

Latitude 30° - 39°

Declination SAME name as Latitude

Sight-Reduction Tables for Latitude 30° - 39°

Declination SAME name as Latitude

Revision V1.2 - Apr2017

Warning and Terms of Usage:

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

Use these Tables only for training and exercising!

Compiled by Erik De Man (mail2erik@siranah.de) on Tue Apr 11 09:21:23 2017

Purpose and Scope

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

The tables on the following pages were calculated according to:

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

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

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

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

For practical Sight Reduction this manual is used as follows:

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

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

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

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	60 00.0 +60.0 180.0	59 59.1 +60.0 178.0	59 56.4 +59.9 176.0	59 51.9 +59.7 174.0	59 45.5 +59.6 172.0
1°	61 00.0 +60.0 180.0	60 59.1 +59.9 177.9	60 56.3 +59.8 175.9	60 51.6 +59.7 173.8	60 45.1 +59.5 171.8
2°	62 00.0 +60.0 180.0	61 59.0 +60.0 177.9	61 56.1 +59.9 175.7	61 51.3 +59.7 173.6	61 44.6 +59.5 171.5
3°	63 00.0 +60.0 180.0	62 59.0 +60.0 177.8	62 56.0 +59.9 175.6	62 51.0 +59.7 173.4	62 44.1 +59.5 171.3
4°	64 00.0 +60.0 180.0	63 59.0 +59.9 177.7	63 55.9 +59.8 175.5	63 50.7 +59.7 173.2	63 43.6 +59.4 171.0
5°	65 00.0 +60.0 180.0	64 58.9 +60.0 177.6	64 55.7 +59.9 175.3	64 50.4 +59.7 173.0	64 43.0 +59.4 170.6
6°	66 00.0 +60.0 180.0	65 58.9 +59.9 177.6	65 55.6 +59.8 175.1	65 50.1 +59.6 172.7	65 42.4 +59.3 170.3
7°	67 00.0 +60.0 180.0	66 58.8 +60.0 177.5	66 55.4 +59.8 174.9	66 49.7 +59.6 172.4	66 41.7 +59.3 169.9
8°	68 00.0 +60.0 180.0	67 58.8 +60.0 177.4	67 55.2 +59.8 174.7	67 49.3 +59.5 172.1	67 41.0 +59.2 169.5
9°	69 00.0 +60.0 180.0	68 58.8 +59.9 177.2	68 55.0 +59.8 174.5	68 48.8 +59.5 171.8	68 40.2 +59.1 169.1
10°	70 00.0 +60.0 180.0	69 58.7 +59.9 177.1	69 54.8 +59.7 174.3	69 48.3 +59.5 171.4	69 39.3 +59.0 168.6
11°	71 00.0 +60.0 180.0	70 58.6 +60.0 177.0	70 54.5 +59.8 174.0	70 47.8 +59.4 171.0	70 38.3 +59.0 168.1
12°	72 00.0 +60.0 180.0	71 58.6 +59.9 176.8	71 54.3 +59.7 173.7	71 47.2 +59.3 170.6	71 37.3 +58.8 167.5
13°	73 00.0 +60.0 180.0	72 58.5 +59.9 176.7	72 54.0 +59.6 173.4	72 46.5 +59.2 170.1	72 36.1 +58.7 166.9
14°	74 00.0 +60.0 180.0	73 58.4 +59.9 176.5	73 53.6 +59.7 173.0	73 45.7 +59.2 169.5	73 34.8 +58.5 166.1
15°	75 00.0 +60.0 180.0	74 58.3 +59.9 176.3	74 53.3 +59.5 172.6	74 44.9 +59.0 168.9	74 33.3 +58.4 165.3
16°	76 00.0 +60.0 180.0	75 58.2 +59.9 176.0	75 52.8 +59.5 172.1	75 43.9 +58.9 168.2	75 31.7 +58.0 164.4
17°	77 00.0 +60.0 180.0	76 58.1 +59.8 175.8	76 52.3 +59.5 171.6	76 42.8 +58.8 167.4	76 29.7 +57.8 163.4
18°	78 00.0 +60.0 180.0	77 57.9 +59.9 175.4	77 51.8 +59.3 170.9	77 41.6 +58.5 166.5	77 27.5 +57.5 162.2
19°	79 00.0 +60.0 180.0	78 57.8 +59.8 175.1	78 51.1 +59.2 170.2	78 40.1 +58.2 165.4	78 25.0 +56.9 160.8
20°	80 00.0 +60.0 180.0	79 57.6 +59.7 174.6	79 50.3 +59.0 169.3	79 38.3 +57.9 164.1	79 21.9 +56.4 159.2
21°	81 00.0 +60.0 180.0	80 57.3 +59.7 174.1	80 49.3 +58.8 168.2	80 36.2 +57.3 162.6	80 18.3 +55.6 157.2
22°	82 00.0 +60.0 180.0	81 57.0 +59.6 173.4	81 48.1 +58.4 166.9	81 33.5 +56.7 160.7	81 13.9 +54.5 154.9
23°	83 00.0 +60.0 180.0	82 56.6 +59.5 172.5	82 46.5 +58.0 165.2	82 30.2 +55.7 158.3	82 08.4 +53.0 152.0
24°	84 00.0 +60.0 180.0	83 56.1 +59.2 171.3	83 44.5 +57.2 163.0	83 25.9 +54.3 155.3	83 01.4 +50.8 148.4
25°	85 00.0 +60.0 180.0	84 55.3 +58.9 169.7	84 41.7 +56.0 160.0	84 20.2 +52.0 151.3	83 52.2 +47.7 143.7
26°	86 00.0 +60.0 180.0	85 54.2 +58.2 167.3	85 37.7 +53.7 155.7	85 12.2 +48.2 145.8	84 39.9 +42.9 137.6
27°	87 00.0 +60.0 180.0	86 52.4 +56.6 163.4	86 31.4 +49.2 149.2	86 00.4 +41.7 138.0	85 22.8 +35.4 129.5
28°	88 00.0 +60.0 180.0	87 49.0 +51.5 156.1	87 20.6 +39.0 138.3	86 42.1 +30.1 126.6	85 58.2 +24.5 118.8
29°	89 00.0 +60.0 180.0	88 40.5 +27.5 138.7	87 59.6 +16.5 119.4	87 12.2 +11.9 110.2	86 22.7 +09.5 105.0

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°	59 37.5 +59.3 170.1	59 27.6 +59.1 168.1	59 16.1 +58.7 166.2	59 02.9 +58.3 164.3	58 48.0 +57.8 162.4
1°	60 36.8 +59.2 169.8	60 26.7 +58.9 167.8	60 14.8 +58.6 165.8	60 01.2 +58.1 163.8	59 45.8 +57.8 161.9
2°	61 36.0 +59.3 169.4	61 25.6 +58.9 167.4	61 13.4 +58.4 165.3	60 59.3 +58.1 163.3	60 43.6 +57.5 161.4
3°	62 35.3 +59.1 169.1	62 24.5 +58.8 167.0	62 11.8 +58.4 164.9	61 57.4 +57.9 162.8	61 41.1 +57.5 160.8
4°	63 34.4 +59.1 168.7	63 23.3 +58.7 166.5	63 10.2 +58.3 164.4	62 55.3 +57.8 162.2	62 38.6 +57.2 160.1
5°	64 33.5 +59.0 168.3	64 22.0 +58.6 166.1	64 08.5 +58.2 163.8	63 53.1 +57.6 161.6	63 35.8 +57.0 159.5
6°	65 32.5 +59.0 167.9	65 20.6 +58.5 165.6	65 06.7 +58.0 163.3	64 50.7 +57.5 161.0	64 32.8 +56.9 158.8
7°	66 31.5 +58.9 167.5	66 19.1 +58.4 165.0	66 04.7 +57.8 162.6	65 48.2 +57.2 160.3	65 29.7 +56.6 158.0
8°	67 30.4 +58.7 167.0	67 17.5 +58.3 164.4	67 02.5 +57.7 162.0	66 45.4 +57.0 159.6	66 26.3 +56.3 157.2
9°	68 29.1 +58.7 166.4	68 15.8 +58.1 163.8	68 00.2 +57.5 161.3	67 42.4 +56.8 158.8	67 22.6 +56.0 156.3
10°	69 27.8 +58.5 165.8	69 13.9 +57.9 163.1	68 57.7 +57.2 160.5	68 39.2 +56.4 157.9	68 18.6 +55.6 155.4
11°	70 26.3 +58.4 165.2	70 11.8 +57.7 162.4	69 54.9 +56.9 159.6	69 35.6 +56.2 156.9	69 14.2 +55.2 154.3
12°	71 24.7 +58.2 164.5	71 09.5 +57.5 161.5	70 51.8 +56.7 158.7	70 31.8 +55.7 155.9	70 09.4 +54.8 153.2
13°	72 22.9 +58.0 163.7	72 07.0 +57.2 160.6	71 48.5 +56.2 157.6	71 27.5 +55.3 154.8	71 04.2 +54.2 152.0
14°	73 20.9 +57.7 162.8	73 04.2 +56.8 159.6	72 44.7 +55.9 156.5	72 22.8 +54.8 153.5	71 58.4 +53.7 150.6
15°	74 18.6 +57.5 161.9	74 01.0 +56.5 158.5	73 40.6 +55.3 155.2	73 17.6 +54.1 152.1	72 52.1 +52.9 149.1
16°	75 16.1 +57.1 160.8	74 57.5 +56.0 157.2	74 35.9 +54.8 153.8	74 11.7 +53.4 150.6	73 45.0 +52.0 147.5
17°	76 13.2 +56.7 159.5	75 53.5 +55.4 155.8	75 30.7 +54.0 152.2	75 05.1 +52.6 148.9	74 37.0 +51.1 145.7
18°	77 09.9 +56.1 158.1	76 48.9 +54.6 154.2	76 24.7 +53.1 150.4	75 57.7 +51.5 146.9	75 28.1 +49.9 143.6
19°	78 06.0 +55.5 156.4	77 43.5 +53.9 152.3	77 17.8 +52.1 148.4	76 49.2 +50.3 144.8	76 18.0 +48.4 141.4
20°	79 01.5 +54.6 154.5	78 37.4 +52.7 150.1	78 09.9 +50.7 146.1	77 39.5 +48.7 142.3	77 06.4 +46.8 138.8
21°	79 56.1 +53.5 152.3	79 30.1 +51.3 147.6	79 00.6 +49.1 143.4	78 28.2 +46.9 139.5	77 53.2 +44.7 135.9
22°	80 49.6 +52.1 149.5	80 21.4 +49.5 144.7	79 49.7 +47.0 140.2	79 15.1 +44.5 136.2	78 37.9 +42.3 132.6
23°	81 41.7 +50.1 146.3	81 10.9 +47.1 141.1	80 36.7 +44.3 136.6	79 59.6 +41.7 132.5	79 20.2 +39.3 128.9
24°	82 31.8 +47.3 142.2	81 58.0 +44.0 136.9	81 21.0 +40.9 132.2	80 41.3 +38.1 128.2	79 59.5 +35.6 124.7
25°	83 19.1 +43.5 137.2	82 42.0 +39.8 131.8	82 01.9 +36.5 127.2	81 19.4 +33.8 123.3	80 35.1 +31.4 119.9
26°	84 02.6 +38.2 131.0	83 21.8 +34.3 125.6	82 38.4 +31.1 121.2	81 53.2 +28.3 117.6	81 06.5 +26.1 114.5
27°	84 40.8 +30.7 123.1	83 56.1 +27.0 118.2	83 09.5 +24.1 114.3	82 21.5 +22.0 111.2	81 32.6 +20.3 108.6
28°	85 11.5 +20.6 113.3	84 23.1 +17.9 109.4	83 33.6 +16.0 106.4	82 43.5 +14.5 104.0	81 52.9 +13.4 102.0
29°	85 32.1 +08.1 101.7	84 41.0 +07.3 99.4	83 49.6 +06.7 97.6	82 58.0 +06.4 96.2	82 06.3 +06.2 95.0

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	58 31.5 +57.4 160.6	58 13.4 +56.9 158.8	57 53.9 +56.3 157.0	57 32.8 +55.8 155.2	57 10.3 +55.2 153.5
1°	59 28.9 +57.2 160.0	59 10.3 +56.7 158.1	58 50.2 +56.2 156.3	58 28.6 +55.6 154.5	58 05.5 +55.0 152.8
2°	60 26.1 +57.1 159.4	60 07.0 +56.5 157.5	59 46.4 +55.9 155.6	59 24.2 +55.3 153.8	59 00.5 +54.6 152.0
3°	61 23.2 +56.8 158.8	61 03.5 +56.3 156.8	60 42.3 +55.6 154.9	60 19.5 +55.0 153.0	59 55.1 +54.4 151.2
4°	62 20.0 +56.7 158.1	61 59.8 +56.0 156.1	61 37.9 +55.4 154.1	61 14.5 +54.7 152.2	60 49.5 +54.0 150.3
5°	63 16.7 +56.4 157.4	62 55.8 +55.8 155.3	62 33.3 +55.1 153.3	62 09.2 +54.3 151.3	61 43.5 +53.6 149.4
6°	64 13.1 +56.2 156.6	63 51.6 +55.5 154.5	63 28.4 +54.7 152.4	63 03.5 +54.0 150.4	62 37.1 +53.2 148.5
7°	65 09.3 +55.9 155.8	64 47.1 +55.1 153.6	64 23.1 +54.4 151.5	63 57.5 +53.5 149.4	63 30.3 +52.7 147.4
8°	66 05.2 +55.5 154.9	65 42.2 +54.8 152.7	65 17.5 +53.9 150.5	64 51.0 +53.1 148.4	64 23.0 +52.2 146.4
9°	67 00.7 +55.2 153.9	66 37.0 +54.3 151.7	66 11.4 +53.5 149.4	65 44.1 +52.6 147.3	65 15.2 +51.7 145.2
10°	67 55.9 +54.8 152.9	67 31.3 +53.9 150.6	67 04.9 +52.9 148.3	66 36.7 +52.0 146.1	66 06.9 +51.0 144.0
11°	68 50.7 +54.3 151.8	68 25.2 +53.3 149.4	67 57.8 +52.3 147.0	67 28.7 +51.3 144.8	66 57.9 +50.3 142.6
12°	69 45.0 +53.7 150.6	69 18.5 +52.7 148.1	68 50.1 +51.7 145.7	68 20.0 +50.6 143.4	67 48.2 +49.5 141.2
13°	70 38.7 +53.2 149.3	70 11.2 +52.0 146.7	69 41.8 +50.9 144.3	69 10.6 +49.7 141.9	68 37.7 +48.7 139.7
14°	71 31.9 +52.4 147.9	71 03.2 +51.3 145.2	70 32.7 +50.0 142.7	70 00.3 +48.8 140.3	69 26.4 +47.6 138.1
15°	72 24.3 +51.6 146.3	71 54.5 +50.3 143.6	71 22.7 +49.0 141.0	70 49.1 +47.8 138.6	70 14.0 +46.5 136.3
16°	73 15.9 +50.7 144.6	72 44.8 +49.3 141.8	72 11.7 +47.9 139.2	71 36.9 +46.6 136.7	71 00.5 +45.3 134.4
17°	74 06.6 +49.5 142.7	73 34.1 +48.0 139.8	72 59.6 +46.6 137.2	72 23.5 +45.2 134.7	71 45.8 +43.8 132.3
18°	74 56.1 +48.3 140.5	74 22.1 +46.7 137.7	73 46.2 +45.1 135.0	73 08.7 +43.6 132.5	72 29.6 +42.2 130.1
19°	75 44.4 +46.7 138.2	75 08.8 +45.0 135.3	74 31.3 +43.4 132.6	73 52.3 +41.8 130.0	73 11.8 +40.4 127.7
20°	76 31.1 +44.9 135.6	75 53.8 +43.1 132.6	75 14.7 +41.4 129.9	74 34.1 +39.8 127.4	73 52.2 +38.3 125.1
21°	77 16.0 +42.7 132.7	76 36.9 +40.8 129.7	75 56.1 +39.1 127.0	75 13.9 +37.5 124.5	74 30.5 +36.0 122.3
22°	77 58.7 +40.2 129.4	77 17.7 +38.2 126.4	76 35.2 +36.4 123.8	75 51.4 +34.8 121.4	75 06.5 +33.4 119.2
23°	78 38.9 +37.1 125.7	77 55.9 +35.2 122.9	77 11.6 +33.4 120.3	76 26.2 +31.9 118.0	75 39.9 +30.5 115.9
24°	79 16.0 +33.5 121.6	78 31.1 +31.6 118.9	77 45.0 +30.0 116.5	76 58.1 +28.4 114.3	76 10.4 +27.1 112.4
25°	79 49.5 +29.2 117.0	79 02.7 +27.5 114.5	78 15.0 +25.9 112.3	77 26.5 +24.7 110.3	76 37.5 +23.6 108.6
26°	80 18.7 +24.4 112.0	79 30.2 +22.8 109.7	78 40.9 +21.6 107.8	77 51.2 +20.6 106.1	77 01.1 +19.6 104.5
27°	80 43.1 +18.8 106.4	79 53.0 +17.7 104.6	79 02.5 +16.8 103.0	78 11.8 +15.9 101.5	77 20.7 +15.4 100.3
28°	81 01.9 +12.6 100.4	80 10.7 +12.0 99.0	79 19.3 +11.5 97.8	78 27.7 +11.1 96.8	77 36.1 +10.8 95.8
29°	81 14.5 +06.0 94.1	80 22.7 +05.9 93.2	79 30.8 +05.9 92.5	78 38.8 +06.1 91.8	77 46.9 +06.1 91.2

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°	56 46.4 +54.7 151.8	56 21.2 +54.0 150.2	55 54.8 +53.3 148.6	55 27.0 +52.8 147.0	54 58.1 +52.1 145.4
1°	57 41.1 +54.3 151.0	57 15.2 +53.7 149.4	56 48.1 +53.0 147.7	56 19.8 +52.3 146.1	55 50.2 +51.7 144.6
2°	58 35.4 +54.0 150.2	58 08.9 +53.3 148.5	57 41.1 +52.7 146.9	57 12.1 +52.0 145.2	56 41.9 +51.3 143.7
3°	59 29.4 +53.6 149.4	59 02.2 +53.0 147.7	58 33.8 +52.2 146.0	58 04.1 +51.5 144.3	57 33.2 +50.8 142.7
4°	60 23.0 +53.3 148.5	59 55.2 +52.6 146.7	59 26.0 +51.9 145.0	58 55.6 +51.1 143.3	58 24.0 +50.3 141.7
5°	61 16.3 +52.9 147.6	60 47.8 +52.1 145.8	60 17.9 +51.3 144.0	59 46.7 +50.5 142.3	59 14.3 +49.8 140.6
6°	62 09.2 +52.4 146.6	61 39.9 +51.6 144.7	61 09.2 +50.8 142.9	60 37.2 +50.0 141.2	60 04.1 +49.2 139.5
7°	63 01.6 +51.9 145.5	62 31.5 +51.0 143.6	62 00.0 +50.2 141.8	61 27.2 +49.4 140.1	60 53.3 +48.6 138.4
8°	63 53.5 +51.3 144.4	63 22.5 +50.5 142.5	62 50.2 +49.6 140.6	62 16.6 +48.8 138.9	61 41.9 +47.9 137.2
9°	64 44.8 +50.8 143.2	64 13.0 +49.8 141.3	63 39.8 +48.9 139.4	63 05.4 +48.0 137.6	62 29.8 +47.1 135.9
10°	65 35.6 +50.0 141.9	65 02.8 +49.1 140.0	64 28.7 +48.2 138.1	63 53.4 +47.2 136.3	63 16.9 +46.3 134.5
11°	66 25.6 +49.3 140.6	65 51.9 +48.3 138.6	65 16.9 +47.3 136.7	64 40.6 +46.4 134.8	64 03.2 +45.4 133.1
12°	67 14.9 +48.5 139.1	66 40.2 +47.4 137.1	66 04.2 +46.4 135.2	65 27.0 +45.4 133.3	64 48.6 +44.5 131.6
13°	68 03.4 +47.5 137.6	67 27.6 +46.5 135.5	66 50.6 +45.4 133.6	66 12.4 +44.3 131.7	65 33.1 +43.3 130.0
14°	68 50.9 +46.5 135.9	68 14.1 +45.3 133.8	67 36.0 +44.2 131.9	66 56.7 +43.3 130.0	66 16.4 +42.2 128.3
15°	69 37.4 +45.3 134.1	68 59.4 +44.2 132.0	68 20.2 +43.1 130.1	67 40.0 +41.9 128.2	66 58.6 +41.0 126.5
16°	70 22.7 +44.0 132.2	69 43.6 +42.8 130.1	69 03.3 +41.6 128.2	68 21.9 +40.6 126.3	67 39.6 +39.5 124.6
17°	71 06.7 +42.5 130.1	70 26.4 +41.3 128.1	69 44.9 +40.1 126.1	69 02.5 +39.0 124.3	68 19.1 +38.0 122.6
18°	71 49.2 +40.9 127.9	71 07.7 +39.6 125.9	70 25.0 +38.5 123.9	69 41.5 +37.3 122.1	68 57.1 +36.3 120.4
19°	72 30.1 +39.0 125.5	71 47.3 +37.7 123.5	71 03.5 +36.6 121.6	70 18.8 +35.5 119.8	69 33.4 +34.4 118.2
20°	73 09.1 +37.0 122.9	72 25.0 +35.7 121.0	71 40.1 +34.5 119.1	70 54.3 +33.5 117.4	70 07.8 +32.5 115.8
21°	73 46.1 +34.6 120.2	73 00.7 +33.5 118.3	72 14.6 +32.3 116.5	71 27.8 +31.2 114.8	70 40.3 +30.3 113.3
22°	74 20.7 +32.1 117.2	73 34.2 +30.8 115.4	72 46.9 +29.8 113.7	71 59.0 +28.9 112.1	71 10.6 +28.0 110.7
23°	74 52.8 +29.2 114.0	74 05.0 +28.1 112.3	73 16.7 +27.1 110.7	72 27.9 +26.2 109.3	71 38.6 +25.4 107.9
24°	75 22.0 +26.1 110.6	74 33.1 +25.1 109.0	73 43.8 +24.2 107.6	72 54.1 +23.4 106.2	72 04.0 +22.8 105.0
25°	75 48.1 +22.6 107.0	74 58.2 +21.7 105.6	74 08.0 +21.0 104.3	73 17.5 +20.4 103.1	72 26.8 +19.8 102.0
26°	76 10.7 +18.8 103.2	75 19.9 +18.2 101.9	74 29.0 +17.6 100.8	73 37.9 +17.1 99.8	72 46.6 +16.8 98.8
27°	76 29.5 +14.8 99.2	75 38.1 +14.5 98.1	74 46.6 +14.1 97.2	73 55.0 +13.8 96.3	73 03.4 +13.5 95.5
28°	76 44.3 +10.6 95.0	75 52.6 +10.4 94.2	75 00.7 +10.3 93.5	74 08.8 +10.3 92.8	73 16.9 +10.2 92.2
29°	76 54.9 +06.2 90.6	76 03.0 +06.3 90.1	75 11.0 +06.5 89.6	74 19.1 +06.6 89.2	73 27.1 +06.8 88.7

Declination SAME name as Latitude

Latitude 30°

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°	54 28.1 +51.4 143.9	53 57.0 +50.8 142.5	53 24.8 +50.2 141.1	52 51.7 +49.5 139.7	52 17.6 +48.8 138.3
1°	55 19.5 +51.1 143.1	54 47.8 +50.3 141.6	54 15.0 +49.6 140.1	53 41.2 +49.0 138.7	53 06.4 +48.4 137.4
2°	56 10.6 +50.5 142.1	55 38.1 +49.9 140.6	55 04.6 +49.2 139.2	54 30.2 +48.5 137.7	53 54.8 +47.8 136.4
3°	57 01.1 +50.1 141.1	56 28.0 +49.4 139.6	55 53.8 +48.7 138.1	55 18.7 +47.9 136.7	54 42.6 +47.3 135.3
4°	57 51.2 +49.6 140.1	57 17.4 +48.8 138.6	56 42.5 +48.1 137.1	56 06.6 +47.4 135.6	55 29.9 +46.7 134.2
5°	58 40.8 +49.0 139.0	58 06.2 +48.3 137.5	57 30.6 +47.5 136.0	56 54.0 +46.8 134.5	56 16.6 +46.0 133.1
6°	59 29.8 +48.4 137.9	58 54.5 +47.6 136.4	58 18.1 +46.9 134.8	57 40.8 +46.1 133.4	57 02.6 +45.4 132.0
7°	60 18.2 +47.8 136.7	59 42.1 +47.0 135.2	59 05.0 +46.2 133.6	58 26.9 +45.4 132.2	57 48.0 +44.6 130.7
8°	61 06.0 +47.0 135.5	60 29.1 +46.2 133.9	59 51.2 +45.4 132.4	59 12.3 +44.7 130.9	58 32.6 +43.9 129.5
9°	61 53.0 +46.3 134.2	61 15.3 +45.4 132.6	60 36.6 +44.6 131.1	59 57.0 +43.8 129.6	59 16.5 +43.0 128.2
10°	62 39.3 +45.4 132.8	62 00.7 +44.6 131.2	61 21.2 +43.7 129.7	60 40.8 +42.9 128.2	59 59.5 +42.2 126.8
11°	63 24.7 +44.5 131.4	62 45.3 +43.6 129.8	62 04.9 +42.8 128.2	61 23.7 +41.9 126.8	60 41.7 +41.1 125.3
12°	64 09.2 +43.6 129.9	63 28.9 +42.6 128.3	62 47.7 +41.7 126.7	62 05.6 +41.0 125.3	61 22.8 +40.2 123.8
13°	64 52.8 +42.4 128.3	64 11.5 +41.5 126.7	63 29.4 +40.7 125.1	62 46.6 +39.8 123.7	62 03.0 +39.0 122.3
14°	65 35.2 +41.2 126.6	64 53.0 +40.3 125.0	64 10.1 +39.4 123.5	63 26.4 +38.6 122.0	62 42.0 +37.8 120.6
15°	66 16.4 +40.0 124.8	65 33.3 +39.1 123.2	64 49.5 +38.2 121.7	64 05.0 +37.3 120.3	63 19.8 +36.5 118.9
16°	66 56.4 +38.5 122.9	66 12.4 +37.6 121.4	65 27.7 +36.7 119.9	64 42.3 +35.9 118.5	63 56.3 +35.2 117.1
17°	67 34.9 +37.0 120.9	66 50.0 +36.1 119.4	66 04.4 +35.2 118.0	65 18.2 +34.4 116.6	64 31.5 +33.7 115.3
18°	68 11.9 +35.4 118.9	67 26.1 +34.4 117.4	66 39.6 +33.6 115.9	65 52.6 +32.9 114.6	65 05.2 +32.1 113.3
19°	68 47.3 +33.5 116.7	68 00.5 +32.7 115.2	67 13.2 +31.9 113.8	66 25.5 +31.1 112.5	65 37.3 +30.4 111.3
20°	69 20.8 +31.6 114.3	68 33.2 +30.7 112.9	67 45.1 +30.0 111.6	66 56.6 +29.2 110.4	66 07.7 +28.6 109.2
21°	69 52.4 +29.4 111.9	69 03.9 +28.7 110.6	68 15.1 +27.9 109.3	67 25.8 +27.4 108.1	66 36.3 +26.7 107.0
22°	70 21.8 +27.2 109.3	69 32.6 +26.4 108.1	68 43.0 +25.8 106.9	67 53.2 +25.2 105.8	67 03.0 +24.7 104.7
23°	70 49.0 +24.7 106.6	69 59.0 +24.1 105.5	69 08.8 +23.6 104.4	68 18.4 +23.0 103.3	67 27.7 +22.6 102.4
24°	71 13.7 +22.1 103.8	70 23.1 +21.6 102.8	69 32.4 +21.1 101.8	68 41.4 +20.7 100.8	67 50.3 +20.3 99.9
25°	71 35.8 +19.4 100.9	70 44.7 +19.0 100.0	69 53.5 +18.5 99.1	69 02.1 +18.3 98.2	68 10.6 +18.0 97.4
26°	71 55.2 +16.4 97.9	71 03.7 +16.1 97.1	70 12.0 +15.9 96.3	69 20.4 +15.7 95.5	68 28.6 +15.6 94.8
27°	72 11.6 +13.4 94.8	71 19.8 +13.2 94.1	70 27.9 +13.2 93.4	69 36.1 +13.0 92.8	68 44.2 +12.9 92.2
28°	72 25.0 +10.2 91.6	71 33.0 +10.2 91.0	70 41.1 +10.2 90.5	69 49.1 +10.3 90.0	68 57.1 +10.4 89.5
29°	72 35.2 +06.9 88.3	71 43.2 +07.1 87.9	70 51.3 +07.3 87.5	69 59.4 +07.5 87.1	69 07.5 +07.7 86.7

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°	51 42.6 +48.2 137.0	51 06.7 +47.6 135.7	50 30.1 +46.9 134.5	49 52.6 +46.3 133.2	49 14.4 +45.6 132.1
1°	52 30.8 +47.7 136.0	51 54.3 +47.0 134.7	51 17.0 +46.4 133.5	50 38.9 +45.8 132.2	50 00.0 +45.2 131.1
2°	53 18.5 +47.1 135.0	52 41.3 +46.5 133.7	52 03.4 +45.8 132.4	51 24.7 +45.2 131.2	50 45.2 +44.6 130.0
3°	54 05.6 +46.6 134.0	53 27.8 +45.9 132.7	52 49.2 +45.3 131.4	52 09.9 +44.6 130.2	51 29.8 +44.0 129.0
4°	54 52.2 +46.0 132.9	54 13.7 +45.4 131.6	53 34.5 +44.6 130.3	52 54.5 +44.0 129.1	52 13.8 +43.4 127.9
5°	55 38.2 +45.4 131.8	54 59.1 +44.6 130.4	54 19.1 +44.0 129.2	53 38.5 +43.3 127.9	52 57.2 +42.6 126.7
6°	56 23.6 +44.6 130.6	55 43.7 +44.0 129.3	55 03.1 +43.3 128.0	54 21.8 +42.6 126.7	53 39.8 +42.0 125.5
7°	57 08.2 +43.9 129.4	56 27.7 +43.2 128.0	55 46.4 +42.5 126.8	55 04.4 +41.9 125.5	54 21.8 +41.2 124.3
8°	57 52.1 +43.2 128.1	57 10.9 +42.4 126.8	56 28.9 +41.7 125.5	55 46.3 +41.0 124.3	55 03.0 +40.4 123.1
9°	58 35.3 +42.3 126.8	57 53.3 +41.6 125.5	57 10.6 +40.9 124.2	56 27.3 +40.2 123.0	55 43.4 +39.6 121.8
10°	59 17.6 +41.3 125.4	58 34.9 +40.6 124.1	57 51.5 +40.0 122.8	57 07.5 +39.3 121.6	56 23.0 +38.6 120.4
11°	59 58.9 +40.4 124.0	59 15.5 +39.7 122.7	58 31.5 +38.9 121.4	57 46.8 +38.3 120.2	57 01.6 +37.7 119.0
12°	60 39.3 +39.4 122.5	59 55.2 +38.6 121.2	59 10.4 +38.0 119.9	58 25.1 +37.3 118.7	57 39.3 +36.7 117.6
13°	61 18.7 +38.3 120.9	60 33.8 +37.6 119.6	59 48.4 +36.8 118.4	59 02.4 +36.2 117.2	58 16.0 +35.6 116.1
14°	61 57.0 +37.0 119.3	61 11.4 +36.3 118.0	60 25.2 +35.7 116.8	59 38.6 +35.1 115.7	58 51.6 +34.4 114.5
15°	62 34.0 +35.8 117.6	61 47.7 +35.1 116.4	61 00.9 +34.5 115.2	60 13.7 +33.8 114.0	59 26.0 +33.3 112.9
16°	63 09.8 +34.4 115.9	62 22.8 +33.8 114.6	61 35.4 +33.1 113.5	60 47.5 +32.5 112.4	59 59.3 +31.9 111.3
17°	63 44.2 +33.0 114.0	62 56.6 +32.3 112.8	62 08.5 +31.7 111.7	61 20.0 +31.2 110.6	60 31.2 +30.6 109.6
18°	64 17.2 +31.5 112.1	63 28.9 +30.8 111.0	62 40.2 +30.2 109.9	61 51.2 +29.7 108.8	61 01.8 +29.2 107.8
19°	64 48.7 +29.7 110.1	63 59.7 +29.2 109.0	63 10.4 +28.7 108.0	62 20.9 +28.1 107.0	61 31.0 +27.7 106.0
20°	65 18.4 +28.1 108.1	64 28.9 +27.5 107.0	63 39.1 +27.0 106.0	62 49.0 +26.6 105.1	61 58.7 +26.1 104.1
21°	65 46.5 +26.2 105.9	64 56.4 +25.7 104.9	64 06.1 +25.2 104.0	63 15.6 +24.8 103.1	62 24.8 +24.5 102.2
22°	66 12.7 +24.2 103.7	65 22.1 +23.8 102.8	64 31.3 +23.4 101.9	63 40.4 +23.1 101.0	62 49.3 +22.8 100.2
23°	66 36.9 +22.2 101.4	65 45.9 +21.8 100.6	64 54.7 +21.5 99.7	64 03.5 +21.2 98.9	63 12.1 +20.9 98.2
24°	66 59.1 +20.0 99.1	66 07.7 +19.7 98.3	65 16.2 +19.5 97.5	64 24.7 +19.2 96.8	63 33.0 +19.1 96.1
25°	67 19.1 +17.7 96.7	66 27.4 +17.6 95.9	65 35.7 +17.4 95.2	64 43.9 +17.3 94.6	63 52.1 +17.2 93.9
26°	67 36.8 +15.4 94.2	66 45.0 +15.3 93.5	65 53.1 +15.2 92.9	65 01.2 +15.2 92.3	64 09.3 +15.1 91.8
27°	67 52.2 +13.0 91.6	67 00.3 +12.9 91.1	66 08.3 +13.0 90.5	65 16.4 +13.0 90.0	64 24.4 +13.1 89.5
28°	68 05.2 +10.5 89.0	67 13.2 +10.6 88.6	66 21.3 +10.7 88.1	65 29.4 +10.8 87.7	64 37.5 +10.9 87.3
29°	68 15.7 +07.9 86.4	67 23.8 +08.1 86.0	66 32.0 +08.3 85.6	65 40.2 +08.6 85.3	64 48.4 +08.8 85.0

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Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	48 35.4 +45.1 130.9	47 55.8 +44.5 129.8	47 15.6 +43.9 128.7	46 34.7 +43.4 127.6	45 53.2 +42.8 126.5
1°	49 20.5 +44.6 129.9	48 40.3 +44.0 128.8	47 59.5 +43.4 127.7	47 18.1 +42.8 126.6	46 36.0 +42.3 125.5
2°	50 05.1 +44.0 128.9	49 24.3 +43.4 127.7	48 42.9 +42.8 126.6	48 00.9 +42.2 125.5	47 18.3 +41.7 124.5
3°	50 49.1 +43.3 127.8	50 07.7 +42.8 126.6	49 25.7 +42.2 125.5	48 43.1 +41.7 124.5	48 00.0 +41.1 123.4
4°	51 32.4 +42.8 126.7	50 50.5 +42.1 125.5	50 07.9 +41.6 124.4	49 24.8 +41.0 123.4	48 41.1 +40.5 122.3
5°	52 15.2 +42.1 125.5	51 32.6 +41.5 124.4	50 49.5 +40.9 123.3	50 05.8 +40.3 122.2	49 21.6 +39.8 121.2
6°	52 57.3 +41.3 124.4	52 14.1 +40.7 123.2	51 30.4 +40.1 122.1	50 46.1 +39.6 121.1	50 01.4 +39.0 120.0
7°	53 38.6 +40.6 123.2	52 54.8 +40.0 122.0	52 10.5 +39.4 120.9	51 25.7 +38.9 119.9	50 40.4 +38.4 118.9
8°	54 19.2 +39.8 121.9	53 34.8 +39.2 120.8	52 49.9 +38.7 119.7	52 04.6 +38.0 118.7	51 18.8 +37.5 117.6
9°	54 59.0 +38.9 120.6	54 14.0 +38.4 119.5	53 28.6 +37.7 118.4	52 42.6 +37.3 117.4	51 56.3 +36.7 116.4
10°	55 37.9 +38.1 119.3	54 52.4 +37.4 118.2	54 06.3 +36.9 117.1	53 19.9 +36.3 116.1	52 33.0 +35.8 115.1
11°	56 16.0 +37.0 117.9	55 29.8 +36.5 116.8	54 43.2 +36.0 115.8	53 56.2 +35.5 114.7	53 08.8 +35.0 113.8
12°	56 53.0 +36.1 116.5	56 06.3 +35.5 115.4	55 19.2 +34.9 114.4	54 31.7 +34.4 113.4	53 43.8 +34.0 112.4
13°	57 29.1 +35.0 115.0	56 41.8 +34.5 113.9	55 54.1 +34.0 112.9	55 06.1 +33.4 111.9	54 17.8 +32.9 111.0
14°	58 04.1 +33.9 113.5	57 16.3 +33.3 112.4	56 28.1 +32.8 111.4	55 39.5 +32.4 110.5	54 50.7 +31.9 109.6
15°	58 38.0 +32.7 111.9	57 49.6 +32.2 110.9	57 00.9 +31.7 109.9	56 11.9 +31.3 109.0	55 22.6 +30.9 108.1
16°	59 10.7 +31.4 110.3	58 21.8 +30.9 109.3	57 32.6 +30.5 108.3	56 43.2 +30.0 107.4	55 53.5 +29.6 106.6
17°	59 42.1 +30.1 108.6	58 52.7 +29.7 107.6	58 03.1 +29.2 106.7	57 13.2 +28.9 105.8	56 23.1 +28.5 105.0
18°	60 12.2 +28.8 106.9	59 22.4 +28.3 105.9	58 32.3 +27.9 105.1	57 42.1 +27.5 104.2	56 51.6 +27.2 103.4
19°	60 41.0 +27.2 105.1	59 50.7 +26.9 104.2	59 00.2 +26.6 103.4	58 09.6 +26.2 102.5	57 18.8 +25.9 101.8
20°	61 08.2 +25.8 103.3	60 17.6 +25.4 102.4	59 26.8 +25.0 101.6	58 35.8 +24.8 100.8	57 44.7 +24.5 100.1
21°	61 34.0 +24.1 101.4	60 43.0 +23.8 100.6	59 51.8 +23.6 99.8	59 00.6 +23.3 99.1	58 09.2 +23.1 98.4
22°	61 58.1 +22.5 99.4	61 06.8 +22.2 98.7	60 15.4 +22.0 98.0	59 23.9 +21.8 97.3	58 32.3 +21.6 96.6
23°	62 20.6 +20.7 97.5	61 29.0 +20.6 96.8	60 37.4 +20.4 96.1	59 45.7 +20.2 95.4	58 53.9 +20.1 94.8
24°	62 41.3 +19.0 95.4	61 49.6 +18.8 94.8	60 57.8 +18.7 94.1	60 05.9 +18.6 93.5	59 14.0 +18.6 93.0
25°	63 00.3 +17.0 93.3	62 08.4 +17.0 92.8	61 16.5 +16.9 92.2	60 24.5 +16.9 91.6	59 32.6 +16.9 91.1
26°	63 17.3 +15.1 91.2	62 25.4 +15.1 90.7	61 33.4 +15.1 90.2	60 41.4 +15.2 89.7	59 49.5 +15.2 89.2
27°	63 32.4 +13.2 89.1	62 40.5 +13.2 88.6	61 48.5 +13.3 88.1	60 56.6 +13.4 87.7	60 04.7 +13.5 87.3
28°	63 45.6 +11.1 86.9	62 53.7 +11.3 86.5	62 01.8 +11.5 86.1	61 10.0 +11.6 85.7	60 18.2 +11.8 85.3
29°	63 56.7 +09.0 84.6	63 05.0 +09.2 84.3	62 13.3 +09.5 84.0	61 21.6 +09.7 83.6	60 30.0 +10.0 83.3

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	45 11.2 +42.3 125.5	44 28.7 +41.7 124.5	43 45.6 +41.3 123.6	43 02.1 +40.7 122.6	42 18.1 +40.3 121.7
1°	45 53.5 +41.7 124.5	45 10.4 +41.3 123.5	44 26.9 +40.7 122.6	43 42.8 +40.3 121.6	42 58.4 +39.7 120.7
2°	46 35.2 +41.2 123.5	45 51.7 +40.6 122.5	45 07.6 +40.1 121.5	44 23.1 +39.6 120.6	43 38.1 +39.2 119.7
3°	47 16.4 +40.6 122.4	46 32.3 +40.1 121.4	45 47.7 +39.6 120.5	45 02.7 +39.1 119.5	44 17.3 +38.6 118.6
4°	47 57.0 +39.9 121.3	47 12.4 +39.4 120.3	46 27.3 +38.9 119.4	45 41.8 +38.4 118.4	44 55.9 +38.0 117.5
5°	48 36.9 +39.3 120.2	47 51.8 +38.7 119.2	47 06.2 +38.3 118.3	46 20.2 +37.8 117.3	45 33.9 +37.3 116.4
6°	49 16.2 +38.5 119.0	48 30.5 +38.1 118.1	47 44.5 +37.5 117.1	46 58.0 +37.1 116.2	46 11.2 +36.7 115.3
7°	49 54.7 +37.8 117.9	49 08.6 +37.3 116.9	48 22.0 +36.9 116.0	47 35.1 +36.4 115.0	46 47.9 +35.9 114.2
8°	50 32.5 +37.0 116.7	49 45.9 +36.5 115.7	48 58.9 +36.1 114.8	48 11.5 +35.7 113.9	47 23.8 +35.2 113.0
9°	51 09.5 +36.3 115.4	50 22.4 +35.8 114.5	49 35.0 +35.2 113.5	48 47.2 +34.8 112.6	47 59.0 +34.5 111.8
10°	51 45.8 +35.3 114.1	50 58.2 +34.9 113.2	50 10.2 +34.5 112.3	49 22.0 +34.0 111.4	48 33.5 +33.6 110.5
11°	52 21.1 +34.5 112.8	51 33.1 +34.0 111.9	50 44.7 +33.6 111.0	49 56.0 +33.2 110.1	49 07.1 +32.8 109.3
12°	52 55.6 +33.5 111.5	52 07.1 +33.1 110.6	51 18.3 +32.7 109.7	50 29.2 +32.3 108.8	49 39.9 +31.9 108.0
13°	53 29.1 +32.5 110.1	52 40.2 +32.1 109.2	51 51.0 +31.7 108.3	51 01.5 +31.4 107.5	50 11.8 +31.1 106.7
14°	54 01.6 +31.5 108.7	53 12.3 +31.1 107.8	52 22.7 +30.7 106.9	51 32.9 +30.4 106.1	50 42.9 +30.0 105.3
15°	54 33.1 +30.5 107.2	53 43.4 +30.0 106.4	52 53.4 +29.7 105.5	52 03.3 +29.3 104.7	51 12.9 +29.1 104.0
16°	55 03.6 +29.2 105.7	54 13.4 +29.0 104.9	53 23.1 +28.6 104.1	52 32.6 +28.4 103.3	51 42.0 +28.0 102.6
17°	55 32.8 +28.2 104.2	54 42.4 +27.8 103.4	53 51.7 +27.6 102.6	53 01.0 +27.2 101.9	52 10.0 +27.0 101.1
18°	56 01.0 +26.9 102.6	55 10.2 +26.6 101.8	54 19.3 +26.3 101.1	53 28.2 +26.1 100.4	52 37.0 +25.9 99.7
19°	56 27.9 +25.6 101.0	55 36.8 +25.3 100.3	54 45.6 +25.1 99.5	53 54.3 +24.9 98.8	53 02.9 +24.7 98.2
20°	56 53.5 +24.3 99.3	56 02.1 +24.1 98.6	55 10.7 +23.9 98.0	54 19.2 +23.7 97.3	53 27.6 +23.6 96.6
21°	57 17.8 +22.9 97.7	56 26.2 +22.7 97.0	55 34.6 +22.6 96.3	54 42.9 +22.5 95.7	53 51.2 +22.3 95.1
22°	57 40.7 +21.4 95.9	56 48.9 +21.4 95.3	55 57.2 +21.2 94.7	55 05.4 +21.1 94.1	54 13.5 +21.1 93.5
23°	58 02.1 +20.0 94.2	57 10.3 +19.9 93.6	56 18.4 +19.9 93.0	55 26.5 +19.8 92.5	54 34.6 +19.8 91.9
24°	58 22.1 +18.5 92.4	57 30.2 +18.5 91.8	56 38.3 +18.4 91.3	55 46.3 +18.4 90.8	54 54.4 +18.4 90.3
25°	58 40.6 +16.9 90.6	57 48.7 +16.9 90.1	56 56.7 +16.9 89.6	56 04.7 +17.0 89.1	55 12.8 +17.0 88.6
26°	58 57.5 +15.3 88.7	58 05.6 +15.3 88.3	57 13.6 +15.5 87.8	56 21.7 +15.6 87.4	55 29.8 +15.7 86.9
27°	59 12.8 +13.6 86.8	58 20.9 +13.8 86.4	57 29.1 +13.9 86.0	56 37.3 +14.0 85.6	55 45.5 +14.2 85.2
28°	59 26.4 +12.0 84.9	58 34.7 +12.1 84.6	57 43.0 +12.3 84.2	56 51.3 +12.5 83.8	55 59.7 +12.7 83.5
29°	59 38.4 +10.2 83.0	58 46.8 +10.5 82.7	57 55.3 +10.7 82.4	57 03.8 +11.0 82.0	56 12.4 +11.2 81.7

Declination SAME name as Latitude

Latitude 30°

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°	41 33.6 +39.9 120.8	40 48.8 +39.4 119.9	40 03.6 +38.9 119.0	39 18.0 +38.5 118.2	38 32.0 +38.1 117.4
1°	42 13.5 +39.3 119.8	41 28.2 +38.8 118.9	40 42.5 +38.4 118.0	39 56.5 +38.0 117.2	39 10.1 +37.6 116.4
2°	42 52.8 +38.7 118.8	42 07.0 +38.3 117.9	41 20.9 +37.9 117.0	40 34.5 +37.4 116.2	39 47.7 +37.0 115.4
3°	43 31.5 +38.2 117.7	42 45.3 +37.7 116.8	41 58.8 +37.3 116.0	41 11.9 +36.9 115.2	40 24.7 +36.5 114.3
4°	44 09.7 +37.5 116.6	43 23.0 +37.1 115.8	42 36.1 +36.7 114.9	41 48.8 +36.3 114.1	41 01.2 +35.9 113.3
5°	44 47.2 +36.9 115.5	44 00.1 +36.5 114.7	43 12.8 +36.0 113.8	42 25.1 +35.7 113.0	41 37.1 +35.4 112.2
6°	45 24.1 +36.2 114.4	44 36.6 +35.8 113.6	43 48.8 +35.5 112.7	43 00.8 +35.0 111.9	42 12.5 +34.6 111.1
7°	46 00.3 +35.5 113.3	45 12.4 +35.2 112.4	44 24.3 +34.7 111.6	43 35.8 +34.4 110.8	42 47.1 +34.1 110.0
8°	46 35.8 +34.9 112.1	45 47.6 +34.4 111.3	44 59.0 +34.1 110.5	44 10.2 +33.7 109.7	43 21.2 +33.3 108.9
9°	47 10.7 +34.0 110.9	46 22.0 +33.7 110.1	45 33.1 +33.3 109.3	44 43.9 +33.0 108.5	43 54.5 +32.7 107.8
10°	47 44.7 +33.3 109.7	46 55.7 +32.9 108.9	46 06.4 +32.5 108.1	45 16.9 +32.2 107.3	44 27.2 +31.9 106.6
11°	48 18.0 +32.4 108.5	47 28.6 +32.0 107.7	46 38.9 +31.8 106.9	45 49.1 +31.5 106.1	44 59.1 +31.2 105.4
12°	48 50.4 +31.6 107.2	48 00.6 +31.3 106.4	47 10.7 +31.0 105.7	46 20.6 +30.6 104.9	45 30.3 +30.4 104.2
13°	49 22.0 +30.7 105.9	48 31.9 +30.4 105.1	47 41.7 +30.0 104.4	46 51.2 +29.9 103.7	46 00.7 +29.5 102.9
14°	49 52.7 +29.7 104.6	49 02.3 +29.4 103.8	48 11.7 +29.2 103.1	47 21.1 +28.9 102.4	46 30.2 +28.8 101.7
15°	50 22.4 +28.8 103.2	49 31.7 +28.6 102.5	48 40.9 +28.3 101.8	47 50.0 +28.1 101.1	46 59.0 +27.8 100.4
16°	50 51.2 +27.8 101.8	50 00.3 +27.5 101.1	49 09.2 +27.4 100.4	48 18.1 +27.1 99.8	47 26.8 +27.0 99.1
17°	51 19.0 +26.8 100.4	50 27.8 +26.6 99.7	49 36.6 +26.3 99.1	48 45.2 +26.2 98.4	47 53.8 +26.0 97.8
18°	51 45.8 +25.6 99.0	50 54.4 +25.5 98.3	50 02.9 +25.4 97.7	49 11.4 +25.2 97.0	48 19.8 +25.0 96.4
19°	52 11.4 +24.6 97.5	51 19.9 +24.4 96.9	50 28.3 +24.2 96.3	49 36.6 +24.1 95.7	48 44.8 +24.1 95.1
20°	52 36.0 +23.4 96.0	51 44.3 +23.3 95.4	50 52.5 +23.2 94.8	50 00.7 +23.2 94.2	49 08.9 +23.0 93.7
21°	52 59.4 +22.3 94.5	52 07.6 +22.1 93.9	51 15.7 +22.1 93.3	50 23.9 +22.0 92.8	49 31.9 +22.0 92.2
22°	53 21.7 +21.0 93.0	52 29.7 +21.0 92.4	51 37.8 +20.9 91.9	50 45.9 +20.9 91.3	49 53.9 +20.9 90.8
23°	53 42.7 +19.7 91.4	52 50.7 +19.7 90.9	51 58.7 +19.8 90.3	51 06.8 +19.7 89.8	50 14.8 +19.8 89.3
24°	54 02.4 +18.4 89.8	53 10.4 +18.5 89.3	52 18.5 +18.5 88.8	51 26.5 +18.6 88.3	50 34.6 +18.6 87.9
25°	54 20.8 +17.2 88.1	53 28.9 +17.2 87.7	52 37.0 +17.3 87.2	51 45.1 +17.4 86.8	50 53.2 +17.5 86.4
26°	54 38.0 +15.7 86.5	53 46.1 +15.9 86.1	52 54.3 +16.0 85.7	52 02.5 +16.1 85.2	51 10.7 +16.3 84.8
27°	54 53.7 +14.4 84.8	54 02.0 +14.5 84.4	53 10.3 +14.7 84.1	52 18.6 +14.9 83.7	51 27.0 +15.0 83.3
28°	55 08.1 +12.9 83.1	54 16.5 +13.1 82.8	53 25.0 +13.3 82.4	52 33.5 +13.6 82.1	51 42.0 +13.8 81.7
29°	55 21.0 +11.5 81.4	54 29.6 +11.8 81.1	53 38.3 +12.0 80.8	52 47.1 +12.2 80.5	51 55.8 +12.6 80.2

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	37 45.7 +37.7 116.6	36 59.0 +37.4 115.8	36 12.1 +36.9 115.0	35 24.9 +36.5 114.2	34 37.3 +36.3 113.5
1°	38 23.4 +37.2 115.6	37 36.4 +36.8 114.8	36 49.0 +36.5 114.0	36 01.4 +36.1 113.3	35 13.6 +35.7 112.5
2°	39 00.6 +36.6 114.6	38 13.2 +36.3 113.8	37 25.5 +35.9 113.0	36 37.5 +35.6 112.3	35 49.3 +35.3 111.5
3°	39 37.2 +36.2 113.5	38 49.5 +35.7 112.8	38 01.4 +35.4 112.0	37 13.1 +35.1 111.3	36 24.6 +34.7 110.5
4°	40 13.4 +35.5 112.5	39 25.2 +35.2 111.7	38 36.8 +34.9 111.0	37 48.2 +34.5 110.2	36 59.3 +34.2 109.5
5°	40 48.9 +35.0 111.4	40 00.4 +34.6 110.7	39 11.7 +34.3 109.9	38 22.7 +34.0 109.2	37 33.5 +33.7 108.5
6°	41 23.9 +34.3 110.4	40 35.0 +34.0 109.6	39 46.0 +33.7 108.9	38 56.7 +33.4 108.1	38 07.2 +33.1 107.4
7°	41 58.2 +33.7 109.3	41 09.0 +33.4 108.5	40 19.7 +33.1 107.8	39 30.1 +32.8 107.1	38 40.3 +32.6 106.4
8°	42 31.9 +33.0 108.2	41 42.4 +32.8 107.4	40 52.8 +32.4 106.7	40 02.9 +32.2 106.0	39 12.9 +31.9 105.3
9°	43 04.9 +32.4 107.0	42 15.2 +32.0 106.3	41 25.2 +31.8 105.6	40 35.1 +31.5 104.9	39 44.8 +31.2 104.2
10°	43 37.3 +31.6 105.9	42 47.2 +31.4 105.1	41 57.0 +31.1 104.4	41 06.6 +30.9 103.8	40 16.0 +30.7 103.1
11°	44 08.9 +30.9 104.7	43 18.6 +30.6 104.0	42 28.1 +30.4 103.3	41 37.5 +30.1 102.6	40 46.7 +29.9 101.9
12°	44 39.8 +30.2 103.5	43 49.2 +29.9 102.8	42 58.5 +29.7 102.1	42 07.6 +29.5 101.4	41 16.6 +29.3 100.8
13°	45 10.0 +29.3 102.3	44 19.1 +29.1 101.6	43 28.2 +28.9 100.9	42 37.1 +28.7 100.3	41 45.9 +28.5 99.6
14°	45 39.3 +28.5 101.0	44 48.2 +28.3 100.4	43 57.1 +28.1 99.7	43 05.8 +28.0 99.1	42 14.4 +27.9 98.4
15°	46 07.8 +27.7 99.7	45 16.5 +27.5 99.1	44 25.2 +27.3 98.5	43 33.8 +27.1 97.9	42 42.3 +27.0 97.2
16°	46 35.5 +26.8 98.5	45 44.0 +26.7 97.8	44 52.5 +26.5 97.2	44 00.9 +26.4 96.6	43 09.3 +26.2 96.0
17°	47 02.3 +25.8 97.2	46 10.7 +25.7 96.5	45 19.0 +25.6 96.0	44 27.3 +25.5 95.4	43 35.5 +25.5 94.8
18°	47 28.1 +25.0 95.8	46 36.4 +24.8 95.2	45 44.6 +24.8 94.7	44 52.8 +24.7 94.1	44 01.0 +24.6 93.5
19°	47 53.1 +23.9 94.5	47 01.2 +23.9 93.9	46 09.4 +23.8 93.3	45 17.5 +23.8 92.8	44 25.6 +23.7 92.3
20°	48 17.0 +23.0 93.1	47 25.1 +23.0 92.6	46 33.2 +22.9 92.0	45 41.3 +22.9 91.5	44 49.3 +22.9 91.0
21°	48 40.0 +22.0 91.7	47 48.1 +21.9 91.2	46 56.1 +21.9 90.7	46 04.2 +21.9 90.2	45 12.2 +21.9 89.7
22°	49 02.0 +20.9 90.3	48 10.0 +20.9 89.8	47 18.0 +21.0 89.3	46 26.1 +21.0 88.8	45 34.1 +21.1 88.3
23°	49 22.9 +19.8 88.9	48 30.9 +19.9 88.4	47 39.0 +19.9 87.9	46 47.1 +20.0 87.5	45 55.2 +20.0 87.0
24°	49 42.7 +18.7 87.4	48 50.8 +18.8 87.0	47 58.9 +18.9 86.5	47 07.1 +18.9 86.1	46 15.2 +19.1 85.6
25°	50 01.4 +17.6 85.9	49 09.6 +17.7 85.5	48 17.8 +17.8 85.1	47 26.0 +18.0 84.7	46 34.3 +18.1 84.3
26°	50 19.0 +16.4 84.4	49 27.3 +16.6 84.0	48 35.6 +16.8 83.6	47 44.0 +16.9 83.3	46 52.4 +17.1 82.9
27°	50 35.4 +15.2 82.9	49 43.9 +15.4 82.6	48 52.4 +15.6 82.2	48 00.9 +15.8 81.8	47 09.5 +16.0 81.5
28°	50 50.6 +14.1 81.4	49 59.3 +14.2 81.1	49 08.0 +14.5 80.7	48 16.7 +14.7 80.4	47 25.5 +15.0 80.0
29°	51 04.7 +12.7 79.9	50 13.5 +13.1 79.5	49 22.5 +13.3 79.2	48 31.4 +13.6 78.9	47 40.5 +13.9 78.6

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Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	33 49.6 +35.8 112.8	33 01.5 +35.6 112.0	32 13.2 +35.3 111.3	31 24.7 +35.0 110.6	30 36.0 +34.6 110.0
1°	34 25.4 +35.5 111.8	33 37.1 +35.1 111.1	32 48.5 +34.8 110.4	31 59.7 +34.5 109.7	31 10.6 +34.2 109.0
2°	35 00.9 +34.9 110.8	34 12.2 +34.6 110.1	33 23.3 +34.3 109.4	32 34.2 +34.0 108.7	31 44.8 +33.8 108.1
3°	35 35.8 +34.4 109.8	34 46.8 +34.2 109.1	33 57.6 +33.9 108.4	33 08.2 +33.6 107.7	32 18.6 +33.4 107.1
4°	36 10.2 +34.0 108.8	35 21.0 +33.6 108.1	34 31.5 +33.3 107.4	33 41.8 +33.1 106.7	32 52.0 +32.8 106.1
5°	36 44.2 +33.4 107.8	35 54.6 +33.1 107.1	35 04.8 +32.9 106.4	34 14.9 +32.6 105.7	33 24.8 +32.4 105.1
6°	37 17.6 +32.8 106.7	36 27.7 +32.6 106.1	35 37.7 +32.3 105.4	34 47.5 +32.1 104.7	33 57.2 +31.8 104.1
7°	37 50.4 +32.2 105.7	37 00.3 +32.0 105.0	36 10.0 +31.8 104.3	35 19.6 +31.6 103.7	34 29.0 +31.4 103.1
8°	38 22.6 +31.7 104.6	37 32.3 +31.4 103.9	36 41.8 +31.2 103.3	35 51.2 +31.0 102.6	35 00.4 +30.8 102.0
9°	38 54.3 +31.1 103.5	38 03.7 +30.9 102.9	37 13.0 +30.6 102.2	36 22.2 +30.4 101.6	35 31.2 +30.3 101.0
10°	39 25.4 +30.4 102.4	38 34.6 +30.2 101.8	37 43.6 +30.1 101.1	36 52.6 +29.8 100.5	36 01.5 +29.6 99.9
11°	39 55.8 +29.7 101.3	39 04.8 +29.5 100.7	38 13.7 +29.4 100.0	37 22.4 +29.3 99.4	36 31.1 +29.1 99.8
12°	40 25.5 +29.1 100.2	39 34.3 +29.0 99.5	38 43.1 +28.7 98.9	37 51.7 +28.6 98.3	37 00.2 +28.5 97.7
13°	40 54.6 +28.4 99.0	40 03.3 +28.2 98.4	39 11.8 +28.1 97.8	38 20.3 +28.0 97.2	37 28.7 +27.9 96.6
14°	41 23.0 +27.7 97.8	40 31.5 +27.5 97.2	39 39.9 +27.4 96.7	38 48.3 +27.3 96.1	37 56.6 +27.2 95.5
15°	41 50.7 +26.9 96.7	40 59.0 +26.8 96.1	40 07.3 +26.7 95.5	39 15.6 +26.6 94.9	38 23.8 +26.5 94.4
16°	42 17.6 +26.1 95.4	41 25.8 +26.1 94.9	40 34.0 +26.0 94.3	39 42.2 +25.9 93.8	38 50.3 +25.9 93.2
17°	42 43.7 +25.4 94.2	41 51.9 +25.3 93.7	41 00.0 +25.3 93.1	40 08.1 +25.2 92.6	39 16.2 +25.2 92.1
18°	43 09.1 +24.6 93.0	42 17.2 +24.5 92.5	41 25.3 +24.5 91.9	40 33.3 +24.5 91.4	39 41.4 +24.4 90.9
19°	43 33.7 +23.7 91.7	42 41.7 +23.7 91.2	41 49.8 +23.7 90.7	40 57.8 +23.7 90.2	40 05.8 +23.7 89.7
20°	43 57.4 +22.8 90.5	43 05.4 +22.9 90.0	42 13.5 +22.8 89.5	41 21.5 +22.9 89.0	40 29.5 +23.0 88.5
21°	44 20.2 +22.0 89.2	43 28.3 +22.0 88.7	42 36.3 +22.1 88.2	41 44.4 +22.1 87.7	40 52.5 +22.2 87.3
22°	44 42.2 +21.1 87.9	43 50.3 +21.1 87.4	42 58.4 +21.2 86.9	42 06.5 +21.3 86.5	41 14.7 +21.3 86.0
23°	45 03.3 +20.1 86.5	44 11.4 +20.3 86.1	43 19.6 +20.3 85.7	42 27.8 +20.5 85.2	41 36.0 +20.6 84.8
24°	45 23.4 +19.2 85.2	44 31.7 +19.3 84.8	43 39.9 +19.5 84.4	42 48.3 +19.5 83.9	41 56.6 +19.7 83.5
25°	45 42.6 +18.3 83.9	44 51.0 +18.4 83.5	43 59.4 +18.5 83.1	43 07.8 +18.7 82.7	42 16.3 +18.9 82.3
26°	46 00.9 +17.2 82.5	45 09.4 +17.4 82.1	44 17.9 +17.7 81.7	43 26.5 +17.8 81.4	42 35.2 +18.0 81.0
27°	46 18.1 +16.3 81.1	45 26.8 +16.5 80.7	44 35.6 +16.6 80.4	43 44.3 +16.9 80.0	42 53.2 +17.1 79.7
28°	46 34.4 +15.2 79.7	45 43.3 +15.4 79.4	44 52.2 +15.7 79.0	44 01.2 +16.0 78.7	43 10.3 +16.2 78.4
29°	46 49.6 +14.1 78.3	45 58.7 +14.4 78.0	45 07.9 +14.7 77.7	44 17.2 +15.0 77.4	43 26.5 +15.3 77.0

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°	29 47.0 +34.4 109.3	28 57.9 +34.1 108.6	28 08.6 +33.8 108.0	27 19.1 +33.5 107.4	26 29.4 +33.3 106.7
1°	30 21.4 +34.0 108.3	29 32.0 +33.7 107.7	28 42.4 +33.4 107.0	27 52.6 +33.2 106.4	27 02.7 +33.0 105.8
2°	30 55.4 +33.5 107.4	30 05.7 +33.2 106.7	29 15.8 +33.1 106.1	28 25.8 +32.8 105.5	27 35.7 +32.6 104.9
3°	31 28.9 +33.0 106.4	30 38.9 +32.9 105.8	29 48.9 +32.6 105.1	28 58.6 +32.4 104.5	28 08.3 +32.1 103.9
4°	32 01.9 +32.7 105.4	31 11.8 +32.4 104.8	30 21.5 +32.2 104.2	29 31.0 +32.0 103.6	28 40.4 +31.8 102.9
5°	32 34.6 +32.1 104.4	31 44.2 +31.9 103.8	30 53.7 +31.7 103.2	30 03.0 +31.5 102.6	29 12.2 +31.4 102.0
6°	33 06.7 +31.7 103.4	32 16.1 +31.5 102.8	31 25.4 +31.2 102.2	30 34.5 +31.1 101.6	29 43.6 +30.9 101.0
7°	33 38.4 +31.1 102.4	32 47.6 +30.9 101.8	31 56.6 +30.8 101.2	31 05.6 +30.6 100.6	30 14.5 +30.5 100.0
8°	34 09.5 +30.6 101.4	33 18.5 +30.5 100.8	32 27.4 +30.3 100.2	31 36.2 +30.2 99.6	30 45.0 +30.0 99.0
9°	34 40.1 +30.1 100.4	33 49.0 +29.9 99.7	32 57.7 +29.8 99.2	32 06.4 +29.6 98.6	31 15.0 +29.5 98.0
10°	35 10.2 +29.6 99.3	34 18.9 +29.4 98.7	33 27.5 +29.3 98.1	32 36.0 +29.2 97.5	31 44.5 +29.0 97.0
11°	35 39.8 +28.9 98.2	34 48.3 +28.8 97.6	33 56.8 +28.7 97.1	33 05.2 +28.6 96.5	32 13.5 +28.5 95.9
12°	36 08.7 +28.4 97.1	35 17.1 +28.3 96.6	34 25.5 +28.1 96.0	33 33.8 +28.0 95.4	32 42.0 +28.0 94.9
13°	36 37.1 +27.7 96.1	35 45.4 +27.6 95.5	34 53.6 +27.6 94.9	34 01.8 +27.6 94.4	33 10.0 +27.5 93.8
14°	37 04.8 +27.2 94.9	36 13.0 +27.1 94.4	35 21.2 +27.0 93.8	34 29.4 +26.9 93.3	33 37.5 +26.9 92.8
15°	37 32.0 +26.5 93.8	36 40.1 +26.4 93.3	35 48.2 +26.4 92.7	34 56.3 +26.4 92.2	34 04.4 +26.3 91.7
16°	37 58.5 +25.8 92.7	37 06.5 +25.8 92.2	36 14.6 +25.8 91.6	35 22.7 +25.7 91.1	34 30.7 +25.8 90.6
17°	38 24.3 +25.1 91.5	37 32.3 +25.2 91.0	36 40.4 +25.1 90.5	35 48.4 +25.2 90.0	34 56.5 +25.1 89.5
18°	38 49.4 +24.5 90.4	37 57.5 +24.4 89.9	37 05.5 +24.5 89.4	36 13.6 +24.5 88.9	35 21.6 +24.5 88.4
19°	39 13.9 +23.7 89.2	38 21.9 +23.8 88.7	37 30.0 +23.8 88.2	36 38.1 +23.8 87.8	35 46.1 +23.9 87.3
20°	39 37.6 +23.0 88.0	38 45.7 +23.0 87.5	37 53.8 +23.1 87.1	37 01.9 +23.2 86.6	36 10.0 +23.3 86.1
21°	40 00.6 +22.2 86.8	39 08.7 +22.4 86.4	38 16.9 +22.4 85.9	37 25.1 +22.5 85.5	36 33.3 +22.6 85.0
22°	40 22.8 +21.5 85.6	39 31.1 +21.5 85.2	38 39.3 +21.7 84.7	37 47.6 +21.8 84.3	36 55.9 +21.9 83.8
23°	40 44.3 +20.7 84.4	39 52.6 +20.8 83.9	39 01.0 +20.9 83.5	38 09.4 +21.0 83.1	37 17.8 +21.2 82.7
24°	41 05.0 +19.9 83.1	40 13.4 +20.1 82.7	39 21.9 +20.2 82.3	38 30.4 +20.4 81.9	37 39.0 +20.5 81.5
25°	41 24.9 +19.0 81.9	40 33.5 +19.2 81.5	39 42.1 +19.4 81.1	38 50.8 +19.6 80.7	37 59.5 +19.8 80.3
26°	41 43.9 +18.2 80.6	40 52.7 +18.4 80.2	40 01.5 +18.6 79.9	39 10.4 +18.8 79.5	38 19.3 +19.1 79.1
27°	42 02.1 +17.3 79.3	41 11.1 +17.5 78.9	40 20.1 +17.8 78.6	39 29.2 +18.0 78.3	38 38.4 +18.2 77.9
28°	42 19.4 +16.5 78.0	41 28.6 +16.8 77.7	40 37.9 +17.0 77.4	39 47.2 +17.3 77.0	38 56.6 +17.6 76.7
29°	42 35.9 +15.6 76.7	41 45.4 +15.8 76.4	40 54.9 +16.1 76.1	40 04.5 +16.4 75.8	39 14.2 +16.7 75.4

Declination SAME name as Latitude

Latitude 30°

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	25 39.5 +33.1 106.1	24 49.5 +32.9 105.5	23 59.4 +32.7 104.9	23 09.1 +32.5 104.3	22 18.7 +32.3 103.7
1°	26 12.6 +32.8 105.2	25 22.4 +32.6 104.6	24 32.1 +32.3 104.0	23 41.6 +32.1 103.4	22 51.0 +31.9 102.8
2°	26 45.4 +32.4 104.2	25 55.0 +32.1 103.6	25 04.4 +32.0 103.0	24 13.7 +31.8 102.5	23 22.9 +31.7 101.9
3°	27 17.8 +31.9 103.3	26 27.1 +31.8 102.7	25 36.4 +31.6 102.1	24 45.5 +31.5 101.5	23 54.6 +31.2 100.9
4°	27 49.7 +31.6 102.3	26 58.9 +31.4 101.7	26 08.0 +31.3 101.2	25 17.0 +31.1 100.6	24 25.8 +31.0 100.0
5°	28 21.3 +31.2 101.4	27 30.3 +31.1 100.8	26 39.3 +30.8 100.2	25 48.1 +30.7 99.6	24 56.8 +30.6 99.1
6°	28 52.5 +30.8 100.4	28 01.4 +30.6 99.8	27 10.1 +30.5 99.2	26 18.8 +30.3 98.7	25 27.4 +30.2 98.1
7°	29 23.3 +30.3 99.4	28 32.0 +30.2 98.8	27 40.6 +30.0 98.3	26 49.1 +30.0 97.7	25 57.6 +29.8 97.2
8°	29 53.6 +29.9 98.4	29 02.2 +29.7 97.9	28 10.6 +29.7 97.3	27 19.1 +29.5 96.7	26 27.4 +29.5 96.2
9°	30 23.5 +29.4 97.4	29 31.9 +29.3 96.9	28 40.3 +29.2 96.3	27 48.6 +29.1 95.8	26 56.9 +29.0 95.2
10°	30 52.9 +28.9 96.4	30 01.2 +28.8 95.9	29 09.5 +28.7 95.3	28 17.7 +28.7 94.8	27 25.9 +28.6 94.2
11°	31 21.8 +28.4 95.4	30 30.0 +28.4 94.8	29 38.2 +28.3 94.3	28 46.4 +28.2 93.8	27 54.5 +28.2 93.2
12°	31 50.2 +28.0 94.4	30 58.4 +27.9 93.8	30 06.5 +27.9 93.3	29 14.6 +27.8 92.8	28 22.7 +27.8 92.2
13°	32 18.2 +27.4 93.3	31 26.3 +27.3 92.8	30 34.4 +27.3 92.3	29 42.4 +27.3 91.7	28 50.5 +27.3 91.2
14°	32 45.6 +26.8 92.3	31 53.6 +26.9 91.7	31 01.7 +26.8 91.2	30 09.7 +26.9 90.7	29 17.8 +26.8 90.2
15°	33 12.4 +26.3 91.2	32 20.5 +26.3 90.7	31 28.5 +26.3 90.2	30 36.6 +26.3 89.7	29 44.6 +26.3 89.2
16°	33 38.7 +25.8 90.1	32 46.8 +25.8 89.6	31 54.8 +25.8 89.1	31 02.9 +25.8 88.6	30 10.9 +25.9 88.1
17°	34 04.5 +25.2 89.0	33 12.6 +25.2 88.5	32 20.6 +25.3 88.1	31 28.7 +25.3 87.6	30 36.8 +25.3 87.1
18°	34 29.7 +24.6 87.9	33 37.8 +24.6 87.4	32 45.9 +24.6 87.0	31 54.0 +24.7 86.5	31 02.1 +24.8 86.0
19°	34 54.3 +23.9 86.8	34 02.4 +24.0 86.4	33 10.5 +24.2 85.9	32 18.7 +24.2 85.4	31 26.9 +24.3 85.0
20°	35 18.2 +23.4 85.7	34 26.4 +23.4 85.2	33 34.7 +23.5 84.8	32 42.9 +23.7 84.3	31 51.2 +23.8 83.9
21°	35 41.6 +22.7 84.6	34 49.8 +22.9 84.1	33 58.2 +22.9 83.7	33 06.6 +23.0 83.3	32 15.0 +23.2 82.8
22°	36 04.3 +22.0 83.4	35 12.7 +22.1 83.0	34 21.1 +22.3 82.6	33 29.6 +22.5 82.1	32 38.2 +22.6 81.7
23°	36 26.3 +21.4 82.3	35 34.8 +21.6 81.9	34 43.4 +21.7 81.4	33 52.1 +21.8 81.0	33 00.8 +22.0 80.6
24°	36 47.7 +20.6 81.1	35 56.4 +20.8 80.7	35 05.1 +21.0 80.3	34 13.9 +21.2 79.9	33 22.8 +21.4 79.5
25°	37 08.3 +20.0 79.9	36 17.2 +20.2 79.5	35 26.1 +20.4 79.2	34 35.1 +20.6 78.8	33 44.2 +20.8 78.4
26°	37 28.3 +19.3 78.7	36 37.4 +19.5 78.4	35 46.5 +19.8 78.0	34 55.7 +20.0 77.6	34 05.0 +20.2 77.3
27°	37 47.6 +18.5 77.5	36 56.9 +18.8 77.2	36 06.3 +19.0 76.8	35 15.7 +19.3 76.5	34 25.2 +19.6 76.1
28°	38 06.1 +17.8 76.3	37 15.7 +18.0 76.0	36 25.3 +18.3 75.7	35 35.0 +18.6 75.3	34 44.8 +18.9 75.0
29°	38 23.9 +17.0 75.1	37 33.7 +17.3 74.8	36 43.6 +17.6 74.5	35 53.6 +17.9 74.1	35 03.7 +18.2 73.8

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	21 28.1 +32.1 103.1	20 37.5 +31.9 102.6	19 46.7 +31.7 102.0	18 55.8 +31.6 101.4	18 04.8 +31.5 100.9
1°	22 00.2 +31.8 102.2	21 09.4 +31.6 101.6	20 18.4 +31.5 101.1	19 27.4 +31.3 100.5	18 36.3 +31.1 100.0
2°	22 32.0 +31.5 101.3	21 41.0 +31.3 100.7	20 49.9 +31.2 100.2	19 58.7 +31.1 99.6	19 07.4 +31.0 99.1
3°	23 03.5 +31.1 100.4	22 12.3 +31.0 99.8	21 21.1 +30.9 99.3	20 29.8 +30.7 98.7	19 38.4 +30.6 98.2
4°	23 34.6 +30.8 99.4	22 43.3 +30.7 98.9	21 52.0 +30.5 98.3	21 00.5 +30.5 97.8	20 09.0 +30.3 97.2
5°	24 05.4 +30.5 98.5	23 14.0 +30.4 98.0	22 22.5 +30.3 97.4	21 31.0 +30.1 96.9	20 39.3 +30.1 96.3
6°	24 35.9 +30.1 97.6	23 44.4 +30.0 97.0	22 52.8 +29.9 96.5	22 01.1 +29.8 95.9	21 09.4 +29.8 95.4
7°	25 06.0 +29.8 96.6	24 14.4 +29.6 96.1	23 22.7 +29.6 95.5	22 30.9 +29.5 95.0	21 39.2 +29.4 94.5
8°	25 35.8 +29.3 95.6	24 44.0 +29.3 95.1	23 52.3 +29.2 94.6	23 00.4 +29.2 94.0	22 08.6 +29.1 93.5
9°	26 05.1 +29.0 94.7	25 13.3 +28.9 94.1	24 21.5 +28.8 93.6	23 29.6 +28.8 93.1	22 37.7 +28.8 92.6
10°	26 34.1 +28.6 93.7	25 42.2 +28.5 93.2	24 50.3 +28.5 92.7	23 58.4 +28.5 92.1	23 06.5 +28.4 91.6
11°	27 02.7 +28.1 92.7	26 10.7 +28.2 92.2	25 18.8 +28.1 91.7	24 26.9 +28.0 91.2	23 34.9 +28.1 90.7
12°	27 30.8 +27.7 91.7	26 38.9 +27.7 91.2	25 46.9 +27.7 90.7	24 54.9 +27.7 90.2	24 03.0 +27.7 89.7
13°	27 58.5 +27.3 90.7	27 06.6 +27.3 90.2	26 14.6 +27.3 89.7	25 22.6 +27.4 89.2	24 30.7 +27.3 88.7
14°	28 25.8 +26.8 89.7	27 33.9 +26.8 89.2	26 41.9 +26.9 88.7	25 50.0 +26.9 88.2	24 58.0 +27.0 88.7
15°	28 52.6 +26.4 88.7	28 00.7 +26.4 88.2	27 08.8 +26.4 87.7	26 16.9 +26.5 87.2	25 25.0 +26.5 86.8
16°	29 19.0 +25.9 87.7	28 27.1 +25.9 87.2	27 35.2 +26.0 86.7	26 43.4 +26.0 86.2	25 51.5 +26.2 85.8
17°	29 44.9 +25.4 86.6	28 53.0 +25.5 86.2	28 01.2 +25.6 85.7	27 09.4 +25.6 85.2	26 17.7 +25.7 84.8
18°	30 10.3 +24.9 85.6	29 18.5 +25.0 85.1	28 26.8 +25.0 84.7	27 35.0 +25.2 84.2	26 43.4 +25.3 83.8
19°	30 35.2 +24.4 84.5	29 43.5 +24.5 84.1	28 51.8 +24.6 83.6	28 00.2 +24.7 83.2	27 08.7 +24.8 82.7
20°	30 59.6 +23.8 83.5	30 08.0 +24.0 83.0	29 16.4 +24.1 82.6	28 24.9 +24.3 82.1	27 33.5 +24.4 81.7
21°	31 23.4 +23.4 82.4	30 32.0 +23.4 82.0	29 40.5 +23.7 81.5	28 49.2 +23.7 81.1	27 57.9 +23.9 80.7
22°	31 46.8 +22.7 81.3	30 55.4 +23.0 80.9	30 04.2 +23.0 80.5	29 12.9 +23.3 80.1	28 21.8 +23.4 79.6
23°	32 09.5 +22.2 80.2	31 18.4 +22.3 79.8	30 27.2 +22.6 79.4	29 36.2 +22.8 79.0	28 45.2 +23.0 78.6
24°	32 31.7 +21.7 79.1	31 40.7 +21.9 78.7	30 49.8 +22.0 78.3	29 59.0 +22.2 77.9	29 08.2 +22.4 77.5
25°	32 53.4 +21.0 78.0	32 02.6 +21.2 77.6	31 11.8 +21.5 77.2	30 21.2 +21.7 76.9	29 30.6 +22.0 76.5
26°	33 14.4 +20.4 76.9	32 23.8 +20.7 76.5	31 33.3 +20.9 76.1	30 42.9 +21.2 75.8	29 52.6 +21.4 75.4
27°	33 34.8 +19.8 75.8	32 44.5 +20.1 75.4	31 54.2 +20.4 75.0	31 04.1 +20.6 74.7	30 14.0 +20.9 74.3
28°	33 54.6 +19.2 74.6	33 04.6 +19.4 74.3	32 14.6 +19.7 73.9	31 24.7 +20.0 73.6	30 34.9 +20.3 73.2
29°	34 13.8 +18.5 73.5	33 24.0 +18.9 73.2	32 34.3 +19.2 72.8	31 44.7 +19.5 72.5	30 55.2 +19.8 72.1

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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°	17 13.8 +31.3 100.3	16 22.6 +31.2 99.8	15 31.3 +31.1 99.2	14 40.0 +30.9 98.7	13 48.6 +30.8 98.2
1°	17 45.1 +31.0 99.4	16 53.8 +30.9 98.9	16 02.4 +30.8 98.3	15 10.9 +30.7 97.8	14 19.4 +30.6 97.3
2°	18 16.1 +30.8 98.5	17 24.7 +30.7 98.0	16 33.2 +30.6 97.4	15 41.6 +30.5 96.9	14 50.0 +30.4 96.4
3°	18 46.9 +30.5 97.6	17 55.4 +30.4 97.1	17 03.8 +30.3 96.5	16 12.1 +30.3 96.0	15 20.4 +30.2 95.5
4°	19 17.4 +30.3 96.7	18 25.8 +30.2 96.2	17 34.1 +30.1 95.6	16 42.4 +30.0 95.1	15 50.6 +29.9 94.6
5°	19 47.7 +29.9 95.8	18 56.0 +29.9 95.3	18 04.2 +29.8 94.7	17 12.4 +29.8 94.2	16 20.5 +29.8 93.7
6°	20 17.6 +29.7 94.9	19 25.9 +29.6 94.3	18 34.0 +29.6 93.8	17 42.2 +29.5 93.3	16 50.3 +29.5 92.8
7°	20 47.3 +29.4 93.9	19 55.5 +29.3 93.4	19 03.6 +29.3 92.9	18 11.7 +29.3 92.4	17 19.8 +29.2 91.9
8°	21 16.7 +29.1 93.0	20 24.8 +29.0 92.5	19 32.9 +29.0 92.0	18 41.0 +28.9 91.5	17 49.0 +29.0 91.0
9°	21 45.8 +28.7 92.1	20 53.8 +28.8 91.6	20 01.9 +28.7 91.0	19 09.9 +28.8 90.5	18 18.0 +28.7 90.0
10°	22 14.5 +28.4 91.1	21 22.6 +28.4 90.6	20 30.6 +28.4 90.1	19 38.7 +28.4 89.6	18 46.7 +28.4 89.1
11°	22 42.9 +28.1 90.2	21 51.0 +28.1 89.7	20 59.0 +28.1 89.2	20 07.1 +28.1 88.7	19 15.1 +28.2 88.2
12°	23 11.0 +27.8 89.2	22 19.1 +27.7 88.7	21 27.1 +27.8 88.2	20 35.2 +27.8 87.7	19 43.3 +27.9 87.2
13°	23 38.8 +27.3 88.2	22 46.8 +27.4 87.7	21 54.9 +27.5 87.3	21 03.0 +27.5 86.8	20 11.2 +27.5 86.3
14°	24 06.1 +27.0 87.3	23 14.2 +27.1 86.8	22 22.4 +27.1 86.3	21 30.5 +27.2 85.8	20 38.7 +27.3 85.4
15°	24 33.1 +26.6 86.3	23 41.3 +26.6 85.8	22 49.5 +26.7 85.3	21 57.7 +26.8 84.9	21 06.0 +26.9 84.4
16°	24 59.7 +26.2 85.3	24 07.9 +26.3 84.8	23 16.2 +26.4 84.4	22 24.5 +26.5 83.9	21 32.9 +26.6 83.4
17°	25 25.9 +25.8 84.3	24 34.2 +26.0 83.8	23 42.6 +26.0 83.4	22 51.0 +26.1 82.9	21 59.5 +26.2 82.5
18°	25 51.7 +25.4 83.3	25 00.2 +25.5 82.9	24 08.6 +25.7 82.4	23 17.1 +25.8 82.0	22 25.7 +25.9 81.5
19°	26 17.1 +25.0 82.3	25 25.7 +25.1 81.8	24 34.3 +25.2 81.4	23 42.9 +25.4 81.0	22 51.6 +25.6 80.5
20°	26 42.1 +24.5 81.3	25 50.8 +24.7 80.8	24 59.5 +24.8 80.4	24 08.3 +25.0 80.0	23 17.2 +25.1 79.5
21°	27 06.6 +24.1 80.3	26 15.5 +24.2 79.8	25 24.3 +24.5 79.4	24 33.3 +24.6 79.0	23 42.3 +24.8 78.6
22°	27 30.7 +23.6 79.2	26 39.7 +23.8 78.8	25 48.8 +24.0 78.4	24 57.9 +24.2 78.0	24 07.1 +24.4 77.6
23°	27 54.3 +23.2 78.2	27 03.5 +23.4 77.8	26 12.8 +23.5 77.4	25 22.1 +23.8 77.0	24 31.5 +24.0 76.6
24°	28 17.5 +22.7 77.1	27 26.9 +22.9 76.7	26 36.3 +23.2 76.3	25 45.9 +23.3 75.9	24 55.5 +23.6 75.5
25°	28 40.2 +22.1 76.1	27 49.8 +22.4 75.7	26 59.5 +22.6 75.3	26 09.2 +23.0 74.9	25 19.1 +23.2 74.5
26°	29 02.3 +21.7 75.0	28 12.2 +21.9 74.6	27 22.1 +22.2 74.3	26 32.2 +22.4 73.9	25 42.3 +22.7 73.5
27°	29 24.0 +21.2 74.0	28 34.1 +21.5 73.6	27 44.3 +21.8 73.2	26 54.6 +22.0 72.9	26 05.0 +22.3 72.5
28°	29 45.2 +20.6 72.9	28 55.6 +20.9 72.5	28 06.1 +21.2 72.2	27 16.6 +21.6 71.8	26 27.3 +21.9 71.4
29°	30 05.8 +20.1 71.8	29 16.5 +20.4 71.5	28 27.3 +20.7 71.1	27 38.2 +21.0 70.8	26 49.2 +21.4 70.4

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°	12 57.2 +30.6 97.6	12 05.6 +30.6 97.1	11 14.0 +30.5 96.6	10 22.4 +30.4 96.1	9 30.7 +30.3 95.6
1°	13 27.8 +30.6 96.7	12 36.2 +30.4 96.2	11 44.5 +30.4 95.7	10 52.8 +30.3 95.2	10 01.0 +30.3 94.7
2°	13 58.4 +30.3 95.9	13 06.6 +30.3 95.3	12 14.9 +30.2 94.8	11 23.1 +30.1 94.3	10 31.3 +30.0 93.8
3°	14 28.7 +30.1 95.0	13 36.9 +30.0 94.5	12 45.1 +30.0 93.9	11 53.2 +30.0 93.4	11 01.3 +29.9 92.9
4°	14 58.8 +29.9 94.1	14 06.9 +29.9 93.6	13 15.1 +29.8 93.0	12 23.2 +29.7 92.5	11 31.2 +29.8 92.0
5°	15 28.7 +29.7 93.2	14 36.8 +29.6 92.7	13 44.9 +29.6 92.2	12 52.9 +29.6 91.7	12 01.0 +29.6 91.1
6°	15 58.4 +29.4 92.3	15 06.4 +29.5 91.8	14 14.5 +29.4 91.3	13 22.5 +29.5 90.8	12 30.6 +29.4 90.3
7°	16 27.8 +29.2 91.4	15 35.9 +29.2 90.9	14 43.9 +29.2 90.4	13 52.0 +29.2 89.9	13 00.0 +29.2 89.4
8°	16 57.0 +29.0 90.5	16 05.1 +29.0 90.0	15 13.1 +29.0 89.5	14 21.2 +29.0 89.0	13 29.2 +29.1 88.5
9°	17 26.0 +28.7 89.5	16 34.1 +28.7 89.0	15 42.1 +28.8 88.5	14 50.2 +28.8 88.1	13 58.3 +28.8 87.6
10°	17 54.7 +28.5 88.6	17 02.8 +28.5 88.1	16 10.9 +28.5 87.6	15 19.0 +28.5 87.1	14 27.1 +28.6 86.7
11°	18 23.2 +28.2 87.7	17 31.3 +28.2 87.2	16 39.4 +28.3 86.7	15 47.5 +28.4 86.2	14 55.7 +28.4 85.8
12°	18 51.4 +27.9 86.8	17 59.5 +28.0 86.3	17 07.7 +28.0 85.8	16 15.9 +28.1 85.3	15 24.1 +28.2 84.8
13°	19 19.3 +27.6 85.8	18 27.5 +27.7 85.3	17 35.7 +27.8 84.9	16 44.0 +27.9 84.4	15 52.3 +28.0 83.9
14°	19 46.9 +27.4 84.9	18 55.2 +27.4 84.4	18 03.5 +27.5 83.9	17 11.9 +27.6 83.5	16 20.3 +27.7 83.0
15°	20 14.3 +27.0 83.9	19 22.6 +27.1 83.5	18 31.0 +27.2 83.0	17 39.5 +27.3 82.5	16 48.0 +27.4 82.1
16°	20 41.3 +26.7 83.0	19 49.7 +26.9 82.5	18 58.2 +27.0 82.1	18 06.8 +27.1 81.6	17 15.4 +27.2 81.1
17°	21 08.0 +26.4 82.0	20 16.6 +26.5 81.6	19 25.2 +26.6 81.1	18 33.9 +26.8 80.7	17 42.6 +27.0 80.2
18°	21 34.4 +26.0 81.1	20 43.1 +26.2 80.6	19 51.8 +26.4 80.2	19 00.7 +26.5 79.7	18 09.6 +26.6 79.3
19°	22 00.4 +25.7 80.1	21 09.3 +25.8 79.6	20 18.2 +26.0 79.2	19 27.2 +26.2 78.8	18 36.2 +26.4 78.3
20°	22 26.1 +25.3 79.1	21 35.1 +25.5 78.7	20 44.2 +25.7 78.2	19 53.4 +25.9 77.8	19 02.6 +26.1 77.4
21°	22 51.4 +25.0 78.1	22 00.6 +25.2 77.7	21 09.9 +25.4 77.3	20 19.3 +25.5 76.9	19 28.7 +25.8 76.4
22°	23 16.4 +24.6 77.1	22 25.8 +24.8 76.7	21 35.3 +25.0 76.3	20 44.8 +25.3 75.9	19 54.5 +25.5 75.5
23°	23 41.0 +24.3 76.1	22 50.6 +24.5 75.7	22 00.3 +24.7 75.3	21 10.1 +24.9 74.9	20 20.0 +25.1 74.5
24°	24 05.3 +23.8 75.1	23 15.1 +24.1 74.7	22 25.0 +24.3 74.3	21 35.0 +24.6 73.9	20 45.1 +24.9 73.5
25°	24 29.1 +23.4 74.1	23 39.2 +23.6 73.7	22 49.3 +24.0 73.4	21 59.6 +24.2 73.0	21 10.0 +24.5 72.6
26°	24 52.5 +23.0 73.1	24 02.8 +23.3 72.7	23 13.3 +23.5 72.4	22 23.8 +23.9 72.0	21 34.5 +24.1 71.6
27°	25 15.5 +22.6 72.1	24 26.1 +22.9 71.7	23 36.8 +23.2 71.4	22 47.7 +23.5 71.0	21 58.6 +23.8 70.6
28°	25 38.1 +22.2 71.1	24 49.0 +22.5 70.7	24 00.0 +22.8 70.3	23 11.2 +23.1 70.0	22 22.4 +23.4 69.6
29°	26 00.3 +21.7 70.0	25 11.5 +22.0 69.7	24 22.8 +22.4 69.3	23 34.3 +22.7 69.0	22 45.8 +23.1 68.6

Declination SAME name as Latitude

Latitude 30°

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 38.9 +30.3 95.0	7 47.2 +30.2 94.5	6 55.4 +30.1 94.0	6 03.5 +30.1 93.5	5 11.6 +30.1 93.0
1°	9 09.2 +30.2 94.2	8 17.4 +30.1 93.7	7 25.5 +30.1 93.1	6 33.6 +30.1 92.6	5 41.7 +30.0 92.1
2°	9 39.4 +30.0 93.3	8 47.5 +30.0 92.8	7 55.6 +30.0 92.3	7 03.7 +29.9 91.8	6 11.7 +29.9 91.3
3°	10 09.4 +29.9 92.4	9 17.5 +29.9 91.9	8 25.6 +29.8 91.4	7 33.6 +29.8 90.9	6 41.6 +29.9 90.4
4°	10 39.3 +29.7 91.5	9 47.4 +29.7 91.0	8 55.4 +29.7 90.5	8 03.4 +29.8 90.0	7 11.5 +29.7 89.5
5°	11 09.0 +29.6 90.6	10 17.1 +29.6 90.1	9 25.1 +29.6 89.6	8 33.2 +29.6 89.1	7 41.2 +29.6 88.6
6°	11 38.6 +29.4 89.8	10 46.7 +29.4 89.3	9 54.7 +29.5 88.8	9 02.8 +29.4 88.3	8 10.8 +29.5 87.8
7°	12 08.0 +29.3 88.9	11 16.1 +29.3 88.4	10 24.2 +29.3 87.9	9 32.2 +29.4 87.4	8 40.3 +29.4 86.9
8°	12 37.3 +29.0 88.0	11 45.4 +29.1 87.5	10 53.5 +29.1 87.0	10 01.6 +29.2 86.5	9 09.7 +29.3 86.0
9°	13 06.3 +28.9 87.1	12 14.5 +28.9 86.6	11 22.6 +29.0 86.1	10 30.8 +29.0 85.6	9 39.0 +29.1 85.1
10°	13 35.2 +28.7 86.2	12 43.4 +28.7 85.7	11 51.6 +28.8 85.2	10 59.8 +28.9 84.7	10 08.1 +29.0 84.2
11°	14 03.9 +28.5 85.3	13 12.1 +28.6 84.8	12 20.4 +28.7 84.3	11 28.7 +28.8 83.8	10 37.1 +28.8 83.3
12°	14 32.4 +28.3 84.4	13 40.7 +28.4 83.9	12 49.1 +28.4 83.4	11 57.5 +28.5 82.9	11 05.9 +28.7 82.4
13°	15 00.7 +28.0 83.4	14 09.1 +28.1 83.0	13 17.5 +28.3 82.5	12 26.0 +28.4 82.0	11 34.6 +28.5 81.6
14°	15 28.7 +27.8 82.5	14 37.2 +28.0 82.1	13 45.8 +28.1 81.6	12 54.4 +28.2 81.1	12 03.1 +28.3 80.7
15°	15 56.5 +27.6 81.6	15 05.2 +27.7 81.1	14 13.9 +27.8 80.7	13 22.6 +28.0 80.2	12 31.4 +28.2 79.8
16°	16 24.1 +27.4 80.7	15 32.9 +27.5 80.2	14 41.7 +27.7 79.8	13 50.6 +27.8 79.3	12 59.6 +28.0 78.8
17°	16 51.5 +27.1 79.8	16 00.4 +27.2 79.3	15 09.4 +27.4 78.8	14 18.4 +27.6 78.4	13 27.6 +27.7 77.9
18°	17 18.6 +26.8 78.8	16 27.6 +27.0 78.4	15 36.8 +27.2 77.9	14 46.0 +27.4 77.5	13 55.3 +27.6 77.0
19°	17 45.4 +26.6 77.9	16 54.6 +26.8 77.4	16 04.0 +26.9 77.0	15 13.4 +27.1 76.6	14 22.9 +27.3 76.1
20°	18 12.0 +26.2 76.9	17 21.4 +26.5 76.5	16 30.9 +26.7 76.1	15 40.5 +26.9 75.6	14 50.2 +27.2 75.2
21°	18 38.2 +26.0 76.0	17 47.9 +26.2 75.6	16 57.6 +26.4 75.1	16 07.4 +26.7 74.7	15 17.4 +26.9 74.3
22°	19 04.2 +25.8 75.0	18 14.1 +25.9 74.6	17 24.0 +26.2 74.2	16 34.1 +26.4 73.8	15 44.3 +26.6 73.3
23°	19 30.0 +25.4 74.1	18 40.0 +25.7 73.7	17 50.2 +25.9 73.3	17 00.5 +26.2 72.8	16 10.9 +26.5 72.4
24°	19 55.4 +25.0 73.1	19 05.7 +25.3 72.7	18 16.1 +25.6 72.3	17 26.7 +25.9 71.9	16 37.4 +26.1 71.5
25°	20 20.4 +24.8 72.2	19 31.0 +25.1 71.8	18 41.7 +25.4 71.3	17 52.6 +25.6 70.9	17 03.5 +25.9 70.5
26°	20 45.2 +24.5 71.2	19 56.1 +24.7 70.8	19 07.1 +25.0 70.4	18 18.2 +25.3 70.0	17 29.4 +25.7 69.6
27°	21 09.7 +24.1 70.2	20 20.8 +24.4 69.8	19 32.1 +24.7 69.4	18 43.5 +25.1 69.0	17 55.1 +25.3 68.6
28°	21 33.8 +23.7 69.2	20 45.2 +24.1 68.8	19 56.8 +24.4 68.5	19 08.6 +24.7 68.1	18 20.4 +25.1 67.7
29°	21 57.5 +23.4 68.2	21 09.3 +23.7 67.9	20 21.2 +24.1 67.5	19 33.3 +24.4 67.1	18 45.5 +24.8 66.7

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 19.7 +30.1 92.5	3 27.8 +30.0 92.0	2 35.9 +30.0 91.5	1 43.9 +30.0 91.0	0 52.0 +30.0 90.5
1°	4 49.8 +30.0 91.6	3 57.8 +30.0 91.1	3 05.9 +29.9 90.6	2 13.9 +30.0 90.1	1 22.0 +29.9 89.6
2°	5 19.8 +29.9 90.8	4 27.8 +29.9 90.3	3 35.8 +30.0 89.8	2 43.9 +29.9 89.3	1 51.9 +30.0 88.8
3°	5 49.7 +29.8 89.9	4 57.7 +29.9 89.4	4 05.8 +29.8 88.9	3 13.8 +29.9 88.4	2 21.9 +29.9 87.9
4°	6 19.5 +29.8 89.0	5 27.6 +29.7 88.5	4 35.6 +29.8 88.0	3 43.7 +29.8 87.5	2 51.8 +29.9 87.0
5°	6 49.3 +29.6 88.1	5 57.3 +29.7 87.7	5 05.4 +29.8 87.2	4 13.5 +29.8 86.7	3 21.7 +29.8 86.2
6°	7 18.9 +29.6 87.3	6 27.0 +29.6 86.8	5 35.2 +29.6 86.3	4 43.3 +29.7 85.8	3 51.5 +29.8 85.3
7°	7 48.5 +29.4 86.4	6 56.6 +29.5 85.9	6 04.8 +29.6 85.4	5 13.0 +29.7 84.9	4 21.3 +29.7 84.4
8°	8 17.9 +29.3 85.5	7 26.1 +29.4 85.0	6 34.4 +29.5 84.5	5 42.7 +29.5 84.0	4 51.0 +29.7 83.6
9°	8 47.2 +29.2 84.6	7 55.5 +29.3 84.1	7 03.9 +29.3 83.7	6 12.2 +29.5 83.2	5 20.7 +29.6 82.7
10°	9 16.4 +29.1 83.7	8 24.8 +29.2 83.3	7 33.2 +29.3 82.8	6 41.7 +29.4 82.3	5 50.3 +29.5 81.8
11°	9 45.5 +28.9 82.9	8 54.0 +29.0 82.4	8 02.5 +29.2 81.9	7 11.1 +29.3 81.4	6 19.8 +29.4 80.9
12°	10 14.4 +28.8 82.0	9 23.0 +28.9 81.5	8 31.7 +29.0 81.0	7 40.4 +29.2 80.5	6 49.2 +29.3 80.1
13°	10 43.2 +28.7 81.1	9 51.9 +28.8 80.6	9 00.7 +28.9 80.1	8 09.6 +29.0 79.7	7 18.5 +29.2 79.2
14°	11 11.9 +28.4 80.2	10 20.7 +28.6 79.7	9 29.6 +28.8 79.2	8 38.6 +29.0 78.8	7 47.7 +29.1 78.3
15°	11 40.3 +28.4 79.3	10 49.3 +28.5 78.8	9 58.4 +28.6 78.4	9 07.6 +28.8 77.9	8 16.8 +29.0 77.4
16°	12 08.7 +28.1 78.4	11 17.8 +28.3 77.9	10 27.0 +28.5 77.5	9 36.4 +28.6 77.0	8 45.8 +28.8 76.5
17°	12 36.8 +27.9 77.5	11 46.1 +28.1 77.0	10 55.5 +28.3 76.6	10 05.0 +28.6 76.1	9 14.6 +28.8 75.6
18°	13 04.7 +27.8 76.6	12 14.2 +28.0 76.1	11 23.8 +28.2 75.7	10 33.6 +28.3 75.2	9 43.4 +28.6 74.7
19°	13 32.5 +27.6 75.7	12 42.2 +27.8 75.2	11 52.0 +28.0 74.8	11 01.9 +28.3 74.3	10 12.0 +28.4 73.9
20°	14 00.1 +27.3 74.7	13 10.0 +27.6 74.3	12 20.0 +27.8 73.9	11 30.2 +28.0 73.4	10 40.4 +28.3 73.0
21°	14 27.4 +27.1 73.8	13 37.6 +27.3 73.4	12 47.8 +27.6 72.9	11 58.2 +27.9 72.5	11 08.7 +28.1 72.1
22°	14 54.5 +27.0 72.9	14 04.9 +27.2 72.5	13 15.4 +27.5 72.0	12 26.1 +27.7 71.6	11 36.8 +28.0 71.2
23°	15 21.5 +26.6 72.0	14 32.1 +27.0 71.6	13 42.9 +27.2 71.1	12 53.8 +27.5 70.7	12 04.8 +27.8 70.3
24°	15 48.1 +26.5 71.1	14 59.1 +26.7 70.6	14 10.1 +27.0 70.2	13 21.3 +27.3 69.8	12 32.6 +27.6 69.3
25°	16 14.6 +26.2 70.1	15 25.8 +26.5 69.7	14 37.1 +26.8 69.3	13 48.6 +27.1 68.9	13 00.2 +27.4 68.4
26°	16 40.8 +25.9 69.2	15 52.3 +26.3 68.8	15 03.9 +26.6 68.4	14 15.7 +26.9 67.9	13 27.6 +27.2 67.5
27°	17 06.7 +25.7 68.2	16 18.6 +26.0 67.8	15 30.5 +26.3 67.4	14 42.6 +26.7 67.0	13 54.8 +27.0 66.6
28°	17 32.4 +25.4 67.3	16 44.6 +25.7 66.9	15 56.8 +26.1 66.5	15 09.3 +26.4 66.1	14 21.8 +26.8 65.7
29°	17 57.8 +25.2 66.3	17 10.3 +25.5 66.0	16 22.9 +25.9 65.6	15 35.7 +26.2 65.2	14 48.6 +26.6 64.8

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Latitude 30°

Declination SAME name as Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 +30.0 90.0	-0 52.0 +30.0	-1 43.9 +30.0	-2 35.9 +30.1	-3 27.8 +30.1
1°	0 30.0 +30.0 89.1	-0 22.0 +30.1	-1 13.9 +30.0	-2 05.8 +30.1	-2 57.7 +30.1
2°	1 00.0 +30.0 88.3	0 08.1 +30.0 87.8	-0 43.9 +30.1	-1 35.7 +30.1	-2 27.6 +30.1
3°	1 30.0 +29.9 87.4	0 38.1 +30.0 86.9	-0 13.8 +30.1	-1 05.6 +30.1	-1 57.5 +30.2
4°	1 59.9 +30.0 86.5	1 08.1 +30.0 86.0	0 16.3 +30.0 85.5	-0 35.5 +30.1	-1 27.3 +30.2
5°	2 29.9 +29.9 85.7	1 38.1 +29.9 85.2	0 46.3 +30.0 84.7	-0 05.4 +30.1	-0 57.1 +30.2
6°	2 59.8 +29.8 84.8	2 08.0 +30.0 84.3	1 16.3 +30.1 83.8	0 24.7 +30.1 83.3	-0 26.9 +30.2
7°	3 29.6 +29.8 83.9	2 38.0 +29.9 83.4	1 46.4 +30.0 82.9	0 54.8 +30.1 82.4	0 03.3 +30.3 81.9
8°	3 59.4 +29.8 83.1	3 07.9 +29.8 82.6	2 16.4 +29.9 82.1	1 24.9 +30.1 81.6	0 33.6 +30.2 81.1
9°	4 29.2 +29.7 82.2	3 37.7 +29.8 81.7	2 46.3 +30.0 81.2	1 55.0 +30.1 80.7	1 03.8 +30.2 80.2
10°	4 58.9 +29.6 81.3	4 07.5 +29.8 80.8	3 16.3 +29.8 80.3	2 25.1 +30.0 79.8	1 34.0 +30.1 79.4
11°	5 28.5 +29.5 80.4	4 37.3 +29.7 80.0	3 46.1 +29.9 79.5	2 55.1 +30.0 79.0	2 04.1 +30.2 78.5
12°	5 58.0 +29.5 79.6	5 07.0 +29.6 79.1	4 16.0 +29.8 78.6	3 25.1 +29.9 78.1	2 34.3 +30.1 77.6
13°	6 27.5 +29.4 78.7	5 36.6 +29.5 78.2	4 45.8 +29.7 77.7	3 55.0 +29.9 77.2	3 04.4 +30.1 76.8
14°	6 56.9 +29.2 77.8	6 06.1 +29.5 77.3	5 15.5 +29.6 76.9	4 24.9 +29.8 76.4	3 34.5 +30.0 75.9
15°	7 26.1 +29.2 76.9	6 35.6 +29.3 76.5	5 45.1 +29.5 76.0	4 54.7 +29.8 75.5	4 04.5 +29.9 75.0
16°	7 55.3 +29.1 76.1	7 04.9 +29.3 75.6	6 14.6 +29.5 75.1	5 24.5 +29.7 74.6	4 34.4 +29.9 74.2
17°	8 24.4 +28.9 75.2	7 34.2 +29.1 74.7	6 44.1 +29.4 74.2	5 54.2 +29.6 73.8	5 04.3 +29.9 73.3
18°	8 53.3 +28.8 74.3	8 03.3 +29.1 73.8	7 13.5 +29.3 73.4	6 23.8 +29.5 72.9	5 34.2 +29.7 72.4
19°	9 22.1 +28.7 73.4	8 32.4 +28.9 72.9	7 42.8 +29.1 72.5	6 53.3 +29.4 72.0	6 03.9 +29.7 71.5
20°	9 50.8 +28.5 72.5	9 01.3 +28.8 72.0	8 11.9 +29.1 71.6	7 22.7 +29.3 71.1	6 33.6 +29.6 70.7
21°	10 19.3 +28.4 71.6	9 30.1 +28.6 71.2	8 41.0 +28.9 70.7	7 52.0 +29.2 70.2	7 03.2 +29.5 69.8
22°	10 47.7 +28.3 70.7	9 58.7 +28.6 70.3	9 09.9 +28.8 69.8	8 21.2 +29.1 69.4	7 32.7 +29.3 68.9
23°	11 16.0 +28.0 69.8	10 27.3 +28.3 69.4	9 38.7 +28.7 68.9	8 50.3 +28.9 68.5	8 02.0 +29.3 68.0
24°	11 44.0 +27.9 68.9	10 55.6 +28.2 68.5	10 07.4 +28.5 68.0	9 19.2 +28.9 67.6	8 31.3 +29.1 67.1
25°	12 11.9 +27.8 68.0	11 23.8 +28.1 67.6	10 35.9 +28.3 67.1	9 48.1 +28.7 66.7	9 00.4 +29.0 66.3
26°	12 39.7 +27.5 67.1	11 51.9 +27.9 66.7	11 04.2 +28.2 66.2	10 16.8 +28.5 65.8	9 29.4 +28.9 65.4
27°	13 07.2 +27.4 66.2	12 19.8 +27.6 65.8	11 32.4 +28.1 65.3	10 45.3 +28.4 64.9	9 58.3 +28.8 64.5
28°	13 34.6 +27.1 65.3	12 47.4 +27.5 64.9	12 00.5 +27.8 64.4	11 13.7 +28.2 64.0	10 27.1 +28.6 63.6
29°	14 01.7 +27.0 64.4	13 14.9 +27.4 63.9	12 28.3 +27.7 63.5	11 41.9 +28.1 63.1	10 55.7 +28.4 62.7

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°	-4 19.7 +30.1	-5 11.6 +30.1	-6 03.5 +30.2	-6 55.4 +30.3	-7 47.2 +30.4
1°	-3 49.6 +30.2	-4 41.5 +30.3	-5 33.3 +30.3	-6 25.1 +30.4	-7 16.8 +30.4
2°	-3 19.4 +30.2	-4 11.2 +30.2	-5 03.0 +30.3	-5 54.7 +30.4	-6 46.4 +30.5
3°	-2 49.2 +30.2	-3 41.0 +30.4	-4 32.7 +30.5	-5 24.3 +30.5	-6 15.9 +30.6
4°	-2 19.0 +30.3	-3 10.6 +30.3	-4 02.2 +30.4	-4 53.8 +30.6	-5 45.3 +30.7
5°	-1 48.7 +30.3	-2 40.3 +30.4	-3 31.8 +30.5	-4 23.2 +30.6	-5 14.6 +30.8
6°	-1 18.4 +30.3	-2 09.9 +30.5	-3 01.3 +30.6	-3 52.6 +30.7	-4 43.8 +30.8
7°	-0 48.1 +30.4	-1 39.4 +30.4	-2 30.7 +30.6	-3 21.9 +30.7	-4 13.0 +30.9
8°	-0 17.7 +30.3	-1 09.0 +30.5	-2 00.1 +30.6	-2 51.2 +30.8	-3 42.1 +30.9
9°	0 12.6 +30.3 79.7	-0 38.5 +30.5	-1 29.5 +30.7	-2 20.4 +30.8	-3 11.2 +31.0
10°	0 42.9 +30.4 78.9	-0 08.0 +30.5	-0 58.8 +30.6	-1 49.6 +30.8	-2 40.2 +31.0
11°	1 13.3 +30.3 78.0	0 22.5 +30.5 77.5	-0 28.2 +30.7	-1 18.8 +30.9	-2 09.2 +31.0
12°	1 43.6 +30.3 77.1	0 53.0 +30.4 76.6	0 02.5 +30.6 76.1	-0 47.9 +30.8	-1 38.2 +31.1
13°	2 13.9 +30.2 76.3	1 23.4 +30.5 75.8	0 33.1 +30.7 75.3	-0 17.1 +30.9	-1 07.1 +31.0
14°	2 44.1 +30.2 75.4	1 53.9 +30.4 74.9	1 03.8 +30.6 74.4	0 13.8 +30.9 73.9	-0 36.1 +31.1
15°	3 14.3 +30.2 74.5	2 24.3 +30.4 74.0	1 34.4 +30.6 73.6	0 44.7 +30.8 73.1	-0 05.0 +31.1
16°	3 44.5 +30.1 73.7	2 54.7 +30.4 73.2	2 05.0 +30.6 72.7	1 15.5 +30.8 72.2	0 26.1 +31.1 71.7
17°	4 14.6 +30.1 72.8	3 25.1 +30.3 72.3	2 35.6 +30.6 71.8	1 46.3 +30.8 71.3	0 57.2 +31.0 70.8
18°	4 44.7 +30.0 71.9	3 55.4 +30.2 71.5	3 06.2 +30.5 71.0	2 17.1 +30.8 70.5	1 28.2 +31.1 70.0
19°	5 14.7 +29.9 71.1	4 25.6 +30.2 70.6	3 36.7 +30.5 70.1	2 47.9 +30.7 69.6	1 59.3 +31.0 69.1
20°	5 44.6 +29.9 70.2	4 55.8 +30.1 69.7	4 07.2 +30.4 69.2	3 18.6 +30.7 68.8	2 30.3 +31.0 68.3
21°	6 14.5 +29.7 69.3	5 25.9 +30.1 68.9	4 37.6 +30.3 68.4	3 49.3 +30.7 67.9	3 01.3 +30.9 67.4
22°	6 44.2 +29.7 68.4	5 56.0 +30.0 68.0	5 07.9 +30.3 67.5	4 20.0 +30.6 67.0	3 32.2 +30.9 66.6
23°	7 13.9 +29.6 67.6	6 26.0 +29.8 67.1	5 38.2 +30.2 66.6	4 50.6 +30.5 66.2	4 03.1 +30.9 65.7
24°	7 43.5 +29.4 66.7	6 55.8 +29.8 66.2	6 08.4 +30.1 65.8	5 21.1 +30.4 65.3	4 34.0 +30.7 64.8
25°	8 12.9 +29.4 65.8	7 25.6 +29.7 65.4	6 38.5 +30.0 64.9	5 51.5 +30.4 64.4	5 04.7 +30.7 64.0
26°	8 42.3 +29.2 64.9	7 55.3 +29.6 64.5	7 08.5 +29.9 64.0	6 21.9 +30.3 63.6	5 35.4 +30.7 63.1
27°	9 11.5 +29.1 64.0	8 24.9 +29.4 63.6	7 38.4 +29.8 63.2	6 52.2 +30.1 62.7	6 06.1 +30.5 62.3
28°	9 40.6 +29.0 63.2	8 54.3 +29.4 62.7	8 08.2 +29.7 62.3	7 22.3 +30.1 61.8	6 36.6 +30.5 61.4
29°	10 09.6 +28.8 62.3	9 23.7 +29.2 61.8	8 37.9 +29.6 61.4	7 52.4 +30.0 61.0	7 07.1 +30.3 60.5

