	22 09.2 +56.3 95.9	21 49.7 +56.4 94.9	21 30.2 +56.4 94.0
20°	23 44.3 +56.3 97.4	23 24.9 +56.3 96.5	23 05.5 +56.3 95.5	22 46.1 +56.2 94.6	22 26.6 +56.2 93.6
21°	24 40.6 +56.3 97.1	24 21.2 +56.3 96.1	24 01.8 +56.2 95.1	23 42.3 +56.3 94.2	23 22.8 +56.3 93.2
22°	25 36.9 +56.2 96.7	25 17.5 +56.2 95.7	24 58.0 +56.2 94.8	24 38.6 +56.1 93.8	24 19.1 +56.1 92.9
23°	26 33.1 +56.2 96.3	26 13.7 +56.1 95.3	25 54.2 +56.1 94.4	25 34.7 +56.1 93.4	25 15.2 +56.1 92.5
24°	27 29.3 +56.0 95.9	27 09.8 +56.1 94.9	26 50.3 +56.1 94.0	26 30.8 +56.1 93.0	26 11.3 +56.1 92.1
25°	28 25.3 +56.0 95.5	28 05.9 +55.9 94.5	27 46.4 +56.0 93.6	27 26.9 +55.9 92.6	27 07.4 +55.9 91.7
26°	29 21.3 +55.9 95.1	29 01.8 +56.0 94.1	28 42.4 +55.9 93.2	28 22.8 +55.9 92.2	28 03.3 +55.9 91.3
27°	30 17.2 +55.9 94.7	29 57.8 +55.8 93.7	29 38.3 +55.8 92.8	29 18.7 +55.8 91.8	28 59.2 +55.8 90.8
28°	31 13.1 +55.7 94.2	30 53.6 +55.7 93.3	30 34.1 +55.7 92.3	30 14.5 +55.8 91.4	29 55.0 +55.7 90.4
29°	32 08.8 +55.7 93.8	31 49.3 +55.7 92.8	31 29.8 +55.7 91.9	31 10.3 +55.6 90.9	30 50.7 +55.7 90.0

Declination SAME name as Latitude

Latitude 71°

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 14.5 +56.8 99.5	2 55.2 +56.8 98.5	2 35.8 +56.8 97.6	2 16.4 +56.8 96.6	1 57.0 +56.8 95.7
1°	4 11.3 +56.8 99.1	3 52.0 +56.8 98.2	3 32.6 +56.8 97.2	3 13.2 +56.8 96.3	2 53.8 +56.7 95.4
2°	5 08.1 +56.8 98.8	4 48.8 +56.7 97.9	4 29.4 +56.8 96.9	4 10.0 +56.7 96.0	3 50.5 +56.8 95.0
3°	6 04.9 +56.8 98.5	5 45.5 +56.8 97.5	5 26.2 +56.7 96.6	5 06.7 +56.8 95.6	4 47.3 +56.7 94.7
4°	7 01.7 +56.7 98.2	6 42.3 +56.8 97.2	6 22.9 +56.8 96.3	6 03.5 +56.7 95.3	5 44.0 +56.7 94.4
5°	7 58.4 +56.8 97.8	7 39.1 +56.7 96.9	7 19.7 +56.7 95.9	7 00.2 +56.7 95.0	6 40.7 +56.8 94.0
6°	8 55.2 +56.8 97.5	8 35.8 +56.8 96.6	8 16.4 +56.7 95.6	7 56.9 +56.8 94.7	7 37.5 +56.7 93.7
7°	9 52.0 +56.7 97.2	9 32.6 +56.7 96.2	9 13.1 +56.7 95.3	8 53.7 +56.6 94.3	8 34.2 +56.6 93.4
8°	10 48.7 +56.7 96.9	10 29.3 +56.7 95.9	10 09.8 +56.7 95.0	9 50.3 +56.7 94.0	9 30.8 +56.7 93.1
9°	11 45.4 +56.7 96.5	11 26.0 +56.6 95.6	11 06.5 +56.7 94.6	10 47.0 +56.7 93.7	10 27.5 +56.7 92.7
10°	12 42.1 +56.6 96.2	12 22.6 +56.7 95.2	12 03.2 +56.6 94.3	11 43.7 +56.6 93.3	11 24.2 +56.6 92.4
11°	13 38.7 +56.6 95.9	13 19.3 +56.6 94.9	12 59.8 +56.6 93.9	12 40.3 +56.6 93.0	12 20.8 +56.6 92.0
12°	14 35.3 +56.6 95.5	14 15.9 +56.6 94.6	13 56.4 +56.6 93.6	13 36.9 +56.6 92.7	13 17.4 +56.5 91.7
13°	15 31.9 +56.6 95.2	15 12.5 +56.5 94.2	14 53.0 +56.5 93.3	14 33.5 +56.5 92.3	14 13.9 +56.6 91.4
14°	16 28.5 +56.5 94.8	16 09.0 +56.5 93.9	15 49.5 +56.5 92.9	15 30.0 +56.5 92.0	15 10.5 +56.5 91.0
15°	17 25.0 +56.5 94.5	17 05.5 +56.5 93.5	16 46.0 +56.5 92.6	16 26.5 +56.5 91.6	16 07.0 +56.5 90.7
16°	18 21.5 +56.5 94.1	18 02.0 +56.5 93.2	17 42.5 +56.5 92.2	17 23.0 +56.4 91.3	17 03.5 +56.4 90.3
17°	19 18.0 +56.4 93.8	18 58.5 +56.4 92.8	18 39.0 +56.4 91.9	18 19.4 +56.4 90.9	17 59.9 +56.4 90.0
18°	20 14.4 +56.3 93.4	19 54.9 +56.3 92.4	19 35.4 +56.3 91.5	19 15.8 +56.4 90.5	18 56.3 +56.3 89.6
19°	21 10.7 +56.4 93.0	20 51.2 +56.3 92.1	20 31.7 +56.3 91.1	20 12.2 +56.3 90.2	19 52.6 +56.3 89.2
20°	22 07.1 +56.2 92.7	21 47.5 +56.3 91.7	21 28.0 +56.3 90.8	21 08.5 +56.2 89.8	20 48.9 +56.3 88.9
21°	23 03.3 +56.2 92.3	22 43.8 +56.2 91.3	22 24.3 +56.2 90.4	22 04.7 +56.2 89.4	21 45.2 +56.2 88.5
22°	23 59.5 +56.2 91.9	23 40.0 +56.2 90.9	23 20.5 +56.1 90.0	23 00.9 +56.2 89.1	22 41.4 +56.2 88.1
23°	24 55.7 +56.1 91.5	24 36.2 +56.1 90.6	24 16.6 +56.1 89.6	23 57.1 +56.1 88.7	23 37.6 +56.1 87.7
24°	25 51.8 +56.0 91.1	25 32.3 +56.0 90.2	25 12.7 +56.1 89.2	24 53.2 +56.0 88.3	24 33.7 +56.0 87.3
25°	26 47.8 +56.0 90.7	26 28.3 +55.9 89.8	26 08.8 +55.9 88.8	25 49.2 +56.0 87.9	25 29.7 +56.0 87.0
26°	27 43.8 +55.9 90.3	27 24.2 +55.9 89.4	27 04.7 +55.9 88.4	26 45.2 +55.9 87.5	26 25.7 +55.9 86.5
27°	28 39.7 +55.8 89.9	28 20.1 +55.9 89.0	28 00.6 +55.8 88.0	27 41.1 +55.8 87.1	27 21.6 +55.8 86.1
28°	29 35.5 +55.7 89.5	29 16.0 +55.7 88.5	28 56.4 +55.8 87.6	28 36.9 +55.8 86.7	28 17.4 +55.8 85.7
29°	30 31.2 +55.7 89.1	30 11.7 +55.6 88.1	29 52.2 +55.6 87.2	29 32.7 +55.6 86.2	29 13.2 +55.7 85.3

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 37.6 +56.7 94.7	1 18.1 +56.7 93.8	0 58.6 +56.7 92.8	0 39.1 +56.7 91.9	0 19.5 +56.8 90.9
1°	2 34.3 +56.8 94.4	2 14.8 +56.8 93.5	1 55.3 +56.8 92.5	1 35.8 +56.7 91.6	1 16.3 +56.7 90.6
2°	3 31.1 +56.7 94.1	3 11.6 +56.7 93.1	2 52.1 +56.7 92.2	2 32.5 +56.8 91.2	2 13.0 +56.7 90.3
3°	4 27.8 +56.7 93.8	4 08.3 +56.7 92.8	3 48.8 +56.7 91.9	3 29.3 +56.7 90.9	3 09.7 +56.7 90.0
4°	5 24.5 +56.8 93.4	5 05.0 +56.7 92.5	4 45.5 +56.7 91.5	4 26.0 +56.7 90.6	4 06.4 +56.7 89.6
5°	6 21.3 +56.7 93.1	6 01.7 +56.7 92.2	5 42.2 +56.7 91.2	5 22.7 +56.7 90.3	5 03.1 +56.7 89.3
6°	7 18.0 +56.7 92.8	6 58.4 +56.7 91.8	6 38.9 +56.7 90.9	6 19.4 +56.7 89.9	5 59.8 +56.7 89.0
7°	8 14.7 +56.6 92.4	7 55.1 +56.7 91.5	7 35.6 +56.7 90.5	7 16.1 +56.6 89.6	6 56.5 +56.7 88.7
8°	9 11.3 +56.7 92.1	8 51.8 +56.7 91.2	8 32.3 +56.6 90.2	8 12.7 +56.7 89.3	7 53.2 +56.7 88.3
9°	10 08.0 +56.6 91.8	9 48.5 +56.6 90.8	9 28.9 +56.7 89.9	9 09.4 +56.6 88.9	8 49.9 +56.6 88.0
10°	11 04.6 +56.6 91.4	10 45.1 +56.6 90.5	10 25.6 +56.6 89.5	10 06.0 +56.7 88.6	9 46.5 +56.6 87.7
11°	12 01.2 +56.6 91.1	11 41.7 +56.6 90.2	11 22.2 +56.6 89.2	11 02.7 +56.5 88.3	10 43.1 +56.6 87.3
12°	12 57.8 +56.6 90.8	12 38.3 +56.6 89.8	12 18.8 +56.5 88.9	11 59.2 +56.6 87.9	11 39.7 +56.6 87.0
13°	13 54.4 +56.5 90.4	13 34.9 +56.5 89.5	13 15.3 +56.6 88.5	12 55.8 +56.6 87.6	12 36.3 +56.6 86.6
14°	14 50.9 +56.6 90.1	14 31.4 +56.5 89.1	14 11.9 +56.5 88.2	13 52.4 +56.5 87.2	13 32.9 +56.5 86.3
15°	15 47.5 +56.4 89.7	15 27.9 +56.5 88.8	15 08.4 +56.5 87.8	14 48.9 +56.5 86.9	14 29.4 +56.5 86.0
16°	16 43.9 +56.5 89.4	16 24.4 +56.4 88.4	16 04.9 +56.4 87.5	15 45.4 +56.4 86.5	15 25.9 +56.4 85.6
17°	17 40.4 +56.4 89.0	17 20.8 +56.4 88.1	17 01.3 +56.4 87.1	16 41.8 +56.4 86.2	16 22.3 +56.5 85.3
18°	18 36.8 +56.3 88.7	18 17.2 +56.4 87.7	17 57.7 +56.4 86.8	17 38.2 +56.4 85.8	17 18.8 +56.3 84.9
19°	19 33.1 +56.3 88.3	19 13.6 +56.3 87.4	18 54.1 +56.3 86.4	18 34.6 +56.3 85.5	18 15.1 +56.4 84.5
20°	20 29.4 +56.3 87.9	20 09.9 +56.3 87.0	19 50.4 +56.3 86.0	19 30.9 +56.3 85.1	19 11.5 +56.3 84.2
21°	21 25.7 +56.2 87.6	21 06.2 +56.2 86.6	20 46.7 +56.2 85.7	20 27.2 +56.3 84.7	20 07.8 +56.2 83.8
22°	22 21.9 +56.2 87.2	22 02.4 +56.2 86.2	21 42.9 +56.2 85.3	21 23.5 +56.2 84.4	21 04.0 +56.2 83.4
23°	23 18.1 +56.1 86.8	22 58.6 +56.1 85.9	22 39.1 +56.1 84.9	22 19.7 +56.1 84.0	22 00.2 +56.2 83.1
24°	24 14.2 +56.0 86.4	23 54.7 +56.0 85.5	23 35.2 +56.1 84.5	23 15.8 +56.1 83.6	22 56.4 +56.1 82.7
25°	25 10.2 +56.0 86.0	24 50.7 +56.0 85.1	24 31.3 +56.0 84.1	24 11.9 +56.0 83.2	23 52.5 +56.0 82.3
26°	26 06.2 +55.9 85.6	25 46.7 +56.0 84.7	25 27.3 +55.9 83.8	25 07.9 +56.0 82.8	24 48.5 +56.0 81.9
27°	27 02.1 +55.9 85.2	26 42.7 +55.8 84.3	26 23.2 +55.9 83.4	26 03.9 +55.9 82.4	25 44.5 +55.9 81.5
28°	27 58.0 +55.7 84.8	27 38.5 +55.8 83.9	27 19.1 +55.8 82.9	26 59.8 +55.8 82.0	26 40.4 +55.9 81.1
29°	28 53.7 +55.7 84.4	28 34.3 +55.7 83.5	28 14.9 +55.7 82.5	27 55.6 +55.7 81.6	27 36.3 +55.7 80.7

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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 +56.7 90.0	-0 19.5 +56.7	-0 39.1 +56.8	-0 58.6 +56.8	-1 18.1 +56.8
1°	0 56.7 +56.8 89.7	0 37.2 +56.7 88.7	0 17.7 +56.7 87.8	-0 01.8 +56.7	-0 21.3 +56.7
2°	1 53.5 +56.7 89.3	1 33.9 +56.8 88.4	1 14.4 +56.7 87.5	0 54.9 +56.7 86.5	0 35.4 +56.8 85.6
3°	2 50.2 +56.7 89.0	2 30.7 +56.7 88.1	2 11.1 +56.8 87.1	1 51.6 +56.8 86.2	1 32.2 +56.7 85.2
4°	3 46.9 +56.7 88.7	3 27.4 +56.7 87.8	3 07.9 +56.7 86.8	2 48.4 +56.7 85.9	2 28.9 +56.7 84.9
5°	4 43.6 +56.7 88.4	4 24.1 +56.7 87.4	4 04.6 +56.7 86.5	3 45.1 +56.7 85.5	3 25.6 +56.8 84.6
6°	5 40.3 +56.7 88.0	5 20.8 +56.7 87.1	5 01.3 +56.7 86.2	4 41.8 +56.7 85.2	4 22.4 +56.7 84.3
7°	6 37.0 +56.7 87.7	6 17.5 +56.7 86.8	5 58.0 +56.7 85.8	5 38.5 +56.7 84.9	5 19.1 +56.7 83.9
8°	7 33.7 +56.7 87.4	7 14.2 +56.7 86.4	6 54.7 +56.7 85.5	6 35.2 +56.7 84.6	6 15.8 +56.7 83.6
9°	8 30.4 +56.6 87.0	8 10.9 +56.6 86.1	7 51.4 +56.6 85.2	7 31.9 +56.7 84.2	7 12.5 +56.7 83.3
10°	9 27.0 +56.6 86.7	9 07.5 +56.6 85.8	8 48.0 +56.7 84.8	8 28.6 +56.7 83.9	8 09.2 +56.7 83.0
11°	10 23.6 +56.6 86.4	10 04.1 +56.7 85.4	9 44.7 +56.6 84.5	9 25.3 +56.6 83.6	9 05.9 +56.6 82.6
12°	11 20.2 +56.6 86.0	11 00.8 +56.6 85.1	10 41.3 +56.6 84.2	10 21.9 +56.6 83.2	10 02.5 +56.7 82.3
13°	12 16.8 +56.6 85.7	11 57.4 +56.5 84.8	11 37.9 +56.6 83.8	11 18.5 +56.6 82.9	10 59.2 +56.6 81.9
14°	13 13.4 +56.5 85.4	12 53.9 +56.6 84.4	12 34.5 +56.6 83.5	12 15.1 +56.6 82.5	11 55.8 +56.5 81.6
15°	14 09.9 +56.5 85.0	13 50.5 +56.5 84.1	13 31.1 +56.5 83.1	13 11.7 +56.5 82.2	12 52.3 +56.6 81.3
16°	15 06.4 +56.5 84.7	14 47.0 +56.5 83.7	14 27.6 +56.5 82.8	14 08.2 +56.5 81.9	13 48.9 +56.5 80.9
17°	16 02.9 +56.4 84.3	15 43.5 +56.4 83.4	15 24.1 +56.4 82.4	15 04.7 +56.5 81.5	14 45.4 +56.5 80.6
18°	16 59.3 +56.4 84.0	16 39.9 +56.4 83.0	16 20.5 +56.5 82.1	16 01.2 +56.5 81.2	15 41.9 +56.5 80.2
19°	17 55.7 +56.4 83.6	17 36.3 +56.4 82.7	17 17.0 +56.4 81.7	16 57.7 +56.4 80.8	16 38.4 +56.4 79.9
20°	18 52.1 +56.3 83.2	18 32.7 +56.3 82.3	18 13.4 +56.3 81.4	17 54.1 +56.3 80.5	17 34.8 +56.4 79.5
21°	19 48.4 +56.3 82.9	19 29.0 +56.3 81.9	19 09.7 +56.3 81.0	18 50.4 +56.4 80.1	18 31.2 +56.4 79.2
22°	20 44.7 +56.2 82.5	20 25.3 +56.3 81.6	20 06.0 +56.3 80.7	19 46.8 +56.2 79.7	19 27.6 +56.3 78.8
23°	21 40.9 +56.1 82.1	21 21.6 +56.1 81.2	21 02.3 +56.2 80.3	20 43.0 +56.3 79.4	20 23.9 +56.2 78.4
24°	22 37.0 +56.2 81.8	22 17.7 +56.2 80.8	21 58.5 +56.1 79.9	21 39.3 +56.2 79.0	21 20.1 +56.2 78.1
25°	23 33.2 +56.0 81.4	23 13.9 +56.1 80.4	22 54.6 +56.1 79.5	22 35.5 +56.1 78.6	22 16.3 +56.2 77.7
26°	24 29.2 +56.0 81.0	24 10.0 +56.0 80.1	23 50.7 +56.1 79.1	23 31.6 +56.1 78.2	23 12.5 +56.1 77.3
27°	25 25.2 +56.0 80.6	25 06.0 +55.9 79.7	24 46.8 +56.0 78.7	24 27.7 +56.0 77.8	24 08.6 +56.0 76.9
28°	26 21.2 +55.8 80.2	26 01.9 +55.9 79.3	25 42.8 +55.9 78.3	25 23.7 +55.9 77.4	25 04.6 +56.0 76.5
29°	27 17.0 +55.8 79.8	26 57.8 +55.8 78.9	26 38.7 +55.8 77.9	26 19.6 +55.9 77.0	26 00.6 +55.9 76.1

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-1 37.6 +56.8	-1 57.0 +56.8	-2 16.4 +56.7	-2 35.8 +56.8	-2 55.2 +56.8
1°	-0 40.8 +56.8	-1 00.2 +56.7	-1 19.7 +56.8	-1 39.0 +56.8	-1 58.4 +56.9
2°	0 16.0 +56.7 84.6	-0 03.5 +56.8	-0 22.9 +56.8	-0 42.2 +56.8	-1 01.5 +56.8
3°	1 12.7 +56.8 84.3	0 53.3 +56.8 83.4	0 33.9 +56.8 82.4	0 14.6 +56.8 81.5	-0 04.7 +56.8
4°	2 09.5 +56.7 84.0	1 50.1 +56.7 83.0	1 30.7 +56.8 82.1	1 11.4 +56.8 81.1	0 52.1 +56.8 80.2
5°	3 06.2 +56.8 83.6	2 46.8 +56.8 82.7	2 27.5 +56.7 81.8	2 08.2 +56.7 80.8	1 48.9 +56.8 79.9
6°	4 03.0 +56.7 83.3	3 43.6 +56.7 82.4	3 24.2 +56.8 81.4	3 04.9 +56.8 80.5	2 45.7 +56.8 79.6
7°	4 59.7 +56.7 83.0	4 40.3 +56.8 82.1	4 21.0 +56.8 81.1	4 01.7 +56.8 80.2	3 42.5 +56.8 79.2
8°	5 56.4 +56.7 82.7	5 37.1 +56.7 81.7	5 17.8 +56.7 80.8	4 58.5 +56.8 79.8	4 39.3 +56.8 78.9
9°	6 53.1 +56.7 82.3	6 33.8 +56.7 81.4	6 14.5 +56.7 80.5	5 55.3 +56.7 79.5	5 36.1 +56.8 78.6
10°	7 49.8 +56.7 82.0	7 30.5 +56.7 81.1	7 11.2 +56.8 80.1	6 52.0 +56.8 79.2	6 32.9 +56.7 78.3
11°	8 46.5 +56.7 81.7	8 27.2 +56.7 80.7	8 08.0 +56.7 79.8	7 48.8 +56.7 78.9	7 29.6 +56.8 77.9
12°	9 43.2 +56.6 81.3	9 23.9 +56.7 80.4	9 04.7 +56.7 79.5	8 45.5 +56.7 78.5	8 26.4 +56.7 77.6
13°	10 39.8 +56.7 81.0	10 20.6 +56.6 80.1	10 01.4 +56.6 79.1	9 42.2 +56.7 78.2	9 23.1 +56.7 77.3
14°	11 36.5 +56.6 80.7	11 17.2 +56.6 79.7	10 58.0 +56.7 78.8	10 38.9 +56.7 77.9	10 19.8 +56.7 76.9
15°	12 33.1 +56.5 80.3	12 13.8 +56.6 79.4	11 54.7 +56.6 78.5	11 35.6 +56.6 77.5	11 16.5 +56.7 76.6
16°	13 29.6 +56.6 80.0	13 10.4 +56.6 79.1	12 51.3 +56.6 78.1	12 32.2 +56.6 77.2	12 13.2 +56.6 76.3
17°	14 26.2 +56.5 79.6	14 07.0 +56.5 78.7	13 47.9 +56.5 77.8	13 28.8 +56.6 76.9	13 09.8 +56.7 75.9
18°	15 22.7 +56.5 79.3	15 03.5 +56.6 78.4	14 44.4 +56.6 77.4	14 25.4 +56.6 76.5	14 06.5 +56.5 75.6
19°	16 19.2 +56.5 79.0	16 00.1 +56.4 78.0	15 41.0 +56.5 77.1	15 22.0 +56.5 76.2	15 03.0 +56.6 75.3
20°	17 15.7 +56.4 78.6	16 56.5 +56.5 77.7	16 37.5 +56.5 76.7	16 18.5 +56.5 75.8	15 59.6 +56.5 74.9
21°	18 12.1 +56.3 78.2	17 53.0 +56.4 77.3	17 34.0 +56.4 76.4	17 15.0 +56.5 75.5	16 56.1 +56.5 74.6
22°	19 08.4 +56.4 77.9	18 49.4 +56.3 77.0	18 30.4 +56.4 76.0	18 11.5 +56.4 75.1	17 52.6 +56.5 74.2
23°	20 04.8 +56.3 77.5	19 45.7 +56.3 76.6	19 26.8 +56.3 75.7	19 07.9 +56.4 74.8	18 49.1 +56.4 73.8
24°	21 01.1 +56.2 77.1	20 42.0 +56.3 76.2	20 23.1 +56.3 75.3	20 04.3 +56.3 74.4	19 45.5 +56.4 73.5
25°	21 57.3 +56.2 76.8	21 38.3 +56.2 75.9	21 19.4 +56.3 74.9	21 00.6 +56.3 74.0	20 41.9 +56.3 73.1
26°	22 53.5 +56.1 76.4	22 34.5 +56.2 75.5	22 15.7 +56.2 74.6	21 56.9 +56.2 73.7	21 38.2 +56.2 72.7
27°	23 49.6 +56.1 76.0	23 30.7 +56.1 75.1	23 11.9 +56.1 74.2	22 53.1 +56.2 73.3	22 34.4 +56.3 72.4
28°	24 45.7 +56.0 75.6	24 26.8 +56.0 74.7	24 08.0 +56.1 73.8	23 49.3 +56.1 72.9	23 30.7 +56.1 72.0
29°	25 41.7 +55.9 75.2	25 22.8 +56.0 74.3	25 04.1 +56.0 73.4	24 45.4 +56.1 72.5	24 26.8 +56.1 71.6

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 14.5 +56.9	-3 33.7 +56.8	-3 52.9 +56.9	-4 12.0 +56.9	-4 31.0 +56.9
1°	-2 17.6 +56.8	-2 36.9 +56.9	-2 56.0 +56.9	-3 15.1 +56.9	-3 34.1 +56.9
2°	-1 20.8 +56.8	-1 40.0 +56.8	-1 59.1 +56.8	-2 18.2 +56.9	-2 37.2 +56.9
3°	-0 24.0 +56.9	-0 43.2 +56.9	-1 02.3 +56.9	-1 21.3 +56.9	-1 40.3 +56.9
4°	0 32.9 +56.8 79.3	0 13.7 +56.9 78.3	-0 05.4 +56.9	-0 24.4 +56.9	-0 43.4 +57.0
5°	1 29.7 +56.8 78.9	1 10.6 +56.8 78.0	0 51.5 +56.9 77.0	0 32.5 +56.9 76.1	0 13.6 +56.9 75.2
6°	2 26.5 +56.8 78.6	2 07.4 +56.9 77.7	1 48.4 +56.8 76.7	1 29.4 +56.9 75.8	1 10.5 +56.9 74.8
7°	3 23.3 +56.9 78.3	3 04.3 +56.8 77.3	2 45.2 +56.9 76.4	2 26.3 +56.9 75.5	2 07.4 +56.9 74.5
8°	4 20.2 +56.8 78.0	4 01.1 +56.8 77.0	3 42.1 +56.9 76.1	3 23.2 +56.9 75.1	3 04.3 +57.0 74.2
9°	5 17.0 +56.8 77.6	4 57.9 +56.9 76.7	4 39.0 +56.8 75.8	4 20.1 +56.8 74.8	4 01.3 +56.9 73.9
10°	6 13.8 +56.8 77.3	5 54.8 +56.8 76.4	5 35.8 +56.8 75.4	5 16.9 +56.9 74.5	4 58.2 +56.9 73.6
11°	7 10.6 +56.7 77.0	6 51.6 +56.8 76.1	6 32.6 +56.9 75.1	6 13.8 +56.9 74.2	5 55.1 +56.8 73.3
12°	8 07.3 +56.8 76.7	7 48.4 +56.7 75.7	7 29.5 +56.8 74.8	7 10.7 +56.8 73.9	6 51.9 +56.9 72.9
13°	9 04.1 +56.7 76.3	8 45.1 +56.8 75.4	8 26.3 +56.8 74.5	8 07.5 +56.8 73.5	7 48.8 +56.9 72.6
14°	10 00.8 +56.8 76.0	9 41.9 +56.8 75.1	9 23.1 +56.8 74.1	9 04.3 +56.8 73.2	8 45.7 +56.8 72.3
15°	10 57.6 +56.7 75.7	10 38.7 +56.7 74.7	10 19.9 +56.7 73.8	10 01.1 +56.8 72.9	9 42.5 +56.9 72.0
16°	11 54.3 +56.6 75.3	11 35.4 +56.7 74.4	11 16.6 +56.8 73.5	10 57.9 +56.8 72.6	10 39.4 +56.8 71.6
17°	12 50.9 +56.7 75.0	12 32.1 +56.7 74.1	12 13.4 +56.7 73.2	11 54.7 +56.8 72.2	11 36.2 +56.7 71.3
18°	13 47.6 +56.6 74.7	13 28.8 +56.6 73.7	13 10.1 +56.7 72.8	12 51.5 +56.7 71.9	12 32.9 +56.8 71.0
19°	14 44.2 +56.6 74.3	14 25.4 +56.7 73.4	14 06.8 +56.6 72.5	13 48.2 +56.7 71.6	13 29.7 +56.7 70.6
20°	15 40.8 +56.5 74.0	15 22.1 +56.6 73.1	15 03.4 +56.6 72.1	14 44.9 +56.6 71.2	14 26.4 +56.7 70.3
21°	16 37.3 +56.6 73.6	16 18.7 +56.5 72.7	16 00.0 +56.6 71.8	15 41.5 +56.7 70.9	15 23.1 +56.7 70.0
22°	17 33.9 +56.5 73.3	17 15.2 +56.5 72.4	16 56.6 +56.6 71.5	16 38.2 +56.6 70.5	16 19.8 +56.6 69.6
23°	18 30.4 +56.4 72.9	18 11.7 +56.5 72.0	17 53.2 +56.5 71.1	17 34.8 +56.5 70.2	17 16.4 +56.6 69.3
24°	19 26.8 +56.4 72.6	19 08.2 +56.5 71.7	18 49.7 +56.5 70.8	18 31.3 +56.6 69.8	18 13.0 +56.6 68.9
25°	20 23.2 +56.4 72.2	20 04.7 +56.4 71.3	19 46.2 +56.4 70.4	19 27.9 +56.4 69.5	19 09.6 +56.5 68.6
26°	21 19.6 +56.3 71.8	21 01.1 +56.3 70.9	20 42.6 +56.4 70.0	20 24.3 +56.5 69.1	20 06.1 +56.5 68.2
27°	22 15.9 +56.2 71.5	21 57.4 +56.3 70.6	21 39.0 +56.4 69.7	21 20.8 +56.4 68.8	21 02.6 +56.5 67.9
28°	23 12.1 +56.2 71.1	22 53.7 +56.2 70.2	22 35.4 +56.3 69.3	22 17.2 +56.3 68.4	21 59.1 +56.3 67.5
29°	24 08.3 +56.2 70.7	23 49.9 +56.2 69.8	23 31.7 +56.2 68.9	23 13.5 +56.3 68.0	22 55.4 +56.4 67.1

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°	-4 50.0 +56.9	-5 08.9 +57.0	-5 27.7 +57.0	-5 46.4 +57.0	-6 05.1 +57.1
1°	-3 53.1 +57.0	-4 11.9 +56.9	-4 30.7 +57.0	-4 49.4 +57.0	-5 08.0 +57.1
2°	-2 56.1 +56.9	-3 15.0 +57.0	-3 33.7 +57.0	-3 52.4 +57.1	-4 10.9 +57.0
3°	-1 59.2 +57.0	-2 18.0 +57.0	-2 36.7 +57.0	-2 55.3 +57.0	-3 13.9 +57.1
4°	-1 02.2 +56.9	-1 21.0 +57.0	-1 39.7 +57.0	-1 58.3 +57.1	-2 16.8 +57.1
5°	-0 05.3 +57.0	-0 24.0 +57.0	-0 42.7 +57.0	-1 01.2 +57.0	-1 19.7 +57.1
6°	0 51.7 +56.9 73.9	0 33.0 +56.9 72.9	0 14.3 +57.0 72.0	-0 04.2 +57.1	-0 22.6 +57.1
7°	1 48.6 +57.0 73.6	1 29.9 +57.0 72.6	1 11.3 +57.1 71.7	0 52.9 +57.0 70.7	0 34.5 +57.0 69.8
8°	2 45.6 +56.9 73.3	2 26.9 +57.0 72.3	2 08.4 +57.0 71.4	1 49.9 +57.0 70.4	1 31.5 +57.1 69.5
9°	3 42.5 +57.0 72.9	3 23.9 +57.0 72.0	3 05.4 +57.0 71.1	2 46.9 +57.1 70.1	2 28.6 +57.1 69.2
10°	4 39.5 +56.9 72.6	4 20.9 +56.9 71.7	4 02.4 +57.0 70.8	3 44.0 +57.0 69.8	3 25.7 +57.1 68.9
11°	5 36.4 +56.9 72.3	5 17.8 +57.0 71.4	4 59.4 +57.0 70.4	4 41.0 +57.1 69.5	4 22.8 +57.0 68.6
12°	6 33.3 +56.9 72.0	6 14.8 +56.9 71.1	5 56.4 +56.9 70.1	5 38.1 +57.0 69.2	5 19.8 +57.1 68.3
13°	7 30.2 +56.9 71.7	7 11.7 +57.0 70.7	6 53.3 +57.0 69.8	6 35.1 +57.0 68.9	6 16.9 +57.0 67.9
14°	8 27.1 +56.9 71.4	8 08.7 +56.9 70.4	7 50.3 +57.0 69.5	7 32.1 +57.0 68.6	7 13.9 +57.1 67.6
15°	9 24.0 +56.9 71.0	9 05.6 +56.9 70.1	8 47.3 +56.9 69.2	8 29.1 +56.9 68.3	8 11.0 +57.0 67.3
16°	10 20.9 +56.8 70.7	10 02.5 +56.9 69.8	9 44.2 +56.9 68.9	9 26.0 +57.0 67.9	9 08.0 +57.0 67.0
17°	11 17.7 +56.8 70.4	10 59.4 +56.8 69.5	10 41.1 +56.9 68.5	10 23.0 +56.9 67.6	10 05.0 +57.0 66.7
18°	12 14.5 +56.8 70.1	11 56.2 +56.9 69.1	11 38.0 +56.9 68.2	11 19.9 +57.0 67.3	11 02.0 +56.9 66.4
19°	13 11.3 +56.8 69.7	12 53.1 +56.8 68.8	12 34.9 +56.8 67.9	12 16.9 +56.9 67.0	11 58.9 +57.0 66.1
20°	14 08.1 +56.7 69.4	13 49.9 +56.7 68.5	13 31.7 +56.9 67.6	13 13.8 +56.8 66.6	12 55.9 +56.9 65.7
21°	15 04.8 +56.7 69.1	14 46.6 +56.8 68.1	14 28.6 +56.8 67.2	14 10.6 +56.9 66.3	13 52.8 +56.9 65.4
22°	16 01.5 +56.7 68.7	15 43.4 +56.7 67.8	15 25.4 +56.7 66.9	15 07.5 +56.8 66.0	14 49.7 +56.9 65.1
23°	16 58.2 +56.7 68.4	16 40.1 +56.7 67.5	16 22.1 +56.8 66.6	16 04.3 +56.8 65.7	15 46.6 +56.8 64.7
24°	17 54.9 +56.6 68.0	17 36.8 +56.7 67.1	17 18.9 +56.7 66.2	17 01.1 +56.7 65.3	16 43.4 +56.8 64.4
25°	18 51.5 +56.6 67.7	18 33.5 +56.6 66.8	18 15.6 +56.6 65.9	17 57.8 +56.7 65.0	17 40.2 +56.7 64.1
26°	19 48.1 +56.5 67.3	19 30.1 +56.6 66.4	19 12.2 +56.7 65.5	18 54.5 +56.7 64.6	18 36.9 +56.8 63.7
27°	20 44.6 +56.5 67.0	20 26.7 +56.5 66.1	20 08.9 +56.6 65.2	19 51.2 +56.6 64.3	19 33.7 +56.7 63.4
28°	21 41.1 +56.4 66.6	21 23.2 +56.5 65.7	21 05.5 +56.5 64.8	20 47.8 +56.6 63.9	20 30.4 +56.6 63.0
29°	22 37.5 +56.4 66.2	22 19.7 +56.4 65.4	22 02.0 +56.5 64.5	21 44.4 +56.6 63.6	21 27.0 +56.6 62.7

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°	-6 23.6 +57.1	-6 42.0 +57.1	-7 00.3 +57.1	-7 18.5 +57.2	-7 36.6 +57.3
1°	-5 26.5 +57.1	-5 44.9 +57.2	-6 03.2 +57.2	-6 21.3 +57.2	-6 39.3 +57.2
2°	-4 29.4 +57.1	-4 47.7 +57.1	-5 06.0 +57.2	-5 24.1 +57.2	-5 42.1 +57.3
3°	-3 32.3 +57.1	-3 50.6 +57.2	-4 08.8 +57.2	-4 26.9 +57.3	-4 44.8 +57.3
4°	-2 35.2 +57.1	-2 53.4 +57.1	-3 11.6 +57.2	-3 29.6 +57.2	-3 47.5 +57.2
5°	-1 38.1 +57.2	-1 56.3 +57.2	-2 14.4 +57.2	-2 32.4 +57.2	-2 50.3 +57.3
6°	-0 40.9 +57.1	-0 59.1 +57.1	-1 17.2 +57.2	-1 35.2 +57.3	-1 53.0 +57.3
7°	0 16.2 +57.1 68.9	-0 02.0 +57.2	-0 20.0 +57.2	-0 37.9 +57.2	-0 55.7 +57.3
8°	1 13.3 +57.1 68.6	0 55.2 +57.1 67.6	0 37.2 +57.2 66.7	0 19.3 +57.3 65.7	0 01.6 +57.3 64.8
9°	2 10.4 +57.1 68.2	1 52.3 +57.2 67.3	1 34.4 +57.2 66.4	1 16.6 +57.2 65.4	0 58.9 +57.2 64.5
10°	3 07.5 +57.2 67.9	2 49.5 +57.2 67.0	2 31.6 +57.2 66.1	2 13.8 +57.2 65.1	1 56.1 +57.3 64.2
11°	4 04.7 +57.1 67.6	3 46.7 +57.1 66.7	3 28.8 +57.2 65.8	3 11.0 +57.3 64.8	2 53.4 +57.3 63.9
12°	5 01.8 +57.1 67.3	4 43.8 +57.1 66.4	4 26.0 +57.1 65.5	4 08.3 +57.2 64.5	3 50.7 +57.3 63.6
13°	5 58.9 +57.0 67.0	5 40.9 +57.2 66.1	5 23.1 +57.2 65.2	5 05.5 +57.2 64.2	4 48.0 +57.2 63.3
14°	6 55.9 +57.1 66.7	6 38.1 +57.1 65.8	6 20.3 +57.2 64.8	6 02.7 +57.2 63.9	5 45.2 +57.3 63.0
15°	7 53.0 +57.1 66.4	7 35.2 +57.1 65.5	7 17.5 +57.1 64.5	6 59.9 +57.2 63.6	6 42.5 +57.2 62.7
16°	8 50.1 +57.0 66.1	8 32.3 +57.1 65.2	8 14.6 +57.2 64.2	7 57.1 +57.2 63.3	7 39.7 +57.2 62.4
17°	9 47.1 +57.0 65.8	9 29.4 +57.0 64.8	9 11.8 +57.1 63.9	8 54.3 +57.1 63.0	8 36.9 +57.3 62.1
18°	10 44.1 +57.1 65.5	10 26.4 +57.1 64.5	10 08.9 +57.1 63.6	9 51.4 +57.2 62.7	9 34.2 +57.2 61.8
19°	11 41.2 +56.9 65.1	11 23.5 +57.0 64.2	11 06.0 +57.1 63.3	10 48.6 +57.1 62.4	10 31.4 +57.1 61.5
20°	12 38.1 +57.0 64.8	12 20.5 +57.0 63.9	12 03.1 +57.0 63.0	11 45.7 +57.1 62.1	11 28.5 +57.2 61.2
21°	13 35.1 +56.9 64.5	13 17.5 +57.0 63.6	13 00.1 +57.1 62.7	12 42.8 +57.1 61.8	12 25.7 +57.1 60.8
22°	14 32.0 +57.0 64.2	14 14.5 +57.0 63.3	13 57.2 +57.0 62.4	13 39.9 +57.1 61.4	13 22.8 +57.2 60.5
23°	15 29.0 +56.8 63.8	15 11.5 +56.9 62.9	14 54.2 +56.9 62.0	14 37.0 +57.0 61.1	14 20.0 +57.0 60.2
24°	16 25.8 +56.9 63.5	16 08.4 +56.9 62.6	15 51.1 +57.0 61.7	15 34.0 +57.0 60.8	15 17.0 +57.1 59.9
25°	17 22.7 +56.8 63.2	17 05.3 +56.9 62.3	16 48.1 +56.9 61.4	16 31.0 +57.0 60.5	16 14.1 +57.0 59.6
26°	18 19.5 +56.8 62.8	18 02.2 +56.8 61.9	17 45.0 +56.9 61.0	17 28.0 +57.0 60.2	17 11.1 +57.0 59.3
27°	19 16.3 +56.7 62.5	18 59.0 +56.8 61.6	18 41.9 +56.9 60.7	18 25.0 +56.9 59.8	18 08.1 +57.0 58.9
28°	20 13.0 +56.7 62.1	19 55.8 +56.8 61.3	19 38.8 +56.8 60.4	19 21.9 +56.8 59.5	19 05.1 +56.9 58.6
29°	21 09.7 +56.7 61.8	20 52.6 +56.7 60.9	20 35.6 +56.8 60.0	20 18.7 +56.9 59.1	20 02.0 +56.9 58.3

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°	-7 54.5 +57.3	-8 12.3 +57.3	-8 30.0 +57.4	-8 47.5 +57.4	-9 04.9 +57.5
1°	-6 57.2 +57.3	-7 15.0 +57.3	-7 32.6 +57.4	-7 50.1 +57.4	-8 07.4 +57.4
2°	-5 59.9 +57.3	-6 17.7 +57.4	-6 35.2 +57.4	-6 52.7 +57.5	-7 10.0 +57.5
3°	-5 02.6 +57.3	-5 20.3 +57.3	-5 37.8 +57.4	-5 55.2 +57.4	-6 12.5 +57.5
4°	-4 05.3 +57.3	-4 23.0 +57.4	-4 40.4 +57.4	-4 57.8 +57.5	-5 15.0 +57.5
5°	-3 08.0 +57.3	-3 25.6 +57.4	-3 43.0 +57.4	-4 00.3 +57.4	-4 17.5 +57.5
6°	-2 10.7 +57.3	-2 28.2 +57.3	-2 45.6 +57.4	-3 02.9 +57.5	-3 20.0 +57.5
7°	-1 13.4 +57.4	-1 30.9 +57.4	-1 48.2 +57.4	-2 05.4 +57.4	-2 22.5 +57.5
8°	-0 16.0 +57.3	-0 33.5 +57.4	-0 50.8 +57.4	-1 08.0 +57.5	-1 25.0 +57.6
9°	0 41.3 +57.3 63.5	0 23.9 +57.4 62.6	0 06.6 +57.4 61.6	-0 10.5 +57.5	-0 27.4 +57.5
10°	1 38.6 +57.4 63.2	1 21.3 +57.3 62.3	1 04.0 +57.5 61.4	0 47.0 +57.4 60.4	0 30.1 +57.5 59.5
11°	2 36.0 +57.3 62.9	2 18.6 +57.4 62.0	2 01.5 +57.4 61.1	1 44.4 +57.5 60.1	1 27.6 +57.5 59.2
12°	3 33.3 +57.3 62.6	3 16.0 +57.4 61.7	2 58.9 +57.4 60.8	2 41.9 +57.5 59.8	2 25.1 +57.5 58.9
13°	4 30.6 +57.3 62.4	4 13.4 +57.3 61.4	3 56.3 +57.4 60.5	3 39.4 +57.4 59.6	3 22.6 +57.5 58.6
14°	5 27.9 +57.3 62.1	5 10.7 +57.4 61.1	4 53.7 +57.4 60.2	4 36.8 +57.5 59.3	4 20.1 +57.5 58.3
15°	6 25.2 +57.3 61.8	6 08.1 +57.3 60.8	5 51.1 +57.4 59.9	5 34.3 +57.4 59.0	5 17.6 +57.5 58.0
16°	7 22.5 +57.3 61.5	7 05.4 +57.3 60.5	6 48.5 +57.4 59.6	6 31.7 +57.4 58.7	6 15.1 +57.5 57.8
17°	8 19.8 +57.2 61.2	8 02.7 +57.3 60.2	7 45.9 +57.3 59.3	7 29.1 +57.5 58.4	7 12.6 +57.5 57.5
18°	9 17.0 +57.3 60.9	9 00.0 +57.3 59.9	8 43.2 +57.4 59.0	8 26.6 +57.4 58.1	8 10.1 +57.4 57.2
19°	10 14.3 +57.2 60.6	9 57.3 +57.3 59.6	9 40.6 +57.3 58.7	9 24.0 +57.3 57.8	9 07.5 +57.5 56.9
20°	11 11.5 +57.2 60.2	10 54.6 +57.3 59.3	10 37.9 +57.3 58.4	10 21.3 +57.4 57.5	10 05.0 +57.4 56.6
21°	12 08.7 +57.2 59.9	11 51.9 +57.2 59.0	11 35.2 +57.3 58.1	11 18.7 +57.4 57.2	11 02.4 +57.4 56.3
22°	13 05.9 +57.2 59.6	12 49.1 +57.3 58.7	12 32.5 +57.3 57.8	12 16.1 +57.3 56.9	11 59.8 +57.4 56.0
23°	14 03.1 +57.1 59.3	13 46.4 +57.2 58.4	13 29.8 +57.3 57.5	13 13.4 +57.3 56.6	12 57.2 +57.4 55.7
24°	15 00.2 +57.1 59.0	14 43.6 +57.1 58.1	14 27.1 +57.2 57.2	14 10.7 +57.3 56.3	13 54.6 +57.3 55.4
25°	15 57.3 +57.1 58.7	15 40.7 +57.2 57.8	15 24.3 +57.2 56.9	15 08.0 +57.3 56.0	14 51.9 +57.3 55.1
26°	16 54.4 +57.1 58.4	16 37.9 +57.1 57.5	16 21.5 +57.2 56.6	16 05.3 +57.2 55.7	15 49.2 +57.3 54.8
27°	17 51.5 +57.0 58.0	17 35.0 +57.1 57.1	17 18.7 +57.1 56.3	17 02.5 +57.2 55.4	16 46.5 +57.3 54.5
28°	18 48.5 +57.0 57.7	18 32.1 +57.0 56.8	18 15.8 +57.1 55.9	17 59.7 +57.2 55.1	17 43.8 +57.2 54.2
29°	19 45.5 +57.0 57.4	19 29.1 +57.1 56.5	19 12.9 +57.1 55.6	18 56.9 +57.1 54.7	18 41.0 +57.2 53.9

Declination SAME name as Latitude

Latitude 71°

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°	-9 22.1 +57.5	-9 39.2 +57.6	-9 56.1 +57.6		
1°	-8 24.6 +57.5	-8 41.6 +57.5	-8 58.5 +57.6	-9 15.2 +57.7	-9 31.7 +57.7
2°	-7 27.1 +57.5	-7 44.1 +57.6	-8 00.9 +57.7	-8 17.5 +57.7	-8 34.0 +57.8
3°	-6 29.6 +57.6	-6 46.5 +57.6	-7 03.2 +57.6	-7 19.8 +57.7	-7 36.2 +57.7
4°	-5 32.0 +57.5	-5 48.9 +57.6	-6 05.6 +57.6	-6 22.1 +57.7	-6 38.5 +57.8
5°	-4 34.5 +57.6	-4 51.3 +57.6	-5 08.0 +57.7	-5 24.4 +57.7	-5 40.7 +57.7
6°	-3 36.9 +57.5	-3 53.7 +57.6	-4 10.3 +57.7	-4 26.7 +57.7	-4 43.0 +57.8
7°	-2 39.4 +57.6	-2 56.1 +57.6	-3 12.6 +57.6	-3 29.0 +57.7	-3 45.2 +57.7
8°	-1 41.8 +57.6	-1 58.5 +57.6	-2 15.0 +57.7	-2 31.3 +57.7	-2 47.5 +57.8
9°	-0 44.2 +57.5	-1 00.9 +57.7	-1 17.3 +57.6	-1 33.6 +57.7	-1 49.7 +57.8
10°	0 13.3 +57.6 58.5	-0 03.2 +57.6	-0 19.7 +57.7	-0 35.9 +57.7	-0 51.9 +57.8
11°	1 10.9 +57.6 58.2	0 54.4 +57.6 57.3	0 38.0 +57.7 56.4	0 21.8 +57.8 55.4	0 05.9 +57.7 54.5
12°	2 08.5 +57.5 58.0	1 52.0 +57.6 57.0	1 35.7 +57.6 56.1	1 19.6 +57.7 55.1	1 03.6 +57.8 54.2
13°	3 06.0 +57.6 57.7	2 49.6 +57.6 56.7	2 33.3 +57.7 55.8	2 17.3 +57.7 54.9	2 01.4 +57.8 53.9
14°	4 03.6 +57.5 57.4	3 47.2 +57.6 56.5	3 31.0 +57.7 55.5	3 15.0 +57.7 54.6	2 59.2 +57.7 53.7
15°	5 01.1 +57.6 57.1	4 44.8 +57.6 56.2	4 28.7 +57.6 55.3	4 12.7 +57.7 54.3	3 56.9 +57.8 53.4
16°	5 58.7 +57.5 56.8	5 42.4 +57.6 55.9	5 26.3 +57.7 55.0	5 10.4 +57.7 54.0	4 54.7 +57.7 53.1
17°	6 56.2 +57.5 56.5	6 40.0 +57.6 55.6	6 24.0 +57.6 54.7	6 08.1 +57.7 53.8	5 52.4 +57.8 52.8
18°	7 53.7 +57.5 56.3	7 37.6 +57.5 55.3	7 21.6 +57.6 54.4	7 05.8 +57.7 53.5	6 50.2 +57.7 52.6
19°	8 51.2 +57.5 56.0	8 35.1 +57.6 55.1	8 19.2 +57.6 54.1	8 03.5 +57.6 53.2	7 47.9 +57.8 52.3
20°	9 48.7 +57.5 55.7	9 32.7 +57.5 54.8	9 16.8 +57.6 53.8	9 01.1 +57.7 52.9	8 45.7 +57.7 52.0
21°	10 46.2 +57.5 55.4	10 30.2 +57.6 54.5	10 14.4 +57.6 53.6	9 58.8 +57.6 52.7	9 43.4 +57.7 51.7
22°	11 43.7 +57.4 55.1	11 27.8 +57.5 54.2	11 12.0 +57.6 53.3	10 56.4 +57.7 52.4	10 41.1 +57.6 51.5
23°	12 41.1 +57.5 54.8	12 25.3 +57.4 53.9	12 09.6 +57.5 53.0	11 54.1 +57.6 52.1	11 38.7 +57.7 51.2
24°	13 38.6 +57.4 54.5	13 22.7 +57.5 53.6	13 07.1 +57.5 52.7	12 51.7 +57.6 51.8	12 36.4 +57.7 50.9
25°	14 36.0 +57.4 54.2	14 20.2 +57.5 53.3	14 04.6 +57.6 52.4	13 49.3 +57.5 51.5	13 34.1 +57.6 50.6
26°	15 33.4 +57.3 53.9	15 17.7 +57.4 53.0	15 02.2 +57.4 52.1	14 46.8 +57.6 51.2	14 31.7 +57.6 50.3
27°	16 30.7 +57.3 53.6	16 15.1 +57.4 52.7	15 59.6 +57.5 51.8	15 44.4 +57.5 50.9	15 29.3 +57.6 50.0
28°	17 28.0 +57.4 53.3	17 12.5 +57.3 52.4	16 57.1 +57.4 51.5	16 41.9 +57.5 50.6	16 26.9 +57.6 49.7
29°	18 25.4 +57.2 53.0	18 09.8 +57.4 52.1	17 54.5 +57.4 51.2	17 39.4 +57.5 50.3	17 24.5 +57.5 49.5

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°	-9 48.0 +57.8				
2°	-8 50.2 +57.8	-9 06.3 +57.8	-9 22.2 +57.9	-9 37.9 +57.9	-9 53.4 +58.0
3°	-7 52.4 +57.7	-8 08.5 +57.9	-8 24.3 +57.9	-8 40.0 +58.0	-8 55.4 +58.0
4°	-6 54.7 +57.8	-7 10.6 +57.8	-7 26.4 +57.9	-7 42.0 +57.9	-7 57.4 +58.0
5°	-5 56.9 +57.8	-6 12.8 +57.9	-6 28.5 +57.9	-6 44.1 +58.0	-6 59.4 +58.0
6°	-4 59.1 +57.9	-5 14.9 +57.8	-5 30.6 +57.9	-5 46.1 +58.0	-6 01.4 +58.0
7°	-4 01.2 +57.8	-4 17.1 +57.9	-4 32.7 +57.9	-4 48.1 +57.9	-5 03.4 +58.1
8°	-3 03.4 +57.8	-3 19.2 +57.9	-3 34.8 +58.0	-3 50.2 +58.0	-4 05.3 +58.0
9°	-2 05.6 +57.8	-2 21.3 +57.9	-2 36.8 +57.9	-2 52.2 +58.0	-3 07.3 +58.1
10°	-1 07.8 +57.9	-1 23.4 +57.8	-1 38.9 +57.9	-1 54.2 +58.0	-2 09.2 +58.0
11°	-0 09.9 +57.8	-0 25.6 +57.9	-0 41.0 +58.0	-0 56.2 +58.0	-1 11.2 +58.1
12°	0 47.9 +57.8 53.3	0 32.3 +57.9 52.3	0 17.0 +57.9 51.4	0 01.8 +58.0 50.4	-0 13.1 +58.0
13°	1 45.7 +57.8 53.0	1 30.2 +57.9 52.1	1 14.9 +57.9 51.1	0 59.8 +58.0 50.2	0 44.9 +58.0 49.2
14°	2 43.5 +57.8 52.7	2 28.1 +57.9 51.8	2 12.8 +58.0 50.8	1 57.8 +58.0 49.9	1 42.9 +58.1 49.0
15°	3 41.3 +57.9 52.5	3 26.0 +57.8 51.5	3 10.8 +57.9 50.6	2 55.8 +58.0 49.7	2 41.0 +58.0 48.7
16°	4 39.2 +57.8 52.2	4 23.8 +57.9 51.3	4 08.7 +57.9 50.3	3 53.8 +57.9 49.4	3 39.0 +58.1 48.5
17°	5 37.0 +57.8 51.9	5 21.7 +57.9 51.0	5 06.6 +57.9 50.1	4 51.7 +58.0 49.1	4 37.1 +58.0 48.2
18°	6 34.8 +57.8 51.6	6 19.6 +57.8 50.7	6 04.5 +57.9 49.8	5 49.7 +58.0 48.9	5 35.1 +58.0 48.0
19°	7 32.6 +57.7 51.4	7 17.4 +57.8 50.5	7 02.4 +57.9 49.5	6 47.7 +57.9 48.6	6 33.1 +58.0 47.7
20°	8 30.3 +57.8 51.1	8 15.2 +57.9 50.2	8 00.3 +57.9 49.3	7 45.6 +58.0 48.4	7 31.1 +58.1 47.4
21°	9 28.1 +57.8 50.8	9 13.1 +57.8 49.9	8 58.2 +57.9 49.0	8 43.6 +57.9 48.1	8 29.2 +57.9 47.2
22°	10 25.9 +57.7 50.6	10 10.9 +57.8 49.7	9 56.1 +57.9 48.7	9 41.5 +58.0 47.8	9 27.1 +58.0 46.9
23°	11 23.6 +57.8 50.3	11 08.7 +57.8 49.4	10 54.0 +57.8 48.5	10 39.5 +57.9 47.6	10 25.1 +58.0 46.7
24°	12 21.4 +57.7 50.0	12 06.5 +57.8 49.1	11 51.8 +57.9 48.2	11 37.4 +57.9 47.3	11 23.1 +58.0 46.4
25°	13 19.1 +57.7 49.7	13 04.3 +57.7 48.8	12 49.7 +57.8 47.9	12 35.3 +57.8 47.0	12 21.1 +57.9 46.1
26°	14 16.8 +57.6 49.4	14 02.0 +57.8 48.5	13 47.5 +57.8 47.7	13 33.1 +57.9 46.8	13 19.0 +57.9 45.9
27°	15 14.4 +57.7 49.2	14 59.8 +57.7 48.3	14 45.3 +57.8 47.4	14 31.0 +57.9 46.5	14 16.9 +58.0 45.6
28°	16 12.1 +57.6 48.9	15 57.5 +57.7 48.0	15 43.1 +57.7 47.1	15 28.9 +57.8 46.2	15 14.9 +57.8 45.3
29°	17 09.7 +57.6 48.6	16 55.2 +57.6 47.7	16 40.8 +57.8 46.8	16 26.7 +57.8 45.9	16 12.7 +57.9 45.1

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Latitude 71°

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°	-9 10.7 +58.1	-9 25.7 +58.1	-9 40.5 +58.2	-9 55.1 +58.2	
4°	-8 12.6 +58.1	-8 27.6 +58.1	-8 42.3 +58.1	-8 56.9 +58.2	-9 11.2 +58.3
5°	-7 14.5 +58.0	-7 29.5 +58.2	-7 44.2 +58.2	-7 58.7 +58.3	-8 12.9 +58.3
6°	-6 16.5 +58.1	-6 31.3 +58.1	-6 46.0 +58.2	-7 00.4 +58.2	-7 14.6 +58.3
7°	-5 18.4 +58.1	-5 33.2 +58.2	-5 47.8 +58.2	-6 02.2 +58.3	-6 16.3 +58.3
8°	-4 20.3 +58.1	-4 35.0 +58.1	-4 49.6 +58.2	-5 03.9 +58.3	-5 18.0 +58.3
9°	-3 22.2 +58.1	-3 36.9 +58.2	-3 51.4 +58.2	-4 05.6 +58.2	-4 19.7 +58.4
10°	-2 24.1 +58.1	-2 38.7 +58.1	-2 53.2 +58.2	-3 07.4 +58.3	-3 21.3 +58.3
11°	-1 26.0 +58.1	-1 40.6 +58.2	-1 55.0 +58.3	-2 09.1 +58.3	-2 23.0 +58.3
12°	-0 27.9 +58.1	-0 42.4 +58.1	-0 56.7 +58.2	-1 10.8 +58.2	-1 24.7 +58.3
13°	0 30.2 +58.1 48.3	0 15.7 +58.2 47.3	0 01.5 +58.2 46.4	-0 12.6 +58.3	-0 26.4 +58.4
14°	1 28.3 +58.1 48.0	1 13.9 +58.2 47.1	0 59.7 +58.2 46.2	0 45.7 +58.3 45.2	0 32.0 +58.3 44.3
15°	2 26.4 +58.1 47.8	2 12.1 +58.1 46.8	1 57.9 +58.2 45.9	1 44.0 +58.3 45.0	1 30.3 +58.3 44.0
16°	3 24.5 +58.1 47.5	3 10.2 +58.2 46.6	2 56.1 +58.2 45.7	2 42.3 +58.2 44.7	2 28.6 +58.4 43.8
17°	4 22.6 +58.1 47.3	4 08.4 +58.1 46.4	3 54.3 +58.2 45.4	3 40.5 +58.3 44.5	3 27.0 +58.3 43.6
18°	5 20.7 +58.1 47.0	5 06.5 +58.2 46.1	4 52.5 +58.2 45.2	4 38.8 +58.3 44.3	4 25.3 +58.3 43.3
19°	6 18.8 +58.1 46.8	6 04.7 +58.1 45.9	5 50.7 +58.2 44.9	5 37.1 +58.2 44.0	5 23.6 +58.3 43.1
20°	7 16.9 +58.0 46.5	7 02.8 +58.1 45.6	6 48.9 +58.2 44.7	6 35.3 +58.3 43.8	6 21.9 +58.3 42.9
21°	8 14.9 +58.1 46.3	8 00.9 +58.1 45.4	7 47.1 +58.2 44.4	7 33.6 +58.2 43.5	7 20.2 +58.3 42.6
22°	9 13.0 +58.0 46.0	8 59.0 +58.1 45.1	8 45.3 +58.2 44.2	8 31.8 +58.2 43.3	8 18.5 +58.3 42.4
23°	10 11.0 +58.1 45.8	9 57.1 +58.1 44.9	9 43.5 +58.1 44.0	9 30.0 +58.3 43.0	9 16.8 +58.3 42.1
24°	11 09.1 +58.0 45.5	10 55.2 +58.1 44.6	10 41.6 +58.2 43.7	10 28.3 +58.2 42.8	10 15.1 +58.3 41.9
25°	12 07.1 +58.0 45.2	11 53.3 +58.1 44.3	11 39.8 +58.1 43.4	11 26.5 +58.2 42.6	11 13.4 +58.2 41.7
26°	13 05.1 +58.0 45.0	12 51.4 +58.1 44.1	12 37.9 +58.1 43.2	12 24.7 +58.1 42.3	12 11.6 +58.3 41.4
27°	14 03.1 +58.0 44.7	13 49.5 +58.0 43.8	13 36.0 +58.1 42.9	13 22.8 +58.2 42.1	13 09.9 +58.2 41.2
28°	15 01.1 +57.9 44.5	14 47.5 +58.0 43.6	14 34.1 +58.1 42.7	14 21.0 +58.2 41.8	14 08.1 +58.2 40.9
29°	15 59.0 +58.0 44.2	15 45.5 +58.0 43.3	15 32.2 +58.1 42.4	15 19.2 +58.1 41.5	15 06.3 +58.2 40.7

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°	-9 25.3 +58.4	-9 39.1 +58.4	-9 52.7 +58.4		
5°	-8 26.9 +58.3	-8 40.7 +58.4	-8 54.3 +58.5	-9 07.6 +58.5	-9 20.7 +58.6
6°	-7 28.6 +58.4	-7 42.3 +58.4	-7 55.8 +58.5	-8 09.1 +58.6	-8 22.1 +58.6
7°	-6 30.2 +58.4	-6 43.9 +58.4	-6 57.3 +58.4	-7 10.5 +58.5	-7 23.5 +58.6
8°	-5 31.8 +58.3	-5 45.5 +58.5	-5 58.9 +58.5	-6 12.0 +58.5	-6 24.9 +58.6
9°	-4 33.5 +58.4	-4 47.0 +58.4	-5 00.4 +58.5	-5 13.5 +58.6	-5 26.3 +58.6
10°	-3 35.1 +58.4	-3 48.6 +58.4	-4 01.9 +58.5	-4 14.9 +58.5	-4 27.7 +58.6
11°	-2 36.7 +58.4	-2 50.2 +58.5	-3 03.4 +58.5	-3 16.4 +58.6	-3 29.1 +58.6
12°	-1 38.3 +58.4	-1 51.7 +58.4	-2 04.9 +58.5	-2 17.8 +58.6	-2 30.5 +58.6
13°	-0 39.9 +58.4	-0 53.3 +58.5	-1 06.4 +58.5	-1 19.2 +58.5	-1 31.9 +58.7
14°	0 18.5 +58.3 43.3	0 05.2 +58.4 42.4	-0 07.9 +58.5	-0 20.7 +58.6	-0 33.2 +58.6
15°	1 16.8 +58.4 43.1	1 03.6 +58.5 42.2	0 50.6 +58.5 41.2	0 37.9 +58.5 40.3	0 25.4 +58.6 39.3
16°	2 15.2 +58.4 42.9	2 02.1 +58.4 41.9	1 49.1 +58.5 41.0	1 36.4 +58.6 40.1	1 24.0 +58.6 39.1
17°	3 13.6 +58.4 42.6	3 00.5 +58.4 41.7	2 47.6 +58.5 40.8	2 35.0 +58.5 39.8	2 22.6 +58.6 38.9
18°	4 12.0 +58.4 42.4	3 58.9 +58.5 41.5	3 46.1 +58.5 40.5	3 33.5 +58.6 39.6	3 21.2 +58.6 38.7
19°	5 10.4 +58.3 42.2	4 57.4 +58.4 41.2	4 44.6 +58.5 40.3	4 32.1 +58.5 39.4	4 19.8 +58.6 38.5
20°	6 08.7 +58.4 41.9	5 55.8 +58.4 41.0	5 43.1 +58.5 40.1	5 30.6 +58.6 39.2	5 18.4 +58.6 38.3
21°	7 07.1 +58.4 41.7	6 54.2 +58.5 40.8	6 41.6 +58.5 39.9	6 29.2 +58.5 39.0	6 17.0 +58.6 38.0
22°	8 05.5 +58.3 41.5	7 52.7 +58.4 40.6	7 40.1 +58.4 39.6	7 27.7 +58.6 38.7	7 15.6 +58.6 37.8
23°	9 03.8 +58.4 41.2	8 51.1 +58.4 40.3	8 38.5 +58.5 39.4	8 26.3 +58.5 38.5	8 14.2 +58.6 37.6
24°	10 02.2 +58.3 41.0	9 49.5 +58.4 40.1	9 37.0 +58.5 39.2	9 24.8 +58.5 38.3	9 12.8 +58.6 37.4
25°	11 00.5 +58.3 40.8	10 47.9 +58.3 39.9	10 35.5 +58.4 39.0	10 23.3 +58.5 38.1	10 11.4 +58.5 37.2
26°	11 58.8 +58.3 40.5	11 46.2 +58.4 39.6	11 33.9 +58.4 38.7	11 21.8 +58.5 37.8	11 09.9 +58.6 36.9
27°	12 57.1 +58.3 40.3	12 44.6 +58.4 39.4	12 32.3 +58.5 38.5	12 20.3 +58.5 37.6	12 08.5 +58.5 36.7
28°	13 55.4 +58.3 40.0	13 43.0 +58.3 39.1	13 30.8 +58.4 38.3	13 18.8 +58.4 37.4	13 07.0 +58.6 36.5
29°	14 53.7 +58.3 39.8	14 41.3 +58.3 38.9	14 29.2 +58.4 38.0	14 17.2 +58.5 37.2	14 05.6 +58.5 36.3

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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°					
2°					
3°					
4°					
5°	-9 33.5 +58.7	-9 46.0 +58.7	-9 58.3 +58.7		
6°	-8 34.8 +58.6	-8 47.3 +58.7	-8 59.6 +58.8	-9 11.6 +58.9	-9 23.3 +58.9
7°	-7 36.2 +58.7	-7 48.6 +58.7	-8 00.8 +58.7	-8 12.7 +58.8	-8 24.4 +58.9
8°	-6 37.5 +58.6	-6 49.9 +58.7	-7 02.1 +58.8	-7 13.9 +58.8	-7 25.5 +58.8
9°	-5 38.9 +58.7	-5 51.2 +58.7	-6 03.3 +58.8	-6 15.1 +58.8	-6 26.7 +58.9
10°	-4 40.2 +58.6	-4 52.5 +58.7	-5 04.5 +58.8	-5 16.3 +58.8	-5 27.8 +58.9
11°	-3 41.6 +58.7	-3 53.8 +58.7	-4 05.7 +58.7	-4 17.5 +58.9	-4 28.9 +58.9
12°	-2 42.9 +58.7	-2 55.1 +58.8	-3 07.0 +58.8	-3 18.6 +58.8	-3 30.0 +58.9
13°	-1 44.2 +58.6	-1 56.3 +58.7	-2 08.2 +58.8	-2 19.8 +58.8	-2 31.1 +58.9
14°	-0 45.6 +58.7	-0 57.6 +58.7	-1 09.4 +58.8	-1 21.0 +58.9	-1 32.2 +58.9
15°	0 13.1 +58.7 38.4	0 01.1 +58.7 37.4	-0 10.6 +58.8	-0 22.1 +58.8	-0 33.3 +58.9
16°	1 11.8 +58.7 38.2	0 59.8 +58.8 37.2	0 48.2 +58.7 36.3	0 36.7 +58.9 35.3	0 25.6 +58.8 34.4
17°	2 10.5 +58.6 38.0	1 58.6 +58.7 37.0	1 46.9 +58.8 36.1	1 35.6 +58.8 35.2	1 24.4 +58.9 34.2
18°	3 09.1 +58.7 37.8	2 57.3 +58.7 36.8	2 45.7 +58.8 35.9	2 34.4 +58.8 35.0	2 23.3 +58.9 34.0
19°	4 07.8 +58.7 37.5	3 56.0 +58.7 36.6	3 44.5 +58.8 35.7	3 33.2 +58.9 34.8	3 22.2 +58.9 33.8
20°	5 06.5 +58.6 37.3	4 54.7 +58.8 36.4	4 43.3 +58.7 35.5	4 32.1 +58.8 34.6	4 21.1 +58.9 33.6
21°	6 05.1 +58.7 37.1	5 53.5 +58.7 36.2	5 42.0 +58.8 35.3	5 30.9 +58.8 34.4	5 20.0 +58.9 33.4
22°	7 03.8 +58.6 36.9	6 52.2 +58.7 36.0	6 40.8 +58.8 35.1	6 29.7 +58.8 34.2	6 18.9 +58.8 33.3
23°	8 02.4 +58.7 36.7	7 50.9 +58.7 35.8	7 39.6 +58.7 34.9	7 28.5 +58.8 34.0	7 17.7 +58.9 33.1
24°	9 01.1 +58.6 36.5	8 49.6 +58.7 35.6	8 38.3 +58.8 34.7	8 27.3 +58.9 33.8	8 16.6 +58.9 32.9
25°	9 59.7 +58.6 36.3	9 48.3 +58.6 35.4	9 37.1 +58.7 34.5	9 26.2 +58.8 33.6	9 15.5 +58.8 32.7
26°	10 58.3 +58.6 36.1	10 46.9 +58.7 35.2	10 35.8 +58.8 34.3	10 25.0 +58.7 33.4	10 14.3 +58.9 32.5
27°	11 56.9 +58.6 35.8	11 45.6 +58.7 34.9	11 34.6 +58.7 34.1	11 23.7 +58.8 33.2	11 13.2 +58.8 32.3
28°	12 55.5 +58.6 35.6	12 44.3 +58.6 34.7	12 33.3 +58.7 33.8	12 22.5 +58.8 33.0	12 12.0 +58.9 32.1
29°	13 54.1 +58.6 35.4	13 42.9 +58.7 34.5	13 32.0 +58.7 33.6	13 21.3 +58.8 32.8	13 10.9 +58.8 31.9

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°	-9 34.7 +58.9	-9 45.9 +59.0	-9 56.7 +59.0		
7°	-8 35.8 +58.9	-8 46.9 +59.0	-8 57.7 +59.0	-9 08.3 +59.1	-9 18.5 +59.1
8°	-7 36.9 +59.0	-7 47.9 +59.0	-7 58.7 +59.0	-8 09.2 +59.1	-8 19.4 +59.1
9°	-6 37.9 +58.9	-6 48.9 +59.0	-6 59.7 +59.1	-7 10.1 +59.1	-7 20.3 +59.2
10°	-5 39.0 +58.9	-5 49.9 +58.9	-6 00.6 +59.0	-6 11.0 +59.1	-6 21.1 +59.1
11°	-4 40.1 +59.0	-4 51.0 +59.0	-5 01.6 +59.1	-5 11.9 +59.1	-5 22.0 +59.2
12°	-3 41.1 +58.9	-3 52.0 +59.0	-4 02.5 +59.0	-4 12.8 +59.1	-4 22.8 +59.1
13°	-2 42.2 +59.0	-2 53.0 +59.0	-3 03.5 +59.1	-3 13.7 +59.1	-3 23.7 +59.2
14°	-1 43.2 +58.9	-1 54.0 +59.0	-2 04.4 +59.0	-2 14.6 +59.1	-2 24.5 +59.1
15°	-0 44.3 +59.0	-0 55.0 +59.0	-1 05.4 +59.1	-1 15.5 +59.1	-1 25.4 +59.2
16°	0 14.7 +58.9 33.5	0 04.0 +59.0 32.5	-0 06.3 +59.0	-0 16.4 +59.1	-0 26.2 +59.1
17°	1 13.6 +58.9 33.3	1 03.0 +59.0 32.3	0 52.7 +59.0 31.4	0 42.7 +59.1 30.5	0 32.9 +59.2 29.5
18°	2 12.5 +59.0 33.1	2 02.0 +59.0 32.2	1 51.7 +59.1 31.2	1 41.8 +59.1 30.3	1 32.1 +59.1 29.3
19°	3 11.5 +58.9 32.9	3 01.0 +59.0 32.0	2 50.8 +59.0 31.0	2 40.9 +59.1 30.1	2 31.2 +59.1 29.2
20°	4 10.4 +59.0 32.7	4 00.0 +59.0 31.8	3 49.8 +59.1 30.9	3 40.0 +59.1 29.9	3 30.3 +59.2 29.0
21°	5 09.4 +58.9 32.5	4 59.0 +59.0 31.6	4 48.9 +59.0 30.7	4 39.1 +59.0 29.8	4 29.5 +59.1 28.8
22°	6 08.3 +58.9 32.3	5 58.0 +59.0 31.4	5 47.9 +59.1 30.5	5 38.1 +59.1 29.6	5 28.6 +59.2 28.7
23°	7 07.2 +58.9 32.1	6 57.0 +58.9 31.2	6 47.0 +59.0 30.3	6 37.2 +59.1 29.4	6 27.8 +59.1 28.5
24°	8 06.1 +59.0 32.0	7 55.9 +59.0 31.0	7 46.0 +59.0 30.1	7 36.3 +59.1 29.2	7 26.9 +59.2 28.3
25°	9 05.1 +58.9 31.8	8 54.9 +59.0 30.9	8 45.0 +59.1 30.0	8 35.4 +59.1 29.1	8 26.1 +59.1 28.2
26°	10 04.0 +58.9 31.6	9 53.9 +58.9 30.7	9 44.1 +59.0 29.8	9 34.5 +59.1 28.9	9 25.2 +59.1 28.0
27°	11 02.9 +58.9 31.4	10 52.8 +59.0 30.5	10 43.1 +59.0 29.6	10 33.6 +59.0 28.7	10 24.3 +59.1 27.8
28°	12 01.8 +58.9 31.2	11 51.8 +59.0 30.3	11 42.1 +59.0 29.4	11 32.6 +59.1 28.5	11 23.4 +59.1 27.6
29°	13 00.7 +58.9 31.0	12 50.8 +58.9 30.1	12 41.1 +59.0 29.2	12 31.7 +59.0 28.3	12 22.5 +59.1 27.5

Latitude 71°

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°	-9 28.5 +59.2	-9 38.2 +59.2	-9 47.6 +59.3	-9 56.7 +59.4	
8°	-8 29.3 +59.2	-8 39.0 +59.3	-8 48.3 +59.3	-8 57.3 +59.3	-9 06.1 +59.4
9°	-7 30.1 +59.1	-7 39.7 +59.2	-7 49.0 +59.3	-7 58.0 +59.3	-8 06.7 +59.4
10°	-6 31.0 +59.2	-6 40.5 +59.2	-6 49.7 +59.3	-6 58.7 +59.4	-7 07.3 +59.3
11°	-5 31.8 +59.2	-5 41.3 +59.3	-5 50.4 +59.2	-5 59.3 +59.3	-6 08.0 +59.4
12°	-4 32.6 +59.2	-4 42.0 +59.2	-4 51.2 +59.3	-5 00.0 +59.3	-5 08.6 +59.4
13°	-3 33.4 +59.2	-3 42.8 +59.3	-3 51.9 +59.3	-4 00.7 +59.4	-4 09.2 +59.4
14°	-2 34.2 +59.2	-2 43.5 +59.2	-2 52.6 +59.3	-3 01.3 +59.3	-3 09.8 +59.4
15°	-1 35.0 +59.2	-1 44.3 +59.3	-1 53.3 +59.3	-2 02.0 +59.3	-2 10.4 +59.4
16°	-0 35.8 +59.2	-0 45.0 +59.2	-0 54.0 +59.3	-1 02.7 +59.4	-1 11.0 +59.3
17°	0 23.4 +59.2 28.6	0 14.2 +59.3 27.6	0 05.3 +59.3 26.7	-0 03.3 +59.3	-0 11.7 +59.4
18°	1 22.6 +59.2 28.4	1 13.5 +59.2 27.5	1 04.6 +59.3 26.5	0 56.0 +59.4 25.6	0 47.7 +59.4 24.6
19°	2 21.8 +59.2 28.2	2 12.7 +59.3 27.3	2 03.9 +59.3 26.4	1 55.4 +59.3 25.4	1 47.1 +59.4 24.5
20°	3 21.0 +59.2 28.1	3 12.0 +59.2 27.1	3 03.2 +59.3 26.2	2 54.7 +59.3 25.3	2 46.5 +59.4 24.4
21°	4 20.2 +59.2 27.9	4 11.2 +59.2 27.0	4 02.5 +59.3 26.1	3 54.0 +59.4 25.1	3 45.9 +59.4 24.2
22°	5 19.4 +59.2 27.7	5 10.4 +59.3 26.8	5 01.8 +59.3 25.9	4 53.4 +59.3 25.0	4 45.3 +59.3 24.1
23°	6 18.6 +59.2 27.6	6 09.7 +59.2 26.7	6 01.1 +59.2 25.8	5 52.7 +59.3 24.8	5 44.6 +59.4 23.9
24°	7 17.8 +59.2 27.4	7 08.9 +59.3 26.5	7 00.3 +59.3 25.6	6 52.0 +59.4 24.7	6 44.0 +59.4 23.8
25°	8 17.0 +59.2 27.3	8 08.2 +59.2 26.4	7 59.6 +59.3 25.4	7 51.4 +59.3 24.5	7 43.4 +59.4 23.6
26°	9 16.2 +59.1 27.1	9 07.4 +59.2 26.2	8 58.9 +59.3 25.3	8 50.7 +59.3 24.4	8 42.8 +59.3 23.5
27°	10 15.3 +59.2 26.9	10 06.6 +59.2 26.0	9 58.2 +59.3 25.1	9 50.0 +59.3 24.2	9 42.1 +59.4 23.3
28°	11 14.5 +59.2 26.8	11 05.8 +59.3 25.9	10 57.5 +59.2 25.0	10 49.3 +59.4 24.1	10 41.5 +59.4 23.2
29°	12 13.7 +59.1 26.6	12 05.1 +59.2 25.7	11 56.7 +59.3 24.8	11 48.7 +59.3 23.9	11 40.9 +59.3 23.0

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 14.5 +59.4	-9 22.6 +59.4	-9 30.5 +59.5	-9 38.0 +59.6	-9 45.2 +59.6
9°	-8 15.1 +59.4	-8 23.2 +59.5	-8 31.0 +59.5	-8 38.4 +59.5	-8 45.6 +59.6
10°	-7 15.7 +59.4	-7 23.7 +59.4	-7 31.5 +59.5	-7 38.9 +59.6	-7 46.0 +59.6
11°	-6 16.3 +59.5	-6 24.3 +59.5	-6 32.0 +59.6	-6 39.3 +59.5	-6 46.4 +59.6
12°	-5 16.8 +59.4	-5 24.8 +59.5	-5 32.4 +59.5	-5 39.8 +59.6	-5 46.8 +59.6
13°	-4 17.4 +59.4	-4 25.3 +59.4	-4 32.9 +59.5	-4 40.2 +59.5	-4 47.2 +59.5
14°	-3 18.0 +59.4	-3 25.9 +59.5	-3 33.4 +59.5	-3 40.7 +59.6	-3 47.7 +59.6
15°	-2 18.6 +59.5	-2 26.4 +59.5	-2 33.9 +59.5	-2 41.1 +59.5	-2 48.1 +59.6
16°	-1 19.1 +59.4	-1 26.9 +59.5	-1 34.4 +59.5	-1 41.6 +59.6	-1 48.5 +59.6
17°	-0 19.7 +59.4	-0 27.4 +59.4	-0 34.9 +59.5	-0 42.0 +59.5	-0 48.9 +59.6
18°	0 39.7 +59.5 23.7	0 32.0 +59.5 22.8	0 24.6 +59.5 21.8	0 17.5 +59.6 20.9	0 10.7 +59.6 19.9
19°	1 39.2 +59.4 23.6	1 31.5 +59.5 22.6	1 24.1 +59.5 21.7	1 17.1 +59.5 20.7	1 10.3 +59.6 19.8
20°	2 38.6 +59.4 23.4	2 31.0 +59.4 22.5	2 23.6 +59.6 21.6	2 16.6 +59.6 20.6	2 09.9 +59.6 19.7
21°	3 38.0 +59.4 23.3	3 30.4 +59.5 22.4	3 23.2 +59.5 21.4	3 16.2 +59.5 20.5	3 09.5 +59.6 19.6
22°	4 37.4 +59.5 23.1	4 29.9 +59.5 22.2	4 22.7 +59.5 21.3	4 15.7 +59.6 20.4	4 09.1 +59.5 19.5
23°	5 36.9 +59.4 23.0	5 29.4 +59.4 22.1	5 22.2 +59.5 21.2	5 15.3 +59.5 20.3	5 08.6 +59.6 19.3
24°	6 36.3 +59.4 22.9	6 28.8 +59.5 22.0	6 21.7 +59.5 21.0	6 14.8 +59.6 20.1	6 08.2 +59.6 19.2
25°	7 35.7 +59.4 22.7	7 28.3 +59.5 21.8	7 21.2 +59.5 20.9	7 14.4 +59.5 20.0	7 07.8 +59.6 19.1
26°	8 35.1 +59.4 22.6	8 27.8 +59.4 21.7	8 20.7 +59.5 20.8	8 13.9 +59.5 19.9	8 07.4 +59.6 19.0
27°	9 34.5 +59.5 22.4	9 27.2 +59.5 21.6	9 20.2 +59.5 20.7	9 13.4 +59.6 19.8	9 07.0 +59.6 18.9
28°	10 34.0 +59.4 22.3	10 26.7 +59.4 21.4	10 19.7 +59.5 20.5	10 13.0 +59.5 19.6	10 06.6 +59.5 18.7
29°	11 33.4 +59.4 22.2	11 26.1 +59.5 21.3	11 19.2 +59.5 20.4	11 12.5 +59.6 19.5	11 06.1 +59.6 18.6

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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 52.0 +59.6	-9 58.6 +59.7			
9°	-8 52.4 +59.6	-8 58.9 +59.6	-9 05.1 +59.7	-9 11.0 +59.7	-9 16.6 +59.8
10°	-7 52.8 +59.6	-7 59.3 +59.7	-8 05.4 +59.6	-8 11.3 +59.7	-8 16.8 +59.7
11°	-6 53.2 +59.6	-6 59.6 +59.6	-7 05.8 +59.7	-7 11.6 +59.8	-7 17.1 +59.8
12°	-5 53.6 +59.7	-6 00.0 +59.7	-6 06.1 +59.7	-6 11.8 +59.7	-6 17.3 +59.8
13°	-4 53.9 +59.6	-5 00.3 +59.6	-5 06.4 +59.7	-5 12.1 +59.7	-5 17.5 +59.7
14°	-3 54.3 +59.6	-4 00.7 +59.7	-4 06.7 +59.7	-4 12.4 +59.7	-4 17.8 +59.8
15°	-2 54.7 +59.6	-3 01.0 +59.7	-3 07.0 +59.7	-3 12.7 +59.8	-3 18.0 +59.7
16°	-1 55.1 +59.7	-2 01.3 +59.6	-2 07.3 +59.7	-2 12.9 +59.7	-2 18.3 +59.8
17°	-0 55.4 +59.6	-1 01.7 +59.7	-1 07.6 +59.7	-1 13.2 +59.7	-1 18.5 +59.7
18°	0 04.2 +59.6 19.0	-0 02.0 +59.7	-0 07.9 +59.7	-0 13.5 +59.7	-0 18.8 +59.8
19°	1 03.8 +59.7 18.9	0 57.7 +59.6 17.9	0 51.8 +59.7 17.0	0 46.2 +59.8 16.0	0 41.0 +59.8 15.1
20°	2 03.5 +59.6 18.8	1 57.3 +59.7 17.8	1 51.5 +59.7 16.9	1 46.0 +59.7 16.0	1 40.8 +59.7 15.0
21°	3 03.1 +59.6 18.6	2 57.0 +59.6 17.7	2 51.2 +59.7 16.8	2 45.7 +59.7 15.9	2 40.5 +59.8 14.9
22°	4 02.7 +59.6 18.5	3 56.6 +59.7 17.6	3 50.9 +59.7 16.7	3 45.4 +59.7 15.8	3 40.3 +59.7 14.8
23°	5 02.3 +59.6 18.4	4 56.3 +59.7 17.5	4 50.6 +59.7 16.6	4 45.1 +59.8 15.7	4 40.0 +59.8 14.7
24°	6 01.9 +59.7 18.3	5 56.0 +59.6 17.4	5 50.3 +59.7 16.5	5 44.9 +59.7 15.6	5 39.8 +59.7 14.7
25°	7 01.6 +59.6 18.2	6 55.6 +59.7 17.3	6 50.0 +59.7 16.4	6 44.6 +59.7 15.5	6 39.5 +59.8 14.6
26°	8 01.2 +59.6 18.1	7 55.3 +59.6 17.2	7 49.7 +59.6 16.3	7 44.3 +59.7 15.4	7 39.3 +59.7 14.5
27°	9 00.8 +59.6 18.0	8 54.9 +59.7 17.1	8 49.3 +59.7 16.2	8 44.0 +59.8 15.3	8 39.0 +59.8 14.4
28°	10 00.4 +59.6 17.9	9 54.6 +59.6 17.0	9 49.0 +59.7 16.1	9 43.8 +59.7 15.2	9 38.8 +59.7 14.3
29°	11 00.0 +59.7 17.7	10 54.2 +59.7 16.9	10 48.7 +59.7 16.0	10 43.5 +59.7 15.1	10 38.5 +59.8 14.2

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°	-9 21.8 +59.8	-9 26.7 +59.8	-9 31.3 +59.9	-9 35.5 +59.9	-9 39.4 +59.9
10°	-8 22.0 +59.8	-8 26.9 +59.8	-8 31.4 +59.8	-8 35.6 +59.8	-8 39.5 +59.9
11°	-7 22.2 +59.8	-7 27.1 +59.8	-7 31.6 +59.9	-7 35.8 +59.9	-7 39.6 +59.9
12°	-6 22.4 +59.7	-6 27.3 +59.9	-6 31.7 +59.8	-6 35.9 +59.9	-6 39.7 +59.8
13°	-5 22.7 +59.8	-5 27.4 +59.8	-5 31.9 +59.8	-5 36.0 +59.8	-5 39.9 +59.9
14°	-4 22.9 +59.8	-4 27.6 +59.8	-4 32.1 +59.9	-4 36.2 +59.9	-4 40.0 +59.9
15°	-3 23.1 +59.8	-3 27.8 +59.8	-3 32.2 +59.8	-3 36.3 +59.8	-3 40.1 +59.9
16°	-2 23.3 +59.8	-2 28.0 +59.8	-2 32.4 +59.8	-2 36.5 +59.9	-2 40.2 +59.9
17°	-1 23.5 +59.8	-1 28.2 +59.8	-1 32.6 +59.9	-1 36.6 +59.9	-1 40.3 +59.9
18°	-0 23.7 +59.8	-0 28.4 +59.8	-0 32.7 +59.8	-0 36.7 +59.8	-0 40.4 +59.8
19°	0 36.1 +59.7 14.2	0 31.4 +59.8 13.2	0 27.1 +59.9 12.3	0 23.1 +59.9 11.3	0 19.4 +59.9 10.4
20°	1 35.8 +59.8 14.1	1 31.2 +59.9 13.1	1 27.0 +59.8 12.2	1 23.0 +59.8 11.3	1 19.3 +59.9 10.3
21°	2 35.6 +59.8 14.0	2 31.1 +59.8 13.1	2 26.8 +59.8 12.1	2 22.8 +59.9 11.2	2 19.2 +59.9 10.3
22°	3 35.4 +59.8 13.9	3 30.9 +59.8 13.0	3 26.6 +59.9 12.1	3 22.7 +59.9 11.1	3 19.1 +59.9 10.2
23°	4 35.2 +59.8 13.8	4 30.7 +59.8 12.9	4 26.5 +59.8 12.0	4 22.6 +59.8 11.1	4 19.0 +59.9 10.1
24°	5 35.0 +59.8 13.7	5 30.5 +59.8 12.8	5 26.3 +59.9 11.9	5 22.4 +59.9 11.0	5 18.9 +59.8 10.1
25°	6 34.8 +59.8 13.7	6 30.3 +59.8 12.7	6 26.2 +59.8 11.8	6 22.3 +59.9 10.9	6 18.7 +59.9 10.0
26°	7 34.6 +59.7 13.6	7 30.1 +59.8 12.7	7 26.0 +59.8 11.8	7 22.2 +59.8 10.9	7 18.6 +59.9 10.0
27°	8 34.3 +59.8 13.5	8 29.9 +59.8 12.6	8 25.8 +59.9 11.7	8 22.0 +59.9 10.8	8 18.5 +59.9 9.9
28°	9 34.1 +59.8 13.4	9 29.7 +59.8 12.5	9 25.7 +59.8 11.6	9 21.9 +59.8 10.7	9 18.4 +59.9 9.8
29°	10 33.9 +59.8 13.3	10 29.5 +59.9 12.4	10 25.5 +59.8 11.5	10 21.7 +59.9 10.7	10 18.3 +59.9 9.8

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°	-9	43.0 +59.9	-9	46.2 +59.9	-9	49.1 +60.0	-9	51.6 +59.9	-9	53.9 +60.0
10°	-8	43.1 +59.9	-8	46.3 +60.0	-8	49.1 +59.9	-8	51.7 +60.0	-8	53.9 +60.0
11°	-7	43.2 +60.0	-7	46.3 +59.9	-7	49.2 +59.9	-7	51.7 +59.9	-7	53.9 +59.9
12°	-6	43.2 +59.9	-6	46.4 +59.9	-6	49.3 +60.0	-6	51.8 +60.0	-6	54.0 +60.0
13°	-5	43.3 +59.9	-5	46.5 +59.9	-5	49.3 +59.9	-5	51.8 +59.9	-5	54.0 +60.0
14°	-4	43.4 +59.9	-4	46.6 +59.9	-4	49.4 +59.9	-4	51.9 +60.0	-4	54.0 +59.9
15°	-3	43.5 +59.9	-3	46.7 +60.0	-3	49.5 +60.0	-3	51.9 +59.9	-3	54.1 +60.0
16°	-2	43.6 +59.9	-2	46.7 +59.9	-2	49.5 +59.9	-2	52.0 +60.0	-2	54.1 +60.0
17°	-1	43.7 +59.9	-1	46.8 +59.9	-1	49.6 +60.0	-1	52.0 +59.9	-1	54.1 +59.9
18°	-0	43.8 +59.9	-0	46.9 +59.9	-0	49.6 +59.9	-0	52.1 +60.0	-0	54.2 +60.0
19°	0	16.1 +59.9 9.5	0	13.0 +60.0 8.5	0	10.3 +59.9 7.6	0	07.9 +59.9 6.6	0	05.8 +60.0 5.7
20°	1	16.0 +59.9 9.4	1	13.0 +59.9 8.5	1	10.2 +60.0 7.5	1	07.8 +60.0 6.6	1	05.8 +59.9 5.6
21°	2	15.9 +59.9 9.3	2	12.9 +59.9 8.4	2	10.2 +59.9 7.5	2	07.8 +59.9 6.5	2	05.7 +60.0 5.6
22°	3	15.8 +59.9 9.3	3	12.8 +59.9 8.4	3	10.1 +60.0 7.4	3	07.7 +60.0 6.5	3	05.7 +60.0 5.6
23°	4	15.7 +59.9 9.2	4	12.7 +59.9 8.3	4	10.1 +59.9 7.4	4	07.7 +60.0 6.5	4	05.7 +59.9 5.5
24°	5	15.6 +59.9 9.2	5	12.6 +60.0 8.3	5	10.0 +59.9 7.3	5	07.7 +59.9 6.4	5	05.6 +60.0 5.5
25°	6	15.5 +59.9 9.1	6	12.6 +59.9 8.2	6	09.9 +60.0 7.3	6	07.6 +60.0 6.4	6	05.6 +60.0 5.5
26°	7	15.4 +59.9 9.1	7	12.5 +59.9 8.1	7	09.9 +59.9 7.2	7	07.6 +59.9 6.3	7	05.6 +59.9 5.4
27°	8	15.3 +59.9 9.0	8	12.4 +59.9 8.1	8	09.8 +59.9 7.2	8	07.5 +60.0 6.3	8	05.5 +60.0 5.4
28°	9	15.2 +59.9 8.9	9	12.3 +59.9 8.0	9	09.7 +60.0 7.2	9	07.5 +59.9 6.3	9	05.5 +59.9 5.4
29°	10	15.1 +59.9 8.9	10	12.2 +60.0 8.0	10	09.7 +59.9 7.1	10	07.4 +60.0 6.2	10	05.4 +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°	-9	55.7 +59.9	-9	57.3 +60.0	-9	58.5 +60.0	-9	59.3 +60.0	-9	59.8 +60.0
10°	-8	55.8 +60.0	-8	57.3 +60.0	-8	58.5 +60.0	-8	59.3 +60.0	-8	59.8 +60.0
11°	-7	55.8 +60.0	-7	57.3 +60.0	-7	58.5 +60.0	-7	59.3 +60.0	-7	59.8 +60.0
12°	-6	55.8 +60.0	-6	57.3 +60.0	-6	58.5 +60.0	-6	59.3 +60.0	-6	59.8 +60.0
13°	-5	55.8 +59.9	-5	57.3 +60.0	-5	58.5 +60.0	-5	59.3 +60.0	-5	59.8 +60.0
14°	-4	55.9 +60.0	-4	57.3 +59.9	-4	58.5 +60.0	-4	59.3 +60.0	-4	59.8 +60.0
15°	-3	55.9 +60.0	-3	57.4 +60.0	-3	58.5 +60.0	-3	59.3 +60.0	-3	59.8 +60.0
16°	-2	55.9 +60.0	-2	57.4 +60.0	-2	58.5 +60.0	-2	59.3 +60.0	-2	59.8 +60.0
17°	-1	55.9 +60.0	-1	57.4 +60.0	-1	58.5 +60.0	-1	59.3 +59.9	-1	59.8 +60.0
18°	-0	55.9 +59.9	-0	57.4 +60.0	-0	58.5 +60.0	-0	59.4 +60.0	-0	59.8 +60.0
19°	0	04.0 +60.0 4.7	0	02.6 +60.0 3.8	0	01.5 +59.9 2.8	0	00.6 +60.0 1.9	0	00.2 +60.0 0.9
20°	1	04.0 +60.0 4.7	1	02.6 +59.9 3.8	1	01.4 +60.0 2.8	1	00.6 +60.0 1.9	1	00.2 +60.0 0.9
21°	2	04.0 +60.0 4.7	2	02.5 +60.0 3.7	2	01.4 +60.0 2.8	2	00.6 +60.0 1.9	2	00.2 +60.0 0.9
22°	3	04.0 +59.9 4.6	3	02.5 +60.0 3.7	3	01.4 +60.0 2.8	3	00.6 +60.0 1.9	3	00.2 +60.0 0.9
23°	4	03.9 +60.0 4.6	4	02.5 +60.0 3.7	4	01.4 +60.0 2.8	4	00.6 +60.0 1.8	4	00.2 +60.0 0.9
24°	5	03.9 +60.0 4.6	5	02.5 +60.0 3.7	5	01.4 +60.0 2.8	5	00.6 +60.0 1.8	5	00.2 +60.0 0.9
25°	6	03.9 +60.0 4.6	6	02.5 +60.0 3.6	6	01.4 +60.0 2.7	6	00.6 +60.0 1.8	6	00.2 +60.0 0.9
26°	7	03.9 +59.9 4.5	7	02.5 +60.0 3.6	7	01.4 +60.0 2.7	7	00.6 +60.0 1.8	7	00.2 +60.0 0.9
27°	8	03.8 +60.0 4.5	8	02.5 +59.9 3.6	8	01.4 +60.0 2.7	8	00.6 +60.0 1.8	8	00.2 +60.0 0.9
28°	9	03.8 +60.0 4.5	9	02.4 +60.0 3.6	9	01.4 +60.0 2.7	9	00.6 +60.0 1.8	9	00.2 +60.0 0.9
29°	10	03.8 +60.0 4.4	10	02.4 +60.0 3.6	10	01.4 +60.0 2.7	10	00.6 +60.0 1.8	10	00.2 +60.0 0.9

Declination SAME name as Latitude

Latitude 72°

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°	18 00.0 +60.0 180.0	17 59.8 +60.0 178.9	17 59.3 +60.0 177.9	17 58.5 +60.0 176.8	17 57.3 +60.0 175.8
1°	19 00.0 +60.0 180.0	18 59.8 +60.0 178.9	18 59.3 +60.0 177.9	18 58.5 +60.0 176.8	18 57.3 +59.9 175.8
2°	20 00.0 +60.0 180.0	19 59.8 +60.0 178.9	19 59.3 +60.0 177.9	19 58.5 +59.9 176.8	19 57.2 +60.0 175.7
3°	21 00.0 +60.0 180.0	20 59.8 +60.0 178.9	20 59.3 +60.0 177.9	20 58.4 +60.0 176.8	20 57.2 +60.0 175.7
4°	22 00.0 +60.0 180.0	21 59.8 +60.0 178.9	21 59.3 +60.0 177.8	21 58.4 +60.0 176.8	21 57.2 +60.0 175.7
5°	23 00.0 +60.0 180.0	22 59.8 +60.0 178.9	22 59.3 +60.0 177.8	22 58.4 +60.0 176.8	22 57.2 +60.0 175.7
6°	24 00.0 +60.0 180.0	23 59.8 +60.0 178.9	23 59.3 +60.0 177.8	23 58.4 +60.0 176.7	23 57.2 +60.0 175.6
7°	25 00.0 +60.0 180.0	24 59.8 +60.0 178.9	24 59.3 +60.0 177.8	24 58.4 +60.0 176.7	24 57.2 +59.9 175.6
8°	26 00.0 +60.0 180.0	25 59.8 +60.0 178.9	25 59.3 +60.0 177.8	25 58.4 +60.0 176.7	25 57.1 +60.0 175.6
9°	27 00.0 +60.0 180.0	26 59.8 +60.0 178.9	26 59.3 +60.0 177.8	26 58.4 +60.0 176.7	26 57.1 +60.0 175.6
10°	28 00.0 +60.0 180.0	27 59.8 +60.0 178.9	27 59.3 +60.0 177.8	27 58.4 +60.0 176.7	27 57.1 +60.0 175.5
11°	29 00.0 +60.0 180.0	28 59.8 +60.0 178.9	28 59.3 +60.0 177.8	28 58.4 +60.0 176.6	28 57.1 +60.0 175.5
12°	30 00.0 +60.0 180.0	29 59.8 +60.0 178.9	29 59.3 +60.0 177.7	29 58.4 +59.9 176.6	29 57.1 +60.0 175.5
13°	31 00.0 +60.0 180.0	30 59.8 +60.0 178.9	30 59.3 +60.0 177.7	30 58.3 +60.0 176.6	30 57.1 +59.9 175.5
14°	32 00.0 +60.0 180.0	31 59.8 +60.0 178.9	31 59.3 +60.0 177.7	31 58.3 +60.0 176.6	31 57.0 +60.0 175.4
15°	33 00.0 +60.0 180.0	32 59.8 +60.0 178.8	32 59.3 +59.9 177.7	32 58.3 +60.0 176.5	32 57.0 +60.0 175.4
16°	34 00.0 +60.0 180.0	33 59.8 +60.0 178.8	33 59.2 +60.0 177.7	33 58.3 +60.0 176.5	33 57.0 +60.0 175.4
17°	35 00.0 +60.0 180.0	34 59.8 +60.0 178.8	34 59.2 +60.0 177.7	34 58.3 +60.0 176.5	34 57.0 +60.0 175.3
18°	36 00.0 +60.0 180.0	35 59.8 +60.0 178.8	35 59.2 +60.0 177.6	35 58.3 +60.0 176.5	35 57.0 +59.9 175.3
19°	37 00.0 +60.0 180.0	36 59.8 +60.0 178.8	36 59.2 +60.0 177.6	36 58.3 +60.0 176.4	36 56.9 +60.0 175.3
20°	38 00.0 +60.0 180.0	37 59.8 +60.0 178.8	37 59.2 +60.0 177.6	37 58.3 +60.0 176.4	37 56.9 +60.0 175.2
21°	39 00.0 +60.0 180.0	38 59.8 +60.0 178.8	38 59.2 +60.0 177.6	38 58.3 +59.9 176.4	38 56.9 +60.0 175.2
22°	40 00.0 +60.0 180.0	39 59.8 +60.0 178.8	39 59.2 +60.0 177.6	39 58.2 +60.0 176.4	39 56.9 +59.9 175.2
23°	41 00.0 +60.0 180.0	40 59.8 +60.0 178.8	40 59.2 +60.0 177.6	40 58.2 +60.0 176.3	40 56.8 +60.0 175.1
24°	42 00.0 +60.0 180.0	41 59.8 +60.0 178.8	41 59.2 +60.0 177.5	41 58.2 +60.0 176.3	41 56.8 +60.0 175.1
25°	43 00.0 +60.0 180.0	42 59.8 +60.0 178.8	42 59.2 +60.0 177.5	42 58.2 +60.0 176.3	42 56.8 +60.0 175.0
26°	44 00.0 +60.0 180.0	43 59.8 +60.0 178.8	43 59.2 +60.0 177.5	43 58.2 +60.0 176.3	43 56.8 +59.9 175.0
27°	45 00.0 +60.0 180.0	44 59.8 +60.0 178.7	44 59.2 +60.0 177.5	44 58.2 +60.0 176.2	44 56.7 +60.0 175.0
28°	46 00.0 +60.0 180.0	45 59.8 +60.0 178.7	45 59.2 +60.0 177.5	45 58.2 +59.9 176.2	45 56.7 +60.0 174.9
29°	47 00.0 +60.0 180.0	46 59.8 +60.0 178.7	46 59.2 +60.0 177.4	46 58.1 +60.0 176.2	46 56.7 +60.0 174.9

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°	17 55.8 +59.9 174.7	17 53.9 +59.9 173.7	17 51.7 +59.9 172.6	17 49.1 +60.0 171.6	17 46.3 +59.9 170.5
1°	18 55.7 +60.0 174.7	18 53.8 +60.0 173.7	18 51.6 +60.0 172.6	18 49.1 +59.9 171.5	18 46.2 +59.9 170.5
2°	19 55.7 +60.0 174.7	19 53.8 +60.0 173.6	19 51.6 +59.9 172.6	19 49.0 +59.9 171.5	19 46.1 +59.9 170.4
3°	20 55.7 +60.0 174.7	20 53.8 +59.9 173.6	20 51.5 +60.0 172.5	20 48.9 +60.0 171.4	20 46.0 +59.9 170.4
4°	21 55.7 +59.9 174.6	21 53.7 +60.0 173.5	21 51.5 +59.9 172.5	21 48.9 +59.9 171.4	21 45.9 +60.0 170.3
5°	22 55.6 +60.0 174.6	22 53.7 +60.0 173.5	22 51.4 +60.0 172.4	22 48.8 +60.0 171.3	22 45.9 +59.9 170.3
6°	23 55.6 +60.0 174.6	23 53.7 +59.9 173.5	23 51.4 +59.9 172.4	23 48.8 +59.9 171.3	23 45.8 +59.9 170.2
7°	24 55.6 +59.9 174.5	24 53.6 +60.0 173.4	24 51.3 +60.0 172.3	24 48.7 +59.9 171.2	24 45.7 +59.9 170.2
8°	25 55.5 +60.0 174.5	25 53.6 +60.0 173.4	25 51.3 +59.9 172.3	25 48.6 +59.9 171.2	25 45.6 +59.9 170.1
9°	26 55.5 +60.0 174.5	26 53.6 +59.9 173.4	26 51.2 +60.0 172.2	26 48.5 +60.0 171.1	26 45.5 +59.9 170.0
10°	27 55.5 +60.0 174.4	27 53.5 +60.0 173.3	27 51.2 +59.9 172.2	27 48.5 +59.9 171.1	27 45.4 +59.9 170.0
11°	28 55.5 +59.9 174.4	28 53.5 +59.9 173.3	28 51.1 +60.0 172.1	28 48.4 +59.9 171.0	28 45.3 +59.9 169.9
12°	29 55.4 +60.0 174.4	29 53.4 +60.0 173.2	29 51.1 +59.9 172.1	29 48.3 +60.0 171.0	29 45.2 +60.0 169.8
13°	30 55.4 +60.0 174.3	30 53.4 +59.9 173.2	30 51.0 +59.9 172.0	30 48.3 +59.9 170.9	30 45.2 +59.9 169.8
14°	31 55.4 +59.9 174.3	31 53.3 +60.0 173.1	31 50.9 +60.0 172.0	31 48.2 +59.9 170.9	31 45.1 +59.9 169.7
15°	32 55.3 +60.0 174.2	32 53.3 +60.0 173.1	32 50.9 +59.9 171.9	32 48.1 +59.9 170.8	32 45.0 +59.9 169.6
16°	33 55.3 +60.0 174.2	33 53.3 +59.9 173.0	33 50.8 +60.0 171.9	33 48.0 +59.9 170.7	33 44.9 +59.9 169.6
17°	34 55.3 +60.0 174.2	34 53.2 +60.0 173.0	34 50.8 +59.9 171.8	34 47.9 +60.0 170.7	34 44.8 +59.8 169.5
18°	35 55.3 +59.9 174.1	35 53.2 +59.9 173.0	35 50.7 +59.9 171.8	35 47.9 +59.9 170.6	35 44.6 +59.9 169.4
19°	36 55.2 +60.0 174.1	36 53.1 +60.0 172.9	36 50.6 +60.0 171.7	36 47.8 +59.9 170.5	36 44.5 +59.9 169.4
20°	37 55.2 +59.9 174.0	37 53.1 +59.9 172.9	37 50.6 +59.9 171.7	37 47.7 +59.9 170.5	37 44.4 +59.9 169.3
21°	38 55.1 +60.0 174.0	38 53.0 +60.0 172.8	38 50.5 +59.9 171.6	38 47.6 +59.9 170.4	38 44.3 +59.9 169.2
22°	39 55.1 +60.0 174.0	39 53.0 +59.9 172.7	39 50.4 +60.0 171.5	39 47.5 +59.9 170.3	39 44.2 +59.9 169.1
23°	40 55.1 +59.9 173.9	40 52.9 +60.0 172.7	40 50.4 +59.9 171.5	40 47.4 +59.9 170.3	40 44.1 +59.9 169.0
24°	41 55.0 +60.0 173.9	41 52.9 +59.9 172.6	41 50.3 +59.9 171.4	41 47.3 +59.9 170.2	41 44.0 +59.8 169.0
25°	42 55.0 +60.0 173.8	42 52.8 +59.9 172.6	42 50.2 +59.9 171.3	42 47.2 +59.9 170.1	42 43.8 +59.9 168.9
26°	43 55.0 +59.9 173.8	43 52.7 +60.0 172.5	43 50.1 +59.9 171.3	43 47.1 +59.9 170.0	43 43.7 +59.9 168.8
27°	44 54.9 +60.0 173.7	44 52.7 +59.9 172.4	44 50.0 +60.0 171.2	44 47.0 +59.9 169.9	44 43.6 +59.8 168.7
28°	45 54.9 +59.9 173.6	45 52.6 +59.9 172.4	45 50.0 +59.9 171.1	45 46.9 +59.9 169.9	45 43.4 +59.9 168.6
29°	46 54.8 +60.0 173.6	46 52.5 +60.0 172.3	46 49.9 +59.9 171.0	46 46.8 +59.8 169.8	46 43.3 +59.8 168.5

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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°	17 43.0 +59.9 169.5	17 39.5 +59.9 168.4	17 35.6 +59.9 167.4	17 31.4 +59.8 166.4	17 26.9 +59.8 165.3
1°	18 42.9 +60.0 169.4	18 39.4 +59.9 168.4	18 35.5 +59.8 167.3	18 31.2 +59.9 166.3	18 26.7 +59.8 165.2
2°	19 42.9 +59.9 169.4	19 39.3 +59.8 168.3	19 35.3 +59.9 167.3	19 31.1 +59.8 166.2	19 26.5 +59.8 165.1
3°	20 42.8 +59.9 169.3	20 39.1 +59.9 168.3	20 35.2 +59.9 167.2	20 30.9 +59.9 166.1	20 26.3 +59.8 165.1
4°	21 42.7 +59.9 169.3	21 39.0 +59.9 168.2	21 35.1 +59.8 167.1	21 30.8 +59.8 166.0	21 26.1 +59.8 165.0
5°	22 42.6 +59.9 169.2	22 38.9 +59.9 168.1	22 34.9 +59.9 167.0	22 30.6 +59.8 166.0	22 25.9 +59.8 164.9
6°	23 42.5 +59.8 169.1	23 38.8 +59.9 168.0	23 34.8 +59.8 167.0	23 30.4 +59.8 165.9	23 25.7 +59.8 164.8
7°	24 42.3 +59.9 169.1	24 38.7 +59.8 168.0	24 34.6 +59.9 166.9	24 30.2 +59.9 165.8	24 25.5 +59.8 164.7
8°	25 42.2 +59.9 169.0	25 38.5 +59.9 167.9	25 34.5 +59.8 166.8	25 30.1 +59.8 165.7	25 25.3 +59.8 164.6
9°	26 42.1 +59.9 168.9	26 38.4 +59.9 167.8	26 34.3 +59.9 166.7	26 29.9 +59.8 165.6	26 25.1 +59.8 164.5
10°	27 42.0 +59.9 168.9	27 38.3 +59.8 167.8	27 34.2 +59.8 166.6	27 29.7 +59.8 165.5	27 24.9 +59.8 164.4
11°	28 41.9 +59.9 168.8	28 38.1 +59.9 167.7	28 34.0 +59.8 166.6	28 29.5 +59.8 165.4	28 24.7 +59.8 164.3
12°	29 41.8 +59.9 168.7	29 38.0 +59.9 167.6	29 33.8 +59.9 166.5	29 29.3 +59.8 165.4	29 24.5 +59.7 164.2
13°	30 41.7 +59.9 168.7	30 37.9 +59.8 167.5	30 33.7 +59.8 166.4	30 29.1 +59.8 165.3	30 24.2 +59.8 164.1
14°	31 41.6 +59.8 168.6	31 37.7 +59.9 167.4	31 33.5 +59.8 166.3	31 28.9 +59.8 165.2	31 24.0 +59.8 164.0
15°	32 41.4 +59.9 168.5	32 37.6 +59.8 167.4	32 33.3 +59.9 166.2	32 28.7 +59.8 165.1	32 23.8 +59.7 163.9
16°	33 41.3 +59.9 168.4	33 37.4 +59.9 167.3	33 33.2 +59.8 166.1	33 28.5 +59.8 165.0	33 23.5 +59.8 163.8
17°	34 41.2 +59.9 168.3	34 37.3 +59.8 167.2	34 33.0 +59.8 166.0	34 28.3 +59.8 164.9	34 23.3 +59.7 163.7
18°	35 41.1 +59.8 168.3	35 37.1 +59.9 167.1	35 32.8 +59.8 165.9	35 28.1 +59.8 164.8	35 23.0 +59.8 163.6
19°	36 40.9 +59.9 168.2	36 37.0 +59.8 167.0	36 32.6 +59.8 165.8	36 27.9 +59.8 164.7	36 22.8 +59.7 163.5
20°	37 40.8 +59.9 168.1	37 36.8 +59.8 166.9	37 32.4 +59.8 165.7	37 27.7 +59.7 164.6	37 22.5 +59.8 163.4
21°	38 40.7 +59.8 168.0	38 36.6 +59.8 166.8	38 32.2 +59.8 165.6	38 27.4 +59.8 164.4	38 22.3 +59.7 163.3
22°	39 40.5 +59.9 167.9	39 36.4 +59.9 166.7	39 32.0 +59.8 165.5	39 27.2 +59.7 164.3	39 22.0 +59.7 163.1
23°	40 40.4 +59.8 167.8	40 36.3 +59.8 166.6	40 31.8 +59.8 165.4	40 26.9 +59.8 164.2	40 21.7 +59.7 163.0
24°	41 40.2 +59.9 167.7	41 36.1 +59.8 166.5	41 31.6 +59.7 165.3	41 26.7 +59.7 164.1	41 21.4 +59.7 162.9
25°	42 40.1 +59.8 167.6	42 35.9 +59.8 166.4	42 31.3 +59.8 165.2	42 26.4 +59.7 164.0	42 21.1 +59.7 162.7
26°	43 39.9 +59.8 167.5	43 35.7 +59.8 166.3	43 31.1 +59.8 165.1	43 26.1 +59.8 163.8	43 20.8 +59.7 162.6
27°	44 39.7 +59.8 167.4	44 35.5 +59.8 166.2	44 30.9 +59.7 164.9	44 25.9 +59.7 163.7	44 20.5 +59.6 162.5
28°	45 39.5 +59.9 167.3	45 35.3 +59.8 166.1	45 30.6 +59.8 164.8	45 25.6 +59.7 163.6	45 20.1 +59.7 162.3
29°	46 39.4 +59.8 167.2	46 35.1 +59.7 165.9	46 30.4 +59.7 164.7	46 25.3 +59.7 163.4	46 19.8 +59.6 162.2

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	17 22.0 +59.8 164.3	17 16.8 +59.8 163.2	17 11.3 +59.7 162.2	17 05.5 +59.7 161.1	16 59.3 +59.7 160.1
1°	18 21.8 +59.8 164.2	18 16.6 +59.7 163.1	18 11.0 +59.8 162.1	18 05.2 +59.7 161.0	17 59.0 +59.6 160.0
2°	19 21.6 +59.8 164.1	19 16.3 +59.8 163.0	19 10.8 +59.7 162.0	19 04.9 +59.7 160.9	18 58.6 +59.7 159.9
3°	20 21.4 +59.7 164.0	20 16.1 +59.7 162.9	20 10.5 +59.7 161.9	20 04.6 +59.6 160.8	19 58.3 +59.7 159.8
4°	21 21.1 +59.8 163.9	21 15.8 +59.8 162.8	21 10.2 +59.7 161.8	21 04.2 +59.7 160.7	20 58.0 +59.6 159.6
5°	22 20.9 +59.8 163.8	22 15.6 +59.7 162.7	22 09.9 +59.7 161.7	22 03.9 +59.7 160.6	21 57.6 +59.6 159.5
6°	23 20.7 +59.8 163.7	23 15.3 +59.8 162.6	23 09.6 +59.7 161.6	23 03.6 +59.7 160.5	22 57.2 +59.7 159.4
7°	24 20.5 +59.7 163.6	24 15.1 +59.7 162.5	24 09.3 +59.7 161.5	24 03.3 +59.6 160.4	23 56.9 +59.6 159.3
8°	25 20.2 +59.8 163.5	25 14.8 +59.7 162.4	25 09.0 +59.7 161.3	25 02.9 +59.7 160.3	24 56.5 +59.6 159.2
9°	26 20.0 +59.8 163.4	26 14.5 +59.8 162.3	26 08.7 +59.7 161.2	26 02.6 +59.7 160.1	25 56.1 +59.7 159.0
10°	27 19.8 +59.7 163.3	27 14.3 +59.7 162.2	27 08.4 +59.7 161.1	27 02.3 +59.6 160.0	26 55.8 +59.6 158.9
11°	28 19.5 +59.8 163.2	28 14.0 +59.7 162.1	28 08.1 +59.7 161.0	28 01.9 +59.7 159.9	27 55.4 +59.6 158.8
12°	29 19.3 +59.7 163.1	29 13.7 +59.7 162.0	29 07.8 +59.7 160.9	29 01.6 +59.6 159.8	28 55.0 +59.6 158.7
13°	30 19.0 +59.7 163.0	30 13.4 +59.7 161.9	30 07.5 +59.6 160.8	30 01.2 +59.6 159.7	29 54.6 +59.6 158.5
14°	31 18.7 +59.8 162.9	31 13.1 +59.7 161.8	31 07.1 +59.7 160.6	31 00.8 +59.6 159.5	30 54.2 +59.6 158.4
15°	32 18.5 +59.7 162.8	32 12.8 +59.7 161.7	32 06.8 +59.7 160.5	32 00.4 +59.7 159.4	31 53.8 +59.5 158.3
16°	33 18.2 +59.7 162.7	33 12.5 +59.7 161.5	33 06.5 +59.6 160.4	33 00.1 +59.6 159.3	32 53.3 +59.6 158.1
17°	34 17.9 +59.7 162.6	34 12.2 +59.7 161.4	34 06.1 +59.6 160.3	33 59.7 +59.6 159.1	33 52.9 +59.5 158.0
18°	35 17.6 +59.7 162.4	35 11.9 +59.6 161.3	35 05.7 +59.7 160.1	34 59.3 +59.6 159.0	34 52.4 +59.6 157.8
19°	36 17.3 +59.7 162.3	36 11.5 +59.7 161.2	36 05.4 +59.6 160.0	35 58.9 +59.5 158.8	35 52.0 +59.5 157.7
20°	37 17.0 +59.7 162.2	37 11.2 +59.6 161.0	37 05.0 +59.6 159.9	36 58.4 +59.6 158.7	36 51.5 +59.5 157.5
21°	38 16.7 +59.7 162.1	38 10.8 +59.7 160.9	38 04.6 +59.6 159.7	37 58.0 +59.5 158.5	37 51.0 +59.5 157.4
22°	39 16.4 +59.7 161.9	39 10.5 +59.6 160.8	39 04.2 +59.6 159.6	38 57.5 +59.6 158.4	38 50.5 +59.5 157.2
23°	40 16.1 +59.7 161.8	40 10.1 +59.6 160.6	40 03.8 +59.6 159.4	39 57.1 +59.5 158.2	39 50.0 +59.5 157.0
24°	41 15.8 +59.6 161.7	41 09.7 +59.6 160.5	41 03.4 +59.5 159.3	40 56.6 +59.5 158.1	40 49.5 +59.5 156.9
25°	42 15.4 +59.7 161.5	42 09.3 +59.6 160.3	42 02.9 +59.6 159.1	41 56.1 +59.5 157.9	41 49.0 +59.4 156.7
26°	43 15.1 +59.6 161.4	43 08.9 +59.6 160.1	43 02.5 +59.5 158.9	42 55.6 +59.5 157.7	42 48.4 +59.4 156.5
27°	44 14.7 +59.6 161.2	44 08.5 +59.6 160.0	44 02.0 +59.5 158.8	43 55.1 +59.5 157.5	43 47.8 +59.4 156.3
28°	45 14.3 +59.6 161.1	45 08.1 +59.5 159.8	45 01.5 +59.5 158.6	44 54.6 +59.4 157.3	44 47.2 +59.4 156.1
29°	46 13.9 +59.6 160.9	46 07.6 +59.6 159.6	46 01.0 +59.5 158.4	45 54.0 +59.4 157.1	45 46.6 +59.4 155.9

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	16 52.8 +59.7 159.1	16 46.1 +59.6 158.0	16 39.0 +59.5 157.0	16 31.6 +59.5 155.9	16 23.9 +59.4 154.9
1°	17 52.5 +59.6 158.9	17 45.7 +59.5 157.9	17 38.5 +59.6 156.9	17 31.1 +59.5 155.8	17 23.3 +59.5 154.8
2°	18 52.1 +59.6 158.8	18 45.2 +59.6 157.8	18 38.1 +59.5 156.7	18 30.6 +59.5 155.7	18 22.8 +59.5 154.6
3°	19 51.7 +59.6 158.7	19 44.8 +59.6 157.7	19 37.6 +59.6 156.6	19 30.1 +59.5 155.5	19 22.3 +59.4 154.5
4°	20 51.3 +59.7 158.6	20 44.4 +59.6 157.5	20 37.2 +59.5 156.5	20 29.6 +59.5 155.4	20 21.7 +59.5 154.4
5°	21 51.0 +59.6 158.5	21 44.0 +59.6 157.4	21 36.7 +59.5 156.3	21 29.1 +59.5 155.3	21 21.2 +59.4 154.2
6°	22 50.6 +59.6 158.3	22 43.6 +59.5 157.3	22 36.2 +59.6 156.2	22 28.6 +59.5 155.1	22 20.6 +59.5 154.1
7°	23 50.2 +59.6 158.2	23 43.1 +59.6 157.1	23 35.8 +59.5 156.1	23 28.1 +59.5 155.0	23 20.1 +59.4 153.9
8°	24 49.8 +59.5 158.1	24 42.7 +59.5 157.0	24 35.3 +59.5 155.9	24 27.6 +59.4 154.8	24 19.5 +59.4 153.8
9°	25 49.3 +59.6 158.0	25 42.2 +59.6 156.9	25 34.8 +59.5 155.8	25 27.0 +59.5 154.7	25 18.9 +59.4 153.6
10°	26 48.9 +59.6 157.8	26 41.8 +59.5 156.7	26 34.3 +59.5 155.6	26 26.5 +59.4 154.5	26 18.3 +59.4 153.5
11°	27 48.5 +59.6 157.7	27 41.3 +59.5 156.6	27 33.8 +59.5 155.5	27 25.9 +59.5 154.4	27 17.7 +59.4 153.3
12°	28 48.1 +59.5 157.6	28 40.8 +59.5 156.4	28 33.3 +59.4 155.3	28 25.4 +59.4 154.2	28 17.1 +59.4 153.1
13°	29 47.6 +59.6 157.4	29 40.3 +59.5 156.3	29 32.7 +59.5 155.2	29 24.8 +59.4 154.1	29 16.5 +59.4 153.0
14°	30 47.2 +59.5 157.3	30 39.8 +59.5 156.2	30 32.2 +59.4 155.0	30 24.2 +59.4 153.9	30 15.9 +59.3 152.8
15°	31 46.7 +59.5 157.1	31 39.3 +59.5 156.0	31 31.6 +59.5 154.9	31 23.6 +59.4 153.8	31 15.2 +59.4 152.6
16°	32 46.2 +59.6 157.0	32 38.8 +59.5 155.9	32 31.1 +59.4 154.7	32 23.0 +59.4 153.6	32 14.6 +59.3 152.5
17°	33 45.8 +59.5 156.8	33 38.3 +59.5 155.7	33 30.5 +59.4 154.6	33 22.4 +59.3 153.4	33 13.9 +59.3 152.3
18°	34 45.3 +59.5 156.7	34 37.8 +59.4 155.5	34 29.9 +59.4 154.4	34 21.7 +59.4 153.2	34 13.2 +59.3 152.1
19°	35 44.8 +59.4 156.5	35 37.2 +59.4 155.4	35 29.3 +59.4 154.2	35 21.1 +59.3 153.1	35 12.5 +59.3 151.9
20°	36 44.2 +59.5 156.4	36 36.6 +59.5 155.2	36 28.7 +59.4 154.0	36 20.4 +59.3 152.9	36 11.8 +59.2 151.7
21°	37 43.7 +59.5 156.2	37 36.1 +59.4 155.0	37 28.1 +59.3 153.9	37 19.7 +59.3 152.7	37 11.0 +59.3 151.5
22°	38 43.2 +59.4 156.0	38 35.5 +59.3 154.8	38 27.4 +59.3 153.7	38 19.0 +59.3 152.5	38 10.3 +59.2 151.3
23°	39 42.6 +59.4 155.8	39 34.8 +59.4 154.7	39 26.7 +59.4 153.5	39 18.3 +59.2 152.3	39 09.5 +59.2 151.1
24°	40 42.0 +59.4 155.7	40 34.2 +59.4 154.5	40 26.1 +59.2 153.3	40 17.5 +59.3 152.1	40 08.7 +59.2 150.9
25°	41 41.4 +59.4 155.5	41 33.6 +59.3 154.3	41 25.3 +59.3 153.1	41 16.8 +59.2 151.9	41 07.9 +59.1 150.7
26°	42 40.8 +59.4 155.3	42 32.9 +59.3 154.1	42 24.6 +59.3 152.9	42 16.0 +59.2 151.7	42 07.0 +59.1 150.5
27°	43 40.2 +59.3 155.1	43 32.2 +59.3 153.9	43 23.9 +59.2 152.7	43 15.2 +59.1 151.4	43 06.1 +59.1 150.2
28°	44 39.5 +59.4 154.9	44 31.5 +59.2 153.7	44 23.1 +59.2 152.4	44 14.3 +59.2 151.2	44 05.2 +59.1 150.0
29°	45 38.9 +59.3 154.7	45 30.7 +59.3 153.4	45 22.3 +59.1 152.2	45 13.5 +59.0 151.0	45 04.3 +59.0 149.8

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°	16 15.8 +59.5 153.9	16 07.5 +59.4 152.8	15 58.9 +59.4 151.8	15 50.0 +59.3 150.8	15 40.8 +59.3 149.8
1°	17 15.3 +59.4 153.7	17 06.9 +59.4 152.7	16 58.3 +59.3 151.7	16 49.3 +59.3 150.6	16 40.1 +59.3 149.6
2°	18 14.7 +59.4 153.6	18 06.3 +59.4 152.6	17 57.6 +59.4 151.5	17 48.6 +59.3 150.5	17 39.4 +59.2 149.4
3°	19 14.1 +59.5 153.4	19 05.7 +59.4 152.4	18 57.0 +59.3 151.4	18 47.9 +59.3 150.3	18 38.6 +59.2 149.3
4°	20 13.6 +59.4 153.3	20 05.1 +59.3 152.2	19 56.3 +59.3 151.2	19 47.2 +59.3 150.2	19 37.8 +59.3 149.1
5°	21 13.0 +59.4 153.2	21 04.4 +59.4 152.1	20 55.6 +59.3 151.0	20 46.5 +59.3 150.0	20 37.1 +59.2 148.9
6°	22 12.4 +59.4 153.0	22 03.8 +59.4 151.9	21 54.9 +59.3 150.9	21 45.8 +59.2 149.8	21 36.3 +59.2 148.8
7°	23 11.8 +59.4 152.8	23 03.2 +59.3 151.8	22 54.2 +59.3 150.7	22 45.0 +59.3 149.6	22 35.5 +59.2 148.6
8°	24 11.2 +59.3 152.7	24 02.5 +59.3 151.6	23 53.5 +59.3 150.5	23 44.3 +59.2 149.5	23 34.7 +59.2 148.4
9°	25 10.5 +59.4 152.5	25 01.8 +59.4 151.5	24 52.8 +59.3 150.4	24 43.5 +59.2 149.3	24 33.9 +59.2 148.2
10°	26 09.9 +59.4 152.4	26 01.2 +59.3 151.3	25 52.1 +59.3 150.2	25 42.7 +59.2 149.1	25 33.1 +59.1 148.0
11°	27 09.3 +59.3 152.2	27 00.5 +59.3 151.1	26 51.4 +59.2 150.0	26 41.9 +59.2 148.9	26 32.2 +59.2 147.9
12°	28 08.6 +59.3 152.0	27 59.8 +59.2 150.9	27 50.6 +59.2 149.9	27 41.1 +59.2 148.8	27 31.4 +59.1 147.7
13°	29 07.9 +59.4 151.9	28 59.0 +59.3 150.8	28 49.8 +59.2 149.7	28 40.3 +59.2 148.6	28 30.5 +59.1 147.5
14°	30 07.3 +59.3 151.7	29 58.3 +59.3 150.6	29 49.0 +59.3 149.5	29 39.5 +59.1 148.4	29 29.6 +59.1 147.3
15°	31 06.6 +59.3 151.5	30 57.6 +59.2 150.4	30 48.3 +59.1 149.3	30 38.6 +59.2 148.2	30 28.7 +59.1 147.1
16°	32 05.9 +59.2 151.3	31 56.8 +59.2 150.2	31 47.4 +59.2 149.1	31 37.8 +59.1 148.0	31 27.8 +59.0 146.9
17°	33 05.1 +59.3 151.2	32 56.0 +59.2 150.0	32 46.6 +59.2 148.9	32 36.9 +59.1 147.8	32 26.8 +59.1 146.7
18°	34 04.4 +59.2 151.0	33 55.2 +59.2 149.8	33 45.8 +59.1 148.7	33 36.0 +59.0 147.6	33 25.9 +59.0 146.5
19°	35 03.6 +59.2 150.8	34 54.4 +59.2 149.6	34 44.9 +59.1 148.5	34 35.0 +59.1 147.4	34 24.9 +59.0 146.2
20°	36 02.8 +59.2 150.6	35 53.6 +59.1 149.4	35 44.0 +59.1 148.3	35 34.1 +59.0 147.2	35 23.9 +58.9 146.0
21°	37 02.0 +59.2 150.4	36 52.7 +59.1 149.2	36 43.1 +59.0 148.1	36 33.1 +59.0 146.9	36 22.8 +59.0 145.8
22°	38 01.2 +59.2 150.2	37 51.8 +59.1 149.0	37 42.1 +59.1 147.9	37 32.1 +59.0 146.7	37 21.8 +58.9 145.6
23°	39 00.4 +59.1 150.0	38 50.9 +59.1 148.8	38 41.2 +59.0 147.6	38 31.1 +58.9 146.5	38 20.7 +58.9 145.3
24°	39 59.5 +59.1 149.7	39 50.0 +59.1 148.6	39 40.2 +59.0 147.4	39 30.0 +59.0 146.2	39 19.6 +58.8 145.1
25°	40 58.6 +59.1 149.5	40 49.1 +59.0 148.3	40 39.2 +58.9 147.2	40 29.0 +58.8 146.0	40 18.4 +58.8 144.8
26°	41 57.7 +59.1 149.3	41 48.1 +59.0 148.1	41 38.1 +58.9 146.9	41 27.8 +58.9 145.7	41 17.2 +58.8 144.6
27°	42 56.8 +59.0 149.0	42 47.1 +58.9 147.8	42 37.0 +58.9 146.7	42 26.7 +58.8 145.5	42 16.0 +58.8 144.3
28°	43 55.8 +59.0 148.8	43 46.0 +58.9 147.6	43 35.9 +58.9 146.4	43 25.5 +58.8 145.2	43 14.8 +58.6 144.0
29°	44 54.8 +58.9 148.5	44 44.9 +58.9 147.3	44 34.8 +58.8 146.1	44 24.3 +58.7 144.9	44 13.4 +58.7 143.7

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	15 31.3 +59.3 148.7	15 21.6 +59.2 147.7	15 11.5 +59.2 146.7	15 01.2 +59.1 145.7	14 50.6 +59.1 144.7
1°	16 30.6 +59.2 148.6	16 20.8 +59.1 147.5	16 10.7 +59.1 146.5	16 00.3 +59.1 145.5	15 49.7 +59.0 144.5
2°	17 29.8 +59.2 148.4	17 19.9 +59.2 147.4	17 09.8 +59.1 146.3	16 59.4 +59.0 145.3	16 48.7 +59.0 144.3
3°	18 29.0 +59.2 148.2	18 19.1 +59.1 147.2	18 08.9 +59.1 146.2	17 58.4 +59.1 145.1	17 47.7 +59.0 144.1
4°	19 28.2 +59.2 148.1	19 18.2 +59.2 147.0	19 08.0 +59.1 146.0	18 57.5 +59.0 144.9	18 46.7 +59.0 143.9
5°	20 27.4 +59.1 147.9	20 17.4 +59.1 146.8	20 07.1 +59.1 145.8	19 56.5 +59.0 144.7	19 45.7 +58.9 143.7
6°	21 26.5 +59.2 147.7	21 16.5 +59.1 146.7	21 06.2 +59.0 145.6	20 55.5 +59.1 144.6	20 44.6 +59.0 143.5
7°	22 25.7 +59.1 147.5	22 15.6 +59.1 146.5	22 05.2 +59.1 145.4	21 54.6 +58.9 144.4	21 43.6 +59.0 143.3
8°	23 24.8 +59.2 147.3	23 14.7 +59.1 146.3	23 04.3 +59.0 145.2	22 53.5 +59.0 144.2	22 42.6 +58.9 143.1
9°	24 24.0 +59.1 147.2	24 13.8 +59.1 146.1	24 03.3 +59.0 145.0	23 52.5 +59.0 144.0	23 41.5 +58.9 142.9
10°	25 23.1 +59.1 147.0	25 12.9 +59.0 145.9	25 02.3 +59.0 144.8	24 51.5 +58.9 143.8	24 40.4 +58.9 142.7
11°	26 22.2 +59.1 146.8	26 11.9 +59.1 145.7	26 01.3 +59.0 144.6	25 50.4 +59.0 143.6	25 39.3 +58.9 142.5
12°	27 21.3 +59.1 146.6	27 11.0 +59.0 145.5	27 00.3 +59.0 144.4	26 49.4 +58.9 143.3	26 38.2 +58.8 142.3
13°	28 20.4 +59.0 146.4	28 10.0 +59.0 145.3	27 59.3 +58.9 144.2	27 48.3 +58.9 143.1	27 37.0 +58.9 142.1
14°	29 19.4 +59.1 146.2	29 09.0 +59.0 145.1	28 58.2 +59.0 144.0	28 47.2 +58.9 142.9	28 35.9 +58.8 141.8
15°	30 18.5 +59.0 146.0	30 08.0 +58.9 144.9	29 57.2 +58.9 143.8	29 46.1 +58.8 142.7	29 34.7 +58.8 141.6
16°	31 17.5 +59.0 145.8	31 06.9 +59.0 144.7	30 56.1 +58.8 143.6	30 44.9 +58.8 142.5	30 33.5 +58.7 141.4
17°	32 16.5 +59.0 145.6	32 05.9 +58.9 144.5	31 54.9 +58.9 143.3	31 43.7 +58.8 142.2	31 32.2 +58.8 141.1
18°	33 15.5 +58.9 145.3	33 04.8 +58.9 144.2	32 53.8 +58.8 143.1	32 42.5 +58.8 142.0	32 31.0 +58.7 140.9
19°	34 14.4 +59.0 145.1	34 03.7 +58.9 144.0	33 52.6 +58.9 142.9	33 41.3 +58.8 141.8	33 29.7 +58.7 140.7
20°	35 13.4 +58.9 144.9	35 02.6 +58.8 143.8	34 51.5 +58.7 142.6	34 40.1 +58.7 141.5	34 28.4 +58.6 140.4
21°	36 12.3 +58.8 144.7	36 01.4 +58.8 143.5	35 50.2 +58.8 142.4	35 38.8 +58.7 141.3	35 27.0 +58.6 140.1
22°	37 11.1 +58.9 144.4	37 00.2 +58.8 143.3	36 49.0 +58.7 142.1	36 37.5 +58.6 141.0	36 25.6 +58.6 139.9
23°	38 10.0 +58.8 144.2	37 59.0 +58.7 143.0	37 47.7 +58.7 141.9	37 36.1 +58.6 140.7	37 24.2 +58.6 139.6
24°	39 08.8 +58.8 143.9	38 57.7 +58.7 142.8	38 46.4 +58.6 141.6	38 34.7 +58.6 140.5	38 22.8 +58.5 139.3
25°	40 07.6 +58.7 143.7	39 56.4 +58.7 142.5	39 45.0 +58.6 141.3	39 33.3 +58.5 140.2	39 21.3 +58.4 139.0
26°	41 06.3 +58.7 143.4	40 55.1 +58.7 142.2	40 43.6 +58.6 141.1	40 31.8 +58.5 139.9	40 19.7 +58.5 138.8
27°	42 05.0 +58.7 143.1	41 53.8 +58.5 141.9	41 42.2 +58.5 140.8	41 30.3 +58.4 139.6	41 18.2 +58.3 138.5
28°	43 03.7 +58.6 142.8	42 52.3 +58.6 141.6	42 40.7 +58.5 140.5	42 28.7 +58.4 139.3	42 16.5 +58.3 138.1
29°	44 02.3 +58.6 142.5	43 50.9 +58.5 141.3	43 39.2 +58.4 140.2	43 27.1 +58.4 139.0	43 14.8 +58.3 137.8

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°	14 39.8 +59.0 143.6	14 28.7 +58.9 142.6	14 17.3 +58.8 141.6	14 05.6 +58.9 140.6	13 53.7 +58.8 139.6
1°	15 38.8 +58.9 143.4	15 27.6 +58.9 142.4	15 16.1 +58.9 141.4	15 04.5 +58.8 140.4	14 52.5 +58.8 139.4
2°	16 37.7 +59.0 143.3	16 26.5 +58.9 142.2	16 15.0 +58.9 141.2	16 03.3 +58.8 140.2	15 51.3 +58.7 139.2
3°	17 36.7 +58.9 143.1	17 25.4 +58.9 142.0	17 13.9 +58.8 141.0	17 02.1 +58.8 140.0	16 50.0 +58.8 139.0
4°	18 35.6 +59.0 142.9	18 24.3 +58.9 141.8	18 12.7 +58.8 140.8	18 00.9 +58.8 139.8	17 48.8 +58.7 138.7
5°	19 34.6 +58.9 142.7	19 23.2 +58.9 141.6	19 11.5 +58.9 140.6	18 59.7 +58.7 139.6	18 47.5 +58.7 138.5
6°	20 33.5 +58.9 142.5	20 22.1 +58.8 141.4	20 10.4 +58.8 140.4	19 58.4 +58.8 139.3	19 46.2 +58.7 138.3
7°	21 32.4 +58.9 142.3	21 20.9 +58.9 141.2	21 09.2 +58.8 140.2	20 57.2 +58.7 139.1	20 44.9 +58.7 138.1
8°	22 31.3 +58.9 142.1	22 19.8 +58.8 141.0	22 08.0 +58.7 140.0	21 55.9 +58.7 138.9	21 43.6 +58.6 137.9
9°	23 30.2 +58.8 141.8	23 18.6 +58.8 140.8	23 06.7 +58.8 139.7	22 54.6 +58.7 138.7	22 42.2 +58.7 137.6
10°	24 29.0 +58.9 141.6	24 17.4 +58.8 140.6	24 05.5 +58.7 139.5	23 53.3 +58.7 138.5	23 40.9 +58.6 137.4
11°	25 27.9 +58.8 141.4	25 16.2 +58.7 140.4	25 04.2 +58.7 139.3	24 52.0 +58.6 138.2	24 39.5 +58.6 137.2
12°	26 26.7 +58.8 141.2	26 14.9 +58.8 140.1	26 02.9 +58.7 139.1	25 50.6 +58.7 138.0	25 38.1 +58.6 136.9
13°	27 25.5 +58.8 141.0	27 13.7 +58.7 139.9	27 01.6 +58.7 138.8	26 49.3 +58.6 137.8	26 36.7 +58.5 136.7
14°	28 24.3 +58.7 140.7	28 12.4 +58.7 139.7	28 00.3 +58.6 138.6	27 47.9 +58.6 137.5	27 35.2 +58.6 136.5
15°	29 23.0 +58.8 140.5	29 11.1 +58.7 139.4	28 58.9 +58.6 138.4	28 46.5 +58.5 137.3	28 33.8 +58.5 136.2
16°	30 21.8 +58.7 140.3	30 09.8 +58.6 139.2	29 57.5 +58.6 138.1	29 45.0 +58.6 137.0	29 32.3 +58.4 135.9
17°	31 20.5 +58.7 140.0	31 08.4 +58.6 138.9	30 56.1 +58.6 137.9	30 43.6 +58.4 136.8	30 30.7 +58.5 135.7
18°	32 19.2 +58.6 139.8	32 07.0 +58.6 138.7	31 54.7 +58.5 137.6	31 42.0 +58.5 136.5	31 29.2 +58.4 135.4
19°	33 17.8 +58.6 139.5	33 05.6 +58.6 138.4	32 53.2 +58.5 137.3	32 40.5 +58.4 136.2	32 27.6 +58.3 135.2
20°	34 16.4 +58.6 139.3	34 04.2 +58.5 138.2	33 51.7 +58.5 137.1	33 38.9 +58.4 136.0	33 25.9 +58.4 134.9
21°	35 15.0 +58.6 139.0	35 02.7 +58.5 137.9	34 50.2 +58.4 136.8	34 37.3 +58.4 135.7	34 24.3 +58.2 134.6
22°	36 13.6 +58.5 138.8	36 01.2 +58.4 137.6	35 48.6 +58.4 136.5	35 35.7 +58.3 135.4	35 22.5 +58.3 134.3
23°	37 12.1 +58.5 138.5	36 59.6 +58.5 137.4	36 47.0 +58.3 136.2	36 34.0 +58.3 135.1	36 20.8 +58.2 134.0
24°	38 10.6 +58.4 138.2	37 58.1 +58.3 137.1	37 45.3 +58.3 135.9	37 32.3 +58.2 134.8	37 19.0 +58.1 133.7
25°	39 09.0 +58.4 137.9	38 56.4 +58.3 136.8	38 43.6 +58.2 135.6	38 30.5 +58.2 134.5	38 17.1 +58.2 133.4
26°	40 07.4 +58.3 137.6	39 54.7 +58.3 136.5	39 41.8 +58.2 135.3	39 28.7 +58.1 134.2	39 15.3 +58.0 133.1
27°	41 05.7 +58.3 137.3	40 53.0 +58.2 136.2	40 40.0 +58.2 135.0	40 26.8 +58.1 133.9	40 13.3 +58.0 132.7
28°	42 04.0 +58.2 137.0	41 51.2 +58.2 135.8	41 38.2 +58.1 134.7	41 24.9 +58.0 133.5	41 11.3 +57.9 132.4
29°	43 02.2 +58.2 136.7	42 49.4 +58.1 135.5	42 36.3 +58.0 134.3	42 22.9 +57.9 133.2	42 09.2 +57.9 132.1

Declination SAME name as Latitude

Latitude 72°

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°	13 41.6 +58.7 138.6	13 29.2 +58.7 137.6	13 16.6 +58.6 136.6	13 03.7 +58.6 135.6	12 50.6 +58.5 134.6
1°	14 40.3 +58.7 138.4	14 27.9 +58.6 137.4	14 15.2 +58.6 136.3	14 02.3 +58.5 135.3	13 49.1 +58.5 134.3
2°	15 39.0 +58.7 138.2	15 26.5 +58.7 137.1	15 13.8 +58.6 136.1	15 00.8 +58.6 135.1	14 47.6 +58.5 134.1
3°	16 37.7 +58.7 137.9	16 25.2 +58.6 136.9	16 12.4 +58.6 135.9	15 59.4 +58.5 134.9	15 46.1 +58.5 133.9
4°	17 36.4 +58.7 137.7	17 23.8 +58.6 136.7	17 11.0 +58.6 135.7	16 57.9 +58.5 134.7	16 44.6 +58.5 133.6
5°	18 35.1 +58.7 137.5	18 22.4 +58.7 136.5	18 09.6 +58.5 135.5	17 56.4 +58.5 134.4	17 43.1 +58.4 133.4
6°	19 33.8 +58.6 137.3	19 21.1 +58.5 136.2	19 08.1 +58.6 135.2	18 54.9 +58.5 134.2	18 41.5 +58.5 133.2
7°	20 32.4 +58.6 137.1	20 19.6 +58.6 136.0	20 06.7 +58.5 135.0	19 53.4 +58.5 134.0	19 40.0 +58.4 132.9
8°	21 31.0 +58.6 136.8	21 18.2 +58.6 135.8	21 05.2 +58.5 134.8	20 51.9 +58.4 133.7	20 38.4 +58.4 132.7
9°	22 29.6 +58.6 136.6	22 16.8 +58.5 135.6	22 03.7 +58.4 134.5	21 50.3 +58.4 133.5	21 36.8 +58.3 132.4
10°	23 28.2 +58.6 136.4	23 15.3 +58.5 135.3	23 02.1 +58.5 134.3	22 48.7 +58.4 133.2	22 35.1 +58.4 132.2
11°	24 26.8 +58.5 136.1	24 13.8 +58.5 135.1	24 00.6 +58.4 134.0	23 47.1 +58.4 133.0	23 33.5 +58.3 131.9
12°	25 25.3 +58.5 135.9	25 12.3 +58.5 134.8	24 59.0 +58.4 133.8	24 45.5 +58.4 132.7	24 31.8 +58.3 131.7
13°	26 23.8 +58.5 135.6	26 10.8 +58.4 134.6	25 57.4 +58.4 133.5	25 43.9 +58.3 132.5	25 30.1 +58.2 131.4
14°	27 22.3 +58.5 135.4	27 09.2 +58.4 134.3	26 55.8 +58.4 133.3	26 42.2 +58.3 132.2	26 28.3 +58.3 131.2
15°	28 20.8 +58.4 135.1	28 07.6 +58.4 134.1	27 54.2 +58.3 133.0	27 40.5 +58.2 131.9	27 26.6 +58.2 130.9
16°	29 19.2 +58.4 134.9	29 06.0 +58.3 133.8	28 52.5 +58.3 132.7	28 38.7 +58.3 131.7	28 24.8 +58.1 130.6
17°	30 17.6 +58.4 134.6	30 04.3 +58.3 133.5	29 50.8 +58.2 132.5	29 37.0 +58.2 131.4	29 22.9 +58.2 130.3
18°	31 16.0 +58.4 134.3	31 02.6 +58.3 133.3	30 49.0 +58.2 132.2	30 35.2 +58.1 131.1	30 21.1 +58.1 130.0
19°	32 14.4 +58.3 134.1	32 00.9 +58.3 133.0	31 47.2 +58.2 131.9	31 33.3 +58.1 130.8	31 19.2 +58.0 129.7
20°	33 12.7 +58.2 133.8	32 59.2 +58.2 132.7	32 45.4 +58.2 131.6	32 31.4 +58.1 130.5	32 17.2 +58.0 129.5
21°	34 10.9 +58.3 133.5	33 57.4 +58.1 132.4	33 43.6 +58.0 131.3	33 29.5 +58.0 130.2	33 15.2 +58.0 129.1
22°	35 09.2 +58.1 133.2	34 55.5 +58.1 132.1	34 41.6 +58.1 131.0	34 27.5 +58.0 129.9	34 13.2 +57.9 128.8
23°	36 07.3 +58.2 132.9	35 53.6 +58.1 131.8	35 39.7 +58.0 130.7	35 25.5 +58.0 129.6	35 11.1 +57.9 128.5
24°	37 05.5 +58.1 132.6	36 51.7 +58.0 131.5	36 37.7 +57.9 130.4	36 23.5 +57.8 129.3	36 09.0 +57.8 128.2
25°	38 03.6 +58.0 132.3	37 49.7 +58.0 131.2	37 35.6 +57.9 130.1	37 21.3 +57.9 129.0	37 06.8 +57.8 127.9
26°	39 01.6 +58.0 132.0	38 47.7 +57.9 130.8	38 33.5 +57.9 129.7	38 19.2 +57.7 128.6	38 04.6 +57.7 127.5
27°	39 59.6 +57.9 131.6	39 45.6 +57.8 130.5	39 31.4 +57.7 129.4	39 16.9 +57.7 128.3	39 02.3 +57.6 127.2
28°	40 57.5 +57.8 131.3	40 43.4 +57.8 130.2	40 29.1 +57.7 129.0	40 14.6 +57.7 127.9	39 59.9 +57.5 126.8
29°	41 55.3 +57.8 130.9	41 41.2 +57.7 129.8	41 26.8 +57.7 128.7	41 12.3 +57.5 127.6	40 57.4 +57.5 126.4

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°	12 37.3 +58.5 133.6	12 23.7 +58.5 132.6	12 10.0 +58.3 131.6	11 56.0 +58.3 130.6	11 41.8 +58.3 129.6
1°	13 35.8 +58.4 133.3	13 22.2 +58.4 132.3	13 08.3 +58.4 131.3	12 54.3 +58.3 130.3	12 40.1 +58.2 129.3
2°	14 34.2 +58.5 133.1	14 20.6 +58.4 132.1	14 06.7 +58.3 131.1	13 52.6 +58.3 130.1	13 38.3 +58.3 129.1
3°	15 32.7 +58.4 132.9	15 19.0 +58.3 131.9	15 05.0 +58.4 130.9	14 50.9 +58.3 129.8	14 36.6 +58.2 128.8
4°	16 31.1 +58.4 132.6	16 17.3 +58.4 131.6	16 03.4 +58.3 130.6	15 49.2 +58.2 129.6	15 34.8 +58.2 128.6
5°	17 29.5 +58.4 132.4	17 15.7 +58.3 131.4	17 01.7 +58.3 130.4	16 47.4 +58.3 129.4	16 33.0 +58.2 128.3
6°	18 27.9 +58.4 132.1	18 14.0 +58.4 131.1	18 00.0 +58.2 130.1	17 45.7 +58.2 129.1	17 31.2 +58.2 128.1
7°	19 26.3 +58.3 131.9	19 12.4 +58.3 130.9	18 58.2 +58.3 129.9	18 43.9 +58.2 128.8	18 29.4 +58.1 127.8
8°	20 24.6 +58.4 131.7	20 10.7 +58.2 130.6	19 56.5 +58.2 129.6	19 42.1 +58.2 128.6	19 27.5 +58.1 127.6
9°	21 23.0 +58.3 131.4	21 08.9 +58.3 130.4	20 54.7 +58.2 129.4	20 40.3 +58.1 128.3	20 25.6 +58.1 127.3
10°	22 21.3 +58.3 131.2	22 07.2 +58.2 130.1	21 52.9 +58.2 129.1	21 38.4 +58.2 128.1	21 23.7 +58.1 127.0
11°	23 19.6 +58.2 130.9	23 05.4 +58.2 129.9	22 51.1 +58.2 128.8	22 36.6 +58.1 127.8	22 21.8 +58.0 126.8
12°	24 17.8 +58.3 130.6	24 03.6 +58.2 129.6	23 49.3 +58.1 128.6	23 34.7 +58.0 127.5	23 19.8 +58.1 126.5
13°	25 16.1 +58.2 130.4	25 01.8 +58.2 129.3	24 47.4 +58.1 128.3	24 32.7 +58.1 127.2	24 17.9 +58.0 126.2
14°	26 14.3 +58.1 130.1	26 00.0 +58.1 129.1	25 45.5 +58.0 128.0	25 30.8 +58.0 127.0	25 15.9 +57.9 125.9
15°	27 12.4 +58.2 129.8	26 58.1 +58.1 128.8	26 43.5 +58.1 127.7	26 28.8 +57.9 126.7	26 13.8 +57.9 125.6
16°	28 10.6 +58.1 129.5	27 56.2 +58.0 128.5	27 41.6 +58.0 127.4	27 26.7 +58.0 126.4	27 11.7 +57.9 125.3
17°	29 08.7 +58.1 129.3	28 54.2 +58.1 128.2	28 39.6 +57.9 127.2	28 24.7 +57.9 126.1	28 09.6 +57.8 125.1
18°	30 06.8 +58.0 129.0	29 52.3 +57.9 127.9	29 37.5 +57.9 126.9	29 22.6 +57.8 125.8	29 07.4 +57.8 124.7
19°	31 04.8 +58.0 128.7	30 50.2 +58.0 127.6	30 35.4 +57.9 126.6	30 20.4 +57.9 125.5	30 05.2 +57.8 124.4
20°	32 02.8 +58.0 128.4	31 48.2 +57.9 127.3	31 33.3 +57.8 126.2	31 18.3 +57.7 125.2	31 03.0 +57.7 124.1
21°	33 00.8 +57.9 128.1	32 46.1 +57.8 127.0	32 31.1 +57.8 125.9	32 16.0 +57.7 124.9	32 00.7 +57.7 123.8
22°	33 58.7 +57.8 127.8	33 43.9 +57.8 126.7	33 28.9 +57.8 125.6	33 13.7 +57.7 124.5	32 58.4 +57.6 123.5
23°	34 56.5 +57.8 127.4	34 41.7 +57.7 126.4	34 26.7 +57.6 125.3	34 11.4 +57.6 124.2	33 56.0 +57.5 123.1
24°	35 54.3 +57.8 127.1	35 39.4 +57.7 126.0	35 24.3 +57.6 124.9	35 09.0 +57.6 123.9	34 53.5 +57.5 122.8
25°	36 52.1 +57.7 126.8	36 37.1 +57.6 125.7	36 21.9 +57.6 124.6	36 06.6 +57.5 123.5	35 51.0 +57.5 122.4
26°	37 49.8 +57.6 126.4	37 34.7 +57.6 125.3	37 19.5 +57.5 124.2	37 04.1 +57.4 123.2	36 48.5 +57.3 122.1
27°	38 47.4 +57.5 126.1	38 32.3 +57.5 125.0	38 17.0 +57.4 123.9	38 01.5 +57.4 122.8	37 45.8 +57.3 121.7
28°	39 44.9 +57.5 125.7	39 29.8 +57.4 124.6	39 14.4 +57.4 123.5	38 58.9 +57.2 122.4	38 43.1 +57.2 121.3
29°	40 42.4 +57.4 125.3	40 27.2 +57.3 124.2	40 11.8 +57.2 123.1	39 56.1 +57.3 122.0	39 40.3 +57.2 121.0

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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°	11 27.4 +58.2 128.6	11 12.8 +58.2 127.6	10 58.0 +58.2 126.6	10 43.1 +58.0 125.6	10 27.9 +58.0 124.6
1°	12 25.6 +58.2 128.3	12 11.0 +58.1 127.4	11 56.2 +58.1 126.4	11 41.1 +58.1 125.4	11 25.9 +58.0 124.4
2°	13 23.8 +58.2 128.1	13 09.1 +58.2 127.1	12 54.3 +58.1 126.1	12 39.2 +58.0 125.1	12 23.9 +58.0 124.1
3°	14 22.0 +58.2 127.8	14 07.3 +58.1 126.8	13 52.4 +58.0 125.8	13 37.2 +58.1 124.9	13 21.9 +58.0 123.9
4°	15 20.2 +58.2 127.6	15 05.4 +58.1 126.6	14 50.4 +58.1 125.6	14 35.3 +58.0 124.6	14 19.9 +58.0 123.6
5°	16 18.4 +58.1 127.3	16 03.5 +58.1 126.3	15 48.5 +58.0 125.3	15 33.3 +58.0 124.3	15 17.9 +57.9 123.3
6°	17 16.5 +58.1 127.1	17 01.6 +58.1 126.1	16 46.5 +58.0 125.1	16 31.3 +57.9 124.1	16 15.8 +57.9 123.1
7°	18 14.6 +58.1 126.8	17 59.7 +58.0 125.8	17 44.5 +58.0 124.8	17 29.2 +58.0 123.8	17 13.7 +57.9 122.8
8°	19 12.7 +58.1 126.6	18 57.7 +58.0 125.5	18 42.5 +58.0 124.5	18 27.2 +57.9 123.5	18 11.6 +57.9 122.5
9°	20 10.8 +58.0 126.3	19 55.7 +58.0 125.3	19 40.5 +58.0 124.3	19 25.1 +57.9 123.2	19 09.5 +57.8 122.2
10°	21 08.8 +58.0 126.0	20 53.7 +58.0 125.0	20 38.5 +57.9 124.0	20 23.0 +57.9 123.0	20 07.3 +57.9 121.9
11°	22 06.8 +58.0 125.7	21 51.7 +57.9 124.7	21 36.4 +57.9 123.7	21 20.9 +57.8 122.7	21 05.2 +57.8 121.7
12°	23 04.8 +58.0 125.5	22 49.6 +58.0 124.4	22 34.3 +57.8 123.4	22 18.7 +57.8 122.4	22 03.0 +57.7 121.4
13°	24 02.8 +57.9 125.2	23 47.6 +57.8 124.2	23 32.1 +57.9 123.1	23 16.5 +57.8 122.1	23 00.7 +57.7 121.1
14°	25 00.7 +57.9 124.9	24 45.4 +57.9 123.9	24 30.0 +57.7 122.8	24 14.3 +57.7 121.8	23 58.4 +57.7 120.8
15°	25 58.6 +57.9 124.6	25 43.3 +57.8 123.6	25 27.7 +57.8 122.5	25 12.0 +57.7 121.5	24 56.1 +57.7 120.5
16°	26 56.5 +57.8 124.3	26 41.1 +57.8 123.3	26 25.5 +57.7 122.2	26 09.7 +57.7 121.2	25 53.8 +57.6 120.2
17°	27 54.3 +57.8 124.0	27 38.9 +57.7 123.0	27 23.2 +57.7 121.9	27 07.4 +57.6 120.9	26 51.4 +57.6 119.9
18°	28 52.1 +57.8 123.7	28 36.6 +57.7 122.7	28 20.9 +57.6 121.6	28 05.0 +57.6 120.6	27 49.0 +57.5 119.5
19°	29 49.9 +57.7 123.4	29 34.3 +57.6 122.3	29 18.5 +57.6 121.3	29 02.6 +57.5 120.3	28 46.5 +57.5 119.2
20°	30 47.6 +57.6 123.1	30 31.9 +57.6 122.0	30 16.1 +57.6 121.0	30 00.1 +57.5 119.9	29 44.0 +57.4 118.9
21°	31 45.2 +57.6 122.7	31 29.5 +57.6 121.7	31 13.7 +57.5 120.6	30 57.6 +57.5 119.6	30 41.4 +57.4 118.6
22°	32 42.8 +57.6 122.4	32 27.1 +57.5 121.4	32 11.2 +57.4 120.3	31 55.1 +57.3 119.3	31 38.8 +57.3 118.2
23°	33 40.4 +57.5 122.1	33 24.6 +57.4 121.0	33 08.6 +57.4 120.0	32 52.4 +57.4 118.9	32 36.1 +57.3 117.9
24°	34 37.9 +57.4 121.7	34 22.0 +57.4 120.7	34 06.0 +57.3 119.6	33 49.8 +57.2 118.6	33 33.4 +57.2 117.5
25°	35 35.3 +57.4 121.4	35 19.4 +57.3 120.3	35 03.3 +57.2 119.3	34 47.0 +57.2 118.2	34 30.6 +57.1 117.2
26°	36 32.7 +57.3 121.0	36 16.7 +57.2 120.0	36 00.5 +57.2 118.9	35 44.2 +57.1 117.8	35 27.7 +57.1 116.8
27°	37 30.0 +57.2 120.6	37 13.9 +57.2 119.6	36 57.7 +57.1 118.5	36 41.3 +57.1 117.5	36 24.8 +57.0 116.4
28°	38 27.2 +57.1 120.3	38 11.1 +57.1 119.2	37 54.8 +57.1 118.1	37 38.4 +57.0 117.1	37 21.8 +56.9 116.0
29°	39 24.3 +57.1 119.9	39 08.2 +57.0 118.8	38 51.9 +56.9 117.7	38 35.4 +56.9 116.7	38 18.7 +56.9 115.6

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°	10 12.6 +57.9 123.7	9 57.0 +58.0 122.7	9 41.3 +57.9 121.7	9 25.5 +57.8 120.7	9 09.5 +57.8 119.7
1°	11 10.5 +58.0 123.4	10 55.0 +57.9 122.4	10 39.2 +57.9 121.4	10 23.3 +57.9 120.5	10 07.3 +57.7 119.5
2°	12 08.5 +57.9 123.1	11 52.9 +57.9 122.1	11 37.1 +57.9 121.2	11 21.2 +57.8 120.2	11 05.0 +57.8 119.2
3°	13 06.4 +58.0 122.9	12 50.8 +57.9 121.9	12 35.0 +57.8 120.9	12 19.0 +57.8 119.9	12 02.8 +57.8 118.9
4°	14 04.4 +57.9 122.6	13 48.7 +57.8 121.6	13 32.8 +57.8 120.6	13 16.8 +57.7 119.6	13 00.6 +57.7 118.6
5°	15 02.3 +57.9 122.3	14 46.5 +57.9 121.3	14 30.6 +57.8 120.3	14 14.5 +57.8 119.4	13 58.3 +57.7 118.4
6°	16 00.2 +57.8 122.1	15 44.4 +57.8 121.1	15 28.4 +57.8 120.1	15 12.3 +57.7 119.1	14 56.0 +57.7 118.1
7°	16 58.0 +57.9 121.8	16 42.2 +57.8 120.8	16 26.2 +57.7 119.8	16 10.0 +57.7 118.8	15 53.7 +57.7 117.8
8°	17 55.9 +57.8 121.5	17 40.0 +57.8 120.5	17 23.9 +57.8 119.5	17 07.7 +57.7 118.5	16 51.4 +57.6 117.5
9°	18 53.7 +57.8 121.2	18 37.8 +57.7 120.2	18 21.7 +57.7 119.2	18 05.4 +57.7 118.2	17 49.0 +57.6 117.2
10°	19 51.5 +57.8 120.9	19 35.5 +57.8 119.9	19 19.4 +57.7 118.9	19 03.1 +57.6 117.9	18 46.6 +57.6 116.9
11°	20 49.3 +57.7 120.7	20 33.3 +57.7 119.6	20 17.1 +57.6 118.6	20 00.7 +57.6 117.6	19 44.2 +57.6 116.6
12°	21 47.0 +57.7 120.4	21 31.0 +57.6 119.3	21 14.7 +57.6 118.3	20 58.3 +57.6 117.3	20 41.8 +57.5 116.3
13°	22 44.7 +57.7 120.1	22 28.6 +57.7 119.0	22 12.3 +57.6 118.0	21 55.9 +57.5 117.0	21 39.3 +57.5 116.0
14°	23 42.4 +57.7 119.8	23 26.3 +57.5 118.7	23 09.9 +57.6 117.7	22 53.4 +57.5 116.7	22 36.8 +57.5 115.7
15°	24 40.1 +57.6 119.5	24 23.8 +57.6 118.4	24 07.5 +57.5 117.4	23 50.9 +57.5 116.4	23 34.3 +57.4 115.4
16°	25 37.7 +57.5 119.2	25 21.4 +57.5 118.1	25 05.0 +57.4 117.1	24 48.4 +57.4 116.1	24 31.7 +57.4 115.1
17°	26 35.2 +57.6 118.8	26 18.9 +57.5 117.8	26 02.4 +57.5 116.8	25 45.8 +57.4 115.8	25 29.1 +57.3 114.8
18°	27 32.8 +57.4 118.5	27 16.4 +57.4 117.5	26 59.9 +57.4 116.5	26 43.2 +57.3 115.4	26 26.4 +57.3 114.4
19°	28 30.2 +57.5 118.2	28 13.8 +57.4 117.2	27 57.3 +57.3 116.1	27 40.5 +57.3 115.1	27 23.7 +57.2 114.1
20°	29 27.7 +57.4 117.9	29 11.2 +57.3 116.8	28 54.6 +57.3 115.8	28 37.8 +57.3 114.8	28 20.9 +57.2 113.8
21°	30 25.1 +57.3 117.5	30 08.5 +57.3 116.5	29 51.9 +57.2 115.5	29 35.1 +57.1 114.4	29 18.1 +57.2 113.4
22°	31 22.4 +57.3 117.2	31 05.8 +57.2 116.1	30 49.1 +57.2 115.1	30 32.2 +57.2 114.1	30 15.3 +57.0 113.1
23°	32 19.7 +57.2 116.8	32 03.0 +57.2 115.8	31 46.3 +57.1 114.8	31 29.4 +57.0 113.7	31 12.3 +57.1 112.7
24°	33 16.9 +57.1 116.5	33 00.2 +57.1 115.4	32 43.4 +57.0 114.4	32 26.4 +57.0 113.4	32 09.4 +56.9 112.3
25°	34 14.0 +57.1 116.1	33 57.3 +57.0 115.1	33 40.4 +57.0 114.0	33 23.4 +57.0 113.0	33 06.3 +56.9 112.0
26°	35 11.1 +57.0 115.7	34 54.3 +57.0 114.7	34 37.4 +56.9 113.6	34 20.4 +56.8 112.6	34 03.2 +56.8 111.6
27°	36 08.1 +57.0 115.3	35 51.3 +56.9 114.3	35 34.3 +56.9 113.3	35 17.2 +56.8 112.2	35 00.0 +56.7 111.2
28°	37 05.1 +56.8 115.0	36 48.2 +56.8 113.9	36 31.2 +56.7 112.9	36 14.0 +56.7 111.8	35 56.7 +56.7 110.8
29°	38 01.9 +56.8 114.6	37 45.0 +56.7 113.5	37 27.9 +56.7 112.5	37 10.7 +56.6 111.4	36 53.4 +56.6 110.4

Declination SAME name as Latitude

Latitude 72°

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°	8 53.3 +57.7 118.8	8 37.0 +57.7 117.8	8 20.5 +57.7 116.8	8 03.9 +57.6 115.9	7 47.1 +57.6 114.9
1°	9 51.0 +57.8 118.5	9 34.7 +57.7 117.5	9 18.2 +57.6 116.5	9 01.5 +57.6 115.6	8 44.7 +57.6 114.6
2°	10 48.8 +57.7 118.2	10 32.4 +57.7 117.2	10 15.8 +57.7 116.3	9 59.1 +57.6 115.3	9 42.3 +57.6 114.3
3°	11 46.5 +57.7 117.9	11 30.1 +57.6 117.0	11 13.5 +57.6 116.0	10 56.7 +57.6 115.0	10 39.9 +57.5 114.0
4°	12 44.2 +57.7 117.7	12 27.7 +57.7 116.7	12 11.1 +57.6 115.7	11 54.3 +57.6 114.7	11 37.4 +57.5 113.7
5°	13 41.9 +57.7 117.4	13 25.4 +57.6 116.4	13 08.7 +57.6 115.4	12 51.9 +57.5 114.4	12 34.9 +57.5 113.5
6°	14 39.6 +57.6 117.1	14 23.0 +57.6 116.1	14 06.3 +57.5 115.1	13 49.4 +57.5 114.1	13 32.4 +57.5 113.2
7°	15 37.2 +57.6 116.8	15 20.6 +57.6 115.8	15 03.8 +57.6 114.8	14 46.9 +57.6 113.8	14 29.9 +57.5 112.9
8°	16 34.8 +57.6 116.5	16 18.2 +57.5 115.5	16 01.4 +57.5 114.5	15 44.5 +57.4 113.5	15 27.4 +57.4 112.6
9°	17 32.4 +57.6 116.2	17 15.7 +57.6 115.2	16 58.9 +57.5 114.2	16 41.9 +57.5 113.3	16 24.8 +57.5 112.3
10°	18 30.0 +57.6 115.9	18 13.3 +57.5 114.9	17 56.4 +57.5 113.9	17 39.4 +57.4 112.9	17 22.3 +57.3 112.0
11°	19 27.6 +57.5 115.6	19 10.8 +57.5 114.6	18 53.9 +57.4 113.6	18 36.8 +57.4 112.6	18 19.6 +57.4 111.7
12°	20 25.1 +57.5 115.3	20 08.3 +57.4 114.3	19 51.3 +57.4 113.3	19 34.2 +57.4 112.3	19 17.0 +57.3 111.3
13°	21 22.6 +57.4 115.0	21 05.7 +57.4 114.0	20 48.7 +57.4 113.0	20 31.6 +57.3 112.0	20 14.3 +57.3 111.0
14°	22 20.0 +57.4 114.7	22 03.1 +57.4 113.7	21 46.1 +57.3 112.7	21 28.9 +57.3 111.7	21 11.6 +57.3 110.7
15°	23 17.4 +57.4 114.4	23 00.5 +57.3 113.4	22 43.4 +57.3 112.4	22 26.2 +57.3 111.4	22 08.9 +57.2 110.4
16°	24 14.8 +57.4 114.1	23 57.8 +57.3 113.1	23 40.7 +57.3 112.1	23 23.5 +57.2 111.1	23 06.1 +57.2 110.1
17°	25 12.2 +57.2 113.7	24 55.1 +57.3 112.7	24 38.0 +57.2 111.7	24 20.7 +57.1 110.7	24 03.3 +57.1 109.7
18°	26 09.4 +57.3 113.4	25 52.4 +57.2 112.4	25 35.2 +57.1 111.4	25 17.8 +57.2 110.4	25 00.4 +57.1 109.4
19°	27 06.7 +57.2 113.1	26 49.6 +57.1 112.1	26 32.3 +57.1 111.1	26 15.0 +57.0 110.1	25 57.5 +57.0 109.1
20°	28 03.9 +57.1 112.7	27 46.7 +57.1 111.7	27 29.4 +57.1 110.7	27 12.0 +57.1 109.7	26 54.5 +57.0 108.7
21°	29 01.0 +57.1 112.4	28 43.8 +57.1 111.4	28 26.5 +57.0 110.4	28 09.1 +56.9 109.4	27 51.5 +57.0 108.4
22°	29 58.1 +57.1 112.0	29 40.9 +57.0 111.0	29 23.5 +57.0 110.0	29 06.0 +57.0 109.0	28 48.5 +56.8 108.0
23°	30 55.2 +56.9 111.7	30 37.9 +56.9 110.7	30 20.5 +56.9 109.7	30 03.0 +56.8 108.6	29 45.3 +56.9 107.6
24°	31 52.1 +57.0 111.3	31 34.8 +56.9 110.3	31 17.4 +56.8 109.3	30 59.8 +56.8 108.3	30 42.2 +56.7 107.3
25°	32 49.1 +56.8 110.9	32 31.7 +56.8 109.9	32 14.2 +56.8 108.9	31 56.6 +56.7 107.9	31 38.9 +56.7 106.9
26°	33 45.9 +56.8 110.6	33 28.5 +56.7 109.5	33 11.0 +56.6 108.5	32 53.3 +56.7 107.5	32 35.6 +56.6 106.5
27°	34 42.7 +56.7 110.2	34 25.2 +56.7 109.1	34 07.6 +56.6 108.1	33 50.0 +56.5 107.1	33 32.2 +56.5 106.1
28°	35 39.4 +56.6 109.8	35 21.9 +56.5 108.7	35 04.2 +56.6 107.7	34 46.5 +56.5 106.7	34 28.7 +56.5 105.7
29°	36 36.0 +56.5 109.4	36 18.4 +56.5 108.3	36 00.8 +56.4 107.3	35 43.0 +56.4 106.3	35 25.2 +56.3 105.3

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°	7 30.2 +57.6 113.9	7 13.2 +57.5 112.9	6 56.1 +57.5 112.0	6 38.8 +57.5 111.0	6 21.5 +57.4 110.1
1°	8 27.8 +57.5 113.6	8 10.7 +57.5 112.7	7 53.6 +57.4 111.7	7 36.3 +57.4 110.7	7 18.9 +57.4 109.8
2°	9 25.3 +57.6 113.3	9 08.2 +57.5 112.4	8 51.0 +57.5 111.4	8 33.7 +57.4 110.4	8 16.3 +57.4 109.5
3°	10 22.9 +57.5 113.1	10 05.7 +57.5 112.1	9 48.5 +57.4 111.1	9 31.1 +57.4 110.1	9 13.7 +57.4 109.2
4°	11 20.4 +57.5 112.8	11 03.2 +57.5 111.8	10 45.9 +57.5 110.8	10 28.5 +57.4 109.8	10 11.1 +57.3 108.9
5°	12 17.9 +57.4 112.5	12 00.7 +57.4 111.5	11 43.4 +57.4 110.5	11 25.9 +57.4 109.5	11 08.4 +57.4 108.6
6°	13 15.3 +57.5 112.2	12 58.1 +57.4 111.2	12 40.8 +57.3 110.2	12 23.3 +57.4 109.3	12 05.8 +57.3 108.3
7°	14 12.8 +57.4 111.9	13 55.5 +57.4 110.9	13 38.1 +57.4 109.9	13 20.7 +57.3 108.9	13 03.1 +57.3 108.0
8°	15 10.2 +57.4 111.6	14 52.9 +57.4 110.6	14 35.5 +57.3 109.6	14 18.0 +57.3 108.6	14 00.4 +57.2 107.7
9°	16 07.6 +57.4 111.3	15 50.3 +57.3 110.3	15 32.8 +57.4 109.3	15 15.3 +57.3 108.3	14 57.6 +57.3 107.4
10°	17 05.0 +57.3 111.0	16 47.6 +57.3 110.0	16 30.2 +57.2 109.0	16 12.6 +57.2 108.0	15 54.9 +57.2 107.1
11°	18 02.3 +57.4 110.7	17 44.9 +57.3 109.7	17 27.4 +57.3 108.7	17 09.8 +57.2 107.7	16 52.1 +57.2 106.7
12°	18 59.7 +57.3 110.4	18 42.2 +57.3 109.4	18 24.7 +57.2 108.4	18 07.0 +57.2 107.4	17 49.3 +57.2 106.4
13°	19 57.0 +57.2 110.0	19 39.5 +57.2 109.1	19 21.9 +57.2 108.1	19 04.2 +57.2 107.1	18 46.5 +57.1 106.1
14°	20 54.2 +57.2 109.7	20 36.7 +57.2 108.7	20 19.1 +57.2 107.7	20 01.4 +57.1 106.8	19 43.6 +57.1 105.8
15°	21 51.4 +57.2 109.4	21 33.9 +57.2 108.4	21 16.3 +57.1 107.4	20 58.5 +57.1 106.4	20 40.7 +57.1 105.4
16°	22 48.6 +57.2 109.1	22 31.1 +57.1 108.1	22 13.4 +57.1 107.1	21 55.6 +57.1 106.1	21 37.8 +57.0 105.1
17°	23 45.8 +57.1 108.7	23 28.2 +57.0 107.7	23 10.5 +57.0 106.8	22 52.7 +57.0 105.8	22 34.8 +56.9 104.8
18°	24 42.9 +57.0 108.4	24 25.2 +57.0 107.4	24 07.5 +57.0 106.4	23 49.7 +56.9 105.4	23 31.7 +57.0 104.4
19°	25 39.9 +57.0 108.1	25 22.2 +57.0 107.1	25 04.5 +56.9 106.1	24 46.6 +56.9 105.1	24 28.7 +56.9 104.1
20°	26 36.9 +57.0 107.7	26 19.2 +56.9 106.7	26 01.4 +56.9 105.7	25 43.5 +56.9 104.7	25 25.6 +56.8 103.7
21°	27 33.9 +56.9 107.4	27 16.1 +56.9 106.4	26 58.3 +56.8 105.4	26 40.4 +56.8 104.4	26 22.4 +56.8 103.4
22°	28 30.8 +56.8 107.0	28 13.0 +56.8 106.0	27 55.1 +56.8 105.0	27 37.2 +56.7 104.0	27 19.2 +56.7 103.0
23°	29 27.6 +56.8 106.6	29 09.8 +56.8 105.6	28 51.9 +56.7 104.6	28 33.9 +56.7 103.6	28 15.9 +56.6 102.7
24°	30 24.4 +56.7 106.3	30 06.6 +56.6 105.3	29 48.6 +56.7 104.3	29 30.6 +56.6 103.3	29 12.5 +56.6 102.3
25°	31 21.1 +56.7 105.9	31 03.2 +56.7 104.9	30 45.3 +56.6 103.9	30 27.2 +56.6 102.9	30 09.1 +56.6 101.9
26°	32 17.8 +56.5 105.5	31 59.9 +56.5 104.5	31 41.9 +56.5 103.5	31 23.8 +56.5 102.5	31 05.7 +56.4 101.5
27°	33 14.3 +56.5 105.1	32 56.4 +56.5 104.1	32 38.4 +56.4 103.1	32 20.3 +56.4 102.1	32 02.1 +56.4 101.1
28°	34 10.8 +56.5 104.7	33 52.9 +56.3 103.7	33 34.8 +56.4 102.7	33 16.7 +56.3 101.7	32 58.5 +56.3 100.7
29°	35 07.3 +56.3 104.3	34 49.2 +56.3 103.3	34 31.2 +56.2 102.3	34 13.0 +56.3 101.3	33 54.8 +56.2 100.3

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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°	6 04.0 +57.4 109.1	5 46.4 +57.4 108.1	5 28.8 +57.3 107.2	5 11.0 +57.3 106.2	4 53.2 +57.2 105.3
1°	7 01.4 +57.4 108.8	6 43.8 +57.3 107.8	6 26.1 +57.3 106.9	6 08.3 +57.3 105.9	5 50.4 +57.3 105.0
2°	7 58.8 +57.3 108.5	7 41.1 +57.4 107.5	7 23.4 +57.3 106.6	7 05.6 +57.3 105.6	6 47.7 +57.2 104.7
3°	8 56.1 +57.4 108.2	8 38.5 +57.3 107.2	8 20.7 +57.3 106.3	8 02.9 +57.2 105.3	7 44.9 +57.3 104.4
4°	9 53.5 +57.3 107.9	9 35.8 +57.3 106.9	9 18.0 +57.3 106.0	9 00.1 +57.3 105.0	8 42.2 +57.2 104.0
5°	10 50.8 +57.3 107.6	10 33.1 +57.2 106.6	10 15.3 +57.2 105.7	9 57.4 +57.2 104.7	9 39.4 +57.2 103.7
6°	11 48.1 +57.3 107.3	11 30.3 +57.3 106.3	11 12.5 +57.2 105.4	10 54.6 +57.2 104.4	10 36.6 +57.2 103.4
7°	12 45.4 +57.3 107.0	12 27.6 +57.3 106.0	12 09.7 +57.3 105.1	11 51.8 +57.2 104.1	11 33.8 +57.1 103.1
8°	13 42.7 +57.2 106.7	13 24.9 +57.2 105.7	13 07.0 +57.2 104.8	12 49.0 +57.2 103.8	12 30.9 +57.2 102.8
9°	14 39.9 +57.2 106.4	14 22.1 +57.2 105.4	14 04.2 +57.1 104.4	13 46.2 +57.1 103.5	13 28.1 +57.1 102.5
10°	15 37.1 +57.2 106.1	15 19.3 +57.1 105.1	15 01.3 +57.2 104.1	14 43.3 +57.1 103.2	14 25.2 +57.1 102.2
11°	16 34.3 +57.2 105.8	16 16.4 +57.2 104.8	15 58.5 +57.1 103.8	15 40.4 +57.1 102.8	15 22.3 +57.1 101.9
12°	17 31.5 +57.1 105.4	17 13.6 +57.1 104.5	16 55.6 +57.1 103.5	16 37.5 +57.1 102.5	16 19.4 +57.0 101.6
13°	18 28.6 +57.1 105.1	18 10.7 +57.1 104.1	17 52.7 +57.0 103.2	17 34.6 +57.0 102.2	17 16.4 +57.0 101.2
14°	19 25.7 +57.1 104.8	19 07.8 +57.0 103.8	18 49.7 +57.0 102.8	18 31.6 +57.0 101.9	18 13.4 +57.0 100.9
15°	20 22.8 +57.0 104.5	20 04.8 +57.0 103.5	19 46.7 +57.0 102.5	19 28.6 +56.9 101.5	19 10.4 +56.9 100.6
16°	21 19.8 +57.0 104.1	21 01.8 +57.0 103.2	20 43.7 +56.9 102.2	20 25.5 +57.0 101.2	20 07.3 +56.9 100.2
17°	22 16.8 +57.0 103.8	21 58.8 +56.9 102.8	21 40.6 +56.9 101.8	21 22.5 +56.8 100.9	21 04.2 +56.9 99.9
18°	23 13.8 +56.9 103.5	22 55.7 +56.9 102.5	22 37.5 +56.9 101.5	22 19.3 +56.9 100.5	22 01.1 +56.8 99.6
19°	24 10.7 +56.8 103.1	23 52.6 +56.8 102.1	23 34.4 +56.8 101.2	23 16.2 +56.8 100.2	22 57.9 +56.8 99.2
20°	25 07.5 +56.8 102.8	24 49.4 +56.8 101.8	24 31.2 +56.8 100.8	24 13.0 +56.7 99.8	23 54.7 +56.7 98.9
21°	26 04.3 +56.8 102.4	25 46.2 +56.7 101.4	25 28.0 +56.7 100.4	25 09.7 +56.7 99.5	24 51.4 +56.7 98.5
22°	27 01.1 +56.7 102.0	26 42.9 +56.7 101.1	26 24.7 +56.6 100.1	26 06.4 +56.6 99.1	25 48.1 +56.6 98.1
23°	27 57.8 +56.6 101.7	27 39.6 +56.6 100.7	27 21.3 +56.6 99.7	27 03.0 +56.6 98.7	26 44.7 +56.5 97.8
24°	28 54.4 +56.6 101.3	28 36.2 +56.5 100.3	28 17.9 +56.5 99.3	27 59.6 +56.5 98.4	27 41.2 +56.5 97.4
25°	29 51.0 +56.5 100.9	29 32.7 +56.5 99.9	29 14.4 +56.5 99.0	28 56.1 +56.4 98.0	28 37.7 +56.4 97.0
26°	30 47.5 +56.4 100.5	30 29.2 +56.4 99.5	30 10.9 +56.4 98.6	29 52.5 +56.4 97.6	29 34.1 +56.4 96.6
27°	31 43.9 +56.4 100.1	31 25.6 +56.4 99.1	31 07.3 +56.3 98.2	30 48.9 +56.3 97.2	30 30.5 +56.3 96.2
28°	32 40.3 +56.2 99.7	32 22.0 +56.2 98.7	32 03.6 +56.2 97.8	31 45.2 +56.2 96.8	31 26.8 +56.2 95.8
29°	33 36.5 +56.2 99.3	33 18.2 +56.2 98.3	32 59.8 +56.2 97.3	32 41.4 +56.2 96.4	32 23.0 +56.1 95.4

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°	4 35.2 +57.3 104.3	4 17.2 +57.3 103.3	3 59.2 +57.2 102.4	3 41.0 +57.2 101.4	3 22.8 +57.2 100.5
1°	5 32.5 +57.2 104.0	5 14.5 +57.2 103.0	4 56.4 +57.2 102.1	4 38.2 +57.2 101.1	4 20.0 +57.1 100.2
2°	6 29.7 +57.2 103.7	6 11.7 +57.2 102.7	5 53.6 +57.1 101.8	5 35.4 +57.1 100.8	5 17.1 +57.2 99.9
3°	7 26.9 +57.3 103.4	7 08.9 +57.2 102.4	6 50.7 +57.2 101.5	6 32.5 +57.2 100.5	6 14.3 +57.1 99.6
4°	8 24.2 +57.1 103.1	8 06.1 +57.1 102.1	7 47.9 +57.2 101.2	7 29.7 +57.1 100.2	7 11.4 +57.1 99.2
5°	9 21.3 +57.2 102.8	9 03.2 +57.2 101.8	8 45.1 +57.1 100.9	8 26.8 +57.1 99.9	8 08.5 +57.1 98.9
6°	10 18.5 +57.2 102.5	10 00.4 +57.1 101.5	9 42.2 +57.1 100.5	9 23.9 +57.1 99.6	9 05.6 +57.1 98.6
7°	11 15.7 +57.1 102.2	10 57.5 +57.2 101.2	10 39.3 +57.1 100.2	10 21.0 +57.1 99.3	10 02.7 +57.1 98.3
8°	12 12.8 +57.2 101.9	11 54.7 +57.1 100.9	11 36.4 +57.1 99.9	11 18.1 +57.1 99.0	10 59.8 +57.0 98.0
9°	13 10.0 +57.1 101.5	12 51.8 +57.0 100.6	12 33.5 +57.1 99.6	12 15.2 +57.0 98.6	11 56.8 +57.1 97.7
10°	14 07.1 +57.0 101.2	13 48.8 +57.1 100.3	13 30.6 +57.0 99.3	13 12.2 +57.1 98.3	12 53.9 +57.0 97.4
11°	15 04.1 +57.1 100.9	14 45.9 +57.0 99.9	14 27.6 +57.0 99.0	14 09.3 +57.0 98.0	13 50.9 +57.0 97.1
12°	16 01.2 +57.0 100.6	15 42.9 +57.0 99.6	15 24.6 +57.0 98.7	15 06.3 +56.9 97.7	14 47.9 +56.9 96.7
13°	16 58.2 +57.0 100.3	16 39.9 +57.0 99.3	16 21.6 +57.0 98.3	16 03.2 +57.0 97.4	15 44.8 +57.0 96.4
14°	17 55.2 +56.9 99.9	17 36.9 +56.9 99.0	17 18.6 +56.9 98.0	17 00.2 +56.9 97.0	16 41.8 +56.9 96.1
15°	18 52.1 +57.0 99.6	18 33.8 +56.9 98.6	18 15.5 +56.9 97.7	17 57.1 +56.9 96.7	17 38.7 +56.8 95.7
16°	19 49.1 +56.8 99.3	19 30.7 +56.9 98.3	19 12.4 +56.8 97.3	18 54.0 +56.8 96.4	18 35.5 +56.8 95.4
17°	20 45.9 +56.9 98.9	20 27.6 +56.8 98.0	20 09.2 +56.8 97.0	19 50.8 +56.8 96.0	19 32.3 +56.8 95.1
18°	21 42.8 +56.8 98.6	21 24.4 +56.8 97.6	21 06.0 +56.8 96.6	20 47.6 +56.7 95.7	20 29.1 +56.8 94.7
19°	22 39.6 +56.7 98.2	22 21.2 +56.7 97.3	22 02.8 +56.7 96.3	21 44.3 +56.8 95.3	21 25.9 +56.7 94.4
20°	23 36.3 +56.7 97.9	23 17.9 +56.7 96.9	22 59.5 +56.7 95.9	22 41.1 +56.6 95.0	22 22.6 +56.6 94.0
21°	24 33.0 +56.7 97.5	24 14.6 +56.7 96.6	23 56.2 +56.6 95.6	23 37.7 +56.6 94.6	23 19.2 +56.6 93.7
22°	25 29.7 +56.6 97.2	25 11.3 +56.6 96.2	24 52.8 +56.6 95.2	24 34.3 +56.6 94.3	24 15.8 +56.6 93.3
23°	26 26.3 +56.5 96.8	26 07.9 +56.5 95.8	25 49.4 +56.5 94.9	25 30.9 +56.5 93.9	25 12.4 +56.5 92.9
24°	27 22.8 +56.5 96.4	27 04.4 +56.4 95.4	26 45.9 +56.5 94.5	26 27.4 +56.5 93.5	26 08.9 +56.4 92.6
25°	28 19.3 +56.4 96.0	28 00.8 +56.4 95.1	27 42.4 +56.4 94.1	27 23.9 +56.3 93.1	27 05.3 +56.4 92.2
26°	29 15.7 +56.4 95.6	28 57.2 +56.4 94.7	28 38.8 +56.3 93.7	28 20.2 +56.4 92.8	28 01.7 +56.3 91.8
27°	30 12.1 +56.2 95.2	29 53.6 +56.2 94.3	29 35.1 +56.2 93.3	29 16.6 +56.2 92.4	28 58.0 +56.3 91.4
28°	31 08.3 +56.2 94.8	30 49.8 +56.2 93.9	30 31.3 +56.2 92.9	30 12.8 +56.2 92.0	29 54.3 +56.1 91.0
29°	32 04.5 +56.1 94.4	31 46.0 +56.1 93.5	31 27.5 +56.1 92.5	31 09.0 +56.1 91.5	30 50.4 +56.1 90.6

Declination SAME name as Latitude

Latitude 72°

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 04.6 +57.1 99.5	2 46.2 +57.2 98.6	2 27.9 +57.1 97.6	2 09.5 +57.1 96.7	1 51.1 +57.1 95.7
1°	4 01.7 +57.1 99.2	3 43.4 +57.1 98.3	3 25.0 +57.1 97.3	3 06.6 +57.1 96.4	2 48.2 +57.0 95.4
2°	4 58.8 +57.2 98.9	4 40.5 +57.1 98.0	4 22.1 +57.1 97.0	4 03.7 +57.1 96.0	3 45.2 +57.1 95.1
3°	5 56.0 +57.1 98.6	5 37.6 +57.1 97.6	5 19.2 +57.1 96.7	5 00.8 +57.1 95.7	4 42.3 +57.1 94.8
4°	6 53.1 +57.1 98.3	6 34.7 +57.1 97.3	6 16.3 +57.1 96.4	5 57.9 +57.0 95.4	5 39.4 +57.1 94.5
5°	7 50.2 +57.1 98.0	7 31.8 +57.1 97.0	7 13.4 +57.1 96.1	6 54.9 +57.1 95.1	6 36.5 +57.0 94.2
6°	8 47.3 +57.1 97.7	8 28.9 +57.0 96.7	8 10.5 +57.0 95.8	7 52.0 +57.0 94.8	7 33.5 +57.0 93.9
7°	9 44.4 +57.0 97.4	9 25.9 +57.1 96.4	9 07.5 +57.0 95.4	8 49.0 +57.1 94.5	8 30.5 +57.1 93.5
8°	10 41.4 +57.1 97.0	10 23.0 +57.0 96.1	10 04.5 +57.1 95.1	9 46.1 +57.0 94.2	9 27.6 +57.0 93.2
9°	11 38.5 +57.0 96.7	11 20.0 +57.0 95.8	11 01.6 +57.0 94.8	10 43.1 +57.0 93.9	10 24.6 +57.0 92.9
10°	12 35.5 +57.0 96.4	12 17.0 +57.0 95.5	11 58.6 +56.9 94.5	11 40.1 +56.9 93.5	11 21.6 +56.9 92.6
11°	13 32.5 +56.9 96.1	13 14.0 +57.0 95.1	12 55.5 +57.0 94.2	12 37.0 +57.0 93.2	12 18.5 +57.0 92.3
12°	14 29.4 +57.0 95.8	14 11.0 +56.9 94.8	13 52.5 +56.9 93.9	13 34.0 +56.9 92.9	13 15.5 +56.9 91.9
13°	15 26.4 +56.9 95.4	15 07.9 +56.9 94.5	14 49.4 +56.9 93.5	14 30.9 +56.9 92.6	14 12.4 +56.9 91.6
14°	16 23.3 +56.9 95.1	16 04.8 +56.9 94.2	15 46.3 +56.9 93.2	15 27.8 +56.9 92.2	15 09.3 +56.8 91.3
15°	17 20.2 +56.8 94.8	17 01.7 +56.8 93.8	16 43.2 +56.8 92.9	16 24.7 +56.8 91.9	16 06.1 +56.9 91.0
16°	18 17.0 +56.9 94.4	17 58.5 +56.9 93.5	17 40.0 +56.8 92.5	17 21.5 +56.8 91.6	17 03.0 +56.8 90.6
17°	19 13.9 +56.7 94.1	18 55.4 +56.7 93.1	18 36.8 +56.8 92.2	18 18.3 +56.8 91.2	17 59.8 +56.7 90.3
18°	20 10.6 +56.8 93.8	19 52.1 +56.8 92.8	19 33.6 +56.7 91.8	19 15.1 +56.7 90.9	18 56.5 +56.8 89.9
19°	21 07.4 +56.7 93.4	20 48.9 +56.7 92.5	20 30.3 +56.7 91.5	20 11.8 +56.7 90.5	19 53.3 +56.6 89.6
20°	22 04.1 +56.6 93.1	21 45.6 +56.6 92.1	21 27.0 +56.7 91.2	21 08.5 +56.6 90.2	20 49.9 +56.7 89.2
21°	23 00.7 +56.6 92.7	22 42.2 +56.6 91.7	22 23.7 +56.6 90.8	22 05.1 +56.6 89.8	21 46.6 +56.6 88.9
22°	23 57.3 +56.6 92.3	23 38.8 +56.5 91.4	23 20.3 +56.5 90.4	23 01.7 +56.6 89.5	22 43.2 +56.5 88.5
23°	24 53.9 +56.5 92.0	24 35.3 +56.5 91.0	24 16.8 +56.5 90.1	23 58.3 +56.4 89.1	23 39.7 +56.5 88.2
24°	25 50.4 +56.4 91.6	25 31.8 +56.5 90.6	25 13.3 +56.4 89.7	24 54.7 +56.5 88.7	24 36.2 +56.5 87.8
25°	26 46.8 +56.4 91.2	26 28.3 +56.3 90.3	26 09.7 +56.4 89.3	25 51.2 +56.4 88.4	25 32.7 +56.3 87.4
26°	27 43.2 +56.3 90.8	27 24.6 +56.3 89.9	27 06.1 +56.3 88.9	26 47.6 +56.3 88.0	26 29.0 +56.4 87.0
27°	28 39.5 +56.2 90.4	28 20.9 +56.3 89.5	28 02.4 +56.3 88.5	27 43.9 +56.2 87.6	27 25.4 +56.2 86.7
28°	29 35.7 +56.2 90.0	29 17.2 +56.2 89.1	28 58.7 +56.1 88.2	28 40.1 +56.2 87.2	28 21.6 +56.2 86.3
29°	30 31.9 +56.1 89.6	30 13.4 +56.1 88.7	29 54.8 +56.1 87.7	29 36.3 +56.1 86.8	29 17.8 +56.1 85.9

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°	1 32.6 +57.1 94.8	1 14.1 +57.1 93.8	0 55.6 +57.1 92.9	0 37.1 +57.0 91.9	0 18.5 +57.1 91.0
1°	2 29.7 +57.1 94.4	2 11.2 +57.1 93.5	1 52.7 +57.0 92.5	1 34.1 +57.1 91.6	1 15.6 +57.1 90.6
2°	3 26.8 +57.0 94.1	3 08.3 +57.0 93.2	2 49.7 +57.1 92.2	2 31.2 +57.1 91.3	2 12.7 +57.0 90.3
3°	4 23.8 +57.1 93.8	4 05.3 +57.1 92.9	3 46.8 +57.1 91.9	3 28.3 +57.0 91.0	3 09.7 +57.1 90.0
4°	5 20.9 +57.1 93.5	5 02.4 +57.0 92.6	4 43.9 +57.0 91.6	4 25.3 +57.1 90.7	4 06.8 +57.0 89.7
5°	6 18.0 +57.0 93.2	5 59.4 +57.1 92.3	5 40.9 +57.0 91.3	5 22.4 +57.0 90.4	5 03.8 +57.1 89.4
6°	7 15.0 +57.0 92.9	6 56.5 +57.0 91.9	6 37.9 +57.1 91.0	6 19.4 +57.0 90.0	6 00.9 +57.0 89.1
7°	8 12.0 +57.0 92.6	7 53.5 +57.0 91.6	7 35.0 +57.0 90.7	7 16.4 +57.0 89.7	6 57.9 +57.0 88.8
8°	9 09.0 +57.0 92.3	8 50.5 +57.0 91.3	8 32.0 +57.0 90.4	8 13.4 +57.0 89.4	7 54.9 +57.0 88.5
9°	10 06.0 +57.0 92.0	9 47.5 +57.0 91.0	9 29.0 +56.9 90.0	9 10.4 +57.0 89.1	8 51.9 +57.0 88.1
10°	11 03.0 +57.0 91.6	10 44.5 +56.9 90.7	10 25.9 +57.0 89.7	10 07.4 +57.0 88.8	9 48.9 +56.9 87.8
11°	12 00.0 +56.9 91.3	11 41.4 +57.0 90.4	11 22.9 +56.9 89.4	11 04.4 +56.9 88.5	10 45.8 +57.0 87.5
12°	12 56.9 +56.9 91.0	12 38.4 +56.9 90.0	12 19.8 +57.0 89.1	12 01.3 +56.9 88.1	11 42.8 +56.9 87.2
13°	13 53.8 +56.9 90.7	13 35.3 +56.9 89.7	13 16.8 +56.9 88.8	12 58.2 +56.9 87.8	12 39.7 +56.9 86.9
14°	14 50.7 +56.9 90.3	14 32.2 +56.9 89.4	14 13.7 +56.8 88.4	13 55.1 +56.9 87.5	13 36.6 +56.9 86.5
15°	15 47.6 +56.8 90.0	15 29.1 +56.8 89.1	15 10.5 +56.9 88.1	14 52.0 +56.8 87.2	14 33.5 +56.8 86.2
16°	16 44.4 +56.8 89.7	16 25.9 +56.8 88.7	16 07.4 +56.8 87.8	15 48.8 +56.8 86.8	15 30.3 +56.8 85.9
17°	17 41.2 +56.8 89.3	17 22.7 +56.8 88.4	17 04.2 +56.7 87.4	16 45.6 +56.8 86.5	16 27.1 +56.8 85.5
18°	18 38.0 +56.7 89.0	18 19.5 +56.7 88.0	18 00.9 +56.8 87.1	17 42.4 +56.8 86.2	17 23.9 +56.8 85.2
19°	19 34.7 +56.7 88.6	19 16.2 +56.7 87.7	18 57.7 +56.7 86.8	18 39.2 +56.7 85.8	18 20.7 +56.7 84.9
20°	20 31.4 +56.6 88.3	20 12.9 +56.6 87.4	19 54.4 +56.6 86.4	19 35.9 +56.6 85.5	19 17.4 +56.7 84.5
21°	21 28.0 +56.6 87.9	21 09.5 +56.6 87.0	20 51.0 +56.6 86.1	20 32.5 +56.7 85.1	20 14.1 +56.6 84.2
22°	22 24.6 +56.6 87.6	22 06.1 +56.6 86.6	21 47.6 +56.6 85.7	21 29.2 +56.5 84.8	21 10.7 +56.6 83.8
23°	23 21.2 +56.5 87.2	23 02.7 +56.5 86.3	22 44.2 +56.5 85.3	22 25.7 +56.6 84.4	22 07.3 +56.5 83.5
24°	24 17.7 +56.4 86.9	23 59.2 +56.4 85.9	23 40.7 +56.5 85.0	23 22.3 +56.4 84.0	23 03.8 +56.5 83.1
25°	25 14.1 +56.4 86.5	24 55.6 +56.4 85.5	24 37.2 +56.4 84.6	24 18.7 +56.5 83.7	24 00.3 +56.5 82.7
26°	26 10.5 +56.4 86.1	25 52.0 +56.4 85.2	25 33.6 +56.3 84.2	25 15.2 +56.3 83.3	24 56.8 +56.3 82.4
27°	27 06.9 +56.2 85.7	26 48.4 +56.3 84.8	26 29.9 +56.3 83.8	26 11.5 +56.3 82.9	25 53.1 +56.4 82.0
28°	28 03.1 +56.2 85.3	27 44.7 +56.2 84.4	27 26.2 +56.2 83.5	27 07.8 +56.3 82.5	26 49.5 +56.2 81.6
29°	28 59.3 +56.1 84.9	28 40.9 +56.1 84.0	28 22.4 +56.2 83.1	28 04.1 +56.1 82.1	27 45.7 +56.2 81.2

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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 +57.1 90.0	-0 18.5 +57.0	-0 37.1 +57.1	-0 55.6 +57.1	-1 14.1 +57.1
1°	0 57.1 +57.0 89.7	0 38.5 +57.1 88.7	0 20.0 +57.1 87.8	0 01.5 +57.0 86.8	-0 17.0 +57.0
2°	1 54.1 +57.1 89.4	1 35.6 +57.0 88.4	1 17.1 +57.0 87.5	0 58.5 +57.1 86.5	0 40.0 +57.1 85.6
3°	2 51.2 +57.0 89.1	2 32.6 +57.1 88.1	2 14.1 +57.1 87.2	1 55.6 +57.1 86.2	1 37.1 +57.1 85.3
4°	3 48.2 +57.1 88.8	3 29.7 +57.1 87.8	3 11.2 +57.0 86.9	2 52.7 +57.0 85.9	2 34.2 +57.1 85.0
5°	4 45.3 +57.0 88.5	4 26.8 +57.0 87.5	4 08.2 +57.1 86.6	3 49.7 +57.1 85.6	3 31.3 +57.0 84.7
6°	5 42.3 +57.0 88.1	5 23.8 +57.0 87.2	5 05.3 +57.0 86.2	4 46.8 +57.0 85.3	4 28.3 +57.1 84.3
7°	6 39.3 +57.1 87.8	6 20.8 +57.0 86.9	6 02.3 +57.1 85.9	5 43.8 +57.1 85.0	5 25.4 +57.0 84.0
8°	7 36.4 +57.0 87.5	7 17.8 +57.1 86.6	6 59.4 +57.0 85.6	6 40.9 +57.0 84.7	6 22.4 +57.1 83.7
9°	8 33.4 +57.0 87.2	8 14.9 +56.9 86.2	7 56.4 +57.0 85.3	7 37.9 +57.0 84.4	7 19.5 +57.0 83.4
10°	9 30.4 +56.9 86.9	9 11.8 +57.0 85.9	8 53.4 +57.0 85.0	8 34.9 +57.0 84.0	8 16.5 +57.0 83.1
11°	10 27.3 +57.0 86.6	10 08.8 +57.0 85.6	9 50.4 +56.9 84.7	9 31.9 +57.0 83.7	9 13.5 +57.0 82.8
12°	11 24.3 +56.9 86.2	11 05.8 +56.9 85.3	10 47.3 +57.0 84.3	10 28.9 +56.9 83.4	10 10.5 +57.0 82.5
13°	12 21.2 +56.9 85.9	12 02.7 +56.9 85.0	11 44.3 +56.9 84.0	11 25.8 +57.0 83.1	11 07.5 +56.9 82.1
14°	13 18.1 +56.9 85.6	12 59.6 +56.9 84.6	12 41.2 +56.9 83.7	12 22.8 +56.9 82.8	12 04.4 +56.9 81.8
15°	14 15.0 +56.8 85.3	13 56.5 +56.9 84.3	13 38.1 +56.9 83.4	13 19.7 +56.9 82.4	13 01.3 +56.9 81.5
16°	15 11.8 +56.9 84.9	14 53.4 +56.8 84.0	14 35.0 +56.8 83.1	14 16.6 +56.8 82.1	13 58.2 +56.9 81.2
17°	16 08.7 +56.8 84.6	15 50.2 +56.8 83.7	15 31.8 +56.8 82.7	15 13.4 +56.9 81.8	14 55.1 +56.9 80.8
18°	17 05.5 +56.7 84.3	16 47.0 +56.8 83.3	16 28.6 +56.8 82.4	16 10.3 +56.8 81.4	15 52.0 +56.8 80.5
19°	18 02.2 +56.8 83.9	17 43.8 +56.7 83.0	17 25.4 +56.8 82.0	17 07.1 +56.8 81.1	16 48.8 +56.8 80.2
20°	18 59.0 +56.6 83.6	18 40.5 +56.7 82.6	18 22.2 +56.7 81.7	18 03.9 +56.7 80.8	17 45.6 +56.7 79.8
21°	19 55.6 +56.7 83.2	19 37.2 +56.7 82.3	19 18.9 +56.7 81.4	19 00.6 +56.7 80.4	18 42.3 +56.7 79.5
22°	20 52.3 +56.6 82.9	20 33.9 +56.6 81.9	20 15.6 +56.6 81.0	19 57.3 +56.6 80.1	19 39.0 +56.7 79.2
23°	21 48.9 +56.5 82.5	21 30.5 +56.6 81.6	21 12.2 +56.6 80.7	20 53.9 +56.6 79.7	20 35.7 +56.7 78.8
24°	22 45.4 +56.5 82.2	22 27.1 +56.5 81.2	22 08.8 +56.5 80.3	21 50.5 +56.6 79.4	21 32.4 +56.5 78.4
25°	23 41.9 +56.5 81.8	23 23.6 +56.5 80.9	23 05.3 +56.5 79.9	22 47.1 +56.5 79.0	22 28.9 +56.6 78.1
26°	24 38.4 +56.4 81.4	24 20.1 +56.4 80.5	24 01.8 +56.5 79.6	23 43.6 +56.5 78.6	23 25.5 +56.5 77.7
27°	25 34.8 +56.3 81.1	25 16.5 +56.4 80.1	24 58.3 +56.3 79.2	24 40.1 +56.4 78.3	24 22.0 +56.4 77.4
28°	26 31.1 +56.3 80.7	26 12.9 +56.3 79.7	25 54.6 +56.4 78.8	25 36.5 +56.3 77.9	25 18.4 +56.4 77.0
29°	27 27.4 +56.2 80.3	27 09.2 +56.2 79.4	26 51.0 +56.2 78.4	26 32.8 +56.3 77.5	26 14.8 +56.3 76.6