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Declination SAME name as Latitude

Latitude 30°

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°	-8 38.9 +30.4	-9 30.7 +30.5			
1°	-8 08.5 +30.5	-9 00.2 +30.6	-9 51.8 +30.7		
2°	-7 38.0 +30.6	-8 29.6 +30.7	-9 21.1 +30.8		
3°	-7 07.4 +30.7	-7 58.9 +30.8	-8 50.3 +31.0	-9 41.6 +31.1	
4°	-6 36.7 +30.8	-7 28.1 +31.0	-8 19.3 +31.0	-9 10.5 +31.2	
5°	-6 05.9 +30.9	-6 57.1 +31.0	-7 48.3 +31.2	-8 39.3 +31.3	-9 30.3 +31.5
6°	-5 35.0 +31.0	-6 26.1 +31.1	-7 17.1 +31.3	-8 08.0 +31.4	-8 58.8 +31.6
7°	-5 04.0 +31.0	-5 55.0 +31.2	-6 45.8 +31.3	-7 36.6 +31.5	-8 27.2 +31.7
8°	-4 33.0 +31.1	-5 23.8 +31.3	-6 14.5 +31.5	-7 05.1 +31.7	-7 55.5 +31.8
9°	-4 01.9 +31.1	-4 52.5 +31.3	-5 43.0 +31.5	-6 33.4 +31.7	-7 23.7 +31.9
10°	-3 30.8 +31.2	-4 21.2 +31.4	-5 11.5 +31.6	-6 01.7 +31.8	-6 51.8 +32.0
11°	-2 59.6 +31.2	-3 49.8 +31.4	-4 39.9 +31.6	-5 29.9 +31.8	-6 19.8 +32.1
12°	-2 28.4 +31.3	-3 18.4 +31.5	-4 08.3 +31.7	-4 58.1 +31.9	-5 47.7 +32.1
13°	-1 57.1 +31.3	-2 46.9 +31.5	-3 36.6 +31.7	-4 26.2 +32.0	-5 15.6 +32.3
14°	-1 25.8 +31.3	-2 15.4 +31.5	-3 04.9 +31.8	-3 54.2 +32.1	-4 43.3 +32.3
15°	-0 54.5 +31.3	-1 43.9 +31.6	-2 33.1 +31.8	-3 22.1 +32.0	-4 11.0 +32.3
16°	-0 23.2 +31.4	-1 12.3 +31.6	-2 01.3 +31.9	-2 50.1 +32.2	-3 38.7 +32.4
17°	0 08.2 +31.3 70.4	-0 40.7 +31.6	-1 29.4 +31.9	-2 17.9 +32.1	-3 06.3 +32.4
18°	0 39.5 +31.3 69.5	-0 09.1 +31.6	-0 57.5 +31.8	-1 45.8 +32.2	-2 33.9 +32.5
19°	1 10.8 +31.3 68.6	0 22.5 +31.6 68.2	-0 25.7 +31.9	-1 13.6 +32.2	-2 01.4 +32.5
20°	1 42.1 +31.3 67.8	0 54.1 +31.6 67.3	0 06.2 +31.9 66.8	-0 41.4 +32.2	-1 28.9 +32.5
21°	2 13.4 +31.2 66.9	1 25.7 +31.5 66.5	0 38.1 +31.9 66.0	-0 09.2 +32.1	-0 56.4 +32.5
22°	2 44.6 +31.2 66.1	1 57.2 +31.6 65.6	1 10.0 +31.8 65.1	0 22.9 +32.2 64.6	-0 23.9 +32.5
23°	3 15.8 +31.2 65.2	2 28.8 +31.5 64.7	1 41.8 +31.9 64.3	0 55.1 +32.2 63.8	0 08.6 +32.6 63.3
24°	3 47.0 +31.1 64.4	3 00.3 +31.4 63.9	2 13.7 +31.8 63.4	1 27.3 +32.2 62.9	0 41.2 +32.5 62.4
25°	4 18.1 +31.1 63.5	3 31.7 +31.4 63.0	2 45.5 +31.8 62.6	1 59.5 +32.1 62.1	1 13.7 +32.5 61.6
26°	4 49.2 +31.0 62.7	4 03.1 +31.4 62.2	3 17.3 +31.7 61.7	2 31.6 +32.1 61.2	1 46.2 +32.4 60.8
27°	5 20.2 +30.9 61.8	4 34.5 +31.3 61.3	3 49.0 +31.7 60.9	3 03.7 +32.1 60.4	2 18.6 +32.5 59.9
28°	5 51.1 +30.8 60.9	5 05.8 +31.2 60.5	4 20.7 +31.6 60.0	3 35.8 +32.0 59.5	2 51.1 +32.4 59.1
29°	6 21.9 +30.8 60.1	5 37.0 +31.2 59.6	4 52.3 +31.6 59.2	4 07.8 +32.0 58.7	3 23.5 +32.4 58.2

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°					
1°					
2°					
3°					
4°					
5°					
6°	-9 49.5 +31.7				
7°	-9 17.8 +31.9				
8°	-8 45.9 +32.0	-9 36.1 +32.2			
9°	-8 13.9 +32.1	-9 03.9 +32.3	-9 53.8 +32.6		
10°	-7 41.8 +32.3	-8 31.6 +32.5	-9 21.2 +32.6		
11°	-7 09.5 +32.3	-7 59.1 +32.5	-8 48.6 +32.8	-9 37.8 +33.0	
12°	-6 37.2 +32.4	-7 26.6 +32.7	-8 15.8 +32.9	-9 04.8 +33.2	-9 53.7 +33.5
13°	-6 04.8 +32.5	-6 53.9 +32.7	-7 42.9 +33.0	-8 31.6 +33.2	-9 20.2 +33.5
14°	-5 32.3 +32.5	-6 21.2 +32.8	-7 09.9 +33.1	-7 58.4 +33.4	-8 46.7 +33.6
15°	-4 59.8 +32.6	-5 48.4 +32.9	-6 36.8 +33.2	-7 25.0 +33.4	-8 13.1 +33.8
16°	-4 27.2 +32.7	-5 15.5 +33.0	-6 03.6 +33.2	-6 51.6 +33.6	-7 39.3 +33.8
17°	-3 54.5 +32.7	-4 42.5 +33.0	-5 30.4 +33.4	-6 18.0 +33.6	-7 05.5 +34.0
18°	-3 21.8 +32.8	-4 09.5 +33.1	-4 57.0 +33.3	-5 44.4 +33.7	-6 31.5 +34.0
19°	-2 49.0 +32.8	-3 36.4 +33.1	-4 23.7 +33.5	-5 10.7 +33.8	-5 57.5 +34.1
20°	-2 16.2 +32.8	-3 03.3 +33.1	-3 50.2 +33.5	-4 36.9 +33.8	-5 23.4 +34.2
21°	-1 43.4 +32.9	-2 30.2 +33.2	-3 16.7 +33.5	-4 03.1 +33.9	-4 49.2 +34.2
22°	-1 10.5 +32.8	-1 57.0 +33.2	-2 43.2 +33.5	-3 29.2 +33.9	-4 15.0 +34.2
23°	-0 37.7 +32.9	-1 23.8 +33.3	-2 09.7 +33.6	-2 55.3 +33.9	-3 40.8 +34.4
24°	-0 04.8 +32.9	-0 50.5 +33.2	-1 36.1 +33.6	-2 21.4 +34.0	-3 06.4 +34.3
25°	0 28.1 +32.8 61.1	-0 17.3 +33.2	-1 02.5 +33.7	-1 47.4 +34.0	-2 32.1 +34.4
26°	1 00.9 +32.9 60.3	0 15.9 +33.3 59.8	-0 28.8 +33.6	-1 13.4 +34.0	-1 57.7 +34.4
27°	1 33.8 +32.8 59.4	0 49.2 +33.2 58.9	0 04.8 +33.6 58.4	-0 39.4 +34.1	-1 23.3 +34.4
28°	2 06.6 +32.8 58.6	1 22.4 +33.2 58.1	0 38.4 +33.6 57.6	-0 05.3 +34.0	-0 48.9 +34.5
29°	2 39.4 +32.8 57.7	1 55.6 +33.2 57.3	1 12.0 +33.6 56.8	0 28.7 +34.0 56.3	-0 14.4 +34.4

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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°	59 00.0 +60.0 180.0	58 59.1 +60.0 178.1	58 56.5 +59.9 176.1	58 52.2 +59.7 174.2	58 46.1 +59.6 172.3
1°	60 00.0 +60.0 180.0	59 59.1 +60.0 178.0	59 56.4 +59.9 176.0	59 51.9 +59.8 174.0	59 45.7 +59.6 172.0
2°	61 00.0 +60.0 180.0	60 59.1 +59.9 177.9	60 56.3 +59.9 175.9	60 51.7 +59.7 173.8	60 45.3 +59.5 171.8
3°	62 00.0 +60.0 180.0	61 59.0 +60.0 177.9	61 56.2 +59.9 175.8	61 51.4 +59.7 173.6	61 44.8 +59.5 171.5
4°	63 00.0 +60.0 180.0	62 59.0 +60.0 177.8	62 56.1 +59.8 175.6	62 51.1 +59.7 173.4	62 44.3 +59.5 171.3
5°	64 00.0 +60.0 180.0	63 59.0 +59.9 177.7	63 55.9 +59.9 175.5	63 50.8 +59.7 173.2	63 43.8 +59.4 171.0
6°	65 00.0 +60.0 180.0	64 58.9 +60.0 177.6	64 55.8 +59.8 175.3	64 50.5 +59.7 173.0	64 43.2 +59.4 170.7
7°	66 00.0 +60.0 180.0	65 58.9 +60.0 177.6	65 55.6 +59.9 175.1	65 50.2 +59.6 172.7	65 42.6 +59.3 170.3
8°	67 00.0 +60.0 180.0	66 58.9 +59.9 177.5	66 55.5 +59.8 174.9	66 49.8 +59.6 172.4	66 41.9 +59.3 169.9
9°	68 00.0 +60.0 180.0	67 58.8 +60.0 177.4	67 55.3 +59.8 174.7	67 49.4 +59.5 172.1	67 41.2 +59.2 169.5
10°	69 00.0 +60.0 180.0	68 58.8 +59.9 177.3	68 55.1 +59.8 174.5	68 48.9 +59.6 171.8	68 40.4 +59.2 169.1
11°	70 00.0 +60.0 180.0	69 58.7 +60.0 177.1	69 54.9 +59.7 174.3	69 48.5 +59.4 171.4	69 39.6 +59.0 168.6
12°	71 00.0 +60.0 180.0	70 58.7 +59.9 177.0	70 54.6 +59.8 174.0	70 47.9 +59.4 171.0	70 38.6 +59.0 168.1
13°	72 00.0 +60.0 180.0	71 58.6 +59.9 176.8	71 54.4 +59.7 173.7	71 47.3 +59.4 170.6	71 37.6 +58.8 167.5
14°	73 00.0 +60.0 180.0	72 58.5 +59.9 176.7	72 54.1 +59.6 173.4	72 46.7 +59.2 170.1	72 36.4 +58.8 166.9
15°	74 00.0 +60.0 180.0	73 58.4 +59.9 176.5	73 53.7 +59.7 173.0	73 45.9 +59.2 169.6	73 35.2 +58.5 166.2
16°	75 00.0 +60.0 180.0	74 58.3 +59.9 176.3	74 53.4 +59.5 172.6	74 45.1 +59.1 169.0	74 33.7 +58.4 165.4
17°	76 00.0 +60.0 180.0	75 58.2 +59.9 176.1	75 52.9 +59.5 172.1	75 44.2 +58.9 168.3	75 32.1 +58.1 164.5
18°	77 00.0 +60.0 180.0	76 58.1 +59.9 175.8	76 52.4 +59.5 171.6	76 43.1 +58.8 167.5	76 30.2 +57.9 163.5
19°	78 00.0 +60.0 180.0	77 58.0 +59.8 175.5	77 51.9 +59.3 171.0	77 41.9 +58.5 166.6	77 28.1 +57.4 162.3
20°	79 00.0 +60.0 180.0	78 57.8 +59.8 175.1	78 51.2 +59.2 170.2	78 40.4 +58.3 165.5	78 25.5 +57.1 160.9
21°	80 00.0 +60.0 180.0	79 57.6 +59.7 174.6	79 50.4 +59.1 169.4	79 38.7 +57.9 164.2	79 22.6 +56.4 159.3
22°	81 00.0 +60.0 180.0	80 57.3 +59.7 174.1	80 49.5 +58.8 168.3	80 36.6 +57.4 162.7	80 19.0 +55.7 157.4
23°	82 00.0 +60.0 180.0	81 57.0 +59.6 173.4	81 48.3 +58.5 167.0	81 34.0 +56.7 160.8	81 14.7 +54.5 155.1
24°	83 00.0 +60.0 180.0	82 56.6 +59.5 172.5	82 46.8 +58.0 165.3	82 30.7 +55.8 158.5	82 09.2 +53.2 152.2
25°	84 00.0 +60.0 180.0	83 56.1 +59.3 171.4	83 44.8 +57.2 163.1	83 26.5 +54.4 155.5	83 02.4 +51.0 148.6
26°	85 00.0 +60.0 180.0	84 55.4 +58.9 169.8	84 42.0 +56.1 160.1	84 20.9 +52.1 151.5	83 53.4 +47.8 143.9
27°	86 00.0 +60.0 180.0	85 54.3 +58.3 167.4	85 38.1 +53.8 155.9	85 13.0 +48.4 146.0	84 41.2 +43.1 137.8
28°	87 00.0 +60.0 180.0	86 52.6 +56.6 163.6	86 31.9 +49.4 149.4	86 01.4 +41.9 138.2	85 24.3 +35.7 129.8
29°	88 00.0 +60.0 180.0	87 49.2 +51.6 156.3	87 21.3 +39.2 138.6	86 43.3 +30.4 126.8	86 00.0 +24.7 119.0

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°	58 38.3 +59.4 170.4	58 28.9 +59.1 168.5	58 17.8 +58.8 166.6	58 05.0 +58.5 164.7	57 50.7 +58.0 162.9
1°	59 37.7 +59.3 170.1	59 28.0 +59.0 168.1	59 16.6 +58.6 166.2	59 03.5 +58.3 164.3	58 48.7 +57.9 162.4
2°	60 37.0 +59.3 169.8	60 27.0 +59.0 167.8	60 15.2 +58.7 165.8	60 01.8 +58.2 163.8	59 46.6 +57.8 161.9
3°	61 36.3 +59.2 169.5	61 26.0 +58.9 167.4	61 13.9 +58.5 165.4	61 00.0 +58.1 163.3	60 44.4 +57.6 161.4
4°	62 35.5 +59.2 169.1	62 24.9 +58.8 167.0	62 12.4 +58.4 164.9	61 58.1 +57.9 162.8	61 42.0 +57.5 160.8
5°	63 34.7 +59.1 168.7	63 23.7 +58.8 166.6	63 10.8 +58.3 164.4	62 56.0 +57.9 162.3	62 39.5 +57.3 160.2
6°	64 33.8 +59.1 168.4	64 22.5 +58.6 166.1	64 09.1 +58.2 163.9	63 53.9 +57.6 161.7	63 36.8 +57.1 159.5
7°	65 32.9 +59.0 167.9	65 21.1 +58.5 165.6	65 07.3 +58.1 163.3	64 51.5 +57.5 161.0	64 33.9 +56.9 158.8
8°	66 31.9 +58.8 167.5	66 19.6 +58.5 165.1	66 05.4 +57.8 162.7	65 49.0 +57.3 160.3	65 30.8 +56.6 158.1
9°	67 30.7 +58.8 167.0	67 18.1 +58.3 164.5	67 03.2 +57.8 162.0	66 46.3 +57.1 159.6	66 27.4 +56.4 157.2
10°	68 29.5 +58.7 166.5	68 16.4 +58.1 163.9	68 01.0 +57.5 161.3	67 43.4 +56.8 158.8	67 23.8 +56.1 156.4
11°	69 28.2 +58.6 165.9	69 14.5 +58.0 163.2	68 58.5 +57.2 160.5	68 40.2 +56.6 157.9	68 19.9 +55.7 155.4
12°	70 26.8 +58.4 165.2	70 12.5 +57.7 162.4	69 55.7 +57.1 159.7	69 36.8 +56.2 157.0	69 15.6 +55.3 154.4
13°	71 25.2 +58.2 164.5	71 10.2 +57.5 161.6	70 52.8 +56.7 158.7	70 33.0 +55.8 156.0	70 10.9 +54.9 153.3
14°	72 23.4 +58.1 163.8	72 07.7 +57.3 160.7	71 49.5 +56.3 157.7	71 28.8 +55.4 154.8	71 05.8 +54.3 152.1
15°	73 21.5 +57.8 162.9	73 05.0 +56.9 159.7	72 45.8 +55.9 156.6	72 24.2 +54.8 153.6	72 00.1 +53.8 150.7
16°	74 19.3 +57.5 161.9	74 01.9 +56.5 158.6	73 41.7 +55.5 155.3	73 19.0 +54.3 152.2	72 53.9 +53.0 149.2
17°	75 16.8 +57.1 160.9	74 58.4 +56.1 157.3	74 37.2 +54.8 153.9	74 13.3 +53.5 150.7	73 46.9 +52.2 147.6
18°	76 13.9 +56.8 159.6	75 54.5 +55.4 155.9	75 32.0 +54.1 152.4	75 06.8 +52.7 149.0	74 39.1 +51.2 145.8
19°	77 10.7 +56.2 158.2	76 49.9 +54.8 154.3	76 26.1 +53.3 150.6	75 59.5 +51.7 147.1	75 30.3 +50.0 143.8
20°	78 06.9 +55.5 156.6	77 44.7 +54.0 152.4	77 19.4 +52.2 148.5	76 51.2 +50.4 144.9	76 20.3 +48.7 141.5
21°	79 02.4 +54.8 154.7	78 38.7 +52.8 150.3	78 11.6 +50.9 146.2	77 41.6 +48.9 142.4	77 09.0 +47.0 139.0
22°	79 57.2 +53.6 152.4	79 31.5 +51.5 147.8	79 02.5 +49.2 143.5	78 30.5 +47.1 139.6	77 56.0 +44.9 136.1
23°	80 50.8 +52.2 149.7	80 23.0 +49.6 144.8	79 51.7 +47.2 140.4	79 17.6 +44.7 136.4	78 40.9 +42.5 132.8
24°	81 43.0 +50.2 146.5	81 12.6 +47.4 141.3	80 38.9 +44.5 136.8	80 02.3 +42.0 132.7	79 23.4 +39.6 129.1
25°	82 33.2 +47.5 142.4	82 00.0 +44.2 137.1	81 23.4 +41.2 132.5	80 44.3 +38.3 128.4	80 03.0 +35.9 124.9
26°	83 20.7 +43.8 137.5	82 44.2 +40.0 132.0	82 04.6 +36.8 127.4	81 22.6 +34.0 123.5	80 38.9 +31.6 120.1
27°	84 04.5 +38.4 131.2	83 24.2 +34.5 125.8	82 41.4 +31.3 121.4	81 56.6 +28.7 117.8	81 10.5 +26.4 114.7
28°	84 42.9 +31.0 123.3	83 58.7 +27.3 118.4	83 12.7 +24.4 114.5	82 25.3 +22.2 111.3	81 36.9 +20.5 108.7
29°	85 13.9 +20.8 113.5	84 26.0 +18.1 109.5	83 37.1 +16.1 106.5	82 47.5 +14.7 104.1	81 57.4 +13.6 102.1

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°	57 34.8 +57.6 161.1	57 17.4 +57.1 159.3	56 58.5 +56.6 157.6	56 38.2 +56.1 155.9	56 16.5 +55.5 154.2
1°	58 32.4 +57.4 160.6	58 14.5 +57.0 158.7	57 55.1 +56.5 157.0	57 34.3 +55.9 155.2	57 12.0 +55.3 153.5
2°	59 29.8 +57.3 160.0	59 11.5 +56.7 158.1	58 51.6 +56.2 156.3	58 30.2 +55.6 154.5	58 07.3 +55.1 152.8
3°	60 27.1 +57.1 159.4	60 08.2 +56.6 157.5	59 47.8 +56.0 155.6	59 25.8 +55.4 153.8	59 02.4 +54.7 152.0
4°	61 24.2 +57.0 158.8	61 04.8 +56.4 156.8	60 43.8 +55.7 154.9	60 21.2 +55.1 153.0	59 57.1 +54.5 151.2
5°	62 21.2 +56.7 158.1	62 01.2 +56.1 156.1	61 39.5 +55.5 154.1	61 16.3 +54.8 152.2	60 51.6 +54.1 150.3
6°	63 17.9 +56.5 157.4	62 57.3 +55.8 155.3	62 35.0 +55.2 153.3	62 11.1 +54.5 151.4	61 45.7 +53.7 149.4
7°	64 14.4 +56.2 156.6	63 53.1 +55.6 154.5	63 30.2 +54.8 152.4	63 05.6 +54.1 150.4	62 39.4 +53.4 148.5
8°	65 10.6 +56.0 155.8	64 48.7 +55.2 153.6	64 25.0 +54.4 151.5	63 59.7 +53.6 149.5	63 32.8 +52.8 147.5
9°	66 06.6 +55.6 154.9	65 43.9 +54.8 152.7	65 19.4 +54.1 150.5	64 53.3 +53.2 148.4	64 25.6 +52.4 146.4
10°	67 02.2 +55.3 154.0	66 38.7 +54.5 151.7	66 13.5 +53.6 149.5	65 46.5 +52.7 147.3	65 18.0 +51.8 145.2
11°	67 57.5 +54.9 153.0	67 33.2 +54.0 150.6	67 07.1 +53.0 148.3	66 39.2 +52.1 146.1	66 09.8 +51.2 144.0
12°	68 52.4 +54.4 151.9	68 27.2 +53.4 149.5	68 00.1 +52.5 147.1	67 31.3 +51.5 144.9	67 01.0 +50.4 142.7
13°	69 46.8 +53.8 150.7	69 20.6 +52.9 148.2	68 52.6 +51.8 145.8	68 22.8 +50.8 143.5	67 51.4 +49.7 141.3
14°	70 40.6 +53.3 149.4	70 13.5 +52.1 146.8	69 44.4 +51.0 144.4	69 13.6 +49.9 142.0	68 41.1 +48.9 139.8
15°	71 33.9 +52.6 148.0	71 05.6 +51.4 145.3	70 35.4 +50.2 142.8	70 03.5 +49.0 140.4	69 30.0 +47.8 138.1
16°	72 26.5 +51.7 146.4	71 57.0 +50.5 143.7	71 25.6 +49.3 141.1	70 52.5 +48.0 138.7	70 17.8 +46.7 136.4
17°	73 18.2 +50.9 144.7	72 47.5 +49.5 141.9	72 14.9 +48.1 139.3	71 40.5 +46.8 136.8	71 04.5 +45.5 134.5
18°	74 09.1 +49.7 142.8	73 37.0 +48.2 140.0	73 03.0 +46.8 137.3	72 27.3 +45.4 134.8	71 50.0 +44.1 132.4
19°	74 58.8 +48.4 140.7	74 25.2 +46.9 137.8	73 49.8 +45.3 135.1	73 12.7 +43.8 132.6	72 34.1 +42.4 130.2
20°	75 47.2 +46.9 138.3	75 12.1 +45.2 135.4	74 35.1 +43.6 132.7	73 56.5 +42.1 130.2	73 16.5 +40.7 127.8
21°	76 34.1 +45.1 135.7	75 57.3 +43.3 132.8	75 18.7 +41.7 130.0	74 38.6 +40.1 127.5	73 57.2 +38.6 125.2
22°	77 19.2 +43.0 132.8	76 40.6 +41.1 129.8	76 00.4 +39.3 127.1	75 18.7 +37.7 124.7	74 35.8 +36.3 122.4
23°	78 02.2 +40.4 129.5	77 21.7 +38.5 126.6	76 39.7 +36.7 123.9	75 56.4 +35.2 121.5	75 12.1 +33.7 119.3
24°	78 42.6 +37.4 125.9	78 00.2 +35.4 123.0	77 16.4 +33.7 120.4	76 31.6 +32.1 118.1	75 45.8 +30.7 116.0
25°	79 20.0 +33.7 121.8	78 35.6 +31.9 119.0	77 50.1 +30.2 116.6	77 03.7 +28.7 114.4	76 16.5 +27.5 112.5
26°	79 53.7 +29.6 117.2	79 07.5 +27.7 114.6	78 20.3 +26.3 112.4	77 32.4 +25.0 110.4	76 44.0 +23.8 108.7
27°	80 23.3 +24.6 112.1	79 35.2 +23.2 109.8	78 46.6 +21.8 107.9	77 57.4 +20.8 106.1	77 07.8 +19.9 104.6
28°	80 47.9 +19.0 106.5	79 58.4 +17.8 104.6	79 08.4 +17.0 103.0	78 18.2 +16.1 101.6	77 27.7 +15.5 100.3
29°	81 06.9 +12.8 100.5	80 16.2 +12.2 99.1	79 25.4 +11.6 97.8	78 34.3 +11.3 96.8	77 43.2 +11.0 95.8

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°	55 53.4 +55.0 152.5	55 29.0 +54.4 150.9	55 03.4 +53.8 149.3	54 36.5 +53.2 147.8	54 08.5 +52.6 146.2
1°	56 48.4 +54.7 151.8	56 23.4 +54.1 150.1	55 57.2 +53.5 148.5	55 29.7 +52.9 146.9	55 01.1 +52.2 145.4
2°	57 43.1 +54.4 151.0	57 17.5 +53.8 149.4	56 50.7 +53.1 147.7	56 22.6 +52.5 146.1	55 53.3 +51.9 144.5
3°	58 37.5 +54.1 150.2	58 11.3 +53.5 148.5	57 43.8 +52.8 146.8	57 15.1 +52.1 145.2	56 45.2 +51.4 143.6
4°	59 31.6 +53.8 149.4	59 04.8 +53.1 147.6	58 36.6 +52.4 145.9	58 07.2 +51.7 144.3	57 36.6 +51.0 142.7
5°	60 25.4 +53.4 148.5	59 57.9 +52.7 146.7	59 29.0 +52.0 145.0	58 58.9 +51.2 143.3	58 27.6 +50.5 141.7
6°	61 18.8 +53.0 147.6	60 50.6 +52.2 145.8	60 21.0 +51.5 144.0	59 50.1 +50.7 142.3	59 18.1 +50.0 140.6
7°	62 11.8 +52.6 146.6	61 42.8 +51.8 144.7	61 12.5 +50.9 142.9	60 40.8 +50.2 141.2	60 08.1 +49.3 139.5
8°	63 04.4 +52.0 145.5	62 34.6 +51.2 143.7	62 03.4 +50.4 141.8	61 31.0 +49.6 140.1	60 57.4 +48.8 138.4
9°	63 56.4 +51.5 144.4	63 25.8 +50.6 142.5	62 53.8 +49.8 140.7	62 20.6 +49.0 138.9	61 46.2 +48.1 137.2
10°	64 47.9 +50.9 143.2	64 16.4 +50.0 141.3	63 43.6 +49.1 139.4	63 09.6 +48.2 137.6	62 34.3 +47.4 135.9
11°	65 38.8 +50.2 142.0	65 06.4 +49.3 140.0	64 32.7 +48.4 138.1	63 57.8 +47.4 136.3	63 21.7 +46.5 134.5
12°	66 29.0 +49.5 140.6	65 55.7 +48.5 138.6	65 21.1 +47.5 136.7	64 45.2 +46.6 134.9	64 08.2 +45.7 133.1
13°	67 18.5 +48.7 139.2	66 44.2 +47.7 137.2	66 08.6 +46.6 135.2	65 31.8 +45.6 133.4	64 53.9 +44.7 131.6
14°	68 07.2 +47.7 137.6	67 31.9 +46.6 135.6	66 55.2 +45.7 133.6	66 17.4 +44.7 131.8	65 38.6 +43.6 130.0
15°	68 54.9 +46.7 136.0	68 18.5 +45.6 133.9	67 40.9 +44.5 132.0	67 02.1 +43.4 130.1	66 22.2 +42.5 128.3
16°	69 41.6 +45.6 134.2	69 04.1 +44.4 132.1	68 25.4 +43.2 130.2	67 45.5 +42.2 128.3	67 04.7 +41.2 126.5
17°	70 27.2 +44.2 132.3	69 48.5 +43.0 130.2	69 08.6 +42.0 128.2	68 27.7 +40.9 126.4	67 45.9 +39.8 124.6
18°	71 11.4 +42.8 130.2	70 31.5 +41.6 128.2	69 50.6 +40.4 126.2	69 08.6 +39.3 124.4	68 25.7 +38.3 122.6
19°	71 54.2 +41.1 128.0	71 13.1 +39.9 126.0	70 31.0 +38.7 124.0	69 47.9 +37.6 122.2	69 04.0 +36.6 120.5
20°	72 35.3 +39.3 125.6	71 53.0 +38.0 123.6	71 09.7 +36.9 121.7	70 25.5 +35.8 119.9	69 40.6 +34.7 118.3
21°	73 14.6 +37.3 123.1	72 31.0 +36.0 121.1	71 46.6 +34.8 119.2	71 01.3 +33.8 117.5	70 15.3 +32.8 115.9
22°	73 51.9 +34.9 120.3	73 07.0 +33.7 118.4	72 21.4 +32.6 116.6	71 35.1 +31.5 114.9	70 48.1 +30.7 113.4
23°	74 26.8 +32.4 117.3	73 40.7 +31.2 115.5	72 54.0 +30.1 113.8	72 06.6 +29.2 112.2	71 18.8 +28.2 110.7
24°	74 59.2 +29.5 114.1	74 11.9 +28.4 112.4	73 24.1 +27.4 110.8	72 35.8 +26.5 109.3	71 47.0 +25.8 107.9
25°	75 28.7 +26.3 110.7	74 40.3 +25.4 109.1	73 51.5 +24.5 107.6	73 02.3 +23.7 106.3	72 12.8 +23.0 105.0
26°	75 55.0 +22.9 107.1	75 05.7 +22.0 105.6	74 16.0 +21.3 104.3	73 26.0 +20.6 103.1	72 35.8 +20.1 102.0
27°	76 17.9 +19.1 103.2	75 27.7 +18.4 102.0	74 37.3 +17.8 100.8	73 46.6 +17.5 99.7	72 55.9 +17.0 98.8
28°	76 37.0 +15.0 99.2	75 46.1 +14.7 98.1	74 55.1 +14.3 97.2	74 04.1 +14.0 96.3	73 12.9 +13.8 95.5
29°	76 52.0 +10.8 94.9	76 00.8 +10.6 94.1	75 09.4 +10.5 93.4	74 18.1 +10.4 92.7	73 26.7 +10.4 92.1

Declination SAME name as Latitude

Latitude 31°

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°	53 39.4 +51.9 144.8	53 09.2 +51.3 143.3	52 37.9 +50.7 141.9	52 05.7 +50.1 140.5	51 32.5 +49.5 139.2
1°	54 31.3 +51.6 143.9	54 00.5 +50.9 142.4	53 28.6 +50.3 141.0	52 55.8 +49.6 139.6	52 22.0 +49.0 138.2
2°	55 22.9 +51.2 143.0	54 51.4 +50.6 141.5	54 18.9 +49.9 140.1	53 45.4 +49.3 138.7	53 11.0 +48.6 137.3
3°	56 14.1 +50.8 142.1	55 42.0 +50.0 140.6	55 08.8 +49.4 139.1	54 34.7 +48.7 137.7	53 59.6 +48.0 136.3
4°	57 04.9 +50.2 141.1	56 32.0 +49.6 139.6	55 58.2 +48.9 138.1	55 23.4 +48.2 136.7	54 47.6 +47.5 135.3
5°	57 55.1 +49.8 140.1	57 21.6 +49.1 138.6	56 47.1 +48.3 137.1	56 11.6 +47.6 135.6	55 35.1 +47.0 134.2
6°	58 44.9 +49.2 139.0	58 10.7 +48.4 137.5	57 35.4 +47.7 136.0	56 59.2 +47.0 134.5	56 22.1 +46.3 133.1
7°	59 34.1 +48.6 137.9	58 59.1 +47.9 136.3	58 23.1 +47.1 134.8	57 46.2 +46.3 133.3	57 08.4 +45.6 131.9
8°	60 22.7 +48.0 136.7	59 47.0 +47.2 135.2	59 10.2 +46.4 133.6	58 32.5 +45.7 132.1	57 54.0 +44.9 130.7
9°	61 10.7 +47.3 135.5	60 34.2 +46.4 133.9	59 56.6 +45.7 132.4	59 18.2 +44.9 130.9	58 38.9 +44.1 129.5
10°	61 58.0 +46.5 134.2	61 20.6 +45.7 132.6	60 42.3 +44.9 131.1	60 03.1 +44.1 129.6	59 23.0 +43.4 128.1
11°	62 44.5 +45.7 132.9	62 06.3 +44.8 131.2	61 27.2 +44.0 129.7	60 47.2 +43.2 128.2	60 06.4 +42.4 126.8
12°	63 30.2 +44.7 131.4	62 51.1 +43.9 129.8	62 11.2 +43.0 128.3	61 30.4 +42.2 126.8	60 48.8 +41.4 125.3
13°	64 14.9 +43.8 129.9	63 35.0 +42.9 128.3	62 54.2 +42.0 126.7	62 12.6 +41.2 125.3	61 30.2 +40.5 123.8
14°	64 58.7 +42.7 128.3	64 17.9 +41.8 126.7	63 36.2 +41.0 125.2	62 53.8 +40.1 123.7	62 10.7 +39.3 122.3
15°	65 41.4 +41.5 126.6	64 59.7 +40.6 125.0	64 17.2 +39.7 123.5	63 33.9 +38.9 122.0	62 50.0 +38.1 120.6
16°	66 22.9 +40.2 124.9	65 40.3 +39.3 123.3	64 56.9 +38.5 121.7	64 12.8 +37.7 120.3	63 28.1 +36.9 118.9
17°	67 03.1 +38.9 123.0	66 19.6 +37.9 121.4	65 35.4 +37.0 119.9	64 50.5 +36.2 118.5	64 05.0 +35.5 117.1
18°	67 42.0 +37.3 121.0	66 57.5 +36.4 119.4	66 12.4 +35.6 118.0	65 26.7 +34.8 116.6	64 40.5 +34.0 115.3
19°	68 19.3 +35.6 118.9	67 33.9 +34.8 117.4	66 48.0 +33.9 116.0	66 01.5 +33.1 114.6	65 14.5 +32.4 113.3
20°	68 54.9 +33.9 116.7	68 08.7 +33.0 115.2	67 21.9 +32.2 113.8	66 34.6 +31.5 112.5	65 46.9 +30.8 111.3
21°	69 28.8 +31.9 114.4	68 41.7 +31.0 113.0	67 54.1 +30.3 111.6	67 06.1 +29.6 110.4	66 17.7 +28.9 109.2
22°	70 00.7 +29.7 111.9	69 12.7 +29.0 110.6	68 24.4 +28.3 109.3	67 35.7 +27.6 108.1	66 46.6 +27.1 107.0
23°	70 30.4 +27.5 109.4	69 41.7 +26.8 108.1	68 52.7 +26.1 106.9	68 03.3 +25.6 105.8	67 13.7 +25.0 104.7
24°	70 57.9 +25.1 106.7	70 08.5 +24.4 105.5	69 18.8 +23.8 104.4	68 28.9 +23.3 103.3	67 38.7 +22.9 102.3
25°	71 23.0 +22.4 103.8	70 32.9 +21.9 102.8	69 42.6 +21.5 101.7	68 52.2 +21.0 100.8	68 01.6 +20.6 99.9
26°	71 45.4 +19.6 100.9	70 54.8 +19.2 99.9	70 04.1 +18.8 99.0	69 13.2 +18.5 98.2	68 22.2 +18.3 97.3
27°	72 05.0 +16.7 97.9	71 14.0 +16.4 97.0	70 22.9 +16.2 96.2	69 31.7 +16.0 95.5	68 40.5 +15.8 94.7
28°	72 21.7 +13.6 94.7	71 30.4 +13.5 94.0	70 39.1 +13.3 93.3	69 47.7 +13.3 92.7	68 56.3 +13.3 92.1
29°	72 35.3 +10.4 91.5	71 43.9 +10.4 90.9	70 52.4 +10.5 90.4	70 01.0 +10.5 89.8	69 09.6 +10.6 89.3

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	50 58.4 +48.9 137.8	50 23.5 +48.2 136.6	49 47.7 +47.7 135.3	49 11.2 +47.0 134.1	48 33.8 +46.5 132.9
1°	51 47.3 +48.4 136.9	51 11.7 +47.8 135.6	50 35.4 +47.1 134.4	49 58.2 +46.6 133.1	49 20.3 +46.0 131.9
2°	52 35.7 +47.9 135.9	51 59.5 +47.3 134.6	51 22.5 +46.7 133.4	50 44.8 +46.0 132.1	50 06.3 +45.4 130.9
3°	53 23.6 +47.4 134.9	52 46.8 +46.7 133.6	52 09.2 +46.1 132.4	51 30.8 +45.5 131.1	50 51.7 +44.9 129.9
4°	54 11.0 +46.8 133.9	53 33.5 +46.2 132.6	52 55.3 +45.5 131.3	52 16.3 +44.9 130.1	51 36.6 +44.3 128.9
5°	54 57.8 +46.3 132.8	54 19.7 +45.6 131.5	53 40.8 +44.9 130.2	53 01.2 +44.3 129.0	52 20.9 +43.6 127.8
6°	55 44.1 +45.6 131.7	55 05.3 +44.9 130.4	54 25.7 +44.3 129.1	53 45.5 +43.6 127.8	53 04.5 +43.0 126.6
7°	56 29.7 +44.9 130.5	55 50.2 +44.2 129.2	55 10.0 +43.6 127.9	54 29.1 +42.9 126.7	53 47.5 +42.3 125.5
8°	57 14.6 +44.2 129.3	56 34.4 +43.5 128.0	55 53.6 +42.8 126.7	55 12.0 +42.2 125.5	54 29.8 +41.5 124.2
9°	57 58.8 +43.4 128.1	57 17.9 +42.7 126.7	56 36.4 +42.0 125.4	55 54.2 +41.3 124.2	55 11.3 +40.7 123.0
10°	58 42.2 +42.6 126.8	58 00.6 +41.9 125.4	57 18.4 +41.2 124.1	56 35.5 +40.5 122.9	55 52.0 +39.9 121.7
11°	59 24.8 +41.7 125.4	58 42.5 +41.0 124.1	57 59.6 +40.3 122.8	57 16.0 +39.7 121.5	56 31.9 +39.0 120.3
12°	60 06.5 +40.7 124.0	59 23.5 +40.0 122.6	58 39.9 +39.3 121.4	57 55.7 +38.6 120.1	57 10.9 +38.0 119.0
13°	60 47.2 +39.7 122.5	60 03.5 +38.9 121.2	59 19.2 +38.2 119.9	58 34.3 +37.6 118.7	57 48.9 +37.1 117.5
14°	61 26.9 +38.5 120.9	60 42.4 +37.9 119.6	59 57.4 +37.2 118.4	59 11.9 +36.6 117.2	58 26.0 +35.9 116.0
15°	62 05.4 +37.4 119.3	61 20.3 +36.7 118.0	60 34.6 +36.1 116.8	59 48.5 +35.4 115.6	59 01.9 +34.8 114.5
16°	62 42.8 +36.1 117.6	61 57.0 +35.4 116.3	61 10.7 +34.7 115.1	60 23.9 +34.2 114.0	59 36.7 +33.6 112.9
17°	63 18.9 +34.8 115.8	62 32.4 +34.1 114.6	61 45.4 +33.5 113.4	60 58.1 +32.8 112.3	60 10.3 +32.3 111.2
18°	63 53.7 +33.3 114.0	63 06.5 +32.7 112.8	62 18.9 +32.1 111.7	61 30.9 +31.5 110.6	60 42.6 +31.0 109.5
19°	64 27.0 +31.8 112.1	63 39.2 +31.1 110.9	62 51.0 +30.6 109.8	62 02.4 +30.1 108.8	61 13.6 +29.6 107.8
20°	64 58.8 +30.1 110.1	64 10.3 +29.6 109.0	63 21.6 +29.0 107.9	62 32.5 +28.5 106.9	61 43.2 +28.0 105.9
21°	65 28.9 +28.4 108.1	64 39.9 +27.8 107.0	63 50.6 +27.3 106.0	63 01.0 +26.9 105.0	62 11.2 +26.5 104.1
22°	65 57.3 +26.5 105.9	65 07.7 +26.1 104.9	64 17.9 +25.6 103.9	63 27.9 +25.2 103.0	62 37.7 +24.8 102.1
23°	66 23.8 +24.6 103.7	65 33.8 +24.1 102.7	64 43.5 +23.8 101.8	63 53.1 +23.4 101.0	63 02.5 +23.1 100.1
24°	66 48.4 +22.5 101.4	65 57.9 +22.1 100.5	65 07.3 +21.8 99.7	64 16.5 +21.5 98.9	63 25.6 +21.3 98.1
25°	67 10.9 +20.3 99.0	66 20.0 +20.1 98.2	65 29.1 +19.8 97.4	64 38.0 +19.6 96.7	63 46.9 +19.4 96.0
26°	67 31.2 +18.0 96.6	66 40.1 +17.8 95.8	65 48.9 +17.7 95.1	64 57.6 +17.6 94.5	64 06.3 +17.5 93.8
27°	67 49.2 +15.7 94.1	66 57.9 +15.6 93.4	66 06.6 +15.5 92.8	65 15.2 +15.5 92.2	64 23.8 +15.4 91.6
28°	68 04.9 +13.3 91.5	67 13.5 +13.2 90.9	66 22.1 +13.2 90.4	65 30.7 +13.3 89.9	64 39.2 +13.4 89.4
29°	68 18.2 +10.7 88.9	67 26.7 +10.9 88.4	66 35.3 +11.0 88.0	65 44.0 +11.0 87.5	64 52.6 +11.2 87.1

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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°	47 55.8 +45.9 131.7	47 17.1 +45.3 130.6	46 37.7 +44.8 129.5	45 57.7 +44.2 128.4	45 17.1 +43.7 127.4
1°	48 41.7 +45.4 130.8	48 02.4 +44.8 129.6	47 22.5 +44.2 128.5	46 41.9 +43.7 127.4	46 00.8 +43.2 126.4
2°	49 27.1 +44.8 129.8	48 47.2 +44.3 128.6	48 06.7 +43.7 127.5	47 25.6 +43.2 126.4	46 44.0 +42.6 125.4
3°	50 11.9 +44.3 128.7	49 31.5 +43.7 127.6	48 50.4 +43.1 126.5	48 08.8 +42.6 125.4	47 26.6 +42.0 124.3
4°	50 56.2 +43.7 127.7	50 15.2 +43.1 126.5	49 33.5 +42.6 125.4	48 51.4 +41.9 124.3	48 08.6 +41.5 123.3
5°	51 39.9 +43.0 126.6	50 58.3 +42.4 125.4	50 16.1 +41.9 124.3	49 33.3 +41.4 123.2	48 50.1 +40.8 122.2
6°	52 22.9 +42.4 125.4	51 40.7 +41.8 124.3	50 58.0 +41.2 123.2	50 14.7 +40.6 122.1	49 30.9 +40.1 121.1
7°	53 05.3 +41.7 124.3	52 22.5 +41.1 123.1	51 39.2 +40.5 122.0	50 55.3 +40.0 121.0	50 11.0 +39.4 119.9
8°	53 47.0 +40.9 123.1	53 03.6 +40.3 121.9	52 19.7 +39.8 120.8	51 35.3 +39.2 119.8	50 50.4 +38.7 118.7
9°	54 27.9 +40.1 121.8	53 43.9 +39.6 120.7	52 59.5 +38.9 119.6	52 14.5 +38.4 118.5	51 29.1 +37.9 117.5
10°	55 08.0 +39.3 120.5	54 23.5 +38.6 119.4	53 38.4 +38.2 118.3	52 52.9 +37.6 117.3	52 07.0 +37.1 116.3
11°	55 47.3 +38.4 119.2	55 02.1 +37.9 118.1	54 16.6 +37.2 117.0	53 30.5 +36.7 116.0	52 44.1 +36.2 115.0
12°	56 25.7 +37.4 117.8	55 40.0 +36.8 116.7	54 53.8 +36.3 115.7	54 07.2 +35.9 114.6	53 20.3 +35.3 113.6
13°	57 03.1 +36.4 116.4	56 16.8 +35.9 115.3	55 30.1 +35.4 114.3	54 43.1 +34.8 113.3	53 55.6 +34.4 112.3
14°	57 39.5 +35.4 114.9	56 52.7 +34.8 113.9	56 05.5 +34.3 112.8	55 17.9 +33.8 111.8	54 30.0 +33.4 110.9
15°	58 14.9 +34.2 113.4	57 27.5 +33.7 112.4	56 39.8 +33.2 111.3	55 51.7 +32.8 110.4	55 03.4 +32.3 109.4
16°	58 49.1 +33.1 111.8	58 01.2 +32.6 110.8	57 13.0 +32.1 109.8	56 24.5 +31.6 108.9	55 35.7 +31.2 108.0
17°	59 22.2 +31.8 110.2	58 33.8 +31.3 109.2	57 45.1 +30.8 108.2	56 56.1 +30.5 107.3	56 06.9 +30.0 106.4
18°	59 54.0 +30.5 108.5	59 05.1 +30.0 107.6	58 15.9 +29.7 106.6	57 26.6 +29.2 105.7	56 36.9 +28.9 104.9
19°	60 24.5 +29.1 106.8	59 35.1 +28.7 105.9	58 45.6 +28.2 105.0	57 55.8 +27.9 104.1	57 05.8 +27.6 103.3
20°	60 53.6 +27.6 105.0	60 03.8 +27.3 104.1	59 13.8 +26.9 103.3	58 23.7 +26.6 102.4	57 33.4 +26.3 101.6
21°	61 21.2 +26.1 103.2	60 31.1 +25.7 102.3	59 40.7 +25.5 101.5	58 50.3 +25.1 100.7	57 59.7 +24.9 99.9
22°	61 47.3 +24.5 101.3	60 56.8 +24.2 100.5	60 06.2 +23.9 99.7	59 15.4 +23.7 98.9	58 24.6 +23.5 98.2
23°	62 11.8 +22.9 99.3	61 21.0 +22.6 98.6	60 30.1 +22.4 97.8	59 39.1 +22.2 97.1	58 48.1 +22.0 96.4
24°	62 34.7 +21.0 97.3	61 43.6 +20.9 96.6	60 52.5 +20.7 95.9	60 01.3 +20.6 95.3	59 10.1 +20.4 94.6
25°	62 55.7 +19.3 95.3	62 04.5 +19.1 94.6	61 13.2 +19.0 94.0	60 21.9 +18.9 93.4	59 30.5 +18.9 92.8
26°	63 15.0 +17.4 93.2	62 23.6 +17.3 92.6	61 32.2 +17.3 92.0	60 40.8 +17.3 91.5	59 49.4 +17.3 90.9
27°	63 32.4 +15.4 91.1	62 40.9 +15.5 90.5	61 49.5 +15.5 90.0	60 58.1 +15.5 89.5	60 06.7 +15.5 89.0
28°	63 47.8 +13.4 88.9	62 56.4 +13.5 88.4	62 05.0 +13.6 87.9	61 13.6 +13.7 87.5	60 22.2 +13.9 87.1
29°	64 01.2 +11.4 86.7	63 09.9 +11.5 86.3	62 18.6 +11.7 85.9	61 27.3 +11.9 85.5	60 36.1 +12.0 85.1

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	44 36.0 +43.1 126.3	43 54.3 +42.6 125.3	43 12.1 +42.1 124.4	42 29.4 +41.6 123.4	41 46.2 +41.2 122.5
1°	45 19.1 +42.7 125.4	44 36.9 +42.2 124.4	43 54.2 +41.6 123.4	43 11.0 +41.2 122.4	42 27.4 +40.7 121.5
2°	46 01.8 +42.1 124.3	45 19.1 +41.5 123.3	44 35.8 +41.1 122.4	43 52.2 +40.6 121.4	43 08.1 +40.1 120.5
3°	46 43.9 +41.5 123.3	46 00.6 +41.0 122.3	45 16.9 +40.5 121.3	44 32.8 +40.0 120.4	43 48.2 +39.6 119.5
4°	47 25.4 +40.9 122.3	46 41.6 +40.4 121.3	45 57.4 +40.0 120.3	45 12.8 +39.5 119.3	44 27.8 +39.0 118.4
5°	48 06.3 +40.3 121.2	47 22.0 +39.8 120.2	46 37.4 +39.3 119.2	45 52.3 +38.8 118.3	45 06.8 +38.3 117.3
6°	48 46.6 +39.6 120.0	48 01.8 +39.1 119.1	47 16.7 +38.6 118.1	46 31.1 +38.2 117.2	45 45.1 +37.8 116.2
7°	49 26.2 +38.9 118.9	48 40.9 +38.5 117.9	47 55.3 +37.9 117.0	47 09.3 +37.5 116.0	46 22.9 +37.0 115.1
8°	50 05.1 +38.2 117.7	49 19.4 +37.7 116.7	48 33.2 +37.3 115.8	47 46.8 +36.7 114.9	46 59.9 +36.4 114.0
9°	50 43.3 +37.4 116.5	49 57.1 +36.9 115.5	49 10.5 +36.5 114.6	48 23.5 +36.1 113.7	47 36.3 +35.6 112.8
10°	51 20.7 +36.6 115.3	50 34.0 +36.1 114.3	49 47.0 +35.6 113.4	48 59.6 +35.2 112.5	48 11.9 +34.9 111.6
11°	51 57.3 +35.7 114.0	51 10.1 +35.3 113.0	50 22.6 +34.9 112.1	49 34.8 +34.5 111.2	48 46.8 +34.0 110.4
12°	52 33.0 +34.9 112.7	51 45.4 +34.4 111.7	50 57.5 +34.0 110.8	50 09.3 +33.6 110.0	49 20.8 +33.2 109.1
13°	53 07.9 +33.9 111.3	52 19.8 +33.5 110.4	51 31.5 +33.1 109.5	50 42.9 +32.7 108.7	49 54.0 +32.4 107.8
14°	53 41.8 +32.9 109.9	52 53.3 +32.5 109.0	52 04.6 +32.1 108.2	51 15.6 +31.8 107.3	50 26.4 +31.4 106.5
15°	54 14.7 +31.9 108.5	53 25.8 +31.5 107.6	52 36.7 +31.2 106.8	51 47.4 +30.8 106.0	50 57.8 +30.5 105.2
16°	54 46.6 +30.8 107.1	53 57.3 +30.5 106.2	53 07.9 +30.1 105.4	52 18.2 +29.8 104.6	51 28.3 +29.5 103.8
17°	55 17.4 +29.7 105.6	54 27.8 +29.4 104.7	53 38.0 +29.0 103.9	52 48.0 +28.7 103.1	51 57.8 +28.5 102.4
18°	55 47.1 +28.6 104.0	54 57.2 +28.2 103.2	54 07.0 +27.9 102.4	53 16.7 +27.7 101.7	52 26.3 +27.4 100.9
19°	56 15.7 +27.2 102.5	55 25.4 +27.0 101.7	54 34.9 +26.8 100.9	53 44.4 +26.5 100.2	52 53.7 +26.3 99.5
20°	56 42.9 +26.1 100.8	55 52.4 +25.7 100.1	55 01.7 +25.5 99.4	54 10.9 +25.3 98.7	53 20.0 +25.2 98.0
21°	57 09.0 +24.6 99.2	56 18.1 +24.5 98.5	55 27.2 +24.3 97.8	54 36.2 +24.1 97.1	53 45.2 +23.9 96.5
22°	57 33.6 +23.3 97.5	56 42.6 +23.1 96.8	55 51.5 +23.0 96.2	55 00.3 +22.9 95.5	54 09.1 +22.8 94.9
23°	57 56.9 +21.9 95.8	57 05.7 +21.8 95.1	56 14.5 +21.6 94.5	55 23.2 +21.5 93.9	54 31.9 +21.4 93.3
24°	58 18.8 +20.4 94.0	57 27.5 +20.3 93.4	56 36.1 +20.2 92.8	55 44.7 +20.2 92.3	54 53.3 +20.2 91.7
25°	58 39.2 +18.8 92.2	57 47.8 +18.8 91.7	56 56.3 +18.8 91.1	56 04.9 +18.8 90.6	55 13.5 +18.8 90.1
26°	58 58.0 +17.2 90.4	58 06.6 +17.2 89.9	57 15.1 +17.3 89.4	56 23.7 +17.4 88.9	55 32.3 +17.4 88.4
27°	59 15.2 +15.7 88.5	58 23.8 +15.7 88.0	57 32.4 +15.8 87.6	56 41.1 +15.9 87.1	55 49.7 +16.0 86.7
28°	59 30.9 +13.9 86.6	58 39.5 +14.1 86.2	57 48.2 +14.3 85.8	56 57.0 +14.3 85.4	56 05.7 +14.6 85.0
29°	59 44.8 +12.3 84.7	58 53.6 +12.5 84.3	58 02.5 +12.6 83.9	57 11.3 +12.9 83.6	56 20.3 +13.0 83.2

Declination SAME name as Latitude

Latitude 31°

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°	41 02.6 +40.7 121.5	40 18.6 +40.2 120.6	39 34.1 +39.9 119.8	38 49.3 +39.4 118.9	38 04.1 +39.0 118.1
1°	41 43.3 +40.2 120.6	40 58.8 +39.8 119.7	40 14.0 +39.3 118.8	39 28.7 +38.9 117.9	38 43.1 +38.5 117.1
2°	42 23.5 +39.7 119.6	41 38.6 +39.3 118.7	40 53.3 +38.8 117.8	40 07.6 +38.4 116.9	39 21.6 +38.0 116.1
3°	43 03.2 +39.1 118.5	42 17.9 +38.6 117.7	41 32.1 +38.3 116.8	40 46.0 +37.9 115.9	39 59.6 +37.5 115.1
4°	43 42.3 +38.6 117.5	42 56.5 +38.2 116.6	42 10.4 +37.7 115.8	41 23.9 +37.3 114.9	40 37.1 +36.9 114.1
5°	44 20.9 +37.9 116.4	43 34.7 +37.5 115.6	42 48.1 +37.1 114.7	42 01.2 +36.8 113.9	41 14.0 +36.4 113.0
6°	44 58.8 +37.3 115.3	44 12.2 +36.9 114.5	43 25.2 +36.5 113.6	42 38.0 +36.1 112.8	41 50.4 +35.8 112.0
7°	45 36.1 +36.7 114.2	44 49.1 +36.2 113.4	44 01.7 +35.9 112.5	43 14.1 +35.5 111.7	42 26.2 +35.1 110.9
8°	46 12.8 +35.9 113.1	45 25.3 +35.6 112.2	44 37.6 +35.2 111.4	43 49.6 +34.8 110.6	43 01.3 +34.5 109.8
9°	46 48.7 +35.3 111.9	46 00.9 +34.8 111.1	45 12.8 +34.4 110.3	44 24.4 +34.1 109.5	43 35.8 +33.8 108.7
10°	47 24.0 +34.4 110.7	46 35.7 +34.1 109.9	45 47.2 +33.8 109.1	44 58.5 +33.5 108.3	44 09.6 +33.1 107.5
11°	47 58.4 +33.7 109.5	47 09.8 +33.4 108.7	46 21.0 +33.0 107.9	45 32.0 +32.6 107.1	44 42.7 +32.4 106.4
12°	48 32.1 +32.9 108.3	47 43.2 +32.5 107.5	46 54.0 +32.2 106.7	46 04.6 +31.9 105.9	45 15.1 +31.6 105.2
13°	49 05.0 +32.0 107.0	48 15.7 +31.7 106.2	47 26.2 +31.4 105.4	46 36.5 +31.2 104.7	45 46.7 +30.9 104.0
14°	49 37.0 +31.1 105.7	48 47.4 +30.8 104.9	47 57.6 +30.5 104.2	47 07.7 +30.2 103.4	46 17.6 +30.0 102.7
15°	50 08.1 +30.2 104.4	49 18.2 +29.9 103.6	48 28.1 +29.7 102.9	47 37.9 +29.4 102.2	46 47.6 +29.2 101.5
16°	50 38.3 +29.2 103.0	49 48.1 +29.0 102.3	48 57.8 +28.7 101.6	48 07.3 +28.6 100.9	47 16.8 +28.3 100.2
17°	51 07.5 +28.2 101.6	50 17.1 +28.0 100.9	49 26.5 +27.8 100.2	48 35.9 +27.5 99.5	47 45.1 +27.4 98.9
18°	51 35.7 +27.2 100.2	50 45.1 +27.0 99.5	49 54.3 +26.8 98.9	49 03.4 +26.7 98.2	48 12.5 +26.5 97.5
19°	52 02.9 +26.1 98.8	51 12.1 +25.9 98.1	50 21.1 +25.8 97.5	49 30.1 +25.6 96.8	48 39.0 +25.5 96.2
20°	52 29.0 +25.0 97.3	51 38.0 +24.8 96.7	50 46.9 +24.7 96.0	49 55.7 +24.6 95.4	49 04.5 +24.5 94.8
21°	52 54.0 +23.9 95.8	52 02.8 +23.8 95.2	51 11.6 +23.6 94.6	50 20.3 +23.6 94.0	49 29.0 +23.5 93.4
22°	53 17.9 +22.6 94.3	52 26.6 +22.5 93.7	51 35.2 +22.5 93.1	50 43.9 +22.4 92.5	49 52.5 +22.4 92.0
23°	53 40.5 +21.4 92.7	52 49.1 +21.4 92.2	51 57.7 +21.4 91.6	51 06.3 +21.3 91.1	50 14.9 +21.3 90.5
24°	54 01.9 +20.2 91.2	53 10.5 +20.1 90.6	52 19.1 +20.1 90.1	51 27.6 +20.2 89.6	50 36.2 +20.2 89.1
25°	54 22.1 +18.8 89.5	53 30.6 +18.9 89.0	52 39.2 +18.9 88.5	51 47.8 +19.0 88.1	50 56.4 +19.1 87.6
26°	54 40.9 +17.5 87.9	53 49.5 +17.6 87.4	52 58.1 +17.7 87.0	52 06.8 +17.8 86.5	51 15.5 +17.8 86.1
27°	54 58.4 +16.1 86.2	54 07.1 +16.2 85.8	53 15.8 +16.4 85.4	52 24.6 +16.5 85.0	51 33.3 +16.7 84.6
28°	55 14.5 +14.7 84.6	54 23.3 +14.9 84.2	53 32.2 +15.0 83.8	52 41.1 +15.2 83.4	51 50.0 +15.4 83.0
29°	55 29.2 +13.3 82.9	54 38.2 +13.5 82.5	53 47.2 +13.7 82.1	52 56.3 +13.9 81.8	52 05.4 +14.2 81.4

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°	37 18.5 +38.6 117.3	36 32.6 +38.3 116.4	35 46.4 +37.9 115.7	34 59.9 +37.5 114.9	34 13.1 +37.2 114.1
1°	37 57.1 +38.2 116.3	37 10.9 +37.7 115.5	36 24.3 +37.4 114.7	35 37.4 +37.1 113.9	34 50.3 +36.7 113.2
2°	38 35.3 +37.6 115.3	37 48.6 +37.3 114.5	37 01.7 +36.9 113.7	36 14.5 +36.5 113.0	35 27.0 +36.2 112.2
3°	39 12.9 +37.1 114.3	38 25.9 +36.7 113.5	37 38.6 +36.4 112.7	36 51.0 +36.1 112.0	36 03.2 +35.7 111.2
4°	39 50.0 +36.6 113.3	39 02.6 +36.2 112.5	38 15.0 +35.9 111.7	37 27.1 +35.5 111.0	36 38.9 +35.3 110.2
5°	40 26.6 +36.0 112.2	39 38.8 +35.7 111.5	38 50.9 +35.3 110.7	38 02.6 +35.0 109.9	37 14.2 +34.7 109.2
6°	41 02.6 +35.4 111.2	40 14.5 +35.1 110.4	39 26.2 +34.7 109.7	38 37.6 +34.5 108.9	37 48.9 +34.1 108.2
7°	41 38.0 +34.8 110.1	40 49.6 +34.5 109.3	40 00.9 +34.2 108.6	39 12.1 +33.9 107.9	38 23.0 +33.6 107.1
8°	42 12.8 +34.1 109.0	41 24.1 +33.8 108.3	40 35.1 +33.6 107.5	39 46.0 +33.2 106.8	38 56.6 +33.0 106.1
9°	42 46.9 +33.5 107.9	41 57.9 +33.2 107.2	41 08.7 +32.9 106.4	40 19.2 +32.7 105.7	39 29.6 +32.5 105.0
10°	43 20.4 +32.9 106.8	42 31.1 +32.5 106.0	41 41.6 +32.3 105.3	40 51.9 +32.0 104.6	40 02.1 +31.7 103.9
11°	43 53.3 +32.1 105.6	43 03.6 +31.9 104.9	42 13.9 +31.5 104.2	41 23.9 +31.4 103.5	40 33.8 +31.2 102.8
12°	44 25.4 +31.3 104.4	43 35.5 +31.1 103.7	42 45.4 +30.9 103.0	41 55.3 +30.6 102.3	41 05.0 +30.4 101.7
13°	44 56.7 +30.6 103.2	44 06.6 +30.4 102.5	43 16.3 +30.2 101.8	42 25.9 +30.0 101.2	41 35.4 +29.8 100.5
14°	45 27.3 +29.8 102.0	44 37.0 +29.5 101.3	43 46.5 +29.4 100.7	42 55.9 +29.2 100.0	42 05.2 +29.0 99.3
15°	45 57.1 +29.0 100.8	45 06.5 +28.8 100.1	44 15.9 +28.6 99.4	43 25.1 +28.4 98.8	42 34.2 +28.3 98.2
16°	46 26.1 +28.1 99.5	45 35.3 +28.0 98.8	44 44.5 +27.8 98.2	43 53.5 +27.7 97.6	43 02.5 +27.5 97.0
17°	46 54.2 +27.3 98.2	46 03.3 +27.1 97.6	45 12.3 +26.9 97.0	44 21.2 +26.8 96.3	43 30.0 +26.8 95.7
18°	47 21.5 +26.3 96.9	46 30.4 +26.2 96.3	45 39.2 +26.1 95.7	44 48.0 +26.0 95.1	43 56.8 +25.9 94.5
19°	47 47.8 +25.4 95.6	46 56.6 +25.3 95.0	46 05.3 +25.3 94.4	45 14.0 +25.2 93.8	44 22.7 +25.1 93.2
20°	48 13.2 +24.4 94.2	47 21.9 +24.4 93.6	46 30.6 +24.3 93.1	45 39.2 +24.2 92.5	44 47.8 +24.2 92.0
21°	48 37.6 +23.5 92.8	47 46.3 +23.3 92.3	46 54.9 +23.3 91.7	46 03.4 +23.4 91.2	45 12.0 +23.4 90.7
22°	49 01.1 +22.4 91.4	48 09.6 +22.4 90.9	47 18.2 +22.4 90.4	46 26.8 +22.4 89.9	45 35.4 +22.4 89.4
23°	49 23.5 +21.3 90.0	48 32.0 +21.4 89.5	47 40.6 +21.4 89.0	46 49.2 +21.4 88.5	45 57.8 +21.5 88.0
24°	49 44.8 +20.2 88.6	48 53.4 +20.3 88.1	48 02.0 +20.4 87.6	47 10.6 +20.4 87.1	46 19.3 +20.5 86.7
25°	50 05.0 +19.2 87.1	49 13.7 +19.2 86.7	48 22.4 +19.3 86.2	47 31.0 +19.5 85.8	46 39.8 +19.5 85.3
26°	50 24.2 +18.0 85.6	49 32.9 +18.1 85.2	48 41.7 +18.2 84.8	47 50.5 +18.4 84.4	46 59.3 +18.5 83.9
27°	50 42.2 +16.8 84.1	49 51.0 +17.0 83.7	48 59.9 +17.2 83.3	48 08.9 +17.3 82.9	47 17.8 +17.5 82.5
28°	50 59.0 +15.6 82.6	50 08.0 +15.8 82.2	49 17.1 +16.0 81.9	48 26.2 +16.2 81.5	47 35.3 +16.5 81.1
29°	51 14.6 +14.4 81.1	50 23.8 +14.6 80.7	49 33.1 +14.8 80.4	48 42.4 +15.1 80.0	47 51.8 +15.3 79.7

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Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	33 26.0 +36.9 113.4	32 38.7 +36.5 112.6	31 51.1 +36.2 111.9	31 03.3 +35.9 111.2	30 15.2 +35.6 110.5
1°	34 02.9 +36.3 112.4	33 15.2 +36.0 111.7	32 27.3 +35.7 111.0	31 39.2 +35.4 110.3	30 50.8 +35.2 109.6
2°	34 39.2 +35.9 111.5	33 51.2 +35.6 110.7	33 03.0 +35.3 110.0	32 14.6 +35.0 109.3	31 26.0 +34.7 108.6
3°	35 15.1 +35.5 110.5	34 26.8 +35.2 109.8	33 38.3 +34.9 109.1	32 49.6 +34.6 108.4	32 00.7 +34.3 107.7
4°	35 50.6 +34.9 109.5	35 02.0 +34.6 108.8	34 13.2 +34.3 108.1	33 24.2 +34.1 107.4	32 35.0 +33.9 106.7
5°	36 25.5 +34.4 108.5	35 36.6 +34.2 107.8	34 47.5 +33.9 107.1	33 58.3 +33.6 106.4	33 08.9 +33.4 105.7
6°	36 59.9 +33.9 107.5	36 10.8 +33.6 106.8	35 21.4 +33.4 106.1	34 31.9 +33.1 105.4	33 42.3 +32.9 104.7
7°	37 33.8 +33.3 106.4	36 44.4 +33.1 105.7	35 54.8 +32.8 105.0	35 05.0 +32.7 104.4	34 15.2 +32.4 103.7
8°	38 07.1 +32.8 105.4	37 17.5 +32.5 104.7	36 27.6 +32.3 104.0	35 37.7 +32.0 103.3	34 47.6 +31.8 102.7
9°	38 39.9 +32.2 104.3	37 50.0 +31.9 103.6	36 59.9 +31.8 103.0	36 09.7 +31.6 102.3	35 19.4 +31.4 101.7
10°	39 12.1 +31.5 103.2	38 21.9 +31.4 102.5	37 31.7 +31.1 101.9	36 41.3 +30.9 101.2	35 50.8 +30.8 100.6
11°	39 43.6 +30.9 102.1	38 53.3 +30.7 101.5	38 02.8 +30.5 100.8	37 12.2 +30.4 100.2	36 21.6 +30.2 99.6
12°	40 14.5 +30.3 101.0	39 24.0 +30.1 100.3	38 33.3 +30.0 99.7	37 42.6 +29.8 99.1	36 51.8 +29.6 98.5
13°	40 44.8 +29.6 99.9	39 54.1 +29.4 99.2	39 03.3 +29.2 98.6	38 12.4 +29.1 98.0	37 21.4 +29.0 97.4
14°	41 14.4 +28.9 98.7	40 23.5 +28.7 98.1	39 32.5 +28.7 97.5	38 41.5 +28.5 96.9	37 50.4 +28.4 96.3
15°	41 43.3 +28.1 97.5	40 52.2 +28.1 96.9	40 01.2 +27.9 96.3	39 10.0 +27.8 95.7	38 18.8 +27.8 95.2
16°	42 11.4 +27.4 96.4	41 20.3 +27.3 95.8	40 29.1 +27.2 95.2	39 37.8 +27.2 94.6	38 46.6 +27.0 94.0
17°	42 38.8 +26.7 95.1	41 47.6 +26.6 94.6	40 56.3 +26.5 94.0	40 05.0 +26.4 93.4	39 13.6 +26.4 92.9
18°	43 05.5 +25.8 93.9	42 14.2 +25.8 93.4	41 22.8 +25.8 92.8	40 31.4 +25.7 92.3	39 40.0 +25.7 91.7
19°	43 31.3 +25.1 92.7	42 40.0 +25.0 92.1	41 48.6 +24.9 91.6	40 57.1 +25.0 91.1	40 05.7 +25.0 90.5
20°	43 56.4 +24.2 91.4	43 05.0 +24.2 90.9	42 13.5 +24.2 90.4	41 22.1 +24.2 89.9	40 30.7 +24.2 89.3
21°	44 20.6 +23.3 90.2	43 29.2 +23.3 89.6	42 37.7 +23.4 89.1	41 46.3 +23.4 88.6	40 54.9 +23.5 88.1
22°	44 43.9 +22.5 88.9	43 52.5 +22.5 88.4	43 01.1 +22.6 87.9	42 09.7 +22.6 87.4	41 18.4 +22.6 86.9
23°	45 06.4 +21.5 87.5	44 15.0 +21.6 87.1	43 23.7 +21.6 86.6	42 32.3 +21.8 86.1	41 41.0 +21.9 85.7
24°	45 27.9 +20.6 86.2	44 36.6 +20.7 85.8	43 45.3 +20.9 85.3	42 54.1 +20.9 84.9	42 02.9 +21.0 84.4
25°	45 48.5 +19.7 84.9	44 57.3 +19.8 84.4	44 06.2 +19.9 84.0	43 15.0 +20.1 83.6	42 23.9 +20.2 83.2
26°	46 08.2 +18.7 83.5	45 17.1 +18.8 83.1	44 26.1 +19.0 82.7	43 35.1 +19.1 82.3	42 44.1 +19.4 81.9
27°	46 26.9 +17.6 82.1	45 35.9 +17.9 81.8	44 45.1 +18.0 81.4	43 54.2 +18.3 81.0	43 03.5 +18.4 80.6
28°	46 44.5 +16.7 80.8	45 53.8 +16.9 80.4	45 03.1 +17.1 80.0	44 12.5 +17.3 79.7	43 21.9 +17.6 79.3
29°	47 01.2 +15.6 79.3	46 10.7 +15.8 79.0	45 20.2 +16.1 78.7	44 29.8 +16.4 78.3	43 39.5 +16.6 78.0

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°	29 26.9 +35.3 109.8	28 38.5 +35.0 109.2	27 49.8 +34.7 108.5	27 00.9 +34.5 107.8	26 11.9 +34.2 107.2
1°	30 02.2 +34.9 108.9	29 13.5 +34.6 108.2	28 24.5 +34.4 107.6	27 35.4 +34.2 106.9	26 46.1 +34.0 106.3
2°	30 37.1 +34.5 108.0	29 48.1 +34.3 107.3	28 58.9 +34.0 106.6	28 09.6 +33.7 106.0	27 20.1 +33.5 105.4
3°	31 11.6 +34.1 107.0	30 22.4 +33.8 106.3	29 32.9 +33.6 105.7	28 43.3 +33.4 105.0	27 53.6 +33.1 104.4
4°	31 45.7 +33.6 106.0	30 56.2 +33.3 105.4	30 06.5 +33.2 104.7	29 16.7 +32.9 104.1	28 26.7 +32.8 103.5
5°	32 19.3 +33.1 105.1	31 29.5 +33.0 104.4	30 39.7 +32.7 103.8	29 49.6 +32.6 103.1	28 59.5 +32.3 102.5
6°	32 52.4 +32.7 104.1	32 02.5 +32.5 103.4	31 12.4 +32.3 102.8	30 22.2 +32.1 102.2	29 31.8 +32.0 101.6
7°	33 25.1 +32.2 103.1	32 35.0 +32.0 102.4	31 44.7 +31.8 101.8	30 54.3 +31.6 101.2	30 03.8 +31.5 100.6
8°	33 57.3 +31.7 102.1	33 07.0 +31.5 101.4	32 16.5 +31.3 100.8	31 25.9 +31.2 100.2	30 35.3 +31.0 99.6
9°	34 29.0 +31.2 101.0	33 38.5 +31.0 100.4	32 47.8 +30.9 99.8	31 57.1 +30.7 99.2	31 06.3 +30.6 98.6
10°	35 00.2 +30.6 100.0	34 09.5 +30.5 99.4	33 18.7 +30.3 98.8	32 27.8 +30.2 98.2	31 36.9 +30.1 97.6
11°	35 30.8 +30.1 98.9	34 40.0 +29.9 98.3	33 49.0 +29.8 97.7	32 58.0 +29.7 97.1	32 07.0 +29.6 96.6
12°	36 00.9 +29.5 97.9	35 09.9 +29.4 97.3	34 18.8 +29.3 96.7	33 27.7 +29.2 96.1	32 36.6 +29.1 95.5
13°	36 30.4 +28.9 96.8	35 39.3 +28.8 96.2	34 48.1 +28.7 95.6	33 56.9 +28.6 95.1	33 05.7 +28.5 94.5
14°	36 59.3 +28.3 95.7	36 08.1 +28.2 95.1	35 16.8 +28.2 94.6	34 25.5 +28.1 94.0	33 34.2 +28.0 93.4
15°	37 27.6 +27.6 94.6	36 36.3 +27.6 94.0	35 45.0 +27.5 93.5	34 53.6 +27.5 92.9	34 02.2 +27.5 92.4
16°	37 55.2 +27.1 93.5	37 03.9 +27.0 92.9	36 12.5 +27.0 92.4	35 21.1 +26.9 91.8	34 29.7 +26.9 91.3
17°	38 22.3 +26.3 92.3	37 30.9 +26.3 91.8	36 39.5 +26.3 91.3	35 48.0 +26.3 90.7	34 56.6 +26.3 90.2
18°	38 48.6 +25.7 91.2	37 57.2 +25.7 90.7	37 05.8 +25.6 90.1	36 14.3 +25.7 89.6	35 22.9 +25.7 89.1
19°	39 14.3 +25.0 90.0	38 22.9 +24.9 89.5	37 31.4 +25.0 89.0	36 40.0 +25.1 88.5	35 48.6 +25.1 88.0
20°	39 39.3 +24.2 88.8	38 47.8 +24.3 88.3	37 56.4 +24.4 87.9	37 05.1 +24.3 87.4	36 13.7 +24.4 86.9
21°	40 03.5 +23.5 87.6	39 12.1 +23.6 87.2	38 20.8 +23.6 86.7	37 29.4 +23.8 86.2	36 38.1 +23.8 85.7
22°	40 27.0 +22.8 86.4	39 35.7 +22.8 86.0	38 44.4 +22.9 85.5	37 53.2 +23.0 85.1	37 01.9 +23.2 84.6
23°	40 49.8 +21.9 85.2	39 58.5 +22.1 84.8	39 07.3 +22.2 84.3	38 16.2 +22.3 83.9	37 25.1 +22.4 83.4
24°	41 11.7 +21.2 84.0	40 20.6 +21.3 83.6	39 29.5 +21.5 83.1	38 38.5 +21.6 82.7	37 47.5 +21.7 82.3
25°	41 32.9 +20.4 82.7	40 41.9 +20.5 82.3	39 51.0 +20.6 81.9	39 00.1 +20.8 81.5	38 09.2 +21.1 81.1
26°	41 53.3 +19.5 81.5	41 02.4 +19.7 81.1	40 11.6 +19.9 80.7	39 20.9 +20.1 80.3	38 30.3 +20.2 79.9
27°	42 12.8 +18.6 80.2	41 22.1 +18.9 79.8	40 31.5 +19.1 79.4	39 41.0 +19.3 79.1	38 50.5 +19.6 78.7
28°	42 31.4 +17.8 78.9	41 41.0 +18.0 78.6	40 50.6 +18.3 78.2	40 00.3 +18.5 77.8	39 10.1 +18.7 77.5
29°	42 49.2 +16.9 77.6	41 59.0 +17.2 77.3	41 08.9 +17.4 76.9	40 18.8 +17.7 76.6	39 28.8 +18.0 76.2

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	25 22.7 +34.0 106.6	24 33.3 +33.8 105.9	23 43.8 +33.6 105.3	22 54.1 +33.4 104.7	22 04.3 +33.2 104.1
1°	25 56.7 +33.7 105.6	25 07.1 +33.5 105.0	24 17.4 +33.2 104.4	23 27.5 +33.1 103.8	22 37.5 +32.9 103.2
2°	26 30.4 +33.3 104.7	25 40.6 +33.1 104.1	24 50.6 +33.0 103.5	24 00.6 +32.7 102.9	23 10.4 +32.5 102.3
3°	27 03.7 +33.0 103.8	26 13.7 +32.8 103.2	25 23.6 +32.5 102.6	24 33.3 +32.4 102.0	23 42.9 +32.3 101.4
4°	27 36.7 +32.5 102.9	26 46.5 +32.4 102.2	25 56.1 +32.3 101.6	25 05.7 +32.1 101.0	24 15.2 +31.9 100.5
5°	28 09.2 +32.2 101.9	27 18.9 +32.0 101.3	26 28.4 +31.8 100.7	25 37.8 +31.7 100.1	24 47.1 +31.6 99.5
6°	28 41.4 +31.8 100.9	27 50.9 +31.6 100.3	27 00.2 +31.5 99.7	26 09.5 +31.3 99.2	25 18.7 +31.2 98.6
7°	29 13.2 +31.3 100.0	28 22.5 +31.2 99.4	27 31.7 +31.1 98.8	26 40.8 +31.0 98.2	25 49.9 +30.8 97.6
8°	29 44.5 +30.9 99.0	28 53.7 +30.7 98.4	28 02.8 +30.6 97.8	27 11.8 +30.5 97.3	26 20.7 +30.5 96.7
9°	30 15.4 +30.5 98.0	29 24.4 +30.4 97.4	28 33.4 +30.2 96.8	27 42.3 +30.2 96.3	26 51.2 +30.0 95.7
10°	30 45.9 +29.9 97.0	29 54.8 +29.9 96.4	29 03.6 +29.8 95.9	28 12.5 +29.7 95.3	27 21.2 +29.7 94.7
11°	31 15.8 +29.6 96.0	30 24.7 +29.4 95.4	29 33.4 +29.4 94.9	28 42.2 +29.3 94.3	27 50.9 +29.2 93.8
12°	31 45.4 +29.0 95.0	30 54.1 +28.9 94.4	30 02.8 +28.9 93.9	29 11.5 +28.8 93.3	28 20.1 +28.8 92.8
13°	32 14.4 +28.5 93.9	31 23.0 +28.5 93.4	30 31.7 +28.4 92.8	29 40.3 +28.4 92.3	28 48.9 +28.4 91.8
14°	32 42.9 +27.9 92.9	31 51.5 +27.9 92.4	31 00.1 +27.9 91.8	30 08.7 +27.9 91.3	29 17.3 +27.9 90.8
15°	33 10.8 +27.5 91.8	32 19.4 +27.5 91.3	31 28.0 +27.4 90.8	30 36.6 +27.4 90.3	29 45.2 +27.4 89.8
16°	33 38.3 +26.9 90.8	32 46.9 +26.8 90.3	31 55.4 +26.9 89.7	31 04.0 +26.9 89.2	30 12.6 +26.9 88.7
17°	34 05.2 +26.3 89.7	33 13.7 +26.4 89.2	32 22.3 +26.4 88.7	31 30.9 +26.4 88.2	30 39.5 +26.5 88.2
18°	34 31.5 +25.7 88.6	33 40.1 +25.7 88.1	32 48.7 +25.8 87.6	31 57.3 +25.9 87.1	31 06.0 +25.9 86.6
19°	34 57.2 +25.2 87.5	34 05.8 +25.2 87.0	33 14.5 +25.3 86.5	32 23.2 +25.3 86.1	31 31.9 +25.4 85.6
20°	35 22.4 +24.5 86.4	34 31.0 +24.6 85.9	33 39.8 +24.6 85.5	32 48.5 +24.8 85.0	31 57.3 +24.9 84.5
21°	35 46.9 +23.9 85.3	34 55.6 +24.0 84.8	34 04.4 +24.1 84.4	33 13.3 +24.2 83.9	32 22.2 +24.3 83.4
22°	36 10.8 +23.2 84.1	35 19.6 +23.4 83.7	34 28.5 +23.5 83.2	33 37.5 +23.6 82.8	32 46.5 +23.7 82.4
23°	36 34.0 +22.6 83.0	35 43.0 +22.7 82.6	34 52.0 +22.9 82.1	34 01.1 +23.0 81.7	33 10.2 +23.2 81.3
24°	36 56.6 +21.9 81.8	36 05.7 +22.0 81.4	35 14.9 +22.2 81.0	34 24.1 +22.4 80.6	33 33.4 +22.6 80.2
25°	37 18.5 +21.2 80.7	36 27.7 +21.4 80.3	35 37.1 +21.5 79.9	34 46.5 +21.7 79.5	33 56.0 +21.9 79.0
26°	37 39.7 +20.4 79.5	36 49.1 +20.7 79.1	35 58.6 +21.0 78.7	35 08.2 +21.2 78.3	34 17.9 +21.4 77.9
27°	38 00.1 +19.8 78.3	37 09.8 +20.0 77.9	36 19.6 +20.2 77.5	35 29.4 +20.4 77.2	34 39.3 +20.7 76.8
28°	38 19.9 +19.0 77.1	37 29.8 +19.3 76.7	36 39.8 +19.5 76.4	35 49.8 +19.8 76.0	35 00.0 +20.0 75.6
29°	38 38.9 +18.3 75.9	37 49.1 +18.5 75.5	36 59.3 +18.8 75.2	36 09.6 +19.1 74.8	35 20.0 +19.4 74.5

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	21 14.3 +33.0 103.5	20 24.3 +32.8 102.9	19 34.1 +32.6 102.3	18 43.8 +32.5 101.8	17 53.4 +32.3 101.2
1°	21 47.3 +32.8 102.6	20 57.1 +32.5 102.0	20 06.7 +32.4 101.4	19 16.3 +32.2 100.9	18 25.7 +32.1 100.3
2°	22 20.1 +32.4 101.7	21 29.6 +32.3 101.1	20 39.1 +32.1 100.5	19 48.5 +32.0 100.0	18 57.8 +31.9 99.4
3°	22 52.5 +32.1 100.8	22 01.9 +32.0 100.2	21 11.2 +31.9 99.6	20 20.5 +31.7 99.1	19 29.7 +31.5 98.5
4°	23 24.6 +31.7 99.9	22 33.9 +31.6 99.3	21 43.1 +31.5 98.7	20 52.2 +31.4 98.2	20 01.2 +31.3 97.6
5°	23 56.3 +31.5 98.9	23 05.5 +31.3 98.4	22 14.6 +31.2 97.8	21 23.6 +31.1 97.2	20 32.5 +31.1 96.7
6°	24 27.8 +31.1 98.0	23 36.8 +31.0 97.4	22 45.8 +30.9 96.9	21 54.7 +30.8 96.3	21 03.6 +30.7 95.8
7°	24 58.9 +30.7 97.1	24 07.8 +30.6 96.5	23 16.7 +30.5 96.0	22 25.5 +30.5 95.4	21 34.3 +30.4 94.9
8°	25 29.6 +30.4 96.1	24 38.4 +30.3 95.6	23 47.2 +30.2 95.0	22 56.0 +30.1 94.5	22 04.7 +30.1 93.9
9°	26 00.0 +30.0 95.2	25 08.7 +29.9 94.6	24 17.4 +29.9 94.1	23 26.1 +29.8 93.5	22 34.8 +29.8 93.0
10°	26 30.0 +29.5 94.2	25 38.6 +29.6 93.7	24 47.3 +29.5 93.1	23 55.9 +29.5 92.6	23 04.6 +29.4 92.1
11°	26 59.5 +29.2 93.2	26 08.2 +29.1 92.7	25 16.8 +29.1 92.2	24 25.4 +29.1 91.6	23 34.0 +29.1 91.1
12°	27 28.7 +28.8 92.2	26 37.3 +28.8 91.7	25 45.9 +28.7 91.2	24 54.5 +28.7 90.7	24 03.1 +28.7 90.1
13°	27 57.5 +28.3 91.2	27 06.1 +28.3 90.7	26 14.6 +28.4 90.2	25 23.2 +28.4 89.7	24 31.8 +28.3 89.2
14°	28 25.8 +27.9 90.2	27 34.4 +27.9 89.7	26 43.0 +27.9 89.2	25 51.6 +27.9 88.7	25 00.1 +28.0 88.2
15°	28 53.7 +27.5 89.2	28 02.3 +27.5 88.7	27 10.9 +27.5 88.2	26 19.5 +27.5 87.7	25 28.1 +27.6 87.2
16°	29 21.2 +26.9 88.2	28 29.8 +27.0 87.7	27 38.4 +27.0 87.2	26 47.0 +27.1 86.7	25 55.7 +27.2 86.2
17°	29 48.1 +26.5 87.2	28 56.8 +26.5 86.7	28 05.4 +26.7 86.2	27 14.1 +26.7 85.7	26 22.9 +26.7 85.3
18°	30 14.6 +26.0 86.2	29 23.3 +26.1 85.7	28 32.1 +26.1 85.2	27 40.8 +26.3 84.7	26 49.6 +26.4 84.3
19°	30 40.6 +25.5 85.1	29 49.4 +25.6 84.6	28 58.2 +25.7 84.2	28 07.1 +25.8 83.7	27 16.0 +25.9 83.2
20°	31 06.1 +25.0 84.1	30 15.0 +25.1 83.6	29 23.9 +25.2 83.1	28 32.9 +25.3 82.7	27 41.9 +25.4 82.2
21°	31 31.1 +24.4 83.0	30 40.1 +24.5 82.5	29 49.1 +24.7 82.1	28 58.2 +24.8 81.6	28 07.3 +25.0 81.2
22°	31 55.5 +23.9 81.9	31 04.6 +24.1 81.5	30 13.8 +24.2 81.0	29 23.0 +24.4 80.6	28 32.3 +24.5 80.2
23°	32 19.4 +23.3 80.8	31 28.7 +23.5 80.4	30 38.0 +23.7 80.0	29 47.4 +23.8 79.6	28 56.8 +24.1 79.1
24°	32 42.7 +22.8 79.7	31 52.2 +22.9 79.3	31 01.7 +23.1 78.9	30 11.2 +23.4 78.5	29 20.9 +23.5 78.1
25°	33 05.5 +22.2 78.6	32 15.1 +22.4 78.2	31 24.8 +22.6 77.8	30 34.6 +22.8 77.4	29 44.4 +23.0 77.0
26°	33 27.7 +21.5 77.5	32 37.5 +21.8 77.1	31 47.4 +22.0 76.7	30 57.4 +22.2 76.4	30 07.4 +22.5 76.0
27°	33 49.2 +21.0 76.4	32 59.3 +21.2 76.0	32 09.4 +21.5 75.6	31 19.6 +21.7 75.3	30 29.9 +22.0 74.9
28°	34 10.2 +20.3 75.3	33 20.5 +20.6 74.9	32 30.9 +20.8 74.5	31 41.3 +21.2 74.2	30 51.9 +21.4 73.8
29°	34 30.5 +19.7 74.1	33 41.1 +20.0 73.8	32 51.7 +20.3 73.4	32 02.5 +20.6 73.1	31 13.3 +20.9 72.7

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	17 02.9 +32.2 100.6	16 12.3 +32.0 100.1	15 21.6 +31.9 99.5	14 30.8 +31.8 98.9	13 40.0 +31.7 98.4
1°	17 35.1 +31.9 99.7	16 44.3 +31.9 99.2	15 53.5 +31.8 98.6	15 02.6 +31.7 98.1	14 11.7 +31.5 97.5
2°	18 07.0 +31.8 98.8	17 16.2 +31.6 98.3	16 25.3 +31.5 97.7	15 34.3 +31.4 97.2	14 43.2 +31.3 96.6
3°	18 38.8 +31.4 98.0	17 47.8 +31.4 97.4	16 56.8 +31.2 96.8	16 05.7 +31.2 96.3	15 14.5 +31.1 95.8
4°	19 10.2 +31.2 97.1	18 19.2 +31.1 96.5	17 28.0 +31.1 96.0	16 36.9 +30.9 95.4	15 45.6 +30.9 94.9
5°	19 41.4 +31.0 96.1	18 50.3 +30.8 95.6	17 59.1 +30.8 95.1	17 07.8 +30.7 94.5	16 16.5 +30.7 94.0
6°	20 12.4 +30.6 95.2	19 21.1 +30.6 94.7	18 29.9 +30.5 94.2	17 38.5 +30.5 93.6	16 47.2 +30.4 93.1
7°	20 43.0 +30.4 94.3	19 51.7 +30.3 93.8	19 00.4 +30.2 93.2	18 09.0 +30.2 92.7	17 17.6 +30.2 92.2
8°	21 13.4 +30.0 93.4	20 22.0 +30.0 92.9	19 30.6 +30.0 92.3	18 39.2 +30.0 91.8	17 47.8 +30.0 91.3
9°	21 43.4 +29.7 92.5	20 52.0 +29.7 91.9	20 00.6 +29.7 91.4	19 09.2 +29.7 90.9	18 17.8 +29.6 90.4
10°	22 13.1 +29.5 91.5	21 21.7 +29.4 91.0	20 30.3 +29.4 90.5	19 38.9 +29.4 90.0	18 47.4 +29.5 89.5
11°	22 42.6 +29.0 90.6	21 51.1 +29.1 90.1	20 59.7 +29.1 89.6	20 08.3 +29.1 89.0	19 16.9 +29.1 88.5
12°	23 11.6 +28.8 89.6	22 20.2 +28.8 89.1	21 28.8 +28.8 88.6	20 37.4 +28.8 88.1	19 46.0 +28.8 87.6
13°	23 40.4 +28.3 88.7	22 49.0 +28.4 88.2	21 57.6 +28.4 87.7	21 06.2 +28.5 87.2	20 14.8 +28.6 86.7
14°	24 08.7 +28.1 87.7	23 17.4 +28.0 87.2	22 26.0 +28.1 86.7	21 34.7 +28.1 86.2	20 43.4 +28.2 85.7
15°	24 36.8 +27.6 86.7	23 45.4 +27.7 86.2	22 54.1 +27.8 85.8	22 02.8 +27.9 85.3	21 11.6 +27.9 84.8
16°	25 04.4 +27.2 85.8	24 13.1 +27.3 85.3	23 21.9 +27.4 84.8	22 30.7 +27.5 84.3	21 39.5 +27.6 83.8
17°	25 31.6 +26.9 84.8	24 40.4 +27.0 84.3	23 49.3 +27.0 83.8	22 58.2 +27.1 83.4	22 07.1 +27.3 82.9
18°	25 58.5 +26.4 83.8	25 07.4 +26.5 83.3	24 16.3 +26.7 82.8	23 25.3 +26.8 82.4	22 34.4 +26.9 81.9
19°	26 24.9 +26.0 82.8	25 33.9 +26.2 82.3	24 43.0 +26.3 81.9	23 52.1 +26.4 81.4	23 01.3 +26.5 80.9
20°	26 50.9 +25.6 81.8	26 00.1 +25.7 81.3	25 09.3 +25.8 80.9	24 18.5 +26.0 80.4	23 27.8 +26.2 80.0
21°	27 16.5 +25.2 80.8	26 25.8 +25.3 80.3	25 35.1 +25.5 79.9	24 44.5 +25.7 79.4	23 54.0 +25.8 79.0
22°	27 41.7 +24.7 79.7	26 51.1 +24.9 79.3	26 00.6 +25.0 78.9	25 10.2 +25.2 78.4	24 19.8 +25.5 78.0
23°	28 06.4 +24.2 78.7	27 16.0 +24.4 78.3	26 25.6 +24.7 77.9	25 35.4 +24.8 77.4	24 45.3 +25.0 77.0
24°	28 30.6 +23.7 77.7	27 40.4 +23.9 77.2	26 50.3 +24.1 76.8	26 00.2 +24.4 76.4	25 10.3 +24.6 76.0
25°	28 54.3 +23.3 76.6	28 04.3 +23.5 76.2	27 14.4 +23.7 75.8	26 24.6 +24.0 75.4	25 34.9 +24.2 75.0
26°	29 17.6 +22.7 75.6	28 27.8 +23.0 75.2	27 38.1 +23.3 74.8	26 48.6 +23.5 74.4	25 59.1 +23.8 74.0
27°	29 40.3 +22.3 74.5	28 50.8 +22.5 74.1	28 01.4 +22.8 73.7	27 12.1 +23.0 73.3	26 22.9 +23.3 73.0
28°	30 02.6 +21.7 73.4	29 13.3 +22.0 73.1	28 24.2 +22.3 72.7	27 35.1 +22.6 72.3	26 46.2 +22.9 71.9
29°	30 24.3 +21.2 72.4	29 35.3 +21.5 72.0	28 46.5 +21.8 71.6	27 57.7 +22.1 71.3	27 09.1 +22.4 70.9

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°	12 49.1 +31.6 97.9	11 58.1 +31.5 97.3	11 07.0 +31.5 96.8	10 15.9 +31.4 96.2	9 24.8 +31.3 95.7
1°	13 20.7 +31.4 97.0	12 29.6 +31.3 96.4	11 38.5 +31.2 95.9	10 47.3 +31.2 95.4	9 56.1 +31.1 94.9
2°	13 52.1 +31.2 96.1	13 00.9 +31.2 95.6	12 09.7 +31.1 95.0	11 18.5 +31.0 94.5	10 27.2 +31.0 94.0
3°	14 23.3 +31.1 95.2	13 32.1 +31.0 94.7	12 40.8 +30.9 94.2	11 49.5 +30.9 93.6	10 58.2 +30.8 93.1
4°	14 54.4 +30.8 94.3	14 03.1 +30.8 93.8	13 11.7 +30.8 93.3	12 20.4 +30.7 92.8	11 29.0 +30.7 92.2
5°	15 25.2 +30.6 93.5	14 33.9 +30.5 92.9	13 42.5 +30.5 92.4	12 51.1 +30.5 91.9	11 59.7 +30.5 91.4
6°	15 55.8 +30.4 92.6	15 04.4 +30.4 92.0	14 13.0 +30.4 91.5	13 21.6 +30.4 91.0	12 30.2 +30.3 90.5
7°	16 26.2 +30.2 91.7	15 34.8 +30.2 91.1	14 43.4 +30.1 90.6	13 52.0 +30.1 90.1	13 00.5 +30.2 89.6
8°	16 56.4 +29.9 90.8	16 05.0 +29.9 90.2	15 13.5 +30.0 89.7	14 22.1 +30.0 89.2	13 30.7 +30.0 88.7
9°	17 26.3 +29.7 89.9	16 34.9 +29.7 89.3	15 43.5 +29.7 88.8	14 52.1 +29.7 88.3	14 00.7 +29.7 87.8
10°	17 56.0 +29.4 88.9	17 04.6 +29.5 88.4	16 13.2 +29.5 87.9	15 21.8 +29.5 87.4	14 30.4 +29.6 86.9
11°	18 25.4 +29.2 88.0	17 34.1 +29.2 87.5	16 42.7 +29.2 87.0	15 51.3 +29.3 86.5	15 00.0 +29.4 86.0
12°	18 54.6 +28.9 87.1	18 03.3 +28.9 86.6	17 11.9 +29.0 86.1	16 20.6 +29.1 85.6	15 29.4 +29.1 85.1
13°	19 23.5 +28.6 86.2	18 32.2 +28.7 85.7	17 40.9 +28.8 85.2	16 49.7 +28.8 84.7	15 58.5 +28.9 84.2
14°	19 52.1 +28.3 85.2	19 00.9 +28.4 84.8	18 09.7 +28.5 84.3	17 18.5 +28.6 83.8	16 27.4 +28.7 83.3
15°	20 20.4 +28.0 84.3	19 29.3 +28.1 83.8	18 38.2 +28.2 83.3	17 47.1 +28.3 82.9	16 56.1 +28.4 82.4
16°	20 48.4 +27.7 83.4	19 57.4 +27.8 82.9	19 06.4 +27.9 82.4	18 15.4 +28.0 81.9	17 24.5 +28.2 81.5
17°	21 16.1 +27.4 82.4	20 25.2 +27.5 81.9	19 34.3 +27.6 81.5	18 43.4 +27.8 81.0	17 52.7 +27.9 80.5
18°	21 43.5 +27.0 81.5	20 52.7 +27.1 81.0	20 01.9 +27.3 80.5	19 11.2 +27.5 80.1	18 20.6 +27.6 79.6
19°	22 10.5 +26.7 80.5	21 19.8 +26.9 80.0	20 29.2 +27.0 79.6	19 38.7 +27.2 79.1	18 48.2 +27.4 78.7
20°	22 37.2 +26.4 79.5	21 46.7 +26.5 79.1	20 56.2 +26.7 78.6	20 05.9 +26.8 78.2	19 15.6 +27.0 77.7
21°	23 03.6 +26.0 78.5	22 13.2 +26.2 78.1	21 22.9 +26.4 77.7	20 32.7 +26.6 77.2	19 42.6 +26.8 76.8
22°	23 29.6 +25.6 77.6	22 39.4 +25.8 77.1	21 49.3 +26.0 76.7	20 59.3 +26.2 76.3	20 09.4 +26.4 75.8
23°	23 55.2 +25.2 76.6	23 05.2 +25.5 76.1	22 15.3 +25.7 75.7	21 25.5 +25.9 75.3	20 35.8 +26.2 74.9
24°	24 20.4 +24.9 75.6	23 30.7 +25.0 75.2	22 41.0 +25.3 74.7	21 51.4 +25.6 74.3	21 02.0 +25.8 73.9
25°	24 45.3 +24.4 74.6	23 55.7 +24.7 74.2	23 06.3 +25.0 73.8	22 17.0 +25.2 73.3	21 27.8 +25.4 72.9
26°	25 09.7 +24.0 73.6	24 20.4 +24.3 73.2	23 31.3 +24.5 72.8	22 42.2 +24.8 72.4	21 53.2 +25.2 72.0
27°	25 33.7 +23.7 72.6	24 44.7 +23.9 72.2	23 55.8 +24.2 71.8	23 07.0 +24.5 71.4	22 18.4 +24.7 71.0
28°	25 57.4 +23.1 71.5	25 08.6 +23.5 71.2	24 20.0 +23.8 70.8	23 31.5 +24.1 70.4	22 43.1 +24.4 70.0
29°	26 20.5 +22.8 70.5	25 32.1 +23.1 70.1	24 43.8 +23.4 69.8	23 55.6 +23.7 69.4	23 07.5 +24.0 69.0

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 33.6 +31.2 95.2	7 42.4 +31.1 94.7	6 51.1 +31.1 94.1	5 59.8 +31.0 93.6	5 08.4 +31.0 93.1
1°	9 04.8 +31.1 94.3	8 13.5 +31.0 93.8	7 22.2 +30.9 93.3	6 30.8 +30.9 92.8	5 39.4 +30.9 92.2
2°	9 35.9 +30.9 93.5	8 44.5 +30.9 92.9	7 53.1 +30.9 92.4	7 01.7 +30.9 91.9	6 10.3 +30.9 91.4
3°	10 06.8 +30.8 92.6	9 15.4 +30.8 92.1	8 24.0 +30.8 91.5	7 32.6 +30.7 91.0	6 41.2 +30.7 90.5
4°	10 37.6 +30.7 91.7	9 46.2 +30.6 91.2	8 54.8 +30.6 90.7	8 03.3 +30.7 90.2	7 11.9 +30.7 89.6
5°	11 08.3 +30.5 90.8	10 16.8 +30.5 90.3	9 25.4 +30.5 89.8	8 34.0 +30.5 89.3	7 42.6 +30.5 88.8
6°	11 38.8 +30.3 90.0	10 47.3 +30.4 89.4	9 55.9 +30.4 88.9	9 04.5 +30.4 88.4	8 13.1 +30.4 87.9
7°	12 09.1 +30.2 89.1	11 17.7 +30.2 88.6	10 26.3 +30.2 88.1	9 34.9 +30.3 87.5	8 43.5 +30.3 87.0
8°	12 39.3 +30.0 88.2	11 47.9 +30.0 87.7	10 56.5 +30.1 87.2	10 05.2 +30.1 86.7	9 13.8 +30.2 86.2
9°	13 09.3 +29.8 87.3	12 17.9 +29.9 86.8	11 26.6 +29.9 86.3	10 35.3 +30.0 85.8	9 44.0 +30.1 85.3
10°	13 39.1 +29.6 86.4	12 47.8 +29.7 85.9	11 56.5 +29.8 85.4	11 05.3 +29.8 84.9	10 14.1 +29.9 84.4
11°	14 08.7 +29.5 85.5	13 17.5 +29.5 85.0	12 26.3 +29.5 84.5	11 35.1 +29.6 84.0	10 44.0 +29.7 83.5
12°	14 38.2 +29.2 84.6	13 47.0 +29.3 84.1	12 55.8 +29.4 83.6	12 04.7 +29.5 83.1	11 13.7 +29.6 82.6
13°	15 07.4 +29.0 83.7	14 16.3 +29.1 83.2	13 25.2 +29.2 82.7	12 34.2 +29.4 82.2	11 43.3 +29.4 81.8
14°	15 36.4 +28.7 82.8	14 45.4 +28.9 82.3	13 54.4 +29.0 81.8	13 03.6 +29.1 81.4	12 12.7 +29.3 80.9
15°	16 05.1 +28.6 81.9	15 14.3 +28.6 81.4	14 23.4 +28.8 80.9	13 32.7 +28.9 80.5	12 42.0 +29.1 80.0
16°	16 33.7 +28.3 81.0	15 42.9 +28.5 80.5	14 52.2 +28.6 80.0	14 01.6 +28.8 79.6	13 11.1 +28.9 79.1
17°	17 02.0 +28.0 80.1	16 11.4 +28.2 79.6	15 20.8 +28.4 79.1	14 30.4 +28.5 78.6	13 40.0 +28.7 78.2
18°	17 30.0 +27.8 79.1	16 39.6 +27.9 78.7	15 49.2 +28.1 78.2	14 58.9 +28.3 77.7	14 08.7 +28.5 77.3
19°	17 57.8 +27.6 78.2	17 07.5 +27.7 77.7	16 17.3 +27.9 77.3	15 27.2 +28.1 76.8	14 37.2 +28.2 76.4
20°	18 25.4 +27.2 77.3	17 35.2 +27.5 76.8	16 45.2 +27.7 76.4	15 55.3 +27.8 75.9	15 05.4 +28.1 75.4
21°	18 52.6 +27.0 76.3	18 02.7 +27.1 75.9	17 12.9 +27.3 75.4	16 23.1 +27.6 75.0	15 33.5 +27.8 74.5
22°	19 19.6 +26.6 75.4	18 29.8 +26.9 74.9	17 40.2 +27.2 74.5	16 50.7 +27.4 74.1	16 01.3 +27.6 73.6
23°	19 46.2 +26.4 74.4	18 56.7 +26.6 74.0	18 07.4 +26.8 73.6	17 18.1 +27.1 73.1	16 28.9 +27.4 72.7
24°	20 12.6 +26.1 73.5	19 23.3 +26.4 73.0	18 34.2 +26.6 72.6	17 45.2 +26.8 72.2	16 56.3 +27.1 71.8
25°	20 38.7 +25.7 72.5	19 49.7 +26.0 72.1	19 00.8 +26.3 71.7	18 12.0 +26.6 71.2	17 23.4 +26.8 70.8
26°	21 04.4 +25.4 71.5	20 15.7 +25.6 71.1	19 27.1 +25.9 70.7	18 38.6 +26.2 70.3	17 50.2 +26.6 69.9
27°	21 29.8 +25.1 70.6	20 41.3 +25.4 70.2	19 53.0 +25.7 69.8	19 04.8 +26.0 69.4	18 16.8 +26.3 68.9
28°	21 54.9 +24.7 69.6	21 06.7 +25.0 69.2	20 18.7 +25.4 68.8	19 30.8 +25.7 68.4	18 43.1 +26.0 68.0
29°	22 19.6 +24.3 68.6	21 31.7 +24.7 68.2	20 44.1 +25.0 67.8	19 56.5 +25.4 67.4	19 09.1 +25.7 67.0

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 17.1 +30.9 92.6	3 25.7 +30.9 92.1	2 34.3 +30.9 91.5	1 42.9 +30.9 91.0	0 51.4 +30.9 90.5
1°	4 48.0 +30.9 91.7	3 56.6 +30.9 91.2	3 05.2 +30.9 90.7	2 13.8 +30.8 90.2	1 22.3 +30.9 89.7
2°	5 18.9 +30.8 90.9	4 27.5 +30.8 90.3	3 36.1 +30.8 89.8	2 44.6 +30.9 89.3	1 53.2 +30.9 88.8
3°	5 49.7 +30.8 90.0	4 58.3 +30.8 89.5	4 06.9 +30.8 89.0	3 15.5 +30.8 88.5	2 24.1 +30.8 87.9
4°	6 20.5 +30.6 89.1	5 29.1 +30.6 88.6	4 37.7 +30.7 88.1	3 46.3 +30.7 87.6	2 54.9 +30.8 87.1
5°	6 51.1 +30.6 88.3	5 59.7 +30.6 87.8	5 08.4 +30.6 87.2	4 17.0 +30.7 86.7	3 25.7 +30.7 86.2
6°	7 21.7 +30.5 87.4	6 30.3 +30.5 86.9	5 39.0 +30.6 86.4	4 47.7 +30.6 85.9	3 56.4 +30.7 85.4
7°	7 52.2 +30.3 86.5	7 00.8 +30.5 86.0	6 09.6 +30.4 85.5	5 18.3 +30.6 85.0	4 27.1 +30.6 84.5
8°	8 22.5 +30.3 85.7	7 31.3 +30.3 85.2	6 40.0 +30.4 84.7	5 48.9 +30.4 84.1	4 57.7 +30.6 83.6
9°	8 52.8 +30.1 84.8	8 01.6 +30.2 84.3	7 10.4 +30.3 83.8	6 19.3 +30.4 83.3	5 28.3 +30.5 82.8
10°	9 22.9 +30.0 83.9	8 31.8 +30.1 83.4	7 40.7 +30.2 82.9	6 49.7 +30.3 82.4	5 58.8 +30.4 81.9
11°	9 52.9 +29.8 83.0	9 01.9 +29.9 82.5	8 10.9 +30.1 82.0	7 20.0 +30.2 81.5	6 29.2 +30.3 81.0
12°	10 22.7 +29.7 82.2	9 31.8 +29.8 81.7	8 41.0 +29.9 81.2	7 50.2 +30.1 80.7	6 59.5 +30.2 80.2
13°	10 52.4 +29.6 81.3	10 01.6 +29.7 80.8	9 10.9 +29.8 80.3	8 20.3 +29.9 79.8	7 29.7 +30.1 79.3
14°	11 22.0 +29.4 80.4	10 31.3 +29.6 79.9	9 40.7 +29.7 79.4	8 50.2 +29.9 78.9	7 59.8 +30.0 78.4
15°	11 51.4 +29.2 79.5	11 00.9 +29.4 79.0	10 10.4 +29.6 78.5	9 20.1 +29.7 78.0	8 29.8 +29.9 77.6
16°	12 20.6 +29.1 78.6	11 30.3 +29.2 78.1	10 40.0 +29.4 77.6	9 49.8 +29.6 77.2	8 59.7 +29.7 76.7
17°	12 49.7 +28.9 77.7	11 59.5 +29.0 77.2	11 09.4 +29.2 76.8	10 19.4 +29.4 76.3	9 29.4 +29.7 75.8
18°	13 18.6 +28.6 76.8	12 28.5 +28.9 76.3	11 38.6 +29.1 75.9	10 48.8 +29.3 75.4	9 59.1 +29.5 74.9
19°	13 47.2 +28.5 75.9	12 57.4 +28.7 75.4	12 07.7 +28.9 75.0	11 18.1 +29.1 74.5	10 28.6 +29.3 74.0
20°	14 15.7 +28.3 75.0	13 26.1 +28.5 74.5	12 36.6 +28.7 74.1	11 47.2 +28.9 73.6	10 57.9 +29.2 73.1
21°	14 44.0 +28.1 74.1	13 54.6 +28.3 73.6	13 05.3 +28.5 73.2	12 16.1 +28.8 72.7	11 27.1 +29.0 72.3
22°	15 12.1 +27.8 73.2	14 22.9 +28.1 72.7	13 33.8 +28.4 72.3	12 44.9 +28.6 71.8	11 56.1 +28.9 71.4
23°	15 39.9 +27.6 72.2	14 51.0 +27.8 71.8	14 02.2 +28.1 71.4	13 13.5 +28.4 70.9	12 25.0 +28.7 70.5
24°	16 07.5 +27.4 71.3	15 18.8 +27.7 70.9	14 30.3 +27.9 70.4	13 41.9 +28.2 70.0	12 53.7 +28.4 69.6
25°	16 34.9 +27.1 70.4	15 46.5 +27.4 70.0	14 58.2 +27.7 69.5	14 10.1 +28.0 69.1	13 22.1 +28.3 68.7
26°	17 02.0 +26.9 69.5	16 13.9 +27.2 69.0	15 25.9 +27.5 68.6	14 38.1 +27.8 68.2	13 50.4 +28.1 67.7
27°	17 28.9 +26.6 68.5	16 41.1 +26.9 68.0	15 53.4 +27.2 67.7	15 05.9 +27.6 67.3	14 18.5 +27.9 66.8
28°	17 55.5 +26.3 67.6	17 08.0 +26.6 67.2	16 20.6 +27.0 66.8	15 33.5 +27.3 66.3	14 46.4 +27.7 65.9
29°	18 21.8 +26.0 66.6	17 34.6 +26.4 66.2	16 47.6 +26.8 65.8	16 00.8 +27.1 65.4	15 14.1 +27.5 65.0

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 +30.9 90.0	-0 51.4 +30.9	-1 42.9 +31.0	-2 34.3 +31.0	-3 25.7 +31.0
1°	0 30.9 +30.9 89.1	-0 20.5 +30.9	-1 11.9 +30.9	-2 03.3 +31.0	-2 54.7 +31.0
2°	1 01.8 +30.9 88.3	0 10.4 +30.9 87.8	-0 41.0 +31.0	-1 32.3 +31.0	-2 23.7 +31.1
3°	1 32.7 +30.8 87.4	0 41.3 +30.9 86.9	-0 10.0 +30.9	-1 01.3 +31.0	-1 52.6 +31.0
4°	2 03.5 +30.9 86.6	1 12.2 +30.9 86.1	0 20.9 +31.0 85.5	-0 30.3 +31.0	-1 21.6 +31.1
5°	2 34.4 +30.8 85.7	1 43.1 +30.9 85.2	0 51.9 +30.9 84.7	0 00.7 +31.0 84.2	-0 50.5 +31.1
6°	3 05.2 +30.7 84.9	2 14.0 +30.8 84.3	1 22.8 +30.9 83.8	0 31.7 +31.0 83.3	-0 19.4 +31.2
7°	3 35.9 +30.7 84.0	2 44.8 +30.8 83.5	1 53.7 +30.9 83.0	1 02.7 +31.0 82.5	0 11.8 +31.1 81.9
8°	4 06.6 +30.7 83.1	3 15.6 +30.7 82.6	2 24.6 +30.9 82.1	1 33.7 +31.0 81.6	0 42.9 +31.1 81.1
9°	4 37.3 +30.6 82.3	3 46.3 +30.7 81.8	2 55.5 +30.8 81.3	2 04.7 +30.9 80.7	1 14.0 +31.0 80.2
10°	5 07.9 +30.5 81.4	4 17.0 +30.7 80.9	3 26.3 +30.8 80.4	2 35.6 +30.9 79.9	1 45.0 +31.1 79.4
11°	5 38.4 +30.4 80.5	4 47.7 +30.6 80.0	3 57.1 +30.7 79.5	3 06.5 +30.9 79.0	2 16.1 +31.0 78.5
12°	6 08.8 +30.4 79.7	5 18.3 +30.5 79.2	4 27.8 +30.7 78.7	3 37.4 +30.8 78.2	2 47.1 +31.0 77.7
13°	6 39.2 +30.3 78.8	5 48.8 +30.4 78.3	4 58.5 +30.6 77.8	4 08.2 +30.8 77.3	3 18.1 +31.0 76.8
14°	7 09.5 +30.1 77.9	6 19.2 +30.4 77.4	5 29.1 +30.5 76.9	4 39.0 +30.7 76.5	3 49.1 +30.9 76.0
15°	7 39.6 +30.1 77.1	6 49.6 +30.2 76.6	5 59.6 +30.4 76.1	5 09.7 +30.6 75.6	4 20.0 +30.8 75.1
16°	8 09.7 +29.9 76.2	7 19.8 +30.1 75.7	6 30.0 +30.4 75.2	5 40.3 +30.6 74.7	4 50.8 +30.8 74.2
17°	8 39.6 +29.9 75.3	7 49.9 +30.1 74.8	7 00.4 +30.2 74.3	6 10.9 +30.5 73.9	5 21.6 +30.7 73.4
18°	9 09.5 +29.7 74.4	8 20.0 +29.9 74.0	7 30.6 +30.2 73.5	6 41.4 +30.4 73.0	5 52.3 +30.6 72.5
19°	9 39.2 +29.5 73.6	8 49.9 +29.8 73.1	8 00.8 +30.0 72.6	7 11.8 +30.2 72.1	6 22.9 +30.5 71.6
20°	10 08.7 +29.5 72.7	9 19.7 +29.7 72.2	8 30.8 +29.9 71.7	7 42.0 +30.2 71.3	6 53.4 +30.4 70.8
21°	10 38.2 +29.3 71.8	9 49.4 +29.5 71.3	9 00.7 +29.8 70.9	8 12.2 +30.1 70.4	7 23.8 +30.4 69.9
22°	11 07.5 +29.1 70.9	10 18.9 +29.4 70.4	9 30.5 +29.7 70.0	8 42.3 +29.9 69.5	7 54.2 +30.2 69.0
23°	11 36.6 +28.9 70.0	10 48.3 +29.3 69.5	10 00.2 +29.5 69.1	9 12.2 +29.8 68.6	8 24.4 +30.1 68.2
24°	12 05.5 +28.8 69.1	11 17.6 +29.0 68.7	10 29.7 +29.4 68.2	9 42.0 +29.7 67.7	8 54.5 +30.0 67.3
25°	12 34.3 +28.6 68.2	11 46.6 +28.9 67.8	10 59.1 +29.2 67.3	10 11.7 +29.6 66.9	9 24.5 +29.9 66.4
26°	13 02.9 +28.4 67.3	12 15.5 +28.8 66.9	11 28.3 +29.1 66.4	10 41.3 +29.4 66.0	9 54.4 +29.7 65.5
27°	13 31.3 +28.3 66.4	12 44.3 +28.5 66.0	11 57.4 +28.9 65.5	11 10.7 +29.2 65.1	10 24.1 +29.6 64.6
28°	13 59.6 +28.0 65.5	13 12.8 +28.4 65.1	12 26.3 +28.7 64.6	11 39.9 +29.1 64.2	10 53.7 +29.4 63.8
29°	14 27.6 +27.8 64.6	13 41.2 +28.2 64.2	12 55.0 +28.5 63.7	12 09.0 +28.9 63.3	11 23.1 +29.3 62.9

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°	-4 17.1 +31.1	-5 08.4 +31.0	-5 59.8 +31.1	-6 51.1 +31.2	-7 42.4 +31.3
1°	-3 46.0 +31.0	-4 37.4 +31.2	-5 28.7 +31.2	-6 19.9 +31.2	-7 11.1 +31.3
2°	-3 15.0 +31.1	-4 06.2 +31.1	-4 57.5 +31.3	-5 48.7 +31.4	-6 39.8 +31.4
3°	-2 43.9 +31.2	-3 35.1 +31.3	-4 26.2 +31.3	-5 17.3 +31.4	-6 08.4 +31.5
4°	-2 12.7 +31.2	-3 03.8 +31.2	-3 54.9 +31.3	-4 45.9 +31.4	-5 36.9 +31.6
5°	-1 41.5 +31.2	-2 32.6 +31.3	-3 23.6 +31.5	-4 14.5 +31.6	-5 05.3 +31.6
6°	-1 10.3 +31.2	-2 01.3 +31.3	-2 52.1 +31.4	-3 42.9 +31.5	-4 33.7 +31.7
7°	-0 39.1 +31.2	-1 30.0 +31.4	-2 20.7 +31.5	-3 11.4 +31.6	-4 02.0 +31.8
8°	-0 07.9 +31.2	-0 58.6 +31.4	-1 49.2 +31.5	-2 39.8 +31.7	-3 30.2 +31.8
9°	0 23.3 +31.2 79.7	-0 27.2 +31.3	-1 17.7 +31.5	-2 08.1 +31.7	-2 58.4 +31.8
10°	0 54.5 +31.2 78.9	0 04.1 +31.4 78.4	-0 46.2 +31.5	-1 36.4 +31.7	-2 26.6 +31.9
11°	1 25.7 +31.2 78.0	0 35.5 +31.3 77.5	-0 14.7 +31.6	-1 04.7 +31.7	-1 54.7 +31.9
12°	1 56.9 +31.2 77.2	1 06.8 +31.4 76.6	0 16.9 +31.5 76.1	-0 33.0 +31.7	-1 22.8 +31.9
13°	2 28.1 +31.1 76.3	1 38.2 +31.3 75.8	0 48.4 +31.5 75.3	-0 01.3 +31.7	-0 50.9 +32.0
14°	2 59.2 +31.1 75.4	2 09.5 +31.3 74.9	1 19.9 +31.5 74.4	0 30.4 +31.7 73.9	-0 18.9 +31.9
15°	3 30.3 +31.1 74.6	2 40.8 +31.3 74.1	1 51.4 +31.5 73.6	1 02.1 +31.7 73.1	0 13.0 +31.9 72.6
16°	4 01.4 +30.9 73.7	3 12.1 +31.2 73.2	2 22.9 +31.4 72.7	1 33.8 +31.7 72.2	0 44.9 +31.9 71.7
17°	4 32.3 +31.0 72.9	3 43.3 +31.1 72.4	2 54.3 +31.4 71.9	2 05.5 +31.7 71.4	1 16.8 +31.9 70.9
18°	5 03.3 +30.8 72.0	4 14.4 +31.1 71.5	3 25.7 +31.4 71.0	2 37.2 +31.6 70.5	1 48.7 +31.9 70.0
19°	5 34.1 +30.8 71.2	4 45.5 +31.1 70.7	3 57.1 +31.3 70.2	3 08.8 +31.5 69.7	2 20.6 +31.9 69.2
20°	6 04.9 +30.7 70.3	5 16.6 +30.9 69.8	4 28.4 +31.2 69.3	3 40.3 +31.6 68.8	2 52.5 +31.8 68.3
21°	6 35.6 +30.6 69.4	5 47.5 +30.9 68.9	4 59.6 +31.2 68.5	4 11.9 +31.4 68.0	3 24.3 +31.7 67.5
22°	7 06.2 +30.6 68.6	6 18.4 +30.9 68.1	5 30.8 +31.1 67.6	4 43.3 +31.5 67.1	3 56.0 +31.8 66.6
23°	7 36.8 +30.4 67.7	6 49.3 +30.7 67.2	6 01.9 +31.0 66.7	5 14.8 +31.3 66.3	4 27.8 +31.6 65.8
24°	8 07.2 +30.3 66.8	7 20.0 +30.6 66.4	6 32.9 +31.0 65.9	5 46.1 +31.3 65.4	4 59.4 +31.6 64.9
25°	8 37.5 +30.1 65.9	7 50.6 +30.5 65.5	7 03.9 +30.8 65.0	6 17.4 +31.1 64.5	5 31.0 +31.5 64.1
26°	9 07.6 +30.1 65.1	8 21.1 +30.4 64.6	7 34.7 +30.8 64.2	6 48.5 +31.1 63.7	6 02.5 +31.5 63.2
27°	9 37.7 +29.9 64.2	8 51.5 +30.3 63.7	8 05.5 +30.6 63.3	7 19.6 +31.0 62.8	6 34.0 +31.3 62.4
28°	10 07.6 +29.8 63.3	9 21.8 +30.1 62.9	8 36.1 +30.5 62.4	7 50.6 +30.9 62.0	7 05.3 +31.3 61.5
29°	10 37.4 +29.6 62.4	9 51.9 +30.0 62.0	9 06.6 +30.4 61.5	8 21.5 +30.7 61.1	7 36.6 +31.1 60.6

Declination SAME name as Latitude

Latitude 31°

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°	-8 33.6 +31.3	-9 24.8 +31.4			
1°	-8 02.3 +31.4	-8 53.4 +31.5	-9 44.5 +31.6		
2°	-7 30.9 +31.5	-8 21.9 +31.6	-9 12.9 +31.8		
3°	-6 59.4 +31.6	-7 50.3 +31.7	-8 41.1 +31.8	-9 31.9 +31.9	
4°	-6 27.8 +31.7	-7 18.6 +31.8	-8 09.3 +31.9	-9 00.0 +32.1	-9 50.5 +32.2
5°	-5 56.1 +31.8	-6 46.8 +32.0	-7 37.4 +32.1	-8 27.9 +32.2	-9 18.3 +32.4
6°	-5 24.3 +31.8	-6 14.8 +31.9	-7 05.3 +32.1	-7 55.7 +32.3	-8 45.9 +32.4
7°	-4 52.5 +32.0	-5 42.9 +32.1	-6 33.2 +32.3	-7 23.4 +32.4	-8 13.5 +32.6
8°	-4 20.5 +31.9	-5 10.8 +32.1	-6 00.9 +32.3	-6 51.0 +32.5	-7 40.9 +32.7
9°	-3 48.6 +32.0	-4 38.7 +32.2	-5 28.6 +32.3	-6 18.5 +32.6	-7 08.2 +32.7
10°	-3 16.6 +32.1	-4 06.5 +32.3	-4 56.3 +32.5	-5 45.9 +32.6	-6 35.5 +32.9
11°	-2 44.5 +32.1	-3 34.2 +32.3	-4 23.8 +32.5	-5 13.3 +32.7	-6 02.6 +32.9
12°	-2 12.4 +32.1	-3 01.9 +32.3	-3 51.3 +32.5	-4 40.6 +32.8	-5 29.7 +33.0
13°	-1 40.3 +32.1	-2 29.6 +32.4	-3 18.8 +32.6	-4 07.8 +32.8	-4 56.7 +33.1
14°	-1 08.2 +32.2	-1 57.2 +32.3	-2 46.2 +32.6	-3 35.0 +32.9	-4 23.6 +33.1
15°	-0 36.0 +32.2	-1 24.9 +32.5	-2 13.6 +32.7	-3 02.1 +32.9	-3 50.5 +33.2
16°	-0 03.8 +32.1	-0 52.4 +32.4	-1 40.9 +32.7	-2 29.2 +32.9	-3 17.3 +33.2
17°	0 28.3 +32.2 70.4	-0 20.0 +32.4	-1 08.2 +32.7	-1 56.3 +33.0	-2 44.1 +33.2
18°	1 00.5 +32.1 69.5	0 12.4 +32.4 69.0	-0 35.5 +32.7	-1 23.3 +33.0	-2 10.9 +33.3
19°	1 32.6 +32.2 68.7	0 44.8 +32.4 68.2	-0 02.8 +32.7	-0 50.3 +33.0	-1 37.6 +33.3
20°	2 04.8 +32.1 67.8	1 17.2 +32.4 67.3	0 29.9 +32.7 66.8	-0 17.3 +33.0	-1 04.3 +33.3
21°	2 36.9 +32.0 67.0	1 49.6 +32.4 66.5	1 02.6 +32.6 66.0	0 15.7 +33.0 65.5	-0 31.0 +33.3
22°	3 08.9 +32.1 66.1	2 22.0 +32.3 65.6	1 35.2 +32.7 65.1	0 48.7 +33.0 64.6	0 02.3 +33.3 64.1
23°	3 41.0 +31.9 65.3	2 54.3 +32.3 64.8	2 07.9 +32.6 64.3	1 21.7 +32.9 63.8	0 35.6 +33.3 63.3
24°	4 12.9 +31.9 64.4	3 26.6 +32.3 63.9	2 40.5 +32.6 63.5	1 54.6 +33.0 63.0	1 08.9 +33.3 62.4
25°	4 44.8 +31.9 63.6	3 58.9 +32.2 63.1	3 13.1 +32.6 62.6	2 27.6 +32.9 62.1	1 42.2 +33.3 61.6
26°	5 16.7 +31.8 62.7	4 31.1 +32.1 62.3	3 45.7 +32.5 61.8	3 00.5 +32.8 61.3	2 15.5 +33.2 60.8
27°	5 48.5 +31.7 61.9	5 03.2 +32.1 61.4	4 18.2 +32.4 60.9	3 33.3 +32.9 60.4	2 48.7 +33.2 59.9
28°	6 20.2 +31.6 61.0	5 35.3 +32.0 60.6	4 50.6 +32.4 60.1	4 06.2 +32.7 59.6	3 21.9 +33.2 59.1
29°	6 51.8 +31.6 60.2	6 07.3 +31.9 59.7	5 23.0 +32.3 59.2	4 38.9 +32.8 58.8	3 55.1 +33.1 58.3

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°					
1°					
2°					
3°					
4°					
5°					
6°	-9 36.1 +32.6				
7°	-9 03.5 +32.8	-9 53.3 +32.9			
8°	-8 30.7 +32.9	-9 20.4 +33.1			
9°	-7 57.8 +32.9	-8 47.3 +33.2	-9 36.7 +33.4		
10°	-7 24.9 +33.1	-8 14.1 +33.3	-9 03.3 +33.6	-9 52.2 +33.7	
11°	-6 51.8 +33.2	-7 40.8 +33.3	-8 29.7 +33.6	-9 18.5 +33.9	
12°	-6 18.6 +33.2	-7 07.5 +33.5	-7 56.1 +33.7	-8 44.6 +34.0	-9 32.9 +34.2
13°	-5 45.4 +33.3	-6 34.0 +33.6	-7 22.4 +33.8	-8 10.6 +34.1	-8 58.7 +34.4
14°	-5 12.1 +33.4	-6 00.4 +33.6	-6 48.6 +33.9	-7 36.5 +34.1	-8 24.3 +34.4
15°	-4 38.7 +33.4	-5 26.8 +33.7	-6 14.7 +34.0	-7 02.4 +34.3	-7 49.9 +34.6
16°	-4 05.3 +33.5	-4 53.1 +33.8	-5 40.7 +34.1	-6 28.1 +34.3	-7 15.3 +34.6
17°	-3 31.8 +33.5	-4 19.3 +33.8	-5 06.6 +34.1	-5 53.8 +34.5	-6 40.7 +34.7
18°	-2 58.3 +33.6	-3 45.5 +33.9	-4 32.5 +34.1	-5 19.3 +34.4	-6 06.0 +34.8
19°	-2 24.7 +33.6	-3 11.6 +33.9	-3 58.4 +34.3	-4 44.9 +34.6	-5 31.2 +34.9
20°	-1 51.1 +33.6	-2 37.7 +33.9	-3 24.1 +34.2	-4 10.3 +34.6	-4 56.3 +34.9
21°	-1 17.5 +33.6	-2 03.8 +34.0	-2 49.9 +34.3	-3 35.7 +34.6	-4 21.4 +35.0
22°	-0 43.9 +33.7	-1 29.8 +34.0	-2 15.6 +34.4	-3 01.1 +34.7	-3 46.4 +35.0
23°	-0 10.2 +33.6	-0 55.8 +33.9	-1 41.2 +34.3	-2 26.4 +34.7	-3 11.4 +35.1
24°	0 23.4 +33.7 61.9	-0 21.9 +34.0	-1 06.9 +34.4	-1 51.7 +34.7	-2 36.3 +35.1
25°	0 57.1 +33.6 61.1	0 12.1 +34.0 60.6	-0 32.5 +34.3	-1 17.0 +34.7	-2 01.2 +35.1
26°	1 30.7 +33.6 60.3	0 46.1 +34.0 59.8	0 01.8 +34.4 59.3	-0 42.3 +34.8	-1 26.1 +35.1
27°	2 04.3 +33.6 59.5	1 20.1 +34.0 59.0	0 36.2 +34.3 58.4	-0 07.5 +34.7	-0 51.0 +35.2
28°	2 37.9 +33.5 58.6	1 54.1 +33.9 58.1	1 10.5 +34.4 57.6	0 27.2 +34.8 57.1	-0 15.8 +35.1
29°	3 11.4 +33.6 57.8	2 28.0 +34.0 57.3	1 44.9 +34.3 56.8	1 02.0 +34.7 56.3	0 19.3 +35.2 55.8

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Latitude 31°

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°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°	-9 46.6 +34.7				
14°	-9 11.9 +34.7				
15°	-8 37.2 +34.9				
16°	-8 02.3 +34.9				
17°	-7 27.4 +35.0				
18°	-6 52.4 +35.2				
19°	-6 17.2 +35.1				
20°	-5 42.1 +35.3				
21°	-5 06.8 +35.3				
22°	-4 31.5 +35.4				
23°	-3 56.1 +35.4				
24°	-3 20.7 +35.5				
25°	-2 45.2 +35.5				
26°	-2 09.7 +35.5				
27°	-1 34.2 +35.6				
28°	-0 58.6 +35.5				
29°	-0 23.1 +35.6				

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
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26°					
27°					
28°					
29°					

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Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	58 00.0 +60.0 180.0	57 59.2 +59.9 178.1	57 56.7 +59.9 176.2	57 52.5 +59.8 174.4	57 46.6 +59.7 172.5
1°	59 00.0 +60.0 180.0	58 59.1 +60.0 178.1	58 56.6 +59.9 176.1	58 52.3 +59.7 174.2	58 46.3 +59.6 172.3
2°	60 00.0 +60.0 180.0	59 59.1 +60.0 178.0	59 56.5 +59.8 176.0	59 52.0 +59.8 174.0	59 45.9 +59.5 172.0
3°	61 00.0 +60.0 180.0	60 59.1 +60.0 177.9	60 56.3 +59.9 175.9	60 51.8 +59.7 173.8	60 45.4 +59.6 171.8
4°	62 00.0 +60.0 180.0	61 59.1 +59.9 177.9	61 56.2 +59.9 175.8	61 51.5 +59.8 173.6	61 45.0 +59.5 171.5
5°	63 00.0 +60.0 180.0	62 59.0 +60.0 177.8	62 56.1 +59.9 175.6	62 51.3 +59.7 173.4	62 44.5 +59.5 171.3
6°	64 00.0 +60.0 180.0	63 59.0 +60.0 177.7	63 56.0 +59.8 175.5	63 51.0 +59.6 173.2	63 44.0 +59.4 171.0
7°	65 00.0 +60.0 180.0	64 59.0 +59.9 177.7	64 55.8 +59.9 175.3	64 50.6 +59.7 173.0	64 43.4 +59.4 170.7
8°	66 00.0 +60.0 180.0	65 58.9 +60.0 177.6	65 55.7 +59.8 175.1	65 50.3 +59.6 172.7	65 42.8 +59.4 170.3
9°	67 00.0 +60.0 180.0	66 58.9 +59.9 177.5	66 55.5 +59.8 175.0	66 49.9 +59.6 172.5	66 42.2 +59.3 170.0
10°	68 00.0 +60.0 180.0	67 58.8 +60.0 177.4	67 55.3 +59.8 174.8	67 49.5 +59.6 172.2	67 41.5 +59.2 169.6
11°	69 00.0 +60.0 180.0	68 58.8 +59.9 177.3	68 55.1 +59.8 174.5	68 49.1 +59.5 171.8	68 40.7 +59.2 169.1
12°	70 00.0 +60.0 180.0	69 58.7 +60.0 177.1	69 54.9 +59.8 174.3	69 48.6 +59.5 171.5	69 39.9 +59.0 168.7
13°	71 00.0 +60.0 180.0	70 58.7 +59.9 177.0	70 54.7 +59.7 174.0	70 48.1 +59.4 171.1	70 38.9 +59.0 168.2
14°	72 00.0 +60.0 180.0	71 58.6 +59.9 176.9	71 54.4 +59.7 173.7	71 47.5 +59.4 170.6	71 37.9 +58.9 167.6
15°	73 00.0 +60.0 180.0	72 58.5 +60.0 176.7	72 54.1 +59.7 173.4	72 46.9 +59.3 170.2	72 36.8 +58.7 167.0
16°	74 00.0 +60.0 180.0	73 58.5 +59.9 176.5	73 53.8 +59.7 173.1	73 46.2 +59.2 169.6	73 35.5 +58.6 166.3
17°	75 00.0 +60.0 180.0	74 58.4 +59.9 176.3	74 53.5 +59.5 172.6	74 45.4 +59.0 169.0	74 34.1 +58.4 165.5
18°	76 00.0 +60.0 180.0	75 58.3 +59.8 176.1	75 53.0 +59.6 172.2	75 44.4 +59.0 168.3	75 32.5 +58.2 164.6
19°	77 00.0 +60.0 180.0	76 58.1 +59.9 175.8	76 52.6 +59.4 171.6	76 43.4 +58.8 167.6	76 30.7 +57.9 163.6
20°	78 00.0 +60.0 180.0	77 58.0 +59.8 175.5	77 52.0 +59.4 171.0	77 42.2 +58.5 166.6	77 28.6 +57.5 162.4
21°	79 00.0 +60.0 180.0	78 57.8 +59.8 175.1	78 51.4 +59.2 170.3	78 40.7 +58.3 165.6	78 26.1 +57.1 161.0
22°	80 00.0 +60.0 180.0	79 57.6 +59.8 174.7	79 50.6 +59.0 169.4	79 39.0 +58.0 164.3	79 23.2 +56.5 159.4
23°	81 00.0 +60.0 180.0	80 57.4 +59.7 174.1	80 49.6 +58.9 168.4	80 37.0 +57.4 162.8	80 19.7 +55.7 157.5
24°	82 00.0 +60.0 180.0	81 57.1 +59.6 173.5	81 48.5 +58.5 167.1	81 34.4 +56.9 161.0	81 15.4 +54.7 155.2
25°	83 00.0 +60.0 180.0	82 56.7 +59.5 172.6	82 47.0 +58.0 165.4	82 31.3 +55.8 158.6	82 10.1 +53.3 152.4
26°	84 00.0 +60.0 180.0	83 56.2 +59.3 171.5	83 45.0 +57.4 163.3	83 27.1 +54.5 155.6	83 03.4 +51.1 148.8
27°	85 00.0 +60.0 180.0	84 55.5 +58.9 169.9	84 42.4 +56.1 160.3	84 21.6 +52.3 151.7	83 54.5 +48.1 144.1
28°	86 00.0 +60.0 180.0	85 54.4 +58.3 167.5	85 38.5 +53.9 156.1	85 13.9 +48.5 146.2	84 42.6 +43.3 138.1
29°	87 00.0 +60.0 180.0	86 52.7 +56.7 163.7	86 32.4 +49.6 149.6	86 02.4 +42.2 138.5	85 25.9 +36.0 130.0

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°	57 39.2 +59.4 170.6	57 30.1 +59.1 168.8	57 19.4 +58.8 167.0	57 07.1 +58.5 165.1	56 53.3 +58.2 163.4
1°	58 38.6 +59.3 170.4	58 29.2 +59.1 168.5	58 18.2 +58.8 166.6	58 05.6 +58.5 164.7	57 51.5 +58.0 162.9
2°	59 37.9 +59.4 170.1	59 28.3 +59.1 168.1	59 17.0 +58.8 166.2	59 04.1 +58.3 164.3	58 49.5 +57.9 162.4
3°	60 37.3 +59.3 169.8	60 27.4 +59.0 167.8	60 15.8 +58.6 165.8	60 02.4 +58.3 163.8	59 47.4 +57.9 161.9
4°	61 36.6 +59.2 169.5	61 26.4 +58.9 167.4	61 14.4 +58.5 165.4	61 00.7 +58.1 163.4	60 45.3 +57.6 161.4
5°	62 35.8 +59.2 169.1	62 25.3 +58.9 167.0	62 12.9 +58.5 164.9	61 58.8 +58.0 162.8	61 42.9 +57.6 160.8
6°	63 35.0 +59.2 168.8	63 24.2 +58.7 166.6	63 11.4 +58.3 164.4	62 56.8 +57.9 162.3	62 40.5 +57.3 160.2
7°	64 34.2 +59.0 168.4	64 22.9 +58.7 166.1	64 09.7 +58.3 163.9	63 54.7 +57.7 161.7	63 37.8 +57.2 159.5
8°	65 33.2 +59.0 168.0	65 21.6 +58.6 165.6	65 08.0 +58.1 163.3	64 52.4 +57.6 161.1	64 35.0 +56.9 158.8
9°	66 32.2 +58.9 167.5	66 20.2 +58.4 165.1	66 06.1 +57.9 162.7	65 50.0 +57.3 160.4	65 31.9 +56.7 158.1
10°	67 31.1 +58.9 167.0	67 18.6 +58.4 164.5	67 04.0 +57.8 162.1	66 47.3 +57.1 159.7	66 28.6 +56.5 157.3
11°	68 30.0 +58.7 166.5	68 17.0 +58.1 163.9	68 01.8 +57.5 161.4	67 44.4 +56.9 158.9	67 25.1 +56.1 156.4
12°	69 28.7 +58.6 165.9	69 15.1 +58.0 163.2	68 59.3 +57.4 160.6	68 41.3 +56.6 158.0	68 21.2 +55.8 155.5
13°	70 27.3 +58.4 165.3	70 13.1 +57.8 162.5	69 56.7 +57.0 159.7	69 37.9 +56.3 157.1	69 17.0 +55.5 154.5
14°	71 25.7 +58.3 164.6	71 10.9 +57.6 161.7	70 53.7 +56.8 158.8	70 34.2 +55.9 156.0	70 12.5 +54.9 153.4
15°	72 24.0 +58.0 163.8	72 08.5 +57.3 160.8	71 50.5 +56.4 157.8	71 30.1 +55.5 154.9	71 07.4 +54.5 152.2
16°	73 22.0 +57.9 163.0	73 05.8 +57.0 159.8	72 46.9 +56.0 156.7	72 25.6 +54.9 153.7	72 01.9 +53.8 150.8
17°	74 19.9 +57.5 162.0	74 02.8 +56.6 158.7	73 42.9 +55.5 155.4	73 20.5 +54.4 152.3	72 55.7 +53.2 149.4
18°	75 17.4 +57.3 160.9	74 59.4 +56.1 157.4	74 38.4 +55.0 154.0	74 14.9 +53.7 150.8	73 48.9 +52.3 147.7
19°	76 14.7 +56.8 159.7	75 55.5 +55.6 156.0	75 33.4 +54.2 152.5	75 08.6 +52.8 149.1	74 41.2 +51.4 145.9
20°	77 11.5 +56.3 158.3	76 51.1 +54.9 154.4	76 27.6 +53.4 150.7	76 01.4 +51.8 147.2	75 32.6 +50.2 143.9
21°	78 07.8 +55.6 156.7	77 46.0 +54.0 152.6	77 21.0 +52.3 148.7	76 53.2 +50.6 145.1	76 22.8 +48.9 141.7
22°	79 03.4 +54.8 154.8	78 40.0 +53.0 150.5	78 13.3 +51.1 146.4	77 43.8 +49.1 142.6	77 11.7 +47.1 139.1
23°	79 58.2 +53.8 152.6	79 33.0 +51.6 148.0	79 04.4 +49.4 143.7	78 32.9 +47.2 139.8	77 58.8 +45.2 136.3
24°	80 52.0 +52.3 149.9	80 24.6 +49.8 145.0	79 53.8 +47.4 140.6	79 20.1 +45.0 136.6	78 44.0 +42.8 133.0
25°	81 44.3 +50.4 146.7	81 14.4 +47.5 141.5	80 41.2 +44.7 137.0	80 05.1 +42.2 132.9	79 26.8 +39.8 129.3
26°	82 34.7 +47.7 142.7	82 01.9 +44.5 137.3	81 25.9 +41.4 132.7	80 47.3 +38.7 128.6	80 06.6 +36.2 125.1
27°	83 22.4 +44.0 137.7	82 46.4 +40.3 132.2	82 07.3 +37.1 127.6	81 26.0 +34.2 123.7	80 42.8 +31.8 120.3
28°	84 06.4 +38.7 131.5	83 26.7 +34.8 126.1	82 44.4 +31.5 121.6	82 00.2 +28.9 118.0	81 14.6 +26.7 114.9
29°	84 45.1 +31.2 123.6	84 01.5 +27.5 118.6	83 15.9 +24.7 114.6	82 29.1 +22.4 111.4	81 41.3 +20.7 108.8

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	56 38.0 +57.7 161.6	56 21.2 +57.3 159.9	56 02.9 +56.9 158.1	55 43.3 +56.4 156.5	55 22.3 +55.9 154.8
1°	57 35.7 +57.7 161.1	57 18.5 +57.2 159.3	56 59.8 +56.7 157.6	56 39.7 +56.1 155.8	56 18.2 +55.6 154.2
2°	58 33.4 +57.4 160.6	58 15.7 +57.0 158.7	57 56.5 +56.5 157.0	57 35.8 +56.0 155.2	57 13.8 +55.4 153.5
3°	59 30.8 +57.4 160.0	59 12.7 +56.8 158.1	58 53.0 +56.3 156.3	58 31.8 +55.7 154.5	58 09.2 +55.1 152.8
4°	60 28.2 +57.2 159.4	60 09.5 +56.6 157.5	59 49.3 +56.0 155.6	59 27.5 +55.5 153.8	59 04.3 +54.9 152.0
5°	61 25.4 +56.9 158.8	61 06.1 +56.5 156.8	60 45.3 +55.9 154.9	60 23.0 +55.2 153.0	59 59.2 +54.6 151.2
6°	62 22.3 +56.8 158.1	62 02.6 +56.2 156.1	61 41.2 +55.5 154.2	61 18.2 +54.9 152.2	60 53.8 +54.2 150.4
7°	63 19.1 +56.6 157.4	62 58.8 +55.9 155.4	62 36.7 +55.3 153.3	62 13.1 +54.6 151.4	61 48.0 +53.9 149.5
8°	64 15.7 +56.3 156.7	63 54.7 +55.6 154.6	63 32.0 +54.9 152.5	63 07.7 +54.2 150.5	62 41.9 +53.4 148.5
9°	65 12.0 +56.1 155.9	64 50.3 +55.3 153.7	64 26.9 +54.6 151.6	64 01.9 +53.8 149.5	63 35.3 +53.0 147.5
10°	66 08.1 +55.7 155.0	65 45.6 +55.0 152.8	65 21.5 +54.2 150.6	64 55.7 +53.3 148.5	64 28.3 +52.5 146.4
11°	67 03.8 +55.3 154.1	66 40.6 +54.6 151.8	66 15.7 +53.7 149.5	65 49.0 +52.9 147.4	65 20.8 +52.0 145.3
12°	67 59.1 +55.0 153.1	67 35.2 +54.0 150.7	67 09.4 +53.2 148.4	66 41.9 +52.2 146.2	66 12.8 +51.3 144.1
13°	68 54.1 +54.5 152.0	68 29.2 +53.6 149.5	68 02.6 +52.6 147.2	67 34.1 +51.7 144.9	67 04.1 +50.7 142.8
14°	69 48.6 +54.0 150.8	69 22.8 +53.0 148.3	68 55.2 +51.9 145.9	68 25.8 +50.9 143.6	67 54.8 +49.9 141.4
15°	70 42.6 +53.4 149.5	70 15.8 +52.3 146.9	69 47.1 +51.2 144.5	69 16.7 +50.1 142.1	68 44.7 +49.0 139.9
16°	71 36.0 +52.7 148.1	71 08.1 +51.6 145.4	70 38.3 +50.4 142.9	70 06.8 +49.2 140.5	69 33.7 +48.0 138.2
17°	72 28.7 +51.9 146.5	71 59.7 +50.6 143.8	71 28.7 +49.4 141.3	70 56.0 +48.2 138.8	70 21.7 +47.0 136.5
18°	73 20.6 +51.0 144.8	72 50.3 +49.7 142.0	72 18.1 +48.3 139.4	71 44.2 +47.0 136.9	71 08.7 +45.7 134.6
19°	74 11.6 +49.9 142.9	73 40.0 +48.4 140.1	73 06.4 +47.0 137.4	72 31.2 +45.6 134.9	71 54.4 +44.3 132.6
20°	75 01.5 +48.7 140.8	74 28.4 +47.1 137.9	73 53.4 +45.6 135.2	73 16.8 +44.1 132.7	72 38.7 +42.7 130.3
21°	75 50.2 +47.1 138.5	75 15.5 +45.4 135.6	74 39.0 +43.9 132.8	74 00.9 +42.4 130.3	73 21.4 +41.0 127.9
22°	76 37.3 +45.3 135.9	76 00.9 +43.6 132.9	75 22.9 +41.9 130.2	74 43.3 +40.3 127.7	74 02.4 +38.9 125.3
23°	77 22.6 +43.2 133.0	76 44.5 +41.4 130.0	76 04.8 +39.6 127.3	75 23.6 +38.1 124.8	74 41.3 +36.5 122.5
24°	78 05.8 +40.7 129.7	77 25.9 +38.7 126.8	76 44.4 +37.0 124.1	76 01.7 +35.4 121.7	75 17.8 +34.0 119.5
25°	78 46.5 +37.6 126.1	78 04.6 +35.7 123.2	77 21.4 +34.0 120.6	76 37.1 +32.4 118.3	75 51.8 +31.0 116.1
26°	79 24.1 +34.1 121.9	78 40.3 +32.2 119.2	77 55.4 +30.4 116.7	77 09.5 +29.0 114.5	76 22.8 +27.8 112.6
27°	79 58.2 +29.8 117.3	79 12.5 +28.0 114.8	78 25.8 +26.6 112.5	77 38.5 +25.2 110.5	76 50.6 +24.1 108.7
28°	80 28.0 +24.9 112.2	79 40.5 +23.4 110.0	78 52.4 +22.1 108.0	78 03.7 +21.1 106.2	77 14.7 +20.1 104.7
29°	80 52.9 +19.2 106.6	80 03.9 +18.1 104.7	79 14.5 +17.1 103.1	78 24.8 +16.4 101.6	77 34.8 +15.8 100.3

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°	55 00.0 +55.3 153.2	54 36.4 +54.8 151.6	54 11.6 +54.2 150.0	53 45.6 +53.6 148.5	53 18.4 +53.1 147.0
1°	55 55.3 +55.1 152.5	55 31.2 +54.5 150.9	55 05.8 +53.9 149.3	54 39.2 +53.3 147.7	54 11.5 +52.7 146.2
2°	56 50.4 +54.8 151.8	56 25.7 +54.2 150.1	55 59.7 +53.6 148.5	55 32.5 +53.0 146.9	55 04.2 +52.4 145.4
3°	57 45.2 +54.6 151.0	57 19.9 +53.9 149.3	56 53.3 +53.3 147.7	56 25.5 +52.7 146.1	55 56.6 +52.0 144.5
4°	58 39.8 +54.2 150.2	58 13.8 +53.6 148.5	57 46.6 +53.0 146.8	57 18.2 +52.3 145.2	56 48.6 +51.6 143.6
5°	59 34.0 +53.9 149.4	59 07.4 +53.3 147.7	58 39.6 +52.5 145.9	58 10.5 +51.8 144.3	57 40.2 +51.1 142.7
6°	60 27.9 +53.5 148.5	60 00.7 +52.8 146.7	59 32.1 +52.1 145.0	59 02.3 +51.4 143.3	58 31.3 +50.7 141.7
7°	61 21.4 +53.2 147.6	60 53.5 +52.4 145.8	60 24.2 +51.7 144.0	59 53.7 +50.9 142.3	59 22.0 +50.2 140.6
8°	62 14.6 +52.7 146.6	61 45.9 +51.9 144.8	61 15.9 +51.1 143.0	60 44.6 +50.4 141.2	60 12.2 +49.6 139.5
9°	63 07.3 +52.2 145.6	62 37.8 +51.4 143.7	62 07.0 +50.6 141.9	61 35.0 +49.8 140.1	61 01.8 +49.0 138.4
10°	63 59.5 +51.6 144.5	63 29.2 +50.8 142.5	62 57.6 +50.0 140.7	62 24.8 +49.1 138.9	61 50.8 +48.3 137.2
11°	64 51.1 +51.1 143.3	64 20.0 +50.2 141.3	63 47.6 +49.3 139.5	63 13.9 +48.4 137.7	62 39.1 +47.6 135.9
12°	65 42.2 +50.4 142.0	65 10.2 +49.5 140.1	64 36.9 +48.6 138.2	64 02.3 +47.7 136.3	63 26.7 +46.7 134.6
13°	66 32.6 +49.7 140.7	65 59.7 +48.7 138.7	65 25.5 +47.7 136.8	64 50.0 +46.8 134.9	64 13.4 +45.9 133.2
14°	67 22.3 +48.8 139.3	66 48.4 +47.8 137.2	66 13.2 +46.9 135.3	65 36.8 +45.9 133.4	65 04.9 +45.0 131.7
15°	68 11.1 +48.0 137.7	67 36.2 +46.9 135.7	67 00.1 +45.8 133.7	66 22.7 +44.9 131.8	65 44.3 +43.9 130.1
16°	68 59.1 +46.9 136.1	68 23.1 +45.8 134.0	67 45.9 +44.8 132.0	67 07.6 +43.7 130.2	66 28.2 +42.7 128.4
17°	69 46.0 +45.8 134.3	69 08.9 +44.7 132.2	68 30.7 +43.5 130.2	67 51.3 +42.5 128.4	67 10.9 +41.5 126.6
18°	70 31.8 +44.5 132.4	69 53.6 +43.3 130.3	69 14.2 +42.2 128.3	68 33.8 +41.1 126.5	67 52.4 +40.1 124.7
19°	71 16.3 +43.0 130.3	70 36.9 +41.8 128.3	69 56.4 +40.7 126.3	69 14.9 +39.6 124.4	68 32.5 +38.6 122.7
20°	71 59.3 +41.4 128.1	71 18.7 +40.2 126.1	70 37.1 +39.0 124.1	69 54.5 +37.9 122.3	69 11.1 +36.9 120.6
21°	72 40.7 +39.6 125.8	71 58.9 +38.3 123.7	71 16.1 +37.2 121.8	70 32.4 +36.1 120.0	69 48.0 +35.1 118.3
22°	73 20.3 +37.5 123.2	72 37.2 +36.3 121.2	71 53.3 +35.1 119.3	71 08.5 +34.1 117.6	70 23.1 +33.1 115.9
23°	73 57.8 +35.3 120.4	73 13.5 +34.0 118.5	72 28.4 +32.9 116.7	71 42.6 +31.9 115.0	70 56.2 +30.9 113.4
24°	74 33.1 +32.6 117.4	73 47.5 +31.5 115.6	73 01.3 +30.4 113.8	72 14.5 +29.4 112.2	71 27.1 +28.6 110.8
25°	75 05.7 +29.8 114.2	74 19.0 +28.7 112.5	73 31.7 +27.7 110.8	72 43.9 +26.9 109.4	71 55.7 +26.1 108.0
26°	75 35.5 +26.7 110.8	74 47.7 +25.6 109.2	73 59.4 +24.8 107.7	73 10.8 +24.0 106.3	72 21.8 +23.3 105.0
27°	76 02.2 +23.1 107.1	75 13.3 +22.3 105.7	74 24.2 +21.6 104.3	73 34.8 +20.9 103.1	72 45.1 +20.4 102.0
28°	76 25.3 +19.4 103.3	75 35.6 +18.7 102.0	74 45.8 +18.1 100.8	73 55.7 +17.7 99.7	73 05.5 +17.3 98.8
29°	76 44.7 +15.2 99.2	75 54.3 +14.9 98.1	75 03.9 +14.5 97.2	74 13.4 +14.2 96.3	73 22.8 +14.0 95.4

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°	52 50.1 +52.5 145.5	52 20.8 +51.9 144.1	51 50.4 +51.3 142.7	51 19.1 +50.7 141.3	50 46.8 +50.1 140.0
1°	53 42.6 +52.1 144.7	53 12.7 +51.5 143.3	52 41.7 +50.9 141.8	52 09.8 +50.3 140.4	51 36.9 +49.7 139.1
2°	54 34.7 +51.8 143.9	54 04.2 +51.1 142.4	53 32.6 +50.5 140.9	53 00.1 +49.9 139.5	52 26.6 +49.3 138.2
3°	55 26.5 +51.3 143.0	54 55.3 +50.7 141.5	54 23.1 +50.1 140.0	53 50.0 +49.4 138.6	53 15.9 +48.7 137.2
4°	56 17.8 +51.0 142.1	55 46.0 +50.3 140.5	55 13.2 +49.6 139.1	54 39.4 +48.9 137.6	54 04.6 +48.3 136.2
5°	57 08.8 +50.4 141.1	56 36.3 +49.8 139.6	56 02.8 +49.1 138.1	55 28.3 +48.4 136.6	54 52.9 +47.8 135.2
6°	57 59.2 +50.0 140.1	57 26.1 +49.2 138.5	56 51.9 +48.5 137.0	56 16.7 +47.9 135.6	55 40.7 +47.1 134.2
7°	58 49.2 +49.4 139.0	58 15.3 +48.7 137.5	57 40.4 +48.0 135.9	57 04.6 +47.2 134.5	56 27.8 +46.6 133.1
8°	59 38.6 +48.9 137.9	59 04.0 +48.1 136.3	58 28.4 +47.3 134.8	57 51.8 +46.6 133.3	57 14.4 +45.9 131.9
9°	60 27.5 +48.1 136.8	59 52.1 +47.4 135.2	59 15.7 +46.7 133.6	58 38.4 +45.9 132.1	58 00.3 +45.2 130.7
10°	61 15.6 +47.5 135.5	60 39.5 +46.7 133.9	60 02.4 +45.9 132.4	59 24.3 +45.2 130.9	58 45.5 +44.4 129.4
11°	62 03.1 +46.8 134.2	61 26.2 +45.9 132.6	60 48.3 +45.1 131.1	60 09.5 +44.3 129.6	59 29.9 +43.6 128.1
12°	62 49.9 +45.9 132.9	62 12.1 +45.1 131.3	61 33.4 +44.3 129.7	60 53.8 +43.5 128.2	60 13.5 +42.7 126.8
13°	63 35.8 +45.0 131.5	62 57.2 +44.2 129.8	62 17.7 +43.3 128.3	61 37.3 +42.5 126.8	60 56.2 +41.7 125.3
14°	64 20.8 +44.1 130.0	63 41.4 +43.1 128.3	63 01.0 +42.3 126.8	62 19.8 +41.6 125.3	61 37.9 +40.8 123.8
15°	65 04.9 +42.9 128.4	64 24.5 +42.1 126.7	63 43.3 +41.3 125.2	63 01.4 +40.4 123.7	62 18.7 +39.6 122.3
16°	65 47.8 +41.8 126.7	65 06.6 +40.9 125.1	64 24.6 +40.0 123.5	63 41.8 +39.2 122.0	62 58.3 +38.5 120.6
17°	66 29.6 +40.6 124.9	65 47.5 +39.6 123.3	65 04.6 +38.8 121.8	64 21.0 +38.0 120.3	63 36.8 +37.2 118.9
18°	67 10.2 +39.1 123.0	66 27.1 +38.3 121.4	65 43.4 +37.3 119.9	64 59.0 +36.5 118.5	64 14.0 +35.8 117.1
19°	67 49.3 +37.6 121.1	67 05.4 +36.7 119.5	66 20.7 +35.9 118.0	65 35.5 +35.1 116.6	64 49.8 +34.3 115.3
20°	68 26.9 +36.0 119.0	67 42.1 +35.1 117.4	66 56.6 +34.3 116.0	66 10.6 +33.5 114.6	65 24.1 +32.8 113.3
21°	69 02.9 +34.1 116.8	68 17.2 +33.3 115.3	67 30.9 +32.5 113.9	66 44.1 +31.8 112.6	65 56.9 +31.1 111.3
22°	69 37.0 +32.3 114.4	68 50.5 +31.3 113.0	68 03.4 +30.6 111.7	67 15.9 +29.9 110.4	66 28.0 +29.3 109.2
23°	70 09.3 +30.1 112.0	69 21.8 +29.4 110.6	68 34.0 +28.6 109.3	67 45.8 +28.0 108.1	66 57.3 +27.4 107.0
24°	70 39.4 +27.8 109.4	69 51.2 +27.1 108.1	69 02.6 +26.5 106.9	68 13.8 +25.9 105.8	67 24.7 +25.4 104.7
25°	71 07.2 +25.3 106.7	70 18.3 +24.7 105.5	69 29.1 +24.2 104.4	68 39.7 +23.6 103.3	67 50.1 +23.2 102.3
26°	71 32.5 +22.7 103.9	70 43.0 +22.2 102.8	69 53.3 +21.7 101.7	69 03.3 +21.4 100.7	68 13.3 +20.9 99.8
27°	71 55.2 +19.9 100.9	71 05.2 +19.5 99.9	70 15.0 +19.1 99.0	69 24.7 +18.8 98.1	68 34.2 +18.6 97.3
28°	72 15.1 +17.0 97.8	71 21.7 +16.6 97.0	70 34.1 +16.5 96.2	69 43.5 +16.2 95.4	68 52.8 +16.1 94.7
29°	72 32.1 +13.8 94.7	71 41.3 +13.7 93.9	70 50.6 +13.6 93.2	69 59.7 +13.6 92.6	69 08.9 +13.5 92.0

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°	50 13.7 +49.5 138.7	49 39.6 +48.9 137.4	49 04.8 +48.3 136.1	48 29.1 +47.8 134.9	47 52.7 +47.2 133.7
1°	51 03.2 +49.0 137.8	50 28.5 +48.5 136.5	49 53.1 +47.9 135.2	49 16.9 +47.2 134.0	48 39.9 +46.7 132.8
2°	51 52.2 +48.7 136.8	51 17.0 +48.0 135.5	50 41.0 +47.4 134.3	50 04.1 +46.9 133.0	49 26.6 +46.2 131.8
3°	52 40.9 +48.1 135.9	52 05.0 +47.5 134.6	51 28.4 +46.9 133.3	50 51.0 +46.3 132.0	50 12.8 +45.7 130.8
4°	53 29.0 +47.6 134.9	52 52.5 +47.0 133.6	52 15.3 +46.4 132.3	51 37.3 +45.7 131.0	50 58.5 +45.2 129.8
5°	54 16.6 +47.1 133.9	53 39.5 +46.5 132.5	53 01.7 +45.8 131.2	52 23.0 +45.2 130.0	51 43.7 +44.6 128.8
6°	55 03.7 +46.5 132.8	54 26.0 +45.8 131.4	53 47.5 +45.2 130.2	53 08.2 +44.6 128.9	52 28.3 +43.9 127.7
7°	55 50.2 +45.9 131.7	55 11.8 +45.2 130.3	54 32.7 +44.5 129.0	53 52.8 +43.9 127.8	53 12.2 +43.3 126.5
8°	56 36.1 +45.2 130.5	55 57.0 +44.5 129.2	55 17.2 +43.9 127.9	54 36.7 +43.2 126.6	53 55.5 +42.6 125.4
9°	57 21.3 +44.5 129.3	56 41.5 +43.8 128.0	56 01.1 +43.1 126.7	55 19.9 +42.5 125.4	54 38.1 +41.9 124.2
10°	58 05.8 +43.7 128.0	57 25.3 +43.0 126.7	56 44.2 +42.3 125.4	56 02.4 +41.7 124.1	55 20.0 +41.0 122.9
11°	58 49.5 +42.8 126.7	58 08.3 +42.2 125.4	57 26.5 +41.5 124.1	56 44.1 +40.8 122.8	56 01.0 +40.3 121.6
12°	59 32.3 +42.0 125.4	58 50.5 +41.3 124.0	58 08.0 +40.6 122.7	57 24.9 +40.0 121.5	56 41.3 +39.3 120.3
13°	60 14.3 +41.0 123.9	59 31.8 +40.3 122.6	58 48.6 +39.6 121.3	58 04.9 +39.0 120.1	57 20.6 +38.4 118.9
14°	60 55.3 +40.0 122.5	60 12.1 +39.3 121.1	59 28.2 +38.7 119.9	58 43.9 +37.9 118.6	57 59.0 +37.3 117.5
15°	61 35.3 +38.9 120.9	60 51.4 +38.2 119.6	60 06.9 +37.5 118.3	59 21.8 +36.9 117.1	58 36.3 +36.3 116.0
16°	62 14.2 +37.8 119.3	61 29.6 +37.0 118.0	60 44.4 +36.4 116.8	59 58.7 +35.8 115.6	59 12.6 +35.2 114.4
17°	62 52.0 +36.4 117.6	62 06.6 +35.8 116.3	61 20.8 +35.1 115.1	60 34.5 +34.5 114.0	59 47.8 +33.9 112.8
18°	63 28.4 +35.1 115.8	62 42.4 +34.4 114.6	61 55.9 +33.8 113.4	61 09.0 +33.3 112.3	60 21.7 +32.7 111.2
19°	64 03.5 +33.7 114.0	63 16.8 +33.1 112.8	62 29.7 +32.4 111.6	61 42.3 +31.8 110.5	60 54.4 +31.4 109.5
20°	64 37.2 +32.1 112.1	63 49.9 +31.5 110.9	63 02.1 +31.0 109.8	62 14.1 +30.4 108.7	61 25.8 +29.9 107.7
21°	65 09.3 +30.5 110.1	64 21.4 +29.9 109.0	63 33.1 +29.4 107.9	62 44.5 +28.9 106.9	61 55.7 +28.4 105.9
22°	65 39.8 +28.7 108.0	64 51.3 +28.1 107.0	64 02.5 +27.7 105.9	63 13.4 +27.3 104.9	62 24.1 +26.9 104.0
23°	66 08.5 +26.9 105.9	65 19.4 +26.4 104.9	64 30.2 +25.9 103.9	63 40.7 +25.5 102.9	62 51.0 +25.2 102.1
24°	66 35.4 +24.9 103.7	65 45.8 +24.5 102.7	64 56.1 +24.1 101.8	64 06.2 +23.8 100.9	63 16.2 +23.4 100.0
25°	67 00.3 +22.8 101.3	66 10.3 +22.5 100.4	65 20.2 +22.1 99.6	64 30.0 +21.8 98.8	63 39.6 +21.7 98.0
26°	67 23.1 +20.6 99.0	66 32.8 +20.3 98.1	65 42.3 +20.2 97.3	64 51.8 +20.0 96.6	64 01.3 +19.7 95.9
27°	67 43.7 +18.4 96.5	66 53.1 +18.2 95.8	66 02.5 +18.0 95.0	65 11.8 +17.8 94.4	64 21.0 +17.8 93.7
28°	68 02.1 +15.9 94.0	67 11.3 +15.9 93.3	66 20.5 +15.8 92.7	65 29.6 +15.8 92.1	64 38.8 +15.7 91.5
29°	68 18.0 +13.5 91.4	67 27.2 +13.5 90.8	66 36.3 +13.5 90.3	65 45.4 +13.6 89.7	64 54.5 +13.7 89.2

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°	47 15.6 +46.6 132.5	46 37.7 +46.1 131.4	45 59.2 +45.6 130.3	45 20.1 +45.0 129.2	44 40.4 +44.5 128.2
1°	48 02.2 +46.1 131.6	47 23.8 +45.6 130.5	46 44.8 +45.0 129.4	46 05.1 +44.5 128.3	45 24.9 +44.0 127.2
2°	48 48.3 +45.7 130.6	48 09.4 +45.1 129.5	47 29.8 +44.6 128.4	46 49.6 +44.0 127.3	46 08.9 +43.4 126.2
3°	49 34.0 +45.1 129.7	48 54.5 +44.6 128.5	48 14.4 +44.0 127.4	47 33.6 +43.5 126.3	46 52.3 +43.0 125.2
4°	50 19.1 +44.6 128.6	49 39.1 +44.0 127.5	48 58.4 +43.4 126.4	48 17.1 +42.9 125.3	47 35.3 +42.4 124.2
5°	51 03.7 +44.0 127.6	50 23.1 +43.4 126.4	49 41.8 +42.9 125.3	49 00.0 +42.3 124.2	48 17.7 +41.7 123.1
6°	51 47.7 +43.3 126.5	51 06.5 +42.7 125.3	50 24.7 +42.2 124.2	49 42.3 +41.7 123.1	48 59.4 +41.2 122.1
7°	52 31.0 +42.7 125.4	51 49.2 +42.2 124.2	51 06.9 +41.5 123.1	50 24.0 +41.0 122.0	49 40.6 +40.5 120.9
8°	53 13.7 +42.0 124.2	52 31.4 +41.4 123.0	51 48.4 +40.9 121.9	51 05.0 +40.3 120.8	50 21.1 +39.8 119.8
9°	53 55.7 +41.3 123.0	53 12.8 +40.6 121.8	52 29.3 +40.1 120.7	51 45.3 +39.6 119.7	51 00.9 +39.0 118.6
10°	54 37.0 +40.4 121.7	53 53.4 +39.9 120.6	53 09.4 +39.3 119.5	52 24.9 +38.8 118.4	51 39.9 +38.3 117.4
11°	55 17.4 +39.7 120.5	54 33.3 +39.1 119.3	53 48.7 +38.5 118.2	53 03.7 +37.9 117.2	52 18.2 +37.5 116.1
12°	55 57.1 +38.7 119.1	55 12.4 +38.1 118.0	54 27.2 +37.6 116.9	53 41.6 +37.1 115.9	52 55.7 +36.6 114.9
13°	56 35.8 +37.8 117.8	55 50.5 +37.3 116.6	55 04.8 +36.7 115.6	54 18.7 +36.2 114.5	53 32.3 +35.7 113.5
14°	57 13.6 +36.8 116.3	56 27.8 +36.2 115.2	55 41.5 +35.8 114.2	54 54.9 +35.3 113.2	54 08.0 +34.7 112.2
15°	57 50.4 +35.7 114.9	57 04.0 +35.2 113.8	56 17.3 +34.6 112.7	55 30.2 +34.2 111.7	54 42.7 +33.8 110.8
16°	58 26.1 +34.6 113.3	57 39.2 +34.1 112.3	56 51.9 +33.6 111.3	56 04.4 +33.1 110.3	55 16.5 +32.7 109.3
17°	59 00.7 +33.4 111.8	58 13.3 +32.9 110.7	57 25.5 +32.5 109.7	56 37.5 +32.0 108.8	55 49.2 +31.6 107.8
18°	59 34.1 +32.2 110.1	58 46.2 +31.7 109.1	57 58.0 +31.3 108.2	57 09.5 +30.9 107.2	56 20.8 +30.5 106.3
19°	60 06.3 +30.9 108.5	59 17.9 +30.4 107.5	58 29.3 +30.0 106.5	57 40.4 +29.6 105.6	56 51.3 +29.2 104.8
20°	60 37.2 +29.5 106.7	59 48.3 +29.1 105.8	58 59.3 +28.6 104.9	58 10.0 +28.3 104.0	57 20.5 +28.0 103.2
21°	61 06.7 +28.0 104.9	60 17.4 +27.6 104.0	59 27.9 +27.3 103.2	58 38.3 +27.0 102.3	57 48.5 +26.7 101.5
22°	61 34.7 +26.4 103.1	60 45.0 +26.2 102.2	59 55.2 +25.8 101.4	59 05.3 +25.5 100.6	58 15.2 +25.3 99.8
23°	62 01.1 +24.9 101.2	61 11.2 +24.5 100.4	60 21.0 +24.4 99.6	59 30.8 +24.1 98.8	58 40.5 +23.8 98.1
24°	62 26.0 +23.2 99.2	61 35.7 +23.0 98.5	60 45.4 +22.7 97.7	59 54.9 +22.5 97.0	59 04.3 +22.4 96.3
25°	62 49.2 +21.4 97.2	61 58.7 +21.2 96.5	61 08.1 +21.1 95.8	60 17.4 +21.0 95.1	59 26.7 +20.9 94.5
26°	63 10.6 +19.6 95.2	62 19.9 +19.5 94.5	61 29.2 +19.3 93.9	60 38.4 +19.3 93.2	59 47.6 +19.2 92.6
27°	63 30.2 +17.7 93.1	62 39.4 +17.6 92.5	61 48.5 +17.6 91.9	60 57.7 +17.6 91.3	60 06.8 +17.6 90.7
28°	63 47.9 +15.7 90.9	62 57.0 +15.8 90.4	62 06.1 +15.8 89.8	61 15.3 +15.8 89.3	60 24.4 +15.9 88.8
29°	64 03.6 +13.8 88.7	63 12.8 +13.8 88.2	62 21.9 +13.9 87.8	61 31.1 +14.0 87.3	60 40.3 +14.1 86.9

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	44 00.1 +44.0 127.1	43 19.3 +43.4 126.1	42 37.9 +43.0 125.1	41 56.0 +42.5 124.1	41 13.7 +42.0 123.2
1°	44 44.1 +43.5 126.2	44 02.7 +43.0 125.2	43 20.9 +42.5 124.2	42 38.5 +42.0 123.2	41 55.7 +41.6 122.2
2°	45 27.6 +42.9 125.2	44 45.7 +42.5 124.2	44 03.4 +41.9 123.2	43 20.5 +41.6 122.2	42 37.3 +41.0 121.3
3°	46 10.5 +42.4 124.2	45 28.2 +41.9 123.2	44 45.3 +41.5 122.2	44 02.1 +40.9 121.2	43 18.3 +40.5 120.3
4°	46 52.9 +41.9 123.2	46 10.1 +41.4 122.1	45 26.8 +40.9 121.2	44 43.0 +40.4 120.2	43 58.8 +40.0 119.3
5°	47 34.8 +41.3 122.1	46 51.5 +40.7 121.1	46 07.7 +40.3 120.1	45 23.4 +39.9 119.2	44 38.8 +39.4 118.2
6°	48 16.1 +40.6 121.0	47 32.2 +40.2 120.0	46 48.0 +39.6 119.0	46 03.3 +39.2 118.1	45 18.2 +38.8 117.1
7°	48 56.7 +40.0 119.9	48 12.4 +39.5 118.9	47 27.6 +39.1 117.9	46 42.5 +38.6 117.0	45 57.0 +38.1 116.1
8°	49 36.7 +39.3 118.8	48 51.9 +38.8 117.8	48 06.7 +38.3 116.8	47 21.1 +37.9 115.9	46 35.1 +37.5 114.9
9°	50 16.0 +38.5 117.6	49 30.7 +38.1 116.6	48 45.0 +37.6 115.6	47 59.0 +37.1 114.7	47 12.6 +36.7 113.8
10°	50 54.5 +37.8 116.4	50 08.8 +37.3 115.4	49 22.6 +36.9 114.5	48 36.1 +36.5 113.5	47 49.3 +36.1 112.6
11°	51 32.3 +37.0 115.1	50 46.1 +36.5 114.2	49 59.5 +36.1 113.2	49 12.6 +35.7 112.3	48 25.4 +35.2 111.4
12°	52 09.3 +36.2 113.9	51 22.6 +35.7 112.9	50 35.6 +35.3 112.0	49 48.3 +34.8 111.1	49 00.6 +34.5 110.2
13°	52 45.5 +35.2 112.6	51 58.3 +34.8 111.6	51 10.9 +34.4 110.7	50 23.1 +34.0 109.8	49 35.1 +33.7 108.9
14°	53 20.7 +34.3 111.2	52 33.1 +33.9 110.3	51 45.3 +33.4 109.4	50 57.1 +33.2 108.5	50 08.8 +32.7 107.7
15°	53 55.0 +33.3 109.8	53 07.0 +32.9 108.9	52 18.7 +32.6 108.0	51 30.3 +32.1 107.2	50 41.5 +31.9 106.3
16°	54 28.3 +32.3 108.4	53 39.9 +32.0 107.5	52 51.3 +31.6 106.7	52 02.4 +31.3 105.8	51 13.4 +30.9 105.0
17°	55 00.6 +31.3 106.9	54 11.9 +30.8 106.1	53 22.9 +30.5 105.2	52 33.7 +30.2 104.4	51 44.3 +29.9 103.6
18°	55 31.9 +30.1 105.5	54 42.7 +29.8 104.6	53 53.4 +29.5 103.8	53 03.9 +29.2 103.0	52 14.2 +28.9 102.2
19°	56 02.0 +28.9 103.9	55 12.5 +28.6 103.1	54 22.9 +28.3 102.3	53 33.1 +28.0 101.5	52 43.1 +27.9 100.8
20°	56 30.9 +27.7 102.3	55 41.1 +27.4 101.5	54 51.2 +27.2 100.8	54 01.1 +27.0 100.0	53 11.0 +26.7 99.3
21°	56 58.6 +26.4 100.7	56 08.5 +26.2 100.0	55 18.4 +25.9 99.2	54 28.1 +25.7 98.5	53 37.7 +25.6 97.8
22°	57 25.0 +25.1 99.1	56 34.7 +24.9 98.3	55 44.3 +24.7 97.6	54 53.8 +24.6 96.9	54 03.3 +24.4 96.3
23°	57 50.1 +23.6 97.4	56 59.6 +23.5 96.7	56 09.0 +23.4 96.0	55 18.4 +23.2 95.3	54 27.7 +23.1 94.7
24°	58 13.7 +22.3 95.6	57 23.1 +22.1 95.0	56 32.4 +22.0 94.3	55 41.6 +21.9 93.7	54 50.8 +21.9 93.1
25°	58 36.0 +20.7 93.9	57 45.2 +20.7 93.2	56 54.4 +20.6 92.6	56 03.5 +20.6 92.1	55 12.7 +20.5 91.5
26°	58 56.7 +19.2 92.0	58 05.9 +19.1 91.5	57 15.0 +19.2 90.9	56 24.1 +19.2 90.4	55 33.2 +19.2 89.8
27°	59 15.9 +17.6 90.2	58 25.0 +17.7 89.7	57 34.2 +17.6 89.2	56 43.3 +17.7 88.6	55 52.4 +17.8 88.2
28°	59 33.5 +16.0 88.3	58 42.7 +16.0 87.8	57 51.8 +16.2 87.4	57 01.0 +16.3 86.9	56 10.2 +16.4 86.4
29°	59 49.5 +14.3 86.4	58 58.7 +14.4 86.0	58 08.0 +14.5 85.5	57 17.3 +14.7 85.1	56 26.6 +14.9 84.7

Declination SAME name as Latitude

Latitude 32°

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°	40 30.9 +41.6 122.3	39 47.6 +41.2 121.4	39 04.0 +40.7 120.5	38 19.9 +40.4 119.6	37 35.5 +39.9 118.8
1°	41 12.5 +41.1 121.3	40 28.8 +40.7 120.4	39 44.7 +40.3 119.5	39 00.3 +39.8 118.7	38 15.4 +39.5 117.8
2°	41 53.6 +40.6 120.3	41 09.5 +40.1 119.4	40 25.0 +39.7 118.6	39 40.1 +39.3 117.7	38 54.9 +38.9 116.8
3°	42 34.2 +40.1 119.4	41 49.6 +39.7 118.5	41 04.7 +39.2 117.6	40 19.4 +38.9 116.7	39 33.8 +38.5 115.9
4°	43 14.3 +39.5 118.3	42 29.3 +39.1 117.4	41 43.9 +38.7 116.6	40 58.3 +38.3 115.7	40 12.3 +37.9 114.9
5°	43 53.8 +38.9 117.3	43 08.4 +38.5 116.4	42 22.6 +38.2 115.5	41 36.6 +37.7 114.7	40 50.2 +37.3 113.8
6°	44 32.7 +38.4 116.2	43 46.9 +38.0 115.3	43 00.8 +37.5 114.5	42 14.3 +37.2 113.6	41 27.5 +36.8 112.8
7°	45 11.1 +37.7 115.2	44 24.9 +37.3 114.3	43 38.3 +36.9 113.4	42 51.5 +36.5 112.6	42 04.3 +36.2 111.7
8°	45 48.8 +37.0 114.0	45 02.2 +36.6 113.2	44 15.2 +36.3 112.3	43 28.0 +36.0 111.5	42 40.5 +35.6 110.7
9°	46 25.8 +36.4 112.9	45 38.8 +36.0 112.0	44 51.5 +35.6 111.2	44 04.0 +35.2 110.4	43 16.1 +35.0 109.6
10°	47 02.2 +35.7 111.7	46 14.8 +35.3 110.9	45 27.1 +35.0 110.1	44 39.2 +34.6 109.2	43 51.1 +34.2 108.4
11°	47 37.9 +34.9 110.6	46 50.1 +34.5 109.7	46 02.1 +34.2 108.9	45 13.8 +33.9 108.1	44 25.3 +33.6 107.3
12°	48 12.8 +34.1 109.3	47 24.6 +33.8 108.5	46 36.3 +33.4 107.7	45 47.7 +33.1 106.9	44 58.9 +32.8 106.1
13°	48 46.9 +33.3 108.1	47 58.4 +33.0 107.3	47 09.7 +32.7 106.5	46 20.8 +32.4 105.7	45 31.7 +32.1 104.9
14°	49 20.2 +32.4 106.8	48 31.4 +32.1 106.0	47 42.4 +31.8 105.2	46 53.2 +31.5 104.5	46 03.8 +31.3 103.7
15°	49 52.6 +31.6 105.5	49 03.5 +31.2 104.7	48 14.2 +31.0 104.0	47 24.7 +30.8 103.2	46 35.1 +30.5 102.5
16°	50 24.2 +30.6 104.2	49 34.7 +30.4 103.4	48 45.2 +30.1 102.7	47 55.5 +29.8 102.0	47 05.6 +29.7 101.2
17°	50 54.8 +29.6 102.9	50 05.1 +29.4 102.1	49 15.3 +29.2 101.4	48 25.3 +29.0 100.7	47 35.3 +28.7 100.0
18°	51 24.4 +28.7 101.5	50 34.5 +28.4 100.7	49 44.5 +28.2 100.0	48 54.3 +28.0 99.3	48 04.0 +27.9 98.6
19°	51 53.1 +27.6 100.1	51 02.9 +27.5 99.3	50 12.7 +27.2 98.7	49 22.3 +27.1 98.0	48 31.9 +26.9 97.3
20°	52 20.7 +26.6 98.6	51 30.4 +26.3 97.9	50 39.9 +26.2 97.3	49 49.4 +26.1 96.6	48 58.8 +26.0 96.0
21°	52 47.3 +25.4 97.1	51 56.7 +25.3 96.5	51 06.1 +25.2 95.8	50 15.5 +25.0 95.2	49 24.8 +25.0 94.6
22°	53 12.7 +24.2 95.6	52 22.0 +24.2 95.0	51 31.3 +24.1 94.4	50 40.5 +24.0 93.8	49 49.8 +23.9 93.2
23°	53 36.9 +23.1 94.1	52 46.2 +22.9 93.5	51 55.4 +22.9 92.9	51 04.5 +22.9 92.3	50 13.7 +22.8 91.7
24°	54 00.0 +21.8 92.5	53 09.1 +21.8 92.0	52 18.3 +21.7 91.4	51 27.4 +21.8 90.8	50 36.5 +21.8 90.3
25°	54 21.8 +20.5 90.9	53 30.9 +20.6 90.4	52 40.0 +20.6 89.9	51 49.2 +20.6 89.3	50 58.3 +20.6 88.8
26°	54 42.3 +19.3 89.3	53 51.5 +19.2 88.8	53 00.6 +19.3 88.3	52 09.8 +19.3 87.8	51 18.9 +19.5 87.3
27°	55 01.6 +17.8 87.7	54 10.7 +18.0 87.2	53 19.9 +18.1 86.7	52 29.1 +18.2 86.3	51 38.4 +18.3 85.8
28°	55 19.4 +16.5 86.0	54 28.7 +16.6 85.6	53 38.0 +16.7 85.1	52 47.3 +16.9 84.7	51 56.7 +17.0 84.3
29°	55 35.9 +15.1 84.3	54 45.3 +15.2 83.9	53 54.7 +15.4 83.5	53 04.2 +15.6 83.1	52 13.7 +15.8 82.7

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°	36 50.7 +39.5 117.9	36 05.6 +39.1 117.1	35 20.1 +38.8 116.3	34 34.4 +38.4 115.5	33 48.3 +38.1 114.7
1°	37 30.2 +39.1 117.0	36 44.7 +38.7 116.2	35 58.9 +38.3 115.4	35 12.8 +37.9 114.6	34 26.4 +37.6 113.8
2°	38 09.3 +38.6 116.0	37 23.4 +38.2 115.2	36 37.2 +37.9 114.4	35 50.7 +37.5 113.6	35 04.0 +37.2 112.9
3°	38 47.9 +38.0 115.0	38 01.6 +37.7 114.2	37 15.1 +37.3 113.4	36 28.2 +37.1 112.7	35 41.2 +36.7 111.9
4°	39 25.9 +37.6 114.0	38 39.3 +37.2 113.2	37 52.4 +36.9 112.4	37 05.3 +36.5 111.7	36 17.9 +36.2 110.9
5°	40 03.5 +37.0 113.0	39 16.5 +36.7 112.2	38 29.3 +36.3 111.4	37 41.8 +36.0 110.7	36 54.1 +35.7 109.9
6°	40 40.5 +36.4 112.0	39 53.2 +36.1 111.2	39 05.6 +35.8 110.4	38 17.8 +35.5 109.7	37 29.8 +35.2 108.9
7°	41 16.9 +35.9 110.9	40 29.3 +35.5 110.2	39 41.4 +35.2 109.4	38 53.3 +34.9 108.6	38 05.0 +34.6 107.9
8°	41 52.8 +35.3 109.9	41 04.8 +35.0 109.1	40 16.6 +34.7 108.3	39 28.2 +34.4 107.6	38 39.6 +34.1 106.8
9°	42 28.1 +34.6 108.8	41 39.8 +34.3 108.0	40 51.3 +34.0 107.2	40 02.6 +33.8 106.5	39 13.7 +33.5 105.8
10°	43 02.7 +34.0 107.7	42 14.1 +33.7 106.9	41 25.3 +33.4 106.2	40 36.4 +33.1 105.4	39 47.2 +32.9 104.7
11°	43 36.7 +33.2 106.5	42 47.8 +33.0 105.8	41 58.7 +32.8 105.0	41 09.5 +32.5 104.3	40 20.1 +32.3 103.6
12°	44 09.9 +32.6 105.4	43 20.8 +32.3 104.6	42 31.5 +32.0 103.9	41 42.0 +31.8 103.2	40 52.4 +31.6 102.5
13°	44 42.5 +31.8 104.2	43 53.1 +31.6 103.5	43 03.5 +31.4 102.8	42 13.8 +31.2 102.1	41 24.0 +31.0 101.4
14°	45 14.3 +31.1 103.0	44 24.7 +30.8 102.3	43 34.9 +30.6 101.6	42 45.0 +30.4 100.9	41 55.0 +30.2 100.2
15°	45 45.4 +30.3 101.8	44 55.5 +30.1 101.1	44 05.5 +29.9 100.4	43 15.4 +29.7 99.7	42 25.2 +29.6 99.1
16°	46 15.7 +29.4 100.5	45 25.6 +29.2 99.9	44 35.4 +29.1 99.2	43 45.1 +29.0 98.5	42 54.8 +28.7 97.9
17°	46 45.1 +28.6 99.3	45 54.8 +28.5 98.6	45 04.5 +28.3 97.9	44 14.1 +28.1 97.3	43 23.5 +28.1 96.7
18°	47 13.7 +27.7 98.0	46 23.3 +27.5 97.3	45 32.8 +27.4 96.7	44 42.2 +27.3 96.1	43 51.6 +27.2 95.5
19°	47 41.4 +26.8 96.7	46 50.8 +26.7 96.0	46 00.2 +26.6 95.4	45 09.5 +26.5 94.8	44 18.8 +26.4 94.2
20°	48 08.2 +25.9 95.3	47 17.5 +25.8 94.7	46 26.8 +25.7 94.1	45 36.0 +25.6 93.5	44 45.2 +25.6 93.0
21°	48 34.1 +24.8 94.0	47 43.3 +24.8 93.4	46 52.5 +24.7 92.8	46 01.6 +24.8 92.2	45 10.8 +24.7 91.7
22°	48 58.9 +23.9 92.6	48 08.1 +23.8 92.0	47 17.2 +23.9 91.5	46 26.4 +23.8 90.9	45 35.5 +23.8 90.4
23°	49 22.8 +22.9 91.2	48 31.9 +22.9 90.6	47 41.1 +22.8 90.1	46 50.2 +22.8 89.6	45 59.3 +22.9 89.1
24°	49 45.7 +21.7 89.8	48 54.8 +21.8 89.2	48 03.9 +21.8 88.7	47 13.0 +21.9 88.2	46 22.2 +21.9 87.7
25°	50 07.4 +20.7 88.3	49 16.6 +20.7 87.8	48 25.7 +20.8 87.3	47 34.9 +20.9 86.9	46 44.1 +21.0 86.4
26°	50 28.1 +19.5 86.9	49 37.3 +19.6 86.4	48 46.5 +19.8 85.9	47 55.8 +19.9 85.5	47 05.1 +20.0 85.0
27°	50 47.6 +18.4 85.4	49 56.9 +18.6 84.9	49 06.3 +18.6 84.5	48 15.7 +18.8 84.0	47 25.1 +18.9 83.6
28°	51 06.0 +17.3 83.8	50 15.5 +17.4 83.4	49 24.9 +17.6 83.0	48 34.5 +17.7 82.6	47 44.0 +17.9 82.2
29°	51 23.3 +16.0 82.3	50 32.9 +16.2 81.9	49 42.5 +16.4 81.5	48 52.2 +16.6 81.2	48 01.9 +16.9 80.8

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Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	33 02.0 +37.7 114.0	32 15.3 +37.4 113.2	31 28.4 +37.1 112.5	30 41.3 +36.8 111.8	29 53.9 +36.5 111.1
1°	33 39.7 +37.3 113.0	32 52.7 +37.0 112.3	32 05.5 +36.7 111.6	31 18.1 +36.4 110.8	30 30.4 +36.1 110.1
2°	34 17.0 +36.8 112.1	33 29.7 +36.5 111.4	32 42.2 +36.2 110.6	31 54.5 +35.9 109.9	31 06.5 +35.7 109.2
3°	34 53.8 +36.4 111.1	34 06.2 +36.1 110.4	33 18.4 +35.8 109.7	32 30.4 +35.6 109.0	31 42.2 +35.3 108.3
4°	35 30.2 +35.9 110.2	34 42.3 +35.7 109.4	33 54.2 +35.4 108.7	33 06.0 +35.0 108.0	32 17.5 +34.8 107.3
5°	36 06.1 +35.5 109.2	35 18.0 +35.1 108.5	34 29.6 +34.9 107.7	33 41.0 +34.7 107.0	32 52.3 +34.4 106.3
6°	36 41.6 +34.9 108.2	35 53.1 +34.7 107.5	35 04.5 +34.4 106.7	34 15.7 +34.1 106.1	33 26.7 +33.9 105.4
7°	37 16.5 +34.3 107.2	36 27.8 +34.1 106.4	35 38.9 +33.8 105.7	34 49.8 +33.7 105.1	34 00.6 +33.4 104.4
8°	37 50.8 +33.9 106.1	37 01.9 +33.6 105.4	36 12.7 +33.4 104.7	35 23.5 +33.1 104.0	34 34.0 +32.9 103.4
9°	38 24.7 +33.2 105.1	37 35.5 +33.0 104.4	36 46.1 +32.8 103.7	35 56.6 +32.6 103.0	35 06.9 +32.5 102.4
10°	38 57.9 +32.7 104.0	38 08.5 +32.4 103.3	37 18.9 +32.3 102.6	36 29.2 +32.0 102.0	35 39.4 +31.8 101.3
11°	39 30.6 +32.1 102.9	38 40.9 +31.9 102.2	37 51.2 +31.6 101.6	37 01.2 +31.5 100.9	36 11.2 +31.4 100.3
12°	40 02.7 +31.4 101.8	39 12.8 +31.2 101.2	38 22.8 +31.1 100.5	37 32.7 +30.9 99.8	36 42.6 +30.7 99.2
13°	40 34.1 +30.7 100.7	39 44.0 +30.6 100.0	38 53.9 +30.4 99.4	38 03.6 +30.3 98.8	37 13.3 +30.2 98.1
14°	41 04.8 +30.1 99.6	40 14.6 +30.0 98.9	39 24.3 +29.8 98.3	38 33.9 +29.7 97.7	37 43.5 +29.5 97.0
15°	41 34.9 +29.4 98.4	40 44.6 +29.2 97.8	39 54.1 +29.1 97.2	39 03.6 +29.0 96.5	38 13.0 +28.9 95.9
16°	42 04.3 +28.7 97.2	41 13.8 +28.6 96.6	40 23.2 +28.5 96.0	39 32.6 +28.4 95.4	38 41.9 +28.3 94.8
17°	42 33.0 +27.9 96.1	41 42.4 +27.8 95.5	40 51.7 +27.7 94.9	40 01.0 +27.6 94.3	39 10.2 +27.6 93.7
18°	43 00.9 +27.1 94.9	42 10.2 +27.0 94.3	41 19.4 +27.0 93.7	40 28.6 +27.0 93.1	39 37.8 +26.9 92.5
19°	43 28.0 +26.4 93.6	42 37.2 +26.3 93.1	41 46.4 +26.3 92.5	40 55.6 +26.2 91.9	40 04.7 +26.2 91.4
20°	43 54.4 +25.5 92.4	43 03.5 +25.5 91.8	42 12.7 +25.5 91.3	41 21.8 +25.5 90.7	40 30.9 +25.5 90.2
21°	44 19.9 +24.7 91.1	43 29.0 +24.7 90.6	42 38.2 +24.6 90.1	41 47.3 +24.7 89.5	40 56.4 +24.7 89.0
22°	44 44.6 +23.8 89.8	43 53.7 +23.9 89.3	43 02.8 +23.9 88.8	42 12.0 +23.9 88.3	41 21.1 +24.0 87.8
23°	45 08.4 +22.9 88.6	44 17.6 +22.9 88.0	43 26.7 +23.0 87.5	42 35.9 +23.1 87.1	41 45.1 +23.2 86.6
24°	45 31.3 +22.1 87.2	44 40.5 +22.1 86.8	43 49.7 +22.2 86.3	42 59.0 +22.2 85.8	42 08.3 +22.3 85.3
25°	45 53.4 +21.0 85.9	45 02.6 +21.2 85.4	44 11.9 +21.3 85.0	43 21.2 +21.4 84.5	42 30.6 +21.5 84.1
26°	46 14.4 +20.1 84.6	45 23.8 +20.2 84.1	44 33.2 +20.4 83.7	43 42.6 +20.6 83.2	42 52.1 +20.7 82.8
27°	46 34.5 +19.1 83.2	45 44.0 +19.3 82.8	44 53.6 +19.4 82.3	44 03.2 +19.6 81.9	43 12.8 +19.8 81.5
28°	46 53.6 +18.1 81.8	46 03.3 +18.3 81.4	45 13.0 +18.5 81.0	44 22.8 +18.7 80.6	43 32.6 +18.9 80.2
29°	47 11.7 +17.1 80.4	46 21.6 +17.3 80.0	45 31.5 +17.5 79.7	44 41.5 +17.7 79.3	43 51.5 +18.0 78.9

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°	29 06.3 +36.2 110.4	28 18.5 +36.0 109.7	27 30.5 +35.7 109.0	26 42.3 +35.4 108.3	25 53.9 +35.2 107.7
1°	29 42.5 +35.9 109.4	28 54.5 +35.5 108.8	28 06.2 +35.3 108.1	27 17.7 +35.1 107.4	26 29.1 +34.8 106.8
2°	30 18.4 +35.4 108.5	29 30.0 +35.2 107.8	28 41.5 +34.9 107.2	27 52.8 +34.7 106.5	27 03.9 +34.5 105.8
3°	30 53.8 +35.0 107.6	30 05.2 +34.8 106.9	29 16.4 +34.6 106.2	28 27.5 +34.3 105.6	27 38.4 +34.1 104.9
4°	31 28.8 +34.6 106.6	30 40.0 +34.3 106.0	29 51.0 +34.1 105.3	29 01.8 +33.9 104.6	28 12.5 +33.7 104.0
5°	32 03.4 +34.1 105.7	31 14.3 +33.9 105.0	30 25.1 +33.7 104.3	29 35.7 +33.5 103.7	28 46.2 +33.4 103.1
6°	32 37.5 +33.7 104.7	31 48.2 +33.5 104.0	30 58.8 +33.3 103.4	30 09.2 +33.1 102.7	29 19.6 +32.9 102.1
7°	33 11.2 +33.2 103.7	32 21.7 +33.1 103.1	31 32.1 +32.8 102.4	30 42.3 +32.7 101.8	29 52.5 +32.5 101.1
8°	33 44.4 +32.8 102.7	32 54.8 +32.5 102.1	32 04.9 +32.4 101.4	31 15.0 +32.2 100.8	30 25.0 +32.0 100.2
9°	34 17.2 +32.2 101.7	33 27.3 +32.1 101.1	32 37.3 +31.9 100.4	31 47.2 +31.8 99.8	30 57.0 +31.6 99.2
10°	34 49.4 +31.7 100.7	33 59.4 +31.5 100.0	33 09.2 +31.4 99.4	32 19.0 +31.2 98.8	31 28.6 +31.2 98.2
11°	35 21.1 +31.2 99.6	34 30.9 +31.0 99.0	33 40.6 +30.9 98.4	32 50.2 +30.8 97.8	31 59.8 +30.6 97.2
12°	35 52.3 +30.6 98.6	35 01.9 +30.5 98.0	34 11.5 +30.4 97.4	33 21.0 +30.3 96.8	32 30.4 +30.2 96.2
13°	36 22.9 +30.0 97.5	35 32.4 +29.9 96.9	34 41.9 +29.8 96.3	33 51.3 +29.7 95.7	33 00.6 +29.7 95.1
14°	36 52.9 +29.5 96.4	36 02.3 +29.4 95.8	35 11.7 +29.3 95.3	34 21.0 +29.2 94.7	33 30.3 +29.1 94.1
15°	37 22.4 +28.8 95.4	36 31.7 +28.7 94.8	35 41.0 +28.6 94.2	34 50.2 +28.6 93.6	33 59.4 +28.6 93.1
16°	37 51.2 +28.2 94.2	37 00.4 +28.2 93.7	36 09.6 +28.1 93.1	35 18.8 +28.1 92.5	34 28.0 +28.0 92.0
17°	38 19.4 +27.6 93.1	37 28.6 +27.5 92.6	36 37.7 +27.5 92.0	35 46.9 +27.4 91.5	34 56.0 +27.5 90.9
18°	38 47.0 +26.8 92.0	37 56.1 +26.9 91.4	37 05.2 +26.9 90.9	36 14.3 +26.9 90.4	35 23.5 +26.8 89.8
19°	39 13.8 +26.2 90.8	38 23.0 +26.2 90.3	37 32.1 +26.2 89.8	36 41.2 +26.2 89.2	35 50.3 +26.3 88.7
20°	39 40.0 +25.5 89.7	38 49.2 +25.5 89.1	37 58.3 +25.5 88.6	37 07.4 +25.6 88.1	36 16.6 +25.6 87.6
21°	40 05.5 +24.8 88.5	39 14.7 +24.8 88.0	38 23.8 +24.9 87.5	37 33.0 +24.9 87.0	36 42.2 +25.0 86.5
22°	40 30.3 +24.0 87.3	39 39.5 +24.1 86.8	38 48.7 +24.1 86.3	37 57.9 +24.3 85.8	37 07.2 +24.3 85.4
23°	40 54.3 +23.3 86.1	40 03.6 +23.3 85.6	39 12.8 +23.5 85.1	38 22.2 +23.5 84.7	37 31.5 +23.7 84.2
24°	41 17.6 +22.4 84.9	40 26.9 +22.6 84.4	39 36.3 +22.7 83.9	38 45.7 +22.8 83.5	37 55.2 +22.9 83.0
25°	41 40.0 +21.7 83.6	40 49.5 +21.8 83.2	39 59.0 +21.9 82.7	39 08.5 +22.1 82.3	38 18.1 +22.3 81.9
26°	42 01.7 +20.8 82.4	41 11.3 +21.0 81.9	40 20.9 +21.2 81.5	39 30.6 +21.4 81.1	38 40.4 +21.5 80.7
27°	42 22.5 +20.0 81.1	41 32.3 +20.1 80.7	40 42.1 +20.4 80.3	39 52.0 +20.5 79.9	39 01.9 +20.8 79.5
28°	42 42.5 +19.1 79.8	41 52.4 +19.4 79.4	41 02.5 +19.5 79.0	40 12.5 +19.8 78.7	39 22.7 +20.0 78.3
29°	43 01.6 +18.3 78.5	42 11.8 +18.5 78.2	41 22.0 +18.8 77.8	40 32.3 +19.0 77.4	39 42.7 +19.2 77.0

Declination SAME name as Latitude

Latitude 32°

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	25 05.3 +35.0 107.0	24 16.6 +34.7 106.4	23 27.7 +34.5 105.7	22 38.6 +34.3 105.1	21 49.5 +34.1 104.5
1°	25 40.3 +34.6 106.1	24 51.3 +34.4 105.5	24 02.2 +34.2 104.8	23 12.9 +34.0 104.2	22 23.6 +33.8 103.6
2°	26 14.9 +34.3 105.2	25 25.7 +34.1 104.6	24 36.4 +33.9 103.9	23 46.9 +33.7 103.3	22 57.4 +33.5 102.7
3°	26 49.2 +33.9 104.3	25 59.8 +33.7 103.7	25 10.3 +33.5 103.0	24 20.6 +33.4 102.4	23 30.9 +33.2 101.8
4°	27 23.1 +33.5 103.4	26 33.5 +33.3 102.7	25 43.8 +33.2 102.1	24 54.0 +33.0 101.5	24 04.1 +32.8 100.9
5°	27 56.6 +33.1 102.4	27 06.8 +33.0 101.8	26 17.0 +32.8 101.2	25 27.0 +32.7 100.6	24 36.9 +32.6 100.0
6°	28 29.7 +32.8 101.5	27 39.8 +32.6 100.9	26 49.8 +32.4 100.2	25 59.7 +32.3 99.6	25 09.5 +32.2 99.1
7°	29 02.5 +32.3 100.5	28 12.4 +32.2 99.9	27 22.2 +32.1 99.3	26 32.0 +31.9 98.7	25 41.7 +31.8 98.1
8°	29 34.8 +32.0 99.6	28 44.6 +31.8 98.9	27 54.3 +31.7 98.4	27 03.9 +31.6 97.8	26 13.5 +31.4 97.2
9°	30 06.8 +31.4 98.6	29 16.4 +31.4 98.0	28 26.0 +31.2 97.4	27 35.5 +31.1 96.8	26 44.9 +31.1 96.2
10°	30 38.2 +31.1 97.6	29 47.8 +30.9 97.0	28 57.2 +30.9 96.4	28 06.6 +30.8 95.8	27 16.0 +30.7 95.3
11°	31 09.3 +30.5 96.6	30 18.7 +30.5 96.0	29 28.1 +30.4 95.4	28 37.4 +30.3 94.9	27 46.7 +30.2 94.3
12°	31 39.8 +30.1 95.6	30 49.2 +30.0 95.0	29 58.5 +29.9 94.4	29 07.7 +29.9 93.9	28 16.9 +29.9 93.3
13°	32 09.9 +29.6 94.6	31 19.2 +29.5 94.0	30 28.4 +29.5 93.4	29 37.6 +29.4 92.9	28 46.8 +29.4 92.3
14°	32 39.5 +29.1 93.5	31 48.7 +29.0 93.0	30 57.9 +29.0 92.4	30 07.0 +29.0 91.9	29 16.2 +28.9 91.3
15°	33 08.6 +28.5 92.5	32 17.7 +28.6 91.9	31 26.9 +28.5 91.4	30 36.0 +28.5 90.9	29 45.1 +28.5 90.3
16°	33 37.1 +28.0 91.4	32 46.3 +27.9 90.9	31 55.4 +28.0 90.4	31 04.5 +28.0 89.8	30 13.6 +28.0 89.3
17°	34 05.1 +27.5 90.4	33 14.2 +27.5 89.8	32 23.4 +27.4 89.3	31 32.5 +27.5 88.8	30 41.6 +27.6 88.3
18°	34 32.6 +26.9 89.3	33 41.7 +26.9 88.8	32 50.8 +27.0 88.3	32 00.0 +27.0 87.8	31 09.2 +27.0 87.2
19°	34 59.5 +26.2 88.2	34 08.6 +26.3 87.7	33 17.8 +26.4 87.2	32 27.0 +26.4 86.7	31 36.2 +26.5 86.2
20°	35 25.7 +25.7 87.1	34 34.9 +25.8 86.6	33 44.2 +25.8 86.1	32 53.4 +25.9 85.6	32 02.7 +26.0 85.1
21°	35 51.4 +25.1 86.0	35 00.7 +25.1 85.5	34 10.0 +25.2 85.0	33 19.3 +25.3 84.6	32 28.7 +25.4 84.1
22°	36 16.5 +24.4 84.9	35 25.8 +24.6 84.4	34 35.2 +24.6 83.9	33 44.6 +24.8 83.5	32 54.1 +24.9 83.0
23°	36 40.9 +23.8 83.7	35 50.4 +23.9 83.3	34 59.8 +24.1 82.8	34 09.4 +24.2 82.4	33 19.0 +24.3 81.9
24°	37 04.7 +23.1 82.6	36 14.3 +23.2 82.1	35 23.9 +23.4 81.7	34 33.6 +23.5 81.3	33 43.3 +23.7 80.8
25°	37 27.8 +22.4 81.4	36 37.5 +22.6 81.0	35 47.3 +22.7 80.6	34 57.1 +22.9 80.1	34 07.0 +23.1 79.7
26°	37 50.2 +21.7 80.3	37 00.1 +21.9 79.8	36 10.0 +22.1 79.4	35 20.0 +22.3 79.0	34 30.1 +22.5 78.6
27°	38 11.9 +21.0 79.1	37 22.0 +21.2 78.7	36 32.1 +21.4 78.3	35 42.3 +21.7 77.9	34 52.6 +21.9 77.5
28°	38 32.9 +20.2 77.9	37 43.2 +20.5 77.5	36 53.5 +20.8 77.1	36 04.0 +21.0 76.7	35 14.5 +21.2 76.3
29°	38 53.1 +19.5 76.7	38 03.7 +19.7 76.3	37 14.3 +20.0 75.9	36 25.0 +20.3 75.6	35 35.7 +20.6 75.2

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°	21 00.1 +33.9 103.9	20 10.7 +33.7 103.3	19 21.1 +33.5 102.7	18 31.4 +33.4 102.1	17 41.6 +33.2 101.5
1°	21 34.0 +33.7 103.0	20 44.4 +33.5 102.4	19 54.6 +33.4 101.8	19 04.8 +33.1 101.2	18 14.8 +33.0 100.6
2°	22 07.7 +33.3 102.1	21 17.9 +33.2 101.5	20 28.0 +33.0 100.9	19 37.9 +32.9 100.3	18 47.8 +32.8 99.7
3°	22 41.0 +33.1 101.2	21 51.1 +32.9 100.6	21 01.0 +32.8 100.0	20 10.8 +32.7 99.4	19 20.6 +32.5 98.9
4°	23 14.1 +32.7 100.3	22 24.0 +32.5 99.7	21 33.8 +32.4 99.1	20 43.5 +32.3 98.5	19 53.1 +32.3 98.0
5°	23 46.8 +32.4 99.4	22 56.5 +32.3 98.8	22 06.2 +32.2 98.2	21 15.8 +32.1 97.6	20 25.4 +31.9 97.1
6°	24 19.2 +32.0 98.5	23 28.8 +32.0 97.9	22 38.4 +31.8 97.3	21 47.9 +31.7 96.7	20 57.3 +31.7 96.2
7°	24 51.2 +31.8 97.5	24 00.8 +31.6 97.0	23 10.2 +31.6 96.4	22 19.6 +31.5 95.8	21 29.0 +31.4 95.2
8°	25 23.0 +31.3 96.6	24 32.4 +31.3 96.0	23 41.8 +31.2 95.5	22 51.1 +31.1 94.9	22 00.4 +31.0 94.3
9°	25 54.3 +31.0 95.6	25 03.7 +30.9 95.1	24 13.0 +30.8 94.5	23 22.2 +30.8 94.0	22 31.4 +30.8 93.4
10°	26 25.3 +30.6 94.7	25 34.6 +30.5 94.1	24 43.8 +30.5 93.6	23 53.0 +30.5 93.0	23 02.2 +30.4 92.5
11°	26 55.9 +30.2 93.7	26 05.1 +30.2 93.2	25 14.3 +30.1 92.6	24 23.5 +30.1 92.1	23 32.6 +30.1 91.5
12°	27 26.1 +29.8 92.8	26 35.3 +29.7 92.2	25 44.4 +29.8 91.7	24 53.6 +29.7 91.1	24 02.7 +29.7 90.6
13°	27 55.9 +29.4 91.8	27 05.0 +29.4 91.2	26 14.2 +29.3 90.7	25 23.3 +29.3 90.2	24 32.4 +29.4 89.6
14°	28 25.3 +28.9 90.8	27 34.4 +29.0 90.3	26 43.5 +29.0 89.7	25 52.6 +29.0 89.2	25 01.8 +29.0 88.7
15°	28 54.2 +28.5 89.8	28 03.4 +28.5 89.3	27 12.5 +28.5 88.7	26 21.6 +28.6 88.2	25 30.8 +28.6 87.7
16°	29 22.7 +28.1 88.8	28 31.9 +28.0 88.3	27 41.0 +28.1 87.8	26 50.2 +28.1 87.2	25 59.4 +28.2 86.7
17°	29 50.8 +27.5 87.8	28 59.9 +27.7 87.3	28 09.1 +27.7 86.8	27 18.3 +27.8 86.3	26 27.6 +27.8 85.8
18°	30 18.3 +27.1 86.7	29 27.6 +27.1 86.2	28 36.8 +27.2 85.7	27 46.1 +27.3 85.3	26 55.4 +27.4 84.8
19°	30 45.4 +26.6 85.7	29 54.7 +26.7 85.2	29 04.0 +26.8 84.7	28 13.4 +26.8 84.2	27 22.8 +26.9 83.8
20°	31 12.0 +26.1 84.7	30 21.4 +26.1 84.2	29 30.8 +26.2 83.7	28 40.2 +26.4 83.2	27 49.7 +26.5 82.8
21°	31 38.1 +25.5 83.6	30 47.5 +25.7 83.1	29 57.0 +25.8 82.7	29 06.6 +25.9 82.2	28 16.2 +26.1 81.7
22°	32 03.6 +25.0 82.5	31 13.2 +25.1 82.1	30 22.8 +25.3 81.6	29 32.5 +25.5 81.2	28 42.3 +25.6 80.7
23°	32 28.6 +24.5 81.5	31 38.3 +24.7 81.0	30 48.1 +24.8 80.6	29 58.0 +24.9 80.1	29 07.9 +25.1 79.7
24°	32 53.1 +23.9 80.4	32 03.0 +24.0 79.9	31 12.9 +24.2 79.5	30 22.9 +24.4 79.1	29 33.0 +24.6 78.6
25°	33 17.0 +23.3 79.3	32 27.0 +23.5 78.9	31 37.1 +23.7 78.4	30 47.3 +23.9 78.0	29 57.6 +24.1 77.6
26°	33 40.3 +22.7 78.2	32 50.5 +22.9 77.8	32 00.8 +23.2 77.4	31 11.2 +23.4 76.9	30 21.7 +23.6 76.5
27°	34 03.0 +22.1 77.1	33 13.4 +22.4 76.7	32 24.0 +22.6 76.3	31 34.6 +22.8 75.9	30 45.3 +23.1 75.5
28°	34 25.1 +21.5 75.9	33 35.8 +21.7 75.6	32 46.6 +21.9 75.2	31 57.4 +22.3 74.8	31 08.4 +22.5 74.4
29°	34 46.6 +20.8 74.8	33 57.5 +21.1 74.4	33 08.5 +21.4 74.1	32 19.7 +21.7 73.7	31 30.9 +22.0 73.3

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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°	16 51.7 +33.1 100.9	16 01.6 +33.0 100.3	15 11.5 +32.9 99.8	14 21.4 +32.7 99.2	13 31.1 +32.6 98.6
1°	17 24.8 +32.8 100.0	16 34.6 +32.8 99.5	15 44.4 +32.6 98.9	14 54.1 +32.5 98.3	14 03.7 +32.4 97.8
2°	17 57.6 +32.7 99.2	17 07.4 +32.5 98.6	16 17.0 +32.5 98.0	15 26.6 +32.3 97.5	14 36.1 +32.3 96.9
3°	18 30.3 +32.4 98.3	17 39.9 +32.3 97.7	16 49.5 +32.1 97.2	15 58.9 +32.1 96.6	15 08.4 +32.0 96.0
4°	19 02.7 +32.1 97.4	18 12.2 +32.0 96.8	17 21.6 +32.0 96.3	16 31.0 +31.9 95.7	15 40.4 +31.8 95.2
5°	19 34.8 +31.9 96.5	18 44.2 +31.8 95.9	17 53.6 +31.7 95.4	17 02.9 +31.7 94.8	16 12.2 +31.6 94.3
6°	20 06.7 +31.6 95.6	19 16.0 +31.6 95.0	18 25.3 +31.5 94.5	17 34.6 +31.4 93.9	16 43.8 +31.4 93.4
7°	20 38.3 +31.3 94.7	19 47.6 +31.2 94.1	18 56.8 +31.2 93.6	18 06.0 +31.2 93.0	17 15.2 +31.1 92.5
8°	21 09.6 +31.0 93.8	20 18.8 +31.0 93.2	19 28.0 +30.9 92.7	18 37.2 +30.9 92.1	17 46.3 +30.9 91.6
9°	21 40.6 +30.7 92.9	20 49.8 +30.7 92.3	19 58.9 +30.7 91.8	19 08.1 +30.6 91.2	18 17.2 +30.6 90.7
10°	22 11.3 +30.4 91.9	21 20.5 +30.4 91.4	20 29.6 +30.4 90.9	19 38.7 +30.4 90.3	18 47.8 +30.4 89.8
11°	22 41.7 +30.1 91.0	21 50.9 +30.0 90.5	21 00.0 +30.0 89.9	20 09.1 +30.1 89.4	19 18.2 +30.1 88.9
12°	23 11.8 +29.7 90.1	22 20.9 +29.8 89.5	21 30.0 +29.8 89.0	20 39.2 +29.7 88.5	19 48.3 +29.8 88.0
13°	23 41.5 +29.4 89.1	22 50.7 +29.4 88.6	21 59.8 +29.4 88.1	21 08.9 +29.5 87.6	20 18.1 +29.5 87.0
14°	24 10.9 +29.0 88.2	23 20.1 +29.0 87.6	22 29.2 +29.1 87.1	21 38.4 +29.2 86.6	20 47.6 +29.3 86.1
15°	24 39.9 +28.7 87.2	23 49.1 +28.7 86.7	22 58.3 +28.8 86.2	22 07.6 +28.8 85.7	21 16.9 +28.9 85.2
16°	25 08.6 +28.3 86.2	24 17.8 +28.4 85.7	23 27.1 +28.4 85.2	22 36.4 +28.5 84.7	21 45.8 +28.5 84.2
17°	25 36.9 +27.8 85.3	24 46.2 +27.9 84.8	23 55.5 +28.1 84.3	23 04.9 +28.2 83.8	22 14.3 +28.3 83.3
18°	26 04.7 +27.5 84.3	25 14.1 +27.6 83.8	24 23.6 +27.6 83.3	23 33.1 +27.7 82.8	22 42.6 +27.9 82.3
19°	26 32.2 +27.1 83.3	25 41.7 +27.2 82.8	24 51.2 +27.3 82.3	24 00.8 +27.5 81.8	23 10.5 +27.6 81.4
20°	26 59.3 +26.6 82.3	26 08.9 +26.7 81.8	25 18.5 +26.9 81.3	24 28.3 +27.0 80.9	23 38.1 +27.2 80.4
21°	27 25.9 +26.2 81.3	26 35.6 +26.4 80.8	25 45.4 +26.5 80.3	24 55.3 +26.7 79.9	24 05.3 +26.8 79.4
22°	27 52.1 +25.7 80.3	27 02.0 +25.9 79.8	26 11.9 +26.1 79.3	25 22.0 +26.2 78.9	24 32.1 +26.4 78.4
23°	28 17.8 +25.3 79.2	27 27.9 +25.5 78.8	26 38.0 +25.7 78.3	25 48.2 +25.9 77.9	24 58.5 +26.1 77.5
24°	28 43.1 +24.8 78.2	27 53.4 +25.0 77.8	27 03.7 +25.2 77.3	26 14.1 +25.4 76.9	25 24.6 +25.6 76.5
25°	29 07.9 +24.4 77.2	28 18.4 +24.5 76.7	27 28.9 +24.8 76.3	26 39.5 +25.0 75.9	25 50.2 +25.2 75.5
26°	29 32.3 +23.8 76.1	28 42.9 +24.1 75.7	27 53.7 +24.3 75.3	27 04.5 +24.5 74.9	26 15.4 +24.8 74.4
27°	29 56.1 +23.3 75.1	29 07.0 +23.5 74.6	28 18.0 +23.8 74.2	27 29.0 +24.1 73.8	26 40.2 +24.4 73.4
28°	30 19.4 +22.8 74.0	29 30.5 +23.1 73.6	28 41.8 +23.3 73.2	27 53.1 +23.6 72.8	27 04.6 +23.9 72.4
29°	30 42.2 +22.3 72.9	29 53.6 +22.6 72.5	29 05.1 +22.9 72.1	28 16.7 +23.2 71.8	27 28.5 +23.4 71.4

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°	12 40.7 +32.6 98.1	11 50.3 +32.4 97.5	10 59.9 +32.3 97.0	10 09.3 +32.3 96.4	9 18.7 +32.2 95.9
1°	13 13.3 +32.3 97.2	12 22.7 +32.3 96.7	11 32.2 +32.1 96.1	10 41.6 +32.1 95.6	9 50.9 +32.0 95.0
2°	13 45.6 +32.1 96.4	12 55.0 +32.1 95.8	12 04.3 +32.0 95.3	11 13.7 +31.9 94.7	10 22.9 +31.9 94.2
3°	14 17.7 +32.0 95.5	13 27.1 +31.9 94.9	12 36.3 +31.9 94.4	11 45.6 +31.8 93.8	10 54.8 +31.8 93.3
4°	14 49.7 +31.8 94.6	13 59.0 +31.7 94.1	13 08.2 +31.6 93.5	12 17.4 +31.6 93.0	11 26.6 +31.5 92.4
5°	15 21.5 +31.5 93.7	14 30.7 +31.5 93.2	13 39.8 +31.5 92.6	12 49.0 +31.5 92.1	11 58.1 +31.5 91.6
6°	15 53.0 +31.3 92.8	15 02.2 +31.3 92.3	14 11.3 +31.3 91.8	13 20.5 +31.2 91.2	12 29.6 +31.2 90.7
7°	16 24.3 +31.1 92.0	15 33.5 +31.1 91.4	14 42.6 +31.1 90.9	13 51.7 +31.1 90.4	13 00.8 +31.1 89.8
8°	16 55.4 +30.9 91.1	16 04.6 +30.8 90.5	15 13.7 +30.9 90.0	14 22.8 +30.9 89.5	13 31.9 +30.9 88.9
9°	17 26.3 +30.7 90.2	16 35.4 +30.7 89.6	15 44.6 +30.6 89.1	14 53.7 +30.7 88.6	14 02.8 +30.7 88.1
10°	17 57.0 +30.3 89.3	17 06.1 +30.4 88.7	16 15.2 +30.5 88.2	15 24.4 +30.4 87.7	14 33.5 +30.5 87.2
11°	18 27.3 +30.2 88.4	17 36.5 +30.1 87.8	16 45.7 +30.1 87.3	15 54.8 +30.3 86.8	15 04.0 +30.3 86.3
12°	18 57.5 +29.8 87.4	18 06.6 +29.9 86.9	17 15.8 +30.0 86.4	16 25.1 +30.0 85.9	15 34.3 +30.1 85.4
13°	19 27.3 +29.6 86.5	18 36.5 +29.7 86.0	17 45.8 +29.7 85.5	16 55.1 +29.8 85.0	16 04.4 +29.9 84.5
14°	19 56.9 +29.3 85.6	19 06.2 +29.3 85.1	18 15.5 +29.4 84.6	17 24.9 +29.5 84.1	16 34.3 +29.6 83.6
15°	20 26.2 +29.0 84.7	19 35.5 +29.1 84.2	18 44.9 +29.2 83.7	17 54.4 +29.3 83.2	17 03.9 +29.4 82.7
16°	20 55.2 +28.6 83.7	20 04.6 +28.8 83.2	19 14.1 +28.9 82.7	18 23.7 +29.0 82.3	17 33.3 +29.1 81.8
17°	21 23.8 +28.4 82.8	20 33.4 +28.5 82.3	19 43.0 +28.6 81.8	18 52.7 +28.7 81.3	18 02.4 +28.9 80.8
18°	21 52.2 +28.0 81.8	21 01.9 +28.1 81.4	20 11.6 +28.3 80.9	19 21.4 +28.4 80.4	18 31.3 +28.5 79.9
19°	22 20.2 +27.7 80.9	21 30.0 +27.9 80.4	20 39.9 +28.0 79.9	19 49.8 +28.2 79.5	18 59.8 +28.4 79.0
20°	22 47.9 +27.4 79.9	21 57.9 +27.5 79.5	21 07.9 +27.7 79.0	20 18.0 +27.8 78.5	19 28.2 +28.0 78.1
21°	23 15.3 +27.0 79.0	22 25.4 +27.1 78.5	21 35.6 +27.3 78.0	20 45.8 +27.6 77.6	19 56.2 +27.7 77.1
22°	23 42.3 +26.6 78.0	22 52.5 +26.9 77.5	22 02.9 +27.0 77.1	21 13.4 +27.2 76.6	20 23.9 +27.4 76.2
23°	24 08.9 +26.2 77.0	23 19.4 +26.4 76.6	22 29.9 +26.7 76.1	21 40.6 +26.8 75.7	20 51.3 +27.1 75.2
24°	24 35.1 +25.9 76.0	23 45.8 +26.1 75.6	22 56.6 +26.3 75.1	22 07.4 +26.6 74.7	21 18.4 +26.8 74.3
25°	25 01.0 +25.4 75.0	24 11.9 +25.7 74.6	23 22.9 +25.9 74.2	22 34.0 +26.2 73.7	21 45.2 +26.4 73.3
26°	25 26.4 +25.1 74.0	24 37.6 +25.3 73.6	23 48.8 +25.6 73.2	23 00.2 +25.8 72.8	22 11.6 +26.1 72.3
27°	25 51.5 +24.6 73.0	25 02.9 +24.9 72.6	24 14.4 +25.2 72.2	23 26.0 +25.4 71.8	22 37.7 +25.8 71.4
28°	26 16.1 +24.2 72.0	25 27.8 +24.5 71.6	24 39.6 +24.7 71.2	23 51.4 +25.1 70.8	23 03.5 +25.3 70.4
29°	26 40.3 +23.8 71.0	25 52.3 +24.0 70.6	25 04.3 +24.4 70.2	24 16.5 +24.7 69.8	23 28.8 +25.0 69.4

Declination SAME name as Latitude

Latitude 32°

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 28.1 +32.1 95.3	7 37.4 +32.0 94.8	6 46.7 +32.0 94.3	5 55.9 +32.0 93.7	5 05.1 +31.9 93.2
1°	9 00.2 +32.0 94.5	8 09.4 +32.0 93.9	7 18.7 +31.8 93.4	6 27.9 +31.8 92.9	5 37.0 +31.8 92.3
2°	9 32.2 +31.8 93.6	8 41.4 +31.8 93.1	7 50.5 +31.8 92.6	6 59.7 +31.7 92.0	6 08.8 +31.8 91.5
3°	10 04.0 +31.7 92.8	9 13.2 +31.6 92.2	8 22.3 +31.7 91.7	7 31.4 +31.7 91.2	6 40.6 +31.6 90.6
4°	10 35.7 +31.6 91.9	9 44.8 +31.6 91.4	8 54.0 +31.5 90.8	8 03.1 +31.5 90.3	7 12.2 +31.6 89.8
5°	11 07.3 +31.4 91.0	10 16.4 +31.4 90.5	9 25.5 +31.4 90.0	8 34.6 +31.5 89.4	7 43.8 +31.4 88.9
6°	11 38.7 +31.3 90.2	10 47.8 +31.3 89.6	9 56.9 +31.3 89.1	9 06.1 +31.3 88.6	8 15.2 +31.3 88.1
7°	12 10.0 +31.1 89.3	11 19.1 +31.1 88.8	10 28.2 +31.2 88.2	9 37.4 +31.1 87.7	8 46.5 +31.3 87.2
8°	12 41.1 +30.9 88.4	11 50.2 +31.0 87.9	10 59.4 +31.0 87.4	10 08.5 +31.1 86.9	9 17.8 +31.0 86.3
9°	13 12.0 +30.7 87.5	12 21.2 +30.7 87.0	11 30.4 +30.8 86.5	10 39.6 +30.9 86.0	9 48.8 +31.0 85.5
10°	13 42.7 +30.6 86.7	12 51.9 +30.7 86.1	12 01.2 +30.7 85.6	11 10.5 +30.7 85.1	10 19.8 +30.8 84.6
11°	14 13.3 +30.3 85.8	13 22.6 +30.4 85.3	12 31.9 +30.5 84.7	11 41.2 +30.6 84.2	10 50.6 +30.7 83.7
12°	14 43.6 +30.2 84.9	13 53.0 +30.2 84.4	13 02.4 +30.3 83.9	12 11.8 +30.4 83.4	11 21.3 +30.5 82.8
13°	15 13.8 +29.9 84.0	14 23.2 +30.1 83.5	13 32.7 +30.1 83.0	12 42.2 +30.3 82.5	11 51.8 +30.4 82.0
14°	15 43.7 +29.8 83.1	14 53.3 +29.8 82.6	14 02.8 +30.0 82.1	13 12.5 +30.0 81.6	12 22.2 +30.1 81.1
15°	16 13.5 +29.4 82.2	15 23.1 +29.6 81.7	14 32.8 +29.7 81.2	13 42.5 +29.9 80.7	12 52.3 +30.0 80.2
16°	16 42.9 +29.3 81.3	15 52.7 +29.4 80.8	15 02.5 +29.5 80.3	14 12.4 +29.6 79.8	13 22.3 +29.8 79.3
17°	17 12.2 +29.0 80.4	16 22.1 +29.1 79.9	15 32.0 +29.3 79.4	14 42.0 +29.5 78.9	13 52.1 +29.7 78.4
18°	17 41.2 +28.7 79.4	16 51.2 +28.9 79.0	16 01.3 +29.1 78.5	15 11.5 +29.2 78.0	14 21.8 +29.4 77.5
19°	18 09.9 +28.5 78.5	17 20.1 +28.7 78.0	16 30.4 +28.8 77.6	15 40.7 +29.0 77.1	14 51.2 +29.2 76.6
20°	18 38.4 +28.2 77.6	17 48.8 +28.4 77.1	16 59.2 +28.6 76.7	16 09.7 +28.8 76.2	15 20.4 +29.0 75.7
21°	19 06.6 +27.9 76.7	18 17.2 +28.1 76.2	17 27.8 +28.3 75.7	16 38.5 +28.6 75.3	15 49.4 +28.7 74.8
22°	19 34.5 +27.7 75.7	18 45.3 +27.8 75.3	17 56.1 +28.1 74.8	17 07.1 +28.3 74.4	16 18.1 +28.5 73.9
23°	20 02.2 +27.3 74.8	19 13.1 +27.6 74.3	18 24.2 +27.8 73.9	17 35.4 +28.0 73.4	16 46.6 +28.3 73.0
24°	20 29.5 +27.0 73.8	19 40.7 +27.2 73.4	18 52.0 +27.5 72.9	18 03.4 +27.7 72.5	17 14.9 +28.0 72.0
25°	20 56.5 +26.7 72.9	20 07.9 +27.0 72.4	19 19.5 +27.2 72.0	18 31.1 +27.5 71.6	17 42.9 +27.8 71.1
26°	21 23.2 +26.4 71.9	20 34.9 +26.6 71.5	19 46.7 +26.9 71.1	18 58.6 +27.2 70.6	18 10.7 +27.5 70.2
27°	21 49.6 +26.0 70.9	21 01.5 +26.3 70.5	20 13.6 +26.6 70.1	19 25.8 +26.9 69.7	18 38.2 +27.2 69.3
28°	22 15.6 +25.7 70.0	21 27.8 +26.0 69.6	20 40.2 +26.3 69.1	19 52.7 +26.6 68.7	19 05.4 +26.9 68.3
29°	22 41.3 +25.3 69.0	21 53.8 +25.7 68.6	21 06.5 +26.0 68.2	20 19.3 +26.3 67.8	19 32.3 +26.6 67.4