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 32.6 +57.1	-1 51.1 +57.1	-2 09.5 +57.1	-2 27.9 +57.1	-2 46.2 +57.1
1°	-0 35.5 +57.1	-0 54.0 +57.1	-1 12.4 +57.1	-1 30.8 +57.1	-1 49.1 +57.1
2°	0 21.6 +57.1 84.6	0 03.1 +57.1 83.7	-0 15.3 +57.1	-0 33.7 +57.2	-0 52.0 +57.2
3°	1 18.7 +57.0 84.3	1 00.2 +57.1 83.4	0 41.8 +57.1 82.4	0 23.5 +57.1 81.5	0 05.2 +57.1 80.5
4°	2 15.7 +57.1 84.0	1 57.3 +57.1 83.1	1 38.9 +57.1 82.1	1 20.6 +57.1 81.2	1 02.3 +57.1 80.2
5°	3 12.8 +57.1 83.7	2 54.4 +57.1 82.8	2 36.0 +57.1 81.8	2 17.7 +57.1 80.9	1 59.4 +57.2 79.9
6°	4 09.9 +57.1 83.4	3 51.5 +57.1 82.4	3 33.1 +57.1 81.5	3 14.8 +57.1 80.5	2 56.6 +57.1 79.6
7°	5 07.0 +57.0 83.1	4 48.6 +57.0 82.1	4 30.2 +57.1 81.2	4 11.9 +57.1 80.2	3 53.7 +57.1 79.3
8°	6 04.0 +57.1 82.8	5 45.6 +57.1 81.8	5 27.3 +57.1 80.9	5 09.0 +57.1 79.9	4 50.8 +57.1 79.0
9°	7 01.1 +57.0 82.5	6 42.7 +57.1 81.5	6 24.4 +57.1 80.6	6 06.1 +57.1 79.6	5 47.9 +57.1 78.7
10°	7 58.1 +57.0 82.1	7 39.8 +57.0 81.2	7 21.5 +57.0 80.3	7 03.2 +57.1 79.3	6 45.0 +57.1 78.4
11°	8 55.1 +57.0 81.8	8 36.8 +57.0 80.9	8 18.5 +57.0 79.9	8 00.3 +57.0 79.0	7 42.1 +57.1 78.1
12°	9 52.1 +57.0 81.5	9 33.8 +57.0 80.6	9 15.5 +57.1 79.6	8 57.3 +57.1 78.7	8 39.2 +57.0 77.7
13°	10 49.1 +57.0 81.2	10 30.8 +57.0 80.3	10 12.6 +57.0 79.3	9 54.4 +57.0 78.4	9 36.2 +57.1 77.4
14°	11 46.1 +56.9 80.9	11 27.8 +57.0 79.9	11 09.6 +57.0 79.0	10 51.4 +57.0 78.1	10 33.3 +57.0 77.1
15°	12 43.0 +56.9 80.6	12 24.8 +56.9 79.6	12 06.6 +56.9 78.7	11 48.4 +57.0 77.7	11 30.3 +57.0 76.8
16°	13 39.9 +56.9 80.2	13 21.7 +56.9 79.3	13 03.5 +56.9 78.4	12 45.4 +56.9 77.4	12 27.3 +57.0 76.5
17°	14 36.8 +56.9 79.9	14 18.6 +56.9 79.0	14 00.4 +57.0 78.0	13 42.3 +57.0 77.1	13 24.3 +57.0 76.2
18°	15 33.7 +56.8 79.6	15 15.5 +56.9 78.6	14 57.4 +56.8 77.7	14 39.3 +56.9 76.8	14 21.3 +56.9 75.8
19°	16 30.5 +56.9 79.2	16 12.4 +56.8 78.3	15 54.2 +56.9 77.4	15 36.2 +56.9 76.4	15 18.2 +56.9 75.5
20°	17 27.4 +56.7 78.9	17 09.2 +56.8 78.0	16 51.1 +56.8 77.0	16 33.1 +56.8 76.1	16 15.1 +56.9 75.2
21°	18 24.1 +56.8 78.6	18 06.0 +56.7 77.6	17 47.9 +56.8 76.7	17 29.9 +56.8 75.8	17 12.0 +56.8 74.9
22°	19 20.9 +56.7 78.2	19 02.7 +56.8 77.3	18 44.7 +56.7 76.4	18 26.7 +56.8 75.4	18 08.8 +56.8 74.5
23°	20 17.6 +56.6 77.9	19 59.5 +56.6 76.9	19 41.4 +56.7 76.0	19 23.5 +56.7 75.1	19 05.6 +56.8 74.2
24°	21 14.2 +56.6 77.5	20 56.1 +56.7 76.6	20 38.1 +56.7 75.7	20 20.2 +56.7 74.8	20 02.4 +56.7 73.8
25°	22 10.8 +56.6 77.2	21 52.8 +56.6 76.2	21 34.8 +56.6 75.3	21 16.9 +56.7 74.4	20 59.1 +56.7 73.5
26°	23 07.4 +56.5 76.8	22 49.4 +56.5 75.9	22 31.4 +56.6 75.0	22 13.6 +56.6 74.0	21 55.8 +56.6 73.1
27°	24 03.9 +56.5 76.4	23 45.9 +56.5 75.5	23 28.0 +56.5 74.6	23 10.2 +56.5 73.7	22 52.4 +56.6 72.8
28°	25 00.4 +56.4 76.1	24 42.4 +56.4 75.1	24 24.5 +56.5 74.2	24 06.7 +56.5 73.3	23 49.0 +56.5 72.4
29°	25 56.8 +56.3 75.7	25 38.8 +56.4 74.8	25 21.0 +56.4 73.9	25 03.2 +56.5 73.0	24 45.5 +56.5 72.0

Declination SAME name as Latitude

Latitude 72°

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 04.6 +57.2	-3 22.8 +57.1	-3 41.0 +57.2	-3 59.2 +57.2	-4 17.2 +57.2
1°	-2 07.4 +57.1	-2 25.7 +57.2	-2 43.8 +57.2	-3 02.0 +57.3	-3 20.0 +57.2
2°	-1 10.3 +57.2	-1 28.5 +57.2	-1 46.6 +57.1	-2 04.7 +57.2	-2 22.8 +57.3
3°	-0 13.1 +57.1	-0 31.3 +57.2	-0 49.5 +57.2	-1 07.5 +57.2	-1 25.5 +57.2
4°	0 44.0 +57.2 79.3	0 25.9 +57.1 78.3	0 07.7 +57.2 77.4	-0 10.3 +57.2	-0 28.3 +57.2
5°	1 41.2 +57.2 79.0	1 23.0 +57.2 78.0	1 04.9 +57.2 77.1	0 46.9 +57.2 76.1	0 28.9 +57.3 75.2
6°	2 38.4 +57.1 78.7	2 20.2 +57.2 77.7	2 02.1 +57.2 76.8	1 44.1 +57.2 75.8	1 26.2 +57.2 74.9
7°	3 35.5 +57.1 78.3	3 17.4 +57.1 77.4	2 59.3 +57.2 76.5	2 41.3 +57.2 75.5	2 23.4 +57.2 74.6
8°	4 32.6 +57.2 78.0	4 14.5 +57.2 77.1	3 56.5 +57.2 76.1	3 38.5 +57.2 75.2	3 20.6 +57.3 74.3
9°	5 29.8 +57.1 77.7	5 11.7 +57.1 76.8	4 53.7 +57.1 75.8	4 35.7 +57.2 74.9	4 17.9 +57.2 74.0
10°	6 26.9 +57.1 77.4	6 08.8 +57.2 76.5	5 50.8 +57.2 75.5	5 32.9 +57.2 74.6	5 15.1 +57.2 73.7
11°	7 24.0 +57.1 77.1	7 06.0 +57.1 76.2	6 48.0 +57.1 75.2	6 30.1 +57.2 74.3	6 12.3 +57.2 73.4
12°	8 21.1 +57.1 76.8	8 03.1 +57.1 75.9	7 45.1 +57.2 74.9	7 27.3 +57.1 74.0	7 09.5 +57.2 73.0
13°	9 18.2 +57.0 76.5	9 00.2 +57.1 75.6	8 42.3 +57.1 74.6	8 24.4 +57.2 73.7	8 06.7 +57.2 72.7
14°	10 15.2 +57.1 76.2	9 57.3 +57.1 75.2	9 39.4 +57.1 74.3	9 21.6 +57.1 73.4	9 03.9 +57.1 72.4
15°	11 12.3 +57.0 75.9	10 54.4 +57.0 74.9	10 36.5 +57.1 74.0	10 18.7 +57.1 73.1	10 01.0 +57.2 72.1
16°	12 09.3 +57.0 75.6	11 51.4 +57.0 74.6	11 33.6 +57.0 73.7	11 15.8 +57.1 72.7	10 58.2 +57.1 71.8
17°	13 06.3 +57.0 75.2	12 48.4 +57.1 74.3	12 30.6 +57.1 73.4	12 12.9 +57.1 72.4	11 55.3 +57.1 71.5
18°	14 03.3 +57.0 74.9	13 45.5 +56.9 74.0	13 27.7 +57.0 73.0	13 10.0 +57.0 72.1	12 52.4 +57.1 71.2
19°	15 00.3 +56.9 74.6	14 42.4 +57.0 73.7	14 24.7 +57.0 72.7	14 07.0 +57.1 71.8	13 49.5 +57.0 70.9
20°	15 57.2 +56.9 74.3	15 39.4 +56.9 73.3	15 21.7 +56.9 72.4	15 04.1 +57.0 71.5	14 46.5 +57.1 70.6
21°	16 54.1 +56.9 73.9	16 36.3 +56.9 73.0	16 18.6 +57.0 72.1	16 01.1 +56.9 71.2	15 43.6 +57.0 70.2
22°	17 51.0 +56.8 73.6	17 33.2 +56.9 72.7	17 15.6 +56.9 71.7	16 58.0 +57.0 70.8	16 40.6 +56.9 69.9
23°	18 47.8 +56.8 73.3	18 30.1 +56.8 72.3	18 12.5 +56.8 71.4	17 55.0 +56.8 70.5	17 37.5 +57.0 69.6
24°	19 44.6 +56.8 72.9	19 26.9 +56.8 72.0	19 09.3 +56.9 71.1	18 51.8 +56.9 70.2	18 34.5 +56.9 69.2
25°	20 41.4 +56.7 72.6	20 23.7 +56.8 71.7	20 06.2 +56.8 70.7	19 48.7 +56.8 69.8	19 31.4 +56.8 68.9
26°	21 38.1 +56.6 72.2	21 20.5 +56.7 71.3	21 03.0 +56.7 70.4	20 45.5 +56.8 69.5	20 28.2 +56.8 68.6
27°	22 34.7 +56.7 71.9	22 17.2 +56.6 71.0	21 59.7 +56.7 70.0	21 42.3 +56.8 69.1	21 25.0 +56.8 68.2
28°	23 31.4 +56.5 71.5	23 13.8 +56.6 70.6	22 56.4 +56.6 69.7	22 39.1 +56.7 68.8	22 21.8 +56.8 67.9
29°	24 27.9 +56.6 71.1	24 10.4 +56.6 70.2	23 53.0 +56.6 69.3	23 35.8 +56.6 68.4	23 18.6 +56.7 67.5

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°	-4 35.2 +57.2	-4 53.2 +57.3	-5 11.0 +57.3	-5 28.8 +57.4	-5 46.4 +57.3
1°	-3 38.0 +57.3	-3 55.9 +57.3	-4 13.7 +57.3	-4 31.4 +57.3	-4 49.1 +57.4
2°	-2 40.7 +57.2	-2 58.6 +57.3	-3 16.4 +57.3	-3 34.1 +57.3	-3 51.7 +57.4
3°	-1 43.5 +57.3	-2 01.3 +57.3	-2 19.1 +57.3	-2 36.8 +57.4	-2 54.3 +57.3
4°	-0 46.2 +57.3	-1 04.0 +57.3	-1 21.8 +57.3	-1 39.4 +57.3	-1 57.0 +57.4
5°	0 11.1 +57.2 74.2	-0 06.7 +57.2	-0 24.5 +57.4	-0 42.1 +57.4	-0 59.6 +57.4
6°	1 08.3 +57.3 73.9	0 50.5 +57.3 73.0	0 32.9 +57.3 72.0	0 15.3 +57.3 71.1	-0 02.2 +57.4
7°	2 05.6 +57.2 73.6	1 47.8 +57.3 72.7	1 30.2 +57.3 71.7	1 12.6 +57.4 70.8	0 55.2 +57.4 69.8
8°	3 02.8 +57.3 73.3	2 45.1 +57.3 72.4	2 27.5 +57.3 71.4	2 10.0 +57.3 70.5	1 52.6 +57.3 69.5
9°	4 00.1 +57.2 73.0	3 42.4 +57.3 72.1	3 24.8 +57.3 71.1	3 07.3 +57.4 70.2	2 49.9 +57.4 69.2
10°	4 57.3 +57.3 72.7	4 39.7 +57.3 71.8	4 22.1 +57.3 70.8	4 04.7 +57.3 69.9	3 47.3 +57.4 68.9
11°	5 54.6 +57.2 72.4	5 37.0 +57.2 71.5	5 19.4 +57.3 70.5	5 02.0 +57.3 69.6	4 44.7 +57.3 68.6
12°	6 51.8 +57.2 72.1	6 34.2 +57.3 71.2	6 16.7 +57.3 70.2	5 59.3 +57.3 69.3	5 42.0 +57.4 68.3
13°	7 49.0 +57.2 71.8	7 31.5 +57.2 70.9	7 14.0 +57.3 69.9	6 56.6 +57.3 69.0	6 39.4 +57.3 68.1
14°	8 46.2 +57.2 71.5	8 28.7 +57.2 70.6	8 11.3 +57.2 69.6	7 53.9 +57.3 68.7	7 36.7 +57.3 67.8
15°	9 43.4 +57.2 71.2	9 25.9 +57.2 70.3	9 08.5 +57.3 69.3	8 51.2 +57.3 68.4	8 34.0 +57.4 67.5
16°	10 40.6 +57.2 70.9	10 23.1 +57.2 70.0	10 05.8 +57.2 69.0	9 48.5 +57.3 68.1	9 31.4 +57.3 67.2
17°	11 37.8 +57.1 70.6	11 20.3 +57.2 69.6	11 03.0 +57.2 68.7	10 45.8 +57.2 67.8	10 28.7 +57.2 66.9
18°	12 34.9 +57.1 70.3	12 17.5 +57.1 69.3	12 00.2 +57.2 68.4	11 43.0 +57.2 67.5	11 25.9 +57.3 66.6
19°	13 32.0 +57.1 69.9	13 14.6 +57.2 69.0	12 57.4 +57.1 68.1	12 40.2 +57.2 67.2	12 23.2 +57.2 66.3
20°	14 29.1 +57.1 69.6	14 11.8 +57.1 68.7	13 54.5 +57.2 67.8	13 37.4 +57.2 66.9	13 20.4 +57.3 65.9
21°	15 26.2 +57.0 69.3	15 08.9 +57.0 68.4	14 51.7 +57.1 67.5	14 34.6 +57.2 66.6	14 17.7 +57.2 65.6
22°	16 23.2 +57.0 69.0	16 05.9 +57.1 68.1	15 48.8 +57.1 67.2	15 31.8 +57.1 66.2	15 14.9 +57.1 65.3
23°	17 20.2 +57.0 68.7	17 03.0 +57.0 67.7	16 45.9 +57.0 66.8	16 28.9 +57.1 65.9	16 12.0 +57.2 65.0
24°	18 17.2 +56.9 68.3	18 00.0 +57.0 67.4	17 42.9 +57.1 66.5	17 26.0 +57.1 65.6	17 09.2 +57.1 64.7
25°	19 14.1 +56.9 68.0	18 57.0 +56.9 67.1	18 40.0 +56.9 66.2	18 23.1 +57.0 65.3	18 06.3 +57.1 64.4
26°	20 11.0 +56.9 67.7	19 53.9 +56.9 66.8	19 36.9 +57.0 65.8	19 20.1 +57.0 64.9	19 03.4 +57.0 64.0
27°	21 07.9 +56.8 67.3	20 50.8 +56.9 66.4	20 33.9 +56.9 65.5	20 17.1 +56.9 64.6	20 00.4 +57.0 63.7
28°	22 04.7 +56.8 67.0	21 47.7 +56.8 66.1	21 30.8 +56.9 65.2	21 14.0 +57.0 64.3	20 57.4 +57.0 63.4
29°	23 01.5 +56.7 66.6	22 44.5 +56.8 65.7	22 27.7 +56.8 64.8	22 11.0 +56.8 63.9	21 54.4 +56.9 63.0

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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°	-6 04.0 +57.4	-6 21.5 +57.4	-6 38.8 +57.4	-6 56.1 +57.5	-7 13.2 +57.5
1°	-5 06.6 +57.4	-5 24.1 +57.5	-5 41.4 +57.5	-5 58.6 +57.5	-6 15.7 +57.5
2°	-4 09.2 +57.4	-4 26.6 +57.4	-4 43.9 +57.4	-5 01.1 +57.5	-5 18.2 +57.6
3°	-3 11.8 +57.4	-3 29.2 +57.4	-3 46.5 +57.5	-4 03.6 +57.5	-4 20.6 +57.5
4°	-2 14.4 +57.4	-2 31.8 +57.5	-2 49.0 +57.5	-3 06.1 +57.5	-3 23.1 +57.6
5°	-1 17.0 +57.4	-1 34.3 +57.4	-1 51.5 +57.5	-2 08.6 +57.5	-2 25.5 +57.5
6°	-0 19.6 +57.4	-0 36.9 +57.5	-0 54.0 +57.5	-1 11.1 +57.6	-1 28.0 +57.6
7°	0 37.8 +57.4 68.9	0 20.6 +57.4 67.9	0 03.5 +57.4 67.0	-0 13.5 +57.5	-0 30.4 +57.5
8°	1 35.2 +57.4 68.6	1 18.0 +57.5 67.6	1 00.9 +57.5 66.7	0 44.0 +57.5 65.7	0 27.1 +57.6 64.8
9°	2 32.6 +57.5 68.3	2 15.5 +57.4 67.3	1 58.4 +57.5 66.4	1 41.5 +57.5 65.4	1 24.7 +57.6 64.5
10°	3 30.1 +57.4 68.0	3 12.9 +57.5 67.1	2 55.9 +57.5 66.1	2 39.0 +57.5 65.2	2 22.3 +57.5 64.2
11°	4 27.5 +57.4 67.7	4 10.4 +57.4 66.8	3 53.4 +57.5 65.8	3 36.5 +57.5 64.9	3 19.8 +57.6 63.9
12°	5 24.9 +57.3 67.4	5 07.8 +57.4 66.5	4 50.9 +57.4 65.5	4 34.0 +57.5 64.6	4 17.4 +57.5 63.6
13°	6 22.2 +57.4 67.1	6 05.2 +57.4 66.2	5 48.3 +57.5 65.2	5 31.5 +57.5 64.3	5 14.9 +57.5 63.4
14°	7 19.6 +57.4 66.8	7 02.6 +57.4 65.9	6 45.8 +57.4 65.0	6 29.0 +57.5 64.0	6 12.4 +57.6 63.1
15°	8 17.0 +57.3 66.5	8 00.0 +57.4 65.6	7 43.2 +57.4 64.7	7 26.5 +57.5 63.7	7 10.0 +57.5 62.8
16°	9 14.3 +57.4 66.2	8 57.4 +57.4 65.3	8 40.6 +57.5 64.4	8 24.0 +57.5 63.4	8 07.5 +57.5 62.5
17°	10 11.7 +57.3 65.9	9 54.8 +57.4 65.0	9 38.1 +57.4 64.1	9 21.5 +57.4 63.1	9 05.0 +57.5 62.2
18°	11 09.0 +57.3 65.6	10 52.2 +57.3 64.7	10 35.5 +57.4 63.8	10 18.9 +57.4 62.9	10 02.5 +57.4 61.9
19°	12 06.3 +57.3 65.3	11 49.5 +57.3 64.4	11 32.9 +57.3 63.5	11 16.3 +57.4 62.6	10 59.9 +57.5 61.6
20°	13 03.6 +57.2 65.0	12 46.8 +57.3 64.1	12 30.2 +57.4 63.2	12 13.7 +57.4 62.3	11 57.4 +57.4 61.3
21°	14 00.8 +57.3 64.7	13 44.1 +57.3 63.8	13 27.6 +57.3 62.9	13 11.1 +57.4 62.0	12 54.8 +57.5 61.0
22°	14 58.1 +57.2 64.4	14 41.4 +57.3 63.5	14 24.9 +57.3 62.6	14 08.5 +57.4 61.7	13 52.3 +57.4 60.7
23°	15 55.3 +57.2 64.1	15 38.7 +57.2 63.2	15 22.2 +57.3 62.3	15 05.9 +57.3 61.4	14 49.7 +57.3 60.4
24°	16 52.5 +57.1 63.8	16 35.9 +57.2 62.9	16 19.5 +57.2 62.0	16 03.2 +57.3 61.1	15 47.0 +57.4 60.1
25°	17 49.6 +57.2 63.5	17 33.1 +57.2 62.6	17 16.7 +57.2 61.6	17 00.5 +57.2 60.7	16 44.4 +57.3 59.8
26°	18 46.8 +57.0 63.1	18 30.3 +57.1 62.2	18 13.9 +57.2 61.3	17 57.7 +57.3 60.4	17 41.7 +57.3 59.5
27°	19 43.8 +57.1 62.8	19 27.4 +57.1 61.9	19 11.1 +57.2 61.0	18 55.0 +57.2 60.1	18 39.0 +57.2 59.2
28°	20 40.9 +57.0 62.5	20 24.5 +57.1 61.6	20 08.3 +57.1 60.7	19 52.2 +57.2 59.8	19 36.2 +57.3 58.9
29°	21 37.9 +57.0 62.1	21 21.6 +57.0 61.3	21 05.4 +57.1 60.4	20 49.4 +57.1 59.5	20 33.5 +57.2 58.6

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°	-7 30.2 +57.5	-7 47.1 +57.6	-8 03.9 +57.7	-8 20.5 +57.7	-8 37.0 +57.8
1°	-6 32.7 +57.6	-6 49.5 +57.6	-7 06.2 +57.6	-7 22.8 +57.7	-7 39.2 +57.7
2°	-5 35.1 +57.6	-5 51.9 +57.6	-6 08.6 +57.7	-6 25.1 +57.7	-6 41.5 +57.7
3°	-4 37.5 +57.6	-4 54.3 +57.6	-5 10.9 +57.6	-5 27.4 +57.7	-5 43.8 +57.8
4°	-3 39.9 +57.5	-3 56.7 +57.7	-4 13.3 +57.7	-4 29.7 +57.7	-4 46.0 +57.7
5°	-2 42.4 +57.6	-2 59.0 +57.6	-3 15.6 +57.7	-3 32.0 +57.7	-3 48.3 +57.8
6°	-1 44.8 +57.6	-2 01.4 +57.6	-2 17.9 +57.7	-2 34.3 +57.7	-2 50.5 +57.7
7°	-0 47.2 +57.6	-1 03.8 +57.7	-1 20.2 +57.6	-1 36.6 +57.7	-1 52.8 +57.8
8°	0 10.4 +57.6 63.8	-0 06.1 +57.6	-0 22.6 +57.7	-0 38.9 +57.8	-0 55.0 +57.8
9°	1 08.0 +57.6 63.6	0 51.5 +57.6 62.6	0 35.1 +57.7 61.7	0 18.9 +57.7 60.7	0 02.8 +57.7 59.8
10°	2 05.6 +57.6 63.3	1 49.1 +57.7 62.3	1 32.8 +57.7 61.4	1 16.6 +57.7 60.4	1 00.5 +57.8 59.5
11°	3 03.2 +57.6 63.0	2 46.8 +57.6 62.0	2 30.5 +57.6 61.1	2 14.3 +57.7 60.2	1 58.3 +57.8 59.2
12°	4 00.8 +57.6 62.7	3 44.4 +57.6 61.8	3 28.1 +57.7 60.8	3 12.0 +57.7 59.9	2 56.1 +57.7 58.9
13°	4 58.4 +57.6 62.4	4 42.0 +57.7 61.5	4 25.8 +57.7 60.5	4 09.7 +57.8 59.6	3 53.8 +57.8 58.7
14°	5 56.0 +57.5 62.1	5 39.7 +57.6 61.2	5 23.5 +57.6 60.3	5 07.5 +57.7 59.3	4 51.6 +57.7 58.4
15°	6 53.5 +57.6 61.9	6 37.3 +57.6 60.9	6 21.1 +57.7 60.0	6 05.2 +57.6 59.1	5 49.3 +57.8 58.1
16°	7 51.1 +57.5 61.6	7 34.9 +57.6 60.6	7 18.8 +57.6 59.7	7 02.8 +57.7 58.8	6 47.1 +57.7 57.9
17°	8 48.6 +57.6 61.3	8 32.5 +57.5 60.4	8 16.4 +57.6 59.4	8 00.5 +57.7 58.5	7 44.8 +57.7 57.6
18°	9 46.2 +57.5 61.0	9 30.0 +57.6 60.1	9 14.0 +57.7 59.2	8 58.2 +57.7 58.2	8 42.5 +57.7 57.3
19°	10 43.7 +57.5 60.7	10 27.6 +57.6 59.8	10 11.7 +57.6 58.9	9 55.9 +57.6 57.9	9 40.2 +57.7 57.0
20°	11 41.2 +57.5 60.4	11 25.2 +57.5 59.5	11 09.3 +57.5 58.6	10 53.5 +57.6 57.7	10 37.9 +57.7 56.7
21°	12 38.7 +57.5 60.1	12 22.7 +57.5 59.2	12 06.8 +57.6 58.3	11 51.1 +57.6 57.4	11 35.6 +57.7 56.5
22°	13 36.2 +57.4 59.8	13 20.2 +57.5 58.9	13 04.4 +57.5 58.0	12 48.7 +57.6 57.1	12 33.3 +57.6 56.2
23°	14 33.6 +57.4 59.5	14 17.7 +57.5 58.6	14 01.9 +57.6 57.7	13 46.3 +57.6 56.8	13 30.9 +57.6 55.9
24°	15 31.0 +57.4 59.2	15 15.2 +57.4 58.3	14 59.5 +57.5 57.4	14 43.9 +57.6 56.5	14 28.5 +57.6 55.6
25°	16 28.4 +57.4 58.9	16 12.6 +57.4 58.0	15 57.0 +57.4 57.1	15 41.5 +57.5 56.2	15 26.1 +57.6 55.3
26°	17 25.8 +57.3 58.6	17 10.0 +57.4 57.7	16 54.4 +57.5 56.8	16 39.0 +57.5 55.9	16 23.7 +57.6 55.0
27°	18 23.1 +57.3 58.3	18 07.4 +57.4 57.4	17 51.9 +57.4 56.5	17 36.5 +57.5 55.6	17 21.3 +57.5 54.7
28°	19 20.4 +57.3 58.0	19 04.8 +57.3 57.1	18 49.3 +57.4 56.2	18 34.0 +57.4 55.3	18 18.8 +57.5 54.4
29°	20 17.7 +57.3 57.7	20 02.1 +57.3 56.8	19 46.7 +57.4 55.9	19 31.4 +57.4 55.0	19 16.3 +57.5 54.1

Declination SAME name as Latitude

Latitude 72°

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°	-8 53.3 +57.8	-9 09.5 +57.8	-9 25.5 +57.9	-9 41.3 +57.8	-9 57.0 +57.9
1°	-7 55.5 +57.7	-8 11.7 +57.8	-8 27.6 +57.8	-8 43.5 +58.0	-8 59.1 +58.0
2°	-6 57.8 +57.8	-7 13.9 +57.9	-7 29.8 +57.9	-7 45.5 +57.9	-8 01.1 +57.9
3°	-6 00.0 +57.8	-6 16.0 +57.8	-6 31.9 +57.9	-6 47.6 +57.9	-7 03.2 +58.0
4°	-5 02.2 +57.8	-5 18.2 +57.9	-5 34.0 +57.9	-5 49.7 +57.9	-6 05.2 +58.0
5°	-4 04.4 +57.8	-4 20.3 +57.8	-4 36.1 +57.8	-4 51.8 +58.0	-5 07.2 +57.9
6°	-3 06.6 +57.8	-3 22.5 +57.9	-3 38.3 +57.9	-3 53.8 +57.9	-4 09.3 +58.0
7°	-2 08.8 +57.8	-2 24.6 +57.8	-2 40.4 +57.9	-2 55.9 +58.0	-3 11.3 +58.0
8°	-1 11.0 +57.8	-1 26.8 +57.9	-1 42.5 +57.9	-1 57.9 +57.9	-2 13.3 +58.0
9°	-0 13.2 +57.9	-0 28.9 +57.8	-0 44.6 +57.9	-1 00.0 +57.9	-1 15.3 +58.0
10°	0 44.7 +57.8 58.5	0 28.9 +57.9 57.6	0 13.3 +58.0 56.6	-0 02.1 +58.0	-0 17.3 +58.0
11°	1 42.5 +57.8 58.3	1 26.8 +57.8 57.3	1 11.3 +57.9 56.4	0 55.9 +57.9 55.4	0 40.7 +58.0 54.5
12°	2 40.3 +57.8 58.0	2 24.6 +57.9 57.1	2 09.2 +57.9 56.1	1 53.8 +58.0 55.2	1 38.7 +58.0 54.2
13°	3 38.1 +57.8 57.7	3 22.5 +57.8 56.8	3 07.1 +57.8 55.8	2 51.8 +57.9 54.9	2 36.7 +58.0 54.0
14°	4 35.9 +57.8 57.5	4 20.3 +57.9 56.5	4 04.9 +57.9 55.6	3 49.7 +58.0 54.6	3 34.7 +58.0 53.7
15°	5 33.7 +57.8 57.2	5 18.2 +57.8 56.3	5 02.8 +57.9 55.3	4 47.7 +57.9 54.4	4 32.7 +58.0 53.4
16°	6 31.5 +57.7 56.9	6 16.0 +57.8 56.0	6 00.7 +57.9 55.1	5 45.6 +57.9 54.1	5 30.7 +57.9 53.2
17°	7 29.2 +57.8 56.6	7 13.8 +57.8 55.7	6 58.6 +57.9 54.8	6 43.5 +57.9 53.9	6 28.6 +58.0 52.9
18°	8 27.0 +57.8 56.4	8 11.6 +57.9 55.4	7 56.5 +57.8 54.5	7 41.4 +58.0 53.6	7 26.6 +58.0 52.7
19°	9 24.8 +57.7 56.1	9 09.5 +57.7 55.2	8 54.3 +57.9 54.3	8 39.4 +57.9 53.3	8 24.6 +57.9 52.4
20°	10 22.5 +57.7 55.8	10 07.2 +57.8 54.9	9 52.2 +57.8 54.0	9 37.3 +57.8 53.1	9 22.5 +58.0 52.1
21°	11 20.2 +57.7 55.5	11 05.0 +57.8 54.6	10 50.0 +57.8 53.7	10 35.1 +57.9 52.8	10 20.5 +57.9 51.9
22°	12 17.9 +57.7 55.3	12 02.8 +57.7 54.4	11 47.8 +57.8 53.4	11 33.0 +57.9 52.5	11 18.4 +57.9 51.6
23°	13 15.6 +57.7 55.0	13 00.5 +57.8 54.1	12 45.6 +57.8 53.2	12 30.9 +57.8 52.3	12 16.3 +57.9 51.4
24°	14 13.3 +57.7 54.7	13 58.3 +57.7 53.8	13 43.4 +57.8 52.9	13 28.7 +57.8 52.0	13 14.2 +57.9 51.1
25°	15 11.0 +57.6 54.4	14 56.0 +57.7 53.5	14 41.2 +57.7 52.6	14 26.5 +57.8 51.7	14 12.1 +57.8 50.8
26°	16 08.6 +57.6 54.1	15 53.7 +57.6 53.2	15 38.9 +57.7 52.3	15 24.3 +57.8 51.4	15 09.9 +57.9 50.5
27°	17 06.2 +57.6 53.8	16 51.3 +57.7 52.9	16 36.6 +57.7 52.0	16 22.1 +57.8 51.2	16 07.8 +57.8 50.3
28°	18 03.8 +57.6 53.5	17 49.0 +57.6 52.7	17 34.3 +57.7 51.8	17 19.9 +57.7 50.9	17 05.6 +57.8 50.0
29°	19 01.4 +57.5 53.2	18 46.6 +57.6 52.4	18 32.0 +57.7 51.5	18 17.6 +57.7 50.6	18 03.4 +57.7 49.7

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°	-9 14.6 +58.0	-9 29.9 +58.1	-9 45.0 +58.1	-9 59.9 +58.1	-9 16.5 +58.2
2°	-8 16.6 +58.0	-8 31.8 +58.0	-8 46.9 +58.1	-9 01.8 +58.2	-8 18.3 +58.3
3°	-7 18.6 +58.1	-7 33.8 +58.1	-7 48.8 +58.1	-8 03.6 +58.1	-7 20.0 +58.2
4°	-6 20.5 +58.0	-6 35.7 +58.1	-6 50.7 +58.1	-7 05.5 +58.2	
5°	-5 22.5 +58.0	-5 37.6 +58.1	-5 52.6 +58.2	-6 07.3 +58.2	-6 21.8 +58.2
6°	-4 24.5 +58.0	-4 39.5 +58.0	-4 54.4 +58.1	-5 09.1 +58.2	-5 23.6 +58.2
7°	-3 26.5 +58.1	-3 41.5 +58.1	-3 56.3 +58.1	-4 10.9 +58.2	-4 25.4 +58.3
8°	-2 28.4 +58.0	-2 43.4 +58.1	-2 58.2 +58.2	-3 12.7 +58.1	-3 27.1 +58.2
9°	-1 30.4 +58.1	-1 45.3 +58.1	-2 00.0 +58.1	-2 14.6 +58.2	-2 28.9 +58.2
10°	-0 32.3 +58.0	-0 47.2 +58.1	-1 01.9 +58.2	-1 16.4 +58.2	-1 30.7 +58.3
11°	0 25.7 +58.1 53.5	0 10.9 +58.1 52.6	-0 03.7 +58.1	-0 18.2 +58.2	-0 32.4 +58.2
12°	1 23.8 +58.0 53.3	1 09.0 +58.1 52.3	0 54.4 +58.2 51.4	0 40.0 +58.2 50.4	0 25.8 +58.3 49.5
13°	2 21.8 +58.1 53.0	2 07.1 +58.1 52.1	1 52.6 +58.1 51.1	1 38.2 +58.2 50.2	1 24.1 +58.2 49.2
14°	3 19.9 +58.0 52.8	3 05.2 +58.1 51.8	2 50.7 +58.1 50.9	2 36.4 +58.2 49.9	2 22.3 +58.3 49.0
15°	4 17.9 +58.0 52.5	4 03.3 +58.1 51.6	3 48.8 +58.2 50.6	3 34.6 +58.2 49.7	3 20.6 +58.2 48.8
16°	5 15.9 +58.0 52.3	5 01.4 +58.0 51.3	4 47.0 +58.1 50.4	4 32.8 +58.2 49.5	4 18.8 +58.2 48.5
17°	6 13.9 +58.1 52.0	5 59.4 +58.1 51.1	5 45.1 +58.1 50.1	5 31.0 +58.1 49.2	5 17.0 +58.3 48.3
18°	7 12.0 +58.0 51.7	6 57.5 +58.1 50.8	6 43.2 +58.1 49.9	6 29.1 +58.2 49.0	6 15.3 +58.2 48.0
19°	8 10.0 +58.0 51.5	7 55.6 +58.0 50.6	7 41.3 +58.1 49.6	7 27.3 +58.2 48.7	7 13.5 +58.2 47.8
20°	9 08.0 +58.0 51.2	8 53.6 +58.1 50.3	8 39.4 +58.1 49.4	8 25.5 +58.1 48.5	8 11.7 +58.2 47.5
21°	10 06.0 +57.9 51.0	9 51.7 +58.0 50.1	9 37.5 +58.1 49.1	9 23.6 +58.2 48.2	9 09.9 +58.2 47.3
22°	11 03.9 +58.0 50.7	10 49.7 +58.0 49.8	10 35.6 +58.1 48.9	10 21.8 +58.1 48.0	10 08.1 +58.2 47.1
23°	12 01.9 +57.9 50.4	11 47.7 +58.0 49.5	11 33.7 +58.0 48.6	11 19.9 +58.1 47.7	11 06.3 +58.1 46.8
24°	12 59.8 +58.0 50.2	12 45.7 +58.0 49.3	12 31.7 +58.1 48.4	12 18.0 +58.1 47.5	12 04.4 +58.2 46.6
25°	13 57.8 +57.9 49.9	13 43.7 +58.0 49.0	13 29.8 +58.0 48.1	13 16.1 +58.1 47.2	13 02.6 +58.1 46.3
26°	14 55.7 +57.9 49.6	14 41.7 +57.9 48.7	14 27.8 +58.0 47.8	14 14.2 +58.0 46.9	14 00.7 +58.2 46.0
27°	15 53.6 +57.9 49.4	15 39.6 +57.9 48.5	15 25.8 +58.0 47.6	15 12.2 +58.1 46.7	14 58.9 +58.1 45.8
28°	16 51.5 +57.8 49.1	16 37.5 +58.0 48.2	16 23.8 +58.0 47.3	16 10.3 +58.0 46.4	15 57.0 +58.0 45.5
29°	17 49.3 +57.8 48.8	17 35.5 +57.8 47.9	17 21.8 +57.9 47.0	17 08.3 +58.0 46.2	16 55.0 +58.1 45.3

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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°	-9 30.9 +58.2	-9 45.2 +58.3	-9 59.3 +58.3		
3°	-8 32.7 +58.3	-8 46.9 +58.3	-9 01.0 +58.4	-9 14.8 +58.4	-9 28.4 +58.4
4°	-7 34.4 +58.2	-7 48.6 +58.3	-8 02.6 +58.4	-8 16.4 +58.4	-8 30.0 +58.5
5°	-6 36.2 +58.3	-6 50.3 +58.3	-7 04.2 +58.3	-7 18.0 +58.5	-7 31.5 +58.5
6°	-5 37.9 +58.3	-5 52.0 +58.3	-6 05.9 +58.4	-6 19.5 +58.4	-6 33.0 +58.5
7°	-4 39.6 +58.3	-4 53.7 +58.4	-5 07.5 +58.4	-5 21.1 +58.4	-5 34.5 +58.5
8°	-3 41.3 +58.3	-3 55.3 +58.3	-4 09.1 +58.4	-4 22.7 +58.5	-4 36.0 +58.5
9°	-2 43.0 +58.3	-2 57.0 +58.4	-3 10.7 +58.4	-3 24.2 +58.4	-3 37.5 +58.4
10°	-1 44.7 +58.2	-1 58.6 +58.3	-2 12.3 +58.4	-2 25.8 +58.4	-2 39.1 +58.5
11°	-0 46.5 +58.3	-1 00.3 +58.3	-1 13.9 +58.4	-1 27.4 +58.5	-1 40.6 +58.5
12°	0 11.8 +58.3 48.5	-0 02.0 +58.4	-0 15.5 +58.4	-0 28.9 +58.4	-0 42.1 +58.5
13°	1 10.1 +58.3 48.3	0 56.4 +58.3 47.3	0 42.9 +58.4 46.4	0 29.5 +58.5 45.4	0 16.4 +58.5 44.5
14°	2 08.4 +58.3 48.1	1 54.7 +58.4 47.1	1 41.3 +58.4 46.2	1 28.0 +58.4 45.2	1 14.9 +58.5 44.3
15°	3 06.7 +58.3 47.8	2 53.1 +58.3 46.9	2 39.7 +58.3 45.9	2 26.4 +58.5 45.0	2 13.4 +58.5 44.1
16°	4 05.0 +58.3 47.6	3 51.4 +58.4 46.6	3 38.0 +58.4 45.7	3 24.9 +58.4 44.8	3 11.9 +58.5 43.8
17°	5 03.3 +58.3 47.3	4 49.8 +58.3 46.4	4 36.4 +58.4 45.5	4 23.3 +58.5 44.5	4 10.4 +58.5 43.6
18°	6 01.6 +58.2 47.1	5 48.1 +58.3 46.2	5 34.8 +58.4 45.2	5 21.8 +58.4 44.3	5 08.9 +58.5 43.4
19°	6 59.8 +58.3 46.9	6 46.4 +58.3 45.9	6 33.2 +58.4 45.0	6 20.2 +58.4 44.1	6 07.4 +58.5 43.2
20°	7 58.1 +58.3 46.6	7 44.7 +58.3 45.7	7 31.6 +58.3 44.8	7 18.6 +58.4 43.9	7 05.9 +58.4 42.9
21°	8 56.4 +58.2 46.4	8 43.0 +58.3 45.5	8 29.9 +58.4 44.5	8 17.0 +58.4 43.6	8 04.3 +58.5 42.7
22°	9 54.6 +58.2 46.1	9 41.3 +58.3 45.2	9 28.3 +58.3 44.3	9 15.4 +58.4 43.4	9 02.8 +58.5 42.5
23°	10 52.8 +58.3 45.9	10 39.6 +58.3 45.0	10 26.6 +58.4 44.1	10 13.8 +58.4 43.2	10 01.3 +58.4 42.3
24°	11 51.1 +58.2 45.6	11 37.9 +58.3 44.7	11 25.0 +58.3 43.8	11 12.2 +58.4 42.9	10 59.7 +58.4 42.0
25°	12 49.3 +58.2 45.4	12 36.2 +58.2 44.5	12 23.3 +58.3 43.6	12 10.6 +58.4 42.7	11 58.1 +58.5 41.8
26°	13 47.5 +58.2 45.1	13 34.4 +58.3 44.3	13 21.6 +58.3 43.4	13 09.0 +58.3 42.5	12 56.6 +58.4 41.6
27°	14 45.7 +58.1 44.9	14 32.7 +58.2 44.0	14 19.9 +58.3 43.1	14 07.3 +58.4 42.2	13 55.0 +58.4 41.3
28°	15 43.8 +58.2 44.6	15 30.9 +58.2 43.8	15 18.2 +58.2 42.9	15 05.7 +58.3 42.0	14 53.4 +58.4 41.1
29°	16 42.0 +58.1 44.4	16 29.1 +58.2 43.5	16 16.4 +58.3 42.6	16 04.0 +58.3 41.7	15 51.8 +58.3 40.8

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°	-9 41.8 +58.5	-9 55.0 +58.6			
4°	-8 43.3 +58.5	-8 56.4 +58.6	-9 09.3 +58.6	-9 22.0 +58.7	-9 34.4 +58.7
5°	-7 44.8 +58.5	-7 57.8 +58.5	-8 10.7 +58.6	-8 23.3 +58.7	-8 35.7 +58.8
6°	-6 46.3 +58.6	-6 59.3 +58.6	-7 12.1 +58.7	-7 24.6 +58.7	-7 36.9 +58.7
7°	-5 47.7 +58.5	-6 00.7 +58.6	-6 13.4 +58.6	-6 25.9 +58.7	-6 38.2 +58.7
8°	-4 49.2 +58.6	-5 02.1 +58.6	-5 14.8 +58.7	-5 27.2 +58.6	-5 39.5 +58.8
9°	-3 50.6 +58.5	-4 03.5 +58.6	-4 16.1 +58.6	-4 28.6 +58.7	-4 40.7 +58.7
10°	-2 52.1 +58.6	-3 04.9 +58.6	-3 17.5 +58.7	-3 29.9 +58.7	-3 42.0 +58.8
11°	-1 53.5 +58.5	-2 06.3 +58.6	-2 18.8 +58.6	-2 31.2 +58.7	-2 43.2 +58.7
12°	-0 55.0 +58.6	-1 07.7 +58.6	-1 20.2 +58.7	-1 32.5 +58.7	-1 44.5 +58.8
13°	0 03.6 +58.5 43.5	-0 09.1 +58.6	-0 21.5 +58.6	-0 33.8 +58.8	-0 45.7 +58.7
14°	1 02.1 +58.6 43.3	0 49.5 +58.6 42.4	0 37.1 +58.7 41.4	0 25.0 +58.7 40.5	0 13.0 +58.8 39.5
15°	2 00.7 +58.5 43.1	1 48.1 +58.6 42.2	1 35.8 +58.6 41.2	1 23.7 +58.7 40.3	1 11.8 +58.7 39.3
16°	2 59.2 +58.5 42.9	2 46.7 +58.6 42.0	2 34.4 +58.7 41.0	2 22.4 +58.7 40.1	2 10.5 +58.8 39.1
17°	3 57.7 +58.6 42.7	3 45.3 +58.6 41.7	3 33.1 +58.6 40.8	3 21.1 +58.7 39.9	3 09.3 +58.7 38.9
18°	4 56.3 +58.5 42.5	4 43.9 +58.6 41.5	4 31.7 +58.6 40.6	4 19.8 +58.6 39.7	4 08.0 +58.8 38.7
19°	5 54.8 +58.6 42.2	5 42.5 +58.6 41.3	5 30.3 +58.7 40.4	5 18.4 +58.7 39.4	5 06.8 +58.7 38.5
20°	6 53.4 +58.5 42.0	6 41.1 +58.5 41.1	6 29.0 +58.6 40.2	6 17.1 +58.7 39.2	6 05.5 +58.8 38.3
21°	7 51.9 +58.5 41.8	7 39.6 +58.6 40.9	7 27.6 +58.6 40.0	7 15.8 +58.7 39.0	7 04.3 +58.7 38.1
22°	8 50.4 +58.5 41.6	8 38.2 +58.6 40.7	8 26.2 +58.7 39.7	8 14.5 +58.7 38.8	8 03.0 +58.7 37.9
23°	9 48.9 +58.5 41.3	9 36.8 +58.5 40.4	9 24.9 +58.6 39.5	9 13.2 +58.6 38.6	9 01.7 +58.7 37.7
24°	10 47.4 +58.5 41.1	10 35.3 +58.6 40.2	10 23.5 +58.6 39.3	10 11.8 +58.7 38.4	10 00.4 +58.8 37.5
25°	11 45.9 +58.5 40.9	11 33.9 +58.5 40.0	11 22.1 +58.6 39.1	11 10.5 +58.6 38.2	10 59.2 +58.7 37.3
26°	12 44.4 +58.4 40.7	12 32.4 +58.5 39.8	12 20.7 +58.5 38.9	12 09.1 +58.7 38.0	11 57.9 +58.6 37.1
27°	13 42.9 +58.4 40.4	13 30.9 +58.6 39.5	13 19.2 +58.6 38.6	13 07.8 +58.6 37.7	11 56.5 +58.7 36.9
28°	14 41.3 +58.4 40.2	14 29.5 +58.4 39.3	14 17.8 +58.6 38.4	14 06.4 +58.6 37.5	13 55.2 +58.7 36.6
29°	15 39.7 +58.5 40.0	15 27.9 +58.5 39.1	15 16.4 +58.5 38.2	15 05.0 +58.6 37.3	14 53.9 +58.7 36.4

Declination SAME name as Latitude

Latitude 72°

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°	-9 46.6 +58.8	-9 58.5 +58.8			
5°	-8 47.8 +58.8	-8 59.7 +58.8	-9 11.3 +58.8	-9 22.7 +58.9	-9 33.9 +59.0
6°	-7 49.0 +58.8	-8 00.9 +58.9	-8 12.5 +58.9	-8 23.8 +58.9	-8 34.9 +59.0
7°	-6 50.2 +58.7	-7 02.0 +58.8	-7 13.6 +58.9	-7 24.9 +59.0	-7 35.9 +59.0
8°	-5 51.5 +58.8	-6 03.2 +58.8	-6 14.7 +58.9	-6 25.9 +58.9	-6 36.9 +59.0
9°	-4 52.7 +58.8	-5 04.4 +58.9	-5 15.8 +58.9	-5 27.0 +59.0	-5 37.9 +59.0
10°	-3 53.9 +58.8	-4 05.5 +58.8	-4 16.9 +58.9	-4 28.0 +58.9	-4 38.9 +59.0
11°	-2 55.1 +58.8	-3 06.7 +58.9	-3 18.0 +58.9	-3 29.1 +58.9	-3 39.9 +59.0
12°	-1 56.3 +58.8	-2 07.8 +58.9	-2 19.1 +58.9	-2 30.2 +59.0	-2 40.9 +59.0
13°	-0 57.5 +58.8	-1 08.9 +58.8	-1 20.2 +58.9	-1 31.2 +59.0	-1 41.9 +59.0
14°	0 01.3 +58.9 38.6	-0 10.1 +58.9	-0 21.3 +58.9	-0 32.2 +58.9	-0 42.9 +59.0
15°	1 00.2 +58.8 38.4	0 48.8 +58.8 37.4	0 37.6 +58.9 36.5	0 26.7 +59.0 35.5	0 16.1 +59.0 34.6
16°	1 59.0 +58.8 38.2	1 47.6 +58.9 37.2	1 36.5 +58.9 36.3	1 25.7 +58.9 35.4	1 15.1 +59.0 34.4
17°	2 57.8 +58.8 38.0	2 46.5 +58.8 37.1	2 35.4 +58.9 36.1	2 24.6 +59.0 35.2	2 14.1 +59.0 34.2
18°	3 56.6 +58.8 37.8	3 45.3 +58.9 36.9	3 34.3 +58.9 35.9	3 23.6 +58.9 35.0	3 13.1 +59.0 34.0
19°	4 55.4 +58.7 37.6	4 44.2 +58.8 36.7	4 33.2 +58.9 35.7	4 22.5 +59.0 34.8	4 12.1 +58.9 33.9
20°	5 54.1 +58.8 37.4	5 43.0 +58.9 36.5	5 32.1 +58.9 35.5	5 21.5 +58.9 34.6	5 11.0 +59.0 33.7
21°	6 52.9 +58.8 37.2	6 41.9 +58.8 36.3	6 31.0 +58.9 35.3	6 20.4 +58.9 34.4	6 10.0 +59.0 33.5
22°	7 51.7 +58.8 37.0	7 40.7 +58.8 36.1	7 29.9 +58.9 35.2	7 19.3 +59.0 34.2	7 09.0 +59.0 33.3
23°	8 50.5 +58.8 36.8	8 39.5 +58.8 35.9	8 28.8 +58.8 35.0	8 18.3 +58.9 34.0	8 08.0 +59.0 33.1
24°	9 49.3 +58.7 36.6	9 38.3 +58.9 35.7	9 27.6 +58.9 34.8	9 17.2 +58.9 33.9	9 07.0 +59.0 32.9
25°	10 48.0 +58.8 36.4	10 37.2 +58.8 35.5	10 26.5 +58.9 34.6	10 16.1 +58.9 33.7	10 06.0 +58.9 32.8
26°	11 46.8 +58.7 36.2	11 36.0 +58.8 35.3	11 25.4 +58.8 34.4	11 15.0 +58.9 33.5	11 04.9 +59.0 32.6
27°	12 45.5 +58.8 36.0	12 34.8 +58.8 35.1	12 24.2 +58.9 34.2	12 13.9 +58.9 33.3	12 03.9 +58.9 32.4
28°	13 44.3 +58.7 35.8	13 33.6 +58.7 34.9	13 23.1 +58.8 34.0	13 12.8 +58.9 33.1	13 02.8 +59.0 32.2
29°	14 43.0 +58.7 35.5	14 32.3 +58.8 34.7	14 21.9 +58.8 33.8	14 11.7 +58.9 32.9	14 01.8 +58.9 32.0

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°	-9 44.8 +59.1	-9 55.4 +59.1			
6°	-8 45.7 +59.0	-8 56.3 +59.1	-9 06.6 +59.1	-9 16.6 +59.1	-9 26.4 +59.2
7°	-7 46.7 +59.0	-7 57.2 +59.1	-8 07.5 +59.1	-8 17.5 +59.2	-8 27.2 +59.2
8°	-6 47.7 +59.1	-6 58.1 +59.0	-7 08.4 +59.2	-7 18.3 +59.2	-7 28.0 +59.3
9°	-5 48.6 +59.0	-5 59.1 +59.1	-6 09.2 +59.1	-6 19.1 +59.2	-6 28.7 +59.2
10°	-4 49.6 +59.1	-5 00.0 +59.1	-5 10.1 +59.2	-5 19.9 +59.2	-5 29.5 +59.2
11°	-3 50.5 +59.0	-4 00.9 +59.1	-4 10.9 +59.1	-4 20.7 +59.1	-4 30.3 +59.2
12°	-2 51.5 +59.1	-3 01.8 +59.1	-3 11.8 +59.1	-3 21.6 +59.2	-3 31.1 +59.3
13°	-1 52.4 +59.0	-2 02.7 +59.1	-2 12.7 +59.2	-2 22.4 +59.2	-2 31.8 +59.2
14°	-0 53.4 +59.1	-1 03.6 +59.1	-1 13.5 +59.1	-1 23.2 +59.2	-1 32.6 +59.2
15°	0 05.7 +59.0 33.6	-0 04.5 +59.1	-0 14.4 +59.2	-0 24.0 +59.2	-0 33.4 +59.3
16°	1 04.7 +59.1 33.5	0 54.6 +59.1 32.5	0 44.8 +59.1 31.6	0 35.2 +59.2 30.6	0 25.9 +59.2 29.7
17°	2 03.8 +59.0 33.3	1 53.7 +59.1 32.3	1 43.9 +59.2 31.4	1 34.4 +59.2 30.5	1 25.1 +59.3 29.5
18°	3 02.8 +59.0 33.1	2 52.8 +59.1 32.2	2 43.1 +59.1 31.2	2 33.6 +59.2 30.3	2 24.4 +59.2 29.4
19°	4 01.8 +59.1 32.9	3 51.9 +59.1 32.0	3 42.2 +59.1 31.1	3 32.8 +59.1 30.1	3 23.6 +59.2 29.2
20°	5 00.9 +59.0 32.8	4 51.0 +59.1 31.8	4 41.3 +59.2 30.9	4 31.9 +59.2 30.0	4 22.8 +59.2 29.0
21°	5 59.9 +59.1 32.6	5 50.1 +59.1 31.7	5 40.5 +59.1 30.7	5 31.1 +59.2 29.8	5 22.0 +59.3 28.9
22°	6 59.0 +59.0 32.4	6 49.2 +59.0 31.5	6 39.6 +59.1 30.6	6 30.3 +59.2 29.6	6 21.3 +59.2 28.7
23°	7 58.0 +59.0 32.2	7 48.2 +59.1 31.3	7 38.7 +59.2 30.4	7 29.5 +59.2 29.5	7 20.5 +59.2 28.6
24°	8 57.0 +59.1 32.0	8 47.3 +59.1 31.1	8 37.9 +59.1 30.2	8 28.7 +59.1 29.3	8 19.7 +59.2 28.4
25°	9 56.1 +59.0 31.9	9 46.4 +59.1 30.9	9 37.0 +59.1 30.0	9 27.8 +59.2 29.1	9 18.9 +59.2 28.2
26°	10 55.1 +59.0 31.7	10 45.5 +59.0 30.8	10 36.1 +59.1 29.9	10 27.0 +59.2 29.0	10 18.1 +59.3 28.1
27°	11 54.1 +59.0 31.5	11 44.5 +59.1 30.6	11 35.2 +59.1 29.7	11 26.2 +59.1 28.8	11 17.4 +59.2 27.9
28°	12 53.1 +59.0 31.3	12 43.6 +59.0 30.4	12 34.3 +59.1 29.5	12 25.3 +59.2 28.6	12 16.6 +59.1 27.7
29°	13 52.1 +59.0 31.1	13 42.6 +59.1 30.2	13 33.4 +59.1 29.3	13 24.5 +59.1 28.5	13 15.7 +59.2 27.6

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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°	-9 35.9 +59.3	-9 45.1 +59.3	-9 54.0 +59.3		
7°	-8 36.6 +59.2	-8 45.8 +59.3	-8 54.7 +59.4	-9 03.3 +59.4	-9 11.6 +59.4
8°	-7 37.4 +59.3	-7 46.5 +59.3	-7 55.3 +59.3	-8 03.9 +59.4	-8 12.2 +59.5
9°	-6 38.1 +59.3	-6 47.2 +59.3	-6 56.0 +59.4	-7 04.5 +59.4	-7 12.7 +59.4
10°	-5 38.8 +59.2	-5 47.9 +59.4	-5 56.6 +59.3	-6 05.1 +59.4	-6 13.3 +59.4
11°	-4 39.6 +59.3	-4 48.5 +59.3	-4 57.3 +59.4	-5 05.7 +59.4	-5 13.9 +59.5
12°	-3 40.3 +59.3	-3 49.2 +59.3	-3 57.9 +59.4	-4 06.3 +59.4	-4 14.4 +59.4
13°	-2 41.0 +59.3	-2 49.9 +59.3	-2 58.5 +59.3	-3 06.9 +59.4	-3 15.0 +59.5
14°	-1 41.7 +59.3	-1 50.6 +59.3	-1 59.2 +59.4	-2 07.5 +59.4	-2 15.5 +59.4
15°	-0 42.4 +59.2	-0 51.3 +59.4	-0 59.8 +59.4	-1 08.1 +59.4	-1 16.1 +59.5
16°	0 16.8 +59.3 28.7	0 08.1 +59.3 27.8	-0 00.4 +59.3	-0 08.7 +59.4	-0 16.6 +59.4
17°	1 16.1 +59.3 28.6	1 07.4 +59.3 27.6	0 58.9 +59.4 26.7	0 50.7 +59.4 25.7	0 42.8 +59.5 24.8
18°	2 15.4 +59.3 28.4	2 06.7 +59.3 27.5	1 58.3 +59.3 26.5	1 50.1 +59.4 25.6	1 42.3 +59.4 24.7
19°	3 14.7 +59.2 28.3	3 06.0 +59.3 27.3	2 57.6 +59.4 26.4	2 49.5 +59.4 25.5	2 41.7 +59.5 24.5
20°	4 13.9 +59.3 28.1	4 05.3 +59.4 27.2	3 57.0 +59.4 26.2	3 48.9 +59.5 25.3	3 41.2 +59.4 24.4
21°	5 13.2 +59.3 28.0	5 04.7 +59.3 27.0	4 56.4 +59.3 26.1	4 48.4 +59.4 25.2	4 40.6 +59.4 24.2
22°	6 12.5 +59.3 27.8	6 04.0 +59.3 26.9	5 55.7 +59.4 26.0	5 47.8 +59.4 25.0	5 40.0 +59.5 24.1
23°	7 11.8 +59.2 27.6	7 03.3 +59.3 26.7	6 55.1 +59.3 25.8	6 47.2 +59.3 24.9	6 39.5 +59.4 24.0
24°	8 11.0 +59.3 27.5	8 02.6 +59.3 26.6	7 54.4 +59.4 25.7	7 46.5 +59.4 24.7	7 38.9 +59.5 23.8
25°	9 10.3 +59.3 27.3	9 01.9 +59.3 26.4	8 53.8 +59.3 25.5	8 45.9 +59.4 24.6	8 38.4 +59.4 23.7
26°	10 09.6 +59.2 27.2	10 01.2 +59.3 26.3	9 53.1 +59.4 25.4	9 45.3 +59.4 24.5	9 37.8 +59.4 23.6
27°	11 08.8 +59.3 27.0	11 00.5 +59.3 26.1	10 52.5 +59.3 25.2	10 44.7 +59.4 24.3	10 37.2 +59.4 23.4
28°	12 08.1 +59.2 26.8	11 59.8 +59.3 26.0	11 51.8 +59.4 25.1	11 44.1 +59.4 24.2	11 36.6 +59.5 23.3
29°	13 07.3 +59.2 26.7	12 59.1 +59.3 25.8	12 51.2 +59.3 24.9	12 43.5 +59.4 24.0	12 36.1 +59.4 23.1

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°	-9 19.6 +59.4	-9 27.4 +59.5	-9 34.8 +59.5	-9 42.0 +59.6	-9 48.8 +59.6
8°	-8 20.2 +59.5	-8 27.9 +59.6	-8 35.3 +59.6	-8 42.4 +59.6	-8 49.2 +59.6
9°	-7 20.7 +59.5	-7 28.3 +59.5	-7 35.7 +59.5	-7 42.8 +59.6	-7 49.6 +59.7
10°	-6 21.2 +59.5	-6 28.8 +59.5	-6 36.2 +59.6	-6 43.2 +59.6	-6 49.9 +59.6
11°	-5 21.7 +59.5	-5 29.3 +59.5	-5 36.6 +59.6	-5 43.6 +59.6	-5 50.3 +59.6
12°	-4 22.2 +59.4	-4 29.8 +59.5	-4 37.0 +59.5	-4 44.0 +59.6	-4 50.7 +59.7
13°	-3 22.8 +59.5	-3 30.3 +59.6	-3 37.5 +59.6	-3 44.4 +59.6	-3 51.0 +59.6
14°	-2 23.3 +59.5	-2 30.7 +59.5	-2 37.9 +59.5	-2 44.8 +59.6	-2 51.4 +59.6
15°	-1 23.8 +59.5	-1 31.2 +59.5	-1 38.4 +59.6	-1 45.2 +59.6	-1 51.8 +59.6
16°	-0 24.3 +59.5	-0 31.7 +59.5	-0 38.8 +59.6	-0 45.6 +59.6	-0 52.2 +59.7
17°	0 35.2 +59.5 23.8	0 27.8 +59.6 22.9	0 20.8 +59.5 21.9	0 14.0 +59.6 21.0	0 07.5 +59.6 20.0
18°	1 34.7 +59.5 23.7	1 27.4 +59.5 22.8	1 20.3 +59.6 21.8	1 13.6 +59.6 20.9	1 07.1 +59.6 19.9
19°	2 34.2 +59.4 23.6	2 26.9 +59.5 22.6	2 19.9 +59.5 21.7	2 13.2 +59.6 20.8	2 06.7 +59.7 19.8
20°	3 33.6 +59.5 23.4	3 26.4 +59.5 22.5	3 19.4 +59.6 21.6	3 12.8 +59.6 20.6	3 06.4 +59.6 19.7
21°	4 33.1 +59.5 23.3	4 25.9 +59.5 22.4	4 19.0 +59.6 21.5	4 12.4 +59.6 20.5	4 06.0 +59.6 19.6
22°	5 32.6 +59.5 23.2	5 25.4 +59.6 22.3	5 18.6 +59.5 21.3	5 12.0 +59.5 20.4	5 05.6 +59.7 19.5
23°	6 32.1 +59.5 23.1	6 25.0 +59.5 22.1	6 18.1 +59.6 21.2	6 11.5 +59.6 20.3	6 05.3 +59.6 19.4
24°	7 31.6 +59.4 22.9	7 24.5 +59.5 22.0	7 17.7 +59.5 21.1	7 11.1 +59.6 20.2	7 04.9 +59.6 19.3
25°	8 31.0 +59.5 22.8	8 24.0 +59.5 21.9	8 17.2 +59.6 21.0	8 10.7 +59.6 20.1	8 04.5 +59.6 19.2
26°	9 30.5 +59.5 22.7	9 23.5 +59.5 21.7	9 16.8 +59.5 20.8	9 10.3 +59.6 19.9	9 04.1 +59.6 19.0
27°	10 30.0 +59.5 22.5	10 23.0 +59.5 21.6	10 16.3 +59.6 20.7	10 09.9 +59.6 19.8	10 03.7 +59.7 18.9
28°	11 29.5 +59.4 22.4	11 22.5 +59.5 21.5	11 15.9 +59.5 20.6	11 09.5 +59.6 19.7	11 03.4 +59.6 18.8
29°	12 28.9 +59.5 22.2	12 22.0 +59.5 21.4	12 15.4 +59.5 20.5	12 09.1 +59.5 19.6	12 03.0 +59.6 18.7

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 55.3 +59.6				
9°	-8 55.7 +59.7	-9 01.9 +59.7	-9 07.8 +59.7	-9 13.4 +59.8	-9 18.7 +59.8
	-7 56.0 +59.6	-8 02.2 +59.7	-8 08.1 +59.8	-8 13.6 +59.7	-8 18.9 +59.8
10°	-6 56.4 +59.7	-7 02.5 +59.7	-7 08.3 +59.7	-7 13.9 +59.8	-7 19.1 +59.8
11°	-5 56.7 +59.7	-6 02.8 +59.7	-6 08.6 +59.7	-6 14.1 +59.7	-6 19.3 +59.8
12°	-4 57.0 +59.6	-5 03.1 +59.7	-5 08.9 +59.7	-5 14.4 +59.8	-5 19.5 +59.7
13°	-3 57.4 +59.7	-4 03.4 +59.7	-4 09.2 +59.7	-4 14.6 +59.7	-4 19.8 +59.8
14°	-2 57.7 +59.6	-3 03.7 +59.7	-3 09.5 +59.8	-3 14.9 +59.8	-3 20.0 +59.8
15°	-1 58.1 +59.7	-2 04.0 +59.7	-2 09.7 +59.7	-2 15.1 +59.7	-2 20.2 +59.8
16°	-0 58.4 +59.7	-1 04.3 +59.7	-1 10.0 +59.7	-1 15.4 +59.8	-1 20.4 +59.8
17°	0 01.3 +59.6 19.1	-0 04.6 +59.6	-0 10.3 +59.8	-0 15.6 +59.7	-0 20.6 +59.7
18°	1 00.9 +59.7 19.0	0 55.0 +59.7 18.0	0 49.5 +59.7 17.1	0 44.1 +59.8 16.1	0 39.1 +59.8 15.2
19°	2 00.6 +59.7 18.9	1 54.7 +59.7 17.9	1 49.2 +59.7 17.0	1 43.9 +59.8 16.1	1 38.9 +59.8 15.1
20°	3 00.3 +59.6 18.8	2 54.4 +59.7 17.8	2 48.9 +59.7 16.9	2 43.7 +59.7 16.0	2 38.7 +59.8 15.0
21°	3 59.9 +59.7 18.7	3 54.1 +59.7 17.7	3 48.6 +59.8 16.8	3 43.4 +59.8 15.9	3 38.5 +59.8 14.9
22°	4 59.6 +59.6 18.6	4 53.8 +59.7 17.6	4 48.4 +59.7 16.7	4 43.2 +59.7 15.8	4 38.3 +59.7 14.9
23°	5 59.2 +59.7 18.5	5 53.5 +59.7 17.5	5 48.1 +59.7 16.6	5 42.9 +59.8 15.7	5 38.0 +59.8 14.8
24°	6 58.9 +59.7 18.3	6 53.2 +59.7 17.4	6 47.8 +59.7 16.5	6 42.7 +59.7 15.6	6 37.8 +59.8 14.7
25°	7 58.6 +59.6 18.2	7 52.9 +59.7 17.3	7 47.5 +59.7 16.4	7 42.4 +59.8 15.5	7 37.6 +59.8 14.6
26°	8 58.2 +59.7 18.1	8 52.6 +59.7 17.2	8 47.2 +59.8 16.3	8 42.2 +59.7 15.4	8 37.4 +59.8 14.5
27°	9 57.9 +59.6 18.0	9 52.3 +59.7 17.1	9 47.0 +59.7 16.2	9 41.9 +59.8 15.3	9 37.2 +59.7 14.4
28°	10 57.5 +59.7 17.9	10 52.0 +59.6 17.0	10 46.7 +59.7 16.1	10 41.7 +59.7 15.2	10 36.9 +59.8 14.3
29°	11 57.2 +59.6 17.8	11 51.6 +59.7 16.9	11 46.4 +59.7 16.0	11 41.4 +59.8 15.1	11 36.7 +59.8 14.2

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 23.6 +59.8	-9 28.3 +59.8	-9 32.6 +59.8	-9 36.7 +59.9	-9 40.4 +59.9
9°	-8 23.8 +59.8	-8 28.5 +59.9	-8 32.8 +59.9	-8 36.8 +59.9	-8 40.5 +59.9
10°	-7 24.0 +59.8	-7 28.6 +59.8	-7 32.9 +59.8	-7 36.9 +59.8	-7 40.6 +59.9
11°	-6 24.2 +59.8	-6 28.8 +59.8	-6 33.1 +59.9	-6 37.1 +59.9	-6 40.7 +59.9
12°	-5 24.4 +59.8	-5 29.0 +59.9	-5 33.2 +59.8	-5 37.2 +59.9	-5 40.8 +59.9
13°	-4 24.6 +59.8	-4 29.1 +59.8	-4 33.4 +59.9	-4 37.3 +59.9	-4 40.9 +59.9
14°	-3 24.8 +59.8	-3 29.3 +59.8	-3 33.5 +59.8	-3 37.4 +59.9	-3 41.0 +59.9
15°	-2 25.0 +59.8	-2 29.5 +59.8	-2 33.7 +59.9	-2 37.5 +59.8	-2 41.1 +59.9
16°	-1 25.2 +59.8	-1 29.7 +59.9	-1 33.8 +59.8	-1 37.7 +59.9	-1 41.2 +59.9
17°	-0 25.4 +59.8	-0 29.8 +59.8	-0 34.0 +59.9	-0 37.8 +59.9	-0 41.3 +59.9
18°	0 34.4 +59.8 14.3	0 30.0 +59.8 13.3	0 25.9 +59.8 12.4	0 22.1 +59.9 11.4	0 18.6 +59.9 10.5
19°	1 34.2 +59.8 14.2	1 29.8 +59.9 13.2	1 25.7 +59.9 12.3	1 22.0 +59.8 11.3	1 18.5 +59.9 10.4
20°	2 34.0 +59.8 14.1	2 29.7 +59.8 13.2	2 25.6 +59.9 12.2	2 21.8 +59.9 11.3	2 18.4 +59.8 10.3
21°	3 33.8 +59.9 14.0	3 29.5 +59.8 13.1	3 25.5 +59.8 12.1	3 21.7 +59.9 11.2	3 18.2 +59.9 10.3
22°	4 33.7 +59.8 13.9	4 29.3 +59.9 13.0	4 25.3 +59.9 12.1	4 21.6 +59.9 11.1	4 18.1 +59.9 10.2
23°	5 33.5 +59.8 13.8	5 29.2 +59.8 12.9	5 25.2 +59.8 12.0	5 21.5 +59.8 11.1	5 18.0 +59.9 10.2
24°	6 33.3 +59.8 13.8	6 29.0 +59.8 12.9	6 25.0 +59.9 11.9	6 21.3 +59.9 11.0	6 17.9 +59.9 10.1
25°	7 33.1 +59.8 13.7	7 28.8 +59.9 12.8	7 24.9 +59.8 11.9	7 21.2 +59.9 11.0	7 17.8 +59.9 10.0
26°	8 32.9 +59.8 13.6	8 28.7 +59.8 12.7	8 24.7 +59.9 11.8	8 21.1 +59.9 10.9	8 17.7 +59.9 10.0
27°	9 32.7 +59.8 13.5	9 28.5 +59.8 12.6	9 24.6 +59.8 11.7	9 21.0 +59.8 10.8	9 17.6 +59.9 9.9
28°	10 32.5 +59.8 13.4	10 28.3 +59.8 12.5	10 24.4 +59.9 11.7	10 20.8 +59.9 10.8	10 17.5 +59.9 9.9
29°	11 32.3 +59.8 13.4	11 28.1 +59.9 12.5	11 24.3 +59.8 11.6	11 20.7 +59.9 10.7	11 17.4 +59.9 9.8

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 43.8 +59.9	-9 46.9 +60.0	-9 49.6 +59.9	-9 52.0 +59.9	-9 54.1 +59.9
9°	-8 43.9 +59.9	-8 46.9 +59.9	-8 49.7 +60.0	-8 52.1 +60.0	-8 54.2 +60.0
10°	-7 44.0 +60.0	-7 47.0 +59.9	-7 49.7 +59.9	-7 52.1 +59.9	-7 54.2 +60.0
11°	-6 44.0 +59.9	-6 47.1 +60.0	-6 49.8 +60.0	-6 52.2 +60.0	-6 54.2 +59.9
12°	-5 44.1 +59.9	-5 47.1 +59.9	-5 49.8 +59.9	-5 52.2 +59.9	-5 54.3 +60.0
13°	-4 44.2 +59.9	-4 47.2 +59.9	-4 49.9 +60.0	-4 52.3 +60.0	-4 54.3 +60.0
14°	-3 44.3 +59.9	-3 47.3 +59.9	-3 49.9 +59.9	-3 52.3 +60.0	-3 54.3 +59.9
15°	-2 44.4 +59.9	-2 47.4 +60.0	-2 50.0 +59.9	-2 52.3 +59.9	-2 54.4 +60.0
16°	-1 44.5 +59.9	-1 47.4 +59.9	-1 50.1 +60.0	-1 52.4 +60.0	-1 54.4 +60.0
17°	-0 44.6 +59.9	-0 47.5 +59.9	-0 50.1 +59.9	-0 52.4 +59.9	-0 54.4 +59.9
18°	0 15.3 +60.0 9.5	0 12.4 +60.0 8.6	0 09.8 +60.0 7.6	0 07.5 +60.0 6.7	0 05.5 +60.0 5.7
19°	1 15.3 +59.9 9.5	1 12.4 +59.9 8.5	1 09.8 +59.9 7.6	1 07.5 +59.9 6.6	1 05.5 +60.0 5.7
20°	2 15.2 +59.9 9.4	2 12.3 +59.9 8.5	2 09.7 +60.0 7.5	2 07.4 +60.0 6.6	2 05.5 +59.9 5.6
21°	3 15.1 +59.9 9.3	3 12.2 +60.0 8.4	3 09.7 +59.9 7.5	3 07.4 +60.0 6.5	3 05.4 +60.0 5.6
22°	4 15.0 +59.9 9.3	4 12.2 +59.9 8.4	4 09.6 +60.0 7.4	4 07.4 +59.9 6.5	4 05.4 +60.0 5.6
23°	5 14.9 +59.9 9.2	5 12.1 +59.9 8.3	5 09.6 +59.9 7.4	5 07.3 +60.0 6.5	5 05.4 +59.9 5.5
24°	6 14.8 +59.9 9.2	6 12.0 +59.9 8.3	6 09.5 +59.9 7.3	6 07.3 +59.9 6.4	6 05.3 +60.0 5.5
25°	7 14.7 +60.0 9.1	7 11.9 +60.0 8.2	7 09.4 +60.0 7.3	7 07.2 +60.0 6.4	7 05.3 +60.0 5.5
26°	8 14.7 +59.9 9.1	8 11.9 +59.9 8.2	8 09.4 +59.9 7.3	8 07.2 +59.9 6.4	8 05.3 +60.0 5.4
27°	9 14.6 +59.9 9.0	9 11.8 +59.9 8.1	9 09.3 +60.0 7.2	9 07.1 +60.0 6.3	9 05.3 +59.9 5.4
28°	10 14.5 +59.9 9.0	10 11.7 +60.0 8.1	10 09.3 +59.9 7.2	10 07.1 +60.0 6.3	10 05.2 +60.0 5.4
29°	11 14.4 +59.9 8.9	11 11.7 +59.9 8.0	11 09.2 +60.0 7.1	11 07.1 +59.9 6.2	11 05.2 +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 55.9 +59.9	-9 57.4 +60.0	-9 58.5 +60.0	-9 59.3 +59.9	-9 59.8 +60.0
9°	-8 56.0 +60.0	-8 57.4 +60.0	-8 58.5 +59.9	-8 59.4 +60.0	-8 59.8 +60.0
10°	-7 56.0 +60.0	-7 57.4 +60.0	-7 58.6 +60.0	-7 59.4 +60.0	-7 59.8 +60.0
11°	-6 56.0 +60.0	-6 57.4 +59.9	-6 58.6 +60.0	-6 59.4 +60.0	-6 59.8 +60.0
12°	-5 56.0 +60.0	-5 57.5 +60.0	-5 58.6 +60.0	-5 59.4 +60.0	-5 59.8 +60.0
13°	-4 56.0 +59.9	-4 57.5 +60.0	-4 58.6 +60.0	-4 59.4 +60.0	-4 59.8 +60.0
14°	-3 56.1 +60.0	-3 57.5 +60.0	-3 58.6 +60.0	-3 59.4 +60.0	-3 59.8 +60.0
15°	-2 56.1 +60.0	-2 57.5 +60.0	-2 58.6 +60.0	-2 59.4 +60.0	-2 59.8 +60.0
16°	-1 56.1 +60.0	-1 57.5 +60.0	-1 58.6 +60.0	-1 59.4 +60.0	-1 59.8 +60.0
17°	-0 56.1 +59.9	-0 57.5 +60.0	-0 58.6 +60.0	-0 59.4 +60.0	-0 59.8 +60.0
18°	0 03.8 +60.0 4.8	0 02.5 +59.9 3.8	0 01.4 +60.0 2.9	0 00.6 +60.0 1.9	0 00.2 +60.0 1.0
19°	1 03.8 +60.0 4.7	1 02.4 +60.0 3.8	1 01.4 +60.0 2.8	1 00.6 +60.0 1.9	1 00.2 +60.0 0.9
20°	2 03.8 +60.0 4.7	2 02.4 +60.0 3.8	2 01.4 +60.0 2.8	2 00.6 +60.0 1.9	2 00.2 +60.0 0.9
21°	3 03.8 +60.0 4.7	3 02.4 +60.0 3.7	3 01.4 +60.0 2.8	3 00.6 +60.0 1.9	3 00.2 +60.0 0.9
22°	4 03.8 +59.9 4.6	4 02.4 +60.0 3.7	4 01.4 +59.9 2.8	4 00.6 +60.0 1.9	4 00.2 +59.9 0.9
23°	5 03.7 +60.0 4.6	5 02.4 +60.0 3.7	5 01.3 +60.0 2.8	5 00.6 +60.0 1.8	5 00.1 +60.0 0.9
24°	6 03.7 +60.0 4.6	6 02.4 +60.0 3.7	6 01.3 +60.0 2.8	6 00.6 +60.0 1.8	6 00.1 +60.0 0.9
25°	7 03.7 +60.0 4.6	7 02.4 +59.9 3.7	7 01.3 +60.0 2.7	7 00.6 +60.0 1.8	7 00.1 +60.0 0.9
26°	8 03.7 +59.9 4.5	8 02.3 +60.0 3.6	8 01.3 +60.0 2.7	8 00.6 +60.0 1.8	8 00.1 +60.0 0.9
27°	9 03.6 +60.0 4.5	9 02.3 +60.0 3.6	9 01.3 +60.0 2.7	9 00.6 +60.0 1.8	9 00.1 +60.0 0.9
28°	10 03.6 +60.0 4.5	10 02.3 +60.0 3.6	10 01.3 +60.0 2.7	10 00.6 +60.0 1.8	10 00.1 +60.0 0.9
29°	11 03.6 +60.0 4.5	11 02.3 +60.0 3.6	11 01.3 +60.0 2.7	11 00.6 +60.0 1.8	11 00.1 +60.0 0.9

Declination SAME name as Latitude

Latitude 73°

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°	17 00.0 +60.0 180.0	16 59.8 +60.0 179.0	16 59.4 +60.0 177.9	16 58.6 +60.0 176.9	16 57.4 +60.0 175.8
1°	18 00.0 +60.0 180.0	17 59.8 +60.0 178.9	17 59.4 +60.0 177.9	17 58.6 +59.9 176.8	17 57.4 +60.0 175.8
2°	19 00.0 +60.0 180.0	18 59.8 +60.0 178.9	18 59.4 +59.9 177.9	18 58.5 +60.0 176.8	18 57.4 +60.0 175.8
3°	20 00.0 +60.0 180.0	19 59.8 +60.0 178.9	19 59.3 +60.0 177.9	19 58.5 +60.0 176.8	19 57.4 +60.0 175.7
4°	21 00.0 +60.0 180.0	20 59.8 +60.0 178.9	20 59.3 +60.0 177.9	20 58.5 +60.0 176.8	20 57.4 +60.0 175.7
5°	22 00.0 +60.0 180.0	21 59.8 +60.0 178.9	21 59.3 +60.0 177.9	21 58.5 +60.0 176.8	21 57.4 +60.0 175.7
6°	23 00.0 +60.0 180.0	22 59.8 +60.0 178.9	22 59.3 +60.0 177.8	22 58.5 +60.0 176.8	22 57.4 +59.9 175.7
7°	24 00.0 +60.0 180.0	23 59.8 +60.0 178.9	23 59.3 +60.0 177.8	23 58.5 +60.0 176.7	23 57.3 +60.0 175.7
8°	25 00.0 +60.0 180.0	24 59.8 +60.0 178.9	24 59.3 +60.0 177.8	24 58.5 +60.0 176.7	24 57.3 +60.0 175.6
9°	26 00.0 +60.0 180.0	25 59.8 +60.0 178.9	25 59.3 +60.0 177.8	25 58.5 +60.0 176.7	25 57.3 +60.0 175.6
10°	27 00.0 +60.0 180.0	26 59.8 +60.0 178.9	26 59.3 +60.0 177.8	26 58.5 +60.0 176.7	26 57.3 +60.0 175.6
11°	28 00.0 +60.0 180.0	27 59.8 +60.0 178.9	27 59.3 +60.0 177.8	27 58.5 +60.0 176.7	27 57.3 +60.0 175.6
12°	29 00.0 +60.0 180.0	28 59.8 +60.0 178.9	28 59.3 +60.0 177.8	28 58.5 +60.0 176.6	28 57.3 +59.9 175.5
13°	30 00.0 +60.0 180.0	29 59.8 +60.0 178.9	29 59.3 +60.0 177.7	29 58.5 +59.9 176.6	29 57.2 +60.0 175.5
14°	31 00.0 +60.0 180.0	30 59.8 +60.0 178.9	30 59.3 +60.0 177.7	30 58.4 +60.0 176.6	30 57.2 +60.0 175.5
15°	32 00.0 +60.0 180.0	31 59.8 +60.0 178.9	31 59.3 +60.0 177.7	31 58.4 +60.0 176.6	31 57.2 +60.0 175.4
16°	33 00.0 +60.0 180.0	32 59.8 +60.0 178.9	32 59.3 +60.0 177.7	32 58.4 +60.0 176.6	32 57.2 +60.0 175.4
17°	34 00.0 +60.0 180.0	33 59.8 +60.0 178.8	33 59.3 +60.0 177.7	33 58.4 +60.0 176.5	33 57.2 +60.0 175.4
18°	35 00.0 +60.0 180.0	34 59.8 +60.0 178.8	34 59.3 +60.0 177.7	34 58.4 +60.0 176.5	34 57.2 +59.9 175.4
19°	36 00.0 +60.0 180.0	35 59.8 +60.0 178.8	35 59.3 +60.0 177.7	35 58.4 +60.0 176.5	35 57.1 +60.0 175.3
20°	37 00.0 +60.0 180.0	36 59.8 +60.0 178.8	36 59.3 +60.0 177.6	36 58.4 +60.0 176.5	36 57.1 +60.0 175.3
21°	38 00.0 +60.0 180.0	37 59.8 +60.0 178.8	37 59.3 +60.0 177.6	37 58.4 +60.0 176.4	37 57.1 +60.0 175.3
22°	39 00.0 +60.0 180.0	38 59.8 +60.0 178.8	38 59.3 +60.0 177.6	38 58.4 +59.9 176.4	38 57.1 +60.0 175.2
23°	40 00.0 +60.0 180.0	39 59.8 +60.0 178.8	39 59.3 +60.0 177.6	39 58.3 +60.0 176.4	39 57.1 +59.9 175.2
24°	41 00.0 +60.0 180.0	40 59.8 +60.0 178.8	40 59.3 +60.0 177.6	40 58.3 +60.0 176.4	40 57.0 +60.0 175.2
25°	42 00.0 +60.0 180.0	41 59.8 +60.0 178.8	41 59.3 +59.9 177.6	41 58.3 +60.0 176.3	41 57.0 +60.0 175.1
26°	43 00.0 +60.0 180.0	42 59.8 +60.0 178.8	42 59.2 +60.0 177.5	42 58.3 +60.0 176.3	42 57.0 +60.0 175.1
27°	44 00.0 +60.0 180.0	43 59.8 +60.0 178.8	43 59.2 +60.0 177.5	43 58.3 +60.0 176.3	43 57.0 +59.9 175.0
28°	45 00.0 +60.0 180.0	44 59.8 +60.0 178.8	44 59.2 +60.0 177.5	44 58.3 +60.0 176.3	44 56.9 +60.0 175.0
29°	46 00.0 +60.0 180.0	45 59.8 +60.0 178.7	45 59.2 +60.0 177.5	45 58.3 +60.0 176.2	45 56.9 +60.0 175.0

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°	16 56.0 +60.0 174.8	16 54.2 +60.0 173.7	16 52.2 +59.9 172.7	16 49.8 +59.9 171.6	16 47.1 +59.9 170.6
1°	17 56.0 +60.0 174.7	17 54.2 +60.0 173.7	17 52.1 +60.0 172.6	17 49.7 +60.0 171.6	17 47.0 +59.9 170.5
2°	18 56.0 +59.9 174.7	18 54.2 +60.0 173.7	18 52.1 +59.9 172.6	18 49.7 +59.9 171.5	18 46.9 +60.0 170.5
3°	19 55.9 +60.0 174.7	19 54.2 +59.9 173.6	19 52.0 +60.0 172.6	19 49.6 +60.0 171.5	19 46.9 +59.9 170.4
4°	20 55.9 +60.0 174.7	20 54.1 +60.0 173.6	20 52.0 +60.0 172.5	20 49.6 +59.9 171.5	20 46.8 +59.9 170.4
5°	21 55.9 +60.0 174.6	21 54.1 +60.0 173.6	21 52.0 +59.9 172.5	21 49.5 +59.9 171.4	21 46.7 +59.9 170.3
6°	22 55.9 +59.9 174.6	22 54.1 +59.9 173.5	22 51.9 +60.0 172.4	22 49.4 +60.0 171.4	22 46.6 +60.0 170.3
7°	23 55.8 +60.0 174.6	23 54.0 +60.0 173.5	23 51.9 +59.9 172.4	23 49.4 +59.9 171.3	23 46.6 +59.9 170.2
8°	24 55.8 +60.0 174.5	24 54.0 +60.0 173.4	24 51.8 +60.0 172.4	24 49.3 +60.0 171.3	24 46.5 +59.9 170.2
9°	25 55.8 +60.0 174.5	25 54.0 +59.9 173.4	25 51.8 +59.9 172.3	25 49.3 +59.9 171.2	25 46.4 +59.9 170.1
10°	26 55.8 +59.9 174.5	26 53.9 +60.0 173.4	26 51.7 +60.0 172.3	26 49.2 +59.9 171.2	26 46.3 +60.0 170.1
11°	27 55.7 +60.0 174.4	27 53.9 +59.9 173.3	27 51.7 +59.9 172.2	27 49.1 +60.0 171.1	27 46.3 +59.9 170.0
12°	28 55.7 +60.0 174.4	28 53.8 +60.0 173.3	28 51.6 +60.0 172.2	28 49.1 +59.9 171.1	28 46.2 +59.9 169.9
13°	29 55.7 +60.0 174.4	29 53.8 +60.0 173.3	29 51.6 +59.9 172.1	29 49.0 +59.9 171.0	29 46.1 +59.9 169.9
14°	30 55.7 +59.9 174.3	30 53.8 +59.9 173.2	30 51.5 +60.0 172.1	30 48.9 +60.0 171.0	30 46.0 +59.9 169.8
15°	31 55.6 +60.0 174.3	31 53.7 +60.0 173.2	31 51.5 +59.9 172.0	31 48.9 +59.9 170.9	31 45.9 +59.9 169.8
16°	32 55.6 +60.0 174.3	32 53.7 +60.0 173.1	32 51.4 +60.0 172.0	32 48.8 +59.9 170.8	32 45.8 +59.9 169.7
17°	33 55.6 +60.0 174.2	33 53.7 +59.9 173.1	33 51.4 +59.9 171.9	33 48.7 +60.0 170.8	33 45.7 +60.0 169.6
18°	34 55.6 +59.9 174.2	34 53.6 +60.0 173.0	34 51.3 +60.0 171.9	34 48.7 +59.9 170.7	34 45.7 +59.9 169.6
19°	35 55.5 +60.0 174.2	35 53.6 +59.9 173.0	35 51.3 +59.9 171.8	35 48.6 +59.9 170.7	35 45.6 +59.9 169.5
20°	36 55.5 +60.0 174.1	36 53.5 +60.0 172.9	36 51.2 +59.9 171.8	36 48.5 +59.9 170.6	36 45.5 +59.9 169.4
21°	37 55.5 +59.9 174.1	37 53.5 +59.9 172.9	37 51.1 +60.0 171.7	37 48.4 +59.9 170.5	37 45.4 +59.9 169.4
22°	38 55.4 +60.0 174.0	38 53.4 +60.0 172.8	38 51.1 +59.9 171.7	38 48.3 +60.0 170.5	38 45.3 +59.9 169.3
23°	39 55.4 +60.0 174.0	39 53.4 +59.9 172.8	39 51.0 +59.9 171.6	39 48.3 +59.9 170.4	39 45.2 +59.8 169.2
24°	40 55.4 +59.9 174.0	40 53.3 +60.0 172.7	40 50.9 +60.0 171.5	40 48.2 +59.9 170.3	40 45.0 +59.9 169.1
25°	41 55.3 +60.0 173.9	41 53.3 +59.9 172.7	41 50.9 +59.9 171.5	41 48.1 +59.9 170.3	41 44.9 +59.9 169.0
26°	42 55.3 +60.0 173.9	42 53.2 +60.0 172.6	42 50.8 +59.9 171.4	42 48.0 +59.9 170.2	42 44.8 +59.9 169.0
27°	43 55.3 +59.9 173.8	43 53.2 +59.9 172.6	43 50.7 +60.0 171.3	43 47.9 +59.9 170.1	43 44.7 +59.9 168.9
28°	44 55.2 +60.0 173.8	44 53.1 +60.0 172.5	44 50.7 +59.9 171.3	44 47.8 +59.9 170.0	44 44.6 +59.9 168.8
29°	45 55.2 +59.9 173.7	45 53.1 +59.9 172.5	45 50.6 +59.9 171.2	45 47.7 +59.9 169.9	45 44.5 +59.8 168.7

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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°	16 44.0 +60.0 169.6	16 40.7 +59.9 168.5	16 37.1 +59.8 167.5	16 33.1 +59.9 166.4	16 28.8 +59.9 165.4
1°	17 44.0 +59.9 169.5	17 40.6 +59.9 168.4	17 36.9 +59.9 167.4	17 33.0 +59.8 166.4	17 28.7 +59.8 165.3
2°	18 43.9 +59.9 169.4	18 40.5 +59.9 168.4	18 36.8 +59.9 167.3	18 32.8 +59.9 166.3	18 28.5 +59.8 165.2
3°	19 43.8 +59.9 169.4	19 40.4 +59.9 168.3	19 36.7 +59.9 167.3	19 32.7 +59.8 166.2	19 28.3 +59.9 165.2
4°	20 43.7 +59.9 169.3	20 40.3 +59.9 168.3	20 36.6 +59.8 167.2	20 32.5 +59.9 166.1	20 28.2 +59.8 165.1
5°	21 43.6 +59.9 169.3	21 40.2 +59.9 168.2	21 36.4 +59.9 167.1	21 32.4 +59.8 166.1	21 28.0 +59.8 165.0
6°	22 43.5 +59.9 169.2	22 40.1 +59.9 168.1	22 36.3 +59.9 167.1	22 32.2 +59.9 166.0	22 27.8 +59.8 164.9
7°	23 43.4 +59.9 169.1	23 40.0 +59.9 168.1	23 36.2 +59.8 167.0	23 32.1 +59.8 165.9	23 27.6 +59.8 164.8
8°	24 43.3 +59.9 169.1	24 39.9 +59.8 168.0	24 36.0 +59.9 166.9	24 31.9 +59.8 165.8	24 27.4 +59.9 164.7
9°	25 43.2 +59.9 169.0	25 39.7 +59.9 167.9	25 35.9 +59.9 166.8	25 31.7 +59.9 165.7	25 27.3 +59.8 164.7
10°	26 43.1 +59.9 169.0	26 39.6 +59.9 167.9	26 35.8 +59.8 166.8	26 31.6 +59.8 165.7	26 27.1 +59.8 164.6
11°	27 43.0 +59.9 168.9	27 39.5 +59.9 167.8	27 35.6 +59.9 166.7	27 31.4 +59.9 165.6	27 26.9 +59.8 164.5
12°	28 42.9 +59.9 168.8	28 39.4 +59.9 167.7	28 35.5 +59.8 166.6	28 31.3 +59.8 165.5	28 26.7 +59.8 164.4
13°	29 42.8 +59.9 168.8	29 39.3 +59.8 167.6	29 35.3 +59.9 166.5	29 31.1 +59.8 165.4	29 26.5 +59.8 164.3
14°	30 42.7 +59.9 168.7	30 39.1 +59.9 167.6	30 35.2 +59.8 166.4	30 30.9 +59.8 165.3	30 26.3 +59.8 164.2
15°	31 42.6 +59.9 168.6	31 39.0 +59.9 167.5	31 35.0 +59.9 166.4	31 30.7 +59.9 165.2	31 26.1 +59.8 164.1
16°	32 42.5 +59.9 168.6	32 38.9 +59.8 167.4	32 34.9 +59.8 166.3	32 30.6 +59.8 165.1	32 25.9 +59.8 164.0
17°	33 42.4 +59.9 168.5	33 38.7 +59.9 167.3	33 34.7 +59.9 166.2	33 30.4 +59.8 165.0	33 25.7 +59.8 163.9
18°	34 42.3 +59.9 168.4	34 38.6 +59.9 167.3	34 34.6 +59.8 166.1	34 30.2 +59.8 165.0	34 25.5 +59.7 163.8
19°	35 42.2 +59.9 168.3	35 38.5 +59.8 167.2	35 34.4 +59.8 166.0	35 30.0 +59.8 164.9	35 25.2 +59.8 163.7
20°	36 42.1 +59.8 168.3	36 38.3 +59.9 167.1	36 34.2 +59.9 165.9	36 29.8 +59.8 164.8	36 25.0 +59.8 163.6
21°	37 41.9 +59.9 168.2	37 38.2 +59.8 167.0	37 34.1 +59.8 165.8	37 29.6 +59.8 164.7	37 24.8 +59.7 163.5
22°	38 41.8 +59.9 168.1	38 38.0 +59.9 166.9	38 33.9 +59.8 165.7	38 29.4 +59.8 164.5	38 24.5 +59.8 163.4
23°	39 41.7 +59.9 168.0	39 37.9 +59.8 166.8	39 33.7 +59.8 165.6	39 29.2 +59.7 164.4	39 24.3 +59.7 163.2
24°	40 41.6 +59.8 167.9	40 37.7 +59.8 166.7	40 33.5 +59.8 165.5	40 28.9 +59.8 164.3	40 24.0 +59.8 163.1
25°	41 41.4 +59.9 167.8	41 37.5 +59.9 166.6	41 33.3 +59.8 165.4	41 28.7 +59.8 164.2	41 23.8 +59.7 163.0
26°	42 41.3 +59.8 167.7	42 37.4 +59.8 166.5	42 33.1 +59.8 165.3	42 28.5 +59.7 164.1	42 23.5 +59.7 162.9
27°	43 41.1 +59.9 167.6	43 37.2 +59.8 166.4	43 32.9 +59.8 165.2	43 28.2 +59.8 164.0	43 23.2 +59.7 162.7
28°	44 41.0 +59.8 167.5	44 37.0 +59.8 166.3	44 32.7 +59.8 165.1	44 28.0 +59.7 163.8	44 22.9 +59.7 162.6
29°	45 40.8 +59.9 167.4	45 36.8 +59.8 166.2	45 32.5 +59.7 165.0	45 27.7 +59.8 163.7	45 22.6 +59.7 162.5

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°	16 24.2 +59.9 164.3	16 19.4 +59.7 163.3	16 14.2 +59.7 162.3	16 08.7 +59.7 161.2	16 02.9 +59.7 160.2
1°	17 24.1 +59.8 164.3	17 19.1 +59.8 163.2	17 13.9 +59.8 162.2	17 08.4 +59.7 161.1	17 02.6 +59.7 160.1
2°	18 23.9 +59.8 164.2	18 18.9 +59.8 163.1	18 13.7 +59.7 162.1	18 08.1 +59.8 161.0	18 02.3 +59.7 160.0
3°	19 23.7 +59.8 164.1	19 18.7 +59.8 163.0	19 13.4 +59.8 162.0	19 07.9 +59.7 160.9	19 02.0 +59.7 159.9
4°	20 23.5 +59.8 164.0	20 18.5 +59.8 163.0	20 13.2 +59.7 161.9	20 07.6 +59.7 160.8	20 01.7 +59.7 159.8
5°	21 23.3 +59.8 163.9	21 18.3 +59.7 162.9	21 12.9 +59.8 161.8	21 07.3 +59.7 160.7	21 01.4 +59.6 159.7
6°	22 23.1 +59.8 163.8	22 18.0 +59.8 162.8	22 12.7 +59.7 161.7	22 07.0 +59.7 160.6	22 01.0 +59.7 159.6
7°	23 22.9 +59.8 163.7	23 17.8 +59.8 162.7	23 12.4 +59.8 161.6	23 06.7 +59.7 160.5	23 00.7 +59.7 159.4
8°	24 22.7 +59.8 163.7	24 17.6 +59.7 162.6	24 12.2 +59.7 161.5	24 06.4 +59.7 160.4	24 00.4 +59.7 159.3
9°	25 22.5 +59.8 163.6	25 17.3 +59.8 162.5	25 11.9 +59.7 161.4	25 06.1 +59.7 160.3	25 00.1 +59.6 159.2
10°	26 22.3 +59.7 163.5	26 17.1 +59.8 162.4	26 11.6 +59.8 161.3	26 05.8 +59.7 160.2	25 59.7 +59.7 159.1
11°	27 22.0 +59.8 163.4	27 16.9 +59.7 162.3	27 11.4 +59.7 161.2	27 05.5 +59.7 160.1	26 59.4 +59.7 159.0
12°	28 21.8 +59.8 163.3	28 16.6 +59.8 162.2	28 11.1 +59.7 161.1	28 05.2 +59.7 160.0	27 59.1 +59.6 158.9
13°	29 21.6 +59.8 163.2	29 16.4 +59.7 162.1	29 10.8 +59.7 161.0	29 04.9 +59.7 159.8	28 58.7 +59.6 158.7
14°	30 21.4 +59.7 163.1	30 16.1 +59.7 162.0	30 10.5 +59.7 160.8	30 04.6 +59.6 159.7	29 58.3 +59.7 158.6
15°	31 21.1 +59.8 163.0	31 15.8 +59.8 161.9	31 10.2 +59.7 160.7	31 04.2 +59.7 159.6	30 58.0 +59.6 158.5
16°	32 20.9 +59.7 162.9	32 15.6 +59.7 161.7	32 09.9 +59.7 160.6	32 03.9 +59.7 159.5	31 57.6 +59.6 158.4
17°	33 20.6 +59.8 162.8	33 15.3 +59.7 161.6	33 09.6 +59.7 160.5	33 03.6 +59.6 159.4	32 57.2 +59.6 158.2
18°	34 20.4 +59.7 162.7	34 15.0 +59.7 161.5	34 09.3 +59.6 160.4	34 03.2 +59.6 159.2	33 56.8 +59.6 158.1
19°	35 20.1 +59.8 162.5	35 14.7 +59.7 161.4	35 08.9 +59.7 160.2	35 02.8 +59.7 159.1	34 56.4 +59.6 157.9
20°	36 19.9 +59.7 162.4	36 14.4 +59.7 161.3	36 08.6 +59.7 160.1	36 02.5 +59.6 159.0	35 56.0 +59.6 157.8
21°	37 19.6 +59.7 162.3	37 14.1 +59.7 161.1	37 08.3 +59.6 160.0	37 02.1 +59.6 158.8	36 55.6 +59.6 157.7
22°	38 19.3 +59.8 162.2	38 13.8 +59.7 161.0	38 07.9 +59.7 159.8	38 01.7 +59.6 158.7	37 55.2 +59.5 157.5
23°	39 19.1 +59.7 162.1	39 13.5 +59.6 160.9	39 07.6 +59.6 159.7	39 01.3 +59.6 158.5	38 54.7 +59.6 157.3
24°	40 18.8 +59.7 161.9	40 13.1 +59.7 160.7	40 07.2 +59.6 159.6	40 00.9 +59.6 158.4	39 54.3 +59.5 157.2
25°	41 18.5 +59.6 161.8	41 12.8 +59.7 160.6	41 06.8 +59.6 159.4	41 00.5 +59.5 158.2	40 53.8 +59.5 157.0
26°	42 18.1 +59.7 161.7	42 12.5 +59.6 160.5	42 06.4 +59.6 159.3	42 00.0 +59.6 158.1	41 53.3 +59.5 156.9
27°	43 17.8 +59.7 161.5	43 12.1 +59.6 160.3	43 06.0 +59.6 159.1	42 59.6 +59.5 157.9	42 52.8 +59.5 156.7
28°	44 17.5 +59.7 161.4	44 11.7 +59.6 160.2	44 05.6 +59.6 158.9	43 59.1 +59.5 157.7	43 52.3 +59.5 156.5
29°	45 17.2 +59.6 161.2	45 11.3 +59.6 160.0	45 05.2 +59.5 158.8	44 58.6 +59.5 157.5	44 51.8 +59.4 156.3

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°	15 56.8 +59.7 159.2	15 50.4 +59.6 158.1	15 43.7 +59.6 157.1	15 36.7 +59.6 156.1	15 29.5 +59.5 155.0
1°	16 56.5 +59.6 159.1	16 50.0 +59.7 158.0	16 43.3 +59.6 157.0	16 36.3 +59.6 155.9	16 29.0 +59.6 154.9
2°	17 56.1 +59.7 158.9	17 49.7 +59.6 157.9	17 42.9 +59.6 156.9	17 35.9 +59.6 155.8	17 28.6 +59.5 154.8
3°	18 55.8 +59.7 158.8	18 49.3 +59.6 157.8	18 42.5 +59.6 156.7	18 35.5 +59.5 155.7	18 28.1 +59.5 154.6
4°	19 55.5 +59.6 158.7	19 48.9 +59.7 157.7	19 42.1 +59.6 156.6	19 35.0 +59.6 155.6	19 27.6 +59.5 154.5
5°	20 55.1 +59.7 158.6	20 48.6 +59.6 157.5	20 41.7 +59.6 156.5	20 34.6 +59.5 155.4	20 27.1 +59.5 154.4
6°	21 54.8 +59.6 158.5	21 48.2 +59.6 157.4	21 41.3 +59.6 156.4	21 34.1 +59.6 155.3	21 26.6 +59.5 154.2
7°	22 54.4 +59.7 158.4	22 47.8 +59.6 157.3	22 40.9 +59.6 156.2	22 33.7 +59.5 155.2	22 26.1 +59.5 154.1
8°	23 54.1 +59.6 158.3	23 47.4 +59.6 157.2	23 40.5 +59.5 156.1	23 33.2 +59.5 155.0	23 25.6 +59.5 154.0
9°	24 53.7 +59.6 158.1	24 47.0 +59.6 157.1	24 40.0 +59.6 156.0	24 32.7 +59.5 154.9	24 25.1 +59.5 153.8
10°	25 53.3 +59.7 158.0	25 46.6 +59.6 156.9	25 39.6 +59.5 155.8	25 32.2 +59.6 154.8	25 24.6 +59.5 153.7
11°	26 53.0 +59.6 157.9	26 46.2 +59.6 156.8	26 39.1 +59.6 155.7	26 31.8 +59.5 154.6	26 24.1 +59.5 153.5
12°	27 52.6 +59.6 157.8	27 45.8 +59.6 156.7	27 38.7 +59.5 155.6	27 31.3 +59.5 154.5	27 23.6 +59.4 153.4
13°	28 52.2 +59.6 157.6	28 45.4 +59.5 156.5	28 38.2 +59.5 155.4	28 30.8 +59.4 154.3	28 23.0 +59.5 153.2
14°	29 51.8 +59.6 157.5	29 44.9 +59.6 156.4	29 37.7 +59.6 155.3	29 30.2 +59.5 154.2	29 22.5 +59.4 153.1
15°	30 51.4 +59.6 157.4	30 44.5 +59.5 156.2	30 37.3 +59.5 155.1	30 29.7 +59.5 154.0	30 21.9 +59.4 152.9
16°	31 51.0 +59.5 157.2	31 44.0 +59.6 156.1	31 36.8 +59.5 155.0	31 29.2 +59.4 153.9	31 21.3 +59.4 152.8
17°	32 50.5 +59.6 157.1	32 43.6 +59.5 156.0	32 36.3 +59.4 154.8	32 28.6 +59.5 153.7	32 20.7 +59.4 152.6
18°	33 50.1 +59.6 156.9	33 43.1 +59.5 155.8	33 35.7 +59.5 154.7	33 28.1 +59.4 153.5	33 20.1 +59.4 152.4
19°	34 49.7 +59.5 156.8	34 42.6 +59.5 155.7	34 35.2 +59.5 154.5	34 27.5 +59.4 153.4	34 19.5 +59.4 152.2
20°	35 49.2 +59.6 156.6	35 42.1 +59.5 155.5	35 34.7 +59.4 154.4	35 26.9 +59.4 153.2	35 18.9 +59.3 152.1
21°	36 48.8 +59.5 156.5	36 41.6 +59.5 155.3	36 34.1 +59.5 154.2	36 26.3 +59.4 153.0	36 18.2 +59.3 151.9
22°	37 48.3 +59.5 156.3	37 41.1 +59.4 155.2	37 33.6 +59.4 154.0	37 25.7 +59.4 152.9	37 17.5 +59.4 151.7
23°	38 47.8 +59.5 156.2	38 40.5 +59.5 155.0	38 33.0 +59.4 153.8	38 25.1 +59.3 152.7	38 16.9 +59.3 151.5
24°	39 47.3 +59.5 156.0	39 40.0 +59.4 154.8	39 32.4 +59.4 153.7	39 24.4 +59.4 152.5	39 16.2 +59.2 151.3
25°	40 46.8 +59.4 155.8	40 39.4 +59.4 154.7	40 31.8 +59.3 153.5	40 23.8 +59.3 152.3	40 15.4 +59.3 151.1
26°	41 46.2 +59.5 155.7	41 38.8 +59.4 154.5	41 31.1 +59.4 153.3	41 23.1 +59.3 152.1	41 14.7 +59.2 150.9
27°	42 45.7 +59.4 155.5	42 38.2 +59.4 154.3	42 30.5 +59.3 153.1	42 22.4 +59.2 151.9	42 13.9 +59.2 150.7
28°	43 45.1 +59.4 155.3	43 37.6 +59.4 154.1	43 29.8 +59.3 152.9	43 21.6 +59.3 151.7	43 13.1 +59.2 150.5
29°	44 44.5 +59.4 155.1	44 37.0 +59.3 153.9	44 29.1 +59.3 152.7	44 20.9 +59.2 151.5	44 12.3 +59.2 150.2

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°	15 21.9 +59.5 154.0	15 14.1 +59.5 153.0	15 06.0 +59.4 152.0	14 57.6 +59.4 150.9	14 49.0 +59.3 149.9
1°	16 21.4 +59.5 153.9	16 13.6 +59.4 152.8	16 05.4 +59.5 151.8	15 57.0 +59.4 150.8	15 48.3 +59.3 149.7
2°	17 20.9 +59.5 153.7	17 13.0 +59.5 152.7	17 04.9 +59.4 151.7	16 56.4 +59.4 150.6	16 47.6 +59.4 149.6
3°	18 20.4 +59.5 153.6	18 12.5 +59.4 152.6	18 04.3 +59.4 151.5	17 55.8 +59.3 150.5	17 47.0 +59.3 149.4
4°	19 19.9 +59.5 153.5	19 11.9 +59.5 152.4	19 03.7 +59.4 151.4	18 55.1 +59.4 150.3	18 46.3 +59.3 149.3
5°	20 19.4 +59.5 153.3	20 11.4 +59.4 152.3	20 03.1 +59.4 151.2	19 54.5 +59.3 150.2	19 45.6 +59.3 149.1
6°	21 18.9 +59.4 153.2	21 10.8 +59.4 152.1	21 02.5 +59.4 151.1	20 53.8 +59.4 150.0	20 44.9 +59.3 149.0
7°	22 18.3 +59.5 153.0	22 10.2 +59.5 152.0	22 01.9 +59.3 150.9	21 53.2 +59.3 149.9	21 44.2 +59.3 148.8
8°	23 17.8 +59.4 152.9	23 09.7 +59.4 151.8	23 01.2 +59.4 150.8	22 52.5 +59.3 149.7	22 43.5 +59.3 148.6
9°	24 17.2 +59.5 152.7	24 09.1 +59.4 151.7	24 00.6 +59.4 150.6	23 51.8 +59.4 149.5	23 42.8 +59.3 148.5
10°	25 16.7 +59.4 152.6	25 08.5 +59.4 151.5	25 00.0 +59.3 150.4	24 51.2 +59.3 149.4	24 42.1 +59.2 148.3
11°	26 16.1 +59.4 152.4	26 07.9 +59.3 151.4	25 59.3 +59.3 150.3	25 50.5 +59.3 149.2	25 41.3 +59.3 148.1
12°	27 15.5 +59.5 152.3	27 07.2 +59.4 151.2	26 58.6 +59.4 150.1	26 49.8 +59.2 149.0	26 40.6 +59.2 147.9
13°	28 15.0 +59.4 152.1	28 06.6 +59.4 151.0	27 58.0 +59.3 149.9	27 49.0 +59.3 148.9	27 39.8 +59.2 147.8
14°	29 14.4 +59.3 152.0	29 06.0 +59.3 150.9	28 57.3 +59.3 149.8	28 48.3 +59.3 148.7	28 39.0 +59.2 147.6
15°	30 13.7 +59.4 151.8	30 05.3 +59.3 150.7	29 56.6 +59.3 149.6	29 47.6 +59.2 148.5	29 38.2 +59.2 147.4
16°	31 13.1 +59.4 151.6	31 04.6 +59.4 150.5	30 55.9 +59.2 149.4	30 46.8 +59.2 148.3	30 37.4 +59.2 147.2
17°	32 12.5 +59.3 151.5	32 04.0 +59.3 150.4	31 55.1 +59.3 149.2	31 46.0 +59.2 148.1	31 36.6 +59.2 147.0
18°	33 11.8 +59.4 151.3	33 03.3 +59.2 150.2	32 54.4 +59.2 149.1	32 45.2 +59.2 147.9	32 35.8 +59.1 146.8
19°	34 11.2 +59.3 151.1	34 02.5 +59.3 150.0	33 53.6 +59.2 148.9	33 44.4 +59.2 147.7	33 34.9 +59.1 146.6
20°	35 10.5 +59.3 150.9	35 01.8 +59.3 149.8	34 52.8 +59.2 148.7	34 43.6 +59.1 147.5	34 34.0 +59.1 146.4
21°	36 09.8 +59.3 150.7	36 01.1 +59.2 149.6	35 52.0 +59.2 148.5	35 42.7 +59.1 147.3	35 33.1 +59.1 146.2
22°	37 09.1 +59.2 150.6	37 00.3 +59.2 149.4	36 51.2 +59.2 148.3	36 41.8 +59.1 147.1	36 32.2 +59.0 146.0
23°	38 08.3 +59.3 150.4	37 59.5 +59.2 149.2	37 50.4 +59.1 148.1	37 40.9 +59.1 146.9	37 31.2 +59.0 145.8
24°	39 07.6 +59.2 150.2	38 58.7 +59.2 149.0	38 49.5 +59.1 147.8	38 40.0 +59.1 146.7	38 30.2 +59.0 145.5
25°	40 06.8 +59.2 149.9	39 57.9 +59.1 148.8	39 48.6 +59.1 147.6	39 39.1 +59.0 146.5	39 29.2 +59.0 145.3
26°	41 06.0 +59.2 149.7	40 57.0 +59.1 148.6	40 47.7 +59.1 147.4	40 38.1 +59.0 146.2	40 28.2 +59.0 145.1
27°	42 05.2 +59.1 149.5	41 56.1 +59.1 148.3	41 46.8 +59.0 147.1	41 37.1 +59.0 146.0	41 27.1 +58.9 144.8
28°	43 04.3 +59.2 149.3	42 55.2 +59.1 148.1	42 45.8 +59.0 146.9	42 36.1 +58.9 145.7	42 26.0 +58.9 144.6
29°	44 03.5 +59.0 149.0	43 54.3 +59.0 147.8	43 44.8 +58.9 146.7	43 35.0 +58.9 145.5	43 24.9 +58.8 144.3

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°	14 40.0 +59.3 148.9	14 30.8 +59.3 147.9	14 21.4 +59.2 146.8	14 11.6 +59.2 145.8	14 01.6 +59.2 144.8
1°	15 39.3 +59.3 148.7	15 30.1 +59.2 147.7	15 20.6 +59.2 146.7	15 10.8 +59.2 145.7	15 00.8 +59.1 144.6
2°	16 38.6 +59.3 148.6	16 29.3 +59.3 147.5	16 19.8 +59.2 146.5	16 10.0 +59.2 145.5	15 59.9 +59.1 144.5
3°	17 37.9 +59.3 148.4	17 28.6 +59.2 147.4	17 19.0 +59.2 146.3	17 09.2 +59.1 145.3	16 59.0 +59.1 144.3
4°	18 37.2 +59.3 148.2	18 27.8 +59.3 147.2	18 18.2 +59.2 146.2	18 08.3 +59.2 145.1	17 58.1 +59.2 144.1
5°	19 36.5 +59.3 148.1	19 27.1 +59.2 147.0	19 17.4 +59.2 146.0	19 07.5 +59.1 145.0	18 57.3 +59.0 143.9
6°	20 35.8 +59.2 147.9	20 26.3 +59.2 146.9	20 16.6 +59.1 145.8	20 06.6 +59.1 144.8	19 56.3 +59.1 143.7
7°	21 35.0 +59.3 147.7	21 25.5 +59.2 146.7	21 15.7 +59.2 145.6	21 05.7 +59.1 144.6	20 55.4 +59.1 143.5
8°	22 34.3 +59.2 147.6	22 24.7 +59.2 146.5	22 14.9 +59.2 145.5	22 04.8 +59.1 144.4	21 54.5 +59.0 143.4
9°	23 33.5 +59.2 147.4	23 23.9 +59.2 146.3	23 14.1 +59.1 145.3	23 03.9 +59.1 144.2	22 53.5 +59.1 143.2
10°	24 32.7 +59.2 147.2	24 23.1 +59.2 146.2	24 13.2 +59.1 145.1	24 03.0 +59.1 144.0	23 52.6 +59.0 143.0
11°	25 31.9 +59.2 147.0	25 22.3 +59.1 146.0	25 12.3 +59.1 144.9	25 02.1 +59.2 143.8	24 51.6 +59.0 142.8
12°	26 31.1 +59.2 146.9	26 21.4 +59.2 145.8	26 11.4 +59.1 144.7	26 01.2 +59.0 143.6	25 50.6 +59.0 142.6
13°	27 30.3 +59.2 146.7	27 20.6 +59.1 145.6	27 10.5 +59.1 144.5	27 00.2 +59.0 143.4	26 49.6 +59.0 142.4
14°	28 29.5 +59.2 146.5	28 19.7 +59.1 145.4	28 09.6 +59.0 144.3	27 59.2 +59.0 143.2	27 48.6 +58.9 142.2
15°	29 28.7 +59.1 146.3	29 18.8 +59.1 145.2	29 08.6 +59.1 144.1	28 58.2 +59.0 143.0	28 47.5 +59.0 142.0
16°	30 27.8 +59.1 146.1	30 17.9 +59.0 145.0	30 07.7 +59.0 143.9	29 57.2 +59.0 142.8	29 46.5 +58.9 141.7
17°	31 26.9 +59.1 145.9	31 16.9 +59.1 144.8	31 06.7 +59.0 143.7	30 56.2 +58.9 142.6	30 45.4 +58.9 141.5
18°	32 26.0 +59.1 145.7	32 16.0 +59.0 144.6	32 05.7 +59.0 143.5	31 55.1 +59.0 142.4	31 44.3 +58.9 141.3
19°	33 25.1 +59.1 145.5	33 15.0 +59.0 144.4	33 04.7 +58.9 143.3	32 54.1 +58.8 142.2	32 43.2 +58.8 141.1
20°	34 24.2 +59.0 145.3	34 14.0 +59.0 144.2	34 03.6 +59.0 143.1	33 52.9 +58.9 141.9	33 42.0 +58.8 140.8
21°	35 23.2 +59.0 145.1	35 13.0 +59.0 143.9	35 02.6 +58.9 142.8	34 51.8 +58.9 141.7	34 40.8 +58.8 140.6
22°	36 22.2 +59.0 144.8	36 12.0 +58.9 143.7	36 01.5 +58.8 142.6	35 50.7 +58.8 141.5	35 39.6 +58.8 140.3
23°	37 21.2 +59.0 144.6	37 10.9 +58.9 143.5	37 00.3 +58.9 142.4	36 49.5 +58.8 141.2	36 38.4 +58.7 140.1
24°	38 20.2 +58.9 144.4	38 09.8 +58.9 143.2	37 59.2 +58.8 142.1	37 48.3 +58.7 141.0	37 37.1 +58.7 139.8
25°	39 19.1 +58.9 144.1	39 08.7 +58.8 143.0	38 58.0 +58.8 141.9	38 47.0 +58.7 140.7	38 35.8 +58.6 139.6
26°	40 18.0 +58.9 143.9	40 07.5 +58.8 142.7	39 56.8 +58.7 141.6	39 45.7 +58.7 140.4	39 34.4 +58.6 139.3
27°	41 16.9 +58.8 143.6	41 06.3 +58.8 142.5	40 55.5 +58.7 141.3	40 44.4 +58.7 140.2	40 33.0 +58.6 139.0
28°	42 15.7 +58.8 143.4	42 05.1 +58.7 142.2	41 54.2 +58.7 141.0	41 43.1 +58.6 139.9	41 31.6 +58.5 138.7
29°	43 14.5 +58.8 143.1	43 03.8 +58.7 141.9	42 52.9 +58.6 140.8	42 41.7 +58.5 139.6	42 30.1 +58.5 138.4

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°	13 51.4 +59.1 143.8	13 40.9 +59.1 142.8	13 30.2 +59.0 141.8	13 19.2 +59.0 140.8	13 08.0 +58.9 139.7
1°	14 50.5 +59.1 143.6	14 40.0 +59.0 142.6	14 29.2 +59.0 141.6	14 18.2 +58.9 140.6	14 06.9 +58.9 139.5
2°	15 49.6 +59.1 143.4	15 39.0 +59.0 142.4	15 28.2 +59.0 141.4	15 17.1 +59.0 140.4	15 05.8 +58.9 139.4
3°	16 48.7 +59.0 143.2	16 38.0 +59.1 142.2	16 27.2 +59.0 141.2	16 16.1 +58.9 140.2	16 04.7 +58.9 139.2
4°	17 47.7 +59.1 143.1	17 37.1 +59.0 142.0	17 26.2 +58.9 141.0	17 15.0 +58.9 140.0	17 03.6 +58.9 139.0
5°	18 46.8 +59.0 142.9	18 36.1 +59.0 141.8	18 25.1 +59.0 140.8	18 13.9 +58.9 139.8	18 02.5 +58.8 138.8
6°	19 45.8 +59.1 142.7	19 35.1 +59.0 141.7	19 24.1 +58.9 140.6	19 12.8 +58.9 139.6	19 01.3 +58.9 138.5
7°	20 44.9 +59.0 142.5	20 34.1 +58.9 141.5	20 23.0 +58.9 140.4	20 11.7 +58.9 139.4	20 00.2 +58.8 138.3
8°	21 43.9 +59.0 142.3	21 33.0 +59.0 141.3	21 21.9 +58.9 140.2	21 10.6 +58.9 139.2	20 59.0 +58.8 138.1
9°	22 42.9 +59.0 142.1	22 32.0 +58.9 141.1	22 20.8 +58.9 140.0	22 09.5 +58.8 139.0	21 57.8 +58.8 137.9
10°	23 41.9 +59.0 141.9	23 30.9 +59.0 140.9	23 19.7 +58.9 139.8	23 08.3 +58.8 138.7	22 56.6 +58.8 137.7
11°	24 40.9 +58.9 141.7	24 29.9 +58.9 140.6	24 18.6 +58.9 139.6	24 07.1 +58.8 138.5	23 55.4 +58.8 137.5
12°	25 39.8 +59.0 141.5	25 28.8 +58.9 140.4	25 17.5 +58.8 139.4	25 05.9 +58.8 138.3	24 54.2 +58.7 137.3
13°	26 38.8 +58.9 141.3	26 27.7 +58.9 140.2	26 16.3 +58.9 139.2	26 04.7 +58.8 138.1	25 52.9 +58.7 137.0
14°	27 37.7 +58.9 141.1	27 26.6 +58.8 140.0	27 15.2 +58.8 138.9	27 03.5 +58.8 137.9	26 51.6 +58.7 136.8
15°	28 36.6 +58.9 140.9	28 25.4 +58.8 139.8	28 14.0 +58.7 138.7	28 02.3 +58.7 137.6	27 50.3 +58.7 136.6
16°	29 35.5 +58.9 140.6	29 24.2 +58.8 139.6	29 12.7 +58.8 138.5	29 01.0 +58.7 137.4	28 49.0 +58.6 136.3
17°	30 34.4 +58.8 140.4	30 23.0 +58.8 139.3	30 11.5 +58.7 138.3	29 59.7 +58.7 137.2	29 47.6 +58.7 136.1
18°	31 33.2 +58.8 140.2	31 21.8 +58.8 139.1	31 10.2 +58.7 138.0	30 58.4 +58.6 136.9	30 46.3 +58.6 135.8
19°	32 32.0 +58.8 140.0	32 20.6 +58.7 138.9	32 08.9 +58.7 137.8	31 57.0 +58.6 136.7	31 44.9 +58.5 135.6
20°	33 30.8 +58.8 139.7	33 19.3 +58.7 138.6	33 07.6 +58.6 137.5	32 55.6 +58.6 136.4	32 43.4 +58.6 135.3
21°	34 29.6 +58.7 139.5	34 18.0 +58.7 138.4	34 06.2 +58.7 137.3	33 54.2 +58.6 136.2	33 42.0 +58.4 135.1
22°	35 28.3 +58.7 139.2	35 16.7 +58.6 138.1	35 04.9 +58.5 137.0	34 52.8 +58.5 135.9	34 40.4 +58.5 134.8
23°	36 27.0 +58.6 139.0	36 15.3 +58.6 137.9	36 03.4 +58.6 136.7	35 51.3 +58.5 135.6	35 38.9 +58.4 134.5
24°	37 25.6 +58.7 138.7	37 13.9 +58.6 137.6	37 02.0 +58.5 136.5	36 49.8 +58.4 135.4	36 37.3 +58.4 134.2
25°	38 24.3 +58.6 138.4	38 12.5 +58.5 137.3	38 00.5 +58.5 136.2	37 48.2 +58.4 135.1	37 35.7 +58.4 134.0
26°	39 22.9 +58.5 138.2	39 11.0 +58.5 137.0	38 59.0 +58.4 135.9	38 46.6 +58.4 134.8	38 34.1 +58.2 133.7
27°	40 21.4 +58.5 137.9	40 09.5 +58.5 136.7	39 57.4 +58.3 135.6	39 45.0 +58.3 134.5	39 32.3 +58.3 133.4
28°	41 19.9 +58.5 137.6	41 08.0 +58.4 136.4	40 55.7 +58.4 135.3	40 43.3 +58.2 134.2	40 30.6 +58.2 133.0
29°	42 18.4 +58.4 137.3	42 06.4 +58.3 136.1	41 54.1 +58.2 135.0	41 41.5 +58.2 133.9	41 28.8 +58.1 132.7

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°	12 56.5 +58.9 138.7	12 44.9 +58.8 137.7	12 32.9 +58.8 136.7	12 20.8 +58.7 135.7	12 08.4 +58.7 134.7
1°	13 55.4 +58.9 138.5	13 43.7 +58.8 137.5	13 31.7 +58.8 136.5	13 19.5 +58.8 135.5	13 07.1 +58.7 134.5
2°	14 54.3 +58.8 138.3	14 42.5 +58.8 137.3	14 30.5 +58.7 136.3	14 18.3 +58.7 135.3	14 05.8 +58.7 134.3
3°	15 53.1 +58.9 138.1	15 41.3 +58.8 137.1	15 29.2 +58.8 136.1	15 17.0 +58.7 135.1	15 04.5 +58.6 134.1
4°	16 52.0 +58.8 137.9	16 40.1 +58.8 136.9	16 28.0 +58.7 135.9	16 15.7 +58.6 134.9	16 03.1 +58.7 133.9
5°	17 50.8 +58.8 137.7	17 38.9 +58.7 136.7	17 26.7 +58.7 135.7	17 14.3 +58.7 134.7	17 01.8 +58.6 133.6
6°	18 49.6 +58.8 137.5	18 37.6 +58.8 136.5	18 25.4 +58.7 135.5	18 13.0 +58.7 134.4	18 00.4 +58.6 133.4
7°	19 48.4 +58.8 137.3	19 36.4 +58.7 136.3	19 24.1 +58.7 135.2	19 11.7 +58.6 134.2	18 59.0 +58.6 133.2
8°	20 47.2 +58.7 137.1	20 35.1 +58.7 136.1	20 22.8 +58.7 135.0	20 10.3 +58.6 134.0	19 57.6 +58.6 133.0
9°	21 45.9 +58.8 136.9	21 33.8 +58.7 135.8	21 21.5 +58.6 134.8	21 08.9 +58.6 133.8	20 56.2 +58.5 132.7
10°	22 44.7 +58.7 136.7	22 32.5 +58.7 135.6	22 20.1 +58.7 134.6	22 07.5 +58.6 133.5	21 54.7 +58.5 132.5
11°	23 43.4 +58.7 136.4	23 31.2 +58.7 135.4	23 18.8 +58.6 134.3	23 06.1 +58.6 133.3	22 53.2 +58.6 132.3
12°	24 42.1 +58.7 136.2	24 29.9 +58.6 135.2	24 17.4 +58.6 134.1	24 04.7 +58.5 133.1	23 51.8 +58.4 132.0
13°	25 40.8 +58.7 136.0	25 28.5 +58.6 134.9	25 16.0 +58.6 133.9	25 03.2 +58.5 132.8	24 50.2 +58.5 131.8
14°	26 39.5 +58.6 135.7	26 27.1 +58.6 134.7	26 14.6 +58.5 133.6	26 01.7 +58.5 132.6	25 48.7 +58.5 131.5
15°	27 38.1 +58.7 135.5	27 25.7 +58.6 134.4	27 13.1 +58.5 133.4	27 00.2 +58.5 132.3	26 47.2 +58.4 131.3
16°	28 36.8 +58.6 135.3	28 24.3 +58.5 134.2	28 11.6 +58.5 133.1	27 58.7 +58.4 132.1	27 45.6 +58.4 131.0
17°	29 35.4 +58.5 135.0	29 22.8 +58.6 133.9	29 10.1 +58.5 132.9	28 57.1 +58.4 131.8	28 44.0 +58.3 130.7
18°	30 33.9 +58.6 134.8	30 21.4 +58.4 133.7	30 08.6 +58.4 132.6	29 55.5 +58.4 131.5	29 42.3 +58.3 130.5
19°	31 32.5 +58.5 134.5	31 19.8 +58.5 133.4	31 07.0 +58.4 132.4	30 53.9 +58.4 131.3	30 40.6 +58.3 130.2
20°	32 31.0 +58.4 134.2	32 18.3 +58.4 133.2	32 05.4 +58.3 132.1	31 52.3 +58.3 131.0	31 38.9 +58.3 129.9
21°	33 29.4 +58.5 134.0	33 16.7 +58.4 132.9	33 03.7 +58.4 131.8	32 50.6 +58.2 130.7	32 37.2 +58.2 129.6
22°	34 27.9 +58.4 133.7	34 15.1 +58.3 132.6	34 02.1 +58.3 131.5	33 48.8 +58.3 130.4	33 35.4 +58.2 129.4
23°	35 26.3 +58.3 133.4	35 13.4 +58.3 132.3	35 00.4 +58.2 131.2	34 47.1 +58.1 130.1	34 33.5 +58.1 129.1
24°	36 24.6 +58.4 133.1	36 11.7 +58.3 132.0	35 58.6 +58.2 130.9	35 45.2 +58.2 129.8	35 31.7 +58.0 128.8
25°	37 23.0 +58.2 132.8	37 10.0 +58.2 131.7	36 56.8 +58.1 130.6	36 43.4 +58.1 129.5	36 29.7 +58.1 128.5
26°	38 21.2 +58.3 132.5	38 08.2 +58.2 131.4	37 54.9 +58.1 130.3	37 41.5 +58.0 129.2	37 27.8 +57.9 128.1
27°	39 19.5 +58.1 132.2	39 06.4 +58.1 131.1	38 53.0 +58.1 130.0	38 39.5 +58.0 128.9	38 25.7 +58.0 127.8
28°	40 17.6 +58.2 131.9	40 04.5 +58.0 130.8	39 51.1 +58.0 129.7	39 37.5 +57.9 128.6	39 23.7 +57.8 127.5
29°	41 15.8 +58.0 131.6	41 02.5 +58.0 130.5	40 49.1 +57.9 129.3	40 35.4 +57.9 128.2	40 21.5 +57.8 127.1

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	11 55.9 +58.6 133.7	11 43.1 +58.6 132.7	11 30.1 +58.6 131.7	11 16.9 +58.5 130.7	11 03.5 +58.5 129.7
1°	12 54.5 +58.6 133.5	12 41.7 +58.6 132.5	12 28.7 +58.5 131.5	12 15.4 +58.5 130.5	12 02.0 +58.4 129.5
2°	13 53.1 +58.7 133.3	13 40.3 +58.5 132.3	13 27.2 +58.5 131.3	13 13.9 +58.5 130.3	13 00.4 +58.5 129.3
3°	14 51.8 +58.6 133.1	14 38.8 +58.6 132.1	14 25.7 +58.5 131.0	14 12.4 +58.5 130.0	13 58.9 +58.4 129.0
4°	15 50.4 +58.6 132.8	15 37.4 +58.5 131.8	15 24.2 +58.5 130.8	15 10.9 +58.4 129.8	14 57.3 +58.4 128.8
5°	16 49.0 +58.5 132.6	16 35.9 +58.6 131.6	16 22.7 +58.5 130.6	16 09.3 +58.4 129.6	15 55.7 +58.4 128.6
6°	17 47.5 +58.6 132.4	17 34.5 +58.5 131.4	17 21.2 +58.5 130.4	17 07.7 +58.5 129.3	16 54.1 +58.4 128.3
7°	18 46.1 +58.5 132.2	18 33.0 +58.5 131.1	18 19.7 +58.4 130.1	18 06.2 +58.4 129.1	17 52.5 +58.3 128.1
8°	19 44.6 +58.6 131.9	19 31.5 +58.5 130.9	19 18.1 +58.5 129.9	19 04.6 +58.3 128.9	18 50.8 +58.3 127.8
9°	20 43.2 +58.5 131.7	20 30.0 +58.4 130.7	20 16.6 +58.4 129.6	20 02.9 +58.4 128.6	19 49.1 +58.4 127.6
10°	21 41.7 +58.5 131.5	21 28.4 +58.5 130.4	21 15.0 +58.4 129.4	21 01.3 +58.3 128.4	20 47.5 +58.3 127.3
11°	22 40.2 +58.4 131.2	22 26.9 +58.4 130.2	22 13.4 +58.3 129.1	21 59.6 +58.4 128.1	21 45.8 +58.2 127.1
12°	23 38.6 +58.5 131.0	23 25.3 +58.4 129.9	23 11.7 +58.4 128.9	22 58.0 +58.3 127.9	22 44.0 +58.3 126.8
13°	24 37.1 +58.4 130.7	24 23.7 +58.3 129.7	24 10.1 +58.3 128.6	23 56.3 +58.2 127.6	23 42.3 +58.2 126.6
14°	25 35.5 +58.4 130.5	25 22.0 +58.4 129.4	25 08.4 +58.3 128.4	24 54.5 +58.3 127.3	24 40.5 +58.2 126.3
15°	26 33.9 +58.3 130.2	26 20.4 +58.3 129.2	26 06.7 +58.2 128.1	25 52.8 +58.2 127.1	25 38.7 +58.1 126.0
16°	27 32.2 +58.4 130.0	27 18.7 +58.3 128.9	27 04.9 +58.3 127.9	26 51.0 +58.2 126.8	26 36.8 +58.2 125.8
17°	28 30.6 +58.3 129.7	28 17.0 +58.2 128.6	28 03.2 +58.1 127.6	27 49.2 +58.1 126.5	27 35.0 +58.1 125.5
18°	29 28.9 +58.2 129.4	29 15.2 +58.2 128.4	29 01.3 +58.2 127.3	28 47.3 +58.1 126.2	28 33.1 +58.0 125.2
19°	30 27.1 +58.3 129.1	30 13.4 +58.2 128.1	29 59.5 +58.1 127.0	29 45.4 +58.1 126.0	29 31.1 +58.0 124.9
20°	31 25.4 +58.1 128.9	31 11.6 +58.1 127.8	30 57.6 +58.1 126.7	30 43.5 +58.0 125.7	30 29.1 +58.0 124.6
21°	32 23.5 +58.2 128.6	32 09.7 +58.1 127.5	31 55.7 +58.1 126.4	31 41.5 +58.0 125.4	31 27.1 +57.9 124.3
22°	33 21.7 +58.1 128.3	33 07.8 +58.1 127.2	32 53.8 +58.0 126.1	32 39.5 +57.9 125.1	32 25.0 +57.9 124.0
23°	34 19.8 +58.1 128.0	34 05.9 +58.0 126.9	33 51.8 +57.9 125.8	33 37.4 +57.9 124.8	33 22.9 +57.9 123.7
24°	35 17.9 +58.0 127.7	35 03.9 +58.0 126.6	34 49.7 +57.9 125.5	34 35.3 +57.9 124.4	34 20.8 +57.8 123.4
25°	36 15.9 +58.0 127.4	36 01.9 +57.9 126.3	35 47.6 +57.9 125.2	35 33.2 +57.8 124.1	35 18.6 +57.7 123.1
26°	37 13.9 +57.9 127.0	36 59.8 +57.8 126.0	36 45.5 +57.8 124.9	36 31.0 +57.7 123.8	36 16.3 +57.7 122.7
27°	38 11.8 +57.8 126.7	37 57.6 +57.8 125.6	37 43.3 +57.7 124.5	37 28.7 +57.7 123.4	37 14.0 +57.6 122.4
28°	39 09.6 +57.8 126.4	38 55.4 +57.7 125.3	38 41.0 +57.7 124.2	38 26.4 +57.6 123.1	38 11.6 +57.6 122.0
29°	40 07.4 +57.8 126.0	39 53.1 +57.7 124.9	39 38.7 +57.6 123.8	39 24.0 +57.6 122.7	39 09.2 +57.4 121.7

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	10 49.9 +58.4 128.7	10 36.2 +58.3 127.8	10 22.2 +58.3 126.8	10 08.0 +58.3 125.8	9 53.7 +58.3 124.8
1°	11 48.3 +58.4 128.5	11 34.5 +58.4 127.5	11 20.5 +58.3 126.5	11 06.3 +58.3 125.5	10 52.0 +58.2 124.5
2°	12 46.7 +58.4 128.3	12 32.9 +58.3 127.3	12 18.8 +58.3 126.3	12 04.6 +58.3 125.3	11 50.2 +58.2 124.3
3°	13 45.1 +58.4 128.0	13 31.2 +58.4 127.0	13 17.1 +58.3 126.0	13 02.9 +58.2 125.0	12 48.4 +58.2 124.1
4°	14 43.5 +58.4 127.8	14 29.6 +58.3 126.8	14 15.4 +58.3 125.8	14 01.1 +58.2 124.8	13 46.6 +58.2 123.8
5°	15 41.9 +58.3 127.6	15 27.9 +58.3 126.6	15 13.7 +58.2 125.6	14 59.3 +58.2 124.6	14 44.8 +58.2 123.6
6°	16 40.2 +58.3 127.3	16 26.2 +58.3 126.3	16 11.9 +58.3 125.3	15 57.5 +58.2 124.3	15 43.0 +58.1 123.3
7°	17 38.5 +58.4 127.1	17 24.5 +58.2 126.1	17 10.2 +58.2 125.1	16 55.7 +58.2 124.0	16 41.1 +58.2 123.0
8°	18 36.9 +58.2 126.8	18 22.7 +58.3 125.8	18 08.4 +58.2 124.8	17 53.9 +58.2 123.8	17 39.3 +58.1 122.8
9°	19 35.1 +58.3 126.6	19 21.0 +58.2 125.6	19 06.6 +58.2 124.5	18 52.1 +58.1 123.5	18 37.4 +58.1 122.5
10°	20 33.4 +58.3 126.3	20 19.2 +58.2 125.3	20 04.8 +58.1 124.3	19 50.2 +58.1 123.3	19 35.5 +58.0 122.3
11°	21 31.7 +58.2 126.1	21 17.4 +58.2 125.0	21 02.9 +58.2 124.0	20 48.3 +58.1 123.0	20 33.5 +58.1 122.0
12°	22 29.9 +58.2 125.8	22 15.6 +58.1 124.8	22 01.1 +58.1 123.8	21 46.4 +58.1 122.7	21 31.6 +58.0 121.7
13°	23 28.1 +58.2 125.5	23 13.7 +58.1 124.5	22 59.2 +58.1 123.5	22 44.5 +58.0 122.5	22 29.6 +58.0 121.4
14°	24 26.3 +58.1 125.3	24 11.8 +58.1 124.2	23 57.3 +58.0 123.2	23 42.5 +58.0 122.2	23 27.6 +57.9 121.2
15°	25 24.4 +58.1 125.0	25 09.9 +58.1 124.0	24 55.3 +58.0 122.9	24 40.5 +58.0 121.9	24 25.5 +57.9 120.9
16°	26 22.5 +58.1 124.7	26 08.0 +58.0 123.7	25 53.3 +58.0 122.7	25 38.5 +57.9 121.6	25 23.4 +57.9 120.6
17°	27 20.6 +58.0 124.4	27 06.0 +58.0 123.4	26 51.3 +57.9 122.4	26 36.4 +57.9 121.3	26 21.3 +57.9 120.3
18°	28 18.6 +58.0 124.2	28 04.0 +58.0 123.1	27 49.2 +58.0 122.1	27 34.3 +57.9 121.0	27 19.2 +57.8 120.0
19°	29 16.6 +58.0 123.9	29 02.0 +57.9 122.8	28 47.2 +57.8 121.8	28 32.2 +57.8 120.7	28 17.0 +57.8 119.7
20°	30 14.6 +57.9 123.6	29 59.9 +57.9 122.5	29 45.0 +57.8 121.5	29 30.0 +57.8 120.4	29 14.8 +57.7 119.4
21°	31 12.5 +57.9 123.3	30 57.8 +57.8 122.2	30 42.8 +57.8 121.2	30 27.8 +57.7 120.1	30 12.5 +57.7 119.1
22°	32 10.4 +57.9 123.0	31 55.6 +57.8 121.9	31 40.6 +57.8 120.8	31 25.5 +57.7 119.8	31 10.2 +57.6 118.8
23°	33 08.3 +57.7 122.6	32 53.4 +57.7 121.6	32 38.4 +57.7 120.5	32 23.2 +57.6 119.5	32 07.8 +57.6 118.4
24°	34 06.0 +57.8 122.3	33 51.1 +57.7 121.3	33 36.1 +57.6 120.2	33 20.8 +57.6 119.1	33 05.4 +57.5 118.1
25°	35 03.8 +57.7 122.0	34 48.8 +57.6 120.9	34 33.7 +57.6 119.9	34 18.4 +57.5 118.8	34 02.9 +57.5 117.8
26°	36 01.5 +57.6 121.6	35 46.4 +57.6 120.6	35 31.3 +57.5 119.5	35 15.9 +57.5 118.5	35 00.4 +57.4 117.4
27°	36 59.1 +57.5 121.3	36 44.0 +57.5 120.2	36 28.8 +57.4 119.2	36 13.4 +57.4 118.1	35 57.8 +57.4 117.1
28°	37 56.6 +57.5 120.9	37 41.5 +57.5 119.9	37 26.2 +57.4 118.8	37 10.8 +57.3 117.7	36 55.2 +57.3 116.7
29°	38 54.1 +57.5 120.6	38 39.0 +57.3 119.5	38 23.6 +57.3 118.4	38 08.1 +57.3 117.4	37 52.5 +57.2 116.3

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°	9 39.2 +58.2 123.8	9 24.6 +58.1 122.8	9 09.8 +58.1 121.8	8 54.8 +58.1 120.9	8 39.6 +58.1 119.9
1°	10 37.4 +58.2 123.6	10 22.7 +58.2 122.6	10 07.9 +58.1 121.6	9 52.9 +58.0 120.6	9 37.7 +58.0 119.6
2°	11 35.6 +58.2 123.3	11 20.9 +58.1 122.3	11 06.0 +58.1 121.3	10 50.9 +58.1 120.4	10 35.7 +58.0 119.4
3°	12 33.8 +58.2 123.1	12 19.0 +58.1 122.1	12 04.1 +58.0 121.1	11 49.0 +58.0 120.1	11 33.7 +58.0 119.1
4°	13 32.0 +58.1 122.8	13 17.1 +58.1 121.8	13 02.1 +58.1 120.8	12 47.0 +58.0 119.8	12 31.7 +58.0 118.8
5°	14 30.1 +58.1 122.6	14 15.2 +58.1 121.6	14 00.2 +58.0 120.6	13 45.0 +58.0 119.6	13 29.7 +58.0 118.6
6°	15 28.2 +58.1 122.3	15 13.3 +58.1 121.3	14 58.2 +58.1 120.3	14 43.0 +58.0 119.3	14 27.7 +57.9 118.3
7°	16 26.3 +58.1 122.0	16 11.4 +58.0 121.0	15 56.3 +58.0 120.0	15 41.0 +58.0 119.0	15 25.6 +57.9 118.0
8°	17 24.4 +58.1 121.8	17 09.4 +58.1 120.8	16 54.3 +58.0 119.8	16 39.0 +57.9 118.8	16 23.5 +57.9 117.8
9°	18 22.5 +58.0 121.5	18 07.5 +58.0 120.5	17 52.3 +57.9 119.5	17 36.9 +57.9 118.5	17 21.4 +57.9 117.5
10°	19 20.5 +58.1 121.2	19 05.5 +57.9 120.2	18 50.2 +58.0 119.2	18 34.8 +57.9 118.2	18 19.3 +57.9 117.2
11°	20 18.6 +58.0 121.0	20 03.4 +58.0 120.0	19 48.2 +57.9 119.0	19 32.7 +57.9 117.9	19 17.2 +57.8 116.9
12°	21 16.6 +57.9 120.7	21 01.4 +57.9 119.7	20 46.1 +57.9 118.7	20 30.6 +57.9 117.7	20 15.0 +57.8 116.7
13°	22 14.5 +58.0 120.4	21 59.3 +57.9 119.4	21 44.0 +57.8 118.4	21 28.5 +57.8 117.4	21 12.8 +57.8 116.4
14°	23 12.5 +57.9 120.1	22 57.2 +57.9 119.1	22 41.8 +57.8 118.1	22 26.3 +57.8 117.1	22 10.6 +57.7 116.1
15°	24 10.4 +57.9 119.9	23 55.1 +57.8 118.8	23 39.6 +57.8 117.8	23 24.1 +57.7 116.8	23 08.3 +57.7 115.8
16°	25 08.3 +57.8 119.6	24 52.9 +57.8 118.5	24 37.4 +57.8 117.5	24 21.8 +57.7 116.5	24 06.0 +57.7 115.5
17°	26 06.1 +57.8 119.3	25 50.7 +57.8 118.2	25 35.2 +57.7 117.2	25 19.5 +57.7 116.2	25 03.7 +57.7 115.2
18°	27 03.9 +57.8 119.0	26 48.5 +57.7 117.9	26 32.9 +57.7 116.9	26 17.2 +57.6 115.9	26 01.4 +57.6 114.9
19°	28 01.7 +57.7 118.7	27 46.2 +57.7 117.6	27 30.6 +57.6 116.6	27 14.8 +57.6 115.6	26 59.0 +57.5 114.6
20°	28 59.4 +57.7 118.4	28 43.9 +57.6 117.3	28 28.2 +57.6 116.3	28 12.4 +57.6 115.3	27 56.5 +57.5 114.2
21°	29 57.1 +57.6 118.0	29 41.5 +57.6 117.0	29 25.8 +57.6 116.0	29 10.0 +57.5 114.9	28 54.0 +57.5 113.9
22°	30 54.7 +57.6 117.7	30 39.1 +57.6 116.7	30 23.4 +57.5 115.6	30 07.5 +57.5 114.6	29 51.5 +57.4 113.6
23°	31 52.3 +57.6 117.4	31 36.7 +57.5 116.4	31 20.9 +57.4 115.3	31 05.0 +57.4 114.3	30 48.9 +57.4 113.3
24°	32 49.9 +57.4 117.1	32 34.2 +57.4 116.0	32 18.3 +57.4 115.0	32 02.4 +57.3 113.9	31 46.3 +57.3 112.9
25°	33 47.3 +57.5 116.7	33 31.6 +57.4 115.7	33 15.7 +57.4 114.6	32 59.7 +57.3 113.6	32 43.6 +57.2 112.6
26°	34 44.8 +57.3 116.4	34 29.0 +57.3 115.3	34 13.1 +57.2 114.3	33 57.0 +57.2 113.2	33 40.8 +57.2 112.2
27°	35 42.1 +57.3 116.0	35 26.3 +57.2 115.0	35 10.3 +57.2 113.9	34 54.2 +57.2 112.9	34 38.0 +57.1 111.8
28°	36 39.4 +57.3 115.6	36 23.5 +57.2 114.6	36 07.5 +57.2 113.5	35 51.4 +57.1 112.5	35 35.1 +57.1 111.5
29°	37 36.7 +57.1 115.3	37 20.7 +57.1 114.2	37 04.7 +57.0 113.2	36 48.5 +57.0 112.1	36 32.2 +56.9 111.1

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 24.4 +58.0 118.9	8 08.9 +58.0 117.9	7 53.4 +57.9 117.0	7 37.7 +57.8 116.0	7 21.8 +57.9 115.0
1°	9 22.4 +57.9 118.6	9 06.9 +57.9 117.7	8 51.3 +57.9 116.7	8 35.5 +57.9 115.7	8 19.7 +57.8 114.7
2°	10 20.3 +58.0 118.4	10 04.8 +58.0 117.4	9 49.2 +57.9 116.4	9 33.4 +57.9 115.4	9 17.5 +57.8 114.5
3°	11 18.3 +58.0 118.1	11 02.8 +57.9 117.1	10 47.1 +57.9 116.2	10 31.3 +57.8 115.2	10 15.3 +57.9 114.2
4°	12 16.3 +57.9 117.9	12 00.7 +57.9 116.9	11 45.0 +57.8 115.9	11 29.1 +57.9 114.9	11 13.2 +57.8 113.9
5°	13 14.2 +57.9 117.6	12 58.6 +57.9 116.6	12 42.8 +57.9 115.6	12 27.0 +57.8 114.6	12 11.0 +57.7 113.7
6°	14 12.1 +57.9 117.3	13 56.5 +57.9 116.3	13 40.7 +57.8 115.3	13 24.8 +57.8 114.4	13 08.7 +57.8 113.4
7°	15 10.0 +57.9 117.1	14 54.4 +57.8 116.1	14 38.5 +57.8 115.1	14 22.6 +57.8 114.1	14 06.5 +57.7 113.1
8°	16 07.9 +57.9 116.8	15 52.2 +57.8 115.8	15 36.3 +57.8 114.8	15 20.4 +57.7 113.8	15 04.2 +57.8 112.8
9°	17 05.8 +57.8 116.5	16 50.0 +57.8 115.5	16 34.1 +57.8 114.5	16 18.1 +57.8 113.5	16 02.0 +57.7 112.5
10°	18 03.6 +57.9 116.2	17 47.8 +57.8 115.2	17 31.9 +57.8 114.2	17 15.9 +57.7 113.2	16 59.7 +57.7 112.2
11°	19 01.5 +57.8 115.9	18 45.6 +57.8 114.9	18 29.7 +57.7 113.9	18 13.6 +57.6 113.0	17 57.4 +57.6 112.0
12°	19 59.3 +57.7 115.7	19 43.4 +57.7 114.7	19 27.4 +57.7 113.7	19 11.2 +57.7 112.7	18 55.0 +57.6 111.7
13°	20 57.0 +57.8 115.4	20 41.1 +57.7 114.4	20 25.1 +57.6 113.4	20 08.9 +57.6 112.4	19 52.6 +57.6 111.4
14°	21 54.8 +57.7 115.1	21 38.8 +57.7 114.1	21 22.7 +57.7 113.1	21 06.5 +57.6 112.1	20 50.2 +57.6 111.1
15°	22 52.5 +57.6 114.8	22 36.5 +57.6 113.8	22 20.4 +57.6 112.8	22 04.1 +57.6 111.8	21 47.8 +57.5 110.8
16°	23 50.1 +57.7 114.5	23 34.1 +57.6 113.5	23 18.0 +57.5 112.5	23 01.7 +57.5 111.5	22 45.3 +57.5 110.5
17°	24 47.8 +57.6 114.2	24 31.7 +57.6 113.2	24 15.5 +57.6 112.2	23 59.2 +57.5 111.2	23 42.8 +57.5 110.2
18°	25 45.4 +57.5 113.9	25 29.3 +57.5 112.9	25 13.1 +57.4 111.8	24 56.7 +57.5 110.8	24 40.3 +57.4 109.8
19°	26 42.9 +57.6 113.6	26 26.8 +57.5 112.5	26 10.5 +57.5 111.5	25 54.2 +57.4 110.5	25 37.7 +57.4 109.5
20°	27 40.5 +57.4 113.2	27 24.3 +57.4 112.2	27 08.0 +57.4 111.2	26 51.6 +57.3 110.2	26 35.1 +57.3 109.2
21°	28 37.9 +57.5 112.9	28 21.7 +57.4 111.9	28 05.4 +57.3 110.9	27 48.9 +57.3 109.9	27 32.4 +57.3 108.9
22°	29 35.4 +57.3 112.6	29 19.1 +57.3 111.6	29 02.7 +57.3 110.5	28 46.2 +57.3 109.5	28 29.7 +57.2 108.5
23°	30 32.7 +57.4 112.2	30 16.4 +57.3 111.2	30 00.0 +57.3 110.2	29 43.5 +57.2 109.2	29 26.9 +57.2 108.2
24°	31 30.1 +57.2 111.9	31 13.7 +57.2 110.9	30 57.3 +57.2 109.9	30 40.7 +57.2 108.8	30 24.1 +57.1 107.8
25°	32 27.3 +57.2 111.5	32 10.9 +57.2 110.5	31 54.5 +57.1 109.5	31 37.9 +57.1 108.5	31 21.2 +57.0 107.5
26°	33 24.5 +57.2 111.2	33 08.1 +57.1 110.2	32 51.6 +57.1 109.1	32 35.0 +57.0 108.1	32 18.2 +57.0 107.1
27°	34 21.7 +57.0 110.8	34 05.2 +57.0 109.8	33 48.7 +56.9 108.8	33 32.0 +57.0 107.7	33 15.2 +57.0 106.7
28°	35 18.7 +57.0 110.4	35 02.2 +57.0 109.4	34 45.6 +57.0 108.4	34 29.0 +56.8 107.4	34 12.2 +56.8 106.4
29°	36 15.7 +57.0 110.1	35 59.2 +56.9 109.0	35 42.6 +56.8 108.0	35 25.8 +56.9 107.0	35 09.0 +56.8 106.0

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°	7 05.9 +57.8 114.0	6 49.8 +57.8 113.1	6 33.6 +57.7 112.1	6 17.3 +57.7 111.1	6 00.9 +57.6 110.2
1°	8 03.7 +57.8 113.8	7 47.6 +57.7 112.8	7 31.3 +57.8 111.8	7 15.0 +57.7 110.9	6 58.5 +57.7 109.9
2°	9 01.5 +57.8 113.5	8 45.3 +57.8 112.5	8 29.1 +57.7 111.5	8 12.7 +57.7 110.6	7 56.2 +57.7 109.6
3°	9 59.3 +57.8 113.2	9 43.1 +57.7 112.2	9 26.8 +57.7 111.3	9 10.4 +57.7 110.3	8 53.9 +57.7 109.3
4°	10 57.1 +57.7 112.9	10 40.8 +57.8 112.0	10 24.5 +57.7 111.0	10 08.1 +57.7 110.0	9 51.6 +57.6 109.0
5°	11 54.8 +57.8 112.7	11 38.6 +57.7 111.7	11 22.2 +57.7 110.7	11 05.8 +57.6 109.7	10 49.2 +57.6 108.8
6°	12 52.6 +57.7 112.4	12 36.3 +57.7 111.4	12 19.9 +57.7 110.4	12 03.4 +57.7 109.5	11 46.8 +57.6 108.5
7°	13 50.3 +57.7 112.1	13 34.0 +57.7 111.1	13 17.6 +57.6 110.1	13 01.1 +57.6 109.2	12 44.4 +57.6 108.2
8°	14 48.0 +57.7 111.8	14 31.7 +57.6 110.8	14 15.2 +57.7 109.9	13 58.7 +57.6 108.9	13 42.0 +57.6 107.9
9°	15 45.7 +57.7 111.5	15 29.3 +57.7 110.6	15 12.9 +57.6 109.6	14 56.3 +57.6 108.6	14 39.6 +57.6 107.6
10°	16 43.4 +57.6 111.3	16 27.0 +57.6 110.3	16 10.5 +57.6 109.3	15 53.9 +57.5 108.3	15 37.2 +57.5 107.3
11°	17 41.0 +57.6 111.0	17 24.6 +57.6 110.0	17 08.1 +57.5 109.0	16 51.4 +57.5 108.0	16 34.7 +57.5 107.0
12°	18 38.6 +57.6 110.7	18 22.2 +57.5 109.7	18 05.6 +57.5 108.7	17 48.9 +57.6 107.7	17 32.2 +57.5 106.7
13°	19 36.2 +57.6 110.4	19 19.7 +57.6 109.4	19 03.1 +57.5 108.4	18 46.5 +57.4 107.4	18 29.7 +57.4 106.4
14°	20 33.8 +57.5 110.1	20 17.3 +57.5 109.1	20 00.6 +57.5 108.1	19 43.9 +57.5 107.1	19 27.1 +57.4 106.1
15°	21 31.3 +57.5 109.8	21 14.8 +57.4 108.8	20 58.1 +57.5 107.8	20 41.4 +57.4 106.8	20 24.5 +57.4 105.8
16°	22 28.8 +57.5 109.5	22 12.2 +57.5 108.5	21 55.6 +57.4 107.5	21 38.8 +57.3 106.5	21 21.9 +57.4 105.5
17°	23 26.3 +57.4 109.2	23 09.7 +57.4 108.2	22 53.0 +57.3 107.2	22 36.1 +57.4 106.2	22 19.3 +57.3 105.2
18°	24 23.7 +57.4 108.8	24 07.1 +57.3 107.8	23 50.3 +57.3 106.8	23 33.5 +57.3 105.9	23 16.6 +57.2 104.9
19°	25 21.1 +57.3 108.5	25 04.4 +57.3 107.5	24 47.6 +57.3 106.5	24 30.8 +57.2 105.5	24 13.8 +57.3 104.5
20°	26 18.4 +57.3 108.2	26 01.7 +57.3 107.2	25 44.9 +57.3 106.2	25 28.0 +57.2 105.2	25 11.1 +57.1 104.2
21°	27 15.7 +57.3 107.9	26 59.0 +57.2 106.9	26 42.2 +57.1 105.9	26 25.2 +57.2 104.9	26 08.2 +57.2 103.9
22°	28 13.0 +57.2 107.5	27 56.2 +57.2 106.5	27 39.3 +57.2 105.5	27 22.4 +57.1 104.5	27 05.4 +57.1 103.5
23°	29 10.2 +57.1 107.2	28 53.4 +57.1 106.2	28 36.5 +57.1 105.2	28 19.5 +57.1 104.2	28 02.5 +57.0 103.2
24°	30 07.3 +57.1 106.8	29 50.5 +57.0 105.8	29 33.6 +57.0 104.8	29 16.6 +57.0 103.8	28 59.5 +57.0 102.8
25°	31 04.4 +57.0 106.5	30 47.5 +57.0 105.5	30 30.6 +57.0 104.5	30 13.6 +56.9 103.5	29 56.5 +56.9 102.5
26°	32 01.4 +57.0 106.1	31 44.5 +57.0 105.1	31 27.6 +56.9 104.1	31 10.5 +56.9 103.1	30 53.4 +56.8 102.1
27°	32 58.4 +56.9 105.7	32 41.5 +56.8 104.7	32 24.5 +56.8 103.7	32 07.4 +56.8 102.7	31 50.2 +56.8 101.7
28°	33 55.3 +56.8 105.3	33 38.3 +56.8 104.3	33 21.3 +56.8 103.3	33 04.2 +56.7 102.3	32 47.0 +56.7 101.3
29°	34 52.1 +56.8 105.0	34 35.1 +56.7 103.9	34 18.1 +56.7 102.9	34 00.9 +56.7 101.9	33 43.7 +56.7 101.0

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	5 44.3 +57.7 109.2	5 27.7 +57.7 108.2	5 11.0 +57.6 107.3	4 54.2 +57.6 106.3	4 37.3 +57.6 105.3
1°	6 42.0 +57.7 108.9	6 25.4 +57.6 107.9	6 08.6 +57.6 107.0	5 51.8 +57.6 106.0	5 34.9 +57.6 105.1
2°	7 39.7 +57.6 108.6	7 23.0 +57.6 107.7	7 06.2 +57.6 106.7	6 49.4 +57.6 105.7	6 32.5 +57.5 104.8
3°	8 37.3 +57.6 108.4	8 20.6 +57.6 107.4	8 03.8 +57.6 106.4	7 47.0 +57.5 105.4	7 30.0 +57.5 104.5
4°	9 34.9 +57.6 108.1	9 18.2 +57.6 107.1	9 01.4 +57.6 106.1	8 44.5 +57.5 105.2	8 27.5 +57.6 104.2
5°	10 32.5 +57.6 107.8	10 15.8 +57.6 106.8	9 59.0 +57.5 105.8	9 42.0 +57.6 104.9	9 25.1 +57.5 103.9
6°	11 30.1 +57.6 107.5	11 13.4 +57.5 106.5	10 56.5 +57.6 105.6	10 39.6 +57.5 104.6	10 22.6 +57.5 103.6
7°	12 27.7 +57.6 107.2	12 10.9 +57.6 106.2	11 54.1 +57.5 105.3	11 37.1 +57.5 104.3	11 20.1 +57.4 103.3
8°	13 25.3 +57.5 106.9	13 08.5 +57.5 106.0	12 51.6 +57.5 105.0	12 34.6 +57.5 104.0	12 17.5 +57.5 103.0
9°	14 22.8 +57.6 106.6	14 06.0 +57.5 105.7	13 49.1 +57.4 104.7	13 32.1 +57.4 103.7	13 15.0 +57.4 102.7
10°	15 20.4 +57.5 106.3	15 03.5 +57.5 105.4	14 46.5 +57.5 104.4	14 29.5 +57.4 103.4	14 12.4 +57.4 102.4
11°	16 17.9 +57.4 106.0	16 01.0 +57.4 105.1	15 44.0 +57.4 104.1	15 26.9 +57.5 103.1	15 09.8 +57.4 102.1
12°	17 15.3 +57.5 105.7	16 58.4 +57.5 104.8	16 41.4 +57.4 103.8	16 24.4 +57.3 102.8	16 07.2 +57.4 101.8
13°	18 12.8 +57.4 105.4	17 55.9 +57.3 104.5	17 38.8 +57.4 103.5	17 21.7 +57.4 102.5	17 04.6 +57.3 101.5
14°	19 10.2 +57.4 105.1	18 53.2 +57.4 104.2	18 36.2 +57.3 103.2	18 19.1 +57.3 102.2	18 01.9 +57.3 101.2
15°	20 07.6 +57.4 104.8	19 50.6 +57.3 103.8	19 33.5 +57.4 102.9	19 16.4 +57.3 101.9	18 59.2 +57.3 100.9
16°	21 05.0 +57.3 104.5	20 47.9 +57.3 103.5	20 30.9 +57.2 102.5	20 13.7 +57.3 101.6	19 56.5 +57.2 100.6
17°	22 02.3 +57.3 104.2	21 45.2 +57.3 103.2	21 28.1 +57.3 102.2	21 11.0 +57.2 101.2	20 53.7 +57.2 100.3
18°	22 59.6 +57.2 103.9	22 42.5 +57.2 102.9	22 25.4 +57.2 101.9	22 08.2 +57.2 100.9	21 50.9 +57.2 99.9
19°	23 56.8 +57.2 103.5	23 39.7 +57.2 102.6	23 22.6 +57.1 101.6	23 05.4 +57.1 100.6	22 48.1 +57.1 99.6
20°	24 54.0 +57.2 103.2	24 36.9 +57.1 102.2	24 19.7 +57.2 101.2	24 02.5 +57.1 100.3	23 45.2 +57.1 99.3
21°	25 51.2 +57.1 102.9	25 34.0 +57.1 101.9	25 16.9 +57.0 100.9	24 59.6 +57.0 99.9	24 42.3 +57.0 98.9
22°	26 48.3 +57.1 102.5	26 31.1 +57.1 101.5	26 13.9 +57.0 100.6	25 56.6 +57.0 99.6	25 39.3 +57.0 98.6
23°	27 45.4 +57.0 102.2	27 28.2 +57.0 101.2	27 10.9 +57.0 100.2	26 53.6 +57.0 99.2	26 36.3 +56.9 98.3
24°	28 42.4 +56.9 101.8	28 25.2 +56.9 100.8	28 07.9 +56.9 99.9	27 50.6 +56.9 98.9	27 33.2 +56.9 97.9
25°	29 39.3 +56.9 101.5	29 22.1 +56.9 100.5	29 04.8 +56.9 99.5	28 47.5 +56.8 98.5	28 30.1 +56.8 97.5
26°	30 36.2 +56.8 101.1	30 19.0 +56.8 100.1	30 01.7 +56.8 99.1	29 44.3 +56.8 98.2	29 26.9 +56.8 97.2
27°	31 33.0 +56.8 100.7	31 15.8 +56.7 99.7	30 58.5 +56.7 98.8	30 41.1 +56.7 97.8	30 23.7 +56.7 96.8
28°	32 29.8 +56.7 100.4	32 12.5 +56.7 99.4	31 55.2 +56.6 98.4	31 37.8 +56.6 97.4	31 20.4 +56.6 96.4
29°	33 26.5 +56.6 100.0	33 09.2 +56.6 99.0	32 51.8 +56.6 98.0	32 34.4 +56.6 97.0	32 17.0 +56.6 96.0

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°	4 20.4 +57.5 104.4	4 03.4 +57.5 103.4	3 46.3 +57.5 102.5	3 29.1 +57.5 101.5	3 11.9 +57.4 100.5
1°	5 17.9 +57.6 104.1	5 00.9 +57.5 103.1	4 43.8 +57.5 102.2	4 26.6 +57.5 101.2	4 09.3 +57.5 100.2
2°	6 15.5 +57.5 103.8	5 58.4 +57.5 102.8	5 41.3 +57.4 101.9	5 24.1 +57.4 100.9	5 06.8 +57.5 100.0
3°	7 13.0 +57.5 103.5	6 55.9 +57.5 102.6	6 38.7 +57.5 101.6	6 21.5 +57.5 100.6	6 04.3 +57.4 99.7
4°	8 10.5 +57.5 103.2	7 53.4 +57.5 102.3	7 36.2 +57.5 101.3	7 19.0 +57.4 100.3	7 01.7 +57.4 99.4
5°	9 08.0 +57.5 102.9	8 50.9 +57.4 102.0	8 33.7 +57.4 101.0	8 16.4 +57.5 100.0	7 59.1 +57.4 99.1
6°	10 05.5 +57.5 102.6	9 48.3 +57.5 101.7	9 31.1 +57.5 100.7	9 13.9 +57.4 99.8	8 56.5 +57.5 98.8
7°	11 03.0 +57.4 102.4	10 45.8 +57.4 101.4	10 28.6 +57.4 100.4	10 11.3 +57.4 99.5	9 54.0 +57.3 98.5
8°	12 00.4 +57.4 102.1	11 43.2 +57.4 101.1	11 26.0 +57.4 100.1	11 08.7 +57.4 99.2	10 51.3 +57.4 98.2
9°	12 57.8 +57.5 101.8	12 40.6 +57.4 100.8	12 23.4 +57.4 99.8	12 06.1 +57.3 98.9	11 48.7 +57.4 97.9
10°	13 55.3 +57.3 101.5	13 38.0 +57.4 100.5	13 20.8 +57.3 99.5	13 03.4 +57.4 98.6	12 46.1 +57.3 97.6
11°	14 52.6 +57.4 101.2	14 35.4 +57.4 100.2	14 18.1 +57.4 99.2	14 00.8 +57.3 98.3	13 43.4 +57.3 97.3
12°	15 50.0 +57.4 100.9	15 32.8 +57.3 99.9	15 15.5 +57.3 98.9	14 58.1 +57.3 98.0	14 40.7 +57.3 97.0
13°	16 47.4 +57.3 100.6	16 30.1 +57.3 99.6	16 12.8 +57.3 98.6	15 55.4 +57.3 97.6	15 38.0 +57.3 96.7
14°	17 44.7 +57.3 100.2	17 27.4 +57.3 99.3	17 10.1 +57.2 98.3	16 52.7 +57.2 97.3	16 35.3 +57.2 96.4
15°	18 42.0 +57.2 99.9	18 24.7 +57.2 99.0	18 07.3 +57.2 98.0	17 49.9 +57.2 97.0	17 32.5 +57.2 96.1
16°	19 39.2 +57.2 99.6	19 21.9 +57.2 98.6	19 04.5 +57.2 97.7	18 47.1 +57.2 96.7	18 29.7 +57.2 95.7
17°	20 36.4 +57.2 99.3	20 19.1 +57.2 98.3	20 01.7 +57.2 97.4	19 44.3 +57.2 96.4	19 26.9 +57.1 95.4
18°	21 33.6 +57.2 99.0	21 16.3 +57.1 98.0	20 58.9 +57.1 97.0	20 41.5 +57.1 96.1	20 24.0 +57.1 95.1
19°	22 30.8 +57.1 98.6	22 13.4 +57.1 97.7	21 56.0 +57.1 96.7	21 38.6 +57.0 95.7	21 21.1 +57.1 94.8
20°	23 27.9 +57.0 98.3	23 10.5 +57.1 97.3	22 53.1 +57.0 96.4	22 35.6 +57.1 95.4	22 18.2 +57.0 94.4
21°	24 24.9 +57.1 98.0	24 07.6 +57.0 97.0	23 50.1 +57.0 96.0	23 32.7 +56.9 95.1	23 15.2 +57.0 94.1
22°	25 22.0 +56.9 97.6	25 04.6 +56.9 96.7	24 47.1 +57.0 95.7	24 29.6 +57.0 94.7	24 12.2 +56.9 93.8
23°	26 18.9 +56.9 97.3	26 01.5 +56.9 96.3	25 44.1 +56.9 95.3	25 26.6 +56.9 94.4	25 09.1 +56.9 93.4
24°	27 15.8 +56.9 96.9	26 58.4 +56.9 96.0	26 41.0 +56.8 95.0	26 23.5 +56.8 94.0	26 06.0 +56.8 93.0
25°	28 12.7 +56.8 96.6	27 55.3 +56.8 95.6	27 37.8 +56.8 94.6	27 20.3 +56.8 93.7	27 02.8 +56.8 92.7
26°	29 09.5 +56.8 96.2	28 52.1 +56.7 95.2	28 34.6 +56.7 94.3	28 17.1 +56.7 93.3	27 59.6 +56.7 92.3
27°	30 06.3 +56.6 95.8	29 48.8 +56.7 94.9	29 31.3 +56.7 93.9	29 13.8 +56.6 92.9	28 56.3 +56.6 92.0
28°	31 02.9 +56.7 95.4	30 45.5 +56.6 94.5	30 28.0 +56.6 93.5	30 10.4 +56.6 92.5	29 52.9 +56.6 91.6
29°	31 59.6 +56.5 95.1	31 42.1 +56.5 94.1	31 24.6 +56.5 93.1	31 07.0 +56.6 92.2	30 49.5 +56.5 91.2

Declination SAME name as Latitude

Latitude 73°

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°	2 54.6 +57.5 99.6	2 37.3 +57.4 98.6	2 19.9 +57.4 97.7	2 02.5 +57.4 96.7	1 45.1 +57.4 95.7
1°	3 52.1 +57.4 99.3	3 34.7 +57.5 98.3	3 17.3 +57.5 97.4	2 59.9 +57.4 96.4	2 42.5 +57.4 95.4
2°	4 49.5 +57.4 99.0	4 32.2 +57.4 98.0	4 14.8 +57.4 97.1	3 57.3 +57.4 96.1	3 39.9 +57.4 95.2
3°	5 46.9 +57.5 98.7	5 29.6 +57.4 97.7	5 12.2 +57.4 96.8	4 54.7 +57.4 95.8	4 37.3 +57.4 94.9
4°	6 44.4 +57.4 98.4	6 27.0 +57.4 97.4	6 09.6 +57.4 96.5	5 52.1 +57.4 95.5	5 34.7 +57.3 94.6
5°	7 41.8 +57.4 98.1	7 24.4 +57.4 97.2	7 07.0 +57.4 96.2	6 49.5 +57.4 95.2	6 32.0 +57.4 94.3
6°	8 39.2 +57.4 97.8	8 21.8 +57.4 96.9	8 04.4 +57.3 95.9	7 46.9 +57.4 94.9	7 29.4 +57.4 94.0
7°	9 36.6 +57.4 97.5	9 19.2 +57.3 96.6	9 01.7 +57.4 95.6	8 44.3 +57.3 94.6	8 26.8 +57.3 93.7
8°	10 34.0 +57.3 97.2	10 16.5 +57.4 96.3	9 59.1 +57.3 95.3	9 41.6 +57.3 94.3	9 24.1 +57.3 93.4
9°	11 31.3 +57.4 96.9	11 13.9 +57.3 96.0	10 56.4 +57.3 95.0	10 38.9 +57.4 94.0	10 21.4 +57.3 93.1
10°	12 28.7 +57.3 96.6	12 11.2 +57.3 95.7	11 53.7 +57.4 94.7	11 36.3 +57.3 93.7	11 18.7 +57.3 92.8
11°	13 26.0 +57.3 96.3	13 08.5 +57.3 95.4	12 51.1 +57.2 94.4	12 33.6 +57.2 93.4	12 16.0 +57.3 92.5
12°	14 23.3 +57.3 96.0	14 05.8 +57.3 95.1	13 48.3 +57.3 94.1	13 30.8 +57.3 93.1	13 13.3 +57.3 92.2
13°	15 20.6 +57.2 95.7	15 03.1 +57.2 94.8	14 45.6 +57.2 93.8	14 28.1 +57.2 92.8	14 10.6 +57.2 91.9
14°	16 17.8 +57.2 95.4	16 00.3 +57.2 94.4	15 42.8 +57.2 93.5	15 25.3 +57.2 92.5	15 07.8 +57.2 91.6
15°	17 15.0 +57.2 95.1	16 57.5 +57.2 94.1	16 40.0 +57.2 93.2	16 22.5 +57.2 92.2	16 05.0 +57.2 91.2
16°	18 12.2 +57.2 94.8	17 54.7 +57.2 93.8	17 37.2 +57.2 92.8	17 19.7 +57.1 91.9	17 02.2 +57.1 90.9
17°	19 09.4 +57.1 94.5	18 51.9 +57.1 93.5	18 34.4 +57.1 92.5	18 16.8 +57.1 91.6	17 59.3 +57.1 90.6
18°	20 06.5 +57.1 94.1	19 49.0 +57.1 93.2	19 31.5 +57.1 92.2	19 13.9 +57.1 91.2	18 56.4 +57.1 90.3
19°	21 03.6 +57.1 93.8	20 46.1 +57.0 92.8	20 28.6 +57.0 91.9	20 11.0 +57.1 90.9	19 53.5 +57.0 90.0
20°	22 00.7 +57.0 93.5	21 43.1 +57.0 92.5	21 25.6 +57.0 91.5	21 08.1 +57.0 90.6	20 50.5 +57.0 89.6
21°	22 57.7 +56.9 93.1	22 40.1 +57.0 92.2	22 22.6 +57.0 91.2	22 05.1 +56.9 90.2	21 47.5 +57.0 89.3
22°	23 54.6 +57.0 92.8	23 37.1 +56.9 91.8	23 19.6 +56.9 90.9	23 02.0 +56.9 89.9	22 44.5 +56.9 89.0
23°	24 51.6 +56.8 92.4	24 34.0 +56.9 91.5	24 16.5 +56.9 90.5	23 58.9 +56.9 89.6	23 41.4 +56.9 88.6
24°	25 48.4 +56.9 92.1	25 30.9 +56.8 91.1	25 13.4 +56.8 90.2	24 55.8 +56.8 89.2	24 38.3 +56.8 88.3
25°	26 45.3 +56.7 91.7	26 27.7 +56.8 90.8	26 10.2 +56.7 89.8	25 52.6 +56.8 88.9	25 35.1 +56.8 87.9
26°	27 42.0 +56.7 91.4	27 24.5 +56.7 90.4	27 06.9 +56.7 89.4	26 49.4 +56.7 88.5	26 31.9 +56.7 87.5
27°	28 38.7 +56.7 91.0	28 21.2 +56.6 90.0	28 03.6 +56.7 89.1	27 46.1 +56.7 88.1	27 28.6 +56.6 87.2
28°	29 35.4 +56.6 90.6	29 17.8 +56.6 89.7	29 00.3 +56.6 88.7	28 42.8 +56.6 87.8	28 25.2 +56.6 86.8
29°	30 32.0 +56.5 90.2	30 14.4 +56.5 89.3	29 56.9 +56.5 88.3	29 39.4 +56.5 87.4	29 21.8 +56.6 86.4

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°	1 27.6 +57.4 94.8	1 10.1 +57.4 93.8	0 52.6 +57.4 92.9	0 35.1 +57.4 91.9	0 17.5 +57.4 91.0
1°	2 25.0 +57.4 94.5	2 07.5 +57.4 93.5	1 50.0 +57.4 92.6	1 32.5 +57.3 91.6	1 14.9 +57.4 90.7
2°	3 22.4 +57.4 94.2	3 04.9 +57.4 93.2	2 47.4 +57.3 92.3	2 29.8 +57.4 91.3	2 12.3 +57.4 90.4
3°	4 19.8 +57.4 93.9	4 02.3 +57.3 92.9	3 44.7 +57.4 92.0	3 27.2 +57.4 91.0	3 09.7 +57.3 90.1
4°	5 17.2 +57.3 93.6	4 59.6 +57.4 92.7	4 42.1 +57.4 91.7	4 24.6 +57.3 90.7	4 07.0 +57.4 89.8
5°	6 14.5 +57.4 93.3	5 57.0 +57.4 92.4	5 39.5 +57.3 91.4	5 21.9 +57.4 90.4	5 04.4 +57.4 89.5
6°	7 11.9 +57.3 93.0	6 54.4 +57.3 92.1	6 36.8 +57.4 91.1	6 19.3 +57.3 90.2	6 01.8 +57.3 89.2
7°	8 09.2 +57.4 92.7	7 51.7 +57.4 91.8	7 34.2 +57.3 90.8	7 16.6 +57.4 89.9	6 59.1 +57.3 88.9
8°	9 06.6 +57.3 92.4	8 49.1 +57.3 91.5	8 31.5 +57.3 90.5	8 14.0 +57.3 89.6	7 56.4 +57.4 88.6
9°	10 03.9 +57.3 92.1	9 46.4 +57.3 91.2	9 28.8 +57.3 90.2	9 11.3 +57.3 89.3	8 53.8 +57.3 88.3
10°	11 01.2 +57.3 91.8	10 43.7 +57.3 90.9	10 26.1 +57.3 89.9	10 08.6 +57.3 89.0	9 51.1 +57.2 88.0
11°	11 58.5 +57.3 91.5	11 41.0 +57.2 90.6	11 23.4 +57.3 89.6	11 05.9 +57.2 88.7	10 48.3 +57.3 87.7
12°	12 55.8 +57.2 91.2	12 38.2 +57.3 90.3	12 20.7 +57.2 89.3	12 03.1 +57.3 88.4	11 45.6 +57.3 87.4
13°	13 53.0 +57.2 90.9	13 35.5 +57.2 90.0	13 17.9 +57.3 89.0	13 00.4 +57.2 88.0	12 42.9 +57.2 87.1
14°	14 50.2 +57.2 90.6	14 32.7 +57.2 89.6	14 15.2 +57.2 88.7	13 57.6 +57.2 87.7	13 40.1 +57.2 86.8
15°	15 47.4 +57.2 90.3	15 29.9 +57.2 89.3	15 12.4 +57.1 88.4	14 54.8 +57.2 87.4	14 37.3 +57.2 86.5
16°	16 44.6 +57.2 90.0	16 27.1 +57.1 89.0	16 09.5 +57.2 88.1	15 52.0 +57.2 87.1	15 34.5 +57.2 86.2
17°	17 41.8 +57.1 89.7	17 24.2 +57.1 88.7	17 06.7 +57.1 87.7	16 49.2 +57.1 86.8	16 31.7 +57.1 85.8
18°	18 38.9 +57.0 89.3	18 21.3 +57.1 88.4	18 03.8 +57.1 87.4	17 46.3 +57.1 86.5	17 28.8 +57.1 85.5
19°	19 35.9 +57.1 89.0	19 18.4 +57.1 88.1	19 00.9 +57.0 87.1	18 43.4 +57.0 86.1	18 25.9 +57.0 85.2
20°	20 33.0 +57.0 88.7	20 15.5 +57.0 87.7	19 57.9 +57.0 86.8	19 40.4 +57.0 85.8	19 22.9 +57.1 84.9
21°	21 30.0 +57.0 88.3	21 12.5 +56.9 87.4	20 54.9 +57.0 86.4	20 37.4 +57.0 85.5	20 20.0 +57.0 84.5
22°	22 27.0 +56.9 88.0	22 09.4 +57.0 87.0	21 51.9 +56.9 86.1	21 34.4 +57.0 85.2	21 17.0 +56.9 84.2
23°	23 23.9 +56.8 87.7	23 06.4 +56.8 86.7	22 48.8 +56.9 85.8	22 31.4 +56.9 84.8	22 13.9 +56.9 83.9
24°	24 20.7 +56.9 87.3	24 03.2 +56.9 86.4	23 45.7 +56.9 85.4	23 28.3 +56.8 84.5	23 10.8 +56.9 83.5
25°	25 17.6 +56.8 87.0	25 00.1 +56.7 86.0	24 42.6 +56.8 85.1	24 25.1 +56.8 84.1	24 07.7 +56.8 83.2
26°	26 14.4 +56.7 86.6	25 56.8 +56.8 85.6	25 39.4 +56.7 84.7	25 21.9 +56.8 83.8	25 04.5 +56.8 82.8
27°	27 11.1 +56.6 86.2	26 53.6 +56.6 85.3	26 36.1 +56.7 84.3	26 18.7 +56.7 83.4	26 01.3 +56.7 82.5
28°	28 07.7 +56.6 85.9	27 50.2 +56.7 84.9	27 32.8 +56.6 84.0	27 15.4 +56.6 83.0	26 58.0 +56.6 82.1
29°	29 04.3 +56.6 85.5	28 46.9 +56.5 84.5	28 29.4 +56.6 83.6	28 12.0 +56.6 82.7	27 54.6 +56.6 81.7

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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 +57.4 90.0	-0 17.5 +57.3	-0 35.1 +57.4	-0 52.6 +57.4	-1 10.1 +57.4
1°	0 57.4 +57.4 89.7	0 39.8 +57.4 88.8	0 22.3 +57.4 87.8	0 04.8 +57.4 86.8	-0 12.7 +57.4
2°	1 54.8 +57.3 89.4	1 37.2 +57.4 88.5	1 19.7 +57.4 87.5	1 02.2 +57.3 86.5	0 44.7 +57.4 85.6
3°	2 52.1 +57.4 89.1	2 34.6 +57.4 88.2	2 17.1 +57.3 87.2	1 59.5 +57.4 86.3	1 42.1 +57.3 85.3
4°	3 49.5 +57.4 88.8	3 32.0 +57.3 87.9	3 14.4 +57.4 86.9	2 56.9 +57.4 86.0	2 39.4 +57.4 85.0
5°	4 46.9 +57.3 88.5	4 29.3 +57.4 87.6	4 11.8 +57.4 86.6	3 54.3 +57.4 85.7	3 36.8 +57.4 84.7
6°	5 44.2 +57.4 88.2	5 26.7 +57.3 87.3	5 09.2 +57.3 86.3	4 51.7 +57.3 85.4	4 34.2 +57.4 84.4
7°	6 41.6 +57.3 87.9	6 24.0 +57.4 87.0	6 06.5 +57.4 86.0	5 49.0 +57.4 85.1	5 31.6 +57.3 84.1
8°	7 38.9 +57.3 87.6	7 21.4 +57.3 86.7	7 03.9 +57.3 85.7	6 46.4 +57.3 84.8	6 28.9 +57.4 83.8
9°	8 36.2 +57.3 87.3	8 18.7 +57.3 86.4	8 01.2 +57.3 85.4	7 43.7 +57.4 84.5	7 26.3 +57.3 83.5
10°	9 33.5 +57.3 87.0	9 16.0 +57.3 86.1	8 58.5 +57.3 85.1	8 41.1 +57.3 84.2	8 23.6 +57.4 83.2
11°	10 30.8 +57.3 86.7	10 13.3 +57.3 85.8	9 55.8 +57.3 84.8	9 38.4 +57.3 83.9	9 21.0 +57.3 82.9
12°	11 28.1 +57.3 86.4	11 10.6 +57.3 85.5	10 53.1 +57.3 84.5	10 35.7 +57.3 83.6	10 18.3 +57.3 82.6
13°	12 25.4 +57.2 86.1	12 07.9 +57.2 85.2	11 50.4 +57.3 84.2	11 33.0 +57.2 83.3	11 15.6 +57.2 82.3
14°	13 22.6 +57.2 85.8	13 05.1 +57.2 84.9	12 47.7 +57.2 83.9	12 30.2 +57.3 83.0	12 12.8 +57.3 82.0
15°	14 19.8 +57.2 85.5	14 02.3 +57.2 84.6	13 44.9 +57.2 83.6	13 27.5 +57.2 82.7	13 10.1 +57.2 81.7
16°	15 17.0 +57.2 85.2	14 59.5 +57.2 84.3	14 42.1 +57.2 83.3	14 24.7 +57.2 82.4	14 07.3 +57.2 81.4
17°	16 14.2 +57.1 84.9	15 56.7 +57.2 83.9	15 39.3 +57.1 83.0	15 21.9 +57.2 82.1	15 04.5 +57.2 81.1
18°	17 11.3 +57.1 84.6	16 53.9 +57.1 83.6	16 36.4 +57.2 82.7	16 19.1 +57.1 81.7	16 01.7 +57.2 80.8
19°	18 08.4 +57.1 84.3	17 51.0 +57.1 83.3	17 33.6 +57.1 82.4	17 16.2 +57.1 81.4	16 58.9 +57.1 80.5
20°	19 05.5 +57.0 83.9	18 48.1 +57.0 83.0	18 30.7 +57.0 82.0	18 13.3 +57.1 81.1	17 56.0 +57.1 80.2
21°	20 02.5 +57.0 83.6	19 45.1 +57.0 82.7	19 27.7 +57.1 81.7	19 10.4 +57.0 80.8	18 53.1 +57.1 79.8
22°	20 59.5 +57.0 83.3	20 42.1 +57.0 82.3	20 24.8 +56.9 81.4	20 07.4 +57.0 80.4	19 50.2 +57.0 79.5
23°	21 56.5 +56.9 82.9	21 39.1 +56.9 82.0	21 21.7 +57.0 81.0	21 04.4 +57.0 80.1	20 47.2 +57.0 79.2
24°	22 53.4 +56.9 82.6	22 36.0 +56.9 81.6	22 18.7 +56.9 80.7	22 01.4 +56.9 79.8	21 44.2 +56.9 78.8
25°	23 50.3 +56.8 82.2	23 32.9 +56.9 81.3	23 15.6 +56.9 80.4	22 58.3 +56.9 79.4	22 41.1 +56.9 78.5
26°	24 47.1 +56.8 81.9	24 29.8 +56.8 80.9	24 12.5 +56.8 80.0	23 55.2 +56.8 79.1	23 38.0 +56.9 78.2
27°	25 43.9 +56.7 81.5	25 26.6 +56.7 80.6	25 09.3 +56.7 79.7	24 52.0 +56.8 78.7	24 34.9 +56.8 77.8
28°	26 40.6 +56.7 81.2	26 23.3 +56.7 80.2	26 06.0 +56.7 79.3	25 48.8 +56.8 78.4	25 31.7 +56.7 77.4
29°	27 37.3 +56.6 80.8	27 20.0 +56.6 79.9	27 02.7 +56.7 78.9	26 45.6 +56.6 78.0	26 28.4 +56.7 77.1

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-1 27.6 +57.4	-1 45.1 +57.4	-2 02.5 +57.4	-2 19.9 +57.4	-2 37.3 +57.5
1°	-0 30.2 +57.4	-0 47.7 +57.4	-1 05.1 +57.4	-1 22.5 +57.4	-1 39.8 +57.4
2°	0 27.2 +57.4 84.6	0 09.7 +57.4 83.7	-0 07.7 +57.4	-0 25.1 +57.5	-0 42.4 +57.4
3°	1 24.6 +57.4 84.3	1 07.1 +57.4 83.4	0 49.7 +57.5 82.4	0 32.4 +57.4 81.5	0 15.0 +57.5 80.5
4°	2 22.0 +57.4 84.1	2 04.5 +57.5 83.1	1 47.2 +57.4 82.1	1 29.8 +57.4 81.2	1 12.5 +57.4 80.2
5°	3 19.4 +57.4 83.8	3 02.0 +57.3 82.8	2 44.6 +57.4 81.9	2 27.2 +57.4 80.9	2 09.9 +57.5 79.9
6°	4 16.8 +57.3 83.5	3 59.3 +57.4 82.5	3 42.0 +57.4 81.6	3 24.6 +57.5 80.6	3 07.4 +57.4 79.7
7°	5 14.1 +57.4 83.2	4 56.7 +57.4 82.2	4 39.4 +57.4 81.3	4 22.1 +57.4 80.3	4 04.8 +57.4 79.4
8°	6 11.5 +57.4 82.9	5 54.1 +57.4 81.9	5 36.8 +57.4 81.0	5 19.5 +57.4 80.0	5 02.2 +57.4 79.1
9°	7 08.9 +57.3 82.6	6 51.5 +57.4 81.6	6 34.2 +57.3 80.7	6 16.9 +57.4 79.7	5 59.6 +57.5 78.8
10°	8 06.2 +57.4 82.3	7 48.9 +57.3 81.3	7 31.5 +57.4 80.4	7 14.3 +57.4 79.4	6 57.1 +57.4 78.5
11°	9 03.6 +57.3 82.0	8 46.2 +57.3 81.0	8 28.9 +57.4 80.1	8 11.7 +57.3 79.1	7 54.5 +57.3 78.2
12°	10 00.9 +57.3 81.7	9 43.5 +57.4 80.7	9 26.3 +57.3 79.8	9 09.0 +57.4 78.8	8 51.8 +57.4 77.9
13°	10 58.2 +57.3 81.4	10 40.9 +57.3 80.4	10 23.6 +57.3 79.5	10 06.4 +57.3 78.5	9 49.2 +57.4 77.6
14°	11 55.5 +57.3 81.1	11 38.2 +57.3 80.1	11 20.9 +57.3 79.2	11 03.7 +57.3 78.2	10 46.6 +57.3 77.3
15°	12 52.8 +57.2 80.8	12 35.5 +57.2 79.8	12 18.2 +57.3 78.9	12 01.0 +57.3 77.9	11 43.9 +57.3 77.0
16°	13 50.0 +57.2 80.5	13 32.7 +57.3 79.5	13 15.5 +57.3 78.6	12 58.3 +57.3 77.6	12 41.2 +57.3 76.7
17°	14 47.2 +57.2 80.2	14 30.0 +57.2 79.2	14 12.8 +57.2 78.3	13 55.6 +57.3 77.3	13 38.5 +57.3 76.4
18°	15 44.4 +57.2 79.9	15 27.2 +57.2 78.9	15 10.0 +57.2 78.0	14 52.9 +57.2 77.0	14 35.8 +57.3 76.1
19°	16 41.6 +57.1 79.5	16 24.4 +57.1 78.6	16 07.2 +57.2 77.7	15 50.1 +57.2 76.7	15 33.1 +57.2 75.8
20°	17 38.7 +57.2 79.2	17 21.5 +57.2 78.3	17 04.4 +57.1 77.3	16 47.3 +57.2 76.4	16 30.3 +57.2 75.5
21°	18 35.9 +57.0 78.9	18 18.7 +57.1 78.0	18 01.5 +57.2 77.0	17 44.5 +57.1 76.1	17 27.5 +57.2 75.2
22°	19 32.9 +57.1 78.6	19 15.8 +57.0 77.6	18 58.7 +57.1 76.7	18 41.6 +57.1 75.8	18 24.7 +57.1 74.8
23°	20 30.0 +57.0 78.2	20 12.8 +57.1 77.3	19 55.8 +57.0 76.4	19 38.7 +57.1 75.4	19 21.8 +57.1 74.5
24°	21 27.0 +57.0 77.9	21 09.9 +57.0 77.0	20 52.8 +57.0 76.0	20 35.8 +57.1 75.1	20 18.9 +57.1 74.2
25°	22 24.0 +56.9 77.6	22 06.9 +56.9 76.6	21 49.8 +57.0 75.7	21 32.9 +57.0 74.8	21 16.0 +57.0 73.9
26°	23 20.9 +56.9 77.2	23 03.8 +56.9 76.3	22 46.8 +56.9 75.4	22 29.9 +56.9 74.4	22 13.0 +57.0 73.5
27°	24 17.8 +56.8 76.9	24 00.7 +56.9 75.9	23 43.7 +56.9 75.0	23 26.8 +56.9 74.1	23 10.0 +56.9 73.2
28°	25 14.6 +56.8 76.5	24 57.6 +56.8 75.6	24 40.6 +56.8 74.7	24 23.7 +56.9 73.8	24 06.9 +56.9 72.8
29°	26 11.4 +56.7 76.2	25 54.4 +56.7 75.2	25 37.4 +56.8 74.3	25 20.6 +56.8 73.4	25 03.8 +56.9 72.5

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°	-2 54.6 +57.4	-3 11.9 +57.5	-3 29.1 +57.5	-3 46.3 +57.5	-4 03.4 +57.6
1°	-1 57.2 +57.5	-2 14.4 +57.5	-2 31.6 +57.5	-2 48.8 +57.6	-3 05.8 +57.5
2°	-0 59.7 +57.5	-1 16.9 +57.4	-1 34.1 +57.5	-1 51.2 +57.5	-2 08.3 +57.5
3°	-0 02.2 +57.4	-0 19.5 +57.5	-0 36.6 +57.5	-0 53.7 +57.5	-1 10.8 +57.6
4°	0 55.2 +57.5 79.3	0 38.0 +57.5 78.3	0 20.9 +57.5 77.4	0 03.8 +57.5 76.4	-0 13.2 +57.5
5°	1 52.7 +57.4 79.0	1 35.5 +57.5 78.0	1 18.4 +57.4 77.1	1 01.3 +57.5 76.1	0 44.3 +57.5 75.2
6°	2 50.1 +57.5 78.7	2 33.0 +57.4 77.7	2 15.8 +57.5 76.8	1 58.8 +57.5 75.8	1 41.8 +57.6 74.9
7°	3 47.6 +57.4 78.4	3 30.4 +57.5 77.5	3 13.3 +57.5 76.5	2 56.3 +57.5 75.6	2 39.4 +57.5 74.6
8°	4 45.0 +57.5 78.1	4 27.9 +57.4 77.2	4 10.8 +57.5 76.2	3 53.8 +57.5 75.3	3 36.9 +57.5 74.3
9°	5 42.5 +57.4 77.8	5 25.3 +57.5 76.9	5 08.3 +57.5 75.9	4 51.3 +57.5 75.0	4 34.4 +57.5 74.0
10°	6 39.9 +57.4 77.5	6 22.8 +57.4 76.6	6 05.8 +57.4 75.6	5 48.8 +57.5 74.7	5 31.9 +57.5 73.7
11°	7 37.3 +57.4 77.2	7 20.2 +57.5 76.3	7 03.2 +57.5 75.4	6 46.3 +57.5 74.4	6 29.4 +57.5 73.5
12°	8 34.7 +57.4 77.0	8 17.7 +57.4 76.0	8 00.7 +57.4 75.1	7 43.8 +57.4 74.1	7 26.9 +57.5 73.2
13°	9 32.1 +57.4 76.7	9 15.1 +57.4 75.7	8 58.1 +57.4 74.8	8 41.2 +57.5 73.8	8 24.4 +57.5 72.9
14°	10 29.5 +57.4 76.4	10 12.5 +57.4 75.4	9 55.5 +57.4 74.5	9 38.7 +57.4 73.5	9 21.9 +57.5 72.6
15°	11 26.9 +57.3 76.1	11 09.9 +57.3 75.1	10 52.9 +57.4 74.2	10 36.1 +57.4 73.2	10 19.4 +57.4 72.3
16°	12 24.2 +57.3 75.8	12 07.2 +57.4 74.8	11 50.3 +57.4 73.9	11 33.5 +57.4 72.9	11 16.8 +57.4 72.0
17°	13 21.5 +57.3 75.5	13 04.6 +57.3 74.5	12 47.7 +57.4 73.6	12 30.9 +57.4 72.6	12 14.2 +57.4 71.7
18°	14 18.8 +57.3 75.2	14 01.9 +57.3 74.2	13 45.1 +57.3 73.3	13 28.3 +57.4 72.3	13 11.6 +57.4 71.4
19°	15 16.1 +57.2 74.8	14 59.2 +57.3 73.9	14 42.4 +57.3 73.0	14 25.7 +57.3 72.0	14 09.0 +57.4 71.1
20°	16 13.3 +57.3 74.5	15 56.5 +57.2 73.6	15 39.7 +57.3 72.7	15 23.0 +57.3 71.7	15 06.4 +57.3 70.8
21°	17 10.6 +57.2 74.2	16 53.7 +57.3 73.3	16 37.0 +57.2 72.4	16 20.3 +57.3 71.4	16 03.7 +57.3 70.5
22°	18 07.8 +57.1 73.9	17 51.0 +57.1 73.0	17 34.2 +57.2 72.0	17 17.6 +57.2 71.1	17 01.0 +57.3 70.2
23°	19 04.9 +57.2 73.6	18 48.1 +57.2 72.7	18 31.4 +57.2 71.7	18 14.8 +57.3 70.8	17 58.3 +57.3 69.9
24°	20 02.1 +57.1 73.3	19 45.3 +57.1 72.3	19 28.6 +57.2 71.4	19 12.1 +57.1 70.5	18 55.6 +57.2 69.6
25°	20 59.2 +57.0 72.9	20 42.4 +57.1 72.0	20 25.8 +57.1 71.1	20 09.2 +57.2 70.2	19 52.8 +57.2 69.2
26°	21 56.2 +57.0 72.6	21 39.5 +57.1 71.7	21 22.9 +57.1 70.8	21 06.4 +57.1 69.8	20 50.0 +57.1 68.9
27°	22 53.2 +57.0 72.3	22 36.6 +57.0 71.3	22 20.0 +57.0 70.4	22 03.5 +57.1 69.5	21 47.1 +57.1 68.6
28°	23 50.2 +56.9 71.9	23 33.6 +56.9 71.0	23 17.0 +57.0 70.1	23 00.6 +57.0 69.2	22 44.2 +57.1 68.3
29°	24 47.1 +56.9 71.6	24 30.5 +56.9 70.7	24 14.0 +57.0 69.7	23 57.6 +57.0 68.8	23 41.3 +57.0 67.9

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°	-4 20.4 +57.6	-4 37.3 +57.5	-4 54.2 +57.6	-5 11.0 +57.6	-5 27.7 +57.6
1°	-3 22.8 +57.5	-3 39.8 +57.6	-3 56.6 +57.6	-4 13.4 +57.6	-4 30.1 +57.7
2°	-2 25.3 +57.6	-2 42.2 +57.6	-2 59.0 +57.6	-3 15.8 +57.7	-3 32.4 +57.6
3°	-1 27.7 +57.5	-1 44.6 +57.6	-2 01.4 +57.6	-2 18.1 +57.6	-2 34.8 +57.7
4°	-0 30.2 +57.6	-0 47.0 +57.5	-1 03.8 +57.6	-1 20.5 +57.6	-1 37.1 +57.6
5°	0 27.4 +57.5 74.2	0 10.5 +57.6 73.3	-0 06.2 +57.6	-0 22.9 +57.6	-0 39.5 +57.7
6°	1 24.9 +57.6 73.9	1 08.1 +57.6 73.0	0 51.4 +57.6 72.0	0 34.7 +57.7 71.1	0 18.2 +57.7 70.1
7°	2 22.5 +57.5 73.6	2 05.7 +57.6 72.7	1 49.0 +57.6 71.7	1 32.4 +57.6 70.8	1 15.9 +57.6 69.8
8°	3 20.0 +57.6 73.4	3 03.3 +57.5 72.4	2 46.6 +57.6 71.5	2 30.0 +57.6 70.5	2 13.5 +57.7 69.6
9°	4 17.6 +57.5 73.1	4 00.8 +57.6 72.1	3 44.2 +57.6 71.2	3 27.6 +57.7 70.2	3 11.2 +57.6 69.3
10°	5 15.1 +57.6 72.8	4 58.4 +57.6 71.8	4 41.8 +57.6 70.9	4 25.3 +57.6 70.0	4 08.8 +57.7 69.0
11°	6 12.7 +57.5 72.5	5 56.0 +57.5 71.6	5 39.4 +57.6 70.6	5 22.9 +57.6 69.7	5 06.5 +57.6 68.7
12°	7 10.2 +57.5 72.2	6 53.5 +57.6 71.3	6 37.0 +57.5 70.3	6 20.5 +57.6 69.4	6 04.1 +57.6 68.4
13°	8 07.7 +57.5 71.9	7 51.1 +57.5 71.0	7 34.5 +57.6 70.1	7 18.1 +57.6 69.1	7 01.7 +57.7 68.2
14°	9 05.2 +57.5 71.6	8 48.6 +57.5 70.7	8 32.1 +57.5 69.8	8 15.7 +57.6 68.8	7 59.4 +57.6 67.9
15°	10 02.7 +57.5 71.4	9 46.1 +57.5 70.4	9 29.6 +57.6 69.5	9 13.3 +57.5 68.5	8 57.0 +57.6 67.6
16°	11 00.2 +57.4 71.1	10 43.6 +57.5 70.1	10 27.2 +57.5 69.2	10 10.8 +57.6 68.3	9 54.6 +57.6 67.3
17°	11 57.6 +57.4 70.8	11 41.1 +57.5 69.8	11 24.7 +57.5 68.9	11 08.4 +57.5 68.0	10 52.2 +57.5 67.0
18°	12 55.0 +57.5 70.5	12 38.6 +57.4 69.5	12 22.2 +57.5 68.6	12 05.9 +57.5 67.7	11 49.7 +57.6 66.7
19°	13 52.5 +57.4 70.2	13 36.0 +57.4 69.2	13 19.7 +57.4 68.3	13 03.4 +57.5 67.4	12 47.3 +57.5 66.5
20°	14 49.9 +57.3 69.9	14 33.4 +57.4 68.9	14 17.1 +57.5 68.0	14 00.9 +57.5 67.1	13 44.8 +57.5 66.2
21°	15 47.2 +57.4 69.6	15 30.8 +57.4 68.6	15 14.6 +57.4 67.7	14 58.4 +57.4 66.8	14 42.3 +57.5 65.9
22°	16 44.6 +57.3 69.3	16 28.2 +57.4 68.3	16 12.0 +57.4 67.4	15 55.8 +57.4 66.5	15 39.8 +57.5 65.6
23°	17 41.9 +57.3 69.0	17 25.6 +57.3 68.0	17 09.4 +57.3 67.1	16 53.2 +57.4 66.2	16 37.3 +57.4 65.3
24°	18 39.2 +57.2 68.6	18 22.9 +57.3 67.7	18 06.7 +57.3 66.8	17 50.6 +57.4 65.9	17 34.7 +57.4 65.0
25°	19 36.4 +57.3 68.3	19 20.2 +57.2 67.4	19 04.0 +57.3 66.5	18 48.0 +57.3 65.6	18 32.1 +57.4 64.7
26°	20 33.7 +57.1 68.0	20 17.4 +57.3 67.1	20 01.3 +57.3 66.2	19 45.3 +57.4 65.3	19 29.5 +57.3 64.4
27°	21 30.8 +57.2 67.7	21 14.7 +57.2 66.8	20 58.6 +57.2 65.9	20 42.7 +57.2 65.0	20 26.8 +57.3 64.0
28°	22 28.0 +57.1 67.4	22 11.9 +57.1 66.4	21 55.8 +57.2 65.5	21 39.9 +57.3 64.6	21 24.1 +57.3 63.7
29°	23 25.1 +57.1 67.0	23 09.0 +57.1 66.1	22 53.0 +57.2 65.2	22 37.2 +57.1 64.3	22 21.4 +57.2 63.4