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 14.3 +31.9 92.7	3 23.5 +31.8 92.1	2 32.6 +31.8 91.6	1 41.8 +31.8 91.1	0 50.9 +31.8 90.5
1°	4 46.2 +31.8 91.8	3 55.3 +31.8 91.3	3 04.4 +31.8 90.7	2 13.6 +31.7 90.2	1 22.7 +31.7 89.7
2°	5 18.0 +31.7 91.0	4 27.1 +31.7 90.4	3 36.2 +31.7 89.9	2 45.3 +31.8 89.4	1 54.4 +31.8 88.8
3°	5 49.7 +31.6 90.1	4 58.8 +31.7 89.6	4 07.9 +31.7 89.0	3 17.1 +31.6 88.5	2 26.2 +31.7 88.0
4°	6 21.3 +31.6 89.2	5 30.5 +31.5 88.7	4 39.6 +31.6 88.2	3 48.7 +31.7 87.7	2 57.9 +31.7 87.1
5°	6 52.9 +31.5 88.4	6 02.0 +31.5 87.9	5 11.2 +31.5 87.3	4 20.4 +31.6 86.8	3 29.6 +31.6 86.3
6°	7 24.4 +31.3 87.5	6 33.5 +31.4 87.0	5 42.7 +31.5 86.5	4 52.0 +31.5 86.0	4 01.2 +31.6 85.4
7°	7 55.7 +31.3 86.7	7 04.9 +31.4 86.1	6 14.2 +31.4 85.6	5 23.5 +31.4 85.1	4 32.8 +31.5 84.6
8°	8 27.0 +31.1 85.8	7 36.3 +31.2 85.3	6 45.6 +31.3 84.8	5 54.9 +31.4 84.2	5 04.3 +31.5 83.7
9°	8 58.1 +31.1 84.9	8 07.5 +31.1 84.4	7 16.9 +31.1 83.9	6 26.3 +31.3 83.4	5 35.8 +31.3 82.9
10°	9 29.2 +30.9 84.1	8 38.6 +31.0 83.6	7 48.0 +31.1 83.0	6 57.6 +31.2 82.5	6 07.1 +31.3 82.0
11°	10 00.1 +30.7 83.2	9 09.6 +30.8 82.7	8 19.1 +31.0 82.2	7 28.8 +31.0 81.7	6 38.4 +31.2 81.2
12°	10 30.8 +30.7 82.3	9 40.4 +30.8 81.8	8 50.1 +30.9 81.3	7 59.8 +31.0 80.8	7 09.6 +31.2 80.3
13°	11 01.5 +30.4 81.5	10 11.2 +30.6 81.0	9 21.0 +30.7 80.4	8 30.8 +30.9 79.9	7 40.8 +31.0 79.4
14°	11 31.9 +30.3 80.6	10 41.8 +30.4 80.1	9 51.7 +30.6 79.6	9 01.7 +30.7 79.1	8 11.8 +30.9 78.6
15°	12 02.2 +30.2 79.7	11 12.2 +30.3 79.2	10 22.3 +30.4 78.7	9 32.4 +30.6 78.2	8 42.7 +30.7 77.7
16°	12 32.4 +29.9 78.8	11 42.5 +30.1 78.3	10 52.7 +30.3 77.8	10 03.0 +30.5 77.3	9 13.4 +30.7 76.8
17°	13 02.3 +29.8 77.9	12 12.6 +30.0 77.4	11 23.0 +30.2 76.9	10 33.5 +30.3 76.5	9 44.1 +30.5 76.0
18°	13 32.1 +29.6 77.0	12 42.6 +29.8 76.5	11 53.2 +29.9 76.1	11 03.8 +30.2 75.6	10 14.6 +30.4 75.1
19°	14 01.7 +29.4 76.1	13 12.4 +29.6 75.7	12 23.1 +29.8 75.2	11 34.0 +30.0 74.7	10 45.0 +30.2 74.2
20°	14 31.1 +29.2 75.2	13 42.0 +29.4 74.8	12 52.9 +29.7 74.3	12 04.0 +29.9 73.8	11 15.2 +30.1 73.3
21°	15 00.3 +29.0 74.3	14 11.4 +29.2 73.9	13 22.6 +29.4 73.4	12 33.9 +29.6 72.9	11 45.3 +29.9 72.4
22°	15 29.3 +28.8 73.4	14 40.6 +29.0 73.0	13 52.0 +29.2 72.5	13 03.5 +29.5 72.0	12 15.2 +29.7 71.6
23°	15 58.1 +28.5 72.5	15 09.6 +28.8 72.1	14 21.2 +29.1 71.6	13 33.0 +29.3 71.1	12 44.9 +29.6 70.7
24°	16 26.6 +28.3 71.6	15 38.4 +28.5 71.1	14 50.3 +28.8 70.7	14 02.3 +29.1 70.2	13 14.5 +29.4 69.8
25°	16 54.9 +28.0 70.7	16 06.9 +28.3 70.2	15 19.1 +28.6 69.8	14 31.4 +28.9 69.3	13 43.9 +29.2 68.9
26°	17 22.9 +27.8 69.8	16 35.2 +28.1 69.3	15 47.7 +28.4 68.9	15 00.3 +28.7 68.4	14 13.1 +28.9 68.0
27°	17 50.7 +27.5 68.8	17 03.3 +27.8 68.4	16 16.1 +28.1 68.0	15 29.0 +28.4 67.5	14 42.0 +28.8 67.1
28°	18 18.2 +27.2 67.9	17 31.1 +27.6 67.5	16 44.2 +27.9 67.0	15 57.4 +28.2 66.6	15 10.8 +28.5 66.2
29°	18 45.4 +27.0 66.9	17 58.7 +27.3 66.5	17 12.1 +27.6 66.1	16 25.6 +28.0 65.7	15 39.3 +28.4 65.3

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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 +31.8 90.0	-0 50.9 +31.8	-1 41.8 +31.9	-2 32.6 +31.8	-3 23.5 +31.9
1°	0 31.8 +31.8 89.2	-0 19.1 +31.8	-1 09.9 +31.8	-2 00.8 +31.9	-2 51.6 +31.9
2°	1 03.6 +31.8 88.3	0 12.7 +31.8 87.8	-0 38.1 +31.8	-1 28.9 +31.9	-2 19.7 +31.9
3°	1 35.4 +31.7 87.5	0 44.5 +31.8 86.9	-0 06.3 +31.9	-0 57.0 +31.9	-1 47.8 +32.0
4°	2 07.1 +31.7 86.6	1 16.3 +31.8 86.1	0 25.6 +31.8 85.5	-0 25.1 +31.9	-1 15.8 +32.0
5°	2 38.8 +31.7 85.8	1 48.1 +31.8 85.2	0 57.4 +31.8 84.7	0 06.8 +31.9 84.2	-0 43.8 +32.0
6°	3 10.5 +31.7 84.9	2 19.9 +31.7 84.4	1 29.2 +31.9 83.9	0 38.7 +31.9 83.3	-0 11.8 +32.0
7°	3 42.2 +31.6 84.1	2 51.6 +31.7 83.5	2 01.1 +31.7 83.0	1 10.6 +31.9 82.5	0 20.2 +32.0 81.9
8°	4 13.8 +31.5 83.2	3 23.3 +31.6 82.7	2 32.8 +31.8 82.2	1 42.5 +31.8 81.6	0 52.2 +31.9 81.1
9°	4 45.3 +31.5 82.3	3 54.9 +31.6 81.8	3 04.6 +31.7 81.3	2 14.3 +31.8 80.8	1 24.1 +32.0 80.3
10°	5 16.8 +31.4 81.5	4 26.5 +31.5 81.0	3 36.3 +31.6 80.5	2 46.1 +31.8 79.9	1 56.1 +31.9 79.4
11°	5 48.2 +31.3 80.6	4 58.0 +31.5 80.1	4 07.9 +31.6 79.6	3 17.9 +31.8 79.1	2 28.0 +31.9 78.6
12°	6 19.5 +31.3 79.8	5 29.5 +31.4 79.3	4 39.5 +31.6 78.8	3 49.7 +31.7 78.2	2 59.9 +31.9 77.7
13°	6 50.8 +31.1 78.9	6 00.9 +31.3 78.4	5 11.1 +31.5 77.9	4 21.4 +31.6 77.4	3 31.8 +31.8 76.9
14°	7 21.9 +31.1 78.1	6 32.2 +31.2 77.6	5 42.6 +31.4 77.0	4 53.0 +31.6 76.5	4 03.6 +31.8 76.0
15°	7 53.0 +30.9 77.2	7 03.4 +31.2 76.7	6 14.0 +31.3 76.2	5 24.6 +31.5 75.7	4 35.4 +31.7 75.2
16°	8 23.9 +30.9 76.3	7 34.6 +31.0 75.8	6 45.3 +31.2 75.3	5 56.1 +31.4 74.8	5 07.1 +31.6 74.3
17°	8 54.8 +30.7 75.5	8 05.6 +30.9 75.0	7 16.5 +31.1 74.5	6 27.5 +31.4 74.0	5 38.7 +31.5 73.5
18°	9 25.5 +30.6 74.6	8 36.5 +30.8 74.1	7 47.6 +31.0 73.6	6 58.9 +31.2 73.1	6 10.2 +31.5 72.6
19°	9 56.1 +30.4 73.7	9 07.3 +30.7 73.2	8 18.6 +31.0 72.7	7 30.1 +31.2 72.2	6 41.7 +31.4 71.7
20°	10 26.5 +30.3 72.8	9 38.0 +30.5 72.4	8 49.6 +30.7 71.9	8 01.3 +31.0 71.4	7 13.1 +31.3 70.9
21°	10 56.8 +30.2 72.0	10 08.5 +30.4 71.5	9 20.3 +30.7 71.0	8 32.3 +30.9 70.5	7 44.4 +31.2 70.0
22°	11 27.0 +30.0 71.1	10 38.9 +30.3 70.6	9 51.0 +30.5 70.1	9 03.2 +30.8 69.7	8 15.6 +31.1 69.2
23°	11 57.0 +29.8 70.2	11 09.2 +30.1 69.7	10 21.5 +30.4 69.3	9 34.0 +30.7 68.8	8 46.7 +30.9 68.3
24°	12 26.8 +29.7 69.3	11 39.3 +29.9 68.8	10 51.9 +30.3 68.4	10 04.7 +30.5 67.9	9 17.6 +30.9 67.4
25°	12 56.5 +29.5 68.4	12 09.2 +29.8 68.0	11 22.2 +30.0 67.5	10 35.2 +30.4 67.0	9 48.5 +30.7 66.6
26°	13 26.0 +29.2 67.5	12 39.0 +29.6 67.1	11 52.2 +29.9 66.6	11 05.6 +30.2 66.2	10 19.2 +30.5 65.7
27°	13 55.2 +29.1 66.6	13 08.6 +29.4 66.2	12 22.1 +29.8 65.7	11 35.8 +30.1 65.3	10 49.7 +30.4 64.8
28°	14 24.3 +28.9 65.7	13 38.0 +29.2 65.3	12 51.9 +29.5 64.8	12 05.9 +29.9 64.4	11 20.1 +30.3 63.9
29°	14 53.2 +28.7 64.8	14 07.2 +29.1 64.4	13 21.4 +29.4 63.9	12 35.8 +29.7 63.5	11 50.4 +30.1 63.1

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°	-4 14.3 +31.9	-5 05.1 +31.9	-5 55.9 +32.0	-6 46.7 +32.1	-7 37.4 +32.1
1°	-3 42.4 +31.9	-4 33.2 +32.0	-5 23.9 +32.0	-6 14.6 +32.1	-7 05.3 +32.2
2°	-3 10.5 +32.0	-4 01.2 +32.1	-4 51.9 +32.2	-5 42.5 +32.2	-6 33.1 +32.3
3°	-2 38.5 +32.1	-3 29.1 +32.1	-4 19.7 +32.2	-5 10.3 +32.3	-6 00.8 +32.4
4°	-2 06.4 +32.0	-2 57.0 +32.2	-3 47.5 +32.2	-4 38.0 +32.4	-5 28.4 +32.5
5°	-1 34.4 +32.1	-2 24.8 +32.1	-3 15.3 +32.3	-4 05.6 +32.4	-4 55.9 +32.5
6°	-1 02.3 +32.1	-1 52.7 +32.2	-2 43.0 +32.3	-3 33.2 +32.4	-4 23.4 +32.6
7°	-0 30.2 +32.1	-1 20.5 +32.3	-2 10.7 +32.4	-3 00.8 +32.5	-3 50.8 +32.6
8°	0 01.9 +32.1 80.6	-0 48.2 +32.2	-1 38.3 +32.4	-2 28.3 +32.5	-3 18.2 +32.7
9°	0 34.0 +32.1 79.7	-0 16.0 +32.2	-1 05.9 +32.3	-1 55.8 +32.6	-2 45.5 +32.7
10°	1 06.1 +32.1 78.9	0 16.2 +32.3 78.4	-0 33.6 +32.4	-1 23.2 +32.5	-2 12.8 +32.7
11°	1 38.2 +32.1 78.0	0 48.5 +32.2 77.5	-0 01.2 +32.4	-0 50.7 +32.6	-1 40.1 +32.8
12°	2 10.3 +32.0 77.2	1 20.7 +32.2 76.7	0 31.2 +32.4 76.1	-0 18.1 +32.6	-1 07.3 +32.7
13°	2 42.3 +32.0 76.3	1 52.9 +32.2 75.8	1 03.6 +32.4 75.3	0 14.5 +32.5 74.8	-0 34.6 +32.8
14°	3 14.3 +31.9 75.5	2 25.1 +32.1 75.0	1 36.0 +32.3 74.5	0 47.0 +32.6 73.9	-0 01.8 +32.8
15°	3 46.2 +31.9 74.7	2 57.2 +32.1 74.1	2 08.3 +32.4 73.6	1 19.6 +32.5 73.1	0 31.0 +32.7 72.6
16°	4 18.1 +31.9 73.8	3 29.3 +32.1 73.3	2 40.7 +32.3 72.8	1 52.1 +32.6 72.3	1 03.7 +32.8 71.7
17°	4 50.0 +31.8 73.0	4 01.4 +32.0 72.4	3 13.0 +32.2 71.9	2 24.7 +32.4 71.4	1 36.5 +32.7 70.9
18°	5 21.8 +31.7 72.1	4 33.4 +32.0 71.6	3 45.2 +32.2 71.1	2 57.1 +32.5 70.6	2 09.2 +32.7 70.1
19°	5 53.5 +31.6 71.2	5 05.4 +31.8 70.7	4 17.4 +32.1 70.2	3 29.6 +32.4 69.7	2 41.9 +32.7 69.2
20°	6 25.1 +31.6 70.4	5 37.2 +31.9 69.9	4 49.5 +32.1 69.4	4 02.0 +32.3 68.9	3 14.6 +32.6 68.4
21°	6 56.7 +31.4 69.5	6 09.1 +31.7 69.0	5 21.6 +32.0 68.5	4 34.3 +32.3 68.0	3 47.2 +32.6 67.5
22°	7 28.1 +31.4 68.7	6 40.8 +31.6 68.2	5 53.6 +32.0 67.7	5 06.6 +32.3 67.2	4 19.8 +32.5 66.7
23°	7 59.5 +31.2 67.8	7 12.4 +31.6 67.3	6 25.6 +31.8 66.8	5 38.9 +32.1 66.3	4 52.3 +32.5 65.8
24°	8 30.7 +31.2 67.0	7 44.0 +31.4 66.5	6 57.4 +31.8 66.0	6 11.0 +32.1 65.5	5 24.8 +32.4 65.0
25°	9 01.9 +31.0 66.1	8 15.4 +31.4 65.6	7 29.2 +31.6 65.1	6 43.1 +32.0 64.6	5 57.2 +32.3 64.2
26°	9 32.9 +30.8 65.2	8 46.8 +31.2 64.8	8 00.8 +31.6 64.3	7 15.1 +31.9 63.8	6 29.5 +32.2 63.3
27°	10 03.7 +30.8 64.4	9 18.0 +31.1 63.9	8 32.4 +31.4 63.4	7 47.0 +31.7 62.9	7 01.7 +32.2 62.5
28°	10 34.5 +30.6 63.5	9 49.1 +30.9 63.0	9 03.8 +31.3 62.6	8 18.7 +31.7 62.1	7 33.9 +32.0 61.6
29°	11 05.1 +30.5 62.6	10 20.0 +30.8 62.1	9 35.1 +31.2 61.7	8 50.4 +31.6 61.2	8 05.9 +32.0 60.8

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°	-8 28.1 +32.2	-9 18.7 +32.2			
1°	-7 55.9 +32.3	-8 46.5 +32.4	-9 37.0 +32.5		
2°	-7 23.6 +32.4	-8 14.1 +32.5	-9 04.5 +32.6	-9 54.8 +32.7	
3°	-6 51.2 +32.5	-7 41.6 +32.6	-8 31.9 +32.8	-9 22.1 +32.9	
4°	-6 18.7 +32.6	-7 09.0 +32.7	-7 59.1 +32.8	-8 49.2 +32.9	-9 39.2 +33.1
5°	-5 46.1 +32.6	-6 36.3 +32.8	-7 26.3 +32.9	-8 16.3 +33.1	-9 06.1 +33.2
6°	-5 13.5 +32.7	-6 03.5 +32.9	-6 53.4 +33.0	-7 43.2 +33.2	-8 32.9 +33.3
7°	-4 40.8 +32.8	-5 30.6 +32.9	-6 20.4 +33.1	-7 10.0 +33.2	-7 59.6 +33.5
8°	-4 08.0 +32.8	-4 57.7 +33.0	-5 47.3 +33.2	-6 36.8 +33.4	-7 26.1 +33.5
9°	-3 35.2 +32.9	-4 24.7 +33.0	-5 14.1 +33.2	-6 03.4 +33.4	-6 52.6 +33.6
10°	-3 02.3 +32.9	-3 51.7 +33.1	-4 40.9 +33.3	-5 30.0 +33.5	-6 19.0 +33.7
11°	-2 29.4 +32.9	-3 18.6 +33.2	-4 07.6 +33.3	-4 56.5 +33.5	-5 45.3 +33.8
12°	-1 56.5 +33.0	-2 45.4 +33.1	-3 34.3 +33.4	-4 23.0 +33.6	-5 11.5 +33.8
13°	-1 23.5 +33.0	-2 12.3 +33.2	-3 00.9 +33.4	-3 49.4 +33.7	-4 37.7 +33.9
14°	-0 50.5 +33.0	-1 39.1 +33.3	-2 27.5 +33.5	-3 15.7 +33.7	-4 03.8 +33.9
15°	-0 17.5 +33.0	-1 05.8 +33.2	-1 54.0 +33.5	-2 42.0 +33.7	-3 29.9 +34.0
16°	0 15.5 +33.0 71.2	-0 32.6 +33.2	-1 20.5 +33.5	-2 08.3 +33.7	-2 55.9 +34.0
17°	0 48.5 +33.0 70.4	0 00.6 +33.3 69.8	-0 47.0 +33.5	-1 34.6 +33.8	-2 21.9 +34.1
18°	1 21.5 +32.9 69.5	0 33.9 +33.2 69.0	-0 13.5 +33.5	-1 00.8 +33.8	-1 47.8 +34.0
19°	1 54.4 +33.0 68.7	1 07.1 +33.3 68.2	0 20.0 +33.5 67.6	-0 27.0 +33.8	-1 13.8 +34.1
20°	2 27.4 +32.9 67.9	1 40.4 +33.2 67.3	0 53.5 +33.5 66.8	0 06.8 +33.8 66.3	-0 39.7 +34.1
21°	3 00.3 +32.9 67.0	2 13.6 +33.1 66.5	1 27.0 +33.5 66.0	0 40.6 +33.8 65.5	-0 05.6 +34.1
22°	3 33.2 +32.8 66.2	2 46.7 +33.2 65.7	2 00.5 +33.4 65.2	1 14.4 +33.7 64.6	0 28.5 +34.1 64.1
23°	4 06.0 +32.8 65.3	3 19.9 +33.1 64.8	2 33.9 +33.4 64.3	1 48.1 +33.8 63.8	1 02.6 +34.1 63.3
24°	4 38.8 +32.7 64.5	3 53.0 +33.0 64.0	3 07.3 +33.4 63.5	2 21.9 +33.7 63.0	1 36.7 +34.0 62.5
25°	5 11.5 +32.7 63.7	4 26.0 +33.0 63.2	3 40.7 +33.3 62.7	2 55.6 +33.7 62.2	2 10.7 +34.0 61.6
26°	5 44.2 +32.5 62.8	4 59.0 +32.9 62.3	4 14.0 +33.3 61.8	3 29.3 +33.6 61.3	2 44.7 +34.0 60.8
27°	6 16.7 +32.5 62.0	5 31.9 +32.9 61.5	4 47.3 +33.2 61.0	4 02.9 +33.6 60.5	3 18.7 +34.0 60.0
28°	6 49.2 +32.4 61.1	6 04.8 +32.7 60.6	5 20.5 +33.2 60.2	4 36.5 +33.5 59.7	3 52.7 +33.9 59.2
29°	7 21.6 +32.3 60.3	6 37.5 +32.7 59.8	5 53.7 +33.0 59.3	5 10.0 +33.5 58.8	4 26.6 +33.8 58.3

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°					
1°					
2°					
3°					
4°					
5°	-9 55.9 +33.4				
6°	-9 22.5 +33.5				
7°	-8 49.0 +33.6	-9 38.3 +33.8			
8°	-8 15.4 +33.7	-9 04.5 +33.9	-9 53.5 +34.1		
9°	-7 41.7 +33.8	-8 30.6 +34.0	-9 19.4 +34.3		
10°	-7 07.9 +33.9	-7 56.6 +34.2	-8 45.1 +34.3	-9 33.5 +34.5	
11°	-6 34.0 +34.0	-7 22.4 +34.2	-8 10.8 +34.5	-8 59.0 +34.7	-9 47.0 +35.0
12°	-6 00.0 +34.1	-6 48.2 +34.3	-7 36.3 +34.5	-8 24.3 +34.8	-9 12.0 +35.0
13°	-5 25.9 +34.1	-6 13.9 +34.3	-7 01.8 +34.6	-7 49.5 +34.9	-8 37.0 +35.2
14°	-4 51.8 +34.2	-5 39.6 +34.5	-6 27.2 +34.8	-7 14.6 +35.0	-8 01.8 +35.2
15°	-4 17.6 +34.3	-5 05.1 +34.5	-5 52.4 +34.7	-6 39.6 +35.1	-7 26.6 +35.4
16°	-3 43.3 +34.2	-4 30.6 +34.6	-5 17.7 +34.9	-6 04.5 +35.1	-6 51.2 +35.4
17°	-3 09.1 +34.4	-3 56.0 +34.6	-4 42.8 +34.9	-5 29.4 +35.2	-6 15.8 +35.5
18°	-2 34.7 +34.3	-3 21.4 +34.6	-4 07.9 +34.9	-4 54.2 +35.2	-5 40.3 +35.6
19°	-2 00.4 +34.4	-2 46.8 +34.7	-3 33.0 +35.0	-4 19.0 +35.3	-5 04.7 +35.6
20°	-1 26.0 +34.4	-2 12.1 +34.7	-2 58.0 +35.0	-3 43.7 +35.4	-4 29.1 +35.7
21°	-0 51.6 +34.4	-1 37.4 +34.8	-2 23.0 +35.1	-3 08.3 +35.4	-3 53.4 +35.7
22°	-0 17.2 +34.4	-1 02.6 +34.7	-1 47.9 +35.1	-2 32.9 +35.4	-3 17.7 +35.7
23°	0 17.2 +34.4 62.8	-0 27.9 +34.8	-1 12.8 +35.1	-1 57.5 +35.4	-2 42.0 +35.8
24°	0 51.6 +34.4 61.9	0 06.9 +34.7 61.4	-0 37.7 +35.1	-1 22.1 +35.5	-2 06.2 +35.9
25°	1 26.0 +34.4 61.1	0 41.6 +34.7 60.6	-0 02.6 +35.1	-0 46.6 +35.5	-1 30.3 +35.8
26°	2 00.4 +34.4 60.3	1 16.3 +34.8 59.8	0 32.5 +35.1 59.3	-0 11.1 +35.4	-0 54.5 +35.8
27°	2 34.8 +34.3 59.5	1 51.1 +34.7 59.0	1 07.6 +35.1 58.5	0 24.3 +35.5 57.9	-0 18.7 +35.9
28°	3 09.1 +34.3 58.7	2 25.8 +34.6 58.2	1 42.7 +35.0 57.6	0 59.8 +35.5 57.1	0 17.2 +35.8 56.6
29°	3 43.4 +34.2 57.8	3 00.4 +34.7 57.3	2 17.7 +35.1 56.8	1 35.3 +35.4 56.3	0 53.0 +35.9 55.8

Latitude 32°

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°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°	-9 59.6 +35.3				
13°	-9 24.3 +35.4				
14°	-8 48.9 +35.6	-9 35.7 +35.8			
15°	-8 13.3 +35.6	-8 59.9 +35.9			
16°	-7 37.7 +35.7	-8 24.0 +36.1			
17°	-7 02.0 +35.8	-7 47.9 +36.1			
18°	-6 26.2 +35.9	-7 11.8 +36.2			
19°	-5 50.3 +35.9	-6 35.6 +36.2			
20°	-5 14.4 +36.1	-5 59.4 +36.4			
21°	-4 38.3 +36.0	-5 23.0 +36.4			
22°	-4 02.3 +36.1	-4 46.6 +36.5			
23°	-3 26.2 +36.2	-4 10.1 +36.5			
24°	-2 50.0 +36.2	-3 33.6 +36.5			
25°	-2 13.8 +36.2	-2 57.1 +36.6			
26°	-1 37.6 +36.2	-2 20.5 +36.6			
27°	-1 01.4 +36.2	-1 43.9 +36.7			
28°	-0 25.2 +36.3	-1 07.2 +36.6			
29°	0 11.1 +36.2 55.3	-0 30.6 +36.7			

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°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	57 00.0 +60.0 180.0	56 59.2 +60.0 178.2	56 56.8 +59.9 176.3	56 52.8 +59.8 174.5	56 47.1 +59.7 172.7
1°	58 00.0 +60.0 180.0	57 59.2 +59.9 178.1	57 56.7 +59.9 176.2	57 52.6 +59.7 174.4	57 46.8 +59.6 172.5
2°	59 00.0 +60.0 180.0	58 59.1 +60.0 178.1	58 56.6 +59.9 176.1	58 52.3 +59.8 174.2	58 46.4 +59.6 172.3
3°	60 00.0 +60.0 180.0	59 59.1 +60.0 178.0	59 56.5 +59.9 176.0	59 52.1 +59.8 174.0	59 46.0 +59.6 172.0
4°	61 00.0 +60.0 180.0	60 59.1 +60.0 177.9	60 56.4 +59.9 175.9	60 51.9 +59.7 173.8	60 45.6 +59.6 171.8
5°	62 00.0 +60.0 180.0	61 59.1 +59.9 177.9	61 56.3 +59.9 175.8	61 51.6 +59.8 173.7	61 45.2 +59.5 171.6
6°	63 00.0 +60.0 180.0	62 59.0 +60.0 177.8	62 56.2 +59.8 175.6	62 51.4 +59.7 173.4	62 44.7 +59.5 171.3
7°	64 00.0 +60.0 180.0	63 59.0 +60.0 177.7	63 56.0 +59.9 175.5	63 51.1 +59.7 173.2	63 44.2 +59.4 171.0
8°	65 00.0 +60.0 180.0	64 59.0 +59.9 177.7	64 55.9 +59.8 175.3	64 50.8 +59.6 173.0	64 43.6 +59.4 170.7
9°	66 00.0 +60.0 180.0	65 58.9 +60.0 177.6	65 55.7 +59.9 175.2	65 50.4 +59.7 172.7	65 43.0 +59.4 170.4
10°	67 00.0 +60.0 180.0	66 58.9 +59.9 177.5	66 55.6 +59.8 175.0	66 50.1 +59.6 172.5	66 42.4 +59.3 170.0
11°	68 00.0 +60.0 180.0	67 58.8 +60.0 177.4	67 55.4 +59.8 174.8	67 49.7 +59.6 172.2	67 41.7 +59.3 169.6
12°	69 00.0 +60.0 180.0	68 58.8 +59.9 177.3	68 55.2 +59.8 174.6	68 49.3 +59.5 171.9	68 41.0 +59.1 169.2
13°	70 00.0 +60.0 180.0	69 58.7 +60.0 177.2	69 55.0 +59.8 174.3	69 48.8 +59.5 171.5	69 40.1 +59.2 168.7
14°	71 00.0 +60.0 180.0	70 58.7 +59.9 177.0	70 54.8 +59.7 174.1	70 48.3 +59.4 171.1	70 39.3 +59.0 168.2
15°	72 00.0 +60.0 180.0	71 58.6 +60.0 176.9	71 54.5 +59.7 173.8	71 47.7 +59.4 170.7	71 38.3 +58.9 167.6
16°	73 00.0 +60.0 180.0	72 58.6 +59.9 176.7	72 54.2 +59.7 173.4	72 47.1 +59.3 170.2	72 37.2 +58.7 167.0
17°	74 00.0 +60.0 180.0	73 58.5 +59.9 176.5	73 53.9 +59.7 173.1	73 46.4 +59.2 169.7	73 35.9 +58.6 166.3
18°	75 00.0 +60.0 180.0	74 58.4 +59.9 176.3	74 53.6 +59.6 172.7	74 45.6 +59.1 169.1	74 34.5 +58.5 165.6
19°	76 00.0 +60.0 180.0	75 58.3 +59.9 176.1	75 53.2 +59.5 172.2	75 44.7 +59.0 168.4	75 33.0 +58.2 164.7
20°	77 00.0 +60.0 180.0	76 58.2 +59.8 175.8	76 52.7 +59.5 171.7	76 43.7 +58.8 167.6	76 31.2 +57.9 163.7
21°	78 00.0 +60.0 180.0	77 58.0 +59.9 175.5	77 52.2 +59.3 171.1	77 42.5 +58.6 166.7	77 29.1 +57.6 162.5
22°	79 00.0 +60.0 180.0	78 57.9 +59.8 175.2	78 51.5 +59.3 170.4	78 41.1 +58.3 165.7	78 26.7 +57.1 161.2
23°	80 00.0 +60.0 180.0	79 57.7 +59.7 174.7	79 50.8 +59.0 169.5	79 39.4 +58.0 164.4	79 23.8 +56.6 159.6
24°	81 00.0 +60.0 180.0	80 57.4 +59.7 174.2	80 49.8 +58.9 168.5	80 37.4 +57.5 162.9	80 20.4 +55.8 157.7
25°	82 00.0 +60.0 180.0	81 57.1 +59.7 173.5	81 48.7 +58.5 167.2	81 34.9 +56.9 161.1	81 16.2 +54.8 155.4
26°	83 00.0 +60.0 180.0	82 56.8 +59.5 172.7	82 47.2 +58.1 165.5	82 31.8 +56.0 158.8	82 11.0 +53.4 152.5
27°	84 00.0 +60.0 180.0	83 56.3 +59.3 171.5	83 45.3 +57.4 163.4	83 27.8 +54.5 155.8	83 04.4 +51.3 149.0
28°	85 00.0 +60.0 180.0	84 55.6 +59.0 170.0	84 42.7 +56.2 160.5	84 22.3 +52.4 151.9	83 55.7 +48.3 144.4
29°	86 00.0 +60.0 180.0	85 54.6 +58.3 167.6	85 38.9 +54.1 156.3	85 14.7 +48.8 146.5	84 44.0 +43.5 138.3

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°	56 39.9 +59.5 170.9	56 31.2 +59.2 169.1	56 20.9 +58.9 167.3	56 09.1 +58.6 165.5	55 55.7 +58.3 163.8
1°	57 39.4 +59.4 170.6	57 30.4 +59.2 168.8	57 19.8 +58.9 167.0	57 07.7 +58.6 165.1	56 54.0 +58.2 163.4
2°	58 38.8 +59.4 170.4	58 29.6 +59.1 168.5	58 18.7 +58.8 166.6	58 06.3 +58.4 164.7	57 52.2 +58.1 162.9
3°	59 38.2 +59.4 170.1	59 28.7 +59.1 168.1	59 17.5 +58.8 166.2	59 04.7 +58.4 164.3	58 50.3 +58.0 162.4
4°	60 37.6 +59.3 169.8	60 27.8 +59.0 167.8	60 16.3 +58.7 165.8	60 03.1 +58.3 163.9	59 48.3 +57.9 161.9
5°	61 36.9 +59.2 169.5	61 26.8 +58.9 167.4	61 15.0 +58.5 165.4	61 01.4 +58.2 163.4	60 46.2 +57.7 161.4
6°	62 36.1 +59.2 169.1	62 25.7 +58.9 167.0	62 13.5 +58.5 164.9	61 59.6 +58.0 162.9	61 43.9 +57.6 160.8
7°	63 35.3 +59.2 168.8	63 24.6 +58.8 166.6	63 12.0 +58.4 164.4	62 57.6 +57.9 162.3	62 41.5 +57.4 160.2
8°	64 34.5 +59.1 168.4	64 23.4 +58.7 166.1	64 10.4 +58.3 163.9	63 55.5 +57.8 161.7	63 38.9 +57.2 159.6
9°	65 33.6 +59.0 168.0	65 22.1 +58.6 165.7	65 08.7 +58.1 163.4	64 53.3 +57.6 161.1	64 36.1 +57.0 158.9
10°	66 32.6 +58.9 167.5	66 20.7 +58.5 165.1	66 06.8 +58.0 162.8	65 50.9 +57.4 160.4	65 33.1 +56.8 158.1
11°	67 31.5 +58.9 167.1	67 19.2 +58.4 164.6	67 04.8 +57.8 162.1	66 48.3 +57.2 159.7	66 29.9 +56.5 157.4
12°	68 30.4 +58.7 166.5	68 17.6 +58.2 164.0	68 02.6 +57.6 161.4	67 45.5 +57.0 158.9	67 26.4 +56.2 156.5
13°	69 29.1 +58.6 166.0	69 15.8 +58.0 163.3	69 00.2 +57.4 160.6	68 42.5 +56.6 158.1	68 22.6 +55.9 155.6
14°	70 27.7 +58.5 165.4	70 13.8 +57.9 162.6	69 57.6 +57.1 159.8	69 39.1 +56.4 157.1	69 18.5 +55.6 154.6
15°	71 26.2 +58.3 164.7	71 11.7 +57.6 161.7	70 54.7 +56.9 158.9	70 35.5 +56.0 156.1	70 14.1 +55.0 153.5
16°	72 24.5 +58.1 163.9	72 09.3 +57.3 160.9	71 51.6 +56.5 157.9	71 31.5 +55.5 155.0	71 09.1 +54.6 152.3
17°	73 22.6 +57.9 163.1	73 06.6 +57.1 159.9	72 48.1 +56.0 156.8	72 27.0 +55.1 153.8	72 03.7 +54.0 150.9
18°	74 20.5 +57.6 162.1	74 03.7 +56.6 158.8	73 44.1 +55.7 155.6	73 22.1 +54.5 152.5	72 57.7 +53.3 149.5
19°	75 18.1 +57.3 161.0	75 00.3 +56.3 157.5	74 39.8 +55.0 154.2	74 16.6 +53.7 151.0	73 51.0 +52.4 147.9
20°	76 15.4 +56.9 159.8	75 56.6 +55.6 156.1	75 34.8 +54.3 152.6	75 10.3 +53.0 149.3	74 43.4 +51.6 146.1
21°	77 12.3 +56.4 158.4	76 52.2 +55.0 154.6	76 29.1 +53.6 150.9	76 03.3 +52.0 147.4	75 35.0 +50.4 144.1
22°	78 08.7 +55.7 156.8	77 47.2 +54.2 152.7	77 22.7 +52.4 148.9	76 55.3 +50.7 145.2	76 25.4 +49.0 141.8
23°	79 04.4 +54.9 155.0	78 41.4 +53.1 150.6	78 15.1 +51.2 146.6	77 46.0 +49.3 142.8	77 14.4 +47.4 139.3
24°	79 59.3 +53.9 152.7	79 34.5 +51.7 148.1	79 06.3 +49.6 143.9	78 35.3 +47.5 140.0	78 01.8 +45.4 136.4
25°	80 53.2 +52.4 150.1	80 26.2 +50.1 145.2	79 55.9 +47.6 140.8	79 22.8 +45.2 136.8	78 47.2 +43.0 133.2
26°	81 45.6 +50.6 146.9	81 16.3 +47.7 141.8	80 43.5 +45.0 137.2	80 08.0 +42.4 133.1	79 30.2 +40.1 129.5
27°	82 36.2 +47.9 142.9	82 04.0 +44.6 137.6	81 28.5 +41.7 132.9	80 50.4 +39.0 128.8	80 10.3 +36.4 125.3
28°	83 24.1 +44.2 138.0	82 48.6 +40.6 132.5	82 10.2 +37.3 127.8	81 29.4 +34.5 123.9	80 46.7 +32.2 120.5
29°	84 08.3 +39.0 131.7	83 29.2 +35.1 126.3	82 47.5 +31.8 121.8	82 03.9 +29.2 118.1	81 18.9 +27.0 115.0

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	55 41.0 +57.9 162.1	55 24.8 +57.5 160.4	55 07.2 +57.0 158.7	54 48.2 +56.6 157.0	54 27.9 +56.1 155.4
1°	56 38.9 +57.8 161.6	56 22.3 +57.3 159.8	56 04.2 +56.9 158.1	55 44.8 +56.4 156.4	55 24.0 +56.0 154.8
2°	57 36.7 +57.7 161.1	57 19.6 +57.3 159.3	57 01.1 +56.8 157.6	56 41.2 +56.3 155.8	56 20.0 +55.7 154.1
3°	58 34.4 +57.5 160.6	58 16.9 +57.0 158.8	57 57.9 +56.6 157.0	57 37.5 +56.0 155.2	57 15.7 +55.5 153.5
4°	59 31.9 +57.4 160.0	59 13.9 +56.9 158.2	58 54.5 +56.3 156.3	58 33.5 +55.9 154.5	58 11.2 +55.2 152.8
5°	60 29.3 +57.2 159.4	60 10.8 +56.7 157.5	59 50.8 +56.2 155.6	59 29.4 +55.5 153.8	59 06.4 +55.0 152.0
6°	61 26.5 +57.1 158.8	61 07.5 +56.6 156.9	60 47.0 +55.9 154.9	60 24.9 +55.3 153.1	60 01.4 +54.7 151.2
7°	62 23.6 +56.8 158.2	62 04.1 +56.2 156.2	61 42.9 +55.7 154.2	61 20.2 +55.1 152.3	60 56.1 +54.3 150.4
8°	63 20.4 +56.7 157.5	63 00.3 +56.0 155.4	62 38.6 +55.3 153.4	62 15.3 +54.6 151.4	61 50.4 +54.0 149.5
9°	64 17.1 +56.4 156.7	63 56.3 +55.8 154.6	63 33.9 +55.1 152.5	63 09.9 +54.4 150.5	62 44.4 +53.6 148.6
10°	65 13.5 +56.1 155.9	64 52.1 +55.4 153.7	64 29.0 +54.6 151.6	64 04.3 +53.9 149.6	63 38.0 +53.2 147.6
11°	66 09.6 +55.8 155.1	65 47.5 +55.0 152.8	65 23.6 +54.3 150.6	64 58.2 +53.5 148.5	64 31.2 +52.6 146.5
12°	67 05.4 +55.5 154.1	66 42.5 +54.7 151.8	66 17.9 +53.9 149.6	65 51.7 +52.9 147.4	65 23.8 +52.1 145.4
13°	68 00.9 +55.0 153.1	67 37.2 +54.2 150.8	67 11.8 +53.3 148.5	66 44.6 +52.4 146.3	66 15.9 +51.5 144.2
14°	68 55.9 +54.7 152.0	68 31.4 +53.7 149.6	68 05.1 +52.7 147.3	67 37.0 +51.8 145.0	67 07.4 +50.9 142.9
15°	69 50.6 +54.1 150.9	69 25.1 +53.1 148.4	68 57.8 +52.1 146.0	68 28.8 +51.1 143.7	67 58.3 +50.0 141.5
16°	70 44.7 +53.5 149.6	70 18.2 +52.5 147.0	69 49.9 +51.4 144.6	69 19.9 +50.3 142.2	68 48.3 +49.2 140.0
17°	71 38.2 +52.8 148.2	71 10.7 +51.7 145.6	70 41.3 +50.6 143.0	70 10.2 +49.4 140.6	69 37.5 +48.3 138.4
18°	72 31.0 +52.1 146.7	72 02.4 +50.8 143.9	71 31.9 +49.6 141.4	70 59.6 +48.4 138.9	70 25.8 +47.2 136.6
19°	73 23.1 +51.2 145.0	72 53.2 +49.8 142.2	72 21.5 +48.5 139.6	71 48.0 +47.2 137.1	71 13.0 +45.9 134.7
20°	74 14.3 +50.1 143.1	73 43.0 +48.7 140.2	73 10.0 +47.2 137.6	72 35.2 +45.9 135.1	71 58.9 +44.6 132.7
21°	75 04.4 +48.8 141.0	74 31.7 +47.3 138.1	73 57.2 +45.8 135.4	73 21.1 +44.3 132.9	72 43.5 +43.0 130.5
22°	75 53.2 +47.3 138.7	75 19.0 +45.7 135.7	74 43.0 +44.1 133.0	74 05.4 +42.7 130.5	73 26.5 +41.2 128.1
23°	76 40.5 +45.6 136.1	76 04.7 +43.8 133.1	75 27.1 +42.2 130.4	74 48.1 +40.6 127.8	74 07.7 +39.2 125.5
24°	77 26.1 +43.4 133.2	76 48.5 +41.6 130.2	76 09.3 +39.9 127.5	75 28.7 +38.3 125.0	74 46.9 +36.8 122.7
25°	78 09.5 +41.0 129.9	77 30.1 +39.0 127.0	76 49.2 +37.3 124.3	76 07.0 +35.7 121.8	75 23.7 +34.3 119.6
26°	78 50.5 +37.9 126.2	78 09.1 +36.0 123.4	77 26.5 +34.2 120.7	76 42.7 +32.7 118.4	75 58.0 +31.3 116.3
27°	79 28.4 +34.3 122.1	78 45.1 +32.5 119.4	78 00.7 +30.8 116.9	77 15.4 +29.4 114.7	76 29.3 +28.1 112.7
28°	80 02.7 +30.1 117.5	79 17.6 +28.3 114.9	78 31.5 +26.8 112.7	77 44.8 +25.5 110.6	76 57.4 +24.4 108.8
29°	80 32.8 +25.2 112.4	79 45.9 +23.6 110.1	78 58.3 +22.4 108.1	78 10.3 +21.2 106.3	77 21.8 +20.4 104.7

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	54 06.3 +55.6 153.8	53 43.5 +55.1 152.2	53 19.4 +54.6 150.7	52 54.2 +54.1 149.2	52 27.9 +53.5 147.7
1°	55 01.9 +55.5 153.2	54 38.6 +54.9 151.6	54 14.0 +54.4 150.0	53 48.3 +53.7 148.5	53 21.4 +53.2 146.9
2°	55 57.4 +55.1 152.5	55 33.5 +54.6 150.9	55 08.4 +54.0 149.3	54 42.0 +53.5 147.7	54 14.6 +52.9 146.2
3°	56 52.5 +55.0 151.8	56 28.1 +54.4 150.1	56 02.4 +53.8 148.5	55 35.5 +53.2 146.9	55 07.5 +52.5 145.3
4°	57 47.5 +54.6 151.0	57 22.5 +54.0 149.3	56 56.2 +53.4 147.7	56 28.7 +52.8 146.1	56 00.0 +52.2 144.5
5°	58 42.1 +54.4 150.2	58 16.5 +53.7 148.5	57 49.6 +53.1 146.8	57 21.5 +52.4 145.2	56 52.2 +51.8 143.6
6°	59 36.5 +54.0 149.4	59 10.2 +53.4 147.7	58 42.7 +52.7 146.0	58 13.9 +52.0 144.3	57 44.0 +51.3 142.7
7°	60 30.5 +53.7 148.5	60 03.6 +53.0 146.8	59 35.4 +52.2 145.0	59 05.9 +51.6 143.3	58 35.3 +50.9 141.7
8°	61 24.2 +53.3 147.6	60 56.6 +52.5 145.8	60 27.6 +51.9 144.0	59 57.5 +51.1 142.3	59 26.2 +50.3 140.7
9°	62 17.5 +52.8 146.6	61 49.1 +52.1 144.8	61 19.5 +51.3 143.0	60 48.6 +50.5 141.3	60 16.5 +49.8 139.6
10°	63 10.3 +52.4 145.6	62 41.2 +51.6 143.7	62 10.8 +50.8 141.9	61 39.1 +50.0 140.1	61 06.3 +49.2 138.4
11°	64 02.7 +51.8 144.5	63 32.8 +51.0 142.6	63 01.6 +50.1 140.7	62 29.1 +49.3 139.0	61 55.5 +48.5 137.2
12°	64 54.5 +51.2 143.3	64 23.8 +50.3 141.4	63 51.7 +49.5 139.5	63 18.4 +48.7 137.7	62 44.0 +47.8 136.0
13°	65 45.7 +50.6 142.1	65 14.1 +49.7 140.1	64 41.2 +48.8 138.2	64 07.1 +47.9 136.4	63 31.8 +47.0 134.6
14°	66 36.3 +49.9 140.8	66 03.8 +48.9 138.8	65 30.0 +48.0 136.8	64 55.0 +47.0 135.0	64 18.8 +46.2 133.2
15°	67 26.2 +49.0 139.3	66 52.7 +48.1 137.3	66 18.0 +47.1 135.4	65 42.0 +46.2 133.5	65 05.0 +45.2 131.7
16°	68 15.2 +48.2 137.8	67 40.8 +47.1 135.8	67 05.1 +46.1 133.8	66 28.2 +45.1 131.9	65 50.2 +44.2 130.1
17°	69 03.4 +47.1 136.2	68 27.9 +46.1 134.1	67 51.2 +45.0 132.1	67 13.3 +44.0 130.2	66 34.4 +43.0 128.5
18°	69 50.5 +46.0 134.4	69 14.0 +44.8 132.3	68 36.2 +43.8 130.3	67 57.3 +42.7 128.5	67 17.4 +41.8 126.7
19°	70 36.5 +44.8 132.5	69 58.8 +43.6 130.4	69 20.0 +42.4 128.4	68 40.0 +41.4 126.6	67 59.2 +40.4 124.8
20°	71 21.3 +43.3 130.5	70 42.4 +42.1 128.4	70 02.4 +41.0 126.4	69 21.4 +39.9 124.5	68 39.6 +38.9 122.8
21°	72 04.6 +41.7 128.3	71 24.5 +40.5 126.2	70 43.4 +39.3 124.2	70 01.3 +38.3 122.4	69 18.5 +37.2 120.7
22°	72 46.3 +39.9 125.9	72 05.0 +38.6 123.8	71 22.7 +37.5 121.9	70 39.6 +36.4 120.1	69 55.7 +35.4 118.4
23°	73 26.2 +37.8 123.3	72 43.6 +36.6 121.3	72 00.2 +35.5 119.4	71 16.0 +34.4 117.7	70 31.1 +33.4 116.0
24°	74 04.0 +35.5 120.5	73 20.2 +34.3 118.6	72 35.7 +33.2 116.8	71 50.4 +32.2 115.1	71 04.5 +31.3 113.5
25°	74 39.5 +33.0 117.5	73 54.5 +31.8 115.7	73 08.9 +30.7 113.9	72 22.6 +29.8 112.3	71 35.8 +28.9 110.8
26°	75 12.5 +30.1 114.3	74 26.3 +29.0 112.6	73 39.6 +28.0 110.9	72 52.4 +27.1 109.4	72 04.7 +26.4 108.0
27°	75 42.6 +26.9 110.9	74 55.3 +26.0 109.2	74 07.6 +25.1 107.7	73 19.5 +24.3 106.4	72 31.1 +23.6 105.1
28°	76 09.5 +23.5 107.2	75 21.3 +22.6 105.7	74 32.7 +21.8 104.4	73 43.8 +21.2 103.1	72 54.7 +20.7 102.0
29°	76 33.0 +19.6 103.3	75 43.9 +18.9 102.0	74 54.5 +18.4 100.8	74 05.0 +18.0 99.8	73 15.4 +17.5 98.7

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°	52 00.5 +52.9 146.2	51 32.0 +52.4 144.8	51 02.5 +51.8 143.4	50 32.0 +51.3 142.1	50 00.6 +50.7 140.7
1°	52 53.4 +52.6 145.5	52 24.4 +52.0 144.0	51 54.3 +51.5 142.6	51 23.3 +50.8 141.2	50 51.3 +50.3 139.9
2°	53 46.0 +52.3 144.7	53 16.4 +51.7 143.2	52 45.8 +51.0 141.8	52 14.1 +50.5 140.4	51 41.6 +49.9 139.0
3°	54 38.3 +51.9 143.8	54 08.1 +51.3 142.4	53 36.8 +50.7 140.9	53 04.6 +50.1 139.5	52 31.5 +49.5 138.1
4°	55 30.2 +51.6 143.0	54 59.4 +50.9 141.5	54 27.5 +50.3 140.0	53 54.7 +49.6 138.6	53 21.0 +49.0 137.2
5°	56 21.8 +51.1 142.0	55 50.3 +50.4 140.5	55 17.8 +49.8 139.0	54 44.3 +49.2 137.6	54 10.0 +48.5 136.2
6°	57 12.9 +50.6 141.1	56 40.7 +50.0 139.5	56 07.6 +49.3 138.1	55 33.5 +48.6 136.6	54 58.5 +48.0 135.2
7°	58 03.5 +50.2 140.1	57 30.7 +49.5 138.5	56 56.9 +48.8 137.0	56 22.1 +48.1 135.6	55 46.5 +47.4 134.1
8°	58 53.7 +49.6 139.0	58 20.2 +48.9 137.5	57 45.7 +48.2 135.9	57 10.2 +47.5 134.5	56 33.9 +46.8 133.0
9°	59 43.3 +49.1 137.9	59 09.1 +48.3 136.3	58 33.9 +47.5 134.8	57 57.7 +46.9 133.3	57 20.7 +46.1 131.9
10°	60 32.4 +48.4 136.8	59 57.4 +47.7 135.2	59 21.4 +46.9 133.6	58 44.6 +46.1 132.1	58 06.8 +45.5 130.7
11°	61 20.8 +47.7 135.6	60 45.1 +46.9 133.9	60 08.3 +46.2 132.4	59 30.7 +45.5 130.9	58 52.3 +44.7 129.4
12°	62 08.5 +47.0 134.3	61 32.0 +46.2 132.7	60 54.5 +45.4 131.1	60 16.2 +44.6 129.6	59 37.0 +43.9 128.1
13°	62 55.5 +46.2 132.9	62 18.2 +45.3 131.3	61 39.9 +44.5 129.7	61 00.8 +43.7 128.2	60 20.9 +43.0 126.8
14°	63 41.7 +45.2 131.5	63 03.5 +44.4 129.9	62 24.4 +43.7 128.3	61 44.5 +42.9 126.8	61 03.9 +42.0 125.3
15°	64 26.9 +44.4 130.0	63 47.9 +43.5 128.4	63 08.1 +42.6 126.8	62 27.4 +41.8 125.3	61 45.9 +41.1 123.9
16°	65 11.3 +43.2 128.4	64 31.4 +42.4 126.8	63 50.7 +41.5 125.2	63 09.2 +40.7 123.7	62 27.0 +40.0 122.3
17°	65 54.5 +42.1 126.7	65 13.8 +41.2 125.1	64 32.2 +40.4 123.6	63 49.9 +39.6 122.1	63 07.0 +38.7 120.7
18°	66 36.6 +40.8 125.0	65 55.0 +39.9 123.4	65 12.6 +39.0 121.8	64 29.5 +38.2 120.4	63 45.7 +37.6 119.0
19°	67 17.4 +39.5 123.1	66 34.9 +38.5 121.5	65 51.6 +37.7 120.0	65 07.7 +37.0 118.5	64 23.3 +36.1 117.2
20°	67 56.9 +37.9 121.1	67 13.4 +37.1 119.6	66 29.3 +36.3 118.1	65 44.7 +35.4 116.7	64 59.4 +34.7 115.3
21°	68 34.8 +36.3 119.0	67 50.5 +35.4 117.5	67 05.6 +34.5 116.0	66 20.1 +33.8 114.7	65 34.1 +33.1 113.4
22°	69 11.1 +34.5 116.8	68 25.9 +33.6 115.3	67 40.1 +32.9 113.9	66 53.9 +32.1 112.6	66 07.2 +31.5 111.3
23°	69 45.6 +32.5 114.5	68 59.5 +31.8 113.0	68 13.0 +31.0 111.7	67 26.0 +30.3 110.4	66 38.7 +29.6 109.2
24°	70 18.1 +30.4 112.0	69 31.3 +29.6 110.7	68 44.0 +28.9 109.4	67 56.3 +28.3 108.1	67 08.3 +27.8 107.0
25°	70 48.5 +28.2 109.4	70 00.9 +27.4 108.1	69 12.9 +26.8 106.9	68 24.6 +26.3 105.8	67 36.1 +25.7 104.7
26°	71 16.7 +25.6 106.7	70 28.3 +25.1 105.5	69 39.7 +24.5 104.4	68 50.9 +23.9 103.3	68 01.8 +23.5 102.3
27°	71 42.3 +23.1 103.9	70 53.4 +22.5 102.8	70 04.2 +22.0 101.7	69 14.8 +21.7 100.7	68 25.3 +21.3 99.8
28°	72 05.4 +20.2 100.9	71 15.9 +19.8 99.9	70 26.2 +19.5 99.0	69 36.5 +19.1 98.1	68 46.6 +18.9 97.2
29°	72 25.6 +17.2 97.8	71 35.7 +16.9 96.9	70 45.7 +16.7 96.1	69 55.6 +16.5 95.3	69 05.5 +16.3 94.6

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°	49 28.3 +50.1 139.4	48 55.2 +49.5 138.2	48 21.2 +49.0 136.9	47 46.5 +48.4 135.7	47 10.9 +47.9 134.5
1°	50 18.4 +49.8 138.6	49 44.7 +49.2 137.3	49 10.2 +48.6 136.0	48 34.9 +48.0 134.8	47 58.8 +47.4 133.6
2°	51 08.2 +49.3 137.7	50 33.9 +48.7 136.4	49 58.8 +48.1 135.1	49 22.9 +47.5 133.9	48 46.2 +47.0 132.7
3°	51 57.5 +48.8 136.8	51 22.6 +48.2 135.5	50 46.9 +47.7 134.2	50 10.4 +47.1 132.9	49 33.2 +46.5 131.7
4°	52 46.3 +48.4 135.8	52 10.8 +47.8 134.5	51 34.6 +47.1 133.2	50 57.5 +46.6 132.0	50 19.7 +46.0 130.7
5°	53 34.7 +47.9 134.8	52 58.6 +47.3 133.5	52 21.7 +46.7 132.2	51 44.1 +46.0 131.0	51 05.7 +45.5 129.7
6°	54 22.6 +47.3 133.8	53 45.9 +46.7 132.5	53 08.4 +46.0 131.2	52 30.1 +45.5 129.9	51 51.2 +44.9 128.7
7°	55 09.9 +46.8 132.7	54 32.6 +46.1 131.4	53 54.4 +45.5 130.1	53 15.6 +44.9 128.8	52 36.1 +44.2 127.6
8°	55 56.7 +46.1 131.6	55 18.7 +45.4 130.3	54 39.9 +44.9 129.0	54 00.5 +44.2 127.7	53 20.3 +43.6 126.5
9°	56 42.8 +45.5 130.5	56 04.1 +44.9 129.1	55 24.8 +44.1 127.8	54 44.7 +43.5 126.6	54 03.9 +42.9 125.3
10°	57 28.3 +44.7 129.3	56 49.0 +44.0 127.9	56 08.9 +43.4 126.6	55 28.2 +42.8 125.3	54 46.8 +42.2 124.1
11°	58 13.0 +44.0 128.0	57 33.0 +43.3 126.7	56 52.3 +42.7 125.4	56 11.0 +42.0 124.1	55 29.0 +41.4 122.9
12°	58 57.0 +43.2 126.7	58 16.3 +42.5 125.4	57 35.0 +41.8 124.1	56 53.0 +41.2 122.8	56 10.4 +40.6 121.6
13°	59 40.2 +42.3 125.4	58 58.8 +41.6 124.0	58 16.8 +40.9 122.7	57 34.2 +40.2 121.5	56 51.0 +39.6 120.2
14°	60 22.5 +41.3 123.9	59 40.4 +40.6 122.6	58 57.7 +40.0 121.3	58 14.4 +39.4 120.1	57 30.6 +38.8 118.9
15°	61 03.8 +40.3 122.5	60 21.0 +39.7 121.1	59 37.7 +38.9 119.9	58 53.8 +38.3 118.6	58 09.4 +37.7 117.4
16°	61 44.1 +39.3 120.9	61 00.7 +38.5 119.6	60 16.6 +37.9 118.3	59 32.1 +37.3 117.1	58 47.1 +36.6 115.9
17°	62 23.4 +38.0 119.3	61 39.2 +37.4 118.0	60 54.5 +36.7 116.8	60 09.4 +36.1 115.6	59 23.7 +35.6 114.4
18°	63 01.4 +36.8 117.6	62 16.6 +36.1 116.3	61 31.2 +35.5 115.1	60 45.5 +34.9 113.9	59 59.3 +34.3 112.8
19°	63 38.2 +35.5 115.9	62 52.7 +34.8 114.6	62 06.7 +34.2 113.4	61 20.4 +33.6 112.3	60 33.6 +33.1 111.2
20°	64 13.7 +34.0 114.0	63 27.5 +33.4 112.8	62 40.9 +32.8 111.6	61 54.0 +32.2 110.5	61 06.7 +31.7 109.4
21°	64 47.7 +32.5 112.1	64 00.9 +31.8 110.9	63 13.7 +31.3 109.8	62 26.2 +30.8 108.7	61 38.4 +30.3 107.7
22°	65 20.2 +30.8 110.1	64 32.7 +30.3 109.0	63 45.0 +29.7 107.9	62 57.0 +29.2 106.8	62 08.7 +28.8 105.8
23°	65 51.0 +29.1 108.0	65 03.0 +28.5 106.9	64 14.7 +28.1 105.9	63 26.2 +27.6 104.9	62 37.5 +27.2 103.9
24°	66 20.1 +27.2 105.9	65 31.5 +26.8 104.8	64 42.8 +26.3 103.8	63 53.8 +25.9 102.9	63 04.7 +25.6 102.0
25°	66 47.3 +25.2 103.6	65 58.3 +24.8 102.7	65 09.1 +24.4 101.7	64 19.7 +24.2 100.8	63 30.3 +23.8 100.0
26°	67 12.5 +23.2 101.3	66 23.1 +22.8 100.4	65 33.5 +22.5 99.5	64 43.9 +22.2 98.7	63 54.1 +21.9 97.9
27°	67 35.7 +20.9 98.9	66 45.9 +20.7 98.1	65 56.0 +20.5 97.3	65 06.1 +20.2 96.5	64 16.0 +20.1 95.8
28°	67 56.6 +18.7 96.4	67 06.6 +18.5 95.7	66 16.5 +18.3 95.0	65 26.3 +18.2 94.3	64 36.1 +18.1 93.6
29°	68 15.3 +16.2 93.9	67 25.1 +16.1 93.2	66 34.8 +16.1 92.6	65 44.5 +16.1 92.0	64 54.2 +16.1 91.4

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	46 34.7 +47.3 133.3	45 57.7 +46.8 132.2	45 20.1 +46.3 131.1	44 41.9 +45.7 130.0	44 03.0 +45.3 128.9
1°	47 22.0 +46.9 132.4	46 44.5 +46.4 131.3	46 06.4 +45.8 130.2	45 27.6 +45.3 129.1	44 48.3 +44.8 128.0
2°	48 08.9 +46.4 131.5	47 30.9 +45.9 130.4	46 52.2 +45.4 129.2	46 12.9 +44.9 128.1	45 33.1 +44.3 127.1
3°	48 55.3 +46.0 130.5	48 16.8 +45.4 129.4	47 37.6 +44.8 128.3	46 57.8 +44.3 127.2	46 17.4 +43.8 126.1
4°	49 41.3 +45.4 129.6	49 02.2 +44.8 128.4	48 22.4 +44.3 127.3	47 42.1 +43.8 126.2	47 01.2 +43.3 125.1
5°	50 26.7 +44.9 128.5	49 47.0 +44.3 127.4	49 06.7 +43.8 126.2	48 25.9 +43.2 125.1	47 44.5 +42.7 124.1
6°	51 11.6 +44.3 127.5	50 31.3 +43.8 126.3	49 50.5 +43.2 125.2	49 09.1 +42.7 124.1	48 27.2 +42.1 123.0
7°	51 55.9 +43.6 126.4	51 15.1 +43.1 125.2	50 33.7 +42.5 124.1	49 51.8 +42.0 123.0	49 09.3 +41.5 121.9
8°	52 39.5 +43.1 125.3	51 58.2 +42.4 124.1	51 16.2 +41.9 123.0	50 33.8 +41.3 121.9	49 50.8 +40.8 120.8
9°	53 22.6 +42.3 124.1	52 40.6 +41.8 123.0	51 58.1 +41.2 121.8	51 15.1 +40.7 120.7	50 31.6 +40.2 119.7
10°	54 04.9 +41.6 122.9	53 22.4 +41.0 121.8	52 39.3 +40.5 120.6	51 55.8 +39.9 119.6	51 11.8 +39.4 118.5
11°	54 46.5 +40.8 121.7	54 03.4 +40.2 120.5	53 19.8 +39.7 119.4	52 35.7 +39.2 118.3	51 51.2 +38.7 117.3
12°	55 27.3 +39.9 120.4	54 43.6 +39.4 119.3	53 59.5 +38.8 118.2	53 14.9 +38.3 117.1	52 29.9 +37.8 116.0
13°	56 07.2 +39.1 119.1	55 23.0 +38.5 117.9	54 38.3 +38.0 116.8	53 53.2 +37.5 115.8	53 07.7 +37.0 114.8
14°	56 46.3 +38.2 117.7	56 01.5 +37.6 116.6	55 16.3 +37.1 115.5	54 30.7 +36.6 114.5	53 44.7 +36.1 113.4
15°	57 24.5 +37.1 116.3	56 39.1 +36.6 115.2	55 53.4 +36.1 114.1	55 07.3 +35.6 113.1	54 20.8 +35.2 112.1
16°	58 01.6 +36.1 114.8	57 15.7 +35.6 113.7	56 29.5 +35.1 112.7	55 42.9 +34.6 111.7	54 56.0 +34.1 110.7
17°	58 37.7 +35.0 113.3	57 51.3 +34.5 112.2	57 04.6 +34.0 111.2	56 17.5 +33.5 110.2	55 30.1 +33.1 109.2
18°	59 12.7 +33.8 111.7	58 25.8 +33.3 110.7	57 38.6 +32.8 109.7	56 51.0 +32.4 108.7	56 03.2 +32.0 107.8
19°	59 46.5 +32.6 110.1	58 59.1 +32.1 109.1	58 11.4 +31.7 108.1	57 23.4 +31.3 107.1	56 35.2 +30.9 106.2
20°	60 19.1 +31.2 108.4	59 31.2 +30.8 107.4	58 43.1 +30.3 106.5	57 54.7 +30.0 105.5	57 06.1 +29.7 104.7
21°	60 50.3 +29.9 106.7	60 02.0 +29.4 105.7	59 13.4 +29.1 104.8	58 24.7 +28.7 103.9	57 35.8 +28.3 103.0
22°	61 20.2 +28.4 104.9	60 31.4 +28.0 104.0	59 42.5 +27.7 103.1	58 53.4 +27.4 102.2	58 04.1 +27.1 101.4
23°	61 48.6 +26.8 103.0	60 59.4 +26.6 102.1	60 10.2 +26.2 101.3	59 20.8 +25.9 100.5	58 31.2 +25.7 99.7
24°	62 15.4 +25.2 101.1	61 26.0 +24.9 100.3	60 36.4 +24.7 99.5	59 46.7 +24.5 98.7	58 56.9 +24.3 98.0
25°	62 40.6 +23.6 99.2	61 50.9 +23.3 98.4	61 01.1 +23.1 97.6	60 11.2 +22.9 96.9	59 21.2 +22.7 96.2
26°	63 04.2 +21.7 97.1	62 14.2 +21.6 96.4	61 24.2 +21.4 95.7	60 34.1 +21.3 95.0	59 43.9 +21.2 94.3
27°	63 25.9 +20.0 95.1	62 35.8 +19.8 94.4	61 45.6 +19.7 93.7	60 55.4 +19.6 93.1	60 05.1 +19.6 92.5
28°	63 45.9 +18.0 92.9	62 55.6 +18.0 92.3	62 05.3 +18.0 91.7	61 15.0 +17.9 91.1	60 24.7 +17.9 90.6
29°	64 03.9 +16.0 90.8	63 13.6 +16.0 90.2	62 23.3 +16.1 89.7	61 32.9 +16.2 89.1	60 42.6 +16.3 88.6

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°	43 23.6 +44.7 127.9	42 43.6 +44.2 126.9	42 03.1 +43.7 125.9	41 22.0 +43.3 124.9	40 40.5 +42.9 123.9
1°	44 08.3 +44.3 127.0	43 27.8 +43.9 125.9	42 46.8 +43.4 124.9	42 05.3 +42.9 124.0	41 23.4 +42.4 123.0
2°	44 52.6 +43.8 126.0	44 11.7 +43.3 125.0	43 30.2 +42.8 124.0	42 48.2 +42.4 123.0	42 05.8 +41.9 122.0
3°	45 36.4 +43.3 125.0	44 55.0 +42.8 124.0	44 13.0 +42.4 123.0	43 30.6 +41.9 122.0	42 47.7 +41.4 121.1
4°	46 19.7 +42.8 124.0	45 37.8 +42.3 123.0	44 55.4 +41.8 122.0	44 12.5 +41.3 121.0	43 29.1 +40.9 120.1
5°	47 02.5 +42.2 123.0	46 20.1 +41.7 122.0	45 37.2 +41.2 121.0	44 53.8 +40.8 120.0	44 10.0 +40.4 119.1
6°	47 44.7 +41.7 122.0	47 01.8 +41.1 120.9	46 18.4 +40.7 120.0	45 34.6 +40.2 119.0	44 50.4 +39.8 118.0
7°	48 26.4 +41.0 120.9	47 42.9 +40.6 119.9	46 59.1 +40.0 118.9	46 14.8 +39.6 117.9	45 30.2 +39.1 117.0
8°	49 07.4 +40.3 119.8	48 23.5 +39.8 118.8	47 39.1 +39.5 117.8	46 54.4 +39.0 116.8	46 09.3 +38.6 115.9
9°	49 47.7 +39.7 118.6	49 03.3 +39.2 117.6	48 18.6 +38.7 116.7	47 33.4 +38.3 115.7	46 47.9 +37.9 114.8
10°	50 27.4 +38.9 117.5	49 42.5 +38.5 116.5	48 57.3 +38.0 115.5	48 11.7 +37.6 114.6	47 25.8 +37.1 113.6
11°	51 06.3 +38.2 116.3	50 21.0 +37.7 115.3	49 35.3 +37.3 114.3	48 49.3 +36.8 113.4	48 02.9 +36.5 112.5
12°	51 44.5 +37.4 115.0	50 58.7 +36.9 114.1	50 12.6 +36.5 113.1	49 26.1 +36.1 112.2	48 39.4 +35.7 111.3
13°	52 21.9 +36.5 113.8	51 35.6 +36.1 112.8	50 49.1 +35.6 111.9	50 02.2 +35.3 110.9	49 15.1 +34.9 110.0
14°	52 58.4 +35.6 112.5	52 11.7 +35.2 111.5	51 24.7 +34.9 110.6	50 37.5 +34.4 109.7	49 50.0 +34.1 108.8
15°	53 34.0 +34.7 111.1	52 46.9 +34.3 110.2	51 59.6 +33.9 109.3	51 11.9 +33.6 108.4	50 24.1 +33.2 107.5
16°	54 08.7 +33.8 109.7	53 21.2 +33.4 108.8	52 33.5 +32.9 107.9	51 45.5 +32.6 107.0	50 57.3 +32.3 106.2
17°	54 42.5 +32.7 108.3	53 54.6 +32.3 107.4	53 06.4 +32.0 106.5	52 18.1 +31.7 105.7	51 29.6 +31.3 104.8
18°	55 15.2 +31.6 106.8	54 26.9 +31.3 106.0	53 38.4 +31.0 105.1	52 49.8 +30.6 104.3	52 00.9 +30.4 103.5
19°	55 46.8 +30.5 105.3	54 58.2 +30.2 104.5	54 09.4 +29.9 103.7	53 20.4 +29.6 102.8	52 31.3 +29.3 102.1
20°	56 17.3 +29.4 103.8	55 28.4 +29.0 103.0	54 39.3 +28.7 102.2	53 50.0 +28.5 101.4	53 00.6 +28.3 100.6
21°	56 46.7 +28.0 102.2	55 57.4 +27.8 101.4	55 08.0 +27.6 100.6	54 18.5 +27.3 99.9	53 28.9 +27.1 99.1
22°	57 14.7 +26.9 100.6	56 25.2 +26.6 99.8	55 35.6 +26.3 99.1	54 45.8 +26.2 98.3	53 56.0 +26.0 97.6
23°	57 41.6 +25.4 98.9	56 51.8 +25.3 98.2	56 01.9 +25.1 97.5	55 12.0 +25.0 96.8	54 22.0 +24.8 96.1
24°	58 07.0 +24.1 97.2	57 17.1 +23.9 96.5	56 27.0 +23.8 95.8	55 37.0 +23.6 95.2	54 46.8 +23.6 94.5
25°	58 31.1 +22.6 95.5	57 41.0 +22.5 94.8	56 50.8 +22.4 94.2	56 00.6 +22.3 93.5	55 10.4 +22.2 92.9
26°	58 53.7 +21.1 93.7	58 03.5 +21.0 93.1	57 13.2 +21.0 92.5	56 22.9 +21.0 91.9	55 32.6 +21.0 91.3
27°	59 14.8 +19.6 91.9	58 24.5 +19.6 91.3	57 34.2 +19.6 90.7	56 43.9 +19.5 90.2	55 53.6 +19.6 89.6
28°	59 34.4 +17.9 90.0	58 44.1 +18.0 89.5	57 53.8 +18.0 89.0	57 03.4 +18.1 88.4	56 13.2 +18.1 87.9
29°	59 52.3 +16.3 88.1	59 02.1 +16.3 87.6	58 11.8 +16.5 87.2	57 21.5 +16.6 86.7	56 31.3 +16.7 86.2

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°	39 58.5 +42.4 123.0	39 16.1 +42.0 122.1	38 33.2 +41.6 121.2	37 50.0 +41.2 120.3	37 06.3 +40.8 119.4
1°	40 40.9 +42.0 122.1	39 58.1 +41.5 121.1	39 14.8 +41.1 120.2	38 31.2 +40.7 119.4	37 47.1 +40.3 118.5
2°	41 22.9 +41.5 121.1	40 39.6 +41.1 120.2	39 55.9 +40.7 119.3	39 11.9 +40.2 118.4	38 27.4 +39.9 117.6
3°	42 04.4 +41.0 120.1	41 20.7 +40.6 119.2	40 36.6 +40.1 118.3	39 52.1 +39.8 117.5	39 07.3 +39.4 116.6
4°	42 45.4 +40.5 119.2	42 01.3 +40.0 118.2	41 16.7 +39.7 117.3	40 31.9 +39.2 116.5	39 46.7 +38.8 115.6
5°	43 25.9 +39.9 118.1	42 41.3 +39.5 117.2	41 56.4 +39.1 116.3	41 11.1 +38.8 115.5	40 25.5 +38.4 114.6
6°	44 05.8 +39.3 117.1	43 20.8 +39.0 116.2	42 35.5 +38.6 115.3	41 49.9 +38.1 114.5	41 03.9 +37.8 113.6
7°	44 45.1 +38.8 116.1	43 59.8 +38.3 115.2	43 14.1 +37.9 114.3	42 28.0 +37.6 113.4	41 41.7 +37.3 112.6
8°	45 23.9 +38.1 115.0	44 38.1 +37.8 114.1	43 52.0 +37.4 113.2	43 05.6 +37.0 112.4	42 19.0 +36.6 111.5
9°	46 02.0 +37.5 113.9	45 15.9 +37.0 113.0	44 29.4 +36.7 112.1	43 42.6 +36.4 111.3	42 55.6 +36.0 110.4
10°	46 39.5 +36.8 112.7	45 52.9 +36.5 111.9	45 06.1 +36.1 111.0	44 19.0 +35.7 110.2	43 31.6 +35.4 109.3
11°	47 16.3 +36.1 111.6	46 29.4 +35.7 110.7	45 42.2 +35.3 109.9	44 54.7 +35.0 109.0	44 07.0 +34.7 108.2
12°	47 52.4 +35.3 110.4	47 05.1 +34.9 109.5	46 17.5 +34.7 108.7	45 29.7 +34.4 107.9	44 41.7 +34.1 107.1
13°	48 27.7 +34.5 109.2	47 40.0 +34.2 108.3	46 52.2 +33.8 107.5	46 04.1 +33.6 106.7	45 15.8 +33.3 105.9
14°	49 02.2 +33.8 107.9	48 14.2 +33.5 107.1	47 26.0 +33.2 106.3	46 37.7 +32.8 105.5	45 49.1 +32.5 104.7
15°	49 36.0 +32.8 106.7	48 47.7 +32.5 105.9	47 59.2 +32.2 105.1	47 10.5 +32.0 104.3	46 21.6 +31.8 103.5
16°	50 08.8 +32.0 105.4	49 20.2 +31.7 104.6	48 31.4 +31.5 103.8	47 42.5 +31.2 103.0	46 53.4 +30.9 102.3
17°	50 40.8 +31.1 104.0	49 51.9 +30.8 103.3	49 02.9 +30.5 102.5	48 13.7 +30.3 101.8	47 24.3 +30.2 101.0
18°	51 11.9 +30.1 102.7	50 22.7 +29.9 101.9	49 33.4 +29.7 101.2	48 44.0 +29.4 100.5	47 54.5 +29.2 99.7
19°	51 42.0 +29.1 101.3	50 52.6 +28.9 100.6	50 03.1 +28.6 99.8	49 13.4 +28.5 99.1	48 23.7 +28.3 98.4
20°	52 11.1 +28.0 99.9	51 21.5 +27.8 99.2	50 31.7 +27.7 98.5	49 41.9 +27.5 97.8	48 52.0 +27.4 97.1
21°	52 39.1 +27.0 98.4	51 49.3 +26.8 97.7	50 59.4 +26.7 97.1	50 09.4 +26.6 96.4	49 19.4 +26.4 95.7
22°	53 06.1 +25.8 97.0	52 16.1 +25.7 96.3	51 26.1 +25.6 95.6	50 36.0 +25.5 95.0	49 45.8 +25.4 94.4
23°	53 31.9 +24.7 95.4	52 41.8 +24.6 94.8	51 51.7 +24.5 94.2	51 01.5 +24.4 93.6	50 11.2 +24.4 92.9
24°	53 56.6 +23.5 93.9	53 06.4 +23.4 93.3	52 16.2 +23.3 92.7	51 25.9 +23.3 92.1	50 35.6 +23.3 91.5
25°	54 20.1 +22.2 92.3	53 29.8 +22.2 91.7	52 39.5 +22.2 91.2	51 49.2 +22.2 90.6	50 58.9 +22.2 90.1
26°	54 42.3 +21.0 90.7	53 52.0 +21.0 90.2	53 01.7 +21.0 89.6	52 11.4 +21.0 89.1	51 21.1 +21.0 88.6
27°	55 03.3 +19.6 89.1	54 13.0 +19.6 88.6	53 22.7 +19.7 88.1	52 32.4 +19.8 87.6	51 42.1 +19.9 87.1
28°	55 22.9 +18.2 87.4	54 32.6 +18.3 87.0	53 42.4 +18.4 86.5	52 52.2 +18.5 86.0	52 02.0 +18.7 85.5
29°	55 41.1 +16.9 85.8	54 50.9 +17.0 85.3	54 00.8 +17.1 84.9	53 10.7 +17.3 84.4	52 20.7 +17.4 84.0

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°	36 22.3 +40.4 118.6	35 38.0 +40.0 117.7	34 53.3 +39.6 116.9	34 08.2 +39.3 116.1	33 22.9 +38.9 115.3
1°	37 02.7 +39.9 117.7	36 18.0 +39.5 116.8	35 32.9 +39.2 116.0	34 47.5 +38.9 115.2	34 01.8 +38.6 114.4
2°	37 42.6 +39.5 116.7	36 57.5 +39.2 115.9	36 12.1 +38.8 115.1	35 26.4 +38.4 114.3	34 40.4 +38.1 113.5
3°	38 22.1 +39.0 115.8	37 36.7 +38.6 114.9	36 50.9 +38.3 114.1	36 04.8 +38.0 113.3	35 18.5 +37.6 112.5
4°	39 01.1 +38.5 114.8	38 15.3 +38.2 114.0	37 29.2 +37.8 113.2	36 42.8 +37.5 112.4	35 56.1 +37.2 111.6
5°	39 39.6 +38.0 113.8	38 53.5 +37.6 113.0	38 07.0 +37.3 112.2	37 20.3 +37.0 111.4	36 33.3 +36.7 110.6
6°	40 17.6 +37.5 112.8	39 31.1 +37.1 112.0	38 44.3 +36.8 111.2	37 57.3 +36.5 110.4	37 10.0 +36.2 109.6
7°	40 55.1 +36.9 111.8	40 08.2 +36.6 110.9	39 21.1 +36.3 110.2	38 33.8 +35.9 109.4	37 46.2 +35.7 108.6
8°	41 32.0 +36.3 110.7	40 44.8 +36.0 109.9	39 57.4 +35.7 109.1	39 09.7 +35.4 108.4	38 21.9 +35.1 107.6
9°	42 08.3 +35.7 109.6	41 20.8 +35.4 108.8	40 33.1 +35.1 108.1	39 45.1 +34.9 107.3	38 57.0 +34.6 106.6
10°	42 44.0 +35.1 108.5	41 56.2 +34.8 107.8	41 08.2 +34.5 107.0	40 20.0 +34.2 106.2	39 31.6 +34.0 105.5
11°	43 19.1 +34.4 107.4	42 31.0 +34.2 106.7	41 42.7 +33.9 105.9	40 54.2 +33.7 105.2	40 05.6 +33.4 104.4
12°	43 53.5 +33.8 106.3	43 05.2 +33.4 105.5	42 16.6 +33.2 104.8	41 27.9 +32.9 104.1	40 39.0 +32.7 103.3
13°	44 27.3 +33.0 105.2	43 38.6 +32.8 104.4	42 49.8 +32.6 103.7	42 00.8 +32.4 102.9	41 11.7 +32.2 102.2
14°	45 00.3 +32.3 104.0	44 11.4 +32.1 103.2	43 22.4 +31.8 102.5	42 33.2 +31.6 101.8	41 43.9 +31.4 101.1
15°	45 32.6 +31.6 102.8	44 43.5 +31.3 102.1	43 54.2 +31.1 101.3	43 04.8 +30.9 100.6	42 15.3 +30.8 100.0
16°	46 04.2 +30.7 101.6	45 14.8 +30.5 100.8	44 25.3 +30.4 100.2	43 35.7 +30.2 99.5	42 46.1 +30.0 98.8
17°	46 34.9 +29.9 100.3	45 45.3 +29.8 99.6	44 55.7 +29.5 98.9	44 05.9 +29.4 98.3	43 16.1 +29.3 97.6
18°	47 04.8 +29.1 99.0	46 15.1 +28.9 98.4	45 25.2 +28.8 97.7	44 35.3 +28.7 97.1	43 45.4 +28.5 96.4
19°	47 33.9 +28.1 97.8	46 44.0 +28.0 97.1	45 54.0 +27.9 96.4	45 04.0 +27.8 95.8	44 13.9 +27.7 95.2
20°	48 02.0 +27.3 96.4	47 12.0 +27.2 95.8	46 21.9 +27.1 95.2	45 31.8 +27.0 94.6	44 41.6 +26.9 93.9
21°	48 29.3 +26.3 95.1	47 39.2 +26.2 94.5	46 49.0 +26.1 93.9	45 58.8 +26.1 93.3	45 08.5 +26.1 92.7
22°	48 55.6 +25.4 93.7	48 05.4 +25.3 93.1	47 15.1 +25.3 92.6	46 24.9 +25.1 92.0	45 34.6 +25.1 91.4
23°	49 21.0 +24.3 92.4	48 30.7 +24.3 91.8	47 40.4 +24.2 91.2	46 50.0 +24.3 90.7	45 59.7 +24.3 90.1
24°	49 45.3 +23.3 90.9	48 55.0 +23.2 90.4	48 04.6 +23.3 89.8	47 14.3 +23.3 89.3	46 24.0 +23.4 88.8
25°	50 08.6 +22.2 89.5	49 18.2 +22.3 89.0	48 27.9 +22.3 88.5	47 37.6 +22.4 87.9	46 47.4 +22.4 87.4
26°	50 30.8 +21.1 88.1	49 40.5 +21.1 87.6	48 50.2 +21.3 87.1	48 00.0 +21.3 86.6	47 09.8 +21.4 86.1
27°	50 51.9 +19.9 86.6	50 01.6 +20.1 86.1	49 11.5 +20.1 85.6	48 21.3 +20.3 85.2	47 31.2 +20.4 84.7
28°	51 11.8 +18.8 85.1	50 21.7 +18.9 84.6	49 31.6 +19.1 84.2	48 41.6 +19.2 83.7	47 51.6 +19.4 83.3
29°	51 30.6 +17.6 83.6	50 40.6 +17.8 83.1	49 50.7 +18.0 82.7	49 00.8 +18.2 82.3	48 11.0 +18.3 81.9

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°	32 37.3 +38.6 114.6	31 51.4 +38.3 113.8	31 05.2 +38.0 113.1	30 18.8 +37.7 112.3	29 32.1 +37.4 111.6
1°	33 15.9 +38.2 113.6	32 29.7 +37.8 112.9	31 43.2 +37.6 112.1	30 56.5 +37.2 111.4	30 09.5 +37.0 110.7
2°	33 54.1 +37.8 112.7	33 07.5 +37.5 112.0	32 20.8 +37.1 111.2	31 33.7 +36.9 110.5	30 46.5 +36.6 109.8
3°	34 31.9 +37.3 111.8	33 45.0 +37.1 111.0	32 57.9 +36.8 110.3	32 10.6 +36.5 109.6	31 23.1 +36.2 108.8
4°	35 09.2 +36.9 110.8	34 22.1 +36.5 110.1	33 34.7 +36.3 109.3	32 47.1 +36.0 108.6	31 59.3 +35.8 107.9
5°	35 46.1 +36.4 109.9	34 58.6 +36.2 109.1	34 11.0 +35.9 108.4	33 23.1 +35.6 107.7	32 35.1 +35.4 107.0
6°	36 22.5 +35.9 108.9	35 34.8 +35.6 108.1	34 46.9 +35.3 107.4	33 58.7 +35.2 106.7	33 10.5 +34.9 106.0
7°	36 58.4 +35.4 107.9	36 10.4 +35.2 107.1	35 22.2 +34.9 106.4	34 33.9 +34.6 105.7	33 45.4 +34.4 105.0
8°	37 33.8 +34.9 106.9	36 45.6 +34.6 106.1	35 57.1 +34.4 105.4	35 08.5 +34.2 104.7	34 19.8 +34.0 104.0
9°	38 08.7 +34.3 105.8	37 20.2 +34.1 105.1	36 31.5 +33.9 104.4	35 42.7 +33.7 103.7	34 53.8 +33.4 103.0
10°	38 43.0 +33.8 104.8	37 54.3 +33.5 104.1	37 05.4 +33.3 103.4	36 16.4 +33.1 102.7	35 27.2 +33.0 102.0
11°	39 16.8 +33.1 103.7	38 27.8 +33.0 103.0	37 38.7 +32.8 102.3	36 49.5 +32.6 101.7	36 00.2 +32.4 101.0
12°	39 49.9 +32.6 102.6	39 00.8 +32.3 102.0	38 11.5 +32.2 101.3	37 22.1 +32.0 100.6	36 32.6 +31.8 99.9
13°	40 22.5 +31.9 101.5	39 33.1 +31.8 100.9	38 43.7 +31.5 100.2	37 54.1 +31.4 99.5	37 04.4 +31.3 98.9
14°	40 54.4 +31.3 100.4	40 04.9 +31.1 99.8	39 15.2 +31.0 99.1	38 25.5 +30.8 98.5	37 35.7 +30.7 97.8
15°	41 25.7 +30.6 99.3	40 36.0 +30.4 98.6	39 46.2 +30.3 98.0	38 56.3 +30.2 97.4	38 06.4 +30.1 96.7
16°	41 56.3 +29.9 98.1	41 06.4 +29.8 97.5	40 16.5 +29.6 96.9	39 26.5 +29.6 96.2	38 36.5 +29.4 95.6
17°	42 26.2 +29.1 97.0	41 36.2 +29.0 96.3	40 46.1 +29.0 95.7	39 56.1 +28.8 95.1	39 05.9 +28.8 94.5
18°	42 55.3 +28.4 95.8	42 05.2 +28.4 95.2	41 15.1 +28.2 94.6	40 24.9 +28.2 94.0	39 34.7 +28.1 93.4
19°	43 23.7 +27.7 94.6	42 33.6 +27.5 94.0	41 43.3 +27.6 93.4	40 53.1 +27.5 92.8	40 02.8 +27.5 92.2
20°	43 51.4 +26.8 93.3	43 01.1 +26.8 92.8	42 10.9 +26.7 92.2	41 20.6 +26.7 91.6	40 30.3 +26.7 91.1
21°	44 18.2 +26.0 92.1	43 27.9 +26.0 91.5	42 37.6 +26.0 91.0	41 47.3 +26.0 90.4	40 57.0 +26.0 89.9
22°	44 44.2 +25.2 90.8	43 53.9 +25.2 90.3	43 03.6 +25.2 89.7	42 13.3 +25.2 89.2	41 23.0 +25.2 88.7
23°	45 09.4 +24.3 89.6	44 19.1 +24.3 89.0	43 28.8 +24.3 88.5	42 38.5 +24.4 88.0	41 48.2 +24.5 87.5
24°	45 33.7 +23.4 88.3	44 43.4 +23.5 87.7	43 53.1 +23.6 87.2	43 02.9 +23.6 86.7	42 12.7 +23.6 86.2
25°	45 57.1 +22.5 86.9	45 06.9 +22.5 86.4	44 16.7 +22.6 86.0	43 26.5 +22.7 85.5	42 36.3 +22.9 85.0
26°	46 19.6 +21.5 85.6	45 29.4 +21.6 85.1	44 39.3 +21.7 84.7	43 49.2 +21.9 84.2	42 59.2 +22.0 83.7
27°	46 41.1 +20.5 84.2	45 51.0 +20.7 83.8	45 01.0 +20.9 83.3	44 11.1 +21.0 82.9	43 21.2 +21.1 82.5
28°	47 01.6 +19.6 82.9	46 11.7 +19.7 82.4	45 21.9 +19.9 82.0	44 32.1 +20.0 81.6	43 42.3 +20.3 81.2
29°	47 21.2 +18.5 81.5	46 31.4 +18.8 81.1	45 41.8 +18.9 80.7	44 52.1 +19.2 80.3	44 02.6 +19.3 79.9

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°	28 45.2 +37.1 110.9	27 58.1 +36.8 110.2	27 10.7 +36.6 109.5	26 23.2 +36.3 108.8	25 35.5 +36.0 108.1
1°	29 22.3 +36.7 110.0	28 34.9 +36.5 109.3	27 47.3 +36.2 108.6	26 59.5 +36.0 107.9	26 11.5 +35.8 107.2
2°	29 59.0 +36.4 109.1	29 11.4 +36.1 108.4	28 23.5 +35.9 107.7	27 35.5 +35.6 107.0	26 47.3 +35.4 106.3
3°	30 35.4 +35.9 108.1	29 47.5 +35.7 107.5	28 59.4 +35.5 106.8	28 11.1 +35.3 106.1	27 22.7 +35.0 105.4
4°	31 11.3 +35.6 107.2	30 23.2 +35.3 106.5	29 34.9 +35.0 105.8	28 46.4 +34.8 105.2	27 57.7 +34.7 104.5
5°	31 46.9 +35.1 106.3	30 58.5 +34.9 105.6	30 09.9 +34.7 104.9	29 21.2 +34.5 104.2	28 32.4 +34.3 103.6
6°	32 22.0 +34.7 105.3	31 33.4 +34.5 104.6	30 44.6 +34.3 104.0	29 55.7 +34.1 103.3	29 06.7 +33.9 102.6
7°	32 56.7 +34.2 104.3	32 07.9 +34.0 103.7	31 18.9 +33.8 103.0	30 29.8 +33.7 102.3	29 40.6 +33.5 101.7
8°	33 30.9 +33.8 103.4	32 41.9 +33.6 102.7	31 52.7 +33.4 102.0	31 03.5 +33.2 101.4	30 14.1 +33.0 100.7
9°	34 04.7 +33.2 102.4	33 15.5 +33.1 101.7	32 26.1 +33.0 101.1	31 36.7 +32.8 100.4	30 47.1 +32.7 99.8
10°	34 37.9 +32.8 101.4	33 48.6 +32.6 100.7	32 59.1 +32.4 100.1	32 09.5 +32.3 99.4	31 19.8 +32.2 98.8
11°	35 10.7 +32.3 100.3	34 21.2 +32.1 99.7	33 31.5 +32.0 99.1	32 41.8 +31.8 98.4	31 52.0 +31.7 97.8
12°	35 43.0 +31.7 99.3	34 53.3 +31.5 98.7	34 03.5 +31.4 98.0	33 13.6 +31.3 97.4	32 23.7 +31.2 96.8
13°	36 14.7 +31.1 98.2	35 24.8 +31.0 97.6	34 34.9 +30.9 97.0	33 44.9 +30.9 96.4	32 54.9 +30.7 95.8
14°	36 45.8 +30.6 97.2	35 55.8 +30.5 96.6	35 05.8 +30.4 96.0	34 15.8 +30.2 95.4	33 25.6 +30.3 94.8
15°	37 16.4 +30.0 96.1	36 26.3 +29.9 95.5	35 36.2 +29.8 94.9	34 46.0 +29.8 94.3	33 55.9 +29.6 93.7
16°	37 46.4 +29.3 95.0	36 56.2 +29.3 94.4	36 06.0 +29.3 93.8	35 15.8 +29.2 93.2	34 25.5 +29.2 92.7
17°	38 15.7 +28.8 93.9	37 25.5 +28.7 93.3	36 35.3 +28.6 92.7	35 45.0 +28.6 92.2	34 54.7 +28.6 91.6
18°	38 44.5 +28.0 92.8	37 54.2 +28.0 92.2	37 03.9 +28.0 91.6	36 13.6 +28.0 91.1	35 23.3 +28.0 90.5
19°	39 12.5 +27.4 91.7	38 22.2 +27.4 91.1	37 31.9 +27.4 90.5	36 41.6 +27.4 90.0	35 51.3 +27.4 89.4
20°	39 39.9 +26.8 90.5	38 49.6 +26.8 90.0	37 59.3 +26.8 89.4	37 09.0 +26.8 88.9	36 18.7 +26.8 88.3
21°	40 06.7 +26.0 89.3	39 16.4 +26.0 88.8	38 26.1 +26.0 88.3	37 35.8 +26.1 87.7	36 45.5 +26.2 87.2
22°	40 32.7 +25.2 88.2	39 42.4 +25.3 87.6	38 52.1 +25.4 87.1	38 01.9 +25.4 86.6	37 11.7 +25.5 86.1
23°	40 57.9 +24.6 87.0	40 07.7 +24.6 86.4	39 17.5 +24.7 86.0	38 27.3 +24.8 85.5	37 37.2 +24.8 85.0
24°	41 22.5 +23.7 85.7	40 32.3 +23.8 85.3	39 42.2 +23.9 84.8	38 52.1 +24.0 84.3	38 02.0 +24.2 83.8
25°	41 46.2 +23.0 84.5	40 56.1 +23.1 84.0	40 06.1 +23.2 83.6	39 16.1 +23.4 83.1	38 26.2 +23.5 82.6
26°	42 09.2 +22.1 83.3	41 19.2 +22.3 82.8	40 29.3 +22.5 82.4	39 39.5 +22.6 81.9	38 49.7 +22.7 81.5
27°	42 31.3 +21.3 82.0	41 41.5 +21.5 81.6	40 51.8 +21.6 81.1	40 02.1 +21.8 80.7	39 12.4 +22.1 80.3
28°	42 52.6 +20.5 80.7	42 03.0 +20.6 80.3	41 13.4 +20.9 79.9	40 23.9 +21.1 79.5	39 34.5 +21.2 79.1
29°	43 13.1 +19.6 79.5	42 23.6 +19.8 79.1	41 34.3 +20.0 78.7	40 45.0 +20.2 78.3	39 55.7 +20.5 77.9

Declination SAME name as Latitude

Latitude 33°

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°	24 47.6 +35.8 107.5	23 59.5 +35.6 106.8	23 11.2 +35.4 106.2	22 22.8 +35.2 105.5	21 34.2 +35.0 104.9
1°	25 23.4 +35.5 106.6	24 35.1 +35.3 105.9	23 46.6 +35.1 105.3	22 58.0 +34.9 104.6	22 09.2 +34.8 104.0
2°	25 58.9 +35.2 105.7	25 10.4 +35.0 105.0	24 21.7 +34.8 104.4	23 32.9 +34.6 103.7	22 44.0 +34.4 103.1
3°	26 34.1 +34.8 104.8	25 45.4 +34.6 104.1	24 56.5 +34.5 103.5	24 07.5 +34.3 102.9	23 18.4 +34.1 102.2
4°	27 08.9 +34.5 103.9	26 20.0 +34.3 103.2	25 31.0 +34.1 102.6	24 41.8 +34.0 102.0	23 52.5 +33.8 101.3
5°	27 43.4 +34.1 102.9	26 54.3 +34.0 102.3	26 05.1 +33.8 101.7	25 15.8 +33.6 101.0	24 26.3 +33.5 100.4
6°	28 17.5 +33.8 102.0	27 28.3 +33.5 101.4	26 38.9 +33.4 100.7	25 49.4 +33.3 100.1	24 59.8 +33.1 99.5
7°	28 51.3 +33.3 101.1	28 01.8 +33.2 100.4	27 12.3 +33.0 99.8	26 22.7 +32.9 99.2	25 32.9 +32.8 98.6
8°	29 24.6 +32.9 100.1	28 35.0 +32.8 99.5	27 45.3 +32.7 98.9	26 55.6 +32.5 98.3	26 05.7 +32.5 97.7
9°	29 57.5 +32.5 99.1	29 07.8 +32.4 98.5	28 18.0 +32.2 97.9	27 28.1 +32.2 97.3	26 38.2 +32.0 96.7
10°	30 30.0 +32.1 98.2	29 40.2 +31.9 97.6	28 50.2 +31.9 97.0	28 00.3 +31.7 96.4	27 10.2 +31.7 95.8
11°	31 02.1 +31.6 97.2	30 12.1 +31.5 96.6	29 22.1 +31.4 96.0	28 32.0 +31.4 95.4	27 41.9 +31.3 94.8
12°	31 33.7 +31.1 96.2	30 43.6 +31.1 95.6	29 53.5 +31.0 95.0	29 03.4 +30.9 94.4	28 13.2 +30.8 93.9
13°	32 04.8 +30.7 95.2	31 14.7 +30.6 94.6	30 24.5 +30.5 94.0	29 34.3 +30.5 93.4	28 44.0 +30.5 92.9
14°	32 35.5 +30.1 94.2	31 45.3 +30.1 93.6	30 55.0 +30.1 93.0	30 04.8 +30.0 92.5	29 14.5 +30.0 91.9
15°	33 05.6 +29.7 93.1	32 15.4 +29.6 92.6	31 25.1 +29.6 92.0	30 34.8 +29.5 91.4	29 44.5 +29.5 90.9
16°	33 35.3 +29.1 92.1	32 45.0 +29.1 91.5	31 54.7 +29.0 91.0	31 04.3 +29.1 90.4	30 14.0 +29.1 89.9
17°	34 04.4 +28.6 91.1	33 14.1 +28.5 90.5	32 23.7 +28.6 90.0	31 33.4 +28.6 89.4	30 43.1 +28.6 88.9
18°	34 33.0 +28.0 90.0	33 42.6 +28.1 89.4	32 52.3 +28.1 88.9	32 02.0 +28.1 88.4	31 11.7 +28.1 87.8
19°	35 01.0 +27.4 88.9	34 10.7 +27.4 88.4	33 20.4 +27.5 87.9	32 30.1 +27.5 87.3	31 39.8 +27.6 86.8
20°	35 28.4 +26.8 87.8	34 38.1 +26.9 87.3	33 47.9 +26.9 86.8	32 57.6 +27.1 86.3	32 07.4 +27.1 85.8
21°	35 55.2 +26.3 86.7	35 05.0 +26.3 86.2	34 14.8 +26.4 85.7	33 24.7 +26.4 85.2	32 34.5 +26.6 84.7
22°	36 21.5 +25.6 85.6	35 31.3 +25.7 85.1	34 41.2 +25.8 84.6	33 51.1 +25.9 84.1	33 01.1 +26.0 83.6
23°	36 47.1 +24.9 84.5	35 57.0 +25.1 84.0	35 07.0 +25.2 83.5	34 17.0 +25.3 83.0	33 27.1 +25.4 82.6
24°	37 12.0 +24.3 83.3	36 22.1 +24.4 82.9	35 32.2 +24.5 82.4	34 42.3 +24.7 81.9	33 52.5 +24.9 81.5
25°	37 36.3 +23.7 82.2	36 46.5 +23.8 81.7	35 56.7 +24.0 81.3	35 07.0 +24.1 80.8	34 17.4 +24.2 80.4
26°	38 00.0 +22.9 81.0	37 10.3 +23.1 80.6	36 20.7 +23.2 80.1	35 31.1 +23.5 79.7	34 41.6 +23.7 79.3
27°	38 22.9 +22.2 79.9	37 33.4 +22.4 79.4	36 43.9 +22.7 79.0	35 54.6 +22.8 78.6	35 05.3 +23.0 78.2
28°	38 45.1 +21.5 78.7	37 55.8 +21.7 78.3	37 06.6 +21.9 77.8	36 17.4 +22.2 77.4	35 28.3 +22.4 77.0
29°	39 06.6 +20.7 77.5	38 17.5 +21.0 77.1	37 28.5 +21.2 76.7	36 39.6 +21.4 76.3	35 50.7 +21.8 75.9

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°	20 45.5 +34.9 104.3	19 56.7 +34.6 103.6	19 07.7 +34.5 103.0	18 18.6 +34.4 102.4	17 29.4 +34.2 101.8
1°	21 20.4 +34.5 103.4	20 31.3 +34.4 102.8	19 42.2 +34.2 102.1	18 53.0 +34.0 101.5	18 03.6 +33.9 100.9
2°	21 54.9 +34.3 102.5	21 05.7 +34.1 101.9	20 16.4 +34.0 101.3	19 27.0 +33.8 100.7	18 37.5 +33.7 100.1
3°	22 29.2 +33.9 101.6	21 39.8 +33.8 101.0	20 50.4 +33.6 100.4	20 00.8 +33.6 99.8	19 11.2 +33.4 99.2
4°	23 03.1 +33.7 100.7	22 13.6 +33.6 100.1	21 24.0 +33.4 99.5	20 34.4 +33.2 98.9	19 44.6 +33.2 98.3
5°	23 36.8 +33.3 99.8	22 47.2 +33.2 99.2	21 57.4 +33.1 98.6	21 07.6 +33.0 98.0	20 17.8 +32.9 97.4
6°	24 10.1 +33.0 98.9	23 20.4 +32.9 98.3	22 30.5 +32.8 97.7	21 40.6 +32.8 97.1	20 50.7 +32.6 96.5
7°	24 43.1 +32.7 98.0	23 53.3 +32.6 97.4	23 03.3 +32.5 96.8	22 13.4 +32.4 96.2	21 23.3 +32.3 95.6
8°	25 15.8 +32.4 97.1	24 25.9 +32.2 96.5	23 35.8 +32.2 95.9	22 45.8 +32.0 95.3	21 55.6 +32.1 94.7
9°	25 48.2 +31.9 96.1	24 58.1 +31.9 95.5	24 08.0 +31.8 95.0	23 17.8 +31.8 94.4	22 27.7 +31.7 93.8
10°	26 20.1 +31.6 95.2	25 30.0 +31.5 94.6	24 39.8 +31.5 94.0	23 49.6 +31.4 93.5	22 59.4 +31.4 92.9
11°	26 51.7 +31.3 94.2	26 01.5 +31.2 93.7	25 11.3 +31.1 93.1	24 21.0 +31.1 92.5	23 30.8 +31.0 92.0
12°	27 23.0 +30.8 93.3	26 32.7 +30.8 92.7	25 42.4 +30.8 92.1	24 52.1 +30.8 91.6	24 01.8 +30.7 91.0
13°	27 53.8 +30.4 92.3	27 03.5 +30.4 91.7	26 13.2 +30.3 91.2	25 22.9 +30.3 90.6	24 32.5 +30.4 90.1
14°	28 24.2 +30.0 91.3	27 33.9 +29.9 90.8	26 43.5 +30.0 90.2	25 53.2 +30.0 89.7	25 02.9 +30.0 89.1
15°	28 54.2 +29.5 90.3	28 03.8 +29.6 89.8	27 13.5 +29.6 89.3	26 23.2 +29.6 88.7	25 32.9 +29.6 88.2
16°	29 23.7 +29.1 89.3	28 33.4 +29.1 88.8	27 43.1 +29.1 88.3	26 52.8 +29.2 87.7	26 02.5 +29.3 87.2
17°	29 52.8 +28.6 88.3	29 02.5 +28.7 87.8	28 12.2 +28.8 87.3	27 22.0 +28.8 86.8	26 31.8 +28.8 86.2
18°	30 21.4 +28.2 87.3	29 31.2 +28.2 86.8	28 41.0 +28.2 86.3	27 50.8 +28.3 85.8	27 00.6 +28.4 85.3
19°	30 49.6 +27.7 86.3	29 59.4 +27.7 85.8	29 09.2 +27.9 85.3	28 19.1 +27.9 84.8	27 29.0 +28.0 84.3
20°	31 17.3 +27.1 85.3	30 27.1 +27.3 84.8	29 37.1 +27.3 84.3	28 47.0 +27.5 83.8	27 57.0 +27.6 83.3
21°	31 44.4 +26.7 84.2	30 54.4 +26.8 83.7	30 04.4 +26.9 83.2	29 14.5 +27.0 82.8	28 24.6 +27.1 82.3
22°	32 11.1 +26.1 83.2	31 21.2 +26.2 82.7	30 31.3 +26.3 82.2	29 41.5 +26.5 81.7	28 51.7 +26.6 81.3
23°	32 37.2 +25.6 82.1	31 47.4 +25.7 81.6	30 57.6 +25.9 81.2	30 08.0 +26.0 80.7	29 18.3 +26.2 80.2
24°	33 02.8 +25.0 81.0	32 13.1 +25.2 80.6	31 23.5 +25.4 80.1	30 34.0 +25.5 79.6	29 44.5 +25.7 79.2
25°	33 27.8 +24.4 79.9	32 38.3 +24.6 79.5	31 48.9 +24.8 79.0	30 59.5 +25.0 78.6	30 10.2 +25.2 78.1
26°	33 52.2 +23.9 78.8	33 02.9 +24.1 78.4	32 13.7 +24.2 78.0	31 24.5 +24.4 77.5	30 35.4 +24.7 77.1
27°	34 16.1 +23.2 77.7	33 27.0 +23.4 77.3	32 37.9 +23.7 76.9	31 48.9 +24.0 76.5	31 00.1 +24.1 76.0
28°	34 39.3 +22.7 76.6	33 50.4 +22.9 76.2	33 01.6 +23.1 75.8	32 12.9 +23.3 75.4	31 24.2 +23.6 75.0
29°	35 02.0 +22.0 75.5	34 13.3 +22.3 75.1	33 24.7 +22.5 74.7	32 36.2 +22.8 74.3	31 47.8 +23.1 73.9

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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°	16 40.1 +34.0 101.2	15 50.7 +33.9 100.6	15 01.2 +33.8 100.0	14 11.6 +33.6 99.5	13 22.0 +33.5 98.9
1°	17 14.1 +33.8 100.4	16 24.6 +33.7 99.8	15 35.0 +33.5 99.2	14 45.2 +33.5 98.6	13 55.5 +33.3 98.0
2°	17 47.9 +33.6 99.5	16 58.3 +33.4 98.9	16 08.5 +33.3 98.3	15 18.7 +33.2 97.7	14 28.8 +33.1 97.2
3°	18 21.5 +33.3 98.6	17 31.7 +33.2 98.0	16 41.8 +33.1 97.4	15 51.9 +33.0 96.9	15 01.9 +33.0 96.3
4°	18 54.8 +33.1 97.7	18 04.9 +33.0 97.2	17 14.9 +32.9 96.6	16 24.9 +32.8 96.0	15 34.9 +32.7 95.4
5°	19 27.9 +32.8 96.9	18 37.9 +32.7 96.3	17 47.8 +32.7 95.7	16 57.7 +32.6 95.1	16 07.6 +32.5 94.6
6°	20 00.7 +32.5 96.0	19 10.6 +32.5 95.4	18 20.5 +32.4 94.8	17 30.3 +32.4 94.3	16 40.1 +32.3 93.7
7°	20 33.2 +32.3 95.1	19 43.1 +32.2 94.5	18 52.9 +32.1 93.9	18 02.7 +32.1 93.4	17 12.4 +32.1 92.8
8°	21 05.5 +31.9 94.2	20 15.3 +31.9 93.6	19 25.0 +31.9 93.0	18 34.8 +31.8 92.5	17 44.5 +31.8 91.9
9°	21 37.4 +31.7 93.3	20 47.2 +31.6 92.7	19 56.9 +31.6 92.1	19 06.6 +31.6 91.6	18 16.3 +31.6 91.0
10°	22 09.1 +31.4 92.3	21 18.8 +31.4 91.8	20 28.5 +31.3 91.2	19 38.2 +31.3 90.7	18 47.9 +31.3 90.1
11°	22 40.5 +31.0 91.4	21 50.2 +31.0 90.9	20 59.8 +31.1 90.3	20 09.5 +31.1 89.8	19 19.2 +31.1 89.2
12°	23 11.5 +30.7 90.5	22 21.2 +30.7 89.9	21 30.9 +30.7 89.4	20 40.6 +30.7 88.9	19 50.3 +30.7 88.3
13°	23 42.2 +30.4 89.6	22 51.9 +30.4 89.0	22 01.6 +30.4 88.5	21 11.3 +30.5 87.9	20 21.0 +30.5 87.4
14°	24 12.6 +30.0 88.6	23 22.3 +30.1 88.1	22 32.0 +30.1 87.5	21 41.8 +30.1 87.0	20 51.5 +30.2 86.5
15°	24 42.6 +29.7 87.7	23 52.4 +29.7 87.1	23 02.1 +29.8 86.6	22 11.9 +29.8 86.1	21 21.7 +29.9 85.6
16°	25 12.3 +29.3 86.7	24 22.1 +29.3 86.2	23 31.9 +29.4 85.7	22 41.7 +29.5 85.1	21 51.6 +29.6 84.6
17°	25 41.6 +28.9 85.7	24 51.4 +29.0 85.2	24 01.3 +29.0 84.7	23 11.2 +29.1 84.2	22 21.2 +29.2 83.7
18°	26 10.5 +28.5 84.8	25 20.4 +28.6 84.3	24 30.3 +28.7 83.7	23 40.3 +28.8 83.2	22 50.4 +28.9 82.7
19°	26 39.0 +28.1 83.8	25 49.0 +28.2 83.3	24 59.0 +28.3 82.8	24 09.1 +28.5 82.3	23 19.3 +28.5 81.8
20°	27 07.1 +27.6 82.8	26 17.2 +27.8 82.3	25 27.3 +28.0 81.8	24 37.6 +28.0 81.3	23 47.8 +28.2 80.8
21°	27 34.7 +27.3 81.8	26 45.0 +27.3 81.3	25 55.3 +27.5 80.8	25 05.6 +27.7 80.3	24 16.0 +27.9 79.9
22°	28 02.0 +26.8 80.8	27 12.3 +27.0 80.3	26 22.8 +27.1 79.8	25 33.3 +27.3 79.4	24 43.9 +27.4 78.9
23°	28 28.8 +26.3 79.8	27 39.3 +26.5 79.3	26 49.9 +26.7 78.8	26 00.6 +26.8 78.4	25 11.3 +27.1 77.9
24°	28 55.1 +25.9 78.7	28 05.8 +26.1 78.3	27 16.6 +26.2 77.8	26 27.4 +26.5 77.4	25 38.4 +26.6 76.9
25°	29 21.0 +25.4 77.7	28 31.9 +25.6 77.3	27 42.8 +25.8 76.8	26 53.9 +26.0 76.4	26 05.0 +26.3 75.9
26°	29 46.4 +24.9 76.7	28 57.5 +25.1 76.2	28 08.6 +25.4 75.8	27 19.9 +25.6 75.4	26 31.3 +25.8 74.9
27°	30 11.3 +24.4 75.6	29 22.6 +24.6 75.2	28 34.0 +24.9 74.8	27 45.5 +25.1 74.3	26 57.1 +25.4 73.9
28°	30 35.7 +23.8 74.6	29 47.2 +24.1 74.1	28 58.9 +24.4 73.7	28 10.6 +24.7 73.3	27 22.5 +24.9 72.9
29°	30 59.5 +23.4 73.5	30 11.3 +23.7 73.1	29 23.3 +23.9 72.7	28 35.3 +24.2 72.3	27 47.4 +24.5 71.9

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°	12 32.2 +33.4 98.3	11 42.4 +33.3 97.7	10 52.5 +33.2 97.2	10 02.5 +33.1 96.6	9 12.5 +33.0 96.0
1°	13 05.6 +33.2 97.5	12 15.7 +33.1 96.9	11 25.7 +33.0 96.3	10 35.6 +33.0 95.8	9 45.5 +33.0 95.2
2°	13 38.8 +33.1 96.6	12 48.8 +33.0 96.0	11 58.7 +32.9 95.5	11 08.6 +32.9 94.9	10 18.5 +32.8 94.3
3°	14 11.9 +32.8 95.7	13 21.8 +32.8 95.2	12 31.6 +32.8 94.6	11 41.5 +32.7 94.1	10 51.3 +32.6 93.5
4°	14 44.7 +32.7 94.9	13 54.6 +32.6 94.3	13 04.4 +32.5 93.8	12 14.2 +32.5 93.2	11 23.9 +32.5 92.6
5°	15 17.4 +32.5 94.0	14 27.2 +32.4 93.4	13 36.9 +32.4 92.9	12 46.7 +32.3 92.3	11 56.4 +32.3 91.8
6°	15 49.9 +32.2 93.1	14 59.6 +32.2 92.6	14 09.3 +32.2 92.0	13 19.0 +32.2 91.5	12 28.7 +32.2 90.9
7°	16 22.1 +32.1 92.3	15 31.8 +32.1 91.7	14 41.5 +32.0 91.1	13 51.2 +32.0 90.6	13 00.9 +32.0 90.1
8°	16 54.2 +31.8 91.4	16 03.9 +31.8 90.8	15 13.5 +31.8 90.3	14 23.2 +31.8 89.7	13 32.9 +31.8 89.2
9°	17 26.0 +31.6 90.5	16 35.7 +31.5 89.9	15 45.3 +31.6 89.4	14 55.0 +31.6 88.9	14 04.7 +31.7 88.3
10°	17 57.6 +31.3 89.6	17 07.2 +31.4 89.0	16 16.9 +31.4 88.5	15 26.6 +31.4 88.0	14 36.4 +31.4 87.4
11°	18 28.9 +31.1 88.7	17 38.6 +31.1 88.2	16 48.3 +31.1 87.6	15 58.0 +31.2 87.1	15 07.8 +31.2 86.6
12°	19 00.0 +30.8 87.8	18 09.7 +30.8 87.3	17 19.4 +30.9 86.7	16 29.2 +31.0 86.2	15 39.0 +31.0 85.7
13°	19 30.8 +30.5 86.9	18 40.5 +30.6 86.4	17 50.3 +30.7 85.8	17 00.2 +30.7 85.3	16 10.0 +30.8 84.8
14°	20 01.3 +30.3 86.0	19 11.1 +30.3 85.4	18 21.0 +30.4 84.9	17 30.9 +30.5 84.4	16 40.8 +30.6 83.9
15°	20 31.6 +29.9 85.0	19 41.4 +30.1 84.5	18 51.4 +30.1 84.0	18 01.4 +30.2 83.5	17 11.4 +30.3 83.0
16°	21 01.5 +29.7 84.1	20 11.5 +29.7 83.6	19 21.5 +29.8 83.1	18 31.6 +29.9 82.6	17 41.7 +30.1 82.1
17°	21 31.2 +29.3 83.2	20 41.2 +29.5 82.7	19 51.3 +29.6 82.2	19 01.5 +29.7 81.7	18 11.8 +29.8 81.2
18°	22 00.5 +29.0 82.2	21 10.7 +29.1 81.7	20 20.9 +29.3 81.2	19 31.2 +29.4 80.8	18 41.6 +29.5 80.3
19°	22 29.5 +28.7 81.3	21 39.8 +28.8 80.8	20 50.2 +28.9 80.3	20 00.6 +29.1 79.8	19 11.1 +29.3 79.3
20°	22 58.2 +28.3 80.3	22 08.6 +28.5 79.9	21 19.1 +28.7 79.4	20 29.7 +28.8 78.9	19 40.4 +29.0 78.4
21°	23 26.5 +28.0 79.4	22 37.1 +28.2 78.9	21 47.8 +28.3 78.4	20 58.5 +28.5 78.0	20 09.4 +28.6 77.5
22°	23 54.5 +27.7 78.4	23 05.3 +27.8 78.0	22 16.1 +28.0 77.5	21 27.0 +28.2 77.0	20 38.0 +28.4 76.5
23°	24 22.2 +27.2 77.4	23 33.1 +27.4 77.0	22 44.1 +27.6 76.5	21 55.2 +27.9 76.1	21 06.4 +28.1 75.6
24°	24 49.4 +26.9 76.5	24 00.5 +27.1 76.0	23 11.7 +27.3 75.6	22 23.1 +27.5 75.1	21 34.5 +27.7 74.6
25°	25 16.3 +26.4 75.5	24 27.6 +26.7 75.0	23 39.0 +27.0 74.6	22 50.6 +27.1 74.1	22 02.2 +27.4 73.7
26°	25 42.7 +26.1 74.5	24 54.3 +26.3 74.1	24 06.0 +26.5 73.6	23 17.7 +26.8 73.2	22 29.6 +27.1 72.7
27°	26 08.8 +25.6 73.5	25 20.6 +25.9 73.1	24 32.5 +26.2 72.6	23 44.5 +26.5 72.2	22 56.7 +26.7 71.8
28°	26 34.4 +25.2 72.5	25 46.5 +25.5 72.1	24 58.7 +25.7 71.6	24 11.0 +26.0 71.2	23 23.4 +26.3 70.8
29°	26 59.6 +24.8 71.5	26 12.0 +25.0 71.1	25 24.4 +25.4 70.6	24 37.0 +25.7 70.2	23 49.7 +26.0 69.8

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 22.4 +33.0 95.5	7 32.3 +32.9 94.9	6 42.2 +32.8 94.4	5 52.0 +32.8 93.8	5 01.8 +32.7 93.3
1°	8 55.4 +32.9 94.6	8 05.2 +32.8 94.1	7 15.0 +32.8 93.5	6 24.8 +32.7 93.0	5 34.5 +32.7 92.4
2°	9 28.3 +32.7 93.8	8 38.0 +32.7 93.2	7 47.8 +32.7 92.7	6 57.5 +32.7 92.1	6 07.2 +32.6 91.6
3°	10 01.0 +32.6 92.9	9 10.7 +32.6 92.4	8 20.5 +32.5 91.8	7 30.2 +32.5 91.3	6 39.8 +32.6 90.7
4°	10 33.6 +32.5 92.1	9 43.3 +32.5 91.5	8 53.0 +32.5 91.0	8 02.7 +32.4 90.4	7 12.4 +32.4 89.9
5°	11 06.1 +32.3 91.2	10 15.8 +32.3 90.7	9 25.5 +32.3 90.1	8 35.1 +32.4 89.6	7 44.8 +32.4 89.1
6°	11 38.4 +32.2 90.4	10 48.1 +32.2 89.8	9 57.8 +32.2 89.3	9 07.5 +32.2 88.7	8 17.2 +32.2 88.2
7°	12 10.6 +32.0 89.5	11 20.3 +32.0 89.0	10 30.0 +32.0 88.4	9 39.7 +32.0 87.9	8 49.4 +32.1 87.3
8°	12 42.6 +31.8 88.6	11 52.3 +31.9 88.1	11 02.0 +31.9 87.6	10 11.7 +32.0 87.0	9 21.5 +32.0 86.5
9°	13 14.4 +31.7 87.8	12 24.2 +31.7 87.2	11 33.9 +31.8 86.7	10 43.7 +31.8 86.2	9 53.5 +31.9 85.6
10°	13 46.1 +31.5 86.9	12 55.9 +31.5 86.4	12 05.7 +31.5 85.8	11 15.5 +31.6 85.3	10 25.4 +31.7 84.8
11°	14 17.6 +31.3 86.0	13 27.4 +31.3 85.5	12 37.2 +31.5 85.0	11 47.1 +31.5 84.4	10 57.1 +31.6 83.9
12°	14 48.9 +31.0 85.1	13 58.7 +31.2 84.6	13 08.7 +31.2 84.1	12 18.6 +31.4 83.6	11 28.7 +31.4 83.0
13°	15 19.9 +30.9 84.3	14 29.9 +31.0 83.7	13 39.9 +31.1 83.2	12 50.0 +31.1 82.7	12 00.1 +31.2 82.2
14°	15 50.8 +30.7 83.4	15 00.9 +30.7 82.8	14 11.0 +30.8 82.3	13 21.1 +31.0 81.8	12 31.3 +31.1 81.3
15°	16 21.5 +30.4 82.5	15 31.6 +30.5 82.0	14 41.8 +30.7 81.4	13 52.1 +30.8 80.9	13 02.4 +30.9 80.4
16°	16 51.9 +30.2 81.6	16 02.1 +30.4 81.1	15 12.5 +30.4 80.6	14 22.9 +30.6 80.1	13 33.3 +30.8 79.5
17°	17 22.1 +29.9 80.7	16 32.5 +30.0 80.2	15 42.9 +30.2 79.7	14 53.5 +30.3 79.2	14 04.1 +30.5 78.7
18°	17 52.0 +29.7 79.8	17 02.5 +29.9 79.3	16 13.1 +30.0 78.8	15 23.8 +30.2 78.3	14 34.6 +30.3 77.8
19°	18 21.7 +29.4 78.8	17 32.4 +29.6 78.4	16 43.1 +29.8 77.9	15 54.0 +29.9 77.4	15 04.9 +30.2 76.9
20°	18 51.1 +29.2 77.9	18 02.0 +29.3 77.4	17 12.9 +29.5 77.0	16 23.9 +29.7 76.5	15 35.1 +29.9 76.0
21°	19 20.3 +28.9 77.0	18 31.3 +29.1 76.5	17 42.4 +29.3 76.0	16 53.6 +29.5 75.6	16 05.0 +29.6 75.1
22°	19 49.2 +28.5 76.1	19 00.4 +28.8 75.6	18 11.7 +29.0 75.1	17 23.1 +29.2 74.6	16 34.6 +29.5 74.2
23°	20 17.7 +28.3 75.1	19 29.2 +28.5 74.7	18 40.7 +28.7 74.2	17 52.3 +29.0 73.7	17 04.1 +29.2 73.3
24°	20 46.0 +28.0 74.2	19 57.7 +28.2 73.7	19 09.4 +28.5 73.3	18 21.3 +28.7 72.8	17 33.3 +28.9 72.3
25°	21 14.0 +27.6 73.2	20 25.9 +27.9 72.8	19 37.9 +28.1 72.3	18 50.0 +28.4 71.9	18 02.2 +28.7 71.4
26°	21 41.6 +27.4 72.3	20 53.8 +27.5 71.8	20 06.0 +27.9 71.4	19 18.4 +28.1 71.0	18 30.9 +28.4 70.5
27°	22 09.0 +26.9 71.3	21 21.3 +27.3 70.9	20 33.9 +27.5 70.5	19 46.5 +27.8 70.0	18 59.3 +28.1 69.6
28°	22 35.9 +26.7 70.4	21 48.6 +26.9 69.9	21 01.4 +27.2 69.5	20 14.3 +27.6 69.1	19 27.4 +27.8 68.6
29°	23 02.6 +26.2 69.4	22 15.5 +26.6 69.0	21 28.6 +26.9 68.5	20 41.9 +27.2 68.1	19 55.2 +27.6 67.7

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 11.5 +32.7 92.7	3 21.2 +32.7 92.2	2 30.9 +32.7 91.6	1 40.6 +32.7 91.1	0 50.3 +32.7 90.5
1°	4 44.2 +32.7 91.9	3 53.9 +32.7 91.3	3 03.6 +32.7 90.8	2 13.3 +32.7 90.3	1 23.0 +32.7 89.7
2°	5 16.9 +32.6 91.0	4 26.6 +32.6 90.5	3 36.3 +32.6 90.0	2 46.0 +32.6 89.4	1 55.7 +32.6 88.9
3°	5 49.5 +32.6 90.2	4 59.2 +32.5 89.7	4 08.9 +32.5 89.1	3 18.6 +32.6 88.6	2 28.3 +32.6 88.0
4°	6 22.1 +32.4 89.4	5 31.7 +32.5 88.8	4 41.4 +32.5 88.3	3 51.2 +32.5 87.7	3 00.9 +32.5 87.2
5°	6 54.5 +32.4 88.5	6 04.2 +32.4 88.0	5 13.9 +32.5 87.4	4 23.7 +32.4 86.9	3 33.4 +32.6 86.3
6°	7 26.9 +32.2 87.7	6 36.6 +32.3 87.1	5 46.4 +32.3 86.6	4 56.1 +32.4 86.0	4 06.0 +32.4 85.5
7°	7 59.1 +32.2 86.8	7 08.9 +32.2 86.3	6 18.7 +32.3 85.7	5 28.5 +32.4 85.2	4 38.4 +32.4 84.7
8°	8 31.3 +32.0 86.0	7 41.1 +32.1 85.4	6 51.0 +32.2 84.9	6 00.9 +32.2 84.4	5 10.8 +32.4 83.8
9°	9 03.3 +32.0 85.1	8 13.2 +32.0 84.6	7 23.2 +32.0 84.0	6 33.1 +32.2 83.5	5 43.2 +32.2 83.0
10°	9 35.3 +31.8 84.2	8 45.2 +31.9 83.7	7 55.2 +32.0 83.2	7 05.3 +32.1 82.7	6 15.4 +32.2 82.1
11°	10 07.1 +31.6 83.4	9 17.1 +31.8 82.9	8 27.2 +31.9 82.3	7 37.4 +32.0 81.8	6 47.6 +32.1 81.3
12°	10 38.7 +31.6 82.5	9 48.9 +31.6 82.0	8 59.1 +31.7 81.5	8 09.4 +31.8 80.9	7 19.7 +32.0 80.4
13°	11 10.3 +31.3 81.7	10 20.5 +31.5 81.1	9 30.8 +31.6 80.6	8 41.2 +31.8 80.1	7 51.7 +31.9 79.6
14°	11 41.6 +31.3 80.8	10 52.0 +31.4 80.3	10 02.4 +31.5 79.7	9 13.0 +31.6 79.2	8 23.6 +31.8 78.7
15°	12 12.9 +31.0 79.9	11 23.4 +31.1 79.4	10 33.9 +31.4 78.9	9 44.6 +31.5 78.4	8 55.4 +31.6 77.9
16°	12 43.9 +30.9 79.0	11 54.5 +31.1 78.5	11 05.3 +31.2 78.0	10 16.1 +31.4 77.5	9 27.0 +31.6 77.0
17°	13 14.8 +30.7 78.2	12 25.6 +30.8 77.7	11 36.5 +31.0 77.1	10 47.5 +31.2 76.6	9 58.6 +31.4 76.1
18°	13 45.5 +30.5 77.3	12 56.4 +30.7 76.8	12 07.5 +30.9 76.3	11 18.7 +31.0 75.8	10 30.0 +31.2 75.3
19°	14 16.0 +30.3 76.4	13 27.1 +30.5 75.9	12 38.4 +30.7 75.4	11 49.7 +30.9 74.9	11 01.2 +31.1 74.4
20°	14 46.3 +30.1 75.5	13 57.6 +30.3 75.0	13 09.1 +30.5 74.5	12 20.6 +30.8 74.0	11 32.3 +31.0 73.5
21°	15 16.4 +29.9 74.6	14 27.9 +30.1 74.1	13 39.6 +30.3 73.6	12 51.4 +30.5 73.1	12 03.3 +30.8 72.6
22°	15 46.3 +29.6 73.7	14 58.0 +29.9 73.2	14 09.9 +30.2 72.7	13 21.9 +30.4 72.3	12 34.1 +30.6 71.8
23°	16 15.9 +29.5 72.8	15 27.9 +29.7 72.3	14 40.1 +29.9 71.8	13 52.3 +30.2 71.4	13 04.7 +30.4 70.9
24°	16 45.4 +29.2 71.9	15 57.6 +29.5 71.4	15 10.0 +29.7 70.9	14 22.5 +30.0 70.5	13 35.1 +30.3 70.0
25°	17 14.6 +28.9 71.0	16 27.1 +29.2 70.5	15 39.7 +29.5 70.0	14 52.5 +29.7 69.6	14 05.4 +30.0 69.1
26°	17 43.5 +28.7 70.1	16 56.3 +28.9 69.6	16 09.2 +29.2 69.1	15 22.2 +29.6 68.7	14 35.4 +29.9 68.2
27°	18 12.2 +28.4 69.1	17 25.2 +28.8 68.7	16 38.4 +29.1 68.2	15 51.8 +29.3 67.8	15 05.3 +29.6 67.3
28°	18 40.6 +28.2 68.2	17 54.0 +28.4 67.8	17 07.5 +28.7 67.3	16 21.1 +29.1 66.9	15 34.9 +29.4 66.4
29°	19 08.8 +27.8 67.3	18 22.4 +28.2 66.8	17 36.2 +28.6 66.4	16 50.2 +28.9 66.0	16 04.3 +29.2 65.5

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 +32.7 90.0	-0 50.3 +32.7	-1 40.6 +32.7	-2 30.9 +32.7	-3 21.2 +32.7
1°	0 32.7 +32.6 89.2	-0 17.6 +32.7	-1 07.9 +32.7	-1 58.2 +32.7	-2 48.5 +32.8
2°	1 05.3 +32.7 88.3	0 15.1 +32.6 87.8	-0 35.2 +32.7	-1 25.5 +32.8	-2 15.7 +32.8
3°	1 38.0 +32.6 87.5	0 47.7 +32.7 86.9	-0 02.5 +32.7	-0 52.7 +32.8	-1 42.9 +32.9
4°	2 10.6 +32.6 86.6	1 20.4 +32.7 86.1	0 30.2 +32.8 85.6	-0 19.9 +32.8	-1 10.0 +32.8
5°	2 43.2 +32.6 85.8	1 53.1 +32.6 85.3	1 03.0 +32.7 84.7	0 12.9 +32.7 84.2	-0 37.2 +32.9
6°	3 15.8 +32.5 85.0	2 25.7 +32.6 84.4	1 35.7 +32.6 83.9	0 45.6 +32.8 83.3	-0 04.3 +32.9
7°	3 48.3 +32.5 84.1	2 58.3 +32.6 83.6	2 08.3 +32.7 83.0	1 18.4 +32.8 82.5	0 28.6 +32.8 82.0
8°	4 20.8 +32.5 83.3	3 30.9 +32.5 82.7	2 41.0 +32.6 82.2	1 51.2 +32.7 81.7	1 01.4 +32.9 81.1
9°	4 53.3 +32.3 82.4	4 03.4 +32.5 81.9	3 13.6 +32.6 81.4	2 23.9 +32.7 80.8	1 34.3 +32.8 80.3
10°	5 25.6 +32.3 81.6	4 35.9 +32.4 81.1	3 46.2 +32.5 80.5	2 56.6 +32.7 80.0	2 07.1 +32.8 79.4
11°	5 57.9 +32.2 80.7	5 08.3 +32.3 80.2	4 18.7 +32.5 79.7	3 29.3 +32.6 79.1	2 39.9 +32.8 78.6
12°	6 30.1 +32.1 79.9	5 40.6 +32.3 79.4	4 51.2 +32.4 78.8	4 01.9 +32.5 78.3	3 12.7 +32.7 77.8
13°	7 02.2 +32.1 79.0	6 12.9 +32.2 78.5	5 23.6 +32.4 78.0	4 34.4 +32.6 77.5	3 45.4 +32.7 76.9
14°	7 34.3 +31.9 78.2	6 45.1 +32.1 77.7	5 56.0 +32.2 77.1	5 07.0 +32.4 76.6	4 18.1 +32.6 76.1
15°	8 06.2 +31.8 77.3	7 17.2 +32.0 76.8	6 28.2 +32.2 76.3	5 39.4 +32.4 75.8	4 50.7 +32.5 75.2
16°	8 38.0 +31.8 76.5	7 49.2 +31.9 76.0	7 00.4 +32.1 75.4	6 11.8 +32.2 74.9	5 23.2 +32.5 74.4
17°	9 09.8 +31.5 75.6	8 21.1 +31.8 75.1	7 32.5 +32.0 74.6	6 44.0 +32.2 74.1	5 55.7 +32.4 73.6
18°	9 41.3 +31.5 74.8	8 52.9 +31.6 74.2	8 04.5 +31.9 73.7	7 16.2 +32.1 73.2	6 28.1 +32.4 72.7
19°	10 12.8 +31.3 73.9	9 24.5 +31.6 73.4	8 36.4 +31.7 72.9	7 48.3 +32.0 72.4	7 00.5 +32.2 71.9
20°	10 44.1 +31.2 73.0	9 56.1 +31.4 72.5	9 08.1 +31.7 72.0	8 20.3 +31.9 71.5	7 32.7 +32.1 71.0
21°	11 15.3 +31.0 72.2	10 27.5 +31.3 71.7	9 39.8 +31.5 71.2	8 52.2 +31.8 70.7	8 04.8 +32.1 70.2
22°	11 46.3 +30.9 71.3	10 58.8 +31.1 70.8	10 11.3 +31.4 70.3	9 24.0 +31.7 69.8	8 36.9 +31.9 69.3
23°	12 17.2 +30.7 70.4	11 29.9 +30.9 69.9	10 42.7 +31.2 69.4	9 55.7 +31.5 68.9	9 08.8 +31.8 68.4
24°	12 47.9 +30.5 69.5	12 00.8 +30.9 69.0	11 13.9 +31.1 68.6	10 27.2 +31.3 68.1	9 40.6 +31.6 67.6
25°	13 18.4 +30.4 68.6	12 31.7 +30.6 68.2	11 45.0 +30.9 67.7	10 58.5 +31.3 67.2	10 12.2 +31.6 66.7
26°	13 48.8 +30.1 67.8	13 02.3 +30.4 67.3	12 15.9 +30.8 66.8	11 29.8 +31.0 66.3	10 43.8 +31.4 65.9
27°	14 18.9 +30.0 66.9	13 32.7 +30.3 66.4	12 46.7 +30.6 65.9	12 00.8 +31.0 65.5	11 15.2 +31.2 65.0
28°	14 48.9 +29.7 66.0	14 03.0 +30.1 65.5	13 17.3 +30.4 65.1	12 31.8 +30.7 64.6	11 46.4 +31.1 64.1
29°	15 18.6 +29.5 65.1	14 33.1 +29.8 64.6	13 47.7 +30.2 64.2	13 02.5 +30.5 63.7	12 17.5 +30.9 63.2

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-4 11.5 +32.8	-5 01.8 +32.9	-5 52.0 +32.9	-6 42.2 +33.0	-7 32.3 +33.0
1°	-3 38.7 +32.8	-4 28.9 +32.9	-5 19.1 +33.0	-6 09.2 +33.0	-6 59.3 +33.1
2°	-3 05.9 +32.9	-3 56.0 +32.9	-4 46.1 +33.0	-5 36.2 +33.1	-6 26.2 +33.2
3°	-2 33.0 +32.9	-3 23.1 +33.0	-4 13.1 +33.0	-5 03.1 +33.2	-5 53.0 +33.2
4°	-2 00.1 +32.9	-2 50.1 +33.0	-3 40.1 +33.2	-4 29.9 +33.2	-5 19.8 +33.3
5°	-1 27.2 +33.0	-2 17.1 +33.1	-3 06.9 +33.1	-3 56.7 +33.2	-4 46.5 +33.4
6°	-0 54.2 +33.0	-1 44.0 +33.1	-2 33.8 +33.2	-3 23.5 +33.3	-4 13.1 +33.5
7°	-0 21.2 +32.9	-1 10.9 +33.0	-2 00.6 +33.2	-2 50.2 +33.4	-3 39.6 +33.5
8°	0 11.7 +33.0 80.6	-0 37.9 +33.1	-1 27.4 +33.3	-2 16.8 +33.4	-3 06.1 +33.5
9°	0 44.7 +33.0 79.7	-0 04.8 +33.1	-0 54.1 +33.2	-1 43.4 +33.4	-2 32.6 +33.5
10°	1 17.7 +32.9 78.9	0 28.3 +33.1 78.4	-0 20.9 +33.2	-1 10.0 +33.4	-1 59.1 +33.6
11°	1 50.6 +32.9 78.1	1 01.4 +33.1 77.5	0 12.3 +33.3 77.0	-0 36.6 +33.4	-1 25.5 +33.6
12°	2 23.5 +32.9 77.2	1 34.5 +33.1 76.7	0 45.6 +33.2 76.2	-0 03.2 +33.4	-0 51.9 +33.6
13°	2 56.4 +32.9 76.4	2 07.6 +33.0 75.9	1 18.8 +33.2 75.3	0 30.2 +33.4 74.8	-0 18.3 +33.6
14°	3 29.3 +32.8 75.6	2 40.6 +33.0 75.0	1 52.0 +33.2 74.5	1 03.6 +33.4 73.9	0 15.3 +33.6 73.4
15°	4 02.1 +32.7 74.7	3 13.6 +33.0 74.2	2 25.2 +33.2 73.7	1 37.0 +33.4 73.1	0 48.9 +33.6 72.6
16°	4 34.8 +32.7 73.9	3 46.6 +32.9 73.4	2 58.4 +33.1 72.8	2 10.4 +33.4 72.3	1 22.5 +33.6 71.8
17°	5 07.5 +32.7 73.0	4 19.5 +32.8 72.5	3 31.5 +33.1 72.0	2 43.8 +33.3 71.5	1 56.1 +33.6 70.9
18°	5 40.2 +32.5 72.2	4 52.3 +32.8 71.7	4 04.6 +33.1 71.1	3 17.1 +33.2 70.6	2 29.7 +33.5 70.1
19°	6 12.7 +32.5 71.3	5 25.1 +32.7 70.8	4 37.7 +32.9 70.3	3 50.3 +33.3 69.8	3 03.2 +33.5 69.3
20°	6 45.2 +32.4 70.5	5 57.8 +32.7 70.0	5 10.6 +32.9 69.5	4 23.6 +33.1 69.0	3 36.7 +33.4 68.4
21°	7 17.6 +32.3 69.7	6 30.5 +32.5 69.1	5 43.5 +32.9 68.6	4 56.7 +33.2 68.1	4 10.1 +33.4 67.6
22°	7 49.9 +32.2 68.8	7 03.0 +32.5 68.3	6 16.4 +32.7 67.8	5 29.9 +33.0 67.3	4 43.5 +33.4 66.8
23°	8 22.1 +32.0 68.0	7 35.5 +32.4 67.5	6 49.1 +32.7 66.9	6 02.9 +33.0 66.4	5 16.9 +33.2 65.9
24°	8 54.1 +32.0 67.1	8 07.9 +32.2 66.6	7 21.8 +32.5 66.1	6 35.9 +32.8 65.6	5 50.1 +33.2 65.1
25°	9 26.1 +31.8 66.2	8 40.1 +32.2 65.7	7 54.3 +32.5 65.3	7 08.7 +32.8 64.8	6 23.3 +33.1 64.3
26°	9 57.9 +31.7 65.4	9 12.3 +32.0 64.9	8 26.8 +32.4 64.4	7 41.5 +32.7 63.9	6 56.4 +33.0 63.4
27°	10 29.6 +31.6 64.5	9 44.3 +31.9 64.0	8 59.2 +32.2 63.6	8 14.2 +32.6 63.1	7 29.4 +33.0 62.6
28°	11 01.2 +31.4 63.7	10 16.2 +31.8 63.2	9 31.4 +32.1 62.7	8 46.8 +32.4 62.2	8 02.4 +32.8 61.7
29°	11 32.6 +31.3 62.8	10 48.0 +31.6 62.3	10 03.5 +32.0 61.8	9 19.2 +32.4 61.4	8 35.2 +32.7 60.9

Dec	LHA 100° / 260°	LHA 101° / 259°	LHA 102° / 258°	LHA 103° / 257°	LHA 104° / 256°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-8 22.4 +33.0	-9 12.5 +33.2			
1°	-7 49.4 +33.2	-8 39.3 +33.2	-9 29.3 +33.4		
2°	-7 16.2 +33.3	-8 06.1 +33.4	-8 55.9 +33.5	-9 45.7 +33.6	
3°	-6 42.9 +33.4	-7 32.7 +33.5	-8 22.4 +33.6	-9 12.1 +33.8	
4°	-6 09.5 +33.4	-6 59.2 +33.5	-7 48.8 +33.7	-8 38.3 +33.8	-9 27.8 +34.0
5°	-5 36.1 +33.5	-6 25.7 +33.7	-7 15.1 +33.7	-8 04.5 +33.9	-8 53.8 +34.1
6°	-5 02.6 +33.6	-5 52.0 +33.7	-6 41.4 +33.9	-7 30.6 +34.0	-8 19.7 +34.2
7°	-4 29.0 +33.6	-5 18.3 +33.8	-6 07.5 +34.0	-6 56.6 +34.1	-7 45.5 +34.2
8°	-3 55.4 +33.7	-4 44.5 +33.8	-5 33.5 +34.0	-6 22.5 +34.2	-7 11.3 +34.4
9°	-3 21.7 +33.7	-4 10.7 +33.9	-4 59.5 +34.0	-5 48.3 +34.3	-6 36.9 +34.5
10°	-2 48.0 +33.8	-3 36.8 +34.0	-4 25.5 +34.2	-5 14.0 +34.3	-6 02.4 +34.5
11°	-2 14.2 +33.8	-3 02.8 +33.9	-3 51.3 +34.1	-4 39.7 +34.4	-5 27.9 +34.6
12°	-1 40.4 +33.8	-2 28.9 +34.0	-3 17.2 +34.2	-4 05.3 +34.4	-4 53.3 +34.6
13°	-1 06.6 +33.8	-1 54.9 +34.1	-2 43.0 +34.3	-3 30.9 +34.5	-4 18.7 +34.7
14°	-0 32.8 +33.8	-1 20.8 +34.0	-2 08.7 +34.3	-2 56.4 +34.5	-3 44.0 +34.8
15°	0 01.0 +33.8 72.0	-0 46.8 +34.1	-1 34.4 +34.3	-2 21.9 +34.5	-3 09.2 +34.8
16°	0 34.8 +33.8 71.2	-0 12.7 +34.0	-1 00.1 +34.3	-1 47.4 +34.6	-2 34.4 +34.8
17°	1 08.6 +33.8 70.4	0 21.3 +34.1 69.8	-0 25.8 +34.3	-1 12.8 +34.6	-1 59.6 +34.8
18°	1 42.4 +33.8 69.6	0 55.4 +34.0 69.0	0 08.5 +34.3 68.5	-0 38.2 +34.5	-1 24.8 +34.9
19°	2 16.2 +33.8 68.7	1 29.4 +34.0 68.2	0 42.8 +34.3 67.7	-0 03.7 +34.6	-0 49.9 +34.8
20°	2 50.0 +33.7 67.9	2 03.4 +34.0 67.4	1 17.1 +34.3 66.8	0 30.9 +34.6 66.3	-0 15.1 +34.9
21°	3 23.7 +33.7 67.1	2 37.4 +34.0 66.5	1 51.4 +34.2 66.0	1 05.5 +34.6 65.5	0 19.8 +34.9 64.9
22°	3 57.4 +33.6 66.2	3 11.4 +33.9 65.7	2 25.6 +34.3 65.2	1 40.1 +34.5 64.7	0 54.7 +34.8 64.1
23°	4 31.0 +33.6 65.4	3 45.3 +33.9 64.9	2 59.9 +34.2 64.4	2 14.6 +34.5 63.8	1 29.5 +34.9 63.3
24°	5 04.6 +33.5 64.6	4 19.2 +33.9 64.1	3 34.1 +34.1 63.5	2 49.1 +34.5 63.0	2 04.4 +34.8 62.5
25°	5 38.1 +33.4 63.7	4 53.1 +33.7 63.2	4 08.2 +34.1 62.7	3 23.6 +34.4 62.2	2 39.2 +34.8 61.7
26°	6 11.5 +33.4 62.9	5 26.8 +33.7 62.4	4 42.3 +34.1 61.9	3 58.0 +34.4 61.4	3 14.0 +34.7 60.9
27°	6 44.9 +33.2 62.1	6 00.5 +33.6 61.6	5 16.4 +33.9 61.1	4 32.4 +34.4 60.6	3 48.7 +34.7 60.0
28°	7 18.1 +33.2 61.2	6 34.1 +33.6 60.7	5 50.3 +33.9 60.2	5 06.8 +34.2 59.7	4 23.4 +34.7 59.2
29°	7 51.3 +33.1 60.4	7 07.7 +33.4 59.9	6 24.2 +33.9 59.4	5 41.0 +34.2 58.9	4 58.1 +34.5 58.4

Dec	LHA 105° / 255°	LHA 106° / 254°	LHA 107° / 253°	LHA 108° / 252°	LHA 109° / 251°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°	-9 43.0 +34.3				
6°	-9 08.7 +34.3	-9 57.6 +34.5			
7°	-8 34.4 +34.5	-9 23.1 +34.6			
8°	-7 59.9 +34.5	-8 48.5 +34.8	-9 36.9 +35.0		
9°	-7 25.4 +34.7	-8 13.7 +34.8	-9 01.9 +35.1	-9 50.0 +35.3	
10°	-6 50.7 +34.7	-7 38.9 +35.0	-8 26.8 +35.1	-9 14.7 +35.4	
11°	-6 16.0 +34.8	-7 03.9 +35.0	-7 51.7 +35.3	-8 39.3 +35.5	-9 26.7 +35.7
12°	-5 41.2 +34.9	-6 28.9 +35.1	-7 16.4 +35.3	-8 03.8 +35.6	-8 51.0 +35.9
13°	-5 06.3 +34.9	-5 53.8 +35.2	-6 41.1 +35.5	-7 28.2 +35.7	-8 15.1 +35.9
14°	-4 31.4 +35.0	-5 18.6 +35.3	-6 05.6 +35.5	-6 52.5 +35.8	-7 39.2 +36.1
15°	-3 56.4 +35.1	-4 43.3 +35.3	-5 30.1 +35.5	-6 16.7 +35.8	-7 03.1 +36.1
16°	-3 21.3 +35.0	-4 08.0 +35.3	-4 54.6 +35.7	-5 40.9 +35.9	-6 27.0 +36.2
17°	-2 46.3 +35.2	-3 32.7 +35.4	-4 18.9 +35.6	-5 05.0 +36.0	-5 50.8 +36.2
18°	-2 11.1 +35.1	-2 57.3 +35.4	-3 43.3 +35.8	-4 29.0 +36.0	-5 14.6 +36.3
19°	-1 36.0 +35.2	-2 21.9 +35.5	-3 07.5 +35.7	-3 53.0 +36.1	-4 38.3 +36.4
20°	-1 00.8 +35.1	-1 46.4 +35.5	-2 31.8 +35.8	-3 16.9 +36.1	-4 01.9 +36.4
21°	-0 25.7 +35.2	-1 10.9 +35.5	-1 56.0 +35.8	-2 40.8 +36.1	-3 25.5 +36.5
22°	0 09.5 +35.2 63.6	-0 35.4 +35.5	-1 20.2 +35.8	-2 04.7 +36.2	-2 49.0 +36.5
23°	0 44.7 +35.2 62.8	0 00.1 +35.5 62.2	-0 44.4 +35.9	-1 28.5 +36.1	-2 12.5 +36.5
24°	1 19.9 +35.1 62.0	0 35.6 +35.4 61.4	-0 08.5 +35.8	-0 52.4 +36.2	-1 36.0 +36.6
25°	1 55.0 +35.1 61.2	1 11.0 +35.5 60.6	0 27.3 +35.8 60.1	-0 16.2 +36.2	-0 59.4 +36.5
26°	2 30.1 +35.1 60.3	1 46.5 +35.5 59.8	1 03.1 +35.9 59.3	0 20.0 +36.2 58.7	-0 22.9 +36.6
27°	3 05.2 +35.1 59.5	2 22.0 +35.4 59.0	1 39.0 +35.8 58.5	0 56.2 +36.2 57.9	0 13.7 +36.5 57.4
28°	3 40.3 +35.0 58.7	2 57.4 +35.4 58.2	2 14.8 +35.7 57.7	1 32.4 +36.1 57.1	0 50.2 +36.6 56.6
29°	4 15.3 +35.0 57.9	3 32.8 +35.4 57.4	2 50.5 +35.8 56.9	2 08.5 +36.2 56.3	1 26.8 +36.5 55.8

Latitude 33°

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°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°	-9 38.0 +36.1				
13°	-9 01.9 +36.2	-9 48.4 +36.5			
14°	-8 25.7 +36.3	-9 11.9 +36.5	-9 58.0 +36.9		
15°	-7 49.4 +36.4	-8 35.4 +36.7	-9 21.1 +37.0		
16°	-7 13.0 +36.5	-7 58.7 +36.8	-8 44.1 +37.0		
17°	-6 36.5 +36.6	-7 21.9 +36.9	-8 07.1 +37.2		
18°	-5 59.9 +36.6	-6 45.0 +36.9	-7 29.9 +37.3		
19°	-5 23.3 +36.7	-6 08.1 +37.1	-6 52.6 +37.3		
20°	-4 46.6 +36.8	-5 31.0 +37.0	-6 15.3 +37.4		
21°	-4 09.8 +36.8	-4 54.0 +37.2	-5 37.9 +37.5		
22°	-3 33.0 +36.8	-4 16.8 +37.1	-5 00.4 +37.5		
23°	-2 56.2 +36.9	-3 39.7 +37.3	-4 22.9 +37.6		
24°	-2 19.3 +36.9	-3 02.4 +37.2	-3 45.3 +37.6		
25°	-1 42.4 +36.9	-2 25.2 +37.3	-3 07.7 +37.7		
26°	-1 05.5 +36.9	-1 47.9 +37.3	-2 30.0 +37.7		
27°	-0 28.6 +36.9	-1 10.6 +37.3	-1 52.3 +37.7		
28°	0 08.3 +37.0 56.1	-0 33.3 +37.3	-1 14.6 +37.7		
29°	0 45.3 +36.9 55.3	0 04.0 +37.4 54.7	-0 36.9 +37.7		

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°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	56 00.0 +60.0 180.0	55 59.2 +60.0 178.2	55 56.9 +59.9 176.4	55 53.0 +59.8 174.6	55 47.6 +59.7 172.9
1°	57 00.0 +60.0 180.0	56 59.2 +60.0 178.2	56 56.8 +59.9 176.3	56 52.8 +59.8 174.5	56 47.3 +59.6 172.7
2°	58 00.0 +60.0 180.0	57 59.2 +60.0 178.1	57 56.7 +59.9 176.2	57 52.6 +59.8 174.4	57 46.9 +59.7 172.5
3°	59 00.0 +60.0 180.0	58 59.2 +59.9 178.1	58 56.6 +59.9 176.1	58 52.4 +59.8 174.2	58 46.6 +59.6 172.3
4°	60 00.0 +60.0 180.0	59 59.1 +60.0 178.0	59 56.5 +59.9 176.0	59 52.2 +59.8 174.0	59 46.2 +59.6 172.1
5°	61 00.0 +60.0 180.0	60 59.1 +60.0 177.9	60 56.4 +59.9 175.9	60 52.0 +59.7 173.9	60 45.8 +59.6 171.8
6°	62 00.0 +60.0 180.0	61 59.1 +60.0 177.9	61 56.3 +59.9 175.8	61 51.7 +59.8 173.7	61 45.4 +59.5 171.6
7°	63 00.0 +60.0 180.0	62 59.1 +59.9 177.8	62 56.2 +59.9 175.6	62 51.5 +59.7 173.5	62 44.9 +59.5 171.3
8°	64 00.0 +60.0 180.0	63 59.0 +60.0 177.7	63 56.1 +59.8 175.5	63 51.2 +59.7 173.2	63 44.4 +59.5 171.0
9°	65 00.0 +60.0 180.0	64 59.0 +59.9 177.7	64 55.9 +59.9 175.3	64 50.9 +59.7 173.0	64 43.9 +59.4 170.7
10°	66 00.0 +60.0 180.0	65 58.9 +60.0 177.6	65 55.8 +59.8 175.2	65 50.6 +59.6 172.8	65 43.3 +59.4 170.4
11°	67 00.0 +60.0 180.0	66 58.9 +60.0 177.5	66 55.6 +59.9 175.0	66 50.2 +59.6 172.5	66 42.7 +59.3 170.0
12°	68 00.0 +60.0 180.0	67 58.9 +59.9 177.4	67 55.5 +59.8 174.8	67 49.8 +59.6 172.2	67 42.0 +59.3 169.6
13°	69 00.0 +60.0 180.0	68 58.8 +60.0 177.3	68 55.3 +59.8 174.6	68 49.4 +59.6 171.9	68 41.3 +59.2 169.2
14°	70 00.0 +60.0 180.0	69 58.8 +59.9 177.2	69 55.1 +59.8 174.3	69 49.0 +59.5 171.5	69 40.5 +59.1 168.8
15°	71 00.0 +60.0 180.0	70 58.7 +60.0 177.0	70 54.9 +59.7 174.1	70 48.5 +59.4 171.2	70 39.6 +59.0 168.3
16°	72 00.0 +60.0 180.0	71 58.7 +59.9 176.9	71 54.6 +59.7 173.8	71 47.9 +59.4 170.7	71 38.6 +58.9 167.7
17°	73 00.0 +60.0 180.0	72 58.6 +59.9 176.7	72 54.3 +59.7 173.5	72 47.3 +59.3 170.3	72 37.5 +58.8 167.1
18°	74 00.0 +60.0 180.0	73 58.5 +59.9 176.6	73 54.0 +59.7 173.1	73 46.6 +59.2 169.7	73 36.3 +58.7 166.4
19°	75 00.0 +60.0 180.0	74 58.4 +59.9 176.4	74 53.7 +59.6 172.7	74 45.8 +59.2 169.1	74 35.0 +58.4 165.6
20°	76 00.0 +60.0 180.0	75 58.3 +59.9 176.1	75 53.3 +59.5 172.3	75 45.0 +59.0 168.5	75 33.4 +58.3 164.8
21°	77 00.0 +60.0 180.0	76 58.2 +59.9 175.9	76 52.8 +59.5 171.7	76 44.0 +58.8 167.7	76 31.7 +58.0 163.8
22°	78 00.0 +60.0 180.0	77 58.1 +59.8 175.5	77 52.3 +59.4 171.1	77 42.8 +58.6 166.8	77 29.7 +57.6 162.6
23°	79 00.0 +60.0 180.0	78 57.9 +59.8 175.2	78 51.7 +59.2 170.4	78 41.4 +58.4 165.8	78 27.3 +57.2 161.3
24°	80 00.0 +60.0 180.0	79 57.7 +59.8 174.8	79 50.9 +59.1 169.6	79 39.8 +58.0 164.5	79 24.5 +56.7 159.7
25°	81 00.0 +60.0 180.0	80 57.5 +59.7 174.2	80 50.0 +58.9 168.5	80 37.8 +57.6 163.1	80 21.2 +55.9 157.8
26°	82 00.0 +60.0 180.0	81 57.2 +59.6 173.6	81 48.9 +58.6 167.3	81 35.4 +56.9 161.2	81 17.1 +54.9 155.6
27°	83 00.0 +60.0 180.0	82 56.8 +59.6 172.7	82 47.5 +58.1 165.7	82 32.3 +56.1 159.0	82 12.0 +53.5 152.7
28°	84 00.0 +60.0 180.0	83 56.4 +59.3 171.6	83 45.6 +57.5 163.5	83 28.4 +54.7 156.0	83 05.5 +51.4 149.2
29°	85 00.0 +60.0 180.0	84 55.7 +59.0 170.1	84 43.1 +56.2 160.6	84 23.1 +52.5 152.1	83 56.9 +48.5 144.6

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	55 40.7 +59.5 171.1	55 32.2 +59.3 169.4	55 22.3 +59.0 167.6	55 10.9 +58.7 165.9	54 58.1 +58.4 164.2
1°	56 40.2 +59.4 170.9	56 31.5 +59.3 169.1	56 21.3 +59.0 167.3	56 09.6 +58.7 165.5	55 56.5 +58.3 163.8
2°	57 39.6 +59.5 170.6	57 30.8 +59.1 168.8	57 20.3 +58.9 167.0	57 08.3 +58.6 165.1	56 54.8 +58.2 163.4
3°	58 39.1 +59.4 170.4	58 29.9 +59.2 168.5	58 19.2 +58.9 166.6	58 06.9 +58.5 164.7	57 53.0 +58.2 162.9
4°	59 38.5 +59.3 170.1	59 29.1 +59.1 168.1	59 18.1 +58.7 166.2	59 05.4 +58.4 164.3	58 51.2 +58.0 162.4
5°	60 37.8 +59.4 169.8	60 28.2 +59.0 167.8	60 16.8 +58.7 165.8	60 03.8 +58.4 163.9	59 49.2 +57.9 161.9
6°	61 37.2 +59.2 169.5	61 27.2 +59.0 167.4	61 15.5 +58.7 165.4	61 02.2 +58.2 163.4	60 47.1 +57.8 161.4
7°	62 36.4 +59.3 169.2	62 26.2 +58.9 167.0	62 14.2 +58.5 164.9	62 00.4 +58.1 162.9	61 44.9 +57.6 160.9
8°	63 35.7 +59.2 168.8	63 25.1 +58.8 166.6	63 12.7 +58.4 164.5	62 58.5 +57.9 162.3	62 42.5 +57.5 160.3
9°	64 34.9 +59.1 168.4	64 23.9 +58.8 166.2	64 11.1 +58.3 164.0	63 56.4 +57.9 161.8	63 40.0 +57.3 159.6
10°	65 34.0 +59.0 168.0	65 22.7 +58.6 165.7	65 09.4 +58.2 163.4	64 54.3 +57.6 161.1	64 37.3 +57.1 158.9
11°	66 33.0 +59.0 167.6	66 21.3 +58.5 165.2	66 07.6 +58.0 162.8	65 51.9 +57.5 160.5	65 34.4 +56.8 158.2
12°	67 32.0 +58.8 167.1	67 19.8 +58.4 164.6	67 05.6 +57.8 162.2	66 49.4 +57.2 159.8	66 31.2 +56.6 157.4
13°	68 30.8 +58.8 166.6	68 18.2 +58.3 164.0	68 03.4 +57.7 161.5	67 46.6 +57.0 159.0	67 27.8 +56.3 156.6
14°	69 29.6 +58.6 166.0	69 16.5 +58.0 163.3	69 01.1 +57.5 160.7	68 43.6 +56.8 158.1	68 24.1 +56.0 155.6
15°	70 28.2 +58.6 165.4	70 14.5 +57.9 162.6	69 58.6 +57.2 159.9	69 40.4 +56.4 157.2	69 20.1 +55.6 154.6
16°	71 26.8 +58.3 164.7	71 12.4 +57.7 161.8	70 55.8 +56.9 159.0	70 36.8 +56.1 156.2	70 15.7 +55.2 153.6
17°	72 25.1 +58.2 164.0	72 10.1 +57.4 160.9	71 52.7 +56.5 158.0	71 32.9 +55.6 155.1	71 10.9 +54.7 152.4
18°	73 23.3 +57.9 163.1	73 07.5 +57.1 160.0	72 49.2 +56.2 156.9	72 28.5 +55.2 153.9	72 05.6 +54.1 151.1
19°	74 21.2 +57.7 162.2	74 04.6 +56.8 158.9	73 45.4 +55.7 155.7	73 23.7 +54.6 152.6	72 59.7 +53.4 149.6
20°	75 18.9 +57.3 161.2	75 01.4 +56.3 157.7	74 41.1 +55.1 154.3	74 18.3 +53.9 151.1	73 53.1 +52.6 148.0
21°	76 16.2 +56.9 160.0	75 57.7 +55.7 156.3	75 36.2 +54.5 152.8	75 12.2 +53.1 149.4	74 45.7 +51.7 146.2
22°	77 13.1 +56.5 158.6	76 53.4 +55.1 154.7	76 30.7 +53.6 151.0	76 05.3 +52.1 147.5	75 37.4 +50.6 144.3
23°	78 09.6 +55.8 157.0	77 48.5 +54.3 152.9	77 24.3 +52.7 149.0	76 57.4 +50.9 145.4	76 28.0 +49.2 142.0
24°	79 05.4 +55.0 155.1	78 42.8 +53.2 150.8	78 17.0 +51.4 146.8	77 48.3 +49.5 143.0	77 17.2 +47.6 139.5
25°	80 00.4 +54.0 152.9	79 36.0 +51.9 148.3	79 08.4 +49.7 144.1	78 37.8 +47.7 140.2	78 04.8 +45.7 136.7
26°	80 54.4 +52.6 150.3	80 27.9 +50.2 145.4	79 58.1 +47.8 141.0	79 25.5 +45.5 137.0	78 50.5 +43.2 133.4
27°	81 47.0 +50.7 147.1	81 18.1 +48.0 142.0	80 45.9 +45.3 137.4	80 11.0 +42.7 133.3	79 33.7 +40.4 129.7
28°	82 37.7 +48.2 143.1	82 06.1 +44.9 137.8	81 31.2 +41.9 133.1	80 53.7 +39.2 129.1	80 14.1 +36.7 125.5
29°	83 25.9 +44.4 138.2	82 51.0 +40.8 132.7	82 13.1 +37.6 128.1	81 32.9 +34.8 124.1	80 50.8 +32.5 120.7

Declination SAME name as Latitude

Latitude 34°

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°	51 10.4 +53.3 146.9	50 42.7 +52.9 145.5	50 14.1 +52.3 144.2	49 44.5 +51.7 142.8	49 13.9 +51.3 141.5
1°	52 03.7 +53.1 146.2	51 35.6 +52.5 144.8	51 06.4 +52.0 143.4	50 36.2 +51.5 142.0	50 05.2 +50.8 140.7
2°	52 56.8 +52.8 145.4	52 28.1 +52.2 144.0	51 58.4 +51.6 142.6	51 27.7 +51.0 141.2	50 56.0 +50.5 139.8
3°	53 49.6 +52.5 144.6	53 20.3 +51.9 143.2	52 50.0 +51.3 141.7	52 18.7 +50.7 140.3	51 46.5 +50.1 139.0
4°	54 42.1 +52.1 143.8	54 12.2 +51.5 142.3	53 41.3 +50.9 140.9	53 09.4 +50.3 139.5	52 36.6 +49.7 138.1
5°	55 34.2 +51.7 142.9	55 03.7 +51.1 141.4	54 32.2 +50.4 140.0	53 59.7 +49.8 138.5	53 26.3 +49.2 137.1
6°	56 25.9 +51.3 142.0	55 54.8 +50.6 140.5	55 22.6 +50.0 139.0	54 49.5 +49.4 137.6	54 15.5 +48.8 136.2
7°	57 17.2 +50.8 141.1	56 45.4 +50.2 139.5	56 12.6 +49.6 138.0	55 38.9 +48.9 136.6	55 04.3 +48.2 135.2
8°	58 08.0 +50.4 140.1	57 35.6 +49.7 138.5	57 02.2 +49.0 137.0	56 27.8 +48.3 135.5	55 52.5 +47.7 134.1
9°	58 58.4 +49.8 139.1	58 25.3 +49.1 137.5	57 51.2 +48.4 135.9	57 16.1 +47.8 134.5	56 40.2 +47.0 133.0
10°	59 48.2 +49.3 138.0	59 14.4 +48.5 136.4	58 39.6 +47.8 134.8	58 03.9 +47.1 133.3	57 27.2 +46.5 131.9
11°	60 37.5 +48.6 136.8	60 02.9 +47.9 135.2	59 27.4 +47.2 133.6	58 51.0 +46.4 132.1	58 13.7 +45.7 130.7
12°	61 26.1 +48.0 135.6	60 50.8 +47.2 134.0	60 14.6 +46.4 132.4	59 37.4 +45.7 130.9	58 59.4 +45.0 129.4
13°	62 14.1 +47.2 134.3	61 38.0 +46.4 132.7	61 01.0 +45.7 131.1	60 23.1 +44.9 129.6	59 44.4 +44.1 128.1
14°	63 01.3 +46.4 133.0	62 24.4 +45.7 131.3	61 46.7 +44.8 129.8	61 08.0 +44.1 128.3	60 28.5 +43.4 126.8
15°	63 47.7 +45.6 131.6	63 10.1 +44.7 129.9	62 31.5 +43.9 128.3	61 52.1 +43.1 126.8	61 11.9 +42.3 125.4
16°	64 33.3 +44.6 130.1	63 54.8 +43.7 128.4	63 15.4 +42.9 126.9	62 35.2 +42.1 125.3	61 54.2 +41.4 123.9
17°	65 17.9 +43.5 128.5	64 38.5 +42.7 126.9	63 58.3 +41.8 125.3	63 17.3 +41.0 123.8	62 35.6 +40.3 122.3
18°	66 01.4 +42.4 126.8	65 21.2 +41.5 125.2	64 40.1 +40.7 123.6	63 58.3 +39.9 122.1	63 15.9 +39.1 120.7
19°	66 43.8 +41.1 125.1	66 02.7 +40.2 123.4	65 20.8 +39.4 121.9	64 38.2 +38.6 120.4	63 55.0 +37.9 119.0
20°	67 24.9 +39.8 123.2	66 42.9 +38.9 121.6	66 00.2 +38.0 120.1	65 16.8 +37.3 118.6	64 32.9 +36.5 117.2
21°	68 04.7 +38.2 121.2	67 21.8 +37.4 119.6	66 38.2 +36.6 118.1	65 54.1 +35.7 116.7	65 09.4 +35.0 115.3
22°	68 42.9 +36.7 119.1	67 59.2 +35.7 117.6	67 14.8 +34.9 116.1	66 29.8 +34.2 114.7	65 44.4 +33.5 113.4
23°	69 19.6 +34.8 116.9	68 34.9 +34.0 115.4	67 49.7 +33.2 114.0	67 04.0 +32.5 112.6	66 17.9 +31.8 111.3
24°	69 54.4 +32.9 114.6	69 08.9 +32.1 113.1	68 22.9 +31.3 111.7	67 36.5 +30.6 110.4	66 49.7 +30.0 109.2
25°	70 27.3 +30.7 112.1	69 41.0 +29.9 110.7	68 54.2 +29.3 109.4	68 07.1 +28.7 108.2	67 19.7 +28.1 107.0
26°	70 58.0 +28.5 109.5	70 10.9 +27.8 108.2	69 23.5 +27.1 106.9	68 35.8 +26.5 105.8	67 47.8 +26.0 104.7
27°	71 26.5 +26.0 106.8	70 38.7 +25.4 105.5	69 50.6 +24.9 104.4	69 02.3 +24.4 103.3	68 13.8 +23.9 102.3
28°	71 52.5 +23.3 103.9	71 04.1 +22.8 102.8	70 15.5 +22.3 101.7	69 26.7 +21.9 100.7	68 37.7 +21.6 99.8
29°	72 15.8 +20.5 100.9	71 26.9 +20.1 99.9	70 37.8 +19.7 98.9	69 48.6 +19.4 98.0	68 59.3 +19.2 97.2

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°	48 42.5 +50.7 140.2	48 10.2 +50.2 138.9	47 37.1 +49.6 137.7	47 03.2 +49.1 136.4	46 28.6 +48.5 135.3
1°	49 33.2 +50.3 139.4	49 00.4 +49.7 138.1	48 26.7 +49.2 136.8	47 52.3 +48.7 135.6	47 17.1 +48.2 134.4
2°	50 23.5 +49.9 138.5	49 50.1 +49.4 137.2	49 15.9 +48.8 135.9	48 41.0 +48.2 134.7	48 05.3 +47.7 133.5
3°	51 13.4 +49.6 137.6	50 39.5 +48.9 136.3	50 04.7 +48.4 135.1	49 29.2 +47.8 133.8	48 53.0 +47.2 132.6
4°	52 03.0 +49.0 136.7	51 28.4 +48.5 135.4	50 53.1 +47.9 134.1	50 17.0 +47.4 132.9	49 40.2 +46.8 131.6
5°	52 52.0 +48.7 135.8	52 16.9 +48.1 134.5	51 41.0 +47.5 133.2	51 04.4 +46.8 131.9	50 27.0 +46.3 130.7
6°	53 40.7 +48.1 134.8	53 05.0 +47.5 133.5	52 28.5 +46.9 132.2	51 51.2 +46.4 130.9	51 13.3 +45.7 129.7
7°	54 28.8 +47.6 133.8	53 52.5 +46.9 132.4	53 15.4 +46.3 131.1	52 37.6 +45.7 129.9	51 59.0 +45.2 128.6
8°	55 16.4 +47.0 132.7	54 39.4 +46.4 131.4	54 01.7 +45.8 130.1	53 23.3 +45.2 128.8	52 44.2 +44.6 127.5
9°	56 03.4 +46.4 131.6	55 25.8 +45.8 130.3	54 47.5 +45.1 128.9	54 08.5 +44.5 127.7	53 28.8 +43.9 126.4
10°	56 49.8 +45.7 130.5	56 11.6 +45.1 129.1	55 32.6 +44.5 127.8	54 53.0 +43.8 126.5	54 12.7 +43.2 125.3
11°	57 35.5 +45.1 129.3	56 56.7 +44.3 127.9	56 17.1 +43.7 126.6	55 36.8 +43.1 125.3	54 55.9 +42.5 124.1
12°	58 20.6 +44.3 128.0	57 41.0 +43.7 126.7	57 00.8 +43.0 125.3	56 19.9 +42.3 124.1	55 38.4 +41.7 122.8
13°	59 04.9 +43.4 126.7	58 24.7 +42.7 125.4	57 43.8 +42.1 124.1	57 02.2 +41.6 122.8	56 20.1 +40.9 121.6
14°	59 48.3 +42.6 125.4	59 07.4 +42.0 124.0	58 25.9 +41.3 122.7	57 43.8 +40.6 121.4	57 01.0 +40.1 120.2
15°	60 30.9 +41.7 124.0	59 49.4 +40.9 122.6	59 07.2 +40.3 121.3	58 24.4 +39.7 120.1	57 41.1 +39.0 118.8
16°	61 12.6 +40.7 122.5	60 30.3 +40.0 121.1	59 47.5 +39.3 119.8	59 04.1 +38.6 118.6	58 20.1 +38.1 117.4
17°	61 53.3 +39.5 120.9	61 10.3 +38.9 119.6	60 26.8 +38.2 118.3	59 42.7 +37.7 117.1	58 58.2 +37.1 115.9
18°	62 32.8 +38.4 119.3	61 49.2 +37.7 118.0	61 05.0 +37.1 116.8	60 20.4 +36.4 115.5	59 35.3 +35.9 114.4
19°	63 11.2 +37.2 117.6	62 26.9 +36.5 116.4	61 42.1 +35.8 115.1	60 56.8 +35.3 113.9	60 11.2 +34.7 112.8
20°	63 48.4 +35.8 115.9	63 03.4 +35.1 114.6	62 17.9 +34.6 113.4	61 32.1 +34.0 112.2	60 45.9 +33.4 111.1
21°	64 24.2 +34.3 114.0	63 38.5 +33.8 112.8	62 52.5 +33.1 111.6	62 06.1 +32.6 110.5	61 19.3 +32.1 109.4
22°	64 58.5 +32.9 112.1	64 12.3 +32.2 110.9	63 25.6 +31.7 109.8	62 38.7 +31.1 108.7	61 51.4 +30.7 107.6
23°	65 31.4 +31.2 110.1	64 44.5 +30.6 109.0	63 57.3 +30.1 107.9	63 09.8 +29.6 106.8	62 22.1 +29.2 105.8
24°	66 02.6 +29.4 108.0	65 15.1 +28.9 106.9	64 27.4 +28.4 105.9	63 39.4 +28.0 104.9	62 51.3 +27.5 103.9
25°	66 32.0 +27.6 105.9	65 44.0 +27.1 104.8	64 55.8 +26.7 103.8	64 07.4 +26.3 102.9	63 18.8 +26.0 101.9
26°	66 59.6 +25.5 103.6	66 11.1 +25.2 102.6	65 22.5 +24.8 101.7	64 33.7 +24.5 100.8	63 44.8 +24.1 99.9
27°	67 25.1 +23.5 101.3	66 36.3 +23.1 100.4	65 47.3 +22.8 99.5	64 58.2 +22.5 98.6	64 08.9 +22.4 97.8
28°	67 48.6 +21.3 98.9	66 59.4 +21.0 98.0	66 10.1 +20.8 97.2	65 20.7 +20.6 96.4	64 31.3 +20.4 95.7
29°	68 09.9 +19.0 96.4	67 20.4 +18.8 95.6	66 30.9 +18.6 94.9	65 41.3 +18.5 94.2	64 51.7 +18.4 93.5

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Latitude 34°

Declination SAME name as Latitude

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	45 53.2 +48.0 134.1	45 17.1 +47.5 132.9	44 40.4 +47.0 131.8	44 03.0 +46.5 130.7	43 25.0 +46.0 129.7
1°	46 41.2 +47.6 133.2	46 04.6 +47.1 132.1	45 27.4 +46.5 130.9	44 49.5 +46.1 129.8	44 11.0 +45.6 128.8
2°	47 28.8 +47.2 132.3	46 51.7 +46.6 131.2	46 13.9 +46.2 130.0	45 35.6 +45.6 128.9	44 56.6 +45.1 127.9
3°	48 16.0 +46.7 131.4	47 38.3 +46.2 130.2	47 00.1 +45.6 129.1	46 21.2 +45.1 128.0	45 41.7 +44.6 126.9
4°	49 02.7 +46.2 130.5	48 24.5 +45.7 129.3	47 45.7 +45.2 128.1	47 06.3 +44.6 127.0	46 26.3 +44.2 126.0
5°	49 48.9 +45.8 129.5	49 10.2 +45.2 128.3	48 30.9 +44.6 127.2	47 50.9 +44.2 126.1	47 10.5 +43.6 125.0
6°	50 34.7 +45.1 128.5	49 55.4 +44.6 127.3	49 15.5 +44.1 126.1	48 35.1 +43.5 125.0	47 54.1 +43.0 123.9
7°	51 19.8 +44.6 127.4	50 40.0 +44.1 126.2	49 59.6 +43.5 125.1	49 18.6 +43.0 124.0	48 37.1 +42.5 122.9
8°	52 04.4 +44.0 126.3	51 24.1 +43.4 125.2	50 43.1 +42.9 124.0	50 01.6 +42.4 122.9	49 19.6 +41.9 121.8
9°	52 48.4 +43.4 125.2	52 07.5 +42.8 124.0	51 26.0 +42.2 122.9	50 44.0 +41.7 121.8	50 01.5 +41.2 120.7
10°	53 31.8 +42.6 124.1	52 50.3 +42.1 122.9	52 08.2 +41.6 121.8	51 25.7 +41.0 120.7	50 42.7 +40.5 119.6
11°	54 14.4 +41.9 122.9	53 32.4 +41.3 121.7	52 49.8 +40.8 120.6	52 06.7 +40.3 119.5	51 23.2 +39.8 118.4
12°	54 56.3 +41.2 121.6	54 13.7 +40.6 120.5	53 30.6 +40.1 119.4	52 47.0 +39.6 118.3	52 03.0 +39.0 117.2
13°	55 37.5 +40.3 120.4	54 54.3 +39.8 119.2	54 10.7 +39.2 118.1	53 26.6 +38.7 117.0	52 42.0 +38.3 116.0
14°	56 17.8 +39.4 119.0	55 34.1 +38.9 117.9	54 49.9 +38.3 116.8	54 05.3 +37.8 115.7	53 20.3 +37.3 114.7
15°	56 57.2 +38.6 117.7	56 13.0 +37.9 116.5	55 28.2 +37.5 115.4	54 43.1 +37.0 114.4	53 57.6 +36.5 113.4
16°	57 35.8 +37.5 116.2	56 50.9 +37.0 115.1	56 05.7 +36.5 114.1	55 20.1 +36.0 113.0	54 34.1 +35.6 112.0
17°	58 13.3 +36.5 114.8	57 27.9 +36.0 113.7	56 42.2 +35.4 112.6	55 56.1 +35.0 111.6	55 09.7 +34.5 110.6
18°	58 49.8 +35.3 113.3	58 03.9 +34.8 112.2	57 17.6 +34.4 111.1	56 31.1 +33.9 110.1	55 44.2 +33.5 109.2
19°	59 25.1 +34.2 111.7	58 38.7 +33.7 110.6	57 52.0 +33.3 109.6	57 05.0 +32.8 108.6	56 17.7 +32.5 107.7
20°	59 59.3 +32.9 110.1	59 12.4 +32.5 109.0	58 25.3 +32.0 108.0	57 37.8 +31.7 107.1	56 50.2 +31.2 106.1
21°	60 32.2 +31.7 108.4	59 44.9 +31.2 107.4	58 57.3 +30.8 106.4	58 09.5 +30.4 105.5	57 21.4 +30.1 104.6
22°	61 03.9 +30.2 106.6	60 16.1 +29.8 105.7	59 28.1 +29.4 104.7	58 39.9 +29.1 103.8	57 51.5 +28.8 103.0
23°	61 34.1 +28.8 104.8	60 45.9 +28.4 103.9	59 57.5 +28.1 103.0	59 09.0 +27.7 102.1	58 20.3 +27.5 101.3
24°	62 02.9 +27.2 103.0	61 14.3 +26.9 102.1	60 25.6 +26.6 101.2	59 36.7 +26.4 100.4	58 47.8 +26.0 99.6
25°	62 30.1 +25.6 101.1	61 41.2 +25.3 100.2	60 52.2 +25.1 99.4	60 03.1 +24.8 98.6	59 13.8 +24.7 97.8
26°	62 55.7 +23.9 99.1	62 06.5 +23.7 98.3	61 17.3 +23.4 97.5	60 27.9 +23.3 96.8	59 38.5 +23.1 96.0
27°	63 19.6 +22.1 97.1	62 30.2 +22.0 96.3	61 40.7 +21.8 95.6	60 51.2 +21.7 94.9	60 01.6 +21.6 94.2
28°	63 41.7 +20.3 95.0	62 52.2 +20.1 94.3	62 02.5 +20.1 93.6	61 12.9 +20.0 93.0	60 23.2 +19.9 92.3
29°	64 02.0 +18.4 92.8	63 12.3 +18.3 92.2	62 22.6 +18.3 91.6	61 32.9 +18.2 91.0	60 43.1 +18.3 90.4

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°	42 46.4 +45.5 128.6	42 07.3 +45.0 127.6	41 27.6 +44.6 126.6	40 47.4 +44.1 125.6	40 06.7 +43.7 124.6
1°	43 31.9 +45.1 127.7	42 52.3 +44.6 126.7	42 12.2 +44.1 125.7	41 31.5 +43.7 124.7	40 50.4 +43.2 123.7
2°	44 17.0 +44.6 126.8	43 36.9 +44.2 125.8	42 56.3 +43.7 124.8	42 15.2 +43.2 123.8	41 33.6 +42.8 122.8
3°	45 01.6 +44.2 125.9	44 21.1 +43.6 124.8	43 40.0 +43.2 123.8	42 58.4 +42.8 122.8	42 16.4 +42.3 121.9
4°	45 45.8 +43.6 124.9	45 04.7 +43.2 123.9	44 23.2 +42.7 122.9	43 41.2 +42.2 121.9	42 58.7 +41.8 120.9
5°	46 29.4 +43.2 123.9	45 47.9 +42.6 122.9	45 05.9 +42.2 121.9	44 23.4 +41.7 120.9	43 40.5 +41.3 119.9
6°	47 12.6 +42.5 122.9	46 30.5 +42.1 121.9	45 48.1 +41.6 120.8	45 05.1 +41.2 119.9	44 21.8 +40.7 118.9
7°	47 55.1 +42.0 121.8	47 12.6 +41.5 120.8	46 29.7 +41.0 119.8	45 46.3 +40.6 118.8	45 02.5 +40.2 117.9
8°	48 37.1 +41.4 120.8	47 54.1 +40.9 119.7	47 10.7 +40.5 118.7	46 26.9 +40.0 117.8	45 42.7 +39.6 116.8
9°	49 18.5 +40.7 119.7	48 35.0 +40.3 118.6	47 51.2 +39.8 117.6	47 06.9 +39.4 116.7	46 22.3 +38.9 115.7
10°	49 59.2 +40.0 118.5	49 15.3 +39.6 117.5	48 31.0 +39.1 116.5	47 46.3 +38.7 115.6	47 01.2 +38.3 114.6
11°	50 39.2 +39.4 117.4	49 54.9 +38.8 116.4	49 10.1 +38.4 115.4	48 25.0 +38.0 114.4	47 39.5 +37.6 113.5
12°	51 18.6 +38.5 116.2	50 33.7 +38.1 115.2	49 48.5 +37.7 114.2	49 03.0 +37.2 113.2	48 17.1 +36.9 112.3
13°	51 57.1 +37.8 114.9	51 11.8 +37.3 113.9	50 26.2 +36.9 113.0	49 40.2 +36.5 112.0	48 54.0 +36.1 111.1
14°	52 34.9 +36.9 113.7	51 49.1 +36.5 112.7	51 03.1 +36.1 111.7	50 16.7 +35.7 110.8	49 30.1 +35.3 109.9
15°	53 11.8 +36.1 112.4	52 25.6 +35.7 111.4	51 39.2 +35.2 110.5	50 52.4 +34.9 109.5	50 05.4 +34.5 108.7
16°	53 47.9 +35.1 111.0	53 01.3 +34.7 110.1	52 14.4 +34.3 109.1	51 27.3 +34.0 108.2	50 39.9 +33.7 107.4
17°	54 23.0 +34.1 109.6	53 36.0 +33.7 108.7	52 48.7 +33.4 107.8	52 01.3 +33.0 106.9	51 13.6 +32.7 106.1
18°	54 57.1 +33.1 108.2	54 09.7 +32.8 107.3	53 22.1 +32.4 106.4	52 34.3 +32.1 105.5	51 46.3 +31.8 104.7
19°	55 30.2 +32.1 106.7	54 42.5 +31.7 105.9	53 54.5 +31.4 105.0	53 06.4 +31.1 104.1	52 18.1 +30.8 103.3
20°	56 02.3 +30.9 105.2	55 14.2 +30.6 104.4	54 25.9 +30.3 103.5	53 37.5 +30.0 102.7	52 48.9 +29.7 101.9
21°	56 33.2 +29.7 103.7	55 44.8 +29.4 102.9	54 56.2 +29.2 102.0	54 07.5 +28.9 101.2	53 18.6 +28.7 100.5
22°	57 02.9 +28.5 102.1	56 14.2 +28.3 101.3	55 25.4 +28.0 100.5	54 36.4 +27.8 99.7	53 47.3 +27.6 99.0
23°	57 31.4 +27.3 100.5	56 42.5 +26.9 99.7	55 53.4 +26.8 98.9	55 04.2 +26.6 98.2	54 14.9 +26.4 97.5
24°	57 58.7 +25.8 98.8	57 09.4 +25.7 98.1	56 20.2 +25.5 97.3	55 30.8 +25.3 96.6	54 41.3 +25.3 95.9
25°	58 24.5 +24.5 97.1	57 35.1 +24.3 96.4	56 45.7 +24.1 95.7	55 56.1 +24.1 95.0	55 06.6 +23.9 94.4
26°	58 49.0 +23.0 95.4	57 59.4 +22.9 94.7	57 09.8 +22.8 94.0	56 20.2 +22.7 93.4	55 30.5 +22.7 92.7
27°	59 12.0 +21.5 93.6	58 22.3 +21.4 92.9	57 32.6 +21.4 92.3	56 42.9 +21.4 91.7	55 53.2 +21.3 91.1
28°	59 33.5 +19.9 91.7	58 43.7 +20.0 91.1	57 54.0 +19.9 90.6	57 04.3 +19.9 90.0	56 14.5 +20.0 89.4
29°	59 53.4 +18.3 89.9	59 03.7 +18.3 89.3	58 13.9 +18.4 88.8	57 24.2 +18.4 88.2	56 34.5 +18.5 87.7

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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°	39 25.6 +43.2 123.7	38 43.9 +42.8 122.8	38 01.9 +42.4 121.8	37 19.4 +42.0 120.9	36 36.6 +41.6 120.1
1°	40 08.8 +42.8 122.8	39 26.7 +42.4 121.8	38 44.3 +41.9 120.9	38 01.4 +41.6 120.0	37 18.2 +41.1 119.2
2°	40 51.6 +42.3 121.9	40 09.1 +41.9 120.9	39 26.2 +41.6 120.0	38 43.0 +41.1 119.1	37 59.3 +40.8 118.3
3°	41 33.9 +41.9 120.9	40 51.0 +41.5 120.0	40 07.8 +41.0 119.1	39 24.1 +40.7 118.2	38 40.1 +40.3 117.3
4°	42 15.8 +41.4 120.0	41 32.5 +41.0 119.0	40 48.8 +40.6 118.1	40 04.8 +40.2 117.2	39 20.4 +39.8 116.4
5°	42 57.2 +40.9 119.0	42 13.5 +40.4 118.0	41 29.4 +40.1 117.1	40 45.0 +39.6 116.3	40 00.2 +39.3 115.4
6°	43 38.1 +40.3 118.0	42 53.9 +40.0 117.0	42 09.5 +39.5 116.1	41 24.6 +39.2 115.3	40 39.5 +38.8 114.4
7°	44 18.4 +39.7 116.9	43 33.9 +39.3 116.0	42 49.0 +39.0 115.1	42 03.8 +38.6 114.2	41 18.3 +38.2 113.4
8°	44 58.1 +39.2 115.9	44 13.2 +38.8 115.0	43 28.0 +38.4 114.1	42 42.4 +38.0 113.2	41 56.5 +37.7 112.4
9°	45 37.3 +38.5 114.8	44 52.0 +38.1 113.9	44 06.4 +37.7 113.0	43 20.4 +37.5 112.2	42 34.2 +37.1 111.3
10°	46 15.8 +37.9 113.7	45 30.1 +37.6 112.8	44 44.1 +37.2 111.9	43 57.9 +36.8 111.1	43 11.3 +36.5 110.2
11°	46 53.7 +37.3 112.6	46 07.7 +36.8 111.7	45 21.3 +36.5 110.8	44 34.7 +36.1 110.0	43 47.8 +35.8 109.1
12°	47 31.0 +36.5 111.4	46 44.5 +36.2 110.5	45 57.8 +35.8 109.7	45 10.8 +35.5 108.8	44 23.6 +35.2 108.0
13°	48 07.5 +35.7 110.2	47 20.7 +35.4 109.4	46 33.6 +35.1 108.5	45 46.3 +34.8 107.7	44 58.8 +34.5 106.9
14°	48 43.2 +35.0 109.0	47 56.1 +34.6 108.2	47 08.7 +34.3 107.3	46 21.1 +34.0 106.5	45 33.3 +33.8 105.7
15°	49 18.2 +34.2 107.8	48 30.7 +33.9 106.9	47 43.0 +33.6 106.1	46 55.1 +33.3 105.3	46 07.1 +33.0 104.5
16°	49 52.4 +33.3 106.5	49 04.6 +33.0 105.7	48 16.6 +32.7 104.9	47 28.4 +32.5 104.1	46 40.1 +32.2 103.3
17°	50 25.7 +32.4 105.2	49 37.6 +32.1 104.4	48 49.3 +31.9 103.6	48 00.9 +31.6 102.8	47 12.3 +31.4 102.1
18°	50 58.1 +31.5 103.9	50 09.7 +31.3 103.1	49 21.2 +31.0 102.3	48 32.5 +30.8 101.6	47 43.7 +30.6 100.8
19°	51 29.6 +30.5 102.5	50 41.0 +30.3 101.8	49 52.2 +30.1 101.0	49 03.3 +29.9 100.3	48 14.3 +29.7 99.5
20°	52 00.1 +29.6 101.1	51 11.3 +29.3 100.4	50 22.3 +29.1 99.7	49 33.2 +28.9 98.9	48 44.0 +28.8 98.2
21°	52 29.7 +28.5 99.7	51 40.6 +28.3 99.0	50 51.4 +28.1 98.3	50 02.1 +28.0 97.6	49 12.8 +27.8 96.9
22°	52 58.2 +27.4 98.3	52 08.9 +27.2 97.6	51 19.5 +27.1 96.9	50 30.1 +27.0 96.2	49 40.6 +26.9 95.5
23°	53 25.6 +26.2 96.8	52 36.1 +26.2 96.1	51 46.6 +26.1 95.4	50 57.1 +25.9 94.8	50 07.5 +25.9 94.1
24°	53 51.8 +25.1 95.3	53 02.3 +25.0 94.6	52 12.7 +24.9 94.0	51 23.0 +24.9 93.3	50 33.4 +24.8 92.7
25°	54 16.9 +23.9 93.7	53 27.3 +23.8 93.1	52 37.6 +23.8 92.5	51 47.9 +23.7 91.9	50 58.2 +23.7 91.3
26°	54 40.8 +22.7 92.1	53 51.1 +22.6 91.5	53 01.4 +22.6 91.0	52 11.6 +22.6 90.4	51 21.9 +22.6 89.8
27°	55 03.5 +21.3 90.5	54 13.7 +21.4 90.0	53 24.0 +21.3 89.4	52 34.2 +21.5 88.9	51 44.5 +21.5 88.3
28°	55 24.8 +20.0 88.9	54 35.1 +20.0 88.4	53 45.3 +20.2 87.8	52 55.7 +20.1 87.3	52 06.0 +20.3 86.8
29°	55 44.8 +18.6 87.2	54 55.1 +18.7 86.7	54 05.5 +18.8 86.2	53 15.8 +19.0 85.8	52 26.3 +19.0 85.3

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°	35 53.3 +41.3 119.2	35 09.8 +40.8 118.4	34 25.8 +40.5 117.5	33 41.5 +40.2 116.7	32 57.0 +39.8 115.9
1°	36 34.6 +40.8 118.3	35 50.6 +40.4 117.5	35 06.3 +40.1 116.6	34 21.7 +39.7 115.8	33 36.8 +39.4 115.0
2°	37 15.4 +40.3 117.4	36 31.0 +40.0 116.6	35 46.4 +39.6 115.7	35 01.4 +39.3 114.9	34 16.2 +38.9 114.1
3°	37 55.7 +39.9 116.5	37 11.0 +39.6 115.6	36 26.0 +39.2 114.8	35 40.7 +38.9 114.0	34 55.1 +38.6 113.2
4°	38 35.6 +39.5 115.5	37 50.6 +39.1 114.7	37 05.2 +38.8 113.9	36 19.6 +38.4 113.0	35 33.7 +38.1 112.3
5°	39 15.1 +38.9 114.5	38 29.7 +38.6 113.7	37 44.0 +38.3 112.9	36 58.0 +38.0 112.1	36 11.8 +37.7 111.3
6°	39 54.0 +38.5 113.6	39 08.3 +38.1 112.7	38 22.3 +37.8 111.9	37 36.0 +37.5 111.1	36 49.5 +37.2 110.3
7°	40 32.5 +37.9 112.5	39 46.4 +37.6 111.7	39 00.1 +37.2 110.9	38 13.5 +37.0 110.1	37 26.7 +36.6 109.4
8°	41 10.4 +37.3 111.5	40 24.0 +37.0 110.7	39 37.3 +36.8 109.9	38 50.5 +36.4 109.1	38 03.3 +36.2 108.4
9°	41 47.7 +36.8 110.5	41 01.0 +36.5 109.7	40 14.1 +36.1 108.9	39 26.9 +35.9 108.1	38 39.5 +35.6 107.3
10°	42 24.5 +36.2 109.4	41 37.5 +35.9 108.6	40 50.2 +35.6 107.8	40 02.8 +35.3 107.1	39 15.1 +35.1 106.3
11°	43 00.7 +35.5 108.3	42 13.4 +35.2 107.5	41 25.8 +35.0 106.8	40 38.1 +34.7 106.0	39 50.2 +34.5 105.2
12°	43 36.2 +34.9 107.2	42 48.6 +34.6 106.4	42 00.8 +34.4 105.7	41 12.8 +34.2 104.9	40 24.7 +33.9 104.2
13°	44 11.1 +34.2 106.1	43 23.2 +34.0 105.3	42 35.2 +33.7 104.6	41 47.0 +33.4 103.8	40 58.6 +33.2 103.1
14°	44 45.3 +33.5 104.9	44 53.2 +33.3 104.2	43 08.9 +33.0 103.4	42 20.4 +32.9 102.7	41 31.8 +32.7 102.0
15°	45 18.8 +32.8 103.8	44 30.5 +32.5 103.0	43 41.9 +32.3 102.3	42 53.3 +32.1 101.6	42 04.5 +31.9 100.9
16°	45 51.6 +32.0 102.6	45 03.0 +31.8 101.8	44 14.2 +31.6 101.1	43 25.4 +31.4 100.4	42 36.4 +31.2 99.7
17°	46 23.6 +31.2 101.4	45 34.8 +31.0 100.6	44 45.8 +30.9 99.9	43 56.8 +30.7 99.2	43 07.6 +30.6 98.5
18°	46 54.8 +30.4 100.1	46 05.8 +30.2 99.4	45 16.7 +30.0 98.7	44 27.5 +29.9 98.0	43 38.2 +29.8 97.4
19°	47 25.2 +29.5 98.8	46 36.0 +29.4 98.1	45 46.7 +29.3 97.5	44 57.4 +29.1 96.8	44 08.0 +29.0 96.2
20°	47 54.7 +28.7 97.5	47 05.4 +28.5 96.9	46 16.0 +28.4 96.2	45 26.5 +28.3 95.6	44 37.0 +28.2 94.9
21°	48 23.4 +27.7 96.2	47 33.9 +27.6 95.6	46 44.4 +27.5 94.9	45 54.8 +27.4 94.3	45 05.2 +27.4 93.7
22°	48 51.1 +26.8 94.9	48 01.5 +26.7 94.3	47 11.9 +26.6 93.6	46 22.2 +26.6 93.0	45 32.6 +26.5 92.4
23°	49 17.9 +25.8 93.5	48 28.2 +25.7 92.9	47 38.5 +25.7 92.3	46 48.8 +25.7 91.7	45 59.1 +25.6 91.1
24°	49 43.7 +24.7 92.1	48 53.9 +24.8 91.5	48 04.2 +24.8 91.0	47 14.5 +24.7 90.4	46 24.7 +24.8 89.8
25°	50 08.4 +23.8 90.7	49 18.7 +23.7 90.1	48 29.0 +23.7 89.6	47 39.2 +23.8 89.0	46 49.5 +23.8 88.5
26°	50 32.2 +22.6 89.3	49 42.4 +22.7 88.7	48 52.7 +22.7 88.2	48 03.0 +22.8 87.7	47 13.3 +22.8 87.2
27°	50 54.8 +21.5 87.8	50 05.1 +21.6 87.3	49 15.4 +21.7 86.8	48 25.8 +21.7 86.3	47 36.1 +21.9 85.8
28°	51 16.3 +20.4 86.3	50 26.7 +20.5 85.8	49 37.1 +20.6 85.4	48 47.5 +20.8 84.9	47 58.0 +20.9 84.4
29°	51 36.7 +19.2 84.8	50 47.2 +19.3 84.4	49 57.7 +19.5 83.9	49 08.3 +19.6 83.4	48 18.9 +19.8 83.0

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	32 12.1 +39.4 115.1	31 26.9 +39.1 114.4	30 41.5 +38.8 113.6	29 55.7 +38.6 112.8	29 09.8 +38.2 112.1
1°	32 51.5 +39.1 114.2	32 06.0 +38.8 113.5	31 20.3 +38.5 112.7	30 34.3 +38.1 112.0	29 48.0 +37.9 111.2
2°	33 30.6 +38.7 113.3	32 44.8 +38.4 112.6	31 58.8 +38.0 111.8	31 12.4 +37.8 111.1	30 25.9 +37.5 110.3
3°	34 09.3 +38.2 112.4	33 23.2 +37.9 111.6	32 36.8 +37.7 110.9	31 50.2 +37.4 110.2	31 03.4 +37.2 109.4
4°	34 47.5 +37.9 111.5	34 01.1 +37.6 110.7	33 14.5 +37.2 110.0	32 27.6 +37.0 109.2	31 40.6 +36.7 108.5
5°	35 25.4 +37.3 110.5	34 38.7 +37.1 109.8	33 51.7 +36.9 109.0	33 04.6 +36.6 108.3	32 17.3 +36.3 107.6
6°	36 02.7 +36.9 109.6	35 15.8 +36.6 108.8	34 28.6 +36.3 108.1	33 41.2 +36.1 107.3	32 53.6 +35.9 106.6
7°	36 39.6 +36.4 108.6	35 52.4 +36.1 107.8	35 04.9 +35.9 107.1	34 17.3 +35.7 106.4	33 29.5 +35.4 105.7
8°	37 16.0 +35.9 107.6	36 28.5 +35.7 106.9	35 40.8 +35.4 106.1	34 53.0 +35.1 105.4	34 04.9 +35.0 104.7
9°	37 51.9 +35.4 106.6	37 04.2 +35.1 105.8	36 16.2 +34.9 105.1	35 28.1 +34.7 104.4	34 39.9 +34.5 103.7
10°	38 27.3 +34.8 105.6	37 39.3 +34.6 104.8	36 51.1 +34.4 104.1	36 02.8 +34.2 103.4	35 14.4 +34.0 102.7
11°	39 02.1 +34.3 104.5	38 13.9 +34.0 103.8	37 25.5 +33.9 103.1	36 37.0 +33.7 102.4	35 48.4 +33.4 101.7
12°	39 36.4 +33.7 103.5	38 47.9 +33.5 102.7	37 59.4 +33.2 102.0	37 10.7 +33.1 101.4	36 21.8 +33.0 100.7
13°	40 10.1 +33.0 102.4	39 21.4 +32.9 101.7	38 32.6 +32.7 101.0	37 43.8 +32.5 100.3	36 54.8 +32.3 99.6
14°	40 43.1 +32.5 101.3	39 54.3 +32.2 100.6	39 05.3 +32.1 99.9	38 16.3 +31.9 99.2	37 27.1 +31.9 98.6
15°	41 15.6 +31.7 100.2	40 26.5 +31.7 99.5	39 37.4 +31.5 98.8	38 48.2 +31.4 98.2	37 59.0 +31.2 97.5
16°	41 47.3 +31.1 99.0	40 58.2 +30.9 98.4	40 08.9 +30.8 97.7	39 19.6 +30.7 97.1	38 30.2 +30.6 96.4
17°	42 18.4 +30.4 97.9	41 29.1 +30.3 97.2	40 39.7 +30.2 96.6	39 50.3 +30.0 95.9	39 00.8 +29.9 95.3
18°	42 48.8 +29.7 96.7	41 59.4 +29.5 96.1	41 09.9 +29.4 95.4	40 20.3 +29.4 94.8	39 30.7 +29.4 94.2
19°	43 18.5 +28.9 95.5	42 28.9 +28.9 94.9	41 39.3 +28.8 94.3	40 49.7 +28.7 93.7	40 00.1 +28.6 93.1
20°	43 47.4 +28.1 94.3	42 57.8 +28.0 93.7	42 08.1 +28.0 93.1	41 18.4 +28.0 92.5	40 28.7 +28.0 91.9
21°	44 15.5 +27.3 93.1	43 25.8 +27.3 92.5	42 36.1 +27.3 91.9	41 46.4 +27.2 91.3	40 56.7 +27.2 90.7
22°	44 42.8 +26.5 91.8	43 53.1 +26.5 91.3	43 03.4 +26.5 90.7	42 13.6 +26.5 90.1	41 23.9 +26.5 89.6
23°	45 09.3 +25.7 90.6	44 19.6 +25.7 90.0	43 29.9 +25.6 89.4	42 40.1 +25.7 88.9	41 50.4 +25.7 88.4
24°	45 35.0 +24.8 89.3	44 45.3 +24.8 88.7	43 55.5 +24.9 88.2	43 05.8 +24.9 87.7	42 16.1 +25.0 87.1
25°	45 59.8 +23.8 88.0	45 10.1 +23.9 87.4	44 20.4 +24.0 86.9	43 30.7 +24.1 86.4	42 41.1 +24.1 85.9
26°	46 23.6 +23.0 86.6	45 34.0 +23.0 86.1	44 44.4 +23.1 85.6	43 54.8 +23.2 85.1	43 05.2 +23.4 84.7
27°	46 46.6 +21.9 85.3	45 57.0 +22.1 84.8	45 07.5 +22.2 84.3	44 18.0 +22.3 83.9	43 28.6 +22.4 83.4
28°	47 08.5 +21.0 83.9	46 19.1 +21.1 83.5	45 29.7 +21.3 83.0	44 40.3 +21.5 82.6	43 51.0 +21.7 82.1
29°	47 29.5 +20.0 82.6	46 40.2 +20.2 82.1	45 51.0 +20.3 81.7	45 01.8 +20.5 81.2	44 12.7 +20.7 80.8

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°	28 23.6 +37.9 111.4	27 37.1 +37.7 110.7	26 50.5 +37.4 110.0	26 03.6 +37.2 109.3	25 16.6 +36.9 108.6
1°	29 01.5 +37.7 110.5	28 14.8 +37.4 109.8	27 27.9 +37.1 109.1	26 40.8 +36.9 108.4	25 53.5 +36.7 107.7
2°	29 39.2 +37.2 109.6	28 52.2 +37.0 108.9	28 05.0 +36.8 108.2	27 17.7 +36.5 107.5	26 30.2 +36.3 106.8
3°	30 16.4 +36.9 108.7	29 29.2 +36.6 108.0	28 41.8 +36.4 107.3	27 54.2 +36.2 106.6	27 06.5 +35.9 105.9
4°	30 53.3 +36.5 107.8	30 05.8 +36.3 107.1	29 18.2 +36.0 106.4	28 30.4 +35.8 105.7	27 42.4 +35.6 105.0
5°	31 29.8 +36.1 106.9	30 42.1 +35.8 106.2	29 54.2 +35.7 105.5	29 06.2 +35.4 104.8	28 18.0 +35.3 104.1
6°	32 05.9 +35.6 105.9	31 17.9 +35.5 105.2	30 29.9 +35.2 104.5	29 41.6 +35.1 103.9	28 53.3 +34.8 103.2
7°	32 41.5 +35.2 105.0	31 53.4 +35.0 104.3	31 05.1 +34.8 103.6	30 16.7 +34.6 102.9	29 28.1 +34.5 102.3
8°	33 16.7 +34.8 104.0	32 28.4 +34.6 103.3	31 39.9 +34.4 102.6	30 51.3 +34.2 102.0	30 02.6 +34.1 101.3
9°	33 51.5 +34.3 103.0	33 03.0 +34.1 102.3	32 14.3 +34.0 101.7	31 25.5 +33.8 101.0	30 36.7 +33.6 100.4
10°	34 25.8 +33.8 102.0	33 37.1 +33.6 101.4	32 48.3 +33.4 100.7	31 59.3 +33.4 100.0	31 10.3 +33.2 99.4
11°	34 59.6 +33.3 101.0	34 10.7 +33.2 100.4	33 21.7 +33.0 99.7	32 32.7 +32.8 99.1	31 43.5 +32.7 98.4
12°	35 32.9 +32.8 100.0	34 43.9 +32.6 99.3	33 54.7 +32.5 98.7	33 05.5 +32.4 98.1	32 16.2 +32.3 97.4
13°	36 05.7 +32.2 99.0	35 16.5 +32.1 98.3	34 27.2 +32.0 97.7	33 37.9 +31.9 97.1	32 48.5 +31.8 96.4
14°	36 37.9 +31.7 97.9	35 48.6 +31.6 97.3	34 59.2 +31.5 96.7	34 09.8 +31.4 96.0	33 20.3 +31.3 95.4
15°	37 09.6 +31.1 96.9	36 20.2 +31.0 96.2	35 30.7 +30.9 95.6	34 41.2 +30.8 95.0	33 51.6 +30.8 94.4
16°	37 40.7 +30.5 95.8	36 51.2 +30.4 95.2	36 01.6 +30.4 94.6	35 12.0 +30.3 94.0	34 22.4 +30.2 93.4
17°	38 11.2 +29.9 94.7	37 21.6 +29.9 94.1	36 32.0 +29.8 93.5	35 42.3 +29.8 92.9	34 52.6 +29.7 92.3
18°	38 41.1 +29.3 93.6	37 51.5 +29.2 93.0	37 01.8 +29.2 92.4	36 12.1 +29.1 91.8	35 22.3 +29.2 91.2
19°	39 10.4 +28.6 92.5	38 20.7 +28.6 91.9	37 31.0 +28.5 91.3	36 41.2 +28.6 90.7	35 51.5 +28.5 90.2
20°	39 39.0 +27.9 91.3	38 49.3 +27.9 90.8	37 59.5 +27.9 90.2	37 09.8 +27.9 89.6	36 20.0 +28.0 89.1
21°	40 06.9 +27.3 90.2	39 17.2 +27.2 89.6	38 27.4 +27.3 89.1	37 37.7 +27.3 88.5	36 48.0 +27.3 88.0
22°	40 34.2 +26.5 89.0	39 44.4 +26.6 88.5	38 54.7 +26.6 87.9	38 05.0 +26.7 87.4	37 15.3 +26.7 86.9
23°	41 00.7 +25.8 87.8	40 11.0 +25.8 87.3	39 21.3 +25.9 86.8	38 31.7 +25.9 86.3	37 42.0 +26.1 85.7
24°	41 26.5 +25.0 86.6	40 36.8 +25.1 86.1	39 47.2 +25.2 85.6	38 57.6 +25.3 85.1	38 08.1 +25.4 84.6
25°	41 51.5 +24.2 85.4	41 01.9 +24.4 84.9	40 12.4 +24.5 84.4	39 22.9 +24.6 83.9	38 33.5 +24.7 83.4
26°	42 15.7 +23.5 84.2	41 26.3 +23.5 83.7	40 36.9 +23.7 83.2	39 47.5 +23.8 82.7	38 58.2 +24.0 82.3
27°	42 39.2 +22.6 82.9	41 49.8 +22.8 82.5	41 00.6 +22.9 82.0	40 11.3 +23.1 81.5	39 22.2 +23.2 81.1
28°	43 01.8 +21.8 81.7	42 12.6 +22.0 81.2	41 23.5 +22.1 80.8	40 34.4 +22.3 80.3	39 45.4 +22.5 79.9
29°	43 23.6 +20.9 80.4	42 34.6 +21.1 80.0	41 45.6 +21.3 79.5	40 56.7 +21.6 79.1	40 07.9 +21.8 78.7

Declination SAME name as Latitude

Latitude 34°

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°	24 29.3 +36.8 107.9	23 41.9 +36.5 107.2	22 54.3 +36.3 106.6	22 06.6 +36.0 105.9	21 18.6 +35.9 105.3
1°	25 06.1 +36.4 107.0	24 18.4 +36.2 106.4	23 30.6 +36.0 105.7	22 42.6 +35.8 105.0	21 54.5 +35.6 104.4
2°	25 42.5 +36.1 106.1	24 54.6 +35.9 105.5	24 06.6 +35.7 104.8	23 18.4 +35.5 104.2	22 30.1 +35.4 103.5
3°	26 18.6 +35.7 105.3	25 30.5 +35.6 104.6	24 42.3 +35.4 103.9	23 53.9 +35.2 103.3	23 05.5 +35.0 102.6
4°	26 54.3 +35.4 104.4	26 06.1 +35.2 103.7	25 17.7 +35.0 103.0	24 29.1 +34.9 102.4	23 40.5 +34.7 101.8
5°	27 29.7 +35.1 103.4	26 41.3 +34.9 102.8	25 52.7 +34.7 102.1	25 04.0 +34.6 101.5	24 15.2 +34.4 100.9
6°	28 04.8 +34.7 102.5	27 16.2 +34.5 101.9	26 27.4 +34.4 101.2	25 38.6 +34.2 100.6	24 49.6 +34.1 100.0
7°	28 39.5 +34.3 101.6	27 50.7 +34.1 101.0	27 01.8 +34.0 100.3	26 12.8 +33.9 99.7	25 23.7 +33.8 99.1
8°	29 13.8 +33.9 100.7	28 24.8 +33.8 100.0	27 35.8 +33.6 99.4	26 46.7 +33.5 98.8	25 57.5 +33.4 98.1
9°	29 47.7 +33.5 99.7	28 58.6 +33.4 99.1	28 09.4 +33.3 98.5	27 20.2 +33.1 97.8	26 30.9 +33.0 97.2
10°	30 21.2 +33.0 98.8	29 32.0 +32.9 98.1	28 42.7 +32.8 97.5	27 53.3 +32.8 96.9	27 03.9 +32.7 96.3
11°	30 54.2 +32.7 97.8	30 04.9 +32.6 97.2	29 15.5 +32.5 96.5	28 26.1 +32.3 95.9	27 36.6 +32.3 95.3
12°	31 26.9 +32.2 96.8	30 37.5 +32.0 96.2	29 48.0 +32.0 95.6	28 58.4 +32.0 95.0	28 08.9 +31.8 94.4
13°	31 59.1 +31.7 95.8	31 09.5 +31.7 95.2	30 20.0 +31.5 94.6	29 30.4 +31.5 94.0	28 40.7 +31.5 93.4
14°	32 30.8 +31.2 94.8	31 41.2 +31.1 94.2	30 51.5 +31.2 93.6	30 01.9 +31.1 93.0	29 12.2 +31.0 92.4
15°	33 02.0 +30.7 93.8	32 12.3 +30.7 93.2	31 22.7 +30.6 92.6	30 33.0 +30.6 92.0	29 43.2 +30.6 91.5
16°	33 32.7 +30.2 92.8	32 43.0 +30.2 92.2	31 53.3 +30.2 91.6	31 03.6 +30.1 91.0	30 13.8 +30.2 90.5
17°	34 02.9 +29.7 91.7	33 13.2 +29.7 91.2	32 23.5 +29.6 90.6	31 33.7 +29.7 90.0	30 44.0 +29.7 89.5
18°	34 32.6 +29.1 90.7	33 42.9 +29.1 90.1	32 53.1 +29.2 89.6	32 03.4 +29.2 89.0	31 13.7 +29.1 88.5
19°	35 01.7 +28.6 89.6	34 12.0 +28.6 89.1	33 22.3 +28.6 88.5	32 32.6 +28.6 88.0	31 42.8 +28.7 87.4
20°	35 30.3 +28.0 88.5	34 40.6 +28.0 88.0	33 50.9 +28.1 87.5	33 01.2 +28.1 86.9	32 11.5 +28.2 86.4
21°	35 58.3 +27.4 87.4	35 08.6 +27.5 86.9	34 19.0 +27.5 86.4	33 29.3 +27.6 85.9	32 39.7 +27.7 85.4
22°	36 25.7 +26.8 86.3	35 36.1 +26.8 85.8	34 46.5 +26.9 85.3	33 56.9 +27.0 84.8	33 07.4 +27.1 84.3
23°	36 52.5 +26.1 85.2	36 02.9 +26.2 84.7	35 13.4 +26.3 84.2	34 23.9 +26.5 83.7	33 34.5 +26.6 83.2
24°	37 18.6 +25.5 84.1	36 29.1 +25.6 83.6	35 39.7 +25.8 83.1	34 50.4 +25.8 82.6	34 01.1 +26.0 82.1
25°	37 44.1 +24.8 83.0	36 54.7 +25.0 82.5	36 05.5 +25.1 82.0	35 16.2 +25.3 81.5	34 27.1 +25.4 81.1
26°	38 08.9 +24.1 81.8	37 19.7 +24.3 81.3	36 30.6 +24.4 80.9	35 41.5 +24.6 80.4	34 52.5 +24.8 80.0
27°	38 33.0 +23.5 80.6	37 44.0 +23.6 80.2	36 55.0 +23.8 79.7	36 06.1 +24.0 79.3	35 17.3 +24.2 78.8
28°	38 56.5 +22.7 79.5	38 07.6 +22.9 79.0	37 18.8 +23.1 78.6	36 30.1 +23.3 78.2	35 41.5 +23.5 77.7
29°	39 19.2 +22.0 78.3	38 30.5 +22.2 77.8	37 41.9 +22.5 77.4	36 53.4 +22.7 77.0	36 05.0 +22.9 76.6

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°	20 30.6 +35.7 104.6	19 42.4 +35.5 104.0	18 54.0 +35.4 103.4	18 05.6 +35.2 102.7	17 17.0 +35.0 102.1
1°	21 06.3 +35.4 103.8	20 17.9 +35.3 103.1	19 29.4 +35.1 102.5	18 40.8 +34.9 101.9	17 52.0 +34.8 101.3
2°	21 41.7 +35.2 102.9	20 53.2 +35.0 102.3	20 04.5 +34.8 101.6	19 15.7 +34.7 101.0	18 26.8 +34.6 100.4
3°	22 16.9 +34.8 102.0	21 28.2 +34.7 101.4	20 39.3 +34.6 100.8	19 50.4 +34.5 100.2	19 01.4 +34.4 99.5
4°	22 51.7 +34.6 101.1	22 02.9 +34.4 100.5	21 13.9 +34.3 99.9	20 24.9 +34.2 99.3	19 35.8 +34.0 98.7
5°	23 26.3 +34.3 100.2	22 37.3 +34.2 99.6	21 48.2 +34.1 99.0	20 59.1 +33.9 98.4	20 09.8 +33.9 97.8
6°	24 00.6 +34.0 99.3	23 11.5 +33.8 98.7	22 22.3 +33.7 98.1	21 33.0 +33.6 97.5	20 43.7 +33.5 96.9
7°	24 34.6 +33.6 98.4	23 45.3 +33.6 97.8	22 56.0 +33.5 97.2	22 06.6 +33.4 96.6	21 17.2 +33.3 96.0
8°	25 08.2 +33.3 97.5	24 18.9 +33.2 96.9	23 29.5 +33.1 96.3	22 40.0 +33.0 95.7	21 50.5 +32.9 95.1
9°	25 41.5 +33.0 96.6	24 52.1 +32.8 96.0	24 02.6 +32.8 95.4	23 13.0 +32.8 94.8	22 23.4 +32.7 94.2
10°	26 14.5 +32.5 95.7	25 24.9 +32.5 95.1	24 35.4 +32.4 94.5	23 45.8 +32.4 93.9	22 56.1 +32.4 93.3
11°	26 47.0 +32.3 94.7	25 57.4 +32.2 94.2	25 07.8 +32.1 93.6	24 18.2 +32.0 93.0	23 28.5 +32.0 92.4
12°	27 19.3 +31.8 93.8	26 29.6 +31.8 93.2	25 39.9 +31.8 92.6	24 50.2 +31.7 92.1	24 00.5 +31.7 91.5
13°	27 51.1 +31.4 92.8	27 01.4 +31.4 92.3	26 11.7 +31.3 91.7	25 21.9 +31.4 91.1	24 32.2 +31.4 90.6
14°	28 22.5 +31.0 91.9	27 32.8 +31.0 91.3	26 43.0 +31.0 90.7	25 53.3 +31.0 90.2	25 03.6 +31.0 89.6
15°	28 53.5 +30.6 90.9	28 03.8 +30.6 90.3	27 14.0 +30.6 89.8	26 24.3 +30.6 89.2	25 34.6 +30.6 88.7
16°	29 24.1 +30.1 89.9	28 34.4 +30.1 89.4	27 44.6 +30.2 88.8	26 54.9 +30.2 88.3	26 05.2 +30.2 87.7
17°	29 54.2 +29.7 88.9	29 04.5 +29.7 88.4	28 14.8 +29.8 87.8	27 25.1 +29.8 87.3	26 35.4 +29.9 86.7
18°	30 23.9 +29.3 87.9	29 34.2 +29.3 87.4	28 44.6 +29.3 86.8	27 54.9 +29.4 86.3	27 05.3 +29.4 85.8
19°	30 53.2 +28.7 86.9	30 03.5 +28.8 86.4	29 13.9 +28.9 85.8	28 24.3 +28.9 85.3	27 34.7 +29.1 84.8
20°	31 21.9 +28.3 85.9	30 32.3 +28.3 85.4	29 42.8 +28.4 84.8	28 53.2 +28.5 84.3	28 03.8 +28.6 83.8
21°	31 50.2 +27.7 84.8	31 00.6 +27.9 84.3	30 11.2 +27.9 83.8	29 21.7 +28.1 83.3	28 32.4 +28.1 82.8
22°	32 17.9 +27.2 83.8	31 28.5 +27.3 83.3	30 39.1 +27.5 82.8	29 49.8 +27.6 82.3	29 00.5 +27.7 81.8
23°	32 45.1 +26.7 82.7	31 55.8 +26.8 82.2	31 06.6 +26.9 81.8	30 17.4 +27.1 81.3	29 28.2 +27.3 80.8
24°	33 11.8 +26.2 81.7	32 22.6 +26.3 81.2	31 33.5 +26.4 80.7	30 44.5 +26.6 80.2	29 55.5 +26.7 79.8
25°	33 38.0 +25.5 80.6	32 48.9 +25.7 80.1	31 59.9 +26.0 79.7	31 11.1 +26.0 79.2	30 22.2 +26.3 78.7
26°	34 03.5 +25.0 79.5	33 14.6 +25.2 79.0	32 25.9 +25.3 78.6	31 37.1 +25.6 78.1	30 48.5 +25.8 77.7
27°	34 28.5 +24.4 78.4	33 39.8 +24.6 78.0	32 51.2 +24.8 77.5	32 02.7 +25.0 77.1	31 14.3 +25.2 76.6
28°	34 52.9 +23.8 77.3	34 04.4 +24.0 76.9	33 16.0 +24.2 76.4	32 27.7 +24.5 76.0	31 39.5 +24.7 75.6
29°	35 16.7 +23.1 76.2	34 28.4 +23.4 75.7	33 40.2 +23.7 75.3	32 52.2 +23.9 74.9	32 04.2 +24.1 74.5

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Latitude 34°

Declination SAME name as Latitude

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	16 28.3 +34.9 101.5	15 39.5 +34.8 100.9	14 50.6 +34.7 100.3	14 01.6 +34.5 99.7	13 12.6 +34.4 99.1
1°	17 03.2 +34.7 100.7	16 14.3 +34.5 100.1	15 25.3 +34.4 99.5	14 36.1 +34.4 98.9	13 47.0 +34.2 98.3
2°	17 37.9 +34.4 99.8	16 48.8 +34.3 99.2	15 59.7 +34.2 98.6	15 10.5 +34.1 98.0	14 21.2 +34.0 97.4
3°	18 12.3 +34.2 98.9	17 23.1 +34.2 98.3	16 33.9 +34.0 97.7	15 44.6 +33.9 97.2	14 55.2 +33.8 96.6
4°	18 46.5 +34.0 98.1	17 57.3 +33.8 97.5	17 07.9 +33.8 96.9	16 18.5 +33.7 96.3	15 29.0 +33.7 95.7
5°	19 20.5 +33.7 97.2	18 31.1 +33.7 96.6	17 41.7 +33.6 96.0	16 52.2 +33.5 95.4	16 02.7 +33.4 94.9
6°	19 54.2 +33.5 96.3	19 04.8 +33.4 95.7	18 15.3 +33.3 95.1	17 25.7 +33.3 94.6	16 36.1 +33.2 94.0
7°	20 27.7 +33.2 95.4	19 38.2 +33.1 94.9	18 48.6 +33.1 94.3	17 59.0 +33.0 93.7	17 09.3 +33.0 93.1
8°	21 00.9 +32.9 94.5	20 11.3 +32.9 94.0	19 21.7 +32.8 93.4	18 32.0 +32.8 92.8	17 42.3 +32.7 92.2
9°	21 33.8 +32.6 93.7	20 44.2 +32.5 93.1	19 54.5 +32.5 92.5	19 04.8 +32.5 91.9	18 15.0 +32.6 91.4
10°	22 06.4 +32.4 92.7	21 16.7 +32.3 92.2	20 27.0 +32.3 91.6	19 37.3 +32.3 91.0	18 47.6 +32.2 90.5
11°	22 38.8 +32.0 91.8	21 49.0 +32.0 91.3	20 59.3 +32.0 90.7	20 09.6 +32.0 90.1	19 19.8 +32.0 89.6
12°	23 10.8 +31.7 90.9	22 21.0 +31.7 90.4	21 31.3 +31.7 89.8	20 41.6 +31.7 89.2	19 51.8 +31.7 88.7
13°	23 42.5 +31.3 90.0	22 52.7 +31.4 89.4	22 03.0 +31.4 88.9	21 13.3 +31.4 88.3	20 23.5 +31.5 87.8
14°	24 13.8 +31.0 89.1	23 24.1 +31.0 88.5	22 34.4 +31.0 88.0	21 44.7 +31.1 87.4	20 55.0 +31.1 86.9
15°	24 44.8 +30.7 88.1	23 55.1 +30.7 87.6	23 05.4 +30.8 87.0	22 15.8 +30.8 86.5	21 26.1 +30.9 86.0
16°	25 15.5 +30.3 87.2	24 25.8 +30.4 86.6	23 36.2 +30.4 86.1	22 46.6 +30.4 85.6	21 57.0 +30.5 85.0
17°	25 45.8 +29.9 86.2	24 56.2 +29.9 85.7	24 06.6 +30.0 85.2	23 17.0 +30.2 84.6	22 27.5 +30.3 84.1
18°	26 15.7 +29.5 85.2	25 26.1 +29.6 84.7	24 36.6 +29.7 84.2	23 47.2 +29.8 83.7	22 57.8 +29.8 83.2
19°	26 45.2 +29.1 84.3	25 55.7 +29.3 83.8	25 06.3 +29.3 83.2	24 17.0 +29.4 82.7	23 27.6 +29.6 82.2
20°	27 14.3 +28.7 83.3	26 25.0 +28.8 82.8	25 35.6 +29.0 82.3	24 46.4 +29.0 81.8	23 57.2 +29.2 81.3
21°	27 43.0 +28.3 82.3	26 53.8 +28.4 81.8	26 04.6 +28.5 81.3	25 15.4 +28.7 80.8	24 26.4 +28.8 80.3
22°	28 11.3 +27.9 81.3	27 22.2 +28.0 80.8	26 33.1 +28.2 80.3	25 44.1 +28.3 79.8	24 55.2 +28.4 79.3
23°	28 39.2 +27.4 80.3	27 50.2 +27.5 79.8	27 01.3 +27.7 79.3	26 12.4 +27.9 78.9	25 23.6 +28.1 78.4
24°	29 06.6 +26.9 79.3	28 17.7 +27.1 78.8	27 29.0 +27.3 78.3	26 40.3 +27.5 77.9	25 51.7 +27.7 77.4
25°	29 33.5 +26.4 78.3	28 44.8 +26.7 77.8	27 56.3 +26.8 77.3	27 07.8 +27.0 76.9	26 19.4 +27.2 76.4
26°	29 59.9 +26.0 77.2	29 11.5 +26.1 76.8	28 23.1 +26.4 76.3	27 34.8 +26.6 75.9	26 46.6 +26.9 75.4
27°	30 25.9 +25.5 76.2	29 37.6 +25.7 75.7	28 49.5 +25.9 75.3	28 01.4 +26.2 74.9	27 13.5 +26.4 74.4
28°	30 51.4 +24.9 75.1	30 03.3 +25.2 74.7	29 15.4 +25.4 74.3	28 27.6 +25.7 73.8	27 39.9 +25.9 73.4
29°	31 16.3 +24.4 74.1	30 28.5 +24.7 73.6	29 40.8 +25.0 73.2	28 53.3 +25.2 72.8	28 05.8 +25.5 72.4