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°	-5 44.3 +57.6	-6 00.9 +57.7	-6 17.3 +57.8	-6 33.6 +57.8	-6 49.8 +57.8
1°	-4 46.7 +57.7	-5 03.2 +57.7	-5 19.5 +57.7	-5 35.8 +57.7	-5 52.0 +57.8
2°	-3 49.0 +57.7	-4 05.5 +57.8	-4 21.8 +57.7	-4 38.1 +57.8	-4 54.2 +57.8
3°	-2 51.3 +57.7	-3 07.7 +57.7	-3 24.1 +57.8	-3 40.3 +57.8	-3 56.4 +57.8
4°	-1 53.6 +57.7	-2 10.0 +57.7	-2 26.3 +57.7	-2 42.5 +57.8	-2 58.6 +57.8
5°	-0 55.9 +57.7	-1 12.3 +57.7	-1 28.6 +57.8	-1 44.7 +57.8	-2 00.8 +57.9
6°	0 01.8 +57.7 69.2	-0 14.6 +57.7	-0 30.8 +57.7	-0 46.9 +57.8	-1 02.9 +57.8
7°	0 59.5 +57.6 68.9	0 43.1 +57.8 67.9	0 26.9 +57.8 67.0	0 10.9 +57.7 66.0	-0 05.1 +57.8
8°	1 57.1 +57.7 68.6	1 40.9 +57.7 67.7	1 24.7 +57.7 66.7	1 08.6 +57.8 65.7	0 52.7 +57.8 64.8
9°	2 54.8 +57.7 68.3	2 38.6 +57.7 67.4	2 22.4 +57.8 66.4	2 06.4 +57.8 65.5	1 50.5 +57.8 64.5
10°	3 52.5 +57.7 68.1	3 36.3 +57.7 67.1	3 20.2 +57.7 66.2	3 04.2 +57.8 65.2	2 48.3 +57.9 64.3
11°	4 50.2 +57.7 67.8	4 34.0 +57.7 66.8	4 17.9 +57.8 65.9	4 02.0 +57.8 64.9	3 46.2 +57.8 64.0
12°	5 47.9 +57.6 67.5	5 31.7 +57.7 66.6	5 15.7 +57.7 65.6	4 59.8 +57.7 64.7	4 44.0 +57.8 63.7
13°	6 45.5 +57.7 67.2	6 29.4 +57.7 66.3	6 13.4 +57.7 65.3	5 57.5 +57.8 64.4	5 41.8 +57.8 63.5
14°	7 43.2 +57.6 66.9	7 27.1 +57.7 66.0	7 11.1 +57.7 65.1	6 55.3 +57.7 64.1	6 39.6 +57.7 63.2
15°	8 40.8 +57.6 66.7	8 24.8 +57.6 65.7	8 08.8 +57.7 64.8	7 53.0 +57.8 63.8	7 37.3 +57.8 62.9
16°	9 38.4 +57.7 66.4	9 22.4 +57.7 65.4	9 06.5 +57.7 64.5	8 50.8 +57.7 63.6	8 35.1 +57.8 62.6
17°	10 36.1 +57.6 66.1	10 20.1 +57.6 65.2	10 04.2 +57.7 64.2	9 48.5 +57.7 63.3	9 32.9 +57.7 62.4
18°	11 33.7 +57.5 65.8	11 17.7 +57.6 64.9	11 01.9 +57.7 63.9	10 46.2 +57.7 63.0	10 30.6 +57.8 62.1
19°	12 31.2 +57.6 65.5	12 15.3 +57.6 64.6	11 59.6 +57.6 63.7	11 43.9 +57.7 62.7	11 28.4 +57.7 61.8
20°	13 28.8 +57.6 65.2	13 12.9 +57.6 64.3	12 57.2 +57.6 63.4	12 41.6 +57.6 62.5	12 26.1 +57.7 61.5
21°	14 26.4 +57.5 64.9	14 10.5 +57.6 64.0	13 54.8 +57.6 63.1	13 39.2 +57.7 62.2	13 23.8 +57.7 61.2
22°	15 23.9 +57.5 64.6	15 08.1 +57.5 63.7	14 52.4 +57.6 62.8	14 36.9 +57.6 61.9	14 21.5 +57.6 61.0
23°	16 21.4 +57.5 64.4	16 05.6 +57.5 63.4	15 50.0 +57.6 62.5	15 34.5 +57.6 61.6	15 19.1 +57.7 60.7
24°	17 18.9 +57.4 64.1	17 03.1 +57.5 63.1	16 47.6 +57.5 62.2	16 32.1 +57.6 61.3	16 16.8 +57.6 60.4
25°	18 16.3 +57.4 63.7	18 00.6 +57.5 62.8	17 45.1 +57.5 61.9	17 29.7 +57.5 61.0	17 14.4 +57.6 60.1
26°	19 13.7 +57.4 63.4	18 58.1 +57.4 62.5	18 42.6 +57.5 61.6	18 27.2 +57.5 60.7	18 12.0 +57.6 59.8
27°	20 11.1 +57.4 63.1	19 55.5 +57.4 62.2	19 40.1 +57.4 61.3	19 24.7 +57.5 60.4	19 09.6 +57.5 59.5
28°	21 08.5 +57.3 62.8	20 52.9 +57.4 61.9	20 37.5 +57.4 61.0	20 22.2 +57.5 60.1	20 07.1 +57.5 59.2
29°	22 05.8 +57.3 62.5	21 50.3 +57.3 61.6	21 34.9 +57.4 60.7	21 19.7 +57.4 59.8	21 04.6 +57.5 58.9

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°	-7 05.9 +57.9	-7 21.8 +57.8	-7 37.7 +57.9	-7 53.4 +58.0	-8 08.9 +57.9
1°	-6 08.0 +57.8	-6 24.0 +57.9	-6 39.8 +57.9	-6 55.4 +57.9	-7 11.0 +58.0
2°	-5 10.2 +57.8	-5 26.1 +57.9	-5 41.9 +58.0	-5 57.5 +58.0	-6 13.0 +58.0
3°	-4 12.4 +57.9	-4 28.2 +57.9	-4 43.9 +57.9	-4 59.5 +57.9	-5 15.0 +58.0
4°	-3 14.5 +57.8	-3 30.3 +57.8	-3 46.0 +57.9	-4 01.6 +58.0	-4 17.0 +58.0
5°	-2 16.7 +57.9	-2 32.5 +57.9	-2 48.1 +57.9	-3 03.6 +57.9	-3 19.0 +58.0
6°	-1 18.8 +57.8	-1 34.6 +57.9	-1 50.2 +57.9	-2 05.7 +58.0	-2 21.0 +58.0
7°	-0 21.0 +57.9	-0 36.7 +57.9	-0 52.3 +58.0	-1 07.7 +58.0	-1 23.0 +58.0
8°	0 36.9 +57.9 63.8	0 21.2 +57.9 62.9	0 05.7 +57.9 61.9	-0 09.7 +57.9	-0 25.0 +58.0
9°	1 34.8 +57.8 63.6	1 19.1 +57.9 62.6	1 03.6 +57.9 61.7	0 48.2 +58.0 60.7	0 33.0 +58.0 59.8
10°	2 32.6 +57.9 63.3	2 17.0 +57.9 62.4	2 01.5 +58.0 61.4	1 46.2 +58.0 60.5	1 31.0 +58.0 59.5
11°	3 30.5 +57.8 63.0	3 14.9 +57.9 62.1	2 59.5 +57.9 61.1	2 44.2 +57.9 60.2	2 29.0 +58.0 59.2
12°	4 28.3 +57.8 62.8	4 12.8 +57.8 61.8	3 57.4 +57.9 60.9	3 42.1 +58.0 59.9	3 27.0 +58.0 59.0
13°	5 26.1 +57.9 62.5	5 10.6 +57.9 61.6	4 55.3 +57.9 60.6	4 40.1 +57.9 59.7	4 25.0 +58.0 58.7
14°	6 24.0 +57.8 62.2	6 08.5 +57.9 61.3	5 53.2 +57.9 60.4	5 38.0 +58.0 59.4	5 23.0 +58.0 58.5
15°	7 21.8 +57.8 62.0	7 06.4 +57.8 61.0	6 51.1 +57.9 60.1	6 36.0 +57.9 59.2	6 21.0 +58.0 58.2
16°	8 19.6 +57.8 61.7	8 04.2 +57.9 60.8	7 49.0 +57.9 59.8	7 33.9 +57.9 58.9	7 19.0 +57.9 58.0
17°	9 17.4 +57.8 61.4	9 02.1 +57.8 60.5	8 46.9 +57.8 59.6	8 31.8 +57.9 58.6	8 16.9 +58.0 57.7
18°	10 15.2 +57.8 61.2	9 59.9 +57.8 60.2	9 44.7 +57.9 59.3	9 29.7 +57.9 58.4	9 14.9 +57.9 57.4
19°	11 13.0 +57.7 60.9	10 57.7 +57.8 60.0	10 42.6 +57.9 59.0	10 27.6 +57.9 58.1	10 12.8 +58.0 57.2
20°	12 10.7 +57.8 60.6	11 55.5 +57.8 59.7	11 40.5 +57.8 58.8	11 25.5 +57.9 57.8	11 10.8 +57.9 56.9
21°	13 08.5 +57.7 60.3	12 53.3 +57.8 59.4	12 38.3 +57.8 58.5	12 23.4 +57.9 57.6	12 08.7 +57.9 56.6
22°	14 06.2 +57.7 60.0	13 51.1 +57.7 59.1	13 36.1 +57.8 58.2	13 21.3 +57.8 57.3	13 06.6 +57.9 56.4
23°	15 03.9 +57.7 59.8	14 48.8 +57.8 58.8	14 33.9 +57.8 57.9	14 19.1 +57.8 57.0	14 04.5 +57.8 56.1
24°	16 01.6 +57.7 59.5	15 46.6 +57.7 58.6	15 31.7 +57.7 57.7	15 16.9 +57.8 56.7	15 02.3 +57.9 55.8
25°	16 59.3 +57.6 59.2	16 44.3 +57.7 58.3	16 29.4 +57.8 57.4	16 14.7 +57.8 56.5	16 00.2 +57.8 55.6
26°	17 56.9 +57.6 58.9	17 42.0 +57.6 58.0	17 27.2 +57.7 57.1	17 12.5 +57.8 56.2	16 58.0 +57.8 55.3
27°	18 54.5 +57.6 58.6	18 39.6 +57.6 57.7	18 24.9 +57.6 56.8	18 10.3 +57.7 55.9	17 55.8 +57.8 55.0
28°	19 52.1 +57.6 58.3	19 37.2 +57.6 57.4	19 22.5 +57.7 56.5	19 08.0 +57.7 55.6	18 53.6 +57.7 54.7
29°	20 49.7 +57.5 58.0	20 34.8 +57.6 57.1	20 20.2 +57.6 56.2	20 05.7 +57.7 55.3	19 51.3 +57.8 54.4

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°	-8 24.4 +58.0	-8 39.6 +58.0	-8 54.8 +58.1	-9 09.8 +58.2	-9 24.6 +58.2
1°	-7 26.4 +58.1	-7 41.6 +58.1	-7 56.7 +58.1	-8 11.6 +58.1	-8 26.4 +58.2
2°	-6 28.3 +58.0	-6 43.5 +58.0	-6 58.6 +58.1	-7 13.5 +58.1	-7 28.2 +58.1
3°	-5 30.3 +58.0	-5 45.5 +58.1	-6 00.5 +58.1	-6 15.4 +58.2	-6 30.1 +58.2
4°	-4 32.3 +58.1	-4 47.4 +58.1	-5 02.4 +58.1	-5 17.2 +58.1	-5 31.9 +58.2
5°	-3 34.2 +58.0	-3 49.3 +58.0	-4 04.3 +58.1	-4 19.1 +58.2	-4 33.7 +58.2
6°	-2 36.2 +58.0	-2 51.3 +58.1	-3 06.2 +58.2	-3 20.9 +58.2	-3 35.5 +58.2
7°	-1 38.2 +58.1	-1 53.2 +58.1	-2 08.0 +58.1	-2 22.7 +58.1	-2 37.3 +58.2
8°	-0 40.1 +58.0	-0 55.1 +58.1	-1 09.9 +58.1	-1 24.6 +58.2	-1 39.1 +58.3
9°	0 17.9 +58.1 58.8	0 03.0 +58.1 57.8	-0 11.8 +58.1	-0 26.4 +58.2	-0 40.8 +58.2
10°	1 16.0 +58.0 58.5	1 01.1 +58.1 57.6	0 46.3 +58.2 56.6	0 31.8 +58.1 55.7	0 17.4 +58.2 54.7
11°	2 14.0 +58.0 58.3	1 59.2 +58.0 57.3	1 44.5 +58.1 56.4	1 29.9 +58.2 55.4	1 15.6 +58.2 54.5
12°	3 12.0 +58.1 58.0	2 57.2 +58.1 57.1	2 42.6 +58.1 56.1	2 28.1 +58.2 55.2	2 13.8 +58.2 54.2
13°	4 10.1 +58.0 57.8	3 55.3 +58.1 56.8	3 40.7 +58.1 55.9	3 26.3 +58.1 54.9	3 12.0 +58.2 54.0
14°	5 08.1 +58.0 57.5	4 53.4 +58.1 56.6	4 38.8 +58.1 55.6	4 24.4 +58.2 54.7	4 10.2 +58.2 53.8
15°	6 06.1 +58.1 57.3	5 51.5 +58.0 56.3	5 36.9 +58.1 55.4	5 22.6 +58.1 54.5	5 08.4 +58.2 53.5
16°	7 04.2 +58.0 57.0	6 49.5 +58.1 56.1	6 35.0 +58.1 55.1	6 20.7 +58.2 54.2	6 06.6 +58.2 53.3
17°	8 02.2 +58.0 56.8	7 47.6 +58.0 55.8	7 33.1 +58.1 54.9	7 18.9 +58.1 54.0	7 04.8 +58.2 53.0
18°	9 00.2 +58.0 56.5	8 45.6 +58.1 55.6	8 31.2 +58.1 54.6	8 17.0 +58.1 53.7	8 03.0 +58.1 52.8
19°	9 58.2 +57.9 56.2	9 43.7 +58.0 55.3	9 29.3 +58.1 54.4	9 15.1 +58.1 53.5	9 01.1 +58.2 52.5
20°	10 56.1 +58.0 56.0	10 41.7 +58.0 55.1	10 27.4 +58.0 54.1	10 13.2 +58.1 53.2	9 59.3 +58.1 52.3
21°	11 54.1 +57.9 55.7	11 39.7 +58.0 54.8	11 25.4 +58.1 53.9	11 11.3 +58.1 53.0	10 57.4 +58.2 52.0
22°	12 52.0 +58.0 55.5	12 37.7 +58.0 54.5	12 23.5 +58.0 53.6	12 09.4 +58.1 52.7	11 55.6 +58.1 51.8
23°	13 50.0 +57.9 55.2	13 35.7 +57.9 54.3	13 21.5 +58.0 53.4	13 07.5 +58.1 52.4	12 53.7 +58.1 51.5
24°	14 47.9 +57.9 54.9	14 33.6 +58.0 54.0	14 19.5 +58.0 53.1	14 05.6 +58.0 52.2	13 51.8 +58.1 51.3
25°	15 45.8 +57.9 54.6	15 31.6 +57.9 53.7	15 17.5 +58.0 52.8	15 03.6 +58.0 51.9	14 49.9 +58.1 51.0
26°	16 43.7 +57.8 54.4	16 29.5 +57.9 53.5	16 15.5 +57.9 52.6	16 01.6 +58.0 51.7	15 48.0 +58.0 50.7
27°	17 41.5 +57.9 54.1	17 27.4 +57.9 53.2	17 13.4 +58.0 52.3	16 59.6 +58.0 51.4	16 46.0 +58.1 50.5
28°	18 39.4 +57.8 53.8	18 25.3 +57.8 52.9	18 11.4 +57.9 52.0	17 57.6 +58.0 51.1	17 44.1 +58.0 50.2
29°	19 37.2 +57.7 53.5	19 23.1 +57.9 52.6	19 09.3 +57.9 51.7	18 55.6 +57.9 50.8	18 42.1 +58.0 50.0

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°	-9 39.2 +58.2	-9 53.7 +58.2	-9 09.8 +58.3	-9 23.9 +58.4	-9 37.8 +58.4
1°	-8 41.0 +58.2	-8 55.5 +58.3	-8 11.5 +58.4	-8 25.5 +58.3	-8 39.4 +58.4
2°	-7 42.8 +58.2	-7 57.2 +58.2	-7 13.1 +58.3	-7 27.2 +58.4	-7 41.0 +58.4
3°	-6 44.6 +58.2	-6 59.0 +58.3	-6 14.8 +58.3	-6 28.8 +58.4	-6 42.6 +58.4
4°	-5 46.4 +58.3	-6 00.7 +58.3			
5°	-4 48.1 +58.2	-5 02.4 +58.3	-5 16.5 +58.3	-5 30.4 +58.3	-5 44.2 +58.4
6°	-3 49.9 +58.3	-4 04.1 +58.3	-4 18.2 +58.4	-4 32.1 +58.4	-4 45.8 +58.5
7°	-2 51.6 +58.2	-3 05.8 +58.3	-3 19.8 +58.3	-3 33.7 +58.4	-3 47.3 +58.4
8°	-1 53.4 +58.3	-2 07.5 +58.3	-2 21.5 +58.3	-2 35.3 +58.4	-2 48.9 +58.4
9°	-0 55.1 +58.2	-1 09.2 +58.3	-1 23.2 +58.4	-1 36.9 +58.4	-1 50.5 +58.5
10°	0 03.1 +58.3 53.8	-0 10.9 +58.3	-0 24.8 +58.3	-0 38.5 +58.4	-0 52.0 +58.4
11°	1 01.4 +58.2 53.5	0 47.4 +58.3 52.6	0 33.5 +58.4 51.6	0 19.9 +58.3 50.7	0 06.4 +58.4 49.7
12°	1 59.6 +58.3 53.3	1 45.7 +58.3 52.3	1 31.9 +58.3 51.4	1 18.2 +58.4 50.4	1 04.8 +58.4 49.5
13°	2 57.9 +58.2 53.1	2 44.0 +58.2 52.1	2 30.2 +58.3 51.2	2 16.6 +58.4 50.2	2 03.2 +58.5 49.3
14°	3 56.1 +58.3 52.8	3 42.2 +58.3 51.9	3 28.5 +58.4 50.9	3 15.0 +58.4 50.0	3 01.7 +58.4 49.0
15°	4 54.4 +58.2 52.6	4 40.5 +58.3 51.6	4 26.9 +58.3 50.7	4 13.4 +58.4 49.7	4 00.1 +58.4 48.8
16°	5 52.6 +58.2 52.3	5 38.8 +58.3 51.4	5 25.2 +58.3 50.5	5 11.8 +58.3 49.5	4 58.5 +58.4 48.6
17°	6 50.8 +58.3 52.1	6 37.1 +58.3 51.2	6 23.5 +58.3 50.2	6 10.1 +58.4 49.3	5 56.9 +58.4 48.3
18°	7 49.1 +58.2 51.8	7 35.4 +58.2 50.9	7 21.8 +58.3 50.0	7 08.5 +58.4 49.1	6 55.3 +58.4 48.1
19°	8 47.3 +58.2 51.6	8 33.6 +58.3 50.7	8 20.1 +58.4 49.7	8 06.9 +58.3 48.8	7 53.7 +58.4 47.9
20°	9 45.5 +58.2 51.4	9 31.9 +58.2 50.4	9 18.5 +58.2 49.5	9 05.2 +58.3 48.6	8 52.1 +58.4 47.7
21°	10 43.7 +58.2 51.1	10 30.1 +58.3 50.2	10 16.7 +58.3 49.3	10 03.5 +58.4 48.3	9 50.5 +58.4 47.4
22°	11 41.9 +58.1 50.9	11 28.4 +58.2 49.9	11 15.0 +58.3 49.0	11 01.9 +58.3 48.1	10 48.9 +58.4 47.2
23°	12 40.0 +58.2 50.6	12 26.6 +58.2 49.7	12 13.3 +58.2 48.8	12 00.2 +58.3 47.9	11 47.3 +58.3 47.0
24°	13 38.2 +58.1 50.4	13 24.8 +58.2 49.4	13 11.5 +58.3 48.5	12 58.5 +58.3 47.6	12 45.6 +58.4 46.7
25°	14 36.3 +58.2 50.1	14 23.0 +58.2 49.2	14 09.8 +58.2 48.3	13 56.8 +58.3 47.4	13 44.0 +58.3 46.5
26°	15 34.5 +58.1 49.8	15 21.2 +58.1 48.9	15 08.0 +58.2 48.0	14 55.1 +58.2 47.1	14 42.3 +58.3 46.2
27°	16 32.6 +58.1 49.6	16 19.3 +58.1 48.7	16 06.2 +58.2 47.8	15 53.3 +58.3 46.9	15 40.6 +58.3 46.0
28°	17 30.7 +58.0 49.3	17 17.4 +58.2 48.4	17 04.4 +58.2 47.5	16 51.6 +58.2 46.6	16 38.9 +58.3 45.7
29°	18 28.7 +58.1 49.1	18 15.6 +58.1 48.2	18 02.6 +58.1 47.3	17 49.8 +58.2 46.4	17 37.2 +58.2 45.5

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°	-9 51.5 +58.4				
2°	-8 53.1 +58.5	-9 06.6 +58.5	-9 19.9 +58.6	-9 33.0 +58.6	-9 45.9 +58.6
3°	-7 54.6 +58.4	-8 08.1 +58.5	-8 21.3 +58.5	-8 34.4 +58.6	-8 47.3 +58.7
4°	-6 56.2 +58.5	-7 09.6 +58.5	-7 22.8 +58.5	-7 35.8 +58.6	-7 48.6 +58.6
5°	-5 57.7 +58.4	-6 11.1 +58.5	-6 24.3 +58.6	-6 37.2 +58.6	-6 50.0 +58.7
6°	-4 59.3 +58.5	-5 12.6 +58.5	-5 25.7 +58.6	-5 38.6 +58.6	-5 51.3 +58.6
7°	-4 00.8 +58.5	-4 14.1 +58.5	-4 27.1 +58.5	-4 40.0 +58.6	-4 52.7 +58.6
8°	-3 02.3 +58.4	-3 15.6 +58.6	-3 28.6 +58.6	-3 41.4 +58.6	-3 54.1 +58.7
9°	-2 03.9 +58.5	-2 17.0 +58.5	-2 30.0 +58.5	-2 42.8 +58.6	-2 55.4 +58.7
10°	-1 05.4 +58.5	-1 18.5 +58.5	-1 31.5 +58.6	-1 44.2 +58.6	-1 56.7 +58.6
11°	-0 06.9 +58.5	-0 20.0 +58.5	-0 32.9 +58.6	-0 45.6 +58.6	-0 58.1 +58.7
12°	0 51.6 +58.4 48.5	0 38.5 +58.5 47.6	0 25.7 +58.5 46.6	0 13.0 +58.6 45.7	0 00.6 +58.6 44.7
13°	1 50.0 +58.5 48.3	1 37.0 +58.6 47.4	1 24.2 +58.6 46.4	1 11.6 +58.6 45.5	0 59.2 +58.7 44.5
14°	2 48.5 +58.5 48.1	2 35.6 +58.5 47.1	2 22.8 +58.6 46.2	2 10.2 +58.7 45.2	1 57.9 +58.6 44.3
15°	3 47.0 +58.5 47.9	3 34.1 +58.5 46.9	3 21.4 +58.5 46.0	3 08.9 +58.6 45.0	2 56.5 +58.7 44.1
16°	4 45.5 +58.4 47.6	4 32.6 +58.5 46.7	4 19.9 +58.6 45.8	4 07.5 +58.6 44.8	3 55.2 +58.6 43.9
17°	5 43.9 +58.5 47.4	5 31.1 +58.5 46.5	5 18.5 +58.5 45.5	5 06.1 +58.6 44.6	4 53.8 +58.7 43.7
18°	6 42.4 +58.4 47.2	6 29.6 +58.5 46.3	6 17.0 +58.6 45.3	6 04.7 +58.6 44.4	5 52.5 +58.6 43.5
19°	7 40.8 +58.5 47.0	7 28.1 +58.5 46.0	7 15.6 +58.5 45.1	7 03.3 +58.5 44.2	6 51.1 +58.7 43.2
20°	8 39.3 +58.4 46.7	8 26.6 +58.5 45.8	8 14.1 +58.6 44.9	8 01.8 +58.6 44.0	7 49.8 +58.6 43.0
21°	9 37.7 +58.4 46.5	9 25.1 +58.5 45.6	9 12.7 +58.5 44.7	9 00.4 +58.6 43.7	8 48.4 +58.6 42.8
22°	10 36.1 +58.5 46.3	10 23.6 +58.4 45.4	10 11.2 +58.5 44.4	9 59.0 +58.6 43.5	9 47.0 +58.6 42.6
23°	11 34.6 +58.4 46.0	11 22.0 +58.5 45.1	11 09.7 +58.5 44.2	10 57.6 +58.5 43.3	10 45.6 +58.6 42.4
24°	12 33.0 +58.3 45.8	12 20.5 +58.4 44.9	12 08.2 +58.5 44.0	11 56.1 +58.6 43.1	11 44.2 +58.6 42.2
25°	13 31.3 +58.4 45.6	13 18.9 +58.5 44.7	13 06.7 +58.5 43.8	12 54.7 +58.5 42.8	12 42.8 +58.6 41.9
26°	14 29.7 +58.4 45.3	14 17.4 +58.4 44.4	14 05.2 +58.4 43.5	13 53.2 +58.5 42.6	13 41.4 +58.6 41.7
27°	15 28.1 +58.3 45.1	15 15.8 +58.4 44.2	15 03.6 +58.5 43.3	14 51.7 +58.5 42.4	14 40.0 +58.5 41.5
28°	16 26.4 +58.4 44.8	16 14.2 +58.4 44.0	16 02.1 +58.4 43.1	15 50.2 +58.5 42.2	15 38.5 +58.6 41.3
29°	17 24.8 +58.3 44.6	17 12.6 +58.3 43.7	17 00.5 +58.5 42.8	16 48.7 +58.5 41.9	16 37.1 +58.5 41.0

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°	-9 58.6 +58.7				
3°	-8 59.9 +58.7	-9 12.3 +58.7	-9 24.6 +58.8	-9 36.6 +58.9	-9 48.3 +58.8
4°	-8 01.2 +58.7	-8 13.6 +58.7	-8 25.8 +58.8	-8 37.7 +58.8	-8 49.5 +58.9
5°	-7 02.5 +58.6	-7 14.9 +58.7	-7 27.0 +58.8	-7 38.9 +58.8	-7 50.6 +58.9
6°	-6 03.9 +58.7	-6 16.2 +58.8	-6 28.2 +58.7	-6 40.1 +58.8	-6 51.7 +58.8
7°	-5 05.2 +58.7	-5 17.4 +58.7	-5 29.5 +58.8	-5 41.3 +58.9	-5 52.9 +58.9
8°	-4 06.5 +58.7	-4 18.7 +58.8	-4 30.7 +58.8	-4 42.4 +58.8	-4 54.0 +58.9
9°	-3 07.8 +58.7	-3 19.9 +58.7	-3 31.9 +58.8	-3 43.6 +58.8	-3 55.1 +58.9
10°	-2 09.1 +58.7	-2 21.2 +58.8	-2 33.1 +58.8	-2 44.8 +58.9	-2 56.2 +58.8
11°	-1 10.4 +58.7	-1 22.4 +58.7	-1 34.3 +58.8	-1 45.9 +58.8	-1 57.4 +58.9
12°	-0 11.7 +58.7	-0 23.7 +58.8	-0 35.5 +58.8	-0 47.1 +58.8	-0 58.5 +58.9
13°	0 47.0 +58.7 43.6	0 35.1 +58.7 42.6	0 23.3 +58.8 41.6	0 11.7 +58.9 40.7	0 00.4 +58.9 39.7
14°	1 45.7 +58.7 43.3	1 33.8 +58.8 42.4	1 22.1 +58.8 41.4	1 10.6 +58.8 40.5	0 59.3 +58.9 39.5
15°	2 44.4 +58.7 43.1	2 32.6 +58.7 42.2	2 20.9 +58.8 41.2	2 09.4 +58.9 40.3	1 58.2 +58.9 39.4
16°	3 43.1 +58.7 42.9	3 31.3 +58.7 42.0	3 19.7 +58.8 41.0	3 08.3 +58.8 40.1	2 57.1 +58.9 39.2
17°	4 41.8 +58.7 42.7	4 30.0 +58.8 41.8	4 18.5 +58.7 40.8	4 07.1 +58.8 39.9	3 56.0 +58.8 39.0
18°	5 40.5 +58.7 42.5	5 28.8 +58.7 41.6	5 17.2 +58.8 40.6	5 05.9 +58.9 39.7	4 54.8 +58.9 38.8
19°	6 39.2 +58.7 42.3	6 27.5 +58.7 41.4	6 16.0 +58.8 40.4	6 04.8 +58.8 39.5	5 53.7 +58.9 38.6
20°	7 37.9 +58.7 42.1	7 26.2 +58.8 41.2	7 14.8 +58.8 40.2	7 03.6 +58.8 39.3	6 52.6 +58.8 38.4
21°	8 36.6 +58.7 41.9	8 25.0 +58.7 41.0	8 13.6 +58.7 40.0	8 02.4 +58.8 39.1	7 51.4 +58.9 38.2
22°	9 35.3 +58.6 41.7	9 23.7 +58.7 40.8	9 12.3 +58.8 39.8	9 01.2 +58.8 38.9	8 50.3 +58.9 38.0
23°	10 33.9 +58.7 41.5	10 22.4 +58.7 40.5	10 11.1 +58.8 39.6	10 00.0 +58.8 38.7	9 49.2 +58.8 37.8
24°	11 32.6 +58.6 41.2	11 21.1 +58.7 40.3	11 09.9 +58.7 39.4	10 58.8 +58.8 38.5	10 48.0 +58.9 37.6
25°	12 31.2 +58.6 41.0	12 19.8 +58.7 40.1	12 08.6 +58.7 39.2	11 57.6 +58.8 38.3	11 46.9 +58.8 37.4
26°	13 29.8 +58.7 40.8	13 18.5 +58.7 39.9	13 07.3 +58.8 39.0	12 56.4 +58.8 38.1	12 45.7 +58.8 37.2
27°	14 28.5 +58.6 40.6	14 17.2 +58.6 39.7	14 06.1 +58.7 38.8	13 55.2 +58.7 37.9	13 44.5 +58.8 37.0
28°	15 27.1 +58.6 40.4	15 15.8 +58.7 39.5	15 04.8 +58.7 38.6	14 53.9 +58.8 37.7	14 43.3 +58.8 36.8
29°	16 25.7 +58.6 40.1	16 14.5 +58.6 39.3	16 03.5 +58.7 38.4	15 52.7 +58.7 37.5	15 42.1 +58.8 36.6

Dec	LHA 140° / 220°	LHA 141° / 219°	LHA 142° / 218°	LHA 143° / 217°	LHA 144° / 216°
0°	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
1°					
2°					
3°	-9 59.9 +58.9				
4°	-9 01.0 +58.9	-9 12.3 +59.0	-9 23.3 +59.0	-9 34.1 +59.0	-9 44.6 +59.0
5°	-8 02.1 +58.9	-8 13.3 +59.0	-8 24.3 +59.0	-8 35.1 +59.1	-8 45.6 +59.1
6°	-7 03.2 +59.0	-7 14.3 +58.9	-7 25.3 +59.0	-7 36.0 +59.0	-7 46.5 +59.1
7°	-6 04.2 +58.9	-6 15.4 +59.0	-6 26.3 +59.0	-6 37.0 +59.1	-6 47.4 +59.1
8°	-5 05.3 +58.9	-5 16.4 +59.0	-5 27.3 +59.0	-5 37.9 +59.1	-5 48.3 +59.1
9°	-4 06.4 +58.9	-4 17.4 +58.9	-4 28.3 +59.0	-4 38.8 +59.0	-4 49.2 +59.1
10°	-3 07.5 +59.0	-3 18.5 +59.0	-3 29.3 +59.1	-3 39.8 +59.1	-3 50.1 +59.1
11°	-2 08.5 +58.9	-2 19.5 +59.0	-2 30.2 +59.0	-2 40.7 +59.0	-2 51.0 +59.1
12°	-1 09.6 +58.9	-1 20.5 +58.9	-1 31.2 +59.0	-1 41.7 +59.1	-1 51.9 +59.1
13°	-0 10.7 +58.9	-0 21.6 +59.0	-0 32.2 +59.0	-0 42.6 +59.1	-0 52.8 +59.1
14°	0 48.2 +59.0 38.6	0 37.4 +59.0 37.6	0 26.8 +59.0 36.7	0 16.5 +59.0 35.7	0 06.3 +59.1 34.8
15°	1 47.2 +58.9 38.4	1 36.4 +59.0 37.5	1 25.8 +59.1 36.5	1 15.5 +59.1 35.6	1 05.4 +59.2 34.6
16°	2 46.1 +58.9 38.2	2 35.4 +58.9 37.3	2 24.9 +59.0 36.3	2 14.6 +59.1 35.4	2 04.6 +59.1 34.4
17°	3 45.0 +59.0 38.0	3 34.3 +59.0 37.1	3 23.9 +59.0 36.1	3 13.7 +59.0 35.2	3 03.7 +59.1 34.3
18°	4 44.0 +58.9 37.8	4 33.3 +59.0 36.9	4 22.9 +59.0 36.0	4 12.7 +59.1 35.0	4 02.8 +59.1 34.1
19°	5 42.9 +58.9 37.6	5 32.3 +58.9 36.7	5 21.9 +59.0 35.8	5 11.8 +59.0 34.8	5 01.9 +59.1 33.9
20°	6 41.8 +58.9 37.5	6 31.2 +59.0 36.5	6 20.9 +59.0 35.6	6 10.8 +59.1 34.7	6 01.0 +59.1 33.7
21°	7 40.7 +58.9 37.3	7 30.2 +59.0 36.3	7 19.9 +59.0 35.4	7 09.9 +59.0 34.5	7 00.1 +59.0 33.6
22°	8 39.6 +58.9 37.1	8 29.2 +58.9 36.2	8 18.9 +59.0 35.2	8 08.9 +59.1 34.3	7 59.1 +59.1 33.4
23°	9 38.5 +58.9 36.9	9 28.1 +59.0 36.0	9 17.9 +59.0 35.0	9 08.0 +59.0 34.1	8 58.2 +59.1 33.2
24°	10 37.4 +58.9 36.7	10 27.1 +58.9 35.8	10 16.9 +59.0 34.9	10 07.0 +59.0 33.9	9 57.3 +59.1 33.0
25°	11 36.3 +58.9 36.5	11 26.0 +58.9 35.6	11 15.9 +59.0 34.7	11 06.0 +59.1 33.8	10 56.4 +59.1 32.9
26°	12 35.2 +58.9 36.3	12 24.9 +58.9 35.4	12 14.9 +58.9 34.5	12 05.1 +59.0 33.6	11 55.5 +59.0 32.7
27°	13 34.1 +58.8 36.1	13 23.8 +59.0 35.2	13 13.8 +59.0 34.3	13 04.1 +59.0 33.4	12 54.5 +59.1 32.5
28°	14 32.9 +58.9 35.9	14 22.8 +58.9 35.0	14 12.8 +59.0 34.1	14 03.1 +59.0 33.2	13 53.6 +59.0 32.3
29°	15 31.8 +58.8 35.7	15 21.7 +58.8 34.8	15 11.8 +58.9 33.9	15 02.1 +59.0 33.0	14 52.6 +59.1 32.1

Dec	LHA 145° / 215°	LHA 146° / 214°	LHA 147° / 213°	LHA 148° / 212°	LHA 149° / 211°
0°	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
1°					
2°					
3°					
4°	-9 55.0 +59.2				
5°	-8 55.8 +59.1	-9 05.9 +59.2	-9 15.6 +59.2	-9 25.1 +59.2	-9 34.4 +59.3
6°	-7 56.7 +59.1	-8 06.7 +59.2	-8 16.4 +59.2	-8 25.9 +59.3	-8 35.1 +59.3
7°	-6 57.6 +59.2	-7 07.5 +59.2	-7 17.2 +59.2	-7 26.6 +59.2	-7 35.8 +59.3
8°	-5 58.4 +59.1	-6 08.3 +59.2	-6 18.0 +59.3	-6 27.4 +59.3	-6 36.5 +59.3
9°	-4 59.3 +59.2	-5 09.1 +59.1	-5 18.7 +59.2	-5 28.1 +59.3	-5 37.2 +59.3
10°	-4 00.1 +59.1	-4 10.0 +59.2	-4 19.5 +59.2	-4 28.8 +59.2	-4 37.9 +59.3
11°	-3 01.0 +59.2	-3 10.8 +59.2	-3 20.3 +59.2	-3 29.6 +59.3	-3 38.6 +59.3
12°	-2 01.8 +59.1	-2 11.6 +59.2	-2 21.1 +59.3	-2 30.3 +59.3	-2 39.3 +59.4
13°	-1 02.7 +59.2	-1 12.4 +59.2	-1 21.8 +59.2	-1 31.0 +59.3	-1 39.9 +59.3
14°	-0 03.5 +59.1	-0 13.2 +59.2	-0 22.6 +59.3	-0 31.7 +59.2	-0 40.6 +59.3
15°	0 55.6 +59.2 33.6	0 46.0 +59.2 32.7	0 36.7 +59.2 31.7	0 27.5 +59.3 30.8	0 18.7 +59.3 29.8
16°	1 54.8 +59.1 33.5	1 45.2 +59.2 32.5	1 35.9 +59.2 31.6	1 26.8 +59.3 30.6	1 18.0 +59.3 29.7
17°	2 53.9 +59.1 33.3	2 44.4 +59.2 32.4	2 35.1 +59.3 31.4	2 26.1 +59.3 30.5	2 17.3 +59.3 29.5
18°	3 53.0 +59.2 33.1	3 43.6 +59.2 32.2	3 34.4 +59.2 31.3	3 25.4 +59.2 30.3	3 16.6 +59.4 29.4
19°	4 52.2 +59.1 33.0	4 42.8 +59.2 32.0	4 33.6 +59.2 31.1	4 24.6 +59.3 30.2	4 16.0 +59.3 29.2
20°	5 51.3 +59.2 32.8	5 42.0 +59.1 31.9	5 32.8 +59.2 30.9	5 23.9 +59.3 30.0	5 15.3 +59.3 29.1
21°	6 50.5 +59.1 32.6	6 41.1 +59.2 31.7	6 32.0 +59.3 30.8	6 23.2 +59.2 29.9	6 14.6 +59.3 28.9
22°	7 49.6 +59.1 32.5	7 40.3 +59.2 31.5	7 31.3 +59.2 30.6	7 22.4 +59.3 29.7	7 13.9 +59.3 28.8
23°	8 48.7 +59.2 32.3	8 39.5 +59.2 31.4	8 30.5 +59.2 30.5	8 21.7 +59.3 29.5	8 13.2 +59.3 28.6
24°	9 47.9 +59.1 32.1	9 38.7 +59.1 31.2	9 29.7 +59.2 30.3	9 21.0 +59.2 29.4	9 12.5 +59.3 28.5
25°	10 47.0 +59.1 32.0	10 37.8 +59.2 31.0	10 28.9 +59.2 30.1	10 20.2 +59.3 29.2	10 11.8 +59.3 28.3
26°	11 46.1 +59.1 31.8	11 37.0 +59.1 30.9	11 28.1 +59.2 30.0	11 19.5 +59.2 29.1	11 11.1 +59.3 28.2
27°	12 45.2 +59.1 31.6	12 36.1 +59.2 30.7	12 27.3 +59.2 29.8	12 18.7 +59.2 28.9	12 10.4 +59.2 28.0
28°	13 44.3 +59.1 31.4	13 35.3 +59.1 30.5	13 26.5 +59.2 29.6	13 17.9 +59.3 28.7	13 09.6 +59.3 27.8
29°	14 43.4 +59.1 31.2	14 34.4 +59.2 30.4	14 25.7 +59.2 29.5	14 17.2 +59.2 28.6	14 08.9 +59.3 27.7

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°	-9 43.4 +59.3	-9 52.1 +59.3			
6°	-8 44.1 +59.4	-8 52.8 +59.4	-9 01.2 +59.4	-9 09.3 +59.4	-9 17.2 +59.5
7°	-7 44.7 +59.3	-7 53.4 +59.4	-8 01.8 +59.5	-8 09.9 +59.5	-8 17.7 +59.5
8°	-6 45.4 +59.4	-6 54.0 +59.4	-7 02.3 +59.4	-7 10.4 +59.4	-7 18.2 +59.5
9°	-5 46.0 +59.3	-5 54.6 +59.4	-6 02.9 +59.4	-6 11.0 +59.5	-6 18.7 +59.5
10°					
11°	-4 46.7 +59.4	-4 55.2 +59.4	-5 03.5 +59.4	-5 11.5 +59.5	-5 19.2 +59.5
12°	-3 47.3 +59.3	-3 55.8 +59.4	-4 04.1 +59.5	-4 12.0 +59.4	-4 19.7 +59.5
13°	-2 48.0 +59.4	-2 56.4 +59.4	-3 04.6 +59.4	-3 12.6 +59.5	-3 20.2 +59.5
14°	-1 48.6 +59.3	-1 57.0 +59.4	-2 05.2 +59.4	-2 13.1 +59.5	-2 20.7 +59.5
15°	-0 49.3 +59.4	-0 57.6 +59.4	-1 05.8 +59.5	-1 13.6 +59.4	-1 21.2 +59.5
16°	0 10.1 +59.3 28.9	0 01.8 +59.3 27.9	-0 06.3 +59.4	-0 14.2 +59.5	-0 21.7 +59.5
17°	1 09.4 +59.4 28.7	1 01.1 +59.4 27.8	0 53.1 +59.4 26.8	0 45.3 +59.5 25.9	0 37.8 +59.5 24.9
18°	2 08.8 +59.4 28.6	2 00.5 +59.4 27.6	1 52.5 +59.5 26.7	1 44.8 +59.4 25.7	1 37.3 +59.5 24.8
19°	3 08.2 +59.3 28.4	2 59.9 +59.4 27.5	2 52.0 +59.4 26.6	2 44.2 +59.5 25.6	2 36.8 +59.5 24.7
20°	4 07.5 +59.4 28.3	3 59.3 +59.4 27.4	3 51.4 +59.4 26.4	3 43.7 +59.5 25.5	3 36.3 +59.5 24.5
21°	5 06.9 +59.3 28.1	4 58.7 +59.4 27.2	4 50.8 +59.4 26.3	4 43.2 +59.4 25.3	4 35.8 +59.5 24.4
22°	6 06.2 +59.4 28.0	5 58.1 +59.4 27.1	5 50.2 +59.5 26.1	5 42.6 +59.5 25.2	5 35.3 +59.5 24.3
23°	7 05.6 +59.3 27.9	6 57.5 +59.4 26.9	6 49.7 +59.4 26.0	6 42.1 +59.5 25.1	6 34.8 +59.5 24.2
24°	8 04.9 +59.3 27.7	7 56.9 +59.4 26.8	7 49.1 +59.4 25.9	7 41.6 +59.4 24.9	7 34.3 +59.5 24.0
25°	9 04.2 +59.4 27.6	8 56.3 +59.3 26.6	8 48.5 +59.4 25.7	8 41.0 +59.5 24.8	8 33.8 +59.5 23.9
26°	10 03.6 +59.3 27.4	9 55.6 +59.4 26.5	9 47.9 +59.4 25.6	9 40.5 +59.4 24.7	9 33.3 +59.5 23.8
27°	11 02.9 +59.3 27.3	10 55.0 +59.4 26.3	10 47.3 +59.5 25.4	10 39.9 +59.5 24.5	10 32.8 +59.5 23.6
28°	12 02.2 +59.4 27.1	11 54.4 +59.3 26.2	11 46.8 +59.4 25.3	11 39.4 +59.4 24.4	11 32.3 +59.4 23.5
29°	13 01.6 +59.3 26.9	12 53.7 +59.4 26.0	12 46.2 +59.4 25.2	12 38.8 +59.5 24.3	12 31.7 +59.5 23.4
30°	14 00.9 +59.3 26.8	13 53.1 +59.4 25.9	13 45.6 +59.4 25.0	13 38.3 +59.4 24.1	13 31.2 +59.5 23.2

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°	-9 24.8 +59.5	-9 32.2 +59.6	-9 39.2 +59.6	-9 46.0 +59.6	-9 52.5 +59.7
7°	-8 25.3 +59.5	-8 32.6 +59.6	-8 39.6 +59.6	-8 46.4 +59.7	-8 52.8 +59.6
8°	-7 25.8 +59.6	-7 33.0 +59.5	-7 40.0 +59.6	-7 46.7 +59.6	-7 53.2 +59.7
9°	-6 26.2 +59.5	-6 33.5 +59.6	-6 40.4 +59.6	-6 47.1 +59.6	-6 53.5 +59.7
10°					
11°	-5 26.7 +59.5	-5 33.9 +59.6	-5 40.8 +59.6	-5 47.5 +59.7	-5 53.8 +59.6
12°	-4 27.2 +59.6	-4 34.3 +59.5	-4 41.2 +59.6	-4 47.8 +59.6	-4 54.2 +59.7
13°	-3 27.6 +59.5	-3 34.8 +59.6	-3 41.6 +59.6	-3 48.2 +59.6	-3 54.5 +59.7
14°	-2 28.1 +59.5	-2 35.2 +59.6	-2 42.0 +59.6	-2 48.6 +59.7	-2 54.8 +59.6
15°	-1 28.6 +59.6	-1 35.6 +59.6	-1 42.4 +59.6	-1 48.9 +59.6	-1 55.2 +59.7
16°	-0 29.0 +59.5	-0 36.0 +59.5	-0 42.8 +59.6	-0 49.3 +59.7	-0 55.5 +59.7
17°	0 30.5 +59.6 24.0	0 23.5 +59.6 23.0	0 16.8 +59.6 22.1	0 10.4 +59.6 21.1	0 04.2 +59.6 20.2
18°	1 30.1 +59.5 23.8	1 23.1 +59.6 22.9	1 16.4 +59.6 21.9	1 10.0 +59.6 21.0	1 03.8 +59.7 20.0
19°	2 29.6 +59.5 23.7	2 22.7 +59.6 22.8	2 16.0 +59.6 21.8	2 09.6 +59.7 20.9	2 03.5 +59.7 19.9
20°	3 29.1 +59.6 23.6	3 22.3 +59.5 22.7	3 15.6 +59.6 21.7	3 09.3 +59.6 20.8	3 03.2 +59.7 19.8
21°	4 28.7 +59.5 23.5	4 21.8 +59.6 22.5	4 15.2 +59.6 21.6	4 08.9 +59.6 20.7	4 02.9 +59.6 19.7
22°	5 28.2 +59.6 23.4	5 21.4 +59.6 22.4	5 14.8 +59.6 21.5	5 08.5 +59.7 20.6	5 02.5 +59.7 19.6
23°	6 27.8 +59.5 23.2	6 21.0 +59.5 22.3	6 14.4 +59.6 21.4	6 08.2 +59.6 20.4	6 02.2 +59.7 19.5
24°	7 27.3 +59.5 23.1	7 20.5 +59.6 22.2	7 14.0 +59.6 21.3	7 07.8 +59.6 20.3	7 01.9 +59.6 19.4
25°	8 26.8 +59.5 23.0	8 20.1 +59.6 22.1	8 13.6 +59.6 21.1	8 07.4 +59.7 20.2	8 01.5 +59.7 19.3
26°	9 26.3 +59.6 22.8	9 19.7 +59.5 21.9	9 13.2 +59.6 21.0	9 07.1 +59.6 20.1	9 01.2 +59.6 19.2
27°	10 25.9 +59.5 22.7	10 19.2 +59.6 21.8	10 12.8 +59.6 20.9	10 06.7 +59.6 20.0	10 00.8 +59.7 19.1
28°	11 25.4 +59.5 22.6	11 18.8 +59.5 21.7	11 12.4 +59.6 20.8	11 06.3 +59.7 19.9	11 00.5 +59.7 19.0
29°	12 24.9 +59.5 22.5	12 18.3 +59.6 21.6	12 12.0 +59.6 20.7	12 06.0 +59.6 19.8	12 00.2 +59.6 18.9
30°	13 24.4 +59.5 22.3	13 17.9 +59.5 21.4	13 11.6 +59.6 20.5	13 05.6 +59.6 19.7	12 59.8 +59.7 18.8

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°	-9 58.7 +59.7				
7°	-8 59.0 +59.7	-9 04.9 +59.7	-9 10.5 +59.8	-9 15.8 +59.8	-9 20.8 +59.8
8°	-7 59.3 +59.7	-8 05.2 +59.8	-8 10.7 +59.7	-8 16.0 +59.8	-8 21.0 +59.8
9°	-6 59.6 +59.7	-7 05.4 +59.7	-7 11.0 +59.8	-7 16.2 +59.7	-7 21.2 +59.8
10°	-5 59.9 +59.7	-6 05.7 +59.7	-6 11.2 +59.7	-6 16.5 +59.8	-6 21.4 +59.8
11°	-5 00.2 +59.7	-5 06.0 +59.7	-5 11.5 +59.8	-5 16.7 +59.8	-5 21.6 +59.8
12°	-4 00.5 +59.7	-4 06.3 +59.8	-4 11.7 +59.7	-4 16.9 +59.8	-4 21.8 +59.8
13°	-3 00.8 +59.7	-3 06.5 +59.7	-3 12.0 +59.8	-3 17.1 +59.8	-3 22.0 +59.8
14°	-2 01.1 +59.7	-2 06.8 +59.7	-2 12.2 +59.7	-2 17.3 +59.7	-2 22.2 +59.8
15°	-1 01.4 +59.7	-1 07.1 +59.7	-1 12.5 +59.8	-1 17.6 +59.8	-1 22.4 +59.8
16°	-0 01.7 +59.7	-0 07.4 +59.8	-0 12.7 +59.7	-0 17.8 +59.8	-0 22.6 +59.8
17°	0 58.0 +59.7 19.1	0 52.4 +59.7 18.1	0 47.0 +59.8 17.2	0 42.0 +59.8 16.2	0 37.2 +59.8 15.3
18°	1 57.7 +59.7 19.0	1 52.1 +59.7 18.0	1 46.8 +59.8 17.1	1 41.8 +59.8 16.2	1 37.0 +59.8 15.2
19°	2 57.4 +59.7 18.9	2 51.8 +59.7 18.0	2 46.6 +59.7 17.0	2 41.6 +59.7 16.1	2 36.8 +59.8 15.1
20°	3 57.1 +59.7 18.8	3 51.5 +59.8 17.9	3 46.3 +59.8 16.9	3 41.3 +59.8 16.0	3 36.6 +59.9 15.0
21°	4 56.8 +59.7 18.7	4 51.3 +59.7 17.8	4 46.1 +59.7 16.8	4 41.1 +59.8 15.9	4 36.5 +59.8 15.0
22°	5 56.5 +59.7 18.6	5 51.0 +59.7 17.7	5 45.8 +59.8 16.7	5 40.9 +59.8 15.8	5 36.3 +59.8 14.9
23°	6 56.2 +59.6 18.5	6 50.7 +59.7 17.6	6 45.6 +59.7 16.6	6 40.7 +59.8 15.7	6 36.1 +59.8 14.8
24°	7 55.8 +59.7 18.4	7 50.4 +59.8 17.5	7 45.3 +59.8 16.6	7 40.5 +59.7 15.6	7 35.9 +59.8 14.7
25°	8 55.5 +59.7 18.3	8 50.2 +59.7 17.4	8 45.1 +59.7 16.5	8 40.2 +59.8 15.5	8 35.7 +59.8 14.6
26°	9 55.2 +59.7 18.2	9 49.9 +59.7 17.3	9 44.8 +59.8 16.4	9 40.0 +59.8 15.5	9 35.5 +59.8 14.6
27°	10 54.9 +59.7 18.1	10 49.6 +59.7 17.2	10 44.6 +59.7 16.3	10 39.8 +59.7 15.4	10 35.3 +59.8 14.5
28°	11 54.6 +59.7 18.0	11 49.3 +59.7 17.1	11 44.3 +59.7 16.2	11 39.5 +59.8 15.3	11 35.1 +59.8 14.4
29°	12 54.3 +59.7 17.9	12 49.0 +59.8 17.0	12 44.0 +59.8 16.1	12 39.3 +59.8 15.2	12 34.9 +59.7 14.3

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°	-9 25.5 +59.8	-9 29.9 +59.8	-9 34.1 +59.9	-9 37.9 +59.9	-9 41.4 +59.9
8°	-8 25.7 +59.8	-8 30.1 +59.9	-8 34.2 +59.9	-8 38.0 +59.9	-8 41.5 +59.9
9°	-7 25.9 +59.9	-7 30.2 +59.8	-7 34.3 +59.8	-7 38.1 +59.9	-7 41.6 +59.9
10°	-6 26.0 +59.8	-6 30.4 +59.9	-6 34.5 +59.9	-6 38.2 +59.9	-6 41.7 +59.9
11°	-5 26.2 +59.8	-5 30.5 +59.8	-5 34.6 +59.9	-5 38.3 +59.9	-5 41.8 +59.9
12°	-4 26.4 +59.8	-4 30.7 +59.9	-4 34.7 +59.9	-4 38.4 +59.8	-4 41.9 +59.9
13°	-3 26.6 +59.9	-3 30.8 +59.8	-3 34.8 +59.8	-3 38.6 +59.9	-3 42.0 +59.9
14°	-2 26.7 +59.8	-2 31.0 +59.9	-2 35.0 +59.9	-2 38.7 +59.9	-2 42.1 +59.9
15°	-1 26.9 +59.8	-1 31.1 +59.8	-1 35.1 +59.9	-1 38.8 +59.9	-1 42.2 +60.0
16°	-0 27.1 +59.9	-0 31.3 +59.9	-0 35.2 +59.8	-0 38.9 +59.9	-0 42.2 +59.9
17°	0 32.8 +59.8 14.3	0 28.6 +59.8 13.4	0 24.6 +59.9 12.4	0 21.0 +59.9 11.5	0 17.7 +59.9 10.5
18°	1 32.6 +59.8 14.3	1 28.4 +59.9 13.3	1 24.5 +59.9 12.4	1 20.9 +59.9 11.4	1 17.6 +59.9 10.5
19°	2 32.4 +59.8 14.2	2 28.3 +59.8 13.2	2 24.4 +59.8 12.3	2 20.8 +59.9 11.3	2 17.5 +59.9 10.4
20°	3 32.2 +59.9 14.1	3 28.1 +59.8 13.2	3 24.2 +59.9 12.2	3 20.7 +59.9 11.3	3 17.4 +59.9 10.3
21°	4 32.1 +59.8 14.0	4 27.9 +59.9 13.1	4 24.1 +59.9 12.2	4 20.6 +59.8 11.2	4 17.3 +59.9 10.3
22°	5 31.9 +59.8 14.0	5 27.8 +59.8 13.0	5 24.0 +59.9 12.1	5 20.4 +59.9 11.2	5 17.2 +59.9 10.2
23°	6 31.7 +59.8 13.9	6 27.6 +59.9 13.0	6 23.9 +59.8 12.0	6 20.3 +59.9 11.1	6 17.1 +59.9 10.2
24°	7 31.5 +59.9 13.8	7 27.5 +59.8 12.9	7 23.7 +59.9 12.0	7 20.2 +59.9 11.0	7 17.0 +59.9 10.1
25°	8 31.4 +59.8 13.7	8 27.3 +59.9 12.8	8 23.6 +59.9 11.9	8 20.1 +59.9 11.0	8 16.9 +59.9 10.1
26°	9 31.2 +59.8 13.6	9 27.2 +59.8 12.7	9 23.5 +59.8 11.8	9 20.0 +59.9 10.9	9 16.8 +59.9 10.0
27°	10 31.0 +59.8 13.6	10 27.0 +59.9 12.7	10 23.3 +59.9 11.8	10 19.9 +59.9 10.9	10 16.7 +59.9 9.9
28°	11 30.8 +59.9 13.5	11 26.9 +59.8 12.6	11 23.2 +59.9 11.7	11 19.8 +59.9 10.8	11 16.6 +59.9 9.9
29°	12 30.7 +59.8 13.4	12 26.7 +59.9 12.5	12 23.1 +59.8 11.6	12 19.7 +59.8 10.7	12 16.5 +59.9 9.8

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 44.6 +59.9	-9 47.5 +59.9	-9 50.1 +59.9	-9 52.5 +60.0	-9 54.5 +60.0
9°	-8 44.7 +59.9	-8 47.6 +59.9	-8 50.2 +60.0	-8 52.5 +60.0	-8 54.5 +60.0
	-7 44.8 +59.9	-7 47.7 +60.0	-7 50.2 +59.9	-7 52.5 +59.9	-7 54.5 +60.0
10°	-6 44.9 +60.0	-6 47.7 +59.9	-6 50.3 +60.0	-6 52.6 +60.0	-6 54.5 +59.9
11°	-5 44.9 +59.9	-5 47.8 +59.9	-5 50.3 +59.9	-5 52.6 +60.0	-5 54.6 +60.0
12°	-4 45.0 +59.9	-4 47.9 +60.0	-4 50.4 +60.0	-4 52.6 +59.9	-4 54.6 +60.0
13°	-3 45.1 +59.9	-3 47.9 +59.9	-3 50.4 +59.9	-3 52.7 +60.0	-3 54.6 +59.9
14°	-2 45.2 +60.0	-2 48.0 +60.0	-2 50.5 +60.0	-2 52.7 +59.9	-2 54.7 +60.0
15°	-1 45.2 +59.9	-1 48.0 +59.9	-1 50.5 +59.9	-1 52.8 +60.0	-1 54.7 +60.0
16°	-0 45.3 +59.9	-0 48.1 +59.9	-0 50.6 +60.0	-0 52.8 +60.0	-0 54.7 +60.0
17°	0 14.6 +59.9 9.6	0 11.8 +60.0 8.6	0 09.4 +59.9 7.6	0 07.2 +59.9 6.7	0 05.3 +59.9 5.7
18°	1 14.5 +59.9 9.5	1 11.8 +59.9 8.6	1 09.3 +60.0 7.6	1 07.1 +60.0 6.7	1 05.2 +60.0 5.7
19°	2 14.4 +60.0 9.5	2 11.7 +59.9 8.5	2 09.3 +59.9 7.6	2 07.1 +60.0 6.6	2 05.2 +60.0 5.7
20°	3 14.4 +59.9 9.4	3 11.6 +60.0 8.5	3 09.2 +60.0 7.5	3 07.1 +59.9 6.6	3 05.2 +60.0 5.6
21°	4 14.3 +59.9 9.4	4 11.6 +59.9 8.4	4 09.2 +59.9 7.5	4 07.0 +60.0 6.5	4 05.2 +59.9 5.6
22°	5 14.2 +59.9 9.3	5 11.5 +60.0 8.4	5 09.1 +60.0 7.4	5 07.0 +59.9 6.5	5 05.1 +60.0 5.6
23°	6 14.1 +60.0 9.3	6 11.5 +59.9 8.3	6 09.1 +59.9 7.4	6 06.9 +60.0 6.5	6 05.1 +60.0 5.6
24°	7 14.1 +59.9 9.2	7 11.4 +59.9 8.3	7 09.0 +60.0 7.4	7 06.9 +60.0 6.4	7 05.1 +59.9 5.5
25°	8 14.0 +59.9 9.1	8 11.3 +60.0 8.2	8 09.0 +59.9 7.3	8 06.9 +59.9 6.4	8 05.0 +60.0 5.5
26°	9 13.9 +59.9 9.1	9 11.3 +59.9 8.2	9 08.9 +60.0 7.3	9 06.8 +60.0 6.4	9 05.0 +60.0 5.5
27°	10 13.8 +59.9 9.0	10 11.2 +59.9 8.1	10 08.9 +59.9 7.2	10 06.8 +59.9 6.3	10 05.0 +60.0 5.4
28°	11 13.7 +60.0 9.0	11 11.1 +60.0 8.1	11 08.8 +59.9 7.2	11 06.7 +60.0 6.3	11 05.0 +59.9 5.4
29°	12 13.7 +59.9 8.9	12 11.1 +59.9 8.0	12 08.7 +60.0 7.2	12 06.7 +60.0 6.3	12 04.9 +60.0 5.4

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 56.1 +59.9	-9 57.5 +60.0	-9 58.6 +60.0	-9 59.4 +60.0	-9 59.8 +60.0
9°	-8 56.2 +60.0	-8 57.5 +59.9	-8 58.6 +60.0	-8 59.4 +60.0	-8 59.8 +60.0
	-7 56.2 +60.0	-7 57.6 +60.0	-7 58.6 +60.0	-7 59.4 +60.0	-7 59.8 +60.0
10°	-6 56.2 +60.0	-6 57.6 +60.0	-6 58.6 +60.0	-6 59.4 +60.0	-6 59.8 +60.0
11°	-5 56.2 +60.0	-5 57.6 +60.0	-5 58.6 +60.0	-5 59.4 +60.0	-5 59.8 +60.0
12°	-4 56.2 +59.9	-4 57.6 +60.0	-4 58.6 +59.9	-4 59.4 +60.0	-4 59.8 +59.9
13°	-3 56.3 +60.0	-3 57.6 +60.0	-3 58.7 +60.0	-3 59.4 +60.0	-3 59.9 +60.0
14°	-2 56.3 +60.0	-2 57.6 +60.0	-2 58.7 +60.0	-2 59.4 +60.0	-2 59.9 +60.0
15°	-1 56.3 +60.0	-1 57.6 +60.0	-1 58.7 +60.0	-1 59.4 +60.0	-1 59.9 +60.0
16°	-0 56.3 +60.0	-0 57.6 +59.9	-0 58.7 +60.0	-0 59.4 +60.0	-0 59.9 +60.0
17°	0 03.7 +59.9 4.8	0 02.3 +60.0 3.8	0 01.3 +60.0 2.9	0 00.6 +60.0 1.9	0 00.1 +60.0 1.0
18°	1 03.6 +60.0 4.8	1 02.3 +60.0 3.8	1 01.3 +60.0 2.9	1 00.6 +60.0 1.9	1 00.1 +60.0 1.0
19°	2 03.6 +60.0 4.7	2 02.3 +60.0 3.8	2 01.3 +60.0 2.8	2 00.6 +60.0 1.9	2 00.1 +60.0 0.9
20°	3 03.6 +60.0 4.7	3 02.3 +60.0 3.8	3 01.3 +60.0 2.8	3 00.6 +60.0 1.9	3 00.1 +60.0 0.9
21°	4 03.6 +60.0 4.7	4 02.3 +60.0 3.7	4 01.3 +60.0 2.8	4 00.6 +60.0 1.9	4 00.1 +60.0 0.9
22°	5 03.6 +59.9 4.7	5 02.3 +60.0 3.7	5 01.3 +60.0 2.8	5 00.6 +60.0 1.9	5 00.1 +60.0 0.9
23°	6 03.5 +60.0 4.6	6 02.3 +60.0 3.7	6 01.3 +60.0 2.8	6 00.6 +60.0 1.9	6 00.1 +60.0 0.9
24°	7 03.5 +60.0 4.6	7 02.3 +59.9 3.7	7 01.3 +60.0 2.8	7 00.6 +60.0 1.8	7 00.1 +60.0 0.9
25°	8 03.5 +60.0 4.6	8 02.2 +60.0 3.7	8 01.3 +60.0 2.7	8 00.6 +60.0 1.8	8 00.1 +60.0 0.9
26°	9 03.5 +60.0 4.5	9 02.2 +60.0 3.6	9 01.3 +59.9 2.7	9 00.6 +60.0 1.8	9 00.1 +60.0 0.9
27°	10 03.5 +59.9 4.5	10 02.2 +60.0 3.6	10 01.2 +60.0 2.7	10 00.6 +60.0 1.8	10 00.1 +60.0 0.9
28°	11 03.4 +60.0 4.5	11 02.2 +60.0 3.6	11 01.2 +60.0 2.7	11 00.6 +59.9 1.8	11 00.1 +60.0 0.9
29°	12 03.4 +60.0 4.5	12 02.2 +60.0 3.6	12 01.2 +60.0 2.7	12 00.5 +60.0 1.8	12 00.1 +60.0 0.9

Declination SAME name as Latitude

Latitude 74°

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°	16 00.0 +60.0 180.0	15 59.8 +60.0 179.0	15 59.4 +60.0 177.9	15 58.6 +60.0 176.9	15 57.6 +60.0 175.8
1°	17 00.0 +60.0 180.0	16 59.8 +60.0 179.0	16 59.4 +60.0 177.9	16 58.6 +60.0 176.9	16 57.6 +60.0 175.8
2°	18 00.0 +60.0 180.0	17 59.8 +60.0 178.9	17 59.4 +60.0 177.9	17 58.6 +60.0 176.8	17 57.6 +60.0 175.8
3°	19 00.0 +60.0 180.0	18 59.8 +60.0 178.9	18 59.4 +60.0 177.9	18 58.6 +60.0 176.8	18 57.6 +59.9 175.8
4°	20 00.0 +60.0 180.0	19 59.8 +60.0 178.9	19 59.4 +60.0 177.9	19 58.6 +60.0 176.8	19 57.5 +60.0 175.8
5°	21 00.0 +60.0 180.0	20 59.8 +60.0 178.9	20 59.4 +60.0 177.9	20 58.6 +60.0 176.8	20 57.5 +60.0 175.7
6°	22 00.0 +60.0 180.0	21 59.8 +60.0 178.9	21 59.4 +60.0 177.9	21 58.6 +60.0 176.8	21 57.5 +60.0 175.7
7°	23 00.0 +60.0 180.0	22 59.8 +60.0 178.9	22 59.4 +60.0 177.8	22 58.6 +60.0 176.8	22 57.5 +60.0 175.7
8°	24 00.0 +60.0 180.0	23 59.8 +60.0 178.9	23 59.4 +60.0 177.8	23 58.6 +60.0 176.7	23 57.5 +60.0 175.7
9°	25 00.0 +60.0 180.0	24 59.8 +60.0 178.9	24 59.4 +60.0 177.8	24 58.6 +60.0 176.7	24 57.5 +60.0 175.6
10°	26 00.0 +60.0 180.0	25 59.8 +60.0 178.9	25 59.4 +60.0 177.8	25 58.6 +60.0 176.7	25 57.5 +60.0 175.6
11°	27 00.0 +60.0 180.0	26 59.8 +60.0 178.9	26 59.4 +60.0 177.8	26 58.6 +60.0 176.7	26 57.5 +59.9 175.6
12°	28 00.0 +60.0 180.0	27 59.8 +60.0 178.9	27 59.4 +60.0 177.8	27 58.6 +60.0 176.7	27 57.4 +60.0 175.6
13°	29 00.0 +60.0 180.0	28 59.8 +60.0 178.9	28 59.4 +60.0 177.8	28 58.6 +59.9 176.7	28 57.4 +60.0 175.5
14°	30 00.0 +60.0 180.0	29 59.8 +60.0 178.9	29 59.4 +59.9 177.8	29 58.5 +60.0 176.6	29 57.4 +60.0 175.5
15°	31 00.0 +60.0 180.0	30 59.8 +60.0 178.9	30 59.3 +60.0 177.7	30 58.5 +60.0 176.6	30 57.4 +60.0 175.5
16°	32 00.0 +60.0 180.0	31 59.8 +60.0 178.9	31 59.3 +60.0 177.7	31 58.5 +60.0 176.6	31 57.4 +60.0 175.5
17°	33 00.0 +60.0 180.0	32 59.8 +60.0 178.9	32 59.3 +60.0 177.7	32 58.5 +60.0 176.6	32 57.4 +60.0 175.4
18°	34 00.0 +60.0 180.0	33 59.8 +60.0 178.9	33 59.3 +60.0 177.7	33 58.5 +60.0 176.6	33 57.4 +59.9 175.4
19°	35 00.0 +60.0 180.0	34 59.8 +60.0 178.8	34 59.3 +60.0 177.7	34 58.5 +60.0 176.5	34 57.3 +60.0 175.4
20°	36 00.0 +60.0 180.0	35 59.8 +60.0 178.8	35 59.3 +60.0 177.7	35 58.5 +60.0 176.5	35 57.3 +60.0 175.4
21°	37 00.0 +60.0 180.0	36 59.8 +60.0 178.8	36 59.3 +60.0 177.7	36 58.5 +60.0 176.5	36 57.3 +60.0 175.3
22°	38 00.0 +60.0 180.0	37 59.8 +60.0 178.8	37 59.3 +60.0 177.6	37 58.5 +60.0 176.5	37 57.3 +60.0 175.3
23°	39 00.0 +60.0 180.0	38 59.8 +60.0 178.8	38 59.3 +60.0 177.6	38 58.5 +60.0 176.4	38 57.3 +59.9 175.3
24°	40 00.0 +60.0 180.0	39 59.8 +60.0 178.8	39 59.3 +60.0 177.6	39 58.5 +59.9 176.4	39 57.2 +60.0 175.2
25°	41 00.0 +60.0 180.0	40 59.8 +60.0 178.8	40 59.3 +60.0 177.6	40 58.4 +60.0 176.4	40 57.2 +60.0 175.2
26°	42 00.0 +60.0 180.0	41 59.8 +60.0 178.8	41 59.3 +60.0 177.6	41 58.4 +60.0 176.4	41 57.2 +60.0 175.2
27°	43 00.0 +60.0 180.0	42 59.8 +60.0 178.8	42 59.3 +60.0 177.6	42 58.4 +60.0 176.3	42 57.2 +60.0 175.1
28°	44 00.0 +60.0 180.0	43 59.8 +60.0 178.8	43 59.3 +60.0 177.5	43 58.4 +60.0 176.3	43 57.2 +59.9 175.1
29°	45 00.0 +60.0 180.0	44 59.8 +60.0 178.8	44 59.3 +60.0 177.5	44 58.4 +60.0 176.3	44 57.1 +60.0 175.1

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°	15 56.2 +60.0 174.8	15 54.6 +60.0 173.8	15 52.7 +59.9 172.7	15 50.4 +60.0 171.7	15 47.9 +59.9 170.6
1°	16 56.2 +60.0 174.8	16 54.6 +59.9 173.7	16 52.6 +60.0 172.7	16 50.4 +59.9 171.6	16 47.8 +59.9 170.6
2°	17 56.2 +60.0 174.7	17 54.5 +60.0 173.7	17 52.6 +59.9 172.6	17 50.3 +60.0 171.6	17 47.7 +60.0 170.5
3°	18 56.2 +60.0 174.7	18 54.5 +60.0 173.7	18 52.5 +60.0 172.6	18 50.3 +59.9 171.6	18 47.7 +59.9 170.5
4°	19 56.2 +60.0 174.7	19 54.5 +60.0 173.6	19 52.5 +60.0 172.6	19 50.2 +60.0 171.5	19 47.6 +60.0 170.5
5°	20 56.2 +59.9 174.7	20 54.5 +59.9 173.6	20 52.5 +59.9 172.5	20 50.2 +59.9 171.5	20 47.6 +59.9 170.4
6°	21 56.1 +60.0 174.6	21 54.4 +60.0 173.6	21 52.4 +60.0 172.5	21 50.1 +60.0 171.4	21 47.5 +59.9 170.4
7°	22 56.1 +60.0 174.6	22 54.4 +60.0 173.5	22 52.4 +59.9 172.5	22 50.1 +59.9 171.4	22 47.4 +60.0 170.3
8°	23 56.1 +60.0 174.6	23 54.4 +59.9 173.5	23 52.3 +60.0 172.4	23 50.0 +60.0 171.3	23 47.4 +59.9 170.3
9°	24 56.1 +60.0 174.6	24 54.3 +60.0 173.5	24 52.3 +60.0 172.4	24 50.0 +59.9 171.3	24 47.3 +59.9 170.2
10°	25 56.1 +59.9 174.5	25 54.3 +60.0 173.4	25 52.3 +59.9 172.3	25 49.9 +59.9 171.2	25 47.2 +60.0 170.1
11°	26 56.0 +60.0 174.5	26 54.3 +60.0 173.4	26 52.2 +60.0 172.3	26 49.8 +60.0 171.2	26 47.2 +59.9 170.1
12°	27 56.0 +60.0 174.5	27 54.3 +59.9 173.4	27 52.2 +59.9 172.3	27 49.8 +59.9 171.1	27 47.1 +59.9 170.0
13°	28 56.0 +60.0 174.4	28 54.2 +60.0 173.3	28 52.1 +60.0 172.2	28 49.7 +60.0 171.1	28 47.0 +59.9 170.0
14°	29 56.0 +59.9 174.4	29 54.2 +60.0 173.3	29 52.1 +59.9 172.2	29 49.7 +59.9 171.0	29 46.9 +60.0 169.9
15°	30 55.9 +60.0 174.4	30 54.2 +59.9 173.2	30 52.0 +60.0 172.1	30 49.6 +60.0 171.0	30 46.9 +59.9 169.9
16°	31 55.9 +60.0 174.3	31 54.1 +60.0 173.2	31 52.0 +60.0 172.1	31 49.6 +59.9 170.9	31 46.8 +59.9 169.8
17°	32 55.9 +60.0 174.3	32 54.1 +59.9 173.2	32 52.0 +59.9 172.0	32 49.5 +59.9 170.9	32 46.7 +59.9 169.8
18°	33 55.9 +59.9 174.3	33 54.0 +60.0 173.1	33 51.9 +60.0 172.0	33 49.4 +60.0 170.8	33 46.6 +60.0 169.7
19°	34 55.8 +60.0 174.2	34 54.0 +60.0 173.1	34 51.9 +59.9 171.9	34 49.4 +59.9 170.8	34 46.6 +59.9 169.6
20°	35 55.8 +60.0 174.2	35 54.0 +59.9 173.0	35 51.8 +60.0 171.9	35 49.3 +59.9 170.7	35 46.5 +59.9 169.6
21°	36 55.8 +60.0 174.2	36 53.9 +60.0 173.0	36 51.8 +59.9 171.8	36 49.2 +60.0 170.7	36 46.4 +59.9 169.5
22°	37 55.8 +59.9 174.1	37 53.9 +60.0 172.9	37 51.7 +59.9 171.8	37 49.2 +59.9 170.6	37 46.3 +59.9 169.4
23°	38 55.7 +60.0 174.1	38 53.9 +59.9 172.9	38 51.6 +60.0 171.7	38 49.1 +59.9 170.5	38 46.2 +59.9 169.4
24°	39 55.7 +60.0 174.0	39 53.8 +60.0 172.8	39 51.6 +59.9 171.7	39 49.0 +59.9 170.5	39 46.1 +59.9 169.3
25°	40 55.7 +59.9 174.0	40 53.8 +59.9 172.8	40 51.5 +60.0 171.6	40 48.9 +60.0 170.4	40 46.0 +59.9 169.2
26°	41 55.6 +60.0 174.0	41 53.7 +60.0 172.7	41 51.5 +59.9 171.5	41 48.9 +59.9 170.3	41 45.9 +59.9 169.1
27°	42 55.6 +60.0 173.9	42 53.7 +59.9 172.7	42 51.4 +59.9 171.5	42 48.8 +59.9 170.3	42 45.8 +59.9 169.1
28°	43 55.6 +59.9 173.9	43 53.6 +60.0 172.6	43 51.3 +60.0 171.4	43 48.7 +59.9 170.2	43 45.7 +59.9 169.0
29°	44 55.5 +60.0 173.8	44 53.6 +59.9 172.6	44 51.3 +59.9 171.4	44 48.6 +59.9 170.1	44 45.6 +59.9 168.9

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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°	15 45.0 +60.0 169.6	15 41.9 +59.9 168.6	15 38.5 +59.9 167.5	15 34.8 +59.8 166.5	15 30.8 +59.8 165.5
1°	16 45.0 +59.9 169.6	16 41.8 +59.9 168.5	16 38.4 +59.9 167.5	16 34.6 +59.9 166.4	16 30.6 +59.9 165.4
2°	17 44.9 +59.9 169.5	17 41.7 +59.9 168.5	17 38.3 +59.9 167.4	17 34.5 +59.9 166.4	17 30.5 +59.8 165.3
3°	18 44.8 +59.9 169.4	18 41.6 +59.9 168.4	18 38.2 +59.8 167.3	18 34.4 +59.9 166.3	18 30.3 +59.9 165.2
4°	19 44.7 +60.0 169.4	19 41.5 +59.9 168.3	19 38.0 +59.9 167.3	19 34.3 +59.8 166.2	19 30.2 +59.8 165.2
5°	20 44.7 +59.9 169.3	20 41.4 +59.9 168.3	20 37.9 +59.9 167.2	20 34.1 +59.9 166.2	20 30.0 +59.9 165.1
6°	21 44.6 +59.9 169.3	21 41.3 +59.9 168.2	21 37.8 +59.9 167.1	21 34.0 +59.9 166.1	21 29.9 +59.8 165.0
7°	22 44.5 +59.9 169.2	22 41.2 +60.0 168.2	22 37.7 +59.9 167.1	22 33.9 +59.8 166.0	22 29.7 +59.8 164.9
8°	23 44.4 +59.9 169.2	23 41.2 +59.9 168.1	23 37.6 +59.9 167.0	23 33.7 +59.9 165.9	23 29.5 +59.9 164.9
9°	24 44.3 +59.9 169.1	24 41.1 +59.9 168.0	24 37.5 +59.8 166.9	24 33.6 +59.8 165.9	24 29.4 +59.8 164.8
10°	25 44.2 +60.0 169.1	25 41.0 +59.8 168.0	25 37.3 +59.9 166.9	25 33.4 +59.9 165.8	25 29.2 +59.9 164.7
11°	26 44.2 +59.9 169.0	26 40.8 +59.9 167.9	26 37.2 +59.9 166.8	26 33.3 +59.9 165.7	26 29.1 +59.8 164.6
12°	27 44.1 +59.9 168.9	27 40.7 +59.9 167.8	27 37.1 +59.9 166.7	27 33.2 +59.8 165.6	27 28.9 +59.8 164.5
13°	28 44.0 +59.9 168.9	28 40.6 +59.9 167.8	28 37.0 +59.8 166.7	28 33.0 +59.9 165.6	28 28.7 +59.8 164.4
14°	29 43.9 +59.9 168.8	29 40.5 +59.9 167.7	29 36.8 +59.9 166.6	29 32.9 +59.8 165.5	29 28.5 +59.9 164.4
15°	30 43.8 +59.9 168.7	30 40.4 +59.9 167.6	30 36.7 +59.9 166.5	30 32.7 +59.8 165.4	30 28.4 +59.8 164.3
16°	31 43.7 +59.9 168.7	31 40.3 +59.9 167.6	31 36.6 +59.8 166.4	31 32.5 +59.9 165.3	31 28.2 +59.8 164.2
17°	32 43.6 +59.9 168.6	32 40.2 +59.9 167.5	32 36.4 +59.9 166.3	32 32.4 +59.8 165.2	32 28.0 +59.8 164.1
18°	33 43.5 +59.9 168.5	33 40.1 +59.8 167.4	33 36.3 +59.9 166.3	33 32.2 +59.8 165.1	33 27.8 +59.8 164.0
19°	34 43.4 +59.9 168.5	34 39.9 +59.9 167.3	34 36.2 +59.8 166.2	34 32.0 +59.9 165.0	34 27.6 +59.8 163.9
20°	35 43.3 +59.9 168.4	35 39.8 +59.9 167.3	35 36.0 +59.9 166.1	35 31.9 +59.8 164.9	35 27.4 +59.8 163.8
21°	36 43.2 +59.9 168.3	36 39.7 +59.9 167.2	36 35.9 +59.8 166.0	36 31.7 +59.8 164.8	36 27.2 +59.8 163.7
22°	37 43.1 +59.9 168.3	37 39.6 +59.8 167.1	37 35.7 +59.8 165.9	37 31.5 +59.8 164.8	37 27.0 +59.8 163.6
23°	38 43.0 +59.9 168.2	38 39.4 +59.9 167.0	38 35.5 +59.9 165.8	38 31.3 +59.8 164.7	38 26.8 +59.8 163.5
24°	39 42.9 +59.9 168.1	39 39.3 +59.8 166.9	39 35.4 +59.8 165.7	39 31.1 +59.8 164.5	39 26.6 +59.7 163.4
25°	40 42.8 +59.8 168.0	40 39.1 +59.9 166.8	40 35.2 +59.8 165.6	40 30.9 +59.8 164.4	40 26.3 +59.8 163.3
26°	41 42.6 +59.9 167.9	41 39.0 +59.9 166.7	41 35.0 +59.9 165.5	41 30.7 +59.8 164.3	41 26.1 +59.8 163.1
27°	42 42.5 +59.9 167.8	42 38.9 +59.8 166.6	42 34.9 +59.8 165.4	42 30.5 +59.8 164.2	42 25.9 +59.7 163.0
28°	43 42.4 +59.8 167.8	43 38.7 +59.8 166.5	43 34.7 +59.8 165.3	43 30.3 +59.8 164.1	43 25.6 +59.8 162.9
29°	44 42.2 +59.9 167.7	44 38.5 +59.9 166.4	44 34.5 +59.8 165.2	44 30.1 +59.8 164.0	44 25.4 +59.7 162.8

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°	15 26.5 +59.8 164.4	15 21.9 +59.8 163.4	15 17.0 +59.8 162.4	15 11.8 +59.8 161.3	15 06.4 +59.8 160.3
1°	16 26.3 +59.8 164.3	16 21.7 +59.8 163.3	16 16.8 +59.8 162.3	16 11.6 +59.8 161.2	16 06.2 +59.7 160.2
2°	17 26.1 +59.9 164.3	17 21.5 +59.8 163.2	17 16.6 +59.8 162.2	17 11.4 +59.7 161.1	17 05.9 +59.7 160.1
3°	18 26.0 +59.8 164.2	18 21.3 +59.8 163.1	18 16.4 +59.7 162.1	18 11.1 +59.8 161.0	18 05.6 +59.8 160.0
4°	19 25.8 +59.8 164.1	19 21.1 +59.8 163.1	19 16.1 +59.8 162.0	19 10.9 +59.7 161.0	19 05.4 +59.7 159.9
5°	20 25.6 +59.8 164.0	20 20.9 +59.8 163.0	20 15.9 +59.8 161.9	20 10.6 +59.8 160.9	20 05.1 +59.7 159.8
6°	21 25.4 +59.9 163.9	21 20.7 +59.8 162.9	21 15.7 +59.8 161.8	21 10.4 +59.7 160.8	21 04.8 +59.7 159.7
7°	22 25.3 +59.8 163.9	22 20.5 +59.8 162.8	22 15.5 +59.7 161.7	22 10.1 +59.8 160.7	22 04.5 +59.7 159.6
8°	23 25.1 +59.8 163.8	23 20.3 +59.8 162.7	23 15.2 +59.8 161.6	23 09.9 +59.7 160.6	23 04.2 +59.7 159.5
9°	24 24.9 +59.8 163.7	24 20.1 +59.8 162.6	24 15.0 +59.8 161.5	24 09.6 +59.8 160.5	24 03.9 +59.8 159.4
10°	25 24.7 +59.8 163.6	25 19.9 +59.8 162.5	25 14.8 +59.7 161.4	25 09.4 +59.7 160.4	25 03.7 +59.7 159.3
11°	26 24.5 +59.8 163.5	26 19.7 +59.8 162.4	26 14.5 +59.8 161.3	26 09.1 +59.7 160.2	26 03.4 +59.7 159.2
12°	27 24.3 +59.8 163.4	27 19.5 +59.7 162.3	27 14.3 +59.7 161.2	27 08.8 +59.7 160.1	27 03.1 +59.6 159.0
13°	28 24.1 +59.8 163.3	28 19.2 +59.8 162.2	28 14.0 +59.8 161.1	28 08.5 +59.8 160.0	28 02.7 +59.7 158.9
14°	29 23.9 +59.8 163.2	29 19.0 +59.8 162.1	29 13.8 +59.7 161.0	29 08.3 +59.7 159.9	29 02.4 +59.7 158.8
15°	30 23.7 +59.8 163.2	30 18.8 +59.7 162.0	30 13.5 +59.8 160.9	30 08.0 +59.7 159.8	30 02.1 +59.7 158.7
16°	31 23.5 +59.8 163.1	31 18.5 +59.8 161.9	31 13.3 +59.7 160.8	31 07.7 +59.7 159.7	31 01.8 +59.7 158.6
17°	32 23.3 +59.8 163.0	32 18.3 +59.8 161.8	32 13.0 +59.7 160.7	32 07.4 +59.7 159.6	32 01.5 +59.6 158.5
18°	33 23.1 +59.8 162.9	33 18.1 +59.7 161.7	33 12.7 +59.7 160.6	33 07.1 +59.7 159.5	33 01.1 +59.7 158.3
19°	34 22.9 +59.7 162.8	34 17.8 +59.8 161.6	34 12.4 +59.7 160.5	34 06.8 +59.6 159.3	34 00.8 +59.6 158.2
20°	35 22.6 +59.8 162.6	35 17.6 +59.7 161.5	35 12.1 +59.8 160.4	35 06.4 +59.7 159.2	35 00.4 +59.6 158.1
21°	36 22.4 +59.8 162.5	36 17.3 +59.7 161.4	36 11.9 +59.6 160.2	36 06.1 +59.7 159.1	36 00.0 +59.7 157.9
22°	37 22.2 +59.7 162.4	37 17.0 +59.7 161.3	37 11.5 +59.7 160.1	37 05.8 +59.6 158.9	36 59.7 +59.6 157.8
23°	38 21.9 +59.8 162.3	38 16.7 +59.8 161.1	38 11.2 +59.7 160.0	38 05.4 +59.7 158.8	37 59.3 +59.6 157.7
24°	39 21.7 +59.7 162.2	39 16.5 +59.7 161.0	39 10.9 +59.7 159.8	39 05.1 +59.6 158.7	38 58.9 +59.6 157.5
25°	40 21.4 +59.7 162.1	40 16.2 +59.7 160.9	40 10.6 +59.6 159.7	40 04.7 +59.6 158.5	39 58.5 +59.6 157.4
26°	41 21.1 +59.8 161.9	41 15.9 +59.6 160.8	41 10.2 +59.7 159.6	41 04.3 +59.6 158.4	40 58.1 +59.5 157.2
27°	42 20.9 +59.7 161.8	42 15.5 +59.7 160.6	42 09.9 +59.6 159.4	42 03.9 +59.6 158.2	41 57.6 +59.6 157.0
28°	43 20.6 +59.7 161.7	43 15.2 +59.7 160.5	43 09.5 +59.7 159.3	43 03.5 +59.6 158.1	42 57.2 +59.5 156.9
29°	44 20.3 +59.7 161.5	44 14.9 +59.6 160.3	44 09.2 +59.6 159.1	44 03.1 +59.6 157.9	43 56.7 +59.5 156.7

Declination SAME name as Latitude

Latitude 74°

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°	15 00.7 +59.7 159.3	14 54.7 +59.7 158.2	14 48.4 +59.7 157.2	14 41.9 +59.6 156.2	14 35.1 +59.6 155.1
1°	16 00.4 +59.7 159.2	15 54.4 +59.7 158.1	15 48.1 +59.6 157.1	15 41.5 +59.6 156.1	15 34.7 +59.6 155.0
2°	17 00.1 +59.7 159.1	16 54.1 +59.6 158.0	16 47.7 +59.7 157.0	16 41.1 +59.6 155.9	16 34.3 +59.5 154.9
3°	17 59.8 +59.7 159.0	17 53.7 +59.7 157.9	17 47.4 +59.6 156.9	17 40.7 +59.7 155.8	17 33.8 +59.6 154.8
4°	18 59.5 +59.7 158.8	18 53.4 +59.7 157.8	18 47.0 +59.7 156.8	18 40.4 +59.6 155.7	18 33.4 +59.6 154.7
5°	19 59.2 +59.7 158.7	19 53.1 +59.7 157.7	19 46.7 +59.6 156.6	19 40.0 +59.6 155.6	19 33.0 +59.6 154.5
6°	20 58.9 +59.7 158.6	20 52.8 +59.6 157.6	20 46.3 +59.6 156.5	20 39.6 +59.6 155.5	20 32.6 +59.5 154.4
7°	21 58.6 +59.7 158.5	21 52.4 +59.7 157.5	21 45.9 +59.7 156.4	21 39.2 +59.6 155.3	21 32.1 +59.6 154.3
8°	22 58.3 +59.7 158.4	22 52.1 +59.6 157.3	22 45.6 +59.6 156.3	22 38.8 +59.6 155.2	22 31.7 +59.5 154.1
9°	23 58.0 +59.7 158.3	23 51.7 +59.7 157.2	23 45.2 +59.6 156.2	23 38.4 +59.5 155.1	23 31.2 +59.6 154.0
10°	24 57.7 +59.6 158.2	24 51.4 +59.6 157.1	24 44.8 +59.6 156.0	24 37.9 +59.6 155.0	24 30.8 +59.5 153.9
11°	25 57.3 +59.7 158.1	25 51.0 +59.6 157.0	25 44.4 +59.6 155.9	25 37.5 +59.6 154.8	25 30.3 +59.6 153.7
12°	26 57.0 +59.7 158.0	26 50.6 +59.7 156.9	26 44.0 +59.6 155.8	26 37.1 +59.5 154.7	26 29.9 +59.5 153.6
13°	27 56.7 +59.6 157.8	27 50.3 +59.6 156.7	27 43.6 +59.6 155.6	27 36.6 +59.6 154.6	27 29.4 +59.5 153.5
14°	28 56.3 +59.7 157.7	28 49.9 +59.6 156.6	28 43.2 +59.6 155.5	28 36.2 +59.5 154.4	28 28.9 +59.5 153.3
15°	29 56.0 +59.6 157.6	29 49.5 +59.6 156.5	29 42.8 +59.5 155.4	29 35.7 +59.6 154.3	29 28.4 +59.5 153.2
16°	30 55.6 +59.6 157.5	30 49.1 +59.6 156.4	30 42.3 +59.6 155.2	30 35.3 +59.5 154.1	30 27.9 +59.5 153.0
17°	31 55.2 +59.7 157.3	31 48.7 +59.6 156.2	31 41.9 +59.5 155.1	31 34.8 +59.5 154.0	31 27.4 +59.5 152.9
18°	32 54.9 +59.6 157.2	32 48.3 +59.6 156.1	32 41.4 +59.6 155.0	32 34.3 +59.5 153.8	32 26.9 +59.4 152.7
19°	33 54.5 +59.6 157.1	33 47.9 +59.5 155.9	33 41.0 +59.5 154.8	33 33.8 +59.5 153.7	33 26.3 +59.5 152.6
20°	34 54.1 +59.6 156.9	34 47.4 +59.6 155.8	34 40.5 +59.5 154.7	34 33.3 +59.5 153.5	34 25.8 +59.4 152.4
21°	35 53.7 +59.6 156.8	35 47.0 +59.6 155.6	35 40.0 +59.5 154.5	35 32.8 +59.4 153.4	35 25.2 +59.4 152.2
22°	36 53.3 +59.5 156.6	36 46.6 +59.5 155.5	36 39.5 +59.5 154.3	36 32.2 +59.5 153.2	36 24.6 +59.4 152.1
23°	37 52.8 +59.6 156.5	37 46.1 +59.5 155.3	37 39.0 +59.5 154.2	37 31.7 +59.4 153.0	37 24.0 +59.4 151.9
24°	38 52.4 +59.6 156.3	38 45.6 +59.5 155.2	38 38.5 +59.5 154.0	38 31.1 +59.4 152.9	38 23.4 +59.4 151.7
25°	39 52.0 +59.5 156.2	39 45.1 +59.5 155.0	39 38.0 +59.4 153.8	39 30.5 +59.4 152.7	39 22.8 +59.4 151.5
26°	40 51.5 +59.5 156.0	40 44.6 +59.5 154.8	40 37.4 +59.5 153.7	40 29.9 +59.4 152.5	40 22.2 +59.3 151.3
27°	41 51.0 +59.5 155.9	41 44.1 +59.5 154.7	41 36.9 +59.4 153.5	41 29.3 +59.4 152.3	41 21.5 +59.3 151.1
28°	42 50.5 +59.5 155.7	42 43.6 +59.4 154.5	42 36.3 +59.4 153.3	42 28.7 +59.3 152.1	42 20.8 +59.3 150.9
29°	43 50.0 +59.5 155.5	43 43.0 +59.4 154.3	43 35.7 +59.4 153.1	43 28.0 +59.4 151.9	43 20.1 +59.3 150.7

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°	14 28.0 +59.5 154.1	14 20.6 +59.6 153.1	14 13.0 +59.5 152.1	14 05.1 +59.5 151.1	13 57.0 +59.4 150.0
1°	15 27.5 +59.6 154.0	15 20.2 +59.5 153.0	15 12.5 +59.5 151.9	15 04.6 +59.5 150.9	14 56.4 +59.5 149.9
2°	16 27.1 +59.6 153.9	16 19.7 +59.5 152.8	16 12.0 +59.5 151.8	16 04.1 +59.4 150.8	15 55.9 +59.4 149.7
3°	17 26.7 +59.5 153.7	17 19.2 +59.5 152.7	17 11.5 +59.5 151.7	17 03.5 +59.5 150.6	16 55.3 +59.4 149.6
4°	18 26.2 +59.5 153.6	18 18.7 +59.5 152.6	18 11.0 +59.4 151.5	18 03.0 +59.4 150.5	17 54.7 +59.4 149.5
5°	19 25.7 +59.6 153.5	19 18.2 +59.5 152.4	19 10.4 +59.5 151.4	19 02.4 +59.4 150.3	18 54.1 +59.4 149.3
6°	20 25.3 +59.5 153.4	20 17.7 +59.5 152.3	20 09.9 +59.5 151.3	20 01.8 +59.5 150.2	19 53.5 +59.4 149.2
7°	21 24.8 +59.5 153.2	21 17.2 +59.5 152.2	21 09.4 +59.4 151.1	21 01.3 +59.4 150.1	20 52.9 +59.3 149.0
8°	22 24.3 +59.6 153.1	22 16.7 +59.5 152.0	22 08.8 +59.5 151.0	22 00.7 +59.4 149.9	21 52.2 +59.4 148.8
9°	23 23.9 +59.5 152.9	23 16.2 +59.5 151.9	23 08.3 +59.4 150.8	23 00.1 +59.4 149.8	22 51.6 +59.4 148.7
10°	24 23.4 +59.5 152.8	24 15.7 +59.4 151.7	24 07.7 +59.4 150.7	23 59.5 +59.4 149.6	23 51.0 +59.3 148.5
11°	25 22.9 +59.5 152.7	25 15.1 +59.5 151.6	25 07.1 +59.5 150.5	24 58.9 +59.3 149.4	24 50.3 +59.4 148.4
12°	26 22.4 +59.5 152.5	26 14.6 +59.5 151.4	26 06.6 +59.4 150.4	25 58.2 +59.4 149.3	25 49.7 +59.3 148.2
13°	27 21.9 +59.4 152.4	27 14.1 +59.4 151.3	27 06.0 +59.4 150.2	26 57.6 +59.4 149.1	26 49.0 +59.3 148.0
14°	28 21.3 +59.5 152.2	28 13.5 +59.4 151.1	28 05.4 +59.4 150.0	27 57.0 +59.3 149.0	27 48.3 +59.3 147.9
15°	29 20.8 +59.5 152.1	29 12.9 +59.4 151.0	29 04.8 +59.3 149.9	28 56.3 +59.4 148.8	28 47.6 +59.3 147.7
16°	30 20.3 +59.4 151.9	30 12.3 +59.4 150.8	30 04.1 +59.4 149.7	29 55.7 +59.3 148.6	29 46.9 +59.3 147.5
17°	31 19.7 +59.4 151.8	31 11.7 +59.4 150.7	31 03.5 +59.3 149.5	30 55.0 +59.3 148.4	30 46.2 +59.2 147.3
18°	32 19.1 +59.5 151.6	32 11.1 +59.4 150.5	32 02.8 +59.4 149.4	31 54.3 +59.3 148.3	31 45.4 +59.3 147.2
19°	33 18.6 +59.4 151.4	33 10.5 +59.4 150.3	33 02.2 +59.3 149.2	32 53.6 +59.2 148.1	32 44.7 +59.2 147.0
20°	34 18.0 +59.4 151.3	34 09.9 +59.3 150.1	34 01.5 +59.3 149.0	33 52.8 +59.3 147.9	33 43.9 +59.2 146.8
21°	35 17.4 +59.3 151.1	35 09.2 +59.4 150.0	35 00.8 +59.3 148.8	34 52.1 +59.2 147.7	34 43.1 +59.2 146.6
22°	36 16.7 +59.4 150.9	36 08.6 +59.3 149.8	36 00.1 +59.3 148.6	35 51.3 +59.3 147.5	35 42.3 +59.2 146.4
23°	37 16.1 +59.3 150.7	37 07.9 +59.3 149.6	36 59.4 +59.2 148.5	36 50.6 +59.2 147.3	36 41.5 +59.1 146.2
24°	38 15.4 +59.4 150.5	38 07.2 +59.2 149.4	37 58.6 +59.2 148.3	37 49.8 +59.1 147.1	37 40.6 +59.2 146.0
25°	39 14.8 +59.3 150.4	39 06.4 +59.3 149.2	38 57.8 +59.2 148.1	38 48.9 +59.2 146.9	38 39.8 +59.1 145.8
26°	40 14.1 +59.3 150.2	40 05.7 +59.2 149.0	39 57.0 +59.2 147.8	39 48.1 +59.1 146.7	39 38.9 +59.1 145.5
27°	41 13.4 +59.2 150.0	41 04.9 +59.3 148.8	40 56.2 +59.2 147.6	40 47.2 +59.1 146.5	40 38.0 +59.0 145.3
28°	42 12.6 +59.3 149.7	42 04.2 +59.1 148.6	41 55.4 +59.1 147.4	41 46.3 +59.1 146.2	41 37.0 +59.0 145.1
29°	43 11.9 +59.2 149.5	43 03.3 +59.2 148.4	42 54.5 +59.1 147.2	42 45.4 +59.1 146.0	42 36.0 +59.0 144.8

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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°	13 48.6 +59.4 149.0	13 40.0 +59.3 148.0	13 31.1 +59.3 147.0	13 22.0 +59.2 146.0	13 12.6 +59.2 144.9
1°	14 48.0 +59.4 148.9	14 39.3 +59.4 147.8	14 30.4 +59.3 146.8	14 21.2 +59.3 145.8	14 11.8 +59.2 144.8
2°	15 47.4 +59.4 148.7	15 38.7 +59.3 147.7	15 29.7 +59.3 146.7	15 20.5 +59.3 145.6	15 11.0 +59.3 144.6
3°	16 46.8 +59.3 148.6	16 38.0 +59.4 147.5	16 29.0 +59.3 146.5	16 19.8 +59.2 145.5	16 10.3 +59.2 144.4
4°	17 46.1 +59.4 148.4	17 37.4 +59.3 147.4	17 28.3 +59.3 146.3	17 19.0 +59.3 145.3	17 09.5 +59.2 144.3
5°	18 45.5 +59.4 148.3	18 36.7 +59.3 147.2	18 27.6 +59.3 146.2	18 18.3 +59.2 145.1	18 08.7 +59.2 144.1
6°	19 44.9 +59.3 148.1	19 36.0 +59.3 147.1	19 26.9 +59.3 146.0	19 17.5 +59.2 145.0	19 07.9 +59.2 143.9
7°	20 44.2 +59.4 148.0	20 35.3 +59.3 146.9	20 26.2 +59.2 145.9	20 16.7 +59.3 144.8	20 07.1 +59.2 143.8
8°	21 43.6 +59.3 147.8	21 34.6 +59.3 146.7	21 25.4 +59.3 145.7	21 16.0 +59.2 144.6	21 06.3 +59.1 143.6
9°	22 42.9 +59.3 147.6	22 33.9 +59.3 146.6	22 24.7 +59.2 145.5	22 15.2 +59.2 144.5	22 05.4 +59.2 143.4
10°	23 42.2 +59.3 147.5	23 33.2 +59.3 146.4	23 23.9 +59.2 145.3	23 14.4 +59.2 144.3	23 04.6 +59.1 143.2
11°	24 41.5 +59.3 147.3	24 32.5 +59.2 146.2	24 23.1 +59.3 145.2	24 13.6 +59.1 144.1	24 03.7 +59.2 143.0
12°	25 40.8 +59.3 147.1	25 31.7 +59.3 146.1	25 22.4 +59.2 145.0	25 12.7 +59.2 143.9	25 02.9 +59.1 142.9
13°	26 40.1 +59.3 147.0	26 31.0 +59.2 145.9	26 21.6 +59.2 144.8	26 11.9 +59.2 143.7	26 02.0 +59.1 142.7
14°	27 39.4 +59.2 146.8	27 30.2 +59.2 145.7	27 20.8 +59.1 144.6	27 11.1 +59.1 143.6	27 01.1 +59.1 142.5
15°	28 38.6 +59.3 146.6	28 29.4 +59.2 145.5	28 19.9 +59.2 144.4	28 10.2 +59.1 143.4	28 00.2 +59.1 142.3
16°	29 37.9 +59.2 146.4	29 28.6 +59.2 145.3	29 19.1 +59.1 144.3	29 09.3 +59.1 143.2	28 59.3 +59.0 142.1
17°	30 37.1 +59.2 146.2	30 27.8 +59.2 145.2	30 18.2 +59.2 144.1	30 08.4 +59.1 143.0	29 58.3 +59.0 141.9
18°	31 36.3 +59.2 146.1	31 27.0 +59.1 145.0	31 17.4 +59.1 143.9	31 07.5 +59.0 142.8	30 57.3 +59.1 141.7
19°	32 35.5 +59.2 145.9	32 26.1 +59.2 144.8	32 16.5 +59.1 143.7	32 06.5 +59.1 142.6	31 56.4 +58.9 141.5
20°	33 34.7 +59.2 145.7	33 25.3 +59.1 144.6	33 15.6 +59.0 143.5	33 05.6 +59.0 142.3	32 55.3 +59.0 141.2
21°	34 33.9 +59.1 145.5	34 24.4 +59.1 144.4	34 14.6 +59.1 143.2	34 04.6 +59.0 142.1	33 54.3 +59.0 141.0
22°	35 33.0 +59.2 145.3	35 23.5 +59.1 144.1	35 13.7 +59.0 143.0	35 03.6 +59.0 141.9	34 53.3 +58.9 140.8
23°	36 32.2 +59.1 145.1	36 22.6 +59.0 143.9	36 12.7 +59.0 142.8	36 02.6 +58.9 141.7	35 52.2 +58.9 140.6
24°	37 31.3 +59.0 144.8	37 21.6 +59.0 143.7	37 11.7 +58.9 142.6	37 01.5 +58.9 141.4	36 51.1 +58.8 140.3
25°	38 30.3 +59.1 144.6	38 20.6 +59.0 143.5	38 10.6 +59.0 142.3	38 00.4 +58.9 141.2	37 49.9 +58.9 140.1
26°	39 29.4 +59.0 144.4	39 19.6 +59.0 143.2	39 09.6 +58.9 142.1	38 59.3 +58.9 141.0	38 48.8 +58.8 139.8
27°	40 28.4 +59.0 144.2	40 18.6 +58.9 143.0	40 08.5 +58.9 141.9	39 58.2 +58.8 140.7	39 47.6 +58.7 139.6
28°	41 27.4 +59.0 143.9	41 17.5 +58.9 142.8	41 07.4 +58.8 141.6	40 57.0 +58.8 140.5	40 46.3 +58.7 139.3
29°	42 26.4 +58.9 143.7	42 16.4 +58.9 142.5	42 06.2 +58.8 141.3	41 55.8 +58.7 140.2	41 45.0 +58.7 139.0

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°	13 03.0 +59.2 143.9	12 53.1 +59.2 142.9	12 43.0 +59.1 141.9	12 32.7 +59.1 140.9	12 22.2 +59.0 139.9
1°	14 02.2 +59.2 143.8	13 52.3 +59.1 142.7	13 42.1 +59.2 141.7	13 31.8 +59.1 140.7	13 21.2 +59.0 139.7
2°	15 01.4 +59.1 143.6	14 51.4 +59.2 142.6	14 41.3 +59.1 141.6	14 30.9 +59.0 140.5	14 20.2 +59.1 139.5
3°	16 00.5 +59.2 143.4	15 50.6 +59.1 142.4	15 40.4 +59.1 141.4	15 29.9 +59.1 140.4	15 19.3 +59.0 139.3
4°	16 59.7 +59.2 143.3	16 49.7 +59.1 142.2	16 39.5 +59.0 141.2	16 29.0 +59.0 140.2	16 18.3 +59.0 139.1
5°	17 58.9 +59.1 143.1	17 48.8 +59.2 142.0	17 38.5 +59.1 141.0	17 28.0 +59.1 140.0	17 17.3 +59.0 139.0
6°	18 58.0 +59.2 142.9	18 48.0 +59.1 141.9	18 37.6 +59.1 140.8	18 27.1 +59.0 139.8	18 16.3 +59.0 138.8
7°	19 57.2 +59.1 142.7	19 47.1 +59.1 141.7	19 36.7 +59.0 140.6	19 26.1 +59.0 139.6	19 15.3 +58.9 138.6
8°	20 56.3 +59.2 142.5	20 46.2 +59.0 141.5	20 35.7 +59.1 140.5	20 25.1 +59.0 139.4	20 14.2 +59.0 138.4
9°	21 55.5 +59.1 142.4	21 45.2 +59.1 141.3	21 34.8 +59.0 140.3	21 24.1 +59.0 139.2	21 13.2 +58.9 138.2
10°	22 54.6 +59.1 142.2	22 44.3 +59.1 141.1	22 33.8 +59.0 140.1	22 23.1 +59.0 139.0	22 12.1 +59.0 138.0
11°	23 53.7 +59.1 142.0	23 43.4 +59.0 140.9	23 32.8 +59.0 139.9	23 22.1 +58.9 138.8	23 11.1 +58.9 137.8
12°	24 52.8 +59.0 141.8	24 42.4 +59.1 140.7	24 31.8 +59.0 139.7	24 21.0 +59.0 138.6	24 10.0 +58.9 137.6
13°	25 51.8 +59.1 141.6	25 41.5 +59.0 140.5	25 30.8 +59.0 139.5	25 20.0 +58.9 138.4	25 08.9 +58.9 137.4
14°	26 50.9 +59.0 141.4	26 40.5 +59.0 140.3	26 29.9 +58.9 139.3	26 18.9 +58.9 138.2	26 07.8 +58.8 137.1
15°	27 49.9 +59.1 141.2	27 39.5 +58.9 140.1	27 28.7 +59.0 139.1	27 17.8 +58.9 138.0	27 06.6 +58.9 136.9
16°	28 49.0 +59.0 141.0	28 38.4 +59.0 139.9	28 27.7 +58.9 138.9	28 16.7 +58.8 137.8	28 05.5 +58.8 136.7
17°	29 48.0 +59.0 140.8	29 37.4 +58.9 139.7	29 26.6 +58.9 138.6	29 15.5 +58.9 137.6	29 04.3 +58.8 136.5
18°	30 47.0 +58.9 140.6	30 36.3 +59.0 139.5	30 25.5 +58.9 138.4	30 14.4 +58.8 137.3	30 03.1 +58.7 136.3
19°	31 45.9 +59.0 140.4	31 35.3 +58.9 139.3	31 24.4 +58.8 138.2	31 13.2 +58.8 137.1	31 01.8 +58.8 136.0
20°	32 44.9 +58.9 140.1	32 34.2 +58.8 139.0	32 23.2 +58.8 138.0	32 12.0 +58.8 136.9	32 00.6 +58.7 135.8
21°	33 43.8 +58.9 139.9	33 33.0 +58.9 138.8	33 22.0 +58.8 137.7	33 10.8 +58.7 136.6	33 59.3 +58.7 135.5
22°	34 42.7 +58.8 139.7	34 31.9 +58.8 138.6	34 20.8 +58.8 137.5	34 09.5 +58.7 136.4	34 58.0 +58.6 135.3
23°	35 41.5 +58.9 139.5	35 30.7 +58.8 138.3	35 19.6 +58.7 137.2	35 08.2 +58.7 136.1	34 56.6 +58.7 135.0
24°	36 40.4 +58.8 139.2	36 29.5 +58.7 138.1	36 18.3 +58.7 137.0	36 06.9 +58.6 135.9	35 55.3 +58.6 134.8
25°	37 39.2 +58.8 139.0	37 28.2 +58.7 137.8	37 17.0 +58.7 136.7	37 05.5 +58.6 135.6	36 53.9 +58.5 134.5
26°	38 38.0 +58.7 138.7	38 26.9 +58.7 137.6	38 15.7 +58.6 136.5	38 04.1 +58.6 135.3	37 52.4 +58.5 134.2
27°	39 36.7 +58.7 138.4	39 25.6 +58.7 137.3	39 14.3 +58.6 136.2	39 02.7 +58.5 135.1	38 50.9 +58.5 133.9
28°	40 35.4 +58.7 138.2	40 24.3 +58.6 137.0	40 12.9 +58.5 135.9	40 01.2 +58.5 134.8	39 49.4 +58.4 133.7
29°	41 34.1 +58.6 137.9	41 22.9 +58.5 136.8	41 11.4 +58.5 135.6	40 59.7 +58.5 134.5	40 47.8 +58.4 133.4

Declination SAME name as Latitude

Latitude 74°

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°	12 11.4 +59.0 138.9	12 00.4 +59.0 137.9	11 49.2 +58.9 136.9	11 37.8 +58.9 135.9	11 26.2 +58.8 134.9
1°	13 10.4 +59.0 138.7	12 59.4 +58.9 137.7	12 48.1 +58.9 136.7	12 36.7 +58.8 135.7	12 25.0 +58.8 134.7
2°	14 09.4 +59.0 138.5	13 58.3 +59.0 137.5	13 47.0 +58.9 136.5	13 35.5 +58.9 135.5	13 23.8 +58.9 134.5
3°	15 08.4 +58.9 138.3	14 57.3 +58.9 137.3	14 45.9 +58.9 136.3	14 34.4 +58.9 135.3	14 22.7 +58.8 134.3
4°	16 07.3 +59.0 138.1	15 56.2 +58.9 137.1	15 44.8 +58.9 136.1	15 33.3 +58.8 135.1	15 21.5 +58.8 134.1
5°	17 06.3 +59.0 137.9	16 55.1 +58.9 136.9	16 43.7 +58.9 135.9	16 32.1 +58.8 134.9	16 20.3 +58.8 133.9
6°	18 05.3 +58.9 137.7	17 54.0 +58.9 136.7	17 42.6 +58.8 135.7	17 30.9 +58.8 134.7	17 19.1 +58.7 133.6
7°	19 04.2 +58.9 137.5	18 52.9 +58.9 136.5	18 41.4 +58.9 135.5	18 29.7 +58.8 134.5	18 17.8 +58.8 133.4
8°	20 03.1 +59.0 137.3	19 51.8 +58.9 136.3	19 40.3 +58.8 135.3	19 28.5 +58.8 134.2	19 16.6 +58.7 133.2
9°	21 02.1 +58.9 137.1	20 50.7 +58.9 136.1	20 39.1 +58.8 135.1	20 27.3 +58.8 134.0	20 15.3 +58.8 133.0
10°	22 01.0 +58.8 136.9	21 49.6 +58.8 135.9	21 37.9 +58.8 134.9	21 26.1 +58.8 133.8	21 14.1 +58.7 132.8
11°	22 59.8 +58.9 136.7	22 48.4 +58.8 135.7	22 36.7 +58.8 134.6	22 24.9 +58.7 133.6	22 12.8 +58.7 132.6
12°	23 58.7 +58.9 136.5	23 47.2 +58.8 135.5	23 35.5 +58.8 134.4	23 23.6 +58.7 133.4	23 11.5 +58.6 132.3
13°	24 57.6 +58.8 136.3	24 46.0 +58.8 135.3	24 34.3 +58.7 134.2	24 22.3 +58.7 133.2	24 10.1 +58.7 132.1
14°	25 56.4 +58.8 136.1	25 44.8 +58.8 135.0	25 33.0 +58.7 134.0	25 21.0 +58.7 132.9	25 08.8 +58.6 131.9
15°	26 55.2 +58.8 135.9	26 43.6 +58.7 134.8	26 31.7 +58.7 133.7	26 19.7 +58.6 132.7	26 07.4 +58.6 131.6
16°	27 54.0 +58.8 135.6	27 42.3 +58.8 134.6	27 30.4 +58.7 133.5	27 18.3 +58.7 132.5	27 06.0 +58.6 131.4
17°	28 52.8 +58.7 135.4	28 41.1 +58.7 134.3	28 29.1 +58.7 133.3	28 17.0 +58.6 132.2	28 04.6 +58.6 131.2
18°	29 51.5 +58.7 135.2	29 39.8 +58.6 134.1	29 27.8 +58.6 133.0	29 15.6 +58.6 132.0	29 03.2 +58.5 130.9
19°	30 50.2 +58.7 134.9	30 38.4 +58.7 133.9	30 26.4 +58.6 132.8	30 14.2 +58.5 131.7	30 01.7 +58.5 130.7
20°	31 48.9 +58.7 134.7	31 37.1 +58.6 133.6	31 25.0 +58.6 132.5	31 12.7 +58.5 131.5	31 00.2 +58.5 130.4
21°	32 47.6 +58.6 134.4	32 35.7 +58.6 133.4	32 23.6 +58.5 132.3	32 11.2 +58.5 131.2	31 58.7 +58.4 130.1
22°	33 46.2 +58.6 134.2	33 34.3 +58.5 133.1	33 22.1 +58.5 132.0	33 09.7 +58.5 130.9	32 57.1 +58.4 129.9
23°	34 44.8 +58.6 133.9	34 32.8 +58.5 132.8	34 20.6 +58.5 131.8	34 08.2 +58.4 130.7	33 55.5 +58.4 129.6
24°	35 43.4 +58.6 133.7	35 31.3 +58.5 132.6	35 19.1 +58.4 131.5	35 06.6 +58.3 130.4	34 53.9 +58.3 129.3
25°	36 42.0 +58.4 133.4	36 29.8 +58.5 132.3	36 17.5 +58.4 131.2	36 04.9 +58.4 130.1	35 52.2 +58.3 129.0
26°	37 40.4 +58.5 133.1	37 28.3 +58.4 132.0	37 15.9 +58.3 130.9	37 03.3 +58.3 129.8	36 50.5 +58.2 128.7
27°	38 38.9 +58.4 132.8	38 26.7 +58.3 131.7	38 14.2 +58.3 130.6	38 01.6 +58.2 129.5	37 48.7 +58.2 128.4
28°	39 37.3 +58.4 132.5	39 25.0 +58.3 131.4	39 12.5 +58.3 130.3	38 59.8 +58.2 129.2	38 46.9 +58.1 128.1
29°	40 35.7 +58.3 132.2	40 23.3 +58.3 131.1	40 10.8 +58.2 130.0	39 58.0 +58.1 128.9	39 45.0 +58.1 127.8

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	11 14.4 +58.7 133.9	11 02.3 +58.8 132.9	10 50.1 +58.7 131.9	10 37.7 +58.7 130.9	10 25.1 +58.6 129.9
1°	12 13.1 +58.8 133.7	12 01.1 +58.7 132.7	11 48.8 +58.7 131.7	11 36.4 +58.6 130.7	11 23.7 +58.7 129.7
2°	13 11.9 +58.8 133.5	12 59.8 +58.8 132.5	12 47.5 +58.7 131.5	12 35.0 +58.7 130.4	12 22.4 +58.6 129.4
3°	14 10.7 +58.8 133.3	13 58.6 +58.7 132.2	13 46.2 +58.7 131.2	13 33.7 +58.7 130.2	13 21.0 +58.6 129.2
4°	15 09.5 +58.7 133.0	14 57.3 +58.7 132.0	14 44.9 +58.7 131.0	14 32.4 +58.6 130.0	14 19.6 +58.6 129.0
5°	16 08.2 +58.8 132.8	15 56.0 +58.7 131.8	15 43.6 +58.7 130.8	15 31.0 +58.6 129.8	15 18.2 +58.6 128.8
6°	17 07.0 +58.7 132.6	16 54.7 +58.7 131.6	16 42.3 +58.6 130.6	16 29.6 +58.6 129.6	16 16.8 +58.5 128.6
7°	18 05.7 +58.7 132.4	17 53.4 +58.7 131.4	17 40.9 +58.6 130.4	17 28.2 +58.6 129.4	17 15.3 +58.6 128.3
8°	19 04.4 +58.7 132.2	18 52.1 +58.7 131.2	18 39.5 +58.7 130.1	18 26.8 +58.6 129.1	18 13.9 +58.5 128.1
9°	20 03.1 +58.7 132.0	19 50.8 +58.6 130.9	19 38.2 +58.6 129.9	19 25.4 +58.5 128.9	19 12.4 +58.5 127.9
10°	21 01.8 +58.7 131.7	20 49.4 +58.6 130.7	20 36.8 +58.5 129.7	20 23.9 +58.6 128.7	20 10.9 +58.5 127.6
11°	22 00.5 +58.6 131.5	21 48.0 +58.6 130.5	21 35.3 +58.6 129.5	21 22.5 +58.5 128.4	21 09.4 +58.5 127.4
12°	22 59.1 +58.7 131.3	22 46.6 +58.6 130.3	22 33.9 +58.6 129.2	22 21.0 +58.5 128.2	22 07.9 +58.5 127.2
13°	23 57.8 +58.6 131.1	23 45.2 +58.6 130.0	23 32.5 +58.5 129.0	23 19.5 +58.5 128.0	23 06.4 +58.4 126.9
14°	24 56.4 +58.6 130.8	24 43.8 +58.5 129.8	24 31.0 +58.5 128.7	24 18.0 +58.4 127.7	24 04.8 +58.4 126.7
15°	25 55.0 +58.5 130.6	25 42.3 +58.5 129.5	25 29.5 +58.4 128.5	25 16.4 +58.5 127.5	25 03.2 +58.4 126.4
16°	26 53.5 +58.6 130.3	26 40.8 +58.5 129.3	26 27.9 +58.5 128.2	26 14.9 +58.4 127.2	26 01.6 +58.4 126.2
17°	27 52.1 +58.5 130.1	27 39.3 +58.5 129.0	27 26.4 +58.4 128.0	27 13.3 +58.3 126.9	27 00.0 +58.3 125.9
18°	28 50.6 +58.5 129.8	28 37.8 +58.4 128.8	28 24.8 +58.4 127.7	28 11.6 +58.4 126.7	27 58.3 +58.3 125.6
19°	29 49.1 +58.4 129.6	29 36.2 +58.4 128.5	29 23.2 +58.3 127.5	29 10.0 +58.3 126.4	28 56.6 +58.2 125.4
20°	30 47.5 +58.4 129.3	30 34.6 +58.4 128.3	30 21.5 +58.4 127.2	30 08.3 +58.3 126.1	29 54.8 +58.3 125.1
21°	31 45.9 +58.4 129.1	31 33.0 +58.3 128.0	31 19.9 +58.3 126.9	31 06.6 +58.2 125.9	30 53.1 +58.2 124.8
22°	32 44.3 +58.4 128.8	32 31.3 +58.3 127.7	32 18.2 +58.2 126.7	32 04.8 +58.2 125.6	31 51.3 +58.1 124.5
23°	33 42.7 +58.3 128.5	33 29.6 +58.3 127.4	33 16.4 +58.2 126.4	33 03.0 +58.2 125.3	32 49.4 +58.1 124.2
24°	34 41.0 +58.2 128.2	34 27.9 +58.2 127.2	34 14.6 +58.2 126.1	34 01.2 +58.1 125.0	33 47.5 +58.1 123.9
25°	35 39.2 +58.3 127.9	35 26.1 +58.2 126.9	35 12.8 +58.1 125.8	34 59.3 +58.0 124.7	34 45.6 +58.0 123.6
26°	36 37.5 +58.2 127.6	36 24.3 +58.1 126.6	36 10.9 +58.1 125.5	35 57.3 +58.1 124.4	35 43.6 +58.0 123.3
27°	37 35.7 +58.1 127.3	37 22.4 +58.1 126.2	37 09.0 +58.0 125.2	36 55.4 +57.9 124.1	36 41.6 +57.9 123.0
28°	38 33.8 +58.1 127.0	38 20.5 +58.0 125.9	38 07.0 +58.0 124.8	37 53.3 +58.0 123.8	37 39.5 +57.9 122.7
29°	39 31.9 +58.0 126.7	39 18.5 +58.0 125.6	39 05.0 +57.9 124.5	38 51.3 +57.8 123.4	38 37.4 +57.8 122.3

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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°	10 12.3 +58.6 128.9	9 59.4 +58.5 127.9	9 46.2 +58.5 126.9	9 32.9 +58.5 125.9	9 19.4 +58.5 124.9
1°	11 10.9 +58.6 128.7	10 57.9 +58.6 127.7	10 44.7 +58.6 126.7	10 31.4 +58.5 125.7	10 17.9 +58.4 124.7
2°	12 09.5 +58.6 128.5	11 56.5 +58.5 127.5	11 43.3 +58.5 126.5	11 29.9 +58.4 125.5	11 16.3 +58.4 124.5
3°	13 08.1 +58.6 128.2	12 55.0 +58.5 127.2	12 41.8 +58.4 126.2	12 28.3 +58.5 125.2	12 14.7 +58.4 124.2
4°	14 06.7 +58.5 128.0	13 53.5 +58.5 127.0	13 40.2 +58.5 126.0	13 26.8 +58.4 125.0	13 13.1 +58.4 124.0
5°	15 05.2 +58.5 127.8	14 52.0 +58.5 126.8	14 38.7 +58.5 125.8	14 25.2 +58.4 124.8	14 11.5 +58.4 123.8
6°	16 03.7 +58.6 127.6	15 50.5 +58.5 126.5	15 37.2 +58.4 125.5	15 23.6 +58.4 124.5	15 09.9 +58.4 123.5
7°	17 02.3 +58.5 127.3	16 49.0 +58.5 126.3	16 35.6 +58.5 125.3	16 22.0 +58.4 124.3	16 08.3 +58.3 123.3
8°	18 00.8 +58.5 127.1	17 47.5 +58.5 126.1	17 34.1 +58.4 125.1	17 20.4 +58.4 124.1	17 06.6 +58.4 123.0
9°	18 59.3 +58.5 126.9	18 46.0 +58.4 125.8	18 32.5 +58.4 124.8	18 18.8 +58.4 123.8	18 05.0 +58.3 122.8
10°	19 57.8 +58.4 126.6	19 44.4 +58.4 125.6	19 30.9 +58.3 124.6	19 17.2 +58.3 123.6	19 03.3 +58.3 122.6
11°	20 56.2 +58.4 126.4	20 42.8 +58.4 125.4	20 29.2 +58.4 124.3	20 15.5 +58.3 123.3	20 01.6 +58.3 122.3
12°	21 54.6 +58.5 126.1	21 41.2 +58.4 125.1	21 27.6 +58.3 124.1	21 13.8 +58.3 123.1	20 59.9 +58.2 122.0
13°	22 53.1 +58.4 125.9	22 39.6 +58.3 124.9	22 25.9 +58.3 123.8	22 12.1 +58.3 122.8	21 58.1 +58.2 121.8
14°	23 51.5 +58.3 125.6	23 37.9 +58.3 124.6	23 24.2 +58.3 123.6	23 10.4 +58.2 122.6	22 56.3 +58.3 121.5
15°	24 49.8 +58.4 125.4	24 36.2 +58.3 124.3	24 22.5 +58.3 123.3	24 08.6 +58.2 122.3	23 54.6 +58.1 121.3
16°	25 48.2 +58.3 125.1	25 34.5 +58.3 124.1	25 20.8 +58.2 123.1	25 06.8 +58.2 122.0	24 52.7 +58.2 121.0
17°	26 46.5 +58.3 124.9	26 32.8 +58.3 123.8	26 19.0 +58.2 122.8	26 05.0 +58.2 121.8	25 50.9 +58.1 120.7
18°	27 44.8 +58.2 124.6	27 31.1 +58.2 123.6	27 17.2 +58.2 122.5	27 03.2 +58.1 121.5	26 49.0 +58.1 120.4
19°	28 43.0 +58.2 124.3	28 29.3 +58.1 123.3	28 15.4 +58.1 122.2	28 01.3 +58.1 121.2	27 47.1 +58.0 120.2
20°	29 41.2 +58.2 124.0	29 27.4 +58.2 123.0	29 13.5 +58.1 122.0	28 59.4 +58.0 120.9	28 45.1 +58.0 119.9
21°	30 39.4 +58.2 123.8	30 25.6 +58.1 122.7	30 11.6 +58.0 121.7	29 57.4 +58.0 120.6	29 43.1 +58.0 119.6
22°	31 37.6 +58.1 123.5	31 23.7 +58.0 122.4	31 09.6 +58.0 121.4	30 55.4 +58.0 120.3	30 41.1 +57.9 119.3
23°	32 35.7 +58.0 123.2	32 21.7 +58.0 122.1	32 07.6 +58.0 121.1	31 53.4 +57.9 120.0	31 39.0 +57.9 119.0
24°	33 33.7 +58.0 122.9	33 19.7 +58.0 121.8	33 05.6 +57.9 120.8	32 51.3 +57.9 119.7	32 36.9 +57.8 118.7
25°	34 31.7 +58.0 122.6	34 17.7 +57.9 121.5	34 03.5 +57.9 120.5	33 49.2 +57.8 119.4	33 34.7 +57.8 118.3
26°	35 29.7 +57.9 122.3	35 15.6 +57.9 121.2	35 01.4 +57.8 120.1	34 47.0 +57.8 119.1	34 32.5 +57.7 118.0
27°	36 27.6 +57.9 121.9	36 13.5 +57.8 120.9	35 59.2 +57.8 119.8	35 44.8 +57.7 118.7	35 30.2 +57.7 117.7
28°	37 25.5 +57.8 121.6	37 11.3 +57.8 120.5	36 57.0 +57.7 119.5	36 42.5 +57.7 118.4	36 27.9 +57.6 117.3
29°	38 23.3 +57.8 121.3	38 09.1 +57.7 120.2	37 54.7 +57.7 119.1	37 40.2 +57.6 118.1	37 25.5 +57.6 117.0

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°	9 05.8 +58.4 123.9	8 52.0 +58.4 123.0	8 38.0 +58.4 122.0	8 23.9 +58.3 121.0	8 09.7 +58.3 120.0
1°	10 04.2 +58.4 123.7	9 50.4 +58.3 122.7	9 36.4 +58.3 121.7	9 22.2 +58.3 120.8	9 08.0 +58.2 119.8
2°	11 02.6 +58.4 123.5	10 48.7 +58.4 122.5	10 34.7 +58.3 121.5	10 20.5 +58.3 120.5	10 06.2 +58.2 119.5
3°	12 01.0 +58.4 123.2	11 47.1 +58.3 122.3	11 33.0 +58.3 121.3	11 18.8 +58.3 120.3	11 04.4 +58.3 119.3
4°	12 59.4 +58.3 123.0	12 45.4 +58.3 122.0	12 31.3 +58.3 121.0	12 17.1 +58.2 120.0	12 02.7 +58.2 119.0
5°	13 57.7 +58.4 122.8	13 43.7 +58.3 121.8	13 29.6 +58.3 120.8	13 15.3 +58.3 119.8	13 00.9 +58.2 118.8
6°	14 56.1 +58.3 122.5	14 42.0 +58.3 121.5	14 27.9 +58.2 120.5	14 13.6 +58.2 119.5	13 59.1 +58.2 118.5
7°	15 54.4 +58.3 122.3	15 40.3 +58.3 121.3	15 26.1 +58.3 120.3	15 11.8 +58.2 119.3	14 57.3 +58.1 118.3
8°	16 52.7 +58.3 122.0	16 38.6 +58.3 121.0	16 24.4 +58.2 120.0	16 10.0 +58.2 119.0	15 55.4 +58.2 118.0
9°	17 51.0 +58.3 121.8	17 36.9 +58.2 120.8	17 22.6 +58.2 119.8	17 08.2 +58.1 118.8	16 53.6 +58.1 117.8
10°	18 49.3 +58.2 121.5	18 35.1 +58.2 120.5	18 20.8 +58.2 119.5	18 06.3 +58.2 118.5	17 51.7 +58.1 117.5
11°	19 47.5 +58.3 121.3	19 33.3 +58.2 120.3	19 19.0 +58.1 119.3	19 04.5 +58.1 118.3	18 49.8 +58.1 117.3
12°	20 45.8 +58.2 121.0	20 31.5 +58.2 120.0	20 17.1 +58.2 119.0	20 02.6 +58.1 118.0	19 47.9 +58.1 117.0
13°	21 44.0 +58.2 120.8	21 29.7 +58.2 119.8	21 15.3 +58.1 118.7	21 00.7 +58.1 117.7	20 46.0 +58.0 116.7
14°	22 42.2 +58.1 120.5	22 27.9 +58.1 119.5	22 13.4 +58.1 118.5	21 58.8 +58.0 117.5	21 44.0 +58.0 116.4
15°	23 40.3 +58.2 120.2	23 26.0 +58.1 119.2	23 11.5 +58.0 118.2	22 56.8 +58.0 117.2	22 42.0 +58.0 116.2
16°	24 38.5 +58.1 120.0	24 24.1 +58.0 118.9	24 09.5 +58.1 117.9	23 54.8 +58.0 116.9	23 40.0 +58.0 115.9
17°	25 36.6 +58.0 119.7	25 22.1 +58.1 118.7	25 07.6 +57.9 117.6	24 52.8 +58.0 116.6	24 38.0 +57.9 115.6
18°	26 34.6 +58.1 119.4	26 20.2 +58.0 118.4	26 05.5 +58.0 117.4	25 50.8 +57.9 116.3	25 35.9 +57.9 115.3
19°	27 32.7 +58.0 119.1	27 18.2 +57.9 118.1	27 03.5 +57.9 117.1	26 48.7 +57.9 116.0	26 33.8 +57.8 115.0
20°	28 30.7 +58.0 118.8	28 16.1 +58.0 117.8	28 01.4 +57.9 116.8	27 46.6 +57.9 115.8	27 31.6 +57.9 114.7
21°	29 28.7 +57.9 118.5	29 14.1 +57.8 117.5	28 59.3 +57.9 116.5	28 44.5 +57.8 115.4	28 29.5 +57.7 114.4
22°	30 26.6 +57.9 118.2	30 11.9 +57.9 117.2	29 57.2 +57.8 116.2	29 42.3 +57.7 115.1	29 27.2 +57.8 114.1
23°	31 24.5 +57.8 117.9	31 09.8 +57.8 116.9	30 55.0 +57.7 115.9	30 40.0 +57.7 114.8	30 25.0 +57.6 113.8
24°	32 22.3 +57.8 117.6	32 07.6 +57.7 116.6	31 52.7 +57.7 115.5	31 37.7 +57.7 114.5	31 22.6 +57.7 113.5
25°	33 20.1 +57.7 117.3	33 05.3 +57.7 116.3	32 50.4 +57.7 115.2	32 35.4 +57.6 114.2	32 20.3 +57.5 113.2
26°	34 17.8 +57.7 117.0	34 03.0 +57.7 115.9	33 48.1 +57.6 114.9	33 33.0 +57.6 113.9	33 17.8 +57.6 112.8
27°	35 15.5 +57.7 116.6	35 00.7 +57.6 115.6	34 45.7 +57.5 114.6	34 30.6 +57.5 113.5	34 15.4 +57.4 112.5
28°	36 13.2 +57.5 116.3	35 58.3 +57.5 115.2	35 43.2 +57.5 114.2	35 28.1 +57.4 113.2	35 12.8 +57.4 112.1
29°	37 10.7 +57.5 115.9	36 55.8 +57.5 114.9	36 40.7 +57.5 113.8	36 25.5 +57.4 112.8	36 10.2 +57.4 111.8

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°	7 55.3 +58.2 119.0	7 40.8 +58.2 118.1	7 26.1 +58.2 117.1	7 11.3 +58.1 116.1	6 56.4 +58.1 115.1
1°	8 53.5 +58.2 118.8	8 39.0 +58.1 117.8	8 24.3 +58.1 116.8	8 09.4 +58.2 115.8	7 54.5 +58.1 114.9
2°	9 51.7 +58.2 118.5	9 37.1 +58.2 117.6	9 22.4 +58.2 116.6	9 07.6 +58.1 115.6	8 52.6 +58.1 114.6
3°	10 49.9 +58.2 118.3	10 35.3 +58.2 117.3	10 20.6 +58.1 116.3	10 05.7 +58.1 115.3	9 50.7 +58.0 114.4
4°	11 48.1 +58.2 118.0	11 33.5 +58.1 117.1	11 18.7 +58.1 116.1	11 03.8 +58.1 115.1	10 48.7 +58.1 114.1
5°	12 46.3 +58.2 117.8	12 31.6 +58.2 116.8	12 16.8 +58.1 115.8	12 01.9 +58.0 114.8	11 46.8 +58.0 113.8
6°	13 44.5 +58.1 117.5	13 29.8 +58.1 116.6	13 14.9 +58.1 115.6	12 59.9 +58.1 114.6	12 44.8 +58.1 113.6
7°	14 42.6 +58.2 117.3	14 27.9 +58.1 116.3	14 13.0 +58.1 115.3	13 58.0 +58.0 114.3	13 42.9 +58.0 113.3
8°	15 40.8 +58.1 117.0	15 26.0 +58.1 116.0	15 11.1 +58.0 115.0	14 56.0 +58.0 114.1	14 40.9 +58.0 113.1
9°	16 38.9 +58.1 116.8	16 24.1 +58.0 115.8	16 09.1 +58.0 114.8	15 54.0 +58.0 113.8	15 38.9 +57.9 112.8
10°	17 37.0 +58.1 116.5	17 22.1 +58.1 115.5	17 07.1 +58.1 114.5	16 52.0 +58.0 113.5	16 36.8 +58.0 112.5
11°	18 35.1 +58.0 116.2	18 20.2 +58.0 115.2	18 05.2 +57.9 114.2	17 50.0 +58.0 113.3	17 34.8 +57.9 112.3
12°	19 33.1 +58.1 116.0	19 18.2 +58.0 115.0	19 03.1 +58.0 114.0	18 48.0 +57.9 113.0	18 32.7 +57.9 112.0
13°	20 31.2 +58.0 115.7	20 16.2 +58.0 114.7	20 01.1 +58.0 113.7	19 45.9 +57.9 112.7	19 30.6 +57.9 111.7
14°	21 29.2 +57.9 115.4	21 14.2 +57.9 114.4	20 59.1 +57.9 113.4	20 43.8 +57.9 112.4	20 28.5 +57.8 111.4
15°	22 27.1 +58.0 115.2	22 12.1 +57.9 114.2	21 57.0 +57.8 113.1	21 41.7 +57.9 112.1	21 26.3 +57.8 111.1
16°	23 25.1 +57.9 114.9	23 10.0 +57.9 113.9	22 54.8 +57.9 112.9	22 39.6 +57.8 111.9	22 24.1 +57.8 110.9
17°	24 23.0 +57.9 114.6	24 07.9 +57.9 113.6	23 52.7 +57.8 112.6	23 37.4 +57.8 111.6	23 21.9 +57.8 110.6
18°	25 20.9 +57.8 114.3	25 05.8 +57.8 113.3	24 50.5 +57.8 112.3	24 35.2 +57.7 111.3	24 19.7 +57.7 110.3
19°	26 18.7 +57.9 114.0	26 03.6 +57.8 113.0	25 48.3 +57.7 112.0	25 32.9 +57.7 111.0	25 17.4 +57.7 110.0
20°	27 16.6 +57.7 113.7	27 01.4 +57.7 112.7	26 46.0 +57.8 111.7	26 30.6 +57.7 110.7	26 15.1 +57.6 109.7
21°	28 14.3 +57.8 113.4	27 59.1 +57.7 112.4	27 43.8 +57.6 111.4	27 28.3 +57.6 110.4	27 12.7 +57.7 109.3
22°	29 12.1 +57.7 113.1	28 56.8 +57.7 112.1	28 41.4 +57.6 111.1	28 25.9 +57.6 110.0	28 10.4 +57.5 109.0
23°	30 09.8 +57.6 112.8	29 54.5 +57.6 111.8	29 39.0 +57.6 110.7	29 23.5 +57.6 109.7	29 07.9 +57.5 108.7
24°	31 07.4 +57.6 112.5	30 52.1 +57.5 111.4	30 36.6 +57.5 110.4	30 21.1 +57.5 109.4	30 05.4 +57.5 108.4
25°	32 05.0 +57.5 112.1	31 49.6 +57.5 111.1	31 34.1 +57.5 110.1	31 18.6 +57.4 109.1	31 02.9 +57.4 108.0
26°	33 02.5 +57.5 111.8	32 47.1 +57.5 110.8	32 31.6 +57.4 109.7	32 16.0 +57.4 108.7	32 00.3 +57.3 107.7
27°	34 00.0 +57.5 111.4	33 44.6 +57.4 110.4	33 29.0 +57.4 109.4	33 13.4 +57.3 108.4	32 57.6 +57.3 107.4
28°	34 57.5 +57.3 111.1	34 42.0 +57.3 110.1	34 26.4 +57.3 109.0	34 10.7 +57.3 108.0	33 54.9 +57.3 107.0
29°	35 54.8 +57.3 110.7	35 39.3 +57.3 109.7	35 23.7 +57.2 108.7	35 08.0 +57.2 107.7	34 52.2 +57.1 106.6

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°	6 41.4 +58.0 114.1	6 26.2 +58.1 113.2	6 11.0 +58.0 112.2	5 55.6 +58.0 111.2	5 40.1 +58.0 110.3
1°	7 39.4 +58.1 113.9	7 24.3 +58.0 112.9	7 09.0 +58.0 111.9	6 53.6 +58.0 111.0	6 38.1 +57.9 110.0
2°	8 37.5 +58.0 113.6	8 22.3 +58.0 112.7	8 07.0 +58.0 111.7	7 51.6 +57.9 110.7	7 36.0 +58.0 109.7
3°	9 35.5 +58.1 113.4	9 20.3 +58.0 112.4	9 05.0 +57.9 111.4	8 49.5 +58.0 110.4	8 34.0 +57.9 109.5
4°	10 33.6 +58.0 113.1	10 18.3 +58.0 112.1	10 02.9 +58.0 111.2	9 47.5 +57.9 110.2	9 31.9 +57.9 109.2
5°	11 31.6 +58.0 112.9	11 16.3 +58.0 111.9	11 00.9 +58.0 110.9	10 45.4 +57.9 109.9	10 29.8 +57.9 108.9
6°	12 29.6 +58.0 112.6	12 14.3 +58.0 111.6	11 58.9 +57.9 110.6	11 43.3 +58.0 109.7	11 27.7 +57.9 108.7
7°	13 27.6 +58.0 112.3	13 12.3 +57.9 111.4	12 56.8 +57.9 110.4	12 41.3 +57.8 109.4	12 25.6 +57.9 108.4
8°	14 25.6 +57.9 112.1	14 10.2 +57.9 111.1	13 54.7 +57.9 110.1	13 39.1 +57.9 109.1	13 23.5 +57.8 108.1
9°	15 23.5 +58.0 111.8	15 08.1 +58.0 110.8	14 52.6 +57.9 109.8	14 37.0 +57.9 108.8	14 21.3 +57.9 107.9
10°	16 21.5 +57.9 111.5	16 06.1 +57.8 110.5	15 50.5 +57.9 109.6	15 34.9 +57.8 108.6	15 19.2 +57.8 107.6
11°	17 19.4 +57.9 111.3	17 03.9 +57.9 110.3	16 48.4 +57.8 109.3	16 32.7 +57.8 108.3	16 17.0 +57.8 107.3
12°	18 17.3 +57.9 111.0	18 01.8 +57.9 110.0	17 46.2 +57.8 109.0	17 30.5 +57.8 108.0	17 14.8 +57.7 107.0
13°	19 15.2 +57.8 110.7	18 59.7 +57.8 109.7	18 44.0 +57.8 108.7	18 28.3 +57.8 107.7	18 12.5 +57.8 106.7
14°	20 13.0 +57.9 110.4	19 57.5 +57.8 109.4	19 41.8 +57.8 108.4	19 26.1 +57.7 107.4	19 10.3 +57.7 106.5
15°	21 10.9 +57.7 110.1	20 55.3 +57.7 109.1	20 39.6 +57.7 108.1	20 23.8 +57.8 107.2	20 08.0 +57.7 106.2
16°	22 08.6 +57.8 109.9	21 53.0 +57.8 108.9	21 37.3 +57.7 107.9	21 21.6 +57.6 106.9	21 05.7 +57.6 105.9
17°	23 06.4 +57.7 109.6	22 50.8 +57.7 108.6	22 35.0 +57.7 107.6	22 19.2 +57.7 106.6	22 03.3 +57.7 105.6
18°	24 04.1 +57.7 109.3	23 48.5 +57.6 108.3	23 32.7 +57.7 107.3	23 16.9 +57.6 106.3	23 01.0 +57.6 105.3
19°	25 01.8 +57.7 109.0	24 46.1 +57.7 108.0	24 30.4 +57.6 107.0	24 14.5 +57.6 106.0	23 58.6 +57.5 105.0
20°	25 59.5 +57.6 108.7	25 43.8 +57.6 107.6	25 28.0 +57.5 106.6	25 12.1 +57.5 105.7	24 56.1 +57.5 104.7
21°	26 57.1 +57.6 108.3	26 41.4 +57.5 107.3	26 25.5 +57.5 106.3	26 09.6 +57.5 105.3	25 53.6 +57.5 104.3
22°	27 54.7 +57.5 108.0	27 38.9 +57.5 107.0	27 23.0 +57.5 106.0	27 07.1 +57.5 105.0	26 51.1 +57.4 104.0
23°	28 52.2 +57.5 107.7	28 36.4 +57.5 106.7	28 20.5 +57.4 105.7	28 04.6 +57.4 104.7	27 48.5 +57.4 103.7
24°	29 49.7 +57.4 107.4	29 33.9 +57.4 106.4	29 17.9 +57.4 105.4	29 02.0 +57.3 104.4	28 45.9 +57.3 103.4
25°	30 47.1 +57.4 107.0	30 31.3 +57.3 106.0	30 15.3 +57.4 105.0	29 59.3 +57.3 104.0	29 43.2 +57.3 103.0
26°	31 44.5 +57.3 106.7	31 28.6 +57.3 105.7	31 12.7 +57.2 104.7	30 56.6 +57.3 103.7	30 40.5 +57.2 102.7
27°	32 41.8 +57.3 106.3	32 25.9 +57.2 105.3	32 09.9 +57.2 104.3	31 53.9 +57.2 103.3	31 37.7 +57.2 102.3
28°	33 39.1 +57.2 106.0	33 23.1 +57.2 105.0	33 07.1 +57.2 104.0	32 51.1 +57.1 103.0	32 34.9 +57.1 102.0
29°	34 36.3 +57.1 105.6	34 20.3 +57.1 104.6	34 04.3 +57.1 103.6	33 48.2 +57.0 102.6	33 32.0 +57.0 101.6

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	5 24.6 +57.9 109.3	5 08.9 +57.9 108.3	4 53.2 +57.9 107.3	4 37.3 +57.9 106.4	4 21.4 +57.9 105.4
1°	6 22.5 +57.9 109.0	6 06.8 +57.9 108.1	5 51.1 +57.8 107.1	5 35.2 +57.9 106.1	5 19.3 +57.8 105.1
2°	7 20.4 +57.9 108.8	7 04.7 +57.9 107.8	6 48.9 +57.9 106.8	6 33.1 +57.8 105.8	6 17.1 +57.8 104.9
3°	8 18.3 +57.9 108.5	8 02.6 +57.9 107.5	7 46.8 +57.9 106.5	7 30.9 +57.8 105.6	7 14.9 +57.9 104.6
4°	9 16.2 +57.9 108.2	9 00.5 +57.9 107.3	8 44.7 +57.8 106.3	8 28.7 +57.9 105.3	8 12.8 +57.8 104.3
5°	10 14.1 +57.9 108.0	9 58.4 +57.8 107.0	9 42.5 +57.8 106.0	9 26.6 +57.8 105.0	9 10.6 +57.7 104.1
6°	11 12.0 +57.9 107.7	10 56.2 +57.8 106.7	10 40.3 +57.8 105.7	10 24.4 +57.8 104.8	10 08.3 +57.8 103.8
7°	12 09.9 +57.8 107.4	11 54.0 +57.9 106.4	11 38.1 +57.9 105.5	11 22.2 +57.8 104.5	11 06.1 +57.8 103.5
8°	13 07.7 +57.8 107.2	12 51.9 +57.8 106.2	12 36.0 +57.7 105.2	12 20.0 +57.7 104.2	12 03.9 +57.7 103.2
9°	14 05.5 +57.9 106.9	13 49.7 +57.8 105.9	13 33.7 +57.8 104.9	13 17.7 +57.8 103.9	13 01.6 +57.8 103.0
10°	15 03.4 +57.7 106.6	14 47.5 +57.7 105.6	14 31.5 +57.8 104.6	14 15.5 +57.7 103.7	13 59.4 +57.7 102.7
11°	16 01.1 +57.8 106.3	15 45.2 +57.8 105.3	15 29.3 +57.7 104.4	15 13.2 +57.7 103.4	14 57.1 +57.7 102.4
12°	16 58.9 +57.8 106.0	16 43.0 +57.7 105.1	16 27.0 +57.7 104.1	16 10.9 +57.7 103.1	15 54.8 +57.6 102.1
13°	17 56.7 +57.7 105.8	17 40.7 +57.7 104.8	17 24.7 +57.7 103.8	17 08.6 +57.6 102.8	16 52.4 +57.7 101.8
14°	18 54.4 +57.7 105.5	18 38.4 +57.7 104.5	18 22.4 +57.6 103.5	18 06.2 +57.7 102.5	17 50.1 +57.6 101.5
15°	19 52.1 +57.6 105.2	19 36.1 +57.6 104.2	19 20.0 +57.6 103.2	19 03.9 +57.6 102.2	18 47.7 +57.6 101.2
16°	20 49.7 +57.7 104.9	20 33.7 +57.6 103.9	20 17.6 +57.6 102.9	20 01.5 +57.6 101.9	19 45.3 +57.5 100.9
17°	21 47.4 +57.6 104.6	21 31.3 +57.6 103.6	21 15.2 +57.6 102.6	20 59.1 +57.5 101.6	20 42.8 +57.6 100.6
18°	22 45.0 +57.5 104.3	22 28.9 +57.6 103.3	22 12.8 +57.5 102.3	21 56.6 +57.5 101.3	21 40.4 +57.5 100.3
19°	23 42.5 +57.6 104.0	23 26.5 +57.5 103.0	23 10.3 +57.5 102.0	22 54.1 +57.5 101.0	22 37.9 +57.4 100.0
20°	24 40.1 +57.5 103.7	24 24.0 +57.4 102.7	24 07.8 +57.5 101.7	23 51.6 +57.4 100.7	23 35.3 +57.4 99.7
21°	25 37.6 +57.4 103.3	25 21.4 +57.5 102.4	25 05.3 +57.4 101.4	24 49.0 +57.4 100.4	24 32.7 +57.4 99.4
22°	26 35.0 +57.4 103.0	26 18.9 +57.4 102.0	26 02.7 +57.3 101.0	25 46.4 +57.4 100.1	25 30.1 +57.3 99.1
23°	27 32.4 +57.4 102.7	27 16.3 +57.3 101.7	27 00.0 +57.4 100.7	26 43.8 +57.3 99.7	26 27.4 +57.3 98.8
24°	28 29.8 +57.3 102.4	28 13.6 +57.3 101.4	27 57.4 +57.2 100.4	27 41.1 +57.2 99.4	27 24.7 +57.3 98.4
25°	29 27.1 +57.3 102.0	29 10.9 +57.2 101.0	28 54.6 +57.3 100.0	28 38.3 +57.2 99.1	28 22.0 +57.2 98.1
26°	30 24.4 +57.2 101.7	30 08.1 +57.2 100.7	29 51.9 +57.1 99.7	29 35.5 +57.2 98.7	29 19.2 +57.1 97.7
27°	31 21.6 +57.1 101.3	31 05.3 +57.1 100.3	30 49.0 +57.1 99.4	30 32.7 +57.1 98.4	30 16.3 +57.1 97.4
28°	32 18.7 +57.1 101.0	32 02.4 +57.1 100.0	31 46.1 +57.1 99.0	31 29.8 +57.0 98.0	31 13.4 +57.0 97.0
29°	33 15.8 +57.0 100.6	32 59.5 +57.0 99.6	32 43.2 +56.9 98.6	32 26.8 +57.0 97.6	32 10.4 +56.9 96.7

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°	4 05.5 +57.8 104.4	3 49.4 +57.8 103.5	3 33.3 +57.8 102.5	3 17.1 +57.8 101.5	3 00.9 +57.7 100.6
1°	5 03.3 +57.8 104.2	4 47.2 +57.8 103.2	4 31.1 +57.8 102.2	4 14.9 +57.7 101.3	3 58.6 +57.8 100.3
2°	6 01.1 +57.8 103.9	5 45.0 +57.8 102.9	5 28.9 +57.7 102.0	5 12.6 +57.8 101.0	4 56.4 +57.7 100.0
3°	6 58.9 +57.8 103.6	6 42.8 +57.8 102.7	6 26.6 +57.8 101.7	6 10.4 +57.8 100.7	5 54.1 +57.8 99.8
4°	7 56.7 +57.8 103.4	7 40.6 +57.7 102.4	7 24.4 +57.7 101.4	7 08.2 +57.7 100.5	6 51.9 +57.7 99.5
5°	8 54.5 +57.8 103.1	8 38.3 +57.8 102.1	8 22.1 +57.8 101.2	8 05.9 +57.7 100.2	7 49.6 +57.7 99.2
6°	9 52.3 +57.7 102.8	9 36.1 +57.7 101.8	9 19.9 +57.7 100.9	9 03.6 +57.7 99.9	8 47.3 +57.7 98.9
7°	10 50.0 +57.8 102.5	10 33.8 +57.8 101.6	10 17.6 +57.7 100.6	10 01.3 +57.7 99.6	9 45.0 +57.7 98.7
8°	11 47.8 +57.7 102.3	11 31.6 +57.7 101.3	11 15.3 +57.7 100.3	10 59.0 +57.7 99.4	10 42.7 +57.7 98.4
9°	12 45.5 +57.7 102.0	12 29.3 +57.7 101.0	12 13.0 +57.7 100.0	11 56.7 +57.7 99.1	11 40.4 +57.6 98.1
10°	13 43.2 +57.7 101.7	13 27.0 +57.7 100.7	13 10.7 +57.7 99.8	12 54.4 +57.6 98.8	12 38.0 +57.7 97.8
11°	14 40.9 +57.7 101.4	14 24.7 +57.6 100.5	14 08.4 +57.6 99.5	13 52.0 +57.7 98.5	13 35.7 +57.6 97.5
12°	15 38.6 +57.6 101.1	15 22.3 +57.6 100.2	15 06.0 +57.6 99.2	14 49.7 +57.6 98.2	14 33.3 +57.6 97.2
13°	16 36.2 +57.6 100.9	16 19.9 +57.7 99.9	16 03.6 +57.6 98.9	15 47.3 +57.6 97.9	15 30.9 +57.5 97.0
14°	17 33.8 +57.6 100.6	17 17.6 +57.5 99.6	17 01.2 +57.6 98.6	16 44.9 +57.5 97.6	16 28.4 +57.6 96.7
15°	18 31.4 +57.6 100.3	18 15.1 +57.6 99.3	17 58.8 +57.5 98.3	17 42.4 +57.5 97.3	17 26.0 +57.5 96.4
16°	19 29.0 +57.6 100.0	19 12.7 +57.5 99.0	18 56.3 +57.6 98.0	18 39.9 +57.6 97.0	18 23.5 +57.5 96.1
17°	20 26.6 +57.5 99.7	20 10.2 +57.5 98.7	19 53.9 +57.4 97.7	19 37.5 +57.4 96.7	19 21.0 +57.5 95.8
18°	21 24.1 +57.4 99.4	21 07.7 +57.5 98.4	20 51.3 +57.5 97.4	20 34.9 +57.5 96.4	20 18.5 +57.4 95.5
19°	22 21.5 +57.5 99.1	22 05.2 +57.4 98.1	21 48.8 +57.4 97.1	21 32.4 +57.4 96.1	21 15.9 +57.4 95.2
20°	23 19.0 +57.4 98.7	23 02.6 +57.4 97.8	22 46.2 +57.4 96.8	22 29.8 +57.3 95.8	22 13.3 +57.4 94.8
21°	24 16.4 +57.4 98.4	24 00.0 +57.4 97.4	23 43.6 +57.3 96.5	23 27.1 +57.4 95.5	23 10.7 +57.3 94.5
22°	25 13.8 +57.3 98.1	24 57.4 +57.3 97.1	24 40.9 +57.3 96.1	24 24.5 +57.3 95.2	24 08.0 +57.3 94.2
23°	26 11.1 +57.2 97.8	25 54.7 +57.2 96.8	25 38.2 +57.3 95.8	25 21.8 +57.2 94.8	25 05.3 +57.2 93.9
24°	27 08.3 +57.3 97.4	26 51.9 +57.2 96.5	26 35.5 +57.2 95.5	26 19.0 +57.2 94.5	26 02.5 +57.2 93.5
25°	28 05.6 +57.2 97.1	27 49.1 +57.2 96.1	27 32.7 +57.1 95.1	27 16.2 +57.2 94.2	26 59.7 +57.1 93.2
26°	29 02.8 +57.1 96.8	28 46.3 +57.1 95.8	28 29.8 +57.1 94.8	28 13.4 +57.0 93.8	27 56.8 +57.1 92.9
27°	29 59.9 +57.0 96.4	29 43.4 +57.1 95.4	29 26.9 +57.1 94.4	29 10.4 +57.1 93.5	28 53.9 +57.1 92.5
28°	30 56.9 +57.0 96.0	30 40.5 +57.0 95.1	30 24.0 +57.0 94.1	30 07.5 +57.0 93.1	29 51.0 +56.9 92.2
29°	31 53.9 +57.0 95.7	31 37.5 +56.9 94.7	31 21.0 +56.9 93.7	31 04.5 +56.9 92.8	30 47.9 +57.0 91.8

Declination SAME name as Latitude

Latitude 74°

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°	2 44.6 +57.7 99.6	2 28.3 +57.7 98.7	2 11.9 +57.7 97.7	1 55.5 +57.7 96.7	1 39.1 +57.7 95.8
1°	3 42.3 +57.8 99.3	3 26.0 +57.7 98.4	3 09.6 +57.7 97.4	2 53.2 +57.7 96.5	2 36.8 +57.7 95.5
2°	4 40.1 +57.7 99.1	4 23.7 +57.7 98.1	4 07.3 +57.7 97.1	3 50.9 +57.7 96.2	3 34.5 +57.6 95.2
3°	5 37.8 +57.7 98.8	5 21.4 +57.8 97.8	5 05.0 +57.7 96.9	4 48.6 +57.7 95.9	4 32.1 +57.7 94.9
4°	6 35.5 +57.7 98.5	6 19.2 +57.7 97.6	6 02.7 +57.7 96.6	5 46.3 +57.7 95.6	5 29.8 +57.7 94.7
5°	7 33.2 +57.7 98.3	7 16.9 +57.6 97.3	7 00.4 +57.7 96.3	6 44.0 +57.7 95.4	6 27.5 +57.7 94.4
6°	8 30.9 +57.7 98.0	8 14.5 +57.7 97.0	7 58.1 +57.7 96.0	7 41.7 +57.6 95.1	7 25.2 +57.6 94.1
7°	9 28.6 +57.7 97.7	9 12.2 +57.7 96.7	8 55.8 +57.6 95.8	8 39.3 +57.7 94.8	8 22.8 +57.7 93.8
8°	10 26.3 +57.7 97.4	10 09.9 +57.6 96.4	9 53.4 +57.7 95.5	9 37.0 +57.6 94.5	9 20.5 +57.6 93.6
9°	11 24.0 +57.6 97.1	11 07.5 +57.7 96.2	10 51.1 +57.6 95.2	10 34.6 +57.6 94.2	10 18.1 +57.6 93.3
10°	12 21.6 +57.6 96.9	12 05.2 +57.6 95.9	11 48.7 +57.6 94.9	11 32.2 +57.6 94.0	11 15.7 +57.6 93.0
11°	13 19.2 +57.7 96.6	13 02.8 +57.6 95.6	12 46.3 +57.6 94.6	12 29.8 +57.6 93.7	12 13.3 +57.6 92.7
12°	14 16.9 +57.5 96.3	14 00.4 +57.6 95.3	13 43.9 +57.6 94.3	13 27.4 +57.6 93.4	13 10.9 +57.6 92.4
13°	15 14.4 +57.6 96.0	14 58.0 +57.5 95.0	14 41.5 +57.5 94.1	14 25.0 +57.5 93.1	14 08.5 +57.5 92.1
14°	16 12.0 +57.5 95.7	15 55.5 +57.6 94.7	15 39.0 +57.6 93.8	15 22.5 +57.6 92.8	15 06.0 +57.5 91.8
15°	17 09.5 +57.6 95.4	16 53.1 +57.5 94.4	16 36.6 +57.5 93.5	16 20.1 +57.5 92.5	16 03.5 +57.5 91.5
16°	18 07.1 +57.4 95.1	17 50.6 +57.5 94.1	17 34.1 +57.4 93.2	17 17.6 +57.4 92.2	17 01.0 +57.5 91.2
17°	19 04.5 +57.5 94.8	18 48.1 +57.4 93.8	18 31.5 +57.5 92.9	18 15.0 +57.5 91.9	17 58.5 +57.4 90.9
18°	20 02.0 +57.4 94.5	19 45.5 +57.4 93.5	19 29.0 +57.4 92.6	19 12.5 +57.4 91.6	18 55.9 +57.4 90.6
19°	20 59.4 +57.4 94.2	20 42.9 +57.4 93.2	20 26.4 +57.4 92.2	20 09.9 +57.4 91.3	19 53.3 +57.4 90.3
20°	21 56.8 +57.4 93.9	21 40.3 +57.4 92.9	21 23.8 +57.3 91.9	21 07.3 +57.3 91.0	20 50.7 +57.4 90.0
21°	22 54.2 +57.3 93.6	22 37.7 +57.3 92.6	22 21.1 +57.3 91.6	22 04.6 +57.3 90.7	21 48.1 +57.3 89.7
22°	23 51.5 +57.3 93.2	23 35.0 +57.2 92.3	23 18.4 +57.3 91.3	23 01.9 +57.3 90.3	22 45.4 +57.2 89.4
23°	24 48.8 +57.2 92.9	24 32.2 +57.3 91.9	24 15.7 +57.2 91.0	23 59.2 +57.2 90.0	23 42.6 +57.3 89.0
24°	25 46.0 +57.2 92.6	25 29.5 +57.2 91.6	25 12.9 +57.2 90.6	24 56.4 +57.2 89.7	24 39.9 +57.1 88.7
25°	26 43.2 +57.1 92.2	26 26.7 +57.1 91.3	26 10.1 +57.1 90.3	25 53.6 +57.1 89.3	25 37.0 +57.2 88.4
26°	27 40.3 +57.1 91.9	27 23.8 +57.1 90.9	27 07.2 +57.1 90.0	26 50.7 +57.1 89.0	26 34.2 +57.1 88.0
27°	28 37.4 +57.0 91.5	28 20.9 +57.0 90.6	28 04.3 +57.1 89.6	27 47.8 +57.0 88.7	27 31.3 +57.0 87.7
28°	29 34.4 +57.0 91.2	29 17.9 +57.0 90.2	29 01.4 +56.9 89.3	28 44.8 +57.0 88.3	28 28.3 +57.0 87.3
29°	30 31.4 +56.9 90.8	30 14.9 +56.9 89.9	29 58.3 +56.9 88.9	29 41.8 +56.9 87.9	29 25.3 +56.9 87.0

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°	1 22.6 +57.7 94.8	1 06.1 +57.7 93.8	0 49.6 +57.7 92.9	0 33.1 +57.6 91.9	0 16.5 +57.7 91.0
1°	2 20.3 +57.7 94.5	2 03.8 +57.7 93.6	1 47.3 +57.7 92.6	1 30.7 +57.7 91.6	1 14.2 +57.7 90.7
2°	3 18.0 +57.7 94.3	3 01.5 +57.6 93.3	2 45.0 +57.6 92.3	2 28.4 +57.7 91.4	2 11.9 +57.7 90.4
3°	4 15.7 +57.6 94.0	3 59.1 +57.7 93.0	3 42.6 +57.7 92.1	3 26.1 +57.7 91.1	3 09.6 +57.6 90.1
4°	5 13.3 +57.7 93.7	4 56.8 +57.7 92.7	4 40.3 +57.7 91.8	4 23.8 +57.6 90.8	4 07.2 +57.7 89.9
5°	6 11.0 +57.7 93.4	5 54.5 +57.6 92.5	5 38.0 +57.6 91.5	5 21.4 +57.7 90.5	5 04.9 +57.6 89.6
6°	7 08.7 +57.6 93.1	6 52.1 +57.7 92.2	6 35.6 +57.7 91.2	6 19.1 +57.6 90.3	6 02.5 +57.7 89.3
7°	8 06.3 +57.7 92.9	7 49.8 +57.6 91.9	7 33.3 +57.6 90.9	7 16.7 +57.7 90.0	7 00.2 +57.6 89.0
8°	9 04.0 +57.6 92.6	8 47.4 +57.7 91.6	8 30.9 +57.6 90.7	8 14.4 +57.6 89.7	7 57.8 +57.6 88.7
9°	10 01.6 +57.6 92.3	9 45.1 +57.6 91.3	9 28.5 +57.6 90.4	9 12.0 +57.6 89.4	8 55.4 +57.7 88.5
10°	10 59.2 +57.6 92.0	10 42.7 +57.6 91.1	10 26.1 +57.6 90.1	10 09.6 +57.6 89.1	9 53.1 +57.6 88.2
11°	11 56.8 +57.6 91.7	11 40.3 +57.5 90.8	11 23.7 +57.6 89.8	11 07.2 +57.6 88.9	10 50.7 +57.5 87.9
12°	12 54.4 +57.5 91.4	12 37.8 +57.6 90.5	12 21.3 +57.6 89.5	12 04.8 +57.5 88.6	11 48.2 +57.6 87.6
13°	13 51.9 +57.6 91.2	13 35.4 +57.5 90.2	13 18.9 +57.5 89.2	13 02.3 +57.6 88.3	12 45.8 +57.5 87.3
14°	14 49.5 +57.5 90.9	14 32.9 +57.6 89.9	14 16.4 +57.5 88.9	13 59.9 +57.5 88.0	13 43.3 +57.6 87.0
15°	15 47.0 +57.5 90.6	15 30.5 +57.4 89.6	15 13.9 +57.5 88.6	14 57.4 +57.5 87.7	14 40.9 +57.5 86.7
16°	16 44.5 +57.5 90.3	16 27.9 +57.5 89.3	16 11.4 +57.5 88.4	15 54.9 +57.5 87.4	15 38.4 +57.4 86.4
17°	17 42.0 +57.4 90.0	17 25.4 +57.5 89.0	17 08.9 +57.4 88.1	16 52.4 +57.4 87.1	16 35.8 +57.5 86.1
18°	18 39.4 +57.4 89.7	18 22.9 +57.4 88.7	18 06.3 +57.4 87.7	17 49.8 +57.4 86.8	17 33.3 +57.4 85.8
19°	19 36.8 +57.4 89.4	19 20.3 +57.3 88.4	19 03.7 +57.4 87.4	18 47.2 +57.4 86.5	18 30.7 +57.4 85.5
20°	20 34.2 +57.3 89.0	20 17.6 +57.4 88.1	20 01.1 +57.4 87.1	19 44.6 +57.4 86.2	19 28.1 +57.4 85.2
21°	21 31.5 +57.3 88.7	21 15.0 +57.3 87.8	20 58.5 +57.3 86.8	20 42.0 +57.3 85.9	20 25.5 +57.3 84.9
22°	22 28.8 +57.3 88.4	22 12.3 +57.3 87.5	21 55.8 +57.3 86.5	21 39.3 +57.3 85.5	21 22.8 +57.3 84.6
23°	23 26.1 +57.2 88.1	23 09.6 +57.2 87.1	22 53.1 +57.2 86.2	22 36.6 +57.2 85.2	22 20.1 +57.3 84.3
24°	24 23.3 +57.2 87.8	24 06.8 +57.2 86.8	23 50.3 +57.2 85.9	23 33.8 +57.2 84.9	23 17.4 +57.2 84.0
25°	25 20.5 +57.2 87.4	25 04.0 +57.1 86.5	24 47.5 +57.2 85.5	24 31.0 +57.2 84.6	24 14.6 +57.1 83.6
26°	26 17.7 +57.0 87.1	26 01.1 +57.1 86.1	25 44.7 +57.1 85.2	25 28.2 +57.1 84.2	25 11.7 +57.2 83.3
27°	27 14.7 +57.1 86.7	26 58.2 +57.1 85.8	26 41.8 +57.0 84.8	26 25.3 +57.1 83.9	26 08.9 +57.1 82.9
28°	28 11.8 +57.0 86.4	27 55.3 +57.0 85.4	27 38.8 +57.0 84.5	27 22.4 +57.0 83.5	27 06.0 +57.0 82.6
29°	29 08.8 +56.9 86.0	28 52.3 +56.9 85.1	28 35.8 +57.0 84.1	28 19.4 +56.9 83.2	28 03.0 +56.9 82.3

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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 +57.7 90.0	-0 16.5 +57.6	-0 33.1 +57.7	-0 49.6 +57.7	-1 06.1 +57.7
1°	0 57.7 +57.6 89.7	0 41.1 +57.7 88.8	0 24.6 +57.7 87.8	0 08.1 +57.7 86.8	-0 08.4 +57.7
2°	1 55.3 +57.7 89.4	1 38.8 +57.7 88.5	1 22.3 +57.7 87.5	1 05.8 +57.7 86.6	0 49.3 +57.7 85.6
3°	2 53.0 +57.7 89.2	2 36.5 +57.7 88.2	2 20.0 +57.6 87.3	2 03.5 +57.6 86.3	1 47.0 +57.6 85.3
4°	3 50.7 +57.7 88.9	3 34.2 +57.6 87.9	3 17.6 +57.7 87.0	3 01.1 +57.7 86.0	2 44.6 +57.7 85.1
5°	4 48.4 +57.6 88.6	4 31.8 +57.7 87.7	4 15.3 +57.7 86.7	3 58.8 +57.7 85.7	3 42.3 +57.7 84.8
6°	5 46.0 +57.7 88.3	5 29.5 +57.6 87.4	5 13.0 +57.6 86.4	4 56.5 +57.6 85.5	4 40.0 +57.7 84.5
7°	6 43.7 +57.6 88.1	6 27.1 +57.7 87.1	6 10.6 +57.7 86.1	5 54.1 +57.7 85.2	5 37.7 +57.6 84.2
8°	7 41.3 +57.6 87.8	7 24.8 +57.6 86.8	7 08.3 +57.6 85.9	6 51.8 +57.6 84.9	6 35.3 +57.7 83.9
9°	8 38.9 +57.6 87.5	8 22.4 +57.6 86.5	8 05.9 +57.6 85.6	7 49.4 +57.7 84.6	7 33.0 +57.6 83.7
10°	9 36.5 +57.6 87.2	9 20.0 +57.6 86.3	9 03.5 +57.6 85.3	8 47.1 +57.6 84.3	8 30.6 +57.6 83.4
11°	10 34.1 +57.6 86.9	10 17.6 +57.6 86.0	10 01.1 +57.6 85.0	9 44.7 +57.6 84.1	9 28.2 +57.7 83.1
12°	11 31.7 +57.6 86.6	11 15.2 +57.6 85.7	10 58.7 +57.6 84.7	10 42.3 +57.6 83.8	10 25.9 +57.6 82.8
13°	12 29.3 +57.5 86.4	12 12.8 +57.5 85.4	11 56.3 +57.6 84.4	11 39.9 +57.5 83.5	11 23.5 +57.5 82.5
14°	13 26.8 +57.6 86.1	13 10.3 +57.6 85.1	12 53.9 +57.5 84.2	12 37.4 +57.6 83.2	12 21.0 +57.6 82.2
15°	14 24.4 +57.5 85.8	14 07.9 +57.5 84.8	13 51.4 +57.5 83.9	13 35.0 +57.5 82.9	13 18.6 +57.5 82.0
16°	15 21.9 +57.5 85.5	15 05.4 +57.5 84.5	14 48.9 +57.6 83.6	14 32.5 +57.5 82.6	14 16.1 +57.6 81.7
17°	16 19.4 +57.4 85.2	16 02.9 +57.5 84.2	15 46.5 +57.4 83.3	15 30.0 +57.5 82.3	15 13.7 +57.5 81.4
18°	17 16.8 +57.4 84.9	17 00.4 +57.4 83.9	16 43.9 +57.5 83.0	16 27.5 +57.5 82.0	16 11.2 +57.4 81.1
19°	18 14.2 +57.5 84.6	17 57.8 +57.4 83.6	17 41.4 +57.4 82.7	17 25.0 +57.4 81.7	17 08.6 +57.5 80.8
20°	19 11.7 +57.3 84.3	18 55.2 +57.4 83.3	18 38.8 +57.4 82.4	18 22.4 +57.4 81.4	18 06.1 +57.4 80.5
21°	20 09.0 +57.4 84.0	19 52.6 +57.3 83.0	19 36.2 +57.4 82.1	19 19.8 +57.4 81.1	19 03.5 +57.4 80.2
22°	21 06.4 +57.3 83.6	20 49.9 +57.4 82.7	20 33.6 +57.3 81.7	20 17.2 +57.3 80.8	20 00.9 +57.4 79.9
23°	22 03.7 +57.2 83.3	21 47.3 +57.2 82.4	21 30.9 +57.3 81.4	21 14.5 +57.4 80.5	20 58.3 +57.3 79.5
24°	23 00.9 +57.3 83.0	22 44.5 +57.3 82.1	22 28.2 +57.2 81.1	22 11.9 +57.2 80.2	21 55.6 +57.3 79.2
25°	23 58.2 +57.1 82.7	23 41.8 +57.2 81.7	23 25.4 +57.2 80.8	23 09.1 +57.3 79.8	22 52.9 +57.2 78.9
26°	24 55.3 +57.2 82.3	24 39.0 +57.1 81.4	24 22.6 +57.2 80.5	24 06.4 +57.1 79.5	23 50.1 +57.2 78.6
27°	25 52.5 +57.1 82.0	25 36.1 +57.1 81.1	25 19.8 +57.1 80.1	25 03.5 +57.2 79.2	24 47.3 +57.2 78.2
28°	26 49.6 +57.0 81.7	26 33.2 +57.1 80.7	26 16.9 +57.1 79.8	26 00.7 +57.1 79.8	25 44.5 +57.1 77.9
29°	27 46.6 +57.0 81.3	27 30.3 +57.0 80.4	27 14.0 +57.0 79.4	26 57.8 +57.0 78.5	26 41.6 +57.1 77.6

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 22.6 +57.7	-1 39.1 +57.7	-1 55.5 +57.7	-2 11.9 +57.7	-2 28.3 +57.8
1°	-0 24.9 +57.7	-0 41.4 +57.7	-0 57.8 +57.7	-1 14.2 +57.7	-1 30.5 +57.7
2°	0 32.8 +57.7 84.6	0 16.3 +57.7 83.7	-0 00.1 +57.7	-0 16.5 +57.8	-0 32.8 +57.7
3°	1 30.5 +57.7 84.4	1 14.0 +57.7 83.4	0 57.6 +57.7 82.4	0 41.3 +57.7 81.5	0 24.9 +57.8 80.5
4°	2 28.2 +57.7 84.1	2 11.7 +57.7 83.1	1 55.3 +57.7 82.2	1 39.0 +57.7 81.2	1 22.7 +57.7 80.3
5°	3 25.9 +57.6 83.8	3 09.4 +57.7 82.9	2 53.0 +57.7 81.9	2 36.7 +57.7 80.9	2 20.4 +57.7 80.0
6°	4 23.5 +57.7 83.5	4 07.1 +57.7 82.6	3 50.7 +57.7 81.6	3 34.4 +57.7 80.7	3 18.1 +57.7 79.7
7°	5 21.2 +57.7 83.3	5 04.8 +57.7 82.3	4 48.4 +57.7 81.4	4 32.1 +57.7 80.4	4 15.8 +57.8 79.4
8°	6 18.9 +57.7 83.0	6 02.5 +57.7 82.0	5 46.1 +57.7 81.1	5 29.8 +57.7 80.1	5 13.6 +57.7 79.2
9°	7 16.6 +57.6 82.7	7 00.2 +57.6 81.8	6 43.8 +57.7 80.8	6 27.5 +57.7 79.8	6 11.3 +57.7 78.9
10°	8 14.2 +57.6 82.4	7 57.8 +57.7 81.5	7 41.5 +57.7 80.5	7 25.2 +57.7 79.6	7 09.0 +57.7 78.6
11°	9 11.8 +57.7 82.1	8 55.5 +57.6 81.2	8 39.2 +57.6 80.2	8 22.9 +57.6 79.3	8 06.7 +57.6 78.3
12°	10 09.5 +57.6 81.9	9 53.1 +57.6 80.9	9 36.8 +57.6 80.0	9 20.5 +57.7 79.0	9 04.3 +57.7 78.1
13°	11 07.1 +57.6 81.6	10 50.7 +57.6 80.6	10 34.4 +57.7 79.7	10 18.2 +57.6 78.7	10 02.0 +57.7 77.8
14°	12 04.7 +57.5 81.3	11 48.3 +57.6 80.3	11 32.1 +57.6 79.4	11 15.8 +57.7 78.4	10 59.7 +57.6 77.5
15°	13 02.2 +57.6 81.0	12 45.9 +57.6 80.1	12 29.7 +57.6 79.1	12 13.5 +57.6 78.2	11 57.3 +57.6 77.2
16°	13 59.8 +57.5 80.7	13 43.5 +57.6 79.8	13 27.3 +57.5 78.8	13 11.1 +57.5 77.9	12 54.9 +57.6 76.9
17°	14 57.3 +57.6 80.4	14 41.1 +57.5 79.5	14 24.8 +57.6 78.5	14 08.6 +57.6 77.6	13 52.5 +57.6 76.6
18°	15 54.9 +57.4 80.1	15 38.6 +57.5 79.2	15 22.4 +57.5 78.2	15 06.2 +57.5 77.3	14 50.1 +57.6 76.3
19°	16 52.3 +57.5 79.8	16 36.1 +57.5 78.9	16 19.9 +57.5 77.9	16 03.7 +57.6 77.0	15 47.7 +57.5 76.1
20°	17 49.8 +57.4 79.5	17 33.6 +57.4 78.6	17 17.4 +57.5 77.6	17 01.3 +57.5 76.7	16 45.2 +57.5 75.8
21°	18 47.2 +57.4 79.2	18 31.0 +57.4 78.3	18 14.9 +57.4 77.3	17 58.8 +57.4 76.4	17 42.7 +57.5 75.5
22°	19 44.6 +57.4 78.9	19 28.4 +57.4 78.0	19 12.3 +57.4 77.0	18 56.2 +57.4 76.1	18 40.2 +57.4 75.2
23°	20 42.0 +57.4 78.6	20 25.8 +57.4 77.7	20 09.7 +57.4 76.7	19 53.6 +57.4 75.8	19 37.6 +57.5 74.9
24°	21 39.4 +57.3 78.3	21 23.2 +57.3 77.4	21 07.1 +57.3 76.4	20 51.0 +57.4 75.5	20 35.1 +57.4 74.5
25°	22 36.7 +57.2 78.0	22 20.5 +57.3 77.0	22 04.4 +57.3 76.1	21 48.4 +57.3 75.2	21 32.5 +57.3 74.2
26°	23 33.9 +57.3 77.6	23 17.8 +57.2 76.7	23 01.7 +57.3 75.8	22 45.7 +57.3 74.8	22 29.8 +57.3 73.9
27°	24 31.2 +57.1 77.3	24 15.0 +57.3 76.4	23 59.0 +57.2 75.5	23 43.0 +57.3 74.5	23 27.1 +57.3 73.6
28°	25 28.3 +57.2 77.0	25 12.3 +57.1 76.1	24 56.2 +57.2 75.1	24 40.3 +57.2 74.2	24 24.4 +57.2 73.3
29°	26 25.5 +57.1 76.6	26 09.4 +57.1 75.7	25 53.4 +57.2 74.8	25 37.5 +57.2 73.9	25 21.6 +57.2 72.9

Declination SAME name as Latitude

Latitude 74°

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°	-2 44.6 +57.7	-3 00.9 +57.8	-3 17.1 +57.8	-3 33.3 +57.8	-3 49.4 +57.8
1°	-1 46.9 +57.8	-2 03.1 +57.7	-2 19.3 +57.7	-2 35.5 +57.8	-2 51.6 +57.8
2°	-0 49.1 +57.7	-1 05.4 +57.8	-1 21.6 +57.8	-1 37.7 +57.8	-1 53.8 +57.8
3°	0 08.6 +57.8 79.6	-0 07.6 +57.8	-0 23.8 +57.8	-0 39.9 +57.8	-0 56.0 +57.8
4°	1 06.4 +57.7 79.3	0 50.2 +57.7 78.3	0 34.0 +57.8 77.4	0 17.9 +57.8 76.4	0 01.8 +57.8 75.5
5°	2 04.1 +57.8 79.0	1 47.9 +57.8 78.1	1 31.8 +57.7 77.1	1 15.7 +57.8 76.1	0 59.6 +57.9 75.2
6°	3 01.9 +57.7 78.7	2 45.7 +57.7 77.8	2 29.5 +57.8 76.8	2 13.5 +57.8 75.9	1 57.5 +57.8 74.9
7°	3 59.6 +57.7 78.5	3 43.4 +57.8 77.5	3 27.3 +57.8 76.6	3 11.3 +57.7 75.6	2 55.3 +57.8 74.6
8°	4 57.3 +57.8 78.2	4 41.2 +57.7 77.2	4 25.1 +57.7 76.3	4 09.0 +57.8 75.3	3 53.1 +57.8 74.4
9°	5 55.1 +57.7 77.9	5 38.9 +57.8 77.0	5 22.8 +57.8 76.0	5 06.8 +57.8 75.1	4 50.9 +57.8 74.1
10°	6 52.8 +57.7 77.7	6 36.7 +57.7 76.7	6 20.6 +57.7 75.7	6 04.6 +57.8 74.8	5 48.7 +57.8 73.8
11°	7 50.5 +57.7 77.4	7 34.4 +57.7 76.4	7 18.3 +57.8 75.5	7 02.4 +57.7 74.5	6 46.5 +57.7 73.6
12°	8 48.2 +57.7 77.1	8 32.1 +57.7 76.2	8 16.1 +57.7 75.2	8 00.1 +57.8 74.2	7 44.2 +57.8 73.3
13°	9 45.9 +57.6 76.8	9 29.8 +57.7 75.9	9 13.8 +57.7 74.9	8 57.9 +57.7 74.0	8 42.0 +57.8 73.0
14°	10 43.5 +57.7 76.5	10 27.5 +57.7 75.6	10 11.5 +57.7 74.6	9 55.6 +57.7 73.7	9 39.8 +57.7 72.8
15°	11 41.2 +57.6 76.3	11 25.2 +57.6 75.3	11 09.2 +57.7 74.4	10 53.3 +57.7 73.4	10 37.5 +57.7 72.5
16°	12 38.8 +57.7 76.0	12 22.8 +57.7 75.0	12 06.9 +57.7 74.1	11 51.0 +57.7 73.1	11 35.2 +57.7 72.2
17°	13 36.5 +57.6 75.7	13 20.5 +57.6 74.7	13 04.6 +57.6 73.8	12 48.7 +57.7 72.9	12 32.9 +57.7 71.9
18°	14 34.1 +57.5 75.4	14 18.1 +57.6 74.5	14 02.2 +57.6 73.5	13 46.4 +57.6 72.6	13 30.6 +57.7 71.6
19°	15 31.6 +57.6 75.1	15 15.7 +57.6 74.2	14 59.8 +57.6 73.2	14 44.0 +57.7 72.3	14 28.3 +57.7 71.4
20°	16 29.2 +57.5 74.8	16 13.3 +57.5 73.9	15 57.4 +57.6 72.9	15 41.7 +57.6 72.0	15 26.0 +57.6 71.1
21°	17 26.7 +57.5 74.5	17 10.8 +57.6 73.6	16 55.0 +57.6 72.6	16 39.3 +57.5 71.7	16 23.6 +57.6 70.8
22°	18 24.2 +57.5 74.2	18 08.4 +57.5 73.3	17 52.6 +57.5 72.4	17 36.8 +57.6 71.4	17 21.2 +57.6 70.5
23°	19 21.7 +57.5 73.9	19 05.9 +57.4 73.0	18 50.1 +57.5 72.1	18 34.4 +57.5 71.1	18 18.8 +57.6 70.2
24°	20 19.2 +57.4 73.6	20 03.3 +57.5 72.7	19 47.6 +57.5 71.7	19 31.9 +57.5 70.8	19 16.4 +57.5 69.9
25°	21 16.6 +57.4 73.3	21 00.8 +57.4 72.4	20 45.1 +57.4 71.4	20 29.4 +57.5 70.5	20 13.9 +57.5 69.6
26°	22 14.0 +57.3 73.0	21 58.2 +57.4 72.1	21 42.5 +57.4 71.1	21 26.9 +57.4 70.2	21 11.4 +57.4 69.3
27°	23 11.3 +57.3 72.7	22 55.6 +57.3 71.7	22 39.9 +57.4 70.8	22 24.3 +57.4 69.9	22 08.8 +57.5 69.0
28°	24 08.6 +57.3 72.3	23 52.9 +57.3 71.4	23 37.3 +57.3 70.5	23 21.7 +57.4 69.6	23 06.3 +57.4 68.7
29°	25 05.9 +57.2 72.0	24 50.2 +57.2 71.1	24 34.6 +57.3 70.2	24 19.1 +57.3 69.3	24 03.7 +57.3 68.3

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°	-4 05.5 +57.9	-4 21.4 +57.8	-4 37.3 +57.8	-4 53.2 +57.9	-5 08.9 +57.9
1°	-3 07.6 +57.8	-3 23.6 +57.9	-3 39.5 +57.9	-3 55.3 +57.9	-4 11.0 +57.9
2°	-2 09.8 +57.8	-2 25.7 +57.8	-2 41.6 +57.9	-2 57.4 +57.9	-3 13.1 +57.9
3°	-1 12.0 +57.9	-1 27.9 +57.9	-1 43.7 +57.8	-1 59.5 +57.9	-2 15.2 +58.0
4°	-0 14.1 +57.8	-0 30.0 +57.8	-0 45.9 +57.9	-1 01.6 +57.9	-1 17.2 +57.9
5°	0 43.7 +57.8 74.2	0 27.8 +57.9 73.3	0 12.0 +57.9 72.3	-0 03.7 +57.9	-0 19.3 +57.9
6°	1 41.5 +57.9 74.0	1 25.7 +57.8 73.0	1 09.9 +57.9 72.0	0 54.2 +57.9 71.1	0 38.6 +57.9 70.1
7°	2 39.4 +57.8 73.7	2 23.5 +57.9 72.7	2 07.8 +57.9 71.8	1 52.1 +57.9 70.8	1 36.5 +58.0 69.9
8°	3 37.2 +57.8 73.4	3 21.4 +57.8 72.5	3 05.7 +57.8 71.5	2 50.0 +57.9 70.6	2 34.5 +57.9 69.6
9°	4 35.0 +57.8 73.2	4 19.2 +57.9 72.2	4 03.5 +57.9 71.2	3 47.9 +57.9 70.3	3 32.4 +57.9 69.3
10°	5 32.8 +57.8 72.9	5 17.1 +57.8 71.9	5 01.4 +57.8 71.0	4 45.8 +57.9 70.0	4 30.3 +57.9 69.1
11°	6 30.6 +57.8 72.6	6 14.9 +57.8 71.7	5 59.2 +57.9 70.7	5 43.7 +57.9 69.8	5 28.2 +57.9 68.8
12°	7 28.4 +57.8 72.3	7 12.7 +57.8 71.4	6 57.1 +57.8 70.4	6 41.6 +57.8 69.5	6 26.1 +57.9 68.5
13°	8 26.2 +57.8 72.1	8 10.5 +57.8 71.1	7 54.9 +57.9 70.2	7 39.4 +57.9 69.2	7 24.0 +57.9 68.3
14°	9 24.0 +57.8 71.8	9 08.3 +57.8 70.9	8 52.8 +57.8 69.9	8 37.3 +57.8 69.0	8 21.9 +57.9 68.0
15°	10 21.8 +57.7 71.5	10 06.1 +57.8 70.6	9 50.6 +57.8 69.6	9 35.1 +57.9 68.7	9 19.8 +57.8 67.8
16°	11 19.5 +57.8 71.3	11 03.9 +57.8 70.3	10 48.4 +57.8 69.4	10 33.0 +57.8 68.4	10 17.6 +57.9 67.5
17°	12 17.3 +57.7 71.0	12 01.7 +57.7 70.0	11 46.2 +57.8 69.1	11 30.8 +57.8 68.2	11 15.5 +57.8 67.2
18°	13 15.0 +57.7 70.7	12 59.4 +57.8 69.8	12 44.0 +57.7 68.8	12 28.6 +57.8 67.9	12 13.3 +57.8 66.9
19°	14 12.7 +57.7 70.4	13 57.2 +57.7 69.5	13 41.7 +57.8 68.5	13 26.4 +57.7 67.6	13 11.1 +57.8 66.7
20°	15 10.4 +57.6 70.1	14 54.9 +57.7 69.2	14 39.5 +57.7 68.3	14 24.1 +57.8 67.3	14 08.9 +57.8 66.4
21°	16 08.0 +57.7 69.8	15 52.6 +57.6 68.9	15 37.2 +57.7 68.0	15 21.9 +57.7 67.0	15 06.7 +57.8 66.1
22°	17 05.7 +57.6 69.6	16 50.2 +57.7 68.6	16 34.9 +57.6 67.7	16 19.6 +57.7 66.8	16 04.5 +57.7 65.8
23°	18 03.3 +57.6 69.3	17 47.9 +57.6 68.3	17 32.5 +57.7 67.4	17 17.3 +57.7 66.5	17 02.2 +57.7 65.5
24°	19 00.9 +57.5 69.0	18 45.5 +57.6 68.0	18 30.2 +57.6 67.1	18 15.0 +57.7 66.2	17 59.9 +57.7 65.3
25°	19 58.4 +57.6 68.7	19 43.1 +57.5 67.7	19 27.8 +57.6 66.8	19 12.7 +57.6 65.9	18 57.6 +57.7 65.0
26°	20 56.0 +57.4 68.4	20 40.6 +57.6 67.4	20 25.4 +57.6 66.5	20 10.3 +57.6 65.6	19 55.3 +57.6 64.7
27°	21 53.4 +57.5 68.1	21 38.2 +57.5 67.1	21 23.0 +57.5 66.2	21 07.9 +57.6 65.3	20 52.9 +57.6 64.4
28°	22 50.9 +57.4 67.7	22 35.7 +57.4 66.8	22 20.5 +57.5 65.9	22 05.5 +57.5 65.0	21 50.5 +57.6 64.1
29°	23 48.3 +57.4 67.4	23 33.1 +57.4 66.5	23 18.0 +57.5 65.6	23 03.0 +57.5 64.7	22 48.1 +57.5 63.8

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Latitude 74°

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°	-5 24.6 +58.0	-5 40.1 +57.9	-5 55.6 +58.0	-6 11.0 +58.1	-6 26.2 +58.0
1°	-4 26.6 +57.9	-4 42.2 +58.0	-4 57.6 +58.0	-5 12.9 +58.0	-5 28.2 +58.1
2°	-3 28.7 +58.0	-3 44.2 +58.0	-3 59.6 +58.0	-4 14.9 +58.0	-4 30.1 +58.0
3°	-2 30.7 +57.9	-2 46.2 +57.9	-3 01.6 +58.0	-3 16.9 +58.0	-3 32.1 +58.1
4°	-1 32.8 +58.0	-1 48.3 +58.0	-2 03.6 +58.0	-2 18.9 +58.1	-2 34.0 +58.1
5°	-0 34.8 +57.9	-0 50.3 +58.0	-1 05.6 +58.0	-1 20.8 +58.0	-1 35.9 +58.0
6°	0 23.1 +58.0 69.2	0 07.7 +58.0 68.2	-0 07.6 +58.0	-0 22.8 +58.0	-0 37.9 +58.1
7°	1 21.1 +57.9 68.9	1 05.7 +58.0 67.9	0 50.4 +58.0 67.0	0 35.2 +58.1 66.0	0 20.2 +58.1 65.1
8°	2 19.0 +58.0 68.6	2 03.7 +57.9 67.7	1 48.4 +58.0 66.7	1 33.3 +58.0 65.8	1 18.3 +58.0 64.8
9°	3 17.0 +57.9 68.4	3 01.6 +58.0 67.4	2 46.4 +58.0 66.5	2 31.3 +58.0 65.5	2 16.3 +58.1 64.6
10°	4 14.9 +57.9 68.1	3 59.6 +58.0 67.2	3 44.4 +58.0 66.2	3 29.3 +58.1 65.3	3 14.4 +58.0 64.3
11°	5 12.8 +58.0 67.9	4 57.6 +57.9 66.9	4 42.4 +58.0 66.0	4 27.4 +58.0 65.0	4 12.4 +58.1 64.1
12°	6 10.8 +57.9 67.6	5 55.5 +58.0 66.6	5 40.4 +58.0 65.7	5 25.4 +58.0 64.7	5 10.5 +58.0 63.8
13°	7 08.7 +57.9 67.3	6 53.5 +57.9 66.4	6 38.4 +58.0 65.4	6 23.4 +58.0 64.5	6 08.5 +58.1 63.5
14°	8 06.6 +57.9 67.1	7 51.4 +58.0 66.1	7 36.4 +57.9 65.2	7 21.4 +58.0 64.2	7 06.6 +58.0 63.3
15°	9 04.5 +57.9 66.8	8 49.4 +57.9 65.9	8 34.3 +58.0 64.9	8 19.4 +58.0 64.0	8 04.6 +58.0 63.0
16°	10 02.4 +57.9 66.5	9 47.3 +57.9 65.6	9 32.3 +57.9 64.7	9 17.4 +58.0 63.7	9 02.6 +58.0 62.8
17°	11 00.3 +57.9 66.3	10 45.2 +57.9 65.3	10 30.2 +58.0 64.4	10 15.4 +57.9 63.5	10 00.6 +58.0 62.5
18°	11 58.2 +57.8 66.0	11 43.1 +57.9 65.1	11 28.2 +57.9 64.1	11 13.3 +58.0 63.2	10 58.6 +58.0 62.3
19°	12 56.0 +57.8 65.7	12 41.0 +57.9 64.8	12 26.1 +57.9 63.9	12 11.3 +57.9 62.9	11 56.6 +58.0 62.0
20°	13 53.8 +57.9 65.5	13 38.9 +57.8 64.5	13 24.0 +57.9 63.6	13 09.2 +57.9 62.7	12 54.6 +58.0 61.7
21°	14 51.7 +57.8 65.2	14 36.7 +57.8 64.3	14 21.9 +57.8 63.3	14 07.1 +57.9 62.4	13 52.6 +57.9 61.5
22°	15 49.5 +57.7 64.9	15 34.5 +57.8 64.0	15 19.7 +57.9 63.0	15 05.0 +57.9 62.1	14 50.5 +57.9 61.2
23°	16 47.2 +57.8 64.6	16 32.3 +57.8 63.7	16 17.6 +57.8 62.8	16 02.9 +57.9 61.8	15 48.4 +57.9 60.9
24°	17 45.0 +57.7 64.3	17 30.1 +57.8 63.4	17 15.4 +57.8 62.5	17 00.8 +57.8 61.6	16 46.3 +57.9 60.7
25°	18 42.7 +57.7 64.1	18 27.9 +57.7 63.1	18 13.2 +57.8 62.2	17 58.6 +57.8 61.3	17 44.2 +57.8 60.4
26°	19 40.4 +57.7 63.8	19 25.6 +57.7 62.8	19 11.0 +57.7 61.9	18 56.4 +57.8 61.0	18 42.0 +57.9 60.1
27°	20 38.1 +57.6 63.5	20 23.3 +57.7 62.6	20 08.7 +57.7 61.6	19 54.2 +57.8 60.7	19 39.9 +57.8 59.8
28°	21 35.7 +57.6 63.2	21 21.0 +57.7 62.3	21 06.4 +57.7 61.3	20 52.0 +57.7 60.4	20 37.7 +57.7 59.5
29°	22 33.3 +57.6 62.9	22 18.7 +57.6 62.0	22 04.1 +57.7 61.1	21 49.7 +57.7 60.1	21 35.4 +57.8 59.2

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°	-6 41.4 +58.1	-6 56.4 +58.1	-7 11.3 +58.1	-7 26.1 +58.2	-7 40.8 +58.2
1°	-5 43.3 +58.1	-5 58.3 +58.1	-6 13.2 +58.2	-6 27.9 +58.1	-6 42.6 +58.2
2°	-4 45.2 +58.1	-5 00.2 +58.1	-5 15.0 +58.1	-5 29.8 +58.2	-5 44.4 +58.3
3°	-3 47.1 +58.1	-4 02.1 +58.2	-4 16.9 +58.2	-4 31.6 +58.2	-4 46.1 +58.2
4°	-2 49.0 +58.1	-3 03.9 +58.1	-3 18.7 +58.1	-3 33.4 +58.2	-3 47.9 +58.2
5°	-1 50.9 +58.1	-2 05.8 +58.1	-2 20.6 +58.2	-2 35.2 +58.2	-2 49.7 +58.2
6°	-0 52.8 +58.1	-1 07.7 +58.1	-1 22.4 +58.1	-1 37.0 +58.2	-1 51.5 +58.3
7°	0 05.3 +58.0 64.1	-0 09.6 +58.2	-0 24.3 +58.2	-0 38.8 +58.2	-0 53.2 +58.2
8°	1 03.3 +58.1 63.8	0 48.6 +58.1 62.9	0 33.9 +58.2 61.9	0 19.4 +58.2 61.0	0 05.0 +58.2 60.0
9°	2 01.4 +58.1 63.6	1 46.7 +58.1 62.6	1 32.1 +58.1 61.7	1 17.6 +58.2 60.7	1 03.2 +58.2 59.8
10°	2 59.5 +58.1 63.3	2 44.8 +58.1 62.4	2 30.2 +58.2 61.4	2 15.8 +58.2 60.5	2 01.4 +58.3 59.5
11°	3 57.6 +58.1 63.1	3 42.9 +58.2 62.1	3 28.4 +58.1 61.2	3 14.0 +58.1 60.2	2 59.7 +58.2 59.3
12°	4 55.7 +58.1 62.8	4 41.1 +58.1 61.9	4 26.5 +58.2 60.9	4 12.1 +58.2 60.0	3 57.9 +58.2 59.0
13°	5 53.8 +58.1 62.6	5 39.2 +58.1 61.6	5 24.7 +58.1 60.7	5 10.3 +58.2 59.7	4 56.1 +58.2 58.8
14°	6 51.9 +58.0 62.3	6 37.3 +58.1 61.4	6 22.8 +58.2 60.5	6 08.5 +58.2 59.5	5 54.3 +58.2 58.6
15°	7 49.9 +58.1 62.1	7 35.4 +58.1 61.1	7 21.0 +58.1 60.2	7 06.7 +58.1 59.3	6 52.5 +58.2 58.3
16°	8 48.0 +58.0 61.8	8 33.5 +58.1 60.9	8 19.1 +58.1 60.0	8 04.8 +58.2 59.0	7 50.7 +58.2 58.1
17°	9 46.0 +58.1 61.6	9 31.6 +58.0 60.6	9 17.2 +58.1 59.7	9 03.0 +58.1 58.8	8 48.9 +58.2 57.8
18°	10 44.1 +58.0 61.3	10 29.6 +58.1 60.4	10 15.3 +58.1 59.4	10 01.1 +58.2 58.5	9 47.1 +58.2 57.6
19°	11 42.1 +58.0 61.1	11 27.7 +58.0 60.1	11 13.4 +58.1 59.2	10 59.3 +58.1 58.3	10 45.3 +58.1 57.3
20°	12 40.1 +58.0 60.8	12 25.7 +58.1 59.9	12 11.5 +58.1 58.9	11 57.4 +58.1 58.0	11 43.4 +58.2 57.1
21°	13 38.1 +58.0 60.5	13 23.8 +58.0 59.6	13 09.6 +58.0 58.7	12 55.5 +58.1 57.8	12 41.6 +58.1 56.8
22°	14 36.1 +57.9 60.3	14 21.8 +58.0 59.3	14 07.6 +58.0 58.4	13 53.6 +58.1 57.5	13 39.7 +58.1 56.6
23°	15 34.0 +58.0 60.0	15 19.8 +57.9 59.1	15 05.6 +58.1 58.2	14 51.7 +58.0 57.2	14 37.8 +58.1 56.3
24°	16 32.0 +57.9 59.7	16 17.7 +58.0 58.8	16 03.7 +58.0 57.9	15 49.7 +58.1 57.0	15 35.9 +58.1 56.1
25°	17 29.9 +57.9 59.5	17 15.7 +57.9 58.5	17 01.7 +57.9 57.6	16 47.8 +58.0 56.7	16 34.0 +58.1 55.8
26°	18 27.8 +57.8 59.2	18 13.6 +57.9 58.3	17 59.6 +58.0 57.4	17 45.8 +58.0 56.4	17 32.1 +58.0 55.5
27°	19 25.6 +57.9 58.9	19 11.5 +57.9 58.0	18 57.6 +57.9 57.1	18 43.8 +58.0 56.2	18 30.1 +58.0 55.3
28°	20 23.5 +57.8 58.6	20 09.4 +57.9 57.7	19 55.5 +57.9 56.8	19 41.8 +57.9 55.9	19 28.1 +58.0 55.0
29°	21 21.3 +57.8 58.3	21 07.3 +57.8 57.4	20 53.4 +57.9 56.5	20 39.7 +57.9 55.6	20 26.1 +58.0 54.7

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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°	-7 55.3 +58.2	-8 09.7 +58.3	-8 23.9 +58.3	-8 38.0 +58.3	-8 52.0 +58.4
1°	-6 57.1 +58.3	-7 11.4 +58.3	-7 25.6 +58.3	-7 39.7 +58.3	-7 53.6 +58.4
2°	-5 58.8 +58.2	-6 13.1 +58.2	-6 27.3 +58.3	-6 41.4 +58.4	-6 55.2 +58.4
3°	-5 00.6 +58.3	-5 14.9 +58.3	-5 29.0 +58.3	-5 43.0 +58.4	-5 56.8 +58.4
4°	-4 02.3 +58.2	-4 16.6 +58.3	-4 30.7 +58.4	-4 44.6 +58.3	-4 58.4 +58.4
5°	-3 04.1 +58.3	-3 18.3 +58.3	-3 32.3 +58.3	-3 46.3 +58.4	-4 00.0 +58.4
6°	-2 05.8 +58.3	-2 20.0 +58.3	-2 34.0 +58.3	-2 47.9 +58.4	-3 01.6 +58.4
7°	-1 07.5 +58.2	-1 21.7 +58.3	-1 35.7 +58.4	-1 49.5 +58.3	-2 03.2 +58.4
8°	-0 09.3 +58.3	-0 23.4 +58.3	-0 37.3 +58.3	-0 51.2 +58.4	-1 04.8 +58.4
9°	0 49.0 +58.3 58.8	0 34.9 +58.3 57.8	0 21.0 +58.3 56.9	0 07.2 +58.4 55.9	-0 06.4 +58.4
10°	1 47.3 +58.2 58.6	1 33.2 +58.3 57.6	1 19.3 +58.4 56.7	1 05.6 +58.4 55.7	0 52.0 +58.4 54.7
11°	2 45.5 +58.3 58.3	2 31.5 +58.3 57.4	2 17.7 +58.3 56.4	2 04.0 +58.3 55.5	1 50.4 +58.4 54.5
12°	3 43.8 +58.2 58.1	3 29.8 +58.3 57.1	3 16.0 +58.3 56.2	3 02.3 +58.4 55.2	2 48.8 +58.4 54.3
13°	4 42.0 +58.3 57.9	4 28.1 +58.3 56.9	4 14.3 +58.4 56.0	4 00.7 +58.4 55.0	3 47.2 +58.4 54.1
14°	5 40.3 +58.2 57.6	5 26.4 +58.3 56.7	5 12.7 +58.3 55.7	4 59.1 +58.3 54.8	4 45.6 +58.4 53.8
15°	6 38.5 +58.3 57.4	6 24.7 +58.3 56.4	6 11.0 +58.3 55.5	5 57.4 +58.4 54.5	5 44.0 +58.4 53.6
16°	7 36.8 +58.2 57.1	7 23.0 +58.2 56.2	7 09.3 +58.3 55.2	6 55.8 +58.3 54.3	6 42.4 +58.4 53.4
17°	8 35.0 +58.2 56.9	8 21.2 +58.3 55.9	8 07.6 +58.3 55.0	7 54.1 +58.4 54.1	7 40.8 +58.4 53.1
18°	9 33.2 +58.2 56.6	9 19.5 +58.2 55.7	9 05.9 +58.3 54.8	8 52.5 +58.3 53.8	8 39.2 +58.4 52.9
19°	10 31.4 +58.2 56.4	10 17.7 +58.3 55.5	10 04.2 +58.3 54.5	9 50.8 +58.3 53.6	9 37.6 +58.3 52.7
20°	11 29.6 +58.2 56.1	11 16.0 +58.2 55.2	11 02.5 +58.2 54.3	10 49.1 +58.3 53.4	10 35.9 +58.4 52.4
21°	12 27.8 +58.2 55.9	12 14.2 +58.2 55.0	12 00.7 +58.3 54.0	11 47.4 +58.3 53.1	11 34.3 +58.3 52.2
22°	13 26.0 +58.1 55.6	13 12.4 +58.2 54.7	12 59.0 +58.2 53.8	12 45.7 +58.3 52.9	12 32.6 +58.3 51.9
23°	14 24.1 +58.2 55.4	14 10.6 +58.2 54.5	13 57.2 +58.3 53.5	13 44.0 +58.3 52.6	13 30.9 +58.4 51.7
24°	15 22.3 +58.1 55.1	15 08.8 +58.2 54.2	14 55.5 +58.2 53.3	14 42.3 +58.2 52.4	14 29.3 +58.3 51.5
25°	16 20.4 +58.1 54.9	16 07.0 +58.1 54.0	15 53.7 +58.2 53.0	15 40.5 +58.3 52.1	15 27.6 +58.2 51.2
26°	17 18.5 +58.1 54.6	17 05.1 +58.1 53.7	16 51.9 +58.1 52.8	16 38.8 +58.2 51.9	16 25.8 +58.3 51.0
27°	18 16.6 +58.1 54.4	18 03.2 +58.1 53.4	17 50.0 +58.2 52.5	17 37.0 +58.2 51.6	17 24.1 +58.2 50.7
28°	19 14.7 +58.0 54.1	19 01.3 +58.1 53.2	18 48.2 +58.1 52.3	18 35.2 +58.2 51.4	18 22.3 +58.3 50.5
29°	20 12.7 +58.0 53.8	19 59.4 +58.1 52.9	19 46.3 +58.1 52.0	19 33.4 +58.1 51.1	19 20.6 +58.2 50.2