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°	12 23.4 +34.3 98.5	11 34.2 +34.2 97.9	10 44.9 +34.1 97.4	9 55.5 +34.0 96.8	9 06.1 +33.9 96.2
1°	12 57.7 +34.1 97.7	12 08.4 +34.0 97.1	11 19.0 +33.9 96.5	10 29.5 +33.9 95.9	9 40.0 +33.8 95.4
2°	13 31.8 +33.9 96.8	12 42.4 +33.8 96.3	11 52.9 +33.8 95.7	11 03.4 +33.7 95.1	10 13.8 +33.7 94.5
3°	14 05.7 +33.8 96.0	13 16.2 +33.7 95.4	12 26.7 +33.6 94.8	11 37.1 +33.6 94.3	10 47.5 +33.5 93.7
4°	14 39.5 +33.6 95.1	13 49.9 +33.6 94.6	13 00.3 +33.5 94.0	12 10.7 +33.4 93.4	11 21.0 +33.4 92.8
5°	15 13.1 +33.4 94.3	14 23.5 +33.3 93.7	13 33.8 +33.3 93.1	12 44.1 +33.3 92.6	11 54.4 +33.3 92.0
6°	15 46.5 +33.1 93.4	14 56.8 +33.1 92.8	14 07.1 +33.1 92.3	13 17.4 +33.1 91.7	12 27.7 +33.0 91.1
7°	16 19.6 +33.0 92.5	15 29.9 +33.0 92.0	14 40.2 +32.9 91.4	13 50.5 +32.9 90.8	13 00.7 +32.9 90.3
8°	16 52.6 +32.7 91.7	16 02.9 +32.7 91.1	15 13.1 +32.7 90.5	14 23.4 +32.7 90.0	13 33.6 +32.8 89.4
9°	17 25.3 +32.5 90.8	16 35.6 +32.5 90.2	15 45.8 +32.5 89.7	14 56.1 +32.5 89.1	14 06.4 +32.5 88.6
10°	17 57.8 +32.3 89.9	17 08.1 +32.3 89.4	16 18.3 +32.3 88.8	15 28.6 +32.3 88.2	14 38.9 +32.4 87.7
11°	18 30.1 +32.0 89.0	17 40.4 +32.0 88.5	16 50.6 +32.1 87.9	16 00.9 +32.1 87.4	15 11.3 +32.1 86.8
12°	19 02.1 +31.7 88.1	18 12.4 +31.8 87.6	17 22.7 +31.8 87.0	16 33.0 +31.9 86.5	15 43.4 +31.9 85.9
13°	19 33.8 +31.5 87.2	18 44.2 +31.5 86.7	17 54.5 +31.6 86.1	17 04.9 +31.7 85.6	16 15.3 +31.8 85.1
14°	20 05.3 +31.2 86.3	19 15.7 +31.3 85.8	18 26.1 +31.4 85.3	17 36.6 +31.4 84.7	16 47.1 +31.4 84.2
15°	20 36.5 +31.0 85.4	19 47.0 +31.0 84.9	18 57.5 +31.0 84.4	18 08.0 +31.1 83.8	17 18.5 +31.3 83.3
16°	21 07.5 +30.6 84.5	20 18.0 +30.7 84.0	19 28.5 +30.8 83.4	18 39.1 +30.9 82.9	17 49.8 +31.0 82.4
17°	21 38.1 +30.3 83.6	20 48.7 +30.4 83.1	19 59.3 +30.5 82.5	19 10.0 +30.7 82.0	18 20.8 +30.8 81.5
18°	22 08.4 +30.0 82.6	21 19.1 +30.1 82.1	20 29.8 +30.3 81.6	19 40.7 +30.3 81.1	18 51.6 +30.4 80.6
19°	22 38.4 +29.7 81.7	21 49.2 +29.8 81.2	21 00.1 +29.9 80.7	20 11.0 +30.1 80.2	19 22.0 +30.3 79.7
20°	23 08.1 +29.3 80.8	22 19.0 +29.5 80.3	21 30.0 +29.6 79.8	20 41.1 +29.8 79.3	19 52.3 +29.9 78.8
21°	23 37.4 +29.0 79.8	22 48.5 +29.1 79.3	21 59.6 +29.3 78.8	21 10.9 +29.4 78.3	20 22.2 +29.6 77.8
22°	24 06.4 +28.6 78.9	23 17.6 +28.8 78.4	22 28.9 +29.0 77.9	21 40.3 +29.2 77.4	20 51.8 +29.4 76.9
23°	24 35.0 +28.2 77.9	23 46.4 +28.4 77.4	22 57.9 +28.6 76.9	22 09.5 +28.8 76.5	21 21.2 +29.0 76.0
24°	25 03.2 +27.9 76.9	24 14.8 +28.1 76.5	23 26.5 +28.3 76.0	22 38.3 +28.5 75.5	21 50.2 +28.7 75.0
25°	25 31.1 +27.4 75.9	24 42.9 +27.7 75.5	23 54.8 +27.9 75.0	23 06.8 +28.1 74.6	22 18.9 +28.3 74.1
26°	25 58.5 +27.1 75.0	25 10.6 +27.2 74.5	24 22.7 +27.5 74.0	23 34.9 +27.8 73.6	22 47.2 +28.1 73.1
27°	26 25.6 +26.6 74.0	25 37.8 +26.9 73.5	24 50.2 +27.2 73.1	24 02.7 +27.4 72.6	23 15.3 +27.6 72.2
28°	26 52.2 +26.3 73.0	26 04.7 +26.5 72.5	25 17.4 +26.7 72.1	24 30.1 +27.0 71.6	23 42.9 +27.3 71.2
29°	27 18.5 +25.7 71.9	26 31.2 +26.1 71.5	25 44.1 +26.4 71.1	24 57.1 +26.7 70.7	24 10.2 +27.0 70.2

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Latitude 34°

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 16.6 +33.9 95.6	7 27.1 +33.8 95.1	6 37.5 +33.8 94.5	5 47.9 +33.7 93.9	4 58.3 +33.6 93.4
1°	8 50.5 +33.7 94.8	8 00.9 +33.7 94.2	7 11.3 +33.6 93.7	6 21.6 +33.6 93.1	5 31.9 +33.6 92.5
2°	9 24.2 +33.6 94.0	8 34.6 +33.6 93.4	7 44.9 +33.6 92.8	6 55.2 +33.5 92.3	6 05.5 +33.5 91.7
3°	9 57.8 +33.5 93.1	9 08.2 +33.4 92.6	8 18.5 +33.4 92.0	7 28.7 +33.5 91.4	6 39.0 +33.4 90.9
4°	10 31.3 +33.4 92.3	9 41.6 +33.4 91.7	8 51.9 +33.3 91.1	8 02.2 +33.3 90.6	7 12.4 +33.3 90.0
5°	11 04.7 +33.2 91.4	10 15.0 +33.2 90.9	9 25.2 +33.2 90.3	8 35.5 +33.2 89.7	7 45.7 +33.3 89.2
6°	11 37.9 +33.1 90.6	10 48.2 +33.0 90.0	9 58.4 +33.1 89.5	9 08.7 +33.1 88.9	8 19.0 +33.1 88.3
7°	12 11.0 +32.9 89.7	11 21.2 +33.0 89.2	10 31.5 +33.0 88.6	9 41.8 +33.0 88.1	8 52.1 +33.0 87.5
8°	12 43.9 +32.7 88.9	11 54.2 +32.7 88.3	11 04.5 +32.8 87.8	10 14.8 +32.8 87.2	9 25.1 +32.9 86.7
9°	13 16.6 +32.6 88.0	12 26.9 +32.6 87.5	11 37.3 +32.6 86.9	10 47.6 +32.7 86.4	9 58.0 +32.7 85.8
10°	13 49.2 +32.4 87.1	12 59.5 +32.5 86.6	12 09.9 +32.5 86.1	11 20.3 +32.6 85.5	10 30.7 +32.6 85.0
11°	14 21.6 +32.2 86.3	13 32.0 +32.2 85.7	12 42.4 +32.3 85.2	11 52.9 +32.3 84.6	11 03.3 +32.5 84.1
12°	14 53.8 +32.0 85.4	14 04.2 +32.1 84.9	13 14.7 +32.2 84.3	12 25.2 +32.3 83.8	11 35.8 +32.3 83.2
13°	15 25.8 +31.8 84.5	14 36.3 +31.9 84.0	13 46.9 +31.9 83.5	12 57.5 +32.0 82.9	12 08.1 +32.2 82.4
14°	15 57.6 +31.6 83.6	15 08.2 +31.7 83.1	14 18.8 +31.8 82.6	13 29.5 +31.9 82.1	12 40.3 +32.0 81.5
15°	16 29.2 +31.3 82.8	15 39.9 +31.4 82.2	14 50.6 +31.6 81.7	14 01.4 +31.7 81.2	13 12.3 +31.8 80.7
16°	17 00.5 +31.1 81.9	16 11.3 +31.3 81.4	15 22.2 +31.3 80.8	14 33.1 +31.5 80.3	13 44.1 +31.6 79.8
17°	17 31.6 +30.9 81.0	16 42.6 +31.0 80.5	15 53.5 +31.2 79.9	15 04.6 +31.3 79.4	14 15.7 +31.5 78.9
18°	18 02.5 +30.6 80.1	17 13.6 +30.7 79.6	16 24.7 +30.9 79.1	15 35.9 +31.1 78.5	14 47.2 +31.2 78.0
19°	18 33.1 +30.4 79.2	17 44.3 +30.6 78.7	16 55.6 +30.7 78.2	16 07.0 +30.8 77.7	15 18.4 +31.1 77.1
20°	19 03.5 +30.1 78.3	18 14.9 +30.2 77.8	17 26.3 +30.4 77.3	16 37.8 +30.6 76.8	15 49.5 +30.8 76.3
21°	19 33.6 +29.8 77.3	18 45.1 +30.0 76.8	17 56.7 +30.2 76.4	17 08.4 +30.4 75.9	16 20.3 +30.5 75.4
22°	20 03.4 +29.5 76.4	19 15.1 +29.7 75.9	18 26.9 +30.0 75.4	17 38.8 +30.2 75.0	16 50.8 +30.4 74.5
23°	20 32.9 +29.3 75.5	19 44.8 +29.5 75.0	18 56.9 +29.6 74.5	18 09.0 +29.8 74.0	17 21.2 +30.1 73.6
24°	21 02.2 +28.9 74.6	20 14.3 +29.1 74.1	19 26.5 +29.4 73.6	18 38.8 +29.7 73.1	17 51.3 +29.9 72.7
25°	21 31.1 +28.6 73.6	20 43.4 +28.9 73.2	19 55.9 +29.1 72.7	19 08.5 +29.3 72.2	18 21.2 +29.5 71.7
26°	21 59.7 +28.3 72.7	21 12.3 +28.5 72.2	20 25.0 +28.8 71.8	19 37.8 +29.0 71.3	18 50.7 +29.4 70.8
27°	22 28.0 +27.9 71.7	21 40.8 +28.2 71.3	20 53.8 +28.4 70.8	20 06.8 +28.8 70.4	19 20.1 +29.0 69.9
28°	22 55.9 +27.6 70.8	22 09.0 +27.9 70.3	21 22.2 +28.2 69.9	20 35.6 +28.5 69.4	19 49.1 +28.8 69.0
29°	23 23.5 +27.2 69.8	22 36.9 +27.5 69.4	21 50.4 +27.8 68.9	21 04.1 +28.1 68.5	20 17.9 +28.4 68.0

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 08.6 +33.6 92.8	3 18.9 +33.6 92.2	2 29.2 +33.6 91.7	1 39.5 +33.5 91.1	0 49.7 +33.6 90.6
1°	4 42.2 +33.6 92.0	3 52.5 +33.5 91.4	3 02.8 +33.5 90.8	2 13.0 +33.6 90.3	1 23.3 +33.5 89.7
2°	5 15.8 +33.5 91.1	4 26.0 +33.5 90.6	3 36.3 +33.5 90.0	2 46.6 +33.4 89.5	1 56.8 +33.5 88.9
3°	5 49.3 +33.4 90.3	4 59.5 +33.4 89.7	4 09.8 +33.4 89.2	3 20.0 +33.5 88.6	2 30.3 +33.5 88.1
4°	6 22.7 +33.3 89.5	5 32.9 +33.4 88.9	4 43.2 +33.4 88.4	3 53.5 +33.4 87.8	3 03.8 +33.4 87.2
5°	6 56.0 +33.3 88.6	6 06.3 +33.3 88.1	5 16.6 +33.3 87.5	4 26.9 +33.3 87.0	3 37.2 +33.4 86.4
6°	7 29.3 +33.1 87.8	6 39.6 +33.1 87.2	5 49.9 +33.2 86.7	5 00.2 +33.3 86.1	4 10.6 +33.4 85.6
7°	8 02.4 +33.0 87.0	7 12.7 +33.1 86.4	6 23.1 +33.2 85.8	5 33.5 +33.2 85.3	4 44.0 +33.2 84.7
8°	8 35.4 +33.0 86.1	7 45.8 +33.0 85.6	6 56.3 +33.0 85.0	6 06.7 +33.2 84.5	5 17.2 +33.3 83.9
9°	9 08.4 +32.8 85.3	8 18.8 +32.9 84.7	7 29.3 +33.0 84.2	6 39.9 +33.0 83.6	5 50.5 +33.1 83.1
10°	9 41.2 +32.7 84.4	8 51.7 +32.8 83.9	8 02.3 +32.8 83.3	7 12.9 +33.0 82.8	6 23.6 +33.0 82.2
11°	10 13.9 +32.6 83.6	9 24.5 +32.6 83.0	8 35.1 +32.8 82.5	7 45.9 +32.8 81.9	6 56.6 +33.0 81.4
12°	10 46.5 +32.4 82.7	9 57.1 +32.6 82.2	9 07.9 +32.6 81.6	8 18.7 +32.8 81.1	7 29.6 +32.9 80.5
13°	11 18.9 +32.2 81.9	10 29.7 +32.3 81.3	9 40.5 +32.5 80.8	8 51.5 +32.6 80.2	8 02.5 +32.8 79.7
14°	11 51.1 +32.2 81.0	11 02.0 +32.3 80.5	10 13.0 +32.4 79.9	9 24.1 +32.5 79.4	8 35.3 +32.6 78.9
15°	12 23.3 +31.9 80.1	11 34.3 +32.1 79.6	10 45.4 +32.2 79.1	9 56.6 +32.4 78.5	9 07.9 +32.5 78.0
16°	12 55.2 +31.8 79.3	12 06.4 +31.9 78.7	11 17.6 +32.1 78.2	10 29.0 +32.2 77.7	9 40.4 +32.5 77.2
17°	13 27.0 +31.6 78.4	12 38.3 +31.8 77.9	11 49.7 +31.9 77.3	11 01.2 +32.1 76.8	10 12.9 +32.2 76.3
18°	13 58.6 +31.4 77.5	13 10.1 +31.5 77.0	12 21.6 +31.8 76.5	11 33.3 +32.0 76.0	10 45.1 +32.2 75.4
19°	14 30.0 +31.2 76.6	13 41.6 +31.4 76.1	12 53.4 +31.6 75.6	12 05.3 +31.8 75.1	11 17.3 +31.9 74.6
20°	15 01.2 +31.0 75.7	14 13.0 +31.2 75.2	13 25.0 +31.4 74.7	12 37.1 +31.6 74.2	11 49.2 +31.9 73.7
21°	15 32.2 +30.8 74.9	14 44.2 +31.0 74.4	13 56.4 +31.2 73.9	13 08.7 +31.4 73.4	12 21.1 +31.6 72.9
22°	16 03.0 +30.6 74.0	15 15.2 +30.8 73.5	14 27.6 +31.0 73.0	13 40.1 +31.3 72.5	12 52.7 +31.5 72.0
23°	16 33.6 +30.3 73.1	15 46.0 +30.6 72.6	14 58.6 +30.8 72.1	14 11.4 +31.0 71.6	13 24.2 +31.3 71.1
24°	17 03.9 +30.1 72.2	16 16.6 +30.3 71.7	15 29.4 +30.6 71.2	14 42.4 +30.9 70.7	13 55.5 +31.2 70.2
25°	17 34.0 +29.8 71.3	16 46.9 +30.2 70.8	16 00.0 +30.4 70.3	15 13.3 +30.6 69.8	14 26.7 +30.9 69.3
26°	18 03.8 +29.6 70.4	17 17.1 +29.8 69.9	16 30.4 +30.2 69.4	15 43.9 +30.5 68.9	14 57.6 +30.7 68.5
27°	18 33.4 +29.3 69.4	17 46.9 +29.6 69.0	17 00.6 +29.9 68.5	16 14.4 +30.2 68.0	15 28.3 +30.5 67.6
28°	19 02.7 +29.1 68.5	18 16.5 +29.4 68.1	17 30.5 +29.6 67.6	16 44.6 +29.9 67.1	15 58.8 +30.3 66.7
29°	19 31.8 +28.8 67.6	18 45.9 +29.1 67.1	18 00.1 +29.4 66.7	17 14.5 +29.7 66.2	16 29.1 +30.0 65.8

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Latitude 34°

Declination SAME name as Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 +33.6 90.0	-0 49.7 +33.5	-1 39.5 +33.6	-2 29.2 +33.6	-3 18.9 +33.6
1°	0 33.6 +33.5 89.2	-0 16.2 +33.6	-1 05.9 +33.6	-1 55.6 +33.6	-2 45.3 +33.7
2°	1 07.1 +33.5 88.3	0 17.4 +33.5 87.8	-0 32.3 +33.6	-1 22.0 +33.7	-2 11.6 +33.7
3°	1 40.6 +33.5 87.5	0 50.9 +33.6 87.0	0 01.3 +33.6 86.4	-0 48.3 +33.6	-1 37.9 +33.7
4°	2 14.1 +33.5 86.7	1 24.5 +33.5 86.1	0 34.9 +33.6 85.6	-0 14.7 +33.7	-1 04.2 +33.7
5°	2 47.6 +33.5 85.9	1 58.0 +33.5 85.3	1 08.5 +33.5 84.7	0 19.0 +33.6 84.2	-0 30.5 +33.7
6°	3 21.1 +33.4 85.0	2 31.5 +33.5 84.5	1 42.0 +33.6 83.9	0 52.6 +33.6 83.4	0 03.2 +33.8 82.8
7°	3 54.5 +33.3 84.2	3 05.0 +33.4 83.6	2 15.6 +33.5 83.1	1 26.2 +33.7 82.5	0 37.0 +33.7 82.0
8°	4 27.8 +33.3 83.4	3 38.4 +33.4 82.8	2 49.1 +33.5 82.2	1 59.9 +33.6 81.7	1 10.7 +33.7 81.1
9°	5 01.1 +33.2 82.5	4 11.8 +33.4 82.0	3 22.6 +33.4 81.4	2 33.5 +33.5 80.9	1 44.4 +33.7 80.3
10°	5 34.3 +33.2 81.7	4 45.2 +33.2 81.1	3 56.0 +33.4 80.6	3 07.0 +33.5 80.0	2 18.1 +33.6 79.5
11°	6 07.5 +33.1 80.8	5 18.4 +33.2 80.3	4 29.4 +33.4 79.8	3 40.5 +33.5 79.2	2 51.7 +33.6 78.7
12°	6 40.6 +33.0 80.0	5 51.6 +33.2 79.5	5 02.8 +33.3 78.9	4 14.0 +33.4 78.4	3 25.3 +33.6 77.8
13°	7 13.6 +32.9 79.2	6 24.8 +33.0 78.6	5 36.1 +33.2 78.1	4 47.4 +33.4 77.5	3 58.9 +33.5 77.0
14°	7 46.5 +32.8 78.3	6 57.8 +33.0 77.8	6 09.3 +33.1 77.2	5 20.8 +33.3 76.7	4 32.4 +33.5 76.2
15°	8 19.3 +32.7 77.5	7 30.8 +32.9 76.9	6 42.4 +33.0 76.4	5 54.1 +33.2 75.9	5 05.9 +33.4 75.3
16°	8 52.0 +32.6 76.6	8 03.7 +32.7 76.1	7 15.4 +33.0 75.6	6 27.3 +33.2 75.0	5 39.3 +33.4 74.5
17°	9 24.6 +32.4 75.8	8 36.4 +32.7 75.3	7 48.4 +32.8 74.7	7 00.5 +33.0 74.2	6 12.7 +33.2 73.7
18°	9 57.0 +32.4 74.9	9 09.1 +32.5 74.4	8 21.2 +32.8 73.9	7 33.5 +32.9 73.4	6 45.9 +33.2 72.8
19°	10 29.4 +32.2 74.1	9 41.6 +32.4 73.5	8 54.0 +32.6 73.0	8 06.4 +32.9 72.5	7 19.1 +33.1 72.0
20°	11 01.6 +32.0 73.2	10 14.0 +32.3 72.7	9 26.6 +32.5 72.2	8 39.3 +32.7 71.7	7 52.2 +32.9 71.1
21°	11 33.6 +31.9 72.3	10 46.3 +32.1 71.8	9 59.1 +32.4 71.3	9 12.0 +32.6 70.8	8 25.1 +32.9 70.3
22°	12 05.5 +31.7 71.5	11 18.4 +32.0 71.0	10 31.5 +32.2 70.5	9 44.6 +32.5 70.0	8 58.0 +32.7 69.5
23°	12 37.2 +31.6 70.6	11 50.4 +31.8 70.1	11 03.7 +32.1 69.6	10 17.1 +32.4 69.1	9 30.7 +32.7 68.6
24°	13 08.8 +31.4 69.7	12 22.2 +31.7 69.2	11 35.8 +31.9 68.8	10 49.5 +32.2 68.3	10 03.4 +32.5 67.7
25°	13 40.2 +31.2 68.9	12 53.9 +31.4 68.4	12 07.7 +31.8 67.9	11 21.7 +32.1 67.4	10 35.9 +32.3 66.9
26°	14 11.4 +31.0 68.0	13 25.3 +31.4 67.5	12 39.5 +31.6 67.0	11 53.8 +31.9 66.5	11 08.2 +32.2 66.0
27°	14 42.4 +30.8 67.1	13 56.7 +31.1 66.6	13 11.1 +31.4 66.1	12 25.7 +31.7 65.7	11 40.4 +32.1 65.2
28°	15 13.2 +30.6 66.2	14 27.8 +30.9 65.7	13 42.5 +31.2 65.3	12 57.4 +31.6 64.8	12 12.5 +31.9 64.3
29°	15 43.8 +30.4 65.3	14 58.7 +30.7 64.9	14 13.7 +31.1 64.4	13 29.0 +31.4 63.9	12 44.4 +31.7 63.4

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-4 08.6 +33.7	-4 58.3 +33.7	-5 47.9 +33.7	-6 37.5 +33.8	-7 27.1 +33.9
1°	-3 34.9 +33.7	-4 24.6 +33.8	-5 14.2 +33.9	-6 03.7 +33.9	-6 53.2 +34.0
2°	-3 01.2 +33.7	-3 50.8 +33.8	-4 40.3 +33.8	-5 29.8 +33.9	-6 19.2 +34.0
3°	-2 27.5 +33.8	-3 17.0 +33.9	-4 06.5 +34.0	-4 55.9 +34.1	-5 45.2 +34.1
4°	-1 53.7 +33.8	-2 43.1 +33.8	-3 32.5 +34.0	-4 21.8 +34.0	-5 11.1 +34.2
5°	-1 19.9 +33.8	-2 09.3 +34.0	-2 58.5 +34.0	-3 47.8 +34.2	-4 36.9 +34.2
6°	-0 46.1 +33.8	-1 35.3 +33.9	-2 24.5 +34.0	-3 13.6 +34.1	-4 02.7 +34.3
7°	-0 12.3 +33.9	-1 01.4 +33.9	-1 50.5 +34.1	-2 39.5 +34.2	-3 28.4 +34.4
8°	0 21.6 +33.8 80.6	-0 27.5 +34.0	-1 16.4 +34.1	-2 05.3 +34.3	-2 54.0 +34.3
9°	0 55.4 +33.8 79.8	0 06.5 +33.9 79.2	-0 42.3 +34.1	-1 31.0 +34.2	-2 19.7 +34.4
10°	1 29.2 +33.8 78.9	0 40.4 +34.0 78.4	-0 08.2 +34.1	-0 56.8 +34.2	-1 45.3 +34.4
11°	2 03.0 +33.8 78.1	1 14.4 +33.9 77.5	0 25.9 +34.0 77.0	-0 22.6 +34.3	-1 10.9 +34.5
12°	2 36.8 +33.7 77.3	1 48.3 +33.9 76.7	0 59.9 +34.1 76.2	0 11.7 +34.3 75.6	-0 36.4 +34.4
13°	3 10.5 +33.7 76.4	2 22.2 +33.9 75.9	1 34.0 +34.1 75.3	0 46.0 +34.2 74.8	-0 02.0 +34.5
14°	3 44.2 +33.7 75.6	2 56.1 +33.8 75.1	2 08.1 +34.0 74.5	1 20.2 +34.2 74.0	0 32.5 +34.4 73.4
15°	4 17.9 +33.6 74.8	3 29.9 +33.8 74.2	2 42.1 +34.0 73.7	1 54.4 +34.2 73.1	1 06.9 +34.4 72.6
16°	4 51.5 +33.5 74.0	4 03.7 +33.8 73.4	3 16.1 +34.0 72.9	2 28.6 +34.2 72.3	1 41.3 +34.4 71.8
17°	5 25.0 +33.5 73.1	4 37.5 +33.6 72.6	3 50.1 +33.9 72.0	3 02.8 +34.2 71.5	2 15.7 +34.4 71.0
18°	5 58.5 +33.3 72.3	5 11.1 +33.7 71.8	4 24.0 +33.8 71.2	3 37.0 +34.0 70.7	2 50.1 +34.3 70.1
19°	6 31.8 +33.4 71.5	5 44.8 +33.5 70.9	4 57.8 +33.8 70.4	4 11.0 +34.1 69.9	3 24.4 +34.3 69.3
20°	7 05.2 +33.2 70.6	6 18.3 +33.5 70.1	5 31.6 +33.7 69.6	4 45.1 +34.0 69.0	3 58.7 +34.3 68.5
21°	7 38.4 +33.1 69.8	6 51.8 +33.4 69.3	6 05.3 +33.7 68.7	5 19.1 +33.9 68.2	4 33.0 +34.2 67.7
22°	8 11.5 +33.0 68.9	7 25.2 +33.2 68.4	6 39.0 +33.5 67.9	5 53.0 +33.8 67.4	5 07.2 +34.1 66.8
23°	8 44.5 +32.9 68.1	7 58.4 +33.2 67.6	7 12.5 +33.5 67.1	6 26.8 +33.8 66.5	5 41.3 +34.0 66.0
24°	9 17.4 +32.8 67.2	8 31.6 +33.1 66.7	7 46.0 +33.4 66.2	7 00.6 +33.7 65.7	6 15.3 +34.0 65.2
25°	9 50.2 +32.7 66.4	9 04.7 +33.0 65.9	8 19.4 +33.3 65.4	7 34.3 +33.5 64.9	6 49.3 +33.9 64.4
26°	10 22.9 +32.5 65.5	9 37.7 +32.8 65.0	8 52.7 +33.1 64.5	8 07.8 +33.5 64.0	7 23.2 +33.8 63.5
27°	10 55.4 +32.4 64.7	10 10.5 +32.7 64.2	9 25.8 +33.0 63.7	8 41.3 +33.4 63.2	7 57.0 +33.7 62.7
28°	11 27.8 +32.2 63.8	10 43.2 +32.6 63.3	9 58.8 +32.9 62.9	9 14.7 +33.2 62.4	8 30.7 +33.6 61.9
29°	12 00.0 +32.0 63.0	11 15.8 +32.4 62.5	10 31.7 +32.8 62.0	9 47.9 +33.1 61.5	9 04.3 +33.5 61.0

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Dec	LHA 100° / 260°	LHA 101° / 259°	LHA 102° / 258°	LHA 103° / 257°	LHA 104° / 256°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-8 16.6 +33.9	-9 06.1 +34.0	-9 55.5 +34.1		
1°	-7 42.7 +34.1	-8 32.1 +34.2	-9 21.4 +34.2		
2°	-7 08.6 +34.1	-7 57.9 +34.2	-8 47.2 +34.4	-9 36.3 +34.4	
3°	-6 34.5 +34.2	-7 23.7 +34.3	-8 12.8 +34.4	-9 01.9 +34.6	-9 50.8 +34.7
4°	-6 00.3 +34.3	-6 49.4 +34.5	-7 38.4 +34.6	-8 27.3 +34.7	-9 16.1 +34.8
5°	-5 26.0 +34.4	-6 14.9 +34.5	-7 03.8 +34.6	-7 52.6 +34.8	-8 41.3 +34.9
6°	-4 51.6 +34.4	-5 40.4 +34.5	-6 29.2 +34.7	-7 17.8 +34.8	-8 06.4 +35.0
7°	-4 17.2 +34.5	-5 05.9 +34.6	-5 54.5 +34.8	-6 43.0 +35.0	-7 31.4 +35.2
8°	-3 42.7 +34.5	-4 31.3 +34.7	-5 19.7 +34.8	-6 08.0 +35.0	-6 56.2 +35.2
9°	-3 08.2 +34.6	-3 56.6 +34.8	-4 44.9 +34.9	-5 33.0 +35.1	-6 21.0 +35.2
10°	-2 33.6 +34.6	-3 21.8 +34.7	-4 10.0 +35.0	-4 57.9 +35.1	-5 45.8 +35.4
11°	-1 59.0 +34.6	-2 47.1 +34.8	-3 35.0 +35.0	-4 22.8 +35.2	-5 10.4 +35.4
12°	-1 24.4 +34.6	-2 12.3 +34.9	-3 00.0 +35.0	-3 47.6 +35.3	-4 35.0 +35.4
13°	-0 49.8 +34.7	-1 37.4 +34.8	-2 25.0 +35.1	-3 12.3 +35.2	-3 59.6 +35.5
14°	-0 15.1 +34.6	-1 02.6 +34.9	-1 49.9 +35.1	-2 37.1 +35.3	-3 24.1 +35.6
15°	0 19.5 +34.6 72.0	-0 27.7 +34.8	-1 14.8 +35.1	-2 01.8 +35.4	-2 48.5 +35.6
16°	0 54.1 +34.7 71.2	0 07.1 +34.9 70.7	-0 39.7 +35.1	-1 26.4 +35.3	-2 12.9 +35.6
17°	1 28.8 +34.6 70.4	0 42.0 +34.9 69.9	-0 04.6 +35.1	-0 51.1 +35.4	-1 37.3 +35.6
18°	2 03.4 +34.6 69.6	1 16.9 +34.8 69.0	0 30.5 +35.1 68.5	-0 15.7 +35.4	-1 01.7 +35.6
19°	2 38.0 +34.5 68.8	1 51.7 +34.8 68.2	1 05.6 +35.1 67.7	0 19.7 +35.3 67.1	-0 26.1 +35.7
20°	3 12.5 +34.5 68.0	2 26.5 +34.8 67.4	1 40.7 +35.1 66.9	0 55.0 +35.4 66.3	0 09.6 +35.6 65.8
21°	3 47.0 +34.5 67.1	3 01.3 +34.8 66.6	2 15.8 +35.0 66.0	1 30.4 +35.3 65.5	0 45.2 +35.7 64.9
22°	4 21.5 +34.4 66.3	3 36.1 +34.7 65.8	2 50.8 +35.0 65.2	2 05.7 +35.3 64.7	1 20.9 +35.6 64.1
23°	4 55.9 +34.4 65.5	4 10.8 +34.6 65.0	3 25.8 +35.0 64.4	2 41.0 +35.3 63.9	1 56.5 +35.6 63.3
24°	5 30.3 +34.3 64.7	4 45.4 +34.6 64.1	4 00.8 +34.9 63.6	3 16.3 +35.3 63.1	2 32.1 +35.5 62.5
25°	6 04.6 +34.2 63.8	5 20.0 +34.6 63.3	4 35.7 +34.8 62.8	3 51.6 +35.1 62.3	3 07.6 +35.6 61.7
26°	6 38.8 +34.1 63.0	5 54.6 +34.4 62.5	5 10.5 +34.8 62.0	4 26.7 +35.2 61.5	3 43.2 +35.4 60.9
27°	7 12.9 +34.1 62.2	6 29.0 +34.4 61.7	5 45.3 +34.8 61.2	5 01.9 +35.1 60.6	4 18.6 +35.5 60.1
28°	7 47.0 +33.9 61.4	7 03.4 +34.3 60.8	6 20.1 +34.6 60.3	5 37.0 +35.0 59.8	4 54.1 +35.3 59.3
29°	8 20.9 +33.8 60.5	7 37.7 +34.2 60.0	6 54.7 +34.6 59.5	6 12.0 +34.9 59.0	5 29.4 +35.4 58.5

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°					
1°					
2°					
3°					
4°					
5°	-9 29.9 +35.1				
6°	-8 54.8 +35.2	-9 43.1 +35.3			
7°	-8 19.6 +35.3	-9 07.8 +35.5	-9 55.8 +35.7		
8°	-7 44.3 +35.4	-8 32.3 +35.6	-9 20.1 +35.8		
9°	-7 08.9 +35.4	-7 56.7 +35.7	-8 44.3 +35.9	-9 31.8 +36.1	
10°	-6 33.5 +35.6	-7 21.0 +35.7	-8 08.4 +35.9	-8 55.7 +36.2	-9 42.8 +36.5
11°	-5 57.9 +35.6	-6 45.3 +35.9	-7 32.5 +36.1	-8 19.5 +36.3	-9 06.3 +36.5
12°	-5 22.3 +35.7	-6 09.4 +35.9	-6 56.4 +36.2	-7 43.2 +36.4	-8 29.8 +36.7
13°	-4 46.6 +35.7	-5 33.5 +36.0	-6 20.2 +36.2	-7 06.8 +36.5	-7 53.1 +36.7
14°	-4 10.9 +35.8	-4 57.5 +36.0	-5 44.0 +36.3	-6 30.3 +36.5	-7 16.4 +36.8
15°	-3 35.1 +35.8	-4 21.5 +36.1	-5 07.7 +36.3	-5 53.8 +36.6	-6 39.6 +36.9
16°	-2 59.3 +35.9	-3 45.4 +36.1	-4 31.4 +36.4	-5 17.2 +36.7	-6 02.7 +36.9
17°	-2 23.4 +35.9	-3 09.3 +36.2	-3 55.0 +36.5	-4 40.5 +36.7	-5 25.8 +37.0
18°	-1 47.5 +35.9	-2 33.1 +36.2	-3 18.5 +36.4	-4 03.8 +36.8	-4 48.8 +37.1
19°	-1 11.6 +35.9	-1 56.9 +36.2	-2 42.1 +36.5	-3 27.0 +36.8	-4 11.7 +37.1
20°	-0 35.7 +36.0	-1 20.7 +36.2	-2 05.6 +36.6	-2 50.2 +36.9	-3 34.6 +37.2
21°	0 00.3 +35.9 64.4	-0 44.5 +36.3	-1 29.0 +36.5	-2 13.3 +36.8	-2 57.4 +37.2
22°	0 36.2 +35.9 63.6	-0 08.2 +36.2	-0 52.5 +36.6	-1 36.5 +36.9	-2 20.2 +37.2
23°	1 12.1 +35.9 62.8	0 28.0 +36.2 62.2	-0 15.9 +36.6	-0 59.6 +36.9	-1 43.0 +37.2
24°	1 48.0 +35.9 62.0	1 04.2 +36.3 61.4	0 20.7 +36.5 60.9	-0 22.7 +36.9	-1 05.8 +37.3
25°	2 23.9 +35.9 61.2	1 40.5 +36.2 60.6	0 57.2 +36.6 60.1	0 14.2 +36.9 59.5	-0 28.5 +37.2
26°	2 59.8 +35.8 60.4	2 16.7 +36.2 59.8	1 33.8 +36.5 59.3	0 51.1 +36.9 58.7	0 08.7 +37.3 58.2
27°	3 35.6 +35.8 59.6	2 52.9 +36.1 59.0	2 10.3 +36.5 58.5	1 28.0 +36.9 58.0	0 46.0 +37.2 57.4
28°	4 11.4 +35.8 58.8	3 29.0 +36.1 58.2	2 46.8 +36.5 57.7	2 04.9 +36.9 57.2	1 23.2 +37.3 56.6
29°	4 47.2 +35.6 58.0	4 05.1 +36.1 57.4	3 23.3 +36.4 56.9	2 41.8 +36.8 56.4	2 00.5 +37.2 55.8

Latitude 34°

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°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°	-9 53.0 +36.8				
12°	-9 16.2 +36.9				
13°	-8 39.3 +37.0	-9 25.3 +37.3			
14°	-8 02.3 +37.1	-8 48.0 +37.3	-9 33.5 +37.6		
15°	-7 25.2 +37.1	-8 10.7 +37.5	-8 55.9 +37.8		
16°	-6 48.1 +37.3	-7 33.2 +37.5	-8 18.1 +37.8		
17°	-6 10.8 +37.3	-6 55.7 +37.6	-7 40.3 +37.9		
18°	-5 33.5 +37.3	-6 18.1 +37.7	-7 02.4 +38.0		
19°	-4 56.2 +37.5	-5 40.4 +37.7	-6 24.4 +38.1		
20°	-4 18.7 +37.4	-5 02.7 +37.8	-5 46.3 +38.1		
21°	-3 41.3 +37.6	-4 24.9 +37.9	-5 08.2 +38.2		
22°	-3 03.7 +37.5	-3 47.0 +37.9	-4 30.0 +38.2		
23°	-2 26.2 +37.6	-3 09.1 +37.9	-3 51.8 +38.3		
24°	-1 48.6 +37.6	-2 31.2 +37.9	-3 13.5 +38.3		
25°	-1 11.0 +37.6	-1 53.3 +38.0	-2 35.2 +38.3		
26°	-0 33.4 +37.6	-1 15.3 +38.0	-1 56.9 +38.4		
27°	0 04.2 +37.6 56.9	-0 37.3 +38.0	-1 18.5 +38.3		
28°	0 41.8 +37.6 56.1	0 00.7 +38.0 55.5	-0 40.2 +38.4		
29°	1 19.4 +37.6 55.3	0 38.7 +38.0 54.7	-0 01.8 +38.4		

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
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19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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Declination SAME name as Latitude

Latitude 35°

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°	55 00.0 +60.0 180.0	54 59.3 +59.9 178.3	54 57.0 +59.9 176.5	54 53.3 +59.8 174.8	54 48.1 +59.7 173.0
1°	56 00.0 +60.0 180.0	55 59.2 +60.0 178.2	55 56.9 +60.0 176.4	55 53.1 +59.8 174.6	55 47.8 +59.6 172.9
2°	57 00.0 +60.0 180.0	56 59.2 +60.0 178.2	56 56.9 +59.9 176.3	56 52.9 +59.8 174.5	56 47.4 +59.7 172.7
3°	58 00.0 +60.0 180.0	57 59.2 +60.0 178.1	57 56.8 +59.9 176.2	57 52.7 +59.8 174.4	57 47.1 +59.7 172.5
4°	59 00.0 +60.0 180.0	58 59.2 +59.9 178.1	58 56.7 +59.9 176.1	58 52.5 +59.8 174.2	58 46.8 +59.6 172.3
5°	60 00.0 +60.0 180.0	59 59.1 +60.0 178.0	59 56.6 +59.9 176.0	59 52.3 +59.8 174.0	59 46.4 +59.6 172.1
6°	61 00.0 +60.0 180.0	60 59.1 +60.0 177.9	60 56.5 +59.9 175.9	60 52.1 +59.8 173.9	60 46.0 +59.6 171.8
7°	62 00.0 +60.0 180.0	61 59.1 +60.0 177.9	61 56.4 +59.9 175.8	61 51.9 +59.7 173.7	61 45.6 +59.5 171.6
8°	63 00.0 +60.0 180.0	62 59.1 +59.9 177.8	62 56.3 +59.8 175.6	62 51.6 +59.7 173.5	62 45.1 +59.5 171.3
9°	64 00.0 +60.0 180.0	63 59.0 +60.0 177.7	63 56.1 +59.9 175.5	63 51.3 +59.7 173.3	63 44.6 +59.5 171.0
10°	65 00.0 +60.0 180.0	64 59.0 +60.0 177.7	64 56.0 +59.9 175.3	64 51.0 +59.7 173.0	64 44.1 +59.4 170.7
11°	66 00.0 +60.0 180.0	65 59.0 +59.9 177.6	65 55.9 +59.8 175.2	65 50.7 +59.7 172.8	65 43.5 +59.4 170.4
12°	67 00.0 +60.0 180.0	66 58.9 +60.0 177.5	66 55.7 +59.8 175.0	66 50.4 +59.6 172.5	66 42.9 +59.4 170.1
13°	68 00.0 +60.0 180.0	67 58.9 +59.9 177.4	67 55.5 +59.9 174.8	67 50.0 +59.6 172.2	67 42.3 +59.3 169.7
14°	69 00.0 +60.0 180.0	68 58.8 +60.0 177.3	68 55.4 +59.8 174.6	68 49.6 +59.5 171.9	68 41.6 +59.2 169.3
15°	70 00.0 +60.0 180.0	69 58.8 +59.9 177.2	69 55.2 +59.7 174.4	69 49.1 +59.6 171.6	69 40.8 +59.1 168.8
16°	71 00.0 +60.0 180.0	70 58.7 +60.0 177.0	70 54.9 +59.8 174.1	70 48.7 +59.4 171.2	70 39.9 +59.1 168.3
17°	72 00.0 +60.0 180.0	71 58.7 +59.9 176.9	71 54.7 +59.7 173.8	71 48.1 +59.4 170.8	71 39.0 +59.9 167.8
18°	73 00.0 +60.0 180.0	72 58.6 +59.9 176.7	72 54.4 +59.7 173.5	72 47.5 +59.3 170.3	72 37.9 +58.8 167.2
19°	74 00.0 +60.0 180.0	73 58.5 +59.9 176.6	73 54.1 +59.7 173.2	73 46.8 +59.3 169.8	73 36.7 +58.7 166.5
20°	75 00.0 +60.0 180.0	74 58.4 +59.9 176.4	74 53.8 +59.6 172.8	74 46.1 +59.1 169.2	74 35.4 +58.5 165.7
21°	76 00.0 +60.0 180.0	75 58.3 +59.9 176.1	75 53.4 +59.6 172.3	75 45.2 +59.0 168.5	75 33.9 +58.3 164.9
22°	77 00.0 +60.0 180.0	76 58.2 +59.9 175.9	76 53.0 +59.4 171.8	76 44.2 +58.9 167.8	76 32.2 +58.0 163.9
23°	78 00.0 +60.0 180.0	77 58.1 +59.8 175.6	77 52.4 +59.4 171.2	77 43.1 +58.7 166.9	77 30.2 +57.7 162.7
24°	79 00.0 +60.0 180.0	78 57.9 +59.9 175.2	78 51.8 +59.3 170.5	78 41.8 +58.4 165.9	78 27.9 +57.3 161.4
25°	80 00.0 +60.0 180.0	79 57.8 +59.7 174.8	79 51.1 +59.1 169.7	79 40.2 +58.1 164.7	79 25.2 +56.7 159.9
26°	81 00.0 +60.0 180.0	80 57.5 +59.8 174.3	80 50.2 +58.9 168.6	80 38.3 +57.6 163.2	80 21.9 +56.0 158.0
27°	82 00.0 +60.0 180.0	81 57.3 +59.6 173.6	81 49.1 +58.6 167.4	81 35.9 +57.0 161.4	81 17.9 +55.0 155.7
28°	83 00.0 +60.0 180.0	82 56.9 +59.5 172.8	82 47.7 +58.2 165.8	82 32.9 +56.1 159.1	82 12.9 +53.7 153.0
29°	84 00.0 +60.0 180.0	83 56.4 +59.4 171.7	83 45.9 +57.5 163.7	83 29.0 +54.8 156.2	83 06.6 +51.6 149.4

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°	54 41.4 +59.5 171.3	54 33.3 +59.3 169.6	54 23.7 +59.1 167.9	54 12.7 +58.8 166.2	54 00.3 +58.5 164.6
1°	55 40.9 +59.5 171.1	55 32.6 +59.3 169.4	55 22.8 +59.0 167.6	55 11.5 +58.8 165.9	54 58.8 +58.5 164.2
2°	56 40.4 +59.5 170.9	56 31.9 +59.2 169.1	56 21.8 +59.0 167.3	56 10.3 +58.7 165.5	55 57.3 +58.3 163.8
3°	57 39.9 +59.4 170.6	57 31.1 +59.2 168.8	57 20.8 +58.9 167.0	57 09.0 +58.6 165.2	56 55.6 +58.3 163.4
4°	58 39.3 +59.5 170.4	58 30.3 +59.2 168.5	58 19.7 +58.9 166.6	58 07.6 +58.5 164.8	57 53.9 +58.2 162.9
5°	59 38.8 +59.3 170.1	59 29.5 +59.1 168.2	59 18.6 +58.8 166.2	59 06.1 +58.5 164.3	58 52.1 +58.1 162.5
6°	60 38.1 +59.4 169.8	60 28.6 +59.1 167.8	60 17.4 +58.7 165.8	60 04.6 +58.3 163.9	59 50.2 +57.9 162.0
7°	61 37.5 +59.3 169.5	61 27.7 +59.0 167.5	61 16.1 +58.7 165.4	61 02.9 +58.3 163.4	60 48.1 +57.8 161.4
8°	62 36.8 +59.2 169.2	62 26.7 +58.9 167.1	62 14.8 +58.6 165.0	62 01.2 +58.1 162.9	61 45.9 +57.7 160.9
9°	63 36.0 +59.2 168.8	63 25.6 +58.8 166.7	63 13.4 +58.4 164.5	62 59.3 +58.1 162.4	62 43.6 +57.5 160.3
10°	64 35.2 +59.2 168.5	64 24.4 +58.8 166.2	64 11.8 +58.4 164.0	63 57.4 +57.8 161.8	63 41.1 +57.4 159.7
11°	65 34.4 +59.0 168.1	65 23.2 +58.7 165.7	65 10.2 +58.2 163.4	64 55.2 +57.7 161.2	64 38.5 +57.1 159.0
12°	66 33.4 +59.0 167.6	66 21.9 +58.5 165.2	66 08.4 +58.0 162.9	65 52.9 +57.6 160.5	65 35.6 +57.0 158.3
13°	67 32.4 +58.9 167.2	67 20.4 +58.5 164.7	67 06.4 +57.9 162.2	66 50.5 +57.3 159.8	66 32.6 +56.6 157.5
14°	68 31.3 +58.8 166.6	68 18.9 +58.3 164.1	68 04.3 +57.8 161.5	67 47.8 +57.1 159.1	67 29.2 +56.4 156.6
15°	69 30.1 +58.7 166.1	69 17.2 +58.1 163.4	69 02.1 +57.5 160.8	68 44.9 +56.8 158.2	68 25.6 +56.1 155.7
16°	70 28.8 +58.5 165.5	70 15.3 +57.9 162.7	69 59.6 +57.2 160.0	69 41.7 +56.5 157.3	69 21.7 +55.7 154.7
17°	71 27.3 +58.4 164.8	71 13.2 +57.8 161.9	70 56.8 +57.0 159.1	70 38.2 +56.1 156.3	70 17.4 +55.3 153.7
18°	72 25.7 +58.2 164.1	72 11.0 +57.4 161.0	71 53.8 +56.6 158.1	71 34.3 +55.8 155.2	71 12.7 +54.8 152.5
19°	73 23.9 +58.0 163.2	73 08.4 +57.2 160.1	72 50.4 +56.3 157.0	72 30.1 +55.2 154.0	72 07.5 +54.2 151.2
20°	74 21.9 +57.7 162.3	74 05.6 +56.8 159.0	73 46.7 +55.8 155.8	73 25.3 +54.8 152.7	73 01.7 +53.6 149.8
21°	75 19.6 +57.4 161.3	75 02.4 +56.4 157.8	74 42.5 +55.2 154.4	74 20.1 +54.0 151.2	73 55.3 +52.7 148.2
22°	76 17.0 +57.0 160.1	75 58.8 +55.8 156.4	75 37.7 +54.6 152.9	75 14.1 +53.2 149.6	74 48.0 +51.9 146.4
23°	77 14.0 +56.5 158.7	76 54.6 +55.2 154.9	76 32.3 +53.8 151.2	76 07.3 +52.3 147.7	75 39.9 +50.7 144.4
24°	78 10.5 +55.9 157.1	77 49.8 +54.4 153.1	77 26.1 +52.8 149.2	76 59.6 +51.1 145.6	76 30.6 +49.5 142.2
25°	79 06.4 +55.2 155.3	78 44.2 +53.4 151.0	78 18.9 +51.5 147.0	77 50.7 +49.7 143.2	77 20.1 +47.8 139.7
26°	80 01.6 +54.1 153.1	79 37.6 +52.1 148.5	79 10.4 +50.0 144.3	78 40.4 +47.9 140.4	78 07.9 +45.9 136.9
27°	80 55.7 +52.7 150.5	80 29.7 +50.4 145.7	80 00.4 +48.0 141.3	79 28.3 +45.7 137.3	78 53.8 +43.5 133.6
28°	81 48.4 +50.9 147.3	81 20.1 +48.1 142.2	80 48.4 +45.5 137.7	80 14.0 +43.0 133.6	79 37.3 +40.7 129.9
29°	82 39.3 +48.4 143.4	82 08.2 +45.1 138.1	81 33.9 +42.1 133.4	80 57.0 +39.4 129.3	80 18.0 +37.0 125.7

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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°	53 46.5 +58.2 162.9	53 31.4 +57.9 161.3	53 15.0 +57.4 159.7	52 57.3 +57.0 158.1	52 38.3 +56.6 156.5
1°	54 44.7 +58.1 162.5	54 29.3 +57.7 160.8	54 12.4 +57.4 159.2	53 54.3 +56.9 157.6	53 34.9 +56.5 156.0
2°	55 42.8 +58.0 162.1	55 27.0 +57.6 160.4	55 09.8 +57.2 158.7	54 51.2 +56.8 157.0	54 31.4 +56.3 155.4
3°	56 40.8 +57.9 161.6	56 24.6 +57.5 159.9	56 07.0 +57.0 158.1	55 48.0 +56.6 156.4	55 27.7 +56.1 154.8
4°	57 38.7 +57.8 161.1	57 22.1 +57.3 159.3	57 04.0 +56.9 157.6	56 44.6 +56.4 155.8	56 23.8 +55.9 154.1
5°	58 36.5 +57.7 160.6	58 19.4 +57.3 158.8	58 00.9 +56.8 157.0	57 41.0 +56.2 155.2	57 19.7 +55.7 153.5
6°	59 34.2 +57.5 160.1	59 16.7 +57.0 158.2	58 57.7 +56.5 156.4	58 37.2 +56.1 154.6	58 15.4 +55.5 152.8
7°	60 31.7 +57.3 159.5	60 13.7 +56.8 157.6	59 54.2 +56.3 155.7	59 33.3 +55.7 153.9	59 10.9 +55.2 152.1
8°	61 29.0 +57.2 158.9	61 10.5 +56.7 156.9	60 50.5 +56.1 155.0	60 29.0 +55.5 153.1	60 06.1 +54.9 151.3
9°	62 26.2 +57.0 158.2	62 07.2 +56.4 156.2	61 46.6 +55.9 154.3	61 24.5 +55.3 152.3	61 01.0 +54.6 150.5
10°	63 23.2 +56.8 157.6	63 03.6 +56.2 155.5	62 42.5 +55.5 153.5	62 19.8 +54.9 151.5	61 55.6 +54.2 149.6
11°	64 20.0 +56.6 156.8	63 59.8 +55.9 154.7	63 38.0 +55.3 152.6	63 14.7 +54.5 150.6	62 49.8 +53.9 148.7
12°	65 16.6 +56.2 156.0	64 55.7 +55.7 153.9	64 33.3 +54.9 151.7	64 09.2 +54.2 149.7	63 43.7 +53.4 147.7
13°	66 12.8 +56.0 155.2	65 51.4 +55.2 153.0	65 28.2 +54.5 150.8	65 03.4 +53.8 148.7	64 37.1 +53.0 146.6
14°	67 08.8 +55.7 154.3	66 46.6 +54.9 152.0	66 22.7 +54.1 149.8	65 57.2 +53.2 147.6	65 30.1 +52.4 145.5
15°	68 04.5 +55.3 153.3	67 41.5 +54.5 151.0	67 16.8 +53.6 148.7	66 50.4 +52.8 146.5	66 22.5 +51.9 144.3
16°	68 59.8 +54.8 152.2	68 36.0 +53.9 149.8	68 10.4 +53.0 147.5	67 43.2 +52.1 145.2	67 14.4 +51.1 143.1
17°	69 54.6 +54.4 151.1	69 29.9 +53.4 148.6	69 03.4 +52.5 146.2	68 35.3 +51.4 143.9	68 05.5 +50.5 141.7
18°	70 49.0 +53.8 149.8	70 23.3 +52.8 147.3	69 55.9 +51.7 144.8	69 26.7 +50.7 142.5	68 56.0 +49.6 140.2
19°	71 42.8 +53.1 148.4	71 16.1 +52.0 145.8	70 47.6 +50.9 143.3	70 17.4 +49.8 140.9	69 45.6 +48.7 138.6
20°	72 35.9 +52.4 146.9	72 08.1 +51.2 144.2	71 38.5 +50.0 141.7	71 07.2 +48.8 139.2	70 34.3 +47.7 136.9
21°	73 28.3 +51.5 145.3	72 59.3 +50.2 142.5	72 28.5 +48.9 139.9	71 56.0 +47.7 137.4	71 22.0 +46.4 135.0
22°	74 19.8 +50.4 143.4	73 49.5 +49.1 140.6	73 17.4 +47.7 137.9	72 43.7 +46.3 135.4	72 08.4 +45.1 133.0
23°	75 10.2 +49.3 141.4	74 38.6 +47.7 138.5	74 05.1 +46.3 135.7	73 30.0 +44.9 133.2	72 53.5 +43.5 130.8
24°	75 59.5 +47.7 139.1	75 26.3 +46.2 136.1	74 51.4 +44.6 133.4	74 14.9 +43.2 130.8	73 37.0 +41.8 128.4
25°	76 47.2 +46.1 136.5	76 12.5 +44.3 133.5	75 36.0 +42.7 130.7	74 58.1 +41.2 128.2	74 18.8 +39.8 125.8
26°	77 33.3 +44.0 133.6	76 56.8 +42.2 130.6	76 18.7 +40.5 127.8	75 39.3 +38.9 125.3	74 58.6 +37.5 123.0
27°	78 17.3 +41.5 130.3	77 39.0 +39.6 127.4	76 59.2 +37.9 124.6	76 18.2 +36.3 122.2	75 36.1 +34.9 119.9
28°	78 58.8 +38.5 126.7	78 18.6 +36.6 123.7	77 37.1 +34.9 121.1	76 54.5 +33.3 118.7	76 11.0 +31.9 116.6
29°	79 37.3 +34.9 122.5	78 55.2 +33.0 119.7	78 12.0 +31.4 117.2	77 27.8 +30.0 115.0	76 42.9 +28.7 113.0

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	52 18.1 +56.2 155.0	51 56.7 +55.7 153.4	51 34.1 +55.3 151.9	51 10.5 +54.8 150.5	50 45.7 +54.3 149.0
1°	53 14.3 +56.0 154.4	52 52.4 +55.6 152.8	52 29.4 +55.1 151.3	52 05.3 +54.5 149.8	51 40.0 +54.0 148.3
2°	54 10.3 +55.8 153.8	53 48.0 +55.3 152.2	53 24.5 +54.8 150.6	52 59.8 +54.3 149.1	52 34.0 +53.8 147.6
3°	55 06.1 +55.7 153.1	54 43.3 +55.1 151.5	54 19.3 +54.6 150.0	53 54.1 +54.1 148.4	53 27.8 +53.5 146.9
4°	56 01.8 +55.4 152.5	55 38.4 +54.9 150.8	55 13.9 +54.3 149.2	54 48.2 +53.7 147.7	54 21.3 +53.2 146.1
5°	56 57.2 +55.1 151.8	56 33.3 +54.6 150.1	56 08.2 +54.0 148.5	55 41.9 +53.5 146.9	55 14.5 +52.9 145.3
6°	57 52.3 +54.9 151.1	57 27.9 +54.3 149.4	57 02.2 +53.7 147.7	56 35.4 +53.1 146.1	56 07.4 +52.5 144.5
7°	58 47.2 +54.6 150.3	58 22.2 +54.0 148.6	57 55.9 +53.4 146.9	57 28.5 +52.7 145.2	56 59.9 +52.1 143.6
8°	59 41.8 +54.3 149.5	59 16.2 +53.6 147.7	58 49.3 +53.0 146.0	58 21.2 +52.4 144.3	57 52.0 +51.7 142.7
9°	60 36.1 +53.9 148.6	60 09.8 +53.3 146.8	59 42.3 +52.6 145.1	59 13.6 +51.9 143.4	58 43.7 +51.2 141.7
10°	61 30.0 +53.6 147.7	61 03.1 +52.9 145.9	60 34.9 +52.2 144.1	60 05.5 +51.5 142.4	59 34.9 +50.8 140.7
11°	62 23.6 +53.1 146.8	61 56.0 +52.4 144.9	61 27.1 +51.6 143.1	60 57.0 +50.9 141.3	60 25.7 +50.2 139.6
12°	63 16.7 +52.7 145.7	62 48.4 +51.9 143.8	62 18.7 +51.2 142.0	61 47.9 +50.4 140.2	61 15.9 +49.6 138.5
13°	64 09.4 +52.1 144.7	63 40.3 +51.3 142.7	63 09.9 +50.5 140.9	62 38.3 +49.7 139.1	62 05.5 +49.0 137.3
14°	65 01.5 +51.6 143.5	64 31.6 +50.8 141.5	64 00.4 +50.0 139.7	63 28.0 +49.1 137.8	62 54.5 +48.3 136.1
15°	65 53.1 +51.0 142.3	65 22.4 +50.1 140.3	64 50.4 +49.2 138.4	64 17.1 +48.4 136.5	63 42.8 +47.5 134.8
16°	66 44.1 +50.3 141.0	66 12.5 +49.3 138.9	65 39.6 +48.4 137.0	65 05.5 +47.5 135.1	64 30.3 +46.6 133.4
17°	67 34.4 +49.4 139.6	67 01.8 +48.5 137.5	66 28.0 +47.6 135.6	65 53.0 +46.6 133.7	65 16.9 +45.8 131.9
18°	68 23.8 +48.6 138.0	67 50.3 +47.6 136.0	67 15.6 +46.6 134.0	66 39.6 +45.7 132.1	66 02.7 +44.7 130.3
19°	69 12.4 +47.6 136.4	68 37.9 +46.6 134.3	68 02.2 +45.5 132.3	67 25.3 +44.5 130.4	66 47.4 +43.6 128.6
20°	70 00.0 +46.6 134.7	69 24.5 +45.4 132.6	68 47.7 +44.3 130.6	68 09.8 +43.4 128.7	67 31.0 +42.3 126.9
21°	70 46.6 +45.2 132.8	70 09.9 +44.1 130.7	69 32.0 +43.1 128.7	68 53.2 +42.0 126.8	68 13.3 +41.1 125.0
22°	71 31.8 +43.9 130.8	70 54.0 +42.7 128.6	70 15.1 +41.5 126.7	69 35.2 +40.5 124.8	68 54.4 +39.5 123.0
23°	72 15.7 +42.2 128.6	71 36.7 +41.0 126.5	70 56.6 +40.0 124.5	70 15.7 +38.8 122.6	69 33.9 +37.9 120.9
24°	72 57.9 +40.5 126.2	72 17.7 +39.3 124.1	71 36.6 +38.1 122.2	70 54.5 +37.1 120.3	70 11.8 +36.0 118.6
25°	73 38.4 +38.5 123.6	72 57.0 +37.2 121.6	72 14.7 +36.1 119.7	71 31.6 +35.1 117.9	70 47.8 +34.1 116.2
26°	74 16.9 +36.1 120.8	73 34.2 +35.0 118.8	72 50.8 +33.8 117.0	72 06.7 +32.8 115.3	71 21.9 +32.0 113.7
27°	74 53.0 +33.6 117.8	74 09.2 +32.4 115.9	73 24.6 +31.4 114.2	72 39.5 +30.4 112.5	71 53.9 +29.5 111.0
28°	75 26.6 +30.8 114.6	74 41.6 +29.7 112.8	73 56.0 +28.7 111.1	73 09.9 +27.8 109.6	72 23.4 +27.1 108.2
29°	75 57.4 +27.5 111.1	75 11.3 +26.5 109.4	74 24.7 +25.7 107.9	73 37.7 +24.9 106.5	72 50.5 +24.2 105.2

Declination SAME name as Latitude

Latitude 35°

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°	50 19.9 +53.8 147.6	49 53.1 +53.2 146.2	49 25.2 +52.8 144.8	48 56.5 +52.2 143.5	48 26.8 +51.7 142.2
1°	51 13.7 +53.5 146.9	50 46.3 +53.0 145.5	50 18.0 +52.5 144.1	49 48.7 +52.0 142.7	49 18.5 +51.4 141.4
2°	52 07.2 +53.3 146.2	51 39.3 +52.7 144.7	51 10.5 +52.1 143.3	50 40.7 +51.6 142.0	50 09.9 +51.1 140.6
3°	53 00.5 +52.9 145.4	52 32.0 +52.4 144.0	52 02.6 +51.9 142.5	51 32.3 +51.2 141.1	51 01.0 +50.7 139.8
4°	53 53.4 +52.6 144.6	53 24.4 +52.1 143.2	52 54.5 +51.4 141.7	52 23.5 +50.9 140.3	51 51.7 +50.3 138.9
5°	54 46.0 +52.3 143.8	54 16.5 +51.7 142.3	53 45.9 +51.1 140.9	53 14.4 +50.5 139.4	52 42.0 +49.9 138.0
6°	55 38.3 +51.9 142.9	55 08.2 +51.2 141.4	54 37.0 +50.7 140.0	54 04.9 +50.1 138.5	53 31.9 +49.5 137.1
7°	56 30.2 +51.5 142.0	55 59.4 +50.9 140.5	55 27.7 +50.2 139.0	54 55.0 +49.6 137.6	54 21.4 +49.0 136.2
8°	57 21.7 +51.0 141.1	56 50.3 +50.4 139.6	56 17.9 +49.8 138.0	55 44.6 +49.1 136.6	55 10.4 +48.4 135.1
9°	58 12.7 +50.6 140.1	57 40.7 +49.9 138.5	57 07.7 +49.2 137.0	56 33.7 +48.6 135.5	55 58.8 +47.9 134.1
10°	59 03.3 +50.0 139.1	58 30.6 +49.3 137.5	57 56.9 +48.6 136.0	57 22.3 +47.9 134.5	56 46.7 +47.4 133.0
11°	59 53.3 +49.5 138.0	59 19.9 +48.8 136.4	58 45.5 +48.1 134.8	58 10.2 +47.4 133.3	57 34.1 +46.7 131.9
12°	60 42.8 +48.9 136.9	60 08.7 +48.1 135.2	59 33.6 +47.4 133.7	58 57.6 +46.7 132.2	58 20.8 +46.0 130.7
13°	61 31.7 +48.2 135.6	60 56.8 +47.5 134.0	60 21.0 +46.7 132.5	59 44.3 +46.0 130.9	59 06.8 +45.2 129.5
14°	62 19.9 +47.4 134.4	61 44.3 +46.7 132.7	61 07.7 +45.9 131.2	60 30.3 +45.2 129.6	59 52.0 +44.5 128.2
15°	63 07.3 +46.7 133.0	62 31.0 +45.8 131.4	61 53.6 +45.1 129.8	61 15.5 +44.3 128.3	60 36.5 +43.6 126.8
16°	63 54.0 +45.8 131.6	63 16.8 +45.0 130.0	62 38.7 +44.2 128.4	61 59.8 +43.4 126.9	61 20.1 +42.7 125.4
17°	64 39.8 +44.9 130.2	64 01.8 +44.0 128.5	63 22.9 +43.2 126.9	62 43.2 +42.5 125.4	62 02.8 +41.7 123.9
18°	65 24.7 +43.8 128.6	64 45.8 +43.0 126.9	64 06.1 +42.2 125.3	63 25.7 +41.3 123.8	62 44.5 +40.6 122.4
19°	66 08.5 +42.7 126.9	65 28.8 +41.8 125.3	64 48.3 +41.0 123.7	64 07.0 +40.3 122.2	63 25.1 +39.5 120.7
20°	66 51.2 +41.5 125.2	66 10.6 +40.6 123.5	65 29.3 +39.7 122.0	64 47.3 +38.9 120.5	64 04.6 +38.2 119.0
21°	67 32.7 +40.0 123.3	66 51.2 +39.2 121.7	66 09.0 +38.4 120.1	65 26.2 +37.6 118.7	64 42.8 +36.8 117.3
22°	68 12.7 +38.6 121.3	67 30.4 +37.7 119.7	66 47.4 +36.9 118.2	66 03.8 +36.1 116.8	65 19.6 +35.4 115.4
23°	68 51.3 +37.0 119.2	68 08.1 +36.1 117.7	67 24.3 +35.3 116.2	66 39.9 +34.5 114.8	65 55.0 +33.9 113.4
24°	69 28.3 +35.1 117.0	68 44.2 +34.3 115.5	67 59.6 +33.5 114.0	67 14.4 +32.9 112.7	66 28.9 +32.1 111.4
25°	70 03.4 +33.3 114.7	69 18.5 +32.4 113.2	68 33.1 +31.7 111.8	67 47.3 +31.0 110.5	67 01.0 +30.4 109.2
26°	70 36.7 +31.1 112.2	69 50.9 +30.4 110.8	69 04.8 +29.6 109.4	68 18.3 +29.0 108.2	67 31.4 +28.4 107.0
27°	71 07.8 +28.8 109.6	70 21.3 +28.1 108.2	69 34.4 +27.5 107.0	68 47.3 +26.9 105.8	67 59.8 +26.4 104.7
28°	71 36.6 +26.3 106.8	70 49.4 +25.7 105.6	70 01.9 +25.1 104.4	69 14.2 +24.6 103.3	68 26.2 +24.3 102.3
29°	72 02.9 +23.6 103.9	71 15.1 +23.1 102.8	70 27.0 +22.7 101.7	69 38.8 +22.3 100.7	68 50.5 +21.9 99.8

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°	47 56.2 +51.2 140.9	47 24.8 +50.7 139.6	46 52.5 +50.2 138.4	46 19.5 +49.7 137.2	45 45.7 +49.2 136.0
1°	48 47.4 +50.9 140.1	48 15.5 +50.3 138.8	47 42.7 +49.8 137.6	47 09.2 +49.3 136.4	46 34.9 +48.7 135.2
2°	49 38.3 +50.5 139.3	49 05.8 +50.0 138.0	48 32.5 +49.5 136.7	47 58.5 +48.9 135.5	47 23.6 +48.4 134.3
3°	50 28.8 +50.2 138.5	49 55.8 +49.6 137.2	49 22.0 +49.0 135.9	48 47.4 +48.5 134.6	48 12.0 +48.0 133.4
4°	51 19.0 +49.7 137.6	50 45.4 +49.2 136.3	50 11.0 +48.7 135.0	49 35.9 +48.1 133.7	49 00.0 +47.5 132.5
5°	52 08.7 +49.3 136.7	51 34.6 +48.7 135.4	50 59.7 +48.1 134.1	50 24.0 +47.6 132.8	49 47.5 +47.1 131.6
6°	52 58.0 +48.9 135.7	52 23.3 +48.3 134.4	51 47.8 +47.7 133.1	51 11.6 +47.1 131.8	50 34.6 +46.6 130.6
7°	53 46.9 +48.4 134.8	53 11.6 +47.8 133.4	52 35.5 +47.2 132.1	51 58.7 +46.6 130.8	51 21.2 +46.0 129.6
8°	54 35.3 +47.8 133.8	53 59.4 +47.2 132.4	53 22.7 +46.6 131.1	52 45.3 +46.1 129.8	52 07.2 +45.5 128.6
9°	55 23.1 +47.3 132.7	54 46.6 +46.7 131.3	54 09.3 +46.1 130.0	53 31.4 +45.4 128.7	52 52.7 +44.9 127.5
10°	56 10.4 +46.7 131.6	55 33.3 +46.0 130.2	54 55.4 +45.4 128.9	54 16.8 +44.8 127.6	53 37.6 +44.2 126.4
11°	56 57.1 +46.0 130.5	56 19.3 +45.4 129.1	55 40.8 +44.8 127.8	55 01.6 +44.2 126.5	54 21.8 +43.6 125.2
12°	57 43.1 +45.3 129.3	57 04.7 +44.7 127.9	56 25.6 +44.0 126.6	55 45.8 +43.4 125.3	55 05.4 +42.8 124.0
13°	58 28.4 +44.6 128.0	57 49.4 +43.9 126.7	57 09.6 +43.3 125.3	56 29.2 +42.7 124.1	55 48.2 +42.0 122.8
14°	59 13.0 +43.8 126.8	58 33.3 +43.1 125.4	57 52.9 +42.5 124.1	57 11.9 +41.8 122.8	56 30.2 +41.3 121.5
15°	59 56.8 +42.9 125.4	59 16.4 +42.2 124.0	58 35.4 +41.5 122.7	57 53.7 +41.0 121.4	57 11.5 +40.4 120.2
16°	60 39.7 +42.0 124.0	59 58.6 +41.3 122.6	59 16.9 +40.7 121.3	58 34.7 +40.0 120.0	57 51.9 +39.4 118.8
17°	61 21.7 +41.0 122.5	60 39.9 +40.3 121.2	59 57.6 +39.7 119.9	59 14.7 +39.0 118.6	58 31.3 +38.5 117.4
18°	62 02.7 +39.9 121.0	61 20.2 +39.3 119.6	60 37.3 +38.5 118.3	59 53.7 +38.0 117.1	59 09.8 +37.4 115.9
19°	62 42.6 +38.7 119.4	61 59.5 +38.0 118.0	61 15.8 +37.5 116.8	60 31.7 +36.9 115.5	59 47.2 +36.2 114.4
20°	63 21.3 +37.5 117.7	62 37.5 +36.9 116.4	61 53.3 +36.2 115.1	61 08.6 +35.6 113.9	60 23.4 +35.1 112.8
21°	63 58.8 +36.2 115.9	63 14.4 +35.5 114.6	62 29.5 +34.9 113.4	61 44.2 +34.4 112.2	60 58.5 +33.9 111.1
22°	64 35.0 +34.7 114.1	63 49.9 +34.1 112.8	63 04.4 +33.5 111.6	62 18.6 +32.9 110.5	61 32.4 +32.4 109.4
23°	65 09.7 +33.2 112.2	64 24.0 +32.6 110.9	63 37.9 +32.1 109.8	62 51.5 +31.6 108.7	62 04.8 +31.1 107.6
24°	65 42.9 +31.6 110.2	64 56.6 +31.0 109.0	64 10.0 +30.5 107.9	63 23.1 +30.0 106.8	62 35.9 +29.5 105.8
25°	66 14.5 +29.8 108.1	65 27.6 +29.3 106.9	64 40.5 +28.8 105.9	63 53.1 +28.3 104.8	63 05.4 +28.0 103.9
26°	66 44.3 +27.9 105.9	65 56.9 +27.4 104.8	65 09.3 +27.0 103.8	64 21.4 +26.7 102.8	63 33.4 +26.3 101.9
27°	67 12.2 +25.9 103.6	66 24.3 +25.5 102.6	65 36.3 +25.1 101.7	64 48.1 +24.8 100.7	63 59.7 +24.5 99.9
28°	67 38.1 +23.9 101.3	66 49.8 +23.5 100.3	66 01.4 +23.2 99.4	65 12.9 +22.9 98.6	64 24.2 +22.7 97.8
29°	68 02.0 +21.6 98.8	67 13.3 +21.4 98.0	66 24.6 +21.1 97.2	65 35.8 +20.9 96.4	64 46.9 +20.8 95.6

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Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	45 11.2 +48.6 134.8	44 36.0 +48.1 133.7	44 00.1 +47.7 132.5	43 23.6 +47.1 131.5	42 46.4 +46.7 130.4
1°	45 59.8 +48.3 134.0	45 24.1 +47.8 132.8	44 47.8 +47.2 131.7	44 10.7 +46.8 130.6	43 33.1 +46.3 129.5
2°	46 48.1 +47.9 133.1	46 11.9 +47.4 132.0	45 35.0 +46.9 130.8	44 57.5 +46.4 129.7	44 19.4 +45.9 128.6
3°	47 36.0 +47.4 132.2	46 59.3 +46.9 131.1	46 21.9 +46.4 129.9	45 43.9 +45.9 128.8	45 05.3 +45.4 127.7
4°	48 23.4 +47.0 131.3	47 46.2 +46.5 130.1	47 08.3 +46.0 129.0	46 29.8 +45.5 127.9	45 50.7 +45.0 126.8
5°	49 10.4 +46.6 130.4	48 32.7 +46.0 129.2	47 54.3 +45.4 128.0	47 15.3 +44.9 126.9	46 35.7 +44.5 125.8
6°	49 57.0 +46.0 129.4	49 18.7 +45.4 128.2	48 39.7 +45.0 127.1	48 00.2 +44.5 125.9	47 20.2 +43.9 124.9
7°	50 43.0 +45.5 128.4	50 04.1 +45.0 127.2	49 24.7 +44.4 126.1	48 44.7 +43.9 124.9	48 04.1 +43.4 123.8
8°	51 28.5 +44.9 127.4	50 49.1 +44.4 126.2	50 09.1 +43.9 125.0	49 28.6 +43.3 123.9	48 47.5 +42.9 122.8
9°	52 13.4 +44.3 126.3	51 33.5 +43.7 125.1	50 53.0 +43.2 123.9	50 11.9 +42.7 122.8	49 30.4 +42.2 121.7
10°	52 57.7 +43.6 125.2	52 17.2 +43.1 124.0	51 36.2 +42.6 122.8	50 54.6 +42.1 121.7	50 12.6 +41.6 120.6
11°	53 41.3 +43.0 124.0	53 00.3 +42.5 122.8	52 18.8 +41.9 121.7	51 36.7 +41.4 120.6	50 54.2 +40.8 119.5
12°	54 24.3 +42.3 122.8	53 42.8 +41.7 121.7	53 00.7 +41.1 120.5	52 18.1 +40.7 119.4	51 35.0 +40.2 118.3
13°	55 06.6 +41.5 121.6	54 24.5 +40.9 120.4	53 41.8 +40.5 119.3	52 58.8 +39.9 118.2	52 15.2 +39.4 117.1
14°	55 48.1 +40.7 120.3	55 05.4 +40.1 119.2	54 22.3 +39.6 118.0	53 38.7 +39.1 116.9	52 54.6 +38.7 115.9
15°	56 28.8 +39.8 119.0	55 45.5 +39.3 117.9	55 01.9 +38.7 116.7	54 17.8 +38.2 115.7	53 33.3 +37.7 114.6
16°	57 08.6 +38.8 117.6	56 24.8 +38.3 116.5	55 40.6 +37.8 115.4	54 56.0 +37.3 114.3	54 11.0 +36.9 113.3
17°	57 47.4 +37.9 116.2	57 03.1 +37.4 115.1	56 18.4 +36.9 114.0	55 33.3 +36.4 112.9	54 47.9 +36.0 111.9
18°	58 25.3 +36.9 114.8	57 40.5 +36.3 113.6	56 55.3 +35.9 112.6	56 09.7 +35.4 111.5	55 23.9 +34.9 110.5
19°	59 02.2 +35.7 113.2	58 16.8 +35.3 112.1	57 31.2 +34.7 111.1	56 45.1 +34.4 110.1	55 58.8 +34.0 109.1
20°	59 37.9 +34.6 111.7	58 52.1 +34.1 110.6	58 05.9 +33.7 109.6	57 19.5 +33.2 108.6	56 32.8 +32.8 107.6
21°	60 12.5 +33.3 110.0	59 26.2 +32.9 109.0	58 39.6 +32.4 108.0	57 52.7 +32.0 107.0	57 05.6 +31.7 106.1
22°	60 45.8 +32.1 108.3	59 59.1 +31.5 107.3	59 12.0 +31.2 106.4	58 24.7 +30.8 105.4	57 37.3 +30.4 104.5
23°	61 17.9 +30.6 106.6	60 30.6 +30.3 105.6	59 43.2 +29.8 104.7	58 55.5 +29.6 103.8	58 07.7 +29.2 102.9
24°	61 48.5 +29.1 104.8	61 00.9 +28.7 103.8	60 13.0 +28.5 102.9	59 25.1 +28.1 102.1	58 36.9 +27.9 101.2
25°	62 17.6 +27.6 102.9	61 29.6 +27.3 102.0	60 41.5 +27.0 101.1	59 53.2 +26.7 100.3	59 04.8 +26.5 99.5
26°	62 45.2 +26.0 101.0	61 56.9 +25.7 100.1	61 08.5 +25.4 99.3	60 19.9 +25.3 98.5	59 31.3 +25.0 97.7
27°	63 11.2 +24.3 99.0	62 22.6 +24.1 98.2	61 33.9 +23.9 97.4	60 45.2 +23.6 96.7	59 56.3 +23.5 95.9
28°	63 35.5 +22.5 97.0	62 46.7 +22.3 96.2	61 57.8 +22.1 95.5	61 08.8 +22.1 94.8	60 19.8 +22.0 94.1
29°	63 58.0 +20.6 94.9	63 09.0 +20.5 94.2	62 19.9 +20.5 93.5	61 30.9 +20.3 92.8	60 41.8 +20.3 92.2

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°	42 08.7 +46.2 129.3	41 30.4 +45.8 128.3	40 51.6 +45.3 127.3	40 12.2 +44.9 126.3	39 32.3 +44.5 125.3
1°	42 54.9 +45.8 128.5	42 16.2 +45.3 127.4	41 36.9 +44.9 126.4	40 57.1 +44.4 125.4	40 16.8 +44.0 124.4
2°	43 40.7 +45.4 127.6	43 01.5 +45.0 126.5	42 21.8 +44.4 125.5	41 41.5 +44.0 124.5	41 00.8 +43.6 123.5
3°	44 26.1 +45.0 126.7	43 46.5 +44.4 125.6	43 06.2 +44.1 124.6	42 25.5 +43.6 123.6	41 44.4 +43.1 122.6
4°	45 11.1 +44.5 125.7	44 30.9 +44.1 124.7	43 50.3 +43.5 123.7	43 09.1 +43.1 122.7	42 27.5 +42.7 121.7
5°	45 55.6 +44.0 124.8	45 15.0 +43.5 123.7	44 33.8 +43.1 122.7	43 52.2 +42.7 121.7	43 10.2 +42.2 120.7
6°	46 39.6 +43.4 123.8	45 58.5 +43.0 122.7	45 16.9 +42.6 121.7	44 34.9 +42.1 120.7	43 52.4 +41.7 119.7
7°	47 23.0 +43.0 122.8	46 41.5 +42.4 121.7	45 59.5 +42.0 120.7	45 17.0 +41.5 119.7	44 34.1 +41.1 118.7
8°	48 06.0 +42.3 121.7	47 23.9 +41.9 120.7	46 41.5 +41.4 119.7	45 58.5 +41.0 118.7	45 15.2 +40.6 117.7
9°	48 48.3 +41.8 120.7	48 05.8 +41.3 119.6	47 22.9 +40.8 118.6	46 39.5 +40.4 117.6	45 55.8 +40.0 116.7
10°	49 30.1 +41.1 119.6	48 47.1 +40.6 118.5	48 03.7 +40.2 117.5	47 19.9 +39.8 116.5	46 35.8 +39.3 115.6
11°	50 11.2 +40.4 118.4	49 27.7 +40.0 117.4	48 43.9 +39.5 116.4	47 59.7 +39.1 115.4	47 15.1 +38.7 114.5
12°	50 51.6 +39.7 117.3	50 07.7 +39.2 116.3	49 23.4 +38.8 115.3	48 38.8 +38.4 114.3	47 53.8 +38.0 113.3
13°	51 31.3 +38.9 116.1	50 46.9 +38.5 115.1	50 02.2 +38.1 114.1	49 17.2 +37.7 113.1	48 31.8 +37.3 112.2
14°	52 10.2 +38.2 114.8	51 25.4 +37.8 113.8	50 40.3 +37.3 112.9	49 54.9 +36.9 111.9	49 09.1 +36.6 111.0
15°	52 48.4 +37.3 113.6	52 03.2 +36.9 112.6	51 17.6 +36.5 111.6	50 31.8 +36.1 110.7	49 45.7 +35.7 109.8
16°	53 25.7 +36.5 112.3	52 40.1 +36.0 111.3	51 54.1 +35.7 110.3	51 07.9 +35.3 109.4	50 21.4 +35.0 108.5
17°	54 02.2 +35.5 110.9	53 16.1 +35.1 110.0	52 29.8 +34.7 109.0	51 43.2 +34.4 108.1	50 56.4 +34.0 107.2
18°	54 37.7 +34.5 109.6	53 51.2 +34.2 108.6	53 04.5 +33.9 107.7	52 17.6 +33.5 106.8	51 30.4 +33.2 105.9
19°	55 12.2 +33.6 108.1	54 25.4 +33.2 107.2	53 38.4 +32.8 106.3	52 51.1 +32.5 105.4	52 03.6 +32.2 104.6
20°	55 45.8 +32.4 106.7	54 58.6 +32.1 105.8	54 11.2 +31.8 104.9	53 23.6 +31.5 104.0	52 35.8 +31.3 103.2
21°	56 18.2 +31.4 105.2	55 30.7 +31.0 104.3	54 43.0 +30.7 103.4	53 55.1 +30.5 102.6	53 07.1 +30.2 101.8
22°	56 49.6 +30.1 103.6	56 01.7 +29.9 102.8	55 13.7 +29.6 101.9	54 25.6 +29.3 101.1	53 37.3 +29.1 100.3
23°	57 19.7 +28.9 102.0	56 31.6 +28.6 101.2	55 43.3 +28.4 100.4	54 54.9 +28.2 99.6	54 06.4 +28.0 98.9
24°	57 48.6 +27.7 100.4	57 00.2 +27.4 99.6	56 11.7 +27.2 98.8	55 23.1 +27.0 98.1	54 34.4 +26.8 97.3
25°	58 16.3 +26.2 98.7	57 27.6 +26.1 97.9	56 38.9 +25.9 97.2	55 50.1 +25.8 96.5	55 01.2 +25.7 95.8
26°	58 42.5 +24.9 97.0	57 53.7 +24.7 96.3	57 04.8 +24.6 95.6	56 15.9 +24.4 94.9	55 26.9 +24.4 94.2
27°	59 07.4 +23.4 95.2	58 18.4 +23.3 94.5	57 29.4 +23.2 93.9	56 40.3 +23.2 93.2	55 51.3 +23.0 92.6
28°	59 30.8 +21.8 93.4	58 41.7 +21.8 92.8	57 52.6 +21.8 92.1	57 03.5 +21.7 91.5	56 14.3 +21.8 90.9
29°	59 52.6 +20.3 91.6	59 03.5 +20.3 91.0	58 14.4 +20.2 90.4	57 25.2 +20.3 89.8	56 36.1 +20.3 89.2

Declination SAME name as Latitude

Latitude 35°

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°	38 52.0 +44.0 124.4	38 11.2 +43.6 123.4	37 29.9 +43.2 122.5	36 48.3 +42.8 121.6	36 06.2 +42.4 120.7
1°	39 36.0 +43.6 123.5	38 54.8 +43.2 122.5	38 13.1 +42.8 121.6	37 31.1 +42.4 120.7	36 48.6 +42.0 119.8
2°	40 19.6 +43.2 122.6	39 38.0 +42.7 121.6	38 55.9 +42.4 120.7	38 13.5 +41.9 119.8	37 30.6 +41.6 118.9
3°	41 02.8 +42.7 121.7	40 20.7 +42.3 120.7	39 38.3 +41.9 119.8	38 55.4 +41.6 118.9	38 12.2 +41.2 118.0
4°	41 45.5 +42.3 120.7	41 03.0 +41.9 119.8	40 20.2 +41.5 118.9	39 37.0 +41.0 118.0	38 53.4 +40.7 117.1
5°	42 27.8 +41.7 119.8	41 44.9 +41.4 118.8	41 01.7 +40.9 117.9	40 18.0 +40.7 117.0	39 34.1 +40.2 116.1
6°	43 09.5 +41.3 118.8	42 26.3 +40.8 117.9	41 42.6 +40.5 116.9	40 58.7 +40.1 116.1	40 14.3 +39.8 115.2
7°	43 50.8 +40.7 117.8	43 07.1 +40.4 116.9	42 23.1 +40.0 116.0	41 38.8 +39.5 115.1	40 54.1 +39.2 114.2
8°	44 31.5 +40.2 116.8	43 47.5 +39.7 115.8	43 03.1 +39.4 114.9	42 18.3 +39.1 114.1	41 33.3 +38.7 113.2
9°	45 11.7 +39.6 115.7	44 27.2 +39.2 114.8	43 42.5 +38.8 113.9	42 57.4 +38.5 113.0	42 12.0 +38.1 112.2
10°	45 51.3 +38.9 114.6	45 06.4 +38.6 113.7	44 21.3 +38.2 112.8	43 35.9 +37.8 112.0	42 50.1 +37.6 111.1
11°	46 30.2 +38.3 113.5	45 45.0 +38.0 112.6	44 59.5 +37.6 111.8	44 13.7 +37.3 110.9	43 27.7 +36.9 110.0
12°	47 08.5 +37.7 112.4	46 23.0 +37.3 111.5	45 37.1 +37.0 110.6	44 51.0 +36.6 109.8	44 04.6 +36.3 108.9
13°	47 46.2 +36.9 111.3	47 00.3 +36.5 110.4	46 14.1 +36.2 109.5	45 27.6 +35.9 108.7	44 40.9 +35.7 107.8
14°	48 23.1 +36.2 110.1	47 36.8 +35.9 109.2	46 50.3 +35.5 108.4	46 03.5 +35.3 107.5	45 16.6 +34.9 106.7
15°	48 59.3 +35.4 108.9	48 12.7 +35.1 108.0	47 25.8 +34.8 107.2	46 38.8 +34.5 106.3	45 51.5 +34.2 105.5
16°	49 34.7 +34.6 107.6	48 47.8 +34.3 106.8	48 00.6 +34.0 106.0	47 13.3 +33.7 105.1	46 25.7 +33.5 104.3
17°	50 09.3 +33.8 106.4	49 22.1 +33.4 105.5	48 34.6 +33.2 104.7	47 47.0 +32.9 103.9	46 59.2 +32.7 103.1
18°	50 43.1 +32.9 105.1	49 55.5 +32.6 104.3	49 07.8 +32.4 103.5	48 19.9 +32.1 102.7	47 31.9 +31.9 101.9
19°	51 16.0 +31.9 103.8	50 28.1 +31.7 102.9	49 40.2 +31.4 102.2	48 52.0 +31.3 101.4	48 03.8 +31.0 100.6
20°	51 47.9 +31.0 102.4	50 59.8 +30.8 101.6	50 11.6 +30.5 100.8	49 23.3 +30.3 100.1	48 34.8 +30.2 99.4
21°	52 18.9 +30.0 101.0	51 30.6 +29.7 100.2	50 42.1 +29.6 99.5	49 53.6 +29.4 98.8	49 05.0 +29.2 98.0
22°	52 48.9 +28.9 99.6	52 00.3 +28.8 98.8	51 11.7 +28.6 98.1	50 23.0 +28.5 97.4	49 34.2 +28.3 96.7
23°	53 17.8 +27.8 98.1	52 29.1 +27.7 97.4	51 40.3 +27.5 96.7	50 51.5 +27.4 96.0	50 02.5 +27.4 95.3
24°	53 45.6 +26.7 96.6	52 56.8 +26.5 95.9	52 07.8 +26.5 95.3	51 18.9 +26.4 94.6	50 29.9 +26.3 93.9
25°	54 12.3 +25.5 95.1	53 23.3 +25.5 94.4	52 34.3 +25.4 93.8	51 45.3 +25.3 93.1	50 56.2 +25.2 92.5
26°	54 37.8 +24.4 93.5	53 48.8 +24.2 92.9	52 59.7 +24.2 92.3	52 10.6 +24.1 91.7	51 21.4 +24.2 91.1
27°	55 02.2 +23.0 92.0	54 13.0 +23.0 91.4	53 23.9 +23.0 90.8	52 34.7 +23.1 90.2	51 45.6 +23.0 89.6
28°	55 25.2 +21.7 90.3	54 36.0 +21.8 89.8	53 46.9 +21.8 89.2	52 57.8 +21.8 88.7	52 08.6 +21.9 88.1
29°	55 46.9 +20.4 88.7	54 57.8 +20.4 88.2	54 08.7 +20.5 87.6	53 19.6 +20.6 87.1	52 30.5 +20.7 86.6

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°	35 23.8 +42.0 119.8	34 41.0 +41.6 119.0	33 57.8 +41.3 118.1	33 14.3 +40.9 117.3	32 30.5 +40.6 116.5
1°	36 05.8 +41.6 119.0	35 22.6 +41.3 118.1	34 39.1 +40.9 117.3	33 55.2 +40.6 116.4	33 11.1 +40.2 115.6
2°	36 47.4 +41.3 118.1	36 03.9 +40.9 117.2	35 20.0 +40.5 116.4	34 35.8 +40.2 115.5	33 51.3 +39.9 114.7
3°	37 28.7 +40.8 117.2	36 44.8 +40.4 116.3	36 00.5 +40.1 115.5	35 16.0 +39.8 114.6	34 31.2 +39.5 113.8
4°	38 09.5 +40.3 116.2	37 25.2 +40.0 115.4	36 40.6 +39.7 114.5	35 55.8 +39.3 113.7	35 10.7 +39.0 112.9
5°	38 49.8 +39.9 115.3	38 05.2 +39.6 114.4	37 20.3 +39.2 113.6	36 35.1 +38.9 112.8	35 49.7 +38.6 112.0
6°	39 29.7 +39.4 114.3	38 44.8 +39.0 113.5	37 59.5 +38.8 112.6	37 14.0 +38.5 111.8	36 28.3 +38.1 111.0
7°	40 09.1 +38.9 113.3	39 23.8 +38.6 112.5	38 38.3 +38.2 111.7	37 52.5 +37.9 110.9	37 06.4 +37.7 110.1
8°	40 48.0 +38.3 112.3	40 02.4 +38.0 111.5	39 16.5 +37.8 110.7	38 30.4 +37.5 109.9	37 44.1 +37.2 109.1
9°	41 26.3 +37.9 111.3	40 40.4 +37.5 110.5	39 54.3 +37.2 109.7	39 07.9 +36.9 108.9	38 21.3 +36.6 108.1
10°	42 04.2 +37.2 110.3	41 17.9 +37.0 109.4	40 31.5 +36.6 108.6	39 44.8 +36.4 107.9	38 57.9 +36.1 107.1
11°	42 41.4 +36.6 109.2	41 54.9 +36.3 108.4	41 08.1 +36.1 107.6	40 21.2 +35.8 106.8	39 34.0 +35.6 106.0
12°	43 18.0 +36.0 108.1	42 31.2 +35.7 107.3	41 44.2 +35.5 106.5	40 57.0 +35.2 105.8	40 09.6 +35.0 105.0
13°	43 54.0 +35.4 107.0	43 06.9 +35.1 106.2	42 19.7 +34.8 105.4	41 32.2 +34.6 104.7	40 44.6 +34.4 103.9
14°	44 29.4 +34.7 105.9	43 42.0 +34.5 105.1	42 54.5 +34.2 104.3	42 06.8 +34.0 103.6	41 19.0 +33.7 102.8
15°	45 04.1 +33.9 104.7	44 16.5 +33.7 104.0	43 28.7 +33.5 103.2	42 40.8 +33.3 102.5	41 52.7 +33.1 101.7
16°	45 38.0 +33.3 103.6	44 50.2 +33.0 102.8	44 02.2 +32.8 102.1	43 14.1 +32.6 101.3	42 25.8 +32.5 100.6
17°	46 11.3 +32.5 102.4	45 23.2 +32.3 101.6	44 35.0 +32.1 100.9	43 46.7 +31.9 100.2	42 58.3 +31.7 99.5
18°	46 43.8 +31.6 101.2	45 55.5 +31.5 100.4	45 07.1 +31.3 99.7	44 18.6 +31.2 99.0	43 30.0 +31.0 98.3
19°	47 15.4 +30.9 99.9	46 27.0 +30.7 99.2	45 38.4 +30.5 98.5	44 49.8 +30.3 97.8	44 01.0 +30.3 97.1
20°	47 46.3 +30.0 98.6	46 57.7 +29.8 97.9	46 08.9 +29.8 97.2	45 20.1 +29.6 96.6	44 31.3 +29.5 95.9
21°	48 16.3 +29.1 97.3	47 27.5 +29.0 96.7	46 38.7 +28.8 96.0	45 49.7 +28.8 95.3	45 00.8 +28.7 94.7
22°	48 45.4 +28.2 96.0	47 56.5 +28.1 95.4	47 07.5 +28.0 94.7	46 18.5 +28.0 94.1	45 29.5 +27.9 93.4
23°	49 13.6 +27.2 94.7	48 24.6 +27.1 94.0	47 35.5 +27.1 93.4	46 46.5 +27.0 92.8	45 57.4 +27.0 92.2
24°	49 40.8 +26.3 93.3	48 51.7 +26.2 92.7	48 02.6 +26.2 92.1	47 13.5 +26.1 91.5	46 24.4 +26.1 90.9
25°	50 07.1 +25.2 91.9	49 17.9 +25.2 91.3	48 28.8 +25.2 90.7	47 39.6 +25.2 90.1	46 50.5 +25.2 89.6
26°	50 32.3 +24.1 90.5	49 43.1 +24.2 89.9	48 54.0 +24.2 89.3	48 04.8 +24.3 88.8	47 15.7 +24.3 88.2
27°	50 56.4 +23.1 89.0	50 07.3 +23.1 88.5	49 18.2 +23.1 87.9	48 29.1 +23.2 87.4	47 40.0 +23.3 86.9
28°	51 19.5 +22.0 87.6	50 30.4 +22.0 87.0	49 41.3 +22.2 86.5	48 52.3 +22.2 86.0	48 03.3 +22.3 85.5
29°	51 41.5 +20.8 86.1	50 52.4 +20.9 85.6	50 03.5 +21.0 85.1	49 14.5 +21.2 84.6	48 25.6 +21.3 84.1

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°	31 46.3 +40.3 115.7	31 01.9 +40.0 114.9	30 17.2 +39.7 114.1	29 32.2 +39.4 113.4	28 46.9 +39.1 112.6
1°	32 26.6 +40.0 114.8	31 41.9 +39.6 114.0	30 56.9 +39.3 113.3	30 11.6 +39.0 112.5	29 26.0 +38.8 111.8
2°	33 06.6 +39.5 113.9	32 21.5 +39.2 113.2	31 36.2 +38.9 112.4	30 50.6 +38.7 111.6	30 04.8 +38.4 110.9
3°	33 46.1 +39.2 113.0	33 00.7 +38.9 112.3	32 15.1 +38.6 111.5	31 29.3 +38.3 110.7	30 43.2 +38.0 110.0
4°	34 25.3 +38.7 112.1	33 39.6 +38.4 111.3	32 53.7 +38.2 110.6	32 07.6 +37.9 109.8	31 21.2 +37.7 109.1
5°	35 04.0 +38.3 111.2	34 18.0 +38.1 110.4	33 31.9 +37.7 109.7	32 45.5 +37.5 108.9	31 58.9 +37.2 108.2
6°	35 42.3 +37.9 110.2	34 56.1 +37.6 109.5	34 09.6 +37.3 108.7	33 23.0 +37.0 108.0	32 36.1 +36.9 107.2
7°	36 20.2 +37.3 109.3	35 33.7 +37.1 108.5	34 46.9 +36.9 107.8	34 00.0 +36.7 107.0	33 13.0 +36.4 106.3
8°	36 57.5 +36.9 108.3	36 10.8 +36.6 107.6	35 23.8 +36.4 106.8	34 36.7 +36.2 106.1	33 49.4 +35.9 105.3
9°	37 34.4 +36.4 107.3	36 47.4 +36.2 106.6	36 00.2 +35.9 105.8	35 12.9 +35.7 105.1	34 25.3 +35.5 104.4
10°	38 10.8 +35.9 106.3	37 23.6 +35.6 105.6	36 36.1 +35.5 104.8	35 48.6 +35.2 104.1	35 00.8 +35.0 103.4
11°	38 46.7 +35.3 105.3	37 59.2 +35.1 104.6	37 11.6 +34.9 103.8	36 23.8 +34.7 103.1	35 35.8 +34.5 102.4
12°	39 22.0 +34.8 104.3	38 34.3 +34.6 103.5	37 46.5 +34.3 102.8	36 58.5 +34.1 102.1	36 10.3 +34.0 101.4
13°	39 56.8 +34.2 103.2	39 08.9 +33.9 102.5	38 20.8 +33.8 101.8	37 32.6 +33.7 101.1	36 44.3 +33.5 100.4
14°	40 31.0 +33.5 102.1	39 42.8 +33.4 101.4	38 54.6 +33.2 100.7	38 06.3 +33.0 100.0	37 17.8 +32.9 99.3
15°	41 04.5 +33.0 101.0	40 16.2 +32.8 100.3	39 27.8 +32.6 99.6	38 39.3 +32.5 98.9	37 50.7 +32.4 98.3
16°	41 37.5 +32.2 99.9	40 49.0 +32.1 99.2	40 00.4 +32.0 98.5	39 11.8 +31.8 97.9	38 23.1 +31.7 97.2
17°	42 09.7 +31.6 98.8	41 21.1 +31.5 98.1	40 32.4 +31.4 97.4	39 43.6 +31.3 96.8	38 54.8 +31.1 96.1
18°	42 41.3 +30.9 97.6	41 52.6 +30.7 97.0	41 03.8 +30.6 96.3	40 14.9 +30.5 95.7	39 25.9 +30.5 95.0
19°	43 12.2 +30.2 96.5	42 23.3 +30.1 95.8	41 34.4 +30.0 95.2	40 45.4 +30.0 94.5	39 56.4 +29.9 93.9
20°	43 42.4 +29.4 95.3	42 53.4 +29.3 94.6	42 04.4 +29.3 94.0	41 15.4 +29.2 93.4	40 26.3 +29.1 92.8
21°	44 11.8 +28.6 94.1	43 22.7 +28.6 93.4	42 33.7 +28.5 92.8	41 44.6 +28.4 92.2	40 55.4 +28.5 91.6
22°	44 40.4 +27.8 92.8	43 51.3 +27.8 92.2	43 02.2 +27.7 91.6	42 13.0 +27.8 91.0	41 23.9 +27.8 90.4
23°	45 08.2 +27.0 91.6	44 19.1 +27.0 91.0	43 29.9 +27.0 90.4	42 40.8 +27.0 89.8	41 51.7 +27.0 89.3
24°	45 35.2 +26.1 90.3	44 46.1 +26.1 89.7	43 56.9 +26.2 89.2	43 07.8 +26.2 88.6	42 18.7 +26.2 88.0
25°	46 01.3 +25.3 89.0	45 12.2 +25.3 88.5	44 23.1 +25.3 87.9	43 34.0 +25.4 87.4	42 44.9 +25.4 86.8
26°	46 26.6 +24.3 87.7	45 37.5 +24.4 87.2	44 48.4 +24.5 86.6	43 59.4 +24.5 86.1	43 10.3 +24.7 85.6
27°	46 50.9 +23.4 86.4	46 01.9 +23.5 85.8	45 12.9 +23.6 85.3	44 23.9 +23.7 84.8	43 35.0 +23.8 84.3
28°	47 14.3 +22.4 85.0	46 25.4 +22.5 84.5	45 36.5 +22.6 84.0	44 47.6 +22.8 83.5	43 58.8 +22.9 83.1
29°	47 36.7 +21.5 83.6	46 47.9 +21.6 83.2	45 59.1 +21.8 82.7	45 10.4 +21.9 82.2	44 21.7 +22.1 81.8

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°	28 01.5 +38.8 111.9	27 15.7 +38.6 111.2	26 29.8 +38.3 110.4	25 43.6 +38.1 109.7	24 57.3 +37.8 109.0
1°	28 40.3 +38.5 111.0	27 54.3 +38.2 110.3	27 08.1 +38.0 109.6	26 21.7 +37.7 108.9	25 35.1 +37.5 108.2
2°	29 18.8 +38.1 110.1	28 32.5 +37.9 109.4	27 46.1 +37.6 108.7	26 59.4 +37.4 108.0	26 12.6 +37.2 107.3
3°	29 56.9 +37.8 109.2	29 10.4 +37.5 108.5	28 23.7 +37.3 107.8	27 36.8 +37.1 107.1	26 49.8 +36.8 106.4
4°	30 34.7 +37.4 108.4	29 47.9 +37.2 107.6	29 01.0 +36.9 106.9	28 13.9 +36.7 106.2	27 26.6 +36.5 105.5
5°	31 12.1 +37.0 107.4	30 25.1 +36.8 106.7	29 37.9 +36.6 106.0	28 50.6 +36.4 105.3	28 03.1 +36.2 104.6
6°	31 49.1 +36.6 106.5	31 01.9 +36.4 105.8	30 14.5 +36.2 105.1	29 27.0 +36.0 104.4	28 39.3 +35.8 103.7
7°	32 25.7 +36.2 105.6	31 38.3 +36.0 104.9	30 50.7 +35.8 104.2	30 03.0 +35.6 103.5	29 15.1 +35.4 102.8
8°	33 01.9 +35.7 104.6	32 14.3 +35.5 103.9	31 26.5 +35.4 103.2	30 38.6 +35.2 102.6	29 50.5 +35.1 101.9
9°	33 37.6 +35.3 103.7	32 49.8 +35.1 103.0	32 01.9 +34.9 102.3	31 13.8 +34.7 101.6	30 25.6 +34.6 100.9
10°	34 12.9 +34.9 102.7	33 24.9 +34.7 102.0	32 36.8 +34.5 101.3	31 48.5 +34.4 100.7	31 00.2 +34.2 100.0
11°	34 47.8 +34.3 101.7	33 59.6 +34.2 101.0	33 11.3 +34.0 100.3	32 22.9 +33.9 99.7	31 34.4 +33.8 99.0
12°	35 22.1 +33.8 100.7	34 33.8 +33.7 100.0	33 45.3 +33.6 99.4	32 56.8 +33.4 98.7	32 08.2 +33.3 98.1
13°	35 55.9 +33.4 99.7	35 07.5 +33.1 99.0	34 18.9 +33.0 98.4	33 30.2 +33.2 97.7	32 41.5 +33.2 97.1
14°	36 29.3 +32.7 98.7	35 40.6 +32.7 98.0	34 51.9 +32.6 97.3	34 03.1 +32.5 96.7	33 14.3 +32.4 96.1
15°	37 02.0 +32.3 97.6	36 13.3 +32.1 97.0	35 24.5 +32.0 96.3	34 35.6 +31.9 95.7	33 46.7 +31.8 95.1
16°	37 34.3 +31.6 96.6	36 45.4 +31.6 95.9	35 56.5 +31.5 95.3	35 07.5 +31.4 94.7	34 18.5 +31.4 94.0
17°	38 05.9 +31.0 95.5	37 17.0 +30.9 94.8	36 28.0 +30.9 94.2	35 38.9 +30.9 93.6	34 49.9 +30.8 93.0
18°	38 36.9 +30.5 94.4	37 47.9 +30.4 93.8	36 58.9 +30.3 93.2	36 09.8 +30.3 92.6	35 20.7 +30.2 92.0
19°	39 07.4 +29.8 93.3	38 18.3 +29.7 92.7	37 29.2 +29.7 92.1	36 40.1 +29.7 91.5	35 50.9 +29.7 90.9
20°	39 37.2 +29.1 92.2	38 48.0 +29.2 91.6	37 58.9 +29.1 91.0	37 09.8 +29.1 90.4	36 20.6 +29.1 89.8
21°	40 06.3 +28.5 91.0	39 17.2 +28.4 90.4	38 28.0 +28.5 89.9	37 38.9 +28.4 89.3	36 49.7 +28.5 88.7
22°	40 34.8 +27.7 89.9	39 45.6 +27.8 89.3	38 56.5 +27.8 88.7	38 07.3 +27.9 88.2	37 18.2 +27.9 87.6
23°	41 02.5 +27.0 88.7	40 13.4 +27.1 88.1	39 24.3 +27.1 87.6	38 35.2 +27.1 87.0	37 46.1 +27.2 86.5
24°	41 29.5 +26.3 87.5	40 40.5 +26.3 87.0	39 51.4 +26.4 86.4	39 02.3 +26.5 85.9	38 13.3 +26.6 85.4
25°	41 55.8 +25.6 86.3	41 06.8 +25.6 85.8	40 17.8 +25.7 85.3	39 28.8 +25.8 84.7	38 39.9 +25.9 84.2
26°	42 21.4 +24.7 85.1	41 32.4 +24.9 84.6	40 43.5 +25.0 84.1	39 54.6 +25.1 83.6	39 05.8 +25.2 83.1
27°	42 46.1 +23.9 83.8	41 57.3 +24.0 83.4	41 08.5 +24.2 82.9	40 19.7 +24.4 82.4	39 31.0 +24.5 81.9
28°	43 10.0 +23.1 82.6	42 21.3 +23.3 82.1	41 32.7 +23.4 81.6	40 44.1 +23.5 81.2	39 55.5 +23.8 80.7
29°	43 33.1 +22.3 81.3	42 44.6 +22.4 80.9	41 56.1 +22.6 80.4	41 07.6 +22.8 80.0	40 19.3 +23.0 79.5

Declination SAME name as Latitude

Latitude 35°

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°	24 10.7 +37.6 108.3	23 23.9 +37.4 107.6	22 37.0 +37.2 107.0	21 49.9 +37.0 106.3	21 02.7 +36.7 105.6
1°	24 48.3 +37.3 107.5	24 01.3 +37.1 106.8	23 14.2 +36.8 106.1	22 26.9 +36.6 105.4	21 39.4 +36.5 104.8
2°	25 25.6 +36.9 106.6	24 38.4 +36.7 105.9	23 51.0 +36.6 105.2	23 03.5 +36.4 104.6	22 15.9 +36.2 103.9
3°	26 02.5 +36.7 105.7	25 15.1 +36.5 105.0	24 27.6 +36.3 104.4	23 39.9 +36.1 103.7	22 52.1 +35.9 103.1
4°	26 39.2 +36.3 104.8	25 51.6 +36.2 104.2	25 03.9 +36.0 103.5	24 16.0 +35.8 102.8	23 28.0 +35.7 102.2
5°	27 15.5 +36.0 103.9	26 27.8 +35.8 103.3	25 39.9 +35.6 102.6	24 51.8 +35.5 102.0	24 03.7 +35.3 101.3
6°	27 51.5 +35.6 103.0	27 03.6 +35.4 102.4	26 15.5 +35.3 101.7	25 27.3 +35.2 101.1	24 39.0 +35.0 100.4
7°	28 27.1 +35.3 102.1	27 39.0 +35.1 101.5	26 50.8 +35.0 100.8	26 02.5 +34.8 100.2	25 14.0 +34.7 99.5
8°	29 02.4 +34.9 101.2	28 14.1 +34.8 100.6	27 25.8 +34.5 99.9	26 37.3 +34.5 99.3	25 48.7 +34.4 98.6
9°	29 37.3 +34.4 100.3	28 48.9 +34.3 99.6	28 00.3 +34.3 99.0	27 11.8 +34.1 98.3	26 23.1 +34.0 97.7
10°	30 11.7 +34.1 99.3	29 23.2 +33.9 98.7	28 34.6 +33.8 98.0	27 45.9 +33.7 97.4	26 57.1 +33.6 96.8
11°	30 45.8 +33.6 98.4	29 57.1 +33.6 97.7	29 08.4 +33.4 97.1	28 19.6 +33.3 96.5	27 30.7 +33.3 95.9
12°	31 19.4 +33.3 97.4	30 30.7 +33.1 96.8	29 41.8 +33.1 96.2	28 52.9 +33.0 95.5	28 04.0 +32.9 94.9
13°	31 52.7 +32.7 96.4	31 03.8 +32.6 95.8	30 14.9 +32.6 95.2	29 25.9 +32.5 94.6	28 36.9 +32.5 94.0
14°	32 25.4 +32.3 95.4	31 36.4 +32.3 94.8	30 47.5 +32.1 94.2	29 58.4 +32.1 93.6	29 09.4 +32.0 93.0
15°	32 57.7 +31.8 94.4	32 08.7 +31.7 93.8	31 19.6 +31.7 93.2	30 30.5 +31.7 92.6	29 41.4 +31.6 92.0
16°	33 29.5 +31.3 93.4	32 40.4 +31.2 92.8	31 51.3 +31.2 92.2	31 02.2 +31.2 91.6	30 13.0 +31.2 91.1
17°	34 00.8 +30.7 92.4	33 11.6 +30.8 91.8	32 22.5 +30.8 91.2	31 33.4 +30.7 90.6	30 44.2 +30.8 90.1
18°	34 31.5 +30.3 91.4	33 42.4 +30.2 90.8	32 53.3 +30.2 90.2	32 04.1 +30.2 89.6	31 15.0 +30.2 89.1
19°	35 01.8 +29.7 90.3	34 12.6 +29.7 89.7	33 23.5 +29.7 89.2	32 34.3 +29.8 88.6	31 45.2 +29.8 88.0
20°	35 31.5 +29.1 89.2	34 42.3 +29.2 88.7	33 53.2 +29.2 88.1	33 04.1 +29.2 87.6	32 15.0 +29.3 87.0
21°	36 00.6 +28.5 88.2	35 11.5 +28.6 87.6	34 22.4 +28.6 87.1	33 33.3 +28.7 86.5	32 44.3 +28.7 86.0
22°	36 29.1 +28.0 87.1	35 40.1 +27.9 86.5	34 51.0 +28.1 86.0	34 02.0 +28.1 85.5	33 13.0 +28.2 84.9
23°	36 57.1 +27.3 86.0	36 08.0 +27.4 85.4	35 19.1 +27.4 84.9	34 30.1 +27.6 84.4	33 41.2 +27.7 83.9
24°	37 24.4 +26.6 84.9	36 35.4 +26.8 84.3	35 46.5 +26.9 83.8	34 57.7 +27.0 83.3	34 08.9 +27.1 82.8
25°	37 51.0 +26.1 83.7	37 02.2 +26.1 83.2	36 13.4 +26.3 82.7	35 24.7 +26.4 82.2	34 36.0 +26.6 81.7
26°	38 17.1 +25.3 82.6	37 28.3 +25.5 82.1	36 39.7 +25.6 81.6	35 51.1 +25.8 81.1	35 02.6 +25.9 80.6
27°	38 42.4 +24.6 81.4	37 53.8 +24.8 81.0	37 05.3 +25.0 80.5	36 16.9 +25.1 80.0	35 28.5 +25.4 79.5
28°	39 07.0 +24.0 80.3	38 18.6 +24.2 79.8	37 30.3 +24.3 79.3	36 42.0 +24.5 78.9	35 53.9 +24.7 78.4
29°	39 31.0 +23.2 79.1	38 42.8 +23.4 78.6	37 54.6 +23.6 78.2	37 06.5 +23.9 77.7	36 18.6 +24.0 77.3

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°	20 15.3 +36.5 105.0	19 27.7 +36.4 104.3	18 40.0 +36.2 103.7	17 52.2 +36.1 103.0	17 04.3 +35.9 102.4
1°	20 51.8 +36.3 104.1	20 04.1 +36.1 103.5	19 16.2 +36.0 102.8	18 28.3 +35.8 102.2	17 40.2 +35.6 101.6
2°	21 28.1 +36.1 103.3	20 40.2 +35.9 102.6	19 52.2 +35.7 102.0	19 04.1 +35.6 101.4	18 15.8 +35.5 100.7
3°	22 04.2 +35.8 102.4	21 16.1 +35.6 101.8	20 27.9 +35.5 101.1	19 39.7 +35.3 100.5	18 51.3 +35.2 99.9
4°	22 40.0 +35.4 101.5	21 51.7 +35.4 100.9	21 03.4 +35.2 100.3	20 15.0 +35.1 99.6	19 26.5 +35.0 99.0
5°	23 15.4 +35.2 100.7	22 27.1 +35.1 100.0	21 38.6 +35.0 99.4	20 50.1 +34.8 98.8	20 01.5 +34.7 98.2
6°	23 50.6 +34.9 99.8	23 02.2 +34.7 99.2	22 13.6 +34.7 98.5	21 24.9 +34.6 97.9	20 36.2 +34.5 97.3
7°	24 25.5 +34.6 98.9	23 36.9 +34.5 98.3	22 48.3 +34.3 97.6	21 59.5 +34.3 97.0	21 10.7 +34.2 96.4
8°	25 00.1 +34.3 98.0	24 11.4 +34.1 97.4	23 22.6 +34.1 96.8	22 33.8 +34.0 96.1	21 44.9 +33.9 95.5
9°	25 34.4 +33.9 97.1	24 45.5 +33.9 96.5	23 56.7 +33.7 95.9	23 07.8 +33.6 95.2	22 18.8 +33.6 94.6
10°	26 08.3 +33.5 96.2	25 19.4 +33.5 95.6	24 30.4 +33.4 94.9	23 41.4 +33.4 94.3	22 52.4 +33.3 93.7
11°	26 41.8 +33.2 95.2	25 52.9 +33.1 94.6	25 03.8 +33.1 94.0	24 14.8 +33.0 93.4	23 25.7 +33.0 92.8
12°	27 15.0 +32.8 94.3	26 26.0 +32.7 93.7	25 36.9 +32.7 93.1	24 47.8 +32.7 92.5	23 58.7 +32.7 91.9
13°	27 47.8 +32.5 93.4	26 58.7 +32.4 92.8	26 09.6 +32.4 92.2	25 20.5 +32.4 91.6	24 31.4 +32.3 91.0
14°	28 20.3 +32.0 92.4	27 31.1 +32.0 91.8	26 42.0 +32.0 91.2	25 52.9 +31.9 90.7	25 03.7 +32.0 90.1
15°	28 52.3 +31.6 91.4	28 03.1 +31.6 90.9	27 14.0 +31.6 90.3	26 24.8 +31.7 89.7	25 35.7 +31.6 89.1
16°	29 23.9 +31.2 90.5	28 34.7 +31.2 89.9	27 45.6 +31.2 89.3	26 56.5 +31.2 88.8	26 07.3 +31.3 88.2
17°	29 55.1 +30.7 89.5	29 05.9 +30.8 88.9	28 16.8 +30.8 88.4	27 27.7 +30.8 87.8	26 38.6 +30.8 87.2
18°	30 25.8 +30.3 88.5	29 36.7 +30.3 87.9	28 47.6 +30.3 87.4	27 58.5 +30.4 86.8	27 09.4 +30.5 86.3
19°	30 56.1 +29.8 87.5	30 07.0 +29.9 86.9	29 17.9 +30.0 86.4	28 28.9 +30.0 85.9	27 39.9 +30.1 85.3
20°	31 25.9 +29.3 86.5	30 36.9 +29.4 85.9	29 47.9 +29.4 85.4	28 58.9 +29.5 84.9	28 10.0 +29.6 84.3
21°	31 55.2 +28.9 85.5	31 06.3 +28.9 84.9	30 17.3 +29.0 84.4	29 28.4 +29.1 83.9	28 39.6 +29.2 83.3
22°	32 24.1 +28.3 84.4	31 35.2 +28.4 83.9	30 46.3 +28.6 83.4	29 57.5 +28.7 82.9	29 08.8 +28.8 82.3
23°	32 52.4 +27.8 83.4	32 03.6 +27.9 82.9	31 14.9 +28.0 82.4	30 26.2 +28.1 81.8	29 37.6 +28.2 81.3
24°	33 20.2 +27.2 82.3	32 31.5 +27.4 81.8	31 42.9 +27.5 81.3	30 54.3 +27.7 80.8	30 05.8 +27.9 80.3
25°	33 47.4 +26.7 81.2	32 58.9 +26.8 80.8	32 10.4 +27.0 80.3	31 22.0 +27.2 79.8	30 33.7 +27.3 79.3
26°	34 14.1 +26.1 80.2	33 25.7 +26.3 79.7	32 37.4 +26.5 79.2	31 49.2 +26.6 78.7	31 01.0 +26.8 78.3
27°	34 40.2 +25.5 79.1	33 52.0 +25.7 78.6	33 03.9 +25.9 78.1	32 15.8 +26.1 77.7	31 27.8 +26.3 77.2
28°	35 05.7 +25.0 78.0	34 17.7 +25.1 77.5	33 29.8 +25.3 77.1	32 41.9 +25.6 76.6	31 54.1 +25.8 76.2
29°	35 30.7 +24.3 76.9	34 42.8 +24.6 76.4	33 55.1 +24.8 76.0	33 07.5 +25.0 75.5	32 19.9 +25.3 75.1