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°	-9 05.8 +58.4	-9 19.4 +58.4	-9 32.9 +58.5	-9 46.2 +58.5	-9 59.4 +58.6
1°	-8 07.4 +58.4	-8 21.0 +58.5	-8 34.4 +58.5	-8 47.7 +58.5	-9 00.8 +58.6
2°	-7 09.0 +58.5	-7 22.5 +58.4	-7 35.9 +58.5	-7 49.2 +58.6	-8 02.2 +58.6
3°	-6 10.5 +58.4	-6 24.1 +58.5	-6 37.4 +58.5	-6 50.6 +58.5	-7 03.6 +58.6
4°	-5 12.1 +58.4	-5 25.6 +58.5	-5 38.9 +58.5	-5 52.1 +58.6	-6 05.0 +58.6
5°	-4 13.7 +58.5	-4 27.1 +58.5	-4 40.4 +58.5	-4 53.5 +58.6	-5 06.4 +58.5
6°	-3 15.2 +58.4	-3 28.6 +58.5	-3 41.9 +58.6	-3 54.9 +58.5	-4 07.9 +58.6
7°	-2 16.8 +58.5	-2 30.1 +58.4	-2 43.3 +58.5	-2 56.4 +58.6	-3 09.3 +58.7
8°	-1 18.3 +58.4	-1 31.7 +58.5	-1 44.8 +58.5	-1 57.8 +58.5	-2 10.6 +58.6
9°	-0 19.9 +58.5	-0 33.2 +58.5	-0 46.3 +58.5	-0 59.3 +58.6	-1 12.0 +58.6
10°	0 38.6 +58.4 53.8	0 25.3 +58.5 52.8	0 12.2 +58.6 51.9	-0 00.7 +58.6	-0 13.4 +58.6
11°	1 37.0 +58.5 53.6	1 23.8 +58.5 52.6	1 10.8 +58.5 51.6	0 57.9 +58.5 50.7	0 45.2 +58.6 49.7
12°	2 35.5 +58.4 53.3	2 22.3 +58.5 52.4	2 09.3 +58.5 51.4	1 56.4 +58.6 50.5	1 43.8 +58.6 49.5
13°	3 33.9 +58.5 53.1	3 20.8 +58.5 52.2	3 07.8 +58.5 51.2	2 55.0 +58.6 50.2	2 42.4 +58.6 49.3
14°	4 32.4 +58.4 52.9	4 19.3 +58.4 51.9	4 06.3 +58.6 51.0	3 53.6 +58.5 50.0	3 41.0 +58.6 49.1
15°	5 30.8 +58.4 52.6	5 17.7 +58.5 51.7	5 04.9 +58.5 50.8	4 52.1 +58.6 49.8	4 39.6 +58.6 48.9
16°	6 29.2 +58.5 52.4	6 16.2 +58.5 51.5	6 03.4 +58.5 50.5	5 50.7 +58.5 49.6	5 38.2 +58.6 48.6
17°	7 27.7 +58.4 52.2	7 14.7 +58.5 51.3	7 01.9 +58.5 50.3	6 49.2 +58.6 49.4	6 36.8 +58.6 48.4
18°	8 26.1 +58.4 52.0	8 13.2 +58.4 51.0	8 00.4 +58.5 50.1	7 47.8 +58.5 49.2	7 35.4 +58.5 48.2
19°	9 24.5 +58.4 51.7	9 11.6 +58.4 50.8	8 58.9 +58.5 49.9	8 46.3 +58.5 48.9	8 33.9 +58.6 48.0
20°	10 22.9 +58.4 51.5	10 10.0 +58.5 50.6	9 57.4 +58.4 49.6	9 44.8 +58.6 48.7	9 32.5 +58.6 47.8
21°	11 21.3 +58.4 51.3	11 08.5 +58.4 50.3	10 55.8 +58.5 49.4	10 43.4 +58.5 48.5	10 31.1 +58.5 47.6
22°	12 19.7 +58.3 51.0	12 06.9 +58.4 50.1	11 54.3 +58.5 49.2	11 41.9 +58.5 48.3	11 29.6 +58.6 47.3
23°	13 18.0 +58.4 50.8	13 05.3 +58.4 49.9	12 52.8 +58.4 48.9	12 40.4 +58.5 48.0	12 28.2 +58.5 47.1
24°	14 16.4 +58.3 50.5	14 03.7 +58.4 49.6	13 51.2 +58.4 48.7	13 38.9 +58.4 47.8	13 26.7 +58.5 46.9
25°	15 14.7 +58.4 50.3	15 02.1 +58.4 49.4	14 49.6 +58.5 48.5	14 37.3 +58.5 47.6	14 25.2 +58.5 46.7
26°	16 13.1 +58.3 50.1	16 00.5 +58.3 49.2	15 48.1 +58.4 48.2	15 35.8 +58.5 47.3	15 23.7 +58.5 46.4
27°	17 11.4 +58.3 49.8	16 58.8 +58.4 48.9	16 46.5 +58.3 48.0	16 34.3 +58.4 47.1	16 22.2 +58.5 46.2
28°	18 09.7 +58.2 49.6	17 57.2 +58.3 48.7	17 44.8 +58.4 47.8	17 32.7 +58.4 46.9	17 20.7 +58.5 46.0
29°	19 07.9 +58.3 49.3	18 55.5 +58.3 48.4	18 43.2 +58.4 47.5	18 31.1 +58.4 46.6	18 19.2 +58.4 45.7

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°	-9 13.7 +58.6	-9 26.5 +58.7	-9 39.0 +58.7	-9 51.4 +58.8	
2°	-8 15.1 +58.6	-8 27.8 +58.7	-8 40.3 +58.7	-8 52.6 +58.7	-9 04.8 +58.8
3°	-7 16.5 +58.7	-7 29.1 +58.6	-7 41.6 +58.7	-7 53.9 +58.7	-8 06.0 +58.8
4°	-6 17.8 +58.6	-6 30.5 +58.7	-6 42.9 +58.7	-6 55.2 +58.8	-7 07.2 +58.8
5°	-5 19.2 +58.6	-5 31.8 +58.7	-5 44.2 +58.7	-5 56.4 +58.7	-6 08.4 +58.8
6°	-4 20.6 +58.7	-4 33.1 +58.7	-4 45.5 +58.7	-4 57.7 +58.8	-5 09.6 +58.8
7°	-3 21.9 +58.6	-3 34.4 +58.6	-3 46.8 +58.8	-3 58.9 +58.8	-4 10.8 +58.8
8°	-2 23.3 +58.7	-2 35.8 +58.7	-2 48.0 +58.7	-3 00.1 +58.7	-3 12.0 +58.8
9°	-1 24.6 +58.6	-1 37.1 +58.7	-1 49.3 +58.7	-2 01.4 +58.8	-2 13.2 +58.8
10°	-0 26.0 +58.6	-0 38.4 +58.7	-0 50.6 +58.7	-1 02.6 +58.8	-1 14.4 +58.8
11°	0 32.6 +58.7 48.8	0 20.3 +58.7 47.8	0 08.1 +58.8 46.8	-0 03.8 +58.7	-0 15.6 +58.8
12°	1 31.3 +58.6 48.6	1 19.0 +58.7 47.6	1 06.9 +58.7 46.6	0 54.9 +58.8 45.7	0 43.2 +58.8 44.7
13°	2 29.9 +58.7 48.3	2 17.7 +58.7 47.4	2 05.6 +58.7 46.4	1 53.7 +58.8 45.5	1 42.0 +58.8 44.5
14°	3 28.6 +58.6 48.1	3 16.4 +58.6 47.2	3 04.3 +58.7 46.2	2 52.5 +58.7 45.3	2 40.8 +58.8 44.3
15°	4 27.2 +58.7 47.9	4 15.0 +58.7 47.0	4 03.0 +58.8 46.0	3 51.2 +58.8 45.1	3 39.6 +58.8 44.1
16°	5 25.9 +58.6 47.7	5 13.7 +58.7 46.8	5 01.8 +58.7 45.8	4 50.0 +58.8 44.9	4 38.4 +58.8 43.9
17°	6 24.5 +58.6 47.5	6 12.4 +58.7 46.6	6 00.5 +58.7 45.6	5 48.8 +58.7 44.7	5 37.2 +58.8 43.7
18°	7 23.1 +58.6 47.3	7 11.1 +58.6 46.3	6 59.2 +58.7 45.4	6 47.5 +58.8 44.5	6 36.0 +58.8 43.5
19°	8 21.7 +58.7 47.1	8 09.7 +58.7 46.1	7 57.9 +58.7 45.2	7 46.3 +58.7 44.3	7 34.8 +58.8 43.3
20°	9 20.4 +58.6 46.8	9 08.4 +58.6 45.9	8 56.6 +58.7 45.0	8 45.0 +58.7 44.1	8 33.6 +58.8 43.1
21°	10 19.0 +58.6 46.6	10 07.0 +58.7 45.7	9 55.3 +58.7 44.8	9 43.7 +58.8 43.8	9 32.4 +58.7 42.9
22°	11 17.6 +58.5 46.4	11 05.7 +58.6 45.5	10 54.0 +58.6 44.6	10 42.5 +58.7 43.6	10 31.1 +58.8 42.7
23°	12 16.1 +58.6 46.2	12 04.3 +58.6 45.3	11 52.6 +58.7 44.3	11 41.2 +58.7 43.4	11 29.9 +58.8 42.5
24°	13 14.7 +58.6 46.0	13 02.9 +58.6 45.1	12 51.3 +58.7 44.1	12 39.9 +58.7 43.2	12 28.7 +58.7 42.3
25°	14 13.3 +58.5 45.7	14 01.5 +58.6 44.8	13 50.0 +58.6 43.9	13 38.6 +58.7 43.0	13 27.4 +58.7 42.1
26°	15 11.8 +58.6 45.5	15 00.1 +58.6 44.6	14 48.6 +58.6 43.7	14 37.3 +58.7 42.8	14 26.1 +58.8 41.9
27°	16 10.4 +58.5 45.3	15 58.7 +58.6 44.4	15 47.2 +58.7 43.5	15 36.0 +58.6 42.6	15 24.9 +58.7 41.7
28°	17 08.9 +58.5 45.1	16 57.3 +58.5 44.2	16 45.9 +58.6 43.3	16 34.6 +58.7 42.4	16 23.6 +58.7 41.5
29°	18 07.4 +58.5 44.8	17 55.8 +58.6 43.9	17 44.5 +58.6 43.0	17 33.3 +58.6 42.1	17 22.3 +58.7 41.2

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°	-9 16.7 +58.8	-9 28.5 +58.9	-9 40.0 +58.9	-9 51.3 +58.9	
3°	-8 17.9 +58.8	-8 29.6 +58.9	-8 41.1 +58.9	-8 52.4 +59.0	-9 03.5 +59.0
4°	-7 19.1 +58.9	-7 30.7 +58.8	-7 42.2 +58.9	-7 53.4 +58.9	-8 04.5 +59.0
5°	-6 20.2 +58.8	-6 31.9 +58.9	-6 43.3 +58.9	-6 54.5 +59.0	-7 05.5 +59.0
6°	-5 21.4 +58.8	-5 33.0 +58.9	-5 44.4 +59.0	-5 55.5 +58.9	-6 06.5 +59.0
7°	-4 22.6 +58.9	-4 34.1 +58.9	-4 45.4 +58.9	-4 56.6 +59.0	-5 07.5 +59.0
8°	-3 23.7 +58.8	-3 35.2 +58.9	-3 46.5 +58.9	-3 57.6 +59.0	-4 08.5 +59.0
9°	-2 24.9 +58.9	-2 36.3 +58.8	-2 47.6 +58.9	-2 58.6 +58.9	-3 09.5 +59.0
10°	-1 26.0 +58.8	-1 37.5 +58.9	-1 48.7 +59.0	-1 59.7 +59.0	-2 10.5 +59.0
11°	-0 27.2 +58.9	-0 38.6 +58.9	-0 49.7 +58.9	-1 00.7 +59.0	-1 11.5 +59.0
12°	0 31.7 +58.8 43.8	0 20.3 +58.9 42.8	0 09.2 +58.9 41.8	-0 01.7 +58.9	-0 12.5 +59.1
13°	1 30.5 +58.9 43.6	1 19.2 +58.9 42.6	1 08.1 +59.0 41.7	0 57.2 +59.0 40.7	0 46.6 +59.0 39.7
14°	2 29.4 +58.8 43.4	2 18.1 +58.9 42.4	2 07.1 +58.9 41.5	1 56.2 +59.0 40.5	1 45.6 +59.0 39.6
15°	3 28.2 +58.9 43.2	3 17.0 +58.9 42.2	3 06.0 +58.9 41.3	2 55.2 +58.9 40.3	2 44.6 +59.0 39.4
16°	4 27.1 +58.8 43.0	4 15.9 +58.9 42.0	4 04.9 +58.9 41.1	3 54.1 +59.0 40.1	3 43.6 +59.0 39.2
17°	5 25.9 +58.8 42.8	5 14.8 +58.8 41.8	5 03.8 +59.0 40.9	4 53.1 +59.0 40.0	4 42.6 +59.0 39.0
18°	6 24.7 +58.9 42.6	6 13.6 +58.9 41.7	6 02.8 +58.9 40.7	5 52.1 +58.9 39.8	5 41.6 +59.0 38.8
19°	7 23.6 +58.8 42.4	7 12.5 +58.9 41.5	7 01.7 +58.9 40.5	6 51.0 +59.0 39.6	6 40.6 +59.0 38.6
20°	8 22.4 +58.8 42.2	8 11.4 +58.8 41.3	8 00.6 +58.9 40.3	7 50.0 +58.9 39.4	7 39.6 +59.0 38.5
21°	9 21.2 +58.8 42.0	9 10.2 +58.9 41.1	8 59.5 +58.9 40.1	8 48.9 +59.0 39.2	8 38.6 +59.0 38.3
22°	10 20.0 +58.8 41.8	10 09.1 +58.9 40.9	9 58.4 +58.9 39.9	9 47.9 +58.9 39.0	9 37.6 +58.9 38.1
23°	11 18.8 +58.8 41.6	11 08.0 +58.8 40.7	10 57.3 +58.9 39.7	10 46.8 +58.9 38.8	10 36.5 +59.0 37.9
24°	12 17.6 +58.8 41.4	12 06.8 +58.8 40.5	11 56.2 +58.8 39.6	11 45.7 +59.0 38.6	11 35.5 +59.0 37.7
25°	13 16.4 +58.8 41.2	13 05.6 +58.9 40.3	12 55.0 +58.9 39.4	12 44.7 +58.9 38.4	12 34.5 +58.9 37.5
26°	14 15.2 +58.8 41.0	14 04.5 +58.8 40.1	13 53.9 +58.9 39.2	13 43.6 +58.9 38.2	13 33.4 +59.0 37.3
27°	15 14.0 +58.7 40.8	15 03.3 +58.8 39.9	14 52.8 +58.8 39.0	14 42.5 +58.9 38.1	14 32.4 +58.9 37.1
28°	16 12.7 +58.8 40.6	16 02.1 +58.8 39.7	15 51.6 +58.9 38.8	15 41.4 +58.9 37.9	15 31.3 +59.0 37.0
29°	17 11.5 +58.7 40.3	17 00.9 +58.7 39.4	16 50.5 +58.8 38.6	16 40.3 +58.8 37.7	16 30.3 +58.9 36.8

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°	-9 14.3 +59.0	-9 25.0 +59.1	-9 35.4 +59.1	-9 45.6 +59.1	-9 55.6 +59.2
4°	-8 15.3 +59.0	-8 25.9 +59.1	-8 36.3 +59.1	-8 46.5 +59.2	-8 56.4 +59.2
5°	-7 16.3 +59.1	-7 26.8 +59.0	-7 37.2 +59.1	-7 47.3 +59.1	-7 57.2 +59.2
6°	-6 17.2 +59.0	-6 27.8 +59.1	-6 38.1 +59.1	-6 48.2 +59.2	-6 58.0 +59.2
7°	-5 18.2 +59.0	-5 28.7 +59.1	-5 39.0 +59.2	-5 49.0 +59.2	-5 58.8 +59.2
8°	-4 19.2 +59.1	-4 29.6 +59.1	-4 39.8 +59.1	-4 49.8 +59.1	-4 59.6 +59.2
9°	-3 20.1 +59.0	-3 30.5 +59.1	-3 40.7 +59.1	-3 50.7 +59.2	-4 00.4 +59.2
10°	-2 21.1 +59.1	-2 31.4 +59.1	-2 41.6 +59.1	-2 51.5 +59.2	-3 01.2 +59.2
11°	-1 22.0 +59.0	-1 32.3 +59.0	-1 42.5 +59.2	-1 52.3 +59.1	-2 02.0 +59.2
12°	-0 23.0 +59.1	-0 33.3 +59.1	-0 43.3 +59.1	-0 53.2 +59.2	-1 02.8 +59.2
13°	0 36.1 +59.0 38.8	0 25.8 +59.1 37.8	0 15.8 +59.1 36.9	0 06.0 +59.2 35.9	-0 03.6 +59.2
14°	1 35.1 +59.1 38.6	1 24.9 +59.1 37.6	1 14.9 +59.2 36.7	1 05.2 +59.1 35.7	0 55.6 +59.2 34.8
15°	2 34.2 +59.0 38.4	2 24.0 +59.1 37.5	2 14.1 +59.1 36.5	2 04.3 +59.2 35.6	1 54.8 +59.2 34.6
16°	3 33.2 +59.1 38.2	3 23.1 +59.1 37.3	3 13.2 +59.1 36.4	3 03.5 +59.2 35.4	2 54.0 +59.2 34.5
17°	4 32.3 +59.0 38.1	4 22.2 +59.1 37.1	4 12.3 +59.1 36.2	4 02.7 +59.1 35.2	3 53.2 +59.2 34.3
18°	5 31.3 +59.1 37.9	5 21.3 +59.1 37.0	5 11.4 +59.2 36.0	5 01.8 +59.2 35.1	4 52.4 +59.2 34.1
19°	6 30.4 +59.0 37.7	6 20.4 +59.0 36.8	6 10.6 +59.1 35.8	6 01.0 +59.2 34.9	5 51.6 +59.2 34.0
20°	7 29.4 +59.0 37.5	7 19.4 +59.1 36.6	7 09.7 +59.1 35.7	7 00.2 +59.1 34.7	6 50.8 +59.2 33.8
21°	8 28.4 +59.1 37.4	8 18.5 +59.1 36.4	8 08.8 +59.1 35.5	7 59.3 +59.2 34.6	7 50.0 +59.2 33.6
22°	9 27.5 +59.0 37.2	9 17.6 +59.0 36.2	9 07.9 +59.1 35.3	8 58.5 +59.1 34.4	8 49.2 +59.2 33.5
23°	10 26.5 +59.0 37.0	10 16.6 +59.1 36.1	10 07.0 +59.1 35.1	9 57.6 +59.1 34.2	9 48.4 +59.2 33.3
24°	11 25.5 +59.0 36.8	11 15.7 +59.0 35.9	11 06.1 +59.1 35.0	10 56.7 +59.2 34.1	10 47.6 +59.2 33.1
25°	12 24.5 +59.0 36.6	12 14.7 +59.1 35.7	12 05.2 +59.1 34.8	11 55.9 +59.1 33.9	11 46.8 +59.1 33.0
26°	13 23.5 +59.0 36.4	13 13.8 +59.0 35.5	13 04.3 +59.1 34.6	12 55.0 +59.1 33.7	12 45.9 +59.2 32.8
27°	14 22.5 +59.0 36.2	14 12.8 +59.1 35.3	14 03.4 +59.0 34.4	13 54.1 +59.1 33.5	13 45.1 +59.2 32.6
28°	15 21.5 +59.0 36.1	15 11.9 +59.0 35.2	15 02.4 +59.1 34.3	14 53.2 +59.1 33.4	14 44.3 +59.1 32.5
29°	16 20.5 +58.9 35.9	16 10.9 +59.0 35.0	16 01.5 +59.1 34.1	15 52.3 +59.1 33.2	15 43.4 +59.1 32.3

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°	-9 06.1 +59.2	-9 15.6 +59.3	-9 24.8 +59.3	-9 33.8 +59.4	-9 42.5 +59.4
5°	-8 06.9 +59.3	-8 16.3 +59.3	-8 25.5 +59.3	-8 34.4 +59.3	-8 43.1 +59.3
6°	-7 07.6 +59.2	-7 17.0 +59.2	-7 26.2 +59.3	-7 35.1 +59.4	-7 43.8 +59.4
7°	-6 08.4 +59.2	-6 17.8 +59.3	-6 26.9 +59.3	-6 35.7 +59.3	-6 44.4 +59.4
8°	-5 09.2 +59.3	-5 18.5 +59.3	-5 27.6 +59.4	-5 36.4 +59.4	-5 45.0 +59.4
9°	-4 09.9 +59.2	-4 19.2 +59.3	-4 28.2 +59.3	-4 37.0 +59.3	-4 45.6 +59.4
10°	-3 10.7 +59.3	-3 19.9 +59.3	-3 28.9 +59.3	-3 37.7 +59.4	-3 46.2 +59.4
11°	-2 11.4 +59.2	-2 20.6 +59.2	-2 29.6 +59.3	-2 38.3 +59.3	-2 46.8 +59.4
12°	-1 12.2 +59.3	-1 21.4 +59.3	-1 30.3 +59.3	-1 39.0 +59.4	-1 47.4 +59.4
13°	-0 12.9 +59.2	-0 22.1 +59.3	-0 31.0 +59.4	-0 39.6 +59.3	-0 48.0 +59.3
14°	0 46.3 +59.2 33.8	0 37.2 +59.3 32.9	0 28.4 +59.3 31.9	0 19.7 +59.4 30.9	0 11.3 +59.4 30.0
15°	1 45.5 +59.3 33.7	1 36.5 +59.3 32.7	1 27.7 +59.3 31.8	1 19.1 +59.3 30.8	1 10.7 +59.4 29.8
16°	2 44.8 +59.2 33.5	2 35.8 +59.3 32.6	2 27.0 +59.3 31.6	2 18.4 +59.4 30.7	2 10.1 +59.4 29.7
17°	3 44.0 +59.3 33.3	3 35.1 +59.2 32.4	3 26.3 +59.3 31.5	3 17.8 +59.4 30.5	3 09.5 +59.4 29.6
18°	4 43.3 +59.2 33.2	4 34.3 +59.3 32.2	4 25.6 +59.3 31.3	4 17.2 +59.3 30.4	4 08.9 +59.4 29.4
19°	5 42.5 +59.3 33.0	5 33.6 +59.3 32.1	5 24.9 +59.4 31.1	5 16.5 +59.4 30.2	5 08.3 +59.4 29.3
20°	6 41.8 +59.2 32.9	6 32.9 +59.3 31.9	6 24.3 +59.3 31.0	6 15.9 +59.3 30.1	6 07.7 +59.4 29.1
21°	7 41.0 +59.2 32.7	7 32.2 +59.2 31.8	7 23.6 +59.3 30.8	7 15.2 +59.3 29.9	7 07.1 +59.4 29.0
22°	8 40.2 +59.2 32.5	8 31.4 +59.3 31.6	8 22.9 +59.3 30.7	8 14.5 +59.4 29.8	8 06.5 +59.3 28.8
23°	9 39.4 +59.3 32.4	9 30.7 +59.3 31.5	9 22.2 +59.3 30.5	9 13.9 +59.3 29.6	9 05.8 +59.4 28.7
24°	10 38.7 +59.2 32.2	10 30.0 +59.2 31.3	10 21.5 +59.3 30.4	10 13.2 +59.4 29.5	10 05.2 +59.4 28.5
25°	11 37.9 +59.2 32.1	11 29.2 +59.3 31.1	11 20.8 +59.3 30.2	11 12.6 +59.3 29.3	11 04.6 +59.3 28.4
26°	12 37.1 +59.2 31.9	12 28.5 +59.2 31.0	12 20.1 +59.2 30.1	12 11.9 +59.3 29.2	12 03.9 +59.4 28.3
27°	13 36.3 +59.2 31.7	13 27.7 +59.2 30.8	13 19.3 +59.3 29.9	13 11.2 +59.3 29.0	13 03.3 +59.4 28.1
28°	14 35.5 +59.2 31.6	14 26.9 +59.3 30.7	14 18.6 +59.3 29.8	14 10.5 +59.3 28.9	14 02.7 +59.3 28.0
29°	15 34.7 +59.2 31.4	15 26.2 +59.2 30.5	15 17.9 +59.3 29.6	15 09.8 +59.3 28.7	15 02.0 +59.4 27.8

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°	-9 51.0 +59.4	-9 59.3 +59.5			
5°	-8 51.6 +59.4	-8 59.8 +59.4	-9 07.8 +59.5	-9 15.5 +59.5	-9 22.9 +59.5
6°	-7 52.2 +59.4	-8 00.4 +59.5	-8 08.3 +59.5	-8 16.0 +59.6	-8 23.4 +59.6
7°	-6 52.8 +59.5	-7 00.9 +59.4	-7 08.8 +59.5	-7 16.4 +59.5	-7 23.8 +59.5
8°	-5 53.3 +59.4	-6 01.5 +59.5	-6 09.3 +59.5	-6 16.9 +59.5	-6 24.3 +59.6
9°	-4 53.9 +59.4	-5 02.0 +59.5	-5 09.8 +59.5	-5 17.4 +59.5	-5 24.7 +59.5
10°	-3 54.5 +59.4	-4 02.5 +59.4	-4 10.3 +59.5	-4 17.9 +59.6	-4 25.2 +59.6
11°	-2 55.1 +59.4	-3 03.1 +59.5	-3 10.8 +59.5	-3 18.3 +59.5	-3 25.6 +59.6
12°	-1 55.7 +59.5	-2 03.6 +59.4	-2 11.3 +59.4	-2 18.8 +59.5	-2 26.0 +59.5
13°	-0 56.2 +59.4	-1 04.2 +59.5	-1 11.9 +59.5	-1 19.3 +59.5	-1 26.5 +59.6
14°	0 03.2 +59.4 29.0	-0 04.7 +59.5	-0 12.4 +59.5	-0 19.8 +59.6	-0 26.9 +59.5
15°	1 02.6 +59.5 28.9	0 54.8 +59.4 27.9	0 47.1 +59.5 27.0	0 39.8 +59.5 26.0	0 32.6 +59.6 25.1
16°	2 02.1 +59.4 28.7	1 54.2 +59.5 27.8	1 46.6 +59.5 26.8	1 39.3 +59.5 25.9	1 32.2 +59.6 24.9
17°	3 01.5 +59.4 28.6	2 53.7 +59.4 27.7	2 46.1 +59.5 26.7	2 38.8 +59.5 25.8	2 31.8 +59.5 24.8
18°	4 00.9 +59.4 28.5	3 53.1 +59.5 27.5	3 45.6 +59.5 26.6	3 38.3 +59.6 25.6	3 31.3 +59.6 24.7
19°	5 00.3 +59.5 28.3	4 52.6 +59.5 27.4	4 45.1 +59.5 26.5	4 37.9 +59.5 25.5	4 30.9 +59.5 24.6
20°	5 59.8 +59.4 28.2	5 52.1 +59.4 27.3	5 44.6 +59.5 26.3	5 37.4 +59.5 25.4	5 30.4 +59.6 24.4
21°	6 59.2 +59.4 28.1	6 51.5 +59.5 27.1	6 44.1 +59.5 26.2	6 36.9 +59.5 25.3	6 30.0 +59.5 24.3
22°	7 58.6 +59.4 27.9	7 51.0 +59.4 27.0	7 43.6 +59.5 26.1	7 36.4 +59.6 25.1	7 29.5 +59.6 24.2
23°	8 58.0 +59.4 27.8	8 50.4 +59.5 26.8	8 43.1 +59.5 25.9	8 36.0 +59.5 25.0	8 29.1 +59.5 24.1
24°	9 57.4 +59.4 27.6	9 49.9 +59.4 26.7	9 42.6 +59.4 25.8	9 35.5 +59.5 24.9	9 28.6 +59.6 24.0
25°	10 56.8 +59.4 27.5	10 49.3 +59.5 26.6	10 42.0 +59.5 25.7	10 35.0 +59.5 24.7	10 28.2 +59.5 23.8
26°	11 56.2 +59.4 27.3	11 48.8 +59.4 26.4	11 41.5 +59.5 25.5	11 34.5 +59.5 24.6	11 27.7 +59.6 23.7
27°	12 55.6 +59.4 27.2	12 48.2 +59.4 26.3	12 41.0 +59.4 25.4	12 34.0 +59.5 24.5	12 27.3 +59.5 23.6
28°	13 55.0 +59.4 27.1	13 47.6 +59.4 26.2	13 40.4 +59.5 25.3	13 33.5 +59.5 24.4	13 26.8 +59.5 23.5
29°	14 54.4 +59.4 26.9	14 47.0 +59.5 26.0	14 39.9 +59.5 25.1	14 33.0 +59.5 24.2	14 26.3 +59.6 23.3

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°	-9 30.1 +59.6	-9 37.0 +59.6	-9 43.7 +59.6	-9 50.1 +59.7	-9 56.2 +59.7
6°	-8 30.5 +59.5	-8 37.4 +59.6	-8 44.1 +59.7	-8 50.4 +59.6	-8 56.5 +59.7
7°	-7 31.0 +59.6	-7 37.8 +59.6	-7 44.4 +59.6	-7 50.8 +59.7	-7 56.8 +59.7
8°	-6 31.4 +59.6	-6 38.2 +59.6	-6 44.8 +59.7	-6 51.1 +59.7	-6 57.1 +59.7
9°	-5 31.8 +59.6	-5 38.6 +59.6	-5 45.1 +59.6	-5 51.4 +59.7	-5 57.4 +59.7
10°	-4 32.2 +59.6	-4 39.0 +59.6	-4 45.5 +59.7	-4 51.7 +59.6	-4 57.7 +59.7
11°	-3 32.6 +59.6	-3 39.4 +59.7	-3 45.8 +59.6	-3 52.1 +59.7	-3 58.0 +59.7
12°	-2 33.0 +59.6	-2 39.7 +59.6	-2 46.2 +59.7	-2 52.4 +59.7	-2 58.3 +59.7
13°	-1 33.4 +59.6	-1 40.1 +59.6	-1 46.5 +59.6	-1 52.7 +59.7	-1 58.6 +59.7
14°	-0 33.8 +59.6	-0 40.5 +59.6	-0 46.9 +59.7	-0 53.0 +59.7	-0 58.9 +59.7
15°	0 25.8 +59.5 24.1	0 19.1 +59.7 23.1	0 12.8 +59.6 22.2	0 06.7 +59.6 21.2	0 00.8 +59.7 20.3
16°	1 25.3 +59.6 24.0	1 18.8 +59.6 23.0	1 12.4 +59.7 22.1	1 06.3 +59.7 21.1	1 00.5 +59.7 20.2
17°	2 24.9 +59.6 23.9	2 18.4 +59.6 22.9	2 12.1 +59.6 22.0	2 06.0 +59.7 21.0	2 00.2 +59.7 20.1
18°	3 24.5 +59.6 23.7	3 18.0 +59.6 22.8	3 11.7 +59.7 21.9	3 05.7 +59.7 20.9	2 59.9 +59.7 20.0
19°	4 24.1 +59.6 23.6	4 17.6 +59.6 22.7	4 11.4 +59.6 21.7	4 05.4 +59.6 20.8	3 59.6 +59.7 19.9
20°	5 23.7 +59.6 23.5	5 17.2 +59.7 22.6	5 11.0 +59.7 21.6	5 05.0 +59.7 20.7	4 59.3 +59.7 19.8
21°	6 23.3 +59.6 23.4	6 16.9 +59.6 22.5	6 10.7 +59.6 21.5	6 04.7 +59.7 20.6	5 59.0 +59.7 19.7
22°	7 22.9 +59.6 23.3	7 16.5 +59.6 22.3	7 10.3 +59.7 21.4	7 04.4 +59.7 20.5	6 58.7 +59.7 19.6
23°	8 22.5 +59.5 23.2	8 16.1 +59.6 22.2	8 10.0 +59.6 21.3	8 04.1 +59.6 20.4	7 58.4 +59.7 19.5
24°	9 22.0 +59.6 23.0	9 15.7 +59.6 22.1	9 09.6 +59.6 21.2	9 03.7 +59.7 20.3	8 58.1 +59.7 19.4
25°	10 21.6 +59.6 22.9	10 15.3 +59.6 22.0	10 09.2 +59.7 21.1	10 03.4 +59.7 20.2	9 57.8 +59.7 19.3
26°	11 21.2 +59.6 22.8	11 14.9 +59.6 21.9	11 08.9 +59.6 21.0	11 03.1 +59.6 20.1	10 57.5 +59.7 19.2
27°	12 20.8 +59.5 22.7	12 14.5 +59.6 21.8	12 08.5 +59.6 20.9	12 02.7 +59.7 20.0	11 57.2 +59.7 19.0
28°	13 20.3 +59.6 22.6	13 14.1 +59.6 21.6	13 08.1 +59.7 20.7	13 02.4 +59.7 19.8	12 56.9 +59.7 18.9
29°	14 19.9 +59.6 22.4	14 13.7 +59.6 21.5	14 07.8 +59.6 20.6	14 02.1 +59.6 19.7	13 56.6 +59.7 18.8

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°	-9 02.4 +59.8	-9 07.9 +59.7	-9 13.2 +59.8	-9 18.2 +59.8	-9 23.0 +59.9
7°	-8 02.6 +59.7	-8 08.2 +59.8	-8 13.4 +59.7	-8 18.4 +59.8	-8 23.1 +59.8
8°	-7 02.9 +59.7	-7 08.4 +59.7	-7 13.7 +59.8	-7 18.6 +59.8	-7 23.3 +59.8
9°	-6 03.2 +59.7	-6 08.7 +59.8	-6 13.9 +59.8	-6 18.8 +59.8	-6 23.5 +59.8
10°	-5 03.5 +59.8	-5 08.9 +59.7	-5 14.1 +59.8	-5 19.0 +59.8	-5 23.7 +59.9
11°	-4 03.7 +59.7	-4 09.2 +59.8	-4 14.3 +59.8	-4 19.2 +59.8	-4 23.8 +59.8
12°	-3 04.0 +59.7	-3 09.4 +59.8	-3 14.5 +59.7	-3 19.4 +59.8	-3 24.0 +59.8
13°	-2 04.3 +59.8	-2 09.6 +59.7	-2 14.8 +59.8	-2 19.6 +59.8	-2 24.2 +59.8
14°	-1 04.5 +59.7	-1 09.9 +59.8	-1 15.0 +59.8	-1 19.8 +59.8	-1 24.4 +59.9
15°	-0 04.8 +59.7	-0 10.1 +59.7	-0 15.2 +59.8	-0 20.0 +59.8	-0 24.5 +59.8
16°	0 54.9 +59.8 19.2	0 49.6 +59.8 18.2	0 44.6 +59.8 17.3	0 39.8 +59.8 16.3	0 35.3 +59.8 15.4
17°	1 54.7 +59.7 19.1	1 49.4 +59.7 18.1	1 44.4 +59.7 17.2	1 39.6 +59.8 16.2	1 35.1 +59.8 15.3
18°	2 54.4 +59.7 19.0	2 49.1 +59.8 18.1	2 44.1 +59.8 17.1	2 39.4 +59.8 16.2	2 34.9 +59.9 15.2
19°	3 54.1 +59.8 18.9	3 48.9 +59.8 18.0	3 43.9 +59.8 17.0	3 39.2 +59.8 16.1	3 34.8 +59.8 15.1
20°	4 53.9 +59.7 18.8	4 48.7 +59.7 17.9	4 43.7 +59.8 16.9	4 39.0 +59.8 16.0	4 34.6 +59.8 15.1
21°	5 53.6 +59.7 18.7	5 48.4 +59.8 17.8	5 43.5 +59.8 16.9	5 38.8 +59.8 15.9	5 34.4 +59.8 15.0
22°	6 53.3 +59.8 18.6	6 48.2 +59.7 17.7	6 43.3 +59.7 16.8	6 38.6 +59.8 15.8	6 34.2 +59.9 14.9
23°	7 53.1 +59.7 18.5	7 47.9 +59.8 17.6	7 43.0 +59.8 16.7	7 38.4 +59.8 15.8	7 34.1 +59.8 14.8
24°	8 52.8 +59.7 18.4	8 47.7 +59.7 17.5	8 42.8 +59.8 16.6	8 38.2 +59.8 15.7	8 33.9 +59.8 14.8
25°	9 52.5 +59.7 18.3	9 47.4 +59.8 17.4	9 42.6 +59.8 16.5	9 38.0 +59.8 15.6	9 33.7 +59.8 14.7
26°	10 52.2 +59.7 18.2	10 47.2 +59.7 17.3	10 42.4 +59.7 16.4	10 37.8 +59.8 15.5	10 33.5 +59.9 14.6
27°	11 51.9 +59.8 18.1	11 46.9 +59.8 17.2	11 42.1 +59.8 16.3	11 37.6 +59.8 15.4	11 33.4 +59.8 14.5
28°	12 51.7 +59.7 18.0	12 46.7 +59.7 17.1	12 41.9 +59.8 16.2	12 37.4 +59.8 15.3	12 33.2 +59.8 14.4
29°	13 51.4 +59.7 17.9	13 46.4 +59.8 17.0	13 41.7 +59.8 16.2	13 37.2 +59.8 15.3	13 33.0 +59.8 14.4

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°	-9 27.4 +59.8	-9 31.6 +59.9	-9 35.5 +59.9	-9 39.1 +59.9	-9 42.4 +59.9
7°	-8 27.6 +59.9	-8 31.7 +59.8	-8 35.6 +59.9	-8 39.2 +59.9	-8 42.5 +59.9
8°	-7 27.7 +59.8	-7 31.9 +59.9	-7 35.7 +59.9	-7 39.3 +59.9	-7 42.6 +59.9
9°	-6 27.9 +59.9	-6 32.0 +59.9	-6 35.8 +59.8	-6 39.4 +59.9	-6 42.7 +59.9
10°	-5 28.0 +59.8	-5 32.1 +59.8	-5 36.0 +59.9	-5 39.5 +59.9	-5 42.8 +60.0
11°	-4 28.2 +59.8	-4 32.3 +59.9	-4 36.1 +59.9	-4 39.6 +59.9	-4 42.8 +59.9
12°	-3 28.4 +59.9	-3 32.4 +59.9	-3 36.2 +59.9	-3 39.7 +59.9	-3 42.9 +59.9
13°	-2 28.5 +59.8	-2 32.5 +59.8	-2 36.3 +59.9	-2 39.8 +59.9	-2 43.0 +59.9
14°	-1 28.7 +59.9	-1 32.7 +59.9	-1 36.4 +59.9	-1 39.9 +59.9	-1 43.1 +59.9
15°	-0 28.8 +59.8	-0 32.8 +59.9	-0 36.5 +59.8	-0 40.0 +59.9	-0 43.2 +59.9
16°	0 31.0 +59.9 14.4	0 27.1 +59.8 13.4	0 23.3 +59.9 12.5	0 19.9 +59.9 11.5	0 16.7 +60.0 10.6
17°	1 30.9 +59.8 14.3	1 26.9 +59.9 13.4	1 23.2 +59.9 12.4	1 19.8 +59.9 11.5	1 16.7 +59.9 10.5
18°	2 30.7 +59.9 14.3	2 26.8 +59.9 13.3	2 23.1 +59.9 12.4	2 19.7 +59.9 11.4	2 16.6 +59.9 10.5
19°	3 30.6 +59.8 14.2	3 26.7 +59.8 13.2	3 23.0 +59.9 12.3	3 19.6 +59.9 11.4	3 16.5 +59.9 10.4
20°	4 30.4 +59.9 14.1	4 26.5 +59.9 13.2	4 22.9 +59.9 12.2	4 19.5 +59.9 11.3	4 16.4 +59.9 10.4
21°	5 30.3 +59.8 14.0	5 26.4 +59.9 13.1	5 22.8 +59.8 12.2	5 19.4 +59.9 11.2	5 16.3 +59.9 10.3
22°	6 30.1 +59.9 14.0	6 26.3 +59.8 13.0	6 22.6 +59.9 12.1	6 19.3 +59.9 11.2	6 16.2 +60.0 10.3
23°	7 30.0 +59.8 13.9	7 26.1 +59.9 13.0	7 22.5 +59.9 12.1	7 19.2 +59.9 11.1	7 16.2 +59.9 10.2
24°	8 29.8 +59.8 13.8	8 26.0 +59.8 12.9	8 22.4 +59.9 12.0	8 19.1 +59.9 11.1	8 16.1 +59.9 10.1
25°	9 29.6 +59.9 13.8	9 25.8 +59.9 12.8	9 22.3 +59.9 11.9	9 19.0 +59.9 11.0	9 16.0 +59.9 10.1
26°	10 29.5 +59.8 13.7	10 25.7 +59.9 12.8	10 22.2 +59.9 11.9	10 18.9 +59.9 10.9	10 15.9 +59.9 10.0
27°	11 29.3 +59.9 13.6	11 25.6 +59.8 12.7	11 22.1 +59.8 11.8	11 18.8 +59.9 10.9	11 15.8 +59.9 10.0
28°	12 29.2 +59.8 13.5	12 25.4 +59.9 12.6	12 21.9 +59.9 11.7	12 18.7 +59.9 10.8	12 15.7 +59.9 9.9
29°	13 29.0 +59.8 13.5	13 25.3 +59.8 12.6	13 21.8 +59.9 11.7	13 18.6 +59.9 10.8	13 15.6 +59.9 9.9

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°	-9 45.5 +60.0	-9 48.2 +59.9	-9 50.7 +60.0	-9 52.9 +60.0	-9 54.8 +60.0
7°	-8 45.5 +59.9	-8 48.3 +60.0	-8 50.7 +59.9	-8 52.9 +60.0	-8 54.8 +60.0
8°	-7 45.6 +59.9	-7 48.3 +59.9	-7 50.8 +60.0	-7 52.9 +59.9	-7 54.8 +60.0
9°	-6 45.7 +60.0	-6 48.4 +60.0	-6 50.8 +59.9	-6 53.0 +60.0	-6 54.8 +59.9
10°	-5 45.7 +59.9	-5 48.4 +59.9	-5 50.9 +60.0	-5 53.0 +60.0	-5 54.9 +60.0
11°	-4 45.8 +59.9	-4 48.5 +59.9	-4 50.9 +59.9	-4 53.0 +59.9	-4 54.9 +60.0
12°	-3 45.9 +59.9	-3 48.6 +60.0	-3 51.0 +60.0	-3 53.1 +60.0	-3 54.9 +60.0
13°	-2 46.0 +60.0	-2 48.6 +59.9	-2 51.0 +60.0	-2 53.1 +60.0	-2 54.9 +59.9
14°	-1 46.0 +59.9	-1 48.7 +60.0	-1 51.0 +59.9	-1 53.1 +59.9	-1 55.0 +60.0
15°	-0 46.1 +59.9	-0 48.7 +59.9	-0 51.1 +60.0	-0 53.2 +60.0	-0 55.0 +60.0
16°	0 13.8 +60.0 9.6	0 11.2 +60.0 8.6	0 08.9 +59.9 7.7	0 06.8 +60.0 6.7	0 05.0 +60.0 5.8
17°	1 13.8 +59.9 9.6	1 11.2 +59.9 8.6	1 08.8 +60.0 7.6	1 06.8 +59.9 6.7	1 05.0 +59.9 5.7
18°	2 13.7 +59.9 9.5	2 11.1 +59.9 8.6	2 08.8 +59.9 7.6	2 06.7 +60.0 6.7	2 04.9 +60.0 5.7
19°	3 13.6 +60.0 9.5	3 11.0 +60.0 8.5	3 08.7 +60.0 7.6	3 06.7 +60.0 6.6	3 04.9 +60.0 5.7
20°	4 13.6 +59.9 9.4	4 11.0 +59.9 8.5	4 08.7 +59.9 7.5	4 06.7 +59.9 6.6	4 04.9 +60.0 5.7
21°	5 13.5 +59.9 9.4	5 10.9 +60.0 8.4	5 08.6 +60.0 7.5	5 06.6 +60.0 6.6	5 04.9 +59.9 5.6
22°	6 13.4 +60.0 9.3	6 10.9 +59.9 8.4	6 08.6 +60.0 7.5	6 06.6 +60.0 6.5	6 04.8 +60.0 5.6
23°	7 13.4 +59.9 9.3	7 10.8 +60.0 8.3	7 08.6 +59.9 7.4	7 06.6 +59.9 6.5	7 04.8 +60.0 5.6
24°	8 13.3 +59.9 9.2	8 10.8 +59.9 8.3	8 08.5 +60.0 7.4	8 06.5 +60.0 6.5	8 04.8 +60.0 5.5
25°	9 13.2 +59.9 9.2	9 10.7 +60.0 8.3	9 08.5 +59.9 7.3	9 06.5 +59.9 6.4	9 04.8 +59.9 5.5
26°	10 13.1 +60.0 9.1	10 10.7 +59.9 8.2	10 08.4 +60.0 7.3	10 06.4 +60.0 6.4	10 04.7 +60.0 5.5
27°	11 13.1 +59.9 9.1	11 10.6 +59.9 8.2	11 08.4 +59.9 7.3	11 06.4 +60.0 6.4	11 04.7 +60.0 5.4
28°	12 13.0 +59.9 9.0	12 10.5 +60.0 8.1	12 08.3 +60.0 7.2	12 06.4 +59.9 6.3	12 04.7 +60.0 5.4
29°	13 12.9 +60.0 9.0	13 10.5 +59.9 8.1	13 08.3 +59.9 7.2	13 06.3 +60.0 6.3	13 04.7 +59.9 5.4

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°	-9 56.4 +60.0	-9 57.7 +60.0	-9 58.7 +60.0	-9 59.4 +60.0	-9 59.9 +60.0
7°	-8 56.4 +60.0	-8 57.7 +60.0	-8 58.7 +60.0	-8 59.4 +60.0	-8 59.9 +60.0
8°	-7 56.4 +60.0	-7 57.7 +60.0	-7 58.7 +60.0	-7 59.4 +60.0	-7 59.9 +60.0
9°	-6 56.4 +60.0	-6 57.7 +60.0	-6 58.7 +60.0	-6 59.4 +60.0	-6 59.9 +60.0
10°	-5 56.4 +60.0	-5 57.7 +60.0	-5 58.7 +60.0	-5 59.4 +60.0	-5 59.9 +60.0
11°	-4 56.4 +59.9	-4 57.7 +60.0	-4 58.7 +60.0	-4 59.4 +60.0	-4 59.9 +60.0
12°	-3 56.5 +60.0	-3 57.7 +60.0	-3 58.7 +60.0	-3 59.4 +60.0	-3 59.9 +60.0
13°	-2 56.5 +60.0	-2 57.7 +59.9	-2 58.7 +60.0	-2 59.4 +60.0	-2 59.9 +60.0
14°	-1 56.5 +60.0	-1 57.8 +60.0	-1 58.7 +60.0	-1 59.4 +60.0	-1 59.9 +60.0
15°	-0 56.5 +60.0	-0 57.8 +60.0	-0 58.7 +59.9	-0 59.4 +60.0	-0 59.9 +60.0
16°	0 03.5 +59.9 4.8	0 02.2 +60.0 3.8	0 01.2 +60.0 2.9	0 00.6 +60.0 1.9	0 00.1 +60.0 1.0
17°	1 03.4 +60.0 4.8	1 02.2 +60.0 3.8	1 01.2 +60.0 2.9	1 00.6 +59.9 1.9	1 00.1 +60.0 1.0
18°	2 03.4 +60.0 4.8	2 02.2 +60.0 3.8	2 01.2 +60.0 2.9	2 00.5 +60.0 1.9	2 00.1 +60.0 1.0
19°	3 03.4 +60.0 4.7	3 02.2 +60.0 3.8	3 01.2 +60.0 2.8	3 00.5 +60.0 1.9	3 00.1 +60.0 0.9
20°	4 03.4 +60.0 4.7	4 02.2 +60.0 3.8	4 01.2 +60.0 2.8	4 00.5 +60.0 1.9	4 00.1 +60.0 0.9
21°	5 03.4 +60.0 4.7	5 02.2 +60.0 3.7	5 01.2 +60.0 2.8	5 00.5 +60.0 1.9	5 00.1 +60.0 0.9
22°	6 03.4 +59.9 4.7	6 02.2 +59.9 3.7	6 01.2 +60.0 2.8	6 00.5 +60.0 1.9	6 00.1 +60.0 0.9
23°	7 03.3 +60.0 4.6	7 02.1 +60.0 3.7	7 01.2 +60.0 2.8	7 00.5 +60.0 1.9	7 00.1 +60.0 0.9
24°	8 03.3 +60.0 4.6	8 02.1 +60.0 3.7	8 01.2 +60.0 2.8	8 00.5 +60.0 1.8	8 00.1 +60.0 0.9
25°	9 03.3 +60.0 4.6	9 02.1 +60.0 3.7	9 01.2 +60.0 2.8	9 00.5 +60.0 1.8	9 00.1 +60.0 0.9
26°	10 03.3 +60.0 4.6	10 02.1 +60.0 3.7	10 01.2 +60.0 2.7	10 00.5 +60.0 1.8	10 00.1 +60.0 0.9
27°	11 03.3 +60.0 4.5	11 02.1 +60.0 3.6	11 01.2 +60.0 2.7	11 00.5 +60.0 1.8	11 00.1 +60.0 0.9
28°	12 03.3 +59.9 4.5	12 02.1 +60.0 3.6	12 01.2 +60.0 2.7	12 00.5 +60.0 1.8	12 00.1 +60.0 0.9
29°	13 03.2 +60.0 4.5	13 02.1 +60.0 3.6	13 01.2 +60.0 2.7	13 00.5 +60.0 1.8	13 00.1 +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°	15 00.0 +60.0 180.0	14 59.9 +60.0 179.0	14 59.4 +60.0 177.9	14 58.7 +60.0 176.9	14 57.8 +59.9 175.9
1°	16 00.0 +60.0 180.0	15 59.9 +60.0 179.0	15 59.4 +60.0 177.9	15 58.7 +60.0 176.9	15 57.7 +60.0 175.8
2°	17 00.0 +60.0 180.0	16 59.9 +60.0 179.0	16 59.4 +60.0 177.9	16 58.7 +60.0 176.9	16 57.7 +60.0 175.8
3°	18 00.0 +60.0 180.0	17 59.9 +60.0 178.9	17 59.4 +60.0 177.9	17 58.7 +60.0 176.9	17 57.7 +60.0 175.8
4°	19 00.0 +60.0 180.0	18 59.9 +60.0 178.9	18 59.4 +60.0 177.9	18 58.7 +60.0 176.8	18 57.7 +60.0 175.8
5°	20 00.0 +60.0 180.0	19 59.9 +60.0 178.9	19 59.4 +60.0 177.9	19 58.7 +60.0 176.8	19 57.7 +60.0 175.8
6°	21 00.0 +60.0 180.0	20 59.9 +60.0 178.9	20 59.4 +60.0 177.9	20 58.7 +60.0 176.8	20 57.7 +60.0 175.7
7°	22 00.0 +60.0 180.0	21 59.9 +60.0 178.9	21 59.4 +60.0 177.9	21 58.7 +60.0 176.8	21 57.7 +60.0 175.7
8°	23 00.0 +60.0 180.0	22 59.9 +60.0 178.9	22 59.4 +60.0 177.8	22 58.7 +60.0 176.8	22 57.7 +60.0 175.7
9°	24 00.0 +60.0 180.0	23 59.9 +60.0 178.9	23 59.4 +60.0 177.8	23 58.7 +60.0 176.8	23 57.7 +59.9 175.7
10°	25 00.0 +60.0 180.0	24 59.9 +60.0 178.9	24 59.4 +60.0 177.8	24 58.7 +60.0 176.7	24 57.6 +60.0 175.7
11°	26 00.0 +60.0 180.0	25 59.9 +60.0 178.9	25 59.4 +60.0 177.8	25 58.7 +60.0 176.7	25 57.6 +60.0 175.6
12°	27 00.0 +60.0 180.0	26 59.9 +60.0 178.9	26 59.4 +60.0 177.8	26 58.7 +60.0 176.7	26 57.6 +60.0 175.6
13°	28 00.0 +60.0 180.0	27 59.9 +59.9 178.9	27 59.4 +60.0 177.8	27 58.7 +59.9 176.7	27 57.6 +60.0 175.6
14°	29 00.0 +60.0 180.0	28 59.8 +60.0 178.9	28 59.4 +60.0 177.8	28 58.6 +60.0 176.7	28 57.6 +60.0 175.6
15°	30 00.0 +60.0 180.0	29 59.8 +60.0 178.9	29 59.4 +60.0 177.8	29 58.6 +60.0 176.7	29 57.6 +60.0 175.5
16°	31 00.0 +60.0 180.0	30 59.8 +60.0 178.9	30 59.4 +60.0 177.8	30 58.6 +60.0 176.6	30 57.6 +60.0 175.5
17°	32 00.0 +60.0 180.0	31 59.8 +60.0 178.9	31 59.4 +60.0 177.7	31 58.6 +60.0 176.6	31 57.6 +59.9 175.5
18°	33 00.0 +60.0 180.0	32 59.8 +60.0 178.9	32 59.4 +60.0 177.7	32 58.6 +60.0 176.6	32 57.5 +60.0 175.5
19°	34 00.0 +60.0 180.0	33 59.8 +60.0 178.9	33 59.4 +60.0 177.7	33 58.6 +60.0 176.6	33 57.5 +60.0 175.4
20°	35 00.0 +60.0 180.0	34 59.8 +60.0 178.9	34 59.4 +60.0 177.7	34 58.6 +60.0 176.6	34 57.5 +60.0 175.4
21°	36 00.0 +60.0 180.0	35 59.8 +60.0 178.8	35 59.4 +60.0 177.7	35 58.6 +60.0 176.5	35 57.5 +60.0 175.4
22°	37 00.0 +60.0 180.0	36 59.8 +60.0 178.8	36 59.4 +60.0 177.7	36 58.6 +60.0 176.5	36 57.5 +60.0 175.4
23°	38 00.0 +60.0 180.0	37 59.8 +60.0 178.8	37 59.4 +60.0 177.7	37 58.6 +60.0 176.5	37 57.5 +60.0 175.3
24°	39 00.0 +60.0 180.0	38 59.8 +60.0 178.8	38 59.4 +60.0 177.6	38 58.6 +60.0 176.5	38 57.5 +59.9 175.3
25°	40 00.0 +60.0 180.0	39 59.8 +60.0 178.8	39 59.4 +60.0 177.6	39 58.6 +59.9 176.5	39 57.4 +60.0 175.3
26°	41 00.0 +60.0 180.0	40 59.8 +60.0 178.8	40 59.4 +60.0 177.6	40 58.5 +60.0 176.4	40 57.4 +60.0 175.2
27°	42 00.0 +60.0 180.0	41 59.8 +60.0 178.8	41 59.4 +59.9 177.6	41 58.5 +60.0 176.4	41 57.4 +60.0 175.2
28°	43 00.0 +60.0 180.0	42 59.8 +60.0 178.8	42 59.3 +60.0 177.6	42 58.5 +60.0 176.4	42 57.4 +60.0 175.2
29°	44 00.0 +60.0 180.0	43 59.8 +60.0 178.8	43 59.3 +60.0 177.6	43 58.5 +60.0 176.4	43 57.4 +59.9 175.1

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°	14 56.5 +60.0 174.8	14 55.0 +59.9 173.8	14 53.1 +60.0 172.8	14 51.0 +60.0 171.7	14 48.7 +59.9 170.7
1°	15 56.5 +60.0 174.8	15 54.9 +60.0 173.8	15 53.1 +60.0 172.7	15 51.0 +60.0 171.7	15 48.6 +60.0 170.6
2°	16 56.5 +59.9 174.8	16 54.9 +60.0 173.7	16 53.1 +59.9 172.7	16 51.0 +59.9 171.6	16 48.6 +59.9 170.6
3°	17 56.4 +60.0 174.8	17 54.9 +60.0 173.7	17 53.0 +60.0 172.7	17 50.9 +60.0 171.6	17 48.5 +59.9 170.6
4°	18 56.4 +60.0 174.7	18 54.9 +59.9 173.7	18 53.0 +60.0 172.6	18 50.9 +59.9 171.6	18 48.4 +60.0 170.5
5°	19 56.4 +60.0 174.7	19 54.8 +60.0 173.6	19 53.0 +59.9 172.6	19 50.8 +60.0 171.5	19 48.4 +59.9 170.5
6°	20 56.4 +60.0 174.7	20 54.8 +60.0 173.6	20 52.9 +60.0 172.5	20 50.8 +59.9 171.5	20 48.3 +60.0 170.4
7°	21 56.4 +60.0 174.6	21 54.8 +60.0 173.6	21 52.9 +60.0 172.5	21 50.7 +60.0 171.4	21 48.3 +59.9 170.4
8°	22 56.4 +59.9 174.6	22 54.8 +59.9 173.5	22 52.9 +59.9 172.5	22 50.7 +59.9 171.4	22 48.2 +60.0 170.3
9°	23 56.3 +60.0 174.6	23 54.7 +60.0 173.5	23 52.8 +60.0 172.4	23 50.6 +60.0 171.4	23 48.2 +59.9 170.3
10°	24 56.3 +60.0 174.6	24 54.7 +60.0 173.5	24 52.8 +60.0 172.4	24 50.6 +59.9 171.3	24 48.1 +59.9 170.2
11°	25 56.3 +60.0 174.5	25 54.7 +60.0 173.4	25 52.8 +59.9 172.4	25 50.5 +60.0 171.3	25 48.0 +60.0 170.2
12°	26 56.3 +60.0 174.5	26 54.7 +59.9 173.4	26 52.7 +60.0 172.3	26 50.5 +60.0 171.2	26 48.0 +59.9 170.1
13°	27 56.3 +59.9 174.5	27 54.6 +60.0 173.4	27 52.7 +59.9 172.3	27 50.5 +59.9 171.2	27 47.9 +60.0 170.1
14°	28 56.2 +60.0 174.5	28 54.6 +60.0 173.3	28 52.6 +60.0 172.2	28 50.4 +59.9 171.1	28 47.9 +59.9 170.0
15°	29 56.2 +60.0 174.4	29 54.6 +59.9 173.3	29 52.6 +60.0 172.2	29 50.3 +60.0 171.1	29 47.8 +59.9 170.0
16°	30 56.2 +60.0 174.4	30 54.5 +60.0 173.3	30 52.6 +59.9 172.2	30 50.3 +59.9 171.0	30 47.7 +60.0 169.9
17°	31 56.2 +60.0 174.4	31 54.5 +60.0 173.2	31 52.5 +60.0 172.1	31 50.2 +60.0 171.0	31 47.7 +59.9 169.9
18°	32 56.2 +59.9 174.3	32 54.5 +59.9 173.2	32 52.5 +59.9 172.1	32 50.2 +59.9 170.9	32 47.6 +59.9 169.8
19°	33 56.1 +60.0 174.3	33 54.4 +60.0 173.2	33 52.4 +60.0 172.0	33 50.1 +60.0 170.9	33 47.5 +59.9 169.7
20°	34 56.1 +60.0 174.3	34 54.4 +60.0 173.1	34 52.4 +60.0 172.0	34 50.1 +59.9 170.8	34 47.4 +60.0 169.7
21°	35 56.1 +60.0 174.2	35 54.4 +59.9 173.1	35 52.4 +59.9 171.9	35 50.0 +60.0 170.8	35 47.4 +59.9 169.6
22°	36 56.1 +59.9 174.2	36 54.3 +60.0 173.0	36 52.3 +60.0 171.9	36 50.0 +59.9 170.7	36 47.3 +59.9 169.6
23°	37 56.0 +60.0 174.2	37 54.3 +60.0 173.0	37 52.3 +59.9 171.8	37 49.9 +59.9 170.7	37 47.2 +59.9 169.5
24°	38 56.0 +60.0 174.1	38 54.3 +59.9 173.0	38 52.2 +60.0 171.8	38 49.8 +60.0 170.6	38 47.1 +60.0 169.4
25°	39 56.0 +60.0 174.1	39 54.2 +60.0 172.9	39 52.2 +59.9 171.7	39 49.8 +59.9 170.5	39 47.1 +59.9 169.4
26°	40 56.0 +59.9 174.0	40 54.2 +60.0 172.9	40 52.1 +60.0 171.7	40 49.7 +59.9 170.5	40 47.0 +59.9 169.3
27°	41 55.9 +60.0 174.0	41 54.2 +59.9 172.8	41 52.1 +59.9 171.6	41 49.6 +60.0 170.4	41 46.9 +59.9 169.2
28°	42 55.9 +60.0 174.0	42 54.1 +60.0 172.8	42 52.0 +59.9 171.6	42 49.6 +59.9 170.4	42 46.8 +59.9 169.2
29°	43 55.9 +60.0 173.9	43 54.1 +59.9 172.7	43 51.9 +60.0 171.5	43 49.5 +59.9 170.3	43 46.7 +59.9 169.1

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°	14 46.0 +59.9 169.7	14 43.1 +59.9 168.6	14 39.9 +59.9 167.6	14 36.4 +59.9 166.6	14 32.7 +59.8 165.5
1°	15 45.9 +60.0 169.6	15 43.0 +59.9 168.6	15 39.8 +59.9 167.5	15 36.3 +59.9 166.5	15 32.5 +59.9 165.5
2°	16 45.9 +59.9 169.6	16 42.9 +59.9 168.5	16 39.7 +59.9 167.5	16 36.2 +59.9 166.4	16 32.4 +59.9 165.4
3°	17 45.8 +59.9 169.5	17 42.8 +60.0 168.5	17 39.6 +59.9 167.4	17 36.1 +59.9 166.4	17 32.3 +59.9 165.3
4°	18 45.7 +60.0 169.5	18 42.8 +59.9 168.4	18 39.5 +59.9 167.4	18 36.0 +59.9 166.3	18 32.2 +59.8 165.3
5°	19 45.7 +59.9 169.4	19 42.7 +59.9 168.4	19 39.4 +59.9 167.3	19 35.9 +59.8 166.2	19 32.0 +59.9 165.2
6°	20 45.6 +59.9 169.4	20 42.6 +59.9 168.3	20 39.3 +59.9 167.2	20 35.7 +59.9 166.2	20 31.9 +59.9 165.1
7°	21 45.5 +60.0 169.3	21 42.5 +59.9 168.2	21 39.2 +59.9 167.2	21 35.6 +59.9 166.1	21 31.8 +59.8 165.0
8°	22 45.5 +59.9 169.3	22 42.4 +59.9 168.2	22 39.1 +59.9 167.1	22 35.5 +59.9 166.0	22 31.6 +59.9 165.0
9°	23 45.4 +59.9 169.2	23 42.3 +60.0 168.1	23 39.0 +59.9 167.0	23 35.4 +59.9 166.0	23 31.5 +59.8 164.9
10°	24 45.3 +60.0 169.1	24 42.3 +59.9 168.1	24 38.9 +59.9 167.0	24 35.3 +59.8 165.9	24 31.3 +59.9 164.8
11°	25 45.3 +59.9 169.1	25 42.2 +59.9 168.0	25 38.8 +59.9 166.9	25 35.1 +59.9 165.8	25 31.2 +59.8 164.7
12°	26 45.2 +59.9 169.0	26 42.1 +59.9 167.9	26 38.7 +59.9 166.8	26 35.0 +59.9 165.8	26 31.0 +59.9 164.7
13°	27 45.1 +59.9 169.0	27 42.0 +59.9 167.9	27 38.6 +59.9 166.8	27 34.9 +59.9 165.7	27 30.9 +59.8 164.6
14°	28 45.0 +59.9 168.9	28 41.9 +59.9 167.8	28 38.5 +59.9 166.7	28 34.8 +59.8 165.6	28 30.7 +59.9 164.5
15°	29 44.9 +60.0 168.9	29 41.8 +59.9 167.8	29 38.4 +59.8 166.6	29 34.6 +59.9 165.5	29 30.6 +59.8 164.4
16°	30 44.9 +59.9 168.8	30 41.7 +59.9 167.7	30 38.2 +59.9 166.6	30 34.5 +59.8 165.5	30 30.4 +59.9 164.3
17°	31 44.8 +59.9 168.7	31 41.6 +59.9 167.6	31 38.1 +59.9 166.5	31 34.3 +59.9 165.4	31 30.3 +59.8 164.3
18°	32 44.7 +59.9 168.7	32 41.5 +59.9 167.5	32 38.0 +59.9 166.4	32 34.2 +59.9 165.3	32 30.1 +59.8 164.2
19°	33 44.6 +59.9 168.6	33 41.4 +59.9 167.5	33 37.9 +59.8 166.3	33 34.1 +59.8 165.2	33 29.9 +59.9 164.1
20°	34 44.5 +59.9 168.5	34 41.3 +59.9 167.4	34 37.7 +59.9 166.3	34 33.9 +59.9 165.1	34 29.8 +59.8 164.0
21°	35 44.4 +59.9 168.5	35 41.2 +59.9 167.3	35 37.6 +59.9 166.2	35 33.8 +59.8 165.0	35 29.6 +59.8 163.9
22°	36 44.3 +59.9 168.4	36 41.1 +59.8 167.3	36 37.5 +59.8 166.1	36 33.6 +59.8 164.9	36 29.4 +59.8 163.8
23°	37 44.2 +59.9 168.3	37 40.9 +59.9 167.2	37 37.3 +59.9 166.0	37 33.4 +59.9 164.9	37 29.2 +59.8 163.7
24°	38 44.1 +59.9 168.3	38 40.8 +59.9 167.1	38 37.2 +59.9 165.9	38 33.3 +59.8 164.8	38 29.0 +59.8 163.6
25°	39 44.0 +59.9 168.2	39 40.7 +59.9 167.0	39 37.1 +59.8 165.8	39 33.1 +59.8 164.7	39 28.8 +59.8 163.5
26°	40 43.9 +59.9 168.1	40 40.6 +59.9 166.9	40 36.9 +59.9 165.7	40 32.9 +59.9 164.6	40 28.6 +59.8 163.4
27°	41 43.8 +59.9 168.0	41 40.5 +59.8 166.8	41 36.8 +59.8 165.7	41 32.8 +59.8 164.5	41 28.4 +59.8 163.3
28°	42 43.7 +59.9 168.0	42 40.3 +59.9 166.8	42 36.6 +59.8 165.6	42 32.6 +59.8 164.4	42 28.2 +59.8 163.2
29°	43 43.6 +59.9 167.9	43 40.2 +59.8 166.7	43 36.4 +59.9 165.5	43 32.4 +59.8 164.3	43 28.0 +59.8 163.1

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°	14 28.7 +59.8 164.5	14 24.4 +59.8 163.5	14 19.8 +59.8 162.4	14 15.0 +59.8 161.4	14 09.9 +59.8 160.4
1°	15 28.5 +59.9 164.4	15 24.2 +59.8 163.4	15 19.6 +59.8 162.4	15 14.8 +59.8 161.3	15 09.7 +59.8 160.3
2°	16 28.4 +59.8 164.4	16 24.0 +59.9 163.3	16 19.4 +59.9 162.3	16 14.6 +59.8 161.2	16 09.5 +59.7 160.2
3°	17 28.2 +59.9 164.3	17 23.9 +59.8 163.2	17 19.3 +59.8 162.2	17 14.4 +59.8 161.1	17 09.2 +59.8 160.1
4°	18 28.1 +59.8 164.2	18 23.7 +59.8 163.2	18 19.1 +59.8 162.1	18 14.2 +59.7 161.1	18 09.0 +59.7 160.0
5°	19 27.9 +59.9 164.1	19 23.5 +59.9 163.1	19 18.9 +59.8 162.0	19 13.9 +59.8 161.0	19 08.7 +59.8 159.9
6°	20 27.8 +59.8 164.1	20 23.4 +59.8 163.0	20 18.7 +59.8 161.9	20 13.7 +59.8 160.9	20 08.5 +59.8 159.8
7°	21 27.6 +59.8 164.0	21 23.2 +59.8 162.9	21 18.5 +59.8 161.9	21 13.5 +59.8 160.8	21 08.3 +59.7 159.7
8°	22 27.4 +59.9 163.9	22 23.0 +59.8 162.8	22 18.3 +59.8 161.8	22 13.3 +59.8 160.7	22 08.0 +59.8 159.6
9°	23 27.3 +59.8 163.8	23 22.8 +59.8 162.7	23 18.1 +59.8 161.7	23 13.1 +59.7 160.6	23 07.8 +59.7 159.5
10°	24 27.1 +59.9 163.7	24 22.6 +59.9 162.7	24 17.9 +59.8 161.6	24 12.8 +59.8 160.5	24 07.5 +59.8 159.4
11°	25 27.0 +59.8 163.7	25 22.5 +59.8 162.6	25 17.7 +59.8 161.5	25 12.6 +59.8 160.4	25 07.3 +59.7 159.3
12°	26 26.8 +59.8 163.6	26 22.3 +59.8 162.5	26 17.5 +59.7 161.4	26 12.4 +59.7 160.3	26 07.0 +59.7 159.2
13°	27 26.6 +59.9 163.5	27 22.1 +59.8 162.4	27 17.2 +59.8 161.3	27 12.1 +59.8 160.2	27 06.7 +59.8 159.1
14°	28 26.5 +59.8 163.4	28 21.9 +59.8 162.3	28 17.0 +59.8 161.2	28 11.9 +59.7 160.1	28 06.5 +59.7 159.0
15°	29 26.3 +59.8 163.3	29 21.7 +59.8 162.2	29 16.8 +59.8 161.1	29 11.6 +59.8 160.0	29 06.2 +59.7 158.9
16°	30 26.1 +59.8 163.2	30 21.5 +59.8 162.1	30 16.6 +59.7 161.0	30 11.4 +59.7 159.9	30 05.9 +59.7 158.8
17°	31 25.9 +59.8 163.1	31 21.3 +59.8 162.0	31 16.3 +59.8 160.9	31 11.1 +59.7 159.8	31 05.6 +59.7 158.7
18°	32 25.7 +59.8 163.0	32 21.1 +59.7 161.9	32 16.1 +59.7 160.8	32 10.8 +59.8 159.7	32 05.3 +59.7 158.6
19°	33 25.5 +59.8 162.9	33 20.8 +59.8 161.8	33 15.8 +59.8 160.7	33 10.6 +59.7 159.6	33 05.0 +59.7 158.4
20°	34 25.3 +59.8 162.9	34 20.6 +59.8 161.7	34 15.6 +59.7 160.6	34 10.3 +59.7 159.5	34 04.7 +59.7 158.3
21°	35 25.1 +59.8 162.8	35 20.4 +59.8 161.6	35 15.3 +59.8 160.5	35 10.0 +59.7 159.3	35 04.4 +59.7 158.2
22°	36 24.9 +59.8 162.7	36 20.2 +59.7 161.5	36 15.1 +59.7 160.4	36 09.7 +59.7 159.2	36 04.1 +59.6 158.1
23°	37 24.7 +59.8 162.5	37 19.9 +59.8 161.4	37 14.8 +59.7 160.2	37 09.4 +59.7 159.1	37 03.7 +59.7 157.9
24°	38 24.5 +59.8 162.4	38 19.7 +59.7 161.3	38 14.5 +59.8 160.1	38 09.1 +59.7 159.0	38 03.4 +59.6 157.8
25°	39 24.3 +59.8 162.3	39 19.4 +59.8 161.2	39 14.3 +59.7 160.0	39 08.8 +59.7 158.8	39 03.0 +59.7 157.7
26°	40 24.1 +59.7 162.2	40 19.2 +59.7 161.0	40 14.0 +59.7 159.9	40 08.5 +59.6 158.7	40 02.7 +59.6 157.5
27°	41 23.8 +59.8 162.1	41 18.9 +59.7 160.9	41 13.7 +59.7 159.7	41 08.1 +59.7 158.6	41 02.3 +59.6 157.4
28°	42 23.6 +59.7 162.0	42 18.6 +59.7 160.8	42 13.4 +59.6 159.6	42 07.8 +59.6 158.4	42 01.9 +59.6 157.2
29°	43 23.3 +59.8 161.9	43 18.3 +59.7 160.7	43 13.0 +59.7 159.5	43 07.4 +59.7 158.3	43 01.5 +59.6 157.1

Declination SAME name as Latitude

Latitude 75°

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°	14 04.6 +59.7 159.4	13 59.0 +59.7 158.3	13 53.1 +59.7 157.3	13 47.0 +59.6 156.3	13 40.6 +59.6 155.3
1°	15 04.3 +59.8 159.3	14 58.7 +59.7 158.2	14 52.8 +59.7 157.2	14 46.6 +59.7 156.2	14 40.2 +59.7 155.1
2°	16 04.1 +59.7 159.2	15 58.4 +59.7 158.1	15 52.5 +59.7 157.1	15 46.3 +59.7 156.1	15 39.9 +59.6 155.0
3°	17 03.8 +59.7 159.1	16 58.1 +59.7 158.0	16 52.2 +59.7 157.0	16 46.0 +59.6 156.0	16 39.5 +59.7 154.9
4°	18 03.5 +59.8 159.0	17 57.8 +59.8 157.9	17 51.9 +59.7 156.9	17 45.6 +59.7 155.8	17 39.2 +59.6 154.8
5°	19 03.3 +59.7 158.9	18 57.6 +59.7 157.8	18 51.6 +59.6 156.8	18 45.3 +59.7 155.7	18 38.8 +59.6 154.7
6°	20 03.0 +59.7 158.8	19 57.3 +59.7 157.7	19 51.2 +59.7 156.7	19 45.0 +59.6 155.6	19 38.4 +59.6 154.6
7°	21 02.7 +59.8 158.7	20 57.0 +59.7 157.6	20 50.9 +59.7 156.6	20 44.6 +59.7 155.5	20 38.0 +59.7 154.4
8°	22 02.5 +59.7 158.6	21 56.7 +59.7 157.5	21 50.6 +59.7 156.4	21 44.3 +59.6 155.4	21 37.7 +59.6 154.3
9°	23 02.2 +59.7 158.5	22 56.4 +59.7 157.4	22 50.3 +59.6 156.3	22 43.9 +59.6 155.3	22 37.3 +59.6 154.2
10°	24 01.9 +59.7 158.4	23 56.1 +59.6 157.3	23 49.9 +59.7 156.2	23 43.5 +59.7 155.1	23 36.9 +59.6 154.1
11°	25 01.6 +59.7 158.3	24 55.7 +59.7 157.2	24 49.6 +59.6 156.1	24 43.2 +59.6 155.0	24 36.5 +59.6 154.0
12°	26 01.3 +59.8 158.1	25 55.4 +59.7 157.1	25 49.2 +59.7 156.0	25 42.8 +59.6 154.9	25 36.1 +59.6 153.8
13°	27 01.1 +59.7 158.0	26 55.1 +59.7 156.9	26 48.9 +59.6 155.9	26 42.4 +59.6 154.8	26 35.7 +59.5 153.7
14°	28 00.8 +59.6 157.9	27 54.8 +59.6 156.8	27 48.5 +59.7 155.7	27 42.0 +59.6 154.6	27 35.2 +59.6 153.6
15°	29 00.4 +59.7 157.8	28 54.4 +59.7 156.7	28 48.2 +59.6 155.6	28 41.6 +59.6 154.5	28 34.8 +59.6 153.4
16°	30 00.1 +59.7 157.7	29 54.1 +59.7 156.6	29 47.8 +59.6 155.5	29 41.2 +59.6 154.4	29 34.4 +59.5 153.3
17°	30 59.8 +59.7 157.6	30 53.8 +59.6 156.5	30 47.4 +59.6 155.4	30 40.8 +59.6 154.2	30 33.9 +59.6 153.1
18°	31 59.5 +59.7 157.4	31 53.4 +59.6 156.3	31 47.0 +59.6 155.2	31 40.4 +59.6 154.1	31 33.5 +59.5 153.0
19°	32 59.2 +59.6 157.3	32 53.0 +59.7 156.2	32 46.6 +59.6 155.1	32 40.0 +59.5 154.0	32 33.0 +59.5 152.9
20°	33 58.8 +59.7 157.2	33 52.7 +59.6 156.1	33 46.2 +59.6 154.9	33 39.5 +59.6 153.8	33 32.5 +59.5 152.7
21°	34 58.5 +59.6 157.1	34 52.3 +59.6 155.9	34 45.8 +59.6 154.8	34 39.1 +59.5 153.7	34 32.0 +59.5 152.6
22°	35 58.1 +59.7 156.9	35 51.9 +59.6 155.8	35 45.4 +59.6 154.7	35 38.6 +59.5 153.5	35 31.5 +59.5 152.4
23°	36 57.8 +59.6 156.8	36 51.5 +59.6 155.7	36 45.0 +59.5 154.5	36 38.1 +59.5 153.4	36 31.0 +59.5 152.2
24°	37 57.4 +59.6 156.7	37 51.1 +59.6 155.5	37 44.5 +59.5 154.4	37 37.6 +59.5 153.2	37 30.5 +59.5 152.1
25°	38 57.0 +59.6 156.5	38 50.7 +59.5 155.4	38 44.0 +59.6 154.2	38 37.1 +59.5 153.0	38 30.0 +59.4 151.9
26°	39 56.6 +59.6 156.4	39 50.2 +59.6 155.2	39 43.6 +59.5 154.0	39 36.6 +59.5 152.9	39 29.4 +59.4 151.7
27°	40 56.2 +59.6 156.2	40 49.8 +59.5 155.0	40 43.1 +59.5 153.9	40 36.1 +59.5 152.7	40 28.8 +59.5 151.5
28°	41 55.8 +59.5 156.1	41 49.3 +59.6 154.9	41 42.6 +59.5 153.7	41 35.6 +59.4 152.5	41 28.3 +59.4 151.4
29°	42 55.3 +59.6 155.9	42 48.9 +59.5 154.7	42 42.1 +59.4 153.5	42 35.0 +59.4 152.3	42 27.7 +59.3 151.2

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°	13 34.0 +59.6 154.2	13 27.1 +59.6 153.2	13 20.0 +59.5 152.2	13 12.6 +59.5 151.2	13 05.0 +59.5 150.2
1°	14 33.6 +59.6 154.1	14 26.7 +59.6 153.1	14 19.5 +59.6 152.1	14 12.1 +59.6 151.0	14 04.5 +59.5 150.0
2°	15 33.2 +59.6 154.0	15 26.3 +59.6 153.0	15 19.1 +59.5 151.9	15 11.7 +59.5 150.9	15 04.0 +59.5 149.9
3°	16 32.8 +59.6 153.9	16 25.9 +59.5 152.8	16 18.6 +59.6 151.8	16 11.2 +59.5 150.8	16 03.5 +59.5 149.7
4°	17 32.4 +59.6 153.8	17 25.4 +59.6 152.7	17 18.2 +59.5 151.7	17 10.7 +59.5 150.6	17 03.0 +59.4 149.6
5°	18 32.0 +59.6 153.6	18 25.0 +59.6 152.6	18 17.7 +59.6 151.6	18 10.2 +59.5 150.5	18 02.4 +59.5 149.5
6°	19 31.6 +59.6 153.5	19 24.6 +59.5 152.5	19 17.3 +59.5 151.4	19 09.7 +59.5 150.4	19 01.9 +59.5 149.3
7°	20 31.2 +59.6 153.4	20 24.1 +59.6 152.3	20 16.8 +59.5 151.3	20 09.2 +59.5 150.2	20 01.4 +59.4 149.2
8°	21 30.8 +59.6 153.3	21 23.7 +59.5 152.2	21 16.3 +59.5 151.2	21 08.7 +59.5 150.1	21 00.8 +59.5 149.0
9°	22 30.4 +59.6 153.1	22 23.2 +59.6 152.1	22 15.8 +59.5 151.0	22 08.2 +59.5 150.0	22 00.3 +59.4 148.9
10°	23 30.0 +59.5 153.0	23 22.8 +59.5 151.9	23 15.3 +59.6 150.9	23 07.7 +59.4 149.8	22 59.7 +59.5 148.8
11°	24 29.5 +59.6 152.9	24 22.3 +59.5 151.8	24 14.9 +59.4 150.7	24 07.1 +59.5 149.7	23 59.2 +59.4 148.6
12°	25 29.1 +59.5 152.7	25 21.8 +59.6 151.7	25 14.3 +59.5 150.6	25 06.6 +59.5 149.5	24 58.6 +59.4 148.5
13°	26 28.6 +59.6 152.6	26 21.4 +59.5 151.5	26 13.8 +59.5 150.5	26 06.1 +59.4 149.4	25 58.0 +59.4 148.3
14°	27 28.2 +59.5 152.5	27 20.9 +59.5 151.4	27 13.3 +59.5 150.3	27 05.5 +59.4 149.2	26 57.4 +59.4 148.1
15°	28 27.7 +59.6 152.3	28 20.4 +59.5 151.2	28 12.8 +59.4 150.2	28 04.9 +59.5 149.1	27 56.8 +59.4 148.0
16°	29 27.3 +59.5 152.2	29 19.9 +59.5 151.1	29 12.2 +59.5 150.0	29 04.4 +59.4 148.9	28 56.2 +59.4 147.8
17°	30 26.8 +59.5 152.0	30 19.4 +59.4 150.9	30 11.7 +59.4 149.8	30 03.8 +59.4 148.8	29 55.6 +59.3 147.7
18°	31 26.3 +59.5 151.9	31 18.8 +59.5 150.8	31 11.1 +59.5 149.7	31 03.2 +59.3 148.6	30 54.9 +59.4 147.5
19°	32 25.8 +59.5 151.7	32 18.3 +59.5 150.6	32 10.6 +59.4 149.5	32 02.5 +59.4 148.4	31 54.3 +59.3 147.3
20°	33 25.3 +59.4 151.6	33 17.8 +59.4 150.5	33 10.0 +59.4 149.4	33 01.9 +59.4 148.3	32 53.6 +59.3 147.1
21°	34 24.7 +59.5 151.4	34 17.2 +59.4 150.3	34 09.4 +59.4 149.2	34 01.3 +59.3 148.1	33 52.9 +59.3 147.0
22°	35 24.2 +59.5 151.3	35 16.6 +59.4 150.1	35 08.8 +59.3 149.0	35 00.6 +59.4 147.9	34 52.2 +59.3 146.8
23°	36 23.7 +59.4 151.1	36 16.0 +59.4 150.0	36 08.1 +59.4 148.8	36 00.0 +59.3 147.7	35 51.5 +59.3 146.6
24°	37 23.1 +59.4 150.9	37 15.4 +59.4 149.8	37 07.5 +59.3 148.7	36 59.3 +59.3 147.5	36 50.8 +59.2 146.4
25°	38 22.5 +59.4 150.8	38 14.8 +59.4 149.6	38 06.8 +59.3 148.5	37 58.6 +59.2 147.3	37 50.0 +59.3 146.2
26°	39 21.9 +59.4 150.6	39 14.2 +59.3 149.4	39 06.1 +59.3 148.3	38 57.8 +59.3 147.1	38 49.3 +59.2 146.0
27°	40 21.3 +59.4 150.4	40 13.5 +59.3 149.2	40 05.4 +59.3 148.1	39 57.1 +59.2 146.9	39 48.5 +59.2 145.8
28°	41 20.7 +59.3 150.2	41 12.8 +59.3 149.0	41 04.7 +59.3 147.9	40 56.3 +59.2 146.7	40 47.7 +59.1 145.6
29°	42 20.0 +59.4 150.0	42 12.1 +59.3 148.8	42 04.0 +59.2 147.7	41 55.5 +59.2 146.5	41 46.8 +59.1 145.3

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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°	12 57.2 +59.4 149.1	12 49.1 +59.4 148.1	12 40.7 +59.5 147.1	12 32.2 +59.4 146.1	12 23.4 +59.4 145.1
1°	13 56.6 +59.5 149.0	13 48.5 +59.4 148.0	13 40.2 +59.3 147.0	13 31.6 +59.3 145.9	13 22.8 +59.3 144.9
2°	14 56.1 +59.4 148.9	14 47.9 +59.5 147.8	14 39.5 +59.4 146.8	14 30.9 +59.4 145.8	14 22.1 +59.3 144.8
3°	15 55.5 +59.5 148.7	15 47.4 +59.4 147.7	15 38.9 +59.4 146.7	15 30.3 +59.3 145.6	15 21.4 +59.3 144.6
4°	16 55.0 +59.4 148.6	16 46.8 +59.4 147.5	16 38.3 +59.4 146.5	16 29.6 +59.4 145.5	16 20.7 +59.3 144.5
5°	17 54.4 +59.5 148.4	17 46.2 +59.4 147.4	17 37.7 +59.4 146.4	17 29.0 +59.3 145.3	17 20.0 +59.3 144.3
6°	18 53.9 +59.4 148.3	18 45.6 +59.4 147.3	18 37.1 +59.3 146.2	18 28.3 +59.4 145.2	18 19.3 +59.3 144.1
7°	19 53.3 +59.4 148.1	19 45.0 +59.4 147.1	19 36.4 +59.4 146.1	19 27.7 +59.3 145.0	19 18.6 +59.3 144.0
8°	20 52.7 +59.4 148.0	20 44.4 +59.4 147.0	20 35.8 +59.3 145.9	20 27.0 +59.3 144.9	20 17.9 +59.3 143.8
9°	21 52.1 +59.5 147.8	21 43.8 +59.3 146.8	21 35.1 +59.4 145.7	21 26.3 +59.3 144.7	21 17.2 +59.3 143.6
10°	22 51.6 +59.4 147.7	22 43.1 +59.4 146.6	22 34.5 +59.3 145.6	22 25.6 +59.3 144.5	22 16.5 +59.2 143.5
11°	23 51.0 +59.4 147.5	23 42.5 +59.4 146.5	23 33.8 +59.3 145.4	23 24.9 +59.3 144.4	23 15.7 +59.3 143.3
12°	24 50.4 +59.3 147.4	24 41.9 +59.3 146.3	24 33.1 +59.3 145.3	24 24.2 +59.2 144.2	24 15.0 +59.2 143.1
13°	25 49.7 +59.4 147.2	25 41.2 +59.3 146.2	25 32.4 +59.3 145.1	25 23.4 +59.3 144.0	25 14.2 +59.2 143.0
14°	26 49.1 +59.4 147.1	26 40.5 +59.4 146.0	26 31.7 +59.3 144.9	26 22.7 +59.2 143.9	26 13.4 +59.2 142.8
15°	27 48.5 +59.3 146.9	27 39.9 +59.3 145.8	27 31.0 +59.3 144.7	27 21.9 +59.3 143.7	27 12.6 +59.2 142.6
16°	28 47.8 +59.3 146.7	28 39.2 +59.3 145.7	28 30.3 +59.3 144.6	28 21.2 +59.2 143.5	28 11.8 +59.2 142.4
17°	29 47.1 +59.4 146.6	29 38.5 +59.3 145.5	29 29.6 +59.2 144.4	29 20.4 +59.2 143.3	29 11.0 +59.2 142.2
18°	30 46.5 +59.3 146.4	30 37.8 +59.2 145.3	30 28.8 +59.2 144.2	30 19.6 +59.2 143.1	30 10.2 +59.1 142.0
19°	31 45.8 +59.3 146.2	31 37.0 +59.3 145.1	31 28.0 +59.2 144.0	31 18.8 +59.1 142.9	31 09.3 +59.1 141.8
20°	32 45.1 +59.3 146.0	32 36.3 +59.2 144.9	32 27.2 +59.2 143.8	32 17.9 +59.2 142.7	32 08.4 +59.1 141.6
21°	33 44.4 +59.2 145.9	33 35.5 +59.2 144.7	33 26.4 +59.2 143.6	33 17.1 +59.1 142.5	33 07.5 +59.1 141.4
22°	34 43.6 +59.3 145.7	34 34.7 +59.2 144.5	34 25.6 +59.2 143.4	34 16.2 +59.1 142.3	34 06.6 +59.1 141.2
23°	35 42.9 +59.2 145.5	35 33.9 +59.2 144.4	35 24.8 +59.1 143.2	35 15.3 +59.1 142.1	35 05.7 +59.0 141.0
24°	36 42.1 +59.2 145.3	36 33.1 +59.2 144.1	36 23.9 +59.1 143.0	36 14.4 +59.1 141.9	36 04.7 +59.0 140.8
25°	37 41.3 +59.2 145.1	37 32.3 +59.1 143.9	37 23.0 +59.1 142.8	37 13.5 +59.0 141.7	37 03.7 +59.0 140.6
26°	38 40.5 +59.1 144.9	38 31.4 +59.1 143.7	38 22.1 +59.0 142.6	38 12.5 +59.0 141.5	38 02.7 +59.0 140.3
27°	39 39.6 +59.2 144.6	39 30.5 +59.1 143.5	39 21.1 +59.1 142.4	39 11.5 +59.0 141.2	39 01.7 +58.9 140.1
28°	40 38.8 +59.1 144.4	40 29.6 +59.0 143.3	40 20.2 +59.0 142.1	40 10.5 +59.0 141.0	40 00.6 +58.9 139.9
29°	41 37.9 +59.0 144.2	41 28.6 +59.1 143.0	41 19.2 +59.0 141.9	41 09.5 +58.9 140.8	40 59.5 +58.9 139.6

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°	12 14.4 +59.3 144.1	12 05.2 +59.3 143.1	11 55.7 +59.3 142.0	11 46.1 +59.2 141.0	11 36.2 +59.2 140.0
1°	13 13.7 +59.3 143.9	13 04.5 +59.2 142.9	12 55.0 +59.2 141.9	12 45.3 +59.2 140.9	12 35.4 +59.1 139.9
2°	14 13.0 +59.3 143.7	14 03.7 +59.3 142.7	13 54.2 +59.2 141.7	13 44.5 +59.2 140.7	13 34.5 +59.2 139.7
3°	15 12.3 +59.3 143.6	15 03.0 +59.2 142.6	14 53.4 +59.2 141.5	14 43.7 +59.1 140.5	14 33.7 +59.1 139.5
4°	16 11.6 +59.3 143.4	16 02.2 +59.3 142.4	15 52.6 +59.2 141.4	15 42.8 +59.2 140.4	15 32.8 +59.2 139.3
5°	17 10.9 +59.2 143.3	17 01.5 +59.2 142.2	16 51.8 +59.2 141.2	16 42.0 +59.2 140.2	16 32.0 +59.1 139.2
6°	18 10.1 +59.3 143.1	18 00.7 +59.2 142.1	17 51.0 +59.2 141.0	17 41.2 +59.1 140.0	17 31.1 +59.1 139.0
7°	19 09.4 +59.2 142.9	18 59.9 +59.2 141.9	18 50.2 +59.2 140.9	18 40.3 +59.2 139.8	18 30.2 +59.1 138.8
8°	20 08.6 +59.3 142.8	19 59.1 +59.2 141.7	19 49.4 +59.2 140.7	19 39.5 +59.1 139.7	19 29.3 +59.1 138.6
9°	21 07.9 +59.2 142.6	20 58.3 +59.2 141.6	20 48.6 +59.1 140.5	20 38.6 +59.1 139.5	20 28.4 +59.1 138.4
10°	22 07.1 +59.2 142.4	21 57.5 +59.2 141.4	21 47.7 +59.2 140.3	21 37.7 +59.1 139.3	21 27.5 +59.0 138.2
11°	23 06.3 +59.2 142.3	22 56.7 +59.2 141.2	22 46.9 +59.1 140.2	22 36.8 +59.1 139.1	22 26.5 +59.1 138.1
12°	24 05.5 +59.2 142.1	23 55.9 +59.1 141.0	23 46.0 +59.1 140.0	23 35.9 +59.1 138.9	23 25.6 +59.0 137.9
13°	25 04.7 +59.2 141.9	24 55.0 +59.2 140.8	24 45.1 +59.1 139.8	24 35.0 +59.0 138.7	24 24.6 +59.1 137.7
14°	26 03.9 +59.2 141.7	25 54.2 +59.1 140.7	25 44.2 +59.1 139.6	25 34.0 +59.1 138.5	25 23.7 +59.0 137.5
15°	27 03.1 +59.1 141.5	26 53.3 +59.1 140.5	26 43.3 +59.1 139.4	26 33.1 +59.0 138.3	26 22.7 +59.0 137.3
16°	28 02.2 +59.2 141.3	27 52.4 +59.1 140.3	27 42.4 +59.0 139.2	27 32.1 +59.0 138.1	27 21.7 +58.9 137.1
17°	29 01.4 +59.1 141.1	28 51.5 +59.1 140.1	28 41.4 +59.1 139.0	28 31.1 +59.0 137.9	28 20.6 +59.0 136.9
18°	30 00.5 +59.1 141.0	29 50.6 +59.1 139.9	29 40.5 +59.0 138.8	29 30.1 +59.0 137.7	29 19.6 +58.9 136.6
19°	30 59.6 +59.1 140.8	30 49.7 +59.0 139.7	30 39.5 +59.0 138.6	30 29.1 +59.0 137.5	30 18.5 +58.9 136.4
20°	31 58.7 +59.0 140.5	31 48.7 +59.0 139.5	31 38.5 +59.0 138.4	31 28.1 +58.9 137.3	31 17.4 +58.9 136.2
21°	32 57.7 +59.1 140.3	32 47.7 +59.0 139.2	32 37.5 +58.9 138.2	32 27.0 +58.9 137.1	32 16.3 +58.9 136.0
22°	33 56.8 +59.0 140.1	33 46.7 +59.0 139.0	33 36.4 +58.9 137.9	33 25.9 +58.9 136.8	33 15.2 +58.8 135.8
23°	34 55.8 +59.0 139.9	34 45.7 +58.9 138.8	34 35.3 +59.0 137.7	34 24.8 +58.8 136.6	34 14.0 +58.8 135.5
24°	35 54.8 +59.0 139.7	35 44.6 +59.0 138.6	35 34.3 +58.8 137.5	35 23.6 +58.9 136.4	35 12.8 +58.8 135.3
25°	36 53.8 +58.9 139.5	36 43.6 +58.9 138.3	36 33.1 +58.9 137.2	36 22.5 +58.8 136.1	36 11.6 +58.8 135.0
26°	37 52.7 +58.9 139.2	37 42.5 +58.8 138.1	37 32.0 +58.8 137.0	37 21.3 +58.7 135.9	37 10.4 +58.7 134.8
27°	38 51.6 +58.9 139.0	38 41.3 +58.9 137.9	38 30.8 +58.8 136.7	38 20.0 +58.8 135.6	38 09.1 +58.7 134.5
28°	39 50.5 +58.9 138.7	39 40.2 +58.8 137.6	39 29.6 +58.7 136.5	39 18.8 +58.7 135.4	39 07.8 +58.6 134.2
29°	40 49.4 +58.8 138.5	40 39.0 +58.7 137.3	40 28.3 +58.7 136.2	40 17.5 +58.6 135.1	40 06.4 +58.6 134.0

Declination SAME name as Latitude

Latitude 75°

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°	11 26.1 +59.2 139.0	11 15.9 +59.0 138.0	11 05.4 +59.0 137.0	10 54.7 +59.0 136.0	10 43.8 +59.0 135.0
1°	12 25.3 +59.1 138.8	12 14.9 +59.1 137.8	12 04.4 +59.1 136.8	11 53.7 +59.0 135.8	11 42.8 +59.0 134.8
2°	13 24.4 +59.1 138.7	13 14.0 +59.1 137.7	13 03.5 +59.0 136.6	12 52.7 +59.0 135.6	12 41.8 +58.9 134.6
3°	14 23.5 +59.1 138.5	14 13.1 +59.1 137.5	14 02.5 +59.0 136.5	13 51.7 +59.0 135.5	13 40.7 +59.0 134.4
4°	15 22.6 +59.1 138.3	15 12.2 +59.0 137.3	15 01.5 +59.1 136.3	14 50.7 +59.0 135.3	14 39.7 +58.9 134.3
5°	16 21.7 +59.1 138.1	16 11.2 +59.1 137.1	16 00.6 +59.0 136.1	15 49.7 +59.0 135.1	15 38.6 +59.0 134.1
6°	17 20.8 +59.1 138.0	17 10.3 +59.0 136.9	16 59.6 +59.0 135.9	16 48.7 +58.9 134.9	16 37.6 +58.9 133.9
7°	18 19.9 +59.0 137.8	18 09.3 +59.0 136.7	17 58.6 +59.0 135.7	17 47.6 +59.0 134.7	17 36.5 +58.9 133.7
8°	19 18.9 +59.1 137.6	19 08.3 +59.1 136.6	18 57.6 +58.9 135.5	18 46.6 +58.9 134.5	18 35.4 +58.9 133.5
9°	20 18.0 +59.0 137.4	20 07.4 +59.0 136.4	19 56.5 +59.0 135.3	19 45.5 +59.0 134.3	19 34.3 +58.9 133.3
10°	21 17.0 +59.1 137.2	21 06.4 +59.0 136.2	20 55.5 +59.0 135.1	20 44.5 +58.9 134.1	20 33.2 +58.9 133.1
11°	22 16.1 +59.0 137.0	22 05.4 +58.9 136.0	21 54.5 +58.9 134.9	21 43.4 +58.9 133.9	21 32.1 +58.8 132.9
12°	23 15.1 +59.0 136.8	23 04.3 +59.0 135.8	22 53.4 +58.9 134.7	22 42.3 +58.9 133.7	22 30.9 +58.9 132.6
13°	24 14.1 +59.0 136.6	24 03.3 +58.9 135.6	23 52.3 +58.9 134.5	23 41.2 +58.8 133.5	23 29.8 +58.8 132.4
14°	25 13.1 +58.9 136.4	25 02.2 +59.0 135.4	24 51.2 +58.9 134.3	24 40.0 +58.9 133.3	24 28.6 +58.8 132.2
15°	26 12.0 +59.0 136.2	26 01.2 +58.9 135.2	25 50.1 +58.9 134.1	25 38.9 +58.8 133.0	25 27.4 +58.8 132.0
16°	27 11.0 +58.9 136.0	27 00.1 +58.9 134.9	26 49.0 +58.8 133.9	26 37.7 +58.8 132.8	26 26.2 +58.8 131.8
17°	28 09.9 +58.9 135.8	27 59.0 +58.8 134.7	27 47.8 +58.9 133.7	27 36.5 +58.8 132.6	27 25.0 +58.7 131.6
18°	29 08.8 +58.9 135.6	28 57.8 +58.9 134.5	28 46.7 +58.8 133.4	28 35.3 +58.8 132.4	28 23.7 +58.7 131.3
19°	30 07.7 +58.9 135.4	29 56.7 +58.8 134.3	29 45.5 +58.8 133.2	29 34.1 +58.7 132.2	29 22.4 +58.7 131.1
20°	31 06.6 +58.8 135.1	30 55.5 +58.8 134.1	30 44.3 +58.7 133.0	30 32.8 +58.7 131.9	30 21.1 +58.7 130.8
21°	32 05.4 +58.8 134.9	31 54.3 +58.8 133.8	31 43.0 +58.7 132.7	31 31.5 +58.7 131.7	31 19.8 +58.7 130.6
22°	33 04.2 +58.8 134.7	32 53.1 +58.7 133.6	32 41.7 +58.7 132.5	32 30.2 +58.7 131.4	32 18.5 +58.6 130.4
23°	34 03.0 +58.8 134.4	33 51.8 +58.8 133.3	33 40.4 +58.7 132.3	33 28.9 +58.6 131.2	33 17.1 +58.5 130.1
24°	35 01.8 +58.7 134.2	34 50.6 +58.6 133.1	34 39.1 +58.7 132.0	34 27.5 +58.6 130.9	34 15.6 +58.6 129.8
25°	36 00.5 +58.7 133.9	35 49.2 +58.7 132.8	35 37.8 +58.6 131.7	35 26.1 +58.5 130.7	35 14.2 +58.5 129.6
26°	36 59.2 +58.7 133.7	36 47.9 +58.6 132.6	36 36.4 +58.5 131.5	36 24.6 +58.5 130.4	36 12.7 +58.5 129.3
27°	37 57.9 +58.6 133.4	37 46.5 +58.6 132.3	37 34.9 +58.6 131.2	37 23.1 +58.5 130.1	37 11.2 +58.4 129.0
28°	38 56.5 +58.6 133.1	38 45.1 +58.5 132.0	38 33.5 +58.4 130.9	38 21.6 +58.5 129.8	38 09.6 +58.4 128.7
29°	39 55.1 +58.6 132.9	39 43.6 +58.5 131.7	39 31.9 +58.5 130.6	39 20.1 +58.4 129.5	39 08.0 +58.3 128.4

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°	10 32.7 +59.0 134.0	10 21.5 +58.9 133.0	10 10.0 +58.9 132.0	9 58.4 +58.8 131.0	9 46.6 +58.8 130.0
1°	11 31.7 +58.9 133.8	11 20.4 +58.9 132.8	11 08.9 +58.9 131.8	10 57.2 +58.9 130.8	10 45.4 +58.8 129.8
2°	12 30.6 +58.9 133.6	12 19.3 +58.9 132.6	12 07.8 +58.8 131.6	11 56.1 +58.8 130.6	11 44.2 +58.8 129.6
3°	13 29.5 +59.0 133.4	13 18.2 +58.9 132.4	13 06.6 +58.9 131.4	12 54.9 +58.8 130.4	12 43.0 +58.7 129.4
4°	14 28.5 +58.9 133.2	14 17.1 +58.8 132.2	14 05.5 +58.8 131.2	13 53.7 +58.8 130.2	13 41.7 +58.8 129.2
5°	15 27.4 +58.9 133.0	15 15.9 +58.9 132.0	15 04.3 +58.8 131.0	14 52.5 +58.8 130.0	14 40.5 +58.8 129.0
6°	16 26.3 +58.9 132.8	16 14.8 +58.9 131.8	16 03.1 +58.9 130.8	15 51.3 +58.8 129.8	15 39.3 +58.7 128.8
7°	17 25.2 +58.8 132.6	17 13.7 +58.8 131.6	17 02.0 +58.8 130.6	16 50.1 +58.7 129.6	16 38.0 +58.8 128.6
8°	18 24.0 +58.9 132.4	18 12.5 +58.8 131.4	18 00.8 +58.8 130.4	17 48.8 +58.8 129.4	17 36.8 +58.7 128.4
9°	19 22.9 +58.9 132.2	19 11.3 +58.8 131.2	18 59.6 +58.7 130.2	18 47.6 +58.7 129.2	18 35.5 +58.7 128.1
10°	20 21.8 +58.8 132.0	20 10.1 +58.8 131.0	19 58.3 +58.8 130.0	19 46.3 +58.8 128.9	19 34.2 +58.7 127.9
11°	21 20.6 +58.8 131.8	21 08.9 +58.8 130.8	20 57.1 +58.7 129.8	20 45.1 +58.7 128.7	20 32.9 +58.6 127.7
12°	22 19.4 +58.8 131.6	22 07.7 +58.8 130.6	21 55.8 +58.8 129.5	21 43.8 +58.7 128.5	21 31.5 +58.7 127.5
13°	23 18.2 +58.8 131.4	23 06.5 +58.7 130.4	22 54.6 +58.7 129.3	22 42.5 +58.6 128.3	22 30.2 +58.6 127.3
14°	24 17.0 +58.8 131.2	24 05.2 +58.8 130.1	23 53.3 +58.7 129.1	23 41.1 +58.7 128.1	23 28.8 +58.6 127.0
15°	25 15.8 +58.7 131.0	25 04.0 +58.7 129.9	24 52.0 +58.6 128.9	24 39.8 +58.6 127.8	24 27.4 +58.6 126.8
16°	26 14.5 +58.8 130.7	26 02.7 +58.7 129.7	25 50.6 +58.7 128.6	25 38.4 +58.6 127.6	25 26.0 +58.6 126.6
17°	27 13.3 +58.7 130.5	27 01.4 +58.6 129.4	26 49.3 +58.6 128.4	26 37.0 +58.6 127.4	26 24.6 +58.5 126.3
18°	28 12.0 +58.6 130.3	28 00.0 +58.7 129.2	27 47.9 +58.6 128.2	27 35.6 +58.6 127.1	27 23.1 +58.6 126.1
19°	29 10.6 +58.7 130.0	28 58.7 +58.6 129.0	28 46.5 +58.6 127.9	28 34.2 +58.5 126.9	28 21.7 +58.4 125.8
20°	30 09.3 +58.6 129.8	29 57.3 +58.6 128.7	29 45.1 +58.5 127.7	29 32.7 +58.5 126.6	29 20.1 +58.5 125.6
21°	31 07.9 +58.6 129.5	30 55.9 +58.5 128.5	30 43.6 +58.5 127.4	30 31.2 +58.5 126.4	30 18.6 +58.4 125.3
22°	32 06.5 +58.6 129.3	31 54.4 +58.5 128.2	31 42.1 +58.5 127.2	31 29.7 +58.4 126.1	31 17.0 +58.4 125.0
23°	33 05.1 +58.5 129.0	32 52.9 +58.5 128.0	32 40.6 +58.5 126.9	32 28.1 +58.4 125.8	32 15.4 +58.4 124.8
24°	34 03.6 +58.5 128.8	33 51.4 +58.5 127.7	33 39.1 +58.4 126.6	33 26.5 +58.4 125.6	33 13.8 +58.3 124.5
25°	35 02.1 +58.5 128.5	34 49.9 +58.4 127.4	34 37.5 +58.3 126.3	34 24.9 +58.3 125.3	34 12.1 +58.3 124.2
26°	36 00.6 +58.4 128.2	35 48.3 +58.4 127.1	35 35.8 +58.4 126.1	35 23.2 +58.3 125.0	35 10.4 +58.2 123.9
27°	36 59.0 +58.4 127.9	36 46.7 +58.3 126.8	36 34.2 +58.3 125.8	36 21.5 +58.2 124.7	36 08.6 +58.2 123.6
28°	37 57.4 +58.3 127.6	37 45.0 +58.3 126.6	37 32.5 +58.2 125.5	37 19.7 +58.2 124.4	37 06.8 +58.2 123.3
29°	38 55.7 +58.3 127.3	38 43.3 +58.2 126.3	38 30.7 +58.2 125.2	38 17.9 +58.2 124.1	38 05.0 +58.1 123.0

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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°	9 34.6 +58.8 129.0	9 22.4 +58.8 128.0	9 10.1 +58.7 127.0	8 57.7 +58.6 126.1	8 45.0 +58.7 125.1
1°	10 33.4 +58.7 128.8	10 21.2 +58.7 127.8	10 08.8 +58.7 126.8	9 56.3 +58.7 125.8	9 43.7 +58.6 124.8
2°	11 32.1 +58.8 128.6	11 19.9 +58.7 127.6	11 07.5 +58.7 126.6	10 55.0 +58.6 125.6	10 42.3 +58.6 124.6
3°	12 30.9 +58.7 128.4	12 18.6 +58.7 127.4	12 06.2 +58.7 126.4	11 53.6 +58.7 125.4	11 40.9 +58.6 124.4
4°	13 29.6 +58.8 128.2	13 17.3 +58.7 127.2	13 04.9 +58.7 126.2	12 52.3 +58.6 125.2	12 39.5 +58.6 124.2
5°	14 28.4 +58.7 128.0	14 16.0 +58.7 127.0	14 03.6 +58.6 126.0	13 50.9 +58.6 125.0	13 38.1 +58.6 124.0
6°	15 27.1 +58.7 127.8	15 14.7 +58.7 126.8	15 02.2 +58.6 125.8	14 49.5 +58.6 124.8	14 36.7 +58.6 123.7
7°	16 25.8 +58.7 127.6	16 13.4 +58.7 126.5	16 00.8 +58.7 125.5	15 48.1 +58.6 124.5	15 35.3 +58.5 123.5
8°	17 24.5 +58.7 127.3	17 12.1 +58.6 126.3	16 59.5 +58.6 125.3	16 46.7 +58.6 124.3	16 33.8 +58.6 123.3
9°	18 23.2 +58.6 127.1	18 10.7 +58.6 126.1	17 58.1 +58.6 125.1	17 45.3 +58.6 124.1	17 32.4 +58.5 123.1
10°	19 21.8 +58.7 126.9	19 09.3 +58.7 125.9	18 56.7 +58.6 124.9	18 43.9 +58.5 123.9	18 30.9 +58.5 122.8
11°	20 20.5 +58.6 126.7	20 08.0 +58.6 125.7	19 55.3 +58.5 124.6	19 42.4 +58.5 123.6	19 29.4 +58.5 122.6
12°	21 19.1 +58.6 126.5	21 06.6 +58.5 125.4	20 53.8 +58.6 124.4	20 40.9 +58.5 123.4	20 27.9 +58.5 122.4
13°	22 17.7 +58.6 126.2	22 05.1 +58.6 125.2	21 52.4 +58.5 124.2	21 39.4 +58.5 123.1	21 26.4 +58.4 122.1
14°	23 16.3 +58.6 126.0	23 03.7 +58.5 125.0	22 50.9 +58.5 123.9	22 37.9 +58.5 122.9	22 24.8 +58.4 121.9
15°	24 14.9 +58.6 125.8	24 02.2 +58.5 124.7	23 49.4 +58.5 123.7	23 36.4 +58.4 122.7	23 23.2 +58.5 121.6
16°	25 13.5 +58.5 125.5	25 00.7 +58.5 124.5	24 47.9 +58.4 123.4	24 34.8 +58.5 122.4	24 21.7 +58.3 121.4
17°	26 12.0 +58.5 125.3	25 59.2 +58.5 124.2	25 46.3 +58.5 123.2	25 33.3 +58.3 122.2	25 20.0 +58.4 121.1
18°	27 10.5 +58.5 125.0	26 57.7 +58.4 124.0	26 44.8 +58.4 122.9	26 31.6 +58.4 121.9	26 18.4 +58.3 120.9
19°	28 09.0 +58.4 124.8	27 56.1 +58.5 123.7	27 43.2 +58.3 122.7	27 30.0 +58.3 121.6	27 16.7 +58.3 120.6
20°	29 07.4 +58.4 124.5	28 54.6 +58.3 123.5	28 41.5 +58.4 122.4	28 28.3 +58.3 121.4	28 15.0 +58.3 120.3
21°	30 05.8 +58.4 124.2	29 52.9 +58.4 123.2	29 39.9 +58.3 122.2	29 26.6 +58.3 121.1	29 13.3 +58.2 120.1
22°	31 04.2 +58.4 124.0	30 51.3 +58.3 122.9	30 38.2 +58.2 121.9	30 24.9 +58.2 120.8	30 11.5 +58.2 119.8
23°	32 02.6 +58.3 123.7	31 49.6 +58.3 122.7	31 36.4 +58.3 121.6	31 23.1 +58.2 120.6	31 09.7 +58.2 119.5
24°	33 00.9 +58.3 123.4	32 47.9 +58.2 122.4	32 34.7 +58.2 121.3	32 21.3 +58.2 120.3	32 07.9 +58.1 119.2
25°	33 59.2 +58.2 123.1	33 46.1 +58.2 122.1	33 32.9 +58.1 121.0	33 19.5 +58.1 120.0	33 06.0 +58.0 118.9
26°	34 57.4 +58.2 122.9	34 44.3 +58.2 121.8	34 31.0 +58.1 120.7	34 17.6 +58.1 119.7	34 04.0 +58.1 118.6
27°	35 55.6 +58.2 122.6	35 42.5 +58.1 121.5	35 29.1 +58.1 120.4	35 15.7 +58.0 119.4	35 02.1 +58.0 118.3
28°	36 53.8 +58.1 122.2	36 40.6 +58.0 121.2	36 27.2 +58.0 120.1	36 13.7 +58.0 119.1	36 00.1 +57.9 118.0
29°	37 51.9 +58.0 121.9	37 38.6 +58.0 120.9	37 25.2 +58.0 119.8	37 11.7 +57.9 118.7	36 58.0 +57.9 117.7

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°	8 32.2 +58.6 124.1	8 19.3 +58.6 123.1	8 06.2 +58.6 122.1	7 53.0 +58.5 121.1	7 39.6 +58.5 120.1
1°	9 30.8 +58.6 123.9	9 17.9 +58.5 122.9	9 04.8 +58.5 121.9	8 51.5 +58.5 120.9	8 38.1 +58.5 119.9
2°	10 29.4 +58.6 123.6	10 16.4 +58.6 122.6	10 03.3 +58.5 121.7	9 50.0 +58.5 120.7	9 36.6 +58.4 119.7
3°	11 28.0 +58.6 123.4	11 15.0 +58.5 122.4	11 01.8 +58.5 121.4	10 48.5 +58.5 120.4	10 35.0 +58.5 119.4
4°	12 26.6 +58.6 123.2	12 13.5 +58.5 122.2	12 00.3 +58.5 121.2	11 47.0 +58.4 120.2	11 33.5 +58.4 119.2
5°	13 25.2 +58.5 123.0	13 12.0 +58.6 122.0	12 58.8 +58.5 121.0	12 45.4 +58.5 120.0	12 31.9 +58.4 119.0
6°	14 23.7 +58.5 122.7	14 10.6 +58.5 121.7	13 57.3 +58.5 120.7	13 43.9 +58.4 119.7	13 30.3 +58.4 118.8
7°	15 22.2 +58.6 122.5	15 09.1 +58.5 121.5	14 55.8 +58.4 120.5	14 42.3 +58.4 119.5	14 28.7 +58.4 118.5
8°	16 20.8 +58.5 122.3	16 07.6 +58.4 121.3	15 54.2 +58.5 120.3	15 40.7 +58.5 119.3	15 27.1 +58.4 118.3
9°	17 19.3 +58.5 122.1	17 06.0 +58.5 121.1	16 52.7 +58.4 120.0	16 39.2 +58.4 119.0	16 25.5 +58.4 118.0
10°	18 17.8 +58.4 121.8	18 04.5 +58.4 120.8	17 51.1 +58.4 119.8	17 37.6 +58.3 118.8	17 23.9 +58.3 117.8
11°	19 16.2 +58.5 121.6	19 02.9 +58.5 120.6	18 49.5 +58.4 119.6	18 35.9 +58.4 118.6	18 22.2 +58.4 117.6
12°	20 14.7 +58.4 121.3	20 01.4 +58.4 120.3	19 47.9 +58.4 119.3	19 34.3 +58.3 118.3	19 20.6 +58.3 117.3
13°	21 13.1 +58.5 121.1	20 59.8 +58.4 120.1	20 46.3 +58.3 119.1	20 32.6 +58.3 118.1	20 18.9 +58.2 117.1
14°	22 11.6 +58.4 120.9	21 58.2 +58.3 119.8	21 44.6 +58.3 118.8	21 30.9 +58.3 117.8	21 17.1 +58.3 116.8
15°	23 10.0 +58.3 120.6	22 56.5 +58.4 119.6	22 42.9 +58.3 118.6	22 29.2 +58.3 117.6	22 15.4 +58.3 116.5
16°	24 08.3 +58.4 120.4	23 54.9 +58.3 119.3	23 41.2 +58.3 118.3	23 27.5 +58.3 117.3	23 13.7 +58.2 116.3
17°	25 06.7 +58.3 120.1	24 53.2 +58.2 119.1	24 39.5 +58.3 118.1	24 25.8 +58.2 117.0	24 11.9 +58.1 116.0
18°	26 05.0 +58.3 119.8	25 51.4 +58.3 118.8	25 37.8 +58.2 117.8	25 24.0 +58.2 116.8	25 10.0 +58.2 115.7
19°	27 03.3 +58.2 119.6	26 49.7 +58.2 118.5	26 36.0 +58.2 117.5	26 22.2 +58.1 116.5	26 08.2 +58.1 115.5
20°	28 01.5 +58.3 119.3	27 47.9 +58.2 118.3	27 34.2 +58.1 117.2	27 20.3 +58.1 116.2	27 06.3 +58.1 115.2
21°	28 59.8 +58.2 119.0	28 46.1 +58.2 118.0	28 32.3 +58.2 117.0	28 18.4 +58.1 115.9	28 04.4 +58.1 114.9
22°	29 58.0 +58.1 118.8	29 44.3 +58.1 117.7	29 30.5 +58.0 116.7	29 16.5 +58.1 115.7	29 02.5 +58.0 114.6
23°	30 56.1 +58.1 118.5	30 42.4 +58.1 117.4	30 28.5 +58.1 116.4	30 14.6 +58.0 115.4	30 00.5 +58.0 114.3
24°	31 54.2 +58.1 118.2	31 40.5 +58.0 117.1	31 26.6 +58.0 116.1	31 12.6 +58.0 115.1	30 58.5 +57.9 114.0
25°	32 52.3 +58.0 117.9	32 38.5 +58.0 116.8	32 24.6 +58.0 115.8	32 10.6 +57.9 114.8	31 56.4 +57.9 113.7
26°	33 50.3 +58.0 117.6	33 36.5 +58.0 116.5	33 22.6 +57.9 115.5	33 08.5 +57.9 114.5	32 54.3 +57.8 113.4
27°	34 48.3 +58.0 117.3	34 34.5 +57.9 116.2	34 20.5 +57.8 115.2	34 06.4 +57.8 114.1	33 52.1 +57.8 113.1
28°	35 46.3 +57.9 116.9	35 32.4 +57.8 115.9	35 18.3 +57.8 114.9	35 04.2 +57.8 113.8	34 49.9 +57.8 112.8
29°	36 44.2 +57.8 116.6	36 30.2 +57.8 115.6	36 16.1 +57.8 114.5	36 02.0 +57.7 113.5	35 47.7 +57.6 112.4

Declination SAME name as Latitude

Latitude 75°

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°	7 26.1 +58.5 119.1	7 12.5 +58.4 118.2	6 58.7 +58.4 117.2	6 44.9 +58.3 116.2	6 30.9 +58.3 115.2
1°	8 24.6 +58.4 118.9	8 10.9 +58.4 117.9	7 57.1 +58.4 117.0	7 43.2 +58.4 116.0	7 29.2 +58.3 115.0
2°	9 23.0 +58.4 118.7	9 09.3 +58.4 117.7	8 55.5 +58.4 116.7	8 41.6 +58.3 115.7	8 27.5 +58.3 114.8
3°	10 21.4 +58.5 118.5	10 07.7 +58.4 117.5	9 53.9 +58.3 116.5	9 39.9 +58.4 115.5	9 25.8 +58.3 114.5
4°	11 19.9 +58.4 118.2	11 06.1 +58.4 117.2	10 52.2 +58.4 116.2	10 38.3 +58.3 115.3	10 24.1 +58.3 114.3
5°	12 18.3 +58.3 118.0	12 04.5 +58.3 117.0	11 50.6 +58.3 116.0	11 36.6 +58.3 115.0	11 22.4 +58.3 114.0
6°	13 16.6 +58.4 117.8	13 02.8 +58.4 116.8	12 48.9 +58.3 115.8	12 34.9 +58.3 114.8	12 20.7 +58.3 113.8
7°	14 15.0 +58.4 117.5	14 01.2 +58.3 116.5	13 47.2 +58.3 115.5	13 33.2 +58.3 114.5	13 19.0 +58.2 113.5
8°	15 13.4 +58.3 117.3	14 59.5 +58.4 116.3	14 45.5 +58.3 115.3	14 31.5 +58.2 114.3	14 17.2 +58.3 113.3
9°	16 11.7 +58.4 117.0	15 57.9 +58.3 116.0	15 43.8 +58.3 115.0	15 29.7 +58.3 114.0	15 15.5 +58.2 113.0
10°	17 10.1 +58.3 116.8	16 56.2 +58.2 115.8	16 42.1 +58.3 114.8	16 28.0 +58.2 113.8	16 13.7 +58.2 112.8
11°	18 08.4 +58.3 116.5	17 54.4 +58.3 115.5	17 40.4 +58.2 114.5	17 26.2 +58.3 113.5	17 11.9 +58.2 112.5
12°	19 06.7 +58.3 116.3	18 52.7 +58.3 115.3	18 38.6 +58.2 114.3	18 24.4 +58.2 113.3	18 10.1 +58.2 112.3
13°	20 05.0 +58.2 116.0	19 51.0 +58.2 115.0	19 36.8 +58.2 114.0	19 22.6 +58.2 113.0	19 08.3 +58.1 112.0
14°	21 03.2 +58.3 115.8	20 49.2 +58.2 114.8	20 35.0 +58.2 113.8	20 20.8 +58.1 112.8	20 06.4 +58.1 111.8
15°	22 01.5 +58.2 115.5	21 47.4 +58.2 114.5	21 33.2 +58.2 113.5	21 18.9 +58.1 112.5	21 04.5 +58.1 111.5
16°	22 59.7 +58.1 115.3	22 45.6 +58.1 114.3	22 31.4 +58.1 113.2	22 17.0 +58.1 112.2	22 02.6 +58.1 111.2
17°	23 57.8 +58.2 115.0	23 43.7 +58.1 114.0	23 29.5 +58.1 113.0	23 15.1 +58.1 112.0	23 00.7 +58.0 111.0
18°	24 56.0 +58.1 114.7	24 41.8 +58.1 113.7	24 27.6 +58.0 112.7	24 13.2 +58.0 111.7	23 58.7 +58.0 110.7
19°	25 54.1 +58.1 114.5	25 39.9 +58.1 113.4	25 25.6 +58.1 112.4	25 11.2 +58.0 111.4	24 56.7 +58.0 110.4
20°	26 52.2 +58.1 114.2	26 38.0 +58.0 113.2	26 23.7 +58.0 112.1	26 09.2 +58.0 111.1	25 54.7 +57.9 110.1
21°	27 50.3 +58.0 113.9	27 36.0 +58.0 112.9	27 21.7 +57.9 111.9	27 07.2 +57.9 110.8	26 52.6 +57.9 109.8
22°	28 48.3 +58.0 113.6	28 34.0 +58.0 112.6	28 19.6 +57.9 111.6	28 05.1 +57.9 110.5	27 50.5 +57.9 109.5
23°	29 46.3 +57.9 113.3	29 32.0 +57.9 112.3	29 17.5 +57.9 111.3	29 03.0 +57.9 110.2	28 48.4 +57.8 109.2
24°	30 44.2 +57.9 113.0	30 29.9 +57.8 112.0	30 15.4 +57.9 111.0	30 00.9 +57.8 109.9	29 46.2 +57.8 108.9
25°	31 42.1 +57.9 112.7	31 27.7 +57.9 111.7	31 13.3 +57.8 110.7	30 58.7 +57.8 109.6	30 44.0 +57.8 108.6
26°	32 40.0 +57.8 112.4	32 25.6 +57.7 111.4	32 11.1 +57.7 110.3	31 56.5 +57.7 109.3	31 41.8 +57.6 108.3
27°	33 37.8 +57.8 112.1	33 23.3 +57.8 111.0	33 08.8 +57.7 110.0	32 54.2 +57.6 109.0	32 39.4 +57.7 108.0
28°	34 35.6 +57.7 111.7	34 21.1 +57.6 110.7	34 06.5 +57.6 109.7	33 51.8 +57.6 108.7	33 37.1 +57.6 107.6
29°	35 33.3 +57.6 111.4	35 18.7 +57.7 110.4	35 04.1 +57.6 109.3	34 49.4 +57.6 108.3	34 34.7 +57.5 107.3

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°	6 16.8 +58.3 114.2	6 02.6 +58.2 113.3	5 48.3 +58.2 112.3	5 33.8 +58.3 111.3	5 19.3 +58.2 110.3
1°	7 15.1 +58.3 114.0	7 00.8 +58.3 113.0	6 46.5 +58.2 112.1	6 32.1 +58.2 111.1	6 17.5 +58.2 110.1
2°	8 13.4 +58.3 113.8	7 59.1 +58.3 112.8	7 44.7 +58.3 111.8	7 30.3 +58.2 110.8	7 15.7 +58.2 109.9
3°	9 11.7 +58.2 113.5	8 57.4 +58.2 112.5	8 43.0 +58.2 111.6	8 28.5 +58.2 110.6	8 13.9 +58.2 109.6
4°	10 09.9 +58.3 113.3	9 55.6 +58.3 112.3	9 41.2 +58.2 111.3	9 26.7 +58.2 110.3	9 12.1 +58.2 109.4
5°	11 08.2 +58.3 113.0	10 53.9 +58.2 112.1	10 39.4 +58.2 111.1	10 24.9 +58.2 110.1	10 10.3 +58.1 109.1
6°	12 06.5 +58.2 112.8	11 52.1 +58.2 111.8	11 37.6 +58.2 110.8	11 23.1 +58.1 109.8	11 08.4 +58.2 108.9
7°	13 04.7 +58.2 112.6	12 50.3 +58.2 111.6	12 35.8 +58.2 110.6	12 21.2 +58.2 109.6	12 06.6 +58.1 108.6
8°	14 02.9 +58.2 112.3	13 48.5 +58.2 111.3	13 34.0 +58.2 110.3	13 19.4 +58.1 109.3	13 04.7 +58.1 108.4
9°	15 01.1 +58.2 112.1	14 46.7 +58.2 111.1	14 32.2 +58.1 110.1	14 17.5 +58.1 109.1	14 02.8 +58.1 108.1
10°	15 59.3 +58.2 111.8	15 44.9 +58.1 110.8	15 30.3 +58.1 109.8	15 15.6 +58.2 108.8	15 00.9 +58.1 107.8
11°	16 57.5 +58.2 111.5	16 43.0 +58.2 110.6	16 28.4 +58.1 109.6	16 13.8 +58.0 108.6	15 59.0 +58.1 107.6
12°	17 55.7 +58.1 111.3	17 41.2 +58.1 110.3	17 26.5 +58.1 109.3	17 11.8 +58.1 108.3	16 57.1 +58.0 107.3
13°	18 53.8 +58.1 111.0	18 39.3 +58.1 110.0	18 24.6 +58.1 109.0	18 09.9 +58.1 108.0	17 55.1 +58.0 107.1
14°	19 51.9 +58.1 110.8	19 37.4 +58.0 109.8	19 22.7 +58.0 108.8	19 08.0 +58.0 107.8	18 53.1 +58.0 106.8
15°	20 50.0 +58.1 110.5	20 35.4 +58.1 109.5	20 20.7 +58.1 108.5	20 06.0 +58.0 107.5	19 51.1 +58.0 106.5
16°	21 48.1 +58.0 110.2	21 33.5 +58.0 109.2	21 18.8 +57.9 108.2	21 04.0 +57.9 107.2	20 49.1 +57.9 106.2
17°	22 46.1 +58.0 110.0	22 31.5 +58.0 109.0	22 16.7 +58.0 108.0	22 01.9 +58.0 107.0	21 47.0 +58.0 106.0
18°	23 44.1 +58.0 109.7	23 29.5 +57.9 108.7	23 14.7 +57.9 107.7	22 59.9 +57.9 106.7	22 45.0 +57.8 105.7
19°	24 42.1 +58.0 109.4	24 27.4 +57.9 108.4	24 12.6 +57.9 107.4	23 57.8 +57.9 106.4	23 42.8 +57.9 105.4
20°	25 40.1 +57.9 109.1	25 25.3 +57.9 108.1	25 10.5 +57.9 107.1	24 55.7 +57.8 106.1	24 40.7 +57.8 105.1
21°	26 38.0 +57.9 108.8	26 23.2 +57.9 107.8	26 08.4 +57.8 106.8	25 53.5 +57.8 105.8	25 38.5 +57.8 104.8
22°	27 35.9 +57.8 108.5	27 21.1 +57.8 107.5	27 06.2 +57.8 106.5	26 51.3 +57.8 105.5	26 36.3 +57.8 104.5
23°	28 33.7 +57.8 108.2	28 18.9 +57.8 107.2	28 04.0 +57.8 106.2	27 49.1 +57.7 105.2	27 34.1 +57.7 104.2
24°	29 31.5 +57.8 107.9	29 16.7 +57.7 106.9	29 01.8 +57.7 105.9	28 46.8 +57.7 104.9	28 31.8 +57.6 103.9
25°	30 29.3 +57.7 107.6	30 14.4 +57.7 106.6	29 59.5 +57.7 105.6	29 44.5 +57.6 104.6	29 29.4 +57.7 103.6
26°	31 27.0 +57.6 107.3	31 12.1 +57.6 106.3	30 57.2 +57.6 105.3	30 42.1 +57.6 104.3	30 27.1 +57.5 103.3
27°	32 24.6 +57.6 107.0	32 09.7 +57.6 105.9	31 54.8 +57.5 104.9	31 39.7 +57.6 103.9	31 24.6 +57.5 102.9
28°	33 22.2 +57.6 106.6	33 07.3 +57.6 105.6	32 52.3 +57.5 104.6	32 37.3 +57.5 103.6	32 22.1 +57.5 102.6
29°	34 19.8 +57.5 106.3	34 04.9 +57.4 105.3	33 49.8 +57.5 104.3	33 34.8 +57.4 103.3	33 19.6 +57.4 102.2

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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°	5 04.7 +58.2 109.4	4 50.0 +58.2 108.4	4 35.2 +58.2 107.4	4 20.4 +58.1 106.5	4 05.5 +58.1 105.5
1°	6 02.9 +58.2 109.1	5 48.2 +58.1 108.2	5 33.4 +58.1 107.2	5 18.5 +58.1 106.2	5 03.6 +58.1 105.2
2°	7 01.1 +58.1 108.9	6 46.3 +58.2 107.9	6 31.5 +58.1 106.9	6 16.6 +58.1 106.0	6 01.7 +58.0 105.0
3°	7 59.2 +58.2 108.6	7 44.5 +58.1 107.7	7 29.6 +58.2 106.7	7 14.7 +58.1 105.7	6 59.7 +58.1 104.7
4°	8 57.4 +58.1 108.4	8 42.6 +58.1 107.4	8 27.8 +58.1 106.4	8 12.8 +58.1 105.5	7 57.8 +58.1 104.5
5°	9 55.5 +58.2 108.1	9 40.7 +58.2 107.2	9 25.9 +58.1 106.2	9 10.9 +58.1 105.2	8 55.9 +58.1 104.2
6°	10 53.7 +58.1 107.9	10 38.9 +58.1 106.9	10 24.0 +58.0 105.9	10 09.0 +58.1 104.9	9 54.0 +58.0 104.0
7°	11 51.8 +58.1 107.6	11 37.0 +58.1 106.6	11 22.0 +58.1 105.7	11 07.1 +58.0 104.7	10 52.0 +58.0 103.7
8°	12 49.9 +58.1 107.4	12 35.1 +58.0 106.4	12 20.1 +58.1 105.4	12 05.1 +58.1 104.4	11 50.0 +58.1 103.4
9°	13 48.0 +58.1 107.1	13 33.1 +58.1 106.1	13 18.2 +58.0 105.1	13 03.2 +58.0 104.2	12 48.1 +58.0 103.2
10°	14 46.1 +58.0 106.9	14 31.2 +58.0 105.9	14 16.2 +58.0 104.9	14 01.2 +58.0 103.9	13 46.1 +58.0 102.9
11°	15 44.1 +58.1 106.6	15 29.2 +58.1 105.6	15 14.2 +58.0 104.6	14 59.2 +58.0 103.6	14 44.1 +57.9 102.7
12°	16 42.2 +58.0 106.3	16 27.3 +58.0 105.3	16 12.2 +58.0 104.4	15 57.2 +57.9 103.4	15 42.0 +58.0 102.4
13°	17 40.2 +58.0 106.1	17 25.3 +57.9 105.1	17 10.2 +58.0 104.1	16 55.1 +58.0 103.1	16 40.0 +57.9 102.1
14°	18 38.2 +58.0 105.8	18 23.2 +58.0 104.8	18 08.2 +57.9 103.8	17 53.1 +57.9 102.8	17 37.9 +57.9 101.9
15°	19 36.2 +57.9 105.5	19 21.2 +57.9 104.5	19 06.1 +57.9 103.5	18 51.0 +57.9 102.6	18 35.8 +57.9 101.6
16°	20 34.1 +58.0 105.2	20 19.1 +57.9 104.3	20 04.0 +57.9 103.3	19 48.9 +57.9 102.3	19 33.7 +57.9 101.3
17°	21 32.1 +57.9 105.0	21 17.0 +57.9 104.0	21 01.9 +57.9 103.0	20 46.8 +57.8 102.0	20 31.6 +57.8 101.0
18°	22 30.0 +57.8 104.7	22 14.9 +57.9 103.7	21 59.8 +57.8 102.7	21 44.6 +57.8 101.7	21 29.4 +57.8 100.7
19°	23 27.8 +57.9 104.4	23 12.8 +57.8 103.4	22 57.6 +57.8 102.4	22 42.4 +57.8 101.4	22 27.2 +57.8 100.4
20°	24 25.7 +57.8 104.1	24 10.6 +57.8 103.1	23 55.4 +57.8 102.1	23 40.2 +57.8 101.1	23 25.0 +57.7 100.1
21°	25 23.5 +57.7 103.8	25 08.4 +57.7 102.8	24 53.2 +57.7 101.8	24 38.0 +57.7 100.8	24 22.7 +57.7 99.8
22°	26 21.2 +57.8 103.5	26 06.1 +57.7 102.5	25 50.9 +57.7 101.5	25 35.7 +57.7 100.5	25 20.4 +57.7 99.5
23°	27 19.0 +57.7 103.2	27 03.8 +57.7 102.2	26 48.6 +57.7 101.2	26 33.4 +57.6 100.2	26 18.1 +57.6 99.2
24°	28 16.7 +57.6 102.9	28 01.5 +57.6 101.9	27 46.3 +57.6 100.9	27 31.0 +57.6 99.9	27 15.7 +57.6 98.9
25°	29 14.3 +57.6 102.6	28 59.1 +57.6 101.6	28 43.9 +57.5 100.6	28 28.6 +57.5 99.6	28 13.3 +57.5 98.6
26°	30 11.9 +57.6 102.3	29 56.7 +57.5 101.3	29 41.4 +57.6 100.3	29 26.1 +57.5 99.3	29 10.8 +57.5 98.3
27°	31 09.5 +57.5 101.9	30 54.2 +57.5 100.9	30 39.0 +57.4 99.9	30 23.6 +57.5 98.9	30 08.3 +57.4 98.0
28°	32 07.0 +57.4 101.6	31 51.7 +57.4 100.6	31 36.4 +57.4 99.6	31 21.1 +57.4 98.6	31 05.7 +57.4 97.6
29°	33 04.4 +57.4 101.2	32 49.1 +57.4 100.3	32 33.8 +57.4 99.3	32 18.5 +57.3 98.3	32 03.1 +57.3 97.3

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°	3 50.5 +58.0 104.5	3 35.4 +58.1 103.5	3 20.3 +58.0 102.6	3 05.1 +58.0 101.6	2 49.8 +58.1 100.6
1°	4 48.5 +58.1 104.3	4 33.5 +58.0 103.3	4 18.3 +58.1 102.3	4 03.1 +58.1 101.3	3 47.9 +58.0 100.4
2°	5 46.6 +58.1 104.0	5 31.5 +58.1 103.0	5 16.4 +58.0 102.1	5 01.2 +58.0 101.1	4 45.9 +58.0 100.1
3°	6 44.7 +58.1 103.8	6 29.6 +58.0 102.8	6 14.4 +58.0 101.8	5 59.2 +58.0 100.8	5 43.9 +58.0 99.9
4°	7 42.8 +58.0 103.5	7 27.6 +58.1 102.5	7 12.4 +58.1 101.6	6 57.2 +58.0 100.6	6 41.9 +58.0 99.6
5°	8 40.8 +58.1 103.2	8 25.7 +58.0 102.3	8 10.5 +58.0 101.3	7 55.2 +58.0 100.3	7 39.9 +58.0 99.4
6°	9 38.9 +58.0 103.0	9 23.7 +58.0 102.0	9 08.5 +58.0 101.0	8 53.2 +58.0 100.1	8 37.9 +58.0 99.1
7°	10 36.9 +58.0 102.7	10 21.7 +58.0 101.8	10 06.5 +58.0 100.8	9 51.2 +58.0 99.8	9 35.9 +57.9 98.8
8°	11 34.9 +58.0 102.5	11 19.7 +58.0 101.5	11 04.5 +58.0 100.5	10 49.2 +57.9 99.5	10 33.8 +58.0 98.6
9°	12 32.9 +58.0 102.2	12 17.7 +58.0 101.2	12 02.5 +57.9 100.3	11 47.1 +58.0 99.3	11 31.8 +57.9 98.3
10°	13 30.9 +58.0 101.9	13 15.7 +57.9 101.0	13 00.4 +58.0 100.0	12 45.1 +57.9 99.0	12 29.7 +58.0 98.0
11°	14 28.9 +57.9 101.7	14 13.6 +58.0 100.7	13 58.4 +57.9 99.7	13 43.0 +58.0 98.7	13 27.7 +57.9 97.8
12°	15 26.8 +58.0 101.4	15 11.6 +57.9 100.4	14 56.3 +57.9 99.5	14 41.0 +57.9 98.5	14 25.6 +57.9 97.5
13°	16 24.8 +57.9 101.1	16 09.5 +57.9 100.2	15 54.2 +57.9 99.2	15 38.9 +57.8 98.2	15 23.5 +57.8 97.2
14°	17 22.7 +57.9 100.9	17 07.4 +57.9 99.9	16 52.1 +57.9 98.9	16 36.7 +57.9 97.9	16 21.3 +57.9 97.0
15°	18 20.6 +57.8 100.6	18 05.3 +57.8 99.6	17 50.0 +57.8 98.6	17 34.6 +57.8 97.7	17 19.2 +57.8 96.7
16°	19 18.4 +57.9 100.3	19 03.1 +57.9 99.3	18 47.8 +57.8 98.4	18 32.4 +57.8 97.4	18 17.0 +57.8 96.4
17°	20 16.3 +57.8 100.0	20 01.0 +57.8 99.1	19 45.6 +57.8 98.1	19 30.2 +57.8 97.1	19 14.8 +57.8 96.1
18°	21 14.1 +57.8 99.7	20 58.8 +57.8 98.8	20 43.4 +57.8 97.8	20 28.0 +57.8 96.8	20 12.6 +57.7 95.8
19°	22 11.9 +57.8 99.5	21 56.6 +57.7 98.5	21 41.2 +57.7 97.5	21 25.8 +57.7 96.5	21 10.3 +57.7 95.5
20°	23 09.7 +57.7 99.2	22 54.3 +57.7 98.2	22 38.9 +57.7 97.2	22 23.5 +57.7 96.2	22 08.0 +57.7 95.2
21°	24 07.4 +57.7 98.9	23 52.0 +57.7 97.9	23 36.6 +57.7 96.9	23 21.2 +57.6 95.9	23 05.7 +57.7 94.9
22°	25 05.1 +57.6 98.6	24 49.7 +57.6 97.6	24 34.3 +57.6 96.6	24 18.8 +57.7 95.6	24 03.4 +57.6 94.6
23°	26 02.7 +57.6 98.3	25 47.3 +57.6 97.3	25 31.9 +57.6 96.3	25 16.5 +57.5 95.3	25 01.0 +57.6 94.3
24°	27 00.3 +57.6 97.9	26 44.9 +57.6 97.0	26 29.5 +57.5 96.0	26 14.0 +57.6 95.0	25 58.6 +57.5 94.0
25°	27 57.9 +57.5 97.6	27 42.5 +57.5 96.6	27 27.0 +57.5 95.7	27 11.6 +57.5 94.7	26 56.1 +57.5 93.7
26°	28 55.4 +57.5 97.3	28 40.0 +57.5 96.3	28 24.5 +57.5 95.3	28 09.1 +57.4 94.4	27 53.6 +57.4 93.4
27°	29 52.9 +57.4 97.0	29 37.5 +57.4 96.0	29 22.0 +57.4 95.0	29 06.5 +57.4 94.0	28 51.0 +57.4 93.1
28°	30 50.3 +57.4 96.6	30 34.9 +57.3 95.7	30 19.4 +57.4 94.7	30 03.9 +57.4 93.7	29 48.4 +57.4 92.7
29°	31 47.7 +57.3 96.3	31 32.2 +57.3 95.3	31 16.8 +57.3 94.3	31 01.3 +57.3 93.4	30 45.8 +57.3 92.4

Declination SAME name as Latitude

Latitude 75°

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°	2 34.6 +58.0 99.7	2 19.2 +58.0 98.7	2 03.9 +57.9 97.7	1 48.5 +57.9 96.8	1 33.0 +58.0 95.8
1°	3 32.6 +58.0 99.4	3 17.2 +58.0 98.4	3 01.8 +58.0 97.5	2 46.4 +58.0 96.5	2 31.0 +58.0 95.5
2°	4 30.6 +58.0 99.2	4 15.2 +58.0 98.2	3 59.8 +58.0 97.2	3 44.4 +58.0 96.2	3 29.0 +57.9 95.3
3°	5 28.6 +58.0 98.9	5 13.2 +58.0 97.9	4 57.8 +58.0 97.0	4 42.4 +58.0 96.0	4 26.9 +58.0 95.0
4°	6 26.6 +58.0 98.6	6 11.2 +58.0 97.7	5 55.8 +58.0 96.7	5 40.4 +57.9 95.7	5 24.9 +58.0 94.8
5°	7 24.6 +57.9 98.4	7 09.2 +58.0 97.4	6 53.8 +57.9 96.4	6 38.3 +58.0 95.5	6 22.9 +57.9 94.5
6°	8 22.5 +58.0 98.1	8 07.2 +57.9 97.2	7 51.7 +58.0 96.2	7 36.3 +57.9 95.2	7 20.8 +57.9 94.2
7°	9 20.5 +58.0 97.9	9 05.1 +58.0 96.9	8 49.7 +57.9 95.9	8 34.2 +58.0 94.9	8 18.7 +58.0 94.0
8°	10 18.5 +57.9 97.6	10 03.1 +57.9 96.6	9 47.6 +58.0 95.7	9 32.2 +57.9 94.7	9 16.7 +57.9 93.7
9°	11 16.4 +57.9 97.3	11 01.0 +57.9 96.4	10 45.6 +57.9 95.4	10 30.1 +57.9 94.4	10 14.6 +57.9 93.5
10°	12 14.3 +58.0 97.1	11 58.9 +57.9 96.1	11 43.5 +57.9 95.1	11 28.0 +57.9 94.2	11 12.5 +57.9 93.2
11°	13 12.3 +57.9 96.8	12 56.8 +57.9 95.8	12 41.4 +57.8 94.9	12 25.9 +57.9 93.9	12 10.4 +57.9 92.9
12°	14 10.2 +57.8 96.5	13 54.7 +57.9 95.6	13 39.2 +57.9 94.6	13 23.8 +57.8 93.6	13 08.3 +57.8 92.6
13°	15 08.0 +57.9 96.3	14 52.6 +57.8 95.3	14 37.1 +57.9 94.3	14 21.6 +57.9 93.3	14 06.1 +57.9 92.4
14°	16 05.9 +57.8 96.0	15 50.4 +57.9 95.0	15 35.0 +57.8 94.0	15 19.5 +57.8 93.1	15 04.0 +57.8 92.1
15°	17 03.7 +57.9 95.7	16 48.3 +57.8 94.7	16 32.8 +57.8 93.8	16 17.3 +57.8 92.8	16 01.8 +57.8 91.8
16°	18 01.6 +57.7 95.4	17 46.1 +57.8 94.5	17 30.6 +57.8 93.5	17 15.1 +57.8 92.5	16 59.6 +57.7 91.5
17°	18 59.3 +57.8 95.1	18 43.9 +57.7 94.2	18 28.4 +57.7 93.2	18 12.9 +57.7 92.2	17 57.3 +57.8 91.3
18°	19 57.1 +57.8 94.9	19 41.6 +57.8 93.9	19 26.1 +57.8 92.9	19 10.6 +57.7 91.9	18 55.1 +57.7 91.0
19°	20 54.9 +57.7 94.6	20 39.4 +57.7 93.6	20 23.9 +57.7 92.6	20 08.3 +57.7 91.7	19 52.8 +57.7 90.7
20°	21 52.6 +57.6 94.3	21 37.1 +57.6 93.3	21 21.6 +57.6 92.3	21 06.0 +57.7 91.4	20 50.5 +57.7 90.4
21°	22 50.2 +57.7 94.0	22 34.7 +57.7 93.0	22 19.2 +57.7 92.0	22 03.7 +57.6 91.1	21 48.2 +57.6 90.1
22°	23 47.9 +57.6 93.7	23 32.4 +57.6 92.7	23 16.9 +57.6 91.7	23 01.3 +57.6 90.8	22 45.8 +57.6 89.8
23°	24 45.5 +57.6 93.4	24 30.0 +57.5 92.4	24 14.5 +57.5 91.4	23 58.9 +57.6 90.5	23 43.4 +57.6 89.5
24°	25 43.1 +57.5 93.1	25 27.5 +57.6 92.1	25 12.0 +57.5 91.1	24 56.5 +57.5 90.1	24 41.0 +57.5 89.2
25°	26 40.6 +57.5 92.7	26 25.1 +57.4 91.8	26 09.5 +57.5 90.8	25 54.0 +57.5 89.8	25 38.5 +57.5 88.9
26°	27 38.1 +57.4 92.4	27 22.5 +57.5 91.4	27 07.0 +57.5 90.5	26 51.5 +57.4 89.5	26 36.0 +57.4 88.5
27°	28 35.5 +57.4 92.1	28 20.0 +57.4 91.1	28 04.5 +57.3 90.1	27 48.9 +57.4 89.2	27 33.4 +57.4 88.2
28°	29 32.9 +57.3 91.8	29 17.4 +57.3 90.8	29 01.8 +57.4 89.8	28 46.3 +57.4 88.9	28 30.8 +57.3 87.9
29°	30 30.2 +57.3 91.4	30 14.7 +57.3 90.4	29 59.2 +57.3 89.5	29 43.7 +57.2 88.5	29 28.1 +57.3 87.6

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 17.6 +57.9 94.8	1 02.1 +57.9 93.9	0 46.6 +57.9 92.9	0 31.1 +57.9 91.9	0 15.5 +58.0 91.0
1°	2 15.5 +58.0 94.6	2 00.0 +58.0 93.6	1 44.5 +58.0 92.6	1 29.0 +58.0 91.7	1 13.5 +57.9 90.7
2°	3 13.5 +58.0 94.3	2 58.0 +58.0 93.3	2 42.5 +57.9 92.4	2 27.0 +57.9 91.4	2 11.4 +58.0 90.4
3°	4 11.5 +57.9 94.1	3 56.0 +57.9 93.1	3 40.4 +58.0 92.1	3 24.9 +58.0 91.2	3 09.4 +57.9 90.2
4°	5 09.4 +58.0 93.8	4 53.9 +58.0 92.8	4 38.4 +57.9 91.9	4 22.9 +57.9 90.9	4 07.3 +58.0 89.9
5°	6 07.4 +57.9 93.5	5 51.9 +57.9 92.6	5 36.3 +58.0 91.6	5 20.8 +57.9 90.6	5 05.3 +57.9 89.7
6°	7 05.3 +57.9 93.3	6 49.8 +57.9 92.3	6 34.3 +57.9 91.3	6 18.7 +58.0 90.4	6 03.2 +57.9 89.4
7°	8 03.2 +58.0 93.0	7 47.7 +57.9 92.0	7 32.2 +57.9 91.1	7 16.7 +57.9 90.1	7 01.1 +58.0 89.1
8°	9 01.2 +57.9 92.7	8 45.6 +58.0 91.8	8 30.1 +57.9 90.8	8 14.6 +57.9 89.8	7 59.1 +57.9 88.9
9°	9 59.1 +57.9 92.5	9 43.6 +57.9 91.5	9 28.0 +57.9 90.5	9 12.5 +57.9 89.6	8 57.0 +57.9 88.6
10°	10 57.0 +57.9 92.2	10 41.5 +57.8 91.2	10 25.9 +57.9 90.3	10 10.4 +57.9 89.3	9 54.9 +57.9 88.4
11°	11 54.9 +57.8 91.9	11 39.3 +57.9 91.0	11 23.8 +57.9 90.0	11 08.3 +57.9 89.0	10 52.8 +57.8 88.1
12°	12 52.7 +57.9 91.7	12 37.2 +57.9 90.7	12 21.7 +57.8 89.7	12 06.2 +57.8 88.8	11 50.6 +57.9 87.8
13°	13 50.6 +57.8 91.4	13 35.1 +57.8 90.4	13 19.5 +57.9 89.5	13 04.0 +57.8 88.5	12 48.5 +57.8 87.5
14°	14 48.4 +57.8 91.1	14 32.9 +57.8 90.2	14 17.4 +57.8 89.2	14 01.8 +57.9 88.2	13 46.3 +57.9 87.3
15°	15 46.2 +57.8 90.9	15 30.7 +57.8 89.9	15 15.2 +57.8 88.9	14 59.7 +57.8 88.0	14 44.2 +57.8 87.0
16°	16 44.0 +57.8 90.6	16 28.5 +57.8 89.6	16 13.0 +57.8 88.6	15 57.5 +57.7 87.7	15 42.0 +57.7 86.7
17°	17 41.8 +57.8 90.3	17 26.3 +57.7 89.3	17 10.8 +57.7 88.4	16 55.2 +57.8 87.4	16 39.7 +57.8 86.4
18°	18 39.6 +57.7 90.0	18 24.0 +57.8 89.0	18 08.5 +57.7 88.1	17 53.0 +57.7 87.1	17 37.5 +57.7 86.2
19°	19 37.3 +57.7 89.7	19 21.8 +57.7 88.8	19 06.2 +57.7 87.8	18 50.7 +57.7 86.8	18 35.2 +57.7 85.9
20°	20 35.0 +57.6 89.4	20 19.5 +57.6 88.5	20 03.9 +57.7 87.5	19 48.4 +57.7 86.5	19 32.9 +57.7 85.6
21°	21 32.6 +57.7 89.1	21 17.1 +57.7 88.2	21 01.6 +57.6 87.2	20 46.1 +57.6 86.2	20 30.6 +57.7 85.3
22°	22 30.3 +57.6 88.8	22 14.8 +57.6 87.9	21 59.2 +57.6 86.9	21 43.7 +57.7 85.9	21 28.3 +57.6 85.0
23°	23 27.9 +57.5 88.5	23 12.4 +57.5 87.6	22 56.8 +57.6 86.6	22 41.4 +57.5 85.6	22 25.9 +57.6 84.7
24°	24 25.4 +57.6 88.2	24 09.9 +57.5 87.3	23 54.4 +57.5 86.3	23 38.9 +57.6 85.3	23 23.5 +57.5 84.4
25°	25 23.0 +57.4 87.9	25 07.4 +57.5 86.9	24 51.9 +57.5 86.0	24 36.5 +57.5 85.0	24 21.0 +57.5 84.1
26°	26 20.4 +57.5 87.6	26 04.9 +57.5 86.6	25 49.4 +57.5 85.7	25 34.0 +57.4 84.7	25 18.5 +57.5 83.8
27°	27 17.9 +57.4 87.3	27 02.4 +57.4 86.3	26 46.9 +57.4 85.3	26 31.4 +57.4 84.4	26 16.0 +57.4 83.4
28°	28 15.3 +57.3 86.9	27 59.8 +57.3 86.0	27 44.3 +57.4 85.0	27 28.8 +57.4 84.1	27 13.4 +57.4 83.1
29°	29 12.6 +57.3 86.6	28 57.1 +57.3 85.6	28 41.7 +57.3 84.7	28 26.2 +57.3 83.7	28 10.8 +57.3 82.8

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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 +58.0 90.0	-0 15.5 +57.9	-0 31.1 +58.0	-0 46.6 +58.0	-1 02.1 +58.0
1°	0 58.0 +57.9 89.7	0 42.4 +58.0 88.8	0 26.9 +58.0 87.8	0 11.4 +58.0 86.8	-0 04.1 +58.0
2°	1 55.9 +58.0 89.5	1 40.4 +57.9 88.5	1 24.9 +57.9 87.6	1 09.4 +57.9 86.6	0 53.9 +57.9 85.6
3°	2 53.9 +57.9 89.2	2 38.3 +58.0 88.3	2 22.8 +58.0 87.3	2 07.3 +58.0 86.3	1 51.8 +58.0 85.4
4°	3 51.8 +58.0 89.0	3 36.3 +57.9 88.0	3 20.8 +57.9 87.0	3 05.3 +57.9 86.1	2 49.8 +57.9 85.1
5°	4 49.8 +57.9 88.7	4 34.2 +58.0 87.7	4 18.7 +58.0 86.8	4 03.2 +58.0 85.8	3 47.7 +58.0 84.8
6°	5 47.7 +57.9 88.4	5 32.2 +57.9 87.5	5 16.7 +57.9 86.5	5 01.2 +57.9 85.5	4 45.7 +57.9 84.6
7°	6 45.6 +57.9 88.2	6 30.1 +57.9 87.2	6 14.6 +57.9 86.3	5 59.1 +57.9 85.3	5 43.6 +58.0 84.3
8°	7 43.5 +58.0 87.9	7 28.0 +57.9 87.0	7 12.5 +57.9 86.0	6 57.0 +58.0 85.0	6 41.6 +57.9 84.1
9°	8 41.5 +57.9 87.7	8 25.9 +57.9 86.7	8 10.4 +58.0 85.7	7 55.0 +57.9 84.8	7 39.5 +57.9 83.8
10°	9 39.4 +57.8 87.4	9 23.8 +57.9 86.4	9 08.4 +57.9 85.5	8 52.9 +57.9 84.5	8 37.4 +58.0 83.5
11°	10 37.2 +57.9 87.1	10 21.7 +57.9 86.2	10 06.3 +57.8 85.2	9 50.8 +57.9 84.2	9 35.4 +57.9 83.3
12°	11 35.1 +57.9 86.9	11 19.6 +57.9 85.9	11 04.1 +57.9 84.9	10 48.7 +57.9 84.0	10 33.3 +57.8 83.0
13°	12 33.0 +57.8 86.6	12 17.5 +57.8 85.6	12 02.0 +57.9 84.7	11 46.6 +57.8 83.7	11 31.1 +57.9 82.7
14°	13 30.8 +57.9 86.3	13 15.3 +57.9 85.3	12 59.9 +57.8 84.4	12 44.4 +57.9 83.4	12 29.0 +57.9 82.5
15°	14 28.7 +57.8 86.0	14 13.2 +57.8 85.1	13 57.7 +57.8 84.1	13 42.3 +57.8 83.2	13 26.9 +57.8 82.2
16°	15 26.5 +57.7 85.8	15 11.0 +57.8 84.8	14 55.5 +57.8 83.8	14 40.1 +57.8 82.9	14 24.7 +57.8 81.9
17°	16 24.2 +57.8 85.5	16 08.8 +57.7 84.5	15 53.3 +57.8 83.6	15 37.9 +57.8 82.6	15 22.5 +57.8 81.6
18°	17 22.0 +57.7 85.2	17 06.5 +57.8 84.2	16 51.1 +57.8 83.3	16 35.7 +57.8 82.3	16 20.3 +57.8 81.4
19°	18 19.7 +57.8 84.9	18 04.3 +57.7 83.9	17 48.9 +57.7 83.0	17 33.5 +57.7 82.0	17 18.1 +57.8 81.1
20°	19 17.5 +57.6 84.6	19 02.0 +57.7 83.7	18 46.6 +57.7 82.7	18 31.2 +57.7 81.8	18 15.9 +57.7 80.8
21°	20 15.1 +57.7 84.3	19 59.7 +57.7 83.4	19 44.3 +57.7 82.4	19 28.9 +57.7 81.5	19 13.6 +57.7 80.5
22°	21 12.8 +57.6 84.0	20 57.4 +57.6 83.1	20 42.0 +57.6 82.1	20 26.6 +57.7 81.2	20 11.3 +57.7 80.2
23°	22 10.4 +57.6 83.7	21 55.0 +57.6 82.8	21 39.6 +57.6 81.8	21 24.3 +57.6 80.9	21 09.0 +57.6 79.9
24°	23 08.0 +57.6 83.4	22 52.6 +57.6 82.5	22 37.2 +57.6 81.5	22 21.9 +57.6 80.6	22 06.6 +57.6 79.6
25°	24 05.6 +57.5 83.1	23 50.2 +57.5 82.2	23 34.8 +57.6 81.2	23 19.5 +57.5 80.3	23 04.2 +57.6 79.3
26°	25 03.1 +57.5 82.8	24 47.7 +57.5 81.9	24 32.4 +57.5 80.9	24 17.0 +57.6 80.0	24 01.8 +57.5 79.0
27°	26 00.6 +57.4 82.5	25 45.2 +57.4 81.5	25 29.9 +57.4 80.6	25 14.6 +57.4 79.6	24 59.3 +57.5 78.7
28°	26 58.0 +57.4 82.2	26 42.6 +57.4 81.2	26 27.3 +57.4 80.3	26 12.0 +57.5 79.3	25 56.8 +57.4 78.4
29°	27 55.4 +57.3 81.8	27 40.0 +57.4 80.9	27 24.7 +57.4 79.9	27 09.5 +57.4 79.0	26 54.2 +57.5 78.1

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-1 17.6 +58.0	-1 33.0 +58.0	-1 48.5 +58.0	-2 03.9 +58.0	-2 19.2 +58.0
1°	-0 19.6 +58.0	-0 35.0 +57.9	-0 50.5 +58.0	-1 05.9 +58.0	-1 21.2 +58.0
2°	0 38.4 +58.0 84.7	0 22.9 +58.0 83.7	0 07.5 +58.0 82.7	-0 07.9 +58.0	-0 23.2 +58.0
3°	1 36.4 +57.9 84.4	1 20.9 +58.0 83.4	1 05.5 +58.0 82.5	0 50.1 +58.0 81.5	0 34.8 +58.0 80.5
4°	2 34.3 +58.0 84.1	2 18.9 +58.0 83.2	2 03.5 +58.0 82.2	1 48.1 +58.0 81.2	1 32.8 +58.0 80.3
5°	3 32.3 +58.0 83.9	3 16.9 +57.9 82.9	3 01.5 +58.0 82.0	2 46.1 +58.0 81.0	2 30.8 +58.0 80.0
6°	4 30.3 +57.9 83.6	4 14.8 +58.0 82.7	3 59.5 +57.9 81.7	3 44.1 +58.0 80.7	3 28.8 +58.0 79.8
7°	5 28.2 +58.0 83.4	5 12.8 +58.0 82.4	4 57.4 +58.0 81.4	4 42.1 +58.0 80.5	4 26.8 +58.0 79.5
8°	6 26.2 +57.9 83.1	6 10.8 +57.9 82.1	5 55.4 +58.0 81.2	5 40.1 +57.9 80.2	5 24.8 +58.0 79.3
9°	7 24.1 +57.9 82.8	7 08.7 +57.9 81.9	6 53.4 +57.9 80.9	6 38.0 +58.0 80.0	6 22.8 +58.0 79.0
10°	8 22.0 +58.0 82.6	8 06.6 +58.0 81.6	7 51.3 +57.9 80.7	7 36.0 +58.0 79.7	7 20.8 +57.9 78.7
11°	9 20.0 +57.9 82.3	9 04.6 +57.9 81.4	8 49.2 +58.0 80.4	8 34.0 +57.9 79.4	8 18.7 +58.0 78.5
12°	10 17.9 +57.9 82.0	10 02.5 +57.9 81.1	9 47.2 +57.9 80.1	9 31.9 +57.9 79.2	9 16.7 +57.9 78.2
13°	11 15.8 +57.8 81.8	11 00.4 +57.9 80.8	10 45.1 +57.9 79.9	10 29.8 +58.0 78.9	10 14.6 +58.0 77.9
14°	12 13.6 +57.9 81.5	11 58.3 +57.9 80.6	11 43.0 +57.9 79.6	11 27.8 +57.9 78.6	11 12.6 +57.9 77.7
15°	13 11.5 +57.9 81.2	12 56.2 +57.8 80.3	12 40.9 +57.9 79.3	12 25.7 +57.8 78.4	12 10.5 +57.9 77.4
16°	14 09.4 +57.8 81.0	13 54.0 +57.9 80.0	13 38.8 +57.8 79.1	13 23.5 +57.9 78.1	13 08.4 +57.9 77.1
17°	15 07.2 +57.8 80.7	14 51.9 +57.8 79.7	14 36.6 +57.9 78.8	14 21.4 +57.9 77.8	14 06.3 +57.8 76.9
18°	16 05.0 +57.8 80.4	15 49.7 +57.8 79.5	15 34.5 +57.8 78.5	15 19.3 +57.8 77.6	15 04.1 +57.9 76.6
19°	17 02.8 +57.7 80.1	16 47.5 +57.8 79.2	16 32.3 +57.8 78.2	16 17.1 +57.8 77.3	16 02.0 +57.8 76.3
20°	18 00.5 +57.8 79.8	17 45.3 +57.7 78.9	17 30.1 +57.7 77.9	17 14.9 +57.8 77.0	16 59.8 +57.8 76.1
21°	18 58.3 +57.7 79.6	18 43.0 +57.8 78.6	18 27.8 +57.8 77.7	18 12.7 +57.8 76.7	17 57.6 +57.8 75.8
22°	19 56.0 +57.7 79.3	19 40.8 +57.7 78.3	19 25.6 +57.7 77.4	19 10.5 +57.7 76.4	18 55.4 +57.8 75.5
23°	20 53.7 +57.6 79.0	20 38.5 +57.6 78.0	20 23.3 +57.7 77.1	20 08.2 +57.7 76.1	19 53.2 +57.7 75.2
24°	21 51.3 +57.7 78.7	21 36.1 +57.7 77.7	21 21.0 +57.6 76.8	21 05.9 +57.7 75.8	20 50.9 +57.7 74.9
25°	22 49.0 +57.6 78.4	22 33.8 +57.6 77.4	22 18.6 +57.7 76.5	22 03.6 +57.6 75.6	21 48.6 +57.6 74.6
26°	23 46.6 +57.5 78.1	23 31.4 +57.6 77.1	23 16.3 +57.6 76.2	23 01.2 +57.6 75.3	22 46.2 +57.7 74.3
27°	24 44.1 +57.5 77.8	24 29.0 +57.5 76.8	24 13.9 +57.5 75.9	23 58.8 +57.6 74.9	23 43.9 +57.6 74.0
28°	25 41.6 +57.5 77.4	25 26.5 +57.5 76.5	25 11.4 +57.5 75.6	24 56.4 +57.5 74.6	24 41.5 +57.5 73.7
29°	26 39.1 +57.4 77.1	26 24.0 +57.4 76.2	26 08.9 +57.5 75.3	25 53.9 +57.5 74.3	25 39.0 +57.5 73.4

Declination SAME name as Latitude

Latitude 75°

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°	-2 34.6 +58.1	-2 49.8 +58.0	-3 05.1 +58.1	-3 20.3 +58.1	-3 35.4 +58.1
1°	-1 36.5 +58.0	-1 51.8 +58.0	-2 07.0 +58.0	-2 22.2 +58.0	-2 37.3 +58.1
2°	-0 38.5 +58.0	-0 53.8 +58.0	-1 09.0 +58.1	-1 24.2 +58.1	-1 39.2 +58.0
3°	0 19.5 +58.0 79.6	0 04.2 +58.1 78.6	-0 10.9 +58.0	-0 26.1 +58.1	-0 41.2 +58.1
4°	1 17.5 +58.0 79.3	1 02.3 +58.0 78.3	0 47.1 +58.0 77.4	0 32.0 +58.0 76.4	0 16.9 +58.1 75.5
5°	2 15.5 +58.0 79.1	2 00.3 +58.0 78.1	1 45.1 +58.1 77.1	1 30.0 +58.1 76.2	1 15.0 +58.1 75.2
6°	3 13.5 +58.1 78.8	2 58.3 +58.1 77.8	2 43.2 +58.0 76.9	2 28.1 +58.0 75.9	2 13.1 +58.0 75.0
7°	4 11.6 +58.0 78.5	3 56.4 +58.0 77.6	3 41.2 +58.1 76.6	3 26.1 +58.1 75.7	3 11.1 +58.1 74.7
8°	5 09.6 +58.0 78.3	4 54.4 +58.0 77.3	4 39.3 +58.0 76.4	4 24.2 +58.0 75.4	4 09.2 +58.1 74.4
9°	6 07.6 +57.9 78.0	5 52.4 +58.0 77.1	5 37.3 +58.0 76.1	5 22.2 +58.1 75.2	5 07.3 +58.0 74.2
10°	7 05.5 +58.0 77.8	6 50.4 +58.0 76.8	6 35.3 +58.0 75.9	6 20.3 +58.0 74.9	6 05.3 +58.1 73.9
11°	8 03.5 +58.0 77.5	7 48.4 +58.0 76.6	7 33.3 +58.0 75.6	7 18.3 +58.0 74.6	7 03.4 +58.0 73.7
12°	9 01.5 +58.0 77.3	8 46.4 +58.0 76.3	8 31.3 +58.0 75.3	8 16.3 +58.1 74.4	8 01.4 +58.1 73.4
13°	9 59.5 +57.9 77.0	9 44.4 +57.9 76.0	9 29.3 +58.0 75.1	9 14.4 +58.0 74.1	8 59.5 +58.0 73.2
14°	10 57.4 +57.9 76.7	10 42.3 +58.0 75.8	10 27.3 +58.0 74.8	10 12.4 +57.9 73.9	9 57.5 +58.0 72.9
15°	11 55.3 +58.0 76.5	11 40.3 +57.9 75.5	11 25.3 +57.9 74.6	11 10.3 +58.0 73.6	10 55.5 +58.0 72.7
16°	12 53.3 +57.9 76.2	12 38.2 +57.9 75.2	12 23.2 +58.0 74.3	12 08.3 +58.0 73.3	11 53.5 +58.0 72.4
17°	13 51.2 +57.9 75.9	13 36.1 +57.9 75.0	13 21.2 +57.9 74.0	13 06.3 +57.9 73.1	12 51.5 +57.9 72.1
18°	14 49.1 +57.8 75.7	14 34.0 +57.9 74.7	14 19.1 +57.9 73.8	14 04.2 +58.0 72.8	13 49.4 +58.0 71.9
19°	15 46.9 +57.9 75.4	15 31.9 +57.9 74.4	15 17.0 +57.9 73.5	15 02.2 +57.9 72.5	14 47.4 +57.9 71.6
20°	16 44.8 +57.8 75.1	16 29.8 +57.8 74.2	16 14.9 +57.9 73.2	16 00.1 +57.9 72.3	15 45.3 +57.9 71.3
21°	17 42.6 +57.8 74.8	17 27.6 +57.9 73.9	17 12.8 +57.8 72.9	16 58.0 +57.8 72.0	16 43.2 +57.9 71.1
22°	18 40.4 +57.8 74.5	18 25.5 +57.8 73.6	18 10.6 +57.8 72.7	17 55.8 +57.9 71.7	17 41.1 +57.9 70.8
23°	19 38.2 +57.7 74.3	19 23.3 +57.7 73.3	19 08.4 +57.8 72.4	18 53.7 +57.8 71.4	18 39.0 +57.8 70.5
24°	20 35.9 +57.7 74.0	20 21.0 +57.8 73.0	20 06.2 +57.8 72.1	19 51.5 +57.8 71.2	19 36.8 +57.8 70.2
25°	21 33.6 +57.7 73.7	21 18.8 +57.7 72.7	21 04.0 +57.7 71.8	20 49.3 +57.7 70.9	20 34.6 +57.8 69.9
26°	22 31.3 +57.7 73.4	22 16.5 +57.7 72.4	22 01.7 +57.7 71.5	21 47.0 +57.8 70.6	21 32.4 +57.8 69.6
27°	23 29.0 +57.6 73.1	23 14.2 +57.6 72.1	22 59.4 +57.7 71.2	22 44.8 +57.7 70.3	22 30.2 +57.7 69.4
28°	24 26.6 +57.6 72.8	24 11.8 +57.6 71.8	23 57.1 +57.6 70.9	23 42.5 +57.6 70.0	23 27.9 +57.7 69.1
29°	25 24.2 +57.5 72.5	25 09.4 +57.6 71.5	24 54.7 +57.6 70.6	24 40.1 +57.6 69.7	24 25.6 +57.6 68.8

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°	-3 50.5 +58.1	-4 05.5 +58.1	-4 20.4 +58.1	-4 35.2 +58.1	-4 50.0 +58.1
1°	-2 52.4 +58.1	-3 07.4 +58.2	-3 22.3 +58.2	-3 37.1 +58.1	-3 51.9 +58.2
2°	-1 54.3 +58.1	-2 09.2 +58.1	-2 24.1 +58.1	-2 39.0 +58.2	-2 53.7 +58.2
3°	-0 56.2 +58.1	-1 11.1 +58.1	-1 26.0 +58.1	-1 40.8 +58.2	-1 55.5 +58.2
4°	0 01.9 +58.1 74.5	-0 13.0 +58.1	-0 27.9 +58.2	-0 42.6 +58.1	-0 57.3 +58.1
5°	1 00.0 +58.1 74.2	0 45.1 +58.1 73.3	0 30.3 +58.1 72.3	0 15.5 +58.2 71.3	0 00.8 +58.2 70.4
6°	1 58.1 +58.1 74.0	1 43.2 +58.1 73.0	1 28.4 +58.1 72.1	1 13.7 +58.1 71.1	0 59.0 +58.2 70.1
7°	2 56.2 +58.1 73.7	2 41.3 +58.1 72.8	2 26.5 +58.2 71.8	2 11.8 +58.2 70.8	1 57.2 +58.2 69.9
8°	3 54.3 +58.1 73.5	3 39.4 +58.1 72.5	3 24.7 +58.1 71.6	3 10.0 +58.1 70.6	2 55.4 +58.1 69.6
9°	4 52.4 +58.0 73.2	4 37.5 +58.1 72.3	4 22.8 +58.1 71.3	4 08.1 +58.2 70.4	3 53.5 +58.2 69.4
10°	5 50.4 +58.1 73.0	5 35.6 +58.1 72.0	5 20.9 +58.1 71.1	5 06.3 +58.1 70.1	4 51.7 +58.2 69.2
11°	6 48.5 +58.1 72.7	6 33.7 +58.1 71.8	6 19.0 +58.1 70.8	6 04.4 +58.1 69.9	5 49.9 +58.1 68.9
12°	7 46.6 +58.0 72.5	7 31.8 +58.1 71.5	7 17.1 +58.1 70.6	7 02.5 +58.1 69.6	6 48.0 +58.2 68.7
13°	8 44.6 +58.1 72.2	8 29.9 +58.0 71.3	8 15.2 +58.1 70.3	8 00.6 +58.1 69.4	7 46.2 +58.1 68.4
14°	9 42.7 +58.0 72.0	9 27.9 +58.1 71.0	9 13.3 +58.1 70.1	8 58.7 +58.2 69.1	8 44.3 +58.1 68.2
15°	10 40.7 +58.0 71.7	10 26.0 +58.0 70.8	10 11.4 +58.0 69.8	9 56.9 +58.0 68.9	9 42.4 +58.1 67.9
16°	11 38.7 +58.0 71.4	11 24.0 +58.1 70.5	11 09.4 +58.1 69.5	10 54.9 +58.1 68.6	10 40.5 +58.1 67.7
17°	12 36.7 +58.0 71.2	12 22.1 +58.0 70.2	12 07.5 +58.0 69.3	11 53.0 +58.1 68.3	11 38.6 +58.1 67.4
18°	13 34.7 +58.0 70.9	13 20.1 +58.0 70.0	13 05.5 +58.1 69.0	12 51.1 +58.0 68.1	12 36.7 +58.1 67.1
19°	14 32.7 +57.9 70.7	14 18.1 +58.0 69.7	14 03.6 +58.0 68.8	13 49.1 +58.1 67.8	13 34.8 +58.1 66.9
20°	15 30.6 +58.0 70.4	15 16.1 +57.9 69.4	15 01.6 +58.0 68.5	14 47.2 +58.0 67.6	14 32.9 +58.0 66.6
21°	16 28.6 +57.9 70.1	16 14.0 +58.0 69.2	15 59.6 +57.9 68.2	15 45.2 +58.0 67.3	15 30.9 +58.0 66.4
22°	17 26.5 +57.9 69.8	17 12.0 +57.9 68.9	16 57.5 +58.0 68.0	16 43.2 +57.9 67.0	16 28.9 +58.0 66.1
23°	18 24.4 +57.9 69.6	18 09.9 +57.9 68.6	17 55.5 +57.9 67.7	17 41.1 +58.0 66.8	17 26.9 +58.0 65.8
24°	19 22.3 +57.8 69.3	19 07.8 +57.8 68.4	18 53.4 +57.9 67.4	18 39.1 +57.9 66.5	18 24.9 +58.0 65.6
25°	20 20.1 +57.8 69.0	20 05.6 +57.9 68.1	19 51.3 +57.9 67.1	19 37.0 +57.9 66.2	19 22.9 +57.9 65.3
26°	21 17.9 +57.8 68.7	21 03.5 +57.8 67.8	20 49.2 +57.8 66.9	20 34.9 +57.9 65.9	20 20.8 +57.9 65.0
27°	22 15.7 +57.7 68.4	22 01.3 +57.8 67.5	21 47.0 +57.8 66.6	21 32.8 +57.8 65.7	21 18.7 +57.9 64.7
28°	23 13.4 +57.8 68.1	22 59.1 +57.7 67.2	22 44.8 +57.8 66.3	22 30.6 +57.9 65.4	22 16.6 +57.8 64.4
29°	24 11.2 +57.7 67.8	23 56.8 +57.7 66.9	23 42.6 +57.7 66.0	23 28.5 +57.7 65.1	23 14.4 +57.8 64.2

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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°	-5 04.7 +58.2	-5 19.3 +58.2	-5 33.8 +58.2	-5 48.3 +58.3	-6 02.6 +58.3
1°	-4 06.5 +58.2	-4 21.1 +58.2	-4 35.6 +58.2	-4 50.0 +58.3	-5 04.3 +58.3
2°	-3 08.3 +58.2	-3 22.9 +58.2	-3 37.4 +58.3	-3 51.7 +58.2	-4 06.0 +58.3
3°	-2 10.1 +58.2	-2 24.7 +58.2	-2 39.1 +58.2	-2 53.5 +58.3	-3 07.7 +58.3
4°	-1 11.9 +58.2	-1 26.5 +58.3	-1 40.9 +58.3	-1 55.2 +58.3	-2 09.4 +58.3
5°	-0 13.7 +58.2	-0 28.2 +58.2	-0 42.6 +58.2	-0 56.9 +58.2	-1 11.1 +58.3
6°	0 44.5 +58.2 69.2	0 30.0 +58.2 68.2	0 15.6 +58.3 67.2	0 01.3 +58.3 66.3	-0 12.8 +58.3
7°	1 42.7 +58.1 68.9	1 28.2 +58.2 68.0	1 13.9 +58.2 67.0	0 59.6 +58.3 66.0	0 45.5 +58.3 65.1
8°	2 40.8 +58.2 68.7	2 26.4 +58.2 67.7	2 12.1 +58.3 66.8	1 57.9 +58.3 65.8	1 43.8 +58.3 64.8
9°	3 39.0 +58.2 68.4	3 24.6 +58.3 67.5	3 10.4 +58.2 66.5	2 56.2 +58.2 65.6	2 42.1 +58.3 64.6
10°	4 37.2 +58.2 68.2	4 22.9 +58.2 67.2	4 08.6 +58.2 66.3	3 54.4 +58.3 65.3	3 40.4 +58.3 64.4
11°	5 35.4 +58.2 67.9	5 21.1 +58.2 67.0	5 06.8 +58.3 66.0	4 52.7 +58.2 65.1	4 38.7 +58.2 64.1
12°	6 33.6 +58.2 67.7	6 19.3 +58.2 66.7	6 05.1 +58.2 65.8	5 50.9 +58.3 64.8	5 36.9 +58.3 63.9
13°	7 31.8 +58.1 67.5	7 17.5 +58.2 66.5	7 03.3 +58.2 65.5	6 49.2 +58.2 64.6	6 35.2 +58.3 63.6
14°	8 29.9 +58.2 67.2	8 15.7 +58.1 66.3	8 01.5 +58.2 65.3	7 47.4 +58.3 64.4	7 33.5 +58.3 63.4
15°	9 28.1 +58.1 67.0	9 13.8 +58.2 66.0	8 59.7 +58.2 65.1	8 45.7 +58.2 64.1	8 31.8 +58.2 63.2
16°	10 26.2 +58.1 66.7	10 12.0 +58.2 65.8	9 57.9 +58.2 64.8	9 43.9 +58.2 63.9	9 30.0 +58.3 62.9
17°	11 24.3 +58.2 66.5	11 10.2 +58.1 65.5	10 56.1 +58.2 64.6	10 42.1 +58.2 63.6	10 28.3 +58.2 62.7
18°	12 22.5 +58.1 66.2	12 08.3 +58.1 65.3	11 54.3 +58.1 64.3	11 40.3 +58.2 63.4	11 26.5 +58.2 62.4
19°	13 20.6 +58.1 65.9	13 06.4 +58.2 65.0	12 52.4 +58.2 64.1	12 38.5 +58.2 63.1	12 24.7 +58.2 62.2
20°	14 18.7 +58.0 65.7	14 04.6 +58.1 64.7	13 50.6 +58.1 63.8	13 36.7 +58.1 62.9	13 22.9 +58.2 61.9
21°	15 16.7 +58.1 65.4	15 02.7 +58.0 64.5	14 48.7 +58.1 63.6	14 34.8 +58.2 62.6	14 21.1 +58.2 61.7
22°	16 14.8 +58.0 65.2	16 00.7 +58.1 64.2	15 46.8 +58.1 63.3	15 33.0 +58.1 62.4	15 19.3 +58.2 61.4
23°	17 12.8 +58.0 64.9	16 58.8 +58.0 64.0	16 44.9 +58.1 63.0	16 31.1 +58.1 62.1	16 17.5 +58.1 61.2
24°	18 10.8 +58.0 64.6	17 56.8 +58.1 63.7	17 43.0 +58.0 62.8	17 29.2 +58.1 61.8	17 15.6 +58.1 60.9
25°	19 08.8 +58.0 64.4	18 54.9 +58.0 63.4	18 41.0 +58.1 62.5	18 27.3 +58.1 61.6	18 13.7 +58.1 60.7
26°	20 06.8 +57.9 64.1	19 52.9 +57.9 63.2	19 39.1 +58.0 62.2	19 25.4 +58.0 61.3	19 11.8 +58.1 60.4
27°	21 04.7 +57.9 63.8	20 50.8 +58.0 62.9	20 37.1 +58.0 62.0	20 23.4 +58.0 61.0	20 09.9 +58.0 60.1
28°	22 02.6 +57.9 63.5	21 48.8 +57.9 62.6	21 35.1 +57.9 61.7	21 21.4 +58.0 60.8	21 07.9 +58.1 59.9
29°	23 00.5 +57.9 63.2	22 46.7 +57.9 62.3	22 33.0 +57.9 61.4	22 19.4 +58.0 60.5	22 06.0 +58.0 59.6

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°	-6 16.8 +58.3	-6 30.9 +58.4	-6 44.9 +58.4	-6 58.7 +58.3	-7 12.5 +58.4
1°	-5 18.5 +58.3	-5 32.5 +58.3	-5 46.5 +58.4	-6 00.4 +58.4	-6 14.1 +58.4
2°	-4 20.2 +58.4	-4 34.2 +58.3	-4 48.1 +58.3	-5 02.0 +58.4	-5 15.7 +58.5
3°	-3 21.8 +58.3	-3 35.9 +58.4	-3 49.8 +58.4	-4 03.6 +58.4	-4 17.2 +58.4
4°	-2 23.5 +58.3	-2 37.5 +58.3	-2 51.4 +58.4	-3 05.2 +58.5	-3 18.8 +58.5
5°	-1 25.2 +58.3	-1 39.2 +58.4	-1 53.0 +58.4	-2 06.7 +58.4	-2 20.3 +58.4
6°	-0 26.9 +58.4	-0 40.8 +58.3	-0 54.6 +58.4	-1 08.3 +58.4	-1 21.9 +58.4
7°	0 31.5 +58.3 64.1	0 17.5 +58.4 63.1	0 03.8 +58.3 62.2	-0 09.9 +58.4	-0 23.5 +58.5
8°	1 29.8 +58.3 63.9	1 15.9 +58.4 62.9	1 02.1 +58.4 61.9	0 48.5 +58.4 61.0	0 35.0 +58.4 60.0
9°	2 28.1 +58.3 63.6	2 14.3 +58.3 62.7	2 00.5 +58.4 61.7	1 46.9 +58.4 60.8	1 33.4 +58.5 59.8
10°	3 26.4 +58.3 63.4	3 12.6 +58.3 62.4	2 58.9 +58.4 61.5	2 45.3 +58.4 60.5	2 31.9 +58.4 59.6
11°	4 24.7 +58.4 63.2	4 10.9 +58.4 62.2	3 57.3 +58.3 61.2	3 43.7 +58.4 60.3	3 30.3 +58.4 59.3
12°	5 23.1 +58.3 62.9	5 09.3 +58.3 62.0	4 55.6 +58.4 61.0	4 42.1 +58.4 60.1	4 28.7 +58.5 59.1
13°	6 21.4 +58.3 62.7	6 07.6 +58.4 61.7	5 54.0 +58.4 60.8	5 40.5 +58.4 59.8	5 27.2 +58.4 58.9
14°	7 19.7 +58.3 62.5	7 06.0 +58.3 61.5	6 52.4 +58.3 60.6	6 38.9 +58.4 59.6	6 25.6 +58.4 58.7
15°	8 18.0 +58.2 62.2	8 04.3 +58.3 61.3	7 50.7 +58.4 60.3	7 37.3 +58.4 59.4	7 24.0 +58.4 58.4
16°	9 16.2 +58.3 62.0	9 02.6 +58.3 61.0	8 49.1 +58.3 60.1	8 35.7 +58.4 59.1	8 22.4 +58.4 58.2
17°	10 14.5 +58.3 61.7	10 00.9 +58.3 60.8	9 47.4 +58.3 59.8	9 34.1 +58.3 58.9	9 20.8 +58.4 58.0
18°	11 12.8 +58.2 61.5	10 59.2 +58.3 60.5	10 45.7 +58.4 59.6	10 32.4 +58.4 58.7	10 19.2 +58.4 57.7
19°	12 11.0 +58.3 61.2	11 57.5 +58.3 60.3	11 44.1 +58.3 59.4	11 30.8 +58.3 58.4	11 17.6 +58.4 57.5
20°	13 09.3 +58.2 61.0	12 55.8 +58.2 60.1	12 42.4 +58.3 59.1	12 29.1 +58.3 58.2	12 16.0 +58.3 57.3
21°	14 07.5 +58.2 60.7	13 54.0 +58.3 59.8	13 40.7 +58.2 58.9	13 27.4 +58.3 57.9	13 14.3 +58.4 57.0
22°	15 05.7 +58.2 60.5	14 52.3 +58.2 59.6	14 38.9 +58.3 58.6	14 25.7 +58.3 57.7	14 12.7 +58.3 56.8
23°	16 03.9 +58.2 60.2	15 50.5 +58.2 59.3	15 37.2 +58.2 58.4	15 24.0 +58.3 57.5	15 11.0 +58.3 56.5
24°	17 02.1 +58.1 60.0	16 48.7 +58.2 59.1	16 35.4 +58.3 58.1	16 22.3 +58.3 57.2	16 09.3 +58.3 56.3
25°	18 00.2 +58.2 59.7	17 46.9 +58.2 58.8	17 33.7 +58.2 57.9	17 20.6 +58.2 57.0	17 07.6 +58.3 56.0
26°	18 58.4 +58.1 59.5	18 45.1 +58.1 58.6	18 31.9 +58.2 57.6	18 18.8 +58.3 56.7	18 05.9 +58.3 55.8
27°	19 56.5 +58.1 59.2	19 43.2 +58.1 58.3	19 30.1 +58.1 57.4	19 17.1 +58.2 56.5	19 04.2 +58.2 55.5
28°	20 54.6 +58.0 58.9	20 41.3 +58.1 58.0	20 28.2 +58.2 57.1	20 15.3 +58.1 56.2	20 02.4 +58.3 55.3
29°	21 52.6 +58.1 58.7	21 39.4 +58.1 57.8	21 26.4 +58.1 56.8	21 13.4 +58.2 55.9	21 00.7 +58.1 55.0

Declination SAME name as Latitude

Latitude 75°

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°	-7 26.1 +58.4	-7 39.6 +58.5	-7 53.0 +58.5	-8 06.2 +58.5	-8 19.3 +58.6
1°	-6 27.7 +58.5	-6 41.1 +58.4	-6 54.5 +58.5	-7 07.7 +58.6	-7 20.7 +58.6
2°	-5 29.2 +58.4	-5 42.7 +58.5	-5 56.0 +58.6	-6 09.1 +58.5	-6 22.1 +58.5
3°	-4 30.8 +58.5	-4 44.2 +58.5	-4 57.4 +58.5	-5 10.6 +58.6	-5 23.6 +58.6
4°	-3 32.3 +58.5	-3 45.7 +58.5	-3 58.9 +58.5	-4 12.0 +58.6	-4 25.0 +58.6
5°	-2 33.8 +58.4	-2 47.2 +58.5	-3 00.4 +58.6	-3 13.4 +58.5	-3 26.4 +58.6
6°	-1 35.4 +58.5	-1 48.7 +58.5	-2 01.8 +58.5	-2 14.9 +58.6	-2 27.8 +58.6
7°	-0 36.9 +58.5	-0 50.2 +58.5	-1 03.3 +58.5	-1 16.3 +58.6	-1 29.2 +58.6
8°	0 21.6 +58.5 59.0	0 08.3 +58.5 58.1	-0 04.8 +58.6	-0 17.7 +58.5	-0 30.6 +58.6
9°	1 20.1 +58.4 58.8	1 06.8 +58.5 57.9	0 53.8 +58.5 56.9	0 40.8 +58.6 55.9	0 28.0 +58.6 55.0
10°	2 18.5 +58.5 58.6	2 05.3 +58.6 57.6	1 52.3 +58.5 56.7	1 39.4 +58.6 55.7	1 26.6 +58.6 54.8
11°	3 17.0 +58.5 58.4	3 03.9 +58.5 57.4	2 50.8 +58.6 56.5	2 38.0 +58.5 55.5	2 25.2 +58.6 54.5
12°	4 15.5 +58.4 58.2	4 02.4 +58.4 57.2	3 49.4 +58.5 56.2	3 36.5 +58.6 55.3	3 23.8 +58.6 54.3
13°	5 13.9 +58.5 57.9	5 00.8 +58.5 57.0	4 47.9 +58.5 56.0	4 35.1 +58.6 55.1	4 22.4 +58.6 54.1
14°	6 12.4 +58.4 57.7	5 59.3 +58.5 56.7	5 46.4 +58.5 55.8	5 33.7 +58.5 54.8	5 21.0 +58.6 53.9
15°	7 10.8 +58.5 57.5	6 57.8 +58.5 56.5	6 44.9 +58.6 55.6	6 32.2 +58.6 54.6	6 19.6 +58.6 53.7
16°	8 09.3 +58.4 57.2	7 56.3 +58.5 56.3	7 43.5 +58.5 55.4	7 30.8 +58.5 54.4	7 18.2 +58.6 53.5
17°	9 07.7 +58.5 57.0	8 54.8 +58.4 56.1	8 42.0 +58.5 55.1	8 29.3 +58.5 54.2	8 16.8 +58.5 53.2
18°	10 06.2 +58.4 56.8	9 53.2 +58.5 55.8	9 40.5 +58.4 54.9	9 27.8 +58.6 54.0	9 15.3 +58.6 53.0
19°	11 04.6 +58.4 56.6	10 51.7 +58.4 55.6	10 38.9 +58.5 54.7	10 26.4 +58.5 53.7	10 13.9 +58.6 52.8
20°	12 03.0 +58.4 56.3	11 50.1 +58.5 55.4	11 37.4 +58.5 54.4	11 24.9 +58.5 53.5	11 12.5 +58.5 52.6
21°	13 01.4 +58.4 56.1	12 48.6 +58.4 55.2	12 35.9 +58.5 54.2	12 23.4 +58.5 53.3	12 11.0 +58.5 52.4
22°	13 59.8 +58.3 55.8	13 47.0 +58.4 54.9	13 34.4 +58.4 54.0	13 21.9 +58.4 53.1	13 09.5 +58.5 52.1
23°	14 58.1 +58.4 55.6	14 45.4 +58.4 54.7	14 32.8 +58.4 53.8	14 20.3 +58.5 52.8	14 08.0 +58.6 51.9
24°	15 56.5 +58.3 55.4	15 43.8 +58.4 54.4	15 31.2 +58.4 53.5	15 18.8 +58.5 52.6	15 06.6 +58.4 51.7
25°	16 54.8 +58.4 55.1	16 42.2 +58.3 54.2	16 29.6 +58.4 53.3	16 17.3 +58.4 52.4	16 05.0 +58.5 51.4
26°	17 53.2 +58.3 54.9	17 40.5 +58.4 54.0	17 28.0 +58.4 53.0	17 15.7 +58.4 52.1	17 03.5 +58.5 51.2
27°	18 51.5 +58.2 54.6	18 38.9 +58.3 53.7	18 26.4 +58.4 52.8	18 14.1 +58.4 51.9	18 02.0 +58.4 51.0
28°	19 49.7 +58.3 54.4	19 37.2 +58.3 53.5	19 24.8 +58.3 52.6	19 12.5 +58.4 51.6	19 00.4 +58.5 50.7
29°	20 48.0 +58.2 54.1	20 35.5 +58.3 53.2	20 23.1 +58.3 52.3	20 10.9 +58.4 51.4	19 58.9 +58.4 50.5

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°	-8 32.2 +58.6	-8 45.0 +58.6	-8 57.7 +58.7	-9 10.1 +58.7	-9 22.4 +58.7
1°	-7 33.6 +58.6	-7 46.4 +58.7	-7 59.0 +58.7	-8 11.4 +58.7	-8 23.7 +58.7
2°	-6 35.0 +58.6	-6 47.7 +58.6	-7 00.3 +58.7	-7 12.7 +58.7	-7 25.0 +58.8
3°	-5 36.4 +58.6	-5 49.1 +58.7	-6 01.6 +58.7	-6 14.0 +58.7	-6 26.2 +58.8
4°	-4 37.8 +58.7	-4 50.4 +58.6	-5 02.9 +58.7	-5 15.3 +58.8	-5 27.4 +58.7
5°	-3 39.1 +58.6	-3 51.8 +58.7	-4 04.2 +58.7	-4 16.5 +58.7	-4 28.7 +58.8
6°	-2 40.5 +58.6	-2 53.1 +58.7	-3 05.5 +58.7	-3 17.8 +58.7	-3 29.9 +58.8
7°	-1 41.9 +58.7	-1 54.4 +58.6	-2 06.8 +58.7	-2 19.1 +58.8	-2 31.1 +58.7
8°	-0 43.2 +58.6	-0 55.8 +58.7	-1 08.1 +58.7	-1 20.3 +58.7	-1 32.4 +58.8
9°	0 15.4 +58.6 54.0	0 02.9 +58.7 53.0	-0 09.4 +58.7	-0 21.6 +58.8	-0 33.6 +58.8
10°	1 14.0 +58.7 53.8	1 01.6 +58.7 52.8	0 49.3 +58.7 51.9	0 37.2 +58.7 50.9	0 25.2 +58.8 49.9
11°	2 12.7 +58.6 53.6	2 00.3 +58.6 52.6	1 48.0 +58.7 51.7	1 35.9 +58.7 50.7	1 24.0 +58.7 49.7
12°	3 11.3 +58.6 53.4	2 58.9 +58.7 52.4	2 46.7 +58.7 51.5	2 34.6 +58.8 50.5	2 22.7 +58.8 49.5
13°	4 09.9 +58.7 53.2	3 57.6 +58.6 52.2	3 45.4 +58.7 51.2	3 33.4 +58.7 50.3	3 21.5 +58.8 49.3
14°	5 08.6 +58.6 52.9	4 56.2 +58.7 52.0	4 44.1 +58.7 51.0	4 32.1 +58.7 50.1	4 20.3 +58.7 49.1
15°	6 07.2 +58.6 52.7	5 54.9 +58.7 51.8	5 42.8 +58.7 50.8	5 30.8 +58.7 49.9	5 19.0 +58.8 48.9
16°	7 05.8 +58.6 52.5	6 53.6 +58.6 51.6	6 41.5 +58.7 50.6	6 29.5 +58.8 49.7	6 17.8 +58.8 48.7
17°	8 04.4 +58.6 52.3	7 52.2 +58.6 51.4	7 40.2 +58.6 50.4	7 28.3 +58.7 49.5	7 16.6 +58.7 48.5
18°	9 03.0 +58.6 52.1	8 50.8 +58.7 51.1	8 38.8 +58.7 50.2	8 27.0 +58.7 49.3	8 15.3 +58.7 48.3
19°	10 01.6 +58.6 51.9	9 49.5 +58.6 50.9	9 37.5 +58.7 50.0	9 25.7 +58.7 49.0	9 14.0 +58.8 48.1
20°	11 00.2 +58.6 51.6	10 48.1 +58.6 50.7	10 36.2 +58.6 49.8	10 24.4 +58.7 48.8	10 12.8 +58.7 47.9
21°	11 58.8 +58.5 51.4	11 46.7 +58.6 50.5	11 34.8 +58.7 49.6	11 23.1 +58.7 48.6	11 11.5 +58.7 47.7
22°	12 57.3 +58.6 51.2	12 45.3 +58.6 50.3	12 33.5 +58.6 49.3	12 21.8 +58.6 48.4	12 10.2 +58.7 47.5
23°	13 55.9 +58.6 51.0	13 43.9 +58.6 50.1	13 32.1 +58.6 49.1	13 20.4 +58.7 48.2	13 08.9 +58.7 47.3
24°	14 54.5 +58.5 50.8	14 42.5 +58.6 49.8	14 30.7 +58.6 48.9	14 19.1 +58.6 48.0	14 07.6 +58.7 47.1
25°	15 53.0 +58.5 50.5	15 41.1 +58.5 49.6	15 29.3 +58.6 48.7	15 17.7 +58.7 47.8	15 06.3 +58.7 46.8
26°	16 51.5 +58.5 50.3	16 39.6 +58.6 49.4	16 27.9 +58.6 48.5	16 16.4 +58.6 47.5	16 05.0 +58.7 46.6
27°	17 50.0 +58.5 50.1	17 38.2 +58.5 49.1	17 26.5 +58.6 48.2	17 15.0 +58.6 47.3	17 03.7 +58.6 46.4
28°	18 48.5 +58.5 49.8	18 36.7 +58.5 48.9	18 25.1 +58.5 48.0	18 13.6 +58.6 47.1	18 02.3 +58.7 46.2
29°	19 47.0 +58.4 49.6	19 35.2 +58.5 48.7	19 23.6 +58.6 47.8	19 12.2 +58.6 46.9	19 01.0 +58.6 46.0

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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°	-9 34.6 +58.8	-9 46.6 +58.8	-9 58.4 +58.9		
1°	-8 35.8 +58.8	-8 47.8 +58.9	-8 59.5 +58.8	-9 11.1 +58.9	-9 22.5 +58.9
2°	-7 37.0 +58.8	-7 48.9 +58.8	-8 00.7 +58.9	-8 12.2 +58.9	-8 23.6 +58.9
3°	-6 38.2 +58.8	-6 50.1 +58.8	-7 01.8 +58.8	-7 13.3 +58.9	-7 24.7 +59.0
4°	-5 39.4 +58.8	-5 51.3 +58.8	-6 03.0 +58.9	-6 14.4 +58.9	-6 25.7 +58.9
5°	-4 40.6 +58.8	-4 52.5 +58.9	-5 04.1 +58.9	-5 15.5 +58.9	-5 26.8 +58.9
6°	-3 41.8 +58.8	-3 53.6 +58.8	-4 05.2 +58.9	-4 16.6 +58.9	-4 27.9 +59.0
7°	-2 43.0 +58.8	-2 54.8 +58.9	-3 06.3 +58.8	-3 17.7 +58.9	-3 28.9 +58.9
8°	-1 44.2 +58.8	-1 55.9 +58.8	-2 07.5 +58.9	-2 18.8 +58.9	-2 30.0 +59.0
9°	-0 45.4 +58.8	-0 57.1 +58.9	-1 08.6 +58.9	-1 19.9 +58.9	-1 31.0 +58.9
10°	0 13.4 +58.8 49.0	0 01.8 +58.8 48.0	-0 09.7 +58.9	-0 21.0 +58.9	-0 32.1 +59.0
11°	1 12.2 +58.8 48.8	1 00.6 +58.8 47.8	0 49.2 +58.9 46.9	0 37.9 +59.0 45.9	0 26.9 +58.9 44.9
12°	2 11.0 +58.8 48.6	1 59.4 +58.9 47.6	1 48.1 +58.8 46.7	1 36.9 +58.9 45.7	1 25.8 +59.0 44.7
13°	3 09.8 +58.8 48.4	2 58.3 +58.8 47.4	2 46.9 +58.9 46.5	2 35.8 +58.9 45.5	2 24.8 +58.9 44.5
14°	4 08.6 +58.8 48.2	3 57.1 +58.9 47.2	3 45.8 +58.9 46.3	3 34.7 +58.9 45.3	3 23.7 +59.0 44.4
15°	5 07.4 +58.8 48.0	4 56.0 +58.8 47.0	4 44.7 +58.9 46.1	4 33.6 +58.9 45.1	4 22.7 +58.9 44.2
16°	6 06.2 +58.8 47.8	5 54.8 +58.8 46.8	5 43.6 +58.8 45.9	5 32.5 +58.9 44.9	5 21.6 +59.0 44.0
17°	7 05.0 +58.8 47.6	6 53.6 +58.8 46.6	6 42.4 +58.9 45.7	6 31.4 +58.9 44.7	6 20.6 +58.9 43.8
18°	8 03.8 +58.8 47.4	7 52.4 +58.9 46.4	7 41.3 +58.8 45.5	7 30.3 +58.9 44.6	7 19.5 +58.9 43.6
19°	9 02.6 +58.7 47.2	8 51.3 +58.8 46.2	8 40.1 +58.9 45.3	8 29.2 +58.9 44.4	8 18.4 +59.0 43.4
20°	10 01.3 +58.8 47.0	9 50.1 +58.8 46.0	9 39.0 +58.8 45.1	9 28.1 +58.9 44.2	9 17.4 +58.9 43.2
21°	11 00.1 +58.8 46.8	10 48.9 +58.8 45.8	10 37.8 +58.9 44.9	10 27.0 +58.8 44.0	10 16.3 +58.9 43.0
22°	11 58.9 +58.7 46.6	11 47.7 +58.8 45.6	11 36.7 +58.8 44.7	11 25.8 +58.9 43.8	11 15.2 +58.9 42.8
23°	12 57.6 +58.8 46.4	12 46.5 +58.8 45.4	12 35.5 +58.8 44.5	12 24.7 +58.9 43.6	12 14.1 +58.9 42.7
24°	13 56.4 +58.7 46.1	13 45.3 +58.7 45.2	13 34.3 +58.8 44.3	13 23.6 +58.8 43.4	13 13.0 +58.9 42.5
25°	14 55.1 +58.7 45.9	14 44.0 +58.8 45.0	14 33.1 +58.8 44.1	14 22.4 +58.8 43.2	14 11.9 +58.9 42.3
26°	15 53.8 +58.7 45.7	15 42.8 +58.7 44.8	15 31.9 +58.8 43.9	15 21.2 +58.9 43.0	15 10.8 +58.8 42.1
27°	16 52.5 +58.7 45.5	16 41.5 +58.8 44.6	16 30.7 +58.8 43.7	16 20.1 +58.8 42.8	16 09.6 +58.9 41.9
28°	17 51.2 +58.7 45.3	17 40.3 +58.7 44.4	17 29.5 +58.7 43.5	17 18.9 +58.8 42.6	17 08.5 +58.8 41.7
29°	18 49.9 +58.6 45.1	18 39.0 +58.7 44.2	18 28.2 +58.8 43.3	18 17.7 +58.8 42.4	18 07.3 +58.9 41.5

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°	-9 33.8 +59.0	-9 44.8 +59.0	-9 55.6 +59.0		
2°	-8 34.8 +59.0	-8 45.8 +59.0	-8 56.6 +59.0	-9 07.2 +59.0	-9 17.7 +59.2
3°	-7 35.8 +58.9	-7 46.8 +59.0	-7 57.6 +59.1	-8 08.2 +59.1	-8 18.5 +59.1
4°	-6 36.9 +59.0	-6 47.8 +59.0	-6 58.5 +59.0	-7 09.1 +59.1	-7 19.4 +59.1
5°	-5 37.9 +59.0	-5 48.8 +59.0	-5 59.5 +59.1	-6 10.0 +59.1	-6 20.3 +59.1
6°	-4 38.9 +59.0	-4 49.8 +59.0	-5 00.4 +59.0	-5 10.9 +59.1	-5 21.2 +59.1
7°	-3 39.9 +59.0	-3 50.8 +59.1	-4 01.4 +59.1	-4 11.8 +59.1	-4 22.1 +59.2
8°	-2 40.9 +58.9	-2 51.7 +59.0	-3 02.3 +59.0	-3 12.7 +59.0	-3 22.9 +59.1
9°	-1 42.0 +59.0	-1 52.7 +59.0	-2 03.3 +59.1	-2 13.7 +59.1	-2 23.8 +59.1
10°	-0 43.0 +59.0	-0 53.7 +59.0	-1 04.2 +59.0	-1 14.6 +59.1	-1 24.7 +59.1
11°	0 16.0 +59.0 44.0	0 05.3 +59.0 43.0	-0 05.2 +59.1	-0 15.5 +59.1	-0 25.6 +59.2
12°	1 15.0 +59.0 43.8	1 04.3 +59.1 42.8	0 53.9 +59.0 41.8	0 43.6 +59.1 40.9	0 33.6 +59.1 39.9
13°	2 14.0 +59.0 43.6	2 03.4 +59.0 42.6	1 52.9 +59.1 41.7	1 42.7 +59.1 40.7	1 32.7 +59.1 39.8
14°	3 13.0 +58.9 43.4	3 02.4 +59.0 42.5	2 52.0 +59.1 41.5	2 41.8 +59.1 40.5	2 31.8 +59.1 39.6
15°	4 11.9 +59.0 43.2	4 01.4 +59.0 42.3	3 51.1 +59.0 41.3	3 40.9 +59.1 40.4	3 30.9 +59.2 39.4
16°	5 10.9 +59.0 43.0	5 00.4 +59.0 42.1	4 50.1 +59.1 41.1	4 40.0 +59.1 40.2	4 30.1 +59.1 39.2
17°	6 09.9 +59.0 42.9	5 59.4 +59.0 41.9	5 49.2 +59.0 41.0	5 39.1 +59.1 40.0	5 29.2 +59.1 39.1
18°	7 08.9 +58.9 42.7	6 58.4 +59.1 41.7	6 48.2 +59.0 40.8	6 38.2 +59.0 39.8	6 28.3 +59.1 38.9
19°	8 07.8 +59.0 42.5	7 57.5 +59.0 41.5	7 47.2 +59.1 40.6	7 37.2 +59.1 39.7	7 27.4 +59.1 38.7
20°	9 06.8 +59.0 42.3	8 56.5 +58.9 41.4	8 46.3 +59.0 40.4	8 36.3 +59.1 39.5	8 26.5 +59.1 38.6
21°	10 05.8 +58.9 42.1	9 55.4 +59.0 41.2	9 45.3 +59.0 40.2	9 35.4 +59.0 39.3	9 25.6 +59.1 38.4
22°	11 04.7 +59.0 41.9	10 54.4 +59.0 41.0	10 44.3 +59.1 40.1	10 34.4 +59.1 39.1	10 24.7 +59.1 38.2
23°	12 03.7 +58.9 41.7	11 53.4 +59.0 40.8	11 43.4 +59.0 39.9	11 33.5 +59.1 39.0	11 23.8 +59.1 38.0
24°	13 02.6 +58.9 41.5	12 52.4 +59.0 40.6	12 42.4 +59.0 39.7	12 32.6 +59.0 38.8	12 22.9 +59.1 37.9
25°	14 01.5 +58.9 41.3	13 51.4 +58.9 40.4	13 41.4 +59.0 39.5	13 31.6 +59.0 38.6	13 22.0 +59.1 37.7
26°	15 00.4 +59.0 41.1	14 50.3 +59.0 40.2	14 40.4 +59.0 39.3	14 30.6 +59.1 38.4	14 21.1 +59.1 37.5
27°	15 59.4 +58.8 40.9	15 49.3 +58.9 40.0	15 39.4 +58.9 39.1	15 29.7 +59.0 38.2	15 20.2 +59.0 37.3
28°	16 58.2 +58.9 40.8	16 48.2 +58.9 39.8	16 38.3 +59.0 38.9	16 28.7 +59.0 38.0	16 19.2 +59.1 37.1
29°	17 57.1 +58.9 40.5	17 47.1 +58.9 39.6	17 37.3 +59.0 38.7	17 27.7 +59.0 37.8	17 18.3 +59.0 36.9