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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°	16 16.2 +35.8 101.8	15 28.0 +35.7 101.2	14 39.8 +35.5 100.6	13 51.4 +35.4 99.9	13 03.0 +35.2 99.3
1°	16 52.0 +35.5 101.0	16 03.7 +35.4 100.3	15 15.3 +35.3 99.7	14 26.8 +35.2 99.1	13 38.2 +35.1 98.5
2°	17 27.5 +35.3 100.1	16 39.1 +35.2 99.5	15 50.6 +35.1 98.9	15 02.0 +35.0 98.3	14 13.3 +34.9 97.7
3°	18 02.8 +35.1 99.3	17 14.3 +35.0 98.6	16 25.7 +34.9 98.0	15 37.0 +34.8 97.4	14 48.2 +34.7 96.8
4°	18 37.9 +34.9 98.4	17 49.3 +34.8 97.8	17 00.6 +34.6 97.2	16 11.8 +34.6 96.6	15 22.9 +34.5 96.0
5°	19 12.8 +34.6 97.5	18 24.1 +34.5 96.9	17 35.2 +34.5 96.3	16 46.4 +34.4 95.7	15 57.4 +34.4 95.1
6°	19 47.4 +34.4 96.7	18 58.6 +34.3 96.1	18 09.7 +34.2 95.5	17 20.8 +34.1 94.9	16 31.8 +34.1 94.3
7°	20 21.8 +34.1 95.8	19 32.9 +34.1 95.2	18 43.9 +34.0 94.6	17 54.9 +34.0 94.0	17 05.9 +33.9 93.4
8°	20 55.9 +33.9 94.9	20 07.0 +33.7 94.3	19 17.9 +33.8 93.7	18 28.9 +33.7 93.1	17 39.8 +33.7 92.6
9°	21 29.8 +33.6 94.0	20 40.7 +33.6 93.4	19 51.7 +33.5 92.9	19 02.6 +33.4 92.3	18 13.5 +33.4 91.7
10°	22 03.4 +33.2 93.2	21 14.3 +33.2 92.6	20 25.2 +33.2 92.0	19 36.0 +33.2 91.4	18 46.9 +33.2 90.8
11°	22 36.6 +33.0 92.3	21 47.5 +32.9 91.7	20 58.4 +32.9 91.1	20 09.2 +33.0 90.5	19 20.1 +32.9 89.9
12°	23 09.6 +32.6 91.3	22 20.4 +32.7 90.8	21 31.3 +32.6 90.2	20 42.2 +32.6 89.6	19 53.0 +32.7 89.0
13°	23 42.2 +32.4 90.4	22 53.1 +32.3 89.9	22 03.9 +32.4 89.3	21 14.8 +32.4 88.7	20 25.7 +32.4 88.2
14°	24 14.6 +32.0 89.5	23 25.4 +32.0 88.9	22 36.3 +32.0 88.4	21 47.2 +32.0 87.8	20 58.1 +32.1 87.3
15°	24 46.6 +31.6 88.6	23 57.4 +31.7 88.0	23 08.3 +31.7 87.5	22 19.2 +31.8 86.9	21 30.2 +31.8 86.3
16°	25 18.2 +31.3 87.6	24 29.1 +31.3 87.1	23 40.0 +31.4 86.5	22 51.0 +31.4 86.0	22 02.0 +31.5 85.4
17°	25 49.5 +30.9 86.7	25 00.4 +31.0 86.1	24 11.4 +31.1 85.6	23 22.4 +31.1 85.1	22 33.5 +31.2 84.5
18°	26 20.4 +30.5 85.7	25 31.4 +30.6 85.2	24 42.5 +30.6 84.7	23 53.5 +30.8 84.1	23 04.7 +30.8 83.6
19°	26 50.9 +30.2 84.8	26 02.0 +30.2 84.2	25 13.1 +30.4 83.7	24 24.3 +30.4 83.2	23 35.5 +30.6 82.7
20°	27 21.1 +29.7 83.8	26 32.2 +29.9 83.3	25 43.5 +29.9 82.8	24 54.7 +30.1 82.2	24 06.1 +30.1 81.7
21°	27 50.8 +29.3 82.8	27 02.1 +29.4 82.3	26 13.4 +29.5 81.8	25 24.8 +29.7 81.3	24 36.2 +29.9 80.8
22°	28 20.1 +28.9 81.8	27 31.5 +29.0 81.3	26 42.9 +29.2 80.8	25 54.5 +29.3 80.3	25 06.1 +29.4 79.8
23°	28 49.0 +28.4 80.8	28 00.5 +28.6 80.3	27 12.1 +28.7 79.8	26 23.8 +28.9 79.3	25 35.5 +29.1 78.8
24°	29 17.4 +28.0 79.8	28 29.1 +28.1 79.3	27 40.8 +28.3 78.8	26 52.7 +28.4 78.4	26 04.6 +28.6 77.9
25°	29 45.4 +27.5 78.8	28 57.2 +27.7 78.3	28 09.1 +27.9 77.9	27 21.1 +28.1 77.4	26 33.2 +28.3 76.9
26°	30 12.9 +27.0 77.8	29 24.9 +27.2 77.3	28 37.0 +27.4 76.8	27 49.2 +27.6 76.4	27 01.5 +27.8 75.9
27°	30 39.9 +26.6 76.8	29 52.1 +26.8 76.3	29 04.4 +27.0 75.8	28 16.8 +27.2 75.4	27 29.3 +27.5 74.9
28°	31 06.5 +26.0 75.7	30 18.9 +26.2 75.3	29 31.4 +26.5 74.8	28 44.0 +26.8 74.4	27 56.8 +26.9 73.9
29°	31 32.5 +25.5 74.7	30 45.1 +25.8 74.2	29 57.9 +26.0 73.8	29 10.8 +26.2 73.3	28 23.7 +26.6 72.9

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°	12 14.4 +35.2 98.7	11 25.8 +35.0 98.1	10 37.1 +35.0 97.5	9 48.4 +34.8 97.0	8 59.5 +34.8 96.4
1°	12 49.6 +34.9 97.9	12 00.8 +34.9 97.3	11 12.1 +34.8 96.7	10 23.2 +34.8 96.1	9 34.3 +34.7 95.5
2°	13 24.5 +34.9 97.1	12 35.7 +34.8 96.5	11 46.9 +34.6 95.9	10 58.0 +34.6 95.3	10 09.0 +34.5 94.7
3°	13 59.4 +34.6 96.2	13 10.5 +34.5 95.6	12 21.5 +34.5 95.0	11 32.6 +34.4 94.5	10 43.5 +34.4 93.9
4°	14 34.0 +34.5 95.4	13 45.0 +34.4 94.8	12 56.0 +34.4 94.2	12 07.0 +34.3 93.6	11 17.9 +34.3 93.0
5°	15 08.5 +34.2 94.5	14 19.4 +34.3 94.0	13 30.4 +34.2 93.4	12 41.3 +34.2 92.8	11 52.2 +34.1 92.2
6°	15 42.7 +34.1 93.7	14 53.7 +34.0 93.1	14 04.6 +34.0 92.5	13 15.5 +34.0 91.9	12 26.3 +34.0 91.4
7°	16 16.8 +33.9 92.8	15 27.7 +33.8 92.3	14 38.6 +33.8 91.7	13 49.5 +33.8 91.1	13 00.3 +33.8 90.5
8°	16 50.7 +33.6 92.0	16 01.5 +33.7 91.4	15 12.4 +33.6 90.8	14 23.3 +33.6 90.2	13 34.1 +33.6 89.7
9°	17 24.3 +33.4 91.1	16 35.2 +33.4 90.5	15 46.0 +33.4 90.0	14 56.9 +33.4 89.4	14 07.7 +33.5 88.8
10°	17 57.7 +33.2 90.2	17 08.6 +33.2 89.7	16 19.4 +33.3 89.1	15 30.3 +33.2 88.5	14 41.2 +33.2 88.0
11°	18 30.9 +33.0 89.4	17 41.8 +32.9 88.8	16 52.7 +32.9 88.2	16 03.5 +33.1 87.7	15 14.4 +33.1 87.1
12°	19 03.9 +32.7 88.5	18 14.7 +32.8 87.9	17 25.6 +32.8 87.4	16 36.6 +32.8 86.8	15 47.5 +32.8 86.2
13°	19 36.6 +32.4 87.6	18 47.5 +32.4 87.0	17 58.4 +32.5 86.5	17 09.4 +32.5 85.9	16 20.3 +32.7 85.4
14°	20 09.0 +32.1 86.7	19 19.9 +32.2 86.1	18 30.9 +32.3 85.6	17 41.9 +32.4 85.0	16 53.0 +32.4 84.5
15°	20 41.1 +31.9 85.8	19 52.1 +32.0 85.2	19 03.2 +32.0 84.7	18 14.3 +32.1 84.1	17 25.4 +32.2 83.6
16°	21 13.0 +31.6 84.9	20 24.1 +31.6 84.3	19 35.2 +31.7 83.8	18 46.4 +31.8 83.3	17 57.6 +31.9 82.7
17°	21 44.6 +31.3 84.0	20 55.7 +31.4 83.4	20 06.9 +31.5 82.9	19 18.2 +31.6 82.4	18 29.5 +31.7 81.8
18°	22 15.9 +30.9 83.1	21 27.1 +31.1 82.5	20 38.4 +31.2 82.0	19 49.8 +31.3 81.5	19 01.2 +31.4 80.9
19°	22 46.8 +30.7 82.1	21 58.2 +30.7 81.6	21 09.6 +30.9 81.1	20 21.1 +31.0 80.6	19 32.6 +31.2 80.0
20°	23 17.5 +30.3 81.2	22 28.9 +30.5 80.7	21 40.5 +30.5 80.2	20 52.1 +30.7 79.6	20 03.8 +30.8 79.1
21°	23 47.8 +29.9 80.2	22 59.4 +30.1 79.7	22 11.0 +30.3 79.2	21 22.8 +30.4 78.7	20 34.6 +30.6 78.2
22°	24 17.7 +29.6 79.3	23 29.5 +29.7 78.8	22 41.3 +29.9 78.3	21 53.2 +30.1 77.8	21 05.2 +30.3 77.3
23°	24 47.3 +29.3 78.3	23 59.2 +29.4 77.8	23 11.2 +29.6 77.4	22 23.3 +29.8 76.9	21 35.5 +30.0 76.4
24°	25 16.6 +28.8 77.4	24 28.6 +29.1 76.9	23 40.8 +29.3 76.4	22 53.1 +29.4 75.9	22 05.5 +29.6 75.4
25°	25 45.4 +28.5 76.4	24 57.7 +28.7 75.9	24 10.1 +28.8 75.4	23 22.5 +29.1 75.0	22 35.1 +29.3 74.5
26°	26 13.9 +28.0 75.4	25 26.4 +28.2 75.0	24 38.9 +28.6 74.5	23 51.6 +28.8 74.0	23 04.4 +29.0 73.5
27°	26 41.9 +27.7 74.4	25 54.6 +27.9 74.0	25 07.5 +28.1 73.5	24 20.4 +28.4 73.0	23 33.4 +28.7 72.6
28°	27 09.6 +27.2 73.4	26 22.5 +27.5 73.0	25 35.6 +27.7 72.5	24 48.8 +28.0 72.1	24 02.1 +28.2 71.6
29°	27 36.8 +26.8 72.4	26 50.0 +27.1 72.0	26 03.3 +27.4 71.6	25 16.8 +27.6 71.1	24 30.3 +27.9 70.7

Declination SAME name as Latitude

Latitude 35°

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 10.7 +34.7 95.8	7 21.7 +34.7 95.2	6 32.8 +34.6 94.6	5 43.8 +34.5 94.0	4 54.7 +34.5 93.4
1°	8 45.4 +34.6 95.0	7 56.4 +34.6 94.4	7 07.4 +34.5 93.8	6 18.3 +34.5 93.2	5 29.2 +34.5 92.6
2°	9 20.0 +34.5 94.1	8 31.0 +34.4 93.5	7 41.9 +34.4 93.0	6 52.8 +34.4 92.4	6 03.7 +34.3 91.8
3°	9 54.5 +34.4 93.3	9 05.4 +34.3 92.7	8 16.3 +34.3 92.1	7 27.2 +34.3 91.6	6 38.0 +34.3 91.0
4°	10 28.9 +34.2 92.5	9 39.7 +34.3 91.9	8 50.6 +34.2 91.3	8 01.5 +34.2 90.7	7 12.3 +34.2 90.2
5°	11 03.1 +34.1 91.6	10 14.0 +34.1 91.0	9 24.8 +34.1 90.5	8 35.7 +34.1 89.9	7 46.5 +34.1 89.3
6°	11 37.2 +34.0 90.8	10 48.1 +33.9 90.2	9 58.9 +34.0 89.6	9 09.8 +33.9 89.1	8 20.6 +34.0 88.5
7°	12 11.2 +33.8 89.9	11 22.0 +33.8 89.4	10 32.9 +33.8 88.8	9 43.7 +33.9 88.2	8 54.6 +33.9 87.7
8°	12 45.0 +33.6 89.1	11 55.8 +33.7 88.5	11 06.7 +33.7 88.0	10 17.6 +33.7 87.4	9 28.5 +33.8 86.8
9°	13 18.6 +33.5 88.2	12 29.5 +33.5 87.7	11 40.4 +33.5 87.1	10 51.3 +33.6 86.5	10 02.3 +33.6 86.0
10°	13 52.1 +33.3 87.4	13 03.0 +33.3 86.8	12 13.9 +33.4 86.3	11 24.9 +33.4 85.7	10 35.9 +33.5 85.1
11°	14 25.4 +33.1 86.5	13 36.3 +33.2 86.0	12 47.3 +33.2 85.4	11 58.3 +33.3 84.9	11 09.4 +33.4 84.3
12°	14 58.5 +32.9 85.7	14 09.5 +33.0 85.1	13 20.5 +33.1 84.6	12 31.6 +33.2 84.0	11 42.8 +33.2 83.5
13°	15 31.4 +32.7 84.8	14 42.5 +32.7 84.3	13 53.6 +32.8 83.7	13 04.8 +32.9 83.2	12 16.0 +33.0 82.6
14°	16 04.1 +32.5 83.9	15 15.2 +32.6 83.4	14 26.4 +32.7 82.8	13 37.7 +32.8 82.3	12 49.0 +32.9 81.7
15°	16 36.6 +32.3 83.1	15 47.8 +32.4 82.5	14 59.1 +32.5 82.0	14 10.5 +32.6 81.4	13 21.9 +32.7 80.9
16°	17 08.9 +32.0 82.2	16 20.2 +32.1 81.6	15 31.6 +32.3 81.1	14 43.1 +32.4 80.6	13 54.6 +32.6 80.0
17°	17 40.9 +31.8 81.3	16 52.3 +32.0 80.8	16 03.9 +32.0 80.2	15 15.5 +32.2 79.7	14 27.2 +32.3 79.2
18°	18 12.7 +31.5 80.4	17 24.3 +31.7 79.9	16 35.9 +31.9 79.3	15 47.7 +32.0 78.8	14 59.5 +32.1 78.3
19°	18 44.2 +31.3 79.5	17 56.0 +31.4 79.0	17 07.8 +31.6 78.5	16 19.7 +31.7 77.9	15 31.6 +32.0 77.4
20°	19 15.5 +31.1 78.6	18 27.4 +31.2 78.1	17 39.4 +31.3 77.6	16 51.4 +31.6 77.0	16 03.6 +31.7 76.5
21°	19 46.6 +30.7 77.7	18 58.6 +30.9 77.2	18 10.7 +31.1 76.7	17 23.0 +31.3 76.2	16 35.3 +31.5 75.6
22°	20 17.3 +30.5 76.8	19 29.5 +30.7 76.3	18 41.8 +30.9 75.8	17 54.3 +31.0 75.3	17 06.8 +31.2 74.8
23°	20 47.8 +30.2 75.9	20 00.2 +30.4 75.4	19 12.7 +30.6 74.9	18 25.3 +30.8 74.4	17 38.0 +31.0 73.9
24°	21 18.0 +29.8 74.9	20 30.6 +30.0 74.4	19 43.3 +30.3 74.0	18 56.1 +30.5 73.5	18 09.0 +30.8 73.0
25°	21 47.8 +29.6 74.0	21 00.6 +29.8 73.5	20 13.6 +30.0 73.0	19 26.6 +30.3 72.5	18 39.8 +30.5 72.1
26°	22 17.4 +29.2 73.1	21 30.4 +29.5 72.6	20 43.6 +29.7 72.1	19 56.9 +29.9 71.6	19 10.3 +30.2 71.1
27°	22 46.6 +28.9 72.1	21 59.9 +29.1 71.6	21 13.3 +29.4 71.2	20 26.8 +29.7 70.7	19 40.5 +30.0 70.2
28°	23 15.5 +28.5 71.2	22 29.0 +28.8 70.7	21 42.7 +29.1 70.2	20 56.5 +29.4 69.8	20 10.5 +29.6 69.3
29°	23 44.0 +28.2 70.2	22 57.8 +28.5 69.8	22 11.8 +28.8 69.3	21 25.9 +29.0 68.8	20 40.1 +29.4 68.4

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 05.6 +34.5 92.9	3 16.5 +34.5 92.3	2 27.4 +34.5 91.7	1 38.3 +34.4 91.1	0 49.1 +34.5 90.6
1°	4 40.1 +34.4 92.1	3 51.0 +34.4 91.5	3 01.9 +34.3 90.9	2 12.7 +34.4 90.3	1 23.6 +34.4 89.8
2°	5 14.5 +34.4 91.2	4 25.4 +34.3 90.7	3 36.2 +34.4 90.1	2 47.1 +34.4 89.5	1 58.0 +34.3 88.9
3°	5 48.9 +34.3 90.4	4 59.7 +34.3 89.8	4 10.6 +34.3 89.3	3 21.5 +34.3 88.7	2 32.3 +34.4 88.1
4°	6 23.2 +34.2 89.6	5 34.0 +34.2 89.0	4 44.9 +34.2 88.4	3 55.8 +34.2 87.9	3 06.7 +34.3 87.3
5°	6 57.4 +34.1 88.8	6 08.2 +34.2 88.2	5 19.1 +34.2 87.6	4 30.0 +34.2 87.0	3 41.0 +34.2 86.5
6°	7 31.5 +34.0 87.9	6 42.4 +34.0 87.4	5 53.3 +34.1 86.8	5 04.2 +34.2 86.2	4 15.2 +34.2 85.6
7°	8 05.5 +33.9 87.1	7 16.4 +34.0 86.5	6 27.4 +34.0 86.0	5 38.4 +34.1 85.4	4 49.4 +34.2 84.8
8°	8 39.4 +33.9 86.3	7 50.4 +33.9 85.7	7 01.4 +34.0 85.1	6 12.5 +34.0 84.6	5 23.6 +34.0 84.0
9°	9 13.3 +33.7 85.4	8 24.3 +33.7 84.9	7 35.4 +33.8 84.3	6 46.5 +33.9 83.7	5 57.6 +34.0 83.2
10°	9 47.0 +33.5 84.6	8 58.0 +33.7 84.0	8 09.2 +33.7 83.5	7 20.4 +33.8 82.9	6 31.6 +34.0 82.3
11°	10 20.5 +33.5 83.7	9 31.7 +33.5 83.2	8 42.9 +33.6 82.6	7 54.2 +33.7 82.1	7 05.6 +33.8 81.5
12°	10 54.0 +33.3 82.9	10 05.2 +33.4 82.3	9 16.5 +33.6 81.8	8 27.9 +33.7 81.2	7 39.4 +33.7 80.7
13°	11 27.3 +33.1 82.0	10 38.6 +33.3 81.5	9 50.1 +33.3 80.9	9 01.6 +33.5 80.4	8 13.1 +33.7 79.8
14°	12 00.4 +33.0 81.2	11 11.9 +33.1 80.7	10 23.4 +33.3 80.1	9 35.1 +33.3 79.6	8 46.8 +33.5 79.0
15°	12 33.4 +32.9 80.3	11 45.0 +33.0 79.8	10 56.7 +33.1 79.3	10 08.4 +33.3 78.7	9 20.3 +33.4 78.2
16°	13 06.3 +32.6 79.5	12 18.0 +32.8 78.9	11 29.8 +33.0 78.4	10 41.7 +33.1 77.9	9 53.7 +33.3 77.3
17°	13 38.9 +32.5 78.6	12 50.8 +32.6 78.1	12 02.8 +32.8 77.6	11 14.8 +33.0 77.0	10 27.0 +33.1 76.5
18°	14 11.4 +32.3 77.8	13 23.4 +32.5 77.2	12 35.6 +32.6 76.7	11 47.8 +32.8 76.2	11 00.1 +33.0 75.6
19°	14 43.7 +32.1 76.9	13 55.9 +32.3 76.4	13 08.2 +32.5 75.8	12 20.6 +32.7 75.3	11 33.1 +32.9 74.8
20°	15 15.8 +31.9 76.0	14 28.2 +32.1 75.5	13 40.7 +32.2 75.0	12 53.3 +32.4 74.4	12 06.0 +32.7 73.9
21°	15 47.7 +31.7 75.1	15 00.3 +31.9 74.6	14 12.9 +32.1 74.1	13 25.7 +32.4 73.6	12 38.7 +32.5 73.1
22°	16 19.4 +31.5 74.2	15 32.2 +31.6 73.7	14 45.0 +31.9 73.2	13 58.1 +32.1 72.7	13 11.2 +32.3 72.2
23°	16 50.9 +31.2 73.4	16 03.8 +31.5 72.9	15 16.9 +31.7 72.4	14 30.2 +31.9 71.8	13 43.5 +32.2 71.3
24°	17 22.1 +31.0 72.5	16 35.3 +31.2 72.0	15 48.6 +31.5 71.5	15 02.1 +31.7 71.0	14 15.7 +32.0 70.5
25°	17 53.1 +30.8 71.6	17 06.5 +31.0 71.1	16 20.1 +31.3 70.6	15 33.8 +31.6 70.1	14 47.7 +31.8 69.6
26°	18 23.9 +30.4 70.7	17 37.5 +30.8 70.2	16 51.4 +31.0 69.7	16 05.4 +31.3 69.2	15 19.5 +31.6 68.7
27°	18 54.3 +30.3 69.8	18 08.3 +30.5 69.3	17 22.4 +30.8 68.8	16 36.7 +31.0 68.3	15 51.1 +31.3 67.8
28°	19 24.6 +29.9 68.8	18 38.8 +30.2 68.4	17 53.2 +30.5 67.9	17 07.7 +30.9 67.4	16 22.4 +31.2 66.9
29°	19 54.5 +29.7 67.9	19 09.0 +30.0 67.5	18 23.7 +30.3 67.0	17 38.6 +30.5 66.5	16 53.6 +30.9 66.1

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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 +34.4 90.0	-0 49.1 +34.4	-1 38.3 +34.4	-2 27.4 +34.4	-3 16.5 +34.4
1°	0 34.4 +34.4 89.2	-0 14.7 +34.4	-1 03.9 +34.5	-1 53.0 +34.5	-2 42.1 +34.6
2°	1 08.8 +34.4 88.4	0 19.7 +34.4 87.8	-0 29.4 +34.5	-1 18.5 +34.5	-2 07.5 +34.5
3°	1 43.2 +34.4 87.5	0 54.1 +34.4 87.0	0 05.1 +34.4 86.4	-0 44.0 +34.5	-1 33.0 +34.6
4°	2 17.6 +34.3 86.7	1 28.5 +34.4 86.1	0 39.5 +34.5 85.6	-0 09.5 +34.5	-0 58.4 +34.6
5°	2 51.9 +34.3 85.9	2 02.9 +34.4 85.3	1 14.0 +34.4 84.8	0 25.0 +34.5 84.2	-0 23.8 +34.5
6°	3 26.2 +34.3 85.1	2 37.3 +34.3 84.5	1 48.4 +34.4 83.9	0 59.5 +34.5 83.4	0 10.7 +34.6 82.8
7°	4 00.5 +34.2 84.3	3 11.6 +34.3 83.7	2 22.8 +34.4 83.1	1 34.0 +34.5 82.5	0 45.3 +34.6 82.0
8°	4 34.7 +34.2 83.4	3 45.9 +34.3 82.9	2 57.2 +34.3 82.3	2 08.5 +34.5 81.7	1 19.9 +34.6 81.2
9°	5 08.9 +34.1 82.6	4 20.2 +34.2 82.0	3 31.5 +34.3 81.5	2 43.0 +34.4 80.9	1 54.5 +34.5 80.3
10°	5 43.0 +34.0 81.8	4 54.4 +34.1 81.2	4 05.8 +34.3 80.7	3 17.4 +34.3 80.1	2 29.0 +34.5 79.5
11°	6 17.0 +33.9 81.0	5 28.5 +34.1 80.4	4 40.1 +34.2 79.8	3 51.7 +34.4 79.3	3 03.5 +34.5 78.7
12°	6 50.9 +33.9 80.1	6 02.6 +34.0 79.6	5 14.3 +34.1 79.0	4 26.1 +34.2 78.4	3 38.0 +34.4 77.9
13°	7 24.8 +33.8 79.3	6 36.6 +33.9 78.7	5 48.4 +34.1 78.2	5 00.3 +34.2 77.6	4 12.4 +34.4 77.1
14°	7 58.6 +33.6 78.5	7 10.5 +33.8 77.9	6 22.5 +33.9 77.4	5 34.5 +34.2 76.8	4 46.8 +34.3 76.2
15°	8 32.2 +33.6 77.6	7 44.3 +33.7 77.1	6 56.4 +33.9 76.5	6 08.7 +34.1 76.0	5 21.1 +34.2 75.4
16°	9 05.8 +33.4 76.8	8 18.0 +33.6 76.2	7 30.3 +33.8 75.7	6 42.8 +33.9 75.1	5 55.3 +34.2 74.6
17°	9 39.2 +33.4 75.9	8 51.6 +33.5 75.4	8 04.1 +33.7 74.9	7 16.7 +33.9 74.3	6 29.5 +34.1 73.8
18°	10 12.6 +33.1 75.1	9 25.1 +33.4 74.6	8 37.8 +33.6 74.0	7 50.6 +33.8 73.5	7 03.6 +34.0 72.9
19°	10 45.7 +33.1 74.2	9 58.5 +33.3 73.7	9 11.4 +33.5 73.2	8 24.4 +33.7 72.6	7 37.6 +33.9 72.1
20°	11 18.8 +32.9 73.4	10 31.8 +33.1 72.9	9 44.9 +33.3 72.3	8 58.1 +33.6 71.8	8 11.5 +33.8 71.3
21°	11 51.7 +32.8 72.5	11 04.9 +33.0 72.0	10 18.2 +33.2 71.5	9 31.7 +33.4 71.0	8 45.3 +33.7 70.4
22°	12 24.5 +32.5 71.7	11 37.9 +32.8 71.2	10 51.4 +33.1 70.6	10 05.1 +33.3 70.1	9 19.0 +33.6 69.6
23°	12 57.0 +32.5 70.8	12 10.7 +32.7 70.3	11 24.5 +32.9 69.8	10 38.4 +33.2 69.3	9 52.6 +33.4 68.8
24°	13 29.5 +32.2 70.0	12 43.4 +32.5 69.5	11 57.4 +32.8 68.9	11 11.6 +33.1 68.4	10 26.0 +33.3 67.9
25°	14 01.7 +32.1 69.1	13 15.9 +32.3 68.6	12 30.2 +32.6 68.1	11 44.7 +32.9 67.6	10 59.3 +33.2 67.1
26°	14 33.8 +31.8 68.2	13 48.2 +32.1 67.7	13 02.8 +32.4 67.2	12 17.6 +32.7 66.7	11 32.5 +33.0 66.2
27°	15 05.6 +31.7 67.3	14 20.3 +32.0 66.9	13 35.2 +32.3 66.4	12 50.3 +32.6 65.9	12 05.5 +32.9 65.4
28°	15 37.3 +31.4 66.5	14 52.3 +31.8 66.0	14 07.5 +32.1 65.5	13 22.9 +32.3 65.0	12 38.4 +32.7 64.5
29°	16 08.7 +31.2 65.6	15 24.1 +31.5 65.1	14 39.6 +31.8 64.6	13 55.2 +32.2 64.1	13 11.1 +32.5 63.7

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°	-4 05.6 +34.5	-4 54.7 +34.6	-5 43.8 +34.7	-6 32.8 +34.7	-7 21.7 +34.7
1°	-3 31.1 +34.6	-4 20.1 +34.6	-5 09.1 +34.6	-5 58.1 +34.8	-6 47.0 +34.8
2°	-2 56.5 +34.6	-3 45.5 +34.6	-4 34.5 +34.8	-5 23.3 +34.8	-6 12.2 +34.9
3°	-2 21.9 +34.6	-3 10.9 +34.8	-3 59.7 +34.8	-4 48.5 +34.9	-5 37.3 +35.0
4°	-1 47.3 +34.6	-2 36.1 +34.7	-3 24.9 +34.8	-4 13.6 +34.9	-5 02.3 +35.0
5°	-1 12.7 +34.7	-2 01.4 +34.8	-2 50.1 +34.9	-3 38.7 +35.0	-4 27.3 +35.1
6°	-0 38.0 +34.7	-1 26.6 +34.7	-2 15.2 +34.9	-3 03.7 +35.0	-3 52.2 +35.2
7°	-0 03.3 +34.7	-0 51.9 +34.8	-1 40.3 +34.9	-2 28.7 +35.0	-3 17.0 +35.1
8°	0 31.4 +34.7 80.6	-0 17.1 +34.8	-1 05.4 +34.9	-1 53.7 +35.1	-2 41.9 +35.2
9°	1 06.1 +34.6 79.8	0 17.7 +34.8 79.2	-0 30.5 +34.9	-1 18.6 +35.0	-2 06.7 +35.3
10°	1 40.7 +34.6 79.0	0 52.5 +34.8 78.4	0 04.4 +35.0 77.8	-0 43.6 +35.1	-1 31.4 +35.2
11°	2 15.3 +34.7 78.1	1 27.3 +34.8 77.6	0 39.4 +34.9 77.0	-0 08.5 +35.1	-0 56.2 +35.3
12°	2 50.0 +34.5 77.3	2 02.1 +34.7 76.8	1 14.3 +34.9 76.2	0 26.6 +35.1 75.6	-0 20.9 +35.2
13°	3 24.5 +34.6 76.5	2 36.8 +34.7 75.9	1 49.2 +34.9 75.4	1 01.7 +35.1 74.8	0 14.3 +35.3 74.2
14°	3 59.1 +34.5 75.7	3 11.5 +34.7 75.1	2 24.1 +34.8 74.6	1 36.8 +35.0 74.0	0 49.6 +35.2 73.4
15°	4 33.6 +34.4 74.9	3 46.2 +34.6 74.3	2 58.9 +34.8 73.7	2 11.8 +35.0 73.2	1 24.8 +35.3 72.6
16°	5 08.0 +34.4 74.0	4 20.8 +34.6 73.5	3 33.7 +34.8 72.9	2 46.8 +35.0 72.4	2 00.1 +35.2 71.8
17°	5 42.4 +34.3 73.2	4 55.4 +34.5 72.7	4 08.5 +34.8 72.1	3 21.8 +35.0 71.6	2 35.3 +35.2 71.0
18°	6 16.7 +34.2 72.4	5 29.9 +34.4 71.8	4 43.3 +34.6 71.3	3 56.8 +34.9 70.7	3 10.5 +35.1 70.2
19°	6 50.9 +34.1 71.6	6 04.3 +34.4 71.0	5 17.9 +34.6 70.5	4 31.7 +34.8 69.9	3 45.6 +35.1 69.4
20°	7 25.0 +34.1 70.7	6 38.7 +34.3 70.2	5 52.5 +34.6 69.7	5 06.5 +34.8 69.1	4 20.7 +35.0 68.6
21°	7 59.1 +33.9 69.9	7 13.0 +34.2 69.4	6 27.1 +34.4 68.8	5 41.3 +34.7 68.3	4 55.7 +35.0 67.7
22°	8 33.0 +33.8 69.1	7 47.2 +34.1 68.5	7 01.5 +34.4 68.0	6 16.0 +34.7 67.5	5 30.7 +34.9 66.9
23°	9 06.8 +33.7 68.2	8 21.3 +34.0 67.7	7 35.9 +34.2 67.2	6 50.7 +34.5 66.6	6 05.6 +34.9 66.1
24°	9 40.5 +33.6 67.4	8 55.3 +33.8 66.9	8 10.1 +34.2 66.4	7 25.2 +34.5 65.8	6 40.5 +34.7 65.3
25°	10 14.1 +33.5 66.6	9 29.1 +33.8 66.0	8 44.3 +34.1 65.5	7 59.7 +34.3 65.0	7 15.2 +34.7 64.5
26°	10 47.6 +33.3 65.7	10 02.9 +33.6 65.2	9 18.4 +33.9 64.7	8 34.0 +34.3 64.2	7 49.9 +34.6 63.6
27°	11 20.9 +33.2 64.9	10 36.5 +33.5 64.4	9 52.3 +33.8 63.9	9 08.3 +34.1 63.3	8 24.5 +34.5 62.8
28°	11 54.1 +33.1 64.0	11 10.0 +33.4 63.5	10 26.1 +33.7 63.0	9 42.4 +34.1 62.5	8 59.0 +34.3 62.0
29°	12 27.2 +32.8 63.2	11 43.4 +33.2 62.7	10 59.8 +33.6 62.2	10 16.5 +33.9 61.7	9 33.3 +34.3 61.2

Declination SAME name as Latitude

Latitude 35°

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°	-8 10.7 +34.9	-8 59.5 +34.9	-9 48.4 +35.0		
1°	-7 35.8 +34.9	-8 24.6 +35.0	-9 13.4 +35.1		
2°	-7 00.9 +35.0	-7 49.6 +35.1	-8 38.3 +35.2	-9 26.8 +35.3	
3°	-6 25.9 +35.0	-7 14.5 +35.1	-8 03.1 +35.3	-8 51.5 +35.4	-9 39.9 +35.6
4°	-5 50.9 +35.2	-6 39.4 +35.3	-7 27.8 +35.4	-8 16.1 +35.5	-9 04.3 +35.6
5°	-5 15.7 +35.2	-6 04.1 +35.3	-6 52.4 +35.5	-7 40.6 +35.6	-8 28.7 +35.8
6°	-4 40.5 +35.2	-5 28.8 +35.4	-6 16.9 +35.5	-7 05.0 +35.7	-7 52.9 +35.8
7°	-4 05.3 +35.4	-4 53.4 +35.5	-5 41.4 +35.6	-6 29.3 +35.8	-7 17.1 +36.0
8°	-3 29.9 +35.3	-4 17.9 +35.5	-5 05.8 +35.7	-5 53.5 +35.8	-6 41.1 +36.0
9°	-2 54.6 +35.4	-3 42.4 +35.5	-4 30.1 +35.7	-5 17.7 +35.9	-6 05.1 +36.1
10°	-2 19.2 +35.4	-3 06.9 +35.6	-3 54.4 +35.8	-4 41.8 +36.0	-5 29.0 +36.1
11°	-1 43.8 +35.4	-2 31.3 +35.7	-3 18.6 +35.8	-4 05.8 +36.0	-4 52.9 +36.3
12°	-1 08.4 +35.5	-1 55.6 +35.6	-2 42.8 +35.9	-3 29.8 +36.1	-4 16.6 +36.2
13°	-0 32.9 +35.4	-1 20.0 +35.7	-2 06.9 +35.8	-2 53.7 +36.0	-3 40.4 +36.3
14°	0 02.5 +35.5 72.9	-0 44.3 +35.6	-1 31.1 +35.9	-2 17.7 +36.1	-3 04.1 +36.3
15°	0 38.0 +35.5 72.0	-0 08.7 +35.7	-0 55.2 +35.9	-1 41.6 +36.2	-2 27.8 +36.4
16°	1 13.5 +35.4 71.2	0 27.0 +35.7 70.7	-0 19.3 +35.9	-1 05.4 +36.1	-1 51.4 +36.4
17°	1 48.9 +35.4 70.4	1 02.7 +35.6 69.9	0 16.6 +35.9 69.3	-0 29.3 +36.2	-1 15.0 +36.4
18°	2 24.3 +35.4 69.6	1 38.3 +35.6 69.1	0 52.5 +35.9 68.5	0 06.9 +36.1 67.9	-0 38.6 +36.4
19°	2 59.7 +35.3 68.8	2 13.9 +35.6 68.3	1 28.4 +35.8 67.7	0 43.0 +36.1 67.1	-0 02.2 +36.4
20°	3 35.0 +35.3 68.0	2 49.5 +35.6 67.5	2 04.2 +35.9 66.9	1 19.1 +36.2 66.3	0 34.2 +36.4 65.8
21°	4 10.3 +35.3 67.2	3 25.1 +35.6 66.6	2 40.1 +35.8 66.1	1 55.3 +36.1 65.5	1 10.6 +36.4 65.0
22°	4 45.6 +35.2 66.4	4 00.7 +35.4 65.8	3 15.9 +35.8 65.3	2 31.4 +36.0 64.7	1 47.0 +36.4 64.2
23°	5 20.8 +35.1 65.6	4 36.1 +35.5 65.0	3 51.7 +35.7 64.5	3 07.4 +36.1 63.9	2 23.4 +36.3 63.4
24°	5 55.9 +35.1 64.8	5 11.6 +35.3 64.2	4 27.4 +35.7 63.7	3 43.5 +36.0 63.1	2 59.7 +36.3 62.6
25°	6 31.0 +35.0 63.9	5 46.9 +35.3 63.4	5 03.1 +35.6 62.9	4 19.5 +35.9 62.3	3 36.0 +36.3 61.8
26°	7 06.0 +34.9 63.1	6 22.2 +35.2 62.6	5 38.7 +35.5 62.1	4 55.4 +35.9 61.5	4 12.3 +36.2 61.0
27°	7 40.9 +34.8 62.3	6 57.4 +35.2 61.8	6 14.2 +35.5 61.2	5 31.3 +35.8 60.7	4 48.5 +36.2 60.2
28°	8 15.7 +34.7 61.5	7 32.6 +35.0 61.0	6 49.7 +35.4 60.4	6 07.1 +35.7 59.9	5 24.7 +36.1 59.4
29°	8 50.4 +34.6 60.7	8 07.6 +35.0 60.1	7 25.1 +35.3 59.6	6 42.8 +35.7 59.1	6 00.8 +36.0 58.6

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°					
1°					
2°					
3°					
4°	-9 52.5 +35.9				
5°	-9 16.6 +35.9				
6°	-8 40.7 +36.0	-9 28.4 +36.2			
7°	-8 04.7 +36.1	-8 52.2 +36.3	-9 39.6 +36.4		
8°	-7 28.6 +36.2	-8 15.9 +36.3	-9 03.2 +36.6	-9 50.2 +36.8	
9°	-6 52.4 +36.3	-7 39.6 +36.5	-8 26.6 +36.7	-9 13.4 +36.9	
10°	-6 16.1 +36.3	-7 03.1 +36.6	-7 49.9 +36.8	-8 36.5 +37.0	-9 23.0 +37.2
11°	-5 39.8 +36.5	-6 26.5 +36.6	-7 13.1 +36.8	-7 59.5 +37.1	-8 45.8 +37.3
12°	-5 03.3 +36.4	-5 49.9 +36.7	-6 36.3 +37.0	-7 22.4 +37.1	-8 08.5 +37.5
13°	-4 26.9 +36.6	-5 13.2 +36.8	-5 59.3 +37.0	-6 45.3 +37.3	-7 31.0 +37.4
14°	-3 50.3 +36.5	-4 36.4 +36.8	-5 22.3 +37.0	-6 08.0 +37.3	-6 53.6 +37.6
15°	-3 13.8 +36.6	-3 59.6 +36.9	-4 45.3 +37.2	-5 30.7 +37.4	-6 16.0 +37.7
16°	-2 37.2 +36.7	-3 22.7 +36.8	-4 08.1 +37.1	-4 53.3 +37.4	-5 38.3 +37.7
17°	-2 00.5 +36.6	-2 45.9 +37.0	-3 31.0 +37.2	-4 15.9 +37.5	-5 00.6 +37.7
18°	-1 23.9 +36.7	-2 08.9 +36.9	-2 53.8 +37.2	-3 38.4 +37.5	-4 22.9 +37.8
19°	-0 47.2 +36.7	-1 32.0 +37.0	-2 16.6 +37.3	-3 00.9 +37.5	-3 45.1 +37.9
20°	-0 10.5 +36.7	-0 55.0 +37.0	-1 39.3 +37.3	-2 23.4 +37.6	-3 07.2 +37.9
21°	0 26.2 +36.7 64.4	-0 18.0 +37.0	-1 02.0 +37.3	-1 45.8 +37.6	-2 29.3 +37.9
22°	1 02.9 +36.7 63.6	0 19.0 +36.9 63.0	-0 24.7 +37.3	-1 08.2 +37.6	-1 51.4 +37.9
23°	1 39.6 +36.6 62.8	0 55.9 +37.0 62.2	0 12.6 +37.3 61.7	-0 30.6 +37.6	-1 13.5 +38.0
24°	2 16.2 +36.6 62.0	1 32.9 +37.0 61.5	0 49.9 +37.2 60.9	0 07.0 +37.7 60.3	-0 35.5 +37.9
25°	2 52.8 +36.6 61.2	2 09.9 +36.9 60.7	1 27.1 +37.3 60.1	0 44.7 +37.6 59.5	0 02.4 +38.0 59.0
26°	3 29.4 +36.6 60.4	2 46.8 +36.9 59.9	2 04.4 +37.3 59.3	1 22.3 +37.6 58.8	0 40.4 +37.9 58.2
27°	4 06.0 +36.5 59.6	3 23.7 +36.9 59.1	2 41.7 +37.2 58.5	1 59.9 +37.5 58.0	1 18.3 +37.9 57.4
28°	4 42.5 +36.4 58.8	4 00.6 +36.8 58.3	3 18.9 +37.1 57.8	2 37.4 +37.6 57.2	1 56.2 +37.9 56.6
29°	5 18.9 +36.4 58.0	4 37.4 +36.7 57.5	3 56.0 +37.2 57.0	3 15.0 +37.5 56.4	2 34.1 +37.9 55.9

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Latitude 35°

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°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°	-9 31.8 +37.5				
12°	-8 54.3 +37.7	-9 39.9 +37.9			
13°	-8 16.6 +37.7	-9 02.0 +38.0	-9 47.2 +38.3		
14°	-7 38.9 +37.9	-8 24.0 +38.1	-9 08.9 +38.4	-9 53.5 +38.6	
15°	-7 01.0 +37.9	-7 45.9 +38.2	-8 30.5 +38.5	-9 14.9 +38.8	
16°	-6 23.1 +38.0	-7 07.7 +38.3	-7 52.0 +38.5	-8 36.1 +38.8	
17°	-5 45.1 +38.0	-6 29.4 +38.3	-7 13.5 +38.7	-7 57.3 +39.0	
18°	-5 07.1 +38.1	-5 51.1 +38.4	-6 34.8 +38.7	-7 18.3 +39.0	
19°	-4 29.0 +38.2	-5 12.7 +38.5	-5 56.1 +38.8	-6 39.3 +39.1	
20°	-3 50.8 +38.2	-4 34.2 +38.5	-5 17.3 +38.8	-6 00.2 +39.1	
21°	-3 12.6 +38.2	-3 55.7 +38.6	-4 38.5 +38.9	-5 21.1 +39.2	
22°	-2 34.4 +38.2	-3 17.1 +38.5	-3 59.6 +38.9	-4 41.9 +39.3	
23°	-1 56.2 +38.3	-2 38.6 +38.7	-3 20.7 +38.9	-4 02.6 +39.3	
24°	-1 17.9 +38.3	-1 59.9 +38.6	-2 41.8 +39.0	-3 23.3 +39.3	
25°	-0 39.6 +38.3	-1 21.3 +38.6	-2 02.8 +39.0	-2 44.0 +39.4	
26°	-0 01.3 +38.3	-0 42.7 +38.7	-1 23.8 +39.1	-2 04.6 +39.4	
27°	0 37.0 +38.3 56.9	-0 04.0 +38.7	-0 44.7 +39.0	-1 25.2 +39.4	
28°	1 15.3 +38.3 56.1	0 34.7 +38.6 55.5	-0 05.7 +39.0	-0 45.8 +39.4	
29°	1 53.6 +38.2 55.3	1 13.3 +38.7 54.8	0 33.3 +39.0 54.2	-0 06.4 +39.4	

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

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Declination SAME name as Latitude

Latitude 36°

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°	54 00.0 +60.0 180.0	53 59.3 +60.0 178.3	53 57.1 +59.9 176.6	53 53.5 +59.9 174.9	53 48.5 +59.7 173.2
1°	55 00.0 +60.0 180.0	54 59.3 +59.9 178.3	54 57.0 +60.0 176.5	54 53.4 +59.8 174.8	54 48.2 +59.7 173.0
2°	56 00.0 +60.0 180.0	55 59.2 +60.0 178.2	55 57.0 +59.9 176.4	55 53.2 +59.8 174.6	55 47.9 +59.7 172.9
3°	57 00.0 +60.0 180.0	56 59.2 +60.0 178.2	56 56.9 +59.9 176.3	56 53.0 +59.8 174.5	56 47.6 +59.7 172.7
4°	58 00.0 +60.0 180.0	57 59.2 +60.0 178.1	57 56.8 +59.9 176.2	57 52.8 +59.8 174.4	57 47.3 +59.6 172.5
5°	59 00.0 +60.0 180.0	58 59.2 +60.0 178.1	58 56.7 +59.9 176.1	58 52.6 +59.8 174.2	58 46.9 +59.7 172.3
6°	60 00.0 +60.0 180.0	59 59.2 +59.9 178.0	59 56.6 +59.9 176.0	59 52.4 +59.8 174.0	59 46.6 +59.6 172.1
7°	61 00.0 +60.0 180.0	60 59.1 +60.0 178.0	60 56.5 +59.9 175.9	60 52.2 +59.8 173.9	60 46.2 +59.6 171.8
8°	62 00.0 +60.0 180.0	61 59.1 +60.0 177.9	61 56.4 +59.9 175.8	61 52.0 +59.7 173.7	61 45.8 +59.5 171.6
9°	63 00.0 +60.0 180.0	62 59.1 +59.9 177.8	62 56.3 +59.9 175.7	62 51.7 +59.8 173.5	62 45.3 +59.5 171.3
10°	64 00.0 +60.0 180.0	63 59.0 +60.0 177.8	63 56.2 +59.9 175.5	63 51.5 +59.7 173.3	63 44.8 +59.5 171.1
11°	65 00.0 +60.0 180.0	64 59.0 +60.0 177.7	64 56.1 +59.8 175.4	64 51.2 +59.7 173.1	64 44.3 +59.5 170.8
12°	66 00.0 +60.0 180.0	65 59.0 +59.9 177.6	65 55.9 +59.9 175.2	65 50.9 +59.6 172.8	65 43.8 +59.4 170.4
13°	67 00.0 +60.0 180.0	66 58.9 +60.0 177.5	66 55.8 +59.8 175.0	66 50.5 +59.7 172.5	66 43.2 +59.4 170.1
14°	68 00.0 +60.0 180.0	67 58.9 +60.0 177.4	67 55.6 +59.8 174.8	67 50.2 +59.6 172.3	67 42.6 +59.3 169.7
15°	69 00.0 +60.0 180.0	68 58.9 +59.9 177.3	68 55.4 +59.8 174.6	68 49.8 +59.5 172.0	68 41.9 +59.2 169.3
16°	70 00.0 +60.0 180.0	69 58.8 +60.0 177.2	69 55.2 +59.8 174.4	69 49.3 +59.6 171.6	69 41.1 +59.2 168.9
17°	71 00.0 +60.0 180.0	70 58.8 +59.9 177.1	70 55.0 +59.8 174.1	70 48.9 +59.4 171.2	70 40.3 +59.0 168.4
18°	72 00.0 +60.0 180.0	71 58.7 +59.9 176.9	71 54.8 +59.7 173.9	71 48.3 +59.4 170.8	71 39.3 +59.0 167.8
19°	73 00.0 +60.0 180.0	72 58.6 +60.0 176.8	72 54.5 +59.7 173.6	72 47.7 +59.4 170.4	72 38.3 +58.9 167.2
20°	74 00.0 +60.0 180.0	73 58.6 +59.9 176.6	73 54.2 +59.7 173.2	73 47.1 +59.3 169.9	73 37.2 +58.7 166.6
21°	75 00.0 +60.0 180.0	74 58.5 +59.9 176.4	74 53.9 +59.6 172.8	74 46.4 +59.1 169.3	74 35.9 +58.5 165.8
22°	76 00.0 +60.0 180.0	75 58.4 +59.9 176.2	75 53.5 +59.6 172.4	75 45.5 +59.1 168.6	75 34.4 +58.3 165.0
23°	77 00.0 +60.0 180.0	76 58.3 +59.8 175.9	76 53.1 +59.5 171.9	76 44.6 +58.8 167.9	76 32.7 +58.1 164.0
24°	78 00.0 +60.0 180.0	77 58.1 +59.9 175.6	77 52.6 +59.4 171.3	77 43.4 +58.7 167.0	77 30.8 +57.8 162.9
25°	79 00.0 +60.0 180.0	78 58.0 +59.8 175.3	78 52.0 +59.3 170.6	78 42.1 +58.5 166.0	78 28.6 +57.3 161.6
26°	80 00.0 +60.0 180.0	79 57.8 +59.8 174.8	79 51.3 +59.1 169.7	79 40.6 +58.1 164.8	79 25.9 +56.8 160.0
27°	81 00.0 +60.0 180.0	80 57.6 +59.7 174.3	80 50.4 +59.0 168.7	80 38.7 +57.7 163.3	80 22.7 +56.1 158.2
28°	82 00.0 +60.0 180.0	81 57.3 +59.7 173.7	81 49.4 +58.6 167.5	81 36.4 +57.1 161.5	81 18.8 +55.1 155.9
29°	83 00.0 +60.0 180.0	82 57.0 +59.5 172.9	82 48.0 +58.2 165.9	82 33.5 +56.2 159.3	82 13.9 +53.8 153.2

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°	53 42.1 +59.5 171.5	53 34.2 +59.4 169.9	53 25.0 +59.1 168.2	53 14.4 +58.9 166.6	53 02.4 +58.6 164.9
1°	54 41.6 +59.6 171.3	54 33.6 +59.3 169.6	54 24.1 +59.1 167.9	54 13.3 +58.8 166.2	54 01.0 +58.6 164.6
2°	55 41.2 +59.5 171.1	55 32.9 +59.3 169.4	55 23.2 +59.1 167.6	55 12.1 +58.8 165.9	54 59.6 +58.5 164.2
3°	56 40.7 +59.5 170.9	56 32.2 +59.3 169.1	56 22.3 +59.0 167.3	56 10.9 +58.7 165.5	55 58.1 +58.4 163.8
4°	57 40.2 +59.4 170.6	57 31.5 +59.2 168.8	57 21.3 +59.0 167.0	57 09.6 +58.7 165.2	56 56.5 +58.3 163.4
5°	58 39.6 +59.5 170.4	58 30.7 +59.2 168.5	58 20.3 +58.9 166.6	58 08.3 +58.6 164.8	57 54.8 +58.2 162.9
6°	59 39.1 +59.4 170.1	59 29.9 +59.2 168.2	59 19.2 +58.8 166.3	59 06.9 +58.5 164.4	58 53.0 +58.1 162.5
7°	60 38.5 +59.3 169.8	60 29.1 +59.0 167.8	60 18.0 +58.8 165.9	60 05.4 +58.4 163.9	59 51.1 +58.0 162.0
8°	61 37.8 +59.3 169.5	61 28.1 +59.1 167.5	61 16.8 +58.7 165.5	61 03.8 +58.3 163.5	60 49.1 +57.9 161.5
9°	62 37.1 +59.3 169.2	62 27.2 +58.9 167.1	62 15.5 +58.6 165.0	62 02.1 +58.2 163.0	61 47.0 +57.8 160.9
10°	63 36.4 +59.2 168.9	63 26.1 +58.9 166.7	63 14.1 +58.4 164.5	63 00.3 +58.0 162.4	62 44.8 +57.5 160.3
11°	64 35.6 +59.2 168.5	64 25.0 +58.8 166.3	64 12.5 +58.4 164.0	63 58.3 +57.9 161.9	63 42.3 +57.5 159.7
12°	65 34.8 +59.0 168.1	65 23.8 +58.7 165.8	65 10.9 +58.3 163.5	64 56.2 +57.8 161.3	64 39.8 +57.2 159.0
13°	66 33.8 +59.1 167.7	66 22.5 +58.6 165.3	66 09.2 +58.1 162.9	65 54.0 +57.6 160.6	65 37.0 +57.0 158.3
14°	67 32.9 +58.9 167.2	67 21.1 +58.5 164.7	67 07.3 +58.0 162.3	66 51.6 +57.4 159.9	66 34.0 +56.7 157.6
15°	68 31.8 +58.8 166.7	68 19.6 +58.3 164.1	68 05.3 +57.7 161.6	67 49.0 +57.1 159.1	67 30.7 +56.5 156.7
16°	69 30.6 +58.7 166.2	69 17.9 +58.2 163.5	69 03.0 +57.6 160.9	68 46.1 +56.9 158.3	68 27.2 +56.2 155.8
17°	70 29.3 +58.6 165.5	70 16.1 +58.0 162.8	70 00.6 +57.3 160.1	69 43.0 +56.6 157.4	69 23.4 +55.8 154.9
18°	71 27.9 +58.4 164.9	71 14.1 +57.7 162.0	70 57.9 +57.1 159.2	70 39.6 +56.2 156.4	70 19.2 +55.3 153.8
19°	72 26.3 +58.3 164.2	72 11.8 +57.6 161.1	71 55.0 +56.7 158.2	71 35.8 +55.9 155.4	71 14.5 +54.9 152.6
20°	73 24.6 +58.0 163.3	73 09.4 +57.2 160.2	72 51.7 +56.3 157.1	72 31.7 +55.3 154.2	72 09.4 +54.4 151.3
21°	74 22.6 +57.8 162.4	74 06.6 +56.9 159.1	73 48.0 +55.9 155.9	73 27.0 +54.9 152.9	73 03.8 +53.7 149.9
22°	75 20.4 +57.4 161.4	75 03.5 +56.4 157.9	74 43.9 +55.4 154.6	74 21.9 +54.1 151.4	73 57.5 +52.9 148.3
23°	76 17.8 +57.1 160.2	75 59.9 +56.0 156.6	75 39.3 +54.7 153.1	75 16.0 +53.4 149.8	74 50.4 +52.1 146.6
24°	77 14.9 +56.6 158.9	76 55.9 +55.3 155.0	76 34.0 +53.9 151.4	76 09.4 +52.5 147.9	75 42.5 +50.9 144.6
25°	78 11.5 +56.0 157.3	77 51.2 +54.5 153.2	77 27.9 +52.9 149.4	77 01.9 +51.2 145.8	76 33.4 +49.6 142.4
26°	79 07.5 +55.2 155.5	78 45.7 +53.5 151.2	78 20.8 +51.7 147.2	77 53.1 +49.9 143.4	77 23.0 +48.1 139.9
27°	80 02.7 +54.3 153.3	79 39.2 +52.2 148.8	79 12.5 +50.2 144.6	78 43.0 +48.2 140.7	78 11.1 +46.1 137.1
28°	80 57.0 +52.9 150.7	80 31.4 +50.6 145.9	80 02.7 +48.2 141.5	79 31.2 +45.9 137.5	78 57.2 +43.8 133.9
29°	81 49.9 +51.1 147.6	81 22.0 +48.4 142.5	80 50.9 +45.7 137.9	80 17.1 +43.2 133.8	79 41.0 +40.9 130.2

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Latitude 36°

Declination SAME name as Latitude

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	52 49.1 +58.3 163.3	52 34.5 +58.0 161.7	52 18.6 +57.7 160.1	52 01.5 +57.3 158.6	51 43.2 +56.8 157.0
1°	53 47.4 +58.3 162.9	53 32.5 +57.9 161.3	53 16.3 +57.5 159.7	52 58.8 +57.1 158.1	52 40.0 +56.7 156.5
2°	54 45.7 +58.1 162.5	54 30.4 +57.8 160.8	54 13.8 +57.4 159.2	53 55.9 +57.0 157.6	53 36.7 +56.6 155.9
3°	55 43.8 +58.1 162.1	55 28.2 +57.7 160.4	55 11.2 +57.3 158.7	54 52.9 +56.8 157.0	54 33.3 +56.4 155.4
4°	56 41.9 +57.9 161.6	56 25.9 +57.5 159.9	56 08.5 +57.1 158.1	55 49.7 +56.7 156.5	55 29.7 +56.2 154.8
5°	57 39.8 +57.9 161.1	57 23.4 +57.4 159.3	57 05.6 +57.0 157.6	56 46.4 +56.5 155.9	56 25.9 +56.0 154.2
6°	58 37.7 +57.7 160.6	58 20.8 +57.3 158.8	58 02.6 +56.8 157.0	57 42.9 +56.3 155.2	57 21.9 +55.8 153.5
7°	59 35.4 +57.5 160.1	59 18.1 +57.1 158.2	58 59.4 +56.6 156.4	58 39.2 +56.1 154.6	58 17.7 +55.6 152.8
8°	60 32.9 +57.5 159.5	60 15.2 +56.9 157.6	59 56.0 +56.4 155.7	59 35.3 +55.9 153.9	59 13.3 +55.3 152.1
9°	61 30.4 +57.2 158.9	61 12.1 +56.8 157.0	60 52.4 +56.2 155.0	60 31.2 +55.6 153.2	60 08.6 +55.0 151.3
10°	62 27.6 +57.1 158.3	62 08.9 +56.5 156.3	61 48.6 +55.9 154.3	61 26.8 +55.3 152.4	61 03.6 +54.7 150.5
11°	63 24.7 +56.8 157.6	63 05.4 +56.3 155.6	62 44.5 +55.7 153.5	62 22.1 +55.1 151.6	61 58.3 +54.4 149.6
12°	64 21.5 +56.7 156.9	64 01.7 +56.0 154.8	63 40.2 +55.3 152.7	63 17.2 +54.7 150.7	62 52.7 +54.0 148.7
13°	65 18.2 +56.3 156.1	64 57.7 +55.7 153.9	64 35.5 +55.1 151.8	64 11.9 +54.3 149.8	63 46.7 +53.6 147.8
14°	66 14.5 +56.1 155.3	65 53.4 +55.4 153.0	65 30.6 +54.6 150.9	65 06.2 +53.9 148.8	64 40.3 +53.1 146.7
15°	67 10.6 +55.8 154.4	66 48.8 +55.0 152.1	66 25.2 +54.2 149.9	66 00.1 +53.4 147.7	65 33.4 +52.6 145.6
16°	68 06.4 +55.4 153.4	67 43.8 +54.5 151.1	67 19.4 +53.8 148.8	66 53.5 +52.9 146.6	66 26.0 +52.0 144.4
17°	69 01.8 +54.9 152.4	68 38.3 +54.1 149.9	68 13.2 +53.2 147.6	67 46.4 +52.2 145.3	67 18.0 +51.4 143.2
18°	69 56.7 +54.5 151.2	69 32.4 +53.6 148.7	69 06.4 +52.6 146.3	68 38.6 +51.7 144.0	68 09.4 +50.6 141.8
19°	70 51.2 +53.9 150.0	70 26.0 +52.9 147.4	69 59.0 +51.9 144.9	69 30.3 +50.8 142.6	69 00.0 +49.9 140.3
20°	71 45.1 +53.3 148.6	71 18.9 +52.2 146.0	70 50.9 +51.1 143.5	70 21.1 +50.0 141.0	69 49.9 +48.9 138.8
21°	72 38.4 +52.6 147.1	72 11.1 +51.4 144.4	71 42.0 +50.1 141.8	71 11.1 +49.1 139.4	70 38.8 +47.9 137.0
22°	73 31.0 +51.6 145.4	73 02.5 +50.4 142.7	72 32.1 +49.2 140.0	72 00.2 +47.9 137.5	71 26.7 +46.6 135.2
23°	74 22.6 +50.7 143.6	73 52.9 +49.2 140.8	73 21.3 +47.9 138.1	72 48.1 +46.6 135.6	72 13.3 +45.4 133.2
24°	75 13.3 +49.4 141.5	74 42.1 +48.0 138.6	74 09.2 +46.5 135.9	73 34.7 +45.1 133.4	72 58.7 +43.8 131.0
25°	76 02.7 +48.0 139.3	75 30.1 +46.4 136.3	74 55.7 +44.9 133.6	74 19.8 +43.5 131.0	73 42.5 +42.1 128.6
26°	76 50.7 +46.3 136.7	76 16.5 +44.6 133.7	75 40.6 +43.0 130.9	75 03.3 +41.5 128.4	74 24.6 +40.1 126.0
27°	77 37.0 +44.3 133.8	77 01.1 +42.5 130.8	76 23.6 +40.8 128.0	75 44.8 +39.2 125.5	75 04.7 +37.8 123.2
28°	78 21.3 +41.8 130.6	77 43.6 +39.9 127.6	77 04.4 +38.2 124.9	76 24.0 +36.6 122.4	75 42.5 +35.2 120.1
29°	79 03.1 +38.8 126.9	78 23.5 +36.9 124.0	77 42.6 +35.2 121.3	77 00.6 +33.7 118.9	76 17.7 +32.3 116.7

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	51 23.6 +56.5 155.5	51 02.9 +56.0 154.0	50 41.1 +55.5 152.5	50 18.1 +55.1 151.1	49 54.1 +54.7 149.6
1°	52 20.1 +56.2 154.9	51 58.9 +55.9 153.4	51 36.6 +55.4 151.9	51 13.2 +54.9 150.4	50 48.8 +54.4 149.0
2°	53 16.3 +56.2 154.4	52 54.8 +55.6 152.8	52 32.0 +55.2 151.3	52 08.1 +54.7 149.8	51 43.2 +54.2 148.3
3°	54 12.5 +55.9 153.8	53 50.4 +55.5 152.2	53 27.2 +54.9 150.6	53 02.8 +54.5 149.1	52 37.4 +53.9 147.6
4°	55 08.4 +55.7 153.1	54 45.9 +55.2 151.5	54 22.1 +54.7 150.0	53 57.3 +54.1 148.4	53 31.3 +53.6 146.9
5°	56 04.1 +55.5 152.5	55 41.1 +55.0 150.9	55 16.8 +54.5 149.2	54 51.4 +53.9 147.7	54 24.9 +53.4 146.1
6°	56 59.6 +55.3 151.8	56 36.1 +54.7 150.1	56 11.3 +54.2 148.5	55 45.3 +53.6 146.9	55 18.3 +53.0 145.3
7°	57 54.9 +55.0 151.1	57 30.8 +54.4 149.4	57 05.5 +53.8 147.7	56 38.9 +53.3 146.1	56 11.3 +52.7 144.5
8°	58 49.9 +54.7 150.3	58 25.2 +54.1 148.6	57 59.3 +53.5 146.9	57 32.2 +52.9 145.2	57 04.0 +52.3 143.6
9°	59 44.6 +54.4 149.5	59 19.3 +53.8 147.8	58 52.8 +53.2 146.0	58 25.1 +52.5 144.4	57 56.3 +51.9 142.7
10°	60 39.0 +54.1 148.7	60 13.1 +53.5 146.9	59 46.0 +52.8 145.1	59 17.6 +52.1 143.4	58 48.2 +51.4 141.8
11°	61 33.1 +53.7 147.8	61 06.6 +53.0 145.9	60 38.8 +52.3 144.2	60 09.7 +51.7 142.4	59 39.6 +50.9 140.8
12°	62 26.8 +53.3 146.8	61 59.6 +52.6 145.0	61 31.1 +51.8 143.2	61 01.4 +51.1 141.4	60 30.5 +50.5 139.7
13°	63 20.1 +52.8 145.8	62 52.2 +52.0 143.9	62 22.9 +51.4 142.1	61 52.5 +50.6 140.3	61 21.0 +49.8 138.6
14°	64 12.9 +52.4 144.7	63 44.2 +51.6 142.8	63 14.3 +50.7 140.9	62 43.1 +50.0 139.1	62 10.8 +49.2 137.4
15°	65 05.3 +51.7 143.6	64 35.8 +50.9 141.6	64 05.0 +50.2 139.7	63 33.1 +49.3 137.9	63 00.0 +48.5 136.2
16°	65 57.0 +51.2 142.4	65 26.7 +50.3 140.4	64 55.2 +49.4 138.5	64 22.4 +48.6 136.6	63 48.5 +47.8 134.8
17°	66 48.2 +50.4 141.1	66 17.0 +49.6 139.1	65 44.6 +48.6 137.1	65 11.0 +47.8 135.2	64 36.3 +46.9 133.5
18°	67 38.6 +49.7 139.7	67 06.6 +48.7 137.6	66 33.2 +47.9 135.7	65 58.8 +46.9 133.8	65 23.2 +46.0 132.0
19°	68 28.3 +48.9 138.2	67 55.3 +47.8 136.1	67 21.1 +46.8 134.1	66 45.7 +45.9 132.2	66 09.2 +45.0 130.4
20°	69 17.2 +47.8 136.6	68 43.1 +46.9 134.5	68 07.9 +45.8 132.5	67 31.6 +44.8 130.6	66 54.2 +43.9 128.8
21°	70 05.0 +46.8 134.8	69 30.0 +45.6 132.7	68 53.7 +44.6 130.7	68 16.4 +43.6 128.8	67 38.1 +42.7 127.0
22°	70 51.8 +45.5 132.9	70 15.6 +44.4 130.8	69 38.3 +43.4 128.8	69 00.0 +42.3 126.9	68 20.8 +41.3 125.1
23°	71 37.3 +44.1 130.9	71 00.0 +43.0 128.8	70 21.7 +41.8 126.8	69 42.3 +40.9 124.9	69 02.1 +39.8 123.1
24°	72 21.4 +42.6 128.7	71 43.0 +41.4 126.6	71 03.5 +40.3 124.6	70 23.2 +39.2 122.8	69 41.9 +38.2 121.0
25°	73 04.0 +40.8 126.4	72 24.4 +39.5 124.3	71 43.8 +38.4 122.3	71 02.4 +37.3 120.5	70 20.1 +36.5 118.7
26°	73 44.8 +38.7 123.8	73 03.9 +37.6 121.7	72 22.2 +36.5 119.8	71 39.7 +35.4 118.0	70 56.6 +34.4 116.3
27°	74 23.5 +36.5 121.0	73 41.5 +35.3 119.0	72 58.7 +34.2 117.1	72 15.1 +33.2 115.4	71 31.0 +32.3 113.8
28°	75 00.0 +34.0 118.0	74 16.8 +32.8 116.1	73 32.9 +31.7 114.3	72 48.3 +30.8 112.6	72 03.3 +29.9 111.1
29°	75 34.0 +31.0 114.7	74 49.6 +29.9 112.9	74 04.6 +29.0 111.2	73 19.1 +28.1 109.7	72 33.2 +27.3 108.2

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Latitude 36°

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°	49 29.1 +54.1 148.2	49 03.0 +53.7 146.9	48 36.0 +53.2 145.5	48 08.0 +52.7 144.2	47 39.2 +52.2 142.9
1°	50 23.2 +54.0 147.6	49 56.7 +53.4 146.2	49 29.2 +52.9 144.8	49 00.7 +52.5 143.4	48 31.4 +51.9 142.1
2°	51 17.2 +53.6 146.9	50 50.1 +53.2 145.5	50 22.1 +52.7 144.1	49 53.2 +52.1 142.7	49 23.3 +51.6 141.4
3°	52 10.8 +53.4 146.1	51 43.3 +52.9 144.7	51 14.8 +52.3 143.3	50 45.3 +51.8 141.9	50 14.9 +51.3 140.6
4°	53 04.2 +53.1 145.4	52 36.2 +52.5 143.9	52 07.1 +52.0 142.5	51 37.1 +51.5 141.1	51 06.2 +50.9 139.7
5°	53 57.3 +52.8 144.6	53 28.7 +52.3 143.1	52 59.1 +51.7 141.7	52 28.6 +51.1 140.3	51 57.1 +50.5 138.9
6°	54 50.1 +52.5 143.8	54 21.0 +51.8 142.3	53 50.8 +51.3 140.8	53 19.7 +50.7 139.4	52 47.6 +50.2 138.0
7°	55 42.6 +52.1 142.9	55 12.8 +51.5 141.4	54 42.1 +50.8 140.0	54 10.4 +50.3 138.5	53 37.8 +49.7 137.1
8°	56 34.7 +51.6 142.1	56 04.3 +51.1 140.5	55 32.9 +50.5 139.0	55 00.7 +49.8 137.6	54 27.5 +49.2 136.1
9°	57 26.3 +51.3 141.1	56 55.4 +50.6 139.6	56 23.4 +50.0 138.1	55 50.5 +49.3 136.6	55 16.7 +48.7 135.1
10°	58 17.6 +50.7 140.1	57 46.0 +50.1 138.6	57 13.4 +49.4 137.0	56 39.8 +48.8 135.6	56 05.4 +48.2 134.1
11°	59 08.3 +50.3 139.1	58 36.1 +49.5 137.5	58 02.8 +48.9 136.0	57 28.6 +48.3 134.5	56 53.6 +47.6 133.0
12°	59 58.6 +49.7 138.0	59 25.6 +49.0 136.4	58 51.7 +48.3 134.9	58 16.9 +47.6 133.4	57 41.2 +46.9 131.9
13°	60 48.3 +49.1 136.9	60 14.6 +48.4 135.3	59 40.0 +47.7 133.7	59 04.5 +47.0 132.2	58 28.1 +46.3 130.7
14°	61 37.4 +48.5 135.7	61 03.0 +47.7 134.1	60 27.7 +47.0 132.5	59 51.5 +46.2 131.0	59 14.4 +45.6 129.5
15°	62 25.9 +47.7 134.5	61 50.7 +47.0 132.8	61 14.7 +46.2 131.2	60 37.7 +45.5 129.7	60 00.0 +44.7 128.2
16°	63 13.6 +46.9 133.1	62 37.7 +46.1 131.5	62 00.9 +45.3 129.9	61 23.2 +44.6 128.3	60 44.7 +44.0 126.9
17°	64 00.5 +46.1 131.7	63 23.8 +45.3 130.1	62 46.2 +44.5 128.5	62 07.8 +43.8 126.9	61 28.7 +43.2 125.5
18°	64 46.6 +45.2 130.2	64 09.1 +44.3 128.6	63 30.7 +43.6 127.0	62 51.6 +42.7 125.5	62 11.7 +42.0 124.0
19°	65 31.8 +44.1 128.7	64 53.4 +43.3 127.0	64 14.3 +42.4 125.4	63 34.3 +41.7 123.9	62 53.7 +40.9 122.4
20°	66 15.9 +43.0 127.0	65 36.7 +42.1 125.4	64 56.7 +41.3 123.8	64 16.0 +40.6 122.3	63 34.6 +39.8 120.8
21°	66 58.9 +41.7 125.3	66 18.8 +40.9 123.6	65 38.0 +40.1 122.0	64 56.6 +39.3 120.5	64 14.4 +38.6 119.1
22°	67 40.6 +40.4 123.4	66 59.7 +39.6 121.8	66 18.1 +38.7 120.2	65 35.9 +37.9 118.7	64 53.0 +37.2 117.3
23°	68 21.0 +39.0 121.4	67 39.3 +38.0 119.8	66 56.8 +37.3 118.3	66 13.8 +36.5 116.8	65 30.2 +35.8 115.4
24°	69 00.0 +37.3 119.3	68 17.3 +36.4 117.8	67 34.1 +35.6 116.3	66 50.3 +34.9 114.8	66 06.0 +34.2 113.5
25°	69 37.3 +35.5 117.1	68 53.7 +34.7 115.6	68 09.7 +33.9 114.1	67 25.2 +33.1 112.7	66 40.2 +32.5 111.4
26°	70 12.8 +33.5 114.8	69 28.4 +32.8 113.3	68 43.6 +32.0 111.9	67 58.3 +31.4 110.5	67 12.7 +30.7 109.3
27°	70 46.3 +31.5 112.3	70 01.2 +30.7 110.9	69 15.6 +30.0 109.5	68 29.7 +29.4 108.3	67 43.4 +28.8 107.1
28°	71 17.8 +29.1 109.7	70 31.9 +28.4 108.3	69 45.6 +27.8 107.0	68 59.1 +27.2 105.8	68 12.2 +26.8 104.7
29°	71 46.9 +26.7 106.9	71 00.3 +26.1 105.6	70 13.4 +25.5 104.5	69 26.3 +25.0 103.3	68 39.0 +24.5 102.3

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	47 09.4 +51.7 141.6	46 38.8 +51.3 140.3	46 07.4 +50.8 139.1	45 35.2 +50.3 137.9	45 02.3 +49.8 136.7
1°	48 01.1 +51.4 140.8	47 30.1 +50.9 139.6	46 58.2 +50.4 138.3	46 25.5 +49.9 137.1	45 52.1 +49.4 135.9
2°	48 52.5 +51.1 140.0	48 21.0 +50.5 138.8	47 48.6 +50.0 137.5	47 15.4 +49.5 136.3	46 41.5 +49.0 135.1
3°	49 43.6 +50.8 139.2	49 11.5 +50.2 137.9	48 38.6 +49.7 136.7	48 04.9 +49.2 135.4	47 30.5 +48.6 134.2
4°	50 34.4 +50.4 138.4	50 01.7 +49.9 137.1	49 28.3 +49.3 135.8	48 54.1 +48.8 134.6	48 19.1 +48.3 133.3
5°	51 24.8 +49.9 137.5	50 51.6 +49.4 136.2	50 17.6 +48.9 134.9	49 42.9 +48.3 133.7	49 07.4 +47.8 132.4
6°	52 14.7 +49.6 136.6	51 41.0 +49.0 135.3	51 06.5 +48.4 134.0	50 31.2 +47.9 132.7	49 55.2 +47.3 131.5
7°	53 04.3 +49.1 135.7	52 30.0 +48.5 134.4	51 54.9 +48.0 133.1	51 19.1 +47.4 131.8	50 42.5 +46.9 130.5
8°	53 53.4 +48.6 134.8	53 18.5 +48.1 133.4	52 42.9 +47.4 132.1	52 06.5 +46.9 130.8	51 29.4 +46.3 129.6
9°	54 42.0 +48.1 133.8	54 06.6 +47.5 132.4	53 30.3 +46.9 131.1	52 53.4 +46.3 129.8	52 15.7 +45.8 128.5
10°	55 30.1 +47.6 132.7	54 54.1 +46.9 131.3	54 17.2 +46.4 130.0	53 39.7 +45.8 128.7	53 01.5 +45.2 127.5
11°	56 17.7 +46.9 131.6	55 41.0 +46.3 130.2	55 03.6 +45.7 128.9	54 25.5 +45.1 127.6	53 46.7 +44.6 126.4
12°	57 04.6 +46.3 130.5	56 27.3 +45.7 129.1	55 49.3 +45.1 127.8	55 10.6 +44.5 126.5	54 31.3 +43.8 125.2
13°	57 50.9 +45.7 129.3	57 13.0 +45.0 127.9	56 34.4 +44.3 126.6	55 55.1 +43.7 125.3	55 15.1 +43.2 124.0
14°	58 36.6 +44.9 128.1	57 58.0 +44.2 126.7	57 18.7 +43.6 125.3	56 38.8 +43.0 124.1	55 58.3 +42.4 122.8
15°	59 21.5 +44.0 126.8	58 42.2 +43.5 125.4	58 02.3 +42.8 124.1	57 21.8 +42.2 122.8	56 40.7 +41.6 121.5
16°	60 05.5 +43.3 125.4	59 25.7 +42.5 124.1	58 45.1 +42.0 122.7	58 04.0 +41.3 121.4	57 22.3 +40.7 120.2
17°	60 48.8 +42.3 124.0	60 08.2 +41.7 122.7	59 27.1 +41.0 121.3	58 45.3 +40.4 120.1	58 03.0 +39.8 118.8
18°	61 31.1 +41.3 122.6	60 49.9 +40.6 121.2	60 08.1 +40.0 119.9	59 25.7 +39.4 118.6	58 42.8 +38.9 117.4
19°	62 12.4 +40.3 121.0	61 30.5 +39.6 119.7	60 48.1 +38.9 118.4	60 05.1 +38.3 117.1	59 21.7 +37.7 115.9
20°	62 52.7 +39.1 119.4	62 10.1 +38.4 118.1	61 27.0 +37.8 116.8	60 43.4 +37.3 115.6	59 59.4 +36.7 114.4
21°	63 31.8 +37.8 117.7	62 48.5 +37.2 116.4	62 04.8 +36.6 115.2	61 20.7 +36.0 113.9	60 36.1 +35.5 112.8
22°	64 09.6 +36.5 116.0	63 25.7 +35.9 114.7	62 41.4 +35.3 113.4	61 56.7 +34.7 112.3	61 11.6 +34.2 111.1
23°	64 46.1 +35.1 114.1	64 01.6 +34.5 112.9	63 16.7 +33.9 111.7	62 31.4 +33.4 110.5	61 45.8 +32.9 109.4
24°	65 21.2 +33.6 112.2	64 36.1 +33.0 111.0	63 50.6 +32.4 109.8	63 04.8 +31.9 108.7	62 18.7 +31.4 107.6
25°	65 54.8 +31.9 110.2	65 09.1 +31.3 109.0	64 23.0 +30.9 107.9	63 36.7 +30.4 106.8	62 50.1 +29.9 105.8
26°	66 26.7 +30.2 108.1	65 40.4 +29.7 107.0	64 53.9 +29.2 105.9	64 07.1 +28.7 104.8	63 20.0 +28.4 103.8
27°	66 56.9 +28.3 105.9	66 10.1 +27.8 104.8	65 23.1 +27.3 103.8	64 35.8 +27.0 102.8	63 48.4 +26.7 101.9
28°	67 25.2 +26.3 103.6	66 37.9 +25.9 102.6	65 50.4 +25.6 101.6	65 02.8 +25.2 100.7	64 15.1 +24.9 99.8
29°	67 51.5 +24.1 101.3	67 03.8 +23.8 100.3	66 16.0 +23.5 99.4	65 28.0 +23.3 98.5	64 40.0 +23.0 97.7

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Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	44 28.7 +49.2 135.5	43 54.3 +48.8 134.4	43 19.3 +48.3 133.2	42 43.6 +47.8 132.1	42 07.3 +47.4 131.1
1°	45 17.9 +48.9 134.7	44 43.1 +48.4 133.6	44 07.6 +47.9 132.4	43 31.4 +47.5 131.3	42 54.7 +47.0 130.2
2°	46 06.8 +48.6 133.9	45 31.5 +48.0 132.7	44 55.5 +47.6 131.6	44 18.9 +47.1 130.5	43 41.7 +46.6 129.4
3°	46 55.4 +48.1 133.0	46 19.5 +47.7 131.9	45 43.1 +47.1 130.7	45 06.0 +46.6 129.6	44 28.3 +46.2 128.5
4°	47 43.5 +47.7 132.1	47 07.2 +47.2 131.0	46 30.2 +46.7 129.8	45 52.6 +46.3 128.7	45 14.5 +45.7 127.6
5°	48 31.2 +47.3 131.2	47 54.4 +46.8 130.1	47 16.9 +46.3 128.9	46 38.9 +45.7 127.8	46 00.2 +45.3 126.7
6°	49 18.5 +46.8 130.3	48 41.2 +46.3 129.1	48 03.2 +45.8 128.0	47 24.6 +45.3 126.8	46 45.5 +44.8 125.7
7°	50 05.3 +46.3 129.3	49 27.5 +45.8 128.1	48 49.0 +45.3 127.0	48 09.9 +44.8 125.9	47 30.3 +44.3 124.8
8°	50 51.6 +45.8 128.3	50 13.3 +45.2 127.1	49 34.3 +44.7 126.0	48 54.7 +44.3 124.9	48 14.6 +43.8 123.7
9°	51 37.4 +45.3 127.3	50 58.5 +44.7 126.1	50 19.0 +44.2 124.9	49 39.0 +43.6 123.8	48 58.4 +43.2 122.7
10°	52 22.7 +44.6 126.2	51 43.2 +44.1 125.0	51 03.2 +43.6 123.9	50 22.6 +43.1 122.7	49 41.6 +42.5 121.6
11°	53 07.3 +44.0 125.1	52 27.3 +43.5 123.9	51 46.8 +42.9 122.8	51 05.7 +42.4 121.6	50 24.1 +42.0 120.5
12°	53 51.3 +43.3 124.0	53 10.8 +42.7 122.8	52 29.7 +42.3 121.6	51 48.1 +41.8 120.5	51 06.1 +41.2 119.4
13°	54 34.6 +42.6 122.8	53 53.5 +42.1 121.6	53 12.0 +41.5 120.5	52 29.9 +41.0 119.3	51 47.3 +40.6 118.3
14°	55 17.2 +41.9 121.6	54 35.6 +41.3 120.4	53 53.5 +40.8 119.2	53 10.9 +40.3 118.1	52 27.9 +39.8 117.1
15°	55 59.1 +41.0 120.3	55 16.9 +40.5 119.1	54 34.3 +40.0 118.0	53 51.2 +39.5 116.9	53 07.7 +39.0 115.8
16°	56 40.1 +40.2 119.0	55 57.4 +39.6 117.8	55 14.3 +39.1 116.7	54 30.7 +38.6 115.6	53 46.7 +38.2 114.5
17°	57 20.3 +39.2 117.6	56 37.0 +38.8 116.5	55 53.4 +38.2 115.4	55 09.3 +37.8 114.3	54 24.9 +37.3 113.2
18°	57 59.5 +38.3 116.2	57 15.8 +37.7 115.1	56 31.6 +37.3 114.0	55 47.1 +36.8 112.9	55 02.2 +36.3 111.9
19°	58 37.8 +37.2 114.7	57 53.5 +36.7 113.6	57 08.9 +36.2 112.5	56 23.9 +35.7 111.5	55 38.5 +35.4 110.5
20°	59 15.0 +36.2 113.2	58 30.2 +35.7 112.1	57 45.1 +35.2 111.1	56 59.6 +34.8 110.0	56 13.9 +34.3 109.0
21°	59 51.2 +34.9 111.7	59 05.9 +34.5 110.6	58 20.3 +34.0 109.5	57 34.4 +33.6 108.5	56 48.2 +33.3 107.5
22°	60 26.1 +33.8 110.0	59 40.4 +33.2 109.0	58 54.3 +32.9 107.9	58 08.0 +32.5 107.0	57 21.5 +32.1 106.0
23°	60 59.9 +32.4 108.3	60 13.6 +32.0 107.3	59 27.2 +31.6 106.3	58 40.5 +31.2 105.4	57 53.6 +30.8 104.4
24°	61 32.3 +31.0 106.6	60 45.6 +30.6 105.6	59 58.8 +30.2 104.6	59 11.7 +29.9 103.7	58 24.4 +29.6 102.8
25°	62 03.3 +29.5 104.8	61 16.2 +29.2 103.8	60 29.0 +28.9 102.9	59 41.6 +28.6 102.0	58 54.0 +28.3 101.1
26°	62 32.8 +28.0 102.9	61 45.4 +27.7 102.0	60 57.9 +27.3 101.1	60 10.2 +27.1 100.2	59 22.3 +26.9 99.4
27°	63 00.8 +26.4 101.0	62 13.1 +26.1 100.1	61 25.2 +25.9 99.2	60 37.3 +25.6 98.4	59 49.2 +25.4 97.6
28°	63 27.2 +24.6 99.0	62 39.2 +24.4 98.1	61 51.1 +24.2 97.3	61 02.9 +24.0 96.6	60 14.6 +23.9 95.8
29°	63 51.8 +22.9 96.9	63 03.6 +22.7 96.1	62 15.3 +22.5 95.4	61 26.9 +22.5 94.7	60 38.5 +22.4 94.0

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°	41 30.4 +46.9 130.0	40 52.9 +46.5 129.0	40 14.9 +46.1 128.0	39 36.4 +45.6 127.0	38 57.4 +45.1 126.0
1°	42 17.3 +46.6 129.2	41 39.4 +46.1 128.1	41 01.0 +45.6 127.1	40 22.0 +45.2 126.1	39 42.5 +44.8 125.1
2°	43 03.9 +46.1 128.3	42 25.5 +45.7 127.3	41 46.6 +45.2 126.2	41 07.2 +44.8 125.2	40 27.3 +44.4 124.3
3°	43 50.0 +45.7 127.4	43 11.2 +45.3 126.4	42 31.8 +44.9 125.4	41 52.0 +44.4 124.4	41 11.7 +44.0 123.4
4°	44 35.7 +45.3 126.5	43 56.5 +44.8 125.5	43 16.7 +44.4 124.5	42 36.4 +44.0 123.4	41 55.7 +43.5 122.5
5°	45 21.0 +44.8 125.6	44 41.3 +44.4 124.6	44 01.1 +43.9 123.5	43 20.4 +43.4 122.5	42 39.2 +43.1 121.5
6°	46 05.8 +44.4 124.7	45 25.7 +43.8 123.6	44 45.0 +43.4 122.6	44 03.8 +43.0 121.6	43 22.3 +42.5 120.6
7°	46 50.2 +43.8 123.7	46 09.5 +43.4 122.6	45 28.4 +42.9 121.6	44 46.8 +42.5 120.6	44 04.8 +42.1 119.6
8°	47 34.0 +43.3 122.7	46 52.9 +42.8 121.6	46 11.3 +42.4 120.6	45 29.3 +42.0 119.6	44 46.9 +41.5 118.6
9°	48 17.3 +42.7 121.6	47 35.7 +42.3 120.6	46 53.7 +41.8 119.6	46 11.3 +41.4 118.6	45 28.4 +41.0 117.6
10°	49 00.0 +42.1 120.6	48 18.0 +41.6 119.5	47 35.5 +41.2 118.5	46 52.7 +40.8 117.5	46 09.4 +40.4 116.5
11°	49 42.1 +41.5 119.5	48 59.6 +41.0 118.4	48 16.7 +40.6 117.4	47 33.5 +40.1 116.4	46 49.8 +39.8 115.5
12°	50 23.6 +40.8 118.4	49 40.6 +40.4 117.3	48 57.3 +39.9 116.3	48 13.6 +39.5 115.3	47 29.6 +39.1 114.4
13°	51 04.4 +40.1 117.2	50 21.0 +39.6 116.2	49 37.2 +39.3 115.2	48 53.1 +38.9 114.2	48 08.7 +38.4 113.2
14°	51 44.5 +39.3 116.0	51 00.6 +39.0 115.0	50 16.5 +38.5 114.0	49 32.0 +38.1 113.0	48 47.1 +37.7 112.1
15°	52 23.8 +38.6 114.8	51 39.6 +38.1 113.8	50 55.0 +37.7 112.8	50 10.1 +37.3 111.8	49 24.8 +37.0 110.9
16°	53 02.4 +37.7 113.5	52 17.7 +37.3 112.5	51 32.7 +36.9 111.5	50 47.4 +36.5 110.6	50 01.8 +36.2 109.7
17°	53 40.1 +36.9 112.2	52 55.0 +36.5 111.2	52 09.6 +36.1 110.3	51 23.9 +35.7 109.3	50 38.0 +35.4 108.4
18°	54 17.0 +35.9 110.9	53 31.5 +35.5 109.9	52 45.7 +35.2 108.9	51 59.6 +34.9 108.0	51 13.4 +34.5 107.1
19°	54 52.9 +35.0 109.5	54 07.0 +34.6 108.5	53 20.9 +34.2 107.6	52 34.5 +33.9 106.7	51 47.9 +33.6 105.8
20°	55 27.9 +33.9 108.1	54 41.6 +33.6 107.1	53 55.1 +33.3 106.2	53 08.4 +32.9 105.3	52 21.5 +32.6 104.5
21°	56 01.8 +32.9 106.6	55 15.2 +32.5 105.7	54 28.4 +32.2 104.8	53 41.3 +32.0 103.9	52 54.1 +31.7 103.1
22°	56 34.7 +31.8 105.1	55 47.7 +31.5 104.2	55 00.6 +31.1 103.3	54 13.3 +30.9 102.5	53 25.8 +30.7 101.7
23°	57 06.5 +30.5 103.5	56 19.2 +30.3 102.7	55 31.7 +30.1 101.8	54 44.2 +29.7 101.0	53 56.5 +29.5 100.2
24°	57 37.0 +29.4 101.9	56 49.5 +29.0 101.1	56 01.8 +28.8 100.3	55 13.9 +28.7 99.5	54 26.0 +28.5 98.7
25°	58 06.4 +28.0 100.3	57 18.5 +27.8 99.5	56 30.6 +27.6 98.7	55 42.6 +27.4 97.9	54 54.5 +27.2 97.2
26°	58 34.4 +26.7 98.6	57 46.3 +26.5 97.8	56 58.2 +26.3 97.1	56 10.0 +26.2 96.4	55 21.7 +26.1 95.6
27°	59 01.1 +25.2 96.9	58 12.8 +25.1 96.1	57 24.5 +25.0 95.4	56 36.2 +24.9 94.7	55 47.8 +24.8 94.1
28°	59 26.3 +23.8 95.1	58 37.9 +23.7 94.4	57 49.5 +23.6 93.7	57 01.1 +23.5 93.1	56 12.6 +23.5 92.4
29°	59 50.1 +22.2 93.3	59 01.6 +22.2 92.6	58 13.1 +22.2 92.0	57 24.6 +22.1 91.4	56 36.1 +22.1 90.8

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°	38 17.8 +44.8 125.0	37 37.9 +44.3 124.1	36 57.4 +44.0 123.1	36 16.6 +43.5 122.2	35 35.3 +43.2 121.3
1°	39 02.6 +44.4 124.2	38 22.2 +44.0 123.2	37 41.4 +43.5 122.3	37 00.1 +43.2 121.4	36 18.5 +42.8 120.5
2°	39 47.0 +43.9 123.3	39 06.2 +43.5 122.3	38 24.9 +43.2 121.4	37 43.3 +42.8 120.5	37 01.3 +42.4 119.6
3°	40 30.9 +43.6 122.4	39 49.7 +43.2 121.4	39 08.1 +42.8 120.5	38 26.1 +42.4 119.6	37 43.7 +42.0 118.7
4°	41 14.5 +43.1 121.5	40 32.9 +42.7 120.5	39 50.9 +42.3 119.6	39 08.5 +41.9 118.7	38 25.7 +41.6 117.8
5°	41 57.6 +42.7 120.6	41 15.6 +42.3 119.6	40 33.2 +41.9 118.7	39 50.4 +41.5 117.8	39 07.3 +41.2 116.9
6°	42 40.3 +42.1 119.6	41 57.9 +41.7 118.7	41 15.1 +41.4 117.7	40 31.9 +41.1 116.8	39 48.5 +40.6 115.9
7°	43 22.4 +41.7 118.6	42 39.6 +41.3 117.7	41 56.5 +40.9 116.8	41 13.0 +40.5 115.9	40 29.1 +40.2 115.0
8°	44 04.1 +41.1 117.6	43 20.9 +40.8 116.7	42 37.4 +40.3 115.8	41 53.5 +40.0 114.9	41 09.3 +39.7 114.0
9°	44 45.2 +40.6 116.6	44 01.7 +40.2 115.7	43 17.7 +39.9 114.8	42 33.5 +39.5 113.9	41 49.0 +39.1 113.0
10°	45 25.8 +40.0 115.6	44 41.9 +39.6 114.6	43 57.6 +39.2 113.7	43 13.0 +38.9 112.8	42 28.1 +38.6 112.0
11°	46 05.8 +39.4 114.5	45 21.5 +39.0 113.6	44 36.8 +38.7 112.7	43 51.9 +38.3 111.8	43 06.7 +38.0 110.9
12°	46 45.2 +38.7 113.4	46 00.5 +38.4 112.5	45 15.5 +38.0 111.6	44 30.2 +37.7 110.7	43 44.7 +37.4 109.9
13°	47 23.9 +38.1 112.3	46 38.9 +37.7 111.4	45 53.5 +37.4 110.5	45 07.9 +37.1 109.6	44 22.1 +36.7 108.8
14°	48 02.0 +37.4 111.1	47 16.6 +37.0 110.2	46 30.9 +36.7 109.4	45 45.0 +36.4 108.5	44 58.8 +36.1 107.7
15°	48 39.4 +36.6 110.0	47 53.6 +36.3 109.1	47 07.6 +36.0 108.2	46 21.4 +35.7 107.4	45 34.9 +35.5 106.5
16°	49 16.0 +35.8 108.8	48 29.9 +35.5 107.9	47 43.6 +35.2 107.0	46 57.1 +34.9 106.2	46 10.4 +34.7 105.4
17°	49 51.8 +35.1 107.5	49 05.4 +34.8 106.7	48 18.8 +34.5 105.8	47 32.0 +34.2 105.0	46 45.1 +33.9 104.2
18°	50 26.9 +34.2 106.3	49 40.2 +33.9 105.4	48 53.3 +33.6 104.6	48 06.2 +33.4 103.8	47 19.0 +33.2 103.0
19°	51 01.1 +33.3 105.0	50 14.1 +33.0 104.1	49 26.9 +32.8 103.3	48 39.6 +32.6 102.5	47 52.2 +32.3 101.7
20°	51 34.4 +32.4 103.6	50 47.1 +32.2 102.8	49 59.7 +31.9 102.0	49 12.2 +31.7 101.2	48 24.5 +31.5 100.5
21°	52 06.8 +31.4 102.3	51 19.3 +31.2 101.5	50 31.6 +31.0 100.7	49 43.9 +30.8 99.9	48 56.0 +30.6 99.2
22°	52 38.2 +30.4 100.9	51 50.5 +30.2 100.1	51 02.6 +30.1 99.3	50 14.7 +29.8 98.6	49 26.6 +29.7 97.9
23°	53 08.6 +29.4 99.4	52 20.7 +29.2 98.7	51 32.7 +29.0 97.9	50 44.5 +28.9 97.2	49 56.3 +28.8 96.5
24°	53 38.0 +28.3 98.0	52 49.9 +28.1 97.2	52 01.7 +28.0 96.5	51 13.4 +27.9 95.8	50 25.1 +27.8 95.2
25°	54 06.3 +27.1 96.5	53 18.0 +27.0 95.8	52 29.7 +26.9 95.1	51 41.3 +26.8 94.4	50 52.9 +26.7 93.8
26°	54 33.4 +26.0 95.0	53 45.0 +25.9 94.3	52 56.6 +25.8 93.6	52 08.1 +25.8 93.0	51 19.6 +25.7 92.3
27°	54 59.4 +24.7 93.4	54 10.9 +24.7 92.7	53 22.4 +24.6 92.1	52 33.9 +24.6 91.5	51 45.3 +24.6 90.9
28°	55 24.1 +23.4 91.8	54 35.6 +23.4 91.2	53 47.0 +23.5 90.6	52 58.5 +23.4 90.0	52 09.9 +23.5 89.4
29°	55 47.5 +22.2 90.2	54 59.0 +22.1 89.6	54 10.5 +22.1 89.0	53 21.9 +22.3 88.4	52 33.4 +22.3 87.9

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°	34 53.6 +42.9 120.4	34 11.6 +42.5 119.6	33 29.2 +42.1 118.7	32 46.5 +41.8 117.9	32 03.4 +41.5 117.1
1°	35 36.5 +42.4 119.6	34 54.1 +42.1 118.7	34 11.3 +41.8 117.9	33 28.3 +41.4 117.0	32 44.9 +41.0 116.2
2°	36 18.9 +42.1 118.7	35 36.2 +41.7 117.8	34 53.1 +41.3 117.0	34 09.7 +41.0 116.2	33 25.9 +40.8 115.3
3°	37 01.0 +41.6 117.8	36 17.9 +41.3 117.0	35 34.4 +41.0 116.1	34 50.7 +40.6 115.3	34 06.7 +40.3 114.5
4°	37 42.6 +41.2 116.9	36 59.2 +40.9 116.1	36 15.4 +40.6 115.2	35 31.3 +40.3 114.4	34 47.0 +39.9 113.6
5°	38 23.8 +40.8 116.0	37 40.1 +40.4 115.1	36 56.0 +40.1 114.3	36 11.6 +39.8 113.5	35 26.9 +39.5 112.6
6°	39 04.6 +40.4 115.1	38 20.5 +40.0 114.2	37 36.1 +39.7 113.4	36 51.4 +39.4 112.5	36 06.4 +39.1 111.7
7°	39 45.0 +39.8 114.1	39 00.5 +39.5 113.2	38 15.8 +39.2 112.4	37 30.8 +38.9 111.6	36 45.5 +38.6 110.8
8°	40 24.8 +39.3 113.1	39 40.0 +39.0 112.3	38 55.0 +38.7 111.4	38 09.7 +38.4 110.6	37 24.1 +38.2 109.8
9°	41 04.1 +38.9 112.1	40 19.0 +38.5 111.3	39 33.7 +38.2 110.5	38 48.1 +37.9 109.6	38 02.3 +37.6 108.8
10°	41 43.0 +38.2 111.1	40 57.5 +38.0 110.3	40 11.9 +37.7 109.4	39 26.0 +37.4 108.6	38 39.9 +37.1 107.8
11°	42 21.2 +37.7 110.1	41 35.5 +37.4 109.2	40 49.6 +37.1 108.4	40 03.4 +36.9 107.6	39 17.0 +36.7 106.8
12°	42 58.9 +37.1 109.0	42 12.9 +36.8 108.2	41 26.7 +36.5 107.4	40 40.3 +36.3 106.6	39 53.7 +36.0 105.8
13°	43 36.0 +36.5 107.9	42 49.7 +36.2 107.1	42 03.2 +36.0 106.3	41 16.6 +35.7 105.5	40 29.7 +35.5 104.8
14°	44 12.5 +35.8 106.8	43 25.9 +35.6 106.0	42 39.2 +35.3 105.2	41 52.3 +35.1 104.5	41 05.2 +34.9 103.7
15°	44 48.3 +35.2 105.7	44 01.5 +34.9 104.9	43 14.5 +34.7 104.1	42 27.4 +34.4 103.4	41 40.1 +34.2 102.6
16°	45 23.5 +34.4 104.6	44 36.4 +34.2 103.8	43 49.2 +34.0 103.0	43 01.8 +33.8 102.2	42 14.3 +33.6 101.5
17°	45 57.9 +33.7 103.4	45 10.6 +33.5 102.6	44 23.2 +33.3 101.9	43 35.6 +33.1 101.1	42 47.9 +32.9 100.4
18°	46 31.6 +33.0 102.2	45 44.1 +32.8 101.4	44 56.5 +32.5 100.7	44 08.7 +32.4 100.0	43 20.8 +32.3 99.2
19°	47 04.6 +32.1 101.0	46 16.9 +31.9 100.2	45 29.0 +31.8 99.5	44 41.1 +31.7 98.8	43 53.1 +31.5 98.1
20°	47 36.7 +31.3 99.7	46 48.8 +31.2 99.0	46 00.8 +31.1 98.3	45 12.8 +30.8 97.6	44 24.6 +30.8 96.9
21°	48 08.0 +30.5 98.5	47 20.0 +30.3 97.7	46 31.9 +30.2 97.0	45 43.6 +30.1 96.4	44 55.4 +30.0 95.7
22°	48 38.5 +29.6 97.2	47 50.3 +29.5 96.5	47 02.1 +29.3 95.8	46 13.7 +29.3 95.1	45 25.4 +29.1 94.5
23°	49 08.1 +28.6 95.8	48 19.8 +28.5 95.2	47 31.4 +28.5 94.5	46 43.0 +28.4 93.8	45 54.5 +28.4 93.2
24°	49 36.7 +27.7 94.5	48 48.3 +27.6 93.8	47 59.9 +27.5 93.2	47 11.4 +27.5 92.6	46 22.9 +27.5 91.9
25°	50 04.4 +26.7 93.1	49 15.9 +26.7 92.5	48 27.4 +26.7 91.8	47 38.9 +26.6 91.2	46 50.4 +26.6 90.6
26°	50 31.1 +25.7 91.7	49 42.6 +25.7 91.1	48 54.1 +25.6 90.5	48 05.5 +25.7 89.9	47 17.0 +25.7 89.3
27°	50 56.8 +24.6 90.3	50 08.3 +24.6 89.7	49 19.7 +24.7 89.1	48 31.2 +24.7 88.5	47 42.7 +24.7 88.0
28°	51 21.4 +23.5 88.8	50 32.9 +23.5 88.3	49 44.4 +23.6 87.7	48 55.9 +23.7 87.2	48 07.4 +23.8 86.6
29°	51 44.9 +22.4 87.3	50 56.4 +22.5 86.8	50 08.0 +22.5 86.3	49 19.6 +22.6 85.8	48 31.2 +22.7 85.2

Latitude 36°**Declination SAME name as Latitude**

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	31 20.0 +41.2 116.3	30 36.4 +40.8 115.5	29 52.4 +40.5 114.7	29 08.1 +40.3 113.9	28 23.6 +40.0 113.1
1°	32 01.2 +40.7 115.4	31 17.2 +40.4 114.6	30 32.9 +40.2 113.8	29 48.4 +39.8 113.0	29 03.6 +39.6 112.3
2°	32 41.9 +40.4 114.5	31 57.6 +40.1 113.7	31 13.1 +39.8 112.9	30 28.2 +39.6 112.2	29 43.2 +39.2 111.4
3°	33 22.3 +40.1 113.6	32 37.7 +39.8 112.9	31 52.9 +39.4 112.1	31 07.8 +39.1 111.3	30 22.4 +38.9 110.5
4°	34 02.4 +39.6 112.8	33 17.5 +39.3 112.0	32 32.3 +39.1 111.2	31 46.9 +38.8 110.4	31 01.3 +38.6 109.7
5°	34 42.0 +39.2 111.8	33 56.8 +38.9 111.1	33 11.4 +38.7 110.3	32 25.7 +38.5 109.5	31 39.9 +38.1 108.8
6°	35 21.2 +38.8 110.9	34 35.7 +38.6 110.1	33 50.1 +38.2 109.4	33 04.2 +38.0 108.6	32 18.0 +37.8 107.8
7°	36 00.0 +38.3 110.0	35 14.3 +38.0 109.2	34 28.3 +37.8 108.4	33 42.2 +37.5 107.7	32 55.8 +37.4 106.9
8°	36 38.3 +37.9 109.0	35 52.3 +37.7 108.2	35 06.1 +37.4 107.5	34 19.7 +37.2 106.7	33 33.2 +36.9 106.0
9°	37 16.2 +37.4 108.1	36 30.0 +37.1 107.3	35 43.5 +36.9 106.5	34 56.9 +36.7 105.8	34 10.1 +36.5 105.0
10°	37 53.6 +36.9 107.1	37 07.1 +36.7 106.3	36 20.4 +36.5 105.5	35 33.6 +36.2 104.8	34 46.6 +36.0 104.1
11°	38 30.5 +36.4 106.1	37 43.8 +36.1 105.3	36 56.9 +35.9 104.6	36 09.8 +35.7 103.8	35 22.6 +35.5 103.1
12°	39 06.9 +35.8 105.0	38 19.9 +35.6 104.3	37 32.8 +35.4 103.6	36 45.5 +35.2 102.8	35 58.1 +35.1 102.1
13°	39 42.7 +35.2 104.0	38 55.5 +35.1 103.3	38 08.2 +34.9 102.5	37 20.7 +34.7 101.8	36 33.2 +34.5 101.1
14°	40 17.9 +34.7 102.9	39 30.6 +34.5 102.2	38 43.1 +34.3 101.5	37 55.4 +34.2 100.8	37 07.7 +34.0 100.1
15°	40 52.6 +34.1 101.9	40 05.1 +33.8 101.1	39 17.4 +33.7 100.4	38 29.6 +33.6 99.7	37 41.7 +33.4 99.0
16°	41 26.7 +33.4 100.8	40 38.9 +33.3 100.1	39 51.1 +33.1 99.4	39 03.2 +32.9 98.7	38 15.1 +32.9 98.0
17°	42 00.1 +32.8 99.7	41 12.2 +32.6 99.0	40 24.2 +32.5 98.3	39 36.1 +32.4 97.6	38 48.0 +32.3 96.9
18°	42 32.9 +32.1 98.5	41 44.8 +32.0 97.8	40 56.7 +31.9 97.2	40 08.5 +31.8 96.5	39 20.3 +31.6 95.8
19°	43 05.0 +31.4 97.4	42 16.8 +31.3 96.7	41 28.6 +31.2 96.0	40 40.3 +31.1 95.4	39 51.9 +31.0 94.7
20°	43 36.4 +30.6 96.2	42 48.1 +30.6 95.5	41 59.8 +30.4 94.9	41 11.4 +30.4 94.2	40 22.9 +30.4 93.6
21°	44 07.0 +29.9 95.0	43 18.7 +29.8 94.4	42 30.2 +29.8 93.7	41 41.8 +29.7 93.1	40 53.3 +29.7 92.5
22°	44 36.9 +29.2 93.8	43 48.5 +29.1 93.2	43 00.0 +29.0 92.5	42 11.5 +29.0 91.9	41 23.0 +29.0 91.3
23°	45 06.1 +28.3 92.6	44 17.6 +28.2 92.0	43 29.0 +28.3 91.3	42 40.5 +28.3 90.7	41 52.0 +28.2 90.1
24°	45 34.4 +27.4 91.3	44 45.8 +27.5 90.7	43 57.3 +27.5 90.1	43 08.8 +27.4 89.5	42 20.2 +27.5 89.0
25°	46 01.8 +26.7 90.0	45 13.3 +26.6 89.5	44 24.8 +26.6 88.9	43 36.2 +26.7 88.3	42 47.7 +26.8 87.8
26°	46 28.5 +25.7 88.7	45 39.9 +25.8 88.2	44 51.4 +25.8 87.6	44 02.9 +25.9 87.1	43 14.5 +25.9 86.5
27°	46 54.2 +24.8 87.4	46 05.7 +24.8 86.9	45 17.2 +25.0 86.3	44 28.8 +25.0 85.8	43 40.4 +25.1 85.3
28°	47 19.0 +23.8 86.1	46 30.5 +24.0 85.6	45 42.2 +24.0 85.0	44 53.8 +24.2 84.5	44 05.5 +24.3 84.0
29°	47 42.8 +22.9 84.7	46 54.5 +23.0 84.2	46 06.2 +23.1 83.7	45 18.0 +23.3 83.2	44 29.8 +23.4 82.7

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°	27 38.9 +39.6 112.4	26 53.9 +39.3 111.6	26 08.6 +39.2 110.9	25 23.2 +38.8 110.2	24 37.5 +38.6 109.5
1°	28 18.5 +39.4 111.5	27 33.2 +39.1 110.8	26 47.8 +38.8 110.0	26 02.0 +38.6 109.3	25 16.1 +38.4 108.6
2°	28 57.9 +39.0 110.7	28 12.3 +38.8 109.9	27 26.6 +38.5 109.2	26 40.6 +38.3 108.5	25 54.5 +38.1 107.8
3°	29 36.9 +38.6 109.8	28 51.1 +38.4 109.1	28 05.1 +38.2 108.3	27 18.9 +38.0 107.6	26 32.6 +37.7 106.9
4°	30 15.5 +38.3 108.9	29 29.5 +38.1 108.2	28 43.3 +37.8 107.4	27 56.9 +37.6 106.7	27 10.3 +37.4 106.0
5°	30 53.8 +37.9 108.0	30 07.6 +37.7 107.3	29 21.1 +37.5 106.6	28 34.5 +37.3 105.8	27 47.7 +37.1 105.1
6°	31 31.7 +37.6 107.1	30 45.3 +37.3 106.4	29 58.6 +37.1 105.7	29 11.8 +36.9 105.0	28 24.8 +36.7 104.3
7°	32 09.3 +37.1 106.2	31 22.6 +36.9 105.5	30 35.7 +36.7 104.7	29 48.7 +36.5 104.0	29 01.5 +36.4 103.3
8°	32 46.4 +36.7 105.3	31 59.5 +36.5 104.5	31 12.4 +36.4 103.8	30 25.2 +36.2 103.1	29 37.9 +36.0 102.4
9°	33 23.1 +36.3 104.3	32 36.0 +36.1 103.6	31 48.8 +35.9 102.9	31 01.4 +35.7 102.2	30 13.9 +35.6 101.5
10°	33 59.4 +35.8 103.4	33 12.1 +35.7 102.6	32 24.7 +35.5 101.9	31 37.1 +35.4 101.3	30 49.5 +35.2 100.6
11°	34 35.2 +35.4 102.4	33 47.8 +35.2 101.7	33 00.2 +35.0 101.0	32 12.5 +34.9 100.3	31 24.7 +34.7 99.6
12°	35 10.6 +34.9 101.4	34 23.0 +34.7 100.7	33 35.2 +34.6 100.0	32 47.4 +34.4 99.3	31 59.4 +34.3 98.7
13°	35 45.5 +34.4 100.4	34 57.7 +34.2 99.7	34 09.8 +34.1 99.0	33 21.8 +34.0 98.4	32 33.7 +33.9 97.7
14°	36 19.9 +33.8 99.4	35 31.9 +33.7 98.7	34 43.9 +33.6 98.0	33 55.8 +33.5 97.4	33 07.6 +33.4 96.7
15°	36 53.7 +33.3 98.4	36 05.6 +33.2 97.7	35 17.5 +33.1 97.0	34 29.3 +33.0 96.4	33 41.0 +32.9 95.7
16°	37 27.0 +32.8 97.3	36 38.8 +32.7 96.7	35 50.6 +32.6 96.0	35 02.3 +32.5 95.4	34 13.9 +32.5 94.7
17°	37 59.8 +32.1 96.3	37 11.5 +32.1 95.6	36 23.2 +32.0 95.0	35 34.8 +31.9 94.3	34 46.4 +31.8 93.7
18°	38 31.9 +31.6 95.2	37 43.6 +31.5 94.5	36 55.2 +31.4 93.9	36 06.7 +31.4 93.3	35 18.2 +31.4 92.7
19°	39 03.5 +31.0 94.1	38 15.1 +30.9 93.5	37 26.6 +30.9 92.8	36 38.1 +30.9 92.2	35 49.6 +30.8 91.6
20°	39 34.5 +30.3 93.0	38 46.0 +30.3 92.4	37 57.5 +30.2 91.8	37 09.0 +30.2 91.1	36 20.4 +30.3 90.6
21°	40 04.8 +29.7 91.9	39 16.3 +29.6 91.3	38 27.7 +29.7 90.7	37 39.2 +29.6 90.1	36 50.7 +29.6 89.5
22°	40 34.5 +28.9 90.7	39 45.9 +29.0 90.1	38 57.4 +29.0 89.5	38 08.8 +29.0 89.0	37 20.3 +29.0 88.4
23°	41 03.4 +28.3 89.6	40 14.9 +28.3 89.0	39 26.4 +28.3 88.4	38 37.8 +28.4 87.8	37 49.3 +28.5 87.3
24°	41 31.7 +27.5 88.4	40 43.2 +27.6 87.8	39 54.7 +27.6 87.3	39 06.2 +27.7 86.7	38 17.8 +27.7 86.2
25°	41 59.2 +26.8 87.2	41 10.8 +26.8 86.6	40 22.3 +27.0 86.1	39 33.9 +27.0 85.6	38 45.5 +27.1 85.0
26°	42 26.0 +26.1 86.0	41 37.6 +26.1 85.5	40 49.3 +26.2 84.9	40 00.9 +26.3 84.4	39 12.6 +26.5 83.9
27°	42 52.1 +25.2 84.8	42 03.7 +25.4 84.2	41 15.5 +25.4 83.7	40 27.2 +25.6 83.2	39 39.1 +25.7 82.7
28°	43 17.3 +24.4 83.5	42 29.1 +24.5 83.0	41 40.9 +24.7 82.5	40 52.8 +24.9 82.0	40 04.8 +25.0 81.5
29°	43 41.7 +23.6 82.3	42 53.6 +23.7 81.8	42 05.6 +23.9 81.3	41 17.7 +24.0 80.8	40 29.8 +24.2 80.4