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°	-9 27.9 +59.2	-9 37.9 +59.2	-9 47.7 +59.2	-9 57.3 +59.3	
3°	-8 28.7 +59.1	-8 38.7 +59.2	-8 48.5 +59.3	-8 58.0 +59.2	-9 07.4 +59.3
4°	-7 29.6 +59.2	-7 39.5 +59.2	-7 49.2 +59.2	-7 58.8 +59.3	-8 08.1 +59.3
5°	-6 30.4 +59.1	-6 40.3 +59.2	-6 50.0 +59.2	-6 59.5 +59.2	-7 08.8 +59.3
6°	-5 31.3 +59.2	-5 41.1 +59.1	-5 50.8 +59.2	-6 00.3 +59.3	-6 09.5 +59.3
7°	-4 32.1 +59.1	-4 42.0 +59.2	-4 51.6 +59.2	-5 01.0 +59.3	-5 10.2 +59.3
8°	-3 33.0 +59.2	-3 42.8 +59.2	-3 52.4 +59.3	-4 01.7 +59.2	-4 10.9 +59.3
9°	-2 33.8 +59.2	-2 43.6 +59.2	-2 53.1 +59.2	-3 02.5 +59.3	-3 11.6 +59.3
10°	-1 34.6 +59.1	-1 44.4 +59.2	-1 53.9 +59.2	-2 03.2 +59.3	-2 12.3 +59.3
11°	-0 35.5 +59.2	-0 45.2 +59.2	-0 54.7 +59.3	-1 03.9 +59.2	-1 13.0 +59.3
12°	0 23.7 +59.2 39.0	0 14.0 +59.2 38.0	0 04.6 +59.2 37.0	-0 04.7 +59.3	-0 13.7 +59.3
13°	1 22.9 +59.1 38.8	1 13.2 +59.2 37.8	1 03.8 +59.2 36.9	0 54.6 +59.3 35.9	0 45.6 +59.3 34.9
14°	2 22.0 +59.2 38.6	2 12.4 +59.2 37.7	2 03.0 +59.3 36.7	1 53.9 +59.2 35.8	1 44.9 +59.3 34.8
15°	3 21.2 +59.1 38.5	3 11.6 +59.2 37.5	3 02.3 +59.2 36.5	2 53.1 +59.3 35.6	2 44.2 +59.3 34.6
16°	4 20.3 +59.2 38.3	4 10.8 +59.2 37.3	4 01.5 +59.2 36.4	3 52.4 +59.3 35.4	3 43.5 +59.3 34.5
17°	5 19.5 +59.2 38.1	5 10.0 +59.2 37.2	5 00.7 +59.3 36.2	4 51.7 +59.2 35.3	4 42.8 +59.3 34.3
18°	6 18.7 +59.1 38.0	6 09.2 +59.2 37.0	6 00.0 +59.2 36.1	5 50.9 +59.3 35.1	5 42.1 +59.3 34.2
19°	7 17.8 +59.2 37.8	7 08.4 +59.2 36.8	6 59.2 +59.2 35.9	6 50.2 +59.2 35.0	6 41.4 +59.3 34.0
20°	8 17.0 +59.1 37.6	8 07.6 +59.2 36.7	7 58.4 +59.2 35.7	7 49.4 +59.3 34.8	7 40.7 +59.3 33.9
21°	9 16.1 +59.1 37.4	9 06.8 +59.1 36.5	8 57.6 +59.2 35.6	8 48.7 +59.2 34.6	8 40.0 +59.2 33.7
22°	10 15.2 +59.2 37.3	10 05.9 +59.2 36.3	9 56.8 +59.2 35.4	9 47.9 +59.3 34.5	9 39.2 +59.3 33.6
23°	11 14.4 +59.1 37.1	11 05.1 +59.2 36.2	10 56.0 +59.2 35.3	10 47.2 +59.2 34.3	10 38.5 +59.3 33.4
24°	12 13.5 +59.1 36.9	12 04.3 +59.1 36.0	11 55.2 +59.2 35.1	11 46.4 +59.3 34.2	11 37.8 +59.3 33.2
25°	13 12.6 +59.1 36.8	13 03.4 +59.2 35.8	12 54.4 +59.2 34.9	12 45.7 +59.2 34.0	12 37.1 +59.2 33.1
26°	14 11.7 +59.1 36.6	14 02.6 +59.1 35.7	13 53.6 +59.2 34.8	13 44.9 +59.2 33.8	13 36.3 +59.3 32.9
27°	15 10.8 +59.1 36.4	15 01.7 +59.2 35.5	14 52.8 +59.2 34.6	14 44.1 +59.2 33.7	14 35.6 +59.2 32.8
28°	16 09.9 +59.1 36.2	16 00.9 +59.1 35.3	15 52.0 +59.2 34.4	15 43.3 +59.2 33.5	15 34.8 +59.3 32.6
29°	17 09.0 +59.1 36.0	17 00.0 +59.1 35.1	16 51.2 +59.1 34.2	16 42.5 +59.2 33.3	16 34.1 +59.2 32.4

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°	-9 16.5 +59.3	-9 25.4 +59.4	-9 34.1 +59.4	-9 42.5 +59.4	-9 50.7 +59.4
4°	-8 17.2 +59.4	-8 26.0 +59.3	-8 34.7 +59.4	-8 43.1 +59.4	-8 51.3 +59.5
5°	-7 17.8 +59.3	-7 26.7 +59.4	-7 35.3 +59.4	-7 43.7 +59.4	-7 51.8 +59.4
6°	-6 18.5 +59.3	-6 27.3 +59.3	-6 35.9 +59.4	-6 44.3 +59.5	-6 52.4 +59.5
7°	-5 19.2 +59.3	-5 28.0 +59.4	-5 36.5 +59.4	-5 44.8 +59.4	-5 52.9 +59.4
8°	-4 19.9 +59.4	-4 28.6 +59.4	-4 37.1 +59.4	-4 45.4 +59.4	-4 53.5 +59.5
9°	-3 20.5 +59.3	-3 29.2 +59.3	-3 37.7 +59.4	-3 46.0 +59.5	-3 54.0 +59.5
10°	-2 21.2 +59.3	-2 29.9 +59.4	-2 38.3 +59.4	-2 46.5 +59.4	-2 54.5 +59.4
11°	-1 21.9 +59.4	-1 30.5 +59.4	-1 38.9 +59.4	-1 47.1 +59.4	-1 55.1 +59.5
12°	-0 22.5 +59.3	-0 31.1 +59.3	-0 39.5 +59.4	-0 47.7 +59.5	-0 55.6 +59.5
13°	0 36.8 +59.3 34.0	0 28.2 +59.4 33.0	0 19.9 +59.4 32.1	0 11.8 +59.4 31.1	0 03.9 +59.4 30.1
14°	1 36.1 +59.4 33.8	1 27.6 +59.4 32.9	1 19.3 +59.4 31.9	1 11.2 +59.4 30.9	1 03.3 +59.5 30.0
15°	2 35.5 +59.3 33.7	2 27.0 +59.3 32.7	2 18.7 +59.4 31.8	2 10.6 +59.5 30.8	2 02.8 +59.4 29.9
16°	3 34.8 +59.3 33.5	3 26.3 +59.4 32.6	3 18.1 +59.4 31.6	3 10.1 +59.4 30.7	3 02.2 +59.5 29.7
17°	4 34.1 +59.4 33.4	4 25.7 +59.4 32.4	4 17.5 +59.4 31.5	4 09.5 +59.4 30.5	4 01.7 +59.5 29.6
18°	5 33.5 +59.3 33.2	5 25.1 +59.3 32.3	5 16.9 +59.4 31.3	5 08.9 +59.4 30.4	5 01.2 +59.4 29.5
19°	6 32.8 +59.3 33.1	6 24.4 +59.4 32.1	6 16.3 +59.4 31.2	6 08.3 +59.5 30.3	6 00.6 +59.5 29.3
20°	7 32.1 +59.3 32.9	7 23.8 +59.3 32.0	7 15.7 +59.4 31.1	7 07.8 +59.4 30.1	7 00.1 +59.4 29.2
21°	8 31.4 +59.4 32.8	8 23.1 +59.4 31.8	8 15.1 +59.3 30.9	8 07.2 +59.4 30.0	7 59.5 +59.5 29.0
22°	9 30.8 +59.3 32.6	9 22.5 +59.3 31.7	9 14.4 +59.4 30.8	9 06.6 +59.4 29.8	8 59.0 +59.4 28.9
23°	10 30.1 +59.3 32.5	10 21.8 +59.4 31.6	10 13.8 +59.4 30.6	10 06.0 +59.4 29.7	9 58.4 +59.5 28.8
24°	11 29.4 +59.3 32.3	11 21.2 +59.3 31.4	11 13.2 +59.4 30.5	11 05.4 +59.5 29.6	10 57.9 +59.4 28.6
25°	12 28.7 +59.3 32.2	12 20.5 +59.4 31.3	12 12.6 +59.4 30.3	12 04.9 +59.4 29.4	11 57.3 +59.5 28.5
26°	13 28.0 +59.3 32.0	13 19.9 +59.3 31.1	13 12.0 +59.3 30.2	13 04.3 +59.4 29.3	12 56.8 +59.4 28.4
27°	14 27.3 +59.3 31.9	14 19.2 +59.3 30.9	14 11.3 +59.3 30.0	14 03.7 +59.3 29.1	13 56.2 +59.4 28.2
28°	15 26.6 +59.3 31.7	15 18.5 +59.3 30.8	15 10.7 +59.3 29.9	15 03.0 +59.4 29.0	14 55.6 +59.5 28.1
29°	16 25.9 +59.2 31.5	16 17.8 +59.4 30.6	16 10.0 +59.4 29.7	16 02.4 +59.4 28.8	15 55.1 +59.4 27.9

Dec	LHA 150° / 210°	LHA 151° / 209°	LHA 152° / 208°	LHA 153° / 207°	LHA 154° / 206°
0°	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
1°					
2°					
3°	-9 58.7 +59.5				
4°	-8 59.2 +59.4	-9 07.0 +59.5	-9 14.5 +59.6	-9 21.7 +59.6	-9 28.7 +59.6
5°	-7 59.8 +59.5	-8 07.5 +59.6	-8 14.9 +59.5	-8 22.1 +59.5	-8 29.1 +59.6
6°	-7 00.3 +59.5	-7 07.9 +59.5	-7 15.4 +59.6	-7 22.6 +59.6	-7 29.5 +59.6
7°	-6 00.8 +59.5	-6 08.4 +59.5	-6 15.8 +59.5	-6 23.0 +59.6	-6 29.9 +59.6
8°	-5 01.3 +59.5	-5 08.9 +59.5	-5 16.3 +59.6	-5 23.4 +59.6	-5 30.3 +59.6
9°	-4 01.8 +59.5	-4 09.4 +59.5	-4 16.7 +59.5	-4 23.8 +59.6	-4 30.7 +59.6
10°	-3 02.3 +59.5	-3 09.9 +59.6	-3 17.2 +59.6	-3 24.2 +59.5	-3 31.1 +59.6
11°	-2 02.8 +59.5	-2 10.3 +59.5	-2 17.6 +59.5	-2 24.7 +59.6	-2 31.5 +59.7
12°	-1 03.3 +59.5	-1 10.8 +59.5	-1 18.1 +59.6	-1 25.1 +59.6	-1 31.8 +59.6
13°	-0 03.8 +59.5	-0 11.3 +59.5	-0 18.5 +59.6	-0 25.5 +59.6	-0 32.2 +59.6
14°	0 55.7 +59.5 29.0	0 48.2 +59.6 28.1	0 41.1 +59.5 27.1	0 34.1 +59.6 26.1	0 27.4 +59.6 25.2
15°	1 55.2 +59.5 28.9	1 47.8 +59.5 27.9	1 40.6 +59.6 27.0	1 33.7 +59.6 26.0	1 27.0 +59.6 25.1
16°	2 54.7 +59.5 28.8	2 47.3 +59.5 27.8	2 40.2 +59.5 26.9	2 33.3 +59.6 25.9	2 26.6 +59.6 24.9
17°	3 54.2 +59.4 28.6	3 46.8 +59.5 27.7	3 39.7 +59.6 26.7	3 32.9 +59.5 25.8	3 26.2 +59.6 24.8
18°	4 53.6 +59.5 28.5	4 46.3 +59.6 27.6	4 39.3 +59.5 26.6	4 32.4 +59.6 25.7	4 25.8 +59.6 24.7
19°	5 53.1 +59.5 28.4	5 45.9 +59.5 27.4	5 38.8 +59.6 26.5	5 32.0 +59.6 25.5	5 25.4 +59.6 24.6
20°	6 52.6 +59.5 28.2	6 45.4 +59.5 27.3	6 38.4 +59.5 26.4	6 31.6 +59.6 25.4	6 25.0 +59.6 24.5
21°	7 52.1 +59.5 28.1	7 44.9 +59.5 27.2	7 37.9 +59.6 26.2	7 31.2 +59.5 25.3	7 24.6 +59.7 24.4
22°	8 51.6 +59.5 28.0	8 44.4 +59.5 27.1	8 37.5 +59.5 26.1	8 30.7 +59.6 25.2	8 24.3 +59.6 24.3
23°	9 51.1 +59.5 27.8	9 43.9 +59.5 26.9	9 37.0 +59.6 26.0	9 30.3 +59.6 25.1	9 23.9 +59.6 24.1
24°	10 50.6 +59.4 27.7	10 43.4 +59.6 26.8	10 36.6 +59.5 25.9	10 29.9 +59.6 24.9	10 23.5 +59.6 24.0
25°	11 50.0 +59.5 27.6	11 43.0 +59.5 26.7	11 36.1 +59.5 25.7	11 29.5 +59.5 24.8	11 23.1 +59.6 23.9
26°	12 49.5 +59.5 27.4	12 42.5 +59.5 26.5	12 35.6 +59.6 25.6	12 29.0 +59.6 24.7	12 22.7 +59.5 23.8
27°	13 49.0 +59.4 27.3	13 42.0 +59.5 26.4	13 35.2 +59.5 25.5	13 28.6 +59.5 24.6	13 22.2 +59.6 23.7
28°	14 48.4 +59.5 27.2	14 41.5 +59.4 26.3	14 34.7 +59.5 25.4	14 28.1 +59.6 24.5	14 21.8 +59.6 23.5
29°	15 47.9 +59.4 27.0	15 40.9 +59.5 26.1	15 34.2 +59.5 25.2	15 27.7 +59.6 24.3	15 21.4 +59.6 23.4

Dec	LHA 155° / 205°	LHA 156° / 204°	LHA 157° / 203°	LHA 158° / 202°	LHA 159° / 201°
0°	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
1°					
2°					
3°					
4°	-9 35.5 +59.7	-9 42.0 +59.7	-9 48.3 +59.7	-9 54.3 +59.7	
5°	-8 35.8 +59.6	-8 42.3 +59.6	-8 48.6 +59.7	-8 54.6 +59.7	-9 00.3 +59.7
6°	-7 36.2 +59.6	-7 42.7 +59.7	-7 48.9 +59.7	-7 54.9 +59.8	-8 00.6 +59.8
7°	-6 36.6 +59.7	-6 43.0 +59.6	-6 49.2 +59.7	-6 55.1 +59.7	-7 00.8 +59.7
8°	-5 36.9 +59.6	-5 43.4 +59.7	-5 49.5 +59.7	-5 55.4 +59.7	-6 01.1 +59.7
9°	-4 37.3 +59.6	-4 43.7 +59.7	-4 49.8 +59.7	-4 55.7 +59.7	-5 01.4 +59.8
10°	-3 37.7 +59.7	-3 44.0 +59.6	-3 50.1 +59.7	-3 56.0 +59.7	-4 01.6 +59.7
11°	-2 38.0 +59.6	-2 44.4 +59.7	-2 50.4 +59.6	-2 56.3 +59.7	-3 01.9 +59.8
12°	-1 38.4 +59.7	-1 44.7 +59.7	-1 50.8 +59.7	-1 56.6 +59.7	-2 02.1 +59.7
13°	-0 38.7 +59.6	-0 45.0 +59.6	-0 51.1 +59.7	-0 56.9 +59.8	-1 02.4 +59.7
14°	0 20.9 +59.6 24.2	0 14.6 +59.7 23.2	0 08.6 +59.7 22.3	0 02.9 +59.7 21.3	-0 02.7 +59.8
15°	1 20.5 +59.7 24.1	1 14.3 +59.7 23.1	1 08.3 +59.7 22.2	1 02.6 +59.7 21.2	0 57.1 +59.7 20.3
16°	2 20.2 +59.6 24.0	2 14.0 +59.6 23.0	2 08.0 +59.7 22.1	2 02.3 +59.7 21.1	1 56.8 +59.8 20.2
17°	3 19.8 +59.6 23.9	3 13.6 +59.7 22.9	3 07.7 +59.7 22.0	3 02.0 +59.7 21.0	2 56.6 +59.7 20.1
18°	4 19.4 +59.7 23.8	4 13.3 +59.7 22.8	4 07.4 +59.7 21.9	4 01.7 +59.7 20.9	3 56.3 +59.7 20.0
19°	5 19.1 +59.6 23.7	5 13.0 +59.6 22.7	5 07.1 +59.7 21.8	5 01.4 +59.8 20.8	4 56.0 +59.8 19.9
20°	6 18.7 +59.7 23.6	6 12.6 +59.7 22.6	6 06.8 +59.7 21.7	6 01.2 +59.7 20.7	5 55.8 +59.7 19.8
21°	7 18.4 +59.6 23.4	7 12.3 +59.7 22.5	7 06.5 +59.7 21.6	7 00.9 +59.7 20.6	6 55.5 +59.8 19.7
22°	8 18.0 +59.6 23.3	8 12.0 +59.6 22.4	8 06.2 +59.6 21.5	8 00.6 +59.7 20.5	7 55.3 +59.7 19.6
23°	9 17.6 +59.6 23.2	9 11.6 +59.7 22.3	9 05.8 +59.7 21.4	9 00.3 +59.7 20.4	8 55.0 +59.7 19.5
24°	10 17.2 +59.7 23.1	10 11.3 +59.6 22.2	10 05.5 +59.7 21.3	10 00.0 +59.7 20.3	9 54.7 +59.8 19.4
25°	11 16.9 +59.6 23.0	11 10.9 +59.7 22.1	11 05.2 +59.7 21.2	11 00.0 +59.7 20.2	10 54.5 +59.7 19.3
26°	12 16.5 +59.6 22.9	12 10.6 +59.6 22.0	12 04.9 +59.7 21.1	11 59.4 +59.7 20.1	11 54.2 +59.7 19.2
27°	13 16.1 +59.6 22.8	13 10.2 +59.7 21.9	13 04.6 +59.6 20.9	12 59.1 +59.7 20.0	12 53.9 +59.8 19.1
28°	14 15.7 +59.7 22.6	14 09.9 +59.6 21.7	14 04.2 +59.7 20.8	13 58.8 +59.7 19.9	13 53.7 +59.7 19.0
29°	15 15.4 +59.6 22.5	15 09.5 +59.7 21.6	15 03.9 +59.7 20.7	14 58.5 +59.7 19.8	14 53.4 +59.7 18.9

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°	-9 05.8 +59.8	-9 11.0 +59.8	-9 16.0 +59.8	-9 20.7 +59.8	-9 25.2 +59.9
6°	-8 06.0 +59.7	-8 11.2 +59.7	-8 16.2 +59.8	-8 20.9 +59.8	-8 25.3 +59.8
7°	-7 06.3 +59.8	-7 11.5 +59.8	-7 16.4 +59.8	-7 21.1 +59.9	-7 25.5 +59.9
8°	-6 06.5 +59.7	-6 11.7 +59.8	-6 16.6 +59.8	-6 21.2 +59.8	-6 25.6 +59.8
9°	-5 06.8 +59.8	-5 11.9 +59.8	-5 16.8 +59.8	-5 21.4 +59.8	-5 25.8 +59.9
10°	-4 07.0 +59.8	-4 12.1 +59.8	-4 17.0 +59.8	-4 21.6 +59.8	-4 25.9 +59.8
11°	-3 07.2 +59.7	-3 12.3 +59.8	-3 17.2 +59.8	-3 21.8 +59.9	-3 26.1 +59.9
12°	-2 07.5 +59.8	-2 12.5 +59.8	-2 17.4 +59.8	-2 21.9 +59.8	-2 26.2 +59.8
13°	-1 07.7 +59.8	-1 12.7 +59.7	-1 17.6 +59.9	-1 22.1 +59.8	-1 26.4 +59.8
14°	-0 07.9 +59.7	-0 13.0 +59.8	-0 17.7 +59.8	-0 22.3 +59.9	-0 26.6 +59.9
15°	0 51.8 +59.8 19.3	0 46.8 +59.8 18.3	0 42.1 +59.8 17.4	0 37.6 +59.8 16.4	0 33.3 +59.8 15.4
16°	1 51.6 +59.8 19.2	1 46.6 +59.8 18.2	1 41.9 +59.8 17.3	1 37.4 +59.8 16.3	1 33.1 +59.9 15.4
17°	2 51.4 +59.7 19.1	2 46.4 +59.8 18.2	2 41.7 +59.8 17.2	2 37.2 +59.8 16.3	2 33.0 +59.8 15.3
18°	3 51.1 +59.8 19.0	3 46.2 +59.8 18.1	3 41.5 +59.8 17.1	3 37.0 +59.9 16.2	3 32.8 +59.9 15.2
19°	4 50.9 +59.7 18.9	4 46.0 +59.8 18.0	4 41.3 +59.8 17.0	4 36.9 +59.8 16.1	4 32.7 +59.8 15.2
20°	5 50.6 +59.8 18.8	5 45.8 +59.7 17.9	5 41.1 +59.8 17.0	5 36.7 +59.8 16.0	5 32.5 +59.9 15.1
21°	6 50.4 +59.8 18.8	6 45.5 +59.8 17.8	6 40.9 +59.8 16.9	6 36.5 +59.8 15.9	6 32.4 +59.8 15.0
22°	7 50.2 +59.7 18.7	7 45.3 +59.8 17.7	7 40.7 +59.8 16.8	7 36.3 +59.9 15.9	7 32.2 +59.9 14.9
23°	8 49.9 +59.8 18.6	8 45.1 +59.8 17.7	8 40.5 +59.8 16.7	8 36.2 +59.8 15.8	8 32.1 +59.8 14.9
24°	9 49.7 +59.7 18.5	9 44.9 +59.8 17.6	9 40.3 +59.8 16.6	9 36.0 +59.8 15.7	9 31.9 +59.8 14.8
25°	10 49.4 +59.8 18.4	10 44.7 +59.7 17.5	10 40.1 +59.8 16.6	10 35.8 +59.8 15.6	10 31.7 +59.9 14.7
26°	11 49.2 +59.8 18.3	11 44.4 +59.8 17.4	11 39.9 +59.8 16.5	11 35.6 +59.9 15.6	11 31.6 +59.8 14.6
27°	12 49.0 +59.7 18.2	12 44.2 +59.8 17.3	12 39.7 +59.8 16.4	12 35.5 +59.8 15.5	12 31.4 +59.9 14.6
28°	13 48.7 +59.8 18.1	13 44.0 +59.8 17.2	13 39.5 +59.8 16.3	13 35.3 +59.8 15.4	13 31.3 +59.8 14.5
29°	14 48.5 +59.7 18.0	14 43.8 +59.7 17.1	14 39.3 +59.8 16.2	14 35.1 +59.8 15.3	14 31.1 +59.8 14.4

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°	-9 29.4 +59.9	-9 33.3 +59.9	-9 36.9 +59.9	-9 40.3 +59.9	-9 43.5 +60.0
6°	-8 29.5 +59.9	-8 33.4 +59.9	-8 37.0 +59.8	-8 40.4 +59.9	-8 43.5 +59.9
7°	-7 29.6 +59.8	-7 33.5 +59.9	-7 37.2 +59.9	-7 40.5 +59.9	-7 43.6 +59.9
8°	-6 29.8 +59.9	-6 33.6 +59.8	-6 37.3 +59.9	-6 40.6 +59.9	-6 43.7 +59.9
9°	-5 29.9 +59.9	-5 33.8 +59.9	-5 37.4 +59.9	-5 40.7 +59.9	-5 43.8 +60.0
10°	-4 30.0 +59.8	-4 33.9 +59.9	-4 37.5 +59.9	-4 40.8 +59.9	-4 43.8 +59.9
11°	-3 30.2 +59.9	-3 34.0 +59.9	-3 37.6 +59.9	-3 40.9 +59.9	-3 43.9 +59.9
12°	-2 30.3 +59.9	-2 34.1 +59.9	-2 37.7 +59.9	-2 41.0 +60.0	-2 44.0 +59.9
13°	-1 30.4 +59.8	-1 34.2 +59.8	-1 37.8 +59.9	-1 41.0 +59.9	-1 44.1 +60.0
14°	-0 30.6 +59.9	-0 34.4 +59.9	-0 37.9 +59.9	-0 41.1 +59.9	-0 44.1 +59.9
15°	0 29.3 +59.9 14.5	0 25.5 +59.9 13.5	0 22.0 +59.9 12.5	0 18.8 +59.9 11.6	0 15.8 +59.9 10.6
16°	1 29.2 +59.8 14.4	1 25.4 +59.9 13.5	1 21.9 +59.9 12.5	1 18.7 +59.9 11.5	1 15.7 +59.9 10.6
17°	2 29.0 +59.9 14.3	2 25.3 +59.9 13.4	2 21.8 +59.9 12.4	2 18.6 +59.9 11.5	2 15.6 +60.0 10.5
18°	3 28.9 +59.8 14.3	3 25.2 +59.9 13.3	3 21.7 +59.9 12.4	3 18.5 +59.9 11.4	3 15.6 +59.9 10.5
19°	4 28.7 +59.9 14.2	4 25.1 +59.8 13.3	4 21.6 +59.9 12.3	4 18.4 +59.9 11.4	4 15.5 +59.9 10.4
20°	5 28.6 +59.9 14.1	5 24.9 +59.9 13.2	5 21.5 +59.9 12.3	5 18.3 +60.0 11.3	5 15.4 +59.9 10.4
21°	6 28.5 +59.8 14.1	6 24.8 +59.9 13.1	6 21.4 +59.9 12.2	6 18.3 +59.9 11.3	6 15.3 +60.0 10.3
22°	7 28.3 +59.9 14.0	7 24.7 +59.9 13.1	7 21.3 +59.9 12.1	7 18.2 +59.9 11.2	7 15.3 +59.9 10.3
23°	8 28.2 +59.9 13.9	8 24.6 +59.9 13.0	8 21.2 +59.9 12.1	8 18.1 +59.9 11.2	8 15.2 +59.9 10.2
24°	9 28.1 +59.8 13.9	9 24.5 +59.8 12.9	9 21.1 +59.9 12.0	9 18.0 +59.9 11.1	9 15.1 +60.0 10.2
25°	10 27.9 +59.9 13.8	10 24.3 +59.9 12.9	10 21.0 +59.9 12.0	10 17.9 +59.9 11.0	10 15.1 +59.9 10.1
26°	11 27.8 +59.8 13.7	11 24.2 +59.9 12.8	11 20.9 +59.9 11.9	11 17.8 +59.9 11.0	11 15.0 +59.9 10.1
27°	12 27.6 +59.9 13.7	12 24.1 +59.9 12.8	12 20.8 +59.9 11.8	12 17.7 +59.9 10.9	12 14.9 +59.9 10.0
28°	13 27.5 +59.9 13.6	13 24.0 +59.8 12.7	13 20.7 +59.9 11.8	13 17.6 +59.9 10.9	13 14.8 +59.9 10.0
29°	14 27.4 +59.8 13.5	14 23.8 +59.9 12.6	14 20.6 +59.9 11.7	14 17.5 +59.9 10.8	14 14.7 +60.0 9.9

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°	-9 46.3	+59.9	-9 48.9	+59.9	-9 51.2	+59.9	-9 53.3	+60.0	-9 55.1	+60.0
6°	-8 46.4	+59.9	-8 49.0	+60.0	-8 51.3	+60.0	-8 53.3	+59.9	-8 55.1	+60.0
7°	-7 46.5	+60.0	-7 49.0	+59.9	-7 51.3	+59.9	-7 53.4	+60.0	-7 55.1	+60.0
8°	-6 46.5	+59.9	-6 49.1	+60.0	-6 51.4	+60.0	-6 53.4	+60.0	-6 55.1	+59.9
9°	-5 46.6	+60.0	-5 49.1	+59.9	-5 51.4	+60.0	-5 53.4	+60.0	-5 55.2	+60.0
10°	-4 46.6	+59.9	-4 49.2	+60.0	-4 51.4	+59.9	-4 53.4	+59.9	-4 55.2	+60.0
11°	-3 46.7	+59.9	-3 49.2	+59.9	-3 51.5	+60.0	-3 53.5	+60.0	-3 55.2	+60.0
12°	-2 46.8	+60.0	-2 49.3	+60.0	-2 51.5	+59.9	-2 53.5	+60.0	-2 55.2	+60.0
13°	-1 46.8	+59.9	-1 49.3	+59.9	-1 51.6	+60.0	-1 53.5	+59.9	-1 55.2	+59.9
14°	-0 46.9	+60.0	-0 49.4	+60.0	-0 51.6	+60.0	-0 53.6	+60.0	-0 55.3	+60.0
15°	0 13.1	+59.9	0 10.6	+59.9	0 08.4	+59.9	0 06.4	+60.0	0 04.7	+60.0
16°	1 13.0	+59.9	1 10.5	+60.0	1 08.3	+60.0	1 06.4	+59.9	1 04.7	+60.0
17°	2 12.9	+60.0	2 10.5	+59.9	2 08.3	+59.9	2 06.3	+60.0	2 04.7	+59.9
18°	3 12.9	+59.9	3 10.4	+60.0	3 08.2	+60.0	3 06.3	+60.0	3 04.6	+60.0
19°	4 12.8	+60.0	4 10.4	+59.9	4 08.2	+60.0	4 06.3	+60.0	4 04.6	+60.0
20°	5 12.8	+59.9	5 10.3	+60.0	5 08.2	+59.9	5 06.3	+59.9	5 04.6	+60.0
21°	6 12.7	+59.9	6 10.3	+59.9	6 08.1	+60.0	6 06.2	+60.0	6 04.6	+60.0
22°	7 12.6	+60.0	7 10.2	+60.0	7 08.1	+60.0	7 06.2	+60.0	7 04.6	+59.9
23°	8 12.6	+59.9	8 10.2	+59.9	8 08.1	+59.9	8 06.2	+59.9	8 04.5	+60.0
24°	9 12.5	+59.9	9 10.1	+60.0	9 08.0	+60.0	9 06.1	+60.0	9 04.5	+60.0
25°	10 12.4	+60.0	10 10.1	+59.9	10 08.0	+59.9	10 06.1	+60.0	10 04.5	+60.0
26°	11 12.4	+59.9	11 10.0	+60.0	11 07.9	+60.0	11 06.1	+59.9	11 04.5	+59.9
27°	12 12.3	+60.0	12 10.0	+59.9	12 07.9	+59.9	12 06.0	+60.0	12 04.4	+60.0
28°	13 12.3	+59.9	13 09.9	+60.0	13 07.8	+60.0	13 06.0	+60.0	13 04.4	+60.0
29°	14 12.2	+59.9	14 09.9	+59.9	14 07.8	+60.0	14 06.0	+59.9	14 04.4	+60.0

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°	-9 56.6	+60.0	-9 57.8	+60.0	-9 58.8	+60.0	-9 59.5	+60.0	-9 59.9	+60.0
6°	-8 56.6	+60.0	-8 57.8	+60.0	-8 58.8	+60.0	-8 59.5	+60.0	-8 59.9	+60.0
7°	-7 56.6	+60.0	-7 57.8	+60.0	-7 58.8	+60.0	-7 59.5	+60.0	-7 59.9	+60.0
8°	-6 56.6	+60.0	-6 57.8	+60.0	-6 58.8	+60.0	-6 59.5	+60.0	-6 59.9	+60.0
9°	-5 56.6	+59.9	-5 57.8	+59.9	-5 58.8	+60.0	-5 59.5	+60.0	-5 59.9	+60.0
10°	-4 56.7	+60.0	-4 57.9	+60.0	-4 58.8	+60.0	-4 59.5	+60.0	-4 59.9	+60.0
11°	-3 56.7	+60.0	-3 57.9	+60.0	-3 58.8	+60.0	-3 59.5	+60.0	-3 59.9	+60.0
12°	-2 56.7	+60.0	-2 57.9	+60.0	-2 58.8	+60.0	-2 59.5	+60.0	-2 59.9	+60.0
13°	-1 56.7	+60.0	-1 57.9	+60.0	-1 58.8	+60.0	-1 59.5	+60.0	-1 59.9	+60.0
14°	-0 56.7	+60.0	-0 57.9	+60.0	-0 58.8	+60.0	-0 59.5	+60.0	-0 59.9	+60.0
15°	0 03.3	+60.0	0 02.1	+60.0	0 01.2	+60.0	0 00.5	+60.0	0 00.1	+60.0
16°	1 03.3	+59.9	1 02.1	+60.0	1 01.2	+60.0	1 00.5	+60.0	1 00.1	+60.0
17°	2 03.2	+60.0	2 02.1	+60.0	2 01.2	+60.0	2 00.5	+60.0	2 00.1	+60.0
18°	3 03.2	+60.0	3 02.1	+60.0	3 01.2	+60.0	3 00.5	+60.0	3 00.1	+60.0
19°	4 03.2	+60.0	4 02.1	+59.9	4 01.2	+60.0	4 00.5	+60.0	4 00.1	+60.0
20°	5 03.2	+60.0	5 02.0	+60.0	5 01.2	+59.9	5 00.5	+60.0	5 00.1	+60.0
21°	6 03.2	+60.0	6 02.0	+60.0	6 01.1	+60.0	6 00.5	+60.0	6 00.1	+60.0
22°	7 03.2	+59.9	7 02.0	+60.0	7 01.1	+60.0	7 00.5	+60.0	7 00.1	+60.0
23°	8 03.1	+60.0	8 02.0	+60.0	8 01.1	+60.0	8 00.5	+60.0	8 00.1	+60.0
24°	9 03.1	+60.0	9 02.0	+60.0	9 01.1	+60.0	9 00.5	+60.0	9 00.1	+60.0
25°	10 03.1	+60.0	10 02.0	+60.0	10 01.1	+60.0	10 00.5	+60.0	10 00.1	+60.0
26°	11 03.1	+60.0	11 02.0	+60.0	11 01.1	+60.0	11 00.5	+60.0	11 00.1	+60.0
27°	12 03.1	+60.0	12 02.0	+60.0	12 01.1	+60.0	12 00.5	+60.0	12 00.1	+60.0
28°	13 03.1	+60.0	13 02.0	+60.0	13 01.1	+60.0	13 00.5	+60.0	13 00.1	+60.0
29°	14 03.1	+59.9	14 02.0	+59.9	14 01.1	+60.0	14 00.5	+60.0	14 00.1	+60.0

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°	14 00.0 +60.0 180.0	13 59.9 +60.0 179.0	13 59.5 +60.0 177.9	13 58.8 +60.0 176.9	13 57.9 +60.0 175.9
1°	15 00.0 +60.0 180.0	14 59.9 +60.0 179.0	14 59.5 +60.0 177.9	14 58.8 +60.0 176.9	14 57.9 +60.0 175.9
2°	16 00.0 +60.0 180.0	15 59.9 +60.0 179.0	15 59.5 +60.0 177.9	15 58.8 +60.0 176.9	15 57.9 +60.0 175.8
3°	17 00.0 +60.0 180.0	16 59.9 +60.0 179.0	16 59.5 +60.0 177.9	16 58.8 +60.0 176.9	16 57.9 +60.0 175.8
4°	18 00.0 +60.0 180.0	17 59.9 +60.0 179.0	17 59.5 +60.0 177.9	17 58.8 +60.0 176.9	17 57.9 +60.0 175.8
5°	19 00.0 +60.0 180.0	18 59.9 +60.0 178.9	18 59.5 +60.0 177.9	18 58.8 +60.0 176.8	18 57.9 +60.0 175.8
6°	20 00.0 +60.0 180.0	19 59.9 +60.0 178.9	19 59.5 +60.0 177.9	19 58.8 +60.0 176.8	19 57.9 +59.9 175.8
7°	21 00.0 +60.0 180.0	20 59.9 +60.0 178.9	20 59.5 +60.0 177.9	20 58.8 +60.0 176.8	20 57.8 +60.0 175.7
8°	22 00.0 +60.0 180.0	21 59.9 +60.0 178.9	21 59.5 +60.0 177.9	21 58.8 +60.0 176.8	21 57.8 +60.0 175.7
9°	23 00.0 +60.0 180.0	22 59.9 +60.0 178.9	22 59.5 +60.0 177.9	22 58.8 +60.0 176.8	22 57.8 +60.0 175.7
10°	24 00.0 +60.0 180.0	23 59.9 +60.0 178.9	23 59.5 +60.0 177.8	23 58.8 +60.0 176.8	23 57.8 +60.0 175.7
11°	25 00.0 +60.0 180.0	24 59.9 +60.0 178.9	24 59.5 +59.9 177.8	24 58.8 +60.0 176.8	24 57.8 +60.0 175.7
12°	26 00.0 +60.0 180.0	25 59.9 +60.0 178.9	25 59.4 +60.0 177.8	25 58.8 +60.0 176.7	25 57.8 +60.0 175.6
13°	27 00.0 +60.0 180.0	26 59.9 +60.0 178.9	26 59.4 +60.0 177.8	26 58.8 +59.9 176.7	26 57.8 +60.0 175.6
14°	28 00.0 +60.0 180.0	27 59.9 +60.0 178.9	27 59.4 +60.0 177.8	27 58.7 +60.0 176.7	27 57.8 +60.0 175.6
15°	29 00.0 +60.0 180.0	28 59.9 +60.0 178.9	28 59.4 +60.0 177.8	28 58.7 +60.0 176.7	28 57.8 +60.0 175.6
16°	30 00.0 +60.0 180.0	29 59.9 +60.0 178.9	29 59.4 +60.0 177.8	29 58.7 +60.0 176.7	29 57.8 +59.9 175.6
17°	31 00.0 +60.0 180.0	30 59.9 +60.0 178.9	30 59.4 +60.0 177.8	30 58.7 +60.0 176.7	30 57.7 +60.0 175.5
18°	32 00.0 +60.0 180.0	31 59.9 +60.0 178.9	31 59.4 +60.0 177.8	31 58.7 +60.0 176.6	31 57.7 +60.0 175.5
19°	33 00.0 +60.0 180.0	32 59.9 +60.0 178.9	32 59.4 +60.0 177.7	32 58.7 +60.0 176.6	32 57.7 +60.0 175.5
20°	34 00.0 +60.0 180.0	33 59.9 +60.0 178.9	33 59.4 +60.0 177.7	33 58.7 +60.0 176.6	33 57.7 +60.0 175.5
21°	35 00.0 +60.0 180.0	34 59.9 +60.0 178.9	34 59.4 +60.0 177.7	34 58.7 +60.0 176.6	34 57.7 +60.0 175.4
22°	36 00.0 +60.0 180.0	35 59.9 +60.0 178.9	35 59.4 +60.0 177.7	35 58.7 +60.0 176.6	35 57.7 +60.0 175.4
23°	37 00.0 +60.0 180.0	36 59.9 +60.0 178.8	36 59.4 +60.0 177.7	36 58.7 +60.0 176.5	36 57.7 +60.0 175.4
24°	38 00.0 +60.0 180.0	37 59.9 +60.0 178.8	37 59.4 +60.0 177.7	37 58.7 +60.0 176.5	37 57.7 +59.9 175.4
25°	39 00.0 +60.0 180.0	38 59.9 +60.0 178.8	38 59.4 +60.0 177.7	38 58.7 +60.0 176.5	38 57.6 +60.0 175.3
26°	40 00.0 +60.0 180.0	39 59.9 +60.0 178.8	39 59.4 +60.0 177.7	39 58.7 +60.0 176.5	39 57.6 +60.0 175.3
27°	41 00.0 +60.0 180.0	40 59.9 +59.9 178.8	40 59.4 +60.0 177.6	40 58.7 +59.9 176.5	40 57.6 +60.0 175.3
28°	42 00.0 +60.0 180.0	41 59.8 +60.0 178.8	41 59.4 +60.0 177.6	41 58.6 +60.0 176.4	41 57.6 +60.0 175.2
29°	43 00.0 +60.0 180.0	42 59.8 +60.0 178.8	42 59.4 +60.0 177.6	42 58.6 +60.0 176.4	42 57.6 +60.0 175.2

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°	13 56.7 +60.0 174.8	13 55.3 +60.0 173.8	13 53.6 +60.0 172.8	13 51.7 +59.9 171.8	13 49.5 +59.9 170.7
1°	14 56.7 +60.0 174.8	14 55.3 +60.0 173.8	14 53.6 +60.0 172.8	14 51.6 +60.0 171.7	14 49.4 +60.0 170.7
2°	15 56.7 +60.0 174.8	15 55.3 +59.9 173.8	15 53.6 +59.9 172.7	15 51.6 +60.0 171.7	15 49.4 +59.9 170.6
3°	16 56.7 +60.0 174.8	16 55.2 +60.0 173.7	16 53.5 +60.0 172.7	16 51.6 +59.9 171.6	16 49.3 +60.0 170.6
4°	17 56.7 +60.0 174.8	17 55.2 +60.0 173.7	17 53.5 +60.0 172.7	17 51.5 +60.0 171.6	17 49.3 +59.9 170.6
5°	18 56.7 +60.0 174.7	18 55.2 +60.0 173.7	18 53.5 +59.9 172.6	18 51.5 +59.9 171.6	18 49.2 +60.0 170.5
6°	19 56.7 +59.9 174.7	19 55.2 +60.0 173.7	19 53.4 +60.0 172.6	19 51.4 +60.0 171.5	19 49.2 +59.9 170.5
7°	20 56.6 +60.0 174.7	20 55.2 +59.9 173.6	20 53.4 +60.0 172.6	20 51.4 +60.0 171.5	20 49.1 +60.0 170.4
8°	21 56.6 +60.0 174.7	21 55.1 +60.0 173.6	21 53.4 +60.0 172.5	21 51.4 +59.9 171.5	21 49.1 +59.9 170.4
9°	22 56.6 +60.0 174.6	22 55.1 +60.0 173.6	22 53.4 +59.9 172.5	22 51.3 +60.0 171.4	22 49.0 +60.0 170.4
10°	23 56.6 +60.0 174.6	23 55.1 +60.0 173.5	23 53.3 +60.0 172.5	23 51.3 +59.9 171.4	23 49.0 +59.9 170.3
11°	24 56.6 +60.0 174.6	24 55.1 +59.9 173.5	24 53.3 +60.0 172.4	24 51.2 +60.0 171.3	24 48.9 +60.0 170.3
12°	25 56.6 +59.9 174.6	25 55.0 +60.0 173.5	25 53.3 +59.9 172.4	25 51.2 +60.0 171.3	25 48.9 +59.9 170.2
13°	26 56.5 +60.0 174.5	26 55.0 +60.0 173.4	26 53.2 +60.0 172.3	26 51.2 +59.9 171.3	26 48.8 +60.0 170.2
14°	27 56.5 +60.0 174.5	27 55.0 +60.0 173.4	27 53.2 +60.0 172.3	27 51.1 +60.0 171.2	27 48.8 +59.9 170.1
15°	28 56.5 +60.0 174.5	28 55.0 +59.9 173.4	28 53.2 +59.9 172.3	28 51.1 +59.9 171.2	28 48.7 +59.9 170.1
16°	29 56.5 +60.0 174.5	29 54.9 +60.0 173.3	29 53.1 +60.0 172.2	29 51.0 +60.0 171.1	29 48.6 +60.0 170.0
17°	30 56.5 +60.0 174.4	30 54.9 +60.0 173.3	30 53.1 +60.0 172.2	30 51.0 +59.9 171.1	30 48.6 +59.9 170.0
18°	31 56.5 +59.9 174.4	31 54.9 +60.0 173.3	31 53.1 +59.9 172.2	31 50.9 +60.0 171.0	31 48.5 +60.0 169.9
19°	32 56.4 +60.0 174.4	32 54.9 +59.9 173.2	32 53.0 +60.0 172.1	32 50.9 +59.9 171.0	32 48.5 +59.9 169.9
20°	33 56.4 +60.0 174.3	33 54.8 +60.0 173.2	33 53.0 +59.9 172.1	33 50.8 +60.0 170.9	33 48.4 +59.9 169.8
21°	34 56.4 +60.0 174.3	34 54.8 +60.0 173.2	34 52.9 +60.0 172.0	34 50.8 +59.9 170.9	34 48.3 +60.0 169.8
22°	35 56.4 +60.0 174.3	35 54.8 +60.0 173.1	35 52.9 +60.0 172.0	35 50.7 +60.0 170.8	35 48.3 +59.9 169.7
23°	36 56.4 +59.9 174.2	36 54.8 +59.9 173.1	36 52.9 +59.9 171.9	36 50.7 +59.9 170.8	36 48.2 +59.9 169.6
24°	37 56.3 +60.0 174.2	37 54.7 +60.0 173.0	37 52.8 +60.0 171.9	37 50.6 +60.0 170.7	37 48.1 +60.0 169.6
25°	38 56.3 +60.0 174.2	38 54.7 +60.0 173.0	38 52.8 +59.9 171.8	38 50.6 +59.9 170.7	38 48.1 +59.9 169.5
26°	39 56.3 +60.0 174.1	39 54.7 +59.9 173.0	39 52.7 +60.0 171.8	39 50.5 +60.0 170.6	39 48.0 +59.9 169.5
27°	40 56.3 +59.9 174.1	40 54.6 +60.0 172.9	40 52.7 +59.9 171.7	40 50.5 +59.9 170.6	40 47.9 +60.0 169.4
28°	41 56.2 +60.0 174.1	41 54.6 +60.0 172.9	41 52.6 +60.0 171.7	41 50.4 +59.9 170.5	41 47.9 +59.9 169.3
29°	42 56.2 +60.0 174.0	42 54.6 +59.9 172.8	42 52.6 +59.9 171.6	42 50.3 +60.0 170.4	42 47.8 +59.9 169.3

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°	13 47.0 +59.9 169.7	13 44.3 +59.9 168.7	13 41.3 +59.9 167.6	13 38.0 +60.0 166.6	13 34.6 +59.9 165.6
1°	14 46.9 +60.0 169.7	14 44.2 +59.9 168.6	14 41.2 +59.9 167.6	14 38.0 +59.9 166.6	14 34.5 +59.8 165.5
2°	15 46.9 +59.9 169.6	15 44.1 +60.0 168.6	15 41.1 +59.9 167.5	15 37.9 +59.9 166.5	15 34.3 +59.9 165.5
3°	16 46.8 +60.0 169.6	16 44.1 +59.9 168.5	16 41.0 +60.0 167.5	16 37.8 +59.9 166.4	16 34.2 +59.9 165.4
4°	17 46.8 +59.9 169.5	17 44.0 +59.9 168.5	17 41.0 +59.9 167.4	17 37.7 +59.9 166.4	17 34.1 +59.9 165.3
5°	18 46.7 +59.9 169.5	18 43.9 +59.9 168.4	18 40.9 +59.9 167.4	18 37.6 +59.9 166.3	18 34.0 +59.9 165.3
6°	19 46.6 +60.0 169.4	19 43.8 +60.0 168.4	19 40.8 +59.9 167.3	19 37.5 +59.9 166.3	19 33.9 +59.9 165.2
7°	20 46.6 +59.9 169.4	20 43.8 +59.9 168.3	20 40.7 +59.9 167.3	20 37.4 +59.9 166.2	20 33.8 +59.9 165.1
8°	21 46.5 +60.0 169.3	21 43.7 +59.9 168.3	21 40.6 +59.9 167.2	21 37.3 +59.9 166.1	21 33.7 +59.8 165.1
9°	22 46.5 +59.9 169.3	22 43.6 +59.9 168.2	22 40.5 +59.9 167.1	22 37.2 +59.9 166.1	22 33.5 +59.9 165.0
10°	23 46.4 +59.9 169.2	23 43.5 +60.0 168.2	23 40.4 +59.9 167.1	23 37.1 +59.8 166.0	23 33.4 +59.9 164.9
11°	24 46.3 +60.0 169.2	24 43.5 +59.9 168.1	24 40.3 +59.9 167.0	24 36.9 +59.9 165.9	24 33.3 +59.9 164.9
12°	25 46.3 +59.9 169.1	25 43.4 +59.9 168.0	25 40.2 +60.0 167.0	25 36.8 +59.9 165.9	25 33.2 +59.8 164.8
13°	26 46.2 +59.9 169.1	26 43.3 +59.9 168.0	26 40.2 +59.9 166.9	26 36.7 +59.9 165.8	26 33.0 +59.9 164.7
14°	27 46.1 +60.0 169.0	27 43.2 +59.9 167.9	27 40.1 +59.9 166.8	27 36.6 +59.9 165.7	27 32.9 +59.9 164.6
15°	28 46.1 +59.9 169.0	28 43.1 +60.0 167.9	28 40.0 +59.9 166.8	28 36.5 +59.9 165.7	28 32.8 +59.8 164.6
16°	29 46.0 +59.9 168.9	29 43.1 +59.9 167.8	29 39.9 +59.9 166.7	29 36.4 +59.9 165.6	29 32.6 +59.9 164.5
17°	30 45.9 +59.9 168.9	30 43.0 +59.9 167.7	30 39.8 +59.9 166.6	30 36.3 +59.8 165.5	30 32.5 +59.9 164.4
18°	31 45.8 +60.0 168.8	31 42.9 +59.9 167.7	31 39.7 +59.9 166.6	31 36.1 +59.9 165.5	31 32.4 +59.8 164.3
19°	32 45.8 +59.9 168.7	32 42.8 +59.9 167.6	32 39.6 +59.8 166.5	32 36.0 +59.9 165.4	32 32.2 +59.9 164.3
20°	33 45.7 +59.9 168.7	33 42.7 +59.9 167.6	33 39.4 +59.9 166.4	33 35.9 +59.9 165.3	33 32.1 +59.8 164.2
21°	34 45.6 +59.9 168.6	34 42.6 +59.9 167.5	34 39.3 +59.9 166.4	34 35.8 +59.8 165.2	34 31.9 +59.9 164.1
22°	35 45.5 +60.0 168.6	35 42.5 +59.9 167.4	35 39.2 +59.9 166.3	35 35.6 +59.9 165.1	35 31.8 +59.8 164.0
23°	36 45.5 +59.9 168.5	36 42.4 +59.9 167.3	36 39.1 +59.9 166.2	36 35.5 +59.9 165.1	36 31.6 +59.9 163.9
24°	37 45.4 +59.9 168.4	37 42.3 +59.9 167.3	37 39.0 +59.9 166.1	37 35.4 +59.8 165.0	37 31.5 +59.8 163.8
25°	38 45.3 +59.9 168.4	38 42.2 +59.9 167.2	38 38.9 +59.8 166.0	38 35.2 +59.9 164.9	38 31.3 +59.8 163.7
26°	39 45.2 +59.9 168.3	39 42.1 +59.9 167.1	39 38.7 +59.9 166.0	39 35.1 +59.8 164.8	39 31.1 +59.8 163.6
27°	40 45.1 +59.9 168.2	40 42.0 +59.9 167.0	40 38.6 +59.9 165.9	40 34.9 +59.9 164.7	40 30.9 +59.9 163.5
28°	41 45.0 +59.9 168.1	41 41.9 +59.9 167.0	41 38.5 +59.8 165.8	41 34.8 +59.8 164.6	41 30.8 +59.8 163.4
29°	42 44.9 +59.9 168.1	42 41.8 +59.9 166.9	42 38.3 +59.9 165.7	42 34.6 +59.8 164.5	42 30.6 +59.8 163.3

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°	13 30.8 +59.9 164.6	13 26.8 +59.9 163.5	13 22.6 +59.8 162.5	13 18.1 +59.8 161.5	13 13.4 +59.8 160.5
1°	14 30.7 +59.9 164.5	14 26.7 +59.9 163.5	14 22.4 +59.9 162.4	14 17.9 +59.9 161.4	14 13.2 +59.8 160.4
2°	15 30.6 +59.8 164.4	15 26.6 +59.8 163.4	15 22.3 +59.8 162.4	15 17.8 +59.8 161.3	15 13.0 +59.8 160.3
3°	16 30.4 +59.9 164.4	16 26.4 +59.9 163.3	16 22.1 +59.9 162.3	16 17.6 +59.8 161.2	16 12.8 +59.8 160.2
4°	17 30.3 +59.9 164.3	17 26.3 +59.8 163.2	17 22.0 +59.8 162.2	17 17.4 +59.8 161.2	17 12.6 +59.8 160.1
5°	18 30.2 +59.9 164.2	18 26.1 +59.9 163.2	18 21.8 +59.8 162.1	18 17.2 +59.8 161.1	18 12.4 +59.8 160.0
6°	19 30.1 +59.8 164.2	19 26.0 +59.8 163.1	19 21.6 +59.8 162.0	19 17.0 +59.8 161.0	19 12.2 +59.8 159.9
7°	20 29.9 +59.9 164.1	20 25.8 +59.9 163.0	20 21.4 +59.9 162.0	20 16.8 +59.8 160.9	20 12.0 +59.7 159.9
8°	21 29.8 +59.8 164.0	21 25.7 +59.8 162.9	21 21.3 +59.8 161.9	21 16.6 +59.8 160.8	21 11.7 +59.8 159.8
9°	22 29.6 +59.9 163.9	22 25.5 +59.8 162.9	22 21.1 +59.8 161.8	22 16.4 +59.8 160.7	22 11.5 +59.8 159.7
10°	23 29.5 +59.9 163.9	23 25.3 +59.9 162.8	23 20.9 +59.8 161.7	23 16.2 +59.8 160.7	23 11.3 +59.8 159.6
11°	24 29.4 +59.8 163.8	24 25.2 +59.8 162.7	24 20.7 +59.9 161.6	24 16.0 +59.8 160.6	24 11.1 +59.8 159.5
12°	25 29.2 +59.9 163.7	25 25.0 +59.9 162.6	25 20.6 +59.8 161.6	25 15.8 +59.8 160.5	25 10.9 +59.7 159.4
13°	26 29.1 +59.8 163.6	26 24.9 +59.8 162.5	26 20.4 +59.8 161.5	26 15.6 +59.8 160.4	26 10.6 +59.8 159.3
14°	27 28.9 +59.9 163.6	27 24.7 +59.8 162.5	27 20.2 +59.8 161.4	27 15.4 +59.8 160.3	27 10.4 +59.8 159.2
15°	28 28.8 +59.8 163.5	28 24.5 +59.8 162.4	28 20.0 +59.8 161.3	28 15.2 +59.8 160.2	28 10.2 +59.7 159.1
16°	29 28.6 +59.9 163.4	29 24.3 +59.9 162.3	29 19.8 +59.8 161.2	29 15.0 +59.8 160.1	29 09.9 +59.8 159.0
17°	30 28.5 +59.8 163.3	30 24.2 +59.8 162.2	30 19.6 +59.8 161.1	30 14.8 +59.7 160.0	30 09.7 +59.7 158.9
18°	31 28.3 +59.8 163.2	31 24.0 +59.8 162.1	31 19.4 +59.8 161.0	31 14.5 +59.8 159.9	31 09.4 +59.8 158.8
19°	32 28.1 +59.9 163.1	32 23.8 +59.8 162.0	32 19.2 +59.8 160.9	32 14.3 +59.8 159.8	32 09.2 +59.7 158.7
20°	33 28.0 +59.8 163.0	33 23.6 +59.8 161.9	33 19.0 +59.8 160.8	33 14.1 +59.7 159.7	33 08.9 +59.7 158.6
21°	34 27.8 +59.8 163.0	34 23.4 +59.8 161.8	34 18.8 +59.7 160.7	34 13.8 +59.8 159.6	34 08.6 +59.8 158.5
22°	35 27.6 +59.9 162.9	35 23.2 +59.8 161.7	35 18.5 +59.8 160.6	35 13.6 +59.7 159.5	35 08.4 +59.7 158.3
23°	36 27.5 +59.8 162.8	36 23.0 +59.8 161.6	36 18.3 +59.8 160.5	36 13.3 +59.8 159.4	36 08.1 +59.7 158.2
24°	37 27.3 +59.8 162.7	37 22.8 +59.8 161.5	37 18.1 +59.7 160.4	37 13.1 +59.7 159.2	37 07.8 +59.7 158.1
25°	38 27.1 +59.8 162.6	38 22.6 +59.8 161.4	38 17.8 +59.8 160.3	38 12.8 +59.7 159.1	38 07.5 +59.7 158.0
26°	39 26.9 +59.8 162.5	39 22.4 +59.7 161.3	39 17.6 +59.7 160.2	39 12.5 +59.7 159.0	39 07.2 +59.7 157.8
27°	40 26.7 +59.8 162.4	40 22.1 +59.8 161.2	40 17.3 +59.8 160.0	40 12.2 +59.7 158.9	40 06.9 +59.6 157.7
28°	41 26.5 +59.8 162.3	41 21.9 +59.8 161.1	41 17.1 +59.7 159.9	41 11.9 +59.7 158.7	41 06.5 +59.7 157.6
29°	42 26.3 +59.7 162.1	42 21.7 +59.7 161.0	42 16.8 +59.7 159.8	42 11.6 +59.7 158.6	42 06.2 +59.7 157.4

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	13 08.4 +59.8 159.4	13 03.2 +59.7 158.4	12 57.7 +59.8 157.4	12 52.0 +59.7 156.4	12 46.1 +59.7 155.4
1°	14 08.2 +59.8 159.4	14 02.9 +59.8 158.3	13 57.5 +59.7 157.3	13 51.7 +59.8 156.3	13 45.8 +59.7 155.2
2°	15 08.0 +59.7 159.3	15 02.7 +59.8 158.2	14 57.2 +59.7 157.2	14 51.5 +59.7 156.2	14 45.5 +59.7 155.1
3°	16 07.7 +59.8 159.2	16 02.5 +59.7 158.1	15 56.9 +59.8 157.1	15 51.2 +59.7 156.1	15 45.2 +59.6 155.0
4°	17 07.5 +59.8 159.1	17 02.2 +59.8 158.0	16 56.7 +59.7 157.0	16 50.9 +59.7 156.0	16 44.8 +59.7 154.9
5°	18 07.3 +59.8 159.0	18 02.0 +59.7 157.9	17 56.4 +59.7 156.9	17 50.6 +59.7 155.9	17 44.5 +59.7 154.8
6°	19 07.1 +59.7 158.9	19 01.7 +59.8 157.9	18 56.1 +59.7 156.8	18 50.3 +59.7 155.8	18 44.2 +59.7 154.7
7°	20 06.8 +59.8 158.8	20 01.5 +59.7 157.8	19 55.8 +59.8 156.7	19 50.0 +59.7 155.7	19 43.9 +59.6 154.6
8°	21 06.6 +59.8 158.7	21 01.2 +59.7 157.7	20 55.6 +59.7 156.6	20 49.7 +59.7 155.5	20 43.5 +59.7 154.5
9°	22 06.4 +59.7 158.6	22 00.9 +59.8 157.6	21 55.3 +59.7 156.5	21 49.4 +59.7 155.4	21 43.2 +59.7 154.4
10°	23 06.1 +59.8 158.5	23 00.7 +59.7 157.5	22 55.0 +59.7 156.4	22 49.1 +59.6 155.3	22 42.9 +59.6 154.3
11°	24 05.9 +59.7 158.4	24 00.4 +59.7 157.4	23 54.7 +59.7 156.3	23 48.7 +59.7 155.2	23 42.5 +59.7 154.1
12°	25 05.6 +59.8 158.3	25 00.1 +59.8 157.2	24 54.4 +59.7 156.2	24 48.4 +59.7 155.1	24 42.2 +59.6 154.0
13°	26 05.4 +59.7 158.2	25 59.9 +59.7 157.1	25 54.1 +59.7 156.1	25 48.1 +59.6 155.0	25 41.8 +59.7 153.9
14°	27 05.1 +59.8 158.1	26 59.6 +59.7 157.0	26 53.8 +59.7 155.9	26 47.7 +59.7 154.9	26 41.5 +59.6 153.8
15°	28 04.9 +59.7 158.0	27 59.3 +59.7 156.9	27 53.5 +59.7 155.8	27 47.4 +59.7 154.7	27 41.1 +59.6 153.7
16°	29 04.6 +59.7 157.9	28 59.0 +59.7 156.8	28 53.2 +59.6 155.7	28 47.1 +59.6 154.6	28 40.7 +59.6 153.5
17°	30 04.3 +59.7 157.8	29 58.7 +59.7 156.7	29 52.8 +59.7 155.6	29 46.7 +59.6 154.5	29 40.3 +59.6 153.4
18°	31 04.0 +59.8 157.7	30 58.4 +59.7 156.6	30 52.5 +59.7 155.5	30 46.3 +59.7 154.4	30 39.9 +59.6 153.3
19°	32 03.8 +59.7 157.6	31 58.1 +59.7 156.5	31 52.2 +59.6 155.4	31 46.0 +59.6 154.2	31 39.5 +59.6 153.1
20°	33 03.5 +59.7 157.5	32 57.8 +59.6 156.3	32 51.8 +59.7 155.2	32 45.6 +59.6 154.1	32 39.1 +59.6 153.0
21°	34 03.2 +59.7 157.3	33 57.4 +59.7 156.2	33 51.5 +59.6 155.1	33 45.2 +59.6 154.0	33 38.7 +59.6 152.9
22°	35 02.9 +59.6 157.2	34 57.1 +59.7 156.1	34 51.1 +59.6 155.0	34 44.8 +59.6 153.8	34 38.3 +59.6 152.7
23°	36 02.5 +59.7 157.1	35 56.8 +59.6 156.0	35 50.7 +59.6 154.8	35 44.4 +59.6 153.7	35 37.9 +59.5 152.6
24°	37 02.2 +59.7 157.0	36 56.4 +59.7 155.8	36 50.3 +59.6 154.7	36 44.0 +59.6 153.6	36 37.4 +59.6 152.4
25°	38 01.9 +59.7 156.8	37 56.1 +59.6 155.7	37 49.9 +59.6 154.5	37 43.6 +59.5 153.4	37 37.0 +59.5 152.3
26°	39 01.6 +59.6 156.7	38 55.7 +59.6 155.5	38 49.5 +59.6 154.4	38 43.1 +59.6 153.2	38 36.5 +59.5 152.1
27°	40 01.2 +59.7 156.6	39 55.3 +59.6 155.4	39 49.1 +59.6 154.2	39 42.7 +59.5 153.1	39 36.0 +59.5 151.9
28°	41 00.9 +59.6 156.4	40 54.9 +59.6 155.2	40 48.7 +59.6 154.1	40 42.2 +59.6 152.9	40 35.5 +59.5 151.8
29°	42 00.5 +59.6 156.3	41 54.5 +59.6 155.1	41 48.3 +59.5 153.9	41 41.8 +59.5 152.8	41 35.0 +59.5 151.6

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°	12 39.9 +59.7 154.3	12 33.5 +59.7 153.3	12 26.9 +59.6 152.3	12 20.0 +59.6 151.3	12 12.9 +59.6 150.3
1°	13 39.6 +59.7 154.2	13 33.2 +59.6 153.2	13 26.5 +59.6 152.2	13 19.6 +59.6 151.2	13 12.5 +59.6 150.1
2°	14 39.3 +59.6 154.1	14 32.8 +59.6 153.1	14 26.1 +59.6 152.1	14 19.2 +59.6 151.0	14 12.1 +59.5 150.0
3°	15 38.9 +59.7 154.0	15 32.4 +59.7 153.0	15 25.7 +59.6 151.9	15 18.8 +59.6 150.9	15 11.6 +59.6 149.9
4°	16 38.6 +59.6 153.9	16 32.1 +59.6 152.9	16 25.3 +59.6 151.8	16 18.4 +59.5 150.8	16 11.2 +59.5 149.8
5°	17 38.2 +59.7 153.8	17 31.7 +59.6 152.7	17 24.9 +59.6 151.7	17 17.9 +59.6 150.7	17 10.7 +59.6 149.6
6°	18 37.9 +59.6 153.7	18 31.3 +59.6 152.6	18 24.5 +59.6 151.6	18 17.5 +59.6 150.5	18 10.3 +59.5 149.5
7°	19 37.5 +59.7 153.6	19 30.9 +59.7 152.5	19 24.1 +59.6 151.5	19 17.1 +59.5 150.4	19 09.8 +59.5 149.4
8°	20 37.2 +59.6 153.4	20 30.6 +59.6 152.4	20 23.7 +59.6 151.3	20 16.6 +59.6 150.3	20 09.3 +59.6 149.2
9°	21 36.8 +59.6 153.3	21 30.2 +59.6 152.3	21 23.3 +59.6 151.2	21 16.2 +59.5 150.2	21 08.9 +59.5 149.1
10°	22 36.4 +59.7 153.2	22 29.8 +59.6 152.1	22 22.9 +59.6 151.1	22 15.7 +59.6 150.0	22 08.4 +59.5 149.0
11°	23 36.1 +59.6 153.1	23 29.4 +59.6 152.0	23 22.5 +59.5 151.0	23 15.3 +59.5 149.9	23 07.9 +59.5 148.8
12°	24 35.7 +59.6 153.0	24 29.0 +59.6 151.9	24 22.0 +59.6 150.8	24 14.8 +59.6 149.8	24 07.4 +59.5 148.7
13°	25 35.3 +59.6 152.8	25 28.6 +59.5 151.8	25 21.6 +59.5 150.7	25 14.4 +59.5 149.6	25 06.9 +59.5 148.6
14°	26 34.9 +59.6 152.7	26 28.1 +59.6 151.6	26 21.1 +59.6 150.6	26 13.9 +59.5 149.5	26 06.4 +59.5 148.4
15°	27 34.5 +59.6 152.6	27 27.7 +59.6 151.5	27 20.7 +59.5 150.4	27 13.4 +59.5 149.3	27 05.9 +59.4 148.3
16°	28 34.1 +59.6 152.4	28 27.3 +59.5 151.4	28 20.2 +59.5 150.3	28 12.9 +59.5 149.2	28 05.3 +59.5 148.1
17°	29 33.7 +59.6 152.3	29 26.8 +59.6 151.2	29 19.7 +59.6 150.1	29 12.4 +59.5 149.0	29 04.8 +59.5 148.0
18°	30 33.3 +59.6 152.2	30 26.4 +59.5 151.1	30 19.3 +59.5 150.0	30 11.9 +59.4 148.9	30 04.3 +59.4 147.8
19°	31 32.9 +59.5 152.0	31 25.9 +59.6 150.9	31 18.8 +59.5 149.8	31 11.3 +59.5 148.7	31 03.7 +59.4 147.6
20°	32 32.4 +59.6 151.9	32 25.5 +59.5 150.8	32 18.3 +59.4 149.7	32 10.8 +59.5 148.6	32 03.1 +59.4 147.5
21°	33 32.0 +59.5 151.7	33 25.0 +59.5 150.6	33 17.7 +59.5 149.5	33 10.3 +59.4 148.4	33 02.5 +59.4 147.3
22°	34 31.5 +59.5 151.6	34 24.5 +59.5 150.5	34 17.2 +59.5 149.4	34 09.7 +59.4 148.3	34 01.9 +59.4 147.2
23°	35 31.0 +59.6 151.4	35 24.0 +59.5 150.3	35 16.7 +59.4 149.2	35 09.1 +59.4 148.1	35 01.3 +59.4 147.0
24°	36 30.6 +59.5 151.3	36 23.5 +59.4 150.2	36 16.1 +59.5 149.0	36 08.5 +59.4 147.9	36 00.7 +59.4 146.8
25°	37 30.1 +59.5 151.1	37 22.9 +59.5 150.0	37 15.6 +59.4 148.9	37 07.9 +59.4 147.7	37 00.1 +59.3 146.6
26°	38 29.6 +59.4 151.0	38 22.4 +59.4 149.8	38 15.0 +59.4 148.7	38 07.3 +59.4 147.6	37 59.4 +59.3 146.4
27°	39 29.0 +59.5 150.8	39 21.8 +59.5 149.7	39 14.4 +59.4 148.5	39 06.7 +59.3 147.4	38 58.7 +59.3 146.2
28°	40 28.5 +59.5 150.6	40 21.3 +59.4 149.5	40 13.8 +59.3 148.3	40 06.0 +59.3 147.2	39 58.0 +59.3 146.0
29°	41 28.0 +59.4 150.4	41 20.7 +59.4 149.3	41 13.1 +59.4 148.1	41 05.3 +59.3 147.0	40 57.3 +59.3 145.8

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°	12 05.6 +59.6 149.2	11 58.1 +59.5 148.2	11 50.3 +59.5 147.2	11 42.4 +59.4 146.2	11 34.2 +59.4 145.2
1°	13 05.2 +59.5 149.1	12 57.6 +59.5 148.1	12 49.8 +59.5 147.1	12 41.8 +59.5 146.1	12 33.6 +59.4 145.1
2°	14 04.7 +59.5 149.0	13 57.1 +59.5 148.0	13 49.3 +59.5 146.9	13 41.3 +59.4 145.9	13 33.0 +59.4 144.9
3°	15 04.2 +59.5 148.9	14 56.6 +59.5 147.8	14 48.8 +59.4 146.8	14 40.7 +59.5 145.8	14 32.4 +59.5 144.8
4°	16 03.7 +59.6 148.7	15 56.1 +59.5 147.7	15 48.2 +59.5 146.7	15 40.2 +59.4 145.6	15 31.9 +59.4 144.6
5°	17 03.3 +59.5 148.6	16 55.6 +59.5 147.6	16 47.7 +59.5 146.5	16 39.6 +59.4 145.5	16 31.3 +59.4 144.5
6°	18 02.8 +59.5 148.5	17 55.1 +59.5 147.4	17 47.2 +59.4 146.4	17 39.0 +59.4 145.4	17 30.7 +59.3 144.3
7°	19 02.3 +59.5 148.3	18 54.6 +59.4 147.3	18 46.6 +59.4 146.3	18 38.4 +59.4 145.2	18 30.0 +59.4 144.2
8°	20 01.8 +59.5 148.2	19 54.0 +59.5 147.2	19 46.0 +59.5 146.1	19 37.8 +59.5 145.1	19 29.4 +59.4 144.0
9°	21 01.3 +59.5 148.1	20 53.5 +59.5 147.0	20 45.5 +59.4 146.0	20 37.3 +59.4 144.9	20 28.8 +59.4 143.9
10°	22 00.8 +59.5 147.9	21 53.0 +59.4 146.9	21 44.9 +59.4 145.8	21 36.7 +59.3 144.8	21 28.2 +59.3 143.7
11°	23 00.3 +59.4 147.8	22 52.4 +59.5 146.7	22 44.3 +59.5 145.7	22 36.0 +59.4 144.6	22 27.5 +59.4 143.6
12°	23 59.7 +59.5 147.6	23 51.9 +59.4 146.6	23 43.8 +59.4 145.5	23 35.4 +59.4 144.5	23 26.9 +59.3 143.4
13°	24 59.2 +59.5 147.5	24 51.3 +59.4 146.4	24 43.2 +59.3 145.4	24 34.8 +59.4 144.3	24 26.2 +59.3 143.2
14°	25 58.7 +59.4 147.3	25 50.7 +59.4 146.3	25 42.5 +59.4 145.2	25 34.2 +59.3 144.1	25 25.5 +59.4 143.1
15°	26 58.1 +59.5 147.2	26 50.1 +59.4 146.1	26 41.9 +59.4 145.0	26 33.5 +59.3 144.0	26 24.9 +59.3 142.9
16°	27 57.6 +59.4 147.0	27 49.5 +59.4 146.0	27 41.3 +59.4 144.9	27 32.8 +59.4 143.8	27 24.2 +59.3 142.7
17°	28 57.0 +59.4 146.9	28 48.9 +59.4 145.8	28 40.7 +59.3 144.7	28 32.2 +59.3 143.6	28 23.5 +59.2 142.6
18°	29 56.4 +59.4 146.7	29 48.3 +59.4 145.6	29 40.0 +59.4 144.5	29 31.5 +59.3 143.5	29 22.7 +59.3 142.4
19°	30 55.8 +59.4 146.6	30 47.7 +59.4 145.5	30 39.4 +59.3 144.4	30 30.8 +59.3 143.3	30 22.0 +59.3 142.2
20°	31 55.2 +59.4 146.4	31 47.1 +59.3 145.3	31 38.7 +59.3 144.2	31 30.1 +59.2 143.1	31 21.3 +59.2 142.0
21°	32 54.6 +59.4 146.2	32 46.4 +59.3 145.1	32 38.0 +59.3 144.0	32 29.3 +59.3 142.9	32 20.5 +59.2 141.8
22°	33 54.0 +59.3 146.0	33 45.7 +59.3 144.9	33 37.3 +59.3 143.8	33 28.6 +59.2 142.7	33 19.7 +59.2 141.6
23°	34 53.3 +59.3 145.9	34 45.0 +59.3 144.8	34 36.6 +59.2 143.7	34 27.8 +59.3 142.5	34 18.9 +59.2 141.4
24°	35 52.6 +59.4 145.7	35 44.3 +59.3 144.6	35 35.8 +59.3 143.5	35 27.1 +59.2 142.4	35 18.1 +59.1 141.2
25°	36 52.0 +59.3 145.5	36 43.6 +59.3 144.4	36 35.1 +59.2 143.3	36 26.3 +59.1 142.2	36 17.2 +59.2 141.0
26°	37 51.3 +59.2 145.3	37 42.9 +59.2 144.2	37 34.3 +59.2 143.1	37 25.4 +59.2 141.9	37 16.4 +59.1 140.8
27°	38 50.5 +59.3 145.1	38 42.1 +59.2 144.0	38 33.5 +59.2 142.9	38 24.6 +59.1 141.7	38 15.5 +59.1 140.6
28°	39 49.8 +59.2 144.9	39 41.3 +59.2 143.8	39 32.7 +59.1 142.6	39 23.7 +59.1 141.5	39 14.6 +59.1 140.4
29°	40 49.0 +59.3 144.7	40 40.5 +59.2 143.6	40 31.8 +59.1 142.4	40 22.8 +59.1 141.3	40 13.7 +59.0 140.2

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°	11 25.8 +59.4 144.2	11 17.2 +59.4 143.2	11 08.4 +59.3 142.2	10 59.4 +59.3 141.2	10 50.2 +59.3 140.2
1°	12 25.2 +59.4 144.0	12 16.6 +59.3 143.0	12 07.7 +59.4 142.0	11 58.7 +59.3 141.0	11 49.5 +59.2 140.0
2°	13 24.6 +59.4 143.9	13 15.9 +59.4 142.9	13 07.1 +59.3 141.9	12 58.0 +59.3 140.8	12 48.7 +59.3 139.8
3°	14 24.0 +59.3 143.7	14 15.3 +59.3 142.7	14 06.4 +59.3 141.7	13 57.3 +59.3 140.7	13 48.0 +59.3 139.7
4°	15 23.3 +59.4 143.6	15 14.6 +59.4 142.6	15 05.7 +59.3 141.6	14 56.6 +59.3 140.5	14 47.3 +59.2 139.5
5°	16 22.7 +59.4 143.4	16 14.0 +59.3 142.4	16 05.0 +59.3 141.4	15 55.9 +59.2 140.4	15 46.5 +59.2 139.3
6°	17 22.1 +59.3 143.3	17 13.3 +59.3 142.3	17 04.3 +59.3 141.2	16 55.1 +59.3 140.2	16 45.7 +59.3 139.2
7°	18 21.4 +59.4 143.1	18 12.6 +59.4 142.1	18 03.6 +59.3 141.1	17 54.4 +59.2 140.0	17 45.0 +59.2 139.0
8°	19 20.8 +59.3 143.0	19 12.0 +59.3 142.0	19 02.9 +59.3 140.9	18 53.6 +59.3 139.9	18 44.2 +59.2 138.8
9°	20 20.1 +59.4 142.8	20 11.3 +59.3 141.8	20 02.2 +59.3 140.8	19 52.9 +59.2 139.7	19 43.4 +59.2 138.7
10°	21 19.5 +59.3 142.7	21 10.6 +59.3 141.6	21 01.5 +59.2 140.6	20 52.1 +59.3 139.5	20 42.6 +59.2 138.5
11°	22 18.8 +59.3 142.5	22 09.9 +59.2 141.5	22 00.7 +59.3 140.4	21 51.4 +59.2 139.4	21 41.8 +59.2 138.3
12°	23 18.1 +59.3 142.3	23 09.1 +59.3 141.3	23 00.0 +59.2 140.2	22 50.6 +59.2 139.2	22 41.0 +59.2 138.2
13°	24 17.4 +59.3 142.2	24 08.4 +59.3 141.1	23 59.2 +59.2 140.1	23 49.8 +59.2 139.0	23 40.2 +59.1 138.0
14°	25 16.7 +59.3 142.0	25 07.7 +59.2 141.0	24 58.4 +59.2 139.9	24 49.0 +59.2 138.8	24 39.3 +59.2 137.8
15°	26 16.0 +59.3 141.8	26 06.9 +59.3 140.8	25 57.6 +59.2 139.7	25 48.2 +59.1 138.7	25 38.5 +59.1 137.6
16°	27 15.3 +59.2 141.7	27 06.2 +59.2 140.6	26 56.8 +59.2 139.5	26 47.3 +59.2 138.5	26 37.6 +59.1 137.4
17°	28 14.5 +59.3 141.5	28 05.4 +59.2 140.4	27 56.0 +59.2 139.4	27 46.5 +59.1 138.3	27 36.7 +59.1 137.2
18°	29 13.8 +59.2 141.3	29 04.6 +59.2 140.2	28 55.2 +59.2 139.2	28 45.6 +59.1 138.1	28 35.8 +59.1 137.0
19°	30 13.0 +59.2 141.1	30 03.8 +59.2 140.0	29 54.4 +59.1 139.0	29 44.7 +59.1 137.9	29 34.9 +59.1 136.8
20°	31 12.2 +59.2 140.9	31 03.0 +59.1 139.9	30 53.5 +59.1 138.8	30 43.8 +59.1 137.7	30 34.0 +59.0 136.6
21°	32 11.4 +59.2 140.7	32 02.1 +59.2 139.7	31 52.6 +59.1 138.6	31 42.9 +59.1 137.5	31 33.0 +59.0 136.4
22°	33 10.6 +59.2 140.6	33 01.3 +59.1 139.5	32 51.7 +59.1 138.4	32 42.0 +59.0 137.3	32 32.0 +59.0 136.2
23°	34 09.8 +59.1 140.4	34 00.4 +59.1 139.3	33 50.8 +59.1 138.2	33 41.0 +59.0 137.1	33 31.0 +59.0 136.0
24°	35 08.9 +59.1 140.1	34 59.5 +59.1 139.0	34 49.9 +59.0 137.9	34 40.0 +59.0 136.9	34 30.0 +59.0 135.8
25°	36 08.0 +59.1 139.9	35 58.6 +59.0 138.8	35 48.9 +59.0 137.7	35 39.0 +59.0 136.6	35 29.0 +58.9 135.5
26°	37 07.1 +59.1 139.7	36 57.6 +59.0 138.6	36 47.9 +59.0 137.5	36 38.0 +58.9 136.4	36 27.9 +58.9 135.3
27°	38 06.2 +59.0 139.5	37 56.6 +59.0 138.4	37 46.9 +59.0 137.3	37 36.9 +59.0 136.2	37 26.8 +58.9 135.1
28°	39 05.2 +59.0 139.3	38 55.6 +59.0 138.2	38 45.9 +58.9 137.0	38 35.9 +58.8 135.9	38 25.7 +58.8 134.8
29°	40 04.2 +59.0 139.0	39 54.6 +59.0 137.9	39 44.8 +58.9 136.8	39 34.7 +58.9 135.7	39 24.5 +58.8 134.6

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	10 40.8 +59.2 139.1	10 31.2 +59.2 138.1	10 21.4 +59.2 137.1	10 11.5 +59.1 136.1	10 01.3 +59.1 135.1
1°	11 40.0 +59.3 139.0	11 30.4 +59.2 138.0	11 20.6 +59.2 137.0	11 10.6 +59.2 136.0	11 00.4 +59.1 135.0
2°	12 39.3 +59.2 138.8	12 29.6 +59.2 137.8	12 19.8 +59.1 136.8	12 09.8 +59.1 135.8	11 59.5 +59.1 134.8
3°	13 38.5 +59.2 138.7	13 28.8 +59.2 137.6	13 18.9 +59.2 136.6	13 08.9 +59.1 135.6	12 58.6 +59.1 134.6
4°	14 37.7 +59.2 138.5	14 28.0 +59.2 137.5	14 18.1 +59.2 136.5	14 08.0 +59.1 135.4	13 57.7 +59.1 134.4
5°	15 36.9 +59.3 138.3	15 27.2 +59.2 137.3	15 17.3 +59.1 136.3	15 07.1 +59.2 135.3	14 56.8 +59.1 134.3
6°	16 36.2 +59.2 138.2	16 26.4 +59.1 137.1	16 16.4 +59.1 136.1	16 06.3 +59.1 135.1	15 55.9 +59.1 134.1
7°	17 35.4 +59.1 138.0	17 25.5 +59.2 137.0	17 15.5 +59.2 135.9	17 05.4 +59.0 134.9	16 55.0 +59.0 133.9
8°	18 34.5 +59.2 137.8	18 24.7 +59.2 136.8	18 14.7 +59.1 135.8	18 04.4 +59.1 134.7	17 54.0 +59.1 133.7
9°	19 33.7 +59.2 137.6	19 23.9 +59.1 136.6	19 13.8 +59.1 135.6	19 03.5 +59.1 134.5	18 53.1 +59.0 133.5
10°	20 32.9 +59.2 137.5	20 23.0 +59.1 136.4	20 12.9 +59.1 135.4	20 02.6 +59.1 134.4	19 52.1 +59.1 133.3
11°	21 32.1 +59.1 137.3	21 22.1 +59.1 136.2	21 12.0 +59.1 135.2	21 01.7 +59.0 134.2	20 51.2 +59.0 133.1
12°	22 31.2 +59.1 137.1	22 21.2 +59.1 136.1	22 11.1 +59.0 135.0	22 00.7 +59.1 134.0	21 50.2 +59.0 132.9
13°	23 30.3 +59.2 136.9	23 20.3 +59.1 135.9	23 10.1 +59.1 134.8	22 59.8 +59.0 133.8	22 49.2 +59.0 132.7
14°	24 29.5 +59.1 136.7	24 19.4 +59.1 135.7	24 09.2 +59.0 134.6	23 58.8 +59.0 133.6	23 48.2 +58.9 132.6
15°	25 28.6 +59.1 136.5	25 18.5 +59.1 135.5	25 08.2 +59.1 134.4	24 57.8 +59.0 133.4	24 47.1 +59.0 132.3
16°	26 27.7 +59.1 136.4	26 17.6 +59.0 135.3	26 07.3 +59.0 134.2	25 56.8 +58.9 133.2	25 46.1 +58.9 132.1
17°	27 26.8 +59.0 136.2	27 16.6 +59.0 135.1	27 06.3 +59.0 134.0	26 55.7 +59.0 133.0	26 45.0 +59.0 131.9
18°	28 25.8 +59.1 136.0	28 15.6 +59.0 134.9	28 05.3 +58.9 133.8	27 54.7 +58.9 132.8	27 44.0 +58.8 131.7
19°	29 24.9 +59.0 135.8	29 14.6 +59.0 134.7	29 04.2 +59.0 133.6	28 53.6 +58.9 132.6	28 42.8 +58.9 131.5
20°	30 23.9 +59.0 135.5	30 13.6 +59.0 134.5	30 03.2 +58.9 133.4	29 52.5 +58.9 132.3	29 41.7 +58.9 131.3
21°	31 22.9 +59.0 135.3	31 12.6 +58.9 134.3	31 02.1 +58.9 133.2	30 51.4 +58.9 132.1	30 40.6 +58.8 131.1
22°	32 21.9 +58.9 135.1	32 11.5 +59.0 134.0	32 01.0 +58.9 133.0	31 50.3 +58.9 131.9	31 39.4 +58.8 130.8
23°	33 20.8 +59.0 134.9	33 10.5 +58.9 133.8	32 59.9 +58.9 132.7	32 49.2 +58.8 131.7	32 38.2 +58.8 130.6
24°	34 19.8 +58.9 134.7	34 09.4 +58.8 133.6	33 58.8 +58.8 132.5	33 48.0 +58.8 131.4	33 37.0 +58.8 130.4
25°	35 18.7 +58.9 134.4	35 08.2 +58.9 133.4	34 57.6 +58.8 132.3	34 46.8 +58.7 131.2	34 35.8 +58.7 130.1
26°	36 17.6 +58.8 134.2	36 07.1 +58.8 133.1	35 56.4 +58.8 132.0	35 45.5 +58.8 130.9	35 34.5 +58.7 129.9
27°	37 16.4 +58.9 134.0	37 05.9 +58.8 132.9	36 55.2 +58.7 131.8	36 44.3 +58.7 130.7	36 33.2 +58.6 129.6
28°	38 15.3 +58.8 133.7	38 04.7 +58.7 132.6	37 53.9 +58.7 131.5	37 43.0 +58.6 130.4	37 31.8 +58.6 129.3
29°	39 14.1 +58.7 133.5	39 03.4 +58.8 132.4	38 52.6 +58.7 131.3	38 41.6 +58.6 130.2	38 30.4 +58.6 129.1

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 51.0 +59.1 134.1	9 40.5 +59.0 133.1	9 29.8 +59.0 132.1	9 19.0 +58.9 131.1	9 07.9 +59.0 130.1
1°	10 50.1 +59.0 134.0	10 39.5 +59.1 133.0	10 28.8 +59.0 132.0	10 17.9 +59.0 131.0	10 06.9 +59.0 130.0
2°	11 49.1 +59.1 133.8	11 38.6 +59.0 132.8	11 27.8 +59.1 131.8	11 16.9 +59.0 130.8	11 05.9 +58.9 129.8
3°	12 48.2 +59.1 133.6	12 37.6 +59.1 132.6	12 26.9 +59.0 131.6	12 15.9 +59.0 130.6	12 04.8 +58.9 129.6
4°	13 47.3 +59.0 133.4	13 36.7 +59.0 132.4	13 25.9 +58.9 131.4	13 14.9 +58.9 130.4	13 03.7 +59.0 129.4
5°	14 46.3 +59.1 133.2	14 35.7 +59.0 132.2	14 24.8 +59.0 131.2	14 13.8 +59.0 130.2	14 02.7 +58.9 129.2
6°	15 45.4 +59.0 133.1	15 34.7 +59.0 132.0	15 23.8 +59.0 131.0	15 12.8 +58.9 130.0	15 01.6 +58.9 129.0
7°	16 44.4 +59.1 132.9	16 33.7 +59.0 131.9	16 22.8 +59.0 130.8	16 11.7 +59.0 129.8	16 00.5 +58.9 128.8
8°	17 43.5 +59.0 132.7	17 32.7 +59.0 131.7	17 21.8 +58.9 130.6	17 10.7 +58.9 129.6	16 59.4 +58.9 128.6
9°	18 42.5 +59.0 132.5	18 31.7 +59.0 131.5	18 20.7 +59.0 130.4	18 09.6 +58.9 129.4	17 58.3 +58.9 128.4
10°	19 41.5 +59.0 132.3	19 30.7 +58.9 131.3	19 19.7 +58.9 130.2	19 08.5 +58.9 129.2	18 57.2 +58.8 128.2
11°	20 40.5 +59.0 132.1	20 29.6 +59.0 131.1	20 18.6 +58.9 130.0	20 07.4 +58.9 129.0	19 56.0 +58.9 128.0
12°	21 39.5 +58.9 131.9	21 28.6 +58.9 130.9	21 17.5 +58.9 129.8	21 06.3 +58.9 128.8	20 54.9 +58.8 127.8
13°	22 38.4 +59.0 131.7	22 27.5 +58.9 130.7	22 16.4 +58.9 129.6	22 05.2 +58.8 128.6	21 53.7 +58.9 127.6
14°	23 37.4 +58.9 131.5	23 26.4 +58.9 130.5	23 15.3 +58.9 129.4	23 04.0 +58.8 128.4	22 52.6 +58.8 127.4
15°	24 36.3 +58.9 131.3	24 25.3 +58.9 130.3	24 14.2 +58.8 129.2	24 02.8 +58.9 128.2	23 51.4 +58.7 127.1
16°	25 35.2 +58.9 131.1	25 24.2 +58.9 130.0	25 13.0 +58.9 129.0	25 01.7 +58.8 128.0	24 50.1 +58.8 126.9
17°	26 34.1 +58.9 130.9	26 23.1 +58.8 129.8	26 11.9 +58.8 128.8	26 00.5 +58.7 127.7	25 48.9 +58.7 126.7
18°	27 33.0 +58.9 130.7	27 21.9 +58.9 129.6	27 10.7 +58.8 128.6	26 59.2 +58.8 127.5	26 47.6 +58.8 126.5
19°	28 31.9 +58.8 130.4	28 20.8 +58.8 129.4	28 09.5 +58.7 128.3	27 58.0 +58.7 127.3	27 46.4 +58.7 126.2
20°	29 30.7 +58.8 130.2	29 19.6 +58.7 129.2	29 08.2 +58.8 128.1	28 56.7 +58.7 127.1	28 45.1 +58.6 126.0
21°	30 29.5 +58.8 130.0	30 18.3 +58.8 128.9	30 07.0 +58.7 127.9	29 55.4 +58.7 126.8	29 43.7 +58.7 125.8
22°	31 28.3 +58.8 129.8	31 17.1 +58.7 128.7	31 05.7 +58.7 127.6	30 54.1 +58.7 126.6	30 42.4 +58.6 125.5
23°	32 27.1 +58.8 129.5	32 15.8 +58.7 128.5	32 04.4 +58.6 127.4	31 52.8 +58.6 126.3	31 41.0 +58.6 125.3
24°	33 25.9 +58.7 129.3	33 14.5 +58.7 128.2	33 03.0 +58.7 127.1	32 51.4 +58.6 126.1	32 39.6 +58.5 125.0
25°	34 24.6 +58.6 129.0	34 13.2 +58.6 128.0	34 01.7 +58.6 126.9	33 50.0 +58.5 125.8	33 38.1 +58.6 124.8
26°	35 23.2 +58.7 128.8	35 11.8 +58.6 127.7	35 00.3 +58.5 126.6	34 48.5 +58.6 125.6	34 36.7 +58.4 124.5
27°	36 21.9 +58.6 128.5	36 10.4 +58.6 127.4	35 58.8 +58.6 126.4	35 47.1 +58.5 125.3	35 35.1 +58.5 124.2
28°	37 20.5 +58.6 128.3	37 09.0 +58.6 127.2	36 57.4 +58.5 126.1	36 45.6 +58.4 125.0	36 33.6 +58.4 123.9
29°	38 19.1 +58.5 128.0	38 07.6 +58.4 126.9	37 55.9 +58.4 125.8	37 44.0 +58.4 124.7	37 32.0 +58.4 123.7

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 56.8 +58.9 129.2	8 45.4 +58.9 128.2	8 33.9 +58.9 127.2	8 22.3 +58.8 126.2	8 10.5 +58.8 125.2
1°	9 55.7 +58.9 129.0	9 44.3 +58.9 128.0	9 32.8 +58.9 127.0	9 21.1 +58.9 126.0	9 09.3 +58.8 125.0
2°	10 54.6 +58.9 128.8	10 43.2 +58.9 127.8	10 31.7 +58.8 126.8	10 20.0 +58.8 125.8	10 08.1 +58.8 124.8
3°	11 53.5 +58.9 128.6	11 42.1 +58.9 127.6	11 30.5 +58.9 126.6	11 18.8 +58.8 125.6	11 06.9 +58.8 124.6
4°	12 52.4 +58.9 128.4	12 41.0 +58.9 127.4	12 29.4 +58.8 126.4	12 17.6 +58.8 125.4	12 05.7 +58.8 124.4
5°	13 51.3 +58.9 128.2	13 39.9 +58.8 127.2	13 28.2 +58.9 126.2	13 16.4 +58.8 125.2	13 04.5 +58.8 124.2
6°	14 50.2 +58.9 128.0	14 38.7 +58.9 127.0	14 27.1 +58.8 126.0	14 15.2 +58.8 125.0	14 03.3 +58.7 124.0
7°	15 49.1 +58.9 127.8	15 37.6 +58.8 126.8	15 25.9 +58.8 125.8	15 14.0 +58.8 124.8	15 02.0 +58.8 123.8
8°	16 48.0 +58.9 127.6	16 36.4 +58.8 126.6	16 24.7 +58.8 125.6	16 12.8 +58.8 124.6	16 00.8 +58.7 123.5
9°	17 46.9 +58.8 127.4	17 35.2 +58.9 126.4	17 23.5 +58.8 125.4	17 11.6 +58.7 124.3	16 59.5 +58.7 123.3
10°	18 45.7 +58.8 127.2	18 34.1 +58.8 126.2	18 22.3 +58.7 125.1	18 10.3 +58.8 124.1	17 58.2 +58.7 123.1
11°	19 44.5 +58.8 127.0	19 32.9 +58.7 126.0	19 21.0 +58.8 124.9	19 09.1 +58.7 123.9	18 56.9 +58.7 122.9
12°	20 43.3 +58.9 126.8	20 31.6 +58.8 125.7	20 19.8 +58.7 124.7	20 07.8 +58.7 123.7	19 55.6 +58.7 122.7
13°	21 42.2 +58.7 126.5	21 30.4 +58.8 125.5	21 18.5 +58.7 124.5	21 06.5 +58.7 123.5	20 54.3 +58.7 122.5
14°	22 40.9 +58.8 126.3	22 29.2 +58.7 125.3	22 17.2 +58.8 124.3	22 05.2 +58.7 123.3	21 53.0 +58.6 122.2
15°	23 39.7 +58.8 126.1	23 27.9 +58.7 125.1	23 16.0 +58.6 124.1	23 03.9 +58.6 123.0	22 51.6 +58.6 122.0
16°	24 38.5 +58.7 125.9	24 26.6 +58.7 124.9	24 14.6 +58.7 123.8	24 02.5 +58.6 122.8	23 50.2 +58.6 121.8
17°	25 37.2 +58.7 125.7	25 25.3 +58.7 124.6	25 13.3 +58.6 123.6	25 01.1 +58.6 122.6	24 48.8 +58.6 121.5
18°	26 35.9 +58.7 125.4	26 24.0 +58.6 124.4	26 11.9 +58.7 123.4	25 59.7 +58.6 122.3	25 47.4 +58.6 121.3
19°	27 34.6 +58.6 125.2	27 22.6 +58.7 124.2	27 10.6 +58.6 123.1	26 58.3 +58.6 122.1	26 46.0 +58.5 121.0
20°	28 33.2 +58.7 125.0	28 21.3 +58.6 123.9	28 09.2 +58.5 122.9	27 56.9 +58.5 121.8	27 44.5 +58.5 120.8
21°	29 31.9 +58.6 124.7	29 19.9 +58.5 123.7	29 07.7 +58.6 122.6	28 55.4 +58.5 121.6	28 43.0 +58.5 120.5
22°	30 30.5 +58.6 124.5	30 18.4 +58.6 123.4	30 06.3 +58.5 122.4	29 53.9 +58.5 121.3	29 41.5 +58.4 120.3
23°	31 29.1 +58.5 124.2	31 17.0 +58.5 123.2	31 04.8 +58.4 122.1	30 52.4 +58.4 121.1	30 39.9 +58.4 120.0
24°	32 27.6 +58.5 124.0	32 15.5 +58.5 122.9	32 03.2 +58.5 121.9	31 50.8 +58.5 120.8	31 38.3 +58.4 119.8
25°	33 26.1 +58.5 123.7	33 14.0 +58.4 122.6	33 01.7 +58.4 121.6	32 49.3 +58.3 120.5	32 36.7 +58.3 119.5
26°	34 24.6 +58.5 123.4	34 12.4 +58.4 122.4	34 00.1 +58.4 121.3	33 47.6 +58.4 120.3	33 35.0 +58.3 119.2
27°	35 23.1 +58.4 123.2	35 10.8 +58.4 122.1	34 58.5 +58.3 121.0	34 46.0 +58.3 120.0	34 33.3 +58.3 118.9
28°	36 21.5 +58.3 122.9	36 09.2 +58.3 121.8	35 56.8 +58.3 120.7	35 44.3 +58.2 119.7	35 31.6 +58.2 118.6
29°	37 19.8 +58.4 122.6	37 07.5 +58.3 121.5	36 55.1 +58.2 120.5	36 42.5 +58.2 119.4	36 29.8 +58.2 118.3

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°	7 58.6 +58.8 124.2	7 46.5 +58.7 123.2	7 34.3 +58.7 122.2	7 21.9 +58.7 121.2	7 09.5 +58.6 120.2
1°	8 57.4 +58.7 124.0	8 45.2 +58.8 123.0	8 33.0 +58.7 122.0	8 20.6 +58.7 121.0	8 08.1 +58.7 120.0
2°	9 56.1 +58.8 123.8	9 44.0 +58.7 122.8	9 31.7 +58.7 121.8	9 19.3 +58.7 120.8	9 06.8 +58.7 119.8
3°	10 54.9 +58.8 123.6	10 42.7 +58.8 122.6	10 30.4 +58.7 121.6	10 18.0 +58.7 120.6	10 05.5 +58.6 119.6
4°	11 53.7 +58.7 123.4	11 41.5 +58.7 122.4	11 29.1 +58.7 121.4	11 16.7 +58.7 120.4	11 04.1 +58.6 119.4
5°	12 52.4 +58.8 123.2	12 40.2 +58.7 122.2	12 27.8 +58.7 121.2	12 15.4 +58.6 120.2	12 02.7 +58.7 119.2
6°	13 51.2 +58.7 123.0	13 38.9 +58.7 122.0	13 26.5 +58.7 121.0	13 14.0 +58.7 120.0	13 01.4 +58.6 119.0
7°	14 49.9 +58.7 122.7	14 37.6 +58.7 121.7	14 25.2 +58.7 120.7	14 12.7 +58.6 119.7	14 00.0 +58.6 118.7
8°	15 48.6 +58.7 122.5	15 36.3 +58.7 121.5	15 23.9 +58.6 120.5	15 11.3 +58.6 119.5	14 58.6 +58.6 118.5
9°	16 47.3 +58.7 122.3	16 35.0 +58.6 121.3	16 22.5 +58.6 120.3	16 09.9 +58.6 119.3	15 57.2 +58.6 118.3
10°	17 46.0 +58.7 122.1	17 33.6 +58.7 121.1	17 21.1 +58.7 120.1	17 08.5 +58.6 119.1	16 55.8 +58.5 118.1
11°	18 44.7 +58.6 121.9	18 32.3 +58.6 120.9	18 19.8 +58.6 119.9	18 07.1 +58.6 118.8	17 54.3 +58.6 117.8
12°	19 43.3 +58.7 121.7	19 30.9 +58.6 120.6	19 18.4 +58.6 119.6	19 05.7 +58.6 118.6	18 52.9 +58.5 117.6
13°	20 42.0 +58.6 121.4	20 29.5 +58.6 120.4	20 17.0 +58.5 119.4	20 04.3 +58.5 118.4	19 51.4 +58.5 117.4
14°	21 40.6 +58.6 121.2	21 28.1 +58.6 120.2	21 15.5 +58.6 119.2	21 02.8 +58.5 118.2	20 49.9 +58.5 117.1
15°	22 39.2 +58.6 121.0	22 26.7 +58.6 120.0	22 14.1 +58.5 118.9	22 01.3 +58.5 117.9	21 48.4 +58.5 116.9
16°	23 37.8 +58.6 120.7	23 25.3 +58.5 119.7	23 12.6 +58.5 118.7	22 59.8 +58.5 117.7	22 46.9 +58.5 116.7
17°	24 36.4 +58.5 120.5	24 23.8 +58.5 119.5	24 11.1 +58.5 118.5	23 58.3 +58.5 117.4	23 45.4 +58.4 116.4
18°	25 34.9 +58.6 120.3	25 22.3 +58.5 119.2	25 09.6 +58.5 118.2	24 56.8 +58.4 117.2	24 43.8 +58.4 116.2
19°	26 33.5 +58.5 120.0	26 20.8 +58.5 119.0	26 08.1 +58.4 118.0	25 55.2 +58.4 116.9	25 42.2 +58.4 115.9
20°	27 32.0 +58.4 119.8	27 19.3 +58.4 118.7	27 06.5 +58.4 117.7	26 53.6 +58.4 116.7	26 40.6 +58.3 115.7
21°	28 30.4 +58.5 119.5	28 17.7 +58.4 118.5	28 04.9 +58.4 117.4	27 52.0 +58.3 116.4	27 38.9 +58.3 115.4
22°	29 28.9 +58.4 119.3	29 16.1 +58.4 118.2	29 03.3 +58.3 117.2	28 50.3 +58.3 116.2	28 37.2 +58.3 115.1
23°	30 27.3 +58.3 119.0	30 14.5 +58.4 118.0	30 01.6 +58.3 116.9	29 48.6 +58.3 115.9	29 35.5 +58.3 114.9
24°	31 25.6 +58.4 118.7	31 12.9 +58.3 117.7	30 59.9 +58.3 116.6	30 46.9 +58.3 115.6	30 33.8 +58.2 114.6
25°	32 24.0 +58.3 118.4	32 11.2 +58.2 117.4	31 58.2 +58.3 116.4	31 45.2 +58.2 115.3	31 32.0 +58.2 114.3
26°	33 22.3 +58.3 118.2	33 09.4 +58.3 117.1	32 56.5 +58.2 116.1	32 43.4 +58.1 115.0	32 30.2 +58.1 114.0
27°	34 20.6 +58.2 117.9	34 07.7 +58.2 116.8	33 54.7 +58.1 115.8	33 41.5 +58.2 114.7	33 28.3 +58.1 113.7
28°	35 18.8 +58.2 117.6	35 05.9 +58.1 116.5	34 52.8 +58.1 115.5	34 39.7 +58.0 114.4	34 26.4 +58.0 113.4
29°	36 17.0 +58.1 117.3	36 04.0 +58.1 116.2	35 50.9 +58.1 115.2	35 37.7 +58.1 114.1	35 24.4 +58.0 113.1

Declination SAME name as Latitude

Latitude 76°

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°	6 56.9 +58.6 119.3	6 44.1 +58.6 118.3	6 31.3 +58.6 117.3	6 18.3 +58.6 116.3	6 05.3 +58.5 115.3
1°	7 55.5 +58.6 119.0	7 42.7 +58.7 118.1	7 29.9 +58.6 117.1	7 16.9 +58.6 116.1	7 03.8 +58.5 115.1
2°	8 54.1 +58.7 118.8	8 41.4 +58.6 117.8	8 28.5 +58.5 116.9	8 15.5 +58.5 115.9	8 02.3 +58.6 114.9
3°	9 52.8 +58.6 118.6	9 40.0 +58.6 117.6	9 27.0 +58.6 116.6	9 14.0 +58.6 115.6	9 00.9 +58.5 114.7
4°	10 51.4 +58.6 118.4	10 38.6 +58.6 117.4	10 25.6 +58.6 116.4	10 12.6 +58.5 115.4	9 59.4 +58.5 114.4
5°	11 50.0 +58.6 118.2	11 37.2 +58.5 117.2	11 24.2 +58.5 116.2	11 11.1 +58.5 115.2	10 57.9 +58.5 114.2
6°	12 48.6 +58.6 118.0	12 35.7 +58.6 117.0	12 22.7 +58.6 116.0	12 09.6 +58.6 115.0	11 56.4 +58.5 114.0
7°	13 47.2 +58.6 117.7	13 34.3 +58.6 116.7	13 21.3 +58.5 115.7	13 08.2 +58.5 114.8	12 54.9 +58.5 113.8
8°	14 45.8 +58.6 117.5	14 32.9 +58.5 116.5	14 19.8 +58.5 115.5	14 06.7 +58.4 114.5	13 53.4 +58.5 113.5
9°	15 44.4 +58.5 117.3	15 31.4 +58.5 116.3	15 18.3 +58.5 115.3	15 05.1 +58.5 114.3	14 51.9 +58.4 113.3
10°	16 42.9 +58.5 117.1	16 29.9 +58.5 116.1	16 16.8 +58.5 115.1	16 03.6 +58.5 114.1	15 50.3 +58.5 113.1
11°	17 41.4 +58.6 116.8	17 28.4 +58.5 115.8	17 15.3 +58.5 114.8	17 02.1 +58.4 113.8	16 48.8 +58.4 112.8
12°	18 40.0 +58.5 116.6	18 26.9 +58.5 115.6	18 13.8 +58.4 114.6	18 00.5 +58.5 113.6	17 47.2 +58.4 112.6
13°	19 38.5 +58.5 116.4	19 25.4 +58.5 115.4	19 12.2 +58.5 114.4	18 59.0 +58.4 113.4	18 45.6 +58.4 112.3
14°	20 37.0 +58.4 116.1	20 23.9 +58.4 115.1	20 10.7 +58.4 114.1	19 57.4 +58.4 113.1	19 44.0 +58.3 112.1
15°	21 35.4 +58.5 115.9	21 22.3 +58.4 114.9	21 09.1 +58.4 113.9	20 55.8 +58.3 112.9	20 42.3 +58.4 111.9
16°	22 33.9 +58.4 115.6	22 20.7 +58.4 114.6	22 07.5 +58.4 113.6	21 54.1 +58.4 112.6	21 40.7 +58.3 111.6
17°	23 32.3 +58.4 115.4	23 19.1 +58.4 114.4	23 05.9 +58.3 113.4	22 52.5 +58.3 112.4	22 39.0 +58.3 111.4
18°	24 30.7 +58.4 115.1	24 17.5 +58.4 114.1	24 04.2 +58.3 113.1	23 50.8 +58.3 112.1	23 37.3 +58.3 111.1
19°	25 29.1 +58.3 114.9	25 15.9 +58.3 113.9	25 02.5 +58.3 112.9	24 49.1 +58.3 111.8	24 35.6 +58.2 110.8
20°	26 27.4 +58.3 114.6	26 14.2 +58.3 113.6	26 00.8 +58.3 112.6	25 47.4 +58.2 111.6	25 33.8 +58.2 110.6
21°	27 25.7 +58.3 114.4	27 12.5 +58.2 113.3	26 59.1 +58.2 112.3	26 45.6 +58.2 111.3	26 32.0 +58.2 110.3
22°	28 24.0 +58.3 114.1	28 10.7 +58.3 113.1	27 57.3 +58.2 112.1	27 43.8 +58.2 111.0	27 30.2 +58.2 110.0
23°	29 22.3 +58.2 113.8	29 09.0 +58.2 112.8	28 55.5 +58.2 111.8	28 42.0 +58.1 110.8	28 28.4 +58.1 109.7
24°	30 20.5 +58.2 113.5	30 07.2 +58.1 112.5	29 53.7 +58.1 111.5	29 40.1 +58.2 110.5	29 26.5 +58.1 109.5
25°	31 18.7 +58.1 113.3	31 05.3 +58.1 112.2	30 51.8 +58.1 111.2	30 38.3 +58.0 110.2	30 24.6 +58.0 109.2
26°	32 16.8 +58.2 113.0	32 03.4 +58.1 111.9	31 49.9 +58.1 110.9	31 36.3 +58.0 109.9	31 22.6 +58.0 108.9
27°	33 15.0 +58.0 112.7	33 01.5 +58.0 111.6	32 48.0 +58.0 110.6	32 34.3 +58.0 109.6	32 20.6 +58.0 108.6
28°	34 13.0 +58.0 112.4	33 59.5 +58.0 111.3	33 46.0 +57.9 110.3	33 32.3 +58.0 109.3	33 18.6 +57.9 108.3
29°	35 11.0 +58.0 112.1	34 57.5 +58.0 111.0	34 43.9 +58.0 110.0	34 30.3 +57.8 109.0	34 16.5 +57.9 108.0

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°	5 52.1 +58.5 114.3	5 38.8 +58.5 113.4	5 25.4 +58.5 112.4	5 12.0 +58.4 111.4	4 58.4 +58.5 110.4
1°	6 50.6 +58.5 114.1	6 37.3 +58.5 113.1	6 23.9 +58.5 112.2	6 10.4 +58.5 111.2	5 56.9 +58.4 110.2
2°	7 49.1 +58.5 113.9	7 35.8 +58.5 112.9	7 22.4 +58.5 111.9	7 08.9 +58.4 111.0	6 55.3 +58.4 110.0
3°	8 47.6 +58.5 113.7	8 34.3 +58.5 112.7	8 20.9 +58.4 111.7	8 07.3 +58.5 110.7	7 53.7 +58.4 109.7
4°	9 46.1 +58.5 113.5	9 32.8 +58.4 112.5	9 19.3 +58.5 111.5	9 05.8 +58.4 110.5	8 52.1 +58.4 109.5
5°	10 44.6 +58.5 113.2	10 31.2 +58.5 112.2	10 17.8 +58.4 111.2	10 04.2 +58.4 110.3	9 50.5 +58.4 109.3
6°	11 43.1 +58.5 113.0	11 29.7 +58.5 112.0	11 16.2 +58.4 111.0	11 02.6 +58.4 110.0	10 48.9 +58.4 109.0
7°	12 41.6 +58.4 112.8	12 28.2 +58.4 111.8	12 14.6 +58.4 110.8	12 01.0 +58.4 109.8	11 47.3 +58.4 108.8
8°	13 40.0 +58.5 112.5	13 26.6 +58.4 111.5	13 13.0 +58.4 110.6	12 59.4 +58.4 109.6	12 45.7 +58.3 108.6
9°	14 38.5 +58.4 112.3	14 25.0 +58.4 111.3	14 11.4 +58.4 110.3	13 57.8 +58.4 109.3	13 44.0 +58.4 108.3
10°	15 36.9 +58.4 112.1	15 23.4 +58.4 111.1	15 09.8 +58.4 110.1	14 56.2 +58.3 109.1	14 42.4 +58.3 108.1
11°	16 35.3 +58.4 111.8	16 21.8 +58.4 110.8	16 08.2 +58.4 109.8	15 54.5 +58.3 108.8	15 40.7 +58.3 107.9
12°	17 33.7 +58.4 111.6	17 20.2 +58.4 110.6	17 06.6 +58.3 109.6	16 52.8 +58.4 108.6	16 39.0 +58.3 107.6
13°	18 32.1 +58.4 111.3	18 18.6 +58.3 110.3	18 04.9 +58.3 109.4	17 51.2 +58.3 108.4	17 37.3 +58.3 107.4
14°	19 30.5 +58.3 111.1	19 16.9 +58.3 110.1	19 03.2 +58.3 109.1	18 49.5 +58.2 108.1	18 35.6 +58.3 107.1
15°	20 28.8 +58.3 110.9	20 15.2 +58.3 109.9	20 01.5 +58.3 108.9	19 47.7 +58.3 107.9	19 33.9 +58.2 106.9
16°	21 27.1 +58.3 110.6	21 13.5 +58.3 109.6	20 59.8 +58.3 108.6	20 46.0 +58.2 107.6	20 32.1 +58.2 106.6
17°	22 25.4 +58.3 110.3	22 11.8 +58.2 109.3	21 58.1 +58.2 108.3	21 44.2 +58.3 107.3	21 30.3 +58.2 106.3
18°	23 23.7 +58.3 110.1	23 10.0 +58.3 109.1	22 56.3 +58.2 108.1	22 42.5 +58.1 107.1	22 28.5 +58.2 106.1
19°	24 22.0 +58.2 109.8	24 08.3 +58.2 108.8	23 54.5 +58.2 107.8	23 40.6 +58.2 106.8	23 26.7 +58.1 105.8
20°	25 20.2 +58.2 109.6	25 06.5 +58.1 108.6	24 52.7 +58.1 107.5	24 38.8 +58.1 106.5	24 24.8 +58.2 105.5
21°	26 18.4 +58.2 109.3	26 04.6 +58.2 108.3	25 50.8 +58.1 107.3	25 36.9 +58.1 106.3	25 23.0 +58.0 105.3
22°	27 16.6 +58.1 109.0	27 02.8 +58.1 108.0	26 48.9 +58.1 107.0	26 35.0 +58.1 106.0	26 21.0 +58.1 105.0
23°	28 14.7 +58.1 108.7	28 00.9 +58.1 107.7	27 47.0 +58.1 106.7	27 33.1 +58.0 105.7	27 19.1 +58.0 104.7
24°	29 12.8 +58.0 108.4	28 59.0 +58.0 107.4	28 45.1 +58.0 106.4	28 31.1 +58.0 105.4	28 17.1 +58.0 104.4
25°	30 10.8 +58.0 108.2	29 57.0 +58.0 107.1	29 43.1 +58.0 106.1	29 29.1 +58.0 105.1	29 15.1 +57.9 104.1
26°	31 08.8 +58.0 107.9	30 55.0 +57.9 106.8	30 41.1 +57.9 105.8	30 27.1 +57.9 104.8	30 13.0 +57.9 103.8
27°	32 06.8 +58.0 107.6	31 52.9 +58.0 106.5	31 39.0 +57.9 105.5	31 25.0 +57.8 104.5	31 10.9 +57.8 103.5
28°	33 04.8 +57.8 107.3	32 50.9 +57.8 106.2	32 36.9 +57.8 105.2	32 22.8 +57.9 104.2	32 08.7 +57.8 103.2
29°	34 02.6 +57.9 106.9	33 48.7 +57.8 105.9	33 34.7 +57.8 104.9	33 20.7 +57.7 103.9	33 06.5 +57.8 102.9

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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°	4 44.8 +58.4 109.5	4 31.0 +58.4 108.5	4 17.2 +58.4 107.5	4 03.4 +58.3 106.5	3 49.4 +58.4 105.5
1°	5 43.2 +58.4 109.2	5 29.4 +58.4 108.2	5 15.6 +58.4 107.3	5 01.7 +58.4 106.3	4 47.8 +58.3 105.3
2°	6 41.6 +58.4 109.0	6 27.8 +58.4 108.0	6 14.0 +58.4 107.0	6 00.1 +58.3 106.1	5 46.1 +58.3 105.1
3°	7 40.0 +58.4 108.8	7 26.2 +58.4 107.8	7 12.4 +58.3 106.8	6 58.4 +58.4 105.8	6 44.4 +58.4 104.8
4°	8 38.4 +58.4 108.5	8 24.6 +58.4 107.5	8 10.7 +58.4 106.6	7 56.8 +58.3 105.6	7 42.8 +58.3 104.6
5°	9 36.8 +58.4 108.3	9 23.0 +58.3 107.3	9 09.1 +58.3 106.3	8 55.1 +58.3 105.4	8 41.1 +58.3 104.4
6°	10 35.2 +58.3 108.1	10 21.3 +58.4 107.1	10 07.4 +58.3 106.1	9 53.4 +58.4 105.1	9 39.4 +58.3 104.1
7°	11 33.5 +58.4 107.8	11 19.7 +58.3 106.8	11 05.7 +58.4 105.9	10 51.8 +58.3 104.9	10 37.7 +58.3 103.9
8°	12 31.9 +58.3 107.6	12 18.0 +58.3 106.6	12 04.1 +58.3 105.6	11 50.1 +58.3 104.6	11 36.0 +58.3 103.7
9°	13 30.2 +58.4 107.3	13 16.3 +58.4 106.4	13 02.4 +58.3 105.4	12 48.4 +58.2 104.4	12 34.3 +58.2 103.4
10°	14 28.6 +58.3 107.1	14 14.7 +58.3 106.1	14 00.7 +58.3 105.1	13 46.6 +58.3 104.1	13 32.5 +58.3 103.2
11°	15 26.9 +58.3 106.9	15 13.0 +58.2 105.9	14 59.0 +58.2 104.9	14 44.9 +58.2 103.9	14 30.8 +58.2 102.9
12°	16 25.2 +58.3 106.6	16 11.2 +58.3 105.6	15 57.2 +58.2 104.6	15 43.1 +58.3 103.7	15 29.0 +58.2 102.7
13°	17 23.5 +58.2 106.4	17 09.5 +58.2 105.4	16 55.5 +58.2 104.4	16 41.4 +58.2 103.4	16 27.2 +58.2 102.4
14°	18 21.7 +58.3 106.1	18 07.7 +58.3 105.1	17 53.7 +58.2 104.1	17 39.6 +58.2 103.1	17 25.4 +58.2 102.2
15°	19 20.0 +58.2 105.9	19 06.0 +58.2 104.9	18 51.9 +58.2 103.9	18 37.8 +58.2 102.9	18 23.6 +58.2 101.9
16°	20 18.2 +58.2 105.6	20 04.2 +58.2 104.6	19 50.1 +58.2 103.6	19 36.0 +58.1 102.6	19 21.8 +58.1 101.6
17°	21 16.4 +58.2 105.3	21 02.4 +58.1 104.4	20 48.3 +58.1 103.4	20 34.1 +58.1 102.4	20 19.9 +58.1 101.4
18°	22 14.6 +58.1 105.1	22 00.5 +58.1 104.1	21 46.4 +58.1 103.1	21 32.2 +58.1 102.1	21 18.0 +58.1 101.1
19°	23 12.7 +58.1 104.8	22 58.6 +58.2 103.8	22 44.5 +58.1 102.8	22 30.3 +58.1 101.8	22 16.1 +58.1 100.8
20°	24 10.8 +58.1 104.5	23 56.8 +58.0 103.5	23 42.6 +58.1 102.6	23 28.4 +58.1 101.6	23 14.2 +58.0 100.6
21°	25 08.9 +58.1 104.3	24 54.8 +58.1 103.3	24 40.7 +58.0 102.3	24 26.5 +58.0 101.3	24 12.2 +58.0 100.3
22°	26 07.0 +58.0 104.0	25 52.9 +58.0 103.0	25 38.7 +58.0 102.0	25 24.5 +58.0 101.0	25 10.2 +58.0 100.0
23°	27 05.0 +58.0 103.7	26 50.9 +58.0 102.7	26 36.7 +58.0 101.7	26 22.5 +57.9 100.7	26 08.2 +57.9 99.7
24°	28 03.0 +58.0 103.4	27 48.9 +57.9 102.4	27 34.7 +57.9 101.4	27 20.4 +57.9 100.4	27 06.1 +57.9 99.4
25°	29 01.0 +57.9 103.1	28 46.8 +57.9 102.1	28 32.6 +57.9 101.1	28 18.3 +57.9 100.1	28 04.0 +57.9 99.1
26°	29 58.9 +57.9 102.8	29 44.7 +57.9 101.8	29 30.5 +57.8 100.8	29 16.2 +57.8 99.8	29 01.9 +57.8 98.8
27°	30 56.8 +57.8 102.5	30 42.6 +57.8 101.5	30 28.3 +57.8 100.5	30 14.0 +57.8 99.5	29 59.7 +57.8 98.5
28°	31 54.6 +57.8 102.2	31 40.4 +57.7 101.2	31 26.1 +57.8 100.2	31 11.8 +57.7 99.2	30 57.5 +57.7 98.2
29°	32 52.4 +57.7 101.9	32 38.1 +57.8 100.9	32 23.9 +57.7 99.9	32 09.5 +57.7 98.9	31 55.2 +57.7 97.9

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°	3 35.4 +58.3 104.6	3 21.3 +58.3 103.6	3 07.2 +58.3 102.6	2 53.0 +58.3 101.7	2 38.7 +58.3 100.7
1°	4 33.7 +58.3 104.3	4 19.6 +58.3 103.4	4 05.5 +58.3 102.4	3 51.3 +58.3 101.4	3 37.0 +58.3 100.4
2°	5 32.0 +58.4 104.1	5 17.9 +58.3 103.1	5 03.8 +58.3 102.2	4 49.6 +58.2 101.2	4 35.3 +58.3 100.2
3°	6 30.4 +58.3 103.9	6 16.2 +58.3 102.9	6 02.1 +58.3 101.9	5 47.8 +58.3 100.9	5 33.6 +58.2 100.0
4°	7 28.7 +58.3 103.6	7 14.5 +58.3 102.7	7 00.4 +58.2 101.7	6 46.1 +58.3 100.7	6 31.8 +58.3 99.7
5°	8 27.0 +58.3 103.4	8 12.8 +58.3 102.4	7 58.6 +58.3 101.4	7 44.4 +58.2 100.5	7 30.1 +58.2 99.5
6°	9 25.3 +58.3 103.2	9 11.1 +58.3 102.2	8 56.9 +58.3 101.2	8 42.6 +58.3 100.2	8 28.3 +58.3 99.2
7°	10 23.6 +58.2 102.9	10 09.4 +58.3 101.9	9 55.2 +58.2 101.0	9 40.9 +58.2 100.0	9 26.6 +58.2 99.0
8°	11 21.8 +58.3 102.7	11 07.7 +58.2 101.7	10 53.4 +58.3 100.7	10 39.1 +58.3 99.7	10 24.8 +58.2 98.8
9°	12 20.1 +58.3 102.4	12 05.9 +58.3 101.4	11 51.7 +58.2 100.5	11 37.4 +58.2 99.5	11 23.0 +58.2 98.5
10°	13 18.4 +58.2 102.2	13 04.2 +58.2 101.2	12 49.9 +58.2 100.2	12 35.6 +58.2 99.2	12 21.2 +58.2 98.3
11°	14 16.6 +58.2 101.9	14 02.4 +58.2 100.9	13 48.1 +58.2 100.0	13 33.8 +58.2 99.0	13 19.4 +58.2 98.0
12°	15 14.8 +58.2 101.7	15 00.6 +58.2 100.7	14 46.3 +58.2 99.7	14 32.0 +58.1 98.7	14 17.6 +58.2 97.8
13°	16 13.0 +58.2 101.4	15 58.8 +58.2 100.4	15 44.5 +58.1 99.5	15 30.1 +58.2 98.5	15 15.8 +58.1 97.5
14°	17 11.2 +58.2 101.2	16 57.0 +58.1 100.2	16 42.6 +58.2 99.2	16 28.3 +58.1 98.2	16 13.9 +58.1 97.2
15°	18 09.4 +58.1 100.9	17 55.1 +58.1 99.9	17 40.8 +58.1 98.9	17 26.4 +58.1 98.0	17 12.0 +58.1 97.0
16°	19 07.5 +58.2 100.7	18 53.2 +58.2 99.7	18 38.9 +58.1 98.7	18 24.5 +58.1 97.7	18 10.1 +58.1 96.7
17°	20 05.7 +58.1 100.4	19 51.4 +58.0 99.4	19 37.0 +58.1 98.4	19 22.6 +58.1 97.4	19 08.2 +58.1 96.5
18°	21 03.8 +58.0 100.1	20 49.4 +58.1 99.1	20 35.1 +58.0 98.2	20 20.7 +58.1 97.2	20 06.3 +58.0 96.2
19°	22 01.8 +58.1 99.9	21 47.5 +58.0 98.9	21 33.1 +58.1 97.9	21 18.8 +58.0 96.9	21 04.3 +58.0 95.9
20°	22 59.9 +58.0 99.6	22 45.5 +58.1 98.6	22 31.2 +58.0 97.6	22 16.8 +58.0 96.6	22 02.3 +58.0 95.6
21°	23 57.9 +58.0 99.3	23 43.6 +57.9 98.3	23 29.2 +57.9 97.3	23 14.8 +57.9 96.4	23 00.3 +58.0 95.4
22°	24 55.9 +57.9 99.0	24 41.5 +58.0 98.0	24 27.1 +58.0 97.1	24 12.7 +58.0 96.1	23 58.3 +57.9 95.1
23°	25 53.8 +58.0 98.7	25 39.5 +57.9 97.7	25 25.1 +57.9 96.8	25 10.7 +57.8 95.8	24 56.2 +57.9 94.8
24°	26 51.8 +57.9 98.4	26 37.4 +57.9 97.5	26 23.0 +57.9 96.5	26 08.5 +57.9 95.5	25 54.1 +57.8 94.5
25°	27 49.7 +57.8 98.1	27 35.3 +57.8 97.2	27 20.9 +57.8 96.2	27 06.4 +57.8 95.2	26 51.9 +57.9 94.2
26°	28 47.5 +57.8 97.8	28 33.1 +57.8 96.9	28 18.7 +57.8 95.9	28 04.2 +57.8 94.9	27 49.8 +57.7 93.9
27°	29 45.3 +57.8 97.5	29 30.9 +57.8 96.6	29 16.5 +57.7 95.6	29 02.0 +57.8 94.6	28 47.5 +57.8 93.6
28°	30 43.1 +57.7 97.2	30 28.7 +57.7 96.2	30 14.2 +57.7 95.3	29 59.8 +57.6 94.3	29 45.3 +57.7 93.3
29°	31 40.8 +57.7 96.9	31 26.4 +57.6 95.9	31 11.9 +57.7 94.9	30 57.4 +57.7 94.0	30 43.0 +57.6 93.0

Declination SAME name as Latitude

Latitude 76°

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°	2 24.5 +58.2 99.7	2 10.1 +58.3 98.7	1 55.8 +58.2 97.8	1 41.4 +58.2 96.8	1 26.9 +58.3 95.8
1°	3 22.7 +58.3 99.5	3 08.4 +58.2 98.5	2 54.0 +58.3 97.5	2 39.6 +58.3 96.6	2 25.2 +58.2 95.6
2°	4 21.0 +58.3 99.2	4 06.6 +58.3 98.3	3 52.3 +58.2 97.3	3 37.9 +58.2 96.3	3 23.4 +58.2 95.3
3°	5 19.3 +58.2 99.0	5 04.9 +58.2 98.0	4 50.5 +58.2 97.0	4 36.1 +58.2 96.1	4 21.6 +58.3 95.1
4°	6 17.5 +58.3 98.7	6 03.1 +58.3 97.8	5 48.7 +58.3 96.8	5 34.3 +58.2 95.8	5 19.9 +58.2 94.9
5°	7 15.8 +58.2 98.5	7 01.4 +58.2 97.5	6 47.0 +58.2 96.6	6 32.5 +58.3 95.6	6 18.1 +58.2 94.6
6°	8 14.0 +58.2 98.3	7 59.6 +58.2 97.3	7 45.2 +58.2 96.3	7 30.8 +58.2 95.3	7 16.3 +58.2 94.4
7°	9 12.2 +58.2 98.0	8 57.8 +58.2 97.0	8 43.4 +58.2 96.1	8 29.0 +58.2 95.1	8 14.5 +58.2 94.1
8°	10 10.4 +58.3 97.8	9 56.0 +58.2 96.8	9 41.6 +58.2 95.8	9 27.2 +58.2 94.9	9 12.7 +58.2 93.9
9°	11 08.7 +58.2 97.5	10 54.2 +58.2 96.6	10 39.8 +58.2 95.6	10 25.4 +58.1 94.6	10 10.9 +58.2 93.6
10°	12 06.9 +58.1 97.3	11 52.4 +58.2 96.3	11 38.0 +58.2 95.3	11 23.5 +58.2 94.4	11 09.1 +58.1 93.4
11°	13 05.0 +58.2 97.0	12 50.6 +58.2 96.1	12 36.2 +58.1 95.1	12 21.7 +58.2 94.1	12 07.2 +58.2 93.1
12°	14 03.2 +58.2 96.8	13 48.8 +58.1 95.8	13 34.3 +58.2 94.8	13 19.9 +58.1 93.9	13 05.4 +58.1 92.9
13°	15 01.4 +58.1 96.5	14 46.9 +58.2 95.5	14 32.5 +58.1 94.6	14 18.0 +58.1 93.6	14 03.5 +58.1 92.6
14°	15 59.5 +58.1 96.3	15 45.1 +58.1 95.3	15 30.6 +58.1 94.3	15 16.1 +58.1 93.3	15 01.6 +58.1 92.4
15°	16 57.6 +58.1 96.0	16 43.2 +58.1 95.0	16 28.7 +58.1 94.1	16 14.2 +58.1 93.1	15 59.7 +58.1 92.1
16°	17 55.7 +58.1 95.7	17 41.3 +58.0 94.8	17 26.8 +58.1 93.8	17 12.3 +58.1 92.8	16 57.8 +58.1 91.8
17°	18 53.8 +58.0 95.5	18 39.3 +58.1 94.5	18 24.9 +58.0 93.5	18 10.4 +58.0 92.6	17 55.9 +58.0 91.6
18°	19 51.8 +58.1 95.2	19 37.4 +58.0 94.2	19 22.9 +58.0 93.3	19 08.4 +58.0 92.3	18 53.9 +58.0 91.3
19°	20 49.9 +58.0 94.9	20 35.4 +58.0 94.0	20 20.9 +58.0 93.0	20 06.4 +58.0 92.0	19 51.9 +58.0 91.0
20°	21 47.9 +58.0 94.7	21 33.4 +58.0 93.7	21 18.9 +58.0 92.7	21 04.4 +58.0 91.7	20 49.9 +58.0 90.8
21°	22 45.9 +57.9 94.4	22 31.4 +57.9 93.4	22 16.9 +57.9 92.4	22 02.4 +57.9 91.5	21 47.9 +57.9 90.5
22°	23 43.8 +57.9 94.1	23 29.3 +57.9 93.1	23 14.8 +57.9 92.2	23 00.3 +57.9 91.2	22 45.8 +57.9 90.2
23°	24 41.7 +57.9 93.8	24 27.2 +57.9 92.8	24 12.7 +57.9 91.9	23 58.2 +57.9 90.9	23 43.7 +57.9 89.9
24°	25 39.6 +57.9 93.5	25 25.1 +57.9 92.6	25 10.6 +57.9 91.6	24 56.1 +57.8 90.6	24 41.6 +57.8 89.6
25°	26 37.5 +57.8 93.2	26 23.0 +57.8 92.3	26 08.5 +57.8 91.3	25 53.9 +57.8 90.3	25 39.4 +57.8 89.3
26°	27 35.3 +57.7 92.9	27 20.8 +57.7 92.0	27 06.3 +57.7 91.0	26 51.7 +57.8 90.0	26 37.2 +57.8 89.0
27°	28 33.0 +57.8 92.6	28 18.5 +57.8 91.7	28 04.0 +57.7 90.7	27 49.5 +57.7 89.7	27 35.0 +57.7 88.7
28°	29 30.8 +57.7 92.3	29 16.3 +57.6 91.3	29 01.7 +57.7 90.4	28 47.2 +57.7 89.4	28 32.7 +57.7 88.4
29°	30 28.5 +57.6 92.0	30 13.9 +57.7 91.0	29 59.4 +57.7 90.1	29 44.9 +57.7 89.1	29 30.4 +57.6 88.1

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 12.5 +58.2 94.9	0 58.0 +58.2 93.9	0 43.5 +58.2 92.9	0 29.0 +58.2 91.9	0 14.5 +58.2 91.0
1°	2 10.7 +58.2 94.6	1 56.2 +58.3 93.6	1 41.7 +58.3 92.7	1 27.2 +58.3 91.7	1 12.7 +58.2 90.7
2°	3 08.9 +58.3 94.4	2 54.5 +58.2 93.4	2 40.0 +58.2 92.4	2 25.5 +58.2 91.5	2 10.9 +58.3 90.5
3°	4 07.2 +58.2 94.1	3 52.7 +58.2 93.2	3 38.2 +58.2 92.2	3 23.7 +58.2 91.2	3 09.2 +58.2 90.2
4°	5 05.4 +58.2 93.9	4 50.9 +58.2 92.9	4 36.4 +58.2 91.9	4 21.9 +58.2 91.0	4 07.4 +58.2 90.0
5°	6 03.6 +58.2 93.6	5 49.1 +58.2 92.7	5 34.6 +58.2 91.7	5 20.1 +58.2 90.7	5 05.6 +58.2 89.8
6°	7 01.8 +58.2 93.4	6 47.3 +58.2 92.4	6 32.8 +58.2 91.5	6 18.3 +58.2 90.5	6 03.8 +58.2 89.5
7°	8 00.0 +58.2 93.2	7 45.5 +58.2 92.2	7 31.0 +58.2 91.2	7 16.5 +58.2 90.2	7 02.0 +58.2 89.3
8°	8 58.2 +58.2 92.9	8 43.7 +58.2 91.9	8 29.2 +58.2 91.0	8 14.7 +58.2 90.0	8 00.2 +58.1 89.0
9°	9 56.4 +58.2 92.7	9 41.9 +58.2 91.7	9 27.4 +58.1 90.7	9 12.9 +58.1 89.7	8 58.3 +58.2 88.8
10°	10 54.6 +58.1 92.4	10 40.1 +58.1 91.4	10 25.5 +58.2 90.5	10 11.0 +58.2 89.5	9 56.5 +58.2 88.5
11°	11 52.7 +58.2 92.2	11 38.2 +58.2 91.2	11 23.7 +58.1 90.2	11 09.2 +58.1 89.2	10 54.7 +58.1 88.3
12°	12 50.9 +58.1 91.9	12 36.4 +58.1 90.9	12 21.8 +58.2 90.0	12 07.3 +58.2 89.0	11 52.8 +58.1 88.0
13°	13 49.0 +58.1 91.7	13 34.5 +58.1 90.7	13 20.0 +58.1 89.7	13 05.5 +58.1 88.7	13 50.9 +58.2 87.8
14°	14 47.1 +58.1 91.4	14 32.6 +58.1 90.4	14 18.1 +58.1 89.5	14 03.6 +58.1 88.5	13 49.1 +58.1 87.5
15°	15 45.2 +58.1 91.1	15 30.7 +58.1 90.2	15 16.2 +58.1 89.2	15 01.7 +58.0 88.2	14 47.2 +58.0 87.3
16°	16 43.3 +58.0 90.9	16 28.8 +58.0 89.9	16 14.3 +58.0 88.9	15 59.7 +58.1 88.0	15 45.2 +58.1 87.0
17°	17 41.3 +58.1 90.6	17 26.8 +58.1 89.6	17 12.3 +58.1 88.7	16 57.8 +58.0 87.7	16 43.3 +58.1 86.7
18°	18 39.4 +58.0 90.3	18 24.9 +58.0 89.4	18 10.4 +58.0 88.4	17 55.8 +58.1 87.4	17 41.4 +58.0 86.5
19°	19 37.4 +58.0 90.1	19 22.9 +58.0 89.1	19 08.4 +58.0 88.1	18 53.9 +58.0 87.2	18 39.4 +58.0 86.2
20°	20 35.4 +57.9 89.8	20 20.9 +57.9 88.8	20 06.4 +57.9 87.9	19 51.9 +57.9 86.9	19 37.4 +57.9 85.9
21°	21 33.3 +58.0 89.5	21 18.8 +58.0 88.6	21 04.3 +58.0 87.6	20 49.8 +58.0 86.6	20 35.3 +58.0 85.7
22°	22 31.3 +57.9 89.2	22 16.8 +57.9 88.3	22 02.3 +57.9 87.3	21 47.8 +57.9 86.3	21 33.3 +57.9 85.4
23°	23 29.2 +57.9 89.0	23 14.7 +57.9 88.0	23 00.2 +57.9 87.0	22 45.7 +57.9 86.1	22 31.2 +57.9 85.1
24°	24 27.1 +57.8 88.7	24 12.6 +57.8 87.7	23 58.1 +57.8 86.7	23 43.6 +57.8 85.8	23 29.1 +57.9 84.8
25°	25 24.9 +57.8 88.4	25 10.4 +57.8 87.4	24 55.9 +57.8 86.4	24 41.4 +57.8 85.5	24 27.0 +57.8 84.5
26°	26 22.7 +57.8 88.1	26 08.2 +57.8 87.1	25 53.7 +57.8 86.1	25 39.2 +57.8 85.2	25 24.8 +57.8 84.2
27°	27 20.5 +57.7 87.8	27 06.0 +57.7 86.8	26 51.5 +57.7 85.8	26 37.0 +57.8 84.9	26 22.6 +57.7 83.9
28°	28 18.2 +57.7 87.5	28 03.7 +57.7 86.5	27 49.2 +57.7 85.5	27 34.8 +57.7 84.6	27 20.3 +57.8 83.6
29°	29 15.9 +57.6 87.2	29 01.4 +57.7 86.2	28 46.9 +57.7 85.2	28 32.5 +57.6 84.3	28 18.1 +57.6 83.3

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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 +58.2 90.0	-0 14.5 +58.2	-0 29.0 +58.2	-0 43.5 +58.2	-0 58.0 +58.2
1°	0 58.2 +58.2 89.8	0 43.7 +58.2 88.8	0 29.2 +58.2 87.8	0 14.7 +58.2 86.8	0 00.2 +58.2 85.9
2°	1 56.4 +58.2 89.5	1 41.9 +58.2 88.5	1 27.4 +58.2 87.6	1 12.9 +58.2 86.6	0 58.4 +58.3 85.6
3°	2 54.6 +58.3 89.3	2 40.1 +58.2 88.3	2 25.6 +58.2 87.3	2 11.1 +58.3 86.4	1 56.7 +58.2 85.4
4°	3 52.9 +58.2 89.0	3 38.3 +58.3 88.1	3 23.8 +58.3 87.1	3 09.4 +58.2 86.1	2 54.9 +58.2 85.2
5°	4 51.1 +58.2 88.8	4 36.6 +58.2 87.8	4 22.1 +58.2 86.8	4 07.6 +58.2 85.9	3 53.1 +58.2 84.9
6°	5 49.3 +58.2 88.5	5 34.8 +58.2 87.6	5 20.3 +58.2 86.6	5 05.8 +58.2 85.6	4 51.3 +58.2 84.7
7°	6 47.5 +58.2 88.3	6 33.0 +58.2 87.3	6 18.5 +58.2 86.4	6 04.0 +58.2 85.4	5 49.5 +58.2 84.4
8°	7 45.7 +58.1 88.1	7 31.2 +58.1 87.1	7 16.7 +58.1 86.1	7 02.2 +58.2 85.1	6 47.7 +58.2 84.2
9°	8 43.8 +58.2 87.8	8 29.3 +58.2 86.8	8 14.8 +58.2 85.9	8 00.4 +58.2 84.9	7 45.9 +58.2 83.9
10°	9 42.0 +58.2 87.6	9 27.5 +58.2 86.6	9 13.0 +58.2 85.6	8 58.6 +58.1 84.7	8 44.1 +58.2 83.7
11°	10 40.2 +58.1 87.3	10 25.7 +58.1 86.3	10 11.2 +58.1 85.4	9 56.7 +58.2 84.4	9 42.3 +58.2 83.4
12°	11 38.3 +58.1 87.1	11 23.8 +58.2 86.1	11 09.3 +58.2 85.1	10 54.9 +58.1 84.2	10 40.5 +58.1 83.2
13°	12 36.4 +58.2 86.8	12 22.0 +58.1 85.8	12 07.5 +58.1 84.9	11 53.0 +58.2 83.9	11 38.6 +58.2 82.9
14°	13 34.6 +58.1 86.5	13 20.1 +58.1 85.6	13 05.6 +58.1 84.6	12 51.2 +58.1 83.7	12 36.8 +58.1 82.7
15°	14 32.7 +58.1 86.3	14 18.2 +58.1 85.3	14 03.7 +58.1 84.4	13 49.3 +58.1 83.4	13 34.9 +58.1 82.4
16°	15 30.8 +58.0 86.0	15 16.3 +58.1 85.1	15 01.8 +58.1 84.1	14 47.4 +58.1 83.1	14 33.0 +58.1 82.2
17°	16 28.8 +58.1 85.8	16 14.4 +58.0 84.8	15 59.9 +58.1 83.8	15 45.5 +58.1 82.9	15 31.1 +58.1 81.9
18°	17 26.9 +58.0 85.5	17 12.4 +58.0 84.5	16 58.0 +58.0 83.6	16 43.6 +58.0 82.6	16 29.2 +58.0 81.7
19°	18 24.9 +58.0 85.2	18 10.4 +58.1 84.3	17 56.0 +58.0 83.3	17 41.6 +58.0 82.4	17 27.2 +58.1 81.4
20°	19 22.9 +58.0 85.0	19 08.5 +57.9 84.0	18 54.0 +58.0 83.0	18 39.6 +58.0 82.1	18 25.3 +58.0 81.1
21°	20 20.9 +57.9 84.7	20 06.4 +58.0 83.7	19 52.0 +58.0 82.8	19 37.6 +58.0 81.8	19 23.3 +58.0 80.9
22°	21 18.8 +58.0 84.4	21 04.4 +57.9 83.5	20 50.0 +57.9 82.5	20 35.6 +58.0 81.5	20 21.3 +58.0 80.6
23°	22 16.8 +57.9 84.1	22 02.3 +57.9 83.2	21 47.9 +58.0 82.2	21 33.6 +57.9 81.3	21 19.3 +57.9 80.3
24°	23 14.7 +57.8 83.9	23 00.2 +57.9 82.9	22 45.9 +57.8 81.9	22 31.5 +57.9 81.0	22 17.2 +57.9 80.0
25°	24 12.5 +57.9 83.6	23 58.1 +57.9 82.6	23 43.7 +57.9 81.7	23 29.4 +57.9 80.7	23 15.1 +57.9 79.7
26°	25 10.4 +57.8 83.3	24 56.0 +57.8 82.3	24 41.6 +57.8 81.4	24 27.3 +57.8 80.4	24 13.0 +57.8 79.5
27°	26 08.2 +57.7 83.0	25 53.8 +57.7 82.0	25 39.4 +57.8 81.1	25 25.1 +57.8 80.1	25 10.8 +57.8 79.2
28°	27 05.9 +57.7 82.7	26 51.5 +57.8 81.7	26 37.2 +57.7 80.8	26 22.9 +57.8 79.8	26 08.6 +57.8 78.9
29°	28 03.6 +57.7 82.4	27 49.3 +57.7 81.4	27 34.9 +57.7 80.5	27 20.7 +57.7 79.5	27 06.4 +57.7 78.6

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 12.5 +58.2	-1 26.9 +58.2	-1 41.4 +58.3	-1 55.8 +58.3	-2 10.1 +58.2
1°	-0 14.3 +58.3	-0 28.7 +58.2	-0 43.1 +58.2	-0 57.5 +58.2	-1 11.9 +58.3
2°	0 44.0 +58.2 84.7	0 29.5 +58.3 83.7	0 15.1 +58.3 82.7	0 00.7 +58.3 81.8	-0 13.6 +58.3
3°	1 42.2 +58.2 84.4	1 27.8 +58.2 83.5	1 13.4 +58.2 82.5	0 59.0 +58.2 81.5	0 44.7 +58.2 80.5
4°	2 40.4 +58.3 84.2	2 26.0 +58.2 83.2	2 11.6 +58.2 82.2	1 57.2 +58.3 81.3	1 42.9 +58.3 80.3
5°	3 38.7 +58.2 83.9	3 24.2 +58.3 83.0	3 09.8 +58.3 82.0	2 55.5 +58.2 81.0	2 41.2 +58.2 80.1
6°	4 36.9 +58.2 83.7	4 22.5 +58.2 82.7	4 08.1 +58.2 81.8	3 53.7 +58.3 80.8	3 39.4 +58.3 79.8
7°	5 35.1 +58.2 83.5	5 20.7 +58.2 82.5	5 06.3 +58.2 81.5	4 52.0 +58.2 80.6	4 37.7 +58.2 79.6
8°	6 33.3 +58.2 83.2	6 18.9 +58.2 82.2	6 04.5 +58.3 81.3	5 50.2 +58.2 80.3	5 35.9 +58.3 79.3
9°	7 31.5 +58.2 83.0	7 17.1 +58.2 82.0	7 02.8 +58.2 81.0	6 48.4 +58.3 80.1	6 34.2 +58.2 79.1
10°	8 29.7 +58.2 82.7	8 15.3 +58.2 81.8	8 01.0 +58.2 80.8	7 46.7 +58.2 79.8	7 32.4 +58.2 78.9
11°	9 27.9 +58.2 82.5	9 13.5 +58.2 81.5	8 59.2 +58.2 80.5	8 44.9 +58.2 79.6	8 30.6 +58.3 78.6
12°	10 26.1 +58.1 82.2	10 11.7 +58.2 81.3	9 57.4 +58.2 80.3	9 43.1 +58.2 79.3	9 28.9 +58.2 78.4
13°	11 24.2 +58.2 82.0	11 09.9 +58.1 81.0	10 55.6 +58.1 80.1	10 41.3 +58.2 79.1	10 27.1 +58.2 78.1
14°	12 22.4 +58.1 81.7	12 08.0 +58.2 80.8	11 53.7 +58.2 79.8	11 39.5 +58.1 78.8	11 25.3 +58.1 77.9
15°	13 20.5 +58.1 81.5	13 06.2 +58.1 80.5	12 51.9 +58.1 79.5	12 37.6 +58.2 78.6	12 23.4 +58.2 77.6
16°	14 18.6 +58.2 81.2	14 04.3 +58.1 80.3	13 50.0 +58.2 79.3	13 35.8 +58.1 78.3	13 21.6 +58.2 77.4
17°	15 16.8 +58.0 81.0	15 02.4 +58.1 80.0	14 48.2 +58.1 79.0	14 33.9 +58.2 78.1	14 19.8 +58.1 77.1
18°	16 14.8 +58.1 80.7	16 00.5 +58.1 79.7	15 46.3 +58.1 78.8	15 32.1 +58.1 77.8	15 17.9 +58.1 76.9
19°	17 12.9 +58.1 80.4	16 58.6 +58.1 79.5	16 44.4 +58.0 78.5	16 30.2 +58.1 77.6	16 16.0 +58.1 76.6
20°	18 11.0 +58.0 80.2	17 56.7 +58.0 79.2	17 42.4 +58.1 78.3	17 28.3 +58.0 77.3	17 14.1 +58.1 76.4
21°	19 09.0 +58.0 79.9	18 54.7 +58.0 78.9	18 40.5 +58.0 78.0	18 26.3 +58.1 77.0	18 12.2 +58.1 76.1
22°	20 07.0 +58.0 79.6	19 52.7 +58.0 78.7	19 38.5 +58.0 77.7	19 24.4 +58.0 76.8	19 10.3 +58.0 75.8
23°	21 05.0 +57.9 79.4	20 50.7 +58.0 78.4	20 36.5 +58.0 77.5	20 22.4 +58.0 76.5	20 08.3 +58.0 75.6
24°	22 02.9 +57.9 79.1	21 48.7 +57.9 78.1	21 34.5 +58.0 77.2	21 20.4 +57.9 76.2	21 06.3 +58.0 75.3
25°	23 00.8 +57.9 78.8	22 46.6 +57.9 77.8	22 32.5 +57.9 76.9	22 18.3 +58.0 75.9	22 04.3 +58.0 75.0
26°	23 58.7 +57.9 78.5	23 44.5 +57.9 77.6	23 30.4 +57.9 76.6	23 16.3 +57.9 75.7	23 02.3 +57.9 74.7
27°	24 56.6 +57.8 78.2	24 42.4 +57.8 77.3	24 28.3 +57.8 76.3	24 14.2 +57.9 75.4	24 00.2 +57.9 74.4
28°	25 54.4 +57.8 77.9	25 40.2 +57.8 77.0	25 26.1 +57.9 76.0	25 12.1 +57.8 75.1	24 58.1 +57.8 74.1
29°	26 52.2 +57.7 77.6	26 38.0 +57.8 76.7	26 24.0 +57.7 75.7	26 09.9 +57.8 74.8	25 55.9 +57.9 73.9

Declination SAME name as Latitude

Latitude 76°

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°	-2 24.5 +58.3	-2 38.7 +58.2	-2 53.0 +58.3	-3 07.2 +58.3	-3 21.3 +58.3
1°	-1 26.2 +58.3	-1 40.5 +58.3	-1 54.7 +58.3	-2 08.9 +58.3	-2 23.0 +58.3
2°	-0 27.9 +58.3	-0 42.2 +58.3	-0 56.4 +58.3	-1 10.6 +58.3	-1 24.7 +58.4
3°	0 30.4 +58.2 79.6	0 16.1 +58.3 78.6	0 01.9 +58.3 77.6	-0 12.3 +58.4	-0 26.3 +58.3
4°	1 28.6 +58.3 79.3	1 14.4 +58.3 78.4	1 00.2 +58.3 77.4	0 46.1 +58.3 76.4	0 32.0 +58.3 75.5
5°	2 26.9 +58.3 79.1	2 12.7 +58.2 78.1	1 58.5 +58.3 77.2	1 44.4 +58.3 76.2	1 30.3 +58.3 75.2
6°	3 25.2 +58.2 78.9	3 10.9 +58.3 77.9	2 56.8 +58.3 76.9	2 42.7 +58.3 76.0	2 28.6 +58.3 75.0
7°	4 23.4 +58.3 78.6	4 09.2 +58.3 77.7	3 55.1 +58.3 76.7	3 41.0 +58.3 75.7	3 26.9 +58.4 74.8
8°	5 21.7 +58.2 78.4	5 07.5 +58.3 77.4	4 53.4 +58.2 76.4	4 39.3 +58.3 75.5	4 25.3 +58.3 74.5
9°	6 19.9 +58.3 78.1	6 05.8 +58.2 77.2	5 51.6 +58.3 76.2	5 37.6 +58.3 75.2	5 23.6 +58.3 74.3
10°	7 18.2 +58.2 77.9	7 04.0 +58.3 76.9	6 49.9 +58.3 76.0	6 35.9 +58.2 75.0	6 21.9 +58.3 74.0
11°	8 16.4 +58.3 77.7	8 02.3 +58.2 76.7	7 48.2 +58.2 75.7	7 34.1 +58.3 74.8	7 20.2 +58.3 73.8
12°	9 14.7 +58.2 77.4	9 00.5 +58.3 76.5	8 46.4 +58.3 75.5	8 32.4 +58.3 74.5	8 18.5 +58.2 73.6
13°	10 12.9 +58.2 77.2	9 58.8 +58.2 76.2	9 44.7 +58.2 75.2	9 30.7 +58.2 74.3	9 16.7 +58.3 73.3
14°	11 11.1 +58.2 76.9	10 57.0 +58.2 76.0	10 42.9 +58.3 75.0	10 28.9 +58.3 74.0	10 15.0 +58.3 73.1
15°	12 09.3 +58.2 76.7	11 55.2 +58.2 75.7	11 41.2 +58.2 74.8	11 27.2 +58.2 73.8	11 13.3 +58.2 72.8
16°	13 07.5 +58.1 76.4	12 53.4 +58.2 75.5	12 39.4 +58.2 74.5	12 25.4 +58.2 73.6	12 11.5 +58.3 72.6
17°	14 05.6 +58.2 76.2	13 51.6 +58.1 75.2	13 37.6 +58.2 74.3	13 23.6 +58.2 73.3	13 09.8 +58.2 72.4
18°	15 03.8 +58.1 75.9	14 49.7 +58.2 75.0	14 35.8 +58.1 74.0	14 21.8 +58.2 73.1	14 08.0 +58.2 72.1
19°	16 01.9 +58.1 75.7	15 47.9 +58.1 74.7	15 33.9 +58.2 73.8	15 20.0 +58.2 72.8	15 06.2 +58.2 71.9
20°	17 00.0 +58.1 75.4	16 46.0 +58.1 74.4	16 32.1 +58.1 73.5	16 18.2 +58.2 72.5	16 04.4 +58.2 71.6
21°	17 58.1 +58.1 75.1	17 44.1 +58.1 74.2	17 30.2 +58.1 73.2	17 16.4 +58.1 72.3	17 02.6 +58.1 71.3
22°	18 56.2 +58.1 74.9	18 42.2 +58.1 73.9	18 28.3 +58.1 73.0	18 14.5 +58.1 72.0	18 00.7 +58.1 71.1
23°	19 54.3 +58.0 74.6	19 40.3 +58.1 73.7	19 26.4 +58.1 72.7	19 12.6 +58.1 71.8	18 58.8 +58.2 70.8
24°	20 52.3 +58.0 74.3	20 38.4 +58.0 73.4	20 24.5 +58.0 72.4	20 10.7 +58.0 71.5	19 57.0 +58.0 70.6
25°	21 50.3 +58.0 74.1	21 36.4 +58.0 73.1	21 22.5 +58.0 72.2	21 08.7 +58.1 71.2	20 55.0 +58.1 70.3
26°	22 48.3 +57.9 73.8	22 34.4 +57.9 72.8	22 20.5 +58.0 71.9	22 06.8 +58.0 71.0	21 53.1 +58.0 70.0
27°	23 46.2 +57.9 73.5	23 32.3 +58.0 72.6	23 18.5 +58.0 71.6	23 04.8 +58.0 70.7	22 51.1 +58.0 69.7
28°	24 44.1 +57.9 73.2	24 30.3 +57.9 72.3	24 16.5 +57.9 71.3	24 02.8 +57.9 70.4	23 49.1 +58.0 69.5
29°	25 42.0 +57.9 72.9	25 28.2 +57.9 72.0	25 14.4 +57.9 71.1	25 00.7 +58.0 70.1	24 47.1 +58.0 69.2

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°	-3 35.4 +58.3	-3 49.4 +58.3	-4 03.4 +58.4	-4 17.2 +58.3	-4 31.0 +58.4
1°	-2 37.1 +58.4	-2 51.1 +58.4	-3 05.0 +58.4	-3 18.9 +58.4	-3 32.6 +58.4
2°	-1 38.7 +58.3	-1 52.7 +58.3	-2 06.6 +58.3	-2 20.5 +58.4	-2 34.2 +58.4
3°	-0 40.4 +58.4	-0 54.4 +58.4	-1 08.3 +58.4	-1 22.1 +58.4	-1 35.8 +58.4
4°	0 18.0 +58.3 74.5	0 04.0 +58.4 73.5	-0 09.9 +58.4	-0 23.7 +58.4	-0 37.4 +58.4
5°	1 16.3 +58.3 74.3	1 02.4 +58.3 73.3	0 48.5 +58.4 72.3	0 34.7 +58.4 71.3	0 21.0 +58.4 70.4
6°	2 14.6 +58.4 74.0	2 00.7 +58.4 73.1	1 46.9 +58.3 72.1	1 33.1 +58.4 71.1	1 19.4 +58.4 70.2
7°	3 13.0 +58.3 73.8	2 59.1 +58.3 72.8	2 45.2 +58.4 71.9	2 31.5 +58.4 70.9	2 17.8 +58.4 69.9
8°	4 11.3 +58.3 73.6	3 57.4 +58.4 72.6	3 43.6 +58.4 71.6	3 29.9 +58.3 70.7	3 16.2 +58.4 69.7
9°	5 09.6 +58.3 73.3	4 55.8 +58.3 72.4	4 42.0 +58.3 71.4	4 28.2 +58.4 70.4	4 14.6 +58.4 69.5
10°	6 07.9 +58.4 73.1	5 54.1 +58.3 72.1	5 40.3 +58.4 71.2	5 26.6 +58.4 70.2	5 13.0 +58.4 69.2
11°	7 06.3 +58.3 72.8	6 52.4 +58.4 71.9	6 38.7 +58.3 70.9	6 25.0 +58.4 70.0	6 11.4 +58.4 69.0
12°	8 04.6 +58.3 72.6	7 50.8 +58.3 71.6	7 37.0 +58.4 70.7	7 23.4 +58.3 69.7	7 09.8 +58.4 68.8
13°	9 02.9 +58.3 72.4	8 49.1 +58.3 71.4	8 35.4 +58.3 70.5	8 21.7 +58.4 69.5	8 08.2 +58.3 68.5
14°	10 01.2 +58.2 72.1	9 47.4 +58.3 71.2	9 33.7 +58.3 70.2	9 20.1 +58.3 69.3	9 06.5 +58.4 68.3
15°	10 59.4 +58.3 71.9	10 45.7 +58.3 70.9	10 32.0 +58.3 70.0	10 18.4 +58.3 69.0	10 04.9 +58.4 68.1
16°	11 57.7 +58.3 71.6	11 44.0 +58.3 70.7	11 30.3 +58.3 69.7	11 16.7 +58.4 68.8	11 03.3 +58.3 67.8
17°	12 56.0 +58.2 71.4	12 42.3 +58.2 70.4	12 28.6 +58.3 69.5	12 15.1 +58.3 68.5	12 01.6 +58.3 67.6
18°	13 54.2 +58.2 71.2	13 40.5 +58.3 70.2	13 26.9 +58.3 69.3	13 13.4 +58.3 68.3	12 59.9 +58.3 67.4
19°	14 52.4 +58.3 70.9	14 38.8 +58.2 70.0	14 25.2 +58.2 69.0	14 11.7 +58.2 68.1	13 58.2 +58.3 67.1
20°	15 50.7 +58.1 70.7	15 37.0 +58.2 69.7	15 23.4 +58.3 68.8	15 09.9 +58.3 67.8	14 56.5 +58.3 66.9
21°	16 48.8 +58.2 70.4	16 35.2 +58.2 69.5	16 21.7 +58.2 68.5	16 08.2 +58.2 67.6	15 54.8 +58.3 66.6
22°	17 47.0 +58.2 70.1	17 33.4 +58.2 69.2	17 19.9 +58.2 68.3	17 06.4 +58.3 67.3	16 53.1 +58.3 66.4
23°	18 45.2 +58.1 69.9	18 31.6 +58.1 68.9	18 18.1 +58.2 68.0	18 04.7 +58.2 67.1	17 51.4 +58.2 66.1
24°	19 43.3 +58.1 69.6	19 29.7 +58.2 68.7	19 16.3 +58.1 67.7	19 02.9 +58.2 66.8	18 49.6 +58.2 65.9
25°	20 41.4 +58.1 69.4	20 27.9 +58.1 68.4	20 14.4 +58.2 67.5	20 01.1 +58.1 66.5	19 47.8 +58.2 65.6
26°	21 39.5 +58.1 69.1	21 26.0 +58.1 68.2	21 12.6 +58.1 67.2	20 59.2 +58.2 66.3	20 46.0 +58.1 65.4
27°	22 37.6 +58.0 68.8	22 24.1 +58.0 67.9	22 10.7 +58.1 66.9	21 57.4 +58.1 66.0	21 44.1 +58.2 65.1
28°	23 35.6 +58.0 68.5	23 22.1 +58.1 67.6	23 08.8 +58.0 66.7	22 55.5 +58.1 65.7	22 42.3 +58.1 64.8
29°	24 33.6 +58.0 68.3	24 20.2 +58.0 67.3	24 06.8 +58.0 66.4	23 53.6 +58.0 65.5	23 40.4 +58.1 64.5

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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°	-4 44.8 +58.4	-4 58.4 +58.4	-5 12.0 +58.5	-5 25.4 +58.4	-5 38.8 +58.5
1°	-3 46.4 +58.5	-4 00.0 +58.5	-4 13.5 +58.4	-4 27.0 +58.5	-4 40.3 +58.5
2°	-2 47.9 +58.4	-3 01.5 +58.4	-3 15.1 +58.5	-3 28.5 +58.5	-3 41.8 +58.5
3°	-1 49.5 +58.4	-2 03.1 +58.5	-2 16.6 +58.5	-2 30.0 +58.5	-2 43.3 +58.5
4°	-0 51.1 +58.5	-1 04.6 +58.4	-1 18.1 +58.5	-1 31.5 +58.5	-1 44.8 +58.5
5°	0 07.4 +58.4 69.4	-0 06.2 +58.5	-0 19.6 +58.4	-0 33.0 +58.5	-0 46.3 +58.6
6°	1 05.8 +58.4 69.2	0 52.3 +58.4 68.2	0 38.8 +58.5 67.2	0 25.5 +58.5 66.3	0 12.3 +58.5 65.3
7°	2 04.2 +58.4 69.0	1 50.7 +58.5 68.0	1 37.3 +58.5 67.0	1 24.0 +58.5 66.1	1 10.8 +58.5 65.1
8°	3 02.6 +58.5 68.7	2 49.2 +58.4 67.8	2 35.8 +58.4 66.8	2 22.5 +58.5 65.8	2 09.3 +58.5 64.9
9°	4 01.1 +58.4 68.5	3 47.6 +58.4 67.5	3 34.2 +58.5 66.6	3 21.0 +58.5 65.6	3 07.8 +58.5 64.6
10°	4 59.5 +58.4 68.3	4 46.0 +58.5 67.3	4 32.7 +58.5 66.3	4 19.5 +58.4 65.4	4 06.3 +58.5 64.4
11°	5 57.9 +58.4 68.0	5 44.5 +58.4 67.1	5 31.2 +58.4 66.1	5 17.9 +58.5 65.2	5 04.8 +58.5 64.2
12°	6 56.3 +58.4 67.8	6 42.9 +58.4 66.9	6 29.6 +58.5 65.9	6 16.4 +58.5 64.9	6 03.3 +58.5 64.0
13°	7 54.7 +58.4 67.6	7 41.3 +58.5 66.6	7 28.1 +58.4 65.7	7 14.9 +58.4 64.7	7 01.8 +58.5 63.8
14°	8 53.1 +58.4 67.3	8 39.8 +58.4 66.4	8 26.5 +58.4 65.4	8 13.3 +58.5 64.5	8 00.3 +58.5 63.5
15°	9 51.5 +58.4 67.1	9 38.2 +58.4 66.2	9 24.9 +58.5 65.2	9 11.8 +58.5 64.3	8 58.8 +58.5 63.3
16°	10 49.9 +58.3 66.9	10 36.6 +58.3 65.9	10 23.4 +58.4 65.0	10 10.3 +58.4 64.0	9 57.3 +58.4 63.1
17°	11 48.2 +58.4 66.6	11 34.9 +58.4 65.7	11 21.8 +58.4 64.7	11 08.7 +58.4 63.8	10 55.7 +58.5 62.8
18°	12 46.6 +58.3 66.4	12 33.3 +58.4 65.5	12 20.2 +58.4 64.5	12 07.1 +58.4 63.6	11 54.2 +58.4 62.6
19°	13 44.9 +58.3 66.2	13 31.7 +58.3 65.2	13 18.6 +58.3 64.3	13 05.5 +58.4 63.3	12 52.6 +58.5 62.4
20°	14 43.2 +58.4 65.9	14 30.0 +58.4 65.0	14 16.9 +58.4 64.0	14 03.9 +58.4 63.1	13 51.1 +58.4 62.1
21°	15 41.6 +58.3 65.7	15 28.4 +58.3 64.7	15 15.3 +58.4 63.8	15 02.3 +58.4 62.9	14 49.5 +58.4 61.9
22°	16 39.9 +58.2 65.4	16 26.7 +58.3 64.5	16 13.7 +58.3 63.6	16 00.7 +58.4 62.6	15 47.9 +58.4 61.7
23°	17 38.1 +58.3 65.2	17 25.0 +58.3 64.2	17 12.0 +58.3 63.3	16 59.1 +58.3 62.4	16 46.3 +58.3 61.4
24°	18 36.4 +58.2 64.9	18 23.3 +58.3 64.0	18 10.3 +58.3 63.1	17 57.4 +58.3 62.1	17 44.6 +58.4 61.2
25°	19 34.6 +58.2 64.7	19 21.6 +58.2 63.7	19 08.6 +58.3 62.8	18 55.7 +58.3 61.9	18 43.0 +58.3 60.9
26°	20 32.8 +58.2 64.4	20 19.8 +58.2 63.5	20 06.9 +58.2 62.6	19 54.0 +58.3 61.6	19 41.3 +58.3 60.7
27°	21 31.0 +58.2 64.2	21 18.0 +58.2 63.2	21 05.1 +58.2 62.3	20 52.3 +58.3 61.4	20 39.6 +58.3 60.4
28°	22 29.2 +58.1 63.9	22 16.2 +58.2 63.0	22 03.3 +58.2 62.0	21 50.6 +58.2 61.1	21 37.9 +58.3 60.2
29°	23 27.3 +58.2 63.6	23 14.4 +58.1 62.7	23 01.5 +58.2 61.8	22 48.8 +58.2 60.9	22 36.2 +58.2 59.9

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°	-5 52.1 +58.5	-6 05.3 +58.6	-6 18.3 +58.5	-6 31.3 +58.6	-6 44.1 +58.6
1°	-4 53.6 +58.6	-5 06.7 +58.5	-5 19.8 +58.6	-5 32.7 +58.6	-5 45.5 +58.6
2°	-3 55.0 +58.5	-4 08.2 +58.6	-4 21.2 +58.6	-4 34.1 +58.6	-4 46.9 +58.7
3°	-2 56.5 +58.5	-3 09.6 +58.6	-3 22.6 +58.6	-3 35.5 +58.6	-3 48.2 +58.6
4°	-1 58.0 +58.6	-2 11.0 +58.5	-2 24.0 +58.6	-2 36.9 +58.6	-2 49.6 +58.6
5°	-0 59.4 +58.5	-1 12.5 +58.6	-1 25.4 +58.6	-1 38.3 +58.7	-1 51.0 +58.7
6°	-0 00.9 +58.6	-0 13.9 +58.6	-0 26.8 +58.6	-0 39.6 +58.6	-0 52.3 +58.6
7°	0 57.7 +58.5 64.1	0 44.7 +58.5 63.1	0 31.8 +58.5 62.2	0 19.0 +58.6 61.2	0 06.3 +58.7 60.2
8°	1 56.2 +58.5 63.9	1 43.2 +58.6 62.9	1 30.3 +58.6 62.0	1 17.6 +58.6 61.0	1 05.0 +58.6 60.0
9°	2 54.7 +58.6 63.7	2 41.8 +58.5 62.7	2 28.9 +58.6 61.7	2 16.2 +58.6 60.8	2 03.6 +58.6 59.8
10°	3 53.3 +58.5 63.5	3 40.3 +58.6 62.5	3 27.5 +58.6 61.5	3 14.8 +58.6 60.6	3 02.2 +58.7 59.6
11°	4 51.8 +58.5 63.2	4 38.9 +58.5 62.3	4 26.1 +58.6 61.3	4 13.4 +58.6 60.4	4 00.9 +58.6 59.4
12°	5 50.3 +58.5 63.0	5 37.4 +58.6 62.1	5 24.7 +58.6 61.1	5 12.0 +58.6 60.1	4 59.5 +58.6 59.2
13°	6 48.8 +58.6 62.8	6 36.0 +58.5 61.8	6 23.3 +58.5 60.9	6 10.6 +58.6 59.9	5 58.1 +58.7 59.0
14°	7 47.4 +58.5 62.6	7 34.5 +58.6 61.6	7 21.8 +58.6 60.7	7 09.2 +58.6 59.7	6 56.8 +58.6 58.8
15°	8 45.9 +58.5 62.3	8 33.1 +58.5 61.4	8 20.4 +58.5 60.4	8 07.8 +58.6 59.5	7 55.4 +58.6 58.5
16°	9 44.4 +58.5 62.1	9 31.6 +58.5 61.2	9 18.9 +58.6 60.2	9 06.4 +58.6 59.3	8 54.0 +58.6 58.3
17°	10 42.9 +58.4 61.9	10 30.1 +58.5 60.9	10 17.5 +58.5 60.0	10 05.0 +58.5 59.0	9 52.6 +58.6 58.1
18°	11 41.3 +58.5 61.7	11 28.6 +58.5 60.7	11 16.0 +58.6 59.8	11 03.5 +58.6 58.8	10 51.2 +58.6 57.9
19°	12 39.8 +58.5 61.4	12 27.1 +58.5 60.5	12 14.6 +58.5 59.5	12 02.1 +58.5 58.6	11 49.8 +58.6 57.7
20°	13 38.3 +58.4 61.2	13 25.6 +58.5 60.3	13 13.1 +58.5 59.3	13 00.6 +58.6 58.4	12 48.4 +58.5 57.4
21°	14 36.7 +58.5 61.0	14 24.1 +58.5 60.0	14 11.6 +58.5 59.1	13 59.2 +58.5 58.2	13 46.9 +58.6 57.2
22°	15 35.2 +58.4 60.7	15 22.6 +58.4 59.8	15 10.1 +58.4 58.9	14 57.7 +58.5 57.9	14 45.5 +58.5 57.0
23°	16 33.6 +58.4 60.5	16 21.0 +58.4 59.6	16 08.5 +58.5 58.6	15 56.2 +58.5 57.7	15 44.0 +58.5 56.8
24°	17 32.0 +58.4 60.3	17 19.4 +58.4 59.3	17 07.0 +58.5 58.4	16 54.7 +58.5 57.5	16 42.5 +58.5 56.5
25°	18 30.4 +58.3 60.0	18 17.8 +58.4 59.1	18 05.5 +58.4 58.2	17 53.2 +58.4 57.2	17 41.0 +58.5 56.3
26°	19 28.7 +58.4 59.8	19 16.2 +58.4 58.8	19 03.9 +58.4 57.9	18 51.6 +58.5 57.0	18 39.5 +58.5 56.1
27°	20 27.1 +58.3 59.5	20 14.6 +58.4 58.6	20 02.3 +58.4 57.7	19 50.1 +58.4 56.8	19 38.0 +58.5 55.8
28°	21 25.4 +58.3 59.3	21 13.0 +58.3 58.4	21 00.7 +58.3 57.4	20 48.5 +58.4 56.5	20 36.5 +58.4 55.6
29°	22 23.7 +58.3 59.0	22 11.3 +58.3 58.1	21 59.0 +58.4 57.2	21 46.9 +58.4 56.3	21 34.9 +58.4 55.3

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°	-6 56.9 +58.7	-7 09.5 +58.7	-7 21.9 +58.7	-7 34.3 +58.8	-7 46.5 +58.8
1°	-5 58.2 +58.7	-6 10.8 +58.7	-6 23.2 +58.7	-6 35.5 +58.7	-6 47.7 +58.7
2°	-4 59.5 +58.6	-5 12.1 +58.7	-5 24.5 +58.7	-5 36.8 +58.7	-5 49.0 +58.8
3°	-4 00.9 +58.7	-4 13.4 +58.7	-4 25.8 +58.7	-4 38.1 +58.8	-4 50.2 +58.8
4°	-3 02.2 +58.6	-3 14.7 +58.7	-3 27.1 +58.7	-3 39.3 +58.7	-3 51.4 +58.8
5°	-2 03.6 +58.7	-2 16.0 +58.7	-2 28.4 +58.8	-2 40.6 +58.8	-2 52.6 +58.7
6°	-1 04.9 +58.7	-1 17.3 +58.7	-1 29.6 +58.7	-1 41.8 +58.7	-1 53.9 +58.8
7°	-0 06.2 +58.6	-0 18.6 +58.7	-0 30.9 +58.7	-0 43.1 +58.8	-0 55.1 +58.8
8°	0 52.4 +58.7 59.1	0 40.1 +58.7 58.1	0 27.8 +58.7 57.1	0 15.7 +58.7 56.2	0 03.7 +58.8 55.2
9°	1 51.1 +58.7 58.8	1 38.8 +58.6 57.9	1 26.5 +58.7 56.9	1 14.4 +58.8 55.9	1 02.5 +58.8 55.0
10°	2 49.8 +58.6 58.6	2 37.4 +58.7 57.7	2 25.2 +58.8 56.7	2 13.2 +58.7 55.7	2 01.3 +58.7 54.8
11°	3 48.4 +58.7 58.4	3 36.1 +58.7 57.5	3 24.0 +58.7 56.5	3 11.9 +58.8 55.5	3 00.0 +58.8 54.6
12°	4 47.1 +58.7 58.2	4 34.8 +58.7 57.3	4 22.7 +58.7 56.3	4 10.7 +58.7 55.3	3 58.8 +58.8 54.4
13°	5 45.8 +58.6 58.0	5 33.5 +58.7 57.0	5 21.4 +58.7 56.1	5 09.4 +58.8 55.1	4 57.6 +58.8 54.2
14°	6 44.4 +58.7 57.8	6 32.2 +58.7 56.8	6 20.1 +58.7 55.9	6 08.2 +58.7 54.9	5 56.4 +58.7 54.0
15°	7 43.1 +58.6 57.6	7 30.9 +58.6 56.6	7 18.8 +58.7 55.7	7 06.9 +58.7 54.7	6 55.1 +58.8 53.8
16°	8 41.7 +58.6 57.4	8 29.5 +58.7 56.4	8 17.5 +58.7 55.5	8 05.6 +58.8 54.5	7 53.9 +58.7 53.6
17°	9 40.3 +58.7 57.2	9 28.2 +58.7 56.2	9 16.2 +58.7 55.3	9 04.4 +58.7 54.3	8 52.6 +58.8 53.4
18°	10 39.0 +58.6 56.9	10 26.9 +58.6 56.0	10 14.9 +58.7 55.0	10 03.1 +58.7 54.1	9 51.4 +58.7 53.2
19°	11 37.6 +58.6 56.7	11 25.5 +58.6 55.8	11 13.6 +58.6 54.8	11 01.8 +58.7 53.9	10 50.1 +58.8 52.9
20°	12 36.2 +58.6 56.5	12 24.1 +58.7 55.6	12 12.2 +58.7 54.6	12 00.5 +58.7 53.7	11 48.9 +58.7 52.7
21°	13 34.8 +58.6 56.3	13 22.8 +58.6 55.3	13 10.9 +58.6 54.4	12 59.2 +58.6 53.5	12 47.6 +58.7 52.5
22°	14 33.4 +58.5 56.1	14 21.4 +58.6 55.1	14 09.5 +58.7 54.2	13 57.8 +58.7 53.3	13 46.3 +58.7 52.3
23°	15 31.9 +58.6 55.8	15 20.0 +58.6 54.9	15 08.2 +58.6 54.0	14 56.5 +58.7 53.0	14 45.0 +58.7 52.1
24°	16 30.5 +58.5 55.6	16 18.6 +58.6 54.7	16 06.8 +58.6 53.7	15 55.2 +58.6 52.8	15 43.7 +58.7 51.9
25°	17 29.0 +58.6 55.4	17 17.2 +58.5 54.4	17 05.4 +58.6 53.5	16 53.8 +58.6 52.6	16 42.4 +58.6 51.7
26°	18 27.6 +58.5 55.1	18 15.7 +58.6 54.2	18 04.0 +58.6 53.3	17 52.4 +58.7 52.4	17 41.0 +58.7 51.5
27°	19 26.1 +58.5 54.9	19 14.3 +58.5 54.0	19 02.6 +58.5 53.1	18 51.1 +58.5 52.1	18 39.7 +58.6 51.2
28°	20 24.6 +58.4 54.7	20 12.8 +58.5 53.8	20 01.1 +58.6 52.8	19 49.6 +58.6 51.9	19 38.3 +58.6 51.0
29°	21 23.0 +58.5 54.4	21 11.3 +58.5 53.5	20 59.7 +58.5 52.6	20 48.2 +58.6 51.7	20 36.9 +58.6 50.8

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°	-7 58.6 +58.8	-8 10.5 +58.8	-8 22.3 +58.9	-8 33.9 +58.8	-8 45.4 +58.9
1°	-6 59.8 +58.8	-7 11.7 +58.8	-7 23.4 +58.8	-7 35.1 +58.9	-7 46.5 +58.9
2°	-6 01.0 +58.8	-6 12.9 +58.9	-6 24.6 +58.9	-6 36.2 +58.9	-6 47.6 +58.9
3°	-5 02.2 +58.8	-5 14.0 +58.8	-5 25.7 +58.8	-5 37.3 +58.9	-5 48.7 +58.9
4°	-4 03.4 +58.8	-4 15.2 +58.8	-4 26.9 +58.9	-4 38.4 +58.9	-4 49.8 +59.0
5°	-3 04.6 +58.8	-3 16.4 +58.9	-3 28.0 +58.9	-3 39.5 +58.9	-3 50.8 +58.9
6°	-2 05.8 +58.8	-2 17.5 +58.8	-2 29.1 +58.8	-2 40.6 +58.9	-2 51.9 +58.9
7°	-1 07.0 +58.8	-1 18.7 +58.8	-1 30.3 +58.9	-1 41.7 +58.9	-1 53.0 +58.9
8°	-0 08.2 +58.9	-0 19.9 +58.9	-0 31.4 +58.9	-0 42.8 +58.9	-0 54.1 +59.0
9°	0 50.7 +58.8 54.0	0 39.0 +58.8 53.0	0 27.5 +58.8 52.1	0 16.1 +58.9 51.1	0 04.9 +58.9 50.1
10°	1 49.5 +58.8 53.8	1 37.8 +58.9 52.8	1 26.3 +58.9 51.9	1 15.0 +58.9 50.9	1 03.8 +58.9 49.9
11°	2 48.3 +58.8 53.6	2 36.7 +58.8 52.7	2 25.2 +58.9 51.7	2 13.9 +58.9 50.7	2 02.7 +59.0 49.8
12°	3 47.1 +58.8 53.4	3 35.5 +58.8 52.5	3 24.1 +58.8 51.5	3 12.8 +58.9 50.5	3 01.7 +58.9 49.6
13°	4 45.9 +58.8 53.2	4 34.3 +58.9 52.3	4 22.9 +58.9 51.3	4 11.7 +58.9 50.3	4 00.6 +58.9 49.4
14°	5 44.7 +58.8 53.0	5 33.2 +58.8 52.1	5 21.8 +58.8 51.1	5 10.6 +58.9 50.2	4 59.5 +58.9 49.2
15°	6 43.5 +58.8 52.8	6 32.0 +58.8 51.9	6 20.6 +58.9 50.9	6 09.5 +58.8 50.0	5 58.4 +58.9 49.0
16°	7 42.3 +58.8 52.6	7 30.8 +58.8 51.7	7 19.5 +58.8 50.7	7 08.3 +58.9 49.8	6 57.3 +59.0 48.8
17°	8 41.1 +58.7 52.4	8 29.6 +58.8 51.5	8 18.3 +58.9 50.5	8 07.2 +58.9 49.6	7 56.3 +58.9 48.6
18°	9 39.8 +58.8 52.2	9 28.4 +58.8 51.3	9 17.2 +58.8 50.3	9 06.1 +58.9 49.4	8 55.2 +58.9 48.4
19°	10 38.6 +58.8 52.0	10 27.2 +58.8 51.1	10 16.0 +58.9 50.1	10 05.0 +58.8 49.2	9 54.1 +58.9 48.2
20°	11 37.4 +58.7 51.8	11 26.0 +58.8 50.9	11 14.9 +58.8 49.9	11 03.8 +58.9 49.0	10 53.0 +58.8 48.0
21°	12 36.1 +58.8 51.6	12 24.8 +58.8 50.7	12 13.7 +58.8 49.7	12 02.7 +58.8 48.8	11 51.8 +58.9 47.8
22°	13 34.9 +58.7 51.4	13 23.6 +58.8 50.5	13 12.5 +58.8 49.5	13 01.5 +58.9 48.6	12 50.7 +58.9 47.7
23°	14 33.6 +58.7 51.2	14 22.4 +58.7 50.2	14 11.3 +58.8 49.3	14 00.4 +58.8 48.4	13 49.6 +58.8 47.5
24°	15 32.3 +58.7 51.0	15 21.1 +58.8 50.0	15 10.1 +58.8 49.1	14 59.2 +58.8 48.2	14 48.4 +58.9 47.3
25°	16 31.0 +58.7 50.7	16 19.9 +58.7 49.8	16 08.9 +58.7 48.9	15 58.0 +58.8 48.0	15 47.3 +58.8 47.0
26°	17 29.7 +58.7 50.5	17 18.6 +58.7 49.6	17 07.6 +58.8 48.7	16 56.8 +58.8 47.8	16 46.1 +58.9 46.8
27°	18 28.4 +58.7 50.3	18 17.3 +58.7 49.4	18 06.4 +58.7 48.5	17 55.6 +58.8 47.6	17 45.0 +58.8 46.6
28°	19 27.1 +58.6 50.1	19 16.0 +58.7 49.2	19 05.1 +58.7 48.3	18 54.4 +58.7 47.3	18 43.8 +58.8 46.4
29°	20 25.7 +58.7 49.9	20 14.7 +58.7 49.0	20 03.8 +58.8 48.0	19 53.1 +58.8 47.1	19 42.6 +58.8 46.2

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°	-8 56.8 +59.0	-9 07.9 +58.9	-9 19.0 +59.0	-9 29.8 +59.0	-9 40.5 +59.1
1°	-7 57.8 +58.9	-8 09.0 +59.0	-8 20.0 +59.0	-8 30.8 +59.1	-8 41.4 +59.0
2°	-6 58.9 +59.0	-7 10.0 +59.0	-7 21.0 +59.1	-7 31.7 +59.0	-7 42.4 +59.1
3°	-5 59.9 +58.9	-6 11.0 +59.0	-6 21.9 +59.0	-6 32.7 +59.0	-6 43.3 +59.1
4°	-5 01.0 +59.0	-5 12.0 +58.9	-5 22.9 +59.0	-5 33.7 +59.1	-5 44.2 +59.1
5°	-4 02.0 +58.9	-4 13.1 +59.0	-4 23.9 +59.0	-4 34.6 +59.0	-4 45.1 +59.0
6°	-3 03.1 +59.0	-3 14.1 +59.0	-3 24.9 +59.0	-3 35.6 +59.1	-3 46.1 +59.1
7°	-2 04.1 +58.9	-2 15.1 +59.0	-2 25.9 +59.0	-2 36.5 +59.0	-2 47.0 +59.1
8°	-1 05.2 +59.0	-1 16.1 +59.0	-1 26.9 +59.1	-1 37.5 +59.1	-1 47.9 +59.1
9°	-0 06.2 +59.0	-0 17.1 +59.0	-0 27.8 +59.0	-0 38.4 +59.0	-0 48.8 +59.1
10°	0 52.8 +58.9 49.0	0 41.9 +59.0 48.0	0 31.2 +59.0 47.0	0 20.6 +59.1 46.1	0 10.3 +59.1 45.1
11°	1 51.7 +59.0 48.8	1 40.9 +59.0 47.8	1 30.2 +59.0 46.9	1 19.7 +59.1 45.9	1 09.4 +59.0 44.9
12°	2 50.7 +58.9 48.6	2 39.9 +59.0 47.6	2 29.2 +59.1 46.7	2 18.8 +59.0 45.7	2 08.4 +59.1 44.8
13°	3 49.6 +59.0 48.4	3 38.9 +58.9 47.5	3 28.3 +59.0 46.5	3 17.8 +59.1 45.5	3 07.5 +59.1 44.6
14°	4 48.6 +58.9 48.2	4 37.8 +59.0 47.3	4 27.3 +59.0 46.3	4 16.9 +59.0 45.4	4 06.6 +59.1 44.4
15°	5 47.5 +59.0 48.1	5 36.8 +59.0 47.1	5 26.3 +59.0 46.1	5 15.9 +59.0 45.2	5 05.7 +59.1 44.2
16°	6 46.5 +58.9 47.9	6 35.8 +59.0 46.9	6 25.3 +59.0 46.0	6 14.9 +59.1 45.0	6 04.8 +59.0 44.1
17°	7 45.4 +59.0 47.7	7 34.8 +59.0 46.7	7 24.3 +59.0 45.8	7 14.0 +59.0 44.8	7 03.8 +59.1 43.9
18°	8 44.4 +58.9 47.5	8 33.8 +58.9 46.5	8 23.3 +59.0 45.6	8 13.0 +59.1 44.6	8 02.9 +59.1 43.7
19°	9 43.3 +58.9 47.3	9 32.7 +59.0 46.4	9 22.3 +59.0 45.4	9 12.1 +59.0 44.5	9 02.0 +59.0 43.5
20°	10 42.2 +59.0 47.1	10 31.7 +58.9 46.2	10 21.3 +59.0 45.2	10 11.1 +59.0 44.3	10 01.0 +59.1 43.3
21°	11 41.2 +58.9 46.9	11 30.6 +59.0 46.0	11 20.3 +59.0 45.0	11 10.1 +59.0 44.1	11 00.1 +59.0 43.2
22°	12 40.1 +58.9 46.7	12 29.6 +58.9 45.8	12 19.3 +58.9 44.9	12 09.1 +59.0 43.9	11 59.1 +59.1 43.0
23°	13 39.0 +58.9 46.5	13 28.5 +58.9 45.6	13 18.2 +59.0 44.7	13 08.1 +59.0 43.7	12 58.2 +59.0 42.8
24°	14 37.9 +58.8 46.3	14 27.4 +59.0 45.4	14 17.2 +59.0 44.5	14 07.1 +59.0 43.5	13 57.2 +59.0 42.6
25°	15 36.7 +58.9 46.1	15 26.4 +58.9 45.2	15 16.2 +58.9 44.3	15 06.1 +59.0 43.4	14 56.2 +59.0 42.4
26°	16 35.6 +58.9 45.9	16 25.3 +58.9 45.0	16 15.1 +58.9 44.1	16 05.1 +58.9 43.2	15 55.2 +59.0 42.2
27°	17 34.5 +58.8 45.7	17 24.2 +58.9 44.8	17 14.0 +58.9 43.9	17 04.0 +59.0 43.0	16 54.2 +59.0 42.1
28°	18 33.3 +58.9 45.5	18 23.1 +58.8 44.6	18 12.9 +59.0 43.7	18 03.0 +59.0 42.8	17 53.2 +59.0 41.9
29°	19 32.2 +58.8 45.3	19 21.9 +58.9 44.4	19 11.9 +58.9 43.5	19 02.0 +58.9 42.6	18 52.2 +59.0 41.7

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°	-9 51.0 +59.1				
1°	-8 51.9 +59.1	-9 02.2 +59.1	-9 12.3 +59.2	-9 22.2 +59.1	-9 32.0 +59.2
2°	-7 52.8 +59.1	-8 03.1 +59.2	-8 13.1 +59.1	-8 23.1 +59.2	-8 32.8 +59.3
3°	-6 53.7 +59.1	-7 03.9 +59.1	-7 14.0 +59.2	-7 23.9 +59.2	-7 33.5 +59.2
4°	-5 54.6 +59.1	-6 04.8 +59.1	-6 14.8 +59.1	-6 24.7 +59.2	-6 34.3 +59.2
5°	-4 55.5 +59.1	-5 05.7 +59.2	-5 15.7 +59.2	-5 25.5 +59.2	-5 35.1 +59.2
6°	-3 56.4 +59.1	-4 06.5 +59.1	-4 16.5 +59.2	-4 26.3 +59.2	-4 35.9 +59.3
7°	-2 57.3 +59.2	-3 07.4 +59.2	-3 17.3 +59.2	-3 27.1 +59.3	-3 36.6 +59.2
8°	-1 58.1 +59.1	-2 08.2 +59.1	-2 18.1 +59.1	-2 27.8 +59.2	-2 37.4 +59.3
9°	-0 59.0 +59.1	-1 09.1 +59.2	-1 19.0 +59.2	-1 28.6 +59.2	-1 38.1 +59.2
10°	0 00.1 +59.1 44.1	-0 09.9 +59.1	-0 19.8 +59.2	-0 29.4 +59.2	-0 38.9 +59.2
11°	0 59.2 +59.1 44.0	0 49.2 +59.2 43.0	0 39.4 +59.2 42.0	0 29.8 +59.2 41.1	0 20.3 +59.3 40.1
12°	1 58.3 +59.1 43.8	1 48.4 +59.1 42.8	1 38.6 +59.2 41.9	1 29.0 +59.2 40.9	1 19.6 +59.2 39.9
13°	2 57.4 +59.1 43.6	2 47.5 +59.1 42.7	2 37.8 +59.1 41.7	2 28.2 +59.2 40.7	2 18.8 +59.2 39.8
14°	3 56.5 +59.2 43.5	3 46.6 +59.2 42.5	3 36.9 +59.2 41.5	3 27.4 +59.2 40.6	3 18.0 +59.3 39.6
15°	4 55.7 +59.1 43.3	4 45.8 +59.1 42.3	4 36.1 +59.2 41.4	4 26.6 +59.2 40.4	4 17.3 +59.2 39.5
16°	5 54.8 +59.1 43.1	5 44.9 +59.2 42.2	5 35.3 +59.1 41.2	5 25.8 +59.2 40.2	5 16.5 +59.3 39.3
17°	6 53.9 +59.1 42.9	6 44.1 +59.1 42.0	6 34.4 +59.2 41.0	6 25.0 +59.2 40.1	6 15.8 +59.2 39.1
18°	7 53.0 +59.1 42.8	7 43.2 +59.1 41.8	7 33.6 +59.2 40.9	7 24.2 +59.2 39.9	7 15.0 +59.2 39.0
19°	8 52.1 +59.1 42.6	8 42.3 +59.1 41.6	8 32.8 +59.1 40.7	8 23.4 +59.2 39.8	8 14.2 +59.2 38.8
20°	9 51.2 +59.0 42.4	9 41.4 +59.2 41.5	9 31.9 +59.2 40.5	9 22.6 +59.2 39.6	9 13.4 +59.2 38.7
21°	10 50.2 +59.1 42.2	10 40.6 +59.1 41.3	10 31.1 +59.1 40.4	10 21.8 +59.1 39.4	10 12.6 +59.3 38.5
22°	11 49.3 +59.1 42.1	11 39.7 +59.1 41.1	11 30.2 +59.2 40.2	11 20.9 +59.2 39.3	11 11.9 +59.2 38.3
23°	12 48.4 +59.1 41.9	12 38.8 +59.1 40.9	12 29.4 +59.1 40.0	12 20.1 +59.2 39.1	12 11.1 +59.2 38.2
24°	13 47.5 +59.0 41.7	13 37.9 +59.1 40.8	13 28.5 +59.1 39.8	13 19.3 +59.2 38.9	13 10.3 +59.2 38.0
25°	14 46.5 +59.1 41.5	14 37.0 +59.1 40.6	14 27.6 +59.1 39.7	14 18.5 +59.1 38.7	14 09.5 +59.1 37.8
26°	15 45.6 +59.0 41.3	15 36.1 +59.0 40.4	15 26.7 +59.2 39.5	15 17.6 +59.1 38.6	15 08.6 +59.2 37.7
27°	16 44.6 +59.0 41.1	16 35.1 +59.1 40.2	16 25.9 +59.1 39.3	16 16.7 +59.2 38.4	16 07.8 +59.2 37.5
28°	17 43.6 +59.1 41.0	17 34.2 +59.1 40.0	17 25.0 +59.0 39.1	17 15.9 +59.1 38.2	17 07.0 +59.2 37.3
29°	18 42.7 +59.0 40.8	18 33.3 +59.0 39.9	18 24.0 +59.1 38.9	18 15.0 +59.1 38.0	18 06.2 +59.1 37.1

Declination SAME name as Latitude

Latitude 76°

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°	-9 41.6 +59.3	-9 50.9 +59.3			
2°	-8 42.3 +59.3	-8 51.6 +59.2	-9 00.8 +59.3	-9 09.7 +59.3	-9 18.5 +59.4
3°	-7 43.0 +59.2	-7 52.4 +59.3	-8 01.5 +59.4	-8 10.4 +59.4	-8 19.1 +59.4
4°	-6 43.8 +59.3	-6 53.1 +59.3	-7 02.1 +59.3	-7 11.0 +59.3	-7 19.7 +59.4
5°	-5 44.5 +59.2	-5 53.8 +59.3	-6 02.8 +59.3	-6 11.7 +59.4	-6 20.3 +59.4
6°	-4 45.3 +59.3	-4 54.5 +59.3	-5 03.5 +59.3	-5 12.3 +59.3	-5 20.9 +59.3
7°	-3 46.0 +59.3	-3 55.2 +59.3	-4 04.2 +59.4	-4 13.0 +59.4	-4 21.6 +59.4
8°	-2 46.7 +59.2	-2 55.9 +59.3	-3 04.8 +59.3	-3 13.6 +59.4	-3 22.2 +59.4
9°	-1 47.5 +59.3	-1 56.6 +59.3	-2 05.5 +59.3	-2 14.2 +59.3	-2 22.8 +59.4
10°	-0 48.2 +59.3	-0 57.3 +59.3	-1 06.2 +59.3	-1 14.9 +59.4	-1 23.4 +59.4
11°	0 11.1 +59.3 39.1	0 02.0 +59.3 38.2	-0 06.9 +59.4	-0 15.5 +59.3	-0 24.0 +59.4
12°	1 10.4 +59.2 39.0	1 01.3 +59.3 38.0	0 52.5 +59.3 37.0	0 43.8 +59.4 36.1	0 35.4 +59.4 35.1
13°	2 09.6 +59.3 38.8	2 00.6 +59.3 37.8	1 51.8 +59.3 36.9	1 43.2 +59.4 35.9	1 34.8 +59.4 35.0
14°	3 08.9 +59.3 38.7	2 59.9 +59.3 37.7	2 51.1 +59.4 36.7	2 42.6 +59.3 35.8	2 34.2 +59.4 34.8
15°	4 08.2 +59.2 38.5	3 59.2 +59.3 37.5	3 50.5 +59.3 36.6	3 41.9 +59.4 35.6	3 33.6 +59.3 34.7
16°	5 07.4 +59.3 38.3	4 58.5 +59.3 37.4	4 49.8 +59.3 36.4	4 41.3 +59.3 35.5	4 32.9 +59.4 34.5
17°	6 06.7 +59.2 38.2	5 57.8 +59.3 37.2	5 49.1 +59.3 36.3	5 40.6 +59.4 35.3	5 32.3 +59.4 34.4
18°	7 05.9 +59.3 38.0	6 57.1 +59.3 37.1	6 48.4 +59.4 36.1	6 40.0 +59.3 35.2	6 31.7 +59.4 34.2
19°	8 05.2 +59.3 37.9	7 56.4 +59.3 36.9	7 47.8 +59.3 36.0	7 39.3 +59.4 35.0	7 31.1 +59.4 34.1
20°	9 04.5 +59.2 37.7	8 55.7 +59.3 36.8	8 47.1 +59.3 35.8	8 38.7 +59.3 34.9	8 30.5 +59.3 34.0
21°	10 03.7 +59.2 37.6	9 55.0 +59.2 36.6	9 46.4 +59.3 35.7	9 38.0 +59.4 34.7	9 29.8 +59.4 33.8
22°	11 02.9 +59.3 37.4	10 54.2 +59.3 36.5	10 45.7 +59.3 35.5	10 37.4 +59.3 34.6	10 29.2 +59.4 33.7
23°	12 02.2 +59.2 37.2	11 53.5 +59.3 36.3	11 45.0 +59.3 35.4	11 36.7 +59.3 34.4	11 28.6 +59.3 33.5
24°	13 01.4 +59.2 37.1	12 52.8 +59.2 36.1	12 44.3 +59.3 35.2	12 36.0 +59.4 34.3	12 27.9 +59.4 33.4
25°	14 00.6 +59.3 36.9	13 52.0 +59.3 36.0	13 43.6 +59.3 35.1	13 35.4 +59.3 34.1	13 27.3 +59.4 33.2
26°	14 59.9 +59.2 36.7	14 51.3 +59.2 35.8	14 42.9 +59.3 34.9	14 34.7 +59.3 34.0	14 26.7 +59.3 33.1
27°	15 59.1 +59.2 36.6	15 50.5 +59.3 35.7	15 42.2 +59.2 34.7	15 34.0 +59.3 33.8	15 26.0 +59.3 32.9
28°	16 58.3 +59.2 36.4	16 49.8 +59.2 35.5	16 41.4 +59.3 34.6	16 33.3 +59.3 33.7	16 25.3 +59.4 32.8
29°	17 57.5 +59.2 36.2	17 49.0 +59.2 35.3	17 40.7 +59.3 34.4	17 32.6 +59.3 33.5	17 24.7 +59.3 32.6

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°	-9 27.0 +59.4	-9 35.3 +59.4	-9 43.5 +59.5	-9 51.4 +59.5	-9 59.1 +59.6
3°	-8 27.6 +59.4	-8 35.9 +59.4	-8 44.0 +59.5	-8 51.9 +59.5	-8 59.5 +59.5
4°	-7 28.2 +59.4	-7 36.5 +59.5	-7 44.5 +59.4	-7 52.4 +59.5	-8 00.0 +59.5
5°	-6 28.8 +59.4	-6 37.0 +59.4	-6 45.1 +59.5	-6 52.9 +59.5	-7 00.5 +59.5
6°	-5 29.4 +59.5	-5 37.6 +59.5	-5 45.6 +59.5	-5 53.4 +59.5	-6 01.0 +59.6
7°	-4 29.9 +59.4	-4 38.1 +59.4	-4 46.1 +59.5	-4 53.9 +59.5	-5 01.4 +59.5
8°	-3 30.5 +59.4	-3 38.7 +59.5	-3 46.6 +59.4	-3 54.4 +59.5	-4 01.9 +59.5
9°	-2 31.1 +59.4	-2 39.2 +59.4	-2 47.2 +59.5	-2 54.9 +59.5	-3 02.4 +59.6
10°	-1 31.7 +59.4	-1 39.8 +59.5	-1 47.7 +59.5	-1 55.4 +59.5	-2 02.8 +59.5
11°	-0 32.3 +59.4	-0 40.3 +59.4	-0 48.2 +59.5	-0 55.9 +59.5	-1 03.3 +59.5
12°	0 27.1 +59.5 34.1	0 19.1 +59.4 33.2	0 11.3 +59.4 32.2	0 03.6 +59.5 31.2	-0 03.8 +59.6
13°	1 26.6 +59.4 34.0	1 18.5 +59.5 33.0	1 10.7 +59.5 32.1	1 03.1 +59.5 31.1	0 55.8 +59.5 30.1
14°	2 26.0 +59.4 33.9	2 18.0 +59.4 32.9	2 10.2 +59.5 31.9	2 02.6 +59.5 31.0	1 55.3 +59.5 30.0
15°	3 25.4 +59.4 33.7	3 17.4 +59.5 32.8	3 09.7 +59.5 31.8	3 02.1 +59.6 30.8	2 54.8 +59.5 29.9
16°	4 24.8 +59.4 33.6	4 16.9 +59.4 32.6	4 09.2 +59.4 31.7	4 01.7 +59.5 30.7	3 54.3 +59.6 29.8
17°	5 24.2 +59.4 33.4	5 16.3 +59.5 32.5	5 08.6 +59.5 31.5	5 01.2 +59.5 30.6	4 53.9 +59.5 29.6
18°	6 23.6 +59.5 33.3	6 15.8 +59.4 32.3	6 08.1 +59.5 31.4	6 00.7 +59.5 30.4	5 53.4 +59.5 29.5
19°	7 23.1 +59.4 33.2	7 15.2 +59.5 32.2	7 07.6 +59.5 31.3	7 00.2 +59.4 30.3	6 52.9 +59.6 29.4
20°	8 22.5 +59.4 33.0	8 14.7 +59.4 32.1	8 07.1 +59.4 31.1	7 59.6 +59.5 30.2	7 52.5 +59.5 29.2
21°	9 21.9 +59.4 32.9	9 14.1 +59.4 31.9	9 06.5 +59.5 31.0	8 59.1 +59.5 30.1	8 52.0 +59.5 29.1
22°	10 21.3 +59.4 32.7	10 13.5 +59.5 31.8	10 06.0 +59.4 30.9	9 58.6 +59.5 29.9	9 51.5 +59.5 29.0
23°	11 20.7 +59.4 32.6	11 13.0 +59.4 31.7	11 05.4 +59.5 30.7	10 58.1 +59.5 29.8	10 51.0 +59.5 28.9
24°	12 20.1 +59.4 32.4	12 12.4 +59.4 31.5	12 04.9 +59.4 30.6	11 57.6 +59.5 29.7	11 50.5 +59.5 28.7
25°	13 19.5 +59.3 32.3	13 11.8 +59.4 31.4	13 04.3 +59.5 30.4	12 57.1 +59.5 29.5	12 50.0 +59.5 28.6
26°	14 18.8 +59.4 32.1	14 11.2 +59.4 31.2	14 03.8 +59.4 30.3	13 56.6 +59.4 29.4	13 49.5 +59.5 28.5
27°	15 18.2 +59.4 32.0	15 10.6 +59.4 31.1	15 03.2 +59.5 30.2	14 56.0 +59.5 29.3	14 49.0 +59.5 28.3
28°	16 17.6 +59.4 31.8	16 10.0 +59.4 30.9	16 02.7 +59.4 30.0	15 55.5 +59.5 29.1	15 48.5 +59.5 28.2
29°	17 17.0 +59.3 31.7	17 09.4 +59.4 30.8	17 02.1 +59.4 29.9	16 55.0 +59.4 29.0	16 48.0 +59.5 28.1

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Latitude 76°

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°	-9 07.0 +59.6	-9 14.2 +59.6	-9 21.2 +59.6	-9 28.0 +59.6	-9 34.6 +59.7
4°	-8 07.4 +59.5	-8 14.6 +59.5	-8 21.6 +59.6	-8 28.4 +59.6	-8 34.9 +59.6
5°	-7 07.9 +59.6	-7 15.1 +59.6	-7 22.0 +59.6	-7 28.8 +59.7	-7 35.3 +59.7
6°	-6 08.3 +59.5	-6 15.5 +59.6	-6 22.4 +59.6	-6 29.1 +59.6	-6 35.6 +59.7
7°	-5 08.8 +59.6	-5 15.9 +59.6	-5 22.8 +59.6	-5 29.5 +59.6	-5 35.9 +59.6
8°	-4 09.2 +59.5	-4 16.3 +59.6	-4 23.2 +59.6	-4 29.9 +59.7	-4 36.3 +59.7
9°	-3 09.7 +59.6	-3 16.7 +59.5	-3 23.6 +59.6	-3 30.2 +59.6	-3 36.6 +59.6
10°	-2 10.1 +59.6	-2 17.2 +59.6	-2 24.0 +59.6	-2 30.6 +59.7	-2 37.0 +59.7
11°	-1 10.5 +59.5	-1 17.6 +59.6	-1 24.4 +59.6	-1 30.9 +59.6	-1 37.3 +59.7
12°	-0 11.0 +59.6	-0 18.0 +59.6	-0 24.8 +59.7	-0 31.3 +59.6	-0 37.6 +59.6
13°	0 48.6 +59.5 29.2	0 41.6 +59.6 28.2	0 34.9 +59.6 27.2	0 28.3 +59.7 26.3	0 22.0 +59.7 25.3
14°	1 48.1 +59.6 29.0	1 41.2 +59.6 28.1	1 34.5 +59.6 27.1	1 28.0 +59.6 26.1	1 21.7 +59.6 25.2
15°	2 47.7 +59.5 28.9	2 40.8 +59.6 28.0	2 34.1 +59.6 27.0	2 27.6 +59.6 26.0	2 21.3 +59.7 25.1
16°	3 47.2 +59.6 28.8	3 40.4 +59.5 27.8	3 33.7 +59.6 26.9	3 27.2 +59.7 25.9	3 21.0 +59.7 25.0
17°	4 46.8 +59.6 28.7	4 39.9 +59.6 27.7	4 33.3 +59.6 26.8	4 26.9 +59.6 25.8	4 20.7 +59.6 24.9
18°	5 46.4 +59.5 28.6	5 39.5 +59.6 27.6	5 32.9 +59.6 26.7	5 26.5 +59.6 25.7	5 20.3 +59.7 24.8
19°	6 45.9 +59.6 28.4	6 39.1 +59.6 27.5	6 32.5 +59.6 26.5	6 26.1 +59.7 25.6	6 20.0 +59.6 24.6
20°	7 45.5 +59.5 28.3	7 38.7 +59.6 27.4	7 32.1 +59.6 26.4	7 25.8 +59.6 25.5	7 19.6 +59.7 24.5
21°	8 45.0 +59.6 28.2	8 38.3 +59.5 27.2	8 31.7 +59.6 26.3	8 25.4 +59.6 25.4	8 19.3 +59.6 24.4
22°	9 44.6 +59.5 28.1	9 37.8 +59.6 27.1	9 31.3 +59.6 26.2	9 25.0 +59.7 25.3	9 18.9 +59.7 24.3
23°	10 44.1 +59.6 27.9	10 37.4 +59.6 27.0	10 30.9 +59.6 26.1	10 24.7 +59.6 25.1	10 18.6 +59.6 24.2
24°	11 43.7 +59.5 27.8	11 37.0 +59.5 26.9	11 30.5 +59.6 26.0	11 24.3 +59.6 25.0	11 18.2 +59.7 24.1
25°	12 43.2 +59.5 27.7	12 36.5 +59.6 26.8	12 30.1 +59.6 25.8	12 23.9 +59.6 24.9	12 17.9 +59.6 24.0
26°	13 42.7 +59.6 27.6	13 36.1 +59.6 26.6	13 29.7 +59.6 25.7	13 23.5 +59.6 24.8	13 17.5 +59.7 23.9
27°	14 42.3 +59.5 27.4	14 35.7 +59.5 26.5	14 29.3 +59.6 25.6	14 23.1 +59.6 24.7	14 17.2 +59.6 23.8
28°	15 41.8 +59.5 27.3	15 35.2 +59.6 26.4	15 28.9 +59.6 25.5	15 22.7 +59.6 24.6	15 16.8 +59.6 23.7
29°	16 41.3 +59.5 27.2	16 34.8 +59.5 26.3	16 28.5 +59.5 25.4	16 22.3 +59.7 24.4	16 16.4 +59.7 23.5

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°	-9 40.9 +59.7	-9 47.0 +59.7	-9 52.9 +59.8	-9 58.5 +59.8	
4°	-8 41.2 +59.7	-8 47.3 +59.7	-8 53.1 +59.7	-8 58.7 +59.7	-9 04.1 +59.7
5°	-7 41.5 +59.6	-7 47.6 +59.7	-7 53.4 +59.7	-7 59.0 +59.7	-8 04.4 +59.8
6°	-6 41.9 +59.7	-6 47.9 +59.7	-6 53.7 +59.7	-6 59.3 +59.8	-7 04.6 +59.8
7°	-5 42.2 +59.7	-5 48.2 +59.7	-5 54.0 +59.8	-5 59.5 +59.7	-6 04.8 +59.8
8°	-4 42.5 +59.7	-4 48.5 +59.7	-4 54.2 +59.7	-4 59.8 +59.8	-5 05.0 +59.7
9°	-3 42.8 +59.7	-3 48.8 +59.7	-3 54.5 +59.7	-4 00.0 +59.8	-4 05.3 +59.8
10°	-2 43.1 +59.7	-2 49.1 +59.7	-2 54.8 +59.8	-3 00.2 +59.7	-3 05.5 +59.8
11°	-1 43.4 +59.6	-1 49.4 +59.8	-1 55.0 +59.7	-2 00.5 +59.8	-2 05.7 +59.8
12°	-0 43.8 +59.7	-0 49.6 +59.7	-0 55.3 +59.7	-1 00.7 +59.7	-1 05.9 +59.7
13°	0 15.9 +59.7 24.3	0 10.1 +59.7 23.3	0 04.4 +59.8 22.4	-0 01.0 +59.8	-0 06.2 +59.8
14°	1 15.6 +59.7 24.2	1 09.8 +59.7 23.2	1 04.2 +59.7 22.3	0 58.8 +59.7 21.3	0 53.6 +59.8 20.4
15°	2 15.3 +59.7 24.1	2 09.5 +59.7 23.2	2 03.9 +59.7 22.2	1 58.5 +59.8 21.2	1 53.4 +59.7 20.3
16°	3 15.0 +59.7 24.0	3 09.2 +59.7 23.1	3 03.6 +59.7 22.1	2 58.3 +59.7 21.1	2 53.1 +59.8 20.2
17°	4 14.7 +59.6 23.9	4 08.9 +59.7 23.0	4 03.3 +59.8 22.0	3 58.0 +59.8 21.0	3 52.9 +59.8 20.1
18°	5 14.3 +59.7 23.8	5 08.6 +59.7 22.9	5 03.1 +59.7 21.9	4 57.8 +59.7 21.0	4 52.7 +59.8 20.0
19°	6 14.0 +59.7 23.7	6 08.3 +59.7 22.8	6 02.8 +59.7 21.8	5 57.5 +59.8 20.9	5 52.5 +59.7 19.9
20°	7 13.7 +59.7 23.6	7 08.0 +59.7 22.7	7 02.5 +59.8 21.7	6 57.3 +59.7 20.8	6 52.2 +59.8 19.8
21°	8 13.4 +59.7 23.5	8 07.7 +59.7 22.6	8 02.3 +59.7 21.6	7 57.0 +59.8 20.7	7 52.0 +59.8 19.7
22°	9 13.1 +59.6 23.4	9 07.4 +59.7 22.5	9 02.0 +59.7 21.5	8 56.8 +59.7 20.6	8 51.8 +59.7 19.7
23°	10 12.7 +59.7 23.3	10 07.1 +59.7 22.4	10 01.7 +59.7 21.4	9 56.5 +59.8 20.5	9 51.5 +59.8 19.6
24°	11 12.4 +59.7 23.2	11 06.8 +59.7 22.3	11 01.4 +59.7 21.3	10 56.3 +59.7 20.4	10 51.3 +59.8 19.5
25°	12 12.1 +59.7 23.1	12 06.5 +59.7 22.1	12 01.1 +59.8 21.2	11 56.0 +59.7 20.3	11 51.1 +59.7 19.4
26°	13 11.8 +59.6 23.0	13 06.2 +59.7 22.0	13 00.9 +59.7 21.1	12 55.7 +59.8 20.2	12 50.8 +59.8 19.3
27°	14 11.4 +59.7 22.9	14 05.9 +59.7 21.9	14 00.6 +59.7 21.0	13 55.5 +59.7 20.1	13 50.6 +59.8 19.2
28°	15 11.1 +59.7 22.7	15 05.6 +59.7 21.8	15 00.3 +59.7 20.9	14 55.2 +59.8 20.0	14 50.4 +59.7 19.1
29°	16 10.8 +59.6 22.6	16 05.3 +59.7 21.7	16 00.0 +59.7 20.8	15 55.0 +59.7 19.9	15 50.1 +59.8 19.0

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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°	-9 09.3 +59.8	-9 14.2 +59.9	-9 18.8 +59.8	-9 23.2 +59.8	-9 27.4 +59.9
5°	-8 09.5 +59.8	-8 14.3 +59.8	-8 19.0 +59.8	-8 23.4 +59.9	-8 27.5 +59.8
6°	-7 09.7 +59.8	-7 14.5 +59.8	-7 19.2 +59.9	-7 23.5 +59.8	-7 27.7 +59.9
7°	-6 09.9 +59.8	-6 14.7 +59.8	-6 19.3 +59.8	-6 23.7 +59.9	-6 27.8 +59.9
8°	-5 10.1 +59.8	-5 14.9 +59.8	-5 19.5 +59.8	-5 23.8 +59.8	-5 27.9 +59.8
9°	-4 10.3 +59.8	-4 15.1 +59.8	-4 19.7 +59.9	-4 24.0 +59.9	-4 28.1 +59.9
10°	-3 10.5 +59.8	-3 15.3 +59.8	-3 19.8 +59.8	-3 24.1 +59.8	-3 28.2 +59.9
11°	-2 10.7 +59.8	-2 15.5 +59.8	-2 20.0 +59.8	-2 24.3 +59.9	-2 28.3 +59.8
12°	-1 10.9 +59.8	-1 15.7 +59.9	-1 20.2 +59.9	-1 24.4 +59.8	-1 28.5 +59.9
13°	-0 11.1 +59.8	-0 15.8 +59.8	-0 20.3 +59.8	-0 24.6 +59.9	-0 28.6 +59.9
14°	0 48.7 +59.8 19.4	0 44.0 +59.8 18.4	0 39.5 +59.8 17.4	0 35.3 +59.8 16.5	0 31.3 +59.8 15.5
15°	1 48.5 +59.8 19.3	1 43.8 +59.8 18.3	1 39.3 +59.9 17.4	1 35.1 +59.9 16.4	1 31.1 +59.9 15.4
16°	2 48.3 +59.7 19.2	2 43.6 +59.8 18.3	2 39.2 +59.8 17.3	2 35.0 +59.8 16.3	2 31.0 +59.9 15.4
17°	3 48.0 +59.8 19.1	3 43.4 +59.8 18.2	3 39.0 +59.8 17.2	3 34.8 +59.9 16.3	3 30.9 +59.8 15.3
18°	4 47.8 +59.8 19.1	4 43.2 +59.8 18.1	4 38.8 +59.9 17.1	4 34.7 +59.8 16.2	4 30.7 +59.9 15.2
19°	5 47.6 +59.8 19.0	5 43.0 +59.8 18.0	5 38.7 +59.8 17.1	5 34.5 +59.9 16.1	5 30.6 +59.9 15.2
20°	6 47.4 +59.8 18.9	6 42.8 +59.9 17.9	6 38.5 +59.8 17.0	6 34.4 +59.8 16.1	6 30.5 +59.8 15.1
21°	7 47.2 +59.8 18.8	7 42.7 +59.8 17.9	7 38.3 +59.8 16.9	7 34.2 +59.8 16.0	7 30.3 +59.9 15.0
22°	8 47.0 +59.8 18.7	8 42.5 +59.8 17.8	8 38.1 +59.9 16.8	8 34.0 +59.9 15.9	8 30.2 +59.8 15.0
23°	9 46.8 +59.8 18.6	9 42.3 +59.8 17.7	9 38.0 +59.8 16.8	9 33.9 +59.8 15.8	9 30.0 +59.9 14.9
24°	10 46.6 +59.8 18.5	10 42.1 +59.8 17.6	10 37.8 +59.8 16.7	10 33.7 +59.9 15.8	10 29.9 +59.9 14.8
25°	11 46.4 +59.8 18.5	11 41.9 +59.8 17.5	11 37.6 +59.8 16.6	11 33.6 +59.8 15.7	11 29.8 +59.8 14.8
26°	12 46.2 +59.7 18.4	12 41.7 +59.8 17.5	12 37.4 +59.9 16.5	12 33.4 +59.9 15.6	12 29.6 +59.9 14.7
27°	13 45.9 +59.8 18.3	13 41.5 +59.8 17.4	13 37.3 +59.8 16.5	13 33.3 +59.8 15.5	13 29.5 +59.8 14.6
28°	14 45.7 +59.8 18.2	14 41.3 +59.8 17.3	14 37.1 +59.8 16.4	14 33.1 +59.8 15.5	14 29.3 +59.9 14.6
29°	15 45.5 +59.8 18.1	15 41.1 +59.8 17.2	15 36.9 +59.8 16.3	15 32.9 +59.9 15.4	15 29.2 +59.9 14.5

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°	-9 31.3 +59.9	-9 35.0 +59.9	-9 38.4 +59.9	-9 41.6 +59.9	-9 44.5 +59.9
5°	-8 31.4 +59.8	-8 35.1 +59.9	-8 38.5 +59.9	-8 41.7 +59.9	-8 44.6 +59.9
6°	-7 31.6 +59.9	-7 35.2 +59.9	-7 38.6 +59.9	-7 41.8 +60.0	-7 44.7 +60.0
7°	-6 31.7 +59.9	-6 35.3 +59.9	-6 38.7 +59.9	-6 41.8 +59.9	-6 44.7 +59.9
8°	-5 31.8 +59.9	-5 35.4 +59.9	-5 38.8 +59.9	-5 41.9 +59.9	-5 44.8 +59.9
9°	-4 31.9 +59.9	-4 35.5 +59.9	-4 38.9 +59.9	-4 42.0 +59.9	-4 44.9 +60.0
10°	-3 32.0 +59.9	-3 35.6 +59.9	-3 39.0 +59.9	-3 42.1 +60.0	-3 44.9 +59.9
11°	-2 32.1 +59.8	-2 35.7 +59.9	-2 39.1 +60.0	-2 42.1 +59.9	-2 45.0 +60.0
12°	-1 32.3 +59.9	-1 35.8 +59.9	-1 39.1 +59.9	-1 42.2 +59.9	-1 45.0 +59.9
13°	-0 32.4 +59.9	-0 35.9 +59.9	-0 39.2 +59.9	-0 42.3 +59.9	-0 45.1 +59.9
14°	0 27.5 +59.9 14.5	0 24.0 +59.9 13.6	0 20.7 +59.9 12.6	0 17.6 +60.0 11.6	0 14.8 +60.0 10.7
15°	1 27.4 +59.9 14.5	1 23.9 +59.9 13.5	1 20.6 +59.9 12.6	1 17.6 +59.9 11.6	1 14.8 +59.9 10.6
16°	2 27.3 +59.8 14.4	2 23.8 +59.9 13.5	2 20.5 +59.9 12.5	2 17.5 +59.9 11.5	2 14.7 +59.9 10.6
17°	3 27.1 +59.9 14.4	3 23.7 +59.9 13.4	3 20.4 +59.9 12.4	3 17.4 +59.9 11.5	3 14.6 +60.0 10.5
18°	4 27.0 +59.9 14.3	4 23.6 +59.9 13.3	4 20.3 +59.9 12.4	4 17.3 +60.0 11.4	4 14.6 +59.9 10.5
19°	5 26.9 +59.9 14.2	5 23.5 +59.9 13.3	5 20.2 +59.9 12.3	5 17.3 +59.9 11.4	5 14.5 +59.9 10.4
20°	6 26.8 +59.9 14.2	6 23.4 +59.8 13.2	6 20.1 +60.0 12.3	6 17.2 +59.9 11.3	6 14.4 +60.0 10.4
21°	7 26.7 +59.8 14.1	7 23.2 +59.9 13.2	7 20.1 +59.9 12.2	7 17.1 +59.9 11.3	7 14.4 +59.9 10.3
22°	8 26.5 +59.9 14.0	8 23.1 +59.9 13.1	8 20.0 +59.9 12.2	8 17.0 +59.9 11.2	8 14.3 +59.9 10.3
23°	9 26.4 +59.9 14.0	9 23.0 +59.9 13.0	9 19.9 +59.9 12.1	9 16.9 +60.0 11.2	9 14.2 +60.0 10.3
24°	10 26.3 +59.9 13.9	10 22.9 +59.9 13.0	10 19.8 +59.9 12.1	10 16.9 +59.9 11.1	10 14.2 +59.9 10.2
25°	11 26.2 +59.9 13.8	11 22.8 +59.9 12.9	11 19.7 +59.9 12.0	11 16.8 +59.9 11.1	11 14.1 +59.9 10.2
26°	12 26.1 +59.8 13.8	12 22.7 +59.9 12.9	12 19.6 +59.9 11.9	12 16.7 +59.9 11.0	12 14.0 +60.0 10.1
27°	13 25.9 +59.9 13.7	13 22.6 +59.9 12.8	13 19.5 +59.9 11.9	13 16.6 +59.9 11.0	13 14.0 +59.9 10.1
28°	14 25.8 +59.9 13.6	14 22.5 +59.9 12.7	14 19.4 +59.9 11.8	14 16.5 +60.0 10.9	14 13.9 +59.9 10.0
29°	15 25.7 +59.9 13.6	15 22.4 +59.9 12.7	15 19.3 +59.9 11.8	15 16.5 +59.9 10.9	15 13.8 +60.0 10.0

Latitude 76°

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°	-9 47.2	+59.9	-9 49.6	+59.9	-9 51.8	+60.0	-9 53.7	+60.0	-9 55.4	+60.0
5°	-8 47.3	+60.0	-8 49.7	+60.0	-8 51.8	+59.9	-8 53.7	+59.9	-8 55.4	+60.0
6°	-7 47.3	+59.9	-7 49.7	+59.9	-7 51.9	+60.0	-7 53.8	+60.0	-7 55.4	+60.0
7°	-6 47.4	+60.0	-6 49.8	+60.0	-6 51.9	+60.0	-6 53.8	+60.0	-6 55.4	+59.9
8°	-5 47.4	+59.9	-5 49.8	+60.0	-5 51.9	+59.9	-5 53.8	+59.9	-5 55.5	+60.0
9°	-4 47.5	+60.0	-4 49.8	+59.9	-4 52.0	+60.0	-4 53.9	+60.0	-4 55.5	+60.0
10°	-3 47.5	+59.9	-3 49.9	+60.0	-3 52.0	+60.0	-3 53.9	+60.0	-3 55.5	+60.0
11°	-2 47.6	+60.0	-2 49.9	+59.9	-2 52.0	+59.9	-2 53.9	+60.0	-2 55.5	+60.0
12°	-1 47.6	+59.9	-1 50.0	+60.0	-1 52.1	+60.0	-1 53.9	+59.9	-1 55.5	+59.9
13°	-0 47.7	+60.0	-0 50.0	+59.9	-0 52.1	+60.0	-0 54.0	+60.0	-0 55.6	+60.0
14°	0 12.3	+59.9 9.7	0 09.9	+60.0 8.7	0 07.9	+59.9 7.8	0 06.0	+60.0 6.8	0 04.4	+60.0 5.8
15°	1 12.2	+60.0 9.7	1 09.9	+59.9 8.7	1 07.8	+60.0 7.7	1 06.0	+60.0 6.8	1 04.4	+60.0 5.8
16°	2 12.2	+59.9 9.6	2 09.8	+60.0 8.7	2 07.8	+60.0 7.7	2 06.0	+59.9 6.7	2 04.4	+60.0 5.8
17°	3 12.1	+59.9 9.6	3 09.8	+60.0 8.6	3 07.8	+59.9 7.7	3 05.9	+60.0 6.7	3 04.4	+59.9 5.7
18°	4 12.0	+60.0 9.5	4 09.8	+59.9 8.6	4 07.7	+60.0 7.6	4 05.9	+60.0 6.7	4 04.3	+60.0 5.7
19°	5 12.0	+59.9 9.5	5 09.7	+60.0 8.5	5 07.7	+59.9 7.6	5 05.9	+60.0 6.6	5 04.3	+60.0 5.7
20°	6 11.9	+60.0 9.4	6 09.7	+59.9 8.5	6 07.6	+60.0 7.6	6 05.9	+59.9 6.6	6 04.3	+60.0 5.7
21°	7 11.9	+59.9 9.4	7 09.6	+60.0 8.5	7 07.6	+60.0 7.5	7 05.8	+60.0 6.6	7 04.3	+60.0 5.6
22°	8 11.8	+60.0 9.4	8 09.6	+59.9 8.4	8 07.6	+59.9 7.5	8 05.8	+60.0 6.6	8 04.3	+59.9 5.6
23°	9 11.8	+59.9 9.3	9 09.5	+60.0 8.4	9 07.5	+60.0 7.5	9 05.8	+60.0 6.5	9 04.2	+60.0 5.6
24°	10 11.7	+60.0 9.3	10 09.5	+60.0 8.3	10 07.5	+60.0 7.4	10 05.8	+59.9 6.5	10 04.2	+60.0 5.6
25°	11 11.7	+59.9 9.2	11 09.5	+59.9 8.3	11 07.5	+59.9 7.4	11 05.7	+60.0 6.5	11 04.2	+60.0 5.5
26°	12 11.6	+60.0 9.2	12 09.4	+60.0 8.3	12 07.4	+60.0 7.4	12 05.7	+60.0 6.4	12 04.2	+60.0 5.5
27°	13 11.6	+59.9 9.1	13 09.4	+59.9 8.2	13 07.4	+60.0 7.3	13 05.7	+59.9 6.4	13 04.2	+59.9 5.5
28°	14 11.5	+59.9 9.1	14 09.3	+60.0 8.2	14 07.4	+59.9 7.3	14 05.6	+60.0 6.4	14 04.1	+60.0 5.5
29°	15 11.4	+60.0 9.1	15 09.3	+59.9 8.1	15 07.3	+60.0 7.2	15 05.6	+60.0 6.3	15 04.1	+60.0 5.4

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°	-9 56.8	+60.0	-9 57.9	+59.9	-9 58.8	+59.9	-9 59.5	+60.0	-9 59.9	+60.0
5°	-8 56.8	+60.0	-8 58.0	+60.0	-8 58.9	+60.0	-8 59.5	+60.0	-8 59.9	+60.0
6°	-7 56.8	+60.0	-7 58.0	+60.0	-7 58.9	+60.0	-7 59.5	+60.0	-7 59.9	+60.0
7°	-6 56.8	+60.0	-6 58.0	+60.0	-6 58.9	+60.0	-6 59.5	+60.0	-6 59.9	+60.0
8°	-5 56.8	+59.9	-5 58.0	+60.0	-5 58.9	+60.0	-5 59.5	+60.0	-5 59.9	+60.0
9°	-4 56.9	+60.0	-4 58.0	+60.0	-4 58.9	+60.0	-4 59.5	+60.0	-4 59.9	+60.0
10°	-3 56.9	+60.0	-3 58.0	+60.0	-3 58.9	+60.0	-3 59.5	+60.0	-3 59.9	+60.0
11°	-2 56.9	+60.0	-2 58.0	+60.0	-2 58.9	+60.0	-2 59.5	+60.0	-2 59.9	+60.0
12°	-1 56.9	+60.0	-1 58.0	+60.0	-1 58.9	+60.0	-1 59.5	+60.0	-1 59.9	+60.0
13°	-0 56.9	+60.0	-0 58.0	+60.0	-0 58.9	+60.0	-0 59.5	+60.0	-0 59.9	+60.0
14°	0 03.1	+60.0 4.9	0 02.0	+60.0 3.9	0 01.1	+60.0 2.9	0 00.5	+60.0 1.9	0 00.1	+60.0 1.0
15°	1 03.1	+59.9 4.8	1 02.0	+59.9 3.9	1 01.1	+60.0 2.9	1 00.5	+60.0 1.9	1 00.1	+60.0 1.0
16°	2 03.0	+60.0 4.8	2 01.9	+60.0 3.8	2 01.1	+60.0 2.9	2 00.5	+60.0 1.9	2 00.1	+60.0 1.0
17°	3 03.0	+60.0 4.8	3 01.9	+60.0 3.8	3 01.1	+60.0 2.9	3 00.5	+60.0 1.9	3 00.1	+60.0 1.0
18°	4 03.0	+60.0 4.8	4 01.9	+60.0 3.8	4 01.1	+60.0 2.9	4 00.5	+60.0 1.9	4 00.1	+60.0 1.0
19°	5 03.0	+60.0 4.7	5 01.9	+60.0 3.8	5 01.1	+60.0 2.8	5 00.5	+60.0 1.9	5 00.1	+60.0 0.9
20°	6 03.0	+60.0 4.7	6 01.9	+60.0 3.8	6 01.1	+60.0 2.8	6 00.5	+60.0 1.9	6 00.1	+60.0 0.9
21°	7 03.0	+60.0 4.7	7 01.9	+60.0 3.8	7 01.1	+60.0 2.8	7 00.5	+60.0 1.9	7 00.1	+60.0 0.9
22°	8 03.0	+59.9 4.7	8 01.9	+60.0 3.7	8 01.1	+60.0 2.8	8 00.5	+60.0 1.9	8 00.1	+60.0 0.9
23°	9 02.9	+60.0 4.7	9 01.9	+60.0 3.7	9 01.1	+60.0 2.8	9 00.5	+60.0 1.9	9 00.1	+60.0 0.9
24°	10 02.9	+60.0 4.6	10 01.9	+60.0 3.7	10 01.1	+60.0 2.8	10 00.5	+60.0 1.9	10 00.1	+60.0 0.9
25°	11 02.9	+60.0 4.6	11 01.9	+60.0 3.7	11 01.1	+59.9 2.8	11 00.5	+60.0 1.8	11 00.1	+60.0 0.9
26°	12 02.9	+60.0 4.6	12 01.9	+60.0 3.7	12 01.0	+60.0 2.8	12 00.5	+60.0 1.8	12 00.1	+60.0 0.9
27°	13 02.9	+60.0 4.6	13 01.9	+59.9 3.7	13 01.0	+60.0 2.7	13 00.5	+60.0 1.8	13 00.1	+60.0 0.9
28°	14 02.9	+60.0 4.5	14 01.8	+60.0 3.6	14 01.0	+60.0 2.7	14 00.5	+60.0 1.8	14 00.1	+60.0 0.9
29°	15 02.9	+60.0 4.5	15 01.8	+60.0 3.6	15 01.0	+60.0 2.7	15 00.5	+60.0 1.8	15 00.1	+60.0 0.9

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Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	13 00.0 +60.0 180.0	12 59.9 +60.0 179.0	12 59.5 +60.0 177.9	12 58.9 +60.0 176.9	12 58.1 +60.0 175.9
1°	14 00.0 +60.0 180.0	13 59.9 +60.0 179.0	13 59.5 +60.0 177.9	13 58.9 +60.0 176.9	13 58.1 +60.0 175.9
2°	15 00.0 +60.0 180.0	14 59.9 +60.0 179.0	14 59.5 +60.0 177.9	14 58.9 +60.0 176.9	14 58.1 +59.9 175.9
3°	16 00.0 +60.0 180.0	15 59.9 +60.0 179.0	15 59.5 +60.0 177.9	15 58.9 +60.0 176.9	15 58.0 +60.0 175.8
4°	17 00.0 +60.0 180.0	16 59.9 +60.0 179.0	16 59.5 +60.0 177.9	16 58.9 +60.0 176.9	16 58.0 +60.0 175.8
5°	18 00.0 +60.0 180.0	17 59.9 +60.0 179.0	17 59.5 +60.0 177.9	17 58.9 +60.0 176.9	17 58.0 +60.0 175.8
6°	19 00.0 +60.0 180.0	18 59.9 +60.0 178.9	18 59.5 +60.0 177.9	18 58.9 +60.0 176.8	18 58.0 +60.0 175.8
7°	20 00.0 +60.0 180.0	19 59.9 +60.0 178.9	19 59.5 +60.0 177.9	19 58.9 +60.0 176.8	19 58.0 +60.0 175.8
8°	21 00.0 +60.0 180.0	20 59.9 +60.0 178.9	20 59.5 +60.0 177.9	20 58.9 +60.0 176.8	20 58.0 +60.0 175.8
9°	22 00.0 +60.0 180.0	21 59.9 +60.0 178.9	21 59.5 +60.0 177.9	21 58.9 +60.0 176.8	21 58.0 +60.0 175.7
10°	23 00.0 +60.0 180.0	22 59.9 +60.0 178.9	22 59.5 +60.0 177.9	22 58.9 +60.0 176.8	22 58.0 +60.0 175.7
11°	24 00.0 +60.0 180.0	23 59.9 +60.0 178.9	23 59.5 +60.0 177.9	23 58.9 +60.0 176.8	23 58.0 +60.0 175.7
12°	25 00.0 +60.0 180.0	24 59.9 +60.0 178.9	24 59.5 +60.0 177.8	24 58.9 +60.0 176.8	24 58.0 +60.0 175.7
13°	26 00.0 +60.0 180.0	25 59.9 +60.0 178.9	25 59.5 +60.0 177.8	25 58.9 +59.9 176.7	25 58.0 +59.9 175.7
14°	27 00.0 +60.0 180.0	26 59.9 +60.0 178.9	26 59.5 +60.0 177.8	26 58.8 +60.0 176.7	26 57.9 +60.0 175.6
15°	28 00.0 +60.0 180.0	27 59.9 +60.0 178.9	27 59.5 +60.0 177.8	27 58.8 +60.0 176.7	27 57.9 +60.0 175.6
16°	29 00.0 +60.0 180.0	28 59.9 +60.0 178.9	28 59.5 +60.0 177.8	28 58.8 +60.0 176.7	28 57.9 +60.0 175.6
17°	30 00.0 +60.0 180.0	29 59.9 +60.0 178.9	29 59.5 +60.0 177.8	29 58.8 +60.0 176.7	29 57.9 +60.0 175.6
18°	31 00.0 +60.0 180.0	30 59.9 +60.0 178.9	30 59.5 +60.0 177.8	30 58.8 +60.0 176.7	30 57.9 +60.0 175.6
19°	32 00.0 +60.0 180.0	31 59.9 +60.0 178.9	31 59.5 +60.0 177.8	31 58.8 +60.0 176.7	31 57.9 +60.0 175.5
20°	33 00.0 +60.0 180.0	32 59.9 +60.0 178.9	32 59.5 +60.0 177.8	32 58.8 +60.0 176.6	32 57.9 +60.0 175.5
21°	34 00.0 +60.0 180.0	33 59.9 +60.0 178.9	33 59.5 +60.0 177.7	33 58.8 +60.0 176.6	33 57.9 +60.0 175.5
22°	35 00.0 +60.0 180.0	34 59.9 +60.0 178.9	34 59.5 +60.0 177.7	34 58.8 +60.0 176.6	34 57.9 +60.0 175.5
23°	36 00.0 +60.0 180.0	35 59.9 +60.0 178.9	35 59.5 +60.0 177.7	35 58.8 +60.0 176.6	35 57.9 +59.9 175.4
24°	37 00.0 +60.0 180.0	36 59.9 +60.0 178.9	36 59.5 +60.0 177.7	36 58.8 +60.0 176.6	36 57.8 +60.0 175.4
25°	38 00.0 +60.0 180.0	37 59.9 +60.0 178.8	37 59.5 +60.0 177.7	37 58.8 +60.0 176.6	37 57.8 +60.0 175.4
26°	39 00.0 +60.0 180.0	38 59.9 +60.0 178.8	38 59.5 +60.0 177.7	38 58.8 +60.0 176.5	38 57.8 +60.0 175.4
27°	40 00.0 +60.0 180.0	39 59.9 +60.0 178.8	39 59.5 +59.9 177.7	39 58.8 +60.0 176.5	39 57.8 +60.0 175.3
28°	41 00.0 +60.0 180.0	40 59.9 +60.0 178.8	40 59.4 +60.0 177.7	40 58.8 +60.0 176.5	40 57.8 +60.0 175.3
29°	42 00.0 +60.0 180.0	41 59.9 +60.0 178.8	41 59.4 +60.0 177.6	41 58.8 +59.9 176.5	41 57.8 +60.0 175.3

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°	12 57.0 +60.0 174.9	12 55.7 +59.9 173.8	12 54.1 +60.0 172.8	12 52.3 +59.9 171.8	12 50.2 +60.0 170.8
1°	13 57.0 +60.0 174.8	13 55.6 +60.0 173.8	13 54.1 +59.9 172.8	13 52.2 +60.0 171.8	13 50.2 +60.0 170.7
2°	14 57.0 +59.9 174.8	14 55.6 +60.0 173.8	14 54.0 +60.0 172.8	14 52.2 +60.0 171.7	14 50.2 +59.9 170.7
3°	15 56.9 +60.0 174.8	15 55.6 +60.0 173.8	15 54.0 +60.0 172.7	15 52.2 +60.0 171.7	15 50.1 +60.0 170.7
4°	16 56.9 +60.0 174.8	16 55.6 +60.0 173.7	16 54.0 +60.0 172.7	16 52.2 +59.9 171.7	16 50.1 +59.9 170.6
5°	17 56.9 +60.0 174.8	17 55.6 +59.9 173.7	17 54.0 +59.9 172.7	17 52.1 +60.0 171.6	17 50.0 +60.0 170.6
6°	18 56.9 +60.0 174.7	18 55.5 +60.0 173.7	18 53.9 +60.0 172.6	18 52.1 +60.0 171.6	18 50.0 +59.9 170.5
7°	19 56.9 +60.0 174.7	19 55.5 +60.0 173.7	19 53.9 +60.0 172.6	19 52.1 +59.9 171.6	19 49.9 +60.0 170.5
8°	20 56.9 +60.0 174.7	20 55.5 +60.0 173.6	20 53.9 +60.0 172.6	20 52.0 +60.0 171.5	20 49.9 +60.0 170.5
9°	21 56.9 +60.0 174.7	21 55.5 +60.0 173.6	21 53.9 +59.9 172.5	21 52.0 +60.0 171.5	21 49.9 +59.9 170.4
10°	22 56.9 +59.9 174.7	22 55.5 +59.9 173.6	22 53.8 +60.0 172.5	22 52.0 +59.9 171.4	22 49.8 +60.0 170.4
11°	23 56.8 +60.0 174.6	23 55.4 +60.0 173.6	23 53.8 +60.0 172.5	23 51.9 +60.0 171.4	23 49.8 +59.9 170.3
12°	24 56.8 +60.0 174.6	24 55.4 +60.0 173.5	24 53.8 +60.0 172.4	24 51.9 +59.9 171.4	24 49.7 +60.0 170.3
13°	25 56.8 +60.0 174.6	25 55.4 +60.0 173.5	25 53.8 +59.9 172.4	25 51.8 +60.0 171.3	25 49.7 +59.9 170.3
14°	26 56.8 +60.0 174.6	26 55.4 +60.0 173.5	26 53.7 +60.0 172.4	26 51.8 +60.0 171.3	26 49.6 +60.0 170.2
15°	27 56.8 +60.0 174.5	27 55.4 +59.9 173.4	27 53.7 +60.0 172.3	27 51.8 +59.9 171.3	27 49.6 +59.9 170.2
16°	28 56.8 +60.0 174.5	28 55.3 +60.0 173.4	28 53.7 +59.9 172.3	28 51.7 +60.0 171.2	28 49.5 +60.0 170.1
17°	29 56.8 +59.9 174.5	29 55.3 +60.0 173.4	29 53.6 +60.0 172.3	29 51.7 +60.0 171.2	29 49.5 +59.9 170.1
18°	30 56.7 +60.0 174.5	30 55.3 +60.0 173.3	30 53.6 +60.0 172.2	30 51.7 +59.9 171.1	30 49.4 +60.0 170.0
19°	31 56.7 +60.0 174.4	31 55.3 +60.0 173.3	31 53.6 +59.9 172.2	31 51.6 +60.0 171.1	31 49.4 +59.9 170.0
20°	32 56.7 +60.0 174.4	32 55.3 +59.9 173.3	32 53.5 +60.0 172.2	32 51.6 +59.9 171.0	32 49.3 +60.0 169.9
21°	33 56.7 +60.0 174.4	33 55.2 +60.0 173.2	33 53.5 +60.0 172.1	33 51.5 +60.0 171.0	33 49.3 +59.9 169.9
22°	34 56.7 +60.0 174.3	34 55.2 +60.0 173.2	34 53.5 +59.9 172.1	34 51.5 +59.9 171.0	34 49.2 +60.0 169.8
23°	35 56.7 +59.9 174.3	35 55.2 +60.0 173.2	35 53.4 +60.0 172.0	35 51.4 +60.0 170.9	35 49.2 +59.9 169.8
24°	36 56.6 +60.0 174.3	36 55.2 +59.9 173.1	36 53.4 +60.0 172.0	36 51.4 +60.0 170.9	36 49.1 +60.0 169.7
25°	37 56.6 +60.0 174.3	37 55.1 +60.0 173.1	37 53.4 +59.9 172.0	37 51.4 +59.9 170.8	37 49.1 +59.9 169.7
26°	38 56.6 +60.0 174.2	38 55.1 +60.0 173.1	38 53.3 +60.0 171.9	38 51.3 +60.0 170.8	38 49.0 +59.9 169.6
27°	39 56.6 +60.0 174.2	39 55.1 +59.9 173.0	39 53.3 +60.0 171.9	39 51.3 +59.9 170.7	39 48.9 +60.0 169.5
28°	40 56.6 +59.9 174.2	40 55.0 +60.0 173.0	40 53.3 +59.9 171.8	40 51.2 +60.0 170.7	40 48.9 +59.9 169.5
29°	41 56.5 +60.0 174.1	41 55.0 +60.0 172.9	41 53.2 +60.0 171.8	41 51.2 +59.9 170.6	41 48.8 +59.9 169.4

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°	12 47.9 +60.0 169.7	12 45.4 +60.0 168.7	12 42.7 +59.9 167.7	12 39.7 +59.9 166.7	12 36.4 +59.9 165.6
1°	13 47.9 +60.0 169.7	13 45.4 +59.9 168.7	13 42.6 +59.9 167.6	13 39.6 +59.9 166.6	13 36.3 +60.0 165.6
2°	14 47.9 +59.9 169.7	14 45.3 +59.9 168.6	14 42.5 +60.0 167.6	14 39.5 +59.9 166.6	14 36.3 +59.9 165.5
3°	15 47.8 +60.0 169.6	15 45.2 +60.0 168.6	15 42.5 +59.9 167.5	15 39.4 +59.9 166.5	15 36.2 +59.9 165.5
4°	16 47.8 +59.9 169.6	16 45.2 +59.9 168.5	16 42.4 +59.9 167.5	16 39.3 +60.0 166.5	16 36.1 +59.9 165.4
5°	17 47.7 +60.0 169.5	17 45.1 +60.0 168.5	17 42.3 +59.9 167.4	17 39.3 +59.9 166.4	17 36.0 +59.9 165.4
6°	18 47.7 +59.9 169.5	18 45.1 +59.9 168.4	18 42.2 +60.0 167.4	18 39.2 +59.9 166.3	18 35.9 +59.9 165.3
7°	19 47.6 +59.9 169.4	19 45.0 +59.9 168.4	19 42.2 +59.9 167.3	19 39.1 +59.9 166.3	19 35.8 +59.9 165.2
8°	20 47.5 +60.0 169.4	20 44.9 +60.0 168.3	20 42.1 +59.9 167.3	20 39.0 +59.9 166.2	20 35.7 +59.9 165.2
9°	21 47.5 +59.9 169.4	21 44.9 +59.9 168.3	21 42.0 +59.9 167.2	21 38.9 +59.9 166.2	21 35.6 +59.9 165.1
10°	22 47.4 +60.0 169.3	22 44.8 +59.9 168.2	22 41.9 +60.0 167.2	22 38.8 +59.9 166.1	22 35.5 +59.9 165.0
11°	23 47.4 +59.9 169.3	23 44.7 +60.0 168.2	23 41.9 +59.9 167.1	23 38.7 +59.9 166.1	23 35.4 +59.8 165.0
12°	24 47.3 +60.0 169.2	24 44.7 +59.9 168.1	24 41.8 +59.9 167.1	24 38.6 +59.9 166.0	24 35.2 +59.9 164.9
13°	25 47.3 +59.9 169.2	25 44.6 +59.9 168.1	25 41.7 +59.9 167.0	25 38.5 +60.0 165.9	25 35.1 +59.9 164.8
14°	26 47.2 +60.0 169.1	26 44.5 +60.0 168.0	26 41.6 +59.9 166.9	26 38.5 +59.9 165.9	26 35.0 +59.9 164.8
15°	27 47.2 +59.9 169.1	27 44.5 +59.9 168.0	27 41.5 +60.0 166.9	27 38.4 +59.9 165.8	27 34.9 +59.9 164.7
16°	28 47.1 +59.9 169.0	28 44.4 +59.9 167.9	28 41.5 +59.9 166.8	28 38.3 +59.9 165.7	28 34.8 +59.9 164.6
17°	29 47.0 +60.0 169.0	29 44.3 +60.0 167.9	29 41.4 +59.9 166.8	29 38.2 +59.9 165.7	29 34.7 +59.9 164.6
18°	30 47.0 +59.9 168.9	30 44.3 +59.9 167.8	30 41.3 +59.9 166.7	30 38.1 +59.8 165.6	30 34.6 +59.8 164.5
19°	31 46.9 +60.0 168.9	31 44.2 +59.9 167.8	31 41.2 +59.9 166.6	31 37.9 +59.9 165.5	31 34.4 +59.9 164.4
20°	32 46.9 +59.9 168.8	32 44.1 +59.9 167.7	32 41.1 +59.9 166.6	32 37.8 +59.9 165.5	32 34.3 +59.9 164.3
21°	33 46.8 +59.9 168.8	33 44.0 +59.9 167.6	33 41.0 +59.9 166.5	33 37.7 +59.9 165.4	33 34.2 +59.9 164.3
22°	34 46.7 +60.0 168.7	34 43.9 +60.0 167.6	34 40.9 +59.9 166.4	34 37.6 +59.9 165.3	34 34.1 +59.8 164.2
23°	35 46.7 +59.9 168.6	35 43.9 +59.9 167.5	35 40.8 +59.9 166.4	35 37.5 +59.9 165.2	35 33.9 +59.9 164.1
24°	36 46.6 +59.9 168.6	36 43.8 +59.9 167.4	36 40.7 +59.9 166.3	36 37.4 +59.9 165.2	36 33.8 +59.9 164.0
25°	37 46.5 +59.9 168.5	37 43.7 +59.9 167.4	37 40.6 +59.9 166.2	37 37.3 +59.8 165.1	37 33.7 +59.8 163.9
26°	38 46.4 +60.0 168.5	38 43.6 +59.9 167.3	38 40.5 +59.9 166.2	38 37.1 +59.9 165.0	38 33.5 +59.9 163.9
27°	39 46.4 +59.9 168.4	39 43.5 +59.9 167.2	39 40.4 +59.9 166.1	39 37.0 +59.9 164.9	39 33.4 +59.8 163.8
28°	40 46.3 +59.9 168.3	40 43.4 +59.9 167.2	40 40.3 +59.9 166.0	40 36.9 +59.8 164.8	40 33.2 +59.9 163.7
29°	41 46.2 +59.9 168.3	41 43.3 +59.9 167.1	41 40.2 +59.8 165.9	41 36.7 +59.9 164.7	41 33.1 +59.8 163.6

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	12 33.0 +59.9 164.6	12 29.3 +59.9 163.6	12 25.4 +59.8 162.6	12 21.2 +59.9 161.6	12 16.8 +59.9 160.5
1°	13 32.9 +59.9 164.6	13 29.2 +59.8 163.5	13 25.2 +59.9 162.5	13 21.1 +59.8 161.5	13 16.7 +59.8 160.5
2°	14 32.8 +59.9 164.5	14 29.0 +59.9 163.5	14 25.1 +59.8 162.4	14 20.9 +59.8 161.4	14 16.5 +59.8 160.4
3°	15 32.7 +59.8 164.4	15 28.9 +59.9 163.4	15 24.9 +59.9 162.4	15 20.7 +59.9 161.3	15 16.3 +59.8 160.3
4°	16 32.5 +59.9 164.4	16 28.8 +59.9 163.3	16 24.8 +59.9 162.3	16 20.6 +59.8 161.3	16 16.1 +59.9 160.2
5°	17 32.4 +59.9 164.3	17 28.7 +59.8 163.3	17 24.7 +59.8 162.2	17 20.4 +59.9 161.2	17 16.0 +59.8 160.1
6°	18 32.3 +59.9 164.2	18 28.5 +59.9 163.2	18 24.5 +59.9 162.2	18 20.3 +59.8 161.1	18 15.8 +59.8 160.1
7°	19 32.2 +59.9 164.2	19 28.4 +59.9 163.1	19 24.4 +59.8 162.1	19 20.1 +59.8 161.0	19 15.6 +59.8 160.0
8°	20 32.1 +59.9 164.1	20 28.3 +59.8 163.1	20 24.2 +59.9 162.0	20 19.9 +59.9 161.0	20 15.4 +59.8 159.9
9°	21 32.0 +59.9 164.0	21 28.1 +59.9 163.0	21 24.1 +59.8 161.9	21 19.8 +59.8 160.9	21 15.2 +59.8 159.8
10°	22 31.9 +59.8 164.0	22 28.0 +59.9 162.9	22 23.9 +59.9 161.9	22 19.6 +59.8 160.8	22 15.0 +59.9 159.7
11°	23 31.7 +59.9 163.9	23 27.9 +59.8 162.8	23 23.8 +59.8 161.8	23 19.4 +59.9 160.7	23 14.9 +59.8 159.6
12°	24 31.6 +59.9 163.8	24 27.7 +59.9 162.8	24 23.6 +59.9 161.7	24 19.3 +59.8 160.6	24 14.7 +59.8 159.6
13°	25 31.5 +59.9 163.8	25 27.6 +59.9 162.7	25 23.5 +59.8 161.6	25 19.1 +59.8 160.5	25 14.5 +59.8 159.5
14°	26 31.4 +59.8 163.7	26 27.5 +59.8 162.6	26 23.3 +59.8 161.5	26 18.9 +59.8 160.5	26 14.3 +59.8 159.4
15°	27 31.2 +59.9 163.6	27 27.3 +59.9 162.5	27 23.1 +59.9 161.5	27 18.7 +59.8 160.4	27 14.1 +59.8 159.3
16°	28 31.1 +59.9 163.6	28 27.2 +59.8 162.5	28 23.0 +59.8 161.4	28 18.5 +59.8 160.3	28 13.9 +59.8 159.2
17°	29 31.0 +59.8 163.5	29 27.0 +59.9 162.4	29 22.8 +59.8 161.3	29 18.3 +59.9 160.2	29 13.7 +59.7 159.1
18°	30 30.8 +59.9 163.4	30 26.9 +59.8 162.3	30 22.6 +59.9 161.2	30 18.2 +59.8 160.1	30 13.4 +59.8 159.0
19°	31 30.7 +59.9 163.3	31 26.7 +59.8 162.2	31 22.5 +59.8 161.1	31 18.0 +59.8 160.0	31 13.2 +59.8 158.9
20°	32 30.6 +59.8 163.2	32 26.5 +59.9 162.1	32 22.3 +59.8 161.0	32 17.8 +59.8 159.9	32 13.0 +59.8 158.8
21°	33 30.4 +59.9 163.2	33 26.4 +59.8 162.0	33 22.1 +59.8 160.9	33 17.6 +59.7 159.8	33 12.8 +59.7 158.7
22°	34 30.3 +59.8 163.1	34 26.2 +59.8 161.9	34 21.9 +59.8 160.8	34 17.3 +59.8 159.7	34 12.5 +59.8 158.6
23°	35 30.1 +59.9 163.0	35 26.0 +59.9 161.9	35 21.7 +59.8 160.7	35 17.1 +59.8 159.6	35 12.3 +59.8 158.5
24°	36 30.0 +59.8 162.9	36 25.9 +59.8 161.8	36 21.5 +59.8 160.6	36 16.9 +59.8 159.5	36 12.1 +59.7 158.4
25°	37 29.8 +59.8 162.8	37 25.7 +59.8 161.7	37 21.3 +59.8 160.5	37 16.7 +59.7 159.4	37 11.8 +59.7 158.3
26°	38 29.6 +59.9 162.7	38 25.5 +59.8 161.6	38 21.1 +59.8 160.4	38 16.4 +59.8 159.3	38 11.5 +59.8 158.1
27°	39 29.5 +59.8 162.6	39 25.3 +59.8 161.5	39 20.9 +59.8 160.3	39 16.2 +59.8 159.2	39 11.3 +59.7 158.0
28°	40 29.3 +59.8 162.5	40 25.1 +59.8 161.4	40 20.7 +59.7 160.2	40 16.0 +59.7 159.0	40 11.0 +59.7 157.9
29°	41 29.1 +59.8 162.4	41 24.9 +59.8 161.2	41 20.4 +59.8 160.1	41 15.7 +59.7 158.9	41 10.7 +59.7 157.8

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	12 12.2 +59.8 159.5	12 07.4 +59.8 158.5	12 02.3 +59.8 157.5	11 57.0 +59.8 156.5	11 51.5 +59.8 155.4
1°	13 12.0 +59.8 159.4	13 07.2 +59.8 158.4	13 02.1 +59.8 157.4	12 56.8 +59.7 156.4	12 51.3 +59.7 155.3
2°	14 11.8 +59.8 159.4	14 07.0 +59.8 158.3	14 01.9 +59.7 157.3	13 56.5 +59.8 156.3	13 51.0 +59.7 155.2
3°	15 11.6 +59.9 159.3	15 06.8 +59.7 158.2	15 01.6 +59.8 157.2	14 56.3 +59.8 156.2	14 50.7 +59.8 155.2
4°	16 11.5 +59.8 159.2	16 06.5 +59.8 158.2	16 01.4 +59.8 157.1	15 56.1 +59.7 156.1	15 50.5 +59.7 155.1
5°	17 11.3 +59.8 159.1	17 06.3 +59.8 158.1	17 01.2 +59.7 157.0	16 55.8 +59.7 156.0	16 50.2 +59.7 155.0
6°	18 11.1 +59.8 159.0	18 06.1 +59.8 158.0	18 00.9 +59.8 156.9	17 55.5 +59.8 155.9	17 49.9 +59.7 154.9
7°	19 10.9 +59.8 158.9	19 05.9 +59.8 157.9	19 00.7 +59.8 156.8	18 55.3 +59.7 155.8	18 49.6 +59.8 154.8
8°	20 10.7 +59.8 158.8	20 05.7 +59.8 157.8	20 00.5 +59.7 156.7	19 55.0 +59.8 155.7	19 49.4 +59.7 154.6
9°	21 10.5 +59.8 158.8	21 05.5 +59.7 157.7	21 00.2 +59.8 156.7	20 54.8 +59.7 155.6	20 49.1 +59.7 154.5
10°	22 10.3 +59.7 158.7	22 05.2 +59.8 157.6	22 00.0 +59.7 156.6	21 54.5 +59.7 155.5	21 48.8 +59.7 154.4
11°	23 10.0 +59.8 158.6	23 05.0 +59.8 157.5	22 59.7 +59.8 156.5	22 54.2 +59.7 155.4	22 48.5 +59.7 154.3
12°	24 09.8 +59.8 158.5	24 04.8 +59.7 157.4	23 59.5 +59.7 156.4	23 53.9 +59.8 155.3	23 48.2 +59.7 154.2
13°	25 09.6 +59.8 158.4	25 04.5 +59.8 157.3	24 59.2 +59.8 156.3	24 53.7 +59.7 155.2	24 47.9 +59.7 154.1
14°	26 09.4 +59.8 158.3	26 04.3 +59.7 157.2	25 59.0 +59.7 156.1	25 53.4 +59.7 155.1	25 47.6 +59.7 154.0
15°	27 09.2 +59.8 158.2	27 04.0 +59.8 157.1	26 58.7 +59.7 156.0	26 53.1 +59.7 155.0	26 47.3 +59.6 153.9
16°	28 09.0 +59.7 158.1	28 03.8 +59.7 157.0	27 58.4 +59.7 155.9	27 52.8 +59.7 154.9	27 46.9 +59.7 153.8
17°	29 08.7 +59.8 158.0	29 03.5 +59.8 156.9	28 58.1 +59.8 155.8	28 52.5 +59.7 154.7	28 46.6 +59.7 153.7
18°	30 08.5 +59.7 157.9	30 03.3 +59.7 156.8	29 57.9 +59.7 155.7	29 52.2 +59.7 154.6	29 46.3 +59.7 153.5
19°	31 08.2 +59.8 157.8	31 03.0 +59.8 156.7	30 57.6 +59.7 155.6	30 51.9 +59.7 154.5	30 46.0 +59.6 153.4
20°	32 08.0 +59.7 157.7	32 02.8 +59.7 156.6	31 57.3 +59.7 155.5	31 51.6 +59.6 154.4	31 45.6 +59.7 153.3
21°	33 07.7 +59.8 157.6	33 02.5 +59.7 156.5	32 57.0 +59.7 155.4	32 51.2 +59.7 154.3	32 45.3 +59.6 153.2
22°	34 07.5 +59.7 157.5	34 02.2 +59.7 156.4	33 56.7 +59.7 155.2	33 50.9 +59.7 154.1	33 44.9 +59.6 153.0
23°	35 07.2 +59.8 157.4	35 01.9 +59.7 156.2	34 56.4 +59.6 155.1	34 50.6 +59.6 154.0	34 44.5 +59.6 152.9
24°	36 07.0 +59.7 157.2	36 01.6 +59.7 156.1	35 56.0 +59.7 155.0	35 50.2 +59.6 153.9	35 44.1 +59.7 152.8
25°	37 06.7 +59.7 157.1	37 01.3 +59.7 156.0	36 55.7 +59.7 154.9	36 49.8 +59.7 153.7	36 43.8 +59.6 152.6
26°	38 06.4 +59.7 157.0	38 01.0 +59.7 155.9	37 55.4 +59.6 154.7	37 49.5 +59.6 153.6	37 43.4 +59.6 152.5
27°	39 06.1 +59.7 156.9	39 00.7 +59.7 155.7	38 55.0 +59.7 154.6	38 49.1 +59.6 153.5	38 43.0 +59.5 152.3
28°	40 05.8 +59.7 156.7	40 00.4 +59.6 155.6	39 54.7 +59.6 154.5	39 48.7 +59.6 153.3	39 42.5 +59.6 152.2
29°	41 05.5 +59.7 156.6	41 00.0 +59.7 155.5	40 54.3 +59.6 154.3	40 48.3 +59.6 153.2	40 42.1 +59.6 152.0

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	11 45.8 +59.7 154.4	11 39.9 +59.7 153.4	11 33.7 +59.7 152.4	11 27.4 +59.6 151.4	11 20.8 +59.6 150.4
1°	12 45.5 +59.7 154.3	12 39.6 +59.7 153.3	12 33.4 +59.7 152.3	12 27.0 +59.7 151.3	12 20.4 +59.7 150.3
2°	13 45.2 +59.8 154.2	13 39.3 +59.7 153.2	13 33.1 +59.6 152.2	13 26.7 +59.6 151.2	13 20.1 +59.6 150.1
3°	14 45.0 +59.7 154.1	14 39.0 +59.6 153.1	14 32.7 +59.7 152.1	14 26.3 +59.7 151.0	14 19.7 +59.6 150.0
4°	15 44.7 +59.7 154.0	15 38.6 +59.7 153.0	15 32.4 +59.7 152.0	15 26.0 +59.6 150.9	15 19.3 +59.6 149.9
5°	16 44.4 +59.7 153.9	16 38.3 +59.7 152.9	16 32.1 +59.6 151.9	16 25.6 +59.6 150.8	16 18.9 +59.6 149.8
6°	17 44.1 +59.7 153.8	17 38.0 +59.7 152.8	17 31.7 +59.7 151.7	17 25.2 +59.7 150.7	17 18.5 +59.6 149.7
7°	18 43.8 +59.7 153.7	18 37.7 +59.7 152.7	18 31.4 +59.6 151.6	18 24.9 +59.6 150.6	18 18.1 +59.6 149.5
8°	19 43.5 +59.7 153.6	19 37.4 +59.6 152.6	19 31.0 +59.7 151.5	19 24.5 +59.6 150.5	19 17.7 +59.6 149.4
9°	20 43.2 +59.6 153.5	20 37.0 +59.7 152.4	20 30.7 +59.6 151.4	20 24.1 +59.6 150.3	20 17.3 +59.6 149.3
10°	21 42.8 +59.7 153.4	21 36.7 +59.6 152.3	21 30.3 +59.6 151.3	21 23.7 +59.6 150.2	21 16.9 +59.6 149.2
11°	22 42.5 +59.7 153.3	22 36.3 +59.7 152.2	22 29.9 +59.7 151.2	22 23.3 +59.6 150.1	22 16.5 +59.6 149.1
12°	23 42.2 +59.7 153.2	23 36.0 +59.7 152.1	23 29.6 +59.6 151.0	23 22.9 +59.6 150.0	23 16.1 +59.5 148.9
13°	24 41.9 +59.6 153.0	24 35.7 +59.6 152.0	24 29.2 +59.6 150.9	24 22.5 +59.6 149.9	24 15.6 +59.6 148.8
14°	25 41.5 +59.7 152.9	25 35.3 +59.6 151.9	25 28.8 +59.6 150.8	25 22.1 +59.6 149.7	25 15.2 +59.6 148.7
15°	26 41.2 +59.7 152.8	26 34.9 +59.7 151.7	26 28.4 +59.6 150.7	26 21.7 +59.6 149.6	26 14.8 +59.5 148.5
16°	27 40.9 +59.6 152.7	27 34.6 +59.6 151.6	27 28.0 +59.6 150.5	27 21.3 +59.6 149.5	27 14.3 +59.6 148.4
17°	28 40.5 +59.7 152.6	28 34.2 +59.6 151.5	28 27.6 +59.6 150.4	28 20.9 +59.5 149.3	28 13.9 +59.5 148.2
18°	29 40.2 +59.6 152.4	29 33.8 +59.6 151.4	29 27.2 +59.6 150.3	29 20.4 +59.6 149.2	29 13.4 +59.5 148.1
19°	30 39.8 +59.6 152.3	30 33.4 +59.6 151.2	30 26.8 +59.6 150.1	30 20.0 +59.5 149.0	30 12.9 +59.5 148.0
20°	31 39.4 +59.6 152.2	31 33.0 +59.6 151.1	31 26.4 +59.5 150.0	31 19.5 +59.6 148.9	31 12.4 +59.5 147.8
21°	32 39.0 +59.7 152.1	32 32.6 +59.6 151.0	32 25.9 +59.6 149.9	32 19.1 +59.5 148.8	32 11.9 +59.5 147.7
22°	33 38.7 +59.6 151.9	33 32.2 +59.6 150.8	33 25.5 +59.5 149.7	33 18.6 +59.5 148.6	33 11.4 +59.5 147.5
23°	34 38.3 +59.6 151.8	34 31.8 +59.5 150.7	34 25.0 +59.6 149.6	34 18.1 +59.5 148.5	34 10.9 +59.5 147.4
24°	35 37.9 +59.5 151.6	35 31.3 +59.6 150.5	35 24.6 +59.5 149.4	35 17.6 +59.5 148.3	35 10.4 +59.4 147.2
25°	36 37.4 +59.6 151.5	36 30.9 +59.5 150.4	36 24.1 +59.5 149.3	36 17.1 +59.5 148.1	36 09.8 +59.5 147.0
26°	37 37.0 +59.6 151.3	37 30.4 +59.5 150.2	37 23.6 +59.5 149.1	37 16.6 +59.4 148.0	37 09.3 +59.4 146.9
27°	38 36.6 +59.5 151.2	38 29.9 +59.6 150.1	38 23.1 +59.5 148.9	38 16.0 +59.5 147.8	38 08.7 +59.4 146.7
28°	39 36.1 +59.6 151.0	39 29.5 +59.5 149.9	39 22.6 +59.4 148.8	39 15.5 +59.4 147.6	39 08.1 +59.4 146.5
29°	40 35.7 +59.5 150.9	40 29.0 +59.4 149.7	40 22.0 +59.5 148.6	40 14.9 +59.4 147.5	40 07.5 +59.4 146.3

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°	11 14.0 +59.6 149.4	11 07.0 +59.6 148.3	10 59.9 +59.5 147.3	10 52.5 +59.5 146.3	10 44.9 +59.5 145.3
1°	12 13.6 +59.6 149.2	12 06.6 +59.6 148.2	11 59.4 +59.6 147.2	11 52.0 +59.5 146.2	11 44.4 +59.5 145.2
2°	13 13.2 +59.6 149.1	13 06.2 +59.6 148.1	12 59.0 +59.5 147.1	12 51.5 +59.6 146.1	12 43.9 +59.5 145.0
3°	14 12.8 +59.6 149.0	14 05.8 +59.5 148.0	13 58.5 +59.6 147.0	13 51.1 +59.5 145.9	13 43.4 +59.5 144.9
4°	15 12.4 +59.6 148.9	15 05.3 +59.6 147.9	14 58.1 +59.5 146.8	14 50.6 +59.5 145.8	14 42.9 +59.5 144.8
5°	16 12.0 +59.6 148.8	16 04.9 +59.6 147.7	15 57.6 +59.5 146.7	15 50.1 +59.5 145.7	15 42.4 +59.5 144.6
6°	17 11.6 +59.6 148.6	17 04.5 +59.5 147.6	16 57.1 +59.6 146.6	16 49.6 +59.5 145.5	16 41.9 +59.4 144.5
7°	18 11.2 +59.6 148.5	18 04.0 +59.6 147.5	17 56.7 +59.5 146.4	17 49.1 +59.5 145.4	17 41.3 +59.5 144.4
8°	19 10.8 +59.5 148.4	19 03.6 +59.5 147.3	18 56.2 +59.5 146.3	18 48.6 +59.5 145.3	18 40.8 +59.5 144.2
9°	20 10.3 +59.6 148.3	20 03.1 +59.6 147.2	19 55.7 +59.5 146.2	19 48.1 +59.5 145.1	19 40.3 +59.4 144.1
10°	21 09.9 +59.5 148.1	21 02.7 +59.5 147.1	20 55.2 +59.5 146.0	20 47.6 +59.5 145.0	20 39.7 +59.5 143.9
11°	22 09.4 +59.6 148.0	22 02.2 +59.5 146.9	21 54.7 +59.5 145.9	21 47.1 +59.4 144.8	21 39.2 +59.4 143.8
12°	23 09.0 +59.5 147.9	23 01.7 +59.5 146.8	22 54.2 +59.5 145.8	22 46.5 +59.5 144.7	22 38.6 +59.5 143.7
13°	24 08.5 +59.6 147.7	24 01.2 +59.5 146.7	23 53.7 +59.5 145.6	23 46.0 +59.4 144.6	23 38.1 +59.4 143.5
14°	25 08.1 +59.5 147.6	25 00.7 +59.5 146.5	24 53.2 +59.5 145.5	24 45.4 +59.5 144.4	24 37.5 +59.4 143.4
15°	26 07.6 +59.5 147.5	26 00.2 +59.5 146.4	25 52.7 +59.4 145.3	25 44.9 +59.4 144.3	25 36.9 +59.4 143.2
16°	27 07.1 +59.6 147.3	26 59.7 +59.5 146.2	26 52.1 +59.5 145.2	26 44.3 +59.5 144.1	26 36.3 +59.4 143.0
17°	28 06.7 +59.5 147.2	27 59.2 +59.5 146.1	27 51.6 +59.4 145.0	27 43.8 +59.4 144.0	27 35.7 +59.4 142.9
18°	29 06.2 +59.5 147.0	28 58.7 +59.5 145.9	28 51.0 +59.5 144.9	28 43.2 +59.4 143.8	28 35.1 +59.4 142.7
19°	30 05.7 +59.4 146.9	29 58.2 +59.4 145.8	29 50.5 +59.4 144.7	29 42.6 +59.4 143.6	29 34.5 +59.3 142.6
20°	31 05.1 +59.5 146.7	30 57.6 +59.5 145.6	30 49.9 +59.4 144.6	30 42.0 +59.4 143.5	30 33.8 +59.4 142.4
21°	32 04.6 +59.5 146.6	31 57.1 +59.4 145.5	31 49.3 +59.4 144.4	31 41.4 +59.3 143.3	31 33.2 +59.3 142.2
22°	33 04.1 +59.4 146.4	32 56.5 +59.4 145.3	32 48.7 +59.4 144.2	32 40.7 +59.4 143.1	32 32.5 +59.3 142.0
23°	34 03.5 +59.5 146.3	33 55.9 +59.4 145.2	33 48.1 +59.4 144.1	33 40.1 +59.3 143.0	33 31.8 +59.3 141.9
24°	35 03.0 +59.4 146.1	34 55.3 +59.4 145.0	34 47.5 +59.3 143.9	34 39.4 +59.3 142.8	34 31.1 +59.3 141.7
25°	36 02.4 +59.4 145.9	35 54.7 +59.4 144.8	35 46.8 +59.4 143.7	35 38.7 +59.3 142.6	35 30.4 +59.3 141.5
26°	37 01.8 +59.4 145.7	36 54.1 +59.4 144.6	36 46.2 +59.3 143.5	36 38.0 +59.3 142.4	36 29.7 +59.3 141.3
27°	38 01.2 +59.4 145.6	37 53.5 +59.3 144.4	37 45.5 +59.3 143.3	37 37.3 +59.3 142.2	37 29.0 +59.2 141.1
28°	39 00.6 +59.3 145.4	38 52.8 +59.3 144.3	38 44.8 +59.3 143.1	38 36.6 +59.2 142.0	38 28.2 +59.2 140.9
29°	39 59.9 +59.4 145.2	39 52.1 +59.3 144.1	39 44.1 +59.3 142.9	39 35.8 +59.3 141.8	39 27.4 +59.2 140.7

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	10 37.1 +59.5 144.3	10 29.1 +59.5 143.3	10 21.0 +59.4 142.3	10 12.6 +59.4 141.3	10 04.1 +59.4 140.3
1°	11 36.6 +59.5 144.2	11 28.6 +59.4 143.2	11 20.4 +59.4 142.1	11 12.0 +59.4 141.1	11 03.5 +59.3 140.1
2°	12 36.1 +59.4 144.0	12 28.0 +59.5 143.0	12 19.8 +59.4 142.0	12 11.4 +59.4 141.0	12 02.8 +59.4 140.0
3°	13 35.5 +59.5 143.9	13 27.5 +59.4 142.9	13 19.2 +59.5 141.9	13 10.8 +59.4 140.8	13 02.2 +59.4 139.8
4°	14 35.0 +59.5 143.8	14 26.9 +59.5 142.7	14 18.7 +59.4 141.7	14 10.2 +59.4 140.7	14 01.6 +59.3 139.7
5°	15 34.5 +59.4 143.6	15 26.4 +59.4 142.6	15 18.1 +59.4 141.6	15 09.6 +59.4 140.5	15 00.9 +59.4 139.5
6°	16 33.9 +59.5 143.5	16 25.8 +59.4 142.5	16 17.5 +59.4 141.4	16 09.0 +59.3 140.4	16 00.3 +59.3 139.4
7°	17 33.4 +59.4 143.3	17 25.2 +59.4 142.3	17 16.9 +59.4 141.3	17 08.3 +59.4 140.2	16 59.6 +59.3 139.2
8°	18 32.8 +59.5 143.2	18 24.6 +59.4 142.2	18 16.3 +59.3 141.1	18 07.7 +59.3 140.1	17 58.9 +59.4 139.1
9°	19 32.3 +59.4 143.0	19 24.0 +59.4 142.0	19 15.6 +59.4 141.0	19 07.0 +59.4 139.9	18 58.3 +59.3 138.9
10°	20 31.7 +59.4 142.9	20 23.4 +59.4 141.9	20 15.0 +59.4 140.8	20 06.4 +59.3 139.8	19 57.6 +59.3 138.7
11°	21 31.1 +59.4 142.8	21 22.8 +59.4 141.7	21 14.4 +59.3 140.7	21 05.7 +59.4 139.6	20 56.9 +59.3 138.6
12°	22 30.5 +59.4 142.6	22 22.2 +59.4 141.6	22 13.7 +59.4 140.5	22 05.1 +59.3 139.5	21 56.2 +59.3 138.4
13°	23 29.9 +59.4 142.5	23 21.6 +59.4 141.4	23 13.1 +59.3 140.4	23 04.4 +59.3 139.3	22 55.5 +59.3 138.3
14°	24 29.3 +59.4 142.3	24 21.0 +59.3 141.2	24 12.4 +59.4 140.2	24 03.7 +59.3 139.1	23 54.8 +59.2 138.1
15°	25 28.7 +59.4 142.1	25 20.3 +59.4 141.1	25 11.8 +59.3 140.0	25 03.0 +59.3 139.0	24 54.0 +59.3 137.9
16°	26 28.1 +59.4 142.0	26 19.7 +59.3 140.9	26 11.1 +59.3 139.9	26 02.3 +59.3 138.8	25 53.3 +59.3 137.7
17°	27 27.5 +59.3 141.8	27 19.0 +59.4 140.8	27 10.4 +59.3 139.7	27 01.6 +59.2 138.6	26 52.6 +59.2 137.6
18°	28 26.8 +59.4 141.7	28 18.4 +59.3 140.6	28 09.7 +59.3 139.5	28 00.8 +59.3 138.5	27 51.8 +59.2 137.4
19°	29 26.2 +59.3 141.5	29 17.7 +59.3 140.4	29 09.0 +59.2 139.3	29 00.1 +59.2 138.3	28 51.0 +59.2 137.2
20°	30 25.5 +59.3 141.3	30 17.0 +59.3 140.2	30 08.2 +59.3 139.2	29 59.3 +59.2 138.1	29 50.2 +59.2 137.0
21°	31 24.8 +59.3 141.1	31 16.3 +59.2 140.1	31 07.5 +59.2 139.0	30 58.5 +59.2 137.9	30 49.4 +59.2 136.8
22°	32 24.1 +59.3 141.0	32 15.5 +59.3 139.9	32 06.7 +59.2 138.8	31 57.7 +59.2 137.7	31 48.6 +59.1 136.6
23°	33 23.4 +59.3 140.8	33 14.8 +59.2 139.7	33 05.9 +59.2 138.6	32 56.9 +59.2 137.5	32 47.7 +59.2 136.4
24°	34 22.7 +59.2 140.6	34 14.0 +59.2 139.5	34 05.1 +59.2 138.4	33 56.1 +59.1 137.3	33 46.9 +59.1 136.2
25°	35 21.9 +59.3 140.4	35 13.2 +59.2 139.3	35 04.3 +59.2 138.2	34 55.2 +59.2 137.1	34 46.0 +59.1 136.0
26°	36 21.2 +59.2 140.2	36 12.4 +59.2 139.1	36 03.5 +59.1 138.0	35 54.4 +59.1 136.9	35 45.1 +59.0 135.8
27°	37 20.4 +59.2 140.0	37 11.6 +59.2 138.9	37 02.6 +59.2 137.8	36 53.5 +59.1 136.7	36 44.1 +59.1 135.6
28°	38 19.6 +59.1 139.8	38 10.8 +59.1 138.7	38 01.8 +59.1 137.6	37 52.6 +59.0 136.5	37 43.2 +59.0 135.4
29°	39 18.7 +59.2 139.6	39 09.9 +59.1 138.5	39 00.9 +59.0 137.4	38 51.6 +59.0 136.2	38 42.2 +59.0 135.1

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°	9 55.4 +59.3 139.3	9 46.5 +59.3 138.3	9 37.4 +59.3 137.3	9 28.2 +59.2 136.3	9 18.7 +59.3 135.3
1°	10 54.7 +59.4 139.1	10 45.8 +59.3 138.1	10 36.7 +59.3 137.1	10 27.4 +59.3 136.1	10 18.0 +59.2 135.1
2°	11 54.1 +59.3 139.0	11 45.1 +59.3 138.0	11 36.0 +59.3 136.9	11 26.7 +59.2 135.9	11 17.2 +59.2 134.9
3°	12 53.4 +59.3 138.8	12 44.4 +59.3 137.8	12 35.3 +59.3 136.8	12 25.9 +59.3 135.8	12 16.4 +59.3 134.8
4°	13 52.7 +59.4 138.7	13 43.7 +59.3 137.6	13 34.6 +59.2 136.6	13 25.2 +59.2 135.6	13 15.7 +59.2 134.6
5°	14 52.1 +59.3 138.5	14 43.0 +59.3 137.5	14 33.8 +59.3 136.5	14 24.4 +59.3 135.5	14 14.9 +59.2 134.4
6°	15 51.4 +59.3 138.4	15 42.3 +59.3 137.3	15 33.1 +59.3 136.3	15 23.7 +59.2 135.3	15 14.1 +59.2 134.3
7°	16 50.7 +59.3 138.2	16 41.6 +59.3 137.2	16 32.4 +59.2 136.1	16 22.9 +59.2 135.1	16 13.3 +59.2 134.1
8°	17 50.0 +59.3 138.0	17 40.9 +59.3 137.0	17 31.6 +59.2 136.0	17 22.1 +59.3 135.0	17 12.5 +59.2 133.9
9°	18 49.3 +59.3 137.9	18 40.2 +59.2 136.8	18 30.8 +59.3 135.8	18 21.4 +59.2 134.8	18 11.7 +59.2 133.8
10°	19 48.6 +59.3 137.7	19 39.4 +59.3 136.7	19 30.1 +59.2 135.6	19 20.6 +59.2 134.6	19 10.9 +59.1 133.6
11°	20 47.9 +59.3 137.5	20 38.7 +59.2 136.5	20 29.3 +59.2 135.5	20 19.8 +59.1 134.4	20 10.0 +59.2 133.4
12°	21 47.2 +59.2 137.4	21 37.9 +59.3 136.3	21 28.5 +59.2 135.3	21 18.9 +59.2 134.3	21 09.2 +59.1 133.2
13°	22 46.4 +59.3 137.2	22 37.2 +59.2 136.2	22 27.7 +59.2 135.1	22 18.1 +59.2 134.1	22 08.3 +59.2 133.1
14°	23 45.7 +59.2 137.0	23 36.4 +59.2 136.0	23 26.9 +59.2 135.0	23 17.3 +59.1 133.9	23 07.5 +59.1 132.9
15°	24 44.9 +59.2 136.9	24 35.6 +59.2 135.8	24 26.1 +59.2 134.8	24 16.4 +59.2 133.7	24 06.6 +59.1 132.7
16°	25 44.1 +59.3 136.7	25 34.8 +59.2 135.6	25 25.3 +59.1 134.6	25 15.6 +59.1 133.5	25 05.7 +59.1 132.5
17°	26 43.4 +59.2 136.5	26 34.0 +59.1 135.5	26 24.4 +59.2 134.4	26 14.7 +59.1 133.4	26 04.8 +59.1 132.3
18°	27 42.6 +59.1 136.3	27 33.1 +59.2 135.3	27 23.6 +59.1 134.2	27 13.8 +59.1 133.2	27 03.9 +59.0 132.1
19°	28 41.7 +59.2 136.1	28 32.3 +59.1 135.1	28 22.7 +59.1 134.0	28 12.9 +59.1 133.0	28 02.9 +59.1 131.9
20°	29 40.9 +59.2 136.0	29 31.4 +59.2 134.9	29 21.8 +59.1 133.8	29 12.0 +59.0 132.8	29 02.0 +59.0 131.7
21°	30 40.1 +59.1 135.8	30 30.6 +59.1 134.7	30 20.9 +59.1 133.6	30 11.0 +59.1 132.6	30 01.0 +59.0 131.5
22°	31 39.2 +59.1 135.6	31 29.7 +59.1 134.5	31 20.0 +59.0 133.4	31 10.1 +59.0 132.4	31 00.0 +59.0 131.3
23°	32 38.3 +59.1 135.4	32 28.8 +59.0 134.3	32 19.0 +59.0 133.2	32 09.1 +59.0 132.1	31 59.0 +58.9 131.1
24°	33 37.4 +59.1 135.2	33 27.8 +59.1 134.1	33 18.0 +59.0 133.0	33 08.1 +58.9 131.9	32 57.9 +59.0 130.9
25°	34 36.5 +59.1 134.9	34 26.9 +59.0 133.9	34 17.0 +59.0 132.8	34 07.0 +59.0 131.7	33 56.9 +58.9 130.6
26°	35 35.6 +59.0 134.7	35 25.9 +59.0 133.6	35 16.0 +59.0 132.6	35 06.0 +58.9 131.5	34 55.8 +58.9 130.4
27°	36 34.6 +59.0 134.5	36 24.9 +58.9 133.4	36 15.0 +58.9 132.3	36 04.9 +58.9 131.2	35 54.7 +58.8 130.2
28°	37 33.6 +59.0 134.3	37 23.8 +58.9 133.2	37 13.9 +58.9 132.1	37 03.8 +58.9 131.0	36 53.5 +58.9 129.9
29°	38 32.6 +58.9 134.0	38 22.8 +58.9 132.9	38 12.8 +58.9 131.9	38 02.7 +58.8 130.8	37 52.4 +58.8 129.7

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°	9 09.2 +59.2 134.3	8 59.4 +59.2 133.3	8 49.5 +59.2 132.3	8 39.4 +59.2 131.3	8 29.2 +59.1 130.3
1°	10 08.4 +59.2 134.1	9 58.6 +59.2 133.1	9 48.7 +59.1 132.1	9 38.6 +59.1 131.1	9 28.3 +59.1 130.1
2°	11 07.6 +59.2 133.9	10 57.8 +59.2 132.9	10 47.8 +59.2 131.9	10 37.7 +59.1 130.9	10 27.4 +59.1 129.9
3°	12 06.8 +59.2 133.8	11 57.0 +59.1 132.8	11 47.0 +59.1 131.7	11 36.8 +59.1 130.7	11 26.5 +59.1 129.7
4°	13 06.0 +59.2 133.6	12 56.1 +59.2 132.6	12 46.1 +59.1 131.6	12 35.9 +59.1 130.6	12 25.6 +59.1 129.6
5°	14 05.2 +59.2 133.4	13 55.3 +59.1 132.4	13 45.2 +59.2 131.4	13 35.0 +59.1 130.4	13 24.7 +59.1 129.4
6°	15 04.4 +59.1 133.3	14 54.4 +59.2 132.2	14 44.4 +59.1 131.2	14 34.1 +59.1 130.2	14 23.8 +59.0 129.2
7°	16 03.5 +59.2 133.1	15 53.6 +59.1 132.1	15 43.5 +59.1 131.1	15 33.2 +59.1 130.0	15 22.8 +59.1 129.0
8°	17 02.7 +59.2 132.9	16 52.7 +59.2 131.9	16 42.6 +59.1 130.9	16 32.3 +59.1 129.9	16 21.9 +59.0 128.8
9°	18 01.9 +59.1 132.7	17 51.9 +59.1 131.7	17 41.7 +59.1 130.7	17 31.4 +59.1 129.7	17 20.9 +59.1 128.7
10°	19 01.0 +59.1 132.6	18 51.0 +59.1 131.5	18 40.8 +59.1 130.5	18 30.5 +59.0 129.5	18 20.0 +59.0 128.5
11°	20 00.1 +59.2 132.4	19 50.1 +59.1 131.4	19 39.9 +59.1 130.3	19 29.5 +59.1 129.3	19 19.0 +59.0 128.3
12°	20 59.3 +59.1 132.2	20 49.2 +59.1 131.2	20 39.0 +59.0 130.1	20 28.6 +59.0 129.1	20 18.0 +59.0 128.1
13°	21 58.4 +59.1 132.0	21 48.3 +59.1 131.0	21 38.0 +59.1 129.9	21 27.6 +59.0 128.9	21 17.0 +59.0 127.9
14°	22 57.5 +59.1 131.8	22 47.4 +59.0 130.8	22 37.1 +59.0 129.8	22 26.6 +59.0 128.7	22 16.0 +59.0 127.7
15°	23 56.6 +59.1 131.6	23 46.4 +59.1 130.6	23 36.1 +59.0 129.6	23 25.6 +59.0 128.5	23 15.0 +58.9 127.5
16°	24 55.7 +59.0 131.4	24 45.5 +59.0 130.4	24 35.1 +59.0 129.4	24 24.6 +59.0 128.3	24 13.9 +59.0 127.3
17°	25 54.7 +59.1 131.3	25 44.5 +59.0 130.2	25 34.1 +59.0 129.2	25 23.6 +58.9 128.1	25 12.9 +58.9 127.1
18°	26 53.8 +59.0 131.1	26 43.5 +59.0 130.0	26 33.1 +59.0 129.0	26 22.5 +59.0 127.9	26 11.8 +58.9 126.9
19°	27 52.8 +59.0 130.9	27 42.5 +59.0 129.8	27 32.1 +58.9 128.8	27 21.5 +58.9 127.7	27 10.7 +58.9 126.7
20°	28 51.8 +59.0 130.6	28 41.5 +59.0 129.6	28 31.0 +58.9 128.5	28 20.4 +58.9 127.5	28 09.6 +58.9 126.4
21°	29 50.8 +59.0 130.4	29 40.5 +58.9 129.4	29 29.9 +59.0 128.3	29 19.3 +58.9 127.3	29 08.5 +58.8 126.2
22°	30 49.8 +58.9 130.2	30 39.4 +58.9 129.2	30 28.9 +58.8 128.1	30 18.2 +58.8 127.1	30 07.3 +58.8 126.0
23°	31 48.7 +59.0 130.0	31 38.3 +58.9 128.9	31 27.7 +58.9 127.9	31 17.0 +58.8 126.8	31 06.1 +58.8 125.8
24°	32 47.7 +58.9 129.8	32 37.2 +58.9 128.7	32 26.6 +58.8 127.7	32 15.8 +58.8 126.6	32 04.9 +58.8 125.5
25°	33 46.6 +58.8 129.6	33 36.1 +58.8 128.5	33 25.4 +58.8 127.4	33 14.6 +58.8 126.4	33 03.7 +58.7 125.3
26°	34 45.4 +58.9 129.3	34 34.9 +58.8 128.3	34 24.2 +58.8 127.2	34 13.4 +58.8 126.1	34 02.4 +58.8 125.1
27°	35 44.3 +58.8 129.1	35 33.7 +58.8 128.0	35 23.0 +58.8 126.9	35 12.2 +58.7 125.9	35 01.2 +58.6 124.8
28°	36 43.1 +58.8 128.8	36 32.5 +58.8 127.8	36 21.8 +58.7 126.7	36 10.9 +58.7 125.6	35 59.8 +58.7 124.5
29°	37 41.9 +58.8 128.6	37 31.3 +58.7 127.5	37 20.5 +58.7 126.4	37 09.6 +58.6 125.4	36 58.5 +58.6 124.3

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°	8 18.8 +59.1 129.3	8 08.3 +59.1 128.3	7 57.6 +59.1 127.3	7 46.8 +59.0 126.3	7 35.9 +59.0 125.3
1°	9 17.9 +59.1 129.1	9 07.4 +59.0 128.1	8 56.7 +59.0 127.1	8 45.8 +59.0 126.1	8 34.9 +58.9 125.1
2°	10 17.0 +59.1 128.9	10 06.4 +59.1 127.9	9 55.7 +59.0 126.9	9 44.8 +59.0 125.9	9 33.8 +59.0 124.9
3°	11 16.1 +59.0 128.7	11 05.5 +59.0 127.7	10 54.7 +59.0 126.7	10 43.8 +59.0 125.7	10 32.8 +59.0 124.7
4°	12 15.1 +59.1 128.6	12 04.5 +59.0 127.6	11 53.7 +59.0 126.5	11 42.8 +59.0 125.5	11 31.8 +58.9 124.5
5°	13 14.2 +59.0 128.4	13 03.5 +59.0 127.4	12 52.7 +59.0 126.4	12 41.8 +59.0 125.4	12 30.7 +59.0 124.4
6°	14 13.2 +59.1 128.2	14 02.5 +59.1 127.2	13 51.7 +59.0 126.2	13 40.8 +58.9 125.2	13 29.7 +58.9 124.2
7°	15 12.3 +59.0 128.0	15 01.6 +59.0 127.0	14 50.7 +59.0 126.0	14 39.7 +59.0 125.0	14 28.6 +58.9 124.0
8°	16 11.3 +59.0 127.8	16 00.6 +59.0 126.8	15 49.7 +59.0 125.8	15 38.7 +58.9 124.8	15 27.5 +58.9 123.8
9°	17 10.3 +59.0 127.6	16 59.6 +58.9 126.6	16 48.7 +58.9 125.6	16 37.6 +58.9 124.6	16 26.4 +58.9 123.6
10°	18 09.3 +59.0 127.4	17 58.5 +59.0 126.4	17 47.6 +59.0 125.4	17 36.5 +59.0 124.4	17 25.3 +58.9 123.4
11°	19 08.3 +59.0 127.3	18 57.5 +59.0 126.2	18 46.6 +58.9 125.2	18 35.5 +58.9 124.2	18 24.2 +58.9 123.2
12°	20 07.3 +59.0 127.1	19 56.5 +58.9 126.0	19 45.5 +58.9 125.0	19 34.4 +58.9 124.0	19 23.1 +58.9 123.0
13°	21 06.3 +58.9 126.9	20 55.4 +59.0 125.8	20 44.4 +58.9 124.8	20 33.3 +58.8 123.8	20 22.0 +58.8 122.8
14°	22 05.2 +59.0 126.7	21 54.4 +58.9 125.6	21 43.3 +58.9 124.6	21 32.1 +58.9 123.6	21 20.8 +58.9 122.6
15°	23 04.2 +58.9 126.5	22 53.3 +58.9 125.4	22 42.2 +58.9 124.4	22 31.0 +58.8 123.4	22 19.7 +58.8 122.4
16°	24 03.1 +58.9 126.3	23 52.2 +58.9 125.2	23 41.1 +58.8 124.2	23 29.8 +58.9 123.2	23 18.5 +58.8 122.1
17°	25 02.0 +58.9 126.0	24 51.1 +58.8 125.0	24 39.9 +58.8 124.0	24 28.7 +58.8 122.9	24 17.3 +58.8 121.9
18°	26 00.9 +58.9 125.8	25 49.9 +58.9 124.8	25 38.8 +58.8 123.8	25 27.5 +58.8 122.7	25 16.1 +58.7 121.7
19°	26 59.8 +58.9 125.6	26 48.8 +58.8 124.6	26 37.6 +58.8 123.5	26 26.3 +58.7 122.5	26 14.8 +58.8 121.5
20°	27 58.7 +58.8 125.4	27 47.6 +58.8 124.4	27 36.4 +58.8 123.3	27 25.0 +58.8 122.3	27 13.6 +58.7 121.2
21°	28 57.5 +58.8 125.2	28 46.4 +58.8 124.1	28 35.2 +58.7 123.1	28 23.8 +58.7 122.1	28 12.3 +58.7 121.0
22°	29 56.3 +58.8 125.0	29 45.2 +58.7 123.9	29 33.9 +58.7 122.9	29 22.5 +58.7 121.8	29 11.0 +58.6 120.8
23°	30 55.1 +58.8 124.7	30 43.9 +58.8 123.7	30 32.6 +58.7 122.6	30 21.2 +58.7 121.6	30 09.6 +58.7 120.5
24°	31 53.9 +58.7 124.5	31 42.7 +58.7 123.4	31 31.3 +58.7 122.4	31 19.9 +58.6 121.3	31 08.3 +58.6 120.3
25°	32 52.6 +58.7 124.2	32 41.4 +58.7 123.2	32 30.0 +58.7 122.1	32 18.5 +58.6 121.1	32 06.9 +58.6 120.0
26°	33 51.3 +58.7 124.0	33 40.1 +58.6 122.9	33 28.7 +58.6 121.9	33 17.1 +58.6 120.8	33 05.5 +58.5 119.8
27°	34 50.0 +58.6 123.7	34 38.7 +58.6 122.7	34 27.3 +58.6 121.6	34 15.7 +58.6 120.6	34 04.0 +58.6 119.5
28°	35 48.6 +58.7 123.5	35 37.3 +58.6 122.4	35 25.9 +58.5 121.4	35 14.3 +58.5 120.3	35 02.6 +58.4 119.3
29°	36 47.3 +58.5 123.2	36 35.9 +58.5 122.2	36 24.4 +58.5 121.1	36 12.8 +58.5 120.0	36 01.0 +58.5 119.0

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°	7 24.8 +59.0 124.3	7 13.6 +58.9 123.3	7 02.2 +58.9 122.3	6 50.8 +58.9 121.3	6 39.2 +58.8 120.3
1°	8 23.8 +58.9 124.1	8 12.5 +58.9 123.1	8 01.1 +58.9 122.1	7 49.7 +58.8 121.1	7 38.0 +58.9 120.2
2°	9 22.7 +58.9 123.9	9 11.4 +59.0 122.9	9 00.0 +58.9 121.9	8 48.5 +58.9 120.9	8 36.9 +58.8 120.0
3°	10 21.6 +59.0 123.7	10 10.4 +58.9 122.7	9 58.9 +58.9 121.7	9 47.4 +58.9 120.8	9 35.7 +58.9 119.8
4°	11 20.6 +58.9 123.5	11 09.3 +58.9 122.5	10 57.8 +58.9 121.6	10 46.3 +58.8 120.6	10 34.6 +58.8 119.6
5°	12 19.5 +58.9 123.4	12 08.2 +58.9 122.4	11 56.7 +58.9 121.4	11 45.1 +58.9 120.4	11 33.4 +58.8 119.4
6°	13 18.4 +58.9 123.2	13 07.1 +58.8 122.2	12 55.6 +58.8 121.2	12 44.0 +58.8 120.2	12 32.2 +58.8 119.2
7°	14 17.3 +58.9 123.0	14 05.9 +58.9 122.0	13 54.4 +58.9 121.0	13 42.8 +58.8 120.0	13 31.0 +58.8 119.0
8°	15 16.2 +58.9 122.8	15 04.8 +58.9 121.8	14 53.3 +58.8 120.8	14 41.6 +58.8 119.8	14 29.8 +58.8 118.7
9°	16 15.1 +58.9 122.6	16 03.7 +58.8 121.6	15 52.1 +58.9 120.6	15 40.4 +58.8 119.5	15 28.6 +58.8 118.5
10°	17 14.0 +58.9 122.4	17 02.5 +58.9 121.4	16 51.0 +58.8 120.3	16 39.2 +58.8 119.3	16 27.4 +58.8 118.3
11°	18 12.9 +58.8 122.2	18 01.4 +58.8 121.2	17 49.8 +58.8 120.1	17 38.0 +58.8 119.1	17 26.2 +58.7 118.1
12°	19 11.7 +58.9 122.0	19 00.2 +58.8 120.9	18 48.6 +58.8 119.9	18 36.8 +58.8 118.9	18 24.9 +58.8 117.9
13°	20 10.6 +58.8 121.8	19 59.0 +58.8 120.7	19 47.4 +58.7 119.7	19 35.6 +58.7 118.7	19 23.7 +58.7 117.7
14°	21 09.4 +58.8 121.5	20 57.8 +58.8 120.5	20 46.1 +58.8 119.5	20 34.3 +58.8 118.5	20 22.4 +58.7 117.5
15°	22 08.2 +58.8 121.3	21 56.6 +58.8 120.3	21 44.9 +58.7 119.3	21 33.1 +58.7 118.3	21 21.1 +58.7 117.3
16°	23 07.0 +58.8 121.1	22 55.4 +58.7 120.1	22 43.6 +58.8 119.1	22 31.8 +58.7 118.0	22 19.8 +58.7 117.0
17°	24 05.8 +58.7 120.9	23 54.1 +58.7 119.9	23 42.4 +58.7 118.8	23 30.5 +58.7 117.8	23 18.5 +58.6 116.8
18°	25 04.5 +58.8 120.7	24 52.8 +58.8 119.6	24 41.1 +58.6 118.6	24 29.2 +58.6 117.6	24 17.1 +58.7 116.6
19°	26 03.3 +58.7 120.4	25 51.6 +58.6 119.4	25 39.7 +58.7 118.4	25 27.8 +58.6 117.4	25 15.8 +58.6 116.3
20°	27 02.0 +58.7 120.2	26 50.2 +58.7 119.2	26 38.4 +58.6 118.2	26 26.4 +58.7 117.1	26 14.4 +58.6 116.1
21°	28 00.7 +58.6 120.0	27 48.9 +58.6 118.9	27 37.0 +58.6 117.9	27 25.1 +58.5 116.9	27 13.0 +58.5 115.9
22°	28 59.3 +58.7 119.7	28 47.5 +58.7 118.7	28 35.6 +58.6 117.7	28 23.6 +58.6 116.6	28 11.5 +58.6 115.6
23°	29 58.0 +58.6 119.5	29 46.2 +58.5 118.5	29 34.2 +58.6 117.4	29 22.2 +58.5 116.4	29 10.1 +58.5 115.4
24°	30 56.6 +58.6 119.2	30 44.7 +58.6 118.2	30 32.8 +58.5 117.2	30 20.7 +58.5 116.1	30 08.6 +58.4 115.1
25°	31 55.2 +58.5 119.0	31 43.3 +58.5 118.0	31 31.3 +58.5 116.9	31 19.2 +58.5 115.9	31 07.0 +58.5 114.8
26°	32 53.7 +58.5 118.7	32 41.8 +58.5 117.7	32 29.8 +58.5 116.7	32 17.7 +58.4 115.6	32 05.5 +58.4 114.6
27°	33 52.2 +58.5 118.5	33 40.3 +58.5 117.4	33 28.3 +58.4 116.4	33 16.1 +58.4 115.3	33 03.9 +58.4 114.3
28°	34 50.7 +58.5 118.2	34 38.8 +58.4 117.2	34 26.7 +58.4 116.1	34 14.5 +58.4 115.1	34 02.3 +58.3 114.0
29°	35 49.2 +58.4 117.9	35 37.2 +58.4 116.9	35 25.1 +58.3 115.8	35 12.9 +58.3 114.8	35 00.6 +58.3 113.7

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°	6 27.5 +58.8 119.4	6 15.7 +58.8 118.4	6 03.7 +58.8 117.4	5 51.7 +58.8 116.4	5 39.6 +58.7 115.4
1°	7 26.3 +58.8 119.2	7 14.5 +58.8 118.2	7 02.5 +58.8 117.2	6 50.5 +58.7 116.2	6 38.3 +58.7 115.2
2°	8 25.1 +58.9 119.0	8 13.3 +58.8 118.0	8 01.3 +58.8 117.0	7 49.2 +58.8 116.0	7 37.0 +58.8 115.0
3°	9 24.0 +58.8 118.8	9 12.1 +58.8 117.8	9 00.1 +58.8 116.8	8 48.0 +58.7 115.8	8 35.8 +58.7 114.8
4°	10 22.8 +58.8 118.6	10 10.9 +58.8 117.6	9 58.9 +58.7 116.6	9 46.7 +58.8 115.6	9 34.5 +58.7 114.6
5°	11 21.6 +58.8 118.4	11 09.7 +58.7 117.4	10 57.6 +58.8 116.4	10 45.5 +58.7 115.4	10 33.2 +58.7 114.4
6°	12 20.4 +58.8 118.2	12 08.4 +58.8 117.2	11 56.4 +58.7 116.2	11 44.2 +58.7 115.2	11 31.9 +58.7 114.2
7°	13 19.2 +58.8 118.0	13 07.2 +58.8 117.0	12 55.1 +58.8 116.0	12 42.9 +58.7 115.0	12 30.6 +58.7 114.0
8°	14 18.0 +58.7 117.7	14 06.0 +58.7 116.7	13 53.9 +58.7 115.7	13 41.6 +58.7 114.7	13 29.3 +58.7 113.8
9°	15 16.7 +58.8 117.5	15 04.7 +58.7 116.5	14 52.6 +58.7 115.5	14 40.3 +58.7 114.5	14 28.0 +58.7 113.5
10°	16 15.5 +58.7 117.3	16 03.4 +58.8 116.3	15 51.3 +58.7 115.3	15 39.0 +58.7 114.3	15 26.7 +58.7 113.3
11°	17 14.2 +58.8 117.1	17 02.2 +58.7 116.1	16 50.0 +58.7 115.1	16 37.7 +58.7 114.1	16 25.4 +58.6 113.1
12°	18 13.0 +58.7 116.9	18 00.9 +58.7 115.9	17 48.7 +58.7 114.9	17 36.4 +58.6 113.9	17 24.0 +58.6 112.9
13°	19 11.7 +58.7 116.7	18 59.6 +58.6 115.7	18 47.4 +58.6 114.7	18 35.0 +58.7 113.7	18 22.6 +58.6 112.7
14°	20 10.4 +58.7 116.5	19 58.2 +58.7 115.5	19 46.0 +58.6 114.4	19 33.7 +58.6 113.4	19 21.2 +58.6 112.4
15°	21 09.1 +58.6 116.2	20 56.9 +58.7 115.2	20 44.6 +58.7 114.2	20 32.3 +58.6 113.2	20 19.8 +58.6 112.2
16°	22 07.7 +58.7 116.0	21 55.6 +58.6 115.0	21 43.3 +58.6 114.0	21 30.9 +58.6 113.0	21 18.4 +58.6 112.0
17°	23 06.4 +58.6 115.8	22 54.2 +58.6 114.8	22 41.9 +58.6 113.8	22 29.5 +58.5 112.7	22 17.0 +58.5 111.7
18°	24 05.0 +58.6 115.6	23 52.8 +58.6 114.5	23 40.5 +58.5 113.5	23 28.0 +58.6 112.5	23 15.5 +58.5 111.5
19°	25 03.6 +58.6 115.3	24 51.4 +58.5 114.3	24 39.0 +58.6 113.3	24 26.6 +58.5 112.3	24 14.0 +58.5 111.3
20°	26 02.2 +58.6 115.1	25 49.9 +58.6 114.1	25 37.6 +58.5 113.0	25 25.1 +58.5 112.0	25 12.5 +58.5 111.0
21°	27 00.8 +58.5 114.8	26 48.5 +58.5 113.8	26 36.1 +58.5 112.8	26 23.6 +58.4 111.8	26 11.0 +58.4 110.8
22°	27 59.3 +58.5 114.6	27 47.0 +58.5 113.6	27 34.6 +58.4 112.5	27 22.0 +58.5 111.5	27 09.4 +58.5 110.5
23°	28 57.8 +58.5 114.3	28 45.5 +58.4 113.3	28 33.0 +58.4 112.3	28 20.5 +58.4 111.3	28 07.9 +58.3 110.3
24°	29 56.3 +58.4 114.1	29 43.9 +58.4 113.1	29 31.4 +58.4 112.0	29 18.9 +58.4 111.0	29 06.2 +58.4 110.0
25°	30 54.7 +58.4 113.8	30 42.3 +58.4 112.8	30 29.8 +58.4 111.8	30 17.3 +58.3 110.7	30 04.6 +58.3 109.7
26°	31 53.1 +58.4 113.6	31 40.7 +58.4 112.5	31 28.2 +58.3 111.5	31 15.6 +58.3 110.5	31 02.9 +58.3 109.5
27°	32 51.5 +58.4 113.3	32 39.1 +58.3 112.2	32 26.5 +58.3 111.2	32 13.9 +58.3 110.2	32 01.2 +58.3 109.2
28°	33 49.9 +58.3 113.0	33 37.4 +58.3 112.0	33 24.8 +58.3 110.9	33 12.2 +58.2 109.9	32 59.5 +58.2 108.9
29°	34 48.2 +58.2 112.7	34 35.7 +58.2 111.7	34 23.1 +58.2 110.6	34 10.4 +58.2 109.6	33 57.7 +58.1 108.6

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°	5 27.3 +58.7 114.4	5 15.0 +58.7 113.5	5 02.6 +58.6 112.5	4 50.0 +58.7 111.5	4 37.4 +58.7 110.5
1°	6 26.0 +58.8 114.2	6 13.7 +58.7 113.2	6 01.2 +58.7 112.3	5 48.7 +58.7 111.3	5 36.1 +58.6 110.3
2°	7 24.8 +58.7 114.0	7 12.4 +58.7 113.0	6 59.9 +58.7 112.1	6 47.4 +58.6 111.1	6 34.7 +58.7 110.1
3°	8 23.5 +58.7 113.8	8 11.1 +58.7 112.8	7 58.6 +58.7 111.8	7 46.0 +58.7 110.9	7 33.4 +58.6 109.9
4°	9 22.2 +58.7 113.6	9 09.8 +58.7 112.6	8 57.3 +58.6 111.6	8 44.7 +58.6 110.6	8 32.0 +58.6 109.7
5°	10 20.9 +58.7 113.4	10 08.5 +58.6 112.4	9 55.9 +58.7 111.4	9 43.3 +58.7 110.4	9 30.6 +58.7 109.4
6°	11 19.6 +58.7 113.2	11 07.1 +58.7 112.2	10 54.6 +58.6 111.2	10 42.0 +58.6 110.2	10 29.3 +58.6 109.2
7°	12 18.3 +58.6 113.0	12 05.8 +58.6 112.0	11 53.2 +58.7 111.0	11 40.6 +58.6 110.0	11 27.9 +58.6 109.0
8°	13 16.9 +58.7 112.8	13 04.4 +58.7 111.8	12 51.9 +58.6 110.8	12 39.2 +58.6 109.8	12 26.5 +58.6 108.8
9°	14 15.6 +58.7 112.5	14 03.1 +58.6 111.5	13 50.5 +58.6 110.6	13 37.8 +58.6 109.6	13 25.1 +58.5 108.6
10°	15 14.3 +58.6 112.3	15 01.7 +58.6 111.3	14 49.1 +58.6 110.3	14 36.4 +58.6 109.3	14 23.6 +58.6 108.3
11°	16 12.9 +58.6 112.1	16 00.3 +58.6 111.1	15 47.7 +58.6 110.1	15 35.0 +58.6 109.1	15 22.2 +58.6 108.1
12°	17 11.5 +58.6 111.9	16 58.9 +58.6 110.9	16 46.3 +58.6 109.9	16 33.6 +58.5 108.9	16 20.8 +58.5 107.9
13°	18 10.1 +58.6 111.7	17 57.5 +58.6 110.7	17 44.9 +58.5 109.7	17 32.1 +58.6 108.7	17 19.3 +58.5 107.7
14°	19 08.7 +58.6 111.4	18 56.1 +58.6 110.4	18 43.4 +58.6 109.4	18 30.7 +58.5 108.4	18 17.8 +58.5 107.4
15°	20 07.3 +58.6 111.2	19 54.7 +58.5 110.2	19 42.0 +58.5 109.2	19 29.2 +58.5 108.2	19 16.3 +58.5 107.2
16°	21 05.9 +58.5 111.0	20 53.2 +58.5 110.0	20 40.5 +58.5 109.0	20 27.7 +58.5 108.0	20 14.8 +58.5 107.0
17°	22 04.4 +58.5 110.7	21 51.7 +58.5 109.7	21 39.0 +58.5 108.7	21 26.2 +58.4 107.7	21 13.3 +58.4 106.7
18°	23 02.9 +58.5 110.5	22 50.2 +58.5 109.5	22 37.5 +58.4 108.5	22 24.6 +58.5 107.5	22 11.7 +58.4 106.5
19°	24 01.4 +58.5 110.2	23 48.7 +58.5 109.2	23 35.9 +58.5 108.2	23 23.1 +58.4 107.2	23 10.1 +58.5 106.2
20°	24 59.9 +58.4 110.0	24 47.2 +58.4 109.0	24 34.4 +58.4 108.0	24 21.5 +58.4 107.0	24 08.6 +58.3 106.0
21°	25 58.3 +58.5 109.8	25 45.6 +58.4 108.7	25 32.8 +58.4 107.7	25 19.9 +58.4 106.7	25 06.9 +58.4 105.7
22°	26 56.8 +58.4 109.5	26 44.0 +58.4 108.5	26 31.2 +58.3 107.5	26 18.3 +58.3 106.5	26 05.3 +58.3 105.5
23°	27 55.2 +58.3 109.2	27 42.4 +58.3 108.2	27 29.5 +58.3 107.2	27 16.6 +58.3 106.2	27 03.6 +58.3 105.2
24°	28 53.5 +58.4 109.0	28 40.7 +58.3 108.0	28 27.8 +58.3 107.0	28 14.9 +58.3 105.9	28 01.9 +58.3 104.9
25°	29 51.9 +58.3 108.7	29 39.0 +58.3 107.7	29 26.1 +58.3 106.7	29 13.2 +58.2 105.7	29 00.2 +58.2 104.7
26°	30 50.2 +58.2 108.4	30 37.3 +58.3 107.4	30 24.4 +58.2 106.4	30 11.4 +58.2 105.4	29 58.4 +58.2 104.4
27°	31 48.4 +58.3 108.2	31 35.6 +58.2 107.1	31 22.6 +58.2 106.1	31 09.6 +58.2 105.1	30 56.6 +58.1 104.1
28°	32 46.7 +58.1 107.9	32 33.8 +58.1 106.9	32 20.8 +58.2 105.8	32 07.8 +58.1 104.8	31 54.7 +58.1 103.8
29°	33 44.8 +58.2 107.6	33 31.9 +58.2 106.6	33 19.0 +58.1 105.5	33 05.9 +58.1 104.5	32 52.8 +58.1 103.5

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°	4 24.8 +58.6 109.5	4 12.0 +58.6 108.5	3 59.2 +58.6 107.6	3 46.3 +58.5 106.6	3 33.3 +58.6 105.6
1°	5 23.4 +58.6 109.3	5 10.6 +58.6 108.3	4 57.8 +58.6 107.4	4 44.8 +58.6 106.4	4 31.9 +58.5 105.4
2°	6 22.0 +58.6 109.1	6 09.2 +58.6 108.1	5 56.4 +58.6 107.1	5 43.4 +58.6 106.2	5 30.4 +58.6 105.2
3°	7 20.6 +58.7 108.9	7 07.8 +58.6 107.9	6 55.0 +58.5 106.9	6 42.0 +58.6 105.9	6 29.0 +58.6 105.0
4°	8 19.3 +58.6 108.7	8 06.4 +58.6 107.7	7 53.5 +58.6 106.7	7 40.6 +58.5 105.7	7 27.6 +58.5 104.7
5°	9 17.9 +58.6 108.5	9 05.0 +58.6 107.5	8 52.1 +58.6 106.5	8 39.1 +58.6 105.5	8 26.1 +58.6 104.5
6°	10 16.5 +58.6 108.2	10 03.6 +58.6 107.2	9 50.7 +58.6 106.3	9 37.7 +58.6 105.3	9 24.7 +58.5 104.3
7°	11 15.1 +58.6 108.0	11 02.2 +58.6 107.0	10 49.3 +58.5 106.0	10 36.3 +58.5 105.1	10 23.2 +58.5 104.1
8°	12 13.7 +58.5 107.8	12 00.8 +58.5 106.8	11 47.8 +58.6 105.8	11 34.8 +58.5 104.8	11 21.7 +58.5 103.8
9°	13 12.2 +58.6 107.6	12 59.3 +58.6 106.6	12 46.4 +58.5 105.6	12 33.3 +58.5 104.6	12 20.2 +58.5 103.6
10°	14 10.8 +58.5 107.4	13 57.9 +58.5 106.4	13 44.9 +58.5 105.4	13 31.8 +58.6 104.4	13 18.7 +58.5 103.4
11°	15 09.3 +58.6 107.1	14 56.4 +58.5 106.1	14 43.4 +58.5 105.1	14 30.4 +58.4 104.2	14 17.2 +58.5 103.2
12°	16 07.9 +58.5 106.9	15 54.9 +58.5 105.9	15 41.9 +58.5 104.9	15 28.8 +58.5 103.9	15 15.7 +58.5 102.9
13°	17 06.4 +58.5 106.7	16 53.4 +58.5 105.7	16 40.4 +58.5 104.7	16 27.3 +58.5 103.7	16 14.2 +58.4 102.7
14°	18 04.9 +58.5 106.4	17 51.9 +58.5 105.4	17 38.9 +58.4 104.4	17 25.8 +58.4 103.5	17 12.6 +58.5 102.5
15°	19 03.4 +58.5 106.2	18 50.4 +58.5 105.2	18 37.3 +58.5 104.2	18 24.2 +58.5 103.2	18 11.1 +58.4 102.2
16°	20 01.9 +58.4 106.0	19 48.9 +58.4 105.0	19 35.8 +58.4 104.0	19 22.7 +58.4 103.0	19 09.5 +58.4 102.0
17°	21 00.3 +58.4 105.7	20 47.3 +58.4 104.7	20 34.2 +58.4 103.7	20 21.1 +58.4 102.7	20 07.9 +58.4 101.7
18°	21 58.7 +58.5 105.5	21 45.7 +58.4 104.5	21 32.6 +58.4 103.5	21 19.5 +58.3 102.5	21 06.3 +58.3 101.5
19°	22 57.2 +58.3 105.2	22 44.1 +58.4 104.2	22 31.0 +58.4 103.2	22 17.8 +58.4 102.2	22 04.6 +58.3 101.2
20°	23 55.5 +58.4 105.0	23 42.5 +58.3 104.0	23 29.4 +58.3 103.0	23 16.2 +58.3 102.0	23 02.9 +58.4 101.0
21°	24 53.9 +58.3 104.7	24 40.8 +58.3 103.7	24 27.7 +58.3 102.7	24 14.5 +58.3 101.7	24 01.3 +58.2 100.7
22°	25 52.2 +58.3 104.5	25 39.1 +58.3 103.5	25 26.0 +58.3 102.5	25 12.8 +58.2 101.5	24 59.5 +58.3 100.5
23°	26 50.5 +58.3 104.2	26 37.4 +58.3 103.2	26 24.3 +58.2 102.2	26 11.0 +58.3 101.2	25 57.8 +58.2 100.2
24°	27 48.8 +58.3 103.9	27 35.7 +58.2 102.9	27 22.5 +58.2 101.9	27 09.3 +58.2 100.9	26 56.0 +58.2 99.9
25°	28 47.1 +58.2 103.7	28 33.9 +58.2 102.7	28 20.7 +58.2 101.7	28 07.5 +58.2 100.7	27 54.2 +58.2 99.7
26°	29 45.3 +58.2 103.4	29 32.1 +58.2 102.4	29 18.9 +58.2 101.4	29 05.7 +58.1 100.4	28 52.4 +58.1 99.4
27°	30 43.5 +58.1 103.1	30 30.3 +58.1 102.1	30 17.1 +58.1 101.1	30 03.8 +58.1 100.1	29 50.5 +58.1 99.1
28°	31 41.6 +58.1 102.8	31 28.4 +58.1 101.8	31 15.2 +58.0 100.8	31 01.9 +58.1 99.8	30 48.6 +58.0 98.8
29°	32 39.7 +58.0 102.5	32 26.5 +58.0 101.5	32 13.2 +58.1 100.5	32 00.0 +58.0 99.5	31 46.6 +58.0 98.5

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°	3 20.3 +58.5 104.6	3 07.2 +58.5 103.7	2 54.0 +58.6 102.7	2 40.8 +58.6 101.7	2 27.6 +58.5 100.7
1°	4 18.8 +58.6 104.4	4 05.7 +58.6 103.4	3 52.6 +58.5 102.5	3 39.4 +58.5 101.5	3 26.1 +58.5 100.5
2°	5 17.4 +58.5 104.2	5 04.3 +58.5 103.2	4 51.1 +58.5 102.2	4 37.9 +58.5 101.3	4 24.6 +58.5 100.3
3°	6 15.9 +58.6 104.0	6 02.8 +58.5 103.0	5 49.6 +58.6 102.0	5 36.4 +58.5 101.0	5 23.1 +58.5 100.1
4°	7 14.5 +58.5 103.8	7 01.3 +58.6 102.8	6 48.2 +58.5 101.8	6 34.9 +58.5 100.8	6 21.6 +58.5 99.8
5°	8 13.0 +58.6 103.5	7 59.9 +58.5 102.6	7 46.7 +58.5 101.6	7 33.4 +58.5 100.6	7 20.1 +58.5 99.6
6°	9 11.6 +58.5 103.3	8 58.4 +58.5 102.3	8 45.2 +58.5 101.3	8 31.9 +58.5 100.4	8 18.6 +58.5 99.4
7°	10 10.1 +58.5 103.1	9 56.9 +58.5 102.1	9 43.7 +58.5 101.1	9 30.4 +58.5 100.1	9 17.1 +58.5 99.2
8°	11 08.6 +58.5 102.9	10 55.4 +58.5 101.9	10 42.2 +58.5 100.9	10 28.9 +58.5 99.9	10 15.6 +58.5 98.9
9°	12 07.1 +58.5 102.6	11 53.9 +58.5 101.7	11 40.7 +58.4 100.7	11 27.4 +58.4 99.7	11 14.1 +58.4 98.7
10°	13 05.6 +58.5 102.4	12 52.4 +58.5 101.4	12 39.1 +58.5 100.4	12 25.8 +58.5 99.5	12 12.5 +58.4 98.5
11°	14 04.1 +58.4 102.2	13 50.9 +58.4 101.2	13 37.6 +58.4 100.2	13 24.3 +58.4 99.2	13 10.9 +58.5 98.2
12°	15 02.5 +58.5 101.9	14 49.3 +58.5 101.0	14 36.0 +58.5 100.0	14 22.7 +58.5 99.0	14 09.4 +58.4 98.0
13°	16 01.0 +58.4 101.7	15 47.8 +58.4 100.7	15 34.5 +58.4 99.7	15 21.2 +58.4 98.8	15 07.8 +58.4 97.8
14°	16 59.4 +58.5 101.5	16 46.2 +58.4 100.5	16 32.9 +58.4 99.5	16 19.6 +58.4 98.5	16 06.2 +58.4 97.5
15°	17 57.9 +58.4 101.2	17 44.6 +58.4 100.2	17 31.3 +58.4 99.3	17 18.0 +58.3 98.3	17 04.6 +58.3 97.3
16°	18 56.3 +58.3 101.0	18 43.0 +58.4 100.0	18 29.7 +58.3 99.0	18 16.3 +58.4 98.0	18 02.9 +58.4 97.1
17°	19 54.6 +58.4 100.8	19 41.4 +58.3 99.8	19 28.0 +58.4 98.8	19 14.7 +58.3 97.8	19 01.3 +58.3 96.8
18°	20 53.0 +58.4 100.5	20 39.7 +58.4 99.5	20 26.4 +58.3 98.5	20 13.0 +58.3 97.5	19 59.6 +58.3 96.6
19°	21 51.4 +58.3 100.3	21 38.1 +58.3 99.3	21 24.7 +58.3 98.3	21 11.3 +58.3 97.3	20 57.9 +58.3 96.3
20°	22 49.7 +58.3 100.0	22 36.4 +58.2 99.0	22 23.0 +58.3 98.0	22 09.6 +58.3 97.0	21 56.2 +58.3 96.1
21°	23 48.0 +58.2 99.7	23 34.6 +58.3 98.8	23 21.3 +58.2 97.8	23 07.9 +58.2 96.8	22 54.5 +58.2 95.8
22°	24 46.2 +58.3 99.5	24 32.9 +58.2 98.5	24 19.5 +58.3 97.5	24 06.1 +58.3 96.5	23 52.7 +58.2 95.5
23°	25 44.5 +58.2 99.2	25 31.1 +58.2 98.2	25 17.8 +58.2 97.2	25 04.4 +58.2 96.2	24 50.9 +58.2 95.3
24°	26 42.7 +58.2 98.9	26 29.3 +58.2 98.0	26 16.0 +58.1 97.0	26 02.6 +58.1 96.0	25 49.1 +58.2 95.0
25°	27 40.9 +58.1 98.7	27 27.5 +58.2 97.7	27 14.1 +58.2 96.7	27 00.7 +58.1 95.7	26 47.3 +58.1 94.7
26°	28 39.0 +58.1 98.4	28 25.7 +58.1 97.4	28 12.3 +58.1 96.4	27 58.8 +58.1 95.4	27 45.4 +58.1 94.4
27°	29 37.1 +58.1 98.1	29 23.8 +58.0 97.1	29 10.4 +58.0 96.1	28 56.9 +58.1 95.1	28 43.5 +58.0 94.2
28°	30 35.2 +58.1 97.8	30 21.8 +58.1 96.8	30 08.4 +58.0 95.8	29 55.0 +58.0 94.8	29 41.5 +58.0 93.9
29°	31 33.3 +58.0 97.5	31 19.9 +57.9 96.5	31 06.4 +58.0 95.5	30 53.0 +58.0 94.6	30 39.5 +58.0 93.6

Declination SAME name as Latitude

Latitude 77°

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°	2 14.3 +58.5 99.7	2 01.0 +58.5 98.8	1 47.6 +58.5 97.8	1 34.3 +58.4 96.8	1 20.8 +58.5 95.8
1°	3 12.8 +58.5 99.5	2 59.5 +58.5 98.6	2 46.1 +58.5 97.6	2 32.7 +58.5 96.6	2 19.3 +58.5 95.6
2°	4 11.3 +58.5 99.3	3 58.0 +58.5 98.3	3 44.6 +58.5 97.4	3 31.2 +58.5 96.4	3 17.8 +58.5 95.4
3°	5 09.8 +58.5 99.1	4 56.5 +58.5 98.1	4 43.1 +58.5 97.1	4 29.7 +58.5 96.2	4 16.3 +58.4 95.2
4°	6 08.3 +58.5 98.9	5 55.0 +58.5 97.9	5 41.6 +58.5 96.9	5 28.2 +58.4 95.9	5 14.7 +58.5 94.9
5°	7 06.8 +58.5 98.6	6 53.5 +58.4 97.7	6 40.1 +58.4 96.7	6 26.6 +58.5 95.7	6 13.2 +58.5 94.7
6°	8 05.3 +58.5 98.4	7 51.9 +58.5 97.4	7 38.5 +58.5 96.5	7 25.1 +58.5 95.5	7 11.7 +58.4 94.5
7°	9 03.8 +58.4 98.2	8 50.4 +58.5 97.2	8 37.0 +58.4 96.2	8 23.6 +58.4 95.2	8 10.1 +58.5 94.3
8°	10 02.2 +58.5 98.0	9 48.9 +58.4 97.0	9 35.4 +58.5 96.0	9 22.0 +58.4 95.0	9 08.6 +58.4 94.0
9°	11 00.7 +58.4 97.7	10 47.3 +58.4 96.7	10 33.9 +58.4 95.8	10 20.4 +58.5 94.8	10 07.0 +58.4 93.8
10°	11 59.1 +58.5 97.5	11 45.7 +58.5 96.5	11 32.3 +58.4 95.5	11 18.9 +58.4 94.6	11 05.4 +58.4 93.6
11°	12 57.6 +58.4 97.3	12 44.2 +58.4 96.3	12 30.7 +58.5 95.3	12 17.3 +58.4 94.3	12 03.8 +58.4 93.3
12°	13 56.0 +58.4 97.0	13 42.6 +58.4 96.0	13 29.2 +58.4 95.1	13 15.7 +58.4 94.1	13 02.2 +58.4 93.1
13°	14 54.4 +58.4 96.8	14 41.0 +58.4 95.8	14 27.6 +58.3 94.8	14 14.1 +58.4 93.9	14 00.6 +58.4 92.9
14°	15 52.8 +58.4 96.6	15 39.4 +58.4 95.6	15 25.9 +58.4 94.6	15 12.5 +58.3 93.6	14 59.0 +58.4 92.6
15°	16 51.2 +58.3 96.3	16 37.8 +58.3 95.3	16 24.3 +58.4 94.4	16 10.8 +58.4 93.4	15 57.4 +58.3 92.4
16°	17 49.5 +58.4 96.1	17 36.1 +58.3 95.1	17 22.7 +58.3 94.1	17 09.2 +58.3 93.1	16 55.7 +58.3 92.2
17°	18 47.9 +58.3 95.8	18 34.4 +58.4 94.8	18 21.0 +58.3 93.9	18 07.5 +58.3 92.9	17 54.0 +58.3 91.9
18°	19 46.2 +58.3 95.6	19 32.8 +58.3 94.6	19 19.3 +58.3 93.6	19 05.8 +58.3 92.6	18 52.3 +58.3 91.7
19°	20 44.5 +58.3 95.3	20 31.1 +58.2 94.3	20 17.6 +58.3 93.4	20 04.1 +58.3 92.4	19 50.6 +58.3 91.4
20°	21 42.8 +58.2 95.1	21 29.3 +58.3 94.1	21 15.9 +58.2 93.1	21 02.4 +58.2 92.1	20 48.9 +58.2 91.2
21°	22 41.0 +58.3 94.8	22 27.6 +58.2 93.8	22 14.1 +58.2 92.8	22 00.6 +58.3 91.9	21 47.1 +58.3 90.9
22°	23 39.3 +58.2 94.5	23 25.8 +58.2 93.6	23 12.3 +58.2 92.6	22 58.9 +58.1 91.6	22 45.4 +58.2 90.6
23°	24 37.5 +58.2 94.3	24 24.0 +58.2 93.3	24 10.5 +58.2 92.3	23 57.0 +58.2 91.3	23 43.6 +58.1 90.4
24°	25 35.7 +58.1 94.0	25 22.2 +58.1 93.0	25 08.7 +58.1 92.1	24 55.2 +58.2 91.1	24 41.7 +58.2 90.1
25°	26 33.8 +58.1 93.7	26 20.3 +58.1 92.8	26 06.8 +58.2 91.8	25 53.4 +58.1 90.8	25 39.9 +58.1 89.8
26°	27 31.9 +58.1 93.5	27 18.4 +58.1 92.5	27 05.0 +58.0 91.5	26 51.5 +58.0 90.5	26 38.0 +58.0 89.5
27°	28 30.0 +58.0 93.2	28 16.5 +58.1 92.2	28 03.0 +58.1 91.2	27 49.5 +58.1 90.2	27 36.0 +58.1 89.3
28°	29 28.0 +58.1 92.9	29 14.6 +58.0 91.9	29 01.1 +58.0 90.9	28 47.6 +58.0 90.0	28 34.1 +58.0 89.0
29°	30 26.1 +57.9 92.6	30 12.6 +57.9 91.6	29 59.1 +57.9 90.6	29 45.6 +57.9 89.7	29 32.1 +57.9 88.7

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	1 07.4 +58.5 94.9	0 53.9 +58.5 93.9	0 40.5 +58.4 92.9	0 27.0 +58.5 91.9	0 13.5 +58.5 91.0
1°	2 05.9 +58.4 94.6	1 52.4 +58.5 93.7	1 38.9 +58.5 92.7	1 25.5 +58.4 91.7	1 12.0 +58.4 90.7
2°	3 04.3 +58.5 94.4	2 50.9 +58.4 93.4	2 37.4 +58.5 92.5	2 23.9 +58.5 91.5	2 10.4 +58.5 90.5
3°	4 02.8 +58.5 94.2	3 49.3 +58.5 93.2	3 35.9 +58.4 92.2	3 22.4 +58.4 91.3	3 08.9 +58.4 90.3
4°	5 01.3 +58.4 94.0	4 47.8 +58.5 93.0	4 34.3 +58.5 92.0	4 20.8 +58.5 91.0	4 07.3 +58.5 90.1
5°	5 59.7 +58.5 93.7	5 46.3 +58.4 92.8	5 32.8 +58.4 91.8	5 19.3 +58.4 90.8	5 05.8 +58.4 89.8
6°	6 58.2 +58.4 93.5	6 44.7 +58.5 92.5	6 31.2 +58.5 91.6	6 17.7 +58.5 90.6	6 04.2 +58.5 89.6
7°	7 56.6 +58.5 93.3	7 43.2 +58.4 92.3	7 29.7 +58.4 91.3	7 16.2 +58.4 90.4	7 02.7 +58.4 89.4
8°	8 55.1 +58.4 93.1	8 41.6 +58.4 92.1	8 28.1 +58.4 91.1	8 14.6 +58.4 90.1	8 01.1 +58.4 89.2
9°	9 53.5 +58.4 92.8	9 40.0 +58.4 91.9	9 26.5 +58.5 90.9	9 13.0 +58.5 89.9	8 59.5 +58.5 88.9
10°	10 51.9 +58.4 92.6	10 38.4 +58.5 91.6	10 25.0 +58.4 90.7	10 11.5 +58.4 89.7	9 58.0 +58.4 88.7
11°	11 50.3 +58.4 92.4	11 36.9 +58.4 91.4	11 23.4 +58.4 90.4	11 09.9 +58.4 89.4	10 56.4 +58.4 88.5
12°	12 48.7 +58.4 92.1	12 35.3 +58.3 91.2	12 21.8 +58.3 90.2	12 08.3 +58.3 89.2	11 54.8 +58.4 88.2
13°	13 47.1 +58.4 91.9	13 33.6 +58.4 90.9	13 20.1 +58.4 89.9	13 06.6 +58.4 89.0	12 53.2 +58.3 88.0
14°	14 45.5 +58.4 91.7	14 32.0 +58.4 90.7	14 18.5 +58.4 89.7	14 05.0 +58.4 88.7	13 51.5 +58.4 87.8
15°	15 43.9 +58.3 91.4	15 30.4 +58.3 90.4	15 16.9 +58.3 89.5	15 03.4 +58.3 88.5	14 49.9 +58.3 87.5
16°	16 42.2 +58.3 91.2	16 28.7 +58.3 90.2	16 15.2 +58.3 89.2	16 01.7 +58.4 88.3	15 48.2 +58.4 87.3
17°	17 40.5 +58.3 90.9	17 27.0 +58.3 90.0	17 13.5 +58.4 89.0	17 00.1 +58.3 88.0	16 46.6 +58.3 87.0
18°	18 38.8 +58.3 90.7	18 25.3 +58.3 89.7	18 11.9 +58.2 88.7	17 58.4 +58.3 87.8	17 44.9 +58.3 86.8
19°	19 37.1 +58.3 90.4	19 23.6 +58.3 89.5	19 10.1 +58.3 88.5	18 56.7 +58.2 87.5	18 43.2 +58.2 86.5
20°	20 35.4 +58.2 90.2	20 21.9 +58.2 89.2	20 08.4 +58.3 88.2	19 54.9 +58.3 87.3	19 41.4 +58.3 86.3
21°	21 33.6 +58.3 89.9	21 20.1 +58.3 88.9	21 06.7 +58.2 88.0	20 53.2 +58.2 87.0	20 39.7 +58.2 86.0
22°	22 31.9 +58.2 89.7	22 18.4 +58.2 88.7	22 04.9 +58.2 87.7	21 51.4 +58.2 86.7	21 37.9 +58.2 85.8
23°	23 30.1 +58.1 89.4	23 16.6 +58.1 88.4	23 03.1 +58.1 87.4	22 49.6 +58.2 86.5	22 36.1 +58.2 85.5
24°	24 28.2 +58.2 89.1	24 14.7 +58.2 88.2	24 01.2 +58.2 87.2	23 47.8 +58.1 86.2	23 34.3 +58.2 85.2
25°	25 26.4 +58.1 88.9	25 12.9 +58.1 87.9	24 59.4 +58.1 86.9	24 45.9 +58.1 85.9	24 32.5 +58.1 85.0
26°	26 24.5 +58.0 88.6	26 11.0 +58.1 87.6	25 57.5 +58.1 86.6	25 44.0 +58.1 85.7	25 30.6 +58.1 84.7
27°	27 22.5 +58.1 88.3	27 09.1 +58.0 87.3	26 55.6 +58.0 86.4	26 42.1 +58.1 85.4	26 28.7 +58.0 84.4
28°	28 20.6 +58.0 88.0	28 07.1 +58.0 87.0	27 53.6 +58.0 86.1	27 40.2 +58.0 85.1	27 26.7 +58.1 84.1
29°	29 18.6 +58.0 87.7	29 05.1 +58.0 86.7	28 51.6 +58.0 85.8	28 38.2 +58.0 84.8	28 24.8 +57.9 83.9

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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 +58.5 90.0	-0 13.5 +58.5	-0 27.0 +58.5	-0 40.5 +58.5	-0 53.9 +58.4
1°	0 58.5 +58.4 89.8	0 45.0 +58.4 88.8	0 31.5 +58.4 87.8	0 18.0 +58.5 86.9	0 04.5 +58.5 85.9
2°	1 56.9 +58.5 89.5	1 43.4 +58.5 88.6	1 29.9 +58.5 87.6	1 16.5 +58.4 86.6	1 03.0 +58.5 85.7
3°	2 55.4 +58.4 89.3	2 41.9 +58.4 88.4	2 28.4 +58.5 87.4	2 14.9 +58.5 86.4	2 01.5 +58.4 85.4
4°	3 53.8 +58.5 89.1	3 40.3 +58.5 88.1	3 26.9 +58.4 87.2	3 13.4 +58.4 86.2	2 59.9 +58.5 85.2
5°	4 52.3 +58.4 88.9	4 38.8 +58.5 87.9	4 25.3 +58.5 86.9	4 11.8 +58.5 86.0	3 58.4 +58.5 85.0
6°	5 50.7 +58.5 88.6	5 37.3 +58.4 87.7	5 23.8 +58.4 86.7	5 10.3 +58.5 85.7	4 56.9 +58.4 84.8
7°	6 49.2 +58.4 88.4	6 35.7 +58.4 87.4	6 22.2 +58.5 86.5	6 08.8 +58.4 85.5	5 55.3 +58.5 84.5
8°	7 47.6 +58.4 88.2	7 34.1 +58.5 87.2	7 20.7 +58.4 86.2	7 07.2 +58.4 85.3	6 53.8 +58.4 84.3
9°	8 46.0 +58.5 88.0	8 32.6 +58.4 87.0	8 19.1 +58.4 86.0	8 05.6 +58.5 85.0	7 52.2 +58.4 84.1
10°	9 44.5 +58.4 87.7	9 31.0 +58.4 86.8	9 17.5 +58.4 85.8	9 04.1 +58.4 84.8	8 50.6 +58.5 83.8
11°	10 42.9 +58.4 87.5	10 29.4 +58.4 86.5	10 15.9 +58.4 85.6	10 02.5 +58.4 84.6	9 49.1 +58.4 83.6
12°	11 41.3 +58.4 87.3	11 27.8 +58.4 86.3	11 14.3 +58.4 85.3	11 00.9 +58.4 84.3	10 47.5 +58.4 83.4
13°	12 39.7 +58.3 87.0	12 26.2 +58.4 86.1	12 12.7 +58.4 85.1	11 59.3 +58.4 84.1	11 45.9 +58.4 83.1
14°	13 38.0 +58.4 86.8	13 24.6 +58.3 85.8	13 11.1 +58.4 84.8	12 57.7 +58.4 83.9	12 44.3 +58.4 82.9
15°	14 36.4 +58.4 86.6	14 22.9 +58.4 85.6	14 09.5 +58.4 84.6	13 56.1 +58.3 83.6	13 42.7 +58.3 82.7
16°	15 34.8 +58.3 86.3	15 21.3 +58.3 85.3	15 07.9 +58.3 84.4	14 54.4 +58.4 83.4	14 41.0 +58.4 82.4
17°	16 33.1 +58.3 86.1	16 19.6 +58.4 85.1	16 06.2 +58.3 84.1	15 52.8 +58.3 83.2	15 39.4 +58.3 82.2
18°	17 31.4 +58.3 85.8	17 18.0 +58.3 84.9	17 04.5 +58.3 83.9	16 51.1 +58.3 82.9	16 37.7 +58.4 82.0
19°	18 29.7 +58.3 85.6	18 16.3 +58.2 84.6	18 02.8 +58.3 83.6	17 49.4 +58.3 82.7	17 36.1 +58.3 81.7
20°	19 28.0 +58.2 85.3	19 14.5 +58.3 84.4	19 01.1 +58.3 83.4	18 47.7 +58.3 82.4	18 34.4 +58.3 81.5
21°	20 26.2 +58.3 85.1	20 12.8 +58.2 84.1	19 59.4 +58.2 83.1	19 46.0 +58.3 82.2	19 32.7 +58.2 81.2
22°	21 24.5 +58.2 84.8	21 11.0 +58.3 83.8	20 57.6 +58.3 82.9	20 44.3 +58.2 81.9	20 30.9 +58.3 81.0
23°	22 22.7 +58.2 84.5	22 09.3 +58.2 83.6	21 55.9 +58.2 82.6	21 42.5 +58.2 81.7	21 29.2 +58.2 80.7
24°	23 20.9 +58.1 84.3	23 07.5 +58.1 83.3	22 54.1 +58.1 82.4	22 40.7 +58.2 81.4	22 27.4 +58.2 80.4
25°	24 19.0 +58.2 84.0	24 05.6 +58.2 83.0	23 52.2 +58.2 82.1	23 38.9 +58.1 81.1	23 25.6 +58.1 80.2
26°	25 17.2 +58.1 83.7	25 03.8 +58.1 82.8	24 50.4 +58.1 81.8	24 37.0 +58.2 80.9	24 23.7 +58.2 79.9
27°	26 15.3 +58.0 83.5	26 01.9 +58.0 82.5	25 48.5 +58.1 81.5	25 35.2 +58.1 80.6	25 21.9 +58.1 79.6
28°	27 13.3 +58.0 83.2	26 59.9 +58.1 82.2	26 46.6 +58.0 81.3	26 33.3 +58.0 80.3	26 20.0 +58.0 79.4
29°	28 11.3 +58.0 82.9	27 58.0 +58.0 81.9	27 44.6 +58.0 81.0	27 31.3 +58.0 80.0	27 18.0 +58.1 79.1

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-1 07.4 +58.5	-1 20.8 +58.4	-1 34.3 +58.5	-1 47.6 +58.4	-2 01.0 +58.5
1°	-0 08.9 +58.4	-0 22.4 +58.5	-0 35.8 +58.5	-0 49.2 +58.5	-1 02.5 +58.5
2°	0 49.5 +58.5 84.7	0 36.1 +58.5 83.7	0 22.7 +58.5 82.7	0 09.3 +58.5 81.8	-0 04.0 +58.5
3°	1 48.0 +58.5 84.5	1 34.6 +58.5 83.5	1 21.2 +58.5 82.5	1 07.8 +58.5 81.5	0 54.5 +58.5 80.6
4°	2 46.5 +58.5 84.2	2 33.1 +58.4 83.3	2 19.7 +58.5 82.3	2 06.3 +58.5 81.3	1 53.0 +58.5 80.3
5°	3 45.0 +58.4 84.0	3 31.5 +58.5 83.0	3 18.2 +58.4 82.1	3 04.8 +58.5 81.1	2 51.5 +58.5 80.1
6°	4 43.4 +58.5 83.8	4 30.0 +58.5 82.8	4 16.6 +58.5 81.8	4 03.3 +58.5 80.9	3 50.0 +58.5 79.9
7°	5 41.9 +58.4 83.6	5 28.5 +58.4 82.6	5 15.1 +58.5 81.6	5 01.8 +58.5 80.6	4 48.5 +58.5 79.7
8°	6 40.3 +58.5 83.3	6 26.9 +58.5 82.4	6 13.6 +58.5 81.4	6 00.3 +58.4 80.4	5 47.0 +58.5 79.4
9°	7 38.8 +58.4 83.1	7 25.4 +58.5 82.1	7 12.1 +58.4 81.2	6 58.7 +58.5 80.2	6 45.5 +58.4 79.2
10°	8 37.2 +58.5 82.9	8 23.9 +58.4 81.9	8 10.5 +58.5 80.9	7 57.2 +58.5 80.0	7 43.9 +58.5 79.0
11°	9 35.7 +58.4 82.6	9 22.3 +58.4 81.7	9 09.0 +58.4 80.7	8 55.7 +58.4 79.7	8 42.4 +58.5 78.8
12°	10 34.1 +58.4 82.4	10 20.7 +58.5 81.4	10 07.4 +58.4 80.5	9 54.1 +58.4 79.5	9 40.9 +58.4 78.5
13°	11 32.5 +58.4 82.2	11 19.2 +58.4 81.2	11 05.8 +58.5 80.2	10 52.5 +58.5 79.3	10 39.3 +58.5 78.3
14°	12 30.9 +58.4 81.9	12 17.6 +58.4 81.0	12 04.3 +58.4 80.0	11 51.0 +58.4 79.0	11 37.8 +58.4 78.1
15°	13 29.3 +58.4 81.7	13 16.0 +58.3 80.7	13 02.7 +58.4 79.8	12 49.4 +58.4 78.8	12 36.2 +58.4 77.8
16°	14 27.7 +58.3 81.5	14 14.3 +58.4 80.5	14 01.1 +58.3 79.5	13 47.8 +58.4 78.6	13 34.6 +58.4 77.6
17°	15 26.0 +58.4 81.2	15 12.7 +58.4 80.3	14 59.4 +58.4 79.3	14 46.2 +58.4 78.3	14 33.0 +58.4 77.4
18°	16 24.4 +58.3 81.0	16 11.1 +58.3 80.0	15 57.8 +58.4 79.1	15 44.6 +58.3 78.1	15 31.4 +58.4 77.1
19°	17 22.7 +58.3 80.7	17 09.4 +58.3 79.8	16 56.2 +58.3 78.8	16 42.9 +58.4 77.9	16 29.8 +58.3 76.9
20°	18 21.0 +58.3 80.5	18 07.7 +58.3 79.5	17 54.5 +58.3 78.6	17 41.3 +58.3 77.6	17 28.1 +58.4 76.7
21°	19 19.3 +58.3 80.2	19 06.0 +58.3 79.3	18 52.8 +58.3 78.3	18 39.6 +58.3 77.4	18 26.5 +58.3 76.4
22°	20 17.6 +58.3 80.0	20 04.3 +58.3 79.0	19 51.1 +58.3 78.1	19 37.9 +58.3 77.1	19 24.8 +58.3 76.2
23°	21 15.9 +58.2 79.7	21 02.6 +58.2 78.8	20 49.4 +58.2 77.8	20 36.2 +58.3 76.9	20 23.1 +58.3 75.9
24°	22 14.1 +58.2 79.5	22 00.8 +58.2 78.5	21 47.6 +58.3 77.6	21 34.5 +58.2 76.6	21 21.4 +58.2 75.7
25°	23 12.3 +58.2 79.2	22 59.0 +58.2 78.3	22 45.9 +58.2 77.3	22 32.7 +58.2 76.3	22 19.6 +58.3 75.4
26°	24 10.5 +58.1 78.9	23 57.2 +58.2 78.0	23 44.1 +58.1 77.0	23 30.9 +58.2 76.1	23 17.9 +58.2 75.1
27°	25 08.6 +58.1 78.7	24 55.4 +58.1 77.7	24 42.2 +58.2 76.8	24 29.1 +58.2 75.8	24 16.1 +58.1 74.9
28°	26 06.7 +58.1 78.4	25 53.5 +58.1 77.4	25 40.4 +58.1 76.5	25 27.3 +58.1 75.5	25 14.2 +58.2 74.6
29°	27 04.8 +58.1 78.1	26 51.6 +58.1 77.2	26 38.5 +58.1 76.2	26 25.4 +58.1 75.3	26 12.4 +58.1 74.3

Declination SAME name as Latitude

Latitude 77°

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°	-2 14.3 +58.5	-2 27.6 +58.5	-2 40.8 +58.5	-2 54.0 +58.5	-3 07.2 +58.6
1°	-1 15.8 +58.5	-1 29.1 +58.5	-1 42.3 +58.5	-1 55.5 +58.5	-2 08.6 +58.5
2°	-0 17.3 +58.5	-0 30.6 +58.6	-0 43.8 +58.5	-0 57.0 +58.6	-1 10.1 +58.6
3°	0 41.2 +58.5 79.6	0 28.0 +58.5 78.6	0 14.7 +58.6 77.6	0 01.6 +58.5 76.7	-0 11.5 +58.5
4°	1 39.7 +58.5 79.4	1 26.5 +58.5 78.4	1 13.3 +58.5 77.4	1 00.1 +58.6 76.4	0 47.0 +58.6 75.5
5°	2 38.2 +58.5 79.1	2 25.0 +58.5 78.2	2 11.8 +58.5 77.2	1 58.7 +58.5 76.2	1 45.6 +58.5 75.3
6°	3 36.7 +58.5 78.9	3 23.5 +58.5 77.9	3 10.3 +58.6 77.0	2 57.2 +58.5 76.0	2 44.1 +58.6 75.0
7°	4 35.2 +58.5 78.7	4 22.0 +58.5 77.7	4 08.9 +58.5 76.8	3 55.7 +58.6 75.8	3 42.7 +58.5 74.8
8°	5 33.7 +58.5 78.5	5 20.5 +58.5 77.5	5 07.4 +58.5 76.5	4 54.3 +58.5 75.6	4 41.2 +58.6 74.6
9°	6 32.2 +58.5 78.3	6 19.0 +58.5 77.3	6 05.9 +58.5 76.3	5 52.8 +58.5 75.3	5 39.8 +58.5 74.4
10°	7 30.7 +58.5 78.0	7 17.5 +58.5 77.1	7 04.4 +58.5 76.1	6 51.3 +58.5 75.1	6 38.3 +58.5 74.2
11°	8 29.2 +58.5 77.8	8 16.0 +58.5 76.8	8 02.9 +58.5 75.9	7 49.8 +58.5 74.9	7 36.8 +58.6 73.9
12°	9 27.7 +58.4 77.6	9 14.5 +58.5 76.6	9 01.4 +58.5 75.6	8 48.3 +58.5 74.7	8 35.4 +58.5 73.7
13°	10 26.1 +58.5 77.3	10 13.0 +58.4 76.4	9 59.9 +58.5 75.4	9 46.8 +58.5 74.5	9 33.9 +58.5 73.5
14°	11 24.6 +58.4 77.1	11 11.4 +58.5 76.2	10 58.4 +58.4 75.2	10 45.3 +58.5 74.2	10 32.4 +58.5 73.3
15°	12 23.0 +58.4 76.9	12 09.9 +58.4 75.9	11 56.8 +58.5 75.0	11 43.8 +58.5 74.0	11 30.9 +58.5 73.0
16°	13 21.4 +58.5 76.7	13 08.3 +58.5 75.7	12 55.3 +58.4 74.7	12 42.3 +58.5 73.8	12 29.4 +58.4 72.8
17°	14 19.9 +58.4 76.4	14 06.8 +58.4 75.5	13 53.7 +58.5 74.5	13 40.8 +58.4 73.5	13 27.8 +58.5 72.6
18°	15 18.3 +58.3 76.2	15 05.2 +58.4 75.2	14 52.2 +58.4 74.3	14 39.2 +58.4 73.3	14 26.3 +58.5 72.3
19°	16 16.6 +58.4 75.9	16 03.6 +58.4 75.0	15 50.6 +58.4 74.0	15 37.6 +58.5 73.1	15 24.8 +58.4 72.1
20°	17 15.0 +58.4 75.7	17 02.0 +58.3 74.7	16 49.0 +58.4 73.8	16 36.1 +58.4 72.8	16 23.2 +58.4 71.9
21°	18 13.4 +58.3 75.5	18 00.3 +58.4 74.5	17 47.4 +58.3 73.5	17 34.5 +58.3 72.6	17 21.6 +58.4 71.6
22°	19 11.7 +58.3 75.2	18 58.7 +58.3 74.3	18 45.7 +58.4 73.3	18 32.8 +58.4 72.3	18 20.0 +58.4 71.4
23°	20 10.0 +58.3 75.0	19 57.0 +58.3 74.0	19 44.1 +58.3 73.1	19 31.2 +58.3 72.1	19 18.4 +58.4 71.2
24°	21 08.3 +58.3 74.7	20 55.3 +58.3 73.8	20 42.4 +58.3 72.8	20 29.5 +58.4 71.9	20 16.8 +58.3 70.9
25°	22 06.6 +58.2 74.4	21 53.6 +58.3 73.5	21 40.7 +58.3 72.5	21 27.9 +58.3 71.6	21 15.1 +58.3 70.7
26°	23 04.8 +58.3 74.2	22 51.9 +58.2 73.2	22 39.0 +58.3 72.3	22 26.2 +58.2 71.3	22 13.4 +58.3 70.4
27°	24 03.1 +58.2 73.9	23 50.1 +58.2 73.0	23 37.3 +58.2 72.0	23 24.4 +58.3 71.1	23 11.7 +58.3 70.1
28°	25 01.3 +58.1 73.7	24 48.3 +58.2 72.7	24 35.5 +58.2 71.8	24 22.7 +58.2 70.8	24 10.0 +58.2 69.9
29°	25 59.4 +58.2 73.4	25 46.5 +58.2 72.4	25 33.7 +58.2 71.5	25 20.9 +58.2 70.6	25 08.2 +58.2 69.6

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°	-3 20.3 +58.6	-3 33.3 +58.6	-3 46.3 +58.6	-3 59.2 +58.6	-4 12.0 +58.6
1°	-2 21.7 +58.6	-2 34.7 +58.6	-2 47.7 +58.6	-3 00.6 +58.7	-3 13.4 +58.6
2°	-1 23.1 +58.5	-1 36.1 +58.5	-1 49.1 +58.6	-2 01.9 +58.6	-2 14.8 +58.7
3°	-0 24.6 +58.6	-0 37.6 +58.6	-0 50.5 +58.6	-1 03.3 +58.6	-1 16.1 +58.6
4°	0 34.0 +58.6 74.5	0 21.0 +58.6 73.5	0 08.1 +58.6 72.5	-0 04.7 +58.6	-0 17.5 +58.6
5°	1 32.6 +58.5 74.3	1 19.6 +58.6 73.3	1 06.7 +58.6 72.3	0 53.9 +58.6 71.4	0 41.1 +58.7 70.4
6°	2 31.1 +58.6 74.1	2 18.2 +58.6 73.1	2 05.3 +58.6 72.1	1 52.5 +58.6 71.1	1 39.8 +58.6 70.2
7°	3 29.7 +58.5 73.8	3 16.8 +58.5 72.9	3 03.9 +58.6 71.9	2 51.1 +58.6 70.9	2 38.4 +58.6 70.0
8°	4 28.2 +58.6 73.6	4 15.3 +58.6 72.7	4 02.5 +58.6 71.7	3 49.7 +58.6 70.7	3 37.0 +58.6 69.7
9°	5 26.8 +58.6 73.4	5 13.9 +58.6 72.4	5 01.1 +58.6 71.5	4 48.3 +58.6 70.5	4 35.6 +58.6 69.5
10°	6 25.4 +58.5 73.2	6 12.5 +58.5 72.2	5 59.7 +58.5 71.3	5 46.9 +58.6 70.3	5 34.2 +58.7 69.3
11°	7 23.9 +58.5 73.0	7 11.0 +58.6 72.0	6 58.2 +58.6 71.0	6 45.5 +58.6 70.1	6 32.9 +58.6 69.1
12°	8 22.4 +58.6 72.7	8 09.6 +58.5 71.8	7 56.8 +58.6 70.8	7 44.1 +58.6 69.9	7 31.5 +58.6 68.9
13°	9 21.0 +58.5 72.5	9 08.1 +58.6 71.6	8 55.4 +58.5 70.6	8 42.7 +58.5 69.6	8 30.1 +58.5 68.7
14°	10 19.5 +58.5 72.3	10 06.7 +58.5 71.3	9 53.9 +58.6 70.4	9 41.2 +58.6 69.4	9 28.6 +58.6 68.5
15°	11 18.0 +58.5 72.1	11 05.2 +58.5 71.1	10 52.5 +58.5 70.2	10 39.8 +58.6 69.2	10 27.2 +58.6 68.2
16°	12 16.5 +58.5 71.8	12 03.7 +58.5 70.9	11 51.0 +58.5 69.9	11 38.4 +58.5 69.0	11 25.8 +58.6 68.0
17°	13 15.0 +58.5 71.6	13 02.2 +58.5 70.7	12 49.5 +58.5 69.7	12 36.9 +58.5 68.7	12 24.4 +58.5 67.8
18°	14 13.5 +58.4 71.4	14 00.7 +58.5 70.4	13 48.0 +58.5 69.5	13 35.4 +58.6 68.5	13 22.9 +58.6 67.6
19°	15 11.9 +58.5 71.2	14 59.2 +58.5 70.2	14 46.5 +58.5 69.2	14 34.0 +58.5 68.3	14 21.5 +58.5 67.3
20°	16 10.4 +58.4 70.9	15 57.7 +58.4 70.0	15 45.0 +58.5 69.0	15 32.5 +58.5 68.1	15 20.0 +58.5 67.1
21°	17 08.8 +58.5 70.7	16 56.1 +58.5 69.7	16 43.5 +58.5 68.8	16 31.0 +58.5 67.8	16 18.5 +58.5 66.9
22°	18 07.3 +58.4 70.4	17 54.6 +58.4 69.5	17 42.0 +58.4 68.5	17 29.5 +58.4 67.6	17 17.0 +58.5 66.7
23°	19 05.7 +58.3 70.2	18 53.0 +58.4 69.3	18 40.4 +58.4 68.3	18 27.9 +58.5 67.4	18 15.5 +58.5 66.4
24°	20 04.0 +58.4 70.0	19 51.4 +58.4 69.0	19 38.8 +58.4 68.1	19 26.4 +58.4 67.1	19 14.0 +58.4 66.2
25°	21 02.4 +58.3 69.7	20 49.8 +58.3 68.8	20 37.2 +58.4 67.8	20 24.8 +58.4 66.9	20 12.4 +58.4 65.9
26°	22 00.7 +58.4 69.5	21 48.1 +58.4 68.5	21 35.6 +58.4 67.6	21 23.2 +58.4 66.6	21 10.8 +58.5 65.7
27°	22 59.1 +58.3 69.2	22 46.5 +58.3 68.3	22 34.0 +58.3 67.3	22 21.6 +58.3 66.4	22 09.3 +58.3 65.5
28°	23 57.4 +58.2 68.9	23 44.8 +58.3 68.0	23 32.3 +58.3 67.1	23 19.9 +58.4 66.1	23 07.6 +58.4 65.2
29°	24 55.6 +58.3 68.7	24 43.1 +58.2 67.7	24 30.6 +58.3 66.8	24 18.3 +58.3 65.9	24 06.0 +58.3 64.9

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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°	-4 24.8 +58.7	-4 37.4 +58.6	-4 50.0 +58.6	-5 02.6 +58.7	-5 15.0 +58.7
1°	-3 26.1 +58.6	-3 38.8 +58.7	-3 51.4 +58.7	-4 03.9 +58.7	-4 16.3 +58.7
2°	-2 27.5 +58.7	-2 40.1 +58.6	-2 52.7 +58.7	-3 05.2 +58.7	-3 17.6 +58.8
3°	-1 28.8 +58.6	-1 41.5 +58.7	-1 54.0 +58.7	-2 06.5 +58.7	-2 18.8 +58.7
4°	-0 30.2 +58.7	-0 42.8 +58.7	-0 55.3 +58.6	-1 07.8 +58.7	-1 20.1 +58.7
5°	0 28.5 +58.6 69.4	0 15.9 +58.6 68.4	0 03.3 +58.7 67.5	-0 09.1 +58.7	-0 21.4 +58.7
6°	1 27.1 +58.6 69.2	1 14.5 +58.7 68.2	1 02.0 +58.7 67.3	0 49.6 +58.7 66.3	0 37.3 +58.7 65.3
7°	2 25.7 +58.7 69.0	2 13.2 +58.6 68.0	2 00.7 +58.7 67.0	1 48.3 +58.7 66.1	1 36.0 +58.8 65.1
8°	3 24.4 +58.6 68.8	3 11.8 +58.7 67.8	2 59.4 +58.7 66.8	2 47.0 +58.7 65.9	2 34.8 +58.7 64.9
9°	4 23.0 +58.7 68.6	4 10.5 +58.7 67.6	3 58.1 +58.6 66.6	3 45.7 +58.7 65.7	3 33.5 +58.7 64.7
10°	5 21.7 +58.6 68.4	5 09.2 +58.6 67.4	4 56.7 +58.7 66.4	4 44.4 +58.7 65.5	4 32.2 +58.7 64.5
11°	6 20.3 +58.6 68.1	6 07.8 +58.6 67.2	5 55.4 +58.7 66.2	5 43.1 +58.7 65.2	5 30.9 +58.7 64.3
12°	7 18.9 +58.6 67.9	7 06.4 +58.7 67.0	6 54.1 +58.6 66.0	6 41.8 +58.7 65.0	6 29.6 +58.7 64.1
13°	8 17.5 +58.6 67.7	8 05.1 +58.6 66.7	7 52.7 +58.7 65.8	7 40.5 +58.6 64.8	7 28.3 +58.7 63.9
14°	9 16.1 +58.6 67.5	9 03.7 +58.6 66.5	8 51.4 +58.6 65.6	8 39.1 +58.7 64.6	8 27.0 +58.7 63.7
15°	10 14.7 +58.6 67.3	10 02.3 +58.7 66.3	9 50.0 +58.7 65.4	9 37.8 +58.7 64.4	9 25.7 +58.7 63.4
16°	11 13.3 +58.6 67.1	11 01.0 +58.6 66.1	10 48.7 +58.6 65.1	10 36.5 +58.6 64.2	10 24.4 +58.6 63.2
17°	12 11.9 +58.6 66.8	11 59.6 +58.6 65.9	11 47.3 +58.6 64.9	11 35.1 +58.6 64.0	11 23.0 +58.7 63.0
18°	13 10.5 +58.6 66.6	12 58.2 +58.5 65.7	12 45.9 +58.6 64.7	12 33.7 +58.7 63.8	12 21.7 +58.6 62.8
19°	14 09.1 +58.5 66.4	13 56.7 +58.6 65.4	13 44.5 +58.6 64.5	13 32.4 +58.6 63.5	13 20.3 +58.7 62.6
20°	15 07.6 +58.5 66.2	14 55.3 +58.6 65.2	14 43.1 +58.6 64.3	14 31.0 +58.6 63.3	14 19.0 +58.6 62.4
21°	16 06.1 +58.6 65.9	15 53.9 +58.5 65.0	15 41.7 +58.6 64.0	15 29.6 +58.6 63.1	15 17.6 +58.6 62.2
22°	17 04.7 +58.5 65.7	16 52.4 +58.5 64.8	16 40.3 +58.5 63.8	16 28.2 +58.6 62.9	16 16.2 +58.6 61.9
23°	18 03.2 +58.5 65.5	17 50.9 +58.6 64.5	17 38.8 +58.5 63.6	17 26.8 +58.5 62.6	17 14.8 +58.6 61.7
24°	19 01.7 +58.4 65.2	18 49.5 +58.5 64.3	18 37.3 +58.6 63.4	18 25.3 +58.6 62.4	18 13.4 +58.6 61.5
25°	20 00.1 +58.5 65.0	19 48.0 +58.4 64.1	19 35.9 +58.5 63.1	19 23.9 +58.5 62.2	19 12.0 +58.5 61.2
26°	20 58.6 +58.4 64.8	20 46.4 +58.5 63.8	20 34.4 +58.4 62.9	20 22.4 +58.5 62.0	20 10.5 +58.6 61.0
27°	21 57.0 +58.4 64.5	21 44.9 +58.4 63.6	21 32.8 +58.5 62.6	21 20.9 +58.5 61.7	21 09.1 +58.5 60.8
28°	22 55.4 +58.4 64.3	22 43.3 +58.4 63.3	22 31.3 +58.4 62.4	22 19.4 +58.5 61.5	22 07.6 +58.5 60.5
29°	23 53.8 +58.4 64.0	23 41.7 +58.4 63.1	23 29.7 +58.5 62.2	23 17.9 +58.4 61.2	23 06.1 +58.5 60.3

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°	-5 27.3 +58.7	-5 39.6 +58.8	-5 51.7 +58.8	-6 03.7 +58.8	-6 15.7 +58.9
1°	-4 28.6 +58.7	-4 40.8 +58.7	-4 52.9 +58.8	-5 04.9 +58.8	-5 16.8 +58.8
2°	-3 29.9 +58.8	-3 42.1 +58.8	-3 54.1 +58.7	-4 06.1 +58.8	-4 18.0 +58.8
3°	-2 31.1 +58.7	-2 43.3 +58.8	-2 55.4 +58.8	-3 07.3 +58.8	-3 19.2 +58.8
4°	-1 32.4 +58.8	-1 44.5 +58.7	-1 56.6 +58.8	-2 08.5 +58.8	-2 20.4 +58.8
5°	-0 33.6 +58.7	-0 45.8 +58.8	-0 57.8 +58.8	-1 09.7 +58.8	-1 21.6 +58.9
6°	0 25.1 +58.7 64.3	0 13.0 +58.7 63.4	0 01.0 +58.8 62.4	-0 10.9 +58.8	-0 22.7 +58.8
7°	1 23.8 +58.8 64.1	1 11.7 +58.8 63.2	0 59.8 +58.7 62.2	0 47.9 +58.8 61.2	0 36.1 +58.8 60.2
8°	2 22.6 +58.7 63.9	2 10.5 +58.8 63.0	1 58.5 +58.8 62.0	1 46.7 +58.8 61.0	1 34.9 +58.9 60.0
9°	3 21.3 +58.8 63.7	3 09.3 +58.7 62.8	2 57.3 +58.8 61.8	2 45.5 +58.8 60.8	2 33.8 +58.8 59.9
10°	4 20.1 +58.7 63.5	4 08.0 +58.8 62.6	3 56.1 +58.8 61.6	3 44.3 +58.8 60.6	3 32.6 +58.8 59.7
11°	5 18.8 +58.7 63.3	5 06.8 +58.7 62.4	4 54.9 +58.7 61.4	4 43.1 +58.8 60.4	4 31.4 +58.8 59.5
12°	6 17.5 +58.7 63.1	6 05.5 +58.8 62.1	5 53.6 +58.8 61.2	5 41.9 +58.8 60.2	5 30.2 +58.8 59.3
13°	7 16.2 +58.7 62.9	7 04.3 +58.7 61.9	6 52.4 +58.8 61.0	6 40.7 +58.7 60.0	6 29.0 +58.8 59.1
14°	8 14.9 +58.8 62.7	8 03.0 +58.7 61.7	7 51.2 +58.7 60.8	7 39.4 +58.8 59.8	7 27.8 +58.8 58.9
15°	9 13.7 +58.7 62.5	9 01.7 +58.8 61.5	8 49.9 +58.8 60.6	8 38.2 +58.8 59.6	8 26.6 +58.8 58.7
16°	10 12.4 +58.7 62.3	10 00.5 +58.7 61.3	9 48.7 +58.7 60.4	9 37.0 +58.8 59.4	9 25.4 +58.8 58.5
17°	11 11.1 +58.6 62.1	10 59.2 +58.7 61.1	10 47.4 +58.8 60.2	10 35.8 +58.7 59.2	10 24.2 +58.8 58.3
18°	12 09.7 +58.7 61.9	11 57.9 +58.7 60.9	11 46.2 +58.7 60.0	11 34.5 +58.8 59.0	11 23.0 +58.8 58.0
19°	13 08.4 +58.7 61.6	12 56.6 +58.7 60.7	12 44.9 +58.7 59.7	12 33.3 +58.7 58.8	12 21.8 +58.8 57.8
20°	14 07.1 +58.6 61.4	13 55.3 +58.7 60.5	13 43.6 +58.7 59.5	13 32.0 +58.7 58.6	13 20.6 +58.7 57.6
21°	15 05.7 +58.7 61.2	14 54.0 +58.6 60.3	14 42.3 +58.7 59.3	14 30.7 +58.8 58.4	14 19.3 +58.8 57.4
22°	16 04.4 +58.6 61.0	15 52.6 +58.7 60.0	15 41.0 +58.7 59.1	15 29.5 +58.7 58.2	15 18.1 +58.7 57.2
23°	17 03.0 +58.6 60.8	16 51.3 +58.6 59.8	16 39.7 +58.6 58.9	16 28.2 +58.7 57.9	16 16.8 +58.7 57.0
24°	18 01.6 +58.6 60.5	17 49.9 +58.6 59.6	17 38.3 +58.7 58.7	17 26.9 +58.6 57.7	17 15.5 +58.7 56.8
25°	19 00.2 +58.6 60.3	18 48.5 +58.6 59.4	18 37.0 +58.6 58.4	18 25.5 +58.7 57.5	18 14.2 +58.7 56.6
26°	19 58.8 +58.5 60.1	19 47.1 +58.6 59.2	19 35.6 +58.6 58.2	19 24.2 +58.6 57.3	19 12.9 +58.7 56.4
27°	20 57.3 +58.6 59.9	20 45.7 +58.6 58.9	20 34.2 +58.6 58.0	20 22.8 +58.7 57.1	20 11.6 +58.6 56.1
28°	21 55.9 +58.5 59.6	21 44.3 +58.6 58.7	21 32.8 +58.6 57.8	21 21.5 +58.6 56.8	21 10.2 +58.7 55.9
29°	22 54.4 +58.5 59.4	22 42.9 +58.5 58.5	22 31.4 +58.6 57.5	22 20.1 +58.6 56.6	22 08.9 +58.6 55.7

Declination SAME name as Latitude

Latitude 77°

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°	-6 27.5 +58.9	-6 39.2 +58.9	-6 50.8 +58.9	-7 02.2 +58.9	-7 13.6 +58.9
1°	-5 28.6 +58.8	-5 40.3 +58.8	-5 51.9 +58.9	-6 03.3 +58.9	-6 14.7 +59.0
2°	-4 29.8 +58.8	-4 41.5 +58.9	-4 53.0 +58.9	-5 04.4 +58.9	-5 15.7 +58.9
3°	-3 31.0 +58.9	-3 42.6 +58.9	-3 54.1 +58.9	-4 05.5 +58.9	-4 16.8 +59.0
4°	-2 32.1 +58.8	-2 43.7 +58.8	-2 55.2 +58.9	-3 06.6 +58.9	-3 17.8 +58.9
5°	-1 33.3 +58.9	-1 44.9 +58.9	-1 56.3 +58.9	-2 07.7 +59.0	-2 18.9 +59.0
6°	-0 34.4 +58.8	-0 46.0 +58.9	-0 57.4 +58.9	-1 08.7 +58.9	-1 19.9 +58.9
7°	0 24.4 +58.9 59.3	0 12.9 +58.9 58.3	0 01.5 +58.9 57.3	-0 09.8 +58.9	-0 21.0 +59.0
8°	1 23.3 +58.8 59.1	1 11.8 +58.8 58.1	1 00.4 +58.9 57.1	0 49.1 +58.9 56.2	0 38.0 +58.9 55.2
9°	2 22.1 +58.9 58.9	2 10.6 +58.9 57.9	1 59.3 +58.9 56.9	1 48.0 +58.9 56.0	1 36.9 +58.9 55.0
10°	3 21.0 +58.8 58.7	3 09.5 +58.9 57.7	2 58.2 +58.9 56.8	2 46.9 +59.0 55.8	2 35.8 +59.0 54.8
11°	4 19.8 +58.9 58.5	4 08.4 +58.8 57.5	3 57.1 +58.8 56.6	3 45.9 +58.9 55.6	3 34.8 +58.9 54.6
12°	5 18.7 +58.8 58.3	5 07.2 +58.9 57.3	4 55.9 +58.9 56.4	4 44.8 +58.9 55.4	4 33.7 +59.0 54.4
13°	6 17.5 +58.8 58.1	6 06.1 +58.9 57.1	5 54.8 +58.9 56.2	5 43.7 +58.9 55.2	5 32.7 +58.9 54.3
14°	7 16.3 +58.9 57.9	7 05.0 +58.8 56.9	6 53.7 +58.9 56.0	6 42.6 +58.9 55.0	6 31.6 +58.9 54.1
15°	8 15.2 +58.8 57.7	8 03.8 +58.9 56.7	7 52.6 +58.9 55.8	7 41.5 +58.9 54.8	7 30.5 +59.0 53.9
16°	9 14.0 +58.8 57.5	9 02.7 +58.8 56.5	8 51.5 +58.8 55.6	8 40.4 +58.9 54.6	8 29.5 +58.9 53.7
17°	10 12.8 +58.8 57.3	10 01.5 +58.9 56.3	9 50.3 +58.9 55.4	9 39.3 +58.9 54.4	9 28.4 +58.9 53.5
18°	11 11.6 +58.8 57.1	11 00.4 +58.8 56.1	10 49.2 +58.9 55.2	10 38.2 +58.9 54.2	10 27.3 +58.9 53.3
19°	12 10.4 +58.8 56.9	11 59.2 +58.8 55.9	11 48.1 +58.8 55.0	11 37.1 +58.8 54.1	11 26.2 +58.9 53.1
20°	13 09.2 +58.8 56.7	12 58.0 +58.8 55.7	12 46.9 +58.8 54.8	12 35.9 +58.9 53.9	12 25.1 +58.9 52.9
21°	14 08.0 +58.8 56.5	13 56.8 +58.8 55.5	13 45.7 +58.9 54.6	13 34.8 +58.9 53.7	13 24.0 +58.9 52.7
22°	15 06.8 +58.7 56.3	14 55.6 +58.8 55.3	14 44.6 +58.8 54.4	14 33.7 +58.8 53.5	14 22.9 +58.9 52.5
23°	16 05.5 +58.8 56.1	15 54.4 +58.8 55.1	15 43.4 +58.8 54.2	15 32.5 +58.8 53.3	15 21.8 +58.8 52.3
24°	17 04.3 +58.7 55.9	16 53.2 +58.7 54.9	16 42.2 +58.8 54.0	16 31.3 +58.9 53.1	16 20.6 +58.9 52.1
25°	18 03.0 +58.7 55.6	17 51.9 +58.8 54.7	17 41.0 +58.8 53.8	17 30.2 +58.8 52.8	17 19.5 +58.8 51.9
26°	19 01.7 +58.7 55.4	18 50.7 +58.7 54.5	18 39.8 +58.7 53.6	18 29.0 +58.8 52.6	18 18.3 +58.8 51.7
27°	20 00.4 +58.7 55.2	19 49.4 +58.7 54.3	19 38.5 +58.8 53.4	19 27.8 +58.7 52.4	19 17.1 +58.8 51.5
28°	20 59.1 +58.7 55.0	20 48.1 +58.7 54.1	20 37.3 +58.7 53.1	20 26.5 +58.8 52.2	20 15.9 +58.8 51.3
29°	21 57.8 +58.6 54.8	21 46.8 +58.7 53.8	21 36.0 +58.7 52.9	21 25.3 +58.7 52.0	21 14.7 +58.8 51.1

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°	-7 24.8 +59.0	-7 35.9 +59.0	-7 46.8 +59.0	-7 57.6 +59.0	-8 08.3 +59.0
1°	-6 25.8 +58.9	-6 36.9 +59.0	-6 47.8 +59.0	-6 58.6 +59.0	-7 09.3 +59.1
2°	-5 26.9 +59.0	-5 37.9 +59.0	-5 48.8 +59.0	-5 59.6 +59.1	-6 10.2 +59.1
3°	-4 27.9 +58.9	-4 38.9 +59.0	-4 49.8 +59.0	-5 00.5 +59.0	-5 11.1 +59.0
4°	-3 29.0 +59.0	-3 39.9 +59.0	-3 50.8 +59.0	-4 01.5 +59.1	-4 12.1 +59.1
5°	-2 30.0 +59.0	-2 40.9 +59.0	-2 51.8 +59.1	-3 02.4 +59.0	-3 13.0 +59.1
6°	-1 31.0 +59.0	-1 41.9 +59.0	-1 52.7 +59.0	-2 03.4 +59.1	-2 13.9 +59.1
7°	-0 32.0 +58.9	-0 42.9 +59.0	-0 53.7 +59.0	-1 04.3 +59.0	-1 14.8 +59.0
8°	0 26.9 +59.0 54.2	0 16.1 +59.0 53.2	0 05.3 +59.0 52.3	-0 05.3 +59.1	-0 15.8 +59.1
9°	1 25.9 +59.0 54.0	1 15.1 +58.9 53.1	1 04.3 +59.1 52.1	0 53.8 +59.0 51.1	0 43.3 +59.1 50.1
10°	2 24.9 +58.9 53.8	2 14.0 +59.0 52.9	2 03.4 +59.0 51.9	1 52.8 +59.1 50.9	1 42.4 +59.1 50.0
11°	3 23.8 +59.0 53.7	3 13.0 +59.0 52.7	3 02.4 +59.0 51.7	2 51.9 +59.0 50.8	2 41.5 +59.0 49.8
12°	4 22.8 +59.0 53.5	4 12.0 +59.0 52.5	4 01.4 +59.0 51.5	3 50.9 +59.0 50.6	3 40.5 +59.1 49.6
13°	5 21.8 +58.9 53.3	5 11.0 +59.0 52.3	5 00.4 +59.0 51.4	4 49.9 +59.1 50.4	4 39.6 +59.1 49.4
14°	6 20.7 +59.0 53.1	6 10.0 +59.0 52.1	5 59.4 +59.0 51.2	5 49.0 +59.0 50.2	5 38.7 +59.1 49.3
15°	7 19.7 +59.0 52.9	7 09.0 +59.0 52.0	6 58.4 +59.0 51.0	6 48.0 +59.1 50.0	6 37.8 +59.0 49.1
16°	8 18.7 +58.9 52.7	8 08.0 +59.0 51.8	7 57.4 +59.1 50.8	7 47.1 +59.0 49.9	7 36.8 +59.1 48.9
17°	9 17.6 +58.9 52.5	9 07.0 +58.9 51.6	8 56.5 +58.9 50.6	8 46.1 +59.0 49.7	8 35.9 +59.0 48.7
18°	10 16.5 +59.0 52.4	10 05.9 +59.0 51.4	9 55.4 +59.0 50.5	9 45.1 +59.0 49.5	9 34.9 +59.1 48.6
19°	11 15.5 +58.9 52.2	11 04.9 +58.9 51.2	10 54.4 +59.0 50.3	10 44.1 +59.0 49.3	10 34.0 +59.0 48.4
20°	12 14.4 +58.9 52.0	12 03.8 +59.0 51.0	11 53.4 +59.0 50.1	11 43.1 +59.0 49.1	11 33.0 +59.0 48.2
21°	13 13.3 +58.9 51.8	13 02.8 +58.9 50.8	12 52.4 +59.0 49.9	12 42.1 +59.0 48.9	12 32.0 +59.1 48.0
22°	14 12.2 +58.9 51.6	14 01.7 +59.0 50.6	13 51.4 +58.9 49.7	13 41.1 +59.0 48.8	13 31.1 +59.0 47.8
23°	15 11.1 +58.9 51.4	15 00.7 +58.9 50.4	14 50.3 +59.0 49.5	14 40.1 +59.0 48.6	14 30.1 +59.0 47.6
24°	16 10.0 +58.9 51.2	15 59.6 +58.9 50.2	15 49.3 +58.9 49.3	15 39.1 +59.0 48.4	15 29.1 +59.0 47.5
25°	17 08.9 +58.9 51.0	16 58.5 +58.9 50.1	16 48.2 +58.9 49.1	16 38.1 +58.9 48.2	16 28.1 +59.0 47.3
26°	18 07.8 +58.8 50.8	17 57.4 +58.9 49.9	17 47.1 +59.0 48.9	17 37.0 +59.0 48.0	17 27.1 +59.0 47.1
27°	19 06.6 +58.9 50.6	18 56.3 +58.8 49.6	18 46.1 +58.9 48.7	18 36.0 +58.9 47.8	18 26.1 +58.9 46.9
28°	20 05.5 +58.8 50.4	19 55.1 +58.9 49.4	19 45.0 +58.9 48.5	19 34.9 +58.9 47.6	19 25.0 +59.0 46.7
29°	21 04.3 +58.8 50.2	20 54.0 +58.8 49.2	20 43.9 +58.8 48.3	20 33.8 +59.0 47.4	20 24.0 +58.9 46.5

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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°	-8 18.8 +59.1	-8 29.2 +59.1	-8 39.4 +59.1	-8 49.5 +59.2	-8 59.4 +59.2
1°	-7 19.7 +59.0	-7 30.1 +59.1	-7 40.3 +59.2	-7 50.3 +59.1	-8 00.2 +59.2
2°	-6 20.7 +59.1	-6 31.0 +59.1	-6 41.1 +59.1	-6 51.2 +59.2	-7 01.0 +59.2
3°	-5 21.6 +59.1	-5 31.9 +59.2	-5 42.0 +59.1	-5 52.0 +59.2	-6 01.8 +59.2
4°	-4 22.5 +59.1	-4 32.7 +59.1	-4 42.9 +59.2	-4 52.8 +59.2	-5 02.6 +59.2
5°	-3 23.4 +59.1	-3 33.6 +59.1	-3 43.7 +59.1	-3 53.6 +59.1	-4 03.4 +59.2
6°	-2 24.3 +59.1	-2 34.5 +59.1	-2 44.6 +59.2	-2 54.5 +59.2	-3 04.2 +59.2
7°	-1 25.2 +59.1	-1 35.4 +59.2	-1 45.4 +59.2	-1 55.3 +59.2	-2 05.0 +59.2
8°	-0 26.1 +59.1	-0 36.2 +59.1	-0 46.2 +59.1	-0 56.1 +59.2	-1 05.8 +59.2
9°	0 33.0 +59.1 49.2	0 22.9 +59.1 48.2	0 12.9 +59.2 47.2	0 03.1 +59.2 46.2	-0 06.6 +59.2
10°	1 32.1 +59.1 49.0	1 22.0 +59.2 48.0	1 12.1 +59.1 47.1	1 02.3 +59.1 46.1	0 52.6 +59.2 45.1
11°	2 31.2 +59.1 48.8	2 21.2 +59.1 47.9	2 11.2 +59.2 46.9	2 01.4 +59.2 45.9	1 51.8 +59.2 45.0
12°	3 30.3 +59.1 48.7	3 20.3 +59.1 47.7	3 10.4 +59.1 46.7	3 00.6 +59.2 45.8	2 51.0 +59.2 44.8
13°	4 29.4 +59.1 48.5	4 19.4 +59.1 47.5	4 09.5 +59.2 46.6	3 59.8 +59.2 45.6	3 50.2 +59.3 44.6
14°	5 28.5 +59.1 48.3	5 18.5 +59.1 47.3	5 08.7 +59.1 46.4	4 59.0 +59.2 45.4	4 49.5 +59.2 44.5
15°	6 27.6 +59.1 48.1	6 17.6 +59.2 47.2	6 07.8 +59.2 46.2	5 58.2 +59.1 45.3	5 48.7 +59.2 44.3
16°	7 26.7 +59.1 48.0	7 16.8 +59.1 47.0	7 07.0 +59.1 46.0	6 57.3 +59.2 45.1	6 47.9 +59.2 44.1
17°	8 25.8 +59.1 47.8	8 15.9 +59.1 46.8	8 06.1 +59.1 45.9	7 56.5 +59.2 44.9	7 47.1 +59.1 44.0
18°	9 24.9 +59.1 47.6	9 15.0 +59.1 46.7	9 05.2 +59.2 45.7	8 55.7 +59.1 44.8	8 46.2 +59.2 43.8
19°	10 24.0 +59.0 47.4	10 14.1 +59.1 46.5	10 04.4 +59.1 45.5	9 54.8 +59.2 44.6	9 45.4 +59.2 43.6
20°	11 23.0 +59.1 47.2	11 13.2 +59.1 46.3	11 03.5 +59.1 45.4	10 54.0 +59.1 44.4	10 44.6 +59.2 43.5
21°	12 22.1 +59.0 47.1	12 12.3 +59.1 46.1	12 02.6 +59.1 45.2	11 53.1 +59.2 44.2	11 43.8 +59.2 43.3
22°	13 21.1 +59.1 46.9	13 11.4 +59.0 45.9	13 01.7 +59.1 45.0	12 52.3 +59.1 44.1	12 43.0 +59.1 43.1
23°	14 20.2 +59.0 46.7	14 10.4 +59.1 45.8	14 00.8 +59.1 44.8	13 51.4 +59.1 43.9	13 42.1 +59.2 43.0
24°	15 19.2 +59.1 46.5	15 09.5 +59.1 45.6	14 59.9 +59.1 44.7	14 50.5 +59.2 43.7	14 41.3 +59.1 42.8
25°	16 18.3 +59.0 46.3	16 08.6 +59.0 45.4	15 59.0 +59.1 44.5	15 49.7 +59.1 43.5	15 40.4 +59.2 42.6
26°	17 17.3 +59.0 46.1	17 07.6 +59.1 45.2	16 58.1 +59.1 44.3	16 48.8 +59.1 43.4	16 39.6 +59.1 42.4
27°	18 16.3 +59.0 46.0	18 06.7 +59.0 45.0	17 57.2 +59.0 44.1	17 47.9 +59.1 43.2	17 38.7 +59.1 42.3
28°	19 15.3 +59.0 45.8	19 05.7 +59.0 44.8	18 56.2 +59.1 43.9	18 47.0 +59.0 43.0	18 37.8 +59.2 42.1
29°	20 14.3 +58.9 45.6	20 04.7 +59.0 44.7	19 55.3 +59.0 43.7	19 46.0 +59.1 42.8	19 37.0 +59.1 41.9

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°	-9 09.2 +59.3	-9 18.7 +59.2	-9 28.2 +59.3	-9 37.4 +59.3	-9 46.5 +59.3
1°	-8 09.9 +59.2	-8 19.5 +59.3	-8 28.9 +59.3	-8 38.1 +59.3	-8 47.2 +59.4
2°	-7 10.7 +59.2	-7 20.2 +59.2	-7 29.6 +59.3	-7 38.8 +59.3	-7 47.8 +59.3
3°	-6 11.5 +59.2	-6 21.0 +59.3	-6 30.3 +59.3	-6 39.5 +59.3	-6 48.5 +59.3
4°	-5 12.3 +59.3	-5 21.7 +59.2	-5 31.0 +59.2	-5 40.2 +59.3	-5 49.2 +59.4
5°	-4 13.0 +59.2	-4 22.5 +59.3	-4 31.8 +59.3	-4 40.9 +59.3	-4 49.8 +59.3
6°	-3 13.8 +59.2	-3 23.2 +59.2	-3 32.5 +59.3	-3 41.6 +59.3	-3 50.5 +59.4
7°	-2 14.6 +59.3	-2 24.0 +59.3	-2 33.2 +59.3	-2 42.3 +59.4	-2 51.1 +59.3
8°	-1 15.3 +59.2	-1 24.7 +59.3	-1 33.9 +59.3	-1 42.9 +59.3	-1 51.8 +59.3
9°	-0 16.1 +59.2	-0 25.4 +59.2	-0 34.6 +59.3	-0 43.6 +59.3	-0 52.5 +59.4
10°	0 43.1 +59.3 44.1	0 33.8 +59.3 43.2	0 24.7 +59.3 42.2	0 15.7 +59.3 41.2	0 06.9 +59.3 40.2
11°	1 42.4 +59.2 44.0	1 33.1 +59.3 43.0	1 24.0 +59.3 42.0	1 15.0 +59.3 41.1	1 06.2 +59.4 40.1
12°	2 41.6 +59.2 43.8	2 32.4 +59.2 42.9	2 23.3 +59.2 41.9	2 14.3 +59.3 40.9	2 05.6 +59.3 40.0
13°	3 40.8 +59.3 43.7	3 31.6 +59.3 42.7	3 22.5 +59.3 41.7	3 13.6 +59.4 40.8	3 04.9 +59.4 39.8
14°	4 40.1 +59.2 43.5	4 30.9 +59.2 42.5	4 21.8 +59.3 41.6	4 13.0 +59.3 40.6	4 04.3 +59.3 39.7
15°	5 39.3 +59.2 43.3	5 30.1 +59.3 42.4	5 21.1 +59.3 41.4	5 12.3 +59.3 40.5	5 03.6 +59.3 39.5
16°	6 38.5 +59.3 43.2	6 29.4 +59.2 42.2	6 20.4 +59.3 41.3	6 11.6 +59.3 40.3	6 02.9 +59.4 39.4
17°	7 37.8 +59.2 43.0	7 28.6 +59.3 42.1	7 19.7 +59.3 41.1	7 10.9 +59.3 40.2	7 02.3 +59.3 39.2
18°	8 37.0 +59.2 42.9	8 27.9 +59.2 41.9	8 19.0 +59.2 41.0	8 10.2 +59.3 40.0	8 01.6 +59.3 39.1
19°	9 36.2 +59.2 42.7	9 27.1 +59.3 41.7	9 18.2 +59.3 40.8	9 09.5 +59.3 39.9	9 00.9 +59.4 38.9
20°	10 35.4 +59.2 42.5	10 26.4 +59.2 41.6	10 17.5 +59.3 40.6	10 08.8 +59.3 39.7	10 00.3 +59.3 38.8
21°	11 34.6 +59.2 42.4	11 25.6 +59.2 41.4	11 16.8 +59.2 40.5	11 08.1 +59.3 39.5	10 59.6 +59.3 38.6
22°	12 33.8 +59.2 42.2	12 24.8 +59.3 41.3	12 16.0 +59.3 40.3	12 07.4 +59.2 39.4	11 58.9 +59.3 38.5
23°	13 33.0 +59.2 42.0	13 24.1 +59.2 41.1	13 15.3 +59.2 40.2	13 06.6 +59.3 39.2	12 58.2 +59.3 38.3
24°	14 32.2 +59.2 41.9	14 23.3 +59.2 40.9	14 14.5 +59.3 40.0	14 05.9 +59.3 39.1	13 57.5 +59.3 38.1
25°	15 31.4 +59.2 41.7	15 22.5 +59.2 40.8	15 13.8 +59.2 39.8	15 05.2 +59.3 38.9	14 56.8 +59.3 38.0
26°	16 30.6 +59.1 41.5	16 21.7 +59.2 40.6	16 13.0 +59.2 39.7	16 04.5 +59.2 38.7	15 56.1 +59.3 37.8
27°	17 29.7 +59.2 41.3	17 20.9 +59.2 40.4	17 12.2 +59.2 39.5	17 03.7 +59.3 38.6	16 55.4 +59.3 37.7
28°	18 28.9 +59.1 41.2	18 20.1 +59.1 40.3	18 11.4 +59.2 39.3	18 03.0 +59.2 38.4	17 54.7 +59.2 37.5
29°	19 28.0 +59.2 41.0	19 19.2 +59.2 40.1	19 10.6 +59.2 39.2	19 02.2 +59.2 38.2	18 53.9 +59.3 37.3

Declination SAME name as Latitude

Latitude 77°

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°	-9 55.4 +59.4				
1°	-8 56.0 +59.3	-9 04.7 +59.4	-9 13.2 +59.4	-9 21.5 +59.4	-9 29.7 +59.5
2°	-7 56.7 +59.4	-8 05.3 +59.4	-8 13.8 +59.4	-8 22.1 +59.4	-8 30.2 +59.4
3°	-6 57.3 +59.4	-7 05.9 +59.3	-7 14.4 +59.4	-7 22.7 +59.5	-7 30.8 +59.5
4°	-5 57.9 +59.3	-6 06.6 +59.4	-6 15.0 +59.4	-6 23.2 +59.4	-6 31.3 +59.5
5°	-4 58.6 +59.4	-5 07.2 +59.4	-5 15.6 +59.4	-5 23.8 +59.5	-5 31.8 +59.4
6°	-3 59.2 +59.4	-4 07.8 +59.4	-4 16.2 +59.5	-4 24.3 +59.4	-4 32.4 +59.5
7°	-2 59.8 +59.3	-3 08.4 +59.4	-3 16.7 +59.4	-3 24.9 +59.4	-3 32.9 +59.5
8°	-2 00.5 +59.4	-2 09.0 +59.4	-2 17.3 +59.4	-2 25.5 +59.5	-2 33.4 +59.5
9°	-1 01.1 +59.4	-1 09.6 +59.4	-1 17.9 +59.4	-1 26.0 +59.4	-1 33.9 +59.4
10°	-0 01.7 +59.3	-0 10.2 +59.4	-0 18.5 +59.4	-0 26.6 +59.5	-0 34.5 +59.5
11°	0 57.6 +59.4 39.1	0 49.2 +59.4 38.2	0 40.9 +59.5 37.2	0 32.9 +59.4 36.2	0 25.0 +59.5 35.2
12°	1 57.0 +59.4 39.0	1 48.6 +59.4 38.0	1 40.4 +59.4 37.0	1 32.3 +59.5 36.1	1 24.5 +59.4 35.1
13°	2 56.4 +59.3 38.8	2 48.0 +59.4 37.9	2 39.8 +59.4 36.9	2 31.8 +59.4 35.9	2 23.9 +59.5 35.0
14°	3 55.7 +59.4 38.7	3 47.4 +59.4 37.7	3 39.2 +59.4 36.8	3 31.2 +59.5 35.8	3 23.4 +59.5 34.8
15°	4 55.1 +59.4 38.5	4 46.8 +59.4 37.6	4 38.6 +59.4 36.6	4 30.7 +59.4 35.7	4 22.9 +59.5 34.7
16°	5 54.5 +59.3 38.4	5 46.2 +59.4 37.4	5 38.0 +59.5 36.5	5 30.1 +59.5 35.5	5 22.4 +59.4 34.6
17°	6 53.8 +59.4 38.3	6 45.6 +59.3 37.3	6 37.5 +59.4 36.4	6 29.6 +59.4 35.4	6 21.8 +59.5 34.4
18°	7 53.2 +59.3 38.1	7 44.9 +59.4 37.2	7 36.9 +59.4 36.2	7 29.0 +59.4 35.3	7 21.3 +59.5 34.3
19°	8 52.5 +59.4 38.0	8 44.3 +59.4 37.0	8 36.3 +59.4 36.1	8 28.4 +59.5 35.1	8 20.8 +59.4 34.2
20°	9 51.9 +59.3 37.8	9 43.7 +59.4 36.9	9 35.7 +59.4 35.9	9 27.9 +59.4 35.0	9 20.2 +59.5 34.0
21°	10 51.2 +59.4 37.7	10 43.1 +59.3 36.7	10 35.1 +59.4 35.8	10 27.3 +59.4 34.8	10 19.7 +59.4 33.9
22°	11 50.6 +59.3 37.5	11 42.4 +59.4 36.6	11 34.5 +59.4 35.6	11 26.7 +59.4 34.7	11 19.1 +59.5 33.8
23°	12 49.9 +59.4 37.4	12 41.8 +59.4 36.4	12 33.9 +59.4 35.5	12 26.1 +59.5 34.6	12 18.6 +59.4 33.6
24°	13 49.3 +59.3 37.2	13 41.2 +59.3 36.3	13 33.3 +59.4 35.3	13 25.6 +59.4 34.4	13 18.0 +59.5 33.5
25°	14 48.6 +59.3 37.1	14 40.5 +59.4 36.1	14 32.7 +59.3 35.2	14 25.0 +59.4 34.3	14 17.5 +59.4 33.3
26°	15 47.9 +59.3 36.9	15 39.9 +59.3 36.0	15 32.0 +59.4 35.1	15 24.4 +59.4 34.1	15 16.9 +59.4 33.2
27°	16 47.2 +59.3 36.7	16 39.2 +59.4 35.8	16 31.4 +59.4 34.9	16 23.8 +59.4 34.0	16 16.3 +59.5 33.1
28°	17 46.5 +59.3 36.6	17 38.6 +59.3 35.7	17 30.8 +59.3 34.8	17 23.2 +59.4 33.8	17 15.8 +59.4 32.9
29°	18 45.8 +59.3 36.4	18 37.9 +59.3 35.5	18 30.1 +59.4 34.6	18 22.6 +59.4 33.7	18 15.2 +59.4 32.8

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°	-9 37.6 +59.5	-9 45.4 +59.5	-9 52.9 +59.5		
2°	-8 38.1 +59.4	-8 45.9 +59.5	-8 53.4 +59.5	-9 00.7 +59.5	-9 07.9 +59.6
3°	-7 38.7 +59.5	-7 46.4 +59.6	-7 53.9 +59.6	-8 01.2 +59.6	-8 08.3 +59.6
4°	-6 39.2 +59.5	-6 46.8 +59.5	-6 54.3 +59.5	-7 01.6 +59.6	-7 08.7 +59.6
5°	-5 39.7 +59.5	-5 47.3 +59.5	-5 54.8 +59.6	-6 02.0 +59.5	-6 09.1 +59.6
6°	-4 40.2 +59.5	-4 47.8 +59.5	-4 55.2 +59.5	-5 02.5 +59.6	-5 09.5 +59.6
7°	-3 40.7 +59.5	-3 48.3 +59.5	-3 55.7 +59.5	-4 02.9 +59.6	-4 09.9 +59.6
8°	-2 41.2 +59.5	-2 48.8 +59.6	-2 56.2 +59.6	-3 03.3 +59.5	-3 10.3 +59.6
9°	-1 41.7 +59.5	-1 49.2 +59.5	-1 56.6 +59.5	-2 03.8 +59.6	-2 10.7 +59.6
10°	-0 42.2 +59.5	-0 49.7 +59.5	-0 57.1 +59.6	-1 04.2 +59.6	-1 11.1 +59.6
11°	0 17.3 +59.5 34.3	0 09.8 +59.5 33.3	0 02.5 +59.5 32.3	-0 04.6 +59.5	-0 11.5 +59.5
12°	1 16.8 +59.5 34.1	1 09.3 +59.6 33.2	1 02.0 +59.6 32.2	0 54.9 +59.6 31.2	0 48.0 +59.6 30.3
13°	2 16.3 +59.5 34.0	2 08.9 +59.5 33.0	2 01.6 +59.5 32.1	1 54.5 +59.6 31.1	1 47.6 +59.6 30.1
14°	3 15.8 +59.5 33.9	3 08.4 +59.5 32.9	3 01.1 +59.6 32.0	2 54.1 +59.6 31.0	2 47.2 +59.6 30.0
15°	4 15.3 +59.5 33.7	4 07.9 +59.5 32.8	4 00.7 +59.5 31.8	3 53.7 +59.5 30.9	3 46.8 +59.6 29.9
16°	5 14.8 +59.5 33.6	5 07.4 +59.5 32.7	5 00.2 +59.6 31.7	4 53.2 +59.6 30.7	4 46.4 +59.6 29.8
17°	6 14.3 +59.5 33.5	6 06.9 +59.6 32.5	5 59.8 +59.5 31.6	5 52.8 +59.6 30.6	5 46.0 +59.6 29.7
18°	7 13.8 +59.5 33.4	7 06.5 +59.5 32.4	6 59.3 +59.6 31.5	6 52.4 +59.5 30.5	6 45.6 +59.6 29.6
19°	8 13.3 +59.5 33.2	8 06.0 +59.5 32.3	7 58.9 +59.5 31.3	7 51.9 +59.6 30.4	7 45.2 +59.6 29.4
20°	9 12.8 +59.4 33.1	9 05.5 +59.5 32.2	8 58.4 +59.5 31.2	8 51.5 +59.6 30.3	8 44.8 +59.6 29.3
21°	10 12.2 +59.5 33.0	10 05.0 +59.5 32.0	9 57.9 +59.6 31.1	9 51.1 +59.5 30.1	9 44.4 +59.6 29.2
22°	11 11.7 +59.5 32.8	11 04.5 +59.5 31.9	10 57.5 +59.5 31.0	10 50.6 +59.6 30.0	10 44.0 +59.5 29.1
23°	12 11.2 +59.5 32.7	12 04.0 +59.5 31.8	11 57.0 +59.5 30.8	11 50.2 +59.5 29.9	11 43.5 +59.6 29.0
24°	13 10.7 +59.4 32.6	13 03.5 +59.5 31.6	12 56.5 +59.5 30.7	12 49.7 +59.6 29.8	12 43.1 +59.6 28.8
25°	14 10.1 +59.5 32.4	14 03.0 +59.5 31.5	13 56.0 +59.6 30.6	13 49.3 +59.5 29.6	13 42.7 +59.6 28.7
26°	15 09.6 +59.5 32.3	15 02.5 +59.5 31.4	14 55.6 +59.5 30.4	14 48.8 +59.5 29.5	14 42.3 +59.5 28.6
27°	16 09.1 +59.4 32.1	16 02.0 +59.5 31.2	15 55.1 +59.5 30.3	15 48.3 +59.6 29.4	15 41.8 +59.6 28.5
28°	17 08.5 +59.5 32.0	17 01.5 +59.4 31.1	16 54.6 +59.5 30.2	16 47.9 +59.5 29.3	16 41.4 +59.5 28.3
29°	18 08.0 +59.4 31.9	18 00.9 +59.5 31.0	17 54.1 +59.5 30.0	17 47.4 +59.5 29.1	17 40.9 +59.6 28.2

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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°	-9 14.8 +59.6	-9 21.5 +59.6	-9 28.1 +59.7	-9 34.4 +59.7	-9 40.5 +59.7
3°	-8 15.2 +59.6	-8 21.9 +59.6	-8 28.4 +59.6	-8 34.7 +59.7	-8 40.8 +59.7
4°	-7 15.6 +59.6	-7 22.3 +59.7	-7 28.8 +59.7	-7 35.0 +59.7	-7 41.1 +59.7
5°	-6 16.0 +59.6	-6 22.6 +59.6	-6 29.1 +59.7	-6 35.3 +59.6	-6 41.4 +59.7
6°	-5 16.4 +59.7	-5 23.0 +59.6	-5 29.4 +59.6	-5 35.7 +59.7	-5 41.7 +59.7
7°	-4 16.7 +59.6	-4 23.4 +59.7	-4 29.8 +59.7	-4 36.0 +59.7	-4 42.0 +59.7
8°	-3 17.1 +59.6	-3 23.7 +59.6	-3 30.1 +59.7	-3 36.3 +59.7	-3 42.3 +59.7
9°	-2 17.5 +59.6	-2 24.1 +59.7	-2 30.4 +59.6	-2 36.6 +59.7	-2 42.6 +59.7
10°	-1 17.9 +59.6	-1 24.4 +59.6	-1 30.8 +59.7	-1 36.9 +59.7	-1 42.9 +59.8
11°	-0 18.3 +59.6	-0 24.8 +59.6	-0 31.1 +59.6	-0 37.2 +59.6	-0 43.1 +59.7
12°	0 41.3 +59.7 29.3	0 34.8 +59.7 28.3	0 28.5 +59.7 27.3	0 22.4 +59.7 26.4	0 16.6 +59.7 25.4
13°	1 41.0 +59.6 29.2	1 34.5 +59.6 28.2	1 28.2 +59.7 27.2	1 22.1 +59.7 26.3	1 16.3 +59.7 25.3
14°	2 40.6 +59.6 29.1	2 34.1 +59.7 28.1	2 27.9 +59.6 27.1	2 21.8 +59.7 26.2	2 16.0 +59.7 25.2
15°	3 40.2 +59.6 28.9	3 33.8 +59.6 28.0	3 27.5 +59.7 27.0	3 21.5 +59.7 26.1	3 15.7 +59.7 25.1
16°	4 39.8 +59.6 28.8	4 33.4 +59.6 27.9	4 27.2 +59.7 26.9	4 21.2 +59.7 26.0	4 15.4 +59.7 25.0
17°	5 39.4 +59.6 28.7	5 33.0 +59.7 27.8	5 26.9 +59.6 26.8	5 20.9 +59.7 25.9	5 15.1 +59.7 24.9
18°	6 39.0 +59.7 28.6	6 32.7 +59.6 27.7	6 26.5 +59.7 26.7	6 20.6 +59.6 25.7	6 14.8 +59.7 24.8
19°	7 38.7 +59.6 28.5	7 32.3 +59.7 27.5	7 26.2 +59.6 26.6	7 20.2 +59.7 25.6	7 14.5 +59.7 24.7
20°	8 38.3 +59.6 28.4	8 32.0 +59.6 27.4	8 25.8 +59.7 26.5	8 19.9 +59.7 25.5	8 14.2 +59.7 24.6
21°	9 37.9 +59.6 28.3	9 31.6 +59.6 27.3	9 25.5 +59.7 26.4	9 19.6 +59.7 25.4	9 13.9 +59.7 24.5
22°	10 37.5 +59.6 28.1	10 31.2 +59.7 27.2	10 25.2 +59.6 26.3	10 19.3 +59.7 25.3	10 13.6 +59.7 24.4
23°	11 37.1 +59.6 28.0	11 30.9 +59.6 27.1	11 24.8 +59.7 26.2	11 19.0 +59.6 25.2	11 13.3 +59.7 24.3
24°	12 36.7 +59.6 27.9	12 30.5 +59.6 27.0	12 24.5 +59.6 26.0	12 18.6 +59.7 25.1	12 13.0 +59.7 24.2
25°	13 36.3 +59.6 27.8	13 30.1 +59.6 26.9	13 24.1 +59.6 25.9	13 18.3 +59.7 25.0	13 12.7 +59.7 24.1
26°	14 35.9 +59.6 27.7	14 29.7 +59.6 26.7	14 23.7 +59.7 25.8	14 18.0 +59.6 24.9	14 12.4 +59.7 24.0
27°	15 35.5 +59.6 27.6	15 29.3 +59.6 26.6	15 23.4 +59.6 25.7	15 17.6 +59.7 24.8	15 12.1 +59.6 23.9
28°	16 35.1 +59.6 27.4	16 28.9 +59.7 26.5	16 23.0 +59.7 25.6	16 17.3 +59.6 24.7	16 11.7 +59.7 23.8
29°	17 34.7 +59.5 27.3	17 28.6 +59.6 26.4	17 22.7 +59.6 25.5	17 16.9 +59.7 24.6	17 11.4 +59.7 23.7

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°	-9 46.4 +59.7	-9 52.1 +59.8	-9 57.5 +59.7		
3°	-8 46.7 +59.8	-8 52.3 +59.7	-8 57.8 +59.8	-9 03.0 +59.8	-9 08.0 +59.8
4°	-7 46.9 +59.7	-7 52.6 +59.8	-7 58.0 +59.8	-8 03.2 +59.8	-8 08.2 +59.8
5°	-6 47.2 +59.7	-6 52.8 +59.7	-6 58.2 +59.7	-7 03.4 +59.8	-7 08.4 +59.8
6°	-5 47.5 +59.7	-5 53.1 +59.8	-5 58.5 +59.8	-6 03.6 +59.8	-6 08.6 +59.8
7°	-4 47.8 +59.8	-4 53.3 +59.7	-4 58.7 +59.8	-5 03.8 +59.7	-5 08.8 +59.8
8°	-3 48.0 +59.7	-3 53.6 +59.8	-3 58.9 +59.7	-4 04.1 +59.8	-4 09.0 +59.8
9°	-2 48.3 +59.7	-2 53.8 +59.7	-2 59.2 +59.8	-3 04.3 +59.8	-3 09.2 +59.8
10°	-1 48.6 +59.7	-1 54.1 +59.8	-1 59.4 +59.8	-2 04.5 +59.8	-2 09.4 +59.8
11°	-0 48.9 +59.8	-0 54.3 +59.7	-0 59.6 +59.7	-1 04.7 +59.8	-1 09.6 +59.8
12°	0 10.9 +59.7 24.4	0 05.4 +59.7 23.4	0 00.1 +59.8 22.5	-0 04.9 +59.8	-0 09.8 +59.8
13°	1 10.6 +59.7 24.3	1 05.1 +59.8 23.4	0 59.9 +59.8 22.4	0 54.9 +59.8 21.4	0 50.0 +59.9 20.4
14°	2 10.3 +59.8 24.2	2 04.9 +59.7 23.3	1 59.7 +59.7 22.3	1 54.7 +59.7 21.3	1 49.9 +59.8 20.4
15°	3 10.1 +59.7 24.1	3 04.6 +59.8 23.2	2 59.4 +59.8 22.2	2 54.4 +59.8 21.2	2 49.7 +59.8 20.3
16°	4 09.8 +59.7 24.0	4 04.4 +59.7 23.1	3 59.2 +59.8 22.1	3 54.2 +59.8 21.2	3 49.5 +59.8 20.2
17°	5 09.5 +59.7 23.9	5 04.1 +59.8 23.0	4 59.0 +59.7 22.0	4 54.0 +59.8 21.1	4 49.3 +59.8 20.1
18°	6 09.2 +59.8 23.8	6 03.9 +59.7 22.9	5 58.7 +59.8 21.9	5 53.8 +59.8 21.0	5 49.1 +59.8 20.0
19°	7 09.0 +59.7 23.7	7 03.6 +59.8 22.8	6 58.5 +59.8 21.9	6 53.6 +59.8 20.9	6 48.9 +59.8 20.0
20°	8 08.7 +59.7 23.7	8 03.4 +59.7 22.7	7 58.3 +59.7 21.8	7 53.4 +59.7 20.8	7 48.7 +59.8 19.9
21°	9 08.4 +59.7 23.6	9 03.1 +59.8 22.6	8 58.0 +59.8 21.7	8 53.1 +59.8 20.7	8 48.5 +59.8 19.8
22°	10 08.1 +59.7 23.5	10 02.9 +59.7 22.5	9 57.8 +59.7 21.6	9 52.9 +59.8 20.6	9 48.3 +59.8 19.7
23°	11 07.8 +59.8 23.4	11 02.6 +59.7 22.4	10 57.5 +59.8 21.5	10 52.7 +59.8 20.6	10 48.1 +59.8 19.6
24°	12 07.6 +59.7 23.3	12 02.3 +59.8 22.3	11 57.3 +59.8 21.4	11 52.5 +59.8 20.5	11 47.9 +59.8 19.5
25°	13 07.3 +59.7 23.2	13 02.1 +59.7 22.2	12 57.1 +59.7 21.3	12 52.3 +59.7 20.4	12 47.7 +59.8 19.5
26°	14 07.0 +59.7 23.1	14 01.8 +59.7 22.1	13 56.8 +59.8 21.2	13 52.0 +59.8 20.3	13 47.5 +59.7 19.4
27°	15 06.7 +59.7 23.0	15 01.5 +59.8 22.0	14 56.6 +59.7 21.1	14 51.8 +59.8 20.2	14 47.2 +59.8 19.3
28°	16 06.4 +59.7 22.9	16 01.3 +59.7 21.9	15 56.3 +59.8 21.0	15 51.6 +59.7 20.1	15 47.0 +59.8 19.2
29°	17 06.1 +59.7 22.8	17 01.0 +59.7 21.8	16 56.1 +59.7 20.9	16 51.3 +59.8 20.0	16 46.8 +59.8 19.1

Declination SAME name as Latitude

Latitude 77°

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°	-9 12.8 +59.9	-9 17.3 +59.8	-9 21.7 +59.9	-9 25.8 +59.9	-9 29.6 +59.8
4°	-8 12.9 +59.8	-8 17.5 +59.8	-8 21.8 +59.8	-8 25.9 +59.9	-8 29.8 +59.9
5°	-7 13.1 +59.8	-7 17.7 +59.9	-7 22.0 +59.9	-7 26.0 +59.8	-7 29.9 +59.9
6°	-6 13.3 +59.8	-6 17.8 +59.8	-6 22.1 +59.9	-6 26.2 +59.9	-6 30.0 +59.9
7°	-5 13.5 +59.8	-5 18.0 +59.9	-5 22.2 +59.8	-5 26.3 +59.9	-5 30.1 +59.9
8°	-4 13.7 +59.9	-4 18.1 +59.8	-4 22.4 +59.9	-4 26.4 +59.8	-4 30.2 +59.9
9°	-3 13.8 +59.8	-3 18.3 +59.8	-3 22.5 +59.8	-3 26.6 +59.9	-3 30.3 +59.8
10°	-2 14.0 +59.8	-2 18.5 +59.9	-2 22.7 +59.9	-2 26.7 +59.9	-2 30.5 +59.9
11°	-1 14.2 +59.8	-1 18.6 +59.8	-1 22.8 +59.8	-1 26.8 +59.9	-1 30.6 +59.9
12°	-0 14.4 +59.8	-0 18.8 +59.9	-0 23.0 +59.9	-0 26.9 +59.8	-0 30.7 +59.9
13°	0 45.4 +59.9 19.5	0 41.1 +59.8 18.5	0 36.9 +59.8 17.5	0 32.9 +59.9 16.6	0 29.2 +59.9 15.6
14°	1 45.3 +59.8 19.4	1 40.9 +59.8 18.4	1 36.7 +59.9 17.5	1 32.8 +59.9 16.5	1 29.1 +59.9 15.5
15°	2 45.1 +59.8 19.3	2 40.7 +59.9 18.3	2 36.6 +59.8 17.4	2 32.7 +59.8 16.4	2 29.0 +59.8 15.5
16°	3 44.9 +59.8 19.2	3 40.6 +59.8 18.3	3 36.4 +59.9 17.3	3 32.5 +59.9 16.4	3 28.8 +59.9 15.4
17°	4 44.7 +59.9 19.2	4 40.4 +59.8 18.2	4 36.3 +59.9 17.2	4 32.4 +59.9 16.3	4 28.7 +59.9 15.3
18°	5 44.6 +59.8 19.1	5 40.2 +59.9 18.1	5 36.2 +59.8 17.2	5 32.3 +59.8 16.2	5 28.6 +59.9 15.3
19°	6 44.4 +59.8 19.0	6 40.1 +59.8 18.1	6 36.0 +59.9 17.1	6 32.1 +59.9 16.2	6 28.5 +59.9 15.2
20°	7 44.2 +59.8 18.9	7 39.9 +59.9 18.0	7 35.9 +59.8 17.0	7 32.0 +59.9 16.1	7 28.4 +59.9 15.1
21°	8 44.0 +59.8 18.8	8 39.8 +59.8 17.9	8 35.7 +59.9 17.0	8 31.9 +59.8 16.0	8 28.3 +59.8 15.1
22°	9 43.8 +59.8 18.8	9 39.6 +59.8 17.8	9 35.6 +59.8 16.9	9 31.7 +59.9 16.0	9 28.1 +59.9 15.0
23°	10 43.6 +59.9 18.7	10 39.4 +59.9 17.8	10 35.4 +59.9 16.8	10 31.6 +59.9 15.9	10 28.0 +59.9 15.0
24°	11 43.5 +59.8 18.6	11 39.3 +59.8 17.7	11 35.3 +59.8 16.7	11 31.5 +59.8 15.8	11 27.9 +59.9 14.9
25°	12 43.3 +59.8 18.5	12 39.1 +59.8 17.6	12 35.1 +59.9 16.7	12 31.3 +59.9 15.7	12 27.8 +59.9 14.8
26°	13 43.1 +59.8 18.4	13 38.9 +59.8 17.5	13 35.0 +59.8 16.6	13 31.2 +59.9 15.7	13 27.7 +59.8 14.8
27°	14 42.9 +59.8 18.4	14 38.7 +59.9 17.4	14 34.8 +59.8 16.5	14 31.1 +59.8 15.6	14 27.5 +59.9 14.7
28°	15 42.7 +59.8 18.3	15 38.6 +59.8 17.4	15 34.6 +59.9 16.5	15 30.9 +59.9 15.5	15 27.4 +59.9 14.6
29°	16 42.5 +59.8 18.2	16 38.4 +59.8 17.3	16 34.5 +59.8 16.4	16 30.8 +59.8 15.5	16 27.3 +59.9 14.6

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°	-9 33.3 +59.9	-9 36.7 +59.9	-9 39.9 +59.9	-9 42.9 +60.0	-9 45.6 +59.9
4°	-8 33.4 +59.9	-8 36.8 +59.9	-8 40.0 +59.9	-8 42.9 +59.9	-8 45.7 +60.0
5°	-7 33.5 +59.9	-7 36.9 +59.9	-7 40.1 +60.0	-7 43.0 +59.9	-7 45.7 +59.9
6°	-6 33.6 +59.9	-6 37.0 +59.9	-6 40.1 +59.9	-6 43.1 +60.0	-6 45.8 +60.0
7°	-5 33.7 +59.9	-5 37.1 +59.9	-5 40.2 +59.9	-5 43.1 +59.9	-5 45.8 +59.9
8°	-4 33.8 +59.9	-4 37.2 +59.9	-4 40.3 +59.9	-4 43.2 +59.9	-4 45.9 +60.0
9°	-3 33.9 +59.9	-3 37.3 +59.9	-3 40.4 +59.9	-3 43.3 +60.0	-3 45.9 +59.9
10°	-2 34.0 +59.9	-2 37.4 +60.0	-2 40.5 +60.0	-2 43.3 +59.9	-2 46.0 +60.0
11°	-1 34.1 +59.9	-1 37.4 +59.9	-1 40.5 +59.9	-1 43.4 +59.9	-1 46.0 +59.9
12°	-0 34.2 +59.9	-0 37.5 +59.9	-0 40.6 +59.9	-0 43.5 +60.0	-0 46.1 +59.9
13°	0 25.7 +59.9 14.6	0 22.4 +59.9 13.6	0 19.3 +59.9 12.7	0 16.5 +59.9 11.7	0 13.8 +60.0 10.7
14°	1 25.6 +59.9 14.5	1 22.3 +59.9 13.6	1 19.2 +60.0 12.6	1 16.4 +59.9 11.6	1 13.8 +59.9 10.7
15°	2 25.5 +59.9 14.5	2 22.2 +59.9 13.5	2 19.2 +59.9 12.6	2 16.3 +60.0 11.6	2 13.7 +60.0 10.6
16°	3 25.4 +59.9 14.4	3 22.1 +59.9 13.5	3 19.1 +59.9 12.5	3 16.3 +59.9 11.5	3 13.7 +59.9 10.6
17°	4 25.3 +59.9 14.4	4 22.0 +59.9 13.4	4 19.0 +59.9 12.5	4 16.2 +59.9 11.5	4 13.6 +60.0 10.5
18°	5 25.2 +59.9 14.3	5 21.9 +59.9 13.4	5 18.9 +59.9 12.4	5 16.1 +60.0 11.5	5 13.6 +59.9 10.5
19°	6 25.1 +59.9 14.3	6 21.8 +60.0 13.3	6 18.8 +60.0 12.4	6 16.1 +59.9 11.4	6 13.5 +60.0 10.5
20°	7 25.0 +59.9 14.2	7 21.8 +59.9 13.3	7 18.8 +59.9 12.3	7 16.0 +59.9 11.4	7 13.5 +59.9 10.4
21°	8 24.9 +59.9 14.1	8 21.7 +59.9 13.2	8 18.7 +59.9 12.3	8 15.9 +60.0 11.3	8 13.4 +59.9 10.4
22°	9 24.8 +59.8 14.1	9 21.6 +59.9 13.1	9 18.6 +59.9 12.2	9 15.9 +59.9 11.3	9 13.3 +60.0 10.3
23°	10 24.6 +59.9 14.0	10 21.5 +59.9 13.1	10 18.5 +60.0 12.1	10 15.8 +59.9 11.2	10 13.3 +59.9 10.3
24°	11 24.5 +59.9 14.0	11 21.4 +59.9 13.0	11 18.5 +59.9 12.1	11 15.7 +60.0 11.2	11 13.2 +60.0 10.2
25°	12 24.4 +59.9 13.9	12 21.3 +59.9 13.0	12 18.4 +59.9 12.0	12 15.7 +59.9 11.1	12 13.2 +59.9 10.2
26°	13 24.3 +59.9 13.8	13 21.2 +59.9 12.9	13 18.3 +59.9 12.0	13 15.6 +59.9 11.1	13 13.1 +60.0 10.1
27°	14 24.2 +59.9 13.8	14 21.1 +59.9 12.9	14 18.2 +59.9 11.9	14 15.5 +60.0 11.0	14 13.1 +59.9 10.1
28°	15 24.1 +59.9 13.7	15 21.0 +59.9 12.8	15 18.1 +59.9 11.9	15 15.5 +59.9 11.0	15 13.0 +59.9 10.1
29°	16 24.0 +59.9 13.6	16 20.9 +59.9 12.7	16 18.0 +60.0 11.8	16 15.4 +59.9 10.9	16 12.9 +60.0 10.0

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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°	-9	48.1 +60.0	-9	50.3 +59.9	-9	52.4 +60.0	-9	54.2 +60.0	-9	55.7 +60.0
4°	-8	48.1 +59.9	-8	50.4 +60.0	-8	52.4 +60.0	-8	54.2 +60.0	-8	55.7 +60.0
5°	-7	48.2 +60.0	-7	50.4 +59.9	-7	52.4 +59.9	-7	54.2 +60.0	-7	55.7 +59.9
6°	-6	48.2 +59.9	-6	50.5 +60.0	-6	52.5 +60.0	-6	54.2 +60.0	-6	55.8 +60.0
7°	-5	48.3 +60.0	-5	50.5 +60.0	-5	52.5 +60.0	-5	54.2 +59.9	-5	55.8 +60.0
8°	-4	48.3 +59.9	-4	50.5 +59.9	-4	52.5 +60.0	-4	54.3 +60.0	-4	55.8 +60.0
9°	-3	48.4 +60.0	-3	50.6 +60.0	-3	52.5 +59.9	-3	54.3 +60.0	-3	55.8 +60.0
10°	-2	48.4 +59.9	-2	50.6 +60.0	-2	52.6 +60.0	-2	54.3 +60.0	-2	55.8 +60.0
11°	-1	48.5 +60.0	-1	50.6 +59.9	-1	52.6 +60.0	-1	54.3 +59.9	-1	55.8 +59.9
12°	-0	48.5 +59.9	-0	50.7 +60.0	-0	52.6 +59.9	-0	54.4 +60.0	-0	55.9 +60.0
13°	0	11.4 +60.0	0	09.3 +59.9	0	07.3 +60.0	0	05.6 +60.0	0	04.1 +60.0
14°	1	11.4 +60.0	1	09.2 +60.0	1	07.3 +60.0	1	05.6 +60.0	1	04.1 +60.0
15°	2	11.4 +59.9	2	09.2 +60.0	2	07.3 +59.9	2	05.6 +59.9	2	04.1 +60.0
16°	3	11.3 +60.0	3	09.2 +59.9	3	07.2 +60.0	3	05.5 +60.0	3	04.1 +60.0
17°	4	11.3 +59.9	4	09.1 +60.0	4	07.2 +60.0	4	05.5 +60.0	4	04.1 +59.9
18°	5	11.2 +60.0	5	09.1 +60.0	5	07.2 +60.0	5	05.5 +60.0	5	04.0 +60.0
19°	6	11.2 +59.9	6	09.1 +59.9	6	07.2 +59.9	6	05.5 +60.0	6	04.0 +60.0
20°	7	11.1 +60.0	7	09.0 +60.0	7	07.1 +60.0	7	05.5 +59.9	7	04.0 +60.0
21°	8	11.1 +59.9	8	09.0 +59.9	8	07.1 +60.0	8	05.4 +60.0	8	04.0 +60.0
22°	9	11.0 +60.0	9	08.9 +60.0	9	07.1 +59.9	9	05.4 +60.0	9	04.0 +60.0
23°	10	11.0 +59.9	10	08.9 +60.0	10	07.0 +60.0	10	05.4 +60.0	10	04.0 +59.9
24°	11	10.9 +60.0	11	08.9 +59.9	11	07.0 +60.0	11	05.4 +59.9	11	03.9 +60.0
25°	12	10.9 +59.9	12	08.8 +60.0	12	07.0 +59.9	12	05.3 +60.0	12	03.9 +60.0
26°	13	10.8 +60.0	13	08.8 +59.9	13	06.9 +60.0	13	05.3 +60.0	13	03.9 +60.0
27°	14	10.8 +59.9	14	08.7 +60.0	14	06.9 +60.0	14	05.3 +60.0	14	03.9 +60.0
28°	15	10.7 +60.0	15	08.7 +60.0	15	06.9 +59.9	15	05.3 +59.9	15	03.9 +60.0
29°	16	10.7 +59.9	16	08.7 +59.9	16	06.8 +60.0	16	05.2 +60.0	16	03.9 +59.9

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°	-9	57.0 +60.0	-9	58.1 +60.0	-9	58.9 +60.0	-9	59.5 +60.0	-9	59.9 +60.0
4°	-8	57.0 +60.0	-8	58.1 +60.0	-8	58.9 +60.0	-8	59.5 +60.0	-8	59.9 +60.0
5°	-7	57.0 +59.9	-7	58.1 +60.0	-7	58.9 +60.0	-7	59.5 +60.0	-7	59.9 +60.0
6°	-6	57.1 +60.0	-6	58.1 +60.0	-6	58.9 +60.0	-6	59.5 +60.0	-6	59.9 +60.0
7°	-5	57.1 +60.0	-5	58.1 +60.0	-5	58.9 +60.0	-5	59.5 +60.0	-5	59.9 +60.0
8°	-4	57.1 +60.0	-4	58.1 +60.0	-4	58.9 +59.9	-4	59.5 +60.0	-4	59.9 +60.0
9°	-3	57.1 +60.0	-3	58.1 +60.0	-3	59.0 +60.0	-3	59.5 +60.0	-3	59.9 +60.0
10°	-2	57.1 +60.0	-2	58.1 +60.0	-2	59.0 +60.0	-2	59.5 +60.0	-2	59.9 +60.0
11°	-1	57.1 +60.0	-1	58.1 +59.9	-1	59.0 +60.0	-1	59.5 +60.0	-1	59.9 +60.0
12°	-0	57.1 +60.0	-0	58.2 +60.0	-0	59.0 +60.0	-0	59.5 +60.0	-0	59.9 +60.0
13°	0	02.9 +60.0	0	01.8 +60.0	0	01.0 +60.0	0	00.5 +60.0	0	00.1 +60.0
14°	1	02.9 +59.9	1	01.8 +60.0	1	01.0 +60.0	1	00.5 +60.0	1	00.1 +60.0
15°	2	02.8 +60.0	2	01.8 +60.0	2	01.0 +60.0	2	00.5 +60.0	2	00.1 +60.0
16°	3	02.8 +60.0	3	01.8 +60.0	3	01.0 +60.0	3	00.5 +60.0	3	00.1 +60.0
17°	4	02.8 +60.0	4	01.8 +60.0	4	01.0 +60.0	4	00.5 +59.9	4	00.1 +60.0
18°	5	02.8 +60.0	5	01.8 +60.0	5	01.0 +60.0	5	00.4 +60.0	5	00.1 +60.0
19°	6	02.8 +60.0	6	01.8 +60.0	6	01.0 +60.0	6	00.4 +60.0	6	00.1 +60.0
20°	7	02.8 +60.0	7	01.8 +60.0	7	01.0 +60.0	7	00.4 +60.0	7	00.1 +60.0
21°	8	02.8 +60.0	8	01.8 +60.0	8	01.0 +60.0	8	00.4 +60.0	8	00.1 +60.0
22°	9	02.8 +60.0	9	01.8 +60.0	9	01.0 +60.0	9	00.4 +60.0	9	00.1 +60.0
23°	10	02.8 +59.9	10	01.8 +60.0	10	01.0 +60.0	10	00.4 +60.0	10	00.1 +60.0
24°	11	02.7 +60.0	11	01.8 +59.9	11	01.0 +60.0	11	00.4 +60.0	11	00.1 +60.0
25°	12	02.7 +60.0	12	01.7 +60.0	12	01.0 +60.0	12	00.4 +60.0	12	00.1 +60.0
26°	13	02.7 +60.0	13	01.7 +60.0	13	01.0 +60.0	13	00.4 +60.0	13	00.1 +60.0
27°	14	02.7 +60.0	14	01.7 +60.0	14	01.0 +60.0	14	00.4 +60.0	14	00.1 +60.0
28°	15	02.7 +60.0	15	01.7 +60.0	15	01.0 +60.0	15	00.4 +60.0	15	00.1 +60.0
29°	16	02.7 +60.0	16	01.7 +60.0	16	01.0 +60.0	16	00.4 +60.0	16	00.1 +60.0

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°	12 00.0 +60.0 180.0	11 59.9 +60.0 179.0	11 59.6 +60.0 178.0	11 59.0 +60.0 176.9	11 58.2 +60.0 175.9
1°	13 00.0 +60.0 180.0	12 59.9 +60.0 179.0	12 59.6 +60.0 177.9	12 59.0 +60.0 176.9	12 58.2 +60.0 175.9
2°	14 00.0 +60.0 180.0	13 59.9 +60.0 179.0	13 59.6 +59.9 177.9	13 59.0 +60.0 176.9	13 58.2 +60.0 175.9
3°	15 00.0 +60.0 180.0	14 59.9 +60.0 179.0	14 59.5 +60.0 177.9	14 59.0 +60.0 176.9	14 58.2 +60.0 175.9
4°	16 00.0 +60.0 180.0	15 59.9 +60.0 179.0	15 59.5 +60.0 177.9	15 59.0 +60.0 176.9	15 58.2 +60.0 175.8
5°	17 00.0 +60.0 180.0	16 59.9 +60.0 179.0	16 59.5 +60.0 177.9	16 59.0 +60.0 176.9	16 58.2 +60.0 175.8
6°	18 00.0 +60.0 180.0	17 59.9 +60.0 179.0	17 59.5 +60.0 177.9	17 59.0 +60.0 176.9	17 58.2 +60.0 175.8
7°	19 00.0 +60.0 180.0	18 59.9 +60.0 179.0	18 59.5 +60.0 177.9	18 59.0 +60.0 176.9	18 58.2 +60.0 175.8
8°	20 00.0 +60.0 180.0	19 59.9 +60.0 178.9	19 59.5 +60.0 177.9	19 59.0 +60.0 176.8	19 58.2 +60.0 175.8
9°	21 00.0 +60.0 180.0	20 59.9 +60.0 178.9	20 59.5 +60.0 177.9	20 59.0 +60.0 176.8	20 58.2 +60.0 175.8
10°	22 00.0 +60.0 180.0	21 59.9 +60.0 178.9	21 59.5 +60.0 177.9	21 59.0 +60.0 176.8	21 58.2 +59.9 175.8
11°	23 00.0 +60.0 180.0	22 59.9 +60.0 178.9	22 59.5 +60.0 177.9	22 59.0 +60.0 176.8	22 58.1 +60.0 175.7
12°	24 00.0 +60.0 180.0	23 59.9 +60.0 178.9	23 59.5 +60.0 177.9	23 59.0 +59.9 176.8	23 58.1 +60.0 175.7
13°	25 00.0 +60.0 180.0	24 59.9 +60.0 178.9	24 59.5 +60.0 177.8	24 58.9 +60.0 176.8	24 58.1 +60.0 175.7
14°	26 00.0 +60.0 180.0	25 59.9 +60.0 178.9	25 59.5 +60.0 177.8	25 58.9 +60.0 176.8	25 58.1 +60.0 175.7
15°	27 00.0 +60.0 180.0	26 59.9 +60.0 178.9	26 59.5 +60.0 177.8	26 58.9 +60.0 176.7	26 58.1 +60.0 175.7
16°	28 00.0 +60.0 180.0	27 59.9 +60.0 178.9	27 59.5 +60.0 177.8	27 58.9 +60.0 176.7	27 58.1 +60.0 175.6
17°	29 00.0 +60.0 180.0	28 59.9 +60.0 178.9	28 59.5 +60.0 177.8	28 58.9 +60.0 176.7	28 58.1 +60.0 175.6
18°	30 00.0 +60.0 180.0	29 59.9 +60.0 178.9	29 59.5 +60.0 177.8	29 58.9 +60.0 176.7	29 58.1 +60.0 175.6
19°	31 00.0 +60.0 180.0	30 59.9 +60.0 178.9	30 59.5 +60.0 177.8	30 58.9 +60.0 176.7	30 58.1 +60.0 175.6
20°	32 00.0 +60.0 180.0	31 59.9 +60.0 178.9	31 59.5 +60.0 177.8	31 58.9 +60.0 176.7	31 58.1 +60.0 175.6
21°	33 00.0 +60.0 180.0	32 59.9 +60.0 178.9	32 59.5 +60.0 177.8	32 58.9 +60.0 176.7	32 58.1 +60.0 175.5
22°	34 00.0 +60.0 180.0	33 59.9 +60.0 178.9	33 59.5 +60.0 177.8	33 58.9 +60.0 176.6	33 58.1 +59.9 175.5
23°	35 00.0 +60.0 180.0	34 59.9 +60.0 178.9	34 59.5 +60.0 177.8	34 58.9 +60.0 176.6	34 58.0 +60.0 175.5
24°	36 00.0 +60.0 180.0	35 59.9 +60.0 178.9	35 59.5 +60.0 177.7	35 58.9 +60.0 176.6	35 58.0 +60.0 175.5
25°	37 00.0 +60.0 180.0	36 59.9 +60.0 178.9	36 59.5 +60.0 177.7	36 58.9 +60.0 176.6	36 58.0 +60.0 175.5
26°	38 00.0 +60.0 180.0	37 59.9 +60.0 178.9	37 59.5 +60.0 177.7	37 58.9 +60.0 176.6	37 58.0 +60.0 175.4
27°	39 00.0 +60.0 180.0	38 59.9 +60.0 178.9	38 59.5 +60.0 177.7	38 58.9 +60.0 176.6	38 58.0 +60.0 175.4
28°	40 00.0 +60.0 180.0	39 59.9 +60.0 178.8	39 59.5 +60.0 177.7	39 58.9 +60.0 176.5	39 58.0 +60.0 175.4
29°	41 00.0 +60.0 180.0	40 59.9 +60.0 178.8	40 59.5 +60.0 177.7	40 58.9 +60.0 176.5	40 58.0 +60.0 175.4

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	11 57.2 +60.0 174.9	11 56.0 +60.0 173.9	11 54.6 +59.9 172.8	11 52.9 +60.0 171.8	11 51.0 +60.0 170.8
1°	12 57.2 +60.0 174.9	12 56.0 +60.0 173.8	12 54.5 +60.0 172.8	12 52.9 +59.9 171.8	12 51.0 +59.9 170.8
2°	13 57.2 +60.0 174.9	13 56.0 +60.0 173.8	13 54.5 +60.0 172.8	13 52.8 +60.0 171.8	13 50.9 +60.0 170.7
3°	14 57.2 +60.0 174.8	14 56.0 +59.9 173.8	14 54.5 +60.0 172.8	14 52.8 +60.0 171.7	14 50.9 +60.0 170.7
4°	15 57.2 +60.0 174.8	15 55.9 +60.0 173.8	15 54.5 +60.0 172.7	15 52.8 +60.0 171.7	15 50.9 +59.9 170.7
5°	16 57.2 +60.0 174.8	16 55.9 +60.0 173.8	16 54.5 +59.9 172.7	16 52.8 +59.9 171.7	16 50.8 +60.0 170.6
6°	17 57.2 +59.9 174.8	17 55.9 +60.0 173.7	17 54.4 +60.0 172.7	17 52.7 +60.0 171.6	17 50.8 +60.0 170.6
7°	18 57.1 +60.0 174.8	18 55.9 +60.0 173.7	18 54.4 +60.0 172.7	18 52.7 +60.0 171.6	18 50.8 +59.9 170.6
8°	19 57.1 +60.0 174.7	19 55.9 +60.0 173.7	19 54.4 +60.0 172.6	19 52.7 +59.9 171.6	19 50.7 +60.0 170.5
9°	20 57.1 +60.0 174.7	20 55.9 +59.9 173.7	20 54.4 +59.9 172.6	20 52.6 +60.0 171.5	20 50.7 +60.0 170.5
10°	21 57.1 +60.0 174.7	21 55.8 +60.0 173.6	21 54.3 +60.0 172.6	21 52.6 +60.0 171.5	21 50.7 +59.9 170.4
11°	22 57.1 +60.0 174.7	22 55.8 +60.0 173.6	22 54.3 +60.0 172.5	22 52.6 +60.0 171.5	22 50.6 +60.0 170.4
12°	23 57.1 +60.0 174.6	23 55.8 +60.0 173.6	23 54.3 +60.0 172.5	23 52.6 +59.9 171.4	23 50.6 +59.9 170.4
13°	24 57.1 +60.0 174.6	24 55.8 +60.0 173.6	24 54.3 +60.0 172.5	24 52.5 +60.0 171.4	24 50.5 +60.0 170.3
14°	25 57.1 +60.0 174.6	25 55.8 +60.0 173.5	25 54.3 +59.9 172.4	25 52.5 +60.0 171.4	25 50.5 +60.0 170.3
15°	26 57.1 +59.9 174.6	26 55.8 +59.9 173.5	26 54.2 +60.0 172.4	26 52.5 +59.9 171.3	26 50.5 +59.9 170.3
16°	27 57.0 +60.0 174.6	27 55.7 +60.0 173.5	27 54.2 +60.0 172.4	27 52.4 +60.0 171.3	27 50.4 +60.0 170.2
17°	28 57.0 +60.0 174.5	28 55.7 +60.0 173.4	28 54.2 +60.0 172.3	28 52.4 +60.0 171.3	28 50.4 +59.9 170.2
18°	29 57.0 +60.0 174.5	29 55.7 +60.0 173.4	29 54.2 +59.9 172.3	29 52.4 +59.9 171.2	29 50.3 +60.0 170.1
19°	30 57.0 +60.0 174.5	30 55.7 +60.0 173.4	30 54.1 +60.0 172.3	30 52.3 +60.0 171.2	30 50.3 +60.0 170.1
20°	31 57.0 +60.0 174.5	31 55.7 +59.9 173.4	31 54.1 +60.0 172.2	31 52.3 +60.0 171.1	31 50.3 +59.9 170.0
21°	32 57.0 +60.0 174.4	32 55.6 +60.0 173.3	32 54.1 +59.9 172.2	32 52.3 +59.9 171.1	32 50.2 +60.0 170.0
22°	33 57.0 +59.9 174.4	33 55.6 +60.0 173.3	33 54.0 +60.0 172.2	33 52.2 +60.0 171.1	33 50.2 +59.9 169.9
23°	34 56.9 +60.0 174.4	34 55.6 +60.0 173.3	34 54.0 +60.0 172.1	34 52.2 +60.0 171.0	34 50.1 +60.0 169.9
24°	35 56.9 +60.0 174.4	35 55.6 +60.0 173.2	35 54.0 +60.0 172.1	35 52.2 +59.9 171.0	35 50.1 +59.9 169.8
25°	36 56.9 +60.0 174.3	36 55.6 +59.9 173.2	36 54.0 +59.9 172.1	36 52.1 +60.0 170.9	36 50.0 +60.0 169.8
26°	37 56.9 +60.0 174.3	37 55.5 +60.0 173.2	37 53.9 +60.0 172.0	37 52.1 +59.9 170.9	37 50.0 +59.9 169.7
27°	38 56.9 +60.0 174.3	38 55.5 +60.0 173.1	38 53.9 +60.0 172.0	38 52.0 +60.0 170.8	38 49.9 +60.0 169.7
28°	39 56.9 +59.9 174.2	39 55.5 +60.0 173.1	39 53.9 +59.9 171.9	39 52.0 +59.9 170.8	39 49.9 +59.9 169.6
29°	40 56.8 +60.0 174.2	40 55.5 +59.9 173.1	40 53.8 +60.0 171.9	40 51.9 +60.0 170.7	40 49.8 +60.0 169.6

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	11 48.9 +60.0 169.8	11 46.6 +59.9 168.8	11 44.0 +60.0 167.7	11 41.3 +59.9 166.7	11 38.3 +59.9 165.7
1°	12 48.9 +59.9 169.7	12 46.5 +60.0 168.7	12 44.0 +59.9 167.7	12 41.2 +59.9 166.7	12 38.2 +59.9 165.6
2°	13 48.8 +60.0 169.7	13 46.5 +59.9 168.7	13 43.9 +60.0 167.6	13 41.1 +60.0 166.6	13 38.1 +60.0 165.6
3°	14 48.8 +59.9 169.7	14 46.4 +60.0 168.6	14 43.9 +59.9 167.6	14 41.1 +59.9 166.6	14 38.1 +59.9 165.5
4°	15 48.7 +60.0 169.6	15 46.4 +59.9 168.6	15 43.8 +59.9 167.6	15 41.0 +59.9 166.5	15 38.0 +59.9 165.5
5°	16 48.7 +60.0 169.6	16 46.3 +60.0 168.5	16 43.7 +60.0 167.5	16 40.9 +60.0 166.5	16 37.9 +59.9 165.4
6°	17 48.7 +59.9 169.5	17 46.3 +59.9 168.5	17 43.7 +59.9 167.5	17 40.9 +59.9 166.4	17 37.8 +59.9 165.4
7°	18 48.6 +60.0 169.5	18 46.2 +60.0 168.5	18 43.6 +60.0 167.4	18 40.8 +59.9 166.4	18 37.7 +60.0 165.3
8°	19 48.6 +59.9 169.5	19 46.2 +59.9 168.4	19 43.6 +59.9 167.4	19 40.7 +59.9 166.3	19 37.7 +59.9 165.3
9°	20 48.5 +60.0 169.4	20 46.1 +60.0 168.4	20 43.5 +59.9 167.3	20 40.6 +60.0 166.3	20 37.6 +59.9 165.2
10°	21 48.5 +59.9 169.4	21 46.1 +59.9 168.3	21 43.4 +60.0 167.3	21 40.6 +59.9 166.2	21 37.5 +59.9 165.2
11°	22 48.4 +60.0 169.3	22 46.0 +60.0 168.3	22 43.4 +59.9 167.2	22 40.5 +59.9 166.2	22 37.4 +59.9 165.1
12°	23 48.4 +59.9 169.3	23 46.0 +59.9 168.2	23 43.3 +59.9 167.2	23 40.4 +59.9 166.1	23 37.3 +59.9 165.0
13°	24 48.3 +60.0 169.3	24 45.9 +59.9 168.2	24 43.2 +60.0 167.1	24 40.3 +60.0 166.0	24 37.2 +59.9 165.0
14°	25 48.3 +59.9 169.2	25 45.8 +60.0 168.1	25 43.2 +59.9 167.1	25 40.3 +59.9 166.0	25 37.1 +59.9 164.9
15°	26 48.2 +60.0 169.2	26 45.8 +59.9 168.1	26 43.1 +59.9 167.0	26 40.2 +59.9 165.9	26 37.0 +59.9 164.8
16°	27 48.2 +59.9 169.1	27 45.7 +60.0 168.0	27 43.0 +59.9 167.0	27 40.1 +59.9 165.9	27 36.9 +59.9 164.8
17°	28 48.1 +60.0 169.1	28 45.7 +59.9 168.0	28 42.9 +60.0 166.9	28 40.0 +59.9 165.8	28 36.8 +59.9 164.7
18°	29 48.1 +59.9 169.0	29 45.6 +59.9 167.9	29 42.9 +59.9 166.8	29 39.9 +59.9 165.7	29 36.7 +59.9 164.7
19°	30 48.0 +60.0 169.0	30 45.5 +60.0 167.9	30 42.8 +59.9 166.8	30 39.8 +59.9 165.7	30 36.6 +59.9 164.6
20°	31 48.0 +59.9 168.9	31 45.5 +59.9 167.8	31 42.7 +59.9 166.7	31 39.7 +59.9 165.6	31 36.5 +59.9 164.5
21°	32 47.9 +60.0 168.9	32 45.4 +59.9 167.8	32 42.6 +60.0 166.7	32 39.6 +60.0 165.6	32 36.4 +59.9 164.4
22°	33 47.9 +59.9 168.8	33 45.3 +60.0 167.7	33 42.6 +59.9 166.6	33 39.6 +59.9 165.5	33 36.3 +59.9 164.4
23°	34 47.8 +60.0 168.8	34 45.3 +59.9 167.7	34 42.5 +59.9 166.5	34 39.5 +59.9 165.4	34 36.2 +59.9 164.3
24°	35 47.8 +59.9 168.7	35 45.2 +59.9 167.6	35 42.4 +59.9 166.5	35 39.4 +59.9 165.3	35 36.1 +59.9 164.2
25°	36 47.7 +59.9 168.7	36 45.1 +59.9 167.5	36 42.3 +59.9 166.4	36 39.3 +59.9 165.3	36 36.0 +59.9 164.2
26°	37 47.6 +60.0 168.6	37 45.0 +60.0 167.5	37 42.2 +59.9 166.3	37 39.2 +59.8 165.2	37 35.9 +59.8 164.1
27°	38 47.6 +59.9 168.6	38 45.0 +59.9 167.4	38 42.1 +59.9 166.3	38 39.0 +59.9 165.1	38 35.7 +59.9 164.0
28°	39 47.5 +59.9 168.5	39 44.9 +59.9 167.3	39 42.0 +59.9 166.2	39 38.9 +59.9 165.1	39 35.6 +59.9 163.9
29°	40 47.4 +60.0 168.4	40 44.8 +59.9 167.3	40 41.9 +59.9 166.1	40 38.8 +59.9 165.0	40 35.5 +59.8 163.8

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°	11 35.1 +59.9 164.7	11 31.7 +59.9 163.7	11 28.1 +59.9 162.6	11 24.3 +59.8 161.6	11 20.2 +59.9 160.6
1°	12 35.0 +59.9 164.6	12 31.6 +59.9 163.6	12 28.0 +59.9 162.6	12 24.1 +59.9 161.6	12 20.1 +59.8 160.5
2°	13 34.9 +59.9 164.6	13 31.5 +59.9 163.5	13 27.9 +59.9 162.5	13 24.0 +59.9 161.5	13 19.9 +59.9 160.5
3°	14 34.8 +60.0 164.5	14 31.4 +59.9 163.5	14 27.8 +59.9 162.5	14 23.9 +59.9 161.4	14 19.8 +59.9 160.4
4°	15 34.8 +59.9 164.5	15 31.3 +59.9 163.4	15 27.6 +59.9 162.4	15 23.8 +59.8 161.4	15 19.7 +59.8 160.3
5°	16 34.7 +59.9 164.4	16 31.2 +59.9 163.4	16 27.5 +59.9 162.3	16 23.6 +59.9 161.3	16 19.5 +59.9 160.2
6°	17 34.6 +59.9 164.3	17 31.1 +59.9 163.3	17 27.4 +59.9 162.3	17 23.5 +59.8 161.2	17 19.4 +59.8 160.2
7°	18 34.5 +59.9 164.3	18 31.0 +59.9 163.2	18 27.3 +59.8 162.2	18 23.3 +59.9 161.1	18 19.2 +59.9 160.1
8°	19 34.4 +59.9 164.2	19 30.9 +59.9 163.2	19 27.1 +59.9 162.1	19 23.2 +59.9 161.1	19 19.1 +59.8 160.0
9°	20 34.3 +59.9 164.2	20 30.8 +59.8 163.1	20 27.0 +59.9 162.0	20 23.1 +59.8 161.0	20 18.9 +59.8 159.9
10°	21 34.2 +59.9 164.1	21 30.6 +59.9 163.0	21 26.9 +59.9 162.0	21 22.9 +59.9 160.9	21 18.7 +59.9 159.9
11°	22 34.1 +59.9 164.0	22 30.5 +59.9 163.0	22 26.8 +59.8 161.9	22 22.8 +59.8 160.8	22 18.6 +59.8 159.8
12°	23 34.0 +59.9 164.0	23 30.4 +59.9 162.9	23 26.6 +59.9 161.8	23 22.6 +59.9 160.8	23 18.4 +59.9 159.7
13°	24 33.9 +59.9 163.9	24 30.3 +59.9 162.8	24 26.5 +59.9 161.8	24 22.5 +59.8 160.7	24 18.3 +59.8 159.6
14°	25 33.8 +59.8 163.8	25 30.2 +59.8 162.8	25 26.4 +59.8 161.7	25 22.3 +59.9 160.6	25 18.1 +59.8 159.5
15°	26 33.6 +59.9 163.8	26 30.0 +59.9 162.7	26 26.2 +59.9 161.6	26 22.2 +59.8 160.5	26 17.9 +59.8 159.5
16°	27 33.5 +59.9 163.7	27 29.9 +59.9 162.6	27 26.1 +59.8 161.5	27 22.0 +59.9 160.5	27 17.7 +59.9 159.4
17°	28 33.4 +59.9 163.6	28 29.8 +59.9 162.5	28 25.9 +59.9 161.5	28 21.9 +59.8 160.4	28 17.6 +59.8 159.3
18°	29 33.3 +59.9 163.6	29 29.7 +59.8 162.5	29 25.8 +59.9 161.4	29 21.7 +59.8 160.3	29 17.4 +59.8 159.2
19°	30 33.2 +59.9 163.5	30 29.5 +59.9 162.4	30 25.7 +59.8 161.3	30 21.5 +59.9 160.2	30 17.2 +59.8 159.1
20°	31 33.1 +59.9 163.4	31 29.4 +59.9 162.3	31 25.5 +59.8 161.2	31 21.4 +59.8 160.1	31 17.0 +59.8 159.0
21°	32 33.0 +59.8 163.3	32 29.3 +59.8 162.2	32 25.3 +59.9 161.1	32 21.2 +59.8 160.0	32 16.8 +59.8 158.9
22°	33 32.8 +59.9 163.3	33 29.1 +59.9 162.2	33 25.2 +59.8 161.0	33 21.0 +59.8 159.9	33 16.6 +59.8 158.8
23°	34 32.7 +59.9 163.2	34 29.0 +59.8 162.1	34 25.0 +59.9 161.0	34 20.8 +59.9 159.8	34 16.4 +59.8 158.7
24°	35 32.6 +59.8 163.1	35 28.8 +59.9 162.0	35 24.9 +59.8 160.9	35 20.7 +59.8 159.8	35 16.2 +59.8 158.6
25°	36 32.4 +59.9 163.0	36 28.7 +59.8 161.9	36 24.7 +59.8 160.8	36 20.5 +59.8 159.7	36 16.0 +59.8 158.5
26°	37 32.3 +59.9 162.9	37 28.5 +59.9 161.8	37 24.5 +59.8 160.7	37 20.3 +59.8 159.6	37 15.8 +59.8 158.4
27°	38 32.2 +59.8 162.9	38 28.4 +59.8 161.7	38 24.3 +59.9 160.6	38 20.1 +59.8 159.5	38 15.6 +59.8 158.3
28°	39 32.0 +59.9 162.8	39 28.2 +59.8 161.6	39 24.2 +59.8 160.5	39 19.9 +59.8 159.3	39 15.4 +59.7 158.2
29°	40 31.9 +59.8 162.7	40 28.0 +59.9 161.5	40 24.0 +59.8 160.4	40 19.7 +59.7 159.2	40 15.1 +59.8 158.1

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°	11 16.0 +59.8 159.6	11 11.5 +59.9 158.6	11 06.9 +59.8 157.6	11 02.0 +59.8 156.5	10 56.9 +59.8 155.5
1°	12 15.8 +59.9 159.5	12 11.4 +59.8 158.5	12 06.7 +59.8 157.5	12 01.8 +59.8 156.5	11 56.7 +59.8 155.4
2°	13 15.7 +59.8 159.4	13 11.2 +59.8 158.4	13 06.5 +59.8 157.4	13 01.6 +59.8 156.4	12 56.5 +59.8 155.3
3°	14 15.5 +59.8 159.4	14 11.0 +59.8 158.3	14 06.3 +59.8 157.3	14 01.4 +59.8 156.3	13 56.3 +59.7 155.3
4°	15 15.3 +59.9 159.3	15 10.8 +59.9 158.3	15 06.1 +59.8 157.2	15 01.2 +59.8 156.2	14 56.0 +59.8 155.2
5°	16 15.2 +59.8 159.2	16 10.7 +59.8 158.2	16 05.9 +59.8 157.1	16 01.0 +59.7 156.1	15 55.8 +59.8 155.1
6°	17 15.0 +59.9 159.1	17 10.5 +59.8 158.1	17 05.7 +59.8 157.1	17 00.7 +59.8 156.0	16 55.6 +59.7 155.0
7°	18 14.9 +59.8 159.1	18 10.3 +59.8 158.0	18 05.5 +59.8 157.0	18 00.5 +59.8 155.9	17 55.3 +59.8 154.9
8°	19 14.7 +59.8 159.0	19 10.1 +59.8 157.9	19 05.3 +59.8 156.9	19 00.3 +59.8 155.8	18 55.1 +59.8 154.8
9°	20 14.5 +59.8 158.9	20 09.9 +59.8 157.8	20 05.1 +59.8 156.8	20 00.1 +59.8 155.8	19 54.9 +59.7 154.7
10°	21 14.3 +59.9 158.8	21 09.7 +59.8 157.8	21 04.9 +59.8 156.7	20 59.9 +59.7 155.7	20 54.6 +59.8 154.6
11°	22 14.2 +59.8 158.7	22 09.5 +59.8 157.7	22 04.7 +59.8 156.6	21 59.6 +59.8 155.6	21 54.4 +59.7 154.5
12°	23 14.0 +59.8 158.6	23 09.3 +59.8 157.6	23 04.5 +59.8 156.5	22 59.4 +59.8 155.5	22 54.1 +59.8 154.4
13°	24 13.8 +59.8 158.6	24 09.1 +59.8 157.5	24 04.3 +59.7 156.4	23 59.2 +59.7 155.4	23 53.9 +59.7 154.3
14°	25 13.6 +59.8 158.5	25 08.9 +59.8 157.4	25 04.0 +59.8 156.3	24 58.9 +59.8 155.3	24 53.6 +59.7 154.2
15°	26 13.4 +59.8 158.4	26 08.7 +59.8 157.3	26 03.8 +59.8 156.2	25 58.7 +59.7 155.2	25 53.3 +59.8 154.1
16°	27 13.2 +59.8 158.3	27 08.5 +59.8 157.2	27 03.6 +59.8 156.1	26 58.4 +59.8 155.1	26 53.1 +59.7 154.0
17°	28 13.0 +59.8 158.2	28 08.3 +59.8 157.1	28 03.4 +59.7 156.0	27 58.2 +59.7 155.0	27 52.8 +59.7 153.9
18°	29 12.8 +59.8 158.1	29 08.1 +59.8 157.0	29 03.1 +59.8 155.9	28 57.9 +59.8 154.9	28 52.5 +59.7 153.8
19°	30 12.6 +59.8 158.0	30 07.9 +59.7 156.9	30 02.9 +59.7 155.8	29 57.7 +59.7 154.8	29 52.2 +59.7 153.7
20°	31 12.4 +59.8 157.9	31 07.6 +59.8 156.8	31 02.6 +59.8 155.7	30 57.4 +59.7 154.6	30 51.9 +59.8 153.6
21°	32 12.2 +59.8 157.8	32 07.4 +59.8 156.7	32 02.4 +59.7 155.6	31 57.1 +59.7 154.5	31 51.7 +59.6 153.4
22°	33 12.0 +59.8 157.7	33 07.2 +59.7 156.6	33 02.1 +59.8 155.5	32 56.8 +59.8 154.4	32 51.3 +59.7 153.3
23°	34 11.8 +59.8 157.6	34 06.9 +59.8 156.5	34 01.9 +59.7 155.4	33 56.6 +59.7 154.3	33 51.0 +59.7 153.2
24°	35 11.6 +59.7 157.5	35 06.7 +59.7 156.4	35 01.6 +59.7 155.3	34 56.3 +59.7 154.2	34 50.7 +59.7 153.1
25°	36 11.3 +59.8 157.4	36 06.4 +59.8 156.3	36 01.3 +59.7 155.2	35 56.0 +59.7 154.1	35 50.4 +59.7 153.0
26°	37 11.1 +59.8 157.3	37 06.2 +59.7 156.2	37 01.0 +59.7 155.1	36 55.7 +59.6 153.9	36 50.1 +59.6 152.8
27°	38 10.9 +59.7 157.2	38 05.9 +59.7 156.1	38 00.7 +59.7 154.9	37 55.3 +59.7 153.8	37 49.7 +59.7 152.7
28°	39 10.6 +59.8 157.1	39 05.6 +59.8 155.9	39 00.4 +59.7 154.8	38 55.0 +59.7 153.7	38 49.4 +59.6 152.6
29°	40 10.4 +59.7 157.0	40 05.4 +59.7 155.8	40 00.1 +59.7 154.7	39 54.7 +59.6 153.5	39 49.0 +59.7 152.4

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	10 51.7 +59.7 154.5	10 46.2 +59.8 153.5	10 40.5 +59.8 152.5	10 34.7 +59.7 151.5	10 28.6 +59.7 150.5
1°	11 51.4 +59.8 154.4	11 46.0 +59.7 153.4	11 40.3 +59.7 152.4	11 34.4 +59.7 151.4	11 28.3 +59.7 150.4
2°	12 51.2 +59.7 154.3	12 45.7 +59.7 153.3	12 40.0 +59.7 152.3	12 34.1 +59.7 151.3	12 28.0 +59.7 150.3
3°	13 50.9 +59.8 154.2	13 45.4 +59.8 153.2	13 39.7 +59.7 152.2	13 33.8 +59.7 151.2	13 27.7 +59.6 150.1
4°	14 50.7 +59.8 154.1	14 45.2 +59.7 153.1	14 39.4 +59.7 152.1	14 33.5 +59.7 151.1	14 27.3 +59.7 150.0
5°	15 50.5 +59.7 154.0	15 44.9 +59.7 153.0	15 39.1 +59.7 152.0	15 33.2 +59.7 151.0	15 27.0 +59.7 149.9
6°	16 50.2 +59.7 154.0	16 44.6 +59.7 152.9	16 38.8 +59.7 151.9	16 32.9 +59.6 150.9	16 26.7 +59.7 149.8
7°	17 49.9 +59.8 153.9	17 44.3 +59.8 152.8	17 38.5 +59.8 151.8	17 32.5 +59.7 150.7	17 26.4 +59.6 149.7
8°	18 49.7 +59.7 153.8	18 44.1 +59.7 152.7	18 38.3 +59.7 151.7	18 32.2 +59.7 150.6	18 26.0 +59.7 149.6
9°	19 49.4 +59.8 153.7	19 43.8 +59.7 152.6	19 38.0 +59.6 151.6	19 31.9 +59.7 150.5	19 25.7 +59.6 149.5
10°	20 49.2 +59.7 153.6	20 43.5 +59.7 152.5	20 37.6 +59.7 151.5	20 31.6 +59.7 150.4	20 25.3 +59.7 149.4
11°	21 48.9 +59.7 153.5	21 43.2 +59.7 152.4	21 37.3 +59.7 151.4	21 31.3 +59.6 150.3	21 25.0 +59.6 149.3
12°	22 48.6 +59.7 153.4	22 42.9 +59.7 152.3	22 37.0 +59.7 151.2	22 30.9 +59.7 150.2	22 24.6 +59.7 149.1
13°	23 48.3 +59.8 153.3	23 42.6 +59.7 152.2	23 36.7 +59.7 151.1	23 30.6 +59.6 150.1	23 24.3 +59.6 149.0
14°	24 48.1 +59.7 153.1	24 42.3 +59.7 152.1	24 36.4 +59.7 151.0	24 30.2 +59.7 150.0	24 23.9 +59.6 148.9
15°	25 47.8 +59.7 153.0	25 42.0 +59.7 152.0	25 36.1 +59.6 150.9	25 29.9 +59.6 149.8	25 23.5 +59.6 148.8
16°	26 47.5 +59.7 152.9	26 41.7 +59.7 151.9	26 35.7 +59.7 150.8	26 29.5 +59.7 149.7	26 23.1 +59.7 148.7
17°	27 47.2 +59.7 152.8	27 41.4 +59.7 151.7	27 35.4 +59.6 150.7	27 29.2 +59.6 149.6	27 22.8 +59.6 148.5
18°	28 46.9 +59.7 152.7	28 41.1 +59.6 151.6	28 35.0 +59.7 150.5	28 28.8 +59.6 149.5	28 22.4 +59.6 148.4
19°	29 46.6 +59.7 152.6	29 40.7 +59.7 151.5	29 34.7 +59.6 150.4	29 28.4 +59.7 149.3	29 22.0 +59.6 148.3
20°	30 46.3 +59.7 152.5	30 40.4 +59.7 151.4	30 34.3 +59.7 150.3	30 28.1 +59.6 149.2	30 21.6 +59.6 148.1
21°	31 46.0 +59.6 152.4	31 40.1 +59.6 151.3	31 34.0 +59.6 150.2	31 27.7 +59.6 149.1	31 21.2 +59.5 148.0
22°	32 45.6 +59.7 152.2	32 39.7 +59.7 151.1	32 33.6 +59.6 150.0	32 27.3 +59.6 148.9	32 20.7 +59.6 147.9
23°	33 45.3 +59.7 152.1	33 39.4 +59.6 151.0	33 33.2 +59.6 149.9	33 26.9 +59.5 148.8	33 20.3 +59.6 147.7
24°	34 45.0 +59.6 152.0	34 39.0 +59.6 150.9	34 32.8 +59.6 149.8	34 26.4 +59.6 148.7	34 19.9 +59.5 147.6
25°	35 44.6 +59.7 151.8	35 38.6 +59.6 150.7	35 32.4 +59.6 149.6	35 26.0 +59.6 148.5	35 19.4 +59.5 147.4
26°	36 44.3 +59.6 151.7	36 38.2 +59.7 150.6	36 32.0 +59.6 149.5	36 25.6 +59.5 148.4	36 18.9 +59.6 147.3
27°	37 43.9 +59.6 151.6	37 37.9 +59.5 150.4	37 31.6 +59.6 149.3	37 25.1 +59.6 148.2	37 18.5 +59.5 147.1
28°	38 43.5 +59.6 151.4	38 37.4 +59.6 150.3	38 31.2 +59.5 149.2	38 24.7 +59.5 148.1	38 18.0 +59.5 146.9
29°	39 43.1 +59.6 151.3	39 37.0 +59.6 150.2	39 30.7 +59.6 149.0	39 24.2 +59.5 147.9	39 17.5 +59.4 146.8

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°	10 22.4 +59.6 149.4	10 15.9 +59.7 148.4	10 09.3 +59.6 147.4	10 02.5 +59.6 146.4	9 55.5 +59.6 145.4
1°	11 22.0 +59.7 149.3	11 15.6 +59.6 148.3	11 08.9 +59.7 147.3	11 02.1 +59.6 146.3	10 55.1 +59.6 145.3
2°	12 21.7 +59.7 149.2	12 15.2 +59.7 148.2	12 08.6 +59.6 147.2	12 01.7 +59.6 146.2	11 54.7 +59.6 145.2
3°	13 21.4 +59.6 149.1	13 14.9 +59.6 148.1	13 08.2 +59.6 147.1	13 01.3 +59.6 146.1	12 54.3 +59.5 145.0
4°	14 21.0 +59.7 149.0	14 14.5 +59.6 148.0	14 07.8 +59.6 147.0	14 00.9 +59.6 145.9	13 53.8 +59.6 144.9
5°	15 20.7 +59.6 148.9	15 14.1 +59.7 147.9	15 07.4 +59.6 146.8	15 00.5 +59.6 145.8	14 53.4 +59.6 144.8
6°	16 20.3 +59.7 148.8	16 13.8 +59.6 147.8	16 07.0 +59.6 146.7	16 00.1 +59.6 145.7	15 53.0 +59.5 144.7
7°	17 20.0 +59.6 148.7	17 13.4 +59.6 147.6	17 06.6 +59.6 146.6	16 59.7 +59.5 145.6	16 52.5 +59.6 144.5
8°	18 19.6 +59.6 148.6	18 13.0 +59.6 147.5	18 06.2 +59.6 146.5	17 59.2 +59.6 145.5	17 52.1 +59.5 144.4
9°	19 19.2 +59.7 148.4	19 12.6 +59.6 147.4	19 05.8 +59.6 146.4	18 58.8 +59.6 145.3	18 51.6 +59.6 144.3
10°	20 18.9 +59.6 148.3	20 12.2 +59.6 147.3	20 05.4 +59.6 146.2	19 58.4 +59.5 145.2	19 51.2 +59.5 144.2
11°	21 18.5 +59.6 148.2	21 11.8 +59.6 147.2	21 05.0 +59.6 146.1	20 57.9 +59.6 145.1	20 50.7 +59.5 144.0
12°	22 18.1 +59.6 148.1	22 11.4 +59.6 147.0	22 04.6 +59.5 146.0	21 57.5 +59.5 144.9	21 50.2 +59.5 143.9
13°	23 17.7 +59.7 148.0	23 11.0 +59.6 146.9	23 04.1 +59.6 145.9	22 57.0 +59.6 144.8	22 49.7 +59.6 143.8
14°	24 17.4 +59.6 147.8	24 10.6 +59.6 146.8	24 03.7 +59.5 145.7	23 56.6 +59.5 144.7	23 49.3 +59.5 143.6
15°	25 17.0 +59.6 147.7	25 10.2 +59.6 146.7	25 03.2 +59.6 145.6	24 56.1 +59.5 144.5	24 48.8 +59.5 143.5
16°	26 16.6 +59.6 147.6	26 09.8 +59.5 146.5	26 02.8 +59.5 145.5	25 55.6 +59.5 144.4	25 48.3 +59.5 143.3
17°	27 16.2 +59.5 147.5	27 09.3 +59.6 146.4	27 02.3 +59.6 145.3	26 55.1 +59.6 144.3	26 47.8 +59.5 143.2
18°	28 15.7 +59.6 147.3	28 08.9 +59.6 146.3	28 01.9 +59.5 145.2	27 54.7 +59.5 144.1	27 47.3 +59.4 143.0
19°	29 15.3 +59.6 147.2	29 08.5 +59.5 146.1	29 01.4 +59.5 145.0	28 54.2 +59.5 144.0	28 46.7 +59.5 142.9
20°	30 14.9 +59.5 147.1	30 08.0 +59.5 146.0	30 00.9 +59.5 144.9	29 53.7 +59.4 143.8	29 46.2 +59.4 142.7
21°	31 14.4 +59.6 146.9	31 07.5 +59.6 145.8	31 00.4 +59.5 144.7	30 53.1 +59.5 143.7	30 45.6 +59.5 142.6
22°	32 14.0 +59.5 146.8	32 07.1 +59.5 145.7	31 59.9 +59.5 144.6	31 52.6 +59.5 143.5	31 45.1 +59.4 142.4
23°	33 13.5 +59.6 146.6	33 06.6 +59.5 145.5	32 59.4 +59.5 144.4	32 52.1 +59.4 143.4	32 44.5 +59.4 142.3
24°	34 13.1 +59.5 146.5	34 06.1 +59.5 145.4	33 58.9 +59.4 144.3	33 51.5 +59.4 143.2	33 43.9 +59.4 142.1
25°	35 12.6 +59.5 146.3	35 05.6 +59.4 145.2	34 58.3 +59.5 144.1	34 50.9 +59.5 143.0	34 43.3 +59.4 141.9
26°	36 12.1 +59.5 146.2	36 05.0 +59.5 145.1	35 57.8 +59.4 144.0	35 50.4 +59.4 142.9	35 42.7 +59.4 141.8
27°	37 11.6 +59.5 146.0	37 04.5 +59.5 144.9	36 57.2 +59.4 143.8	36 49.8 +59.4 142.7	36 42.1 +59.4 141.6
28°	38 11.1 +59.4 145.8	38 04.0 +59.4 144.7	37 56.6 +59.5 143.6	37 49.2 +59.3 142.5	37 41.5 +59.3 141.4
29°	39 10.5 +59.5 145.7	39 03.4 +59.4 144.5	38 56.1 +59.3 143.4	38 48.5 +59.4 142.3	38 40.8 +59.3 141.2

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°	9 48.4 +59.5 144.4	9 41.0 +59.5 143.4	9 33.5 +59.5 142.4	9 25.8 +59.5 141.4	9 17.9 +59.5 140.4
1°	10 47.9 +59.6 144.3	10 40.5 +59.6 143.3	10 33.0 +59.5 142.3	10 25.3 +59.5 141.3	10 17.4 +59.4 140.2
2°	11 47.5 +59.5 144.2	11 40.1 +59.5 143.1	11 32.5 +59.5 142.1	11 24.8 +59.4 141.1	11 16.8 +59.5 140.1
3°	12 47.0 +59.6 144.0	12 39.6 +59.5 143.0	12 32.0 +59.5 142.0	12 24.2 +59.5 141.0	12 16.3 +59.5 140.0
4°	13 46.6 +59.5 143.9	13 39.1 +59.5 142.9	13 31.5 +59.5 141.9	13 23.7 +59.5 140.9	13 15.8 +59.4 139.8
5°	14 46.1 +59.6 143.8	14 38.6 +59.6 142.8	14 31.0 +59.5 141.7	14 23.2 +59.5 140.7	14 15.2 +59.5 139.7
6°	15 45.7 +59.5 143.6	15 38.2 +59.5 142.6	15 30.5 +59.5 141.6	15 22.7 +59.4 140.6	15 14.7 +59.4 139.6
7°	16 45.2 +59.5 143.5	16 37.7 +59.5 142.5	16 30.0 +59.5 141.5	16 22.1 +59.5 140.4	16 14.1 +59.4 139.4
8°	17 44.7 +59.5 143.4	17 37.2 +59.5 142.4	17 29.5 +59.5 141.3	17 21.6 +59.5 140.3	17 13.5 +59.5 139.3
9°	18 44.2 +59.6 143.3	18 36.7 +59.5 142.2	18 29.0 +59.4 141.2	18 21.1 +59.4 140.2	18 13.0 +59.4 139.1
10°	19 43.8 +59.5 143.1	19 36.2 +59.5 142.1	19 28.4 +59.5 141.1	19 20.5 +59.4 140.0	19 12.4 +59.4 139.0
11°	20 43.3 +59.5 143.0	20 35.7 +59.5 141.9	20 27.9 +59.5 140.9	20 19.9 +59.5 139.9	20 11.8 +59.4 138.8
12°	21 42.8 +59.5 142.9	21 35.2 +59.4 141.8	21 27.4 +59.4 140.8	21 19.4 +59.4 139.7	21 11.2 +59.4 138.7
13°	22 42.3 +59.5 142.7	22 34.6 +59.5 141.7	22 26.8 +59.5 140.6	22 18.8 +59.4 139.6	22 10.6 +59.4 138.5
14°	23 41.8 +59.5 142.6	23 34.1 +59.5 141.5	23 26.3 +59.4 140.5	23 18.2 +59.4 139.4	23 10.0 +59.4 138.4
15°	24 41.3 +59.4 142.4	24 33.6 +59.4 141.4	24 25.7 +59.4 140.3	24 17.6 +59.4 139.3	24 09.4 +59.4 138.2
16°	25 40.7 +59.5 142.3	25 33.0 +59.5 141.2	25 25.1 +59.4 140.2	25 17.0 +59.4 139.1	25 08.8 +59.3 138.1
17°	26 40.2 +59.5 142.1	26 32.5 +59.4 141.1	26 24.5 +59.4 140.0	26 16.4 +59.4 139.0	26 08.1 +59.4 137.9
18°	27 39.7 +59.4 142.0	27 31.9 +59.4 140.9	27 23.9 +59.4 139.9	27 15.8 +59.4 138.8	27 07.5 +59.3 137.7
19°	28 39.1 +59.4 141.8	28 31.3 +59.4 140.8	28 23.3 +59.4 139.7	28 15.2 +59.3 138.6	28 06.8 +59.4 137.6
20°	29 38.5 +59.5 141.7	29 30.7 +59.4 140.6	29 22.7 +59.4 139.5	29 14.5 +59.4 138.5	29 06.2 +59.3 137.4
21°	30 38.0 +59.4 141.5	30 30.1 +59.4 140.4	30 22.1 +59.3 139.4	30 13.9 +59.3 138.3	30 05.5 +59.3 137.2
22°	31 37.4 +59.4 141.4	31 29.5 +59.4 140.3	31 21.4 +59.4 139.2	31 13.2 +59.3 138.1	31 04.8 +59.3 137.1
23°	32 36.8 +59.4 141.2	32 28.9 +59.3 140.1	32 20.8 +59.3 139.0	32 12.5 +59.3 137.9	32 04.1 +59.3 136.9
24°	33 36.2 +59.4 141.0	33 28.2 +59.4 139.9	33 20.1 +59.3 138.8	33 11.8 +59.3 137.8	33 03.4 +59.2 136.7
25°	34 35.6 +59.3 140.8	34 27.6 +59.3 139.8	34 19.4 +59.3 138.7	34 11.1 +59.3 137.6	34 02.6 +59.2 136.5
26°	35 34.9 +59.4 140.7	35 26.9 +59.3 139.6	35 18.7 +59.3 138.5	35 10.4 +59.2 137.4	35 01.8 +59.3 136.3
27°	36 34.3 +59.3 140.5	36 26.2 +59.3 139.4	36 18.0 +59.3 138.3	36 09.6 +59.3 137.2	36 01.1 +59.2 136.1
28°	37 33.6 +59.3 140.3	37 25.5 +59.3 139.2	37 17.3 +59.2 138.1	37 08.9 +59.2 137.0	37 00.3 +59.1 135.9
29°	38 32.9 +59.3 140.1	38 24.8 +59.3 139.0	38 16.5 +59.2 137.9	38 08.1 +59.2 136.8	37 59.4 +59.2 135.7

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°	9 09.9 +59.4 139.4	9 01.7 +59.4 138.4	8 53.3 +59.4 137.4	8 44.8 +59.3 136.4	8 36.1 +59.3 135.4
1°	10 09.3 +59.5 139.2	10 01.1 +59.4 138.2	9 52.7 +59.4 137.2	9 44.1 +59.4 136.2	9 35.4 +59.4 135.2
2°	11 08.8 +59.4 139.1	11 00.5 +59.4 138.1	10 52.1 +59.4 137.1	10 43.5 +59.4 136.1	10 34.8 +59.3 135.1
3°	12 08.2 +59.4 139.0	11 59.9 +59.4 137.9	11 51.5 +59.4 136.9	11 42.9 +59.4 135.9	11 34.1 +59.4 134.9
4°	13 07.6 +59.5 138.8	12 59.3 +59.4 137.8	12 50.9 +59.4 136.8	12 42.3 +59.3 135.8	12 33.5 +59.3 134.8
5°	14 07.1 +59.4 138.7	13 58.7 +59.4 137.7	13 50.3 +59.3 136.6	13 41.6 +59.4 135.6	13 32.8 +59.3 134.6
6°	15 06.5 +59.4 138.5	14 58.1 +59.4 137.5	14 49.6 +59.4 136.5	14 41.0 +59.3 135.5	14 32.1 +59.4 134.5
7°	16 05.9 +59.4 138.4	15 57.5 +59.4 137.4	15 49.0 +59.4 136.3	15 40.3 +59.4 135.3	15 31.5 +59.3 134.3
8°	17 05.3 +59.4 138.2	16 56.9 +59.4 137.2	16 48.4 +59.3 136.2	16 39.7 +59.3 135.2	16 30.8 +59.3 134.2
9°	18 04.7 +59.4 138.1	17 56.3 +59.4 137.1	17 47.7 +59.4 136.0	17 39.0 +59.3 135.0	17 30.1 +59.3 134.0
10°	19 04.1 +59.4 138.0	18 55.7 +59.4 136.9	18 47.1 +59.3 135.9	18 38.3 +59.3 134.9	18 29.4 +59.3 133.8
11°	20 03.5 +59.4 137.8	19 55.1 +59.3 136.8	19 46.4 +59.4 135.7	19 37.6 +59.4 134.7	19 28.7 +59.3 133.7
12°	21 02.9 +59.4 137.6	20 54.4 +59.4 136.6	20 45.8 +59.3 135.6	20 37.0 +59.3 134.5	20 28.0 +59.3 133.5
13°	22 02.3 +59.4 137.5	21 53.8 +59.3 136.5	21 45.1 +59.3 135.4	21 36.3 +59.3 134.4	21 27.3 +59.2 133.3
14°	23 01.7 +59.3 137.3	22 53.1 +59.4 136.3	22 44.4 +59.3 135.3	22 35.6 +59.2 134.2	22 26.5 +59.3 133.2
15°	24 01.0 +59.4 137.2	23 52.5 +59.3 136.1	23 43.7 +59.3 135.1	23 34.8 +59.3 134.0	23 25.8 +59.2 133.0
16°	25 00.4 +59.3 137.0	24 51.8 +59.3 136.0	24 43.0 +59.3 134.9	24 34.1 +59.3 133.9	24 25.0 +59.3 132.8
17°	25 59.7 +59.3 136.9	25 51.1 +59.3 135.8	25 42.3 +59.3 134.8	25 33.4 +59.2 133.7	25 24.3 +59.2 132.7
18°	26 59.0 +59.3 136.7	26 50.4 +59.3 135.6	26 41.6 +59.2 134.6	26 32.6 +59.3 133.5	26 23.5 +59.2 132.5
19°	27 58.3 +59.3 136.5	27 49.7 +59.3 135.5	27 40.8 +59.3 134.4	27 31.9 +59.2 133.3	27 22.7 +59.2 132.3
20°	28 57.6 +59.3 136.3	28 49.0 +59.2 135.3	28 40.1 +59.2 134.2	28 31.1 +59.2 133.2	28 21.9 +59.2 132.1
21°	29 56.9 +59.3 136.2	29 48.2 +59.3 135.1	29 39.3 +59.2 134.0	29 30.3 +59.2 133.0	29 21.1 +59.1 131.9
22°	30 56.2 +59.3 136.0	30 47.5 +59.2 134.9	30 38.5 +59.2 133.9	30 29.5 +59.1 132.8	30 20.2 +59.2 131.7
23°	31 55.5 +59.2 135.8	31 46.7 +59.2 134.7	31 37.7 +59.2 133.7	31 28.6 +59.2 132.6	31 19.4 +59.1 131.5
24°	32 54.7 +59.2 135.6	32 45.9 +59.2 134.5	32 36.9 +59.2 133.5	32 27.8 +59.1 132.4	32 18.5 +59.1 131.3
25°	33 53.9 +59.2 135.4	33 45.1 +59.2 134.3	33 36.1 +59.1 133.3	33 26.9 +59.2 132.2	33 17.6 +59.1 131.1
26°	34 53.1 +59.2 135.2	34 44.3 +59.1 134.1	34 35.2 +59.2 133.1	34 26.1 +59.0 132.0	34 16.7 +59.1 130.9
27°	35 52.3 +59.2 135.0	35 43.4 +59.2 133.9	35 34.4 +59.1 132.9	35 25.1 +59.1 131.8	35 15.8 +59.0 130.7
28°	36 51.5 +59.1 134.8	36 42.6 +59.1 133.7	36 33.5 +59.1 132.6	36 24.2 +59.1 131.6	36 14.8 +59.0 130.5
29°	37 50.6 +59.2 134.6	37 41.7 +59.1 133.5	37 32.6 +59.0 132.4	37 23.3 +59.0 131.3	37 13.8 +59.0 130.3

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 27.2 +59.4 134.4	8 18.2 +59.4 133.4	8 09.1 +59.3 132.4	7 59.8 +59.3 131.4	7 50.4 +59.2 130.4
1°	9 26.6 +59.3 134.2	9 17.6 +59.3 133.2	9 08.4 +59.3 132.2	8 59.1 +59.2 131.2	8 49.6 +59.3 130.2
2°	10 25.9 +59.3 134.1	10 16.9 +59.3 133.1	10 07.7 +59.3 132.1	9 58.3 +59.3 131.1	9 48.9 +59.2 130.1
3°	11 25.2 +59.3 133.9	11 16.2 +59.3 132.9	11 07.0 +59.2 131.9	10 57.6 +59.2 130.9	10 48.1 +59.2 129.9
4°	12 24.5 +59.4 133.8	12 15.5 +59.2 132.7	12 06.2 +59.3 131.7	11 56.8 +59.3 130.7	11 47.3 +59.2 129.7
5°	13 23.9 +59.3 133.6	13 14.7 +59.3 132.6	13 05.5 +59.3 131.6	12 56.1 +59.2 130.6	12 46.5 +59.3 129.6
6°	14 23.2 +59.3 133.4	14 14.0 +59.3 132.4	14 04.8 +59.2 131.4	13 55.3 +59.3 130.4	13 45.8 +59.2 129.4
7°	15 22.5 +59.3 133.3	15 13.3 +59.3 132.3	15 04.0 +59.3 131.3	14 54.6 +59.2 130.2	14 45.0 +59.2 129.2
8°	16 21.8 +59.2 133.1	16 12.6 +59.2 132.1	16 03.3 +59.2 131.1	15 53.8 +59.2 130.1	15 44.2 +59.2 129.1
9°	17 21.0 +59.3 133.0	17 11.8 +59.3 131.9	17 02.5 +59.2 130.9	16 53.0 +59.2 129.9	16 43.4 +59.1 128.9
10°	18 20.3 +59.3 132.8	18 11.1 +59.3 131.8	18 01.7 +59.3 130.8	17 52.2 +59.2 129.7	17 42.5 +59.2 128.7
11°	19 19.6 +59.3 132.6	19 10.4 +59.2 131.6	19 01.0 +59.2 130.6	18 51.4 +59.2 129.6	18 41.7 +59.2 128.5
12°	20 18.9 +59.2 132.5	20 09.6 +59.2 131.4	20 00.2 +59.2 130.4	19 50.6 +59.2 129.4	19 40.9 +59.1 128.4
13°	21 18.1 +59.3 132.3	21 08.8 +59.2 131.3	20 59.4 +59.2 130.2	20 49.8 +59.1 129.2	20 40.0 +59.2 128.2
14°	22 17.4 +59.2 132.1	22 08.0 +59.2 131.1	21 58.6 +59.1 130.1	21 48.9 +59.2 129.0	21 39.2 +59.1 128.0
15°	23 16.6 +59.2 132.0	23 07.2 +59.2 130.9	22 57.7 +59.2 129.9	22 48.1 +59.1 128.9	22 38.3 +59.1 127.8
16°	24 15.8 +59.2 131.8	24 06.4 +59.2 130.8	23 56.9 +59.2 129.7	23 47.2 +59.2 128.7	23 37.4 +59.1 127.6
17°	25 15.0 +59.2 131.6	25 05.6 +59.2 130.6	24 56.1 +59.1 129.5	24 46.4 +59.1 128.5	24 36.5 +59.1 127.5
18°	26 14.2 +59.2 131.4	26 04.8 +59.1 130.4	25 55.2 +59.1 129.3	25 45.5 +59.1 128.3	25 35.6 +59.1 127.3
19°	27 13.4 +59.2 131.2	27 03.9 +59.2 130.2	26 54.3 +59.2 129.2	26 44.6 +59.1 128.1	26 34.7 +59.1 127.1
20°	28 12.6 +59.1 131.1	28 03.1 +59.1 130.0	27 53.5 +59.1 129.0	27 43.7 +59.1 127.9	27 33.8 +59.0 126.9
21°	29 11.7 +59.2 130.9	29 02.2 +59.1 129.8	28 52.6 +59.0 128.8	28 42.8 +59.0 127.7	28 32.8 +59.0 126.7
22°	30 10.9 +59.1 130.7	30 01.3 +59.1 129.6	29 51.6 +59.1 128.6	29 41.8 +59.0 127.5	29 31.8 +59.1 126.5
23°	31 10.0 +59.1 130.5	31 00.4 +59.1 129.4	30 50.7 +59.0 128.4	30 40.8 +59.1 127.3	30 30.9 +58.9 126.3
24°	32 09.1 +59.0 130.3	31 59.5 +59.0 129.2	31 49.7 +59.1 128.2	31 39.9 +58.9 127.1	31 29.8 +59.0 126.0
25°	33 08.1 +59.1 130.1	32 58.5 +59.1 129.0	32 48.8 +59.0 127.9	32 38.8 +59.0 126.9	32 28.8 +58.9 125.8
26°	34 07.2 +59.0 129.9	33 57.6 +59.0 128.8	33 47.8 +58.9 127.7	33 37.8 +59.0 126.7	33 27.7 +59.0 125.6
27°	35 06.2 +59.0 129.6	34 56.6 +58.9 128.6	34 46.7 +59.0 127.5	34 36.8 +58.9 126.4	34 26.7 +58.8 125.4
28°	36 05.2 +59.0 129.4	35 55.5 +59.0 128.3	35 45.7 +58.9 127.3	35 35.7 +58.9 126.2	35 25.5 +58.9 125.1
29°	37 04.2 +59.0 129.2	36 54.5 +58.9 128.1	36 44.6 +58.9 127.0	36 34.6 +58.8 126.0	36 24.4 +58.8 124.9

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°	7 40.8 +59.2 129.4	7 31.1 +59.2 128.4	7 21.3 +59.1 127.4	7 11.3 +59.1 126.4	7 01.2 +59.1 125.4
1°	8 40.0 +59.2 129.2	8 30.3 +59.2 128.2	8 20.4 +59.2 127.2	8 10.4 +59.2 126.2	8 00.3 +59.1 125.2
2°	9 39.2 +59.3 129.1	9 29.5 +59.2 128.1	9 19.6 +59.2 127.1	9 09.6 +59.1 126.1	8 59.4 +59.1 125.1
3°	10 38.5 +59.2 128.9	10 28.7 +59.2 127.9	10 18.8 +59.1 126.9	10 08.7 +59.2 125.9	9 58.5 +59.2 124.9
4°	11 37.7 +59.2 128.7	11 27.9 +59.1 127.7	11 17.9 +59.2 126.7	11 07.9 +59.1 125.7	10 57.7 +59.1 124.7
5°	12 36.9 +59.1 128.6	12 27.0 +59.2 127.5	12 17.1 +59.1 126.5	12 07.0 +59.1 125.5	11 56.8 +59.1 124.5
6°	13 36.0 +59.2 128.4	13 26.2 +59.2 127.4	13 16.2 +59.2 126.4	13 06.1 +59.1 125.4	12 55.9 +59.1 124.4
7°	14 35.2 +59.2 128.2	14 25.4 +59.1 127.2	14 15.4 +59.1 126.2	14 05.2 +59.1 125.2	13 55.0 +59.1 124.2
8°	15 34.4 +59.2 128.0	15 24.5 +59.2 127.0	15 14.5 +59.1 126.0	15 04.3 +59.1 125.0	14 54.1 +59.0 124.0
9°	16 33.6 +59.1 127.9	16 23.7 +59.1 126.9	16 13.6 +59.1 125.8	16 03.4 +59.1 124.8	15 53.1 +59.1 123.8
10°	17 32.7 +59.2 127.7	17 22.8 +59.1 126.7	17 12.7 +59.1 125.7	17 02.5 +59.1 124.7	16 52.2 +59.1 123.6
11°	18 31.9 +59.1 127.5	18 21.9 +59.2 126.5	18 11.8 +59.1 125.5	18 01.6 +59.1 124.5	17 51.3 +59.0 123.5
12°	19 31.0 +59.2 127.3	19 21.1 +59.1 126.3	19 10.9 +59.1 125.3	19 00.7 +59.1 124.3	18 50.3 +59.1 123.3
13°	20 30.2 +59.1 127.2	20 20.2 +59.1 126.1	20 10.0 +59.1 125.1	19 59.8 +59.0 124.1	19 49.4 +59.0 123.1
14°	21 29.3 +59.1 127.0	21 19.3 +59.0 126.0	21 09.1 +59.1 124.9	20 58.8 +59.0 123.9	20 48.4 +59.0 122.9
15°	22 28.4 +59.1 126.8	22 18.3 +59.1 125.8	22 08.2 +59.0 124.7	21 57.8 +59.1 123.7	21 47.4 +59.0 122.7
16°	23 27.5 +59.1 126.6	23 17.4 +59.1 125.6	23 07.2 +59.0 124.5	22 56.9 +59.0 123.5	22 46.4 +59.0 122.5
17°	24 26.6 +59.0 126.4	24 16.5 +59.0 125.4	24 06.2 +59.1 124.4	23 55.9 +59.0 123.3	23 45.4 +59.0 122.3
18°	25 25.6 +59.1 126.2	25 15.5 +59.0 125.2	25 05.3 +59.0 124.2	24 54.9 +58.9 123.1	24 44.4 +58.9 122.1
19°	26 24.7 +59.0 126.0	26 14.5 +59.0 125.0	26 04.3 +58.9 124.0	25 53.8 +59.0 122.9	25 43.3 +58.9 121.9
20°	27 23.7 +59.0 125.8	27 13.5 +59.0 124.8	27 03.2 +59.0 123.8	26 52.8 +58.9 122.7	26 42.2 +59.0 121.7
21°	28 22.7 +59.0 125.6	28 12.5 +59.0 124.6	28 02.2 +59.0 123.5	27 51.7 +59.0 122.5	27 41.2 +58.9 121.5
22°	29 21.7 +59.0 125.4	29 11.5 +59.0 124.4	29 01.2 +58.9 123.3	28 50.7 +58.9 122.3	28 40.1 +58.8 121.3
23°	30 20.7 +59.0 125.2	30 10.5 +58.9 124.2	30 00.1 +58.9 123.1	29 49.6 +58.8 122.1	29 38.9 +58.8 121.0
24°	31 19.7 +58.9 125.0	31 09.4 +58.9 123.9	30 59.0 +58.9 122.9	30 48.4 +58.9 121.8	30 37.8 +58.8 120.8
25°	32 18.6 +58.9 124.8	32 08.3 +58.9 123.7	31 57.9 +58.8 122.7	31 47.3 +58.8 121.6	31 36.6 +58.8 120.6
26°	33 17.5 +58.9 124.5	33 07.2 +58.9 123.5	32 56.7 +58.9 122.4	32 46.1 +58.8 121.4	32 35.4 +58.8 120.3
27°	34 16.4 +58.9 124.3	34 06.1 +58.8 123.3	33 55.6 +58.8 122.2	33 44.9 +58.8 121.2	33 34.2 +58.8 120.1
28°	35 15.3 +58.8 124.1	35 04.9 +58.8 123.0	34 54.4 +58.7 122.0	34 43.7 +58.8 120.9	34 33.0 +58.7 119.9
29°	36 14.1 +58.8 123.8	36 03.7 +58.8 122.8	35 53.1 +58.8 121.7	35 42.5 +58.7 120.7	35 31.7 +58.7 119.6

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°	6 50.9 +59.1 124.4	6 40.6 +59.1 123.4	6 30.1 +59.1 122.4	6 19.5 +59.1 121.4	6 08.8 +59.1 120.4
1°	7 50.0 +59.2 124.2	7 39.7 +59.1 123.2	7 29.2 +59.0 122.2	7 18.6 +59.0 121.3	7 07.9 +59.0 120.3
2°	8 49.2 +59.1 124.1	8 38.8 +59.0 123.1	8 28.2 +59.1 122.1	8 17.6 +59.1 121.1	8 06.9 +59.0 120.1
3°	9 48.3 +59.0 123.9	9 37.8 +59.1 122.9	9 27.3 +59.1 121.9	9 16.7 +59.0 120.9	9 05.9 +59.0 119.9
4°	10 47.3 +59.1 123.7	10 36.9 +59.1 122.7	10 26.4 +59.0 121.7	10 15.7 +59.0 120.7	10 04.9 +59.0 119.7
5°	11 46.4 +59.1 123.5	11 36.0 +59.0 122.5	11 25.4 +59.0 121.5	11 14.7 +59.0 120.5	11 03.9 +59.0 119.5
6°	12 45.5 +59.1 123.4	12 35.0 +59.1 122.4	12 24.4 +59.1 121.3	12 13.7 +59.0 120.3	12 02.9 +59.0 119.3
7°	13 44.6 +59.1 123.2	13 34.1 +59.0 122.2	13 23.5 +59.0 121.2	13 12.7 +59.0 120.2	13 01.9 +59.0 119.2
8°	14 43.7 +59.0 123.0	14 33.1 +59.1 122.0	14 22.5 +59.0 121.0	14 11.7 +59.0 120.0	14 00.9 +59.0 119.0
9°	15 42.7 +59.1 122.8	15 32.2 +59.0 121.8	15 21.5 +59.0 120.8	15 10.7 +59.0 119.8	14 59.9 +58.9 118.8
10°	16 41.8 +59.0 122.6	16 31.2 +59.0 121.6	16 20.5 +59.0 120.6	16 09.7 +59.0 119.6	15 58.8 +59.0 118.6
11°	17 40.8 +59.0 122.4	17 30.2 +59.0 121.4	17 19.5 +59.0 120.4	17 08.7 +59.0 119.4	16 57.8 +58.9 118.4
12°	18 39.8 +59.0 122.3	18 29.2 +59.0 121.2	18 18.5 +59.0 120.2	18 07.7 +58.9 119.2	17 56.7 +59.0 118.2
13°	19 38.8 +59.1 122.1	19 28.2 +59.0 121.0	19 17.5 +58.9 120.0	19 06.6 +59.0 119.0	18 55.7 +58.9 118.0
14°	20 37.9 +58.9 121.9	20 27.2 +59.0 120.8	20 16.4 +59.0 119.8	20 05.6 +58.9 118.8	19 54.6 +58.9 117.8
15°	21 36.8 +59.0 121.7	21 26.2 +58.9 120.6	21 15.4 +58.9 119.6	21 04.5 +58.9 118.6	20 53.5 +58.9 117.6
16°	22 35.8 +59.0 121.5	22 25.1 +59.0 120.4	22 14.3 +58.9 119.4	22 03.4 +58.9 118.4	21 52.4 +58.8 117.4
17°	23 34.8 +58.9 121.3	23 24.1 +58.9 120.2	23 13.2 +58.9 119.2	23 02.3 +58.9 118.2	22 51.2 +58.9 117.2
18°	24 33.7 +59.0 121.1	24 23.0 +58.9 120.0	24 12.1 +58.9 119.0	24 01.2 +58.8 118.0	23 50.1 +58.8 117.0
19°	25 32.7 +58.9 120.9	25 21.9 +58.9 119.8	25 11.0 +58.9 118.8	25 00.0 +58.9 117.8	24 48.9 +58.9 116.8
20°	26 31.6 +58.9 120.6	26 20.8 +58.9 119.6	26 09.9 +58.8 118.6	25 58.9 +58.8 117.6	25 47.8 +58.8 116.5
21°	27 30.5 +58.8 120.4	27 19.7 +58.8 119.4	27 08.7 +58.9 118.4	26 57.7 +58.8 117.3	26 46.6 +58.8 116.3
22°	28 29.3 +58.9 120.2	28 18.5 +58.8 119.2	28 07.6 +58.8 118.1	27 56.5 +58.8 117.1	27 45.4 +58.7 116.1
23°	29 28.2 +58.8 120.0	29 17.3 +58.8 119.0	29 06.4 +58.7 117.9	28 55.3 +58.7 116.9	28 44.1 +58.7 115.9
24°	30 27.0 +58.8 119.8	30 16.1 +58.8 118.7	30 05.1 +58.8 117.7	29 54.0 +58.8 116.7	29 42.8 +58.8 115.6
25°	31 25.8 +58.8 119.5	31 14.9 +58.8 118.5	31 03.9 +58.7 117.5	30 52.8 +58.7 116.4	30 41.6 +58.6 115.4
26°	32 24.6 +58.8 119.3	32 13.7 +58.7 118.3	32 02.6 +58.7 117.2	31 51.5 +58.7 116.2	31 40.2 +58.7 115.1
27°	33 23.4 +58.7 119.1	33 12.4 +58.7 118.0	33 01.3 +58.7 117.0	32 50.2 +58.6 115.9	32 38.9 +58.6 114.9
28°	34 22.1 +58.7 118.8	34 11.1 +58.7 117.8	34 00.0 +58.6 116.7	33 48.8 +58.6 115.7	33 37.5 +58.6 114.6
29°	35 20.8 +58.6 118.6	35 09.8 +58.6 117.5	34 58.6 +58.7 116.5	34 47.4 +58.6 115.4	34 36.1 +58.6 114.4

Declination SAME name as Latitude

Latitude 78°

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°	5 58.0 +59.0 119.5	5 47.1 +59.0 118.5	5 36.1 +59.0 117.5	5 25.0 +58.9 116.5	5 13.8 +58.9 115.5
1°	6 57.0 +59.0 119.3	6 46.1 +59.0 118.3	6 35.1 +58.9 117.3	6 23.9 +59.0 116.3	6 12.7 +58.9 115.3
2°	7 56.0 +59.0 119.1	7 45.1 +59.0 118.1	7 34.0 +59.0 117.1	7 22.9 +58.9 116.1	7 11.6 +58.9 115.1
3°	8 55.0 +59.0 118.9	8 44.1 +58.9 117.9	8 33.0 +58.9 116.9	8 21.8 +58.9 115.9	8 10.5 +59.0 114.9
4°	9 54.0 +59.0 118.7	9 43.0 +59.0 117.7	9 31.9 +59.0 116.7	9 20.7 +59.0 115.7	9 09.5 +58.9 114.7
5°	10 53.0 +59.0 118.5	10 42.0 +59.0 117.5	10 30.9 +58.9 116.5	10 19.7 +58.9 115.5	10 08.4 +58.9 114.6
6°	11 52.0 +59.0 118.3	11 41.0 +58.9 117.3	11 29.8 +59.0 116.4	11 18.6 +58.9 115.4	11 07.3 +58.9 114.4
7°	12 51.0 +58.9 118.2	12 39.9 +59.0 117.2	12 28.8 +58.9 116.2	12 17.5 +58.9 115.2	12 06.2 +58.9 114.2
8°	13 49.9 +59.0 118.0	13 38.9 +58.9 117.0	13 27.7 +58.9 116.0	13 16.4 +58.9 115.0	13 05.1 +58.8 114.0
9°	14 48.9 +58.9 117.8	14 37.8 +58.9 116.8	14 26.6 +58.9 115.8	14 15.3 +58.9 114.8	14 03.9 +58.9 113.8
10°	15 47.8 +59.0 117.6	15 36.7 +58.9 116.6	15 25.5 +58.9 115.6	15 14.2 +58.9 114.6	15 02.8 +58.9 113.6
11°	16 46.8 +58.9 117.4	16 35.6 +58.9 116.4	16 24.4 +58.9 115.4	16 13.1 +58.9 114.4	16 01.7 +58.8 113.4
12°	17 45.7 +58.9 117.2	17 34.5 +58.9 116.2	17 23.3 +58.9 115.2	17 12.0 +58.8 114.2	17 00.5 +58.9 113.2
13°	18 44.6 +58.9 117.0	18 33.4 +58.9 116.0	18 22.2 +58.8 115.0	18 10.8 +58.9 114.0	17 59.4 +58.8 113.0
14°	19 43.5 +58.9 116.8	19 32.3 +58.9 115.8	19 21.0 +58.9 114.8	19 09.7 +58.8 113.8	18 58.2 +58.8 112.8
15°	20 42.4 +58.8 116.6	20 31.2 +58.8 115.6	20 19.9 +58.8 114.6	20 08.5 +58.8 113.6	19 57.0 +58.8 112.5
16°	21 41.2 +58.9 116.4	21 30.0 +58.9 115.4	21 18.7 +58.8 114.4	21 07.3 +58.8 113.3	20 55.8 +58.8 112.3
17°	22 40.1 +58.8 116.2	22 28.9 +58.8 115.2	22 17.5 +58.8 114.1	22 06.1 +58.8 113.1	21 54.6 +58.7 112.1
18°	23 38.9 +58.9 116.0	23 27.7 +58.8 114.9	23 16.3 +58.8 113.9	23 04.9 +58.7 112.9	22 53.3 +58.8 111.9
19°	24 37.8 +58.8 115.7	24 26.5 +58.8 114.7	24 15.1 +58.8 113.7	24 03.6 +58.8 112.7	23 52.1 +58.7 111.7
20°	25 36.6 +58.7 115.5	25 25.3 +58.7 114.5	25 13.9 +58.7 113.5	25 02.4 +58.7 112.5	24 50.8 +58.7 111.4
21°	26 35.3 +58.8 115.3	26 24.0 +58.8 114.3	26 12.6 +58.7 113.3	26 01.1 +58.7 112.2	25 49.5 +58.7 111.2
22°	27 34.1 +58.7 115.1	27 22.8 +58.7 114.0	27 11.3 +58.7 113.0	26 59.8 +58.7 112.0	26 48.2 +58.6 111.0
23°	28 32.8 +58.8 114.8	28 21.5 +58.7 113.8	28 10.0 +58.7 112.8	27 58.5 +58.6 111.8	27 46.8 +58.7 110.8
24°	29 31.6 +58.6 114.6	29 20.2 +58.6 113.6	29 08.7 +58.6 112.6	28 57.1 +58.7 111.5	28 45.5 +58.6 110.5
25°	30 30.2 +58.7 114.4	30 18.8 +58.7 113.3	30 07.3 +58.7 112.3	29 55.8 +58.6 111.3	29 44.1 +58.6 110.3
26°	31 28.9 +58.6 114.1	31 17.5 +58.6 113.1	31 06.0 +58.5 112.1	30 54.4 +58.5 111.0	30 42.7 +58.5 110.0
27°	32 27.5 +58.6 113.9	32 16.1 +58.6 112.8	32 04.5 +58.6 111.8	31 52.9 +58.6 110.8	31 41.2 +58.5 109.8
28°	33 26.1 +58.6 113.6	33 14.7 +58.5 112.6	33 03.1 +58.5 111.5	32 51.5 +58.5 110.5	32 39.7 +58.5 109.5
29°	34 24.7 +58.5 113.3	34 13.2 +58.5 112.3	34 01.6 +58.5 111.3	33 50.0 +58.4 110.3	33 38.2 +58.5 109.2

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°	5 02.5 +58.9 114.5	4 51.1 +58.9 113.5	4 39.6 +58.9 112.5	4 28.0 +58.9 111.6	4 16.4 +58.8 110.6
1°	6 01.4 +58.9 114.3	5 50.0 +58.9 113.3	5 38.5 +58.8 112.4	5 26.9 +58.8 111.4	5 15.2 +58.9 110.4
2°	7 00.3 +58.9 114.1	6 48.9 +58.8 113.1	6 37.3 +58.9 112.2	6 25.7 +58.9 111.2	6 14.1 +58.8 110.2
3°	7 59.2 +58.9 113.9	7 47.7 +58.9 113.0	7 36.2 +58.9 112.0	7 24.6 +58.9 111.0	7 12.9 +58.9 110.0
4°	8 58.1 +58.9 113.8	8 46.6 +58.9 112.8	8 35.1 +58.8 111.8	8 23.5 +58.8 110.8	8 11.8 +58.8 109.8
5°	9 57.0 +58.9 113.6	9 45.5 +58.9 112.6	9 33.9 +58.9 111.6	9 22.3 +58.8 110.6	9 10.6 +58.8 109.6
6°	10 55.9 +58.9 113.4	10 44.4 +58.8 112.4	10 32.8 +58.9 111.4	10 21.1 +58.9 110.4	10 09.4 +58.8 109.4
7°	11 54.8 +58.8 113.2	11 43.2 +58.9 112.2	11 31.7 +58.8 111.2	11 20.0 +58.8 110.2	11 08.2 +58.8 109.2
8°	12 53.6 +58.9 113.0	12 42.1 +58.8 112.0	12 30.5 +58.8 111.0	12 18.8 +58.8 110.0	12 07.0 +58.8 109.0
9°	13 52.5 +58.8 112.8	13 40.9 +58.9 111.8	13 29.3 +58.8 110.8	13 17.6 +58.8 109.8	13 05.8 +58.8 108.8
10°	14 51.3 +58.9 112.6	14 39.8 +58.8 111.6	14 28.1 +58.9 110.6	14 16.4 +58.8 109.6	14 04.6 +58.8 108.6
11°	15 50.2 +58.8 112.4	15 38.6 +58.8 111.4	15 27.0 +58.8 110.4	15 15.2 +58.8 109.4	15 03.4 +58.8 108.4
12°	16 49.0 +58.8 112.2	16 37.4 +58.8 111.2	16 25.8 +58.7 110.2	16 14.0 +58.8 109.2	16 02.2 +58.7 108.2
13°	17 47.8 +58.8 112.0	17 36.2 +58.8 111.0	17 24.5 +58.8 110.0	17 12.8 +58.7 109.0	17 00.9 +58.8 108.0
14°	18 46.6 +58.8 111.7	18 35.0 +58.8 110.7	18 23.3 +58.8 109.7	18 11.5 +58.8 108.7	17 59.7 +58.7 107.7
15°	19 45.4 +58.8 111.5	19 33.8 +58.8 110.5	19 22.1 +58.7 109.5	19 10.3 +58.7 108.5	18 58.4 +58.7 107.5
16°	20 44.2 +58.8 111.3	20 32.6 +58.7 110.3	20 20.8 +58.7 109.3	20 09.0 +58.7 108.3	19 57.1 +58.7 107.3
17°	21 43.0 +58.7 111.1	21 31.3 +58.7 110.1	21 19.5 +58.8 109.1	21 07.7 +58.7 108.1	20 55.8 +58.7 107.1
18°	22 41.7 +58.7 110.9	22 30.0 +58.7 109.9	22 18.3 +58.7 108.9	22 06.4 +58.7 107.9	21 54.5 +58.7 106.9
19°	23 40.4 +58.8 110.7	23 28.7 +58.7 109.7	23 17.0 +58.6 108.6	23 05.1 +58.7 107.6	22 53.2 +58.6 106.6
20°	24 39.2 +58.6 110.4	24 27.4 +58.7 109.4	24 15.6 +58.7 108.4	24 03.8 +58.6 107.4	23 51.8 +58.6 106.4
21°	25 37.8 +58.7 110.2	25 26.1 +58.6 109.2	25 14.3 +58.6 108.2	25 02.4 +58.6 107.2	24 50.4 +58.6 106.2
22°	26 36.5 +58.6 110.0	26 24.7 +58.7 109.0	26 12.9 +58.6 107.9	26 01.0 +58.6 106.9	25 49.0 +58.6 105.9
23°	27 35.1 +58.7 109.7	27 23.4 +58.6 108.7	27 11.5 +58.6 107.7	26 59.6 +58.6 106.7	26 47.6 +58.6 105.7
24°	28 33.8 +58.5 109.5	28 22.0 +58.5 108.5	28 10.1 +58.6 107.5	27 58.2 +58.5 106.5	27 46.2 +58.5 105.4
25°	29 32.3 +58.6 109.2	29 20.5 +58.6 108.2	29 08.7 +58.5 107.2	28 56.7 +58.5 106.2	28 44.7 +58.5 105.2
26°	30 30.9 +58.5 109.0	30 19.1 +58.5 108.0	30 07.2 +58.5 107.0	29 55.2 +58.5 106.0	29 43.2 +58.5 104.9
27°	31 29.4 +58.5 108.7	31 17.6 +58.5 107.7	31 05.7 +58.4 106.7	30 53.7 +58.4 105.7	30 41.7 +58.4 104.7
28°	32 27.9 +58.5 108.5	32 16.1 +58.4 107.5	32 04.1 +58.5 106.4	31 52.1 +58.5 105.4	31 40.1 +58.4 104.4
29°	33 26.4 +58.4 108.2	33 14.5 +58.4 107.2	33 02.6 +58.4 106.2	32 50.6 +58.3 105.2	32 38.5 +58.4 104.1

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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°	4 04.7 +58.8 109.6	3 52.9 +58.8 108.6	3 41.0 +58.8 107.6	3 29.1 +58.8 106.6	3 17.1 +58.8 105.7
1°	5 03.5 +58.8 109.4	4 51.7 +58.8 108.4	4 39.8 +58.8 107.4	4 27.9 +58.8 106.4	4 15.9 +58.8 105.5
2°	6 02.3 +58.9 109.2	5 50.5 +58.8 108.2	5 38.6 +58.8 107.2	5 26.7 +58.8 106.2	5 14.7 +58.8 105.3
3°	7 01.2 +58.8 109.0	6 49.3 +58.8 108.0	6 37.4 +58.8 107.0	6 25.5 +58.8 106.0	6 13.5 +58.7 105.1
4°	8 00.0 +58.8 108.8	7 48.1 +58.8 107.8	7 36.2 +58.8 106.8	7 24.3 +58.7 105.8	7 12.2 +58.8 104.9
5°	8 58.8 +58.8 108.6	8 46.9 +58.8 107.6	8 35.0 +58.8 106.6	8 23.0 +58.8 105.6	8 11.0 +58.8 104.7
6°	9 57.6 +58.8 108.4	9 45.7 +58.8 107.4	9 33.8 +58.8 106.4	9 21.8 +58.8 105.4	9 09.8 +58.7 104.5
7°	10 56.4 +58.8 108.2	10 44.5 +58.8 107.2	10 32.6 +58.8 106.2	10 20.6 +58.7 105.2	10 08.5 +58.8 104.2
8°	11 55.2 +58.8 108.0	11 43.3 +58.8 107.0	11 31.4 +58.7 106.0	11 19.3 +58.8 105.0	11 07.3 +58.7 104.0
9°	12 54.0 +58.8 107.8	12 42.1 +58.8 106.8	12 30.1 +58.8 105.8	12 18.1 +58.7 104.8	12 06.0 +58.7 103.8
10°	13 52.8 +58.7 107.6	13 40.9 +58.7 106.6	13 28.9 +58.7 105.6	13 16.8 +58.8 104.6	13 04.7 +58.7 103.6
11°	14 51.5 +58.8 107.4	14 39.6 +58.8 106.4	14 27.6 +58.7 105.4	14 15.6 +58.7 104.4	14 03.4 +58.8 103.4
12°	15 50.3 +58.7 107.2	15 38.4 +58.7 106.2	15 26.3 +58.8 105.2	15 14.3 +58.7 104.2	15 02.2 +58.6 103.2
13°	16 49.0 +58.8 107.0	16 37.1 +58.7 106.0	16 25.1 +58.7 105.0	16 13.0 +58.7 104.0	16 00.8 +58.7 103.0
14°	17 47.8 +58.7 106.7	17 35.8 +58.7 105.7	17 23.8 +58.7 104.8	17 11.7 +58.7 103.8	16 59.5 +58.7 102.8
15°	18 46.5 +58.7 106.5	18 34.5 +58.7 105.5	18 22.5 +58.6 104.5	18 10.4 +58.6 103.5	17 58.2 +58.7 102.5
16°	19 45.2 +58.7 106.3	19 33.2 +58.7 105.3	19 21.1 +58.7 104.3	19 09.0 +58.7 103.3	18 56.9 +58.6 102.3
17°	20 43.9 +58.6 106.1	20 31.9 +58.6 105.1	20 19.8 +58.6 104.1	20 07.7 +58.6 103.1	19 55.5 +58.6 102.1
18°	21 42.5 +58.7 105.9	21 30.5 +58.7 104.9	21 18.4 +58.7 103.9	21 06.3 +58.6 102.9	20 54.1 +58.6 101.9
19°	22 41.2 +58.6 105.6	22 29.2 +58.6 104.6	22 17.1 +58.6 103.6	22 04.9 +58.6 102.6	21 52.7 +58.6 101.6
20°	23 39.8 +58.6 105.4	23 27.8 +58.6 104.4	23 15.7 +58.5 103.4	23 03.5 +58.6 102.4	22 51.3 +58.6 101.4
21°	24 38.4 +58.6 105.2	24 26.4 +58.5 104.2	24 14.2 +58.6 103.2	24 02.1 +58.5 102.2	23 49.9 +58.5 101.2
22°	25 37.0 +58.6 104.9	25 24.9 +58.6 103.9	25 12.8 +58.5 102.9	25 00.6 +58.5 101.9	24 48.4 +58.5 100.9
23°	26 35.6 +58.5 104.7	26 23.5 +58.5 103.7	26 11.3 +58.6 102.7	25 59.1 +58.5 101.7	25 46.9 +58.5 100.7
24°	27 34.1 +58.5 104.4	27 22.0 +58.5 103.4	27 09.9 +58.4 102.4	26 57.6 +58.5 101.4	26 45.4 +58.5 100.4
25°	28 32.6 +58.5 104.2	28 20.5 +58.5 103.2	28 08.3 +58.5 102.2	27 56.1 +58.5 101.2	27 43.9 +58.4 100.2
26°	29 31.1 +58.5 103.9	29 19.0 +58.4 102.9	29 06.8 +58.4 101.9	28 54.6 +58.4 100.9	28 42.3 +58.4 99.9
27°	30 29.6 +58.4 103.7	30 17.4 +58.4 102.7	30 05.2 +58.4 101.7	29 53.0 +58.4 100.7	29 40.7 +58.4 99.7
28°	31 28.0 +58.4 103.4	31 15.8 +58.4 102.4	31 03.6 +58.4 101.4	30 51.4 +58.3 100.4	30 39.1 +58.3 99.4
29°	32 26.4 +58.3 103.1	32 14.2 +58.3 102.1	32 02.0 +58.3 101.1	31 49.7 +58.3 100.1	31 37.4 +58.3 99.1

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°	3 05.1 +58.8 104.7	2 53.0 +58.7 103.7	2 40.8 +58.8 102.7	2 28.7 +58.7 101.7	2 16.4 +58.8 100.8
1°	4 03.9 +58.7 104.5	3 51.7 +58.8 103.5	3 39.6 +58.7 102.5	3 27.4 +58.7 101.5	3 15.2 +58.7 100.6
2°	5 02.6 +58.8 104.3	4 50.5 +58.8 103.3	4 38.3 +58.8 102.3	4 26.1 +58.8 101.3	4 13.9 +58.7 100.4
3°	6 01.4 +58.7 104.1	5 49.3 +58.7 103.1	5 37.1 +58.7 102.1	5 24.9 +58.7 101.1	5 12.6 +58.7 100.2
4°	7 00.1 +58.8 103.9	6 48.0 +58.8 102.9	6 35.8 +58.8 101.9	6 23.6 +58.7 100.9	6 11.3 +58.8 99.9
5°	7 58.9 +58.8 103.7	7 46.8 +58.7 102.7	7 34.6 +58.7 101.7	7 22.3 +58.8 100.7	7 10.1 +58.7 99.7
6°	8 57.7 +58.7 103.5	8 45.5 +58.7 102.5	8 33.3 +58.7 101.5	8 21.1 +58.7 100.5	8 08.8 +58.7 99.5
7°	9 56.4 +58.7 103.3	9 44.2 +58.8 102.3	9 32.0 +58.7 101.3	9 19.8 +58.7 100.3	9 07.5 +58.7 99.3
8°	10 55.1 +58.8 103.1	10 43.0 +58.7 102.1	10 30.7 +58.7 101.1	10 18.5 +58.7 100.1	10 06.2 +58.7 99.1
9°	11 53.9 +58.7 102.8	11 41.7 +58.7 101.9	11 29.4 +58.7 100.9	11 17.2 +58.7 99.9	11 04.9 +58.7 98.9
10°	12 52.6 +58.7 102.6	12 40.4 +58.7 101.6	12 28.1 +58.7 100.7	12 15.9 +58.6 99.7	12 03.6 +58.6 98.7
11°	13 51.3 +58.7 102.4	13 39.1 +58.7 101.4	13 26.8 +58.7 100.4	13 14.5 +58.7 99.5	13 02.2 +58.7 98.5
12°	14 50.0 +58.7 102.2	14 37.8 +58.6 101.2	14 25.5 +58.7 100.2	14 13.2 +58.7 99.2	14 00.9 +58.6 98.3
13°	15 48.7 +58.6 102.0	15 36.4 +58.7 101.0	15 24.2 +58.6 100.0	15 11.9 +58.6 99.0	15 59.5 +58.7 98.0
14°	16 47.3 +58.7 101.8	16 35.1 +58.7 100.8	16 22.8 +58.7 99.8	16 10.5 +58.7 98.8	16 58.2 +58.6 97.8
15°	17 46.0 +58.6 101.6	17 33.8 +58.6 100.6	17 21.5 +58.6 99.6	17 09.2 +58.6 98.6	17 56.8 +58.6 97.6
16°	18 44.6 +58.7 101.3	18 32.4 +58.6 100.3	18 20.1 +58.6 99.3	18 07.8 +58.6 98.4	18 55.4 +58.6 97.4
17°	19 43.3 +58.6 101.1	19 31.0 +58.6 100.1	19 18.7 +58.6 99.1	19 06.4 +58.6 98.1	19 54.0 +58.6 97.1
18°	20 41.9 +58.6 100.9	20 29.6 +58.6 99.9	20 17.3 +58.6 98.9	20 05.0 +58.5 97.9	20 52.6 +58.6 96.9
19°	21 40.5 +58.5 100.6	21 28.2 +58.6 99.7	21 15.9 +58.5 98.7	21 03.5 +58.6 97.7	21 51.2 +58.5 96.7
20°	22 39.0 +58.6 100.4	22 26.8 +58.5 99.4	22 14.4 +58.6 98.4	22 02.1 +58.5 97.4	22 49.7 +58.5 96.4
21°	23 37.6 +58.5 100.2	23 25.3 +58.5 99.2	23 13.0 +58.5 98.2	23 00.6 +58.5 97.2	23 48.2 +58.5 96.2
22°	24 36.1 +58.5 99.9	24 23.8 +58.5 98.9	24 11.5 +58.5 97.9	23 59.1 +58.5 97.0	24 46.7 +58.5 96.0
23°	25 34.6 +58.5 99.7	25 22.3 +58.5 98.7	25 10.0 +58.4 97.7	24 57.6 +58.5 96.7	24 45.2 +58.4 95.7
24°	26 33.1 +58.5 99.4	26 20.8 +58.4 98.4	26 08.4 +58.5 97.5	25 56.1 +58.4 96.5	25 43.6 +58.5 95.5
25°	27 31.6 +58.4 99.2	27 19.2 +58.5 98.2	27 06.9 +58.4 97.2	26 54.5 +58.4 96.2	26 42.1 +58.4 95.2
26°	28 30.0 +58.4 98.9	28 17.7 +58.3 97.9	28 05.3 +58.4 96.9	27 52.9 +58.4 96.0	27 40.5 +58.3 95.0
27°	29 28.4 +58.4 98.7	29 16.0 +58.4 97.7	29 03.7 +58.3 96.7	28 51.3 +58.3 95.7	28 38.8 +58.4 94.7
28°	30 26.8 +58.3 98.4	30 14.4 +58.3 97.4	30 02.0 +58.3 96.4	29 49.6 +58.3 95.4	29 37.2 +58.3 94.4
29°	31 25.1 +58.3 98.1	31 12.7 +58.3 97.1	31 00.3 +58.3 96.1	30 47.9 +58.3 95.1	30 35.5 +58.3 94.2

Declination SAME name as Latitude

Latitude 78°

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°	2 04.1 +58.8 99.8	1 51.8 +58.7 98.8	1 39.5 +58.7 97.8	1 27.1 +58.7 96.8	1 14.7 +58.7 95.9
1°	3 02.9 +58.7 99.6	2 50.5 +58.8 98.6	2 38.2 +58.7 97.6	2 25.8 +58.7 96.6	2 13.4 +58.7 95.7
2°	4 01.6 +58.7 99.4	3 49.3 +58.7 98.4	3 36.9 +58.7 97.4	3 24.5 +58.7 96.4	3 12.1 +58.7 95.5
3°	5 00.3 +58.7 99.2	4 48.0 +58.7 98.2	4 35.6 +58.7 97.2	4 23.2 +58.7 96.2	4 10.8 +58.7 95.2
4°	5 59.0 +58.7 99.0	5 46.7 +58.7 98.0	5 34.3 +58.7 97.0	5 21.9 +58.7 96.0	5 09.5 +58.7 95.0
5°	6 57.7 +58.7 98.8	6 45.4 +58.7 97.8	6 33.0 +58.7 96.8	6 20.6 +58.7 95.8	6 08.2 +58.7 94.8
6°	7 56.4 +58.7 98.5	7 44.1 +58.7 97.6	7 31.7 +58.7 96.6	7 19.3 +58.7 95.6	7 06.9 +58.7 94.6
7°	8 55.1 +58.7 98.3	8 42.8 +58.7 97.4	8 30.4 +58.7 96.4	8 18.0 +58.7 95.4	8 05.6 +58.6 94.4
8°	9 53.8 +58.7 98.1	9 41.5 +58.7 97.1	9 29.1 +58.7 96.2	9 16.7 +58.6 95.2	9 04.2 +58.7 94.2
9°	10 52.5 +58.7 97.9	10 40.2 +58.6 96.9	10 27.8 +58.6 95.9	10 15.3 +58.7 95.0	10 02.9 +58.7 94.0
10°	11 51.2 +58.7 97.7	11 38.8 +58.7 96.7	11 26.4 +58.7 95.7	11 14.0 +58.7 94.8	11 01.6 +58.6 93.8
11°	12 49.9 +58.6 97.5	12 37.5 +58.6 96.5	12 25.1 +58.6 95.5	12 12.7 +58.6 94.5	12 00.2 +58.7 93.6
12°	13 48.5 +58.7 97.3	13 36.1 +58.7 96.3	13 23.7 +58.7 95.3	13 11.3 +58.6 94.3	12 58.9 +58.6 93.3
13°	14 47.2 +58.6 97.1	14 34.8 +58.6 96.1	14 22.4 +58.6 95.1	14 09.9 +58.7 94.1	13 57.5 +58.6 93.1
14°	15 45.8 +58.6 96.8	15 33.4 +58.6 95.8	15 21.0 +58.6 94.9	15 08.6 +58.6 93.9	14 56.1 +58.6 92.9
15°	16 44.4 +58.6 96.6	16 32.0 +58.6 95.6	16 19.6 +58.6 94.6	16 07.2 +58.5 93.7	15 54.7 +58.6 92.7
16°	17 43.0 +58.6 96.4	17 30.6 +58.6 95.4	17 18.2 +58.6 94.4	17 05.7 +58.6 93.4	16 53.3 +58.6 92.5
17°	18 41.6 +58.6 96.2	18 29.2 +58.6 95.2	18 16.8 +58.5 94.2	18 04.3 +58.6 93.2	17 51.9 +58.5 92.2
18°	19 40.2 +58.5 95.9	19 27.8 +58.5 94.9	19 15.3 +58.6 94.0	19 02.9 +58.5 93.0	18 50.4 +58.6 92.0
19°	20 38.7 +58.6 95.7	20 26.3 +58.6 94.7	20 13.9 +58.5 93.7	20 01.4 +58.6 92.7	19 49.0 +58.5 91.8
20°	21 37.3 +58.5 95.5	21 24.9 +58.5 94.5	21 12.4 +58.5 93.5	21 00.0 +58.5 92.5	20 47.5 +58.5 91.5
21°	22 35.8 +58.5 95.2	22 23.4 +58.5 94.2	22 10.9 +58.5 93.3	21 58.5 +58.4 92.3	21 46.0 +58.5 91.3
22°	23 34.3 +58.5 95.0	23 21.9 +58.4 94.0	23 09.4 +58.5 93.0	22 56.9 +58.5 92.0	22 44.5 +58.4 91.1
23°	24 32.8 +58.4 94.7	24 20.3 +58.5 93.8	24 07.9 +58.4 92.8	23 55.4 +58.4 91.8	23 42.9 +58.5 90.8
24°	25 31.2 +58.4 94.5	25 18.8 +58.4 93.5	25 06.3 +58.4 92.5	24 53.8 +58.5 91.5	24 41.4 +58.4 90.6
25°	26 29.6 +58.4 94.2	26 17.2 +58.4 93.2	26 04.7 +58.4 92.3	25 52.3 +58.3 91.3	25 39.8 +58.4 90.3
26°	27 28.0 +58.4 94.0	27 15.6 +58.3 93.0	27 03.1 +58.4 92.0	26 50.6 +58.4 91.0	26 38.2 +58.3 90.0
27°	28 26.4 +58.3 93.7	28 13.9 +58.4 92.7	28 01.5 +58.3 91.7	27 49.0 +58.3 90.8	27 36.5 +58.4 89.8
28°	29 24.7 +58.3 93.4	29 12.3 +58.3 92.5	28 59.8 +58.3 91.5	28 47.3 +58.3 90.5	28 34.9 +58.3 89.5
29°	30 23.0 +58.3 93.2	30 10.6 +58.2 92.2	29 58.1 +58.3 91.2	29 45.6 +58.3 90.2	29 33.2 +58.2 89.3

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 02.3 +58.7 94.9	0 49.9 +58.7 93.9	0 37.4 +58.7 92.9	0 24.9 +58.7 92.0	0 12.5 +58.7 91.0
1°	2 01.0 +58.7 94.7	1 48.6 +58.6 93.7	1 36.1 +58.7 92.7	1 23.6 +58.7 91.7	1 11.2 +58.7 90.8
2°	2 59.7 +58.7 94.5	2 47.2 +58.7 93.5	2 34.8 +58.7 92.5	2 22.3 +58.7 91.5	2 09.9 +58.6 90.6
3°	3 58.4 +58.7 94.3	3 45.9 +58.7 93.3	3 33.5 +58.7 92.3	3 21.0 +58.7 91.3	3 08.5 +58.7 90.4
4°	4 57.1 +58.7 94.1	4 44.6 +58.7 93.1	4 32.2 +58.6 92.1	4 19.7 +58.7 91.1	4 07.2 +58.7 90.1
5°	5 55.8 +58.6 93.9	5 43.3 +58.7 92.9	5 30.8 +58.7 91.9	5 18.4 +58.7 90.9	5 05.9 +58.7 89.9
6°	6 54.4 +58.7 93.6	6 42.0 +58.7 92.7	6 29.5 +58.7 91.7	6 17.1 +58.6 90.7	6 04.6 +58.7 89.7
7°	7 53.1 +58.7 93.4	7 40.7 +58.6 92.5	7 28.2 +58.7 91.5	7 15.7 +58.7 90.5	7 03.3 +58.6 89.5
8°	8 51.8 +58.7 93.2	8 39.3 +58.7 92.2	8 26.9 +58.6 91.3	8 14.4 +58.6 90.3	8 01.9 +58.7 89.3
9°	9 50.5 +58.6 93.0	9 38.0 +58.6 92.0	9 25.5 +58.7 91.0	9 13.0 +58.7 90.1	9 00.6 +58.6 89.1
10°	10 49.1 +58.7 92.8	10 36.6 +58.7 91.8	10 24.2 +58.6 90.8	10 11.7 +58.6 89.9	9 59.2 +58.7 88.9
11°	11 47.8 +58.6 92.6	11 35.3 +58.6 91.6	11 22.8 +58.7 90.6	11 10.3 +58.7 89.6	10 57.9 +58.6 88.7
12°	12 46.4 +58.6 92.4	12 33.9 +58.7 91.4	12 21.5 +58.6 90.4	12 09.0 +58.6 89.4	11 56.5 +58.6 88.4
13°	13 45.0 +58.6 92.1	13 32.6 +58.6 91.2	13 20.1 +58.6 90.2	13 07.6 +58.6 89.2	12 55.1 +58.6 88.2
14°	14 43.6 +58.6 91.9	14 31.2 +58.6 90.9	14 18.7 +58.6 90.0	14 06.2 +58.6 89.0	13 53.7 +58.6 88.0
15°	15 42.2 +58.6 91.7	15 29.8 +58.6 90.7	15 17.3 +58.6 89.7	15 04.8 +58.6 88.8	14 52.3 +58.6 87.8
16°	16 40.8 +58.6 91.5	16 28.4 +58.5 90.5	16 15.9 +58.5 89.5	16 03.4 +58.6 88.5	15 50.9 +58.6 87.6
17°	17 39.4 +58.6 91.2	17 26.9 +58.6 90.3	17 14.4 +58.6 89.3	17 02.0 +58.5 88.3	16 49.5 +58.6 87.3
18°	18 38.0 +58.5 91.0	18 25.5 +58.5 90.0	18 13.0 +58.5 89.1	18 00.5 +58.6 88.1	17 48.1 +58.5 87.1
19°	19 36.5 +58.5 90.8	19 24.0 +58.5 89.8	19 11.5 +58.6 88.8	18 59.1 +58.5 87.9	18 46.6 +58.5 86.9
20°	20 35.0 +58.5 90.6	20 22.5 +58.5 89.6	20 10.1 +58.5 88.6	19 57.6 +58.5 87.6	19 45.1 +58.6 86.6
21°	21 33.5 +58.5 90.3	21 21.0 +58.5 89.3	21 08.6 +58.5 88.4	20 56.1 +58.5 87.4	20 43.7 +58.4 86.4
22°	22 32.0 +58.5 90.1	22 19.5 +58.5 89.1	22 07.1 +58.4 88.1	21 54.6 +58.5 87.1	21 42.1 +58.5 86.2
23°	23 30.5 +58.4 89.8	23 18.0 +58.4 88.9	23 05.5 +58.5 87.9	22 53.1 +58.4 86.9	22 40.6 +58.5 85.9
24°	24 28.9 +58.4 89.6	24 16.4 +58.4 88.6	24 04.0 +58.4 87.6	23 51.5 +58.4 86.7	23 39.1 +58.4 85.7
25°	25 27.3 +58.4 89.3	25 14.8 +58.4 88.4	25 02.4 +58.4 87.4	24 49.9 +58.4 86.4	24 37.5 +58.4 85.4
26°	26 25.7 +58.4 89.1	26 13.2 +58.4 88.1	26 00.8 +58.3 87.1	25 48.3 +58.4 86.1	25 35.9 +58.3 85.2
27°	27 24.1 +58.3 88.8	27 11.6 +58.3 87.8	26 59.1 +58.4 86.9	26 46.7 +58.3 85.9	26 34.2 +58.4 84.9
28°	28 22.4 +58.3 88.5	28 09.9 +58.3 87.6	27 57.5 +58.3 86.6	27 45.0 +58.3 85.6	27 32.6 +58.3 84.7
29°	29 20.7 +58.3 88.3	29 08.2 +58.3 87.3	28 55.8 +58.2 86.3	28 43.3 +58.3 85.4	28 30.9 +58.3 84.4

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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 +58.7 90.0	-0 12.5 +58.7	-0 24.9 +58.6	-0 37.4 +58.7	-0 49.9 +58.7
1°	0 58.7 +58.7 89.8	0 46.2 +58.7 88.8	0 33.7 +58.7 87.8	0 21.3 +58.7 86.9	0 08.8 +58.7 85.9
2°	1 57.4 +58.7 89.6	1 44.9 +58.7 88.6	1 32.4 +58.7 87.6	1 20.0 +58.7 86.7	1 07.5 +58.7 85.7
3°	2 56.1 +58.6 89.4	2 43.6 +58.7 88.4	2 31.1 +58.7 87.4	2 18.7 +58.7 86.4	2 06.2 +58.7 85.5
4°	3 54.7 +58.7 89.2	3 42.3 +58.7 88.2	3 29.8 +58.7 87.2	3 17.4 +58.6 86.2	3 04.9 +58.7 85.3
5°	4 53.4 +58.7 89.0	4 41.0 +58.6 88.0	4 28.5 +58.7 87.0	4 16.0 +58.7 86.0	4 03.6 +58.7 85.0
6°	5 52.1 +58.7 88.7	5 39.6 +58.7 87.8	5 27.2 +58.7 86.8	5 14.7 +58.7 85.8	5 02.3 +58.7 84.8
7°	6 50.8 +58.6 88.5	6 38.3 +58.7 87.6	6 25.9 +58.6 86.6	6 13.4 +58.7 85.6	6 01.0 +58.7 84.6
8°	7 49.4 +58.7 88.3	7 37.0 +58.6 87.3	7 24.5 +58.7 86.4	7 12.1 +58.6 85.4	6 59.7 +58.6 84.4
9°	8 48.1 +58.7 88.1	8 35.6 +58.7 87.1	8 23.2 +58.6 86.2	8 10.7 +58.7 85.2	7 58.3 +58.7 84.2
10°	9 46.8 +58.6 87.9	9 34.3 +58.6 86.9	9 21.8 +58.7 85.9	9 09.4 +58.7 85.0	8 57.0 +58.7 84.0
11°	10 45.4 +58.6 87.7	10 32.9 +58.7 86.7	10 20.5 +58.6 85.7	10 08.1 +58.6 84.8	9 55.7 +58.6 83.8
12°	11 44.0 +58.7 87.5	11 31.6 +58.6 86.5	11 19.1 +58.7 85.5	11 06.7 +58.6 84.5	10 54.3 +58.6 83.6
13°	12 42.7 +58.6 87.3	12 30.2 +58.6 86.3	12 17.8 +58.6 85.3	12 05.3 +58.7 84.3	11 52.9 +58.7 83.4
14°	13 41.3 +58.6 87.0	13 28.8 +58.6 86.1	13 16.4 +58.6 85.1	13 04.0 +58.6 84.1	12 51.6 +58.6 83.1
15°	14 39.9 +58.6 86.8	14 27.4 +58.6 85.8	14 15.0 +58.6 84.9	14 02.6 +58.6 83.9	13 50.2 +58.6 82.9
16°	15 38.5 +58.6 86.6	15 26.0 +58.6 85.6	15 13.6 +58.6 84.6	15 01.2 +58.6 83.7	14 48.8 +58.6 82.7
17°	16 37.1 +58.5 86.4	16 24.6 +58.6 85.4	16 12.2 +58.6 84.4	15 59.8 +58.6 83.4	15 47.4 +58.6 82.5
18°	17 35.6 +58.6 86.1	17 23.2 +58.5 85.2	17 10.8 +58.5 84.2	16 58.4 +58.5 83.2	16 46.0 +58.6 82.2
19°	18 34.2 +58.5 85.9	18 21.7 +58.6 84.9	18 09.3 +58.6 84.0	17 56.9 +58.6 83.0	17 44.6 +58.5 82.0
20°	19 32.7 +58.5 85.7	19 20.3 +58.5 84.7	19 07.9 +58.5 83.7	18 55.5 +58.5 82.8	18 43.1 +58.5 81.8
21°	20 31.2 +58.5 85.4	20 18.8 +58.5 84.5	20 06.4 +58.5 83.5	19 54.0 +58.5 82.5	19 41.6 +58.6 81.6
22°	21 29.7 +58.5 85.2	21 17.3 +58.5 84.2	21 04.9 +58.5 83.3	20 52.5 +58.5 82.3	20 40.2 +58.5 81.3
23°	22 28.2 +58.4 85.0	22 15.8 +58.4 84.0	22 03.4 +58.4 83.0	21 51.0 +58.5 82.1	21 38.7 +58.4 81.1
24°	23 26.6 +58.5 84.7	23 14.2 +58.4 83.7	23 01.8 +58.5 82.8	22 49.5 +58.4 81.8	22 37.1 +58.5 80.8
25°	24 25.1 +58.4 84.5	24 12.6 +58.5 83.5	24 00.3 +58.4 82.5	23 47.9 +58.4 81.6	23 35.6 +58.4 80.6
26°	25 23.5 +58.3 84.2	25 11.1 +58.3 83.2	24 58.7 +58.4 82.3	24 46.3 +58.4 81.3	24 34.0 +58.4 80.3
27°	26 21.8 +58.4 84.0	26 09.4 +58.4 83.0	25 57.1 +58.3 82.0	25 44.7 +58.4 81.1	25 32.4 +58.4 80.1
28°	27 20.2 +58.3 83.7	27 07.8 +58.3 82.7	26 55.4 +58.4 81.8	26 43.1 +58.3 80.8	26 30.8 +58.4 79.8
29°	28 18.5 +58.3 83.4	28 06.1 +58.3 82.5	27 53.8 +58.3 81.5	27 41.4 +58.4 80.5	27 29.2 +58.3 79.6

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 02.3 +58.7	-1 14.7 +58.7	-1 27.1 +58.7	-1 39.5 +58.7	-1 51.8 +58.7
1°	-0 03.6 +58.7	-0 16.0 +58.7	-0 28.4 +58.7	-0 40.8 +58.7	-0 53.1 +58.7
2°	0 55.1 +58.7 84.7	0 42.7 +58.7 83.7	0 30.3 +58.7 82.7	0 17.9 +58.8 81.8	0 05.6 +58.7 80.8
3°	1 53.8 +58.7 84.5	1 41.4 +58.7 83.5	1 29.0 +58.7 82.5	1 16.7 +58.7 81.6	1 04.3 +58.8 80.6
4°	2 52.5 +58.7 84.3	2 40.1 +58.7 83.3	2 27.7 +58.7 82.3	2 15.4 +58.7 81.3	2 03.1 +58.7 80.4
5°	3 51.2 +58.7 84.1	3 38.8 +58.7 83.1	3 26.4 +58.7 82.1	3 14.1 +58.7 81.1	3 01.8 +58.7 80.2
6°	4 49.9 +58.7 83.9	4 37.5 +58.7 82.9	4 25.1 +58.7 81.9	4 12.8 +58.7 80.9	4 00.5 +58.7 80.0
7°	5 48.6 +58.7 83.7	5 36.2 +58.7 82.7	5 23.8 +58.7 81.7	5 11.5 +58.7 80.7	4 59.2 +58.7 79.8
8°	6 47.3 +58.6 83.4	6 34.9 +58.7 82.5	6 22.5 +58.7 81.5	6 10.2 +58.7 80.5	5 57.9 +58.7 79.5
9°	7 45.9 +58.7 83.2	7 33.6 +58.6 82.3	7 21.2 +58.7 81.3	7 08.9 +58.7 80.3	6 56.6 +58.7 79.3
10°	8 44.6 +58.7 83.0	8 32.2 +58.7 82.0	8 19.9 +58.7 81.1	8 07.6 +58.7 80.1	7 55.3 +58.7 79.1
11°	9 43.3 +58.6 82.8	9 30.9 +58.7 81.8	9 18.6 +58.6 80.9	9 06.3 +58.6 79.9	8 54.0 +58.7 78.9
12°	10 41.9 +58.7 82.6	10 29.6 +58.6 81.6	10 17.2 +58.7 80.7	10 04.9 +58.7 79.7	9 52.7 +58.7 78.7
13°	11 40.6 +58.6 82.4	11 28.2 +58.7 81.4	11 15.9 +58.7 80.4	11 03.6 +58.7 79.5	10 51.4 +58.6 78.5
14°	12 39.2 +58.6 82.2	12 26.9 +58.6 81.2	12 14.6 +58.6 80.2	12 02.3 +58.6 79.3	11 50.0 +58.7 78.3
15°	13 37.8 +58.6 81.9	13 25.5 +58.6 81.0	13 13.2 +58.6 80.0	13 00.9 +58.7 79.0	12 48.7 +58.6 78.1
16°	14 36.4 +58.7 81.7	14 24.1 +58.6 80.8	14 11.8 +58.6 79.8	13 59.6 +58.6 78.8	13 47.3 +58.7 77.9
17°	15 35.1 +58.5 81.5	15 22.7 +58.6 80.5	15 10.4 +58.6 79.6	14 58.2 +58.6 78.6	14 46.0 +58.6 77.6
18°	16 33.6 +58.6 81.3	16 21.3 +58.6 80.3	16 09.0 +58.6 79.3	15 56.8 +58.6 78.4	15 44.6 +58.6 77.4
19°	17 32.2 +58.6 81.1	17 19.9 +58.6 80.1	17 07.6 +58.6 79.1	16 55.4 +58.6 78.2	16 43.2 +58.6 77.2
20°	18 30.8 +58.5 80.8	18 18.5 +58.5 79.9	18 06.2 +58.6 78.9	17 54.0 +58.6 77.9	17 41.8 +58.6 77.0
21°	19 29.3 +58.5 80.6	19 17.0 +58.6 79.6	19 04.8 +58.5 78.7	18 52.6 +58.5 77.7	18 40.4 +58.6 76.7
22°	20 27.8 +58.5 80.4	20 15.6 +58.5 79.4	20 03.3 +58.5 78.4	19 51.1 +58.6 77.5	19 39.0 +58.5 76.5
23°	21 26.3 +58.5 80.1	21 14.1 +58.5 79.2	21 01.8 +58.6 78.2	20 49.7 +58.5 77.2	20 37.5 +58.5 76.3
24°	22 24.8 +58.5 79.9	22 12.6 +58.4 78.9	22 00.4 +58.4 78.0	21 48.2 +58.5 77.0	21 36.0 +58.5 76.0
25°	23 23.3 +58.4 79.6	23 11.0 +58.5 78.7	22 58.8 +58.5 77.7	22 46.7 +58.4 76.8	22 34.5 +58.5 75.8
26°	24 21.7 +58.5 79.4	24 09.5 +58.4 78.4	23 57.3 +58.4 77.5	23 45.1 +58.5 76.5	23 33.0 +58.5 75.6
27°	25 20.2 +58.3 79.1	25 07.9 +58.4 78.2	24 55.7 +58.4 77.2	24 43.6 +58.4 76.3	24 31.5 +58.4 75.3
28°	26 18.5 +58.4 78.9	26 06.3 +58.4 77.9	25 54.1 +58.4 77.0	25 42.0 +58.4 76.0	25 29.9 +58.5 75.1
29°	27 16.9 +58.3 78.6	27 04.7 +58.3 77.7	26 52.5 +58.4 76.7	26 40.4 +58.4 75.8	26 28.4 +58.3 74.8

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°	-2 04.1 +58.7	-2 16.4 +58.7	-2 28.7 +58.8	-2 40.8 +58.7	-2 53.0 +58.8
1°	-1 05.4 +58.7	-1 17.7 +58.8	-1 29.9 +58.7	-1 42.1 +58.8	-1 54.2 +58.7
2°	-0 06.7 +58.7	-0 18.9 +58.7	-0 31.2 +58.8	-0 43.3 +58.7	-0 55.5 +58.8
3°	0 52.0 +58.8 79.6	0 39.8 +58.7 78.6	0 27.6 +58.7 77.6	0 15.4 +58.8 76.7	0 03.3 +58.8 75.7
4°	1 50.8 +58.7 79.4	1 38.5 +58.8 78.4	1 26.3 +58.8 77.4	1 14.2 +58.7 76.5	1 02.1 +58.7 75.5
5°	2 49.5 +58.7 79.2	2 37.3 +58.7 78.2	2 25.1 +58.7 77.2	2 12.9 +58.8 76.3	2 00.8 +58.8 75.3
6°	3 48.2 +58.7 79.0	3 36.0 +58.7 78.0	3 23.8 +58.8 77.0	3 11.7 +58.7 76.1	2 59.6 +58.8 75.1
7°	4 46.9 +58.8 78.8	4 34.7 +58.8 77.8	4 22.6 +58.7 76.8	4 10.4 +58.8 75.9	3 58.4 +58.7 74.9
8°	5 45.7 +58.7 78.6	5 33.5 +58.7 77.6	5 21.3 +58.7 76.6	5 09.2 +58.7 75.7	4 57.1 +58.8 74.7
9°	6 44.4 +58.7 78.4	6 32.2 +58.7 77.4	6 20.0 +58.8 76.4	6 07.9 +58.8 75.4	5 55.9 +58.7 74.5
10°	7 43.1 +58.7 78.2	7 30.9 +58.7 77.2	7 18.8 +58.7 76.2	7 06.7 +58.7 75.2	6 54.6 +58.8 74.3
11°	8 41.8 +58.7 77.9	8 29.6 +58.7 77.0	8 17.5 +58.7 76.0	8 05.4 +58.7 75.0	7 53.4 +58.7 74.1
12°	9 40.5 +58.7 77.7	9 28.3 +58.7 76.8	9 16.2 +58.7 75.8	9 04.1 +58.7 74.8	8 52.1 +58.7 73.9
13°	10 39.2 +58.6 77.5	10 27.0 +58.7 76.6	10 14.9 +58.7 75.6	10 02.8 +58.8 74.6	9 50.8 +58.8 73.7
14°	11 37.8 +58.7 77.3	11 25.7 +58.7 76.3	11 13.6 +58.7 75.4	11 01.6 +58.7 74.4	10 49.6 +58.7 73.4
15°	12 36.5 +58.7 77.1	12 24.4 +58.7 76.1	12 12.3 +58.7 75.2	12 00.3 +58.7 74.2	11 48.3 +58.7 73.2
16°	13 35.2 +58.6 76.9	13 23.1 +58.6 75.9	13 11.0 +58.6 75.0	12 59.0 +58.6 74.0	12 47.0 +58.7 73.0
17°	14 33.8 +58.7 76.7	14 21.7 +58.7 75.7	14 09.6 +58.7 74.7	13 57.6 +58.7 73.8	13 45.7 +58.7 72.8
18°	15 32.5 +58.6 76.4	15 20.4 +58.6 75.5	15 08.3 +58.7 74.5	14 56.3 +58.7 73.6	14 44.4 +58.7 72.6
19°	16 31.1 +58.6 76.2	16 19.0 +58.6 75.3	16 07.0 +58.6 74.3	15 55.0 +58.6 73.3	15 43.1 +58.6 72.4
20°	17 29.7 +58.6 76.0	17 17.6 +58.6 75.0	17 05.6 +58.6 74.1	16 53.6 +58.7 73.1	16 41.7 +58.7 72.2
21°	18 28.3 +58.6 75.8	18 16.2 +58.6 74.8	18 04.2 +58.6 73.9	17 52.3 +58.6 72.9	17 40.4 +58.6 71.9
22°	19 26.9 +58.5 75.5	19 14.8 +58.6 74.6	19 02.8 +58.6 73.6	18 50.9 +58.6 72.7	18 39.0 +58.6 71.7
23°	20 25.4 +58.6 75.3	20 13.4 +58.5 74.4	20 01.4 +58.6 73.4	19 49.5 +58.6 72.4	19 37.6 +58.6 71.5
24°	21 24.0 +58.5 75.1	21 11.9 +58.6 74.1	21 00.0 +58.5 73.2	20 48.1 +58.5 72.2	20 36.2 +58.6 71.3
25°	22 22.5 +58.5 74.8	22 10.5 +58.5 73.9	21 58.5 +58.5 72.9	21 46.6 +58.6 72.0	21 34.8 +58.6 71.0
26°	23 21.0 +58.5 74.6	23 09.0 +58.5 73.6	22 57.0 +58.6 72.7	22 45.2 +58.5 71.7	22 33.4 +58.5 70.8
27°	24 19.5 +58.4 74.4	24 07.5 +58.4 73.4	23 55.6 +58.4 72.5	23 43.7 +58.5 71.5	23 31.9 +58.5 70.6
28°	25 17.9 +58.4 74.1	25 05.9 +58.5 73.2	24 54.0 +58.5 72.2	24 42.2 +58.5 71.3	24 30.4 +58.5 70.3
29°	26 16.3 +58.4 73.9	26 04.4 +58.4 72.9	25 52.5 +58.4 72.0	25 40.7 +58.4 71.0	25 28.9 +58.5 70.1

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°	-3 05.1 +58.8	-3 17.1 +58.8	-3 29.1 +58.8	-3 41.0 +58.8	-3 52.9 +58.8
1°	-2 06.3 +58.8	-2 18.3 +58.8	-2 30.3 +58.8	-2 42.2 +58.8	-2 54.1 +58.9
2°	-1 07.5 +58.7	-1 19.5 +58.7	-1 31.5 +58.8	-1 43.4 +58.8	-1 55.2 +58.8
3°	-0 08.8 +58.8	-0 20.8 +58.8	-0 32.7 +58.8	-0 44.6 +58.8	-0 56.4 +58.8
4°	0 50.0 +58.8 74.5	0 38.0 +58.8 73.5	0 26.1 +58.8 72.6	0 14.2 +58.8 71.6	0 02.4 +58.9 70.6
5°	1 48.8 +58.8 74.3	1 36.8 +58.8 73.3	1 24.9 +58.8 72.4	1 13.0 +58.9 71.4	1 01.3 +58.8 70.4
6°	2 47.6 +58.8 74.1	2 35.6 +58.8 73.1	2 23.7 +58.8 72.2	2 11.9 +58.8 71.2	2 00.1 +58.8 70.2
7°	3 46.4 +58.7 73.9	3 34.4 +58.8 72.9	3 22.5 +58.8 72.0	3 10.7 +58.8 71.0	2 58.9 +58.8 70.0
8°	4 45.1 +58.8 73.7	4 33.2 +58.8 72.7	4 21.3 +58.8 71.8	4 09.5 +58.8 70.8	3 57.7 +58.9 69.8
9°	5 43.9 +58.8 73.5	5 32.0 +58.7 72.5	5 20.1 +58.8 71.6	5 08.3 +58.8 70.6	4 56.6 +58.8 69.6
10°	6 42.7 +58.7 73.3	6 30.7 +58.8 72.3	6 18.9 +58.8 71.4	6 07.1 +58.8 70.4	5 55.4 +58.8 69.4
11°	7 41.4 +58.8 73.1	7 29.5 +58.8 72.1	7 17.7 +58.7 71.2	7 05.9 +58.8 70.2	6 54.2 +58.8 69.2
12°	8 40.2 +58.7 72.9	8 28.3 +58.7 71.9	8 16.4 +58.8 71.0	8 04.7 +58.8 70.0	7 53.0 +58.8 69.0
13°	9 38.9 +58.7 72.7	9 27.0 +58.8 71.7	9 15.2 +58.8 70.7	9 03.5 +58.8 69.8	8 51.8 +58.8 68.8
14°	10 37.6 +58.8 72.5	10 25.8 +58.7 71.5	10 14.0 +58.7 70.5	10 02.3 +58.7 69.6	9 50.6 +58.8 68.6
15°	11 36.4 +58.7 72.3	11 24.5 +58.8 71.3	11 12.7 +58.8 70.3	11 01.0 +58.8 69.4	10 49.4 +58.8 68.4
16°	12 35.1 +58.7 72.1	12 23.3 +58.7 71.1	12 11.5 +58.7 70.1	11 59.8 +58.8 69.2	11 48.2 +58.8 68.2
17°	13 33.8 +58.7 71.8	13 22.0 +58.7 70.9	13 10.2 +58.8 69.9	12 58.6 +58.7 69.0	12 47.0 +58.7 68.0
18°	14 32.5 +58.7 71.6	14 20.7 +58.7 70.7	14 09.0 +58.7 69.7	13 57.3 +58.7 68.8	13 45.7 +58.8 67.8
19°	15 31.2 +58.7 71.4	15 19.4 +58.7 70.5	15 07.7 +58.7 69.5	14 56.0 +58.8 68.5	14 44.5 +58.7 67.6
20°	16 29.9 +58.6 71.2	16 18.1 +58.7 70.2	16 06.4 +58.7 69.3	15 54.8 +58.7 68.3	15 43.2 +58.7 67.4
21°	17 28.5 +58.7 71.0	17 16.8 +58.6 70.0	17 05.1 +58.7 69.1	16 53.5 +58.7 68.1	16 41.9 +58.8 67.2
22°	18 27.2 +58.6 70.8	18 15.4 +58.7 69.8	18 03.8 +58.6 68.8	17 52.2 +58.7 67.9	17 40.7 +58.7 66.9
23°	19 25.8 +58.6 70.5	19 14.1 +58.6 69.6	19 02.4 +58.7 68.6	18 50.9 +58.6 67.7	18 39.4 +58.6 66.7
24°	20 24.4 +58.6 70.3	20 12.7 +58.6 69.4	20 01.1 +58.6 68.4	19 49.5 +58.7 67.5	19 38.0 +58.7 66.5
25°	21 23.0 +58.6 70.1	21 11.3 +58.6 69.1	20 59.7 +58.6 68.2	20 48.2 +58.6 67.2	20 36.7 +58.7 66.3
26°	22 21.6 +58.6 69.8	22 09.9 +58.6 68.9	21 58.3 +58.6 67.9	21 46.8 +58.6 67.0	21 35.4 +58.6 66.1
27°	23 20.2 +58.5 69.6	23 08.5 +58.6 68.7	22 56.9 +58.6 67.7	22 45.4 +58.6 66.8	22 34.0 +58.6 65.8
28°	24 18.7 +58.5 69.4	24 07.1 +58.5 68.4	23 55.5 +58.6 67.5	23 44.0 +58.6 66.5	23 32.6 +58.6 65.6
29°	25 17.2 +58.5 69.1	25 05.6 +58.5 68.2	24 54.1 +58.5 67.2	24 42.6 +58.5 66.3	24 31.2 +58.6 65.4

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°	-4 04.7 +58.9	-4 16.4 +58.9	-4 28.0 +58.8	-4 39.6 +58.9	-4 51.1 +58.9
1°	-3 05.8 +58.8	-3 17.5 +58.8	-3 29.2 +58.9	-3 40.7 +58.9	-3 52.2 +58.9
2°	-2 07.0 +58.9	-2 18.7 +58.9	-2 30.3 +58.9	-2 41.8 +58.9	-2 53.3 +58.9
3°	-1 08.1 +58.8	-1 19.8 +58.8	-1 31.4 +58.9	-1 42.9 +58.9	-1 54.4 +59.0
4°	-0 09.3 +58.8	-0 21.0 +58.9	-0 32.5 +58.8	-0 44.0 +58.9	-0 55.4 +58.9
5°	0 49.5 +58.9 69.4	0 37.9 +58.9 68.4	0 26.3 +58.9 67.5	0 14.9 +58.9 66.5	0 03.5 +58.9 65.5
6°	1 48.4 +58.8 69.2	1 36.8 +58.8 68.3	1 25.2 +58.9 67.3	1 13.8 +58.8 66.3	1 02.4 +58.9 65.3
7°	2 47.2 +58.9 69.0	2 35.6 +58.9 68.1	2 24.1 +58.9 67.1	2 12.6 +58.9 66.1	2 01.3 +58.9 65.1
8°	3 46.1 +58.8 68.8	3 34.5 +58.8 67.9	3 23.0 +58.8 66.9	3 11.5 +58.9 65.9	3 00.2 +58.9 64.9
9°	4 44.9 +58.8 68.6	4 33.3 +58.9 67.7	4 21.8 +58.9 66.7	4 10.4 +58.9 65.7	3 59.1 +58.9 64.8
10°	5 43.7 +58.9 68.4	5 32.2 +58.8 67.5	5 20.7 +58.9 66.5	5 09.3 +58.9 65.5	4 58.0 +58.9 64.6
11°	6 42.6 +58.8 68.2	6 31.0 +58.9 67.3	6 19.6 +58.8 66.3	6 08.2 +58.9 65.3	5 56.9 +58.9 64.4
12°	7 41.4 +58.8 68.0	7 29.9 +58.8 67.1	7 18.4 +58.9 66.1	7 07.1 +58.8 65.1	6 55.8 +58.9 64.2
13°	8 40.2 +58.8 67.8	8 28.7 +58.8 66.9	8 17.3 +58.8 65.9	8 05.9 +58.9 65.0	7 54.7 +58.9 64.0
14°	9 39.0 +58.8 67.6	9 27.5 +58.9 66.7	9 16.1 +58.9 65.7	9 04.8 +58.9 64.8	8 53.6 +58.8 63.8
15°	10 37.8 +58.8 67.4	10 26.4 +58.8 66.5	10 15.0 +58.8 65.5	10 03.7 +58.8 64.6	9 52.4 +58.9 63.6
16°	11 36.6 +58.8 67.2	11 25.2 +58.8 66.3	11 13.8 +58.8 65.3	11 02.5 +58.8 64.4	10 51.3 +58.9 63.4
17°	12 35.4 +58.8 67.0	12 24.0 +58.8 66.1	12 12.6 +58.8 65.1	12 01.3 +58.9 64.2	11 50.2 +58.8 63.2
18°	13 34.2 +58.8 66.8	13 22.8 +58.8 65.9	13 11.4 +58.8 64.9	13 00.2 +58.8 64.0	12 49.0 +58.9 63.0
19°	14 33.0 +58.7 66.6	14 21.6 +58.7 65.7	14 10.2 +58.8 64.7	13 59.0 +58.8 63.8	13 47.9 +58.8 62.8
20°	15 31.7 +58.8 66.4	15 20.3 +58.8 65.5	15 09.0 +58.8 64.5	14 57.8 +58.8 63.6	14 46.7 +58.8 62.6
21°	16 30.5 +58.7 66.2	16 19.1 +58.8 65.3	16 07.8 +58.8 64.3	15 56.6 +58.8 63.3	15 45.5 +58.8 62.4
22°	17 29.2 +58.7 66.0	17 17.9 +58.7 65.0	17 06.6 +58.8 64.1	16 55.4 +58.8 63.1	16 44.3 +58.8 62.2
23°	18 27.9 +58.7 65.8	18 16.6 +58.7 64.8	18 05.4 +58.7 63.9	17 54.2 +58.8 62.9	17 43.1 +58.8 62.0
24°	19 26.6 +58.7 65.6	19 15.3 +58.7 64.6	19 04.1 +58.7 63.7	18 53.0 +58.7 62.7	18 41.9 +58.8 61.8
25°	20 25.3 +58.7 65.3	20 14.0 +58.7 64.4	20 02.8 +58.8 63.4	19 51.7 +58.8 62.5	19 40.7 +58.8 61.6
26°	21 24.0 +58.7 65.1	21 12.7 +58.7 64.2	21 01.6 +58.6 63.2	20 50.5 +58.7 62.3	20 39.5 +58.7 61.3
27°	22 22.7 +58.6 64.9	22 11.4 +58.7 63.9	22 00.2 +58.7 63.0	21 49.2 +58.7 62.1	21 38.2 +58.7 61.1
28°	23 21.3 +58.6 64.7	23 10.1 +58.6 63.7	22 58.9 +58.7 62.8	22 47.9 +58.7 61.8	22 36.9 +58.7 60.9
29°	24 19.9 +58.6 64.4	24 08.7 +58.6 63.5	23 57.6 +58.6 62.5	23 46.6 +58.6 61.6	23 35.6 +58.7 60.7

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°	-5 02.5 +59.0	-5 13.8 +59.0	-5 25.0 +59.0	-5 36.1 +59.0	-5 47.1 +59.0
1°	-4 03.5 +58.9	-4 14.8 +58.9	-4 26.0 +58.9	-4 37.1 +59.0	-4 48.1 +59.0
2°	-3 04.6 +58.9	-3 15.9 +59.0	-3 27.1 +59.0	-3 38.1 +58.9	-3 49.1 +59.0
3°	-2 05.7 +58.9	-2 16.9 +58.9	-2 28.1 +59.0	-2 39.2 +59.0	-2 50.1 +59.0
4°	-1 06.8 +59.0	-1 18.0 +58.9	-1 29.1 +58.9	-1 40.2 +59.0	-1 51.1 +59.0
5°	-0 07.8 +58.9	-0 19.1 +59.0	-0 30.2 +59.0	-0 41.2 +59.0	-0 52.1 +59.0
6°	0 51.1 +58.9 64.3	0 39.9 +58.9 63.4	0 28.8 +58.9 62.4	0 17.8 +59.0 61.4	0 06.9 +59.0 60.4
7°	1 50.0 +58.9 64.2	1 38.8 +59.0 63.2	1 27.7 +59.0 62.2	1 16.8 +58.9 61.2	1 05.9 +59.0 60.3
8°	2 48.9 +59.0 64.0	2 37.8 +58.9 63.0	2 26.7 +59.0 62.0	2 15.7 +59.0 61.0	2 04.9 +59.0 60.1
9°	3 47.9 +58.9 63.8	3 36.7 +58.9 62.8	3 25.7 +58.9 61.8	3 14.7 +59.0 60.9	3 03.9 +59.0 59.9
10°	4 46.8 +58.9 63.6	4 35.6 +59.0 62.6	4 24.6 +59.0 61.7	4 13.7 +59.0 60.7	4 02.9 +59.0 59.7
11°	5 45.7 +58.9 63.4	5 34.6 +58.9 62.4	5 23.6 +58.9 61.5	5 12.7 +58.9 60.5	5 01.9 +58.9 59.5
12°	6 44.6 +58.9 63.2	6 33.5 +58.9 62.2	6 22.5 +59.0 61.3	6 11.6 +59.0 60.3	6 00.8 +59.0 59.3
13°	7 43.5 +58.9 63.0	7 32.4 +59.0 62.1	7 21.5 +58.9 61.1	7 10.6 +59.0 60.1	6 59.8 +59.0 59.2
14°	8 42.4 +58.9 62.8	8 31.4 +58.9 61.9	8 20.4 +58.9 60.9	8 09.6 +58.9 59.9	7 58.8 +59.0 59.0
15°	9 41.3 +58.9 62.6	9 30.3 +58.9 61.7	9 19.3 +59.0 60.7	9 08.5 +59.0 59.7	8 57.8 +59.0 58.8
16°	10 40.2 +58.9 62.4	10 29.2 +58.9 61.5	10 18.3 +58.9 60.5	10 07.5 +58.9 59.6	9 56.8 +58.9 58.6
17°	11 39.1 +58.9 62.2	11 28.1 +58.9 61.3	11 17.2 +58.9 60.3	11 06.4 +58.9 59.4	10 55.7 +59.0 58.4
18°	12 38.0 +58.8 62.0	12 27.0 +58.9 61.1	12 16.1 +58.9 60.1	12 05.3 +59.0 59.2	11 54.7 +58.9 58.2
19°	13 36.8 +58.9 61.8	13 25.9 +58.8 60.9	13 15.0 +58.9 59.9	13 04.3 +58.9 59.0	12 53.6 +59.0 58.0
20°	14 35.7 +58.8 61.6	14 24.7 +58.9 60.7	14 13.9 +58.9 59.7	14 03.2 +58.9 58.8	13 52.6 +58.9 57.8
21°	15 34.5 +58.9 61.4	15 23.6 +58.9 60.5	15 12.8 +58.9 59.5	15 02.1 +58.9 58.6	14 51.5 +58.9 57.6
22°	16 33.4 +58.8 61.2	16 22.5 +58.8 60.3	16 11.7 +58.9 59.3	16 01.0 +58.9 58.4	15 50.4 +59.0 57.5
23°	17 32.2 +58.8 61.0	17 21.3 +58.8 60.1	17 10.6 +58.8 59.1	16 59.9 +58.9 58.2	16 49.4 +58.9 57.3
24°	18 31.0 +58.8 60.8	18 20.1 +58.9 59.9	18 09.4 +58.9 58.9	17 58.8 +58.8 58.0	17 48.3 +58.8 57.1
25°	19 29.8 +58.8 60.6	19 19.0 +58.8 59.7	19 08.3 +58.8 58.7	18 57.6 +58.9 57.8	18 47.1 +58.9 56.9
26°	20 28.6 +58.7 60.4	20 17.8 +58.8 59.5	20 07.1 +58.8 58.5	19 56.5 +58.8 57.6	19 46.0 +58.9 56.6
27°	21 27.3 +58.8 60.2	21 16.6 +58.7 59.2	21 05.9 +58.8 58.3	20 55.3 +58.9 57.4	20 44.9 +58.8 56.4
28°	22 26.1 +58.7 60.0	22 15.3 +58.8 59.0	22 04.7 +58.8 58.1	21 54.2 +58.8 57.2	21 43.7 +58.9 56.2
29°	23 24.8 +58.7 59.7	23 14.1 +58.7 58.8	23 03.5 +58.7 57.9	22 53.0 +58.7 57.0	22 42.6 +58.8 56.0

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°	-5 58.0 +59.0	-6 08.8 +59.0	-6 19.5 +59.0	-6 30.1 +59.1	-6 40.6 +59.1
1°	-4 59.0 +59.0	-5 09.8 +59.0	-5 20.5 +59.1	-5 31.0 +59.0	-5 41.5 +59.1
2°	-4 00.0 +59.0	-4 10.8 +59.1	-4 21.4 +59.0	-4 32.0 +59.1	-4 42.4 +59.1
3°	-3 01.0 +59.0	-3 11.7 +59.0	-3 22.4 +59.1	-3 32.9 +59.1	-3 43.3 +59.1
4°	-2 02.0 +59.1	-2 12.7 +59.0	-2 23.3 +59.0	-2 33.8 +59.1	-2 44.2 +59.1
5°	-1 02.9 +59.0	-1 13.7 +59.1	-1 24.3 +59.1	-1 34.7 +59.0	-1 45.1 +59.1
6°	-0 03.9 +59.0	-0 14.6 +59.0	-0 25.2 +59.1	-0 35.7 +59.1	-0 46.0 +59.1
7°	0 55.1 +59.0 59.3	0 44.4 +59.1 58.3	0 33.9 +59.0 57.3	0 23.4 +59.1 56.4	0 13.1 +59.1 55.4
8°	1 54.1 +59.0 59.1	1 43.5 +59.0 58.1	1 32.9 +59.1 57.2	1 22.5 +59.1 56.2	1 12.2 +59.1 55.2
9°	2 53.1 +59.0 58.9	2 42.5 +59.0 57.9	2 32.0 +59.0 57.0	2 21.6 +59.1 56.0	2 11.3 +59.1 55.0
10°	3 52.1 +59.1 58.7	3 41.5 +59.1 57.8	3 31.0 +59.1 56.8	3 20.7 +59.0 55.8	3 10.4 +59.1 54.9
11°	4 51.2 +59.0 58.6	4 40.6 +59.0 57.6	4 30.1 +59.0 56.6	4 19.7 +59.1 55.7	4 09.5 +59.1 54.7
12°	5 50.2 +59.0 58.4	5 39.6 +59.0 57.4	5 29.1 +59.1 56.4	5 18.8 +59.1 55.5	5 08.6 +59.1 54.5
13°	6 49.2 +59.0 58.2	6 38.6 +59.1 57.2	6 28.2 +59.0 56.3	6 17.9 +59.1 55.3	6 07.7 +59.1 54.3
14°	7 48.2 +59.0 58.0	7 37.7 +59.0 57.0	7 27.2 +59.1 56.1	7 17.0 +59.0 55.1	7 06.8 +59.1 54.2
15°	8 47.2 +59.0 57.8	8 36.7 +59.0 56.9	8 26.3 +59.0 55.9	8 16.0 +59.1 54.9	8 05.9 +59.0 54.0
16°	9 46.2 +59.0 57.6	9 35.7 +59.0 56.7	9 25.3 +59.1 55.7	9 15.1 +59.0 54.8	9 04.9 +59.1 53.8
17°	10 45.2 +58.9 57.5	10 34.7 +59.0 56.5	10 24.4 +59.0 55.5	10 14.1 +59.1 54.6	10 04.0 +59.1 53.6
18°	11 44.1 +59.0 57.3	11 33.7 +59.0 56.3	11 23.4 +59.0 55.4	11 13.2 +59.0 54.4	11 03.1 +59.1 53.5
19°	12 43.1 +59.0 57.1	12 32.7 +59.0 56.1	12 22.4 +59.0 55.2	12 12.2 +59.0 54.2	12 02.2 +59.0 53.3
20°	13 42.1 +58.9 56.9	13 31.7 +59.0 55.9	13 21.4 +59.0 55.0	13 11.2 +59.1 54.0	13 01.2 +59.1 53.1
21°	14 41.0 +59.0 56.7	14 30.7 +58.9 55.8	14 20.4 +59.0 54.8	14 10.3 +59.0 53.9	14 00.3 +59.0 52.9
22°	15 40.0 +58.9 56.5	15 29.6 +59.0 55.6	15 19.4 +59.0 54.6	15 09.3 +59.0 53.7	14 59.3 +59.0 52.7
23°	16 38.9 +58.9 56.3	16 28.6 +58.9 55.4	16 18.4 +59.0 54.4	16 08.3 +59.0 53.5	15 58.3 +59.1 52.5
24°	17 37.8 +59.0 56.1	17 27.5 +59.0 55.2	17 17.4 +58.9 54.2	17 07.3 +59.0 53.3	16 57.4 +59.0 52.4
25°	18 36.8 +58.9 55.9	18 26.5 +58.9 55.0	18 16.3 +59.0 54.0	18 06.3 +59.0 53.1	17 56.4 +59.0 52.2
26°	19 35.7 +58.8 55.7	19 25.4 +58.9 54.8	19 15.3 +58.9 53.8	19 05.3 +58.9 52.9	18 55.4 +59.0 52.0
27°	20 34.5 +58.9 55.5	20 24.3 +58.9 54.6	20 14.2 +58.9 53.6	20 04.2 +59.0 52.7	19 54.4 +58.9 51.8
28°	21 33.4 +58.9 55.3	21 23.2 +58.9 54.4	21 13.1 +58.9 53.4	21 03.2 +58.9 52.5	20 53.3 +59.0 51.6
29°	22 32.3 +58.8 55.1	22 22.1 +58.9 54.2	22 12.0 +58.9 53.2	22 02.1 +58.9 52.3	21 52.3 +59.0 51.4

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°	-6 50.9 +59.1	-7 01.2 +59.2	-7 11.3 +59.2	-7 21.3 +59.2	-7 31.1 +59.2
1°	-5 51.8 +59.1	-6 02.0 +59.1	-6 12.1 +59.1	-6 22.1 +59.2	-6 31.9 +59.2
2°	-4 52.7 +59.1	-5 02.9 +59.1	-5 13.0 +59.2	-5 22.9 +59.2	-5 32.7 +59.2
3°	-3 53.6 +59.1	-4 03.8 +59.2	-4 13.8 +59.2	-4 23.7 +59.2	-4 33.5 +59.2
4°	-2 54.5 +59.1	-3 04.6 +59.1	-3 14.6 +59.1	-3 24.5 +59.2	-3 34.3 +59.2
5°	-1 55.4 +59.2	-2 05.5 +59.2	-2 15.5 +59.2	-2 25.3 +59.1	-2 35.1 +59.2
6°	-0 56.2 +59.1	-1 06.3 +59.1	-1 16.3 +59.2	-1 26.2 +59.2	-1 35.9 +59.2
7°	0 02.9 +59.1 54.4	-0 07.2 +59.2	-0 17.1 +59.1	-0 27.0 +59.2	-0 36.7 +59.3
8°	1 02.0 +59.1 54.2	0 52.0 +59.1 53.2	0 42.0 +59.2 52.3	0 32.2 +59.2 51.3	0 22.6 +59.2 50.3
9°	2 01.1 +59.2 54.1	1 51.1 +59.1 53.1	1 41.2 +59.2 52.1	1 31.4 +59.2 51.1	1 21.8 +59.2 50.2
10°	3 00.3 +59.1 53.9	2 50.2 +59.2 52.9	2 40.4 +59.1 51.9	2 30.6 +59.2 51.0	2 21.0 +59.2 50.0
11°	3 59.4 +59.1 53.7	3 49.4 +59.1 52.7	3 39.5 +59.2 51.8	3 29.8 +59.2 50.8	3 20.2 +59.2 49.8
12°	4 58.5 +59.1 53.5	4 48.5 +59.2 52.6	4 38.7 +59.1 51.6	4 29.0 +59.2 50.6	4 19.4 +59.2 49.7
13°	5 57.6 +59.1 53.4	5 47.7 +59.1 52.4	5 37.8 +59.2 51.4	5 28.2 +59.1 50.5	5 18.6 +59.2 49.5
14°	6 56.7 +59.1 53.2	6 46.8 +59.1 52.2	6 37.0 +59.2 51.3	6 27.3 +59.2 50.3	6 17.8 +59.2 49.3
15°	7 55.8 +59.1 53.0	7 45.9 +59.2 52.1	7 36.2 +59.1 51.1	7 26.5 +59.2 50.1	7 17.0 +59.2 49.2
16°	8 54.9 +59.1 52.8	8 45.1 +59.1 51.9	8 35.3 +59.2 50.9	8 25.7 +59.2 50.0	8 16.2 +59.2 49.0
17°	9 54.0 +59.1 52.7	9 44.2 +59.1 51.7	9 34.5 +59.1 50.8	9 24.9 +59.1 49.8	9 15.4 +59.2 48.9
18°	10 53.1 +59.1 52.5	10 43.3 +59.1 51.5	10 33.6 +59.1 50.6	10 24.0 +59.2 49.6	10 14.6 +59.2 48.7
19°	11 52.2 +59.1 52.3	11 42.4 +59.1 51.4	11 32.7 +59.2 50.4	11 23.2 +59.1 49.5	11 13.8 +59.1 48.5
20°	12 51.3 +59.1 52.1	12 41.5 +59.1 51.2	12 31.9 +59.1 50.2	12 22.3 +59.2 49.3	12 12.9 +59.2 48.3
21°	13 50.4 +59.0 52.0	13 40.6 +59.1 51.0	13 31.0 +59.1 50.1	13 21.5 +59.1 49.1	13 12.1 +59.2 48.2
22°	14 49.4 +59.1 51.8	14 39.7 +59.1 50.8	14 30.1 +59.1 49.9	14 20.6 +59.2 49.0	14 11.3 +59.1 48.0
23°	15 48.5 +59.0 51.6	15 38.8 +59.1 50.7	15 29.2 +59.1 49.7	15 19.8 +59.1 48.8	15 10.4 +59.2 47.8
24°	16 47.5 +59.1 51.4	16 37.9 +59.0 50.5	16 28.3 +59.1 49.5	16 18.9 +59.1 48.6	16 09.6 +59.1 47.7
25°	17 46.6 +59.0 51.2	17 36.9 +59.1 50.3	17 27.4 +59.1 49.4	17 18.0 +59.1 48.4	17 08.7 +59.2 47.5
26°	18 45.6 +59.0 51.0	18 36.0 +59.0 50.1	18 26.5 +59.0 49.2	18 17.1 +59.1 48.2	18 07.9 +59.1 47.3
27°	19 44.6 +59.0 50.8	19 35.0 +59.0 49.9	19 25.5 +59.1 49.0	19 16.2 +59.1 48.1	19 07.0 +59.1 47.1
28°	20 43.6 +59.0 50.7	20 34.0 +59.1 49.7	20 24.6 +59.0 48.8	20 15.3 +59.0 47.9	20 06.1 +59.1 46.9
29°	21 42.6 +59.0 50.5	21 33.1 +59.0 49.5	21 23.6 +59.1 48.6	21 14.3 +59.1 47.7	21 05.2 +59.1 46.8

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°	-7 40.8 +59.2	-7 50.4 +59.3	-7 59.8 +59.3	-8 09.1 +59.3	-8 18.2 +59.3
1°	-6 41.6 +59.2	-6 51.1 +59.2	-7 00.5 +59.2	-7 09.8 +59.3	-7 18.9 +59.3
2°	-5 42.4 +59.3	-5 51.9 +59.3	-6 01.3 +59.3	-6 10.5 +59.3	-6 19.6 +59.3
3°	-4 43.1 +59.2	-4 52.6 +59.2	-5 02.0 +59.3	-5 11.2 +59.3	-5 20.3 +59.3
4°	-3 43.9 +59.2	-3 53.4 +59.3	-4 02.7 +59.2	-4 11.9 +59.3	-4 21.0 +59.3
5°	-2 44.7 +59.3	-2 54.1 +59.2	-3 03.5 +59.3	-3 12.6 +59.3	-3 21.7 +59.4
6°	-1 45.4 +59.2	-1 54.9 +59.3	-2 04.2 +59.3	-2 13.3 +59.3	-2 22.3 +59.3
7°	-0 46.2 +59.2	-0 55.6 +59.2	-1 04.9 +59.3	-1 14.0 +59.3	-1 23.0 +59.3
8°	0 13.0 +59.3 49.3	0 03.6 +59.3 48.4	-0 05.6 +59.3	-0 14.7 +59.3	-0 23.7 +59.3
9°	1 12.3 +59.2 49.2	1 02.9 +59.2 48.2	0 53.7 +59.2 47.2	0 44.6 +59.3 46.3	0 35.6 +59.4 45.3
10°	2 11.5 +59.2 49.0	2 02.1 +59.3 48.0	1 52.9 +59.3 47.1	1 43.9 +59.3 46.1	1 35.0 +59.3 45.1
11°	3 10.7 +59.3 48.9	3 01.4 +59.3 47.9	2 52.2 +59.3 46.9	2 43.2 +59.3 45.9	2 34.3 +59.3 45.0
12°	4 10.0 +59.2 48.7	4 00.7 +59.2 47.7	3 51.5 +59.3 46.8	3 42.5 +59.3 45.8	3 33.6 +59.3 44.8
13°	5 09.2 +59.2 48.5	4 59.9 +59.3 47.6	4 50.8 +59.2 46.6	4 41.8 +59.3 45.6	4 32.9 +59.4 44.7
14°	6 08.4 +59.2 48.4	5 59.2 +59.2 47.4	5 50.0 +59.3 46.5	5 41.1 +59.3 45.5	5 32.3 +59.3 44.5
15°	7 07.6 +59.3 48.2	6 58.4 +59.2 47.3	6 49.3 +59.3 46.3	6 40.4 +59.3 45.3	6 31.6 +59.3 44.4
16°	8 06.9 +59.2 48.1	7 57.6 +59.3 47.1	7 48.6 +59.2 46.1	7 39.7 +59.2 45.2	7 30.9 +59.3 44.2
17°	9 06.1 +59.2 47.9	8 56.9 +59.2 46.9	8 47.8 +59.3 46.0	8 38.9 +59.3 45.0	8 30.2 +59.3 44.1
18°	10 05.3 +59.2 47.7	9 56.1 +59.3 46.8	9 47.1 +59.3 45.8	9 38.2 +59.3 44.9	9 29.5 +59.3 43.9
19°	11 04.5 +59.2 47.6	10 55.4 +59.2 46.6	10 46.4 +59.2 45.7	10 37.5 +59.3 44.7	10 28.8 +59.3 43.8
20°	12 03.7 +59.2 47.4	11 54.6 +59.2 46.5	11 45.6 +59.3 45.5	11 36.8 +59.3 44.6	11 28.1 +59.3 43.6
21°	13 02.9 +59.2 47.2	12 53.8 +59.2 46.3	12 44.9 +59.2 45.3	12 36.1 +59.2 44.4	12 27.4 +59.3 43.5
22°	14 02.1 +59.2 47.1	13 53.0 +59.2 46.1	13 44.1 +59.2 45.2	13 35.3 +59.3 44.2	13 26.7 +59.3 43.3
23°	15 01.3 +59.1 46.9	14 52.2 +59.2 46.0	14 43.3 +59.3 45.0	14 34.6 +59.2 44.1	14 26.0 +59.3 43.1
24°	16 00.4 +59.2 46.7	15 51.4 +59.2 45.8	15 42.6 +59.2 44.8	15 33.8 +59.3 43.9	15 25.3 +59.2 43.0
25°	16 59.6 +59.2 46.5	16 50.6 +59.2 45.6	16 41.8 +59.2 44.7	16 33.1 +59.2 43.7	16 24.5 +59.3 42.8
26°	17 58.8 +59.1 46.4	17 49.8 +59.2 45.4	17 41.0 +59.2 44.5	17 32.3 +59.2 43.6	17 23.8 +59.2 42.7
27°	18 57.9 +59.1 46.2	18 49.0 +59.1 45.3	18 40.2 +59.2 44.3	18 31.5 +59.3 43.4	18 23.0 +59.3 42.5
28°	19 57.0 +59.2 46.0	19 48.1 +59.2 45.1	19 39.4 +59.2 44.2	19 30.8 +59.2 43.2	19 22.3 +59.2 42.3
29°	20 56.2 +59.1 45.8	20 47.3 +59.1 44.9	20 38.6 +59.1 44.0	20 30.0 +59.2 43.1	20 21.5 +59.2 42.1

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°	-8 27.2 +59.3	-8 36.1 +59.4	-8 44.8 +59.4	-8 53.3 +59.4	-9 01.7 +59.5
1°	-7 27.9 +59.3	-7 36.7 +59.3	-7 45.4 +59.4	-7 53.9 +59.4	-8 02.2 +59.4
2°	-6 28.6 +59.4	-6 37.4 +59.4	-6 46.0 +59.4	-6 54.5 +59.4	-7 02.8 +59.4
3°	-5 29.2 +59.3	-5 38.0 +59.4	-5 46.6 +59.4	-5 55.1 +59.4	-6 03.4 +59.5
4°	-4 29.9 +59.4	-4 38.6 +59.3	-4 47.2 +59.4	-4 55.7 +59.4	-5 03.9 +59.4
5°	-3 30.5 +59.3	-3 39.3 +59.4	-3 47.8 +59.4	-3 56.3 +59.5	-4 04.5 +59.4
6°	-2 31.2 +59.4	-2 39.9 +59.4	-2 48.4 +59.3	-2 56.8 +59.4	-3 05.1 +59.5
7°	-1 31.8 +59.3	-1 40.5 +59.3	-1 49.1 +59.4	-1 57.4 +59.4	-2 05.6 +59.4
8°	-0 32.5 +59.3	-0 41.2 +59.4	-0 49.7 +59.4	-0 58.0 +59.4	-1 06.2 +59.4
9°	0 26.8 +59.4 44.3	0 18.2 +59.4 43.3	0 09.7 +59.4 42.3	0 01.4 +59.4 41.4	-0 06.8 +59.5
10°	1 26.2 +59.3 44.2	1 17.6 +59.4 43.2	1 09.1 +59.4 42.2	1 00.8 +59.4 41.2	0 52.7 +59.4 40.3
11°	2 25.5 +59.4 44.0	2 17.0 +59.3 43.0	2 08.5 +59.4 42.1	2 00.2 +59.5 41.1	1 52.1 +59.5 40.1
12°	3 24.9 +59.3 43.9	3 16.3 +59.4 42.9	3 07.9 +59.4 41.9	2 59.7 +59.4 41.0	2 51.6 +59.4 40.0
13°	4 24.2 +59.4 43.7	4 15.7 +59.4 42.7	4 07.3 +59.4 41.8	3 59.1 +59.4 40.8	3 51.0 +59.4 39.8
14°	5 23.6 +59.3 43.6	5 15.1 +59.3 42.6	5 06.7 +59.4 41.6	4 58.5 +59.4 40.7	4 50.4 +59.5 39.7
15°	6 22.9 +59.4 43.4	6 14.4 +59.4 42.5	6 06.1 +59.4 41.5	5 57.9 +59.4 40.5	5 49.9 +59.4 39.6
16°	7 22.3 +59.3 43.3	7 13.8 +59.3 42.3	7 05.5 +59.3 41.3	6 57.3 +59.4 40.4	6 49.3 +59.4 39.4
17°	8 21.6 +59.3 43.1	8 13.1 +59.4 42.2	8 04.8 +59.4 41.2	7 56.7 +59.4 40.2	7 48.7 +59.5 39.3
18°	9 20.9 +59.4 43.0	9 12.5 +59.4 42.0	9 04.2 +59.4 41.1	8 56.1 +59.4 40.1	8 48.2 +59.4 39.2
19°	10 20.3 +59.3 42.8	10 11.9 +59.3 41.9	10 03.6 +59.4 40.9	9 55.5 +59.4 40.0	9 47.6 +59.4 39.0
20°	11 19.6 +59.3 42.7	11 11.2 +59.3 41.7	11 03.0 +59.3 40.8	10 54.9 +59.4 39.8	10 47.0 +59.4 38.9
21°	12 18.9 +59.3 42.5	12 10.5 +59.4 41.6	12 02.3 +59.4 40.6	11 54.3 +59.4 39.7	11 46.4 +59.4 38.7
22°	13 18.2 +59.3 42.4	13 09.9 +59.3 41.4	13 01.7 +59.4 40.5	12 53.7 +59.4 39.5	12 45.8 +59.4 38.6
23°	14 17.5 +59.3 42.2	14 09.2 +59.3 41.3	14 01.1 +59.3 40.3	13 53.1 +59.4 39.4	13 45.2 +59.4 38.4
24°	15 16.8 +59.3 42.0	15 08.5 +59.4 41.1	15 00.4 +59.4 40.2	14 52.5 +59.3 39.2	14 44.6 +59.4 38.3
25°	16 16.1 +59.3 41.9	16 07.9 +59.3 40.9	15 59.8 +59.3 40.0	15 51.8 +59.4 39.1	15 44.0 +59.4 38.2
26°	17 15.4 +59.3 41.7	17 07.2 +59.3 40.8	16 59.1 +59.3 39.9	16 51.2 +59.4 38.9	16 43.4 +59.4 38.0
27°	18 14.7 +59.3 41.6	18 06.5 +59.3 40.6	17 58.4 +59.4 39.7	17 50.6 +59.3 38.8	17 42.8 +59.4 37.9
28°	19 14.0 +59.2 41.4	19 05.8 +59.3 40.5	18 57.8 +59.3 39.5	18 49.9 +59.3 38.6	18 42.2 +59.4 37.7
29°	20 13.2 +59.3 41.2	20 05.1 +59.3 40.3	19 57.1 +59.3 39.4	19 49.2 +59.4 38.5	19 41.6 +59.3 37.5

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°	-9 09.9 +59.5	-9 17.9 +59.5	-9 25.8 +59.5	-9 33.5 +59.5	-9 41.0 +59.5
1°	-8 10.4 +59.4	-8 18.4 +59.4	-8 26.3 +59.5	-8 34.0 +59.6	-8 41.5 +59.6
2°	-7 11.0 +59.5	-7 19.0 +59.5	-7 26.8 +59.5	-7 34.4 +59.5	-7 41.9 +59.5
3°	-6 11.5 +59.4	-6 19.5 +59.5	-6 27.3 +59.5	-6 34.9 +59.5	-6 42.4 +59.6
4°	-5 12.1 +59.5	-5 20.0 +59.5	-5 27.8 +59.5	-5 35.4 +59.5	-5 42.8 +59.5
5°	-4 12.6 +59.5	-4 20.5 +59.5	-4 28.3 +59.5	-4 35.9 +59.6	-4 43.3 +59.6
6°	-3 13.1 +59.4	-3 21.0 +59.4	-3 28.8 +59.5	-3 36.3 +59.5	-3 43.7 +59.5
7°	-2 13.7 +59.5	-2 21.6 +59.5	-2 29.3 +59.5	-2 36.8 +59.5	-2 44.2 +59.6
8°	-1 14.2 +59.4	-1 22.1 +59.5	-1 29.8 +59.5	-1 37.3 +59.5	-1 44.6 +59.5
9°	-0 14.8 +59.5	-0 22.6 +59.5	-0 30.3 +59.5	-0 37.8 +59.6	-0 45.1 +59.6
10°	0 44.7 +59.5 39.3	0 36.9 +59.5 38.3	0 29.2 +59.5 37.3	0 21.8 +59.5 36.3	0 14.5 +59.5 35.4
11°	1 44.2 +59.4 39.1	1 36.4 +59.5 38.2	1 28.7 +59.6 37.2	1 21.3 +59.5 36.2	1 14.0 +59.6 35.2
12°	2 43.6 +59.5 39.0	2 35.9 +59.4 38.0	2 28.3 +59.5 37.1	2 20.8 +59.5 36.1	2 13.6 +59.5 35.1
13°	3 43.1 +59.4 38.9	3 35.3 +59.5 37.9	3 27.8 +59.5 36.9	3 20.3 +59.6 36.0	3 13.1 +59.6 35.0
14°	4 42.5 +59.5 38.7	4 34.8 +59.5 37.8	4 27.3 +59.5 36.8	4 19.9 +59.5 35.8	4 12.7 +59.5 34.9
15°	5 42.0 +59.5 38.6	5 34.3 +59.5 37.6	5 26.8 +59.5 36.7	5 19.4 +59.5 35.7	5 12.2 +59.5 34.8
16°	6 41.5 +59.4 38.5	6 33.8 +59.5 37.5	6 26.3 +59.5 36.6	6 18.9 +59.5 35.6	6 11.7 +59.6 34.6
17°	7 40.9 +59.5 38.3	7 33.3 +59.4 37.4	7 25.8 +59.5 36.4	7 18.4 +59.6 35.5	7 11.3 +59.5 34.5
18°	8 40.4 +59.4 38.2	8 32.7 +59.5 37.2	8 25.3 +59.5 36.3	8 18.0 +59.5 35.3	8 10.8 +59.6 34.4
19°	9 39.8 +59.5 38.1	9 32.2 +59.5 37.1	9 24.8 +59.4 36.2	9 17.5 +59.5 35.2	9 10.4 +59.5 34.3
20°	10 39.3 +59.4 37.9	10 31.7 +59.4 37.0	10 24.2 +59.5 36.0	10 17.0 +59.5 35.1	10 09.9 +59.5 34.1
21°	11 38.7 +59.4 37.8	11 31.1 +59.5 36.8	11 23.7 +59.5 35.9	11 16.5 +59.5 35.0	11 09.4 +59.6 34.0
22°	12 38.1 +59.5 37.6	12 30.6 +59.5 36.7	12 23.2 +59.5 35.8	12 16.0 +59.5 34.8	12 09.0 +59.5 33.9
23°	13 37.6 +59.4 37.5	13 30.1 +59.4 36.6	13 22.7 +59.5 35.6	13 15.5 +59.5 34.7	13 08.5 +59.5 33.8
24°	14 37.0 +59.4 37.4	14 29.5 +59.4 36.4	14 22.2 +59.4 35.5	14 15.0 +59.5 34.6	14 08.0 +59.5 33.6
25°	15 36.4 +59.4 37.2	15 28.9 +59.5 36.3	15 21.6 +59.5 35.4	15 14.5 +59.5 34.4	15 07.5 +59.6 33.5
26°	16 35.8 +59.4 37.1	16 28.4 +59.4 36.1	16 21.1 +59.5 35.2	16 14.0 +59.5 34.3	16 07.1 +59.5 33.4
27°	17 35.2 +59.4 36.9	17 27.8 +59.5 36.0	17 20.6 +59.4 35.1	17 13.5 +59.5 34.2	17 06.6 +59.5 33.2
28°	18 34.6 +59.4 36.8	18 27.3 +59.4 35.9	18 20.0 +59.5 34.9	18 13.0 +59.4 34.0	18 06.1 +59.5 33.1
29°	19 34.0 +59.4 36.6	19 26.7 +59.4 35.7	19 19.5 +59.4 34.8	19 12.4 +59.5 33.9	19 05.6 +59.5 33.0

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°	-9 48.4 +59.6	-9 55.5 +59.6	-9 02.9 +59.6	-9 09.7 +59.6	-9 16.3 +59.6
1°	-8 48.8 +59.6	-8 55.9 +59.5	-8 03.3 +59.6	-8 10.1 +59.7	-8 16.7 +59.7
2°	-7 49.2 +59.5	-7 56.4 +59.6	-7 03.7 +59.6	-7 10.4 +59.6	-7 17.0 +59.6
3°	-6 49.7 +59.6	-6 56.8 +59.6	-6 04.1 +59.6	-6 10.8 +59.6	-6 17.4 +59.7
4°	-5 50.1 +59.6	-5 57.2 +59.6			
5°	-4 50.5 +59.5	-4 57.6 +59.6	-5 04.5 +59.6	-5 11.2 +59.6	-5 17.7 +59.6
6°	-3 51.0 +59.6	-3 58.0 +59.6	-4 04.9 +59.6	-4 11.6 +59.7	-4 18.1 +59.7
7°	-2 51.4 +59.6	-2 58.4 +59.6	-3 05.3 +59.7	-3 11.9 +59.6	-3 18.4 +59.7
8°	-1 51.8 +59.5	-1 58.8 +59.6	-2 05.6 +59.6	-2 12.3 +59.6	-2 18.7 +59.6
9°	-0 52.3 +59.6	-0 59.2 +59.6	-1 06.0 +59.6	-1 12.7 +59.7	-1 19.1 +59.7
10°	0 07.3 +59.6 34.4	0 00.4 +59.6 33.4	-0 06.4 +59.6	-0 13.0 +59.6	-0 19.4 +59.6
11°	1 06.9 +59.6 34.3	1 00.0 +59.5 33.3	0 53.2 +59.6 32.3	0 46.6 +59.7 31.3	0 40.2 +59.7 30.4
12°	2 06.5 +59.5 34.2	1 59.5 +59.6 33.2	1 52.8 +59.6 32.2	1 46.3 +59.6 31.2	1 39.9 +59.6 30.3
13°	3 06.0 +59.6 34.0	2 59.1 +59.6 33.1	2 52.4 +59.6 32.1	2 45.9 +59.6 31.1	2 39.5 +59.7 30.2
14°	4 05.6 +59.6 33.9	3 58.7 +59.6 32.9	3 52.0 +59.6 32.0	3 45.5 +59.7 31.0	3 39.2 +59.6 30.1
15°	5 05.2 +59.5 33.8	4 58.3 +59.6 32.8	4 51.6 +59.7 31.9	4 45.2 +59.6 30.9	4 38.8 +59.7 29.9
16°	6 04.7 +59.6 33.7	5 57.9 +59.6 32.7	5 51.3 +59.6 31.8	5 44.8 +59.6 30.8	5 38.5 +59.6 29.8
17°	7 04.3 +59.6 33.6	6 57.5 +59.6 32.6	6 50.9 +59.6 31.6	6 44.4 +59.6 30.7	6 38.1 +59.7 29.7
18°	8 03.9 +59.5 33.4	7 57.1 +59.6 32.5	7 50.5 +59.6 31.5	7 44.0 +59.7 30.6	7 37.8 +59.6 29.6
19°	9 03.4 +59.6 33.3	8 56.7 +59.6 32.4	8 50.1 +59.6 31.4	8 43.7 +59.6 30.5	8 37.4 +59.7 29.5
20°	10 03.0 +59.6 33.2	9 56.3 +59.5 32.2	9 49.7 +59.6 31.3	9 43.3 +59.6 30.3	9 37.1 +59.6 29.4
21°	11 02.6 +59.5 33.1	10 55.8 +59.6 32.1	10 49.3 +59.6 31.2	10 42.9 +59.6 30.2	10 36.7 +59.7 29.3
22°	12 02.1 +59.6 32.9	11 55.4 +59.6 32.0	11 48.9 +59.6 31.1	11 42.5 +59.7 30.1	11 36.4 +59.6 29.2
23°	13 01.7 +59.5 32.8	12 55.0 +59.6 31.9	12 48.5 +59.6 30.9	12 42.2 +59.6 30.0	12 36.0 +59.6 29.1
24°	14 01.2 +59.5 32.7	13 54.6 +59.5 31.8	13 48.1 +59.6 30.8	13 41.8 +59.6 29.9	13 35.6 +59.7 29.0
25°	15 00.7 +59.6 32.6	14 54.1 +59.6 31.6	14 47.7 +59.5 30.7	14 41.4 +59.6 29.8	14 35.3 +59.6 28.8
26°	16 00.3 +59.5 32.4	15 53.7 +59.5 31.5	15 47.2 +59.6 30.6	15 41.0 +59.6 29.7	15 34.9 +59.6 28.7
27°	16 59.8 +59.5 32.3	16 53.2 +59.6 31.4	16 46.8 +59.6 30.5	16 40.6 +59.6 29.5	16 34.5 +59.7 28.6
28°	17 59.3 +59.6 32.2	17 52.8 +59.5 31.3	17 46.4 +59.6 30.3	17 40.2 +59.6 29.4	17 34.2 +59.6 28.5
29°	18 58.9 +59.5 32.0	18 52.3 +59.6 31.1	18 46.0 +59.5 30.2	18 39.8 +59.6 29.3	18 33.8 +59.6 28.4

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°	-9 22.7 +59.6	-9 28.9 +59.6	-9 35.0 +59.7	-9 40.8 +59.7	-9 46.5 +59.8
2°	-8 23.1 +59.7	-8 29.3 +59.7	-8 35.3 +59.7	-8 41.1 +59.7	-8 46.7 +59.7
3°	-7 23.4 +59.7	-7 29.6 +59.7	-7 35.6 +59.7	-7 41.4 +59.8	-7 47.0 +59.8
4°	-6 23.7 +59.7	-6 29.9 +59.7	-6 35.9 +59.8	-6 41.6 +59.7	-6 47.2 +59.7
5°	-5 24.0 +59.6	-5 30.2 +59.7	-5 36.1 +59.7	-5 41.9 +59.7	-5 47.5 +59.8
6°	-4 24.4 +59.7	-4 30.5 +59.7	-4 36.4 +59.7	-4 42.2 +59.7	-4 47.7 +59.7
7°	-3 24.7 +59.7	-3 30.8 +59.7	-3 36.7 +59.7	-3 42.5 +59.8	-3 48.0 +59.8
8°	-2 25.0 +59.7	-2 31.1 +59.7	-2 37.0 +59.7	-2 42.7 +59.7	-2 48.2 +59.7
9°	-1 25.3 +59.6	-1 31.4 +59.7	-1 37.3 +59.7	-1 43.0 +59.7	-1 48.5 +59.8
10°	-0 25.7 +59.7	-0 31.7 +59.7	-0 37.6 +59.7	-0 43.3 +59.8	-0 48.7 +59.7
11°	0 34.0 +59.7 29.4	0 28.0 +59.7 28.4	0 22.1 +59.7 27.4	0 16.5 +59.7 26.5	0 11.0 +59.8 25.5
12°	1 33.7 +59.7 29.3	1 27.7 +59.7 28.3	1 21.8 +59.8 27.3	1 16.2 +59.7 26.4	1 10.8 +59.7 25.4
13°	2 33.4 +59.6 29.2	2 27.4 +59.7 28.2	2 21.6 +59.7 27.2	2 15.9 +59.8 26.3	2 10.5 +59.8 25.3
14°	3 33.0 +59.7 29.1	3 27.1 +59.6 28.1	3 21.3 +59.7 27.1	3 15.7 +59.7 26.2	3 10.3 +59.7 25.2
15°	4 32.7 +59.7 29.0	4 26.7 +59.7 28.0	4 21.0 +59.7 27.1	4 15.4 +59.7 26.1	4 10.0 +59.8 25.1
16°	5 32.4 +59.6 28.9	5 26.4 +59.7 27.9	5 20.7 +59.7 27.0	5 15.1 +59.8 26.0	5 09.8 +59.7 25.0
17°	6 32.0 +59.7 28.8	6 26.1 +59.7 27.8	6 20.4 +59.7 26.9	6 14.9 +59.7 25.9	6 09.5 +59.8 24.9
18°	7 31.7 +59.7 28.7	7 25.8 +59.7 27.7	7 20.1 +59.7 26.8	7 14.6 +59.7 25.8	7 09.3 +59.7 24.8
19°	8 31.4 +59.6 28.6	8 25.5 +59.7 27.6	8 19.8 +59.7 26.7	8 14.3 +59.7 25.7	8 09.0 +59.7 24.8
20°	9 31.0 +59.7 28.5	9 25.2 +59.7 27.5	9 19.5 +59.7 26.6	9 14.0 +59.8 25.6	9 08.7 +59.8 24.7
21°	10 30.7 +59.7 28.3	10 24.9 +59.7 27.4	10 19.2 +59.7 26.5	10 13.8 +59.7 25.5	10 08.5 +59.7 24.6
22°	11 30.4 +59.6 28.2	11 24.6 +59.6 27.3	11 18.9 +59.7 26.4	11 13.5 +59.7 25.4	11 08.2 +59.8 24.5
23°	12 30.0 +59.7 28.1	12 24.2 +59.7 27.2	12 18.6 +59.7 26.3	12 13.2 +59.7 25.3	12 08.0 +59.7 24.4
24°	13 29.7 +59.6 28.0	13 23.9 +59.7 27.1	13 18.3 +59.7 26.1	13 12.9 +59.7 25.2	13 07.7 +59.7 24.3
25°	14 29.3 +59.7 27.9	14 23.6 +59.7 27.0	14 18.0 +59.7 26.0	14 12.6 +59.8 25.1	14 07.4 +59.8 24.2
26°	15 29.0 +59.6 27.8	15 23.3 +59.6 26.9	15 17.7 +59.7 25.9	15 12.4 +59.7 25.0	15 07.2 +59.7 24.1
27°	16 28.6 +59.7 27.7	16 22.9 +59.7 26.8	16 17.4 +59.7 25.8	16 12.1 +59.7 24.9	16 06.9 +59.7 24.0
28°	17 28.3 +59.6 27.6	17 22.6 +59.7 26.6	17 17.1 +59.7 25.7	17 11.8 +59.7 24.8	17 06.6 +59.8 23.9
29°	18 27.9 +59.7 27.5	18 22.3 +59.6 26.5	18 16.8 +59.7 25.6	18 11.5 +59.7 24.7	18 06.4 +59.7 23.8

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°	-9 51.9 +59.7	-9 57.2 +59.8			
2°	-8 52.2 +59.8	-8 57.4 +59.8	-9 02.4 +59.8	-9 07.3 +59.9	-9 11.9 +59.8
3°	-7 52.4 +59.8	-7 57.6 +59.8	-8 02.6 +59.8	-8 07.4 +59.8	-8 12.1 +59.9
4°	-6 52.6 +59.7	-6 57.8 +59.8	-7 02.8 +59.8	-7 07.6 +59.8	-7 12.2 +59.8
5°	-5 52.9 +59.8	-5 58.0 +59.7	-6 03.0 +59.8	-6 07.8 +59.8	-6 12.4 +59.8
6°	-4 53.1 +59.8	-4 58.3 +59.8	-5 03.2 +59.8	-5 08.0 +59.8	-5 12.6 +59.9
7°	-3 53.3 +59.7	-3 58.5 +59.8	-4 03.4 +59.8	-4 08.2 +59.8	-4 12.7 +59.8
8°	-2 53.6 +59.8	-2 58.7 +59.8	-3 03.6 +59.8	-3 08.4 +59.9	-3 12.9 +59.8
9°	-1 53.8 +59.8	-1 58.9 +59.8	-2 03.8 +59.8	-2 08.5 +59.8	-2 13.1 +59.9
10°	-0 54.0 +59.7	-0 59.1 +59.8	-1 04.0 +59.8	-1 08.7 +59.8	-1 13.2 +59.8
11°	0 05.7 +59.8 24.5	0 00.7 +59.7 23.5	-0 04.2 +59.8	-0 08.9 +59.8	-0 13.4 +59.8
12°	1 05.5 +59.8 24.4	1 00.4 +59.8 23.4	0 55.6 +59.8 22.5	0 50.9 +59.8 21.5	0 46.4 +59.9 20.5
13°	2 05.3 +59.7 24.3	2 00.2 +59.8 23.4	1 55.4 +59.8 22.4	1 50.7 +59.8 21.4	1 46.3 +59.8 20.4
14°	3 05.0 +59.8 24.2	3 00.0 +59.8 23.3	2 55.2 +59.8 22.3	2 50.5 +59.9 21.3	2 46.1 +59.8 20.4
15°	4 04.8 +59.8 24.2	3 59.8 +59.8 23.2	3 55.0 +59.8 22.2	3 50.4 +59.8 21.3	3 45.9 +59.9 20.3
16°	5 04.6 +59.7 24.1	4 59.6 +59.8 23.1	4 54.8 +59.8 22.1	4 50.2 +59.8 21.2	4 45.8 +59.8 20.2
17°	6 04.3 +59.8 24.0	5 59.4 +59.7 23.0	5 54.6 +59.8 22.1	5 50.0 +59.8 21.1	5 45.6 +59.8 20.1
18°	7 04.1 +59.8 23.9	6 59.1 +59.8 22.9	6 54.4 +59.8 22.0	6 49.8 +59.8 21.0	6 45.4 +59.9 20.1
19°	8 03.9 +59.7 23.8	7 58.9 +59.8 22.9	7 54.2 +59.8 21.9	7 49.6 +59.8 20.9	7 45.3 +59.8 20.0
20°	9 03.6 +59.8 23.7	8 58.7 +59.8 22.8	8 54.0 +59.8 21.8	8 49.4 +59.9 20.9	8 45.1 +59.8 19.9
21°	10 03.4 +59.8 23.6	9 58.5 +59.8 22.7	9 53.8 +59.8 21.7	9 49.3 +59.8 20.8	9 44.9 +59.8 19.8
22°	11 03.2 +59.7 23.5	10 58.3 +59.7 22.6	10 53.6 +59.8 21.6	10 49.1 +59.8 20.7	10 44.7 +59.9 19.8
23°	12 02.9 +59.8 23.4	11 58.0 +59.8 22.5	11 53.4 +59.8 21.6	11 48.9 +59.8 20.6	11 44.6 +59.8 19.7
24°	13 02.7 +59.7 23.3	12 57.8 +59.8 22.4	12 53.2 +59.7 21.5	12 48.7 +59.8 20.5	12 44.4 +59.8 19.6
25°	14 02.4 +59.8 23.3	13 57.6 +59.8 22.3	13 52.9 +59.8 21.4	13 48.5 +59.8 20.5	13 44.2 +59.8 19.5
26°	15 02.2 +59.7 23.2	14 57.4 +59.7 22.2	14 52.7 +59.8 21.3	14 48.3 +59.8 20.4	14 44.0 +59.9 19.5
27°	16 01.9 +59.8 23.1	15 57.1 +59.8 22.1	15 52.5 +59.8 21.2	15 48.1 +59.8 20.3	15 43.9 +59.8 19.4
28°	17 01.7 +59.7 23.0	16 56.9 +59.8 22.1	16 52.3 +59.8 21.1	16 47.9 +59.8 20.2	16 43.7 +59.8 19.3
29°	18 01.4 +59.8 22.9	17 56.7 +59.7 22.0	17 52.1 +59.8 21.0	17 47.7 +59.8 20.1	17 43.5 +59.8 19.2

Declination SAME name as Latitude

Latitude 78°

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°	-9 16.3 +59.8	-9 20.5 +59.8	-9 24.5 +59.8	-9 28.3 +59.9	-9 31.9 +59.9
3°	-8 16.5 +59.9	-8 20.7 +59.9	-8 24.7 +59.9	-8 28.4 +59.8	-8 32.0 +59.9
4°	-7 16.6 +59.8	-7 20.8 +59.9	-7 24.8 +59.9	-7 28.6 +59.9	-7 32.1 +59.9
5°	-6 16.8 +59.9	-6 20.9 +59.8	-6 24.9 +59.9	-6 28.7 +59.9	-6 32.2 +59.9
6°	-5 16.9 +59.8	-5 21.1 +59.9	-5 25.0 +59.8	-5 28.8 +59.9	-5 32.3 +59.9
7°	-4 17.1 +59.9	-4 21.2 +59.8	-4 25.2 +59.9	-4 28.9 +59.9	-4 32.4 +59.9
8°	-3 17.2 +59.8	-3 21.4 +59.9	-3 25.3 +59.9	-3 29.0 +59.9	-3 32.5 +59.9
9°	-2 17.4 +59.9	-2 21.5 +59.9	-2 25.4 +59.9	-2 29.1 +59.9	-2 32.6 +59.9
10°	-1 17.5 +59.8	-1 21.6 +59.8	-1 25.5 +59.8	-1 29.2 +59.9	-1 32.7 +59.9
11°	-0 17.7 +59.9	-0 21.8 +59.9	-0 25.7 +59.9	-0 29.3 +59.8	-0 32.8 +59.9
12°	0 42.2 +59.8 19.5	0 38.1 +59.9 18.6	0 34.2 +59.9 17.6	0 30.5 +59.9 16.6	0 27.1 +59.9 15.6
13°	1 42.0 +59.9 19.5	1 38.0 +59.8 18.5	1 34.1 +59.9 17.5	1 30.4 +59.9 16.6	1 27.0 +59.9 15.6
14°	2 41.9 +59.8 19.4	2 37.8 +59.9 18.4	2 34.0 +59.8 17.5	2 30.3 +59.9 16.5	2 26.9 +59.9 15.5
15°	3 41.7 +59.9 19.3	3 37.7 +59.8 18.4	3 33.8 +59.9 17.4	3 30.2 +59.9 16.4	3 26.8 +59.9 15.5
16°	4 41.6 +59.8 19.3	4 37.5 +59.9 18.3	4 33.7 +59.9 17.3	4 30.1 +59.9 16.4	4 26.7 +59.9 15.4
17°	5 41.4 +59.8 19.2	5 37.4 +59.9 18.2	5 33.6 +59.9 17.3	5 30.0 +59.9 16.3	5 26.6 +59.9 15.4
18°	6 41.2 +59.9 19.1	6 37.3 +59.8 18.2	6 33.5 +59.8 17.2	6 29.9 +59.9 16.3	6 26.5 +59.9 15.3
19°	7 41.1 +59.8 19.0	7 37.1 +59.9 18.1	7 33.3 +59.9 17.1	7 29.8 +59.9 16.2	7 26.4 +59.9 15.2
20°	8 40.9 +59.9 19.0	8 37.0 +59.8 18.0	8 33.2 +59.9 17.1	8 29.7 +59.8 16.1	8 26.3 +59.9 15.2
21°	9 40.8 +59.8 18.9	9 36.8 +59.9 18.0	9 33.1 +59.9 17.0	9 29.5 +59.9 16.1	9 26.2 +59.9 15.1
22°	10 40.6 +59.9 18.8	10 36.7 +59.9 17.9	10 33.0 +59.8 16.9	10 29.4 +59.9 16.0	10 26.1 +59.9 15.1
23°	11 40.5 +59.8 18.8	11 36.6 +59.8 17.8	11 32.8 +59.9 16.9	11 29.3 +59.9 15.9	11 26.0 +59.9 15.0
24°	12 40.3 +59.8 18.7	12 36.4 +59.9 17.7	12 32.7 +59.9 16.8	12 29.2 +59.9 15.9	12 25.9 +59.9 14.9
25°	13 40.1 +59.9 18.6	13 36.3 +59.8 17.7	13 32.6 +59.8 16.7	13 29.1 +59.9 15.8	13 25.8 +59.9 14.9
26°	14 40.0 +59.8 18.5	14 36.1 +59.9 17.6	14 32.4 +59.9 16.7	14 29.0 +59.8 15.7	14 25.7 +59.9 14.8
27°	15 39.8 +59.9 18.5	15 36.0 +59.8 17.5	15 32.3 +59.9 16.6	15 28.8 +59.9 15.7	15 25.6 +59.9 14.8
28°	16 39.7 +59.8 18.4	16 35.8 +59.9 17.5	16 32.2 +59.8 16.5	16 28.7 +59.9 15.6	16 25.5 +59.9 14.7
29°	17 39.5 +59.8 18.3	17 35.7 +59.8 17.4	17 32.0 +59.9 16.5	17 28.6 +59.9 15.6	17 25.4 +59.8 14.6

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°	-9 35.3 +59.9	-9 38.5 +60.0	-9 41.4 +59.9	-9 44.2 +60.0	-9 46.7 +60.0
3°	-8 35.4 +59.9	-8 38.5 +59.9	-8 41.5 +59.9	-8 44.2 +59.9	-8 46.7 +59.9
4°	-7 35.5 +59.9	-7 38.6 +59.9	-7 41.6 +60.0	-7 44.3 +60.0	-7 46.8 +60.0
5°	-6 35.6 +59.9	-6 38.7 +59.9	-6 41.6 +59.9	-6 44.3 +59.9	-6 46.8 +59.9
6°	-5 35.7 +60.0	-5 38.8 +59.9	-5 41.7 +59.9	-5 44.4 +60.0	-5 46.9 +60.0
7°	-4 35.7 +59.9	-4 38.9 +60.0	-4 41.8 +60.0	-4 44.4 +59.9	-4 46.9 +59.9
8°	-3 35.8 +59.9	-3 38.9 +59.9	-3 41.8 +59.9	-3 44.5 +59.9	-3 47.0 +60.0
9°	-2 35.9 +59.9	-2 39.0 +59.9	-2 41.9 +60.0	-2 44.6 +60.0	-2 47.0 +59.9
10°	-1 36.0 +59.9	-1 39.1 +59.9	-1 41.9 +59.9	-1 44.6 +59.9	-1 47.1 +60.0
11°	-0 36.1 +59.9	-0 39.2 +60.0	-0 42.0 +59.9	-0 44.7 +60.0	-0 47.1 +59.9
12°	0 23.8 +59.9 14.7	0 20.8 +59.9 13.7	0 17.9 +60.0 12.7	0 15.3 +59.9 11.7	0 12.8 +60.0 10.8
13°	1 23.7 +59.9 14.6	1 20.7 +59.9 13.6	1 17.9 +59.9 12.7	1 15.2 +60.0 11.7	1 12.8 +60.0 10.7
14°	2 23.6 +60.0 14.6	2 20.6 +59.9 13.6	2 17.8 +59.9 12.6	2 15.2 +59.9 11.6	2 12.8 +59.9 10.7
15°	3 23.6 +59.9 14.5	3 20.5 +60.0 13.5	3 17.7 +60.0 12.6	3 15.1 +60.0 11.6	3 12.7 +60.0 10.6
16°	4 23.5 +59.9 14.4	4 20.5 +59.9 13.5	4 17.7 +59.9 12.5	4 15.1 +59.9 11.6	4 12.7 +59.9 10.6
17°	5 23.4 +59.9 14.4	5 20.4 +59.9 13.4	5 17.6 +59.9 12.5	5 15.0 +59.9 11.5	5 12.6 +60.0 10.6
18°	6 23.3 +59.9 14.3	6 20.3 +59.9 13.4	6 17.5 +60.0 12.4	6 14.9 +60.0 11.5	6 12.6 +59.9 10.5
19°	7 23.2 +59.9 14.3	7 20.2 +60.0 13.3	7 17.5 +59.9 12.4	7 14.9 +59.9 11.4	7 12.5 +60.0 10.5
20°	8 23.1 +59.9 14.2	8 20.2 +59.9 13.3	8 17.4 +59.9 12.3	8 14.8 +60.0 11.4	8 12.5 +59.9 10.4
21°	9 23.0 +59.9 14.2	9 20.1 +59.9 13.2	9 17.3 +60.0 12.3	9 14.8 +59.9 11.3	9 12.4 +60.0 10.4
22°	10 22.9 +60.0 14.1	10 20.0 +59.9 13.2	10 17.3 +59.9 12.2	10 14.7 +60.0 11.3	10 12.4 +59.9 10.4
23°	11 22.9 +59.9 14.1	11 19.9 +59.9 13.1	11 17.2 +59.9 12.2	11 14.7 +59.9 11.3	11 12.3 +60.0 10.3
24°	12 22.8 +59.9 14.0	12 19.8 +60.0 13.1	12 17.1 +59.9 12.1	12 14.6 +59.9 11.2	12 12.3 +59.9 10.3
25°	13 22.7 +59.9 14.0	13 19.8 +59.9 13.0	13 17.0 +60.0 12.1	13 14.5 +60.0 11.2	13 12.2 +60.0 10.2
26°	14 22.6 +59.9 13.9	14 19.7 +59.9 13.0	14 17.0 +59.9 12.0	14 14.5 +59.9 11.1	14 12.2 +59.9 10.2
27°	15 22.5 +59.9 13.8	15 19.6 +59.9 12.9	15 16.9 +59.9 12.0	15 14.4 +60.0 11.1	15 12.1 +60.0 10.1
28°	16 22.4 +59.9 13.8	16 19.5 +59.9 12.9	16 16.8 +60.0 11.9	16 14.4 +59.9 11.0	16 12.1 +59.9 10.1
29°	17 22.3 +59.9 13.7	17 19.4 +60.0 12.8	17 16.8 +59.9 11.9	17 14.3 +59.9 11.0	17 12.0 +60.0 10.1

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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°	-9	49.0 +60.0	-9	51.1 +60.0	-9	52.9 +59.9	-9	54.6 +60.0	-9	56.0 +60.0
3°	-8	49.0 +59.9	-8	51.1 +60.0	-8	53.0 +60.0	-8	54.6 +60.0	-8	56.0 +59.9
4°	-7	49.1 +60.0	-7	51.1 +59.9	-7	53.0 +60.0	-7	54.6 +59.9	-7	56.1 +60.0
5°	-6	49.1 +60.0	-6	51.2 +60.0	-6	53.0 +60.0	-6	54.7 +60.0	-6	56.1 +60.0
6°	-5	49.1 +59.9	-5	51.2 +60.0	-5	53.0 +59.9	-5	54.7 +60.0	-5	56.1 +60.0
7°	-4	49.2 +60.0	-4	51.2 +59.9	-4	53.1 +60.0	-4	54.7 +60.0	-4	56.1 +60.0
8°	-3	49.2 +59.9	-3	51.3 +60.0	-3	53.1 +60.0	-3	54.7 +60.0	-3	56.1 +60.0
9°	-2	49.3 +60.0	-2	51.3 +60.0	-2	53.1 +60.0	-2	54.7 +59.9	-2	56.1 +60.0
10°	-1	49.3 +60.0	-1	51.3 +59.9	-1	53.1 +59.9	-1	54.8 +60.0	-1	56.1 +59.9
11°	-0	49.3 +59.9	-0	51.4 +60.0	-0	53.2 +60.0	-0	54.8 +60.0	-0	56.2 +60.0
12°	0	10.6 +60.0	0	08.6 +60.0	0	06.8 +60.0	0	05.2 +60.0	0	03.8 +60.0
13°	1	10.6 +59.9	1	08.6 +59.9	1	06.8 +60.0	1	05.2 +60.0	1	03.8 +60.0
14°	2	10.5 +60.0	2	08.5 +60.0	2	06.8 +59.9	2	05.2 +60.0	2	03.8 +60.0
15°	3	10.5 +60.0	3	08.5 +60.0	3	06.7 +60.0	3	05.2 +59.9	3	03.8 +60.0
16°	4	10.5 +59.9	4	08.5 +59.9	4	06.7 +60.0	4	05.1 +60.0	4	03.8 +60.0
17°	5	10.4 +60.0	5	08.4 +60.0	5	06.7 +60.0	5	05.1 +60.0	5	03.8 +59.9
18°	6	10.4 +59.9	6	08.4 +60.0	6	06.7 +59.9	6	05.1 +60.0	6	03.7 +60.0
19°	7	10.3 +60.0	7	08.4 +60.0	7	06.6 +60.0	7	05.1 +60.0	7	03.7 +60.0
20°	8	10.3 +60.0	8	08.4 +59.9	8	06.6 +60.0	8	05.1 +59.9	8	03.7 +60.0
21°	9	10.3 +59.9	9	08.3 +60.0	9	06.6 +59.9	9	05.0 +60.0	9	03.7 +60.0
22°	10	10.2 +60.0	10	08.3 +60.0	10	06.5 +60.0	10	05.0 +60.0	10	03.7 +60.0
23°	11	10.2 +59.9	11	08.3 +59.9	11	06.5 +60.0	11	05.0 +60.0	11	03.7 +60.0
24°	12	10.1 +60.0	12	08.2 +60.0	12	06.5 +60.0	12	05.0 +60.0	12	03.7 +59.9
25°	13	10.1 +60.0	13	08.2 +60.0	13	06.5 +59.9	13	05.0 +59.9	13	03.6 +60.0
26°	14	10.1 +59.9	14	08.2 +59.9	14	06.4 +60.0	14	04.9 +60.0	14	03.6 +60.0
27°	15	10.0 +60.0	15	08.1 +60.0	15	06.4 +60.0	15	04.9 +60.0	15	03.6 +60.0
28°	16	10.0 +59.9	16	08.1 +60.0	16	06.4 +60.0	16	04.9 +60.0	16	03.6 +60.0
29°	17	09.9 +60.0	17	08.1 +59.9	17	06.4 +59.9	17	04.9 +60.0	17	03.6 +60.0

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°	-9	57.2 +59.9	-9	58.2 +60.0	-9	59.0 +60.0	-9	59.6 +60.0	-9	59.9 +60.0
3°	-8	57.3 +60.0	-8	58.2 +60.0	-8	59.0 +60.0	-8	59.6 +60.0	-8	59.9 +60.0
4°	-7	57.3 +60.0	-7	58.2 +59.9	-7	59.0 +60.0	-7	59.6 +60.0	-7	59.9 +60.0
5°	-6	57.3 +60.0	-6	58.3 +60.0	-6	59.0 +60.0	-6	59.6 +60.0	-6	59.9 +60.0
6°	-5	57.3 +60.0	-5	58.3 +60.0	-5	59.0 +60.0	-5	59.6 +60.0	-5	59.9 +60.0
7°	-4	57.3 +60.0	-4	58.3 +60.0	-4	59.0 +60.0	-4	59.6 +60.0	-4	59.9 +60.0
8°	-3	57.3 +60.0	-3	58.3 +60.0	-3	59.0 +60.0	-3	59.6 +60.0	-3	59.9 +60.0
9°	-2	57.3 +60.0	-2	58.3 +60.0	-2	59.0 +60.0	-2	59.6 +60.0	-2	59.9 +60.0
10°	-1	57.3 +60.0	-1	58.3 +60.0	-1	59.0 +60.0	-1	59.6 +60.0	-1	59.9 +60.0
11°	-0	57.3 +60.0	-0	58.3 +60.0	-0	59.0 +60.0	-0	59.6 +60.0	-0	59.9 +60.0
12°	0	02.7 +60.0	0	01.7 +60.0	0	01.0 +60.0	0	00.4 +60.0	0	00.1 +60.0
13°	1	02.7 +59.9	1	01.7 +60.0	1	01.0 +60.0	1	00.4 +60.0	1	00.1 +60.0
14°	2	02.6 +60.0	2	01.7 +60.0	2	01.0 +59.9	2	00.4 +60.0	2	00.1 +60.0
15°	3	02.6 +60.0	3	01.7 +60.0	3	00.9 +60.0	3	00.4 +60.0	3	00.1 +60.0
16°	4	02.6 +60.0	4	01.7 +60.0	4	00.9 +60.0	4	00.4 +60.0	4	00.1 +60.0
17°	5	02.6 +60.0	5	01.7 +60.0	5	00.9 +60.0	5	00.4 +60.0	5	00.1 +60.0
18°	6	02.6 +60.0	6	01.7 +60.0	6	00.9 +60.0	6	00.4 +60.0	6	00.1 +60.0
19°	7	02.6 +60.0	7	01.7 +60.0	7	00.9 +60.0	7	00.4 +60.0	7	00.1 +60.0
20°	8	02.6 +60.0	8	01.7 +59.9	8	00.9 +60.0	8	00.4 +60.0	8	00.1 +60.0
21°	9	02.6 +60.0	9	01.6 +60.0	9	00.9 +60.0	9	00.4 +60.0	9	00.1 +60.0
22°	10	02.6 +60.0	10	01.6 +60.0	10	00.9 +60.0	10	00.4 +60.0	10	00.1 +60.0
23°	11	02.6 +59.9	11	01.6 +60.0	11	00.9 +60.0	11	00.4 +60.0	11	00.1 +60.0
24°	12	02.5 +60.0	12	01.6 +60.0	12	00.9 +60.0	12	00.4 +60.0	12	00.1 +60.0
25°	13	02.5 +60.0	13	01.6 +60.0	13	00.9 +60.0	13	00.4 +60.0	13	00.1 +60.0
26°	14	02.5 +60.0	14	01.6 +60.0	14	00.9 +60.0	14	00.4 +60.0	14	00.1 +60.0
27°	15	02.5 +60.0	15	01.6 +60.0	15	00.9 +60.0	15	00.4 +60.0	15	00.1 +60.0
28°	16	02.5 +60.0	16	01.6 +60.0	16	00.9 +60.0	16	00.4 +60.0	16	00.1 +60.0
29°	17	02.5 +60.0	17	01.6 +60.0	17	00.9 +60.0	17	00.4 +60.0	17	00.1 +60.0

Declination SAME name as Latitude

Latitude 79°

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°	11 00.0 +60.0 180.0	10 59.9 +60.0 179.0	10 59.6 +60.0 178.0	10 59.1 +60.0 176.9	10 58.4 +60.0 175.9
1°	12 00.0 +60.0 180.0	11 59.9 +60.0 179.0	11 59.6 +60.0 178.0	11 59.1 +60.0 176.9	11 58.4 +60.0 175.9
2°	13 00.0 +60.0 180.0	12 59.9 +60.0 179.0	12 59.6 +60.0 177.9	12 59.1 +60.0 176.9	12 58.4 +60.0 175.9
3°	14 00.0 +60.0 180.0	13 59.9 +60.0 179.0	13 59.6 +60.0 177.9	13 59.1 +60.0 176.9	13 58.4 +59.9 175.9
4°	15 00.0 +60.0 180.0	14 59.9 +60.0 179.0	14 59.6 +60.0 177.9	14 59.1 +60.0 176.9	14 58.3 +60.0 175.9
5°	16 00.0 +60.0 180.0	15 59.9 +60.0 179.0	15 59.6 +60.0 177.9	15 59.1 +60.0 176.9	15 58.3 +60.0 175.9
6°	17 00.0 +60.0 180.0	16 59.9 +60.0 179.0	16 59.6 +60.0 177.9	16 59.1 +60.0 176.9	16 58.3 +60.0 175.8
7°	18 00.0 +60.0 180.0	17 59.9 +60.0 179.0	17 59.6 +60.0 177.9	17 59.1 +60.0 176.9	17 58.3 +60.0 175.8
8°	19 00.0 +60.0 180.0	18 59.9 +60.0 179.0	18 59.6 +60.0 177.9	18 59.1 +60.0 176.9	18 58.3 +60.0 175.8
9°	20 00.0 +60.0 180.0	19 59.9 +60.0 178.9	19 59.6 +60.0 177.9	19 59.1 +60.0 176.8	19 58.3 +60.0 175.8
10°	21 00.0 +60.0 180.0	20 59.9 +60.0 178.9	20 59.6 +60.0 177.9	20 59.1 +59.9 176.8	20 58.3 +60.0 175.8
11°	22 00.0 +60.0 180.0	21 59.9 +60.0 178.9	21 59.6 +60.0 177.9	21 59.0 +60.0 176.8	21 58.3 +60.0 175.8
12°	23 00.0 +60.0 180.0	22 59.9 +60.0 178.9	22 59.6 +60.0 177.9	22 59.0 +60.0 176.8	22 58.3 +60.0 175.7
13°	24 00.0 +60.0 180.0	23 59.9 +60.0 178.9	23 59.6 +60.0 177.9	23 59.0 +60.0 176.8	23 58.3 +60.0 175.7
14°	25 00.0 +60.0 180.0	24 59.9 +60.0 178.9	24 59.6 +60.0 177.9	24 59.0 +60.0 176.8	24 58.3 +60.0 175.7
15°	26 00.0 +60.0 180.0	25 59.9 +60.0 178.9	25 59.6 +60.0 177.9	25 59.0 +60.0 176.8	25 58.3 +60.0 175.7
16°	27 00.0 +60.0 180.0	26 59.9 +60.0 178.9	26 59.6 +60.0 177.8	26 59.0 +60.0 176.8	26 58.3 +60.0 175.7
17°	28 00.0 +60.0 180.0	27 59.9 +60.0 178.9	27 59.6 +60.0 177.8	27 59.0 +60.0 176.8	27 58.3 +60.0 175.7
18°	29 00.0 +60.0 180.0	28 59.9 +60.0 178.9	28 59.6 +60.0 177.8	28 59.0 +60.0 176.7	28 58.3 +60.0 175.7
19°	30 00.0 +60.0 180.0	29 59.9 +60.0 178.9	29 59.6 +60.0 177.8	29 59.0 +60.0 176.7	29 58.3 +59.9 175.6
20°	31 00.0 +60.0 180.0	30 59.9 +60.0 178.9	30 59.6 +60.0 177.8	30 59.0 +60.0 176.7	30 58.2 +60.0 175.6
21°	32 00.0 +60.0 180.0	31 59.9 +60.0 178.9	31 59.6 +60.0 177.8	31 59.0 +60.0 176.7	31 58.2 +60.0 175.6
22°	33 00.0 +60.0 180.0	32 59.9 +60.0 178.9	32 59.6 +60.0 177.8	32 59.0 +60.0 176.7	32 58.2 +60.0 175.6
23°	34 00.0 +60.0 180.0	33 59.9 +60.0 178.9	33 59.6 +60.0 177.8	33 59.0 +60.0 176.7	33 58.2 +60.0 175.6
24°	35 00.0 +60.0 180.0	34 59.9 +60.0 178.9	34 59.6 +60.0 177.8	34 59.0 +60.0 176.7	34 58.2 +60.0 175.5
25°	36 00.0 +60.0 180.0	35 59.9 +60.0 178.9	35 59.6 +60.0 177.8	35 59.0 +60.0 176.6	35 58.2 +60.0 175.5
26°	37 00.0 +60.0 180.0	36 59.9 +60.0 178.9	36 59.6 +59.9 177.7	36 59.0 +60.0 176.6	36 58.2 +60.0 175.5
27°	38 00.0 +60.0 180.0	37 59.9 +60.0 178.9	37 59.5 +60.0 177.7	37 59.0 +60.0 176.6	37 58.2 +60.0 175.5
28°	39 00.0 +60.0 180.0	38 59.9 +60.0 178.9	38 59.5 +60.0 177.7	38 59.0 +60.0 176.6	38 58.2 +60.0 175.5
29°	40 00.0 +60.0 180.0	39 59.9 +60.0 178.9	39 59.5 +60.0 177.7	39 59.0 +60.0 176.6	39 58.2 +60.0 175.4

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	10 57.5 +59.9 174.9	10 56.3 +60.0 173.9	10 55.0 +60.0 172.9	10 53.5 +60.0 171.9	10 51.8 +59.9 170.8
1°	11 57.4 +60.0 174.9	11 56.3 +60.0 173.9	11 55.0 +60.0 172.8	11 53.5 +60.0 171.8	11 51.7 +60.0 170.8
2°	12 57.4 +60.0 174.9	12 56.3 +60.0 173.8	12 55.0 +60.0 172.8	12 53.5 +59.9 171.8	12 51.7 +60.0 170.8
3°	13 57.4 +60.0 174.9	13 56.3 +60.0 173.8	13 55.0 +60.0 172.8	13 53.4 +60.0 171.8	13 51.7 +60.0 170.7
4°	14 57.4 +60.0 174.8	14 56.3 +60.0 173.8	14 55.0 +59.9 172.8	14 53.4 +60.0 171.7	14 51.7 +59.9 170.7
5°	15 57.4 +60.0 174.8	15 56.3 +60.0 173.8	15 54.9 +60.0 172.7	15 53.4 +60.0 171.7	15 51.6 +60.0 170.7
6°	16 57.4 +60.0 174.8	16 56.3 +60.0 173.8	16 54.9 +60.0 172.7	16 53.4 +59.9 171.7	16 51.6 +60.0 170.6
7°	17 57.4 +60.0 174.8	17 56.3 +59.9 173.7	17 54.9 +60.0 172.7	17 53.3 +60.0 171.7	17 51.6 +59.9 170.6
8°	18 57.4 +60.0 174.8	18 56.2 +60.0 173.7	18 54.9 +60.0 172.7	18 53.3 +60.0 171.6	18 51.5 +60.0 170.6
9°	19 57.4 +60.0 174.7	19 56.2 +60.0 173.7	19 54.9 +59.9 172.6	19 53.3 +60.0 171.6	19 51.5 +60.0 170.5
10°	20 57.4 +60.0 174.7	20 56.2 +60.0 173.7	20 54.8 +60.0 172.6	20 53.3 +59.9 171.6	20 51.5 +60.0 170.5
11°	21 57.4 +59.9 174.7	21 56.2 +60.0 173.6	21 54.8 +60.0 172.6	21 53.2 +60.0 171.5	21 51.5 +59.9 170.5
12°	22 57.3 +60.0 174.7	22 56.2 +60.0 173.6	22 54.8 +60.0 172.6	22 53.2 +60.0 171.5	22 51.4 +60.0 170.4
13°	23 57.3 +60.0 174.7	23 56.2 +60.0 173.6	23 54.8 +60.0 172.5	23 53.2 +60.0 171.5	23 51.4 +60.0 170.4
14°	24 57.3 +60.0 174.6	24 56.2 +59.9 173.6	24 54.8 +59.9 172.5	24 53.2 +59.9 171.4	24 51.4 +59.9 170.4
15°	25 57.3 +60.0 174.6	25 56.1 +60.0 173.6	25 54.7 +60.0 172.5	25 53.1 +60.0 171.4	25 51.3 +60.0 170.3
16°	26 57.3 +60.0 174.6	26 56.1 +60.0 173.5	26 54.7 +60.0 172.5	26 53.1 +60.0 171.4	26 51.3 +60.0 170.3
17°	27 57.3 +60.0 174.6	27 56.1 +60.0 173.5	27 54.7 +60.0 172.4	27 53.1 +60.0 171.3	27 51.3 +59.9 170.3
18°	28 57.3 +60.0 174.6	28 56.1 +60.0 173.5	28 54.7 +60.0 172.4	28 53.1 +59.9 171.3	28 51.2 +60.0 170.2
19°	29 57.3 +60.0 174.5	29 56.1 +60.0 173.5	29 54.7 +59.9 172.4	29 53.0 +60.0 171.3	29 51.2 +60.0 170.2
20°	30 57.3 +60.0 174.5	30 56.1 +59.9 173.4	30 54.6 +60.0 172.3	30 53.0 +60.0 171.2	30 51.2 +59.9 170.1
21°	31 57.3 +59.9 174.5	31 56.0 +60.0 173.4	31 54.6 +60.0 172.3	31 53.0 +59.9 171.2	31 51.1 +60.0 170.1
22°	32 57.2 +60.0 174.5	32 56.0 +60.0 173.4	32 54.6 +60.0 172.3	32 52.9 +60.0 171.2	32 51.1 +59.9 170.1
23°	33 57.2 +60.0 174.4	33 56.0 +60.0 173.3	33 54.6 +60.0 172.2	33 52.9 +60.0 171.1	33 51.0 +60.0 170.0
24°	34 57.2 +60.0 174.4	34 56.0 +60.0 173.3	34 54.6 +59.9 172.2	34 52.9 +60.0 171.1	34 51.0 +60.0 170.0
25°	35 57.2 +60.0 174.4	35 56.0 +60.0 173.3	35 54.5 +60.0 172.2	35 52.9 +59.9 171.0	35 51.0 +59.9 169.9
26°	36 57.2 +60.0 174.4	36 56.0 +59.9 173.3	36 54.5 +60.0 172.1	36 52.8 +60.0 171.0	36 50.9 +60.0 169.9
27°	37 57.2 +60.0 174.3	37 55.9 +60.0 173.2	37 54.5 +59.9 172.1	37 52.8 +60.0 171.0	37 50.9 +59.9 169.8
28°	38 57.2 +60.0 174.3	38 55.9 +60.0 173.2	38 54.4 +60.0 172.1	38 52.8 +59.9 170.9	38 50.8 +60.0 169.8
29°	39 57.2 +59.9 174.3	39 55.9 +60.0 173.2	39 54.4 +60.0 172.0	39 52.7 +60.0 170.9	39 50.8 +59.9 169.7

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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°	10 49.9 +59.9 169.8	10 47.7 +60.0 168.8	10 45.4 +60.0 167.8	10 42.9 +59.9 166.8	10 40.2 +59.9 165.7
1°	11 49.8 +60.0 169.8	11 47.7 +59.9 168.8	11 45.4 +59.9 167.7	11 42.8 +60.0 166.7	11 40.1 +59.9 165.7
2°	12 49.8 +59.9 169.7	12 47.6 +60.0 168.7	12 45.3 +60.0 167.7	12 42.8 +59.9 166.7	12 40.0 +60.0 165.7
3°	13 49.7 +60.0 169.7	13 47.6 +59.9 168.7	13 45.3 +59.9 167.7	13 42.7 +59.9 166.6	13 40.0 +59.9 165.6
4°	14 49.7 +60.0 169.7	14 47.6 +59.9 168.6	14 45.2 +60.0 167.6	14 42.6 +60.0 166.6	14 39.9 +59.9 165.6
5°	15 49.7 +59.9 169.6	15 47.5 +60.0 168.6	15 45.2 +59.9 167.6	15 42.6 +59.9 166.5	15 39.8 +60.0 165.5
6°	16 49.6 +60.0 169.6	16 47.5 +59.9 168.6	16 45.1 +60.0 167.5	16 42.5 +60.0 166.5	16 39.8 +59.9 165.5
7°	17 49.6 +60.0 169.6	17 47.4 +60.0 168.5	17 45.1 +59.9 167.5	17 42.5 +59.9 166.4	17 39.7 +59.9 165.4
8°	18 49.6 +59.9 169.5	18 47.4 +59.9 168.5	18 45.0 +59.9 167.4	18 42.4 +59.9 166.4	18 39.6 +59.9 165.4
9°	19 49.5 +60.0 169.5	19 47.3 +60.0 168.4	19 44.9 +60.0 167.4	19 42.3 +60.0 166.3	19 39.5 +60.0 165.3
10°	20 49.5 +60.0 169.5	20 47.3 +60.0 168.4	20 44.9 +59.9 167.4	20 42.3 +59.9 166.3	20 39.5 +59.9 165.2
11°	21 49.5 +59.9 169.4	21 47.3 +59.9 168.4	21 44.8 +60.0 167.3	21 42.2 +60.0 166.3	21 39.4 +59.9 165.2
12°	22 49.4 +60.0 169.4	22 47.2 +60.0 168.3	22 44.8 +59.9 167.3	22 42.2 +59.9 166.2	22 39.3 +59.9 165.1
13°	23 49.4 +59.9 169.3	23 47.2 +59.9 168.3	23 44.7 +60.0 167.2	23 42.1 +59.9 166.2	23 39.2 +60.0 165.1
14°	24 49.3 +60.0 169.3	24 47.1 +60.0 168.2	24 44.7 +59.9 167.2	24 42.0 +60.0 166.1	24 39.2 +59.9 165.0
15°	25 49.3 +60.0 169.3	25 47.1 +59.9 168.2	25 44.6 +60.0 167.1	25 42.0 +59.9 166.0	25 39.1 +59.9 165.0
16°	26 49.3 +59.9 169.2	26 47.0 +60.0 168.1	26 44.6 +59.9 167.1	26 41.9 +59.9 166.0	26 39.0 +59.9 164.9
17°	27 49.2 +60.0 169.2	27 47.0 +59.9 168.1	27 44.5 +59.9 167.0	27 41.8 +59.9 165.9	27 38.9 +59.9 164.9
18°	28 49.2 +59.9 169.1	28 46.9 +60.0 168.1	28 44.4 +60.0 167.0	28 41.7 +60.0 165.9	28 38.8 +60.0 164.8
19°	29 49.1 +60.0 169.1	29 46.9 +59.9 168.0	29 44.4 +59.9 166.9	29 41.7 +59.9 165.8	29 38.8 +59.9 164.7
20°	30 49.1 +59.9 169.0	30 46.8 +59.9 168.0	30 44.3 +59.9 166.9	30 41.6 +59.9 165.8	30 38.7 +59.9 164.7
21°	31 49.0 +60.0 169.0	31 46.7 +60.0 167.9	31 44.2 +60.0 166.8	31 41.5 +59.9 165.7	31 38.6 +59.9 164.6
22°	32 49.0 +59.9 169.0	32 46.7 +59.9 167.9	32 44.2 +59.9 166.8	32 41.4 +60.0 165.7	32 38.5 +59.9 164.6
23°	33 48.9 +60.0 168.9	33 46.6 +60.0 167.8	33 44.1 +59.9 166.7	33 41.4 +59.9 165.6	33 38.4 +59.9 164.5
24°	34 48.9 +59.9 168.9	34 46.6 +59.9 167.7	34 44.0 +60.0 166.6	34 41.3 +59.9 165.5	34 38.3 +59.9 164.4
25°	35 48.8 +60.0 168.8	35 46.5 +60.0 167.7	35 44.0 +59.9 166.6	35 41.2 +59.9 165.5	35 38.2 +59.9 164.3
26°	36 48.8 +59.9 168.8	36 46.5 +59.9 167.6	36 43.9 +59.9 166.5	36 41.1 +59.9 165.4	36 38.1 +59.9 164.3
27°	37 48.7 +60.0 168.7	37 46.4 +59.9 167.6	37 43.8 +59.9 166.5	37 41.0 +59.9 165.3	37 38.0 +59.9 164.2
28°	38 48.7 +59.9 168.7	38 46.3 +60.0 167.5	38 43.7 +60.0 166.4	38 40.9 +59.9 165.3	38 37.9 +59.9 164.1
29°	39 48.6 +60.0 168.6	39 46.3 +59.9 167.5	39 43.7 +59.9 166.3	39 40.8 +60.0 165.2	39 37.8 +59.9 164.1

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°	10 37.2 +60.0 164.7	10 34.1 +59.9 163.7	10 30.8 +59.9 162.7	10 27.3 +59.9 161.7	10 23.6 +59.9 160.7
1°	11 37.2 +59.9 164.7	11 34.0 +60.0 163.7	11 30.7 +59.9 162.6	11 27.2 +59.9 161.6	11 23.5 +59.9 160.6
2°	12 37.1 +59.9 164.6	12 34.0 +59.9 163.6	12 30.6 +59.9 162.6	12 27.1 +59.9 161.6	12 23.4 +59.9 160.5
3°	13 37.0 +59.9 164.6	13 33.9 +59.9 163.6	13 30.5 +59.9 162.5	13 27.0 +59.9 161.5	13 23.3 +59.8 160.5
4°	14 36.9 +60.0 164.5	14 33.8 +59.9 163.5	14 30.4 +59.9 162.5	14 26.9 +59.9 161.4	14 23.1 +59.9 160.4
5°	15 36.9 +59.9 164.5	15 33.7 +59.9 163.4	15 30.3 +59.9 162.4	15 26.8 +59.9 161.4	15 23.0 +59.9 160.3
6°	16 36.8 +59.9 164.4	16 33.6 +59.9 163.4	16 30.2 +59.9 162.3	16 26.7 +59.8 161.3	16 22.9 +59.9 160.3
7°	17 36.7 +59.9 164.4	17 33.5 +59.9 163.3	17 30.1 +59.9 162.3	17 26.5 +59.9 161.2	17 22.8 +59.8 160.2
8°	18 36.6 +59.9 164.3	18 33.4 +59.9 163.3	18 30.0 +59.9 162.2	18 26.4 +59.9 161.2	18 22.6 +59.9 160.1
9°	19 36.5 +60.0 164.3	19 33.3 +59.9 163.2	19 29.9 +59.9 162.2	19 26.3 +59.9 161.1	19 22.5 +59.9 160.1
10°	20 36.5 +59.9 164.2	20 33.2 +59.9 163.1	20 29.8 +59.9 162.1	20 26.2 +59.9 161.0	20 22.4 +59.8 160.0
11°	21 36.4 +59.9 164.1	21 33.1 +59.9 163.1	21 29.7 +59.9 162.0	21 26.1 +59.9 161.0	21 22.2 +59.9 159.9
12°	22 36.3 +59.9 164.1	22 33.0 +59.9 163.0	22 29.6 +59.9 162.0	22 26.0 +59.8 160.9	22 22.1 +59.9 159.9
13°	23 36.2 +59.9 164.0	23 32.9 +59.9 163.0	23 29.5 +59.9 161.9	23 25.8 +59.9 160.8	23 22.0 +59.8 159.8
14°	24 36.1 +59.9 164.0	24 32.8 +59.9 162.9	24 29.4 +59.9 161.8	24 25.7 +59.9 160.8	24 21.8 +59.9 159.7
15°	25 36.0 +59.9 163.9	25 32.7 +59.9 162.8	25 29.3 +59.8 161.8	25 25.6 +59.9 160.7	25 21.7 +59.9 159.6
16°	26 35.9 +59.9 163.8	26 32.6 +59.9 162.8	26 29.1 +59.9 161.7	26 25.5 +59.8 160.6	26 21.6 +59.8 159.6
17°	27 35.8 +59.9 163.8	27 32.5 +59.9 162.7	27 29.0 +59.9 161.6	27 25.3 +59.9 160.6	27 21.4 +59.9 159.5
18°	28 35.7 +59.9 163.7	28 32.4 +59.9 162.6	28 28.9 +59.9 161.6	28 25.2 +59.9 160.5	28 21.3 +59.8 159.4
19°	29 35.6 +59.9 163.7	29 32.3 +59.9 162.6	29 28.8 +59.9 161.5	29 25.1 +59.8 160.4	29 21.1 +59.9 159.3
20°	30 35.5 +59.9 163.6	30 32.2 +59.9 162.5	30 28.7 +59.8 161.4	30 24.9 +59.9 160.3	30 21.0 +59.8 159.2
21°	31 35.4 +59.9 163.5	31 32.1 +59.9 162.4	31 28.5 +59.9 161.3	31 24.8 +59.8 160.2	31 20.8 +59.8 159.2
22°	32 35.3 +59.9 163.5	32 32.0 +59.9 162.4	32 28.4 +59.9 161.3	32 24.6 +59.9 160.2	32 20.6 +59.9 159.1
23°	33 35.2 +59.9 163.4	33 31.9 +59.8 162.3	33 28.3 +59.8 161.2	33 24.5 +59.8 160.1	33 20.5 +59.8 159.0
24°	34 35.1 +59.9 163.3	34 31.7 +59.9 162.2	34 28.1 +59.9 161.1	34 24.3 +59.9 160.0	34 20.3 +59.8 158.9
25°	35 35.0 +59.9 163.2	35 31.6 +59.9 162.1	35 28.0 +59.9 161.0	35 24.2 +59.8 159.9	35 20.1 +59.9 158.8
26°	36 34.9 +59.9 163.2	36 31.5 +59.9 162.0	36 27.9 +59.8 160.9	36 24.0 +59.8 159.8	36 20.0 +59.8 158.7
27°	37 34.8 +59.9 163.1	37 31.4 +59.8 162.0	37 27.7 +59.9 160.8	37 23.8 +59.9 159.7	37 19.8 +59.8 158.6
28°	38 34.7 +59.9 163.0	38 31.2 +59.9 161.9	38 27.6 +59.8 160.8	38 23.7 +59.8 159.6	38 19.6 +59.8 158.5
29°	39 34.6 +59.8 162.9	39 31.1 +59.8 161.8	39 27.4 +59.8 160.7	39 23.5 +59.8 159.5	39 19.4 +59.8 158.4

Declination SAME name as Latitude

Latitude 79°

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°	10 19.7 +59.9 159.7	10 15.7 +59.8 158.6	10 11.4 +59.8 157.6	10 07.0 +59.8 156.6	10 02.3 +59.8 155.6
1°	11 19.6 +59.9 159.6	11 15.5 +59.9 158.6	11 11.2 +59.9 157.6	11 06.8 +59.8 156.5	11 02.1 +59.8 155.5
2°	12 19.5 +59.8 159.5	12 15.4 +59.8 158.5	12 11.1 +59.8 157.5	12 06.6 +59.8 156.5	12 01.9 +59.9 155.4
3°	13 19.3 +59.9 159.5	13 15.2 +59.9 158.4	13 10.9 +59.9 157.4	13 06.4 +59.9 156.4	13 01.8 +59.8 155.4
4°	14 19.2 +59.9 159.4	14 15.1 +59.8 158.4	14 10.8 +59.8 157.3	14 06.3 +59.8 156.3	14 01.6 +59.8 155.3
5°	15 19.1 +59.8 159.3	15 14.9 +59.9 158.3	15 10.6 +59.8 157.3	15 06.1 +59.8 156.2	15 01.4 +59.8 155.2
6°	16 18.9 +59.9 159.2	16 14.8 +59.8 158.2	16 10.4 +59.9 157.2	16 05.9 +59.8 156.1	16 01.2 +59.8 155.1
7°	17 18.8 +59.9 159.2	17 14.6 +59.9 158.1	17 10.3 +59.8 157.1	17 05.7 +59.8 156.1	17 01.0 +59.8 155.0
8°	18 18.7 +59.8 159.1	18 14.5 +59.8 158.1	18 10.1 +59.8 157.0	18 05.5 +59.8 156.0	18 00.8 +59.8 154.9
9°	19 18.5 +59.9 159.0	19 14.3 +59.9 158.0	19 09.9 +59.9 156.9	19 05.3 +59.9 155.9	19 00.6 +59.8 154.9
10°	20 18.4 +59.8 159.0	20 14.2 +59.8 157.9	20 09.8 +59.8 156.9	20 05.2 +59.8 155.8	20 00.4 +59.8 154.8
11°	21 18.2 +59.9 158.9	21 14.0 +59.8 157.8	21 09.6 +59.8 156.8	21 05.0 +59.8 155.7	21 00.2 +59.8 154.7
12°	22 18.1 +59.8 158.8	22 13.8 +59.9 157.7	22 09.4 +59.8 156.7	22 04.8 +59.8 155.6	22 00.0 +59.7 154.6
13°	23 17.9 +59.9 158.7	23 13.7 +59.8 157.7	23 09.2 +59.8 156.6	23 04.6 +59.8 155.6	22 59.7 +59.8 154.5
14°	24 17.8 +59.8 158.6	24 13.5 +59.8 157.6	24 09.0 +59.9 156.5	24 04.4 +59.8 155.5	23 59.5 +59.8 154.4
15°	25 17.6 +59.9 158.6	25 13.3 +59.9 157.5	25 08.9 +59.8 156.4	25 04.2 +59.8 155.4	24 59.3 +59.8 154.3
16°	26 17.5 +59.8 158.5	26 13.2 +59.8 157.4	26 08.7 +59.8 156.4	26 04.0 +59.8 155.3	25 59.1 +59.8 154.2
17°	27 17.3 +59.8 158.4	27 13.0 +59.8 157.3	27 08.5 +59.8 156.3	27 03.8 +59.8 155.2	26 58.9 +59.7 154.1
18°	28 17.1 +59.9 158.3	28 12.8 +59.8 157.2	28 08.3 +59.8 156.2	28 03.6 +59.7 155.1	27 58.6 +59.8 154.0
19°	29 17.0 +59.8 158.2	29 12.6 +59.8 157.2	29 08.1 +59.8 156.1	29 03.3 +59.8 155.0	28 58.4 +59.8 153.9
20°	30 16.8 +59.8 158.2	30 12.4 +59.8 157.1	30 07.9 +59.8 156.0	30 03.1 +59.8 154.9	29 58.2 +59.7 153.8
21°	31 16.6 +59.8 158.1	31 12.2 +59.8 157.0	31 07.7 +59.8 155.9	31 02.9 +59.8 154.8	30 57.9 +59.8 153.7
22°	32 16.4 +59.9 158.0	32 12.0 +59.9 156.9	32 07.5 +59.7 155.8	32 02.7 +59.7 154.7	31 57.7 +59.7 153.6
23°	33 16.3 +59.8 157.9	33 11.9 +59.7 156.8	33 07.2 +59.8 155.7	33 02.4 +59.8 154.6	32 57.4 +59.8 153.5
24°	34 16.1 +59.8 157.8	34 11.6 +59.8 156.7	34 07.0 +59.8 155.6	34 02.2 +59.7 154.5	33 57.2 +59.7 153.4
25°	35 15.9 +59.8 157.7	35 11.4 +59.8 156.6	35 06.8 +59.8 155.5	35 01.9 +59.8 154.4	34 56.9 +59.7 153.3
26°	36 15.7 +59.8 157.6	36 11.2 +59.8 156.5	36 06.6 +59.7 155.4	36 01.7 +59.7 154.3	35 56.6 +59.7 153.2
27°	37 15.5 +59.8 157.5	37 11.0 +59.8 156.4	37 06.3 +59.8 155.3	37 01.4 +59.8 154.1	36 56.3 +59.7 153.0
28°	38 15.3 +59.8 157.4	38 10.8 +59.8 156.3	38 06.1 +59.7 155.1	38 01.2 +59.7 154.0	37 56.0 +59.8 152.9
29°	39 15.1 +59.8 157.3	39 10.6 +59.7 156.2	39 05.8 +59.8 155.0	39 00.9 +59.7 153.9	38 55.8 +59.6 152.8

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°	9 57.5 +59.8 154.6	9 52.5 +59.8 153.6	9 47.3 +59.8 152.6	9 41.9 +59.8 151.6	9 36.4 +59.7 150.5
1°	10 57.3 +59.8 154.5	10 52.3 +59.8 153.5	10 47.1 +59.7 152.5	10 41.7 +59.7 151.5	10 36.1 +59.8 150.5
2°	11 57.1 +59.8 154.4	11 52.1 +59.7 153.4	11 46.8 +59.8 152.4	11 41.4 +59.8 151.4	11 35.9 +59.7 150.4
3°	12 56.9 +59.8 154.3	12 51.8 +59.8 153.3	12 46.6 +59.8 152.3	12 41.2 +59.7 151.3	12 35.6 +59.7 150.3
4°	13 56.7 +59.8 154.3	13 51.6 +59.8 153.2	13 46.4 +59.7 152.2	13 40.9 +59.8 151.2	13 35.3 +59.8 150.2
5°	14 56.5 +59.8 154.2	14 51.4 +59.8 153.1	14 46.1 +59.8 152.1	14 40.7 +59.7 151.1	14 35.1 +59.7 150.1
6°	15 56.3 +59.8 154.1	15 51.2 +59.7 153.1	15 45.9 +59.7 152.0	15 40.4 +59.8 151.0	15 34.8 +59.7 150.0
7°	16 56.1 +59.7 154.0	16 50.9 +59.8 153.0	16 45.6 +59.8 151.9	16 40.2 +59.7 150.9	16 34.5 +59.7 149.9
8°	17 55.8 +59.8 153.9	17 50.7 +59.8 152.9	17 45.4 +59.7 151.8	17 39.9 +59.7 150.8	17 34.2 +59.7 149.8
9°	18 55.6 +59.8 153.8	18 50.5 +59.7 152.8	18 45.1 +59.8 151.7	18 39.6 +59.8 150.7	18 33.9 +59.8 149.7
10°	19 55.4 +59.8 153.7	19 50.2 +59.8 152.7	19 44.9 +59.7 151.6	19 39.4 +59.7 150.6	19 33.7 +59.7 149.6
11°	20 55.2 +59.8 153.6	20 50.0 +59.8 152.6	20 44.6 +59.8 151.5	20 39.1 +59.7 150.5	20 33.4 +59.7 149.5
12°	21 55.0 +59.7 153.5	21 49.8 +59.7 152.5	21 44.4 +59.7 151.4	21 38.8 +59.7 150.4	21 33.1 +59.7 149.3
13°	22 54.7 +59.8 153.4	22 49.5 +59.8 152.4	22 44.1 +59.7 151.3	22 38.5 +59.7 150.3	22 32.8 +59.7 149.2
14°	23 54.5 +59.8 153.3	23 49.3 +59.7 152.3	23 43.8 +59.8 151.2	23 38.2 +59.8 150.2	23 32.5 +59.7 149.1
15°	24 54.3 +59.7 153.3	24 49.0 +59.8 152.2	24 43.6 +59.7 151.1	24 38.0 +59.7 150.1	24 32.2 +59.6 149.0
16°	25 54.0 +59.8 153.2	25 48.8 +59.7 152.1	25 43.3 +59.7 151.0	25 37.7 +59.7 150.0	25 31.8 +59.7 148.9
17°	26 53.8 +59.7 153.1	26 48.5 +59.7 152.0	26 43.0 +59.7 150.9	26 37.4 +59.7 149.9	26 31.5 +59.7 148.8
18°	27 53.5 +59.8 153.0	27 48.2 +59.8 151.9	27 42.7 +59.7 150.8	27 37.1 +59.6 149.7	27 31.2 +59.7 148.7
19°	28 53.3 +59.7 152.8	28 48.0 +59.7 151.8	28 42.4 +59.7 150.7	28 36.7 +59.7 149.6	28 30.9 +59.6 148.6
20°	29 53.0 +59.8 152.7	29 47.7 +59.7 151.7	29 42.1 +59.7 150.6	29 36.4 +59.7 149.5	29 30.5 +59.7 148.4
21°	30 52.8 +59.7 152.6	30 47.4 +59.7 151.5	30 41.8 +59.7 150.5	30 36.1 +59.7 149.4	30 30.2 +59.6 148.3
22°	31 52.5 +59.7 152.5	31 47.1 +59.7 151.4	31 41.5 +59.7 150.3	31 35.8 +59.6 149.3	31 29.8 +59.7 148.2
23°	32 52.2 +59.7 152.4	32 46.8 +59.7 151.3	32 41.2 +59.7 150.2	32 35.4 +59.7 149.1	32 29.5 +59.6 148.1
24°	33 51.9 +59.7 152.3	33 46.5 +59.7 151.2	33 40.9 +59.7 150.1	33 35.1 +59.6 149.0	33 29.1 +59.6 147.9
25°	34 51.6 +59.7 152.2	34 46.2 +59.7 151.1	34 40.6 +59.6 150.0	34 34.7 +59.7 148.9	34 28.7 +59.7 147.8
26°	35 51.3 +59.7 152.1	35 45.9 +59.7 150.9	35 40.2 +59.7 149.8	35 34.4 +59.6 148.7	35 28.4 +59.6 147.7
27°	36 51.0 +59.7 151.9	36 45.6 +59.6 150.8	36 39.9 +59.6 149.7	36 34.0 +59.6 148.6	36 28.0 +59.6 147.5
28°	37 50.7 +59.7 151.8	37 45.2 +59.7 150.7	37 39.5 +59.7 149.6	37 33.6 +59.6 148.5	37 27.6 +59.5 147.4
29°	38 50.4 +59.7 151.7	38 44.9 +59.6 150.6	38 39.2 +59.6 149.4	38 33.2 +59.6 148.3	38 27.1 +59.6 147.2

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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°	9 30.7 +59.7 149.5	9 24.8 +59.7 148.5	9 18.7 +59.7 147.5	9 12.5 +59.7 146.5	9 06.1 +59.7 145.5
1°	10 30.4 +59.7 149.4	10 24.5 +59.7 148.4	10 18.4 +59.7 147.4	10 12.2 +59.6 146.4	10 05.8 +59.6 145.4
2°	11 30.1 +59.7 149.3	11 24.2 +59.7 148.3	11 18.1 +59.7 147.3	11 11.8 +59.7 146.3	11 05.4 +59.6 145.3
3°	12 29.8 +59.7 149.2	12 23.9 +59.7 148.2	12 17.8 +59.7 147.2	12 11.5 +59.7 146.2	12 05.0 +59.7 145.2
4°	13 29.5 +59.8 149.1	13 23.6 +59.7 148.1	13 17.5 +59.6 147.1	13 11.2 +59.6 146.1	13 04.7 +59.6 145.1
5°	14 29.3 +59.7 149.0	14 23.3 +59.7 148.0	14 17.1 +59.7 147.0	14 10.8 +59.7 146.0	14 04.3 +59.7 144.9
6°	15 29.0 +59.7 148.9	15 23.0 +59.7 147.9	15 16.8 +59.7 146.9	15 10.5 +59.6 145.9	15 04.0 +59.6 144.8
7°	16 28.7 +59.7 148.8	16 22.7 +59.6 147.8	16 16.5 +59.6 146.8	16 10.1 +59.7 145.7	16 03.6 +59.6 144.7
8°	17 28.4 +59.7 148.7	17 22.3 +59.7 147.7	17 16.1 +59.7 146.7	17 09.8 +59.6 145.6	17 03.2 +59.6 144.6
9°	18 28.1 +59.7 148.6	18 22.0 +59.7 147.6	18 15.8 +59.7 146.6	18 09.4 +59.6 145.5	18 02.8 +59.7 144.5
10°	19 27.8 +59.7 148.5	19 21.7 +59.7 147.5	19 15.5 +59.6 146.4	19 09.0 +59.7 145.4	19 02.5 +59.6 144.4
11°	20 27.5 +59.6 148.4	20 21.4 +59.6 147.4	20 15.1 +59.7 146.3	20 08.7 +59.6 145.3	20 02.1 +59.6 144.2
12°	21 27.1 +59.7 148.3	21 21.0 +59.7 147.3	21 14.8 +59.6 146.2	21 08.3 +59.6 145.2	21 01.7 +59.6 144.1
13°	22 26.8 +59.7 148.2	22 20.7 +59.7 147.1	22 14.4 +59.6 146.1	22 07.9 +59.6 145.0	22 01.3 +59.6 144.0
14°	23 26.5 +59.7 148.1	23 20.4 +59.6 147.0	23 14.0 +59.7 146.0	23 07.5 +59.7 144.9	23 00.9 +59.6 143.9
15°	24 26.2 +59.6 148.0	24 20.0 +59.7 146.9	24 13.7 +59.6 145.9	24 07.2 +59.6 144.8	24 00.5 +59.6 143.8
16°	25 25.8 +59.7 147.8	25 19.7 +59.6 146.8	25 13.3 +59.6 145.7	25 06.8 +59.6 144.7	25 00.1 +59.5 143.6
17°	26 25.5 +59.7 147.7	26 19.3 +59.6 146.7	26 12.9 +59.6 145.6	26 06.4 +59.6 144.5	25 59.6 +59.6 143.5
18°	27 25.2 +59.6 147.6	27 18.9 +59.7 146.5	27 12.5 +59.6 145.5	27 06.0 +59.5 144.4	26 59.2 +59.6 143.4
19°	28 24.8 +59.6 147.5	28 18.6 +59.6 146.4	28 12.1 +59.6 145.4	28 05.5 +59.6 144.3	27 58.8 +59.5 143.2
20°	29 24.4 +59.7 147.4	29 18.2 +59.6 146.3	29 11.7 +59.6 145.2	29 05.1 +59.6 144.2	28 58.3 +59.6 143.1
21°	30 24.1 +59.6 147.2	30 17.8 +59.6 146.2	30 11.3 +59.6 145.1	30 04.7 +59.6 144.0	29 57.9 +59.5 142.9
22°	31 23.7 +59.6 147.1	31 17.4 +59.6 146.0	31 10.9 +59.6 144.9	31 04.3 +59.5 143.9	30 57.4 +59.5 142.8
23°	32 23.3 +59.6 147.0	32 17.0 +59.6 145.9	32 10.5 +59.6 144.8	32 03.8 +59.5 143.7	31 56.9 +59.6 142.7
24°	33 22.9 +59.6 146.8	33 16.6 +59.6 145.8	33 10.1 +59.5 144.7	33 03.3 +59.6 143.6	32 56.5 +59.5 142.5
25°	34 22.5 +59.6 146.7	34 16.2 +59.5 145.6	34 09.6 +59.6 144.5	34 02.9 +59.5 143.4	33 56.0 +59.5 142.4
26°	35 22.1 +59.6 146.6	35 15.7 +59.6 145.5	35 09.2 +59.5 144.4	35 02.4 +59.5 143.3	34 55.5 +59.4 142.2
27°	36 21.7 +59.6 146.4	36 15.3 +59.5 145.3	36 08.7 +59.5 144.2	36 01.9 +59.5 143.1	35 54.9 +59.5 142.0
28°	37 21.3 +59.5 146.3	37 14.8 +59.6 145.2	37 08.2 +59.5 144.1	37 01.4 +59.5 143.0	36 54.4 +59.5 141.9
29°	38 20.8 +59.6 146.1	38 14.4 +59.5 145.0	38 07.7 +59.5 143.9	38 00.9 +59.5 142.8	37 53.9 +59.4 141.7

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 59.5 +59.7 144.5	8 52.8 +59.6 143.5	8 45.9 +59.6 142.5	8 38.9 +59.5 141.5	8 31.7 +59.5 140.5
1°	9 59.2 +59.6 144.4	9 52.4 +59.6 143.4	9 45.5 +59.6 142.4	9 38.4 +59.6 141.4	9 31.2 +59.6 140.4
2°	10 58.8 +59.6 144.3	10 52.0 +59.6 143.3	10 45.1 +59.6 142.3	10 38.0 +59.6 141.2	10 30.8 +59.5 140.2
3°	11 58.4 +59.6 144.2	11 51.6 +59.6 143.1	11 44.7 +59.6 142.1	11 37.6 +59.5 141.1	11 30.3 +59.6 140.1
4°	12 58.0 +59.7 144.0	12 51.2 +59.6 143.0	12 44.3 +59.6 142.0	12 37.1 +59.6 141.0	12 29.9 +59.5 140.0
5°	13 57.7 +59.6 143.9	13 50.8 +59.6 142.9	13 43.9 +59.5 141.9	13 36.7 +59.6 140.9	13 29.4 +59.5 139.9
6°	14 57.3 +59.6 143.8	14 50.4 +59.6 142.8	14 43.4 +59.6 141.8	14 36.3 +59.5 140.7	14 28.9 +59.6 139.7
7°	15 56.9 +59.6 143.7	15 50.0 +59.6 142.7	15 43.0 +59.6 141.6	15 35.8 +59.6 140.6	15 28.5 +59.5 139.6
8°	16 56.5 +59.6 143.6	16 49.6 +59.6 142.5	16 42.6 +59.5 141.5	16 35.4 +59.5 140.5	16 28.0 +59.5 139.5
9°	17 56.1 +59.6 143.5	17 49.2 +59.6 142.4	17 42.1 +59.6 141.4	17 34.9 +59.6 140.4	17 27.5 +59.6 139.3
10°	18 55.7 +59.6 143.3	18 48.8 +59.6 142.3	18 41.7 +59.6 141.3	18 34.5 +59.5 140.2	18 27.1 +59.5 139.2
11°	19 55.3 +59.6 143.2	19 48.4 +59.5 142.2	19 41.3 +59.5 141.1	19 34.0 +59.5 140.1	19 26.6 +59.5 139.1
12°	20 54.9 +59.6 143.1	20 47.9 +59.6 142.0	20 40.8 +59.5 141.0	20 33.5 +59.5 140.0	20 26.1 +59.5 138.9
13°	21 54.5 +59.5 143.0	21 47.5 +59.5 141.9	21 40.3 +59.6 140.9	21 33.0 +59.6 139.8	21 25.6 +59.5 138.8
14°	22 54.0 +59.6 142.8	22 47.0 +59.6 141.8	22 39.9 +59.5 140.7	22 32.6 +59.5 139.7	22 25.1 +59.5 138.7
15°	23 53.6 +59.6 142.7	23 46.6 +59.5 141.7	23 39.4 +59.5 140.6	23 32.1 +59.5 139.6	23 24.6 +59.4 138.5
16°	24 53.2 +59.5 142.6	24 46.1 +59.6 141.5	24 38.9 +59.5 140.5	24 31.6 +59.5 139.4	24 24.0 +59.5 138.4
17°	25 52.7 +59.6 142.4	25 45.7 +59.5 141.4	25 38.4 +59.6 140.3	25 31.1 +59.4 139.3	25 23.5 +59.5 138.2
18°	26 52.3 +59.5 142.3	26 45.2 +59.5 141.2	26 38.0 +59.5 140.2	26 30.5 +59.5 139.1	26 23.0 +59.4 138.1
19°	27 51.8 +59.6 142.2	27 44.7 +59.5 141.1	27 37.5 +59.4 140.0	27 30.0 +59.5 139.0	27 22.4 +59.5 137.9
20°	28 51.4 +59.5 142.0	28 44.2 +59.5 141.0	28 36.9 +59.5 139.9	28 29.5 +59.4 138.8	28 21.9 +59.4 137.8
21°	29 50.9 +59.5 141.9	29 43.7 +59.5 140.8	29 36.4 +59.5 139.7	29 28.9 +59.5 138.7	29 21.3 +59.4 137.6
22°	30 50.4 +59.5 141.7	30 43.2 +59.5 140.7	30 35.9 +59.5 139.6	30 28.4 +59.4 138.5	30 20.7 +59.4 137.5
23°	31 49.9 +59.5 141.6	31 42.7 +59.5 140.5	31 35.4 +59.4 139.4	31 27.8 +59.4 138.4	31 20.1 +59.4 137.3
24°	32 49.4 +59.5 141.4	32 42.2 +59.4 140.3	32 34.8 +59.4 139.3	32 27.2 +59.5 138.2	32 19.5 +59.4 137.1
25°	33 48.9 +59.5 141.3	33 41.6 +59.5 140.2	33 34.2 +59.5 139.1	33 26.7 +59.4 138.0	33 18.9 +59.4 137.0
26°	34 48.4 +59.4 141.1	34 41.1 +59.4 140.0	34 33.7 +59.4 138.9	34 26.1 +59.3 137.9	34 18.3 +59.3 136.8
27°	35 47.8 +59.5 140.9	35 40.5 +59.4 139.9	35 33.1 +59.4 138.8	35 25.4 +59.4 137.7	35 17.6 +59.4 136.6
28°	36 47.3 +59.4 140.8	36 39.9 +59.4 139.7	36 32.5 +59.3 138.6	36 24.8 +59.3 137.5	36 17.0 +59.3 136.4
29°	37 46.7 +59.4 140.6	37 39.3 +59.4 139.5	37 31.8 +59.4 138.4	37 24.1 +59.4 137.3	37 16.3 +59.3 136.2

Declination SAME name as Latitude

Latitude 79°

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°	8 24.3 +59.5 139.5	8 16.8 +59.5 138.5	8 09.1 +59.5 137.5	8 01.3 +59.5 136.5	7 53.3 +59.5 135.5
1°	9 23.8 +59.6 139.4	9 16.3 +59.5 138.3	9 08.6 +59.5 137.3	9 00.8 +59.5 136.3	8 52.8 +59.5 135.3
2°	10 23.4 +59.5 139.2	10 15.8 +59.5 138.2	10 08.1 +59.5 137.2	10 00.3 +59.4 136.2	9 52.3 +59.4 135.2
3°	11 22.9 +59.5 139.1	11 15.3 +59.5 138.1	11 07.6 +59.5 137.1	10 59.7 +59.5 136.1	10 51.7 +59.5 135.1
4°	12 22.4 +59.5 139.0	12 14.8 +59.5 138.0	12 07.1 +59.5 136.9	11 59.2 +59.5 135.9	11 51.2 +59.4 134.9
5°	13 21.9 +59.6 138.8	13 14.3 +59.5 137.8	13 06.6 +59.5 136.8	12 58.7 +59.4 135.8	12 50.6 +59.5 134.8
6°	14 21.5 +59.5 138.7	14 13.8 +59.5 137.7	14 06.1 +59.4 136.7	13 58.1 +59.5 135.7	13 50.1 +59.4 134.6
7°	15 21.0 +59.5 138.6	15 13.3 +59.5 137.6	15 05.5 +59.5 136.5	14 57.6 +59.4 135.5	14 49.5 +59.4 134.5
8°	16 20.5 +59.5 138.4	16 12.8 +59.5 137.4	16 05.0 +59.5 136.4	15 57.0 +59.5 135.4	15 48.9 +59.4 134.4
9°	17 20.0 +59.5 138.3	17 12.3 +59.5 137.3	17 04.5 +59.4 136.3	16 56.5 +59.4 135.2	16 48.3 +59.5 134.2
10°	18 19.5 +59.5 138.2	18 11.8 +59.5 137.1	18 03.9 +59.5 136.1	17 55.9 +59.4 135.1	17 47.8 +59.4 134.1
11°	19 19.0 +59.5 138.0	19 11.3 +59.4 137.0	19 03.4 +59.4 136.0	18 55.3 +59.5 135.0	18 47.2 +59.4 133.9
12°	20 18.5 +59.5 137.9	20 10.7 +59.5 136.9	20 02.8 +59.5 135.8	19 54.8 +59.4 134.8	19 46.6 +59.4 133.8
13°	21 18.0 +59.4 137.8	21 10.2 +59.4 136.7	21 02.3 +59.4 135.7	20 54.2 +59.4 134.7	20 46.0 +59.4 133.6
14°	22 17.4 +59.5 137.6	22 09.6 +59.5 136.6	22 01.7 +59.4 135.5	21 53.6 +59.4 134.5	21 45.4 +59.3 133.5
15°	23 16.9 +59.5 137.5	23 09.1 +59.4 136.4	23 01.1 +59.4 135.4	22 53.0 +59.4 134.4	22 44.7 +59.4 133.3
16°	24 16.4 +59.4 137.3	24 08.5 +59.5 136.3	24 00.5 +59.4 135.2	23 52.4 +59.4 134.2	23 44.1 +59.4 133.2
17°	25 15.8 +59.4 137.2	25 08.0 +59.4 136.1	24 59.9 +59.4 135.1	24 51.8 +59.4 134.0	24 43.5 +59.3 133.0
18°	26 15.2 +59.5 137.0	26 07.4 +59.4 136.0	25 59.3 +59.4 134.9	25 51.2 +59.3 133.9	25 42.8 +59.4 132.8
19°	27 14.7 +59.4 136.9	27 06.8 +59.4 135.8	26 58.7 +59.4 134.8	26 50.5 +59.4 133.7	26 42.2 +59.3 132.7
20°	28 14.1 +59.4 136.7	28 06.2 +59.4 135.7	27 58.1 +59.4 134.6	27 49.9 +59.3 133.6	27 41.5 +59.3 132.5
21°	29 13.5 +59.4 136.6	29 05.6 +59.3 135.5	28 57.5 +59.3 134.4	28 49.2 +59.3 133.4	28 40.8 +59.3 132.3
22°	30 12.9 +59.4 136.4	30 04.9 +59.4 135.3	29 56.8 +59.4 134.3	29 48.5 +59.4 133.2	29 40.1 +59.3 132.2
23°	31 12.3 +59.4 136.2	31 04.3 +59.3 135.2	30 56.2 +59.3 134.1	30 47.9 +59.3 133.0	30 39.4 +59.3 132.0
24°	32 11.7 +59.3 136.1	32 03.6 +59.4 135.0	31 55.5 +59.3 133.9	31 47.2 +59.2 132.9	31 38.7 +59.3 131.8
25°	33 11.0 +59.4 135.9	33 03.0 +59.3 134.8	32 54.8 +59.3 133.7	32 46.4 +59.3 132.7	32 38.0 +59.2 131.6
26°	34 10.4 +59.3 135.7	34 02.3 +59.3 134.6	33 54.1 +59.3 133.6	33 45.7 +59.3 132.5	33 37.2 +59.2 131.4
27°	35 09.7 +59.3 135.5	35 01.6 +59.3 134.5	34 53.4 +59.2 133.4	34 45.0 +59.2 132.3	34 36.4 +59.2 131.2
28°	36 09.0 +59.3 135.3	36 00.9 +59.3 134.3	35 52.6 +59.3 133.2	35 44.2 +59.2 132.1	35 35.6 +59.2 131.0
29°	37 08.3 +59.3 135.2	37 00.2 +59.2 134.1	36 51.9 +59.2 133.0	36 43.4 +59.2 131.9	36 34.8 +59.2 130.8

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	7 45.2 +59.5 134.5	7 37.0 +59.4 133.5	7 28.6 +59.4 132.5	7 20.1 +59.4 131.5	7 11.5 +59.3 130.5
1°	8 44.7 +59.4 134.3	8 36.4 +59.4 133.3	8 28.0 +59.4 132.3	8 19.5 +59.4 131.3	8 10.8 +59.4 130.3
2°	9 44.1 +59.5 134.2	9 35.8 +59.5 133.2	9 27.4 +59.4 132.2	9 18.9 +59.4 131.2	9 10.2 +59.4 130.2
3°	10 43.6 +59.4 134.1	10 35.3 +59.4 133.0	10 26.8 +59.4 132.0	10 18.3 +59.3 131.0	10 09.6 +59.3 130.0
4°	11 43.0 +59.4 133.9	11 34.7 +59.4 132.9	11 26.2 +59.4 131.9	11 17.6 +59.4 130.9	11 08.9 +59.4 129.9
5°	12 42.4 +59.4 133.8	12 34.1 +59.4 132.8	12 25.6 +59.4 131.8	12 17.0 +59.4 130.7	12 08.3 +59.3 129.7
6°	13 41.8 +59.4 133.6	13 33.5 +59.4 132.6	13 25.0 +59.4 131.6	13 16.4 +59.3 130.6	13 07.6 +59.3 129.6
7°	14 41.2 +59.5 133.5	14 32.9 +59.4 132.5	14 24.4 +59.3 131.5	14 15.7 +59.4 130.4	14 06.9 +59.4 129.4
8°	15 40.7 +59.4 133.3	15 32.3 +59.4 132.3	15 23.7 +59.4 131.3	15 15.1 +59.3 130.3	15 06.3 +59.3 129.3
9°	16 40.1 +59.4 133.2	16 31.7 +59.3 132.2	16 23.1 +59.4 131.2	16 14.4 +59.3 130.1	16 05.6 +59.3 129.1
10°	17 39.5 +59.4 133.0	17 31.0 +59.4 132.0	17 22.5 +59.3 131.0	17 13.7 +59.4 130.0	17 04.9 +59.3 129.0
11°	18 38.9 +59.3 132.9	18 30.4 +59.4 131.9	18 21.8 +59.4 130.8	18 13.1 +59.3 129.8	18 04.2 +59.3 128.8
12°	19 38.2 +59.4 132.7	19 29.8 +59.3 131.7	19 21.2 +59.3 130.7	19 12.4 +59.3 129.7	19 03.5 +59.3 128.6
13°	20 37.6 +59.4 132.6	20 29.1 +59.4 131.6	20 20.5 +59.3 130.5	20 11.7 +59.3 129.5	20 02.8 +59.3 128.5
14°	21 37.0 +59.3 132.4	21 28.5 +59.3 131.4	21 19.8 +59.3 130.4	21 11.0 +59.3 129.3	21 02.1 +59.3 128.3
15°	22 36.3 +59.4 132.3	22 27.8 +59.3 131.2	22 19.1 +59.3 130.2	22 10.3 +59.3 129.2	22 01.4 +59.3 128.2
16°	23 35.7 +59.3 132.1	23 27.1 +59.4 131.1	23 18.4 +59.3 130.0	23 09.6 +59.3 129.0	23 00.7 +59.2 128.0
17°	24 35.0 +59.4 132.0	24 26.5 +59.3 130.9	24 17.7 +59.3 129.9	24 08.9 +59.3 128.8	23 59.9 +59.3 127.8
18°	25 34.4 +59.3 131.8	25 25.8 +59.3 130.8	25 17.0 +59.3 129.7	25 08.2 +59.2 128.7	24 59.2 +59.2 127.6
19°	26 33.7 +59.3 131.6	26 25.1 +59.2 130.6	26 16.3 +59.3 129.5	26 07.4 +59.2 128.5	25 58.4 +59.2 127.5
20°	27 33.0 +59.3 131.5	27 24.3 +59.3 130.4	27 15.6 +59.2 129.4	27 06.6 +59.3 128.3	26 57.6 +59.2 127.3
21°	28 32.3 +59.3 131.3	28 23.6 +59.3 130.2	28 14.8 +59.2 129.2	28 05.9 +59.2 128.1	27 56.8 +59.2 127.1
22°	29 31.6 +59.2 131.1	29 22.9 +59.2 130.1	29 14.0 +59.3 129.0	29 05.1 +59.2 128.0	28 56.0 +59.2 126.9
23°	30 30.8 +59.3 130.9	30 22.1 +59.3 129.9	30 13.3 +59.2 128.8	30 04.3 +59.2 127.8	29 55.2 +59.1 126.7
24°	31 30.1 +59.2 130.7	31 21.4 +59.2 129.7	31 12.5 +59.2 128.6	31 03.5 +59.1 127.6	30 54.3 +59.2 126.5
25°	32 29.3 +59.2 130.6	32 20.6 +59.2 129.5	32 11.7 +59.1 128.4	32 02.6 +59.2 127.4	31 53.5 +59.1 126.3
26°	33 28.5 +59.2 130.4	33 19.8 +59.1 129.3	33 10.8 +59.2 128.2	33 01.8 +59.1 127.2	32 52.6 +59.1 126.1
27°	34 27.7 +59.2 130.2	34 18.9 +59.2 129.1	34 10.0 +59.1 128.0	34 00.9 +59.1 127.0	33 51.7 +59.1 125.9
28°	35 26.9 +59.2 130.0	35 18.1 +59.1 128.9	35 09.1 +59.1 127.8	35 00.0 +59.1 126.8	34 50.8 +59.0 125.7
29°	36 26.1 +59.1 129.8	36 17.2 +59.1 128.7	36 08.2 +59.1 127.6	35 59.1 +59.0 126.6	35 49.8 +59.1 125.5

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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°	7 02.7 +59.3 129.5	6 53.8 +59.3 128.5	6 44.8 +59.3 127.5	6 35.6 +59.3 126.5	6 26.4 +59.2 125.5
1°	8 02.0 +59.4 129.3	7 53.1 +59.4 128.3	7 44.1 +59.3 127.3	7 34.9 +59.3 126.3	7 25.6 +59.3 125.3
2°	9 01.4 +59.3 129.2	8 52.5 +59.3 128.2	8 43.4 +59.3 127.2	8 34.2 +59.3 126.2	8 24.9 +59.3 125.2
3°	10 00.7 +59.4 129.0	9 51.8 +59.3 128.0	9 42.7 +59.3 127.0	9 33.5 +59.3 126.0	9 24.2 +59.2 125.0
4°	11 00.1 +59.3 128.9	10 51.1 +59.3 127.9	10 42.0 +59.3 126.9	10 32.8 +59.2 125.9	10 23.4 +59.3 124.9
5°	11 59.4 +59.3 128.7	11 50.4 +59.3 127.7	11 41.3 +59.3 126.7	11 32.0 +59.3 125.7	11 22.7 +59.2 124.7
6°	12 58.7 +59.3 128.6	12 49.7 +59.3 127.6	12 40.6 +59.2 126.6	12 31.3 +59.3 125.5	12 21.9 +59.3 124.5
7°	13 58.0 +59.3 128.4	13 49.0 +59.3 127.4	13 39.8 +59.3 126.4	13 30.6 +59.2 125.4	13 21.2 +59.2 124.4
8°	14 57.3 +59.3 128.3	14 48.3 +59.3 127.2	14 39.1 +59.3 126.2	14 29.8 +59.3 125.2	14 20.4 +59.2 124.2
9°	15 56.6 +59.3 128.1	15 47.6 +59.3 127.1	15 38.4 +59.2 126.1	15 29.1 +59.2 125.1	15 19.6 +59.3 124.1
10°	16 55.9 +59.3 127.9	16 46.9 +59.2 126.9	16 37.6 +59.3 125.9	16 28.3 +59.2 124.9	16 18.9 +59.2 123.9
11°	17 55.2 +59.3 127.8	17 46.1 +59.3 126.8	17 36.9 +59.2 125.7	17 27.5 +59.3 124.7	17 18.1 +59.2 123.7
12°	18 54.5 +59.3 127.6	18 45.4 +59.2 126.6	18 36.1 +59.3 125.6	18 26.8 +59.2 124.6	18 17.3 +59.2 123.5
13°	19 53.8 +59.3 127.5	19 44.6 +59.3 126.4	19 35.4 +59.2 125.4	19 26.0 +59.2 124.4	19 16.5 +59.2 123.4
14°	20 53.1 +59.2 127.3	20 43.9 +59.2 126.3	20 34.6 +59.2 125.2	20 25.2 +59.2 124.2	20 15.7 +59.1 123.2
15°	21 52.3 +59.3 127.1	21 43.1 +59.3 126.1	21 33.8 +59.2 125.1	21 24.4 +59.2 124.0	21 14.8 +59.2 123.0
16°	22 51.6 +59.2 127.0	22 42.4 +59.2 125.9	22 33.0 +59.2 124.9	22 23.6 +59.1 123.9	22 14.0 +59.2 122.8
17°	23 50.8 +59.2 126.8	23 41.6 +59.2 125.7	23 32.2 +59.2 124.7	23 22.7 +59.2 123.7	23 13.2 +59.1 122.7
18°	24 50.0 +59.2 126.6	24 40.8 +59.2 125.6	24 31.4 +59.2 124.5	24 21.9 +59.2 123.5	24 12.3 +59.1 122.5
19°	25 49.2 +59.2 126.4	25 40.0 +59.1 125.4	25 30.6 +59.1 124.4	25 21.1 +59.1 123.3	25 11.4 +59.1 122.3
20°	26 48.4 +59.2 126.2	26 39.1 +59.2 125.2	26 29.7 +59.2 124.2	26 20.2 +59.1 123.1	26 10.5 +59.1 122.1
21°	27 47.6 +59.2 126.1	27 38.3 +59.1 125.0	27 28.9 +59.1 124.0	27 19.3 +59.1 122.9	27 09.6 +59.1 121.9
22°	28 46.8 +59.1 125.9	28 37.4 +59.2 124.8	28 28.0 +59.1 123.8	28 18.4 +59.1 122.7	28 08.7 +59.1 121.7
23°	29 45.9 +59.2 125.7	29 36.6 +59.1 124.6	29 27.1 +59.1 123.6	29 17.5 +59.1 122.5	29 07.8 +59.0 121.5
24°	30 45.1 +59.1 125.5	30 35.7 +59.1 124.4	30 26.2 +59.1 123.4	30 16.6 +59.0 122.3	30 06.8 +59.1 121.3
25°	31 44.2 +59.1 125.3	31 34.8 +59.1 124.2	31 25.3 +59.0 123.2	31 15.6 +59.0 122.1	31 05.9 +59.0 121.1
26°	32 43.3 +59.1 125.1	32 33.9 +59.0 124.0	32 24.3 +59.0 123.0	32 14.6 +59.1 121.9	32 04.9 +59.0 120.9
27°	33 42.4 +59.0 124.9	33 32.9 +59.0 123.8	33 23.3 +59.0 122.8	33 13.7 +58.9 121.7	33 03.9 +58.9 120.7
28°	34 41.4 +59.0 124.7	34 31.9 +59.0 123.6	34 22.3 +59.0 122.5	34 12.6 +59.0 121.5	34 02.8 +59.0 120.4
29°	35 40.4 +59.1 124.4	35 30.9 +59.0 123.4	35 21.3 +59.0 122.3	35 11.6 +58.9 121.3	35 01.8 +58.9 120.2

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°	6 17.0 +59.2 124.5	6 07.5 +59.2 123.5	5 57.9 +59.2 122.5	5 48.2 +59.2 121.5	5 38.4 +59.2 120.5
1°	7 16.2 +59.3 124.3	7 06.7 +59.3 123.3	6 57.1 +59.2 122.4	6 47.4 +59.2 121.4	6 37.6 +59.1 120.4
2°	8 15.5 +59.2 124.2	8 06.0 +59.2 123.2	7 56.3 +59.2 122.2	7 46.6 +59.2 121.2	7 36.7 +59.2 120.2
3°	9 14.7 +59.3 124.0	9 05.2 +59.2 123.0	8 55.5 +59.2 122.0	8 45.8 +59.2 121.0	8 35.9 +59.2 120.0
4°	10 14.0 +59.2 123.9	10 04.4 +59.2 122.9	9 54.7 +59.2 121.9	9 45.0 +59.2 120.9	9 35.1 +59.2 119.9
5°	11 13.2 +59.2 123.7	11 03.6 +59.2 122.7	10 53.9 +59.2 121.7	10 44.2 +59.1 120.7	10 34.3 +59.1 119.7
6°	12 12.4 +59.3 123.5	12 02.8 +59.3 122.5	11 53.1 +59.2 121.5	11 43.3 +59.2 120.5	11 33.4 +59.2 119.5
7°	13 11.7 +59.2 123.4	13 02.1 +59.2 122.4	12 52.3 +59.2 121.4	12 42.5 +59.2 120.4	12 32.6 +59.1 119.4
8°	14 10.9 +59.2 123.2	14 01.3 +59.2 122.2	13 51.5 +59.2 121.2	13 41.7 +59.1 120.2	13 31.7 +59.2 119.2
9°	15 10.1 +59.2 123.0	15 00.5 +59.1 122.0	14 50.7 +59.2 121.0	14 40.8 +59.2 120.0	14 30.9 +59.1 119.0
10°	16 09.3 +59.2 122.9	15 59.6 +59.2 121.9	15 49.9 +59.1 120.9	15 40.0 +59.1 119.8	15 30.0 +59.1 118.8
11°	17 08.5 +59.2 122.7	16 58.8 +59.2 121.7	16 49.0 +59.2 120.7	16 39.1 +59.2 119.7	16 29.1 +59.1 118.7
12°	18 07.7 +59.2 122.5	17 58.0 +59.1 121.5	17 48.2 +59.1 120.5	17 38.3 +59.1 119.5	17 28.2 +59.1 118.5
13°	19 06.9 +59.1 122.4	18 57.1 +59.2 121.3	18 47.3 +59.1 120.3	18 37.4 +59.1 119.3	18 27.3 +59.1 118.3
14°	20 06.0 +59.2 122.2	19 56.3 +59.1 121.2	19 46.4 +59.2 120.1	19 36.5 +59.1 119.1	19 26.4 +59.1 118.1
15°	21 05.2 +59.1 122.0	20 55.4 +59.2 121.0	20 45.6 +59.1 120.0	20 35.6 +59.1 118.9	20 25.5 +59.1 117.9
16°	22 04.3 +59.2 121.8	21 54.6 +59.1 120.8	21 44.7 +59.1 119.8	21 34.7 +59.1 118.8	21 24.6 +59.1 117.7
17°	23 03.5 +59.1 121.6	22 53.7 +59.1 120.6	22 43.8 +59.1 119.6	22 33.8 +59.0 118.6	22 23.7 +59.0 117.6
18°	24 02.6 +59.1 121.5	23 52.8 +59.1 120.4	23 42.9 +59.0 119.4	23 32.8 +59.1 118.4	23 22.7 +59.0 117.4
19°	25 01.7 +59.1 121.3	24 51.9 +59.0 120.2	24 41.9 +59.1 119.2	24 31.9 +59.0 118.2	24 21.7 +59.1 117.2
20°	26 00.8 +59.1 121.1	25 50.9 +59.1 120.0	25 41.0 +59.0 119.0	25 30.9 +59.0 118.0	25 20.8 +59.0 117.0
21°	26 59.9 +59.0 120.9	26 50.0 +59.0 119.8	26 40.0 +59.0 118.8	26 29.9 +59.0 117.8	26 19.8 +58.9 116.8
22°	27 58.9 +59.1 120.7	27 49.0 +59.1 119.6	27 39.0 +59.0 118.6	27 28.9 +59.0 117.6	27 18.7 +59.0 116.6
23°	28 58.0 +59.0 120.5	28 48.1 +59.0 119.4	28 38.0 +59.0 118.4	28 27.9 +59.0 117.4	28 17.7 +59.0 116.4
24°	29 57.0 +59.0 120.3	29 47.1 +59.0 119.2	29 37.0 +59.0 118.2	29 26.9 +58.9 117.2	29 16.7 +58.9 116.1
25°	30 56.0 +59.0 120.1	30 46.1 +58.9 119.0	30 36.0 +58.9 118.0	30 25.8 +59.0 117.0	30 15.6 +58.9 115.9
26°	31 55.0 +59.0 119.8	31 45.0 +59.0 118.8	31 34.9 +59.0 117.8	31 24.8 +58.9 116.7	31 14.5 +58.9 115.7
27°	32 54.0 +58.9 119.6	32 44.0 +58.9 118.6	32 33.9 +58.8 117.5	32 23.7 +58.8 116.5	32 13.4 +58.8 115.5
28°	33 52.9 +58.9 119.4	33 42.9 +58.9 118.4	33 32.7 +58.9 117.3	33 22.5 +58.9 116.3	33 12.2 +58.8 115.2
29°	34 51.8 +58.9 119.2	34 41.8 +58.8 118.1	34 31.6 +58.9 117.1	34 21.4 +58.8 116.0	34 11.0 +58.9 115.0

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	5 28.5 +59.1 119.5	5 18.5 +59.1 118.6	5 08.4 +59.1 117.6	4 58.2 +59.1 116.6	4 47.9 +59.1 115.6
1°	6 27.6 +59.2 119.4	6 17.6 +59.2 118.4	6 07.5 +59.1 117.4	5 57.3 +59.1 116.4	5 47.0 +59.1 115.4
2°	7 26.8 +59.2 119.2	7 16.8 +59.1 118.2	7 06.6 +59.2 117.2	6 56.4 +59.1 116.2	6 46.1 +59.1 115.2
3°	8 26.0 +59.1 119.0	8 15.9 +59.1 118.0	8 05.8 +59.1 117.0	7 55.5 +59.1 116.1	7 45.2 +59.1 115.1
4°	9 25.1 +59.2 118.9	9 15.0 +59.2 117.9	9 04.9 +59.1 116.9	8 54.6 +59.1 115.9	8 44.3 +59.1 114.9
5°	10 24.3 +59.1 118.7	10 14.2 +59.1 117.7	10 04.0 +59.1 116.7	9 53.7 +59.1 115.7	9 43.4 +59.0 114.7
6°	11 23.4 +59.2 118.5	11 13.3 +59.1 117.5	11 03.1 +59.1 116.5	10 52.8 +59.1 115.5	10 42.4 +59.1 114.5
7°	12 22.6 +59.1 118.4	12 12.4 +59.1 117.4	12 02.2 +59.1 116.4	11 51.9 +59.1 115.4	11 41.5 +59.1 114.4
8°	13 21.7 +59.1 118.2	13 11.5 +59.2 117.2	13 01.3 +59.1 116.2	12 51.0 +59.1 115.2	12 40.6 +59.1 114.2
9°	14 20.8 +59.1 118.0	14 10.7 +59.1 117.0	14 00.4 +59.1 116.0	13 50.1 +59.0 115.0	13 39.7 +59.0 114.0
10°	15 19.9 +59.1 117.8	15 09.8 +59.0 116.8	14 59.5 +59.1 115.8	14 49.1 +59.1 114.8	14 38.7 +59.1 113.8
11°	16 19.0 +59.1 117.7	16 08.8 +59.1 116.6	15 58.6 +59.0 115.6	15 48.2 +59.1 114.6	15 37.8 +59.0 113.6
12°	17 18.1 +59.1 117.5	17 07.9 +59.1 116.5	16 57.6 +59.1 115.5	16 47.3 +59.0 114.4	16 36.8 +59.0 113.4
13°	18 17.2 +59.1 117.3	18 07.0 +59.1 116.3	17 56.7 +59.0 115.3	17 46.3 +59.0 114.3	17 35.8 +59.0 113.3
14°	19 16.3 +59.1 117.1	19 06.1 +59.0 116.1	18 55.7 +59.1 115.1	18 45.3 +59.0 114.1	18 34.8 +59.0 113.1
15°	20 15.4 +59.0 116.9	20 05.1 +59.1 115.9	19 54.8 +59.0 114.9	19 44.3 +59.1 113.9	19 33.8 +59.0 112.9
16°	21 14.4 +59.1 116.7	21 04.2 +59.0 115.7	20 53.8 +59.0 114.7	20 43.4 +58.9 113.7	20 32.8 +59.0 112.7
17°	22 13.5 +59.0 116.5	22 03.2 +59.0 115.5	21 52.8 +59.0 114.5	21 42.3 +59.0 113.5	21 31.8 +59.0 112.5
18°	23 12.5 +59.0 116.3	23 02.2 +59.0 115.3	22 51.8 +59.0 114.3	22 41.3 +59.0 113.3	22 30.8 +58.9 112.3
19°	24 11.5 +59.0 116.1	24 01.2 +59.0 115.1	23 50.8 +58.9 114.1	23 40.3 +58.9 113.1	23 29.7 +59.0 112.1
20°	25 10.5 +59.0 115.9	25 00.2 +58.9 114.9	24 49.7 +59.0 113.9	24 39.2 +59.0 112.9	24 28.7 +58.9 111.9
21°	26 09.5 +59.0 115.7	25 59.1 +59.0 114.7	25 48.7 +58.9 113.7	25 38.2 +58.9 112.7	25 27.6 +58.9 111.7
22°	27 08.5 +58.9 115.5	26 58.1 +58.9 114.5	26 47.6 +58.9 113.5	26 37.1 +58.9 112.5	26 26.5 +58.8 111.5
23°	28 07.4 +58.9 115.3	27 57.0 +58.9 114.3	27 46.5 +58.9 113.3	27 36.0 +58.9 112.3	27 25.5 +58.9 111.2
24°	29 06.3 +58.9 115.1	28 55.9 +58.9 114.1	28 45.4 +58.9 113.1	28 34.9 +58.8 112.0	28 24.2 +58.8 111.0
25°	30 05.2 +58.9 114.9	29 54.8 +58.9 113.9	29 44.3 +58.8 112.8	29 33.7 +58.8 111.8	29 23.0 +58.9 110.8
26°	31 04.1 +58.9 114.7	30 53.7 +58.8 113.6	30 43.1 +58.9 112.6	30 32.5 +58.8 111.6	30 21.9 +58.8 110.6
27°	32 03.0 +58.8 114.4	31 52.5 +58.8 113.4	31 42.0 +58.8 112.4	31 31.3 +58.8 111.4	31 20.7 +58.7 110.3
28°	33 01.8 +58.8 114.2	32 51.3 +58.8 113.2	32 40.8 +58.7 112.1	32 30.1 +58.8 111.1	32 19.4 +58.8 110.1
29°	34 00.6 +58.8 114.0	33 50.1 +58.8 112.9	33 39.5 +58.8 111.9	33 28.9 +58.7 110.9	33 18.2 +58.7 109.9

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 37.5 +59.1 114.6	4 27.1 +59.0 113.6	4 16.5 +59.1 112.6	4 05.9 +59.1 111.6	3 55.3 +59.0 110.6
1°	5 36.6 +59.1 114.4	5 26.1 +59.1 113.4	5 15.6 +59.1 112.4	5 05.0 +59.0 111.5	4 54.3 +59.0 110.5
2°	6 35.7 +59.1 114.2	6 25.2 +59.1 113.3	6 14.7 +59.0 112.3	6 04.0 +59.1 111.3	5 53.3 +59.1 110.3
3°	7 34.8 +59.1 114.1	7 24.3 +59.0 113.1	7 13.7 +59.1 112.1	7 03.1 +59.0 111.1	6 52.4 +59.0 110.1
4°	8 33.9 +59.0 113.9	8 23.3 +59.1 112.9	8 12.8 +59.0 111.9	8 02.1 +59.0 110.9	7 51.4 +59.0 109.9
5°	9 32.9 +59.1 113.7	9 22.4 +59.1 112.7	9 11.8 +59.0 111.7	9 01.1 +59.1 110.7	8 50.4 +59.0 109.7
6°	10 32.0 +59.1 113.5	10 21.5 +59.0 112.5	10 10.8 +59.1 111.5	10 00.2 +59.0 110.6	9 49.4 +59.0 109.6
7°	11 31.1 +59.0 113.4	11 20.5 +59.0 112.4	11 09.9 +59.0 111.4	10 59.2 +59.0 110.4	10 48.4 +59.0 109.4
8°	12 30.1 +59.1 113.2	12 19.5 +59.1 112.2	12 08.9 +59.0 111.2	11 58.2 +59.0 110.2	11 47.4 +59.0 109.2
9°	13 29.2 +59.0 113.0	13 18.6 +59.0 112.0	13 07.9 +59.0 111.0	12 57.2 +59.0 110.0	12 46.4 +59.0 109.0
10°	14 28.2 +59.0 112.8	14 17.6 +59.0 111.8	14 06.9 +59.0 110.8	13 56.2 +59.0 109.8	13 45.4 +59.0 108.8
11°	15 27.2 +59.0 112.6	15 16.6 +59.0 111.6	15 05.9 +59.0 110.6	14 55.2 +59.0 109.6	14 44.4 +58.9 108.6
12°	16 26.2 +59.1 112.4	16 15.6 +59.0 111.4	16 04.9 +59.0 110.4	15 54.2 +58.9 109.4	15 43.3 +59.0 108.4
13°	17 25.3 +59.0 112.3	17 14.6 +59.0 111.2	17 03.9 +59.0 110.2	16 53.1 +59.0 109.2	16 42.3 +59.0 108.2
14°	18 24.3 +59.0 112.1	18 13.6 +59.0 111.1	18 02.9 +59.0 110.1	17 52.1 +59.0 109.0	17 41.3 +58.9 108.0
15°	19 23.3 +58.9 111.9	19 12.6 +59.0 110.9	19 01.9 +58.9 109.9	18 51.1 +58.9 108.9	18 40.2 +58.9 107.9
16°	20 22.2 +59.0 111.7	20 11.6 +58.9 110.7	20 00.8 +58.9 109.7	19 50.0 +58.9 108.7	19 39.1 +58.9 107.7
17°	21 21.2 +58.9 111.5	21 10.5 +58.9 110.5	20 59.7 +59.0 109.5	20 48.9 +58.9 108.5	20 38.0 +58.9 107.4
18°	22 20.1 +59.0 111.3	22 09.4 +59.0 110.3	21 58.7 +58.9 109.3	21 47.8 +58.9 108.2	21 36.9 +58.9 107.2
19°	23 19.1 +58.9 111.1	23 08.4 +58.9 110.1	22 57.6 +58.9 109.0	22 46.7 +58.9 108.0	22 35.8 +58.9 107.0
20°	24 18.0 +58.9 110.9	24 07.3 +58.8 109.9	23 56.5 +58.8 108.8	23 45.6 +58.9 107.8	23 34.7 +58.8 106.8
21°	25 16.9 +58.9 110.7	25 06.1 +58.9 109.6	24 55.3 +58.9 108.6	24 44.5 +58.8 107.6	24 33.5 +58.8 106.6
22°	26 15.8 +58.8 110.4	26 05.0 +58.9 109.4	25 54.2 +58.8 108.4	25 43.3 +58.8 107.4	25 32.3 +58.8 106.4
23°	27 14.6 +58.9 110.2	27 03.9 +58.8 109.2	26 53.0 +58.8 108.2	26 42.1 +58.8 107.2	26 31.1 +58.8 106.2
24°	28 13.5 +58.8 110.0	28 02.7 +58.8 109.0	27 51.8 +58.8 108.0	27 40.9 +58.8 107.0	27 29.9 +58.8 106.0
25°	29 12.3 +58.8 109.8	29 01.5 +58.8 108.8	28 50.6 +58.8 107.7	28 39.7 +58.7 106.7	28 28.7 +58.7 105.7
26°	30 11.1 +58.8 109.5	30 00.3 +58.7 108.5	29 49.4 +58.7 107.5	29 38.4 +58.8 106.5	29 27.4 +58.8 105.5
27°	31 09.9 +58.7 109.3	30 59.0 +58.8 108.3	30 48.1 +58.8 107.3	30 37.2 +58.7 106.3	30 26.2 +58.7 105.3
28°	32 08.6 +58.8 109.1	31 57.8 +58.7 108.1	31 46.9 +58.7 107.0	31 35.9 +58.7 106.0	31 24.9 +58.6 105.0
29°	33 07.4 +58.6 108.8	32 56.5 +58.7 107.8	32 45.6 +58.6 106.8	32 34.6 +58.6 105.8	32 23.5 +58.7 104.8

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°	3 44.5 +59.0 109.7	3 33.7 +59.0 108.7	3 22.8 +59.0 107.7	3 11.9 +59.0 106.7	3 00.9 +59.0 105.7
1°	4 43.5 +59.1 109.5	4 32.7 +59.0 108.5	4 21.8 +59.0 107.5	4 10.9 +59.0 106.5	3 59.9 +58.9 105.5
2°	5 42.6 +59.0 109.3	5 31.7 +59.0 108.3	5 20.8 +59.0 107.3	5 09.9 +58.9 106.3	4 58.8 +59.0 105.4
3°	6 41.6 +59.0 109.1	6 30.7 +59.0 108.1	6 19.8 +59.0 107.1	6 08.8 +59.0 106.2	5 57.8 +59.0 105.2
4°	7 40.6 +59.0 108.9	7 29.7 +59.0 107.9	7 18.8 +59.0 107.0	7 07.8 +59.0 106.0	6 56.8 +58.9 105.0
5°	8 39.6 +59.0 108.8	8 28.7 +59.0 107.8	8 17.8 +59.0 106.8	8 06.8 +59.0 105.8	7 55.7 +59.0 104.8
6°	9 38.6 +59.0 108.6	9 27.7 +59.0 107.6	9 16.8 +58.9 106.6	9 05.8 +58.9 105.6	8 54.7 +59.0 104.6
7°	10 37.6 +59.0 108.4	10 26.7 +59.0 107.4	10 15.7 +59.0 106.4	10 04.7 +59.0 105.4	9 53.7 +58.9 104.4
8°	11 36.6 +59.0 108.2	11 25.7 +58.9 107.2	11 14.7 +59.0 106.2	11 03.7 +58.9 105.2	10 52.6 +59.0 104.2
9°	12 35.6 +58.9 108.0	12 24.6 +59.0 107.0	12 13.7 +58.9 106.0	12 02.6 +59.0 105.0	11 51.6 +58.9 104.0
10°	13 34.5 +59.0 107.8	13 23.6 +59.0 106.8	13 12.6 +59.0 105.8	13 01.6 +58.9 104.8	12 50.5 +58.9 103.8
11°	14 33.5 +59.0 107.6	14 22.6 +58.9 106.6	14 11.6 +58.9 105.6	14 00.5 +58.9 104.6	13 49.4 +58.9 103.7
12°	15 32.5 +58.9 107.4	15 21.5 +58.9 106.4	15 10.5 +58.9 105.4	14 59.4 +58.9 104.5	14 48.3 +58.9 103.5
13°	16 31.4 +58.9 107.2	16 20.4 +59.0 106.2	16 09.4 +58.9 105.2	15 58.3 +59.0 104.3	15 47.2 +58.9 103.3
14°	17 30.3 +59.0 107.0	17 19.4 +58.9 106.0	17 08.3 +58.9 105.1	16 57.3 +58.8 104.1	16 46.1 +58.9 103.1
15°	18 29.3 +58.9 106.9	18 18.3 +58.9 105.9	18 07.2 +58.9 104.9	17 56.1 +58.9 103.9	17 45.0 +58.9 102.9
16°	19 28.2 +58.9 106.6	19 17.2 +58.9 105.6	19 06.1 +58.9 104.7	18 55.0 +58.9 103.7	18 43.9 +58.8 102.7
17°	20 27.1 +58.9 106.4	20 16.1 +58.8 105.4	20 05.0 +58.9 104.4	19 53.9 +58.8 103.4	19 42.7 +58.9 102.5
18°	21 26.0 +58.8 106.2	21 14.9 +58.9 105.2	21 03.9 +58.8 104.2	20 52.7 +58.9 103.2	20 41.6 +58.8 102.2
19°	22 24.8 +58.9 106.0	22 13.8 +58.8 105.0	22 02.7 +58.8 104.0	21 51.6 +58.8 103.0	21 40.4 +58.8 102.0
20°	23 23.7 +58.8 105.8	23 12.6 +58.9 104.8	23 01.5 +58.9 103.8	22 50.4 +58.8 102.8	22 39.2 +58.8 101.8
21°	24 22.5 +58.8 105.6	24 11.5 +58.8 104.6	24 00.4 +58.7 103.6	23 49.2 +58.8 102.6	23 38.0 +58.8 101.6
22°	25 21.3 +58.8 105.4	25 10.3 +58.7 104.4	24 59.1 +58.8 103.4	24 48.0 +58.8 102.4	24 36.8 +58.7 101.4
23°	26 20.1 +58.8 105.2	26 09.0 +58.8 104.2	25 57.9 +58.8 103.2	25 46.8 +58.7 102.2	25 35.5 +58.8 101.2
24°	27 18.9 +58.8 104.9	27 07.8 +58.8 103.9	26 56.7 +58.7 102.9	26 45.5 +58.7 101.9	26 34.3 +58.7 100.9
25°	28 17.7 +58.7 104.7	28 06.6 +58.7 103.7	27 55.4 +58.7 102.7	27 44.2 +58.7 101.7	27 33.0 +58.7 100.7
26°	29 16.4 +58.7 104.5	29 05.3 +58.7 103.5	28 54.1 +58.7 102.5	28 42.9 +58.7 101.5	28 31.7 +58.6 100.5
27°	30 15.1 +58.7 104.2	30 04.0 +58.6 103.2	29 52.8 +58.7 102.2	29 41.6 +58.6 101.2	29 30.3 +58.7 100.2
28°	31 13.8 +58.6 104.0	31 02.6 +58.7 103.0	30 51.5 +58.6 102.0	30 40.2 +58.7 101.0	30 29.0 +58.6 100.0
29°	32 12.4 +58.6 103.8	32 01.3 +58.6 102.7	31 50.1 +58.6 101.7	31 38.9 +58.6 100.7	31 27.6 +58.6 99.7

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°	2 49.8 +59.0 104.7	2 38.7 +59.0 103.8	2 27.6 +59.0 102.8	2 16.4 +59.0 101.8	2 05.2 +58.9 100.8
1°	3 48.8 +59.0 104.6	3 37.7 +59.0 103.6	3 26.6 +58.9 102.6	3 15.4 +58.9 101.6	3 04.1 +59.0 100.6
2°	4 47.8 +58.9 104.4	4 36.7 +58.9 103.4	4 25.5 +58.9 102.4	4 14.3 +58.9 101.4	4 03.1 +58.9 100.4
3°	5 46.7 +59.0 104.2	5 35.6 +59.0 103.2	5 24.4 +59.0 102.2	5 13.2 +59.0 101.2	5 02.0 +58.9 100.2
4°	6 45.7 +59.0 104.0	6 34.6 +58.9 103.0	6 23.4 +58.9 102.0	6 12.2 +58.9 101.0	6 00.9 +58.9 100.0
5°	7 44.7 +58.9 103.8	7 33.5 +59.0 102.8	7 22.3 +59.0 101.8	7 11.1 +58.9 100.8	6 59.8 +59.0 99.9
6°	8 43.6 +59.0 103.6	8 32.5 +58.9 102.6	8 21.3 +58.9 101.6	8 10.0 +59.0 100.7	7 58.8 +58.9 99.7
7°	9 42.6 +58.9 103.4	9 31.4 +58.9 102.4	9 20.2 +58.9 101.5	9 09.0 +58.9 100.5	8 57.7 +58.9 99.5
8°	10 41.5 +58.9 103.2	10 30.3 +58.9 102.2	10 19.1 +58.9 101.3	10 07.9 +58.9 100.3	9 56.6 +58.9 99.3
9°	11 40.4 +58.9 103.0	11 29.2 +59.0 102.1	11 18.0 +58.9 101.1	11 06.8 +58.9 100.1	10 55.5 +58.9 99.1
10°	12 39.3 +59.0 102.9	12 28.2 +58.9 101.9	12 16.9 +58.9 100.9	12 05.7 +58.9 99.9	11 54.4 +58.9 98.9
11°	13 38.3 +58.9 102.7	13 27.1 +58.9 101.7	13 15.8 +58.9 100.7	13 04.6 +58.9 99.7	12 53.3 +58.8 98.7
12°	14 37.2 +58.9 102.5	14 26.0 +58.9 101.5	14 14.7 +58.9 100.5	14 03.5 +58.8 99.5	13 52.1 +58.9 98.5
13°	15 36.1 +58.8 102.3	15 24.9 +58.8 101.3	15 13.6 +58.9 100.3	15 02.3 +58.9 99.3	14 51.0 +58.9 98.3
14°	16 34.9 +58.9 102.1	16 23.7 +58.9 101.1	16 12.5 +58.8 100.1	16 01.2 +58.8 99.1	15 49.9 +58.8 98.1
15°	17 33.8 +58.8 101.9	17 22.6 +58.9 100.9	17 11.3 +58.9 99.9	17 00.0 +58.9 98.9	16 48.7 +58.9 97.9
16°	18 32.7 +58.8 101.7	18 21.5 +58.8 100.7	18 10.2 +58.8 99.7	17 58.9 +58.8 98.7	17 47.6 +58.8 97.7
17°	19 31.5 +58.9 101.5	19 20.3 +58.8 100.5	19 09.0 +58.8 99.5	18 57.7 +58.8 98.5	18 46.4 +58.8 97.5
18°	20 30.4 +58.8 101.2	20 19.1 +58.8 100.3	20 07.8 +58.8 99.3	19 56.5 +58.8 98.3	19 45.2 +58.8 97.3
19°	21 29.2 +58.8 101.0	21 17.9 +58.8 100.0	21 06.6 +58.8 99.0	20 55.3 +58.8 98.1	20 44.0 +58.7 97.1
20°	22 28.0 +58.8 100.8	22 16.7 +58.8 99.8	22 05.4 +58.8 98.8	21 54.1 +58.8 97.8	21 42.7 +58.8 96.8
21°	23 26.8 +58.7 100.6	23 15.5 +58.8 99.6	23 04.2 +58.8 98.6	22 52.9 +58.7 97.6	22 41.5 +58.7 96.6
22°	24 25.5 +58.8 100.4	24 14.3 +58.7 99.4	24 03.0 +58.7 98.4	23 51.6 +58.7 97.4	23 40.2 +58.8 96.4
23°	25 24.3 +58.7 100.2	25 13.0 +58.7 99.2	25 01.7 +58.7 98.2	24 50.3 +58.7 97.2	24 39.0 +58.7 96.2
24°	26 23.0 +58.7 99.9	26 11.7 +58.7 98.9	26 00.4 +58.7 97.9	25 49.0 +58.7 96.9	25 37.7 +58.7 96.0
25°	27 21.7 +58.7 99.7	27 10.4 +58.7 98.7	26 59.1 +58.7 97.7	26 47.7 +58.7 96.7	26 36.4 +58.6 95.7
26°	28 20.4 +58.7 99.5	28 09.1 +58.6 98.5	27 57.8 +58.6 97.5	27 46.4 +58.6 96.5	27 35.0 +58.6 95.5
27°	29 19.1 +58.6 99.2	29 07.7 +58.7 98.2	28 56.4 +58.6 97.2	28 45.0 +58.6 96.2	28 33.6 +58.6 95.2
28°	30 17.7 +58.6 99.0	30 06.4 +58.6 98.0	29 55.0 +58.6 97.0	29 43.6 +58.6 96.0	29 32.2 +58.6 95.0
29°	31 16.3 +58.6 98.7	31 05.0 +58.5 97.7	30 53.6 +58.6 96.7	30 42.2 +58.6 95.7	30 30.8 +58.6 94.7

Declination SAME name as Latitude

Latitude 79°

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°	1 53.9 +59.0 99.8	1 42.6 +59.0 98.8	1 31.3 +58.9 97.9	1 19.9 +59.0 96.9	1 08.6 +58.9 95.9
1°	2 52.9 +58.9 99.6	2 41.6 +58.9 98.6	2 30.2 +58.9 97.7	2 18.9 +58.9 96.7	2 07.5 +58.9 95.7
2°	3 51.8 +58.9 99.4	3 40.5 +58.9 98.5	3 29.1 +58.9 97.5	3 17.8 +58.9 96.5	3 06.4 +58.9 95.5
3°	4 50.7 +58.9 99.3	4 39.4 +58.9 98.3	4 28.0 +59.0 97.3	4 16.7 +58.9 96.3	4 05.3 +58.9 95.3
4°	5 49.6 +58.9 99.1	5 38.3 +58.9 98.1	5 27.0 +58.9 97.1	5 15.6 +58.9 96.1	5 04.2 +58.9 95.1
5°	6 48.5 +59.0 98.9	6 37.2 +58.9 97.9	6 25.9 +58.9 96.9	6 14.5 +58.9 95.9	6 03.1 +58.9 94.9
6°	7 47.5 +58.9 98.7	7 36.1 +58.9 97.7	7 24.8 +58.9 96.7	7 13.4 +58.9 95.7	7 02.0 +58.9 94.7
7°	8 46.4 +58.9 98.5	8 35.0 +58.9 97.5	8 23.7 +58.9 96.5	8 12.3 +58.9 95.5	8 00.9 +58.9 94.6
8°	9 45.3 +58.9 98.3	9 33.9 +58.9 97.3	9 22.6 +58.8 96.3	9 11.2 +58.9 95.3	8 59.8 +58.8 94.4
9°	10 44.2 +58.9 98.1	10 32.8 +58.9 97.1	10 21.4 +58.9 96.1	10 10.1 +58.8 95.1	9 58.6 +58.9 94.2
10°	11 43.1 +58.8 97.9	11 31.7 +58.9 96.9	11 20.3 +58.9 95.9	11 08.9 +58.9 95.0	10 57.5 +58.9 94.0
11°	12 41.9 +58.9 97.7	12 30.6 +58.8 96.7	12 19.2 +58.9 95.7	12 07.8 +58.9 94.8	11 56.4 +58.8 93.8
12°	13 40.8 +58.9 97.5	13 29.4 +58.9 96.5	13 18.1 +58.8 95.5	13 06.7 +58.8 94.6	12 55.2 +58.9 93.6
13°	14 39.7 +58.8 97.3	14 28.3 +58.9 96.3	14 16.9 +58.9 95.3	14 05.5 +58.8 94.4	13 54.1 +58.8 93.4
14°	15 38.5 +58.9 97.1	15 27.2 +58.8 96.1	15 15.8 +58.8 95.1	15 04.3 +58.9 94.2	14 52.9 +58.8 93.2
15°	16 37.4 +58.8 96.9	16 26.0 +58.8 95.9	16 14.6 +58.8 94.9	16 03.2 +58.8 93.9	15 51.7 +58.9 93.0
16°	17 36.2 +58.8 96.7	17 24.8 +58.8 95.7	17 13.4 +58.8 94.7	17 02.0 +58.8 93.7	16 50.6 +58.8 92.8
17°	18 35.0 +58.8 96.5	18 23.6 +58.8 95.5	18 12.2 +58.8 94.5	18 00.8 +58.8 93.5	17 49.4 +58.8 92.5
18°	19 33.8 +58.8 96.3	19 22.4 +58.8 95.3	19 11.0 +58.8 94.3	18 59.6 +58.8 93.3	18 48.2 +58.7 92.3
19°	20 32.6 +58.8 96.1	20 21.2 +58.8 95.1	20 09.8 +58.8 94.1	19 58.4 +58.7 93.1	19 46.9 +58.8 92.1
20°	21 31.4 +58.7 95.9	21 20.0 +58.7 94.9	21 08.6 +58.7 93.9	20 57.1 +58.8 92.9	20 45.7 +58.7 91.9
21°	22 30.1 +58.8 95.6	22 18.7 +58.8 94.6	22 07.3 +58.7 93.7	21 55.9 +58.7 92.7	21 44.4 +58.8 91.7
22°	23 28.9 +58.7 95.4	23 17.5 +58.7 94.4	23 06.0 +58.7 93.4	22 54.6 +58.7 92.5	22 43.2 +58.7 91.5
23°	24 27.6 +58.7 95.2	24 16.2 +58.7 94.2	24 04.7 +58.7 93.2	23 53.3 +58.7 92.2	23 41.9 +58.7 91.2
24°	25 26.3 +58.7 95.0	25 14.9 +58.6 94.0	25 03.4 +58.7 93.0	24 52.0 +58.7 92.0	24 40.6 +58.6 91.0
25°	26 25.0 +58.6 94.7	26 13.5 +58.7 93.7	26 02.1 +58.7 92.8	25 50.7 +58.6 91.8	25 39.2 +58.7 90.8
26°	27 23.6 +58.6 94.5	27 12.2 +58.6 93.5	27 00.8 +58.6 92.5	26 49.3 +58.6 91.5	26 37.9 +58.6 90.5
27°	28 22.2 +58.6 94.3	28 10.8 +58.6 93.3	27 59.4 +58.6 92.3	27 47.9 +58.6 91.3	27 36.5 +58.6 90.3
28°	29 20.8 +58.6 94.0	29 09.4 +58.6 93.0	28 58.0 +58.5 92.0	28 46.5 +58.6 91.0	28 35.1 +58.5 90.1
29°	30 19.4 +58.6 93.8	30 08.0 +58.5 92.8	29 56.5 +58.6 91.8	29 45.1 +58.5 90.8	29 33.6 +58.6 89.8

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 57.2 +58.9 94.9	0 45.8 +58.9 93.9	0 34.3 +58.9 92.9	0 22.9 +58.9 92.0	0 11.4 +58.9 91.0
1°	1 56.1 +58.9 94.7	1 44.7 +58.9 93.7	1 33.2 +58.9 92.8	1 21.8 +58.9 91.8	1 10.3 +58.9 90.8
2°	2 55.0 +58.9 94.5	2 43.6 +58.9 93.5	2 32.1 +58.9 92.6	2 20.7 +58.9 91.6	2 09.2 +58.9 90.6
3°	3 53.9 +58.9 94.3	3 42.5 +58.9 93.4	3 31.0 +58.9 92.4	3 19.6 +58.9 91.4	3 08.1 +58.9 90.4
4°	4 52.8 +58.9 94.1	4 41.4 +58.9 93.2	4 29.9 +58.9 92.2	4 18.5 +58.9 91.2	4 07.0 +58.9 90.2
5°	5 51.7 +58.9 94.0	5 40.3 +58.8 93.0	5 28.8 +58.9 92.0	5 17.4 +58.9 91.0	5 05.9 +58.9 90.0
6°	6 50.6 +58.9 93.8	6 39.1 +58.9 92.8	6 27.7 +58.9 91.8	6 16.3 +58.8 90.8	6 04.8 +58.9 89.8
7°	7 49.5 +58.8 93.6	7 38.0 +58.9 92.6	7 26.6 +58.9 91.6	7 15.1 +58.9 90.6	7 03.7 +58.9 89.6
8°	8 48.3 +58.9 93.4	8 36.9 +58.9 92.4	8 25.5 +58.8 91.4	8 14.0 +58.9 90.4	8 02.6 +58.8 89.4
9°	9 47.2 +58.9 93.2	9 35.8 +58.9 92.2	9 24.3 +58.9 91.2	9 12.9 +58.9 90.2	9 01.4 +58.9 89.2
10°	10 46.1 +58.9 93.0	10 34.7 +58.8 92.0	10 23.2 +58.9 91.0	10 11.8 +58.8 90.0	10 00.3 +58.9 89.1
11°	11 45.0 +58.8 92.8	11 33.5 +58.9 91.8	11 22.1 +58.8 90.8	11 10.6 +58.9 89.8	10 59.2 +58.8 88.9
12°	12 43.8 +58.9 92.6	12 32.4 +58.8 91.6	12 20.9 +58.9 90.6	12 09.5 +58.8 89.6	11 58.0 +58.9 88.7
13°	13 42.7 +58.8 92.4	13 31.2 +58.8 91.4	13 19.8 +58.8 90.4	13 08.3 +58.8 89.4	12 56.9 +58.8 88.5
14°	14 41.5 +58.8 92.2	14 30.0 +58.9 91.2	14 18.6 +58.8 90.2	14 07.1 +58.9 89.2	13 55.7 +58.8 88.3
15°	15 40.3 +58.8 92.0	15 28.9 +58.8 91.0	15 17.4 +58.8 90.0	15 06.0 +58.8 89.0	14 54.5 +58.8 88.1
16°	16 39.1 +58.8 91.8	16 27.7 +58.8 90.8	16 16.2 +58.8 89.8	16 04.8 +58.8 88.8	15 53.3 +58.8 87.8
17°	17 37.9 +58.8 91.6	17 26.5 +58.8 90.6	17 15.0 +58.8 89.6	17 03.6 +58.8 88.6	16 52.1 +58.8 87.6
18°	18 36.7 +58.8 91.4	18 25.3 +58.7 90.4	18 13.8 +58.8 89.4	18 02.4 +58.7 88.4	17 50.9 +58.8 87.4
19°	19 35.5 +58.7 91.1	19 24.0 +58.8 90.2	19 12.6 +58.7 89.2	19 01.1 +58.8 88.2	18 49.7 +58.8 87.2
20°	20 34.2 +58.8 90.9	20 22.8 +58.7 89.9	20 11.3 +58.8 89.0	19 59.9 +58.7 88.0	19 48.5 +58.7 87.0
21°	21 33.0 +58.7 90.7	21 21.5 +58.8 89.7	21 10.1 +58.7 88.7	20 58.6 +58.8 87.8	20 47.2 +58.7 86.8
22°	22 31.7 +58.7 90.5	22 20.3 +58.7 89.5	22 08.8 +58.7 88.5	21 57.4 +58.7 87.5	21 45.9 +58.8 86.6
23°	23 30.4 +58.7 90.3	23 19.0 +58.7 89.3	23 07.5 +58.7 88.3	22 56.1 +58.7 87.3	22 44.7 +58.6 86.3
24°	24 29.1 +58.7 90.0	24 17.7 +58.6 89.1	24 06.2 +58.7 88.1	23 54.8 +58.6 87.1	23 43.3 +58.7 86.1
25°	25 27.8 +58.6 89.8	25 16.3 +58.7 88.8	25 04.9 +58.6 87.8	24 53.4 +58.7 86.9	24 42.0 +58.7 85.9
26°	26 26.4 +58.6 89.6	26 15.0 +58.6 88.6	26 03.5 +58.6 87.6	25 52.1 +58.6 86.6	25 40.7 +58.6 85.7
27°	27 25.0 +58.6 89.3	27 13.6 +58.6 88.3	27 02.1 +58.6 87.4	26 50.7 +58.6 86.4	26 39.3 +58.6 85.4
28°	28 23.6 +58.6 89.1	28 12.2 +58.6 88.1	28 00.7 +58.6 87.1	27 49.3 +58.6 86.2	27 37.9 +58.6 85.2
29°	29 22.2 +58.5 88.8	29 10.8 +58.5 87.9	28 59.3 +58.6 86.9	28 47.9 +58.5 85.9	28 36.5 +58.5 84.9

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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 +58.9 90.0	-0 11.4 +58.8	-0 22.9 +58.9	-0 34.3 +58.9	-0 45.8 +58.9
1°	0 58.9 +58.9 89.8	0 47.4 +58.9 88.8	0 36.0 +58.9 87.8	0 24.6 +58.9 86.9	0 13.1 +58.9 85.9
2°	1 57.8 +58.9 89.6	1 46.3 +58.9 88.6	1 34.9 +58.9 87.7	1 23.5 +58.9 86.7	1 12.0 +58.9 85.7
3°	2 56.7 +58.9 89.4	2 45.2 +58.9 88.4	2 33.8 +58.9 87.5	2 22.4 +58.9 86.5	2 10.9 +58.9 85.5
4°	3 55.6 +58.9 89.2	3 44.1 +58.9 88.3	3 32.7 +58.9 87.3	3 21.3 +58.9 86.3	3 09.9 +58.8 85.3
5°	4 54.5 +58.9 89.0	4 43.0 +58.9 88.1	4 31.6 +58.9 87.1	4 20.2 +58.9 86.1	4 08.7 +58.9 85.1
6°	5 53.4 +58.8 88.9	5 41.9 +58.9 87.9	5 30.5 +58.9 86.9	5 19.1 +58.8 85.9	5 07.6 +58.9 84.9
7°	6 52.2 +58.9 88.7	6 40.8 +58.9 87.7	6 29.4 +58.9 86.7	6 17.9 +58.9 85.7	6 06.5 +58.9 84.7
8°	7 51.1 +58.9 88.5	7 39.7 +58.9 87.5	7 28.3 +58.8 86.5	7 16.8 +58.9 85.5	7 05.4 +58.9 84.5
9°	8 50.0 +58.9 88.3	8 38.6 +58.8 87.3	8 27.1 +58.9 86.3	8 15.7 +58.9 85.3	8 04.3 +58.9 84.3
10°	9 48.9 +58.8 88.1	9 37.4 +58.9 87.1	9 26.0 +58.9 86.1	9 14.6 +58.9 85.1	9 03.2 +58.9 84.2
11°	10 47.7 +58.9 87.9	10 36.3 +58.8 86.9	10 24.9 +58.8 85.9	10 13.5 +58.8 84.9	10 02.1 +58.8 84.0
12°	11 46.6 +58.8 87.7	11 35.1 +58.9 86.7	11 23.7 +58.9 85.7	11 12.3 +58.9 84.7	11 00.9 +58.9 83.8
13°	12 45.4 +58.9 87.5	12 34.0 +58.8 86.5	12 22.6 +58.8 85.5	12 11.2 +58.8 84.5	11 59.8 +58.8 83.6
14°	13 44.3 +58.8 87.3	13 32.8 +58.9 86.3	13 21.4 +58.8 85.3	13 10.0 +58.8 84.3	12 58.6 +58.9 83.4
15°	14 43.1 +58.8 87.1	14 31.7 +58.8 86.1	14 20.2 +58.9 85.1	14 08.8 +58.9 84.1	13 57.5 +58.8 83.2
16°	15 41.9 +58.8 86.9	15 30.5 +58.8 85.9	15 19.1 +58.8 84.9	15 07.7 +58.8 83.9	14 56.3 +58.8 83.0
17°	16 40.7 +58.8 86.7	16 29.3 +58.8 85.7	16 17.9 +58.8 84.7	16 06.5 +58.8 83.7	15 55.1 +58.8 82.8
18°	17 39.5 +58.8 86.5	17 28.1 +58.8 85.5	17 16.7 +58.8 84.5	17 05.3 +58.8 83.5	16 53.9 +58.8 82.5
19°	18 38.3 +58.7 86.2	18 26.9 +58.7 85.3	18 15.5 +58.7 84.3	18 04.1 +58.8 83.3	17 52.7 +58.8 82.3
20°	19 37.0 +58.8 86.0	19 25.6 +58.8 85.1	19 14.2 +58.8 84.1	19 02.9 +58.7 83.1	18 51.5 +58.8 82.1
21°	20 35.8 +58.7 85.8	20 24.4 +58.7 84.8	20 13.0 +58.7 83.9	20 01.6 +58.8 82.9	19 50.3 +58.7 81.9
22°	21 34.5 +58.7 85.6	21 23.1 +58.7 84.6	21 11.7 +58.7 83.6	21 00.4 +58.7 82.7	20 49.0 +58.7 81.7
23°	22 33.2 +58.7 85.4	22 21.8 +58.7 84.4	22 10.4 +58.8 83.4	21 59.1 +58.7 82.4	21 47.7 +58.8 81.5
24°	23 31.9 +58.7 85.1	23 20.5 +58.7 84.2	23 09.2 +58.6 83.2	22 57.8 +58.7 82.2	22 46.5 +58.7 81.3
25°	24 30.6 +58.7 84.9	24 19.2 +58.7 83.9	24 07.8 +58.7 83.0	23 56.5 +58.7 82.0	23 45.2 +58.6 81.0
26°	25 29.3 +58.6 84.7	25 17.9 +58.6 83.7	25 06.5 +58.6 82.7	24 55.2 +58.6 81.8	24 43.8 +58.7 80.8
27°	26 27.9 +58.6 84.4	26 16.5 +58.6 83.5	26 05.1 +58.7 82.5	25 53.8 +58.6 81.5	25 42.5 +58.6 80.6
28°	27 26.5 +58.6 84.2	27 15.1 +58.6 83.2	27 03.8 +58.6 82.3	26 52.4 +58.6 81.3	26 41.1 +58.6 80.3
29°	28 25.1 +58.5 84.0	28 13.7 +58.6 83.0	28 02.4 +58.5 82.0	27 51.0 +58.6 81.1	27 39.7 +58.6 80.1

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°	-0 57.2 +58.9	-1 08.6 +58.9	-1 19.9 +58.9	-1 31.3 +58.9	-1 42.6 +58.9
1°	0 01.7 +58.9 84.9	-0 09.7 +58.9	-0 21.0 +58.9	-0 32.4 +58.9	-0 43.7 +58.9
2°	1 00.6 +58.9 84.7	0 49.2 +59.0 83.7	0 37.9 +58.9 82.7	0 26.5 +59.0 81.8	0 15.2 +58.9 80.8
3°	1 59.5 +58.9 84.5	1 48.2 +58.9 83.5	1 36.8 +58.9 82.6	1 25.5 +58.9 81.6	1 14.1 +59.0 80.6
4°	2 58.4 +59.0 84.3	2 47.1 +58.9 83.3	2 35.7 +58.9 82.4	2 24.4 +58.9 81.4	2 13.1 +58.9 80.4
5°	3 57.4 +58.8 84.1	3 46.0 +58.9 83.2	3 34.6 +58.9 82.2	3 23.3 +58.9 81.2	3 12.0 +58.9 80.2
6°	4 56.2 +58.9 83.9	4 44.9 +58.9 83.0	4 33.5 +58.9 82.0	4 22.2 +58.9 81.0	4 10.9 +58.9 80.0
7°	5 55.1 +58.9 83.8	5 43.8 +58.9 82.8	5 32.4 +58.9 81.8	5 21.1 +58.9 80.8	5 09.8 +58.9 79.8
8°	6 54.0 +58.9 83.6	6 42.7 +58.9 82.6	6 31.3 +58.9 81.6	6 20.0 +58.9 80.6	6 08.7 +59.0 79.7
9°	7 52.9 +58.9 83.4	7 41.6 +58.9 82.4	7 30.2 +58.9 81.4	7 18.9 +58.9 80.4	7 07.7 +58.9 79.5
10°	8 51.8 +58.9 83.2	8 40.5 +58.8 82.2	8 29.1 +58.9 81.2	8 17.8 +58.9 80.2	8 06.6 +58.9 79.3
11°	9 50.7 +58.9 83.0	9 39.3 +58.9 82.0	9 28.0 +58.9 81.0	9 16.7 +58.9 80.1	9 05.5 +58.9 79.1
12°	10 49.6 +58.8 82.8	10 38.2 +58.9 81.8	10 26.9 +58.9 80.8	10 15.6 +58.9 79.9	10 04.4 +58.8 78.9
13°	11 48.4 +58.9 82.6	11 37.1 +58.8 81.6	11 25.8 +58.8 80.6	11 14.5 +58.9 79.7	11 03.2 +58.9 78.7
14°	12 47.3 +58.8 82.4	12 35.9 +58.9 81.4	12 24.6 +58.9 80.4	12 13.4 +58.8 79.5	12 02.1 +58.9 78.5
15°	13 46.1 +58.8 82.2	13 34.8 +58.8 81.2	13 23.5 +58.8 80.2	13 12.2 +58.9 79.3	13 01.0 +58.9 78.3
16°	14 44.9 +58.9 82.0	14 33.6 +58.9 81.0	14 22.3 +58.9 80.0	14 11.1 +58.8 79.1	13 59.9 +58.8 78.1
17°	15 43.8 +58.8 81.8	15 32.5 +58.8 80.8	15 21.2 +58.8 79.8	15 09.9 +58.9 78.9	14 58.7 +58.8 77.9
18°	16 42.6 +58.8 81.6	16 31.3 +58.8 80.6	16 20.0 +58.8 79.6	16 08.8 +58.8 78.7	15 57.5 +58.9 77.7
19°	17 41.4 +58.8 81.4	17 30.1 +58.8 80.4	17 18.8 +58.8 79.4	17 07.6 +58.8 78.5	16 56.4 +58.8 77.5
20°	18 40.2 +58.7 81.2	18 28.9 +58.8 80.2	18 17.6 +58.8 79.2	18 06.4 +58.8 78.2	17 55.2 +58.8 77.3
21°	19 38.9 +58.8 80.9	19 27.7 +58.7 80.0	19 16.4 +58.8 79.0	19 05.2 +58.8 78.0	18 54.0 +58.8 77.1
22°	20 37.7 +58.7 80.7	20 26.4 +58.8 79.8	20 15.2 +58.7 78.8	20 04.0 +58.7 77.8	19 52.8 +58.8 76.9
23°	21 36.4 +58.8 80.5	21 25.2 +58.7 79.5	21 13.9 +58.8 78.6	21 02.7 +58.8 77.6	20 51.6 +58.7 76.6
24°	22 35.2 +58.7 80.3	22 23.9 +58.7 79.3	22 12.7 +58.7 78.4	22 01.5 +58.7 77.4	21 50.3 +58.8 76.4
25°	23 33.9 +58.7 80.1	23 22.6 +58.7 79.1	23 11.4 +58.7 78.1	23 00.2 +58.7 77.2	22 49.1 +58.7 76.2
26°	24 32.6 +58.6 79.8	24 21.3 +58.7 78.9	24 10.1 +58.7 77.9	23 58.9 +58.7 76.9	23 47.8 +58.7 76.0
27°	25 31.2 +58.7 79.6	25 20.0 +58.6 78.6	25 08.8 +58.6 77.7	24 57.6 +58.7 76.7	24 46.5 +58.7 75.8
28°	26 29.9 +58.6 79.4	26 18.6 +58.7 78.4	26 07.4 +58.7 77.4	25 56.3 +58.6 76.5	25 45.2 +58.6 75.5
29°	27 28.5 +58.6 79.1	27 17.3 +58.6 78.2	27 06.1 +58.6 77.2	26 54.9 +58.7 76.2	26 43.8 +58.7 75.3

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°	-1 53.9 +58.9	-2 05.2 +58.9	-2 16.4 +58.9	-2 27.6 +58.9	-2 38.7 +58.9
1°	-0 55.0 +58.9	-1 06.3 +59.0	-1 17.5 +59.0	-1 28.7 +59.0	-1 39.8 +59.0
2°	0 03.9 +59.0 79.8	-0 07.3 +58.9	-0 18.5 +58.9	-0 29.7 +59.0	-0 40.8 +58.9
3°	1 02.9 +58.9 79.6	0 51.6 +59.0 78.6	0 40.4 +59.0 77.7	0 29.3 +58.9 76.7	0 18.1 +59.0 75.7
4°	2 01.8 +58.9 79.4	1 50.6 +58.9 78.4	1 39.4 +58.9 77.5	1 28.2 +59.0 76.5	1 17.1 +59.0 75.5
5°	3 00.7 +59.0 79.2	2 49.5 +58.9 78.3	2 38.3 +59.0 77.3	2 27.2 +58.9 76.3	2 16.1 +58.9 75.3
6°	3 59.7 +58.9 79.1	3 48.4 +59.0 78.1	3 37.3 +58.9 77.1	3 26.1 +59.0 76.1	3 15.0 +59.0 75.1
7°	4 58.6 +58.9 78.9	4 47.4 +58.9 77.9	4 36.2 +58.9 76.9	4 25.1 +58.9 75.9	4 14.0 +58.9 74.9
8°	5 57.5 +58.9 78.7	5 46.3 +58.9 77.7	5 35.1 +59.0 76.7	5 24.0 +59.0 75.7	5 12.9 +59.0 74.8
9°	6 56.4 +58.9 78.5	6 45.2 +58.9 77.5	6 34.1 +58.9 76.5	6 23.0 +58.9 75.6	6 11.9 +58.9 74.6
10°	7 55.3 +58.9 78.3	7 44.1 +59.0 77.3	7 33.0 +58.9 76.3	7 21.9 +58.9 75.4	7 10.8 +59.0 74.4
11°	8 54.2 +58.9 78.1	8 43.1 +58.9 77.1	8 31.9 +58.9 76.1	8 20.8 +59.0 75.2	8 09.8 +58.9 74.2
12°	9 53.1 +58.9 77.9	9 42.0 +58.9 76.9	9 30.8 +58.9 76.0	9 19.8 +58.9 75.0	9 08.7 +59.0 74.0
13°	10 52.0 +58.9 77.7	10 40.9 +58.9 76.7	10 29.7 +59.0 75.8	10 18.7 +58.9 74.8	10 07.7 +58.9 73.8
14°	11 50.9 +58.9 77.5	11 39.8 +58.9 76.5	11 28.7 +58.9 75.6	11 17.6 +58.9 74.6	11 06.6 +58.9 73.6
15°	12 49.8 +58.9 77.3	12 38.7 +58.8 76.3	12 27.6 +58.8 75.4	12 16.5 +58.9 74.4	12 05.5 +58.9 73.4
16°	13 48.7 +58.8 77.1	13 37.5 +58.9 76.2	13 26.4 +58.9 75.2	13 15.4 +58.9 74.2	13 04.4 +58.9 73.2
17°	14 47.5 +58.9 76.9	14 36.4 +58.9 76.0	14 25.3 +58.9 75.0	14 14.3 +58.9 74.0	14 03.3 +58.9 73.0
18°	15 46.4 +58.8 76.7	15 35.3 +58.8 75.8	15 24.2 +58.9 74.8	15 13.2 +58.8 73.8	15 02.2 +58.9 72.8
19°	16 45.2 +58.8 76.5	16 34.1 +58.8 75.5	16 23.1 +58.8 74.6	16 12.0 +58.9 73.6	16 01.1 +58.9 72.6
20°	17 44.0 +58.9 76.3	17 32.9 +58.9 75.3	17 21.9 +58.8 74.4	17 10.9 +58.8 73.4	17 00.0 +58.8 72.4
21°	18 42.9 +58.8 76.1	18 31.8 +58.8 75.1	18 20.7 +58.9 74.2	18 09.7 +58.9 73.2	17 58.8 +58.9 72.2
22°	19 41.7 +58.7 75.9	19 30.6 +58.8 74.9	19 19.6 +58.8 74.0	19 08.6 +58.8 73.0	18 57.7 +58.8 72.0
23°	20 40.4 +58.8 75.7	20 29.4 +58.8 74.7	20 18.4 +58.8 73.8	20 07.4 +58.8 72.8	19 56.5 +58.8 71.8
24°	21 39.2 +58.8 75.5	21 28.2 +58.7 74.5	21 17.2 +58.7 73.5	21 06.2 +58.8 72.6	20 55.3 +58.8 71.6
25°	22 38.0 +58.7 75.2	22 26.9 +58.8 74.3	22 15.9 +58.8 73.3	22 05.0 +58.8 72.4	21 54.1 +58.8 71.4
26°	23 36.7 +58.7 75.0	23 25.7 +58.7 74.1	23 14.7 +58.7 73.1	23 03.8 +58.7 72.1	22 52.9 +58.8 71.2
27°	24 35.4 +58.7 74.8	24 24.4 +58.7 73.8	24 13.4 +58.7 72.9	24 02.5 +58.7 71.9	23 51.7 +58.7 71.0
28°	25 34.1 +58.7 74.6	25 23.1 +58.7 73.6	25 12.1 +58.7 72.7	25 01.2 +58.8 71.7	24 50.4 +58.7 70.7
29°	26 32.8 +58.6 74.3	26 21.8 +58.7 73.4	26 10.8 +58.7 72.4	26 00.0 +58.7 71.5	25 49.1 +58.7 70.5

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°	-2 49.8 +58.9	-3 00.9 +59.0	-3 11.9 +59.0	-3 22.8 +59.0	-3 33.7 +59.0
1°	-1 50.9 +59.0	-2 01.9 +59.0	-2 12.9 +59.0	-2 23.8 +59.0	-2 34.7 +59.0
2°	-0 51.9 +59.0	-1 02.9 +59.0	-1 13.9 +59.0	-1 24.8 +59.0	-1 35.7 +59.0
3°	0 07.1 +58.9 74.7	-0 03.9 +58.9	-0 14.9 +59.0	-0 25.8 +59.0	-0 36.7 +59.1
4°	1 06.0 +59.0 74.5	0 55.0 +59.0 73.5	0 44.1 +59.0 72.6	0 33.2 +59.0 71.6	0 22.4 +59.0 70.6
5°	2 05.0 +59.0 74.3	1 54.0 +59.0 73.4	1 43.1 +59.0 72.4	1 32.2 +59.0 71.4	1 21.4 +59.0 70.4
6°	3 04.0 +59.0 74.2	2 53.0 +59.0 73.2	2 42.1 +59.0 72.2	2 31.2 +59.0 71.2	2 20.4 +59.0 70.2
7°	4 03.0 +58.9 74.0	3 52.0 +59.0 73.0	3 41.1 +58.9 72.0	3 30.2 +59.0 71.0	3 19.4 +59.0 70.1
8°	5 01.9 +59.0 73.8	4 51.0 +58.9 72.8	4 40.0 +59.0 71.8	4 29.2 +59.0 70.9	4 18.4 +59.0 69.9
9°	6 00.9 +58.9 73.6	5 49.9 +59.0 72.6	5 39.0 +59.0 71.6	5 28.2 +59.0 70.7	5 17.4 +59.0 69.7
10°	6 59.8 +59.0 73.4	6 48.9 +59.0 72.4	6 38.0 +59.0 71.5	6 27.2 +59.0 70.5	6 16.4 +59.0 69.5
11°	7 58.8 +58.9 73.2	7 47.9 +58.9 72.3	7 37.0 +59.0 71.3	7 26.2 +59.0 70.3	7 15.4 +59.0 69.3
12°	8 57.7 +59.0 73.0	8 46.8 +59.0 72.1	8 36.0 +58.9 71.1	8 25.2 +58.9 70.1	8 14.4 +59.0 69.1
13°	9 56.7 +58.9 72.8	9 45.8 +58.9 71.9	9 34.9 +59.0 70.9	9 24.1 +59.0 69.9	9 13.4 +59.0 69.0
14°	10 55.6 +59.0 72.7	10 44.7 +59.0 71.7	10 33.9 +58.9 70.7	10 23.1 +59.0 69.7	10 12.4 +59.0 68.8
15°	11 54.6 +58.9 72.5	11 43.7 +58.9 71.5	11 32.8 +59.0 70.5	11 22.1 +58.9 69.6	11 11.4 +59.0 68.6
16°	12 53.5 +58.9 72.3	12 42.6 +58.9 71.3	12 31.8 +58.9 70.3	12 21.0 +59.0 69.4	12 10.4 +58.9 68.4
17°	13 52.4 +58.9 72.1	13 41.5 +58.9 71.1	13 30.7 +59.0 70.1	13 20.0 +58.9 69.2	13 09.3 +59.0 68.2
18°	14 51.3 +58.9 71.9	14 40.4 +58.9 70.9	14 29.7 +58.9 70.0	14 18.9 +59.0 69.0	14 08.3 +58.9 68.0
19°	15 50.2 +58.9 71.7	15 39.3 +58.9 70.7	15 28.6 +58.9 69.8	15 17.9 +58.9 68.8	15 07.2 +59.0 67.8
20°	16 49.1 +58.8 71.5	16 38.2 +58.9 70.5	16 27.5 +58.9 69.6	16 16.8 +58.9 68.6	16 06.2 +58.9 67.6
21°	17 47.9 +58.9 71.3	17 37.1 +58.9 70.3	17 26.4 +58.9 69.4	17 15.7 +58.9 68.4	17 05.1 +58.9 67.4
22°	18 46.8 +58.8 71.1	18 36.0 +58.9 70.1	18 25.3 +58.8 69.2	18 14.6 +58.9 68.2	18 04.0 +58.9 67.2
23°	19 45.6 +58.9 70.9	19 34.9 +58.8 69.9	19 24.1 +58.9 69.0	19 13.5 +58.9 68.0	19 02.9 +58.9 67.0
24°	20 44.5 +58.8 70.7	20 33.7 +58.8 69.7	20 23.0 +58.8 68.7	20 12.4 +58.8 67.8	20 01.8 +58.9 66.8
25°	21 43.3 +58.8 70.4	21 32.5 +58.8 69.5	21 21.8 +58.9 68.5	21 11.2 +58.9 67.6	21 00.7 +58.8 66.6
26°	22 42.1 +58.8 70.2	22 31.3 +58.8 69.3	22 20.7 +58.8 68.3	22 10.1 +58.8 67.4	21 59.5 +58.9 66.4
27°	23 40.9 +58.7 70.0	23 30.1 +58.8 69.1	23 19.5 +58.8 68.1	23 08.9 +58.8 67.2	22 58.4 +58.8 66.2
28°	24 39.6 +58.8 69.8	24 28.9 +58.8 68.8	24 18.3 +58.8 67.9	24 07.7 +58.8 66.9	23 57.2 +58.8 66.0
29°	25 38.4 +58.7 69.6	25 27.7 +58.7 68.6	25 17.1 +58.7 67.7	25 06.5 +58.8 66.7	24 56.0 +58.8 65.8

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°	-3 44.5 +59.0	-3 55.3 +59.1	-4 05.9 +59.0	-4 16.5 +59.0	-4 27.1 +59.1
1°	-2 45.5 +59.0	-2 56.2 +59.0	-3 06.9 +59.1	-3 17.5 +59.1	-3 28.0 +59.1
2°	-1 46.5 +59.1	-1 57.2 +59.1	-2 07.8 +59.0	-2 18.4 +59.1	-2 28.9 +59.1
3°	-0 47.4 +59.0	-0 58.1 +59.0	-1 08.8 +59.1	-1 19.3 +59.0	-1 29.8 +59.0
4°	0 11.6 +59.0 69.6	0 00.9 +59.0 68.6	-0 09.7 +59.0	-0 20.3 +59.1	-0 30.8 +59.1
5°	1 10.6 +59.1 69.4	0 59.9 +59.1 68.5	0 49.3 +59.1 67.5	0 38.8 +59.1 66.5	0 28.3 +59.1 65.5
6°	2 09.7 +59.0 69.3	1 59.0 +59.0 68.3	1 48.4 +59.0 67.3	1 37.9 +59.0 66.3	1 27.4 +59.1 65.3
7°	3 08.7 +59.0 69.1	2 58.0 +59.1 68.1	2 47.4 +59.1 67.1	2 36.9 +59.1 66.1	2 26.5 +59.1 65.2
8°	4 07.7 +59.0 68.9	3 57.1 +59.0 67.9	3 46.5 +59.0 66.9	3 36.0 +59.0 66.0	3 25.6 +59.0 65.0
9°	5 06.7 +59.0 68.7	4 56.1 +59.0 67.7	4 45.5 +59.1 66.8	4 35.0 +59.1 65.8	4 24.6 +59.1 64.8
10°	6 05.7 +59.1 68.5	5 55.1 +59.0 67.6	5 44.6 +59.0 66.6	5 34.1 +59.1 65.6	5 23.7 +59.1 64.6
11°	7 04.8 +59.0 68.4	6 54.1 +59.1 67.4	6 43.6 +59.1 66.4	6 33.2 +59.0 65.4	6 22.8 +59.1 64.5
12°	8 03.8 +59.0 68.2	7 53.2 +59.0 67.2	7 42.7 +59.0 66.2	7 32.2 +59.1 65.3	7 21.9 +59.0 64.3
13°	9 02.8 +59.0 68.0	8 52.2 +59.0 67.0	8 41.7 +59.0 66.1	8 31.3 +59.0 65.1	8 20.9 +59.1 64.1
14°	10 01.8 +59.0 67.8	9 51.2 +59.0 66.8	9 40.7 +59.0 65.9	9 30.3 +59.0 64.9	9 20.0 +59.0 63.9
15°	11 00.8 +59.0 67.6	10 50.2 +59.0 66.7	10 39.7 +59.1 65.7	10 29.3 +59.1 64.7	10 19.0 +59.1 63.8
16°	11 59.8 +58.9 67.4	11 49.2 +59.0 66.5	11 38.8 +59.0 65.5	11 28.4 +59.0 64.5	11 18.1 +59.0 63.6
17°	12 58.7 +59.0 67.2	12 48.2 +59.0 66.3	12 37.8 +59.0 65.3	12 27.4 +59.0 64.4	12 17.1 +59.1 63.4
18°	13 57.7 +59.0 67.1	13 47.2 +59.0 66.1	13 36.8 +59.0 65.1	13 26.4 +59.0 64.2	13 16.2 +59.0 63.2
19°	14 56.7 +58.9 66.9	14 46.2 +58.9 65.9	14 35.8 +58.9 64.9	14 25.4 +59.0 64.0	14 15.2 +59.0 63.0
20°	15 55.6 +59.0 66.7	15 45.1 +59.0 65.7	15 34.7 +59.0 64.8	15 24.4 +59.0 63.8	15 14.2 +59.0 62.8
21°	16 54.6 +58.9 66.5	16 44.1 +58.9 65.5	16 33.7 +59.0 64.6	16 23.4 +59.0 63.6	16 13.2 +59.0 62.7
22°	17 53.5 +58.9 66.3	17 43.0 +59.0 65.3	17 32.7 +58.9 64.4	17 22.4 +59.0 63.4	17 12.2 +59.0 62.5
23°	18 52.4 +58.9 66.1	18 42.0 +58.9 65.1	18 31.6 +59.0 64.2	18 21.4 +58.9 63.2	18 11.2 +59.0 62.3
24°	19 51.3 +58.9 65.9	19 40.9 +58.9 64.9	19 30.6 +58.9 64.0	19 20.3 +59.0 63.0	19 10.2 +58.9 62.1
25°	20 50.2 +58.9 65.7	20 39.8 +58.9 64.7	20 29.5 +58.9 63.8	20 19.3 +58.9 62.8	20 09.1 +59.0 61.9
26°	21 49.1 +58.8 65.5	21 38.7 +58.9 64.5	21 28.4 +58.9 63.6	21 18.2 +58.9 62.6	21 08.1 +58.9 61.7
27°	22 47.9 +58.9 65.3	22 37.6 +58.9 64.3	22 27.3 +58.9 63.4	22 17.1 +58.9 62.4	22 07.0 +58.9 61.5
28°	23 46.8 +58.8 65.0	23 36.5 +58.8 64.1	23 26.2 +58.9 63.2	23 16.0 +58.9 62.2	23 05.9 +58.9 61.3
29°	24 45.6 +58.8 64.8	24 35.3 +58.8 63.9	24 25.1 +58.8 62.9	24 14.9 +58.9 62.0	24 04.8 +58.9 61.1

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°	-4 37.5 +59.1	-4 47.9 +59.1	-4 58.2 +59.2	-5 08.4 +59.2	-5 18.5 +59.2
1°	-3 38.4 +59.1	-3 48.8 +59.1	-3 59.0 +59.1	-4 09.2 +59.1	-4 19.3 +59.1
2°	-2 39.3 +59.1	-2 49.7 +59.1	-2 59.9 +59.1	-3 10.1 +59.2	-3 20.2 +59.2
3°	-1 40.2 +59.1	-1 50.6 +59.1	-2 00.8 +59.1	-2 10.9 +59.1	-2 21.0 +59.2
4°	-0 41.1 +59.1	-0 51.5 +59.2	-1 01.7 +59.2	-1 11.8 +59.1	-1 21.8 +59.1
5°	0 18.0 +59.0 64.5	0 07.7 +59.1 63.6	-0 02.5 +59.1	-0 12.7 +59.2	-0 22.7 +59.2
6°	1 17.0 +59.1 64.4	1 06.8 +59.1 63.4	0 56.6 +59.1 62.4	0 46.5 +59.1 61.4	0 36.5 +59.1 60.4
7°	2 16.1 +59.1 64.2	2 05.9 +59.1 63.2	1 55.7 +59.1 62.2	1 45.6 +59.2 61.3	1 35.6 +59.2 60.3
8°	3 15.2 +59.1 64.0	3 05.0 +59.1 63.0	2 54.8 +59.2 62.1	2 44.8 +59.1 61.1	2 34.8 +59.1 60.1
9°	4 14.3 +59.1 63.8	4 04.1 +59.1 62.9	3 54.0 +59.1 61.9	3 43.9 +59.1 60.9	3 33.9 +59.2 59.9
10°	5 13.4 +59.1 63.7	5 03.2 +59.1 62.7	4 53.1 +59.1 61.7	4 43.0 +59.2 60.7	4 33.1 +59.1 59.8
11°	6 12.5 +59.1 63.5	6 02.3 +59.1 62.5	5 52.2 +59.1 61.6	5 42.2 +59.1 60.6	5 32.2 +59.2 59.6
12°	7 11.6 +59.1 63.3	7 01.4 +59.1 62.4	6 51.3 +59.1 61.4	6 41.3 +59.1 60.4	6 31.4 +59.1 59.4
13°	8 10.7 +59.0 63.1	8 00.5 +59.1 62.2	7 50.4 +59.1 61.2	7 40.4 +59.2 60.2	7 30.5 +59.2 59.3
14°	9 09.7 +59.1 63.0	8 59.6 +59.1 62.0	8 49.5 +59.1 61.0	8 39.6 +59.1 60.1	8 29.7 +59.1 59.1
15°	10 08.8 +59.1 62.8	9 58.7 +59.1 61.8	9 48.6 +59.1 60.9	9 38.7 +59.1 59.9	9 28.8 +59.2 58.9
16°	11 07.9 +59.0 62.6	10 57.8 +59.0 61.6	10 47.7 +59.1 60.7	10 37.8 +59.1 59.7	10 28.0 +59.1 58.8
17°	12 06.9 +59.1 62.4	11 56.8 +59.1 61.5	11 46.8 +59.1 60.5	11 36.9 +59.1 59.5	11 27.1 +59.1 58.6
18°	13 06.0 +59.0 62.2	12 55.9 +59.1 61.3	12 45.9 +59.1 60.3	12 36.0 +59.1 59.4	12 26.2 +59.1 58.4
19°	14 05.0 +59.1 62.1	13 55.0 +59.0 61.1	13 45.0 +59.1 60.1	13 35.1 +59.1 59.2	13 25.3 +59.1 58.2
20°	15 04.1 +59.0 61.9	14 54.0 +59.1 60.9	14 44.1 +59.0 60.0	14 34.2 +59.1 59.0	14 24.4 +59.1 58.1
21°	16 03.1 +59.0 61.7	15 53.1 +59.0 60.7	15 43.1 +59.1 59.8	15 33.3 +59.0 58.8	15 23.5 +59.1 57.9
22°	17 02.1 +59.0 61.5	16 52.1 +59.0 60.6	16 42.2 +59.0 59.6	16 32.3 +59.1 58.6	16 22.6 +59.1 57.7
23°	18 01.1 +59.0 61.3	17 51.1 +59.0 60.4	17 41.2 +59.0 59.4	17 31.4 +59.1 58.5	17 21.7 +59.1 57.5
24°	19 00.1 +59.0 61.1	18 50.1 +59.0 60.2	18 40.2 +59.1 59.2	18 30.5 +59.0 58.3	18 20.8 +59.0 57.3
25°	19 59.1 +59.0 60.9	19 49.1 +59.0 60.0	19 39.3 +59.0 59.0	19 29.5 +59.0 58.1	19 19.8 +59.1 57.1
26°	20 58.1 +58.9 60.7	20 48.1 +59.0 59.8	20 38.3 +59.0 58.8	20 28.5 +59.0 57.9	20 18.9 +59.0 57.0
27°	21 57.0 +58.9 60.5	21 47.1 +58.9 59.6	21 37.3 +58.9 58.6	21 27.5 +59.0 57.7	21 17.9 +59.0 56.8
28°	22 55.9 +59.0 60.3	22 46.0 +59.0 59.4	22 36.2 +59.0 58.4	22 26.5 +59.0 57.5	22 16.9 +59.0 56.6
29°	23 54.9 +58.9 60.1	23 45.0 +58.9 59.2	23 35.2 +59.0 58.2	23 25.5 +59.0 57.3	23 15.9 +59.0 56.4

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°	-5 28.5 +59.2	-5 38.4 +59.2	-5 48.2 +59.2	-5 57.9 +59.2	-6 07.5 +59.2
1°	-4 29.3 +59.2	-4 39.2 +59.2	-4 49.0 +59.2	-4 58.7 +59.2	-5 08.3 +59.3
2°	-3 30.1 +59.1	-3 40.0 +59.2	-3 49.8 +59.2	-3 59.5 +59.3	-4 09.0 +59.2
3°	-2 31.0 +59.2	-2 40.8 +59.2	-2 50.6 +59.2	-3 00.2 +59.2	-3 09.8 +59.3
4°	-1 31.8 +59.2	-1 41.6 +59.2	-1 51.4 +59.2	-2 01.0 +59.2	-2 10.5 +59.2
5°	-0 32.6 +59.2	-0 42.4 +59.2	-0 52.2 +59.2	-1 01.8 +59.2	-1 11.3 +59.2
6°	0 26.6 +59.1 59.5	0 16.8 +59.1 58.5	0 07.0 +59.3 57.5	-0 02.6 +59.3	-0 12.1 +59.3
7°	1 25.7 +59.2 59.3	1 15.9 +59.2 58.3	1 06.3 +59.2 57.3	0 56.7 +59.2 56.4	0 47.2 +59.2 55.4
8°	2 24.9 +59.2 59.1	2 15.1 +59.2 58.2	2 05.5 +59.2 57.2	1 55.9 +59.2 56.2	1 46.4 +59.3 55.2
9°	3 24.1 +59.2 59.0	3 14.3 +59.2 58.0	3 04.7 +59.2 57.0	2 55.1 +59.2 56.0	2 45.7 +59.2 55.1
10°	4 23.3 +59.1 58.8	4 13.5 +59.2 57.8	4 03.9 +59.2 56.9	3 54.3 +59.3 55.9	3 44.9 +59.3 54.9
11°	5 22.4 +59.2 58.6	5 12.7 +59.2 57.7	5 03.1 +59.2 56.7	4 53.6 +59.2 55.7	4 44.2 +59.2 54.7
12°	6 21.6 +59.2 58.5	6 11.9 +59.2 57.5	6 02.3 +59.2 56.5	5 52.8 +59.2 55.6	5 43.4 +59.2 54.6
13°	7 20.8 +59.1 58.3	7 11.1 +59.1 57.3	7 01.5 +59.2 56.4	6 52.0 +59.2 55.4	6 42.6 +59.3 54.4
14°	8 19.9 +59.2 58.1	8 10.2 +59.2 57.2	8 00.7 +59.2 56.2	7 51.2 +59.2 55.2	7 41.9 +59.2 54.3
15°	9 19.1 +59.1 58.0	9 09.4 +59.2 57.0	8 59.9 +59.2 56.0	8 50.4 +59.2 55.1	8 41.1 +59.2 54.1
16°	10 18.2 +59.2 57.8	10 08.6 +59.1 56.8	9 59.1 +59.1 55.9	9 49.6 +59.2 54.9	9 40.3 +59.2 53.9
17°	11 17.4 +59.1 57.6	11 07.7 +59.2 56.7	10 58.2 +59.2 55.7	10 48.8 +59.2 54.7	10 39.5 +59.3 53.8
18°	12 16.5 +59.1 57.4	12 06.9 +59.2 56.5	11 57.4 +59.2 55.5	11 48.0 +59.2 54.6	11 38.8 +59.2 53.6
19°	13 15.6 +59.2 57.3	13 06.1 +59.1 56.3	12 56.6 +59.1 55.4	12 47.2 +59.2 54.4	12 38.0 +59.2 53.4
20°	14 14.8 +59.1 57.1	14 05.2 +59.1 56.1	13 55.7 +59.2 55.2	13 46.4 +59.2 54.2	13 37.2 +59.2 53.3
21°	15 13.9 +59.1 56.9	15 04.3 +59.2 56.0	14 54.9 +59.2 55.0	14 45.6 +59.1 54.1	14 36.4 +59.2 53.1
22°	16 13.0 +59.1 56.7	16 03.5 +59.1 55.8	15 54.1 +59.1 54.8	15 44.7 +59.2 53.9	15 35.6 +59.1 52.9
23°	17 12.1 +59.1 56.6	17 02.6 +59.1 55.6	16 53.2 +59.1 54.7	16 43.9 +59.2 53.7	16 34.7 +59.2 52.8
24°	18 11.2 +59.1 56.4	18 01.7 +59.1 55.4	17 52.3 +59.1 54.5	17 43.1 +59.1 53.5	17 33.9 +59.2 52.6
25°	19 10.3 +59.0 56.2	19 00.8 +59.1 55.3	18 51.4 +59.2 54.3	18 42.2 +59.1 53.4	18 33.1 +59.1 52.4
26°	20 09.3 +59.1 56.0	19 59.9 +59.1 55.1	19 50.6 +59.1 54.1	19 41.3 +59.2 53.2	19 32.2 +59.2 52.2
27°	21 08.4 +59.0 55.8	20 59.0 +59.0 54.9	20 49.7 +59.0 53.9	20 40.5 +59.1 53.0	20 31.4 +59.1 52.1
28°	22 07.4 +59.1 55.6	21 58.0 +59.1 54.7	21 48.7 +59.1 53.8	21 39.6 +59.1 52.8	21 30.5 +59.1 51.9
29°	23 06.5 +59.0 55.4	22 57.1 +59.0 54.5	22 47.8 +59.1 53.6	22 38.7 +59.0 52.6	22 29.6 +59.1 51.7

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°	-6 17.0 +59.3	-6 26.4 +59.3	-6 35.6 +59.3	-6 44.8 +59.3	-6 53.8 +59.3
1°	-5 17.7 +59.2	-5 27.1 +59.3	-5 36.3 +59.2	-5 45.5 +59.3	-5 54.5 +59.4
2°	-4 18.5 +59.3	-4 27.8 +59.3	-4 37.1 +59.3	-4 46.2 +59.4	-4 55.1 +59.3
3°	-3 19.2 +59.2	-3 28.5 +59.2	-3 37.8 +59.3	-3 46.8 +59.3	-3 55.8 +59.3
4°	-2 20.0 +59.3	-2 29.3 +59.3	-2 38.5 +59.3	-2 47.5 +59.3	-2 56.5 +59.4
5°	-1 20.7 +59.3	-1 30.0 +59.3	-1 39.2 +59.3	-1 48.2 +59.3	-1 57.1 +59.3
6°	-0 21.4 +59.2	-0 30.7 +59.3	-0 39.9 +59.3	-0 48.9 +59.3	-0 57.8 +59.3
7°	0 37.8 +59.3 54.4	0 28.6 +59.3 53.4	0 19.4 +59.3 52.4	0 10.4 +59.3 51.5	0 01.5 +59.4 50.5
8°	1 37.1 +59.2 54.2	1 27.9 +59.2 53.3	1 18.7 +59.3 52.3	1 09.7 +59.4 51.3	1 00.9 +59.3 50.3
9°	2 36.3 +59.3 54.1	2 27.1 +59.3 53.1	2 18.0 +59.3 52.1	2 09.1 +59.3 51.2	2 00.2 +59.3 50.2
10°	3 35.6 +59.3 53.9	3 26.4 +59.3 53.0	3 17.3 +59.3 52.0	3 08.4 +59.3 51.0	2 59.5 +59.4 50.0
11°	4 34.9 +59.2 53.8	4 25.7 +59.3 52.8	4 16.6 +59.3 51.8	4 07.7 +59.3 50.9	3 58.9 +59.3 49.9
12°	5 34.1 +59.3 53.6	5 25.0 +59.2 52.6	5 15.9 +59.3 51.7	5 07.0 +59.3 50.7	4 58.2 +59.3 49.7
13°	6 33.4 +59.2 53.5	6 24.2 +59.3 52.5	6 15.2 +59.3 51.5	6 06.3 +59.3 50.6	5 57.5 +59.4 49.6
14°	7 32.6 +59.3 53.3	7 23.5 +59.3 52.3	7 14.5 +59.3 51.4	7 05.6 +59.3 50.4	6 56.9 +59.3 49.4
15°	8 31.9 +59.2 53.1	8 22.8 +59.2 52.2	8 13.8 +59.3 51.2	8 04.9 +59.3 50.2	7 56.2 +59.3 49.3
16°	9 31.1 +59.3 53.0	9 22.0 +59.3 52.0	9 13.1 +59.3 51.1	9 04.2 +59.3 50.1	8 55.5 +59.3 49.1
17°	10 30.4 +59.2 52.8	10 21.3 +59.3 51.9	10 12.4 +59.2 50.9	10 03.5 +59.3 49.9	9 54.8 +59.3 49.0
18°	11 29.6 +59.2 52.7	11 20.6 +59.2 51.7	11 11.6 +59.3 50.7	11 02.8 +59.3 49.8	10 54.1 +59.4 48.8
19°	12 28.8 +59.2 52.5	12 19.8 +59.2 51.5	12 10.9 +59.3 50.6	12 02.1 +59.3 49.6	11 53.5 +59.3 48.7
20°	13 28.0 +59.3 52.3	13 19.0 +59.3 51.4	13 10.2 +59.2 50.4	13 01.4 +59.3 49.5	12 52.8 +59.3 48.5
21°	14 27.3 +59.2 52.2	14 18.3 +59.2 51.2	14 09.4 +59.3 50.3	14 00.7 +59.2 49.3	13 52.1 +59.3 48.4
22°	15 26.5 +59.2 52.0	15 17.5 +59.2 51.0	15 08.7 +59.2 50.1	14 59.9 +59.3 49.1	14 51.4 +59.2 48.2
23°	16 25.7 +59.2 51.8	16 16.7 +59.2 50.9	16 07.9 +59.2 49.9	15 59.2 +59.3 49.0	15 50.6 +59.3 48.0
24°	17 24.9 +59.2 51.7	17 15.9 +59.3 50.7	17 07.1 +59.3 49.8	16 58.5 +59.2 48.8	16 49.9 +59.3 47.9
25°	18 24.1 +59.1 51.5	18 15.2 +59.2 50.5	18 06.4 +59.2 49.6	17 57.7 +59.3 48.7	17 49.2 +59.3 47.7
26°	19 23.2 +59.2 51.3	19 14.4 +59.1 50.4	19 05.6 +59.2 49.4	18 57.0 +59.2 48.5	18 48.5 +59.2 47.6
27°	20 22.4 +59.1 51.1	20 13.5 +59.2 50.2	20 04.8 +59.2 49.3	19 56.2 +59.2 48.3	19 47.7 +59.3 47.4
28°	21 21.5 +59.2 51.0	21 12.7 +59.2 50.0	21 04.0 +59.2 49.1	20 55.4 +59.2 48.1	20 47.0 +59.2 47.2
29°	22 20.7 +59.1 50.8	22 11.9 +59.1 49.8	22 03.2 +59.2 48.9	21 54.6 +59.2 48.0	21 46.2 +59.2 47.0

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°	-7 02.7 +59.3	-7 11.5 +59.4	-7 20.1 +59.4	-7 28.6 +59.4	-7 37.0 +59.4
1°	-6 03.4 +59.4	-6 12.1 +59.4	-6 20.7 +59.4	-6 29.2 +59.4	-6 37.6 +59.4
2°	-5 04.0 +59.3	-5 12.7 +59.3	-5 21.3 +59.3	-5 29.8 +59.4	-5 38.2 +59.5
3°	-4 04.7 +59.4	-4 13.4 +59.4	-4 22.0 +59.4	-4 30.4 +59.4	-4 38.7 +59.4
4°	-3 05.3 +59.4	-3 14.0 +59.4	-3 22.6 +59.4	-3 31.0 +59.4	-3 39.3 +59.4
5°	-2 05.9 +59.3	-2 14.6 +59.3	-2 23.2 +59.4	-2 31.6 +59.4	-2 39.9 +59.5
6°	-1 06.6 +59.4	-1 15.3 +59.4	-1 23.8 +59.4	-1 32.2 +59.4	-1 40.4 +59.4
7°	-0 07.2 +59.3	-0 15.9 +59.4	-0 24.4 +59.4	-0 32.8 +59.4	-0 41.0 +59.4
8°	0 52.1 +59.4 49.3	0 43.5 +59.4 48.4	0 35.0 +59.4 47.4	0 26.6 +59.5 46.4	0 18.4 +59.5 45.4
9°	1 51.5 +59.3 49.2	1 42.9 +59.3 48.2	1 34.4 +59.4 47.2	1 26.1 +59.4 46.3	1 17.9 +59.4 45.3
10°	2 50.8 +59.4 49.1	2 42.2 +59.4 48.1	2 33.8 +59.4 47.1	2 25.5 +59.4 46.1	2 17.3 +59.4 45.2
11°	3 50.2 +59.3 48.9	3 41.6 +59.4 47.9	3 33.2 +59.4 47.0	3 24.9 +59.4 46.0	3 16.7 +59.4 45.0
12°	4 49.5 +59.4 48.8	4 41.0 +59.4 47.8	4 32.6 +59.4 46.8	4 24.3 +59.4 45.8	4 16.1 +59.5 44.9
13°	5 48.9 +59.3 48.6	5 40.4 +59.3 47.6	5 32.0 +59.4 46.7	5 23.7 +59.4 45.7	5 15.6 +59.4 44.7
14°	6 48.2 +59.4 48.5	6 39.7 +59.4 47.5	6 31.4 +59.3 46.5	6 23.1 +59.4 45.6	6 15.0 +59.4 44.6
15°	7 47.6 +59.3 48.3	7 39.1 +59.4 47.4	7 30.7 +59.4 46.4	7 22.5 +59.4 45.4	7 14.4 +59.4 44.5
16°	8 46.9 +59.4 48.2	8 38.5 +59.3 47.2	8 30.1 +59.4 46.2	8 21.9 +59.4 45.3	8 13.8 +59.5 44.3
17°	9 46.3 +59.3 48.0	9 37.8 +59.4 47.1	9 29.5 +59.4 46.1	9 21.3 +59.4 45.1	9 13.3 +59.4 44.2
18°	10 45.6 +59.3 47.9	10 37.2 +59.3 46.9	10 28.9 +59.3 46.0	10 20.7 +59.4 45.0	10 12.7 +59.4 44.0
19°	11 44.9 +59.3 47.7	11 36.5 +59.4 46.8	11 28.2 +59.4 45.8	11 20.1 +59.4 44.9	11 12.1 +59.4 43.9
20°	12 44.2 +59.4 47.6	12 35.9 +59.3 46.6	12 27.6 +59.4 45.7	12 19.5 +59.4 44.7	12 11.5 +59.4 43.8
21°	13 43.6 +59.3 47.4	13 35.2 +59.3 46.5	13 27.0 +59.3 45.5	13 18.9 +59.3 44.6	13 10.9 +59.4 43.6
22°	14 42.9 +59.3 47.3	14 34.5 +59.4 46.3	14 26.3 +59.4 45.4	14 18.2 +59.4 44.4	14 10.3 +59.4 43.5
23°	15 42.2 +59.3 47.1	15 33.9 +59.3 46.2	15 25.7 +59.3 45.2	15 17.6 +59.4 44.3	15 09.7 +59.4 43.3
24°	16 41.5 +59.3 46.9	16 33.2 +59.3 46.0	16 25.0 +59.4 45.1	16 17.0 +59.3 44.1	16 09.1 +59.4 43.2
25°	17 40.8 +59.3 46.8	17 32.5 +59.3 45.8	17 24.4 +59.3 44.9	17 16.3 +59.4 44.0	17 08.5 +59.3 43.0
26°	18 40.1 +59.2 46.6	18 31.8 +59.3 45.7	18 23.7 +59.3 44.7	18 15.7 +59.3 43.8	18 07.8 +59.4 42.9
27°	19 39.3 +59.3 46.5	19 31.1 +59.3 45.5	19 23.0 +59.3 44.6	19 15.0 +59.4 43.6	19 07.2 +59.4 42.7
28°	20 38.6 +59.3 46.3	20 30.4 +59.3 45.4	20 22.3 +59.3 44.4	20 14.4 +59.3 43.5	20 06.6 +59.3 42.6
29°	21 37.9 +59.2 46.1	21 29.7 +59.3 45.2	21 21.6 +59.3 44.3	21 13.7 +59.3 43.3	21 05.9 +59.4 42.4

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°	-7 45.2 +59.4	-7 53.3 +59.4	-8 01.3 +59.5	-8 09.1 +59.5	-8 16.8 +59.5
1°	-6 45.8 +59.4	-6 53.9 +59.5	-7 01.8 +59.5	-7 09.6 +59.5	-7 17.3 +59.6
2°	-5 46.4 +59.5	-5 54.4 +59.4	-6 02.3 +59.4	-6 10.1 +59.5	-6 17.7 +59.5
3°	-4 46.9 +59.4	-4 55.0 +59.5	-5 02.9 +59.5	-5 10.6 +59.5	-5 18.2 +59.5
4°	-3 47.5 +59.5	-3 55.5 +59.5	-4 03.4 +59.5	-4 11.1 +59.5	-4 18.7 +59.5
5°	-2 48.0 +59.4	-2 56.0 +59.4	-3 03.9 +59.5	-3 11.6 +59.5	-3 19.2 +59.6
6°	-1 48.6 +59.5	-1 56.6 +59.5	-2 04.4 +59.5	-2 12.1 +59.5	-2 19.6 +59.5
7°	-0 49.1 +59.4	-0 57.1 +59.5	-1 04.9 +59.5	-1 12.6 +59.5	-1 20.1 +59.5
8°	0 10.3 +59.5 44.4	0 02.4 +59.5 43.5	-0 05.4 +59.5	-0 13.1 +59.5	-0 20.6 +59.5
9°	1 09.8 +59.4 44.3	1 01.9 +59.4 43.3	0 54.1 +59.5 42.4	0 46.4 +59.5 41.4	0 38.9 +59.6 40.4
10°	2 09.2 +59.5 44.2	2 01.3 +59.5 43.2	1 53.6 +59.5 42.2	1 45.9 +59.6 41.2	1 38.5 +59.5 40.3
11°	3 08.7 +59.4 44.0	3 00.8 +59.5 43.1	2 53.1 +59.4 42.1	2 45.5 +59.5 41.1	2 38.0 +59.5 40.1
12°	4 08.1 +59.5 43.9	4 00.3 +59.4 42.9	3 52.5 +59.5 42.0	3 45.0 +59.5 41.0	3 37.5 +59.6 40.0
13°	5 07.6 +59.4 43.8	4 59.7 +59.5 42.8	4 52.0 +59.5 41.8	4 44.5 +59.5 40.9	4 37.1 +59.5 39.9
14°	6 07.0 +59.5 43.6	5 59.2 +59.5 42.7	5 51.5 +59.5 41.7	5 44.0 +59.5 40.7	5 36.6 +59.5 39.8
15°	7 06.5 +59.4 43.5	6 58.7 +59.4 42.5	6 51.0 +59.5 41.6	6 43.5 +59.5 40.6	6 36.1 +59.5 39.6
16°	8 05.9 +59.5 43.4	7 58.1 +59.5 42.4	7 50.5 +59.5 41.4	7 43.0 +59.5 40.5	7 35.6 +59.5 39.5
17°	9 05.4 +59.4 43.2	8 57.6 +59.4 42.3	8 50.0 +59.4 41.3	8 42.5 +59.5 40.3	8 35.1 +59.6 39.4
18°	10 04.8 +59.4 43.1	9 57.0 +59.5 42.1	9 49.4 +59.5 41.2	9 42.0 +59.5 40.2	9 34.7 +59.5 39.3
19°	11 04.2 +59.5 42.9	10 56.5 +59.4 42.0	10 48.9 +59.5 41.0	10 41.5 +59.5 40.1	10 34.2 +59.5 39.1
20°	12 03.7 +59.4 42.8	11 55.9 +59.5 41.8	11 48.4 +59.4 40.9	11 41.0 +59.4 39.9	11 33.7 +59.5 39.0
21°	13 03.1 +59.4 42.7	12 55.4 +59.4 41.7	12 47.8 +59.5 40.8	12 40.4 +59.5 39.8	12 33.2 +59.5 38.9
22°	14 02.5 +59.4 42.5	13 54.8 +59.5 41.6	13 47.3 +59.5 40.6	13 39.9 +59.5 39.7	13 32.7 +59.5 38.7
23°	15 01.9 +59.4 42.4	14 54.3 +59.4 41.4	14 46.8 +59.4 40.5	14 39.4 +59.5 39.5	14 32.2 +59.5 38.6
24°	16 01.3 +59.4 42.2	15 53.7 +59.4 41.3	15 46.2 +59.5 40.3	15 38.9 +59.4 39.4	15 31.7 +59.5 38.5
25°	17 00.7 +59.4 42.1	16 53.1 +59.4 41.1	16 45.7 +59.4 40.2	16 38.3 +59.5 39.3	16 31.2 +59.4 38.3
26°	18 00.1 +59.4 41.9	17 52.5 +59.4 41.0	17 45.1 +59.4 40.1	17 37.8 +59.5 39.1	17 30.6 +59.5 38.2
27°	18 59.5 +59.4 41.8	18 51.9 +59.5 40.9	18 44.5 +59.5 39.9	18 37.3 +59.4 39.0	18 30.1 +59.5 38.1
28°	19 58.9 +59.4 41.6	19 51.4 +59.4 40.7	19 44.0 +59.4 39.8	19 36.7 +59.4 38.8	19 29.6 +59.5 37.9
29°	20 58.3 +59.3 41.5	20 50.8 +59.3 40.6	20 43.4 +59.4 39.6	20 36.1 +59.5 38.7	20 29.1 +59.4 37.8

Declination SAME name as Latitude

Latitude 79°

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°	-8 24.3 +59.5	-8 31.7 +59.6	-8 38.9 +59.6	-8 45.9 +59.6	-8 52.8 +59.6
1°	-7 24.8 +59.6	-7 32.1 +59.6	-7 39.3 +59.6	-7 46.3 +59.6	-7 53.2 +59.6
2°	-6 25.2 +59.5	-6 32.5 +59.5	-6 39.7 +59.6	-6 46.7 +59.6	-6 53.6 +59.6
3°	-5 25.7 +59.6	-5 33.0 +59.6	-5 40.1 +59.5	-5 47.1 +59.6	-5 54.0 +59.7
4°	-4 26.1 +59.5	-4 33.4 +59.5	-4 40.6 +59.6	-4 47.5 +59.6	-4 54.3 +59.6
5°	-3 26.6 +59.6	-3 33.9 +59.6	-3 41.0 +59.6	-3 47.9 +59.6	-3 54.7 +59.6
6°	-2 27.0 +59.5	-2 34.3 +59.6	-2 41.4 +59.6	-2 48.3 +59.6	-2 55.1 +59.6
7°	-1 27.5 +59.6	-1 34.7 +59.5	-1 41.8 +59.6	-1 48.7 +59.6	-1 55.5 +59.6
8°	-0 27.9 +59.5	-0 35.2 +59.6	-0 42.2 +59.6	-0 49.1 +59.6	-0 55.9 +59.7
9°	0 31.6 +59.5 39.4	0 24.4 +59.6 38.4	0 17.4 +59.6 37.5	0 10.5 +59.6 36.5	0 03.8 +59.6 35.5
10°	1 31.1 +59.6 39.3	1 24.0 +59.5 38.3	1 17.0 +59.5 37.3	1 10.1 +59.6 36.4	1 03.4 +59.6 35.4
11°	2 30.7 +59.5 39.2	2 23.5 +59.6 38.2	2 16.5 +59.6 37.2	2 09.7 +59.6 36.2	2 03.0 +59.6 35.3
12°	3 30.2 +59.6 39.0	3 23.1 +59.6 38.1	3 16.1 +59.6 37.1	3 09.3 +59.6 36.1	3 02.6 +59.6 35.2
13°	4 29.8 +59.5 38.9	4 22.7 +59.5 38.0	4 15.7 +59.6 37.0	4 08.9 +59.6 36.0	4 02.2 +59.7 35.0
14°	5 29.3 +59.6 38.8	5 22.2 +59.6 37.8	5 15.3 +59.6 36.9	5 08.5 +59.6 35.9	5 01.9 +59.6 34.9
15°	6 28.9 +59.5 38.7	6 21.8 +59.5 37.7	6 14.9 +59.5 36.7	6 08.1 +59.6 35.8	6 01.5 +59.6 34.8
16°	7 28.4 +59.5 38.5	7 21.3 +59.6 37.6	7 14.4 +59.6 36.6	7 07.7 +59.6 35.7	7 01.1 +59.6 34.7
17°	8 27.9 +59.6 38.4	8 20.9 +59.6 37.5	8 14.0 +59.6 36.5	8 07.3 +59.6 35.5	8 00.7 +59.6 34.6
18°	9 27.5 +59.5 38.3	9 20.5 +59.5 37.3	9 13.6 +59.6 36.4	9 06.9 +59.6 35.4	9 00.3 +59.6 34.5
19°	10 27.0 +59.5 38.2	10 20.0 +59.6 37.2	10 13.2 +59.5 36.3	10 06.5 +59.6 35.3	9 59.9 +59.6 34.4
20°	11 26.5 +59.6 38.0	11 19.6 +59.5 37.1	11 12.7 +59.6 36.1	11 06.1 +59.5 35.2	10 59.5 +59.6 34.2
21°	12 26.1 +59.5 37.9	12 19.1 +59.6 37.0	12 12.3 +59.6 36.0	12 05.6 +59.6 35.1	11 59.1 +59.7 34.1
22°	13 25.6 +59.5 37.8	13 18.7 +59.5 36.8	13 11.9 +59.5 35.9	13 05.2 +59.6 35.0	12 58.8 +59.5 34.0
23°	14 25.1 +59.5 37.7	14 18.2 +59.5 36.7	14 11.4 +59.6 35.8	14 04.8 +59.6 34.8	13 58.3 +59.6 33.9
24°	15 24.6 +59.5 37.5	15 17.7 +59.6 36.6	15 11.0 +59.5 35.6	15 04.4 +59.6 34.7	14 57.9 +59.6 33.8
25°	16 24.1 +59.5 37.4	16 17.3 +59.5 36.5	16 10.5 +59.6 35.5	16 04.0 +59.5 34.6	15 57.5 +59.6 33.6
26°	17 23.6 +59.5 37.3	17 16.8 +59.5 36.3	17 10.1 +59.5 35.4	17 03.5 +59.6 34.5	16 57.1 +59.6 33.5
27°	18 23.1 +59.5 37.1	18 16.3 +59.5 36.2	18 09.6 +59.6 35.3	18 03.1 +59.5 34.3	17 56.7 +59.6 33.4
28°	19 22.6 +59.5 37.0	19 15.8 +59.5 36.1	19 09.2 +59.5 35.1	19 02.6 +59.6 34.2	18 56.3 +59.6 33.3
29°	20 22.1 +59.5 36.8	20 15.3 +59.5 35.9	20 08.7 +59.5 35.0	20 02.2 +59.5 34.1	19 55.9 +59.5 33.2

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°	-8 59.5 +59.6	-9 06.1 +59.6	-9 12.5 +59.7	-9 18.7 +59.6	-9 24.8 +59.7
1°	-7 59.9 +59.6	-8 06.5 +59.7	-8 12.8 +59.6	-8 19.1 +59.7	-8 25.1 +59.7
2°	-7 00.3 +59.7	-7 06.8 +59.7	-7 13.2 +59.7	-7 19.4 +59.7	-7 25.4 +59.7
3°	-6 00.6 +59.6	-6 07.1 +59.6	-6 13.5 +59.7	-6 19.7 +59.7	-6 25.7 +59.7
4°	-5 01.0 +59.6	-5 07.5 +59.7	-5 13.8 +59.6	-5 20.0 +59.7	-5 26.0 +59.7
5°	-4 01.4 +59.7	-4 07.8 +59.6	-4 14.2 +59.7	-4 20.3 +59.7	-4 26.3 +59.7
6°	-3 01.7 +59.6	-3 08.2 +59.7	-3 14.5 +59.7	-3 20.6 +59.7	-3 26.6 +59.7
7°	-2 02.1 +59.7	-2 08.5 +59.6	-2 14.8 +59.7	-2 20.9 +59.7	-2 26.9 +59.8
8°	-1 02.4 +59.6	-1 08.9 +59.7	-1 15.1 +59.6	-1 21.2 +59.7	-1 27.1 +59.7
9°	-0 02.8 +59.6	-0 09.2 +59.6	-0 15.5 +59.7	-0 21.5 +59.7	-0 27.4 +59.7
10°	0 56.8 +59.7 34.4	0 50.4 +59.7 33.4	0 44.2 +59.7 32.4	0 38.2 +59.7 31.5	0 32.3 +59.7 30.5
11°	1 56.5 +59.6 34.3	1 50.1 +59.7 33.3	1 43.9 +59.7 32.3	1 37.9 +59.6 31.4	1 32.0 +59.7 30.4
12°	2 56.1 +59.6 34.2	2 49.8 +59.6 33.2	2 43.6 +59.6 32.2	2 37.5 +59.7 31.3	2 31.7 +59.7 30.3
13°	3 55.7 +59.7 34.1	3 49.4 +59.7 33.1	3 43.2 +59.7 32.1	3 37.2 +59.7 31.2	3 31.4 +59.7 30.2
14°	4 55.4 +59.6 34.0	4 49.1 +59.6 33.0	4 42.9 +59.7 32.0	4 36.9 +59.7 31.1	4 31.1 +59.7 30.1
15°	5 55.0 +59.7 33.8	5 48.7 +59.7 32.9	5 42.6 +59.7 31.9	5 36.6 +59.7 31.0	5 30.8 +59.7 30.0
16°	6 54.7 +59.6 33.7	6 48.4 +59.6 32.8	6 42.3 +59.6 31.8	6 36.3 +59.7 30.9	6 30.5 +59.7 29.9
17°	7 54.3 +59.6 33.6	7 48.0 +59.7 32.7	7 41.9 +59.7 31.7	7 36.0 +59.7 30.7	7 30.2 +59.7 29.8
18°	8 53.9 +59.7 33.5	8 47.7 +59.6 32.6	8 41.6 +59.7 31.6	8 35.7 +59.7 30.6	8 29.9 +59.7 29.7
19°	9 53.6 +59.6 33.4	9 47.3 +59.7 32.4	9 41.3 +59.6 31.5	9 35.4 +59.7 30.5	9 29.6 +59.7 29.6
20°	10 53.2 +59.6 33.3	10 47.0 +59.6 32.3	10 40.9 +59.7 31.4	10 35.1 +59.6 30.4	10 29.3 +59.7 29.5
21°	11 52.8 +59.6 33.2	11 46.6 +59.7 32.2	11 40.6 +59.7 31.3	11 34.7 +59.7 30.3	11 29.0 +59.7 29.4
22°	12 52.4 +59.6 33.1	12 46.3 +59.6 32.1	12 40.3 +59.6 31.2	12 34.4 +59.7 30.2	12 28.7 +59.7 29.3
23°	13 52.0 +59.7 32.9	13 45.9 +59.6 32.0	13 39.9 +59.7 31.1	13 34.1 +59.7 30.1	13 28.4 +59.7 29.2
24°	14 51.7 +59.6 32.8	14 45.5 +59.7 31.9	14 39.6 +59.6 31.0	14 33.8 +59.6 30.0	14 28.1 +59.7 29.1
25°	15 51.3 +59.6 32.7	15 45.2 +59.6 31.8	15 39.2 +59.7 30.8	15 33.4 +59.7 29.9	15 27.8 +59.7 29.0
26°	16 50.9 +59.6 32.6	16 44.8 +59.6 31.7	16 38.9 +59.6 30.7	16 33.1 +59.7 29.8	16 27.5 +59.7 28.9
27°	17 50.5 +59.6 32.5	17 44.4 +59.6 31.5	17 38.5 +59.6 30.6	17 32.8 +59.6 29.7	17 27.2 +59.6 28.8
28°	18 50.1 +59.6 32.4	18 44.0 +59.7 31.4	18 38.1 +59.7 30.5	18 32.4 +59.7 29.6	18 26.8 +59.7 28.6
29°	19 49.7 +59.6 32.2	19 43.7 +59.6 31.3	19 37.8 +59.6 30.4	19 32.1 +59.6 29.5	19 26.5 +59.7 28.5

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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°	-9 30.7 +59.7	-9 36.4 +59.7	-9 41.9 +59.7	-9 47.3 +59.8	-9 52.5 +59.8
1°	-8 31.0 +59.8	-8 36.7 +59.8	-8 42.2 +59.8	-8 47.5 +59.7	-8 52.7 +59.8
2°	-7 31.2 +59.7	-7 36.9 +59.7	-7 42.4 +59.7	-7 47.8 +59.8	-7 52.9 +59.8
3°	-6 31.5 +59.7	-6 37.2 +59.7	-6 42.7 +59.8	-6 48.0 +59.8	-6 53.1 +59.7
4°	-5 31.8 +59.7	-5 37.5 +59.8	-5 42.9 +59.7	-5 48.2 +59.7	-5 53.4 +59.8
5°	-4 32.1 +59.7	-4 37.7 +59.7	-4 43.2 +59.8	-4 48.5 +59.8	-4 53.6 +59.8
6°	-3 32.4 +59.8	-3 38.0 +59.8	-3 43.4 +59.7	-3 48.7 +59.8	-3 53.8 +59.8
7°	-2 32.6 +59.7	-2 38.2 +59.7	-2 43.7 +59.8	-2 48.9 +59.8	-2 54.0 +59.8
8°	-1 32.9 +59.7	-1 38.5 +59.8	-1 43.9 +59.8	-1 49.1 +59.7	-1 54.2 +59.8
9°	-0 33.2 +59.7	-0 38.7 +59.7	-0 44.1 +59.7	-0 49.4 +59.8	-0 54.4 +59.8
10°	0 26.5 +59.8 29.5	0 21.0 +59.7 28.5	0 15.6 +59.8 27.5	0 10.4 +59.8 26.6	0 05.4 +59.8 25.6
11°	1 26.3 +59.7 29.4	1 20.7 +59.8 28.4	1 15.4 +59.7 27.4	1 10.2 +59.8 26.5	1 05.2 +59.8 25.5
12°	2 26.0 +59.7 29.3	2 20.5 +59.7 28.3	2 15.1 +59.8 27.4	2 10.0 +59.7 26.4	2 05.0 +59.7 25.4
13°	3 25.7 +59.8 29.2	3 20.2 +59.8 28.2	3 14.9 +59.8 27.3	3 09.7 +59.8 26.3	3 04.7 +59.8 25.3
14°	4 25.5 +59.7 29.1	4 20.0 +59.7 28.1	4 14.7 +59.7 27.2	4 09.5 +59.8 26.2	4 04.5 +59.8 25.2
15°	5 25.2 +59.7 29.0	5 19.7 +59.7 28.1	5 14.4 +59.8 27.1	5 09.3 +59.8 26.1	5 04.3 +59.8 25.2
16°	6 24.9 +59.7 28.9	6 19.4 +59.8 28.0	6 14.2 +59.7 27.0	6 09.1 +59.7 26.0	6 04.1 +59.8 25.1
17°	7 24.6 +59.7 28.8	7 19.2 +59.7 27.9	7 13.9 +59.8 26.9	7 08.8 +59.8 25.9	7 03.9 +59.8 25.0
18°	8 24.3 +59.8 28.7	8 18.9 +59.8 27.8	8 13.7 +59.7 26.8	8 08.6 +59.8 25.9	8 03.7 +59.8 24.9
19°	9 24.1 +59.7 28.6	9 18.7 +59.7 27.7	9 13.4 +59.8 26.7	9 08.4 +59.7 25.8	9 03.5 +59.8 24.8
20°	10 23.8 +59.7 28.5	10 18.4 +59.7 27.6	10 13.2 +59.7 26.6	10 08.1 +59.8 25.7	10 03.3 +59.7 24.7
21°	11 23.5 +59.7 28.4	11 18.1 +59.8 27.5	11 12.9 +59.8 26.5	11 07.9 +59.8 25.6	11 03.0 +59.8 24.6
22°	12 23.2 +59.7 28.3	12 17.9 +59.7 27.4	12 12.7 +59.7 26.4	12 07.7 +59.7 25.5	12 02.8 +59.8 24.6
23°	13 22.9 +59.7 28.2	13 17.6 +59.7 27.3	13 12.4 +59.8 26.4	13 07.4 +59.8 25.4	13 02.6 +59.8 24.5
24°	14 22.6 +59.7 28.1	14 17.3 +59.7 27.2	14 12.2 +59.7 26.3	14 07.2 +59.7 25.3	14 02.4 +59.8 24.4
25°	15 22.3 +59.7 28.0	15 17.0 +59.8 27.1	15 11.9 +59.7 26.2	15 06.9 +59.8 25.2	15 02.2 +59.7 24.3
26°	16 22.0 +59.7 27.9	16 16.8 +59.7 27.0	16 11.6 +59.8 26.1	16 06.7 +59.8 25.1	16 01.9 +59.8 24.2
27°	17 21.7 +59.7 27.8	17 16.5 +59.7 26.9	17 11.4 +59.7 26.0	17 06.5 +59.7 25.0	17 01.7 +59.8 24.1
28°	18 21.4 +59.7 27.7	18 16.2 +59.7 26.8	18 11.1 +59.8 25.9	18 06.2 +59.8 24.9	18 01.5 +59.7 24.0
29°	19 21.1 +59.7 27.6	19 15.9 +59.7 26.7	19 10.9 +59.7 25.8	19 06.0 +59.7 24.8	19 01.2 +59.8 23.9

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°	-9 57.5 +59.8				
1°	-8 57.7 +59.8	-9 02.5 +59.8	-9 07.1 +59.8	-9 11.6 +59.9	-9 15.8 +59.8
2°	-7 57.9 +59.8	-8 02.7 +59.8	-8 07.3 +59.8	-8 11.7 +59.8	-8 16.0 +59.9
3°	-6 58.1 +59.8	-7 02.9 +59.8	-7 07.5 +59.9	-7 11.9 +59.9	-7 16.1 +59.9
4°	-5 58.3 +59.8	-6 03.1 +59.9	-6 07.6 +59.8	-6 12.0 +59.8	-6 16.2 +59.8
5°	-4 58.5 +59.8	-5 03.2 +59.8	-5 07.8 +59.8	-5 12.2 +59.9	-5 16.4 +59.9
6°	-3 58.7 +59.8	-4 03.4 +59.8	-4 08.0 +59.9	-4 12.3 +59.8	-4 16.5 +59.8
7°	-2 58.9 +59.8	-3 03.6 +59.8	-3 08.1 +59.8	-3 12.5 +59.8	-3 16.7 +59.9
8°	-1 59.1 +59.8	-2 03.8 +59.8	-2 08.3 +59.8	-2 12.7 +59.9	-2 16.8 +59.8
9°	-0 59.3 +59.8	-1 04.0 +59.9	-1 08.5 +59.9	-1 12.8 +59.8	-1 17.0 +59.9
10°	0 00.5 +59.8 24.6	-0 04.1 +59.8	-0 08.6 +59.8	-0 13.0 +59.9	-0 17.1 +59.9
11°	1 00.3 +59.8 24.5	0 55.7 +59.8 23.5	0 51.2 +59.8 22.6	0 46.9 +59.8 21.6	0 42.8 +59.8 20.6
12°	2 00.1 +59.8 24.4	1 55.5 +59.8 23.5	1 51.0 +59.9 22.5	1 46.7 +59.9 21.5	1 42.6 +59.9 20.5
13°	2 59.9 +59.8 24.4	2 55.3 +59.8 23.4	2 50.9 +59.8 22.4	2 46.6 +59.8 21.4	2 42.5 +59.8 20.5
14°	3 59.7 +59.8 24.3	3 55.1 +59.8 23.3	3 50.7 +59.8 22.3	3 46.4 +59.9 21.4	3 42.3 +59.9 20.4
15°	4 59.5 +59.9 24.2	4 54.9 +59.9 23.2	4 50.5 +59.9 22.3	4 46.3 +59.8 21.3	4 42.2 +59.9 20.3
16°	5 59.4 +59.8 24.1	5 54.8 +59.8 23.1	5 50.4 +59.8 22.2	5 46.1 +59.9 21.2	5 42.1 +59.8 20.3
17°	6 59.2 +59.8 24.0	6 54.6 +59.8 23.1	6 50.2 +59.8 22.1	6 46.0 +59.8 21.1	6 41.9 +59.9 20.2
18°	7 59.0 +59.8 23.9	7 54.4 +59.8 23.0	7 50.0 +59.8 22.0	7 45.8 +59.8 21.1	7 41.8 +59.8 20.1
19°	8 58.8 +59.8 23.9	8 54.2 +59.8 22.9	8 49.8 +59.9 22.0	8 45.6 +59.9 21.0	8 41.6 +59.9 20.0
20°	9 58.6 +59.8 23.8	9 54.0 +59.8 22.8	9 49.7 +59.8 21.9	9 45.5 +59.8 20.9	9 41.5 +59.8 20.0
21°	10 58.4 +59.7 23.7	10 53.8 +59.8 22.7	10 49.5 +59.8 21.8	10 45.3 +59.9 20.9	10 41.3 +59.9 19.9
22°	11 58.1 +59.8 23.6	11 53.6 +59.9 22.7	11 49.3 +59.8 21.7	11 45.2 +59.8 20.8	11 41.2 +59.9 19.8
23°	12 57.9 +59.8 23.5	12 53.5 +59.8 22.6	12 49.1 +59.9 21.6	12 45.0 +59.9 20.7	12 41.1 +59.8 19.8
24°	13 57.7 +59.8 23.4	13 53.3 +59.8 22.5	13 49.0 +59.8 21.6	13 44.9 +59.8 20.6	13 40.9 +59.9 19.7
25°	14 57.5 +59.8 23.4	14 53.1 +59.8 22.4	14 48.8 +59.8 21.5	14 44.7 +59.8 20.6	14 40.8 +59.8 19.6
26°	15 57.3 +59.8 23.3	15 52.9 +59.8 22.3	15 48.6 +59.8 21.4	15 44.5 +59.9 20.5	15 40.6 +59.9 19.5
27°	16 57.1 +59.8 23.2	16 52.7 +59.8 22.3	16 48.4 +59.9 21.3	16 44.4 +59.8 20.4	16 40.5 +59.8 19.5
28°	17 56.9 +59.8 23.1	17 52.5 +59.8 22.2	17 48.3 +59.8 21.2	17 44.2 +59.8 20.3	17 40.3 +59.8 19.4
29°	18 56.7 +59.8 23.0	18 52.3 +59.8 22.1	18 48.1 +59.8 21.2	18 44.0 +59.8 20.2	18 40.1 +59.9 19.3

Declination SAME name as Latitude

Latitude 79°

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°	-9 19.9 +59.9	-9 23.7 +59.8	-9 27.4 +59.9	-9 30.9 +59.9	-9 34.2 +59.9
2°	-8 20.0 +59.9	-8 23.9 +59.9	-8 27.5 +59.9	-8 31.0 +59.9	-8 34.3 +59.9
3°	-7 20.1 +59.8	-7 24.0 +59.9	-7 27.6 +59.8	-7 31.1 +59.9	-7 34.4 +59.9
4°	-6 20.3 +59.9	-6 24.1 +59.9	-6 27.8 +59.9	-6 31.2 +59.9	-6 34.5 +59.9
5°	-5 20.4 +59.9	-5 24.2 +59.9	-5 27.9 +59.9	-5 31.3 +59.9	-5 34.6 +60.0
6°	-4 20.5 +59.8	-4 24.3 +59.8	-4 28.0 +59.9	-4 31.4 +59.9	-4 34.6 +59.9
7°	-3 20.7 +59.9	-3 24.5 +59.9	-3 28.1 +59.9	-3 31.5 +59.9	-3 34.7 +59.9
8°	-2 20.8 +59.9	-2 24.6 +59.9	-2 28.2 +59.9	-2 31.6 +59.9	-2 34.8 +59.9
9°	-1 20.9 +59.9	-1 24.7 +59.9	-1 28.3 +59.9	-1 31.7 +59.9	-1 34.9 +59.9
10°	-0 21.0 +59.8	-0 24.8 +59.9	-0 28.4 +59.9	-0 31.8 +59.9	-0 35.0 +59.9
11°	0 38.8 +59.9 19.6	0 35.1 +59.9 18.6	0 31.5 +59.9 17.7	0 28.1 +59.9 16.7	0 24.9 +60.0 15.7
12°	1 38.7 +59.9 19.6	1 35.0 +59.8 18.6	1 31.4 +59.9 17.6	1 28.0 +59.9 16.6	1 24.9 +59.9 15.6
13°	2 38.6 +59.8 19.5	2 34.8 +59.9 18.5	2 31.3 +59.9 17.5	2 27.9 +60.0 16.6	2 24.8 +59.9 15.6
14°	3 38.4 +59.9 19.4	3 34.7 +59.9 18.5	3 31.2 +59.9 17.5	3 27.9 +59.9 16.5	3 24.7 +59.9 15.5
15°	4 38.3 +59.9 19.4	4 34.6 +59.9 18.4	4 31.1 +59.9 17.4	4 27.8 +59.9 16.5	4 24.6 +59.9 15.5
16°	5 38.2 +59.9 19.3	5 34.5 +59.9 18.3	5 31.0 +59.9 17.4	5 27.7 +59.9 16.4	5 24.5 +59.9 15.4
17°	6 38.1 +59.8 19.2	6 34.4 +59.9 18.3	6 30.9 +59.9 17.3	6 27.6 +59.9 16.3	6 24.4 +60.0 15.4
18°	7 37.9 +59.9 19.2	7 34.3 +59.8 18.2	7 30.8 +59.9 17.2	7 27.5 +59.9 16.3	7 24.4 +59.9 15.3
19°	8 37.8 +59.9 19.1	8 34.1 +59.9 18.1	8 30.7 +59.9 17.2	8 27.4 +59.9 16.2	8 24.3 +59.9 15.3
20°	9 37.7 +59.8 19.0	9 34.0 +59.9 18.1	9 30.6 +59.9 17.1	9 27.3 +59.9 16.2	9 24.2 +59.9 15.2
21°	10 37.5 +59.9 19.0	10 33.9 +59.9 18.0	10 30.5 +59.9 17.1	10 27.2 +59.9 16.1	10 24.1 +59.9 15.2
22°	11 37.4 +59.9 18.9	11 33.8 +59.9 17.9	11 30.4 +59.8 17.0	11 27.1 +59.9 16.1	11 24.0 +59.9 15.1
23°	12 37.3 +59.8 18.8	12 33.7 +59.8 17.9	12 30.2 +59.9 16.9	12 27.0 +59.9 16.0	12 23.9 +59.9 15.1
24°	13 37.1 +59.9 18.8	13 33.5 +59.9 17.8	13 30.1 +59.9 16.9	13 26.9 +59.9 15.9	13 23.8 +60.0 15.0
25°	14 37.0 +59.9 18.7	14 33.4 +59.9 17.7	14 30.0 +59.9 16.8	14 26.8 +59.9 15.9	14 23.8 +59.9 14.9
26°	15 36.9 +59.8 18.6	15 33.3 +59.9 17.7	15 29.9 +59.9 16.8	15 26.7 +59.9 15.8	15 23.7 +59.9 14.9
27°	16 36.7 +59.9 18.5	16 33.2 +59.8 17.6	16 29.8 +59.9 16.7	16 26.6 +59.9 15.8	16 23.6 +59.9 14.8
28°	17 36.6 +59.8 18.5	17 33.0 +59.9 17.5	17 29.7 +59.9 16.6	17 26.5 +59.9 15.7	17 23.5 +59.9 14.8
29°	18 36.4 +59.9 18.4	18 32.9 +59.9 17.5	18 29.6 +59.8 16.6	18 26.4 +59.9 15.6	18 23.4 +59.9 14.7

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°	-9 37.3 +59.9	-9 40.2 +59.9	-9 42.9 +59.9	-9 45.5 +60.0	-9 47.8 +60.0
2°	-8 37.4 +59.9	-8 40.3 +59.9	-8 43.0 +59.9	-8 45.5 +60.0	-8 47.8 +60.0
3°	-7 37.5 +60.0	-7 40.4 +60.0	-7 43.1 +60.0	-7 45.5 +59.9	-7 47.8 +59.9
4°	-6 37.5 +59.9	-6 40.4 +59.9	-6 43.1 +59.9	-6 45.6 +60.0	-6 47.9 +60.0
5°	-5 37.6 +59.9	-5 40.5 +59.9	-5 43.2 +60.0	-5 45.6 +59.9	-5 47.9 +59.9
6°	-4 37.7 +59.9	-4 40.6 +60.0	-4 43.2 +59.9	-4 45.7 +60.0	-4 48.0 +60.0
7°	-3 37.8 +60.0	-3 40.6 +59.9	-3 43.3 +60.0	-3 45.7 +59.9	-3 48.0 +59.9
8°	-2 37.8 +59.9	-2 40.7 +60.0	-2 43.3 +59.9	-2 45.8 +60.0	-2 48.1 +60.0
9°	-1 37.9 +59.9	-1 40.7 +59.9	-1 43.4 +60.0	-1 45.8 +59.9	-1 48.1 +60.0
10°	-0 38.0 +59.9	-0 40.8 +59.9	-0 43.4 +59.9	-0 45.9 +60.0	-0 48.1 +59.9
11°	0 21.9 +60.0 14.7	0 19.1 +60.0 13.7	0 16.5 +59.9 12.8	0 14.1 +59.9 11.8	0 11.8 +60.0 10.8
12°	1 21.9 +59.9 14.7	1 19.1 +59.9 13.7	1 16.4 +60.0 12.7	1 14.0 +60.0 11.7	1 11.8 +60.0 10.8
13°	2 21.8 +59.9 14.6	2 19.0 +59.9 13.6	2 16.4 +59.9 12.7	2 14.0 +59.9 11.7	2 11.8 +59.9 10.7
14°	3 21.7 +59.9 14.6	3 18.9 +60.0 13.6	3 16.3 +60.0 12.6	3 13.9 +60.0 11.7	3 11.7 +60.0 10.7
15°	4 21.6 +60.0 14.5	4 18.9 +59.9 13.6	4 16.3 +59.9 12.6	4 13.9 +59.9 11.6	4 11.7 +59.9 10.6
16°	5 21.6 +59.9 14.5	5 18.8 +59.9 13.5	5 16.2 +60.0 12.5	5 13.8 +60.0 11.6	5 11.6 +60.0 10.6
17°	6 21.5 +59.9 14.4	6 18.7 +60.0 13.5	6 16.2 +59.9 12.5	6 13.8 +59.9 11.5	6 11.6 +60.0 10.6
18°	7 21.4 +60.0 14.4	7 18.7 +59.9 13.4	7 16.1 +60.0 12.5	7 13.7 +60.0 11.5	7 11.6 +59.9 10.5
19°	8 21.4 +59.9 14.3	8 18.6 +59.9 13.4	8 16.1 +59.9 12.4	8 13.7 +59.9 11.5	8 11.5 +60.0 10.5
20°	9 21.3 +59.9 14.3	9 18.5 +60.0 13.3	9 16.0 +59.9 12.4	9 13.6 +60.0 11.4	9 11.5 +59.9 10.5
21°	10 21.2 +59.9 14.2	10 18.5 +59.9 13.3	10 15.9 +60.0 12.3	10 13.6 +59.9 11.4	10 11.4 +60.0 10.4
22°	11 21.1 +59.9 14.2	11 18.4 +59.9 13.2	11 15.9 +59.9 12.3	11 13.5 +60.0 11.3	11 11.4 +59.9 10.4
23°	12 21.0 +60.0 14.1	12 18.3 +60.0 13.2	12 15.8 +60.0 12.2	12 13.5 +59.9 11.3	12 11.3 +60.0 10.4
24°	13 21.0 +59.9 14.1	13 18.3 +59.9 13.1	13 15.8 +59.9 12.2	13 13.4 +60.0 11.3	13 11.3 +60.0 10.3
25°	14 20.9 +59.9 14.0	14 18.2 +59.9 13.1	14 15.7 +60.0 12.1	14 13.4 +59.9 11.2	14 11.3 +59.9 10.3
26°	15 20.8 +59.9 14.0	15 18.1 +60.0 13.0	15 15.7 +59.9 12.1	15 13.3 +60.0 11.2	15 11.2 +60.0 10.2
27°	16 20.7 +60.0 13.9	16 18.1 +59.9 13.0	16 15.6 +59.9 12.1	16 13.3 +59.9 11.1	16 11.2 +59.9 10.2
28°	17 20.7 +59.9 13.9	17 18.0 +59.9 12.9	17 15.5 +60.0 12.0	17 13.2 +60.0 11.1	17 11.1 +60.0 10.2
29°	18 20.6 +59.9 13.8	18 17.9 +60.0 12.9	18 15.5 +59.9 12.0	18 13.2 +59.9 11.0	18 11.1 +59.9 10.1

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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°	-9	49.9 +60.0	-9	51.8 +60.0	-9	53.5 +60.0	-9	55.0 +59.9	-9	56.4 +60.0
2°	-8	49.9 +59.9	-8	51.8 +59.9	-8	53.5 +59.9	-8	55.1 +60.0	-8	56.4 +60.0
3°	-7	50.0 +60.0	-7	51.9 +60.0	-7	53.6 +60.0	-7	55.1 +60.0	-7	56.4 +60.0
4°	-6	50.0 +60.0	-6	51.9 +60.0	-6	53.6 +60.0	-6	55.1 +60.0	-6	56.4 +60.0
5°	-5	50.0 +59.9	-5	51.9 +60.0	-5	53.6 +60.0	-5	55.1 +60.0	-5	56.4 +60.0
6°	-4	50.1 +60.0	-4	51.9 +59.9	-4	53.6 +60.0	-4	55.1 +60.0	-4	56.4 +60.0
7°	-3	50.1 +60.0	-3	52.0 +60.0	-3	53.6 +59.9	-3	55.1 +59.9	-3	56.4 +60.0
8°	-2	50.1 +59.9	-2	52.0 +60.0	-2	53.7 +60.0	-2	55.2 +60.0	-2	56.4 +60.0
9°	-1	50.2 +60.0	-1	52.0 +60.0	-1	53.7 +60.0	-1	55.2 +60.0	-1	56.4 +59.9
10°	-0	50.2 +60.0	-0	52.0 +59.9	-0	53.7 +60.0	-0	55.2 +60.0	-0	56.5 +60.0
11°	0	09.8 +59.9	0	07.9 +60.0	0	06.3 +59.9	0	04.8 +60.0	0	03.5 +60.0
12°	1	09.7 +60.0	1	07.9 +60.0	1	06.2 +60.0	1	04.8 +60.0	1	03.5 +60.0
13°	2	09.7 +60.0	2	07.9 +59.9	2	06.2 +60.0	2	04.8 +60.0	2	03.5 +60.0
14°	3	09.7 +60.0	3	07.8 +60.0	3	06.2 +60.0	3	04.8 +59.9	3	03.5 +60.0
15°	4	09.7 +59.9	4	07.8 +60.0	4	06.2 +60.0	4	04.7 +60.0	4	03.5 +60.0
16°	5	09.6 +60.0	5	07.8 +60.0	5	06.2 +59.9	5	04.7 +60.0	5	03.5 +60.0
17°	6	09.6 +60.0	6	07.8 +59.9	6	06.1 +60.0	6	04.7 +60.0	6	03.5 +59.9
18°	7	09.6 +59.9	7	07.7 +60.0	7	06.1 +60.0	7	04.7 +60.0	7	03.4 +60.0
19°	8	09.5 +60.0	8	07.7 +60.0	8	06.1 +60.0	8	04.7 +60.0	8	03.4 +60.0
20°	9	09.5 +59.9	9	07.7 +60.0	9	06.1 +60.0	9	04.7 +59.9	9	03.4 +60.0
21°	10	09.4 +60.0	10	07.7 +59.9	10	06.1 +59.9	10	04.6 +60.0	10	03.4 +60.0
22°	11	09.4 +60.0	11	07.6 +60.0	11	06.0 +60.0	11	04.6 +60.0	11	03.4 +60.0
23°	12	09.4 +59.9	12	07.6 +60.0	12	06.0 +60.0	12	04.6 +60.0	12	03.4 +60.0
24°	13	09.3 +60.0	13	07.6 +59.9	13	06.0 +60.0	13	04.6 +60.0	13	03.4 +60.0
25°	14	09.3 +60.0	14	07.5 +60.0	14	06.0 +59.9	14	04.6 +60.0	14	03.4 +59.9
26°	15	09.3 +59.9	15	07.5 +60.0	15	05.9 +60.0	15	04.6 +59.9	15	03.3 +60.0
27°	16	09.2 +60.0	16	07.5 +60.0	16	05.9 +60.0	16	04.5 +60.0	16	03.3 +60.0
28°	17	09.2 +60.0	17	07.5 +59.9	17	05.9 +60.0	17	04.5 +60.0	17	03.3 +60.0
29°	18	09.2 +59.9	18	07.4 +60.0	18	05.9 +59.9	18	04.5 +60.0	18	03.3 +60.0

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°	-9	57.5 +60.0	-9	58.4 +60.0	-9	59.1 +60.0	-9	59.6 +60.0	-9	59.9 +60.0
2°	-8	57.5 +60.0	-8	58.4 +60.0	-8	59.1 +60.0	-8	59.6 +60.0	-8	59.9 +60.0
3°	-7	57.5 +60.0	-7	58.4 +60.0	-7	59.1 +60.0	-7	59.6 +60.0	-7	59.9 +60.0
4°	-6	57.5 +60.0	-6	58.4 +60.0	-6	59.1 +60.0	-6	59.6 +60.0	-6	59.9 +60.0
5°	-5	57.5 +60.0	-5	58.4 +60.0	-5	59.1 +60.0	-5	59.6 +60.0	-5	59.9 +60.0
6°	-4	57.5 +60.0	-4	58.4 +60.0	-4	59.1 +60.0	-4	59.6 +60.0	-4	59.9 +60.0
7°	-3	57.5 +60.0	-3	58.4 +60.0	-3	59.1 +60.0	-3	59.6 +60.0	-3	59.9 +60.0
8°	-2	57.5 +60.0	-2	58.4 +60.0	-2	59.1 +60.0	-2	59.6 +60.0	-2	59.9 +60.0
9°	-1	57.5 +60.0	-1	58.4 +60.0	-1	59.1 +60.0	-1	59.6 +60.0	-1	59.9 +60.0
10°	-0	57.5 +60.0	-0	58.4 +60.0	-0	59.1 +60.0	-0	59.6 +60.0	-0	59.9 +60.0
11°	0	02.5 +59.9	0	01.6 +60.0	0	00.9 +60.0	0	00.4 +60.0	0	00.1 +60.0
12°	1	02.4 +60.0	1	01.6 +60.0	1	00.9 +60.0	1	00.4 +60.0	1	00.1 +60.0
13°	2	02.4 +60.0	2	01.6 +60.0	2	00.9 +60.0	2	00.4 +60.0	2	00.1 +60.0
14°	3	02.4 +60.0	3	01.6 +59.9	3	00.9 +60.0	3	00.4 +60.0	3	00.1 +60.0
15°	4	02.4 +60.0	4	01.5 +60.0	4	00.9 +60.0	4	00.4 +60.0	4	00.1 +60.0
16°	5	02.4 +60.0	5	01.5 +60.0	5	00.9 +60.0	5	00.4 +60.0	5	00.1 +60.0
17°	6	02.4 +60.0	6	01.5 +60.0	6	00.9 +60.0	6	00.4 +60.0	6	00.1 +60.0
18°	7	02.4 +60.0	7	01.5 +60.0	7	00.9 +60.0	7	00.4 +60.0	7	00.1 +60.0
19°	8	02.4 +60.0	8	01.5 +60.0	8	00.9 +60.0	8	00.4 +60.0	8	00.1 +60.0
20°	9	02.4 +60.0	9	01.5 +60.0	9	00.9 +60.0	9	00.4 +60.0	9	00.1 +60.0
21°	10	02.4 +60.0	10	01.5 +60.0	10	00.9 +59.9	10	00.4 +60.0	10	00.1 +60.0
22°	11	02.4 +59.9	11	01.5 +60.0	11	00.8 +60.0	11	00.4 +60.0	11	00.1 +60.0
23°	12	02.3 +60.0	12	01.5 +60.0	12	00.8 +60.0	12	00.4 +60.0	12	00.1 +60.0
24°	13	02.3 +60.0	13	01.5 +60.0	13	00.8 +60.0	13	00.4 +60.0	13	00.1 +60.0
25°	14	02.3 +60.0	14	01.5 +60.0	14	00.8 +60.0	14	00.4 +60.0	14	00.1 +60.0
26°	15	02.3 +60.0	15	01.5 +60.0	15	00.8 +60.0	15	00.4 +60.0	15	00.1 +60.0
27°	16	02.3 +60.0	16	01.5 +60.0	16	00.8 +60.0	16	00.4 +60.0	16	00.1 +60.0
28°	17	02.3 +60.0	17	01.5 +60.0	17	00.8 +60.0	17	00.4 +60.0	17	00.1 +60.0
29°	18	02.3 +60.0	18	01.5 +60.0	18	00.8 +60.0	18	00.4 +60.0	18	00.1 +60.0