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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°	23 51.6 +38.4 108.7	23 05.6 +38.2 108.0	22 19.3 +38.0 107.4	21 32.9 +37.8 106.7	20 46.3 +37.6 106.0
1°	24 30.0 +38.2 107.9	23 43.8 +37.9 107.2	22 57.3 +37.7 106.5	22 10.7 +37.5 105.8	21 23.9 +37.4 105.2
2°	25 08.2 +37.8 107.1	24 21.7 +37.6 106.4	23 35.0 +37.5 105.7	22 48.2 +37.3 105.0	22 01.3 +37.0 104.3
3°	25 46.0 +37.6 106.2	24 59.3 +37.4 105.5	24 12.5 +37.1 104.8	23 25.5 +37.0 104.1	22 38.3 +36.9 103.5
4°	26 23.6 +37.2 105.3	25 36.7 +37.0 104.6	24 49.6 +36.9 104.0	24 02.5 +36.7 103.3	23 15.2 +36.5 102.6
5°	27 00.8 +36.9 104.4	26 13.7 +36.7 103.8	25 26.5 +36.6 103.1	24 39.2 +36.4 102.4	23 51.7 +36.2 101.7
6°	27 37.7 +36.5 103.6	26 50.4 +36.4 102.9	26 03.1 +36.2 102.2	25 15.6 +36.0 101.5	24 27.9 +36.0 100.9
7°	28 14.2 +36.2 102.7	27 26.8 +36.1 102.0	26 39.3 +35.9 101.3	25 51.6 +35.8 100.6	25 03.9 +35.6 100.0
8°	28 50.4 +35.9 101.8	28 02.9 +35.6 101.1	27 15.2 +35.5 100.4	26 27.4 +35.4 99.8	25 39.5 +35.3 99.1
9°	29 26.3 +35.4 100.8	28 38.5 +35.3 100.2	27 50.7 +35.2 99.5	27 02.8 +35.1 98.8	26 14.8 +34.9 98.2
10°	30 01.7 +35.1 99.9	29 13.8 +35.0 99.2	28 25.9 +34.8 98.6	27 37.9 +34.7 97.9	26 49.7 +34.6 97.3
11°	30 36.8 +34.6 99.0	29 48.8 +34.5 98.3	29 00.7 +34.4 97.7	28 12.6 +34.3 97.0	27 24.3 +34.3 96.4
12°	31 11.4 +34.2 98.0	30 23.3 +34.1 97.4	29 35.1 +34.0 96.7	28 46.9 +33.9 96.1	27 58.6 +33.8 95.4
13°	31 45.6 +33.8 97.1	30 57.4 +33.7 96.4	30 09.1 +33.6 95.8	29 20.8 +33.5 95.1	28 32.4 +33.5 94.5
14°	32 19.4 +33.3 96.1	31 31.1 +33.2 95.4	30 42.7 +33.2 94.8	29 54.3 +33.2 94.2	29 05.9 +33.1 93.6
15°	32 52.7 +32.8 95.1	32 04.3 +32.8 94.5	31 15.9 +32.7 93.8	30 27.5 +32.6 93.2	29 39.0 +32.6 92.6
16°	33 25.5 +32.4 94.1	32 37.1 +32.3 93.5	31 48.6 +32.3 92.9	31 00.1 +32.3 92.2	30 11.6 +32.2 91.6
17°	33 57.9 +31.8 93.1	33 09.4 +31.8 92.5	32 20.9 +31.8 91.9	31 32.4 +31.8 91.3	30 43.8 +31.8 90.7
18°	34 29.7 +31.4 92.1	33 41.2 +31.3 91.4	32 52.7 +31.3 90.8	32 04.2 +31.3 90.3	31 15.6 +31.3 89.7
19°	35 01.1 +30.8 91.0	34 12.5 +30.8 90.4	33 24.0 +30.8 89.8	32 35.5 +30.8 89.2	31 46.9 +30.9 88.7
20°	35 31.9 +30.2 90.0	34 43.3 +30.3 89.4	33 54.8 +30.3 88.8	33 06.3 +30.3 88.2	32 17.8 +30.3 87.7
21°	36 02.1 +29.7 88.9	35 13.6 +29.7 88.3	34 25.1 +29.7 87.8	33 36.6 +29.8 87.2	32 48.1 +29.9 86.6
22°	36 31.8 +29.1 87.8	35 43.3 +29.1 87.3	34 54.8 +29.2 86.7	34 06.4 +29.2 86.1	33 18.0 +29.3 85.6
23°	37 00.9 +28.4 86.7	36 12.4 +28.6 86.2	35 24.0 +28.6 85.6	34 35.6 +28.7 85.1	33 47.3 +28.8 84.6
24°	37 29.3 +27.9 85.6	36 41.0 +27.9 85.1	35 52.6 +28.0 84.5	35 04.3 +28.1 84.0	34 16.1 +28.2 83.5
25°	37 57.2 +27.2 84.5	37 08.9 +27.3 84.0	36 20.6 +27.5 83.5	35 32.4 +27.6 82.9	34 44.3 +27.7 82.4
26°	38 24.4 +26.5 83.4	37 36.2 +26.7 82.9	36 48.1 +26.8 82.3	36 00.0 +26.9 81.8	35 12.0 +27.0 81.3
27°	38 50.9 +25.9 82.2	38 02.9 +26.0 81.7	37 14.9 +26.1 81.2	36 26.9 +26.3 80.7	35 39.0 +26.5 80.2
28°	39 16.8 +25.1 81.1	38 28.9 +25.3 80.6	37 41.0 +25.5 80.1	36 53.2 +25.7 79.6	36 05.5 +25.9 79.1
29°	39 41.9 +24.5 79.9	38 54.2 +24.6 79.4	38 06.5 +24.8 78.9	37 18.9 +25.0 78.5	36 31.4 +25.2 78.0

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°	19 59.6 +37.4 105.3	19 12.7 +37.2 104.7	18 25.7 +37.0 104.0	17 38.5 +36.9 103.4	16 51.2 +36.8 102.7
1°	20 37.0 +37.2 104.5	19 49.9 +37.0 103.8	19 02.7 +36.9 103.2	18 15.4 +36.7 102.5	17 28.0 +36.5 101.9
2°	21 14.2 +36.9 103.7	20 26.9 +36.8 103.0	19 39.6 +36.6 102.3	18 52.1 +36.5 101.7	18 04.5 +36.3 101.1
3°	21 51.1 +36.6 102.8	21 03.7 +36.5 102.1	20 16.2 +36.3 101.5	19 28.6 +36.2 100.9	18 40.8 +36.1 100.2
4°	22 27.7 +36.4 102.0	21 40.2 +36.2 101.3	20 52.5 +36.1 100.6	20 04.8 +36.0 100.0	19 16.9 +35.9 99.4
5°	23 04.1 +36.1 101.1	22 16.4 +36.0 100.4	21 28.6 +35.9 99.8	20 40.8 +35.7 99.2	19 52.8 +35.6 98.5
6°	23 40.2 +35.8 100.2	22 52.4 +35.7 99.6	22 04.5 +35.6 98.9	21 16.5 +35.5 98.3	20 28.4 +35.4 97.7
7°	24 16.0 +35.5 99.3	23 28.1 +35.4 98.7	22 40.1 +35.2 98.1	21 52.0 +35.2 97.4	21 03.8 +35.1 96.8
8°	24 51.5 +35.2 98.5	24 03.5 +35.1 97.8	23 15.3 +35.0 97.2	22 27.2 +34.9 96.6	21 38.9 +34.8 95.9
9°	25 26.7 +34.9 97.6	24 38.6 +34.7 96.9	23 50.3 +34.7 96.3	23 02.1 +34.6 95.7	22 13.7 +34.6 95.1
10°	26 01.6 +34.5 96.7	25 13.3 +34.5 96.0	24 25.0 +34.4 95.4	23 36.7 +34.3 94.8	22 48.3 +34.2 94.2
11°	26 36.1 +34.1 95.7	25 47.8 +34.0 95.1	24 59.4 +34.0 94.5	24 11.0 +34.0 93.9	23 22.5 +34.0 93.3
12°	27 10.2 +33.8 94.8	26 21.8 +33.8 94.2	25 33.4 +33.7 93.6	24 45.0 +33.6 93.0	23 56.5 +33.6 92.4
13°	27 44.0 +33.5 93.9	26 55.6 +33.4 93.3	26 07.1 +33.4 92.7	25 18.6 +33.3 92.1	24 30.1 +33.3 91.5
14°	28 17.5 +33.0 92.9	27 29.0 +33.0 92.3	26 40.5 +33.2 91.7	25 51.9 +33.0 91.1	25 03.4 +32.9 90.5
15°	28 50.5 +32.6 92.0	28 02.0 +32.6 91.4	27 13.4 +32.6 90.8	26 24.9 +32.6 90.2	25 36.3 +32.7 89.6
16°	29 23.1 +32.2 91.0	28 34.6 +32.2 90.4	27 46.0 +32.2 89.9	26 57.5 +32.2 89.3	26 09.0 +32.2 88.7
17°	29 55.3 +31.8 90.1	29 06.8 +31.8 89.5	28 18.2 +31.8 88.9	27 29.7 +31.8 88.3	26 41.2 +31.9 87.7
18°	30 27.1 +31.3 89.1	29 38.6 +31.3 88.5	28 50.0 +31.4 87.9	28 01.5 +31.5 87.4	27 13.1 +31.4 86.8
19°	30 58.4 +30.9 88.1	30 09.9 +30.9 87.5	29 21.4 +31.0 87.0	28 33.0 +31.0 86.4	27 44.5 +31.1 85.8
20°	31 29.3 +30.4 87.1	30 40.8 +30.5 86.5	29 52.4 +30.5 86.0	29 04.0 +30.6 85.4	28 15.6 +30.7 84.9
21°	31 59.7 +29.9 86.1	31 11.3 +29.9 85.5	30 22.9 +30.0 85.0	29 34.6 +30.1 84.4	28 46.3 +30.2 83.9
22°	32 29.6 +29.4 85.1	31 41.2 +29.5 84.5	30 52.9 +29.6 84.0	30 04.7 +29.7 83.4	29 16.5 +29.8 82.9
23°	32 59.0 +28.9 84.0	32 10.7 +29.0 83.5	31 22.5 +29.1 83.0	30 34.4 +29.2 82.4	29 46.3 +29.3 81.9
24°	33 27.9 +28.3 83.0	32 39.7 +28.5 82.4	31 51.6 +28.6 81.9	31 03.6 +28.7 81.4	30 15.6 +28.9 80.9
25°	33 56.2 +27.8 81.9	33 08.2 +27.9 81.4	32 20.2 +28.1 80.9	31 32.3 +28.3 80.4	30 44.5 +28.4 79.9
26°	34 24.0 +27.2 80.8	33 36.1 +27.4 80.3	32 48.3 +27.6 79.8	32 00.6 +27.7 79.3	31 12.9 +27.9 78.9
27°	34 51.2 +26.7 79.8	34 03.5 +26.8 79.3	33 15.9 +27.0 78.8	32 28.3 +27.2 78.3	31 40.8 +27.4 77.8
28°	35 17.9 +26.0 78.7	34 30.3 +26.3 78.2	33 42.9 +26.4 77.7	32 55.5 +26.6 77.2	32 08.2 +26.9 76.8
29°	35 43.9 +25.5 77.6	34 56.6 +25.6 77.1	34 09.3 +25.9 76.6	33 22.1 +26.1 76.2	32 35.1 +26.3 75.7

Latitude 36°

Declination SAME name as Latitude

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	16 03.8 +36.6 102.1	15 16.3 +36.4 101.4	14 28.7 +36.3 100.8	13 40.9 +36.2 100.2	12 53.1 +36.1 99.6
1°	16 40.4 +36.4 101.2	15 52.7 +36.3 100.6	15 05.0 +36.1 100.0	14 17.1 +36.1 99.4	13 29.2 +35.9 98.7
2°	17 16.8 +36.2 100.4	16 29.0 +36.1 99.8	15 41.1 +36.0 99.2	14 53.2 +35.8 98.5	14 05.1 +35.8 97.9
3°	17 53.0 +36.0 99.6	17 05.1 +35.9 99.0	16 17.1 +35.8 98.3	15 29.0 +35.7 97.7	14 40.9 +35.6 97.1
4°	18 29.0 +35.8 98.7	17 41.0 +35.6 98.1	16 52.9 +35.6 97.5	16 04.7 +35.5 96.9	15 16.5 +35.4 96.3
5°	19 04.8 +35.5 97.9	18 16.6 +35.5 97.3	17 28.5 +35.3 96.6	16 40.2 +35.3 96.0	15 51.9 +35.2 95.4
6°	19 40.3 +35.3 97.0	18 52.1 +35.2 96.4	18 03.8 +35.1 95.8	17 15.5 +35.1 95.2	16 27.1 +35.0 94.6
7°	20 15.6 +35.0 96.2	19 27.3 +34.9 95.6	18 38.9 +34.9 94.9	17 50.6 +34.8 94.3	17 02.1 +34.8 93.7
8°	20 50.6 +34.8 95.3	20 02.2 +34.7 94.7	19 13.8 +34.7 94.1	18 25.4 +34.6 93.5	17 36.9 +34.6 92.9
9°	21 25.4 +34.4 94.4	20 36.9 +34.5 93.8	19 48.5 +34.4 93.2	19 00.0 +34.4 92.6	18 11.5 +34.4 92.0
10°	21 59.8 +34.2 93.6	21 11.4 +34.1 92.9	20 22.9 +34.1 92.3	19 34.4 +34.1 91.7	18 45.9 +34.1 91.2
11°	22 34.0 +34.0 92.7	21 45.5 +33.9 92.1	20 57.0 +33.9 91.5	20 08.5 +33.9 90.9	19 20.0 +33.8 90.3
12°	23 08.0 +33.6 91.8	22 19.4 +33.6 91.2	21 30.9 +33.6 90.6	20 42.4 +33.5 90.0	19 53.8 +33.6 89.4
13°	23 41.6 +33.2 90.9	22 53.0 +33.3 90.3	22 04.5 +33.3 89.7	21 15.9 +33.4 89.1	20 27.4 +33.3 88.5
14°	24 14.8 +33.0 90.0	23 26.3 +33.0 89.4	22 37.8 +33.0 88.8	21 49.3 +33.0 88.2	21 00.7 +33.1 87.6
15°	24 47.8 +32.6 89.0	23 59.3 +32.6 88.5	23 10.8 +32.6 87.9	22 22.3 +32.7 87.3	21 33.8 +32.7 86.7
16°	25 20.4 +32.3 88.1	24 31.9 +32.3 87.5	23 43.4 +32.4 87.0	22 55.0 +32.4 86.4	22 06.5 +32.5 85.8
17°	25 52.7 +31.9 87.2	25 04.2 +32.0 86.6	24 15.8 +32.0 86.0	23 27.4 +32.1 85.5	22 39.0 +32.2 84.9
18°	26 24.6 +31.5 86.2	25 36.2 +31.6 85.7	24 47.8 +31.7 85.1	23 59.5 +31.7 84.6	23 11.2 +31.8 84.0
19°	26 56.1 +31.2 85.3	26 07.8 +31.2 84.7	25 19.5 +31.3 84.2	24 31.2 +31.4 83.6	23 43.0 +31.5 83.1
20°	27 27.3 +30.7 84.3	26 39.0 +30.8 83.8	25 50.8 +30.9 83.2	25 02.6 +31.0 82.7	24 14.5 +31.1 82.2
21°	27 58.0 +30.4 83.4	27 09.8 +30.5 82.8	26 21.7 +30.6 82.3	25 33.6 +30.7 81.7	24 45.6 +30.8 81.2
22°	28 28.4 +29.9 82.4	27 40.3 +30.0 81.8	26 52.3 +30.1 81.3	26 04.3 +30.3 80.8	25 16.4 +30.5 80.3
23°	28 58.3 +29.4 81.4	28 10.3 +29.6 80.9	27 22.4 +29.8 80.3	26 34.6 +29.9 79.8	25 46.9 +30.0 79.3
24°	29 27.7 +29.1 80.4	28 39.9 +29.2 79.9	27 52.2 +29.3 79.4	27 04.5 +29.5 78.9	26 16.9 +29.7 78.4
25°	29 56.8 +28.5 79.4	29 09.1 +28.7 78.9	28 21.5 +28.9 78.4	27 34.0 +29.1 77.9	26 46.6 +29.3 77.4
26°	30 25.3 +28.1 78.4	29 37.8 +28.3 77.9	28 50.4 +28.5 77.4	28 03.1 +28.6 76.9	27 15.9 +28.8 76.4
27°	30 53.4 +27.6 77.3	30 06.1 +27.8 76.9	29 18.9 +28.0 76.4	28 31.7 +28.2 75.9	27 44.7 +28.4 75.4
28°	31 21.0 +27.1 76.3	30 33.9 +27.3 75.8	29 46.9 +27.5 75.4	28 59.9 +27.8 74.9	28 13.1 +28.0 74.4
29°	31 48.1 +26.5 75.2	31 01.2 +26.8 74.8	30 14.4 +27.0 74.3	29 27.7 +27.3 73.9	28 41.1 +27.6 73.4

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°	12 05.2 +36.0 99.0	11 17.2 +35.9 98.3	10 29.1 +35.8 97.7	9 41.0 +35.7 97.1	8 52.8 +35.6 96.5
1°	12 41.2 +35.8 98.1	11 53.1 +35.8 97.5	11 04.9 +35.7 96.9	10 16.7 +35.6 96.3	9 28.4 +35.6 95.7
2°	13 17.0 +35.7 97.3	12 28.9 +35.6 96.7	11 40.6 +35.5 96.1	10 52.3 +35.5 95.5	10 04.0 +35.4 94.9
3°	13 52.7 +35.5 96.5	13 04.5 +35.4 95.9	12 16.1 +35.4 95.3	11 27.8 +35.3 94.7	10 39.4 +35.3 94.1
4°	14 28.2 +35.4 95.6	13 39.9 +35.3 95.0	12 51.5 +35.2 94.4	12 03.1 +35.2 93.8	11 14.7 +35.1 93.2
5°	15 03.6 +35.1 94.8	14 15.2 +35.1 94.2	13 26.7 +35.1 93.6	12 38.3 +35.0 93.0	11 49.8 +35.0 92.4
6°	15 38.7 +35.0 94.0	14 50.3 +34.9 93.4	14 01.8 +34.9 92.8	13 13.3 +34.9 92.2	12 24.8 +34.8 91.6
7°	16 13.7 +34.7 93.1	15 25.2 +34.7 92.5	14 36.7 +34.7 91.9	13 48.2 +34.7 91.3	12 59.6 +34.7 90.7
8°	16 48.4 +34.6 92.3	15 59.9 +34.6 91.7	15 11.4 +34.5 91.1	14 22.9 +34.5 90.5	13 34.3 +34.5 89.9
9°	17 23.0 +34.3 91.4	16 34.5 +34.3 90.8	15 45.9 +34.3 90.2	14 57.4 +34.3 89.7	14 08.8 +34.4 89.1
10°	17 57.3 +34.1 90.6	17 08.8 +34.1 90.0	16 20.2 +34.2 89.4	15 31.7 +34.1 88.8	14 43.2 +34.1 88.2
11°	18 31.4 +33.9 89.7	17 42.9 +33.9 89.1	16 54.4 +33.8 88.5	16 05.8 +34.0 87.9	15 17.3 +34.0 87.4
12°	19 05.3 +33.6 88.8	18 16.8 +33.6 88.2	17 28.2 +33.7 87.7	16 39.8 +33.7 87.1	15 51.3 +33.7 86.5
13°	19 38.9 +33.4 87.9	18 50.4 +33.4 87.4	18 01.9 +33.5 86.8	17 13.5 +33.5 86.2	16 25.0 +33.6 85.7
14°	20 12.3 +33.0 87.1	19 23.8 +33.1 86.5	18 35.4 +33.1 85.9	17 47.0 +33.2 85.4	16 58.6 +33.3 84.8
15°	20 45.3 +32.9 86.2	19 56.9 +32.9 85.6	19 08.5 +33.0 85.0	18 20.2 +33.0 84.5	17 31.9 +33.1 83.9
16°	21 18.2 +32.5 85.3	20 29.8 +32.6 84.7	19 41.5 +32.7 84.2	18 53.2 +32.8 83.6	18 05.0 +32.9 83.0
17°	21 50.7 +32.2 84.4	21 02.4 +32.3 83.8	20 14.2 +32.4 83.3	19 26.0 +32.5 82.7	18 37.9 +32.6 82.2
18°	22 22.9 +31.9 83.5	21 34.7 +32.0 82.9	20 46.6 +32.1 82.4	19 58.5 +32.2 81.8	19 10.5 +32.3 81.3
19°	22 54.8 +31.6 82.5	22 06.7 +31.7 82.0	21 18.7 +31.8 81.5	20 30.7 +32.0 80.9	19 42.8 +32.1 80.4
20°	23 26.4 +31.3 81.6	22 38.4 +31.4 81.1	21 50.5 +31.5 80.5	21 02.7 +31.6 80.0	20 14.9 +31.8 79.5
21°	23 57.7 +30.9 80.7	23 09.8 +31.1 80.2	22 22.0 +31.3 79.6	21 34.3 +31.4 79.1	20 46.7 +31.5 78.6
22°	24 28.6 +30.6 79.7	23 40.9 +30.7 79.2	22 53.3 +30.9 78.7	22 05.7 +31.1 78.2	21 18.2 +31.3 77.7
23°	24 59.2 +30.2 78.8	24 11.6 +30.4 78.3	23 24.2 +30.5 77.8	22 36.8 +30.7 77.3	21 49.5 +30.9 76.7
24°	25 29.4 +29.9 77.8	24 42.0 +30.0 77.3	23 54.7 +30.2 76.8	23 07.5 +30.4 76.3	22 20.4 +30.6 75.8
25°	25 59.3 +29.4 76.9	25 12.0 +29.7 76.4	24 24.9 +29.9 75.9	23 37.9 +30.1 75.4	22 51.0 +30.2 74.9
26°	26 28.7 +29.1 75.9	25 41.7 +29.3 75.4	24 54.8 +29.5 74.9	24 08.0 +29.7 74.4	23 21.2 +30.0 73.9
27°	26 57.8 +28.6 74.9	26 11.0 +28.8 74.4	25 24.3 +29.1 74.0	24 37.7 +29.3 73.5	23 51.2 +29.6 73.0
28°	27 26.4 +28.3 73.9	26 39.8 +28.5 73.5	25 53.4 +28.7 73.0	25 07.0 +29.0 72.5	24 20.8 +29.2 72.0
29°	27 54.7 +27.8 72.9	27 08.3 +28.1 72.5	26 22.1 +28.3 72.0	25 36.0 +28.6 71.6	24 50.0 +28.8 71.1

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Declination SAME name as Latitude

Latitude 36°

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	8 04.6 +35.5 95.9	7 16.2 +35.6 95.3	6 27.9 +35.4 94.7	5 39.5 +35.4 94.1	4 51.1 +35.3 93.5
1°	8 40.1 +35.5 95.1	7 51.8 +35.4 94.5	7 03.3 +35.4 93.9	6 14.9 +35.3 93.3	5 26.4 +35.3 92.7
2°	9 15.6 +35.3 94.3	8 27.2 +35.3 93.7	7 38.7 +35.3 93.1	6 50.2 +35.3 92.5	6 01.7 +35.3 91.9
3°	9 50.9 +35.3 93.5	9 02.5 +35.2 92.9	8 14.0 +35.2 92.3	7 25.5 +35.1 91.7	6 37.0 +35.1 91.1
4°	10 26.2 +35.1 92.6	9 37.7 +35.1 92.1	8 49.2 +35.0 91.5	8 00.6 +35.1 90.9	7 12.1 +35.1 90.3
5°	11 01.3 +35.0 91.8	10 12.8 +34.9 91.2	9 24.2 +35.0 90.6	8 35.7 +35.0 90.0	7 47.2 +34.9 89.5
6°	11 36.3 +34.8 91.0	10 47.7 +34.9 90.4	9 59.2 +34.8 89.8	9 10.7 +34.8 89.2	8 22.1 +34.9 88.6
7°	12 11.1 +34.7 90.2	11 22.6 +34.7 89.6	10 34.0 +34.7 89.0	9 45.5 +34.7 88.4	8 57.0 +34.7 87.8
8°	12 45.8 +34.5 89.3	11 57.3 +34.5 88.7	11 08.7 +34.6 88.2	10 20.2 +34.6 87.6	9 31.7 +34.7 87.0
9°	13 20.3 +34.4 88.5	12 31.8 +34.4 87.9	11 43.3 +34.4 87.3	10 54.8 +34.5 86.7	10 06.4 +34.5 86.2
10°	13 54.7 +34.2 87.6	13 06.2 +34.2 87.1	12 17.7 +34.3 86.5	11 29.3 +34.3 85.9	10 40.9 +34.4 85.3
11°	14 28.9 +34.0 86.8	13 40.4 +34.1 86.2	12 52.0 +34.1 85.6	12 03.6 +34.2 85.1	11 15.3 +34.2 84.5
12°	15 02.9 +33.8 85.9	14 14.5 +33.8 85.4	13 26.1 +33.9 84.8	12 37.8 +34.0 84.2	11 49.5 +34.1 83.7
13°	15 36.7 +33.6 85.1	14 48.3 +33.7 84.5	14 00.0 +33.8 83.9	13 11.8 +33.8 83.4	12 23.6 +33.9 82.8
14°	16 10.3 +33.4 84.2	15 22.0 +33.5 83.7	14 33.8 +33.6 83.1	13 45.6 +33.7 82.5	12 57.5 +33.8 82.0
15°	16 43.7 +33.2 83.4	15 55.5 +33.3 82.8	15 07.4 +33.3 82.2	14 19.3 +33.5 81.7	13 31.3 +33.6 81.1
16°	17 16.9 +32.9 82.5	16 28.8 +33.0 81.9	15 40.7 +33.2 81.4	14 52.8 +33.3 80.8	14 04.9 +33.4 80.3
17°	17 49.8 +32.7 81.6	17 01.8 +32.9 81.1	16 13.9 +33.0 80.5	15 26.1 +33.1 80.0	14 38.3 +33.2 79.4
18°	18 22.5 +32.5 80.7	17 34.7 +32.6 80.2	16 46.9 +32.7 79.6	15 59.2 +32.8 79.1	15 11.5 +33.1 78.6
19°	18 55.0 +32.2 79.8	18 07.3 +32.3 79.3	17 19.6 +32.5 78.8	16 32.0 +32.7 78.2	15 44.6 +32.8 77.7
20°	19 27.2 +32.0 78.9	18 39.6 +32.1 78.4	17 52.1 +32.3 77.9	17 04.7 +32.5 77.3	16 17.4 +32.6 76.8
21°	19 59.2 +31.7 78.0	19 11.7 +31.9 77.5	18 24.4 +32.0 77.0	17 37.2 +32.2 76.5	16 50.0 +32.4 75.9
22°	20 30.9 +31.4 77.1	19 43.6 +31.6 76.6	18 56.4 +31.8 76.1	18 09.4 +31.9 75.6	17 22.4 +32.1 75.1
23°	21 02.3 +31.1 76.2	20 15.2 +31.3 75.7	19 28.2 +31.5 75.2	18 41.3 +31.7 74.7	17 54.5 +32.0 74.2
24°	21 33.4 +30.8 75.3	20 46.5 +31.0 74.8	19 59.7 +31.2 74.3	19 13.0 +31.4 73.8	18 26.5 +31.6 73.3
25°	22 04.2 +30.5 74.4	21 17.5 +30.7 73.9	20 30.9 +30.9 73.4	19 44.4 +31.2 72.9	18 58.1 +31.4 72.4
26°	22 34.7 +30.1 73.5	21 48.2 +30.4 73.0	21 01.8 +30.7 72.5	20 15.6 +30.9 72.0	19 29.5 +31.1 71.5
27°	23 04.8 +29.8 72.5	22 18.6 +30.1 72.0	21 32.5 +30.3 71.5	20 46.5 +30.6 71.1	20 00.6 +30.9 70.6
28°	23 34.6 +29.5 71.6	22 48.7 +29.7 71.1	22 02.8 +30.0 70.6	21 17.1 +30.3 70.1	20 31.5 +30.6 69.7
29°	24 04.1 +29.2 70.6	23 18.4 +29.4 70.2	22 32.8 +29.7 69.7	21 47.4 +29.9 69.2	21 02.1 +30.2 68.7

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 02.6 +35.3 92.9	3 14.1 +35.3 92.4	2 25.6 +35.3 91.8	1 37.1 +35.2 91.2	0 48.5 +35.3 90.6
1°	4 37.9 +35.3 92.1	3 49.4 +35.3 91.5	3 00.9 +35.2 91.0	2 12.3 +35.3 90.4	1 23.8 +35.3 89.8
2°	5 13.2 +35.2 91.3	4 24.7 +35.2 90.7	3 36.1 +35.2 90.1	2 47.6 +35.2 89.6	1 59.1 +35.2 89.0
3°	5 48.4 +35.2 90.5	4 59.9 +35.1 89.9	4 11.3 +35.2 89.3	3 22.8 +35.2 88.7	2 34.3 +35.2 88.2
4°	6 23.6 +35.0 89.7	5 35.0 +35.1 89.1	4 46.5 +35.1 88.5	3 58.0 +35.1 87.9	3 09.5 +35.1 87.3
5°	6 58.6 +35.0 88.9	6 10.1 +35.0 88.3	5 21.6 +35.0 87.7	4 33.1 +35.1 87.1	3 44.6 +35.1 86.5
6°	7 33.6 +34.9 88.1	6 45.1 +34.9 87.5	5 56.6 +35.0 86.9	5 08.2 +35.0 86.3	4 19.7 +35.1 85.7
7°	8 08.5 +34.8 87.2	7 20.0 +34.8 86.7	6 31.6 +34.9 86.1	5 43.2 +34.9 85.5	4 54.8 +35.0 84.9
8°	8 43.3 +34.7 86.4	7 54.8 +34.8 85.8	7 06.5 +34.7 85.3	6 18.1 +34.9 84.7	5 29.8 +34.9 84.1
9°	9 18.0 +34.5 85.6	8 29.6 +34.6 85.0	7 41.2 +34.7 84.4	6 53.0 +34.7 83.9	6 04.7 +34.9 83.3
10°	9 52.5 +34.5 84.8	9 04.2 +34.5 84.2	8 15.9 +34.6 83.6	7 27.7 +34.7 83.0	6 39.6 +34.8 82.5
11°	10 27.0 +34.3 83.9	9 38.7 +34.4 83.4	8 50.5 +34.5 82.8	8 02.4 +34.6 82.2	7 14.4 +34.7 81.6
12°	11 01.3 +34.2 83.1	10 13.1 +34.3 82.5	9 25.0 +34.4 82.0	8 37.0 +34.5 81.4	7 49.1 +34.5 80.8
13°	11 35.5 +34.0 82.3	10 47.4 +34.1 81.7	9 59.4 +34.3 81.1	9 11.5 +34.4 80.6	8 23.6 +34.5 80.0
14°	12 09.5 +33.9 81.4	11 21.5 +34.0 80.8	10 33.7 +34.1 80.3	9 45.9 +34.2 79.7	8 58.1 +34.4 79.2
15°	12 43.4 +33.7 80.6	11 55.5 +33.9 80.0	11 07.8 +33.9 79.4	10 20.1 +34.1 78.9	9 32.5 +34.3 78.3
16°	13 17.1 +33.5 79.7	12 29.4 +33.7 79.2	11 41.7 +33.9 78.6	10 54.2 +34.0 78.1	10 06.8 +34.1 77.5
17°	13 50.6 +33.4 78.9	13 03.1 +33.5 78.3	12 15.6 +33.7 77.8	11 28.2 +33.8 77.2	10 40.9 +34.0 76.7
18°	14 24.0 +33.2 78.0	13 36.6 +33.3 77.5	12 49.3 +33.5 76.9	12 02.0 +33.7 76.4	11 14.9 +33.9 75.8
19°	14 57.2 +33.0 77.1	14 09.9 +33.2 76.6	13 22.8 +33.3 76.1	12 35.7 +33.5 75.5	11 48.8 +33.7 75.0
20°	15 30.2 +32.8 76.3	14 43.1 +33.0 75.7	13 56.1 +33.2 75.2	13 09.2 +33.4 74.7	12 22.5 +33.5 74.1
21°	16 03.0 +32.6 75.4	15 16.1 +32.7 74.9	14 29.3 +32.9 74.3	13 42.6 +33.2 73.8	12 56.0 +33.4 73.3
22°	16 35.6 +32.3 74.5	15 48.8 +32.6 74.0	15 02.2 +32.8 73.5	14 15.8 +32.9 73.0	13 29.4 +33.2 72.4
23°	17 07.9 +32.1 73.7	16 21.4 +32.3 73.1	15 35.0 +32.6 72.6	14 48.7 +32.8 72.1	14 02.6 +33.1 71.6
24°	17 40.0 +31.9 72.8	16 53.7 +32.2 72.3	16 07.6 +32.3 71.7	15 21.5 +32.6 71.2	14 35.7 +32.8 70.7
25°	18 11.9 +31.7 71.9	17 25.9 +31.8 71.4	16 39.9 +32.2 70.9	15 54.1 +32.4 70.4	15 08.5 +32.6 69.8
26°	18 43.6 +31.3 71.0	17 57.7 +31.7 70.5	17 12.1 +31.9 70.0	16 26.5 +32.2 69.5	15 41.1 +32.5 69.0
27°	19 14.9 +31.2 70.1	18 29.4 +31.4 69.6	17 44.0 +31.6 69.1	16 58.7 +31.9 68.6	16 13.6 +32.2 68.1
28°	19 46.1 +30.8 69.2	19 00.8 +31.1 68.7	18 15.6 +31.4 68.2	17 30.6 +31.7 67.7	16 45.8 +32.0 67.2
29°	20 16.9 +30.5 68.3	19 31.9 +30.8 67.8	18 47.0 +31.2 67.3	18 02.3 +31.5 66.8	17 17.8 +31.7 66.3

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 +35.3 90.0	-0 48.5 +35.2	-1 37.1 +35.3	-2 25.6 +35.3	-3 14.1 +35.3
1°	0 35.3 +35.2 89.2	-0 13.3 +35.3	-1 01.8 +35.3	-1 50.3 +35.3	-2 38.8 +35.4
2°	1 10.5 +35.3 88.4	0 22.0 +35.3 87.8	-0 26.5 +35.3	-1 15.0 +35.4	-2 03.4 +35.4
3°	1 45.8 +35.2 87.6	0 57.3 +35.2 87.0	0 08.8 +35.3 86.4	-0 39.6 +35.4	-1 28.0 +35.4
4°	2 21.0 +35.2 86.8	1 32.5 +35.3 86.2	0 44.1 +35.3 85.6	-0 04.2 +35.3	-0 52.6 +35.4
5°	2 56.2 +35.1 86.0	2 07.8 +35.2 85.4	1 19.4 +35.3 84.8	0 31.1 +35.4 84.2	-0 17.2 +35.5
6°	3 31.3 +35.2 85.1	2 43.0 +35.2 84.6	1 54.7 +35.3 84.0	1 06.5 +35.3 83.4	0 18.3 +35.4 82.8
7°	4 06.5 +35.0 84.3	3 18.2 +35.1 83.7	2 30.0 +35.2 83.2	1 41.8 +35.3 82.6	0 53.7 +35.4 82.0
8°	4 41.5 +35.0 83.5	3 53.3 +35.1 82.9	3 05.2 +35.2 82.4	2 17.1 +35.3 81.8	1 29.1 +35.4 81.2
9°	5 16.5 +35.0 82.7	4 28.4 +35.1 82.1	3 40.4 +35.1 81.5	2 52.4 +35.3 81.0	2 04.5 +35.4 80.4
10°	5 51.5 +34.9 81.9	5 03.5 +35.0 81.3	4 15.5 +35.1 80.7	3 27.7 +35.2 80.1	2 39.9 +35.3 79.6
11°	6 26.4 +34.8 81.1	5 38.5 +34.9 80.5	4 50.6 +35.1 79.9	4 02.9 +35.1 79.3	3 15.2 +35.3 78.8
12°	7 01.2 +34.7 80.2	6 13.4 +34.8 79.7	5 25.7 +34.9 79.1	4 38.0 +35.2 78.5	3 50.5 +35.3 77.9
13°	7 35.9 +34.6 79.4	6 48.2 +34.8 78.9	6 00.6 +34.9 78.3	5 13.2 +35.0 77.7	4 25.8 +35.2 77.1
14°	8 10.5 +34.5 78.6	7 23.0 +34.6 78.0	6 35.5 +34.9 77.5	5 48.2 +35.0 76.9	5 01.0 +35.1 76.3
15°	8 45.0 +34.4 77.8	7 57.6 +34.6 77.2	7 10.4 +34.7 76.6	6 23.2 +34.9 76.1	5 36.1 +35.1 75.5
16°	9 19.4 +34.3 76.9	8 32.2 +34.5 76.4	7 45.1 +34.6 75.8	6 58.1 +34.8 75.3	6 11.2 +35.0 74.7
17°	9 53.7 +34.2 76.1	9 06.7 +34.3 75.6	8 19.7 +34.6 75.0	7 32.9 +34.7 74.4	6 46.2 +34.9 73.9
18°	10 27.9 +34.0 75.3	9 41.0 +34.2 74.7	8 54.3 +34.4 74.2	8 07.6 +34.6 73.6	7 21.1 +34.8 73.1
19°	11 01.9 +33.9 74.4	10 15.2 +34.1 73.9	9 28.7 +34.3 73.3	8 42.2 +34.6 72.8	7 55.9 +34.8 72.2
20°	11 35.8 +33.8 73.6	10 49.3 +34.0 73.1	10 03.0 +34.2 72.5	9 16.8 +34.4 72.0	8 30.7 +34.6 71.4
21°	12 09.6 +33.6 72.7	11 23.3 +33.8 72.2	10 37.2 +34.0 71.7	9 51.2 +34.2 71.1	9 05.3 +34.5 70.6
22°	12 43.2 +33.4 71.9	11 57.1 +33.7 71.4	11 11.2 +33.9 70.8	10 25.4 +34.2 70.3	9 39.8 +34.4 69.8
23°	13 16.6 +33.3 71.0	12 30.8 +33.5 70.5	11 45.1 +33.8 70.0	10 59.6 +34.0 69.5	10 14.2 +34.3 68.9
24°	13 49.9 +33.1 70.2	13 04.3 +33.4 69.7	12 18.9 +33.6 69.1	11 33.6 +33.9 68.6	10 48.5 +34.1 68.1
25°	14 23.0 +32.9 69.3	13 37.7 +33.1 68.8	12 52.5 +33.4 68.3	12 07.5 +33.7 67.8	11 22.6 +34.0 67.3
26°	14 55.9 +32.7 68.5	14 10.8 +33.0 68.0	13 25.9 +33.3 67.4	12 41.2 +33.5 66.9	11 56.6 +33.8 66.4
27°	15 28.6 +32.5 67.6	14 43.8 +32.8 67.1	13 59.2 +33.1 66.6	13 14.7 +33.4 66.1	12 30.4 +33.7 65.6
28°	16 01.1 +32.3 66.7	15 16.6 +32.6 66.2	14 32.3 +32.9 65.7	13 48.1 +33.2 65.2	13 04.1 +33.5 64.7
29°	16 33.4 +32.1 65.8	15 49.2 +32.4 65.4	15 05.2 +32.7 64.9	14 21.3 +33.0 64.4	13 37.6 +33.4 63.9

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°	-4 02.6 +35.4	-4 51.1 +35.5	-5 39.5 +35.5	-6 27.9 +35.5	-7 16.2 +35.6
1°	-3 27.2 +35.4	-4 15.6 +35.4	-5 04.0 +35.5	-5 52.4 +35.6	-6 40.6 +35.6
2°	-2 51.8 +35.5	-3 40.2 +35.5	-4 28.5 +35.6	-5 16.8 +35.7	-6 05.0 +35.8
3°	-2 16.3 +35.4	-3 04.7 +35.6	-3 52.9 +35.6	-4 41.1 +35.7	-5 29.2 +35.8
4°	-1 40.9 +35.5	-2 29.1 +35.6	-3 17.3 +35.7	-4 05.4 +35.8	-4 53.4 +35.9
5°	-1 05.4 +35.5	-1 53.5 +35.6	-2 41.6 +35.7	-3 29.6 +35.8	-4 17.5 +35.9
6°	-0 29.9 +35.6	-1 17.9 +35.6	-2 05.9 +35.7	-2 53.8 +35.8	-3 41.6 +35.9
7°	0 05.7 +35.5 81.4	-0 42.3 +35.6	-1 30.2 +35.8	-2 18.0 +35.9	-3 05.7 +36.0
8°	0 41.2 +35.5 80.6	-0 06.7 +35.7	-0 54.4 +35.7	-1 42.1 +35.9	-2 29.7 +36.1
9°	1 16.7 +35.5 79.8	0 29.0 +35.6 79.2	-0 18.7 +35.8	-1 06.2 +35.9	-1 53.6 +36.0
10°	1 52.2 +35.5 79.0	1 04.6 +35.6 78.4	0 17.1 +35.7 77.8	-0 30.3 +35.9	-1 17.6 +36.1
11°	2 27.7 +35.4 78.2	1 40.2 +35.6 77.6	0 52.8 +35.8 77.0	0 05.6 +35.9 76.4	-0 41.5 +36.1
12°	3 03.1 +35.4 77.4	2 15.8 +35.6 76.8	1 28.6 +35.7 76.2	0 41.5 +35.9 75.6	-0 05.4 +36.0
13°	3 38.5 +35.4 76.6	2 51.4 +35.5 76.0	2 04.3 +35.7 75.4	1 17.4 +35.9 74.8	0 30.6 +36.1 74.2
14°	4 13.9 +35.3 75.8	3 26.9 +35.5 75.2	2 40.0 +35.7 74.6	1 53.3 +35.9 74.0	1 06.7 +36.0 73.4
15°	4 49.2 +35.2 74.9	4 02.4 +35.4 74.4	3 15.7 +35.6 73.8	2 29.2 +35.8 73.2	1 42.7 +36.1 72.6
16°	5 24.4 +35.2 74.1	4 37.8 +35.4 73.6	3 51.3 +35.6 73.0	3 05.0 +35.8 72.4	2 18.8 +36.0 71.8
17°	5 59.6 +35.2 73.3	5 13.2 +35.3 72.8	4 26.9 +35.6 72.2	3 40.8 +35.7 71.6	2 54.8 +36.0 71.0
18°	6 34.8 +35.0 72.5	5 48.5 +35.3 71.9	5 02.5 +35.4 71.4	4 16.5 +35.7 70.8	3 30.8 +35.9 70.2
19°	7 09.8 +34.9 71.7	6 23.8 +35.2 71.1	5 37.9 +35.4 70.6	4 52.2 +35.7 70.0	4 06.7 +35.9 69.4
20°	7 44.7 +34.9 70.9	6 59.0 +35.1 70.3	6 13.3 +35.4 69.8	5 27.9 +35.6 69.2	4 42.6 +35.8 68.6
21°	8 19.6 +34.8 70.0	7 34.1 +35.0 69.5	6 48.7 +35.2 68.9	6 03.5 +35.5 68.4	5 18.4 +35.8 67.8
22°	8 54.4 +34.6 69.2	8 09.1 +34.9 68.7	7 23.9 +35.2 68.1	6 39.0 +35.4 67.6	5 54.2 +35.7 67.0
23°	9 29.0 +34.5 68.4	8 44.0 +34.8 67.8	7 59.1 +35.1 67.3	7 14.4 +35.3 66.8	6 29.9 +35.6 66.2
24°	10 03.5 +34.4 67.6	9 18.8 +34.6 67.0	8 34.2 +34.9 66.5	7 49.7 +35.3 65.9	7 05.5 +35.5 65.4
25°	10 37.9 +34.3 66.7	9 53.4 +34.6 66.2	9 09.1 +34.9 65.7	8 25.0 +35.1 65.1	7 41.0 +35.5 64.6
26°	11 12.2 +34.1 65.9	10 28.0 +34.4 65.4	9 44.0 +34.7 64.8	9 00.1 +35.1 64.3	8 16.5 +35.3 63.8
27°	11 46.3 +34.0 65.1	11 02.4 +34.3 64.5	10 18.7 +34.6 64.0	9 35.2 +34.9 63.5	8 51.8 +35.3 63.0
28°	12 20.3 +33.9 64.2	11 36.7 +34.2 63.7	10 53.3 +34.5 63.2	10 10.1 +34.8 62.7	9 27.1 +35.1 62.1
29°	12 54.2 +33.6 63.4	12 10.9 +34.0 62.9	11 27.8 +34.3 62.3	10 44.9 +34.6 61.8	10 02.2 +35.0 61.3

Declination SAME name as Latitude

Latitude 36°

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°	-8 04.6 +35.7	-8 52.8 +35.7	-9 41.0 +35.8		
1°	-7 28.9 +35.8	-8 17.1 +35.9	-9 05.2 +36.0	-9 53.2 +36.0	
2°	-6 53.1 +35.8	-7 41.2 +35.9	-8 29.2 +36.0	-9 17.2 +36.2	
3°	-6 17.3 +35.9	-7 05.3 +36.0	-7 53.2 +36.1	-8 41.0 +36.2	-9 28.7 +36.3
4°	-5 41.4 +36.0	-6 29.3 +36.1	-7 17.1 +36.3	-8 04.8 +36.4	-8 52.4 +36.5
5°	-5 05.4 +36.0	-5 53.2 +36.2	-6 40.8 +36.3	-7 28.4 +36.4	-8 15.9 +36.6
6°	-4 29.4 +36.1	-5 17.0 +36.2	-6 04.5 +36.3	-6 52.0 +36.5	-7 39.3 +36.7
7°	-3 53.3 +36.2	-4 40.8 +36.3	-5 28.2 +36.5	-6 15.5 +36.6	-7 02.6 +36.7
8°	-3 17.1 +36.1	-4 04.5 +36.3	-4 51.7 +36.4	-5 38.9 +36.7	-6 25.9 +36.9
9°	-2 41.0 +36.2	-3 28.2 +36.4	-4 15.3 +36.6	-5 02.2 +36.7	-5 49.0 +36.8
10°	-2 04.8 +36.3	-2 51.8 +36.4	-3 38.7 +36.6	-4 25.5 +36.8	-5 12.2 +37.0
11°	-1 28.5 +36.2	-2 15.4 +36.4	-3 02.1 +36.6	-3 48.7 +36.8	-4 35.2 +37.0
12°	-0 52.3 +36.3	-1 39.0 +36.5	-2 25.5 +36.6	-3 11.9 +36.8	-3 58.2 +37.0
13°	-0 16.0 +36.2	-1 02.5 +36.4	-1 48.9 +36.7	-2 35.1 +36.9	-3 21.2 +37.1
14°	0 20.2 +36.3 72.9	-0 26.1 +36.5	-1 12.2 +36.6	-1 58.2 +36.9	-2 44.1 +37.1
15°	0 56.5 +36.2 72.1	0 10.4 +36.5 71.5	-0 35.6 +36.7	-1 21.3 +36.9	-2 07.0 +37.2
16°	1 32.7 +36.3 71.3	0 46.9 +36.4 70.7	0 01.1 +36.7 70.1	-0 44.4 +36.9	-1 29.8 +37.1
17°	2 09.0 +36.2 70.5	1 23.3 +36.4 69.9	0 37.8 +36.7 69.3	-0 07.5 +36.9	-0 52.7 +37.2
18°	2 45.2 +36.1 69.7	1 59.7 +36.5 69.1	1 14.5 +36.6 68.5	0 29.4 +36.9 67.9	-0 15.5 +37.2
19°	3 21.3 +36.2 68.9	2 36.2 +36.3 68.3	1 51.1 +36.7 67.7	1 06.3 +36.9 67.1	0 21.7 +37.2 66.6
20°	3 57.5 +36.1 68.1	3 12.5 +36.4 67.5	2 27.8 +36.6 66.9	1 43.2 +36.9 66.4	0 58.9 +37.1 65.8
21°	4 33.6 +36.0 67.3	3 48.9 +36.3 66.7	3 04.4 +36.6 66.1	2 20.1 +36.9 65.6	1 36.0 +37.1 65.0
22°	5 09.6 +36.0 66.5	4 25.2 +36.2 65.9	3 41.0 +36.5 65.3	2 57.0 +36.8 64.8	2 13.1 +37.2 64.2
23°	5 45.6 +35.9 65.7	5 01.4 +36.2 65.1	4 17.5 +36.5 64.5	3 33.8 +36.8 64.0	2 50.3 +37.0 63.4
24°	6 21.5 +35.8 64.9	5 37.6 +36.1 64.3	4 54.0 +36.4 63.7	4 10.6 +36.7 63.2	3 27.3 +37.1 62.6
25°	6 57.3 +35.7 64.0	6 13.7 +36.1 63.5	5 30.4 +36.4 63.0	4 47.3 +36.7 62.4	4 04.4 +37.0 61.8
26°	7 33.0 +35.7 63.2	6 49.8 +36.0 62.7	6 06.8 +36.3 62.2	5 24.0 +36.6 61.6	4 41.4 +36.9 61.0
27°	8 08.7 +35.6 62.4	7 25.8 +35.9 61.9	6 43.1 +36.2 61.3	6 00.6 +36.5 60.8	5 18.3 +36.9 60.3
28°	8 44.3 +35.4 61.6	8 01.7 +35.7 61.1	7 19.3 +36.1 60.5	6 37.1 +36.5 60.0	5 55.2 +36.8 59.5
29°	9 19.7 +35.3 60.8	8 37.4 +35.7 60.3	7 55.4 +36.0 59.7	7 13.6 +36.4 59.2	6 32.0 +36.7 58.7

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°					
1°					
2°					
3°					
4°	-9 39.9 +36.7				
5°	-9 03.2 +36.7	-9 50.5 +36.9			
6°	-8 26.5 +36.8	-9 13.6 +37.0			
7°	-7 49.7 +37.0	-8 36.6 +37.1	-9 23.3 +37.2		
8°	-7 12.7 +37.0	-7 59.5 +37.2	-8 46.1 +37.4	-9 32.5 +37.6	
9°	-6 35.7 +37.0	-7 22.3 +37.3	-8 08.7 +37.5	-8 54.9 +37.7	-9 41.0 +37.9
10°	-5 58.7 +37.2	-6 45.0 +37.3	-7 31.2 +37.6	-8 17.2 +37.7	-9 03.1 +38.0
11°	-5 21.5 +37.2	-6 07.7 +37.5	-6 53.6 +37.6	-7 39.5 +37.9	-8 25.1 +38.1
12°	-4 44.3 +37.3	-5 30.2 +37.4	-6 16.0 +37.7	-7 01.6 +37.9	-7 47.0 +38.2
13°	-4 07.0 +37.3	-4 52.8 +37.6	-5 38.3 +37.8	-6 23.7 +38.1	-7 08.8 +38.2
14°	-3 29.7 +37.3	-4 15.2 +37.6	-5 00.5 +37.8	-5 45.6 +38.0	-6 30.6 +38.4
15°	-2 52.4 +37.4	-3 37.6 +37.6	-4 22.7 +37.9	-5 07.6 +38.1	-5 52.2 +38.3
16°	-2 15.0 +37.4	-3 00.0 +37.6	-3 44.8 +37.9	-4 29.5 +38.2	-5 13.9 +38.5
17°	-1 37.6 +37.4	-2 22.4 +37.7	-3 06.9 +37.9	-3 51.3 +38.2	-4 35.4 +38.5
18°	-1 00.2 +37.5	-1 44.7 +37.7	-2 29.0 +38.0	-3 13.1 +38.3	-3 56.9 +38.5
19°	-0 22.7 +37.4	-1 07.0 +37.7	-1 51.0 +38.0	-2 34.8 +38.3	-3 18.4 +38.6
20°	0 14.7 +37.4 65.2	-0 29.3 +37.8	-1 13.0 +38.0	-1 56.5 +38.3	-2 39.8 +38.6
21°	0 52.1 +37.5 64.4	0 08.5 +37.7 63.8	-0 35.0 +38.0	-1 18.2 +38.3	-2 01.2 +38.6
22°	1 29.6 +37.4 63.6	0 46.2 +37.7 63.0	0 03.0 +38.0 62.5	-0 39.9 +38.3	-1 22.6 +38.6
23°	2 07.0 +37.3 62.8	1 23.9 +37.7 62.3	0 41.0 +38.0 61.7	-0 01.6 +38.3	-0 44.0 +38.7
24°	2 44.3 +37.4 62.1	2 01.6 +37.6 61.5	1 19.0 +38.0 60.9	0 36.7 +38.4 60.3	-0 05.3 +38.6
25°	3 21.7 +37.3 61.3	2 39.2 +37.7 60.7	1 57.0 +38.0 60.1	1 15.1 +38.3 59.6	0 33.3 +38.7 59.0
26°	3 59.0 +37.3 60.5	3 16.9 +37.6 59.9	2 35.0 +37.9 59.4	1 53.4 +38.2 58.8	1 12.0 +38.6 58.2
27°	4 36.3 +37.2 59.7	3 54.5 +37.6 59.1	3 12.9 +38.0 58.6	2 31.6 +38.3 58.0	1 50.6 +38.6 57.4
28°	5 13.5 +37.2 58.9	4 32.1 +37.5 58.4	3 50.9 +37.8 57.8	3 09.9 +38.2 57.2	2 29.2 +38.6 56.7
29°	5 50.7 +37.1 58.1	5 09.6 +37.4 57.6	4 28.7 +37.8 57.0	3 48.1 +38.2 56.5	3 07.8 +38.5 55.9

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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°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°	-9 48.8 +38.3				
11°	-9 10.5 +38.3	-9 55.8 +38.6			
12°	-8 32.2 +38.4	-9 17.2 +38.6			
13°	-7 53.8 +38.5	-8 38.6 +38.8	-9 23.1 +39.0		
14°	-7 15.3 +38.6	-7 59.8 +38.8	-8 44.1 +39.1	-9 28.2 +39.4	
15°	-6 36.7 +38.6	-7 21.0 +39.0	-8 05.0 +39.2	-8 48.8 +39.5	-9 32.3 +39.7
16°	-5 58.1 +38.8	-6 42.0 +39.0	-7 25.8 +39.3	-8 09.3 +39.6	-8 52.6 +39.9
17°	-5 19.3 +38.7	-6 03.0 +39.0	-6 46.5 +39.4	-7 29.7 +39.6	-8 12.7 +40.0
18°	-4 40.6 +38.9	-5 24.0 +39.1	-6 07.1 +39.4	-6 50.1 +39.8	-7 32.7 +40.0
19°	-4 01.7 +38.8	-4 44.9 +39.2	-5 27.7 +39.4	-6 10.3 +39.7	-6 52.7 +40.1
20°	-3 22.9 +38.9	-4 05.7 +39.2	-4 48.3 +39.6	-5 30.6 +39.9	-6 12.6 +40.1
21°	-2 44.0 +39.0	-3 26.5 +39.3	-4 08.7 +39.5	-4 50.7 +39.9	-5 32.5 +40.3
22°	-2 05.0 +38.9	-2 47.2 +39.2	-3 29.2 +39.6	-4 10.8 +39.9	-4 52.2 +40.2
23°	-1 26.1 +39.0	-2 08.0 +39.3	-2 49.6 +39.7	-3 30.9 +40.0	-4 12.0 +40.3
24°	-0 47.1 +39.0	-1 28.7 +39.4	-2 09.9 +39.6	-2 50.9 +40.0	-3 31.7 +40.4
25°	-0 08.1 +38.9	-0 49.3 +39.3	-1 30.3 +39.7	-2 10.9 +40.0	-2 51.3 +40.3
26°	0 30.8 +39.0 57.6	-0 10.0 +39.3	-0 50.6 +39.7	-1 30.9 +40.0	-2 11.0 +40.4
27°	1 09.8 +39.0 56.9	0 29.3 +39.3 56.3	-0 10.9 +39.6	-0 50.9 +40.0	-1 30.6 +40.4
28°	1 48.8 +38.9 56.1	1 08.6 +39.3 55.5	0 28.7 +39.7 55.0	-0 10.9 +40.1	-0 50.2 +40.5
29°	2 27.7 +38.9 55.3	1 47.9 +39.3 54.8	1 08.4 +39.7 54.2	0 29.2 +40.0 53.6	-0 09.7 +40.4

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
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16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
25°					
26°					
27°					
28°					
29°					

Declination SAME name as Latitude

Latitude 37°

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°	53 00.0 +60.0 180.0	52 59.3 +60.0 178.3	52 57.2 +60.0 176.7	52 53.8 +59.8 175.0	52 48.9 +59.7 173.4
1°	54 00.0 +60.0 180.0	53 59.3 +60.0 178.3	53 57.2 +59.9 176.6	53 53.6 +59.9 174.9	53 48.6 +59.8 173.2
2°	55 00.0 +60.0 180.0	54 59.3 +60.0 178.3	54 57.1 +59.9 176.5	54 53.5 +59.8 174.8	54 48.4 +59.7 173.1
3°	56 00.0 +60.0 180.0	55 59.3 +59.9 178.2	55 57.0 +59.9 176.4	55 53.3 +59.8 174.7	55 48.1 +59.7 172.9
4°	57 00.0 +60.0 180.0	56 59.2 +60.0 178.2	56 56.9 +60.0 176.3	56 53.1 +59.8 174.5	56 47.8 +59.7 172.7
5°	58 00.0 +60.0 180.0	57 59.2 +60.0 178.1	57 56.9 +59.9 176.2	57 52.9 +59.8 174.4	57 47.5 +59.6 172.5
6°	59 00.0 +60.0 180.0	58 59.2 +60.0 178.1	58 56.8 +59.9 176.1	58 52.7 +59.8 174.2	58 47.1 +59.7 172.3
7°	60 00.0 +60.0 180.0	59 59.2 +59.9 178.0	59 56.7 +59.9 176.0	59 52.5 +59.8 174.1	59 46.8 +59.6 172.1
8°	61 00.0 +60.0 180.0	60 59.1 +60.0 178.0	60 56.6 +59.9 175.9	60 52.3 +59.8 173.9	60 46.4 +59.6 171.9
9°	62 00.0 +60.0 180.0	61 59.1 +60.0 177.9	61 56.5 +59.9 175.8	61 52.1 +59.8 173.7	61 46.0 +59.6 171.6
10°	63 00.0 +60.0 180.0	62 59.1 +60.0 177.8	62 56.4 +59.9 175.7	62 51.9 +59.7 173.5	62 45.6 +59.5 171.4
11°	64 00.0 +60.0 180.0	63 59.1 +59.9 177.8	63 56.3 +59.8 175.5	63 51.6 +59.7 173.3	63 45.1 +59.5 171.1
12°	65 00.0 +60.0 180.0	64 59.0 +60.0 177.7	64 56.1 +59.9 175.4	64 51.3 +59.7 173.1	64 44.6 +59.5 170.8
13°	66 00.0 +60.0 180.0	65 59.0 +60.0 177.6	65 56.0 +59.9 175.2	65 51.0 +59.7 172.8	65 44.1 +59.4 170.5
14°	67 00.0 +60.0 180.0	66 59.0 +59.9 177.5	66 55.9 +59.8 175.0	66 50.7 +59.6 172.6	66 43.5 +59.4 170.1
15°	68 00.0 +60.0 180.0	67 58.9 +60.0 177.4	67 55.7 +59.8 174.9	67 50.3 +59.6 172.3	67 42.9 +59.3 169.8
16°	69 00.0 +60.0 180.0	68 58.9 +59.9 177.3	68 55.5 +59.8 174.6	68 49.9 +59.6 172.0	68 42.2 +59.2 169.4
17°	70 00.0 +60.0 180.0	69 58.8 +60.0 177.2	69 55.3 +59.8 174.4	69 49.5 +59.6 171.7	69 41.4 +59.2 168.9
18°	71 00.0 +60.0 180.0	70 58.8 +59.9 177.1	70 55.1 +59.8 174.2	70 49.1 +59.4 171.3	70 40.6 +59.1 168.4
19°	72 00.0 +60.0 180.0	71 58.7 +60.0 176.9	71 54.9 +59.7 173.9	71 48.5 +59.5 170.9	71 39.7 +59.0 167.9
20°	73 00.0 +60.0 180.0	72 58.7 +59.9 176.8	72 54.6 +59.8 173.6	72 48.0 +59.3 170.4	72 38.7 +58.9 167.3
21°	74 00.0 +60.0 180.0	73 58.6 +59.9 176.6	73 54.4 +59.6 173.3	73 47.3 +59.3 169.9	73 37.6 +58.7 166.6
22°	75 00.0 +60.0 180.0	74 58.5 +59.9 176.4	74 54.0 +59.7 172.9	74 46.6 +59.2 169.4	74 36.3 +58.6 165.9
23°	76 00.0 +60.0 180.0	75 58.4 +59.9 176.2	75 53.7 +59.5 172.4	75 45.8 +59.1 168.7	75 34.9 +58.4 165.1
24°	77 00.0 +60.0 180.0	76 58.3 +59.9 175.9	76 53.2 +59.5 171.9	76 44.9 +58.9 168.0	76 33.3 +58.1 164.1
25°	78 00.0 +60.0 180.0	77 58.2 +59.8 175.6	77 52.7 +59.5 171.3	77 43.8 +58.7 167.1	77 31.4 +57.8 163.0
26°	79 00.0 +60.0 180.0	78 58.0 +59.9 175.3	78 52.2 +59.3 170.6	78 42.5 +58.5 166.1	78 29.2 +57.4 161.7
27°	80 00.0 +60.0 180.0	79 57.9 +59.7 174.9	79 51.5 +59.1 169.8	79 41.0 +58.2 164.9	79 26.6 +56.9 160.2
28°	81 00.0 +60.0 180.0	80 57.6 +59.8 174.4	80 50.6 +59.0 168.8	80 39.2 +57.7 163.5	80 23.5 +56.2 158.3
29°	82 00.0 +60.0 180.0	81 57.4 +59.6 173.7	81 49.6 +58.7 167.6	81 36.9 +57.2 161.7	81 19.7 +55.2 156.1

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°	52 42.7 +59.6 171.7	52 35.1 +59.4 170.1	52 26.2 +59.2 168.5	52 16.0 +59.0 166.9	52 04.4 +58.7 165.3
1°	53 42.3 +59.6 171.5	53 34.5 +59.4 169.9	53 25.4 +59.2 168.2	53 15.0 +58.9 166.6	53 03.1 +58.7 164.9
2°	54 41.9 +59.5 171.3	54 33.9 +59.4 169.6	54 24.6 +59.1 167.9	54 13.9 +58.9 166.2	54 01.8 +58.6 164.6
3°	55 41.4 +59.5 171.1	55 33.3 +59.3 169.4	55 23.7 +59.1 167.6	55 12.8 +58.8 165.9	55 00.4 +58.5 164.2
4°	56 40.9 +59.5 170.9	56 32.6 +59.3 169.1	56 22.8 +59.1 167.3	56 11.6 +58.7 165.6	55 58.9 +58.5 163.8
5°	57 40.4 +59.5 170.7	57 31.9 +59.3 168.8	57 21.9 +59.0 167.0	57 10.3 +58.7 165.2	56 57.4 +58.3 163.4
6°	58 39.9 +59.5 170.4	58 31.2 +59.2 168.5	58 20.9 +58.9 166.6	58 09.0 +58.6 164.8	57 55.7 +58.3 163.0
7°	59 39.4 +59.4 170.1	59 30.4 +59.1 168.2	59 19.8 +58.8 166.3	59 07.6 +58.6 164.4	58 54.0 +58.2 162.5
8°	60 38.8 +59.4 169.9	60 29.5 +59.1 167.9	60 18.6 +58.8 165.9	60 06.2 +58.4 163.9	59 52.2 +58.0 162.0
9°	61 38.2 +59.3 169.6	61 28.6 +59.1 167.5	61 17.4 +58.8 165.5	61 04.6 +58.4 163.5	60 50.2 +57.9 161.5
10°	62 37.5 +59.3 169.2	62 27.7 +59.0 167.1	62 16.2 +58.6 165.1	62 03.0 +58.2 163.0	61 48.1 +57.8 161.0
11°	63 36.8 +59.2 168.9	63 26.7 +58.9 166.7	63 14.8 +58.5 164.6	63 01.2 +58.1 162.5	62 45.9 +57.7 160.4
12°	64 36.0 +59.2 168.5	64 25.6 +58.8 166.3	64 13.3 +58.4 164.1	63 59.3 +58.0 161.9	63 43.6 +57.5 159.8
13°	65 35.2 +59.1 168.1	65 24.4 +58.7 165.8	65 11.7 +58.3 163.6	64 57.3 +57.8 161.3	64 41.1 +57.2 159.1
14°	66 34.3 +59.0 167.7	66 23.1 +58.6 165.3	66 10.0 +58.2 163.0	65 55.1 +57.6 160.7	65 38.3 +57.1 158.4
15°	67 33.3 +59.0 167.3	67 21.7 +58.6 164.8	67 08.2 +58.0 162.4	66 52.7 +57.5 160.0	66 35.4 +56.8 157.6
16°	68 32.3 +58.8 166.8	68 20.3 +58.3 164.2	68 06.2 +57.8 161.7	67 50.2 +57.2 159.2	67 32.2 +56.6 156.8
17°	69 31.1 +58.8 166.2	69 18.6 +58.2 163.6	69 04.0 +57.7 161.0	68 47.4 +57.0 158.4	68 28.8 +56.3 155.9
18°	70 29.9 +58.6 165.6	70 16.8 +58.1 162.9	70 01.7 +57.3 160.2	69 44.4 +56.6 157.5	69 25.1 +55.9 155.0
19°	71 28.5 +58.4 165.0	71 14.9 +57.8 162.1	70 59.0 +57.2 159.3	70 41.0 +56.4 156.6	70 21.0 +55.4 153.9
20°	72 26.9 +58.3 164.2	72 12.7 +57.6 161.2	71 56.2 +56.8 158.3	71 37.4 +55.9 155.5	71 16.4 +55.1 152.7
21°	73 25.2 +58.1 163.4	73 10.3 +57.3 160.3	72 53.0 +56.4 157.3	72 33.3 +55.5 154.3	72 11.5 +54.4 151.5
22°	74 23.3 +57.8 162.5	74 07.6 +57.0 159.2	73 49.4 +56.0 156.1	73 28.8 +54.9 153.0	73 05.9 +53.9 150.1
23°	75 21.1 +57.5 161.5	75 04.6 +56.5 158.1	74 45.4 +55.4 154.7	74 23.7 +54.3 151.6	73 59.8 +53.1 148.5
24°	76 18.6 +57.2 160.3	76 01.1 +56.0 156.7	75 40.8 +54.9 153.2	75 18.0 +53.6 149.9	74 52.9 +52.2 146.8
25°	77 15.8 +56.7 159.0	76 57.1 +55.5 155.2	76 35.7 +54.0 151.5	76 11.6 +52.6 148.1	75 45.1 +51.1 144.8
26°	78 12.5 +56.1 157.5	77 52.6 +54.6 153.4	77 29.7 +53.1 149.6	77 04.2 +51.4 146.0	76 36.2 +49.9 142.6
27°	79 08.6 +55.3 155.7	78 47.2 +53.7 151.4	78 22.8 +51.9 147.4	77 55.6 +50.1 143.6	77 26.1 +48.2 140.2
28°	80 03.9 +54.4 153.5	79 40.9 +52.4 149.0	79 14.7 +50.3 144.8	78 45.7 +48.4 140.9	78 14.3 +46.4 137.3
29°	80 58.3 +53.0 150.9	80 33.3 +50.7 146.1	80 05.0 +48.5 141.8	79 34.1 +46.2 137.8	79 00.7 +44.1 134.1

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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°	51 51.6 +58.4 163.7	51 37.5 +58.1 162.1	51 22.1 +57.8 160.5	51 05.6 +57.4 159.0	50 47.8 +57.1 157.5
1°	52 50.0 +58.4 163.3	52 35.6 +58.0 161.7	52 19.9 +57.7 160.1	52 03.0 +57.3 158.5	51 44.9 +56.9 157.0
2°	53 48.4 +58.3 162.9	53 33.6 +58.0 161.3	53 17.6 +57.6 159.7	53 00.3 +57.2 158.1	52 41.8 +56.8 156.5
3°	54 46.7 +58.2 162.5	54 31.6 +57.8 160.8	54 15.2 +57.5 159.2	53 57.5 +57.1 157.6	53 38.6 +56.7 155.9
4°	55 44.9 +58.1 162.1	55 29.4 +57.8 160.4	55 12.7 +57.3 158.7	54 54.6 +56.9 157.0	54 35.3 +56.5 155.4
5°	56 43.0 +58.0 161.6	56 27.2 +57.6 159.9	56 10.0 +57.2 158.2	55 51.5 +56.8 156.5	55 31.8 +56.3 154.8
6°	57 41.0 +57.9 161.2	57 24.8 +57.5 159.4	57 07.2 +57.1 157.6	56 48.3 +56.6 155.9	56 28.1 +56.1 154.2
7°	58 38.9 +57.7 160.7	58 22.3 +57.3 158.8	58 04.3 +56.8 157.0	57 44.9 +56.4 155.3	57 24.2 +55.9 153.5
8°	59 36.6 +57.7 160.1	59 19.6 +57.2 158.3	59 01.1 +56.7 156.4	58 41.3 +56.2 154.6	58 20.1 +55.6 152.8
9°	60 34.3 +57.4 159.6	60 16.8 +57.0 157.7	59 57.8 +56.5 155.8	59 37.5 +55.9 153.9	59 15.7 +55.5 152.1
10°	61 31.7 +57.4 159.0	61 13.8 +56.8 157.0	60 54.3 +56.3 155.1	60 33.4 +55.8 153.2	60 11.2 +55.1 151.4
11°	62 29.1 +57.1 158.3	62 10.6 +56.6 156.3	61 50.6 +56.1 154.4	61 29.2 +55.4 152.4	61 06.3 +54.8 150.6
12°	63 26.2 +56.9 157.7	63 07.2 +56.4 155.6	62 46.7 +55.7 153.6	62 24.6 +55.2 151.6	62 01.1 +54.5 149.7
13°	64 23.1 +56.7 157.0	64 03.6 +56.1 154.8	63 42.4 +55.5 152.8	63 19.8 +54.8 150.8	62 55.6 +54.2 148.8
14°	65 19.8 +56.5 156.2	64 59.7 +55.8 154.0	64 37.9 +55.1 151.9	64 14.6 +54.4 149.8	63 49.8 +53.7 147.8
15°	66 16.3 +56.2 155.4	65 55.5 +55.5 153.1	65 33.0 +54.8 151.0	65 09.0 +54.0 148.9	64 43.5 +53.3 146.8
16°	67 12.5 +55.8 154.5	66 51.0 +55.1 152.2	66 27.8 +54.3 150.0	66 03.0 +53.6 147.8	65 36.8 +52.7 145.7
17°	68 08.3 +55.5 153.5	67 46.1 +54.7 151.2	67 22.1 +53.9 148.9	66 56.6 +53.0 146.7	66 29.5 +52.2 144.5
18°	69 03.8 +55.1 152.5	68 40.8 +54.2 150.1	68 16.0 +53.4 147.7	67 49.6 +52.5 145.5	67 21.7 +51.6 143.3
19°	69 58.9 +54.6 151.3	69 35.0 +53.7 148.9	69 09.4 +52.7 146.5	68 42.1 +51.8 144.2	68 13.3 +50.9 141.9
20°	70 53.5 +54.1 150.1	70 28.7 +53.1 147.5	70 02.1 +52.1 145.1	69 33.9 +51.1 142.7	69 04.2 +50.0 140.5
21°	71 47.6 +53.4 148.7	71 21.8 +52.4 146.1	70 54.2 +51.3 143.6	70 25.0 +50.2 141.2	69 54.2 +49.1 138.9
22°	72 41.0 +52.7 147.3	72 14.2 +51.5 144.6	71 45.5 +50.4 142.0	71 15.2 +49.2 139.5	70 43.3 +48.2 137.2
23°	73 33.7 +51.9 145.6	73 05.7 +50.6 142.8	72 35.9 +49.4 140.2	72 04.4 +48.2 137.7	71 31.5 +46.9 135.4
24°	74 25.6 +50.8 143.8	73 56.3 +49.5 140.9	73 25.3 +48.1 138.3	72 52.6 +46.8 135.7	72 18.4 +45.6 133.3
25°	75 16.4 +49.7 141.7	74 45.8 +48.2 138.9	74 13.4 +46.8 136.1	73 39.4 +45.5 133.6	73 04.0 +44.1 131.2
26°	76 06.1 +48.2 139.5	75 34.0 +46.7 136.5	75 00.2 +45.2 133.8	74 24.9 +43.7 131.2	73 48.1 +42.4 128.8
27°	76 54.3 +46.6 136.9	76 20.7 +44.9 133.9	75 45.4 +43.3 131.2	75 08.6 +41.8 128.6	74 30.5 +40.4 126.2
28°	77 40.9 +44.5 134.1	77 05.6 +42.7 131.0	76 28.7 +41.0 128.3	75 50.4 +39.5 125.7	75 10.9 +38.1 123.4
29°	78 25.4 +42.1 130.8	77 48.3 +40.2 127.8	77 09.7 +38.6 125.1	76 29.9 +37.0 122.6	75 49.0 +35.6 120.3

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°	50 28.9 +56.7 156.0	50 08.9 +56.2 154.5	49 47.7 +55.9 153.1	49 25.5 +55.4 151.6	49 02.2 +55.0 150.2
1°	51 25.6 +56.5 155.5	51 05.1 +56.1 154.0	50 43.6 +55.6 152.5	50 20.9 +55.2 151.0	49 57.2 +54.7 149.6
2°	52 22.1 +56.4 154.9	52 01.2 +56.0 153.4	51 39.2 +55.5 151.9	51 16.1 +55.0 150.4	50 51.9 +54.6 149.0
3°	53 18.5 +56.2 154.4	52 57.2 +55.7 152.8	52 34.7 +55.3 151.3	52 11.1 +54.9 149.8	51 46.5 +54.3 148.3
4°	54 14.7 +56.0 153.8	53 52.9 +55.6 152.2	53 30.0 +55.1 150.6	53 06.0 +54.5 149.1	52 40.8 +54.1 147.6
5°	55 10.7 +55.9 153.2	54 48.5 +55.3 151.5	54 25.1 +54.8 150.0	54 00.5 +54.4 148.4	53 34.9 +53.8 146.9
6°	56 06.6 +55.6 152.5	55 43.8 +55.1 150.9	55 19.9 +54.6 149.3	54 54.9 +54.0 147.7	54 28.7 +53.5 146.1
7°	57 02.2 +55.4 151.8	56 38.9 +54.9 150.2	56 14.5 +54.3 148.5	55 48.9 +53.8 146.9	55 22.2 +53.2 145.3
8°	57 57.6 +55.1 151.1	57 33.8 +54.6 149.4	57 08.8 +54.0 147.7	56 42.7 +53.4 146.1	56 15.4 +52.8 144.5
9°	58 52.7 +54.8 150.4	58 28.4 +54.2 148.6	58 02.8 +53.7 146.9	57 36.1 +53.1 145.3	57 08.2 +52.5 143.7
10°	59 47.5 +54.6 149.6	59 22.6 +54.0 147.8	58 56.5 +53.3 146.1	58 29.2 +52.7 144.4	58 00.7 +52.1 142.8
11°	60 42.1 +54.2 148.7	60 16.6 +53.5 146.9	59 49.8 +52.9 145.2	59 21.9 +52.2 143.5	58 52.8 +51.6 141.8
12°	61 36.3 +53.8 147.8	61 10.1 +53.2 146.0	60 42.7 +52.5 144.2	60 14.1 +51.9 142.5	59 44.4 +51.2 140.8
13°	62 30.1 +53.5 146.9	62 03.3 +52.8 145.0	61 35.2 +52.1 143.2	61 06.0 +51.3 141.5	60 35.6 +50.6 139.8
14°	63 23.6 +53.0 145.9	62 56.1 +52.2 144.0	62 27.3 +51.5 142.2	61 57.3 +50.8 140.4	61 26.2 +50.0 138.6
15°	64 16.6 +52.5 144.8	63 48.3 +51.8 142.9	63 18.8 +51.0 141.0	62 48.1 +50.2 139.2	62 16.2 +49.5 137.5
16°	65 09.1 +51.9 143.7	64 40.1 +51.1 141.7	64 09.8 +50.3 139.8	63 38.3 +49.5 138.0	63 05.7 +48.7 136.2
17°	66 01.0 +51.4 142.5	65 31.2 +50.5 140.5	65 00.1 +49.7 138.6	64 27.8 +48.8 136.7	63 54.4 +48.0 134.9
18°	66 52.4 +50.7 141.2	66 21.7 +49.8 139.2	65 49.8 +48.9 137.2	65 16.6 +48.1 135.4	64 42.4 +47.2 133.6
19°	67 43.1 +49.9 139.8	67 11.5 +48.9 137.8	66 38.7 +48.0 135.8	66 04.7 +47.1 133.9	65 29.6 +46.3 132.1
20°	68 33.0 +49.0 138.3	68 00.4 +48.1 136.2	67 26.7 +47.1 134.3	66 51.8 +46.2 132.4	66 15.9 +45.3 130.5
21°	69 22.0 +48.1 136.7	68 48.5 +47.1 134.6	68 13.8 +46.1 132.6	67 38.0 +45.1 130.7	67 01.2 +44.2 128.9
22°	70 10.1 +47.0 135.0	69 35.6 +45.9 132.9	68 59.9 +44.9 130.9	68 23.1 +44.0 128.9	67 45.4 +43.0 127.1
23°	70 57.1 +45.8 133.1	70 21.5 +44.7 131.0	69 44.8 +43.6 129.0	69 07.1 +42.6 127.1	68 28.4 +41.6 125.2
24°	71 42.9 +44.4 131.1	71 06.2 +43.3 129.0	70 28.4 +42.2 127.0	69 49.7 +41.1 125.1	69 10.0 +40.2 123.3
25°	72 27.3 +42.9 128.9	71 49.5 +41.7 126.8	71 10.6 +40.6 124.8	70 30.8 +39.6 122.9	69 50.2 +38.5 121.1
26°	73 10.2 +41.1 126.5	72 31.2 +39.9 124.4	71 51.2 +38.8 122.5	71 10.4 +37.7 120.6	70 28.7 +36.8 118.9
27°	73 51.3 +39.1 124.0	73 11.1 +37.9 121.9	72 30.0 +36.7 120.0	71 48.1 +35.7 118.2	71 05.5 +34.8 116.5
28°	74 30.4 +36.8 121.2	73 49.0 +35.6 119.2	73 06.7 +34.6 117.3	72 23.8 +33.6 115.5	71 40.3 +32.6 113.9
29°	75 07.2 +34.3 118.2	74 24.6 +33.1 116.2	73 41.3 +32.0 114.4	72 57.4 +31.1 112.8	72 12.9 +30.3 111.2

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	48 37.9 +54.5 148.8	48 12.6 +54.1 147.5	47 46.3 +53.7 146.1	47 19.2 +53.1 144.8	46 51.1 +52.7 143.5
1°	49 32.4 +54.3 148.2	49 06.7 +53.8 146.8	48 40.0 +53.3 145.5	48 12.3 +52.9 144.1	47 43.8 +52.4 142.8
2°	50 26.7 +54.1 147.5	50 00.5 +53.6 146.1	49 33.3 +53.1 144.8	49 05.2 +52.6 143.4	48 36.2 +52.1 142.1
3°	51 20.8 +53.8 146.9	50 54.1 +53.3 145.4	50 26.4 +52.9 144.0	49 57.8 +52.3 142.7	49 28.3 +51.8 141.3
4°	52 14.6 +53.6 146.1	51 47.4 +53.1 144.7	51 19.3 +52.5 143.3	50 50.1 +52.0 141.9	50 20.1 +51.5 140.5
5°	53 08.2 +53.3 145.4	52 40.5 +52.7 143.9	52 11.8 +52.2 142.5	51 42.1 +51.7 141.1	51 11.6 +51.1 139.7
6°	54 01.5 +52.9 144.6	53 33.2 +52.4 143.1	53 04.0 +51.8 141.7	52 33.8 +51.3 140.3	52 02.7 +50.8 138.9
7°	54 54.4 +52.6 143.8	54 25.6 +52.1 142.3	53 55.8 +51.5 140.8	53 25.1 +50.9 139.4	52 53.5 +50.3 138.0
8°	55 47.0 +52.3 143.0	55 17.7 +51.7 141.4	54 47.3 +51.1 140.0	54 16.0 +50.5 138.5	53 43.8 +50.0 137.1
9°	56 39.3 +51.9 142.1	56 09.4 +51.2 140.5	55 38.4 +50.7 139.0	55 06.5 +50.1 137.6	54 33.8 +49.4 136.1
10°	57 31.2 +51.4 141.2	57 00.6 +50.8 139.6	56 29.1 +50.2 138.1	55 56.6 +49.6 136.6	55 23.2 +49.0 135.2
11°	58 22.6 +51.0 140.2	57 51.4 +50.4 138.6	57 19.3 +49.7 137.1	56 46.2 +49.0 135.6	56 12.2 +48.4 134.1
12°	59 13.6 +50.5 139.2	58 41.8 +49.8 137.6	58 09.0 +49.1 136.0	57 35.2 +48.5 134.5	57 00.6 +47.9 133.1
13°	60 04.1 +49.9 138.1	59 31.6 +49.2 136.5	58 58.1 +48.6 134.9	58 23.7 +47.9 133.4	57 48.5 +47.2 131.9
14°	60 54.0 +49.3 137.0	60 20.8 +48.6 135.3	59 46.7 +47.9 133.8	59 11.6 +47.3 132.2	58 35.7 +46.6 130.8
15°	61 43.3 +48.7 135.8	61 09.4 +48.0 134.1	60 34.6 +47.2 132.6	59 58.9 +46.5 131.0	59 22.3 +45.9 129.5
16°	62 32.0 +48.0 134.5	61 57.4 +47.2 132.9	61 21.8 +46.5 131.3	60 45.4 +45.8 129.8	60 08.2 +45.0 128.3
17°	63 20.0 +47.2 133.2	62 44.6 +46.4 131.6	62 08.3 +45.7 130.0	61 31.2 +44.9 128.4	60 53.2 +44.3 126.9
18°	64 07.2 +46.4 131.8	63 31.0 +45.6 130.2	62 54.0 +44.8 128.5	62 16.1 +44.1 127.0	61 37.5 +43.3 125.5
19°	64 53.6 +45.4 130.3	64 16.6 +44.6 128.7	63 38.8 +43.8 127.1	63 00.2 +43.0 125.5	62 20.8 +42.4 124.0
20°	65 39.0 +44.4 128.8	65 01.2 +43.6 127.1	64 22.6 +42.8 125.5	63 43.2 +42.1 124.0	63 03.2 +41.3 122.5
21°	66 23.4 +43.3 127.1	65 44.8 +42.5 125.5	65 05.4 +41.6 123.9	64 25.3 +40.8 122.3	63 44.5 +40.1 120.9
22°	67 06.7 +42.1 125.4	66 27.3 +41.2 123.7	65 47.0 +40.5 122.1	65 06.1 +39.7 120.6	64 24.6 +38.9 119.2
23°	67 48.8 +40.8 123.5	67 08.5 +39.9 121.9	66 27.5 +39.0 120.3	65 45.8 +38.3 118.8	65 03.5 +37.6 117.4
24°	68 29.6 +39.2 121.5	67 48.4 +38.4 119.9	67 06.5 +37.6 118.4	66 24.1 +36.8 116.9	65 41.1 +36.1 115.5
25°	69 08.8 +37.7 119.4	68 26.8 +36.8 117.9	67 44.1 +36.0 116.4	67 00.9 +35.3 114.9	66 17.2 +34.6 113.6
26°	69 46.5 +35.8 117.2	69 03.6 +35.0 115.7	68 20.1 +34.3 114.2	67 36.2 +33.5 112.8	66 51.8 +32.9 111.5
27°	70 22.3 +33.9 114.9	69 38.6 +33.1 113.4	68 54.4 +32.4 112.0	68 09.7 +31.7 110.6	67 24.7 +31.1 109.4
28°	70 56.2 +31.8 112.4	70 11.7 +31.1 110.9	69 26.8 +30.3 109.6	68 41.4 +29.8 108.3	67 55.8 +29.2 107.1
29°	71 28.0 +29.5 109.8	70 42.8 +28.8 108.4	69 57.1 +28.2 107.1	69 11.2 +27.6 105.9	68 25.0 +27.1 104.8

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°	46 22.2 +52.2 142.2	45 52.4 +51.8 141.0	45 21.9 +51.2 139.7	44 50.5 +50.8 138.5	44 18.4 +50.3 137.4
1°	47 14.4 +51.9 141.5	46 44.2 +51.4 140.2	46 13.1 +51.0 139.0	45 41.3 +50.5 137.8	45 08.7 +50.0 136.6
2°	48 06.3 +51.6 140.8	47 35.6 +51.1 139.5	47 04.1 +50.6 138.2	46 31.8 +50.1 137.0	45 58.7 +49.7 135.8
3°	48 57.9 +51.3 140.0	48 26.7 +50.8 138.7	47 54.7 +50.3 137.4	47 21.9 +49.8 136.2	46 48.4 +49.3 135.0
4°	49 49.2 +51.0 139.2	49 17.5 +50.5 137.9	48 45.0 +49.9 136.6	48 11.7 +49.4 135.4	47 37.7 +48.9 134.1
5°	50 40.2 +50.6 138.4	50 08.0 +50.0 137.1	49 34.9 +49.6 135.8	49 01.1 +49.0 134.5	48 26.6 +48.5 133.3
6°	51 30.8 +50.2 137.5	50 58.0 +49.7 136.2	50 24.5 +49.1 134.9	49 50.1 +48.6 133.6	49 15.1 +48.1 132.4
7°	52 21.0 +49.8 136.6	51 47.7 +49.2 135.3	51 13.6 +48.7 134.0	50 38.7 +48.2 132.7	50 03.2 +47.6 131.5
8°	53 10.8 +49.4 135.7	52 36.9 +48.8 134.4	52 02.3 +48.2 133.0	51 26.9 +47.7 131.8	50 50.8 +47.2 130.5
9°	54 00.2 +48.8 134.7	53 25.7 +48.3 133.4	52 50.5 +47.8 132.1	52 14.6 +47.2 130.8	51 38.0 +46.6 129.5
10°	54 49.0 +48.4 133.8	54 14.0 +47.8 132.4	53 38.3 +47.2 131.1	53 01.8 +46.6 129.8	52 24.6 +46.1 128.5
11°	55 37.4 +47.8 132.7	55 01.8 +47.2 131.3	54 25.5 +46.6 130.0	53 48.4 +46.1 128.7	53 10.7 +45.5 127.4
12°	56 25.2 +47.2 131.6	55 49.0 +46.6 130.3	55 12.1 +46.0 128.9	54 34.5 +45.4 127.6	53 56.2 +44.9 126.3
13°	57 12.4 +46.6 130.5	56 35.6 +46.0 129.1	55 58.1 +45.4 127.8	55 19.9 +44.8 126.5	54 41.1 +44.2 125.2
14°	57 59.0 +46.0 129.3	57 21.6 +45.3 127.9	56 43.5 +44.7 126.6	56 04.7 +44.1 125.3	55 25.3 +43.5 124.0
15°	58 45.0 +45.2 128.1	58 06.9 +44.6 126.7	57 28.2 +43.9 125.4	56 48.8 +43.3 124.1	56 08.8 +42.7 122.8
16°	59 30.2 +44.4 126.8	58 51.5 +43.7 125.4	58 12.1 +43.1 124.1	57 32.1 +42.5 122.8	56 51.5 +42.0 121.5
17°	60 14.6 +43.5 125.5	59 35.2 +42.9 124.1	58 55.2 +42.3 122.8	58 14.6 +41.7 121.5	57 33.5 +41.1 120.2
18°	60 58.1 +42.7 124.1	60 18.1 +42.0 122.7	59 37.5 +41.3 121.4	58 56.3 +40.7 120.1	58 14.6 +40.1 118.8
19°	61 40.8 +41.6 122.6	61 00.1 +41.0 121.2	60 18.8 +40.4 119.9	59 37.0 +39.8 118.6	58 54.7 +39.2 117.4
20°	62 22.4 +40.6 121.1	61 41.1 +39.9 119.7	60 59.2 +39.3 118.4	60 16.8 +38.7 117.1	59 33.9 +38.2 115.9
21°	63 03.0 +39.5 119.5	62 21.0 +38.8 118.1	61 38.5 +38.2 116.8	60 55.5 +37.6 115.6	60 12.1 +37.0 114.4
22°	63 42.5 +38.2 117.8	62 59.8 +37.6 116.5	62 16.7 +37.0 115.2	61 33.1 +36.4 114.0	60 49.1 +35.9 112.8
23°	64 20.7 +36.9 116.0	63 37.4 +36.3 114.7	62 53.7 +35.6 113.5	62 09.5 +35.1 112.3	61 25.0 +34.6 111.1
24°	64 57.6 +35.5 114.2	64 13.7 +34.8 112.9	63 29.3 +34.3 111.7	62 44.6 +33.8 110.5	61 59.6 +33.3 109.4
25°	65 33.1 +33.9 112.3	64 48.5 +33.4 111.0	64 03.6 +32.8 109.8	63 18.4 +32.3 108.7	62 32.9 +31.8 107.6
26°	66 07.0 +32.3 110.2	65 21.9 +31.7 109.1	64 36.4 +31.3 107.9	63 50.7 +30.8 106.8	63 04.7 +30.3 105.8
27°	66 39.3 +30.6 108.1	65 53.6 +30.1 107.0	65 07.7 +29.5 105.9	64 21.5 +29.1 104.8	63 35.0 +28.8 103.8
28°	67 09.9 +28.6 106.0	66 23.7 +28.1 104.9	65 37.2 +27.8 103.8	64 50.6 +27.4 102.8	64 03.8 +27.0 101.8
29°	67 38.5 +26.7 103.7	66 51.8 +26.3 102.6	66 05.0 +25.9 101.6	65 18.0 +25.5 100.7	64 30.8 +25.3 99.8

Latitude 37°

Declination SAME name as Latitude

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	43 45.6 +49.8 136.2	43 12.1 +49.4 135.0	42 37.9 +48.9 133.9	42 03.1 +48.4 132.8	41 27.6 +48.0 131.7
1°	44 35.4 +49.6 135.4	44 01.5 +49.0 134.3	43 26.8 +48.6 133.1	42 51.5 +48.1 132.0	42 15.6 +47.7 130.9
2°	45 25.0 +49.1 134.6	44 50.5 +48.7 133.5	44 15.4 +48.2 132.3	43 39.6 +47.8 131.2	43 03.3 +47.3 130.1
3°	46 14.1 +48.8 133.8	45 39.2 +48.3 132.6	45 03.6 +47.9 131.5	44 27.4 +47.4 130.4	43 50.6 +46.9 129.3
4°	47 02.9 +48.4 132.9	46 27.5 +47.9 131.8	45 51.5 +47.4 130.6	45 14.8 +47.0 129.5	44 37.5 +46.5 128.4
5°	47 51.3 +48.1 132.1	47 15.4 +47.6 130.9	46 38.9 +47.0 129.7	46 01.8 +46.5 128.6	45 24.0 +46.1 127.5
6°	48 39.4 +47.5 131.2	48 03.0 +47.0 130.0	47 25.9 +46.6 128.8	46 48.3 +46.1 127.7	46 10.1 +45.6 126.6
7°	49 26.9 +47.1 130.2	48 50.0 +46.6 129.0	48 12.5 +46.1 127.9	47 34.4 +45.6 126.7	46 55.7 +45.2 125.6
8°	50 14.0 +46.7 129.3	49 36.6 +46.1 128.1	48 58.6 +45.6 126.9	48 20.0 +45.1 125.8	47 40.9 +44.6 124.7
9°	51 00.7 +46.1 128.3	50 22.7 +45.6 127.1	49 44.2 +45.1 125.9	49 05.1 +44.6 124.8	48 25.5 +44.1 123.7
10°	51 46.8 +45.5 127.3	51 08.3 +45.1 126.1	50 29.3 +44.5 124.9	49 49.7 +44.0 123.7	49 09.6 +43.6 122.6
11°	52 32.3 +45.0 126.2	51 53.4 +44.4 125.0	51 13.8 +43.9 123.8	50 33.7 +43.5 122.7	49 53.2 +42.9 121.6
12°	53 17.3 +44.3 125.1	52 37.8 +43.8 123.9	51 57.7 +43.3 122.7	51 17.2 +42.8 121.6	50 36.1 +42.3 120.5
13°	54 01.6 +43.7 124.0	53 21.6 +43.1 122.8	52 41.0 +42.6 121.6	52 00.0 +42.1 120.5	51 18.4 +41.7 119.4
14°	54 45.3 +42.9 122.8	54 04.7 +42.4 121.6	53 23.6 +41.9 120.4	52 42.1 +41.4 119.3	52 00.1 +40.9 118.2
15°	55 28.2 +42.2 121.6	54 47.1 +41.7 120.4	54 05.5 +41.2 119.2	53 23.5 +40.7 118.1	52 41.0 +40.2 117.0
16°	56 10.4 +41.4 120.3	55 28.8 +40.9 119.1	54 46.7 +40.4 118.0	54 04.2 +39.8 116.9	53 21.2 +39.4 115.8
17°	56 51.8 +40.5 119.0	56 09.7 +40.0 117.8	55 27.1 +39.5 116.7	54 44.0 +39.1 115.6	54 00.6 +38.6 114.5
18°	57 32.3 +39.7 117.6	56 49.7 +39.1 116.5	56 06.6 +38.6 115.3	55 23.1 +38.1 114.2	54 39.2 +37.7 113.2
19°	58 12.0 +38.6 116.2	57 28.8 +38.1 115.1	56 45.2 +37.6 113.9	56 01.2 +37.2 112.9	55 16.9 +36.7 111.8
20°	58 50.6 +37.7 114.8	58 06.9 +37.1 113.6	57 22.8 +36.7 112.5	56 38.4 +36.2 111.5	55 53.6 +35.8 110.4
21°	59 28.3 +36.5 113.2	58 44.0 +36.1 112.1	57 59.5 +35.6 111.0	57 14.6 +35.1 110.0	56 29.4 +34.8 109.0
22°	60 04.8 +35.3 111.7	59 20.1 +34.9 110.6	58 35.1 +34.4 109.5	57 49.7 +34.1 108.5	57 04.2 +33.6 107.5
23°	60 40.1 +34.2 110.0	59 55.0 +33.6 109.0	59 09.5 +33.3 107.9	58 23.8 +32.9 106.9	57 37.8 +32.5 106.0
24°	61 14.3 +32.8 108.3	60 28.6 +32.4 107.3	59 42.8 +32.0 106.3	58 56.7 +31.6 105.3	58 10.3 +31.3 104.4
25°	61 47.1 +31.4 106.6	61 01.0 +31.0 105.6	60 14.8 +30.6 104.6	59 28.3 +30.3 103.7	58 41.6 +30.1 102.7
26°	62 18.5 +29.9 104.8	61 32.0 +29.6 103.8	60 45.4 +29.3 102.8	59 58.6 +29.0 101.9	59 11.7 +28.6 101.1
27°	62 48.4 +28.4 102.9	62 01.6 +28.1 101.9	61 14.7 +27.7 101.0	60 27.6 +27.5 100.2	59 40.3 +27.3 99.3
28°	63 16.8 +26.8 100.9	62 29.7 +26.5 100.0	61 42.4 +26.3 99.2	60 55.1 +26.0 98.4	60 07.6 +25.9 97.6
29°	63 43.6 +25.0 98.9	62 56.2 +24.8 98.1	62 08.7 +24.6 97.3	61 21.1 +24.4 96.5	60 33.5 +24.2 95.7

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°	40 51.6 +47.5 130.7	40 14.9 +47.2 129.6	39 37.8 +46.7 128.6	39 00.1 +46.2 127.6	38 21.8 +45.9 126.6
1°	41 39.1 +47.3 129.9	41 02.1 +46.8 128.8	40 24.5 +46.3 127.8	39 46.3 +46.0 126.8	39 07.7 +45.5 125.8
2°	42 26.4 +46.8 129.0	41 48.9 +46.4 128.0	41 10.8 +46.0 127.0	40 32.3 +45.5 125.9	39 53.2 +45.2 124.9
3°	43 13.2 +46.5 128.2	42 35.3 +46.0 127.1	41 56.8 +45.6 126.1	41 17.8 +45.2 125.1	40 38.4 +44.7 124.1
4°	43 59.7 +46.0 127.3	43 21.3 +45.6 126.3	42 42.4 +45.2 125.2	42 03.0 +44.8 124.2	41 23.1 +44.4 123.2
5°	44 45.7 +45.7 126.4	44 06.9 +45.2 125.4	43 27.6 +44.7 124.3	42 47.8 +44.3 123.3	42 07.5 +43.9 122.3
6°	45 31.4 +45.1 125.5	44 52.1 +44.7 124.4	44 12.3 +44.3 123.4	43 32.1 +43.8 122.4	42 51.4 +43.4 121.4
7°	46 16.5 +44.7 124.5	45 36.8 +44.2 123.5	44 56.6 +43.8 122.4	44 15.9 +43.4 121.4	43 34.8 +43.0 120.4
8°	47 01.2 +44.2 123.6	46 21.0 +43.8 122.5	45 40.4 +43.3 121.5	44 59.3 +42.9 120.5	44 17.8 +42.5 119.5
9°	47 45.4 +43.6 122.6	47 04.8 +43.2 121.5	46 23.7 +42.8 120.5	45 42.2 +42.3 119.5	45 00.3 +41.9 118.5
10°	48 29.0 +43.1 121.5	47 48.0 +42.6 120.5	47 06.5 +42.2 119.5	46 24.5 +41.8 118.4	45 42.2 +41.4 117.4
11°	49 12.1 +42.5 120.5	48 30.6 +42.0 119.4	47 48.7 +41.6 118.4	47 06.3 +41.2 117.4	46 23.6 +40.8 116.4
12°	49 54.6 +41.8 119.4	49 12.6 +41.4 118.3	48 30.3 +40.9 117.3	47 47.5 +40.6 116.3	47 04.4 +40.1 115.3
13°	50 36.4 +41.2 118.3	49 54.0 +40.8 117.2	49 11.2 +40.4 116.2	48 28.1 +39.9 115.2	47 44.5 +39.6 114.2
14°	51 17.6 +40.5 117.1	50 34.8 +40.0 116.1	49 51.6 +39.6 115.1	49 08.0 +39.2 114.1	48 24.1 +38.8 113.1
15°	51 58.1 +39.8 115.9	51 14.8 +39.4 114.9	50 31.2 +38.9 113.9	49 47.2 +38.5 112.9	49 02.9 +38.2 112.0
16°	52 37.9 +38.9 114.7	51 54.2 +38.5 113.7	51 10.1 +38.2 112.7	50 25.7 +37.8 111.7	49 41.1 +37.4 110.8
17°	53 16.8 +38.2 113.5	52 32.7 +37.7 112.4	51 48.3 +37.3 111.5	51 03.5 +37.0 110.5	50 18.5 +36.6 109.6
18°	53 55.0 +37.2 112.1	53 10.4 +36.9 111.1	52 25.6 +36.5 110.2	51 40.5 +36.1 109.2	50 55.1 +35.8 108.3
19°	54 32.2 +36.4 110.8	53 47.3 +36.0 109.8	53 02.1 +35.6 108.9	52 16.6 +35.3 107.9	51 30.9 +35.0 107.0
20°	55 08.6 +35.4 109.4	54 23.3 +35.0 108.5	53 37.7 +34.7 107.5	52 51.9 +34.3 106.6	52 05.9 +34.0 105.7
21°	55 44.0 +34.4 108.0	54 58.3 +34.0 107.1	54 12.4 +33.7 106.1	53 26.2 +33.4 105.2	52 39.9 +33.1 104.4
22°	56 18.4 +33.3 106.5	55 32.3 +33.0 105.6	54 46.1 +32.6 104.7	53 59.6 +32.4 103.8	53 13.0 +32.1 103.0
23°	56 51.7 +32.1 105.0	56 05.3 +31.8 104.1	55 18.7 +31.6 103.2	54 32.0 +31.3 102.4	53 45.1 +31.1 101.6
24°	57 23.8 +31.0 103.5	56 37.1 +30.8 102.6	55 50.3 +30.5 101.7	55 03.3 +30.2 100.9	54 16.2 +30.0 100.1
25°	57 54.8 +29.8 101.9	57 07.9 +29.4 101.0	56 20.8 +29.2 100.2	55 33.5 +29.1 99.4	54 46.2 +28.9 98.6
26°	58 24.6 +28.4 100.2	57 37.3 +28.3 99.4	56 50.0 +28.1 98.6	56 02.6 +27.9 97.8	55 15.1 +27.7 97.1
27°	58 53.0 +27.1 98.5	58 05.6 +26.9 97.7	57 18.1 +26.7 97.0	56 30.5 +26.6 96.2	55 42.8 +26.5 95.5
28°	59 20.1 +25.6 96.8	58 32.5 +25.5 96.0	57 44.8 +25.4 95.3	56 57.1 +25.2 94.6	56 09.3 +25.2 93.9
29°	59 45.7 +24.2 95.0	58 58.0 +24.1 94.3	58 10.2 +24.0 93.6	57 22.3 +24.0 92.9	56 34.5 +23.9 92.3

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	37 43.1 +45.5 125.6	37 04.0 +45.1 124.7	36 24.4 +44.6 123.8	35 44.3 +44.3 122.8	35 03.8 +44.0 121.9
1°	38 28.6 +45.1 124.8	37 49.1 +44.7 123.9	37 09.0 +44.4 122.9	36 28.6 +44.0 122.0	35 47.8 +43.6 121.1
2°	39 13.7 +44.8 124.0	38 33.8 +44.3 123.0	37 53.4 +43.9 122.1	37 12.6 +43.6 121.2	36 31.4 +43.2 120.2
3°	39 58.5 +44.3 123.1	39 18.1 +44.0 122.1	38 37.3 +43.6 121.2	37 56.2 +43.2 120.3	37 14.6 +42.8 119.4
4°	40 42.8 +44.0 122.2	40 02.1 +43.5 121.3	39 20.9 +43.2 120.3	38 39.4 +42.7 119.4	37 57.4 +42.5 118.5
5°	41 26.8 +43.5 121.3	40 45.6 +43.1 120.4	40 04.1 +42.7 119.4	39 22.1 +42.4 118.5	38 39.9 +42.0 117.6
6°	42 10.3 +43.0 120.4	41 28.7 +42.7 119.4	40 46.8 +42.3 118.5	40 04.5 +41.9 117.6	39 21.9 +41.5 116.7
7°	42 53.3 +42.6 119.5	42 11.4 +42.2 118.5	41 29.1 +41.8 117.6	40 46.4 +41.5 116.6	40 03.4 +41.1 115.7
8°	43 35.9 +42.0 118.5	42 53.6 +41.7 117.5	42 10.9 +41.3 116.6	41 27.9 +40.9 115.7	40 44.5 +40.6 114.8
9°	44 17.9 +41.6 117.5	43 35.3 +41.1 116.5	42 52.2 +40.8 115.6	42 08.8 +40.5 114.7	41 25.1 +40.2 113.8
10°	44 59.5 +41.0 116.5	44 16.4 +40.6 115.5	43 33.0 +40.3 114.6	42 49.3 +39.9 113.7	42 05.3 +39.5 112.8
11°	45 40.5 +40.4 115.4	44 57.0 +40.1 114.5	44 13.3 +39.7 113.6	43 29.2 +39.4 112.7	42 44.8 +39.1 111.8
12°	46 20.9 +39.8 114.4	45 37.1 +39.4 113.4	44 53.0 +39.1 112.5	44 08.6 +38.7 111.6	43 23.9 +38.4 110.7
13°	47 00.7 +39.1 113.3	46 16.5 +38.8 112.4	45 32.1 +38.4 111.4	44 47.3 +38.2 110.6	44 02.3 +37.9 109.7
14°	47 39.8 +38.5 112.2	46 55.3 +38.2 111.2	46 10.5 +37.9 110.3	45 25.5 +37.5 109.5	44 40.2 +37.2 108.6
15°	48 18.3 +37.8 111.0	47 33.5 +37.4 110.1	46 48.4 +37.1 109.2	46 03.0 +36.8 108.3	45 17.4 +36.6 107.5
16°	48 56.1 +37.1 109.8	48 10.9 +36.8 108.9	47 25.5 +36.4 108.1	46 39.8 +36.2 107.2	45 54.0 +35.8 106.4
17°	49 33.2 +36.3 108.6	48 47.7 +36.0 107.8	48 01.9 +35.7 106.9	47 16.0 +35.4 106.0	46 29.8 +35.2 105.2
18°	50 09.5 +35.5 107.4	49 23.7 +35.2 106.5	48 37.6 +34.9 105.7	47 51.4 +34.7 104.8	47 05.0 +34.4 104.0
19°	50 45.0 +34.6 106.1	49 58.9 +34.3 105.3	49 12.5 +34.1 104.4	48 26.1 +33.8 103.6	47 39.4 +33.6 102.8
20°	51 19.6 +33.8 104.8	50 33.2 +33.5 104.0	49 46.6 +33.3 103.2	48 59.9 +33.0 102.4	48 13.0 +32.9 101.6
21°	51 53.4 +32.8 103.5	51 06.7 +32.6 102.7	50 19.9 +32.4 101.9	49 32.9 +32.2 101.1	48 45.9 +31.9 100.3
22°	52 26.2 +31.9 102.1	51 39.3 +31.7 101.3	50 52.3 +31.4 100.5	50 05.1 +31.3 99.8	49 17.8 +31.1 99.0
23°	52 58.1 +30.9 100.7	52 11.0 +30.6 100.0	51 23.7 +30.5 99.2	50 36.4 +30.3 98.4	49 48.9 +30.2 97.7
24°	53 29.0 +29.8 99.3	52 41.6 +29.7 98.5	51 54.2 +29.5 97.8	51 06.7 +29.3 97.1	50 19.1 +29.2 96.4
25°	53 58.8 +28.7 97.8	53 11.3 +28.5 97.1	52 23.7 +28.4 96.4	51 36.0 +28.4 95.7	50 48.3 +28.3 95.0
26°	54 27.5 +27.6 96.3	53 39.8 +27.5 95.6	52 52.1 +27.4 94.9	52 04.4 +27.2 94.2	51 16.6 +27.2 93.6
27°	54 55.1 +26.3 94.8	54 07.3 +26.3 94.1	53 19.5 +26.2 93.4	52 31.6 +26.2 92.8	51 43.8 +26.1 92.1
28°	55 21.4 +25.2 93.2	54 33.6 +25.1 92.6	53 45.7 +25.1 91.9	52 57.8 +25.1 91.3	52 09.9 +25.0 90.7
29°	55 46.6 +23.8 91.6	54 58.7 +23.8 91.0	54 10.8 +23.8 90.4	53 22.9 +23.8 89.8	52 34.9 +23.9 89.2

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	34 23.0 +43.6 121.0	33 41.7 +43.3 120.2	33 00.1 +42.9 119.3	32 18.2 +42.5 118.5	31 35.9 +42.2 117.6
1°	35 06.6 +43.2 120.2	34 25.0 +42.8 119.3	33 43.0 +42.6 118.5	33 00.7 +42.2 117.6	32 18.1 +41.9 116.8
2°	35 49.8 +42.9 119.4	35 07.8 +42.6 118.5	34 25.6 +42.1 117.6	33 42.9 +41.9 116.8	33 00.0 +41.5 115.9
3°	36 32.7 +42.4 118.5	35 50.4 +42.1 117.6	35 07.7 +41.8 116.7	34 24.8 +41.5 115.9	33 41.5 +41.2 115.1
4°	37 15.1 +42.1 117.6	36 32.5 +41.7 116.7	35 49.5 +41.5 115.9	35 06.3 +41.1 115.0	34 22.7 +40.8 114.2
5°	37 57.2 +41.7 116.7	37 14.2 +41.4 115.8	36 31.0 +41.0 115.0	35 47.4 +40.7 114.1	35 03.5 +40.4 113.3
6°	38 38.9 +41.2 115.8	37 55.6 +40.9 114.9	37 12.0 +40.5 114.1	36 28.1 +40.2 113.2	35 43.9 +40.0 112.4
7°	39 20.1 +40.8 114.9	38 36.5 +40.4 114.0	37 52.5 +40.2 113.1	37 08.3 +39.9 112.3	36 23.9 +39.5 111.5
8°	40 00.9 +40.3 113.9	39 16.9 +40.0 113.0	38 32.7 +39.6 112.2	37 48.2 +39.4 111.3	37 03.4 +39.1 110.5
9°	40 41.2 +39.7 112.9	39 56.9 +39.5 112.1	39 12.3 +39.2 111.2	38 27.6 +38.8 110.4	37 42.5 +38.6 109.6
10°	41 20.9 +39.3 111.9	40 36.4 +38.9 111.1	39 51.5 +38.7 110.2	39 06.4 +38.4 109.4	38 21.1 +38.2 108.6
11°	42 00.2 +38.7 110.9	41 15.3 +38.5 110.1	40 30.2 +38.1 109.2	39 44.8 +37.9 108.4	38 59.3 +37.6 107.6
12°	42 38.9 +38.2 109.9	41 53.8 +37.8 109.0	41 08.3 +37.6 108.2	40 22.7 +37.4 107.4	39 36.9 +37.1 106.6
13°	43 17.1 +37.6 108.8	42 31.6 +37.3 108.0	41 45.9 +37.1 107.2	41 00.1 +36.7 106.4	40 14.0 +36.5 105.6
14°	43 54.7 +36.9 107.8	43 08.9 +36.7 106.9	42 23.0 +36.4 106.1	41 36.8 +36.2 105.3	40 50.5 +36.0 104.5
15°	44 31.6 +36.3 106.7	43 45.6 +36.0 105.8	42 59.4 +35.8 105.0	42 13.0 +35.6 104.2	41 26.5 +35.4 103.5
16°	45 07.9 +35.6 105.5	44 21.6 +35.4 104.7	43 35.2 +35.2 103.9	42 48.6 +35.0 103.2	42 01.9 +34.7 102.4
17°	45 43.5 +34.9 104.4	44 57.0 +34.7 103.6	44 10.4 +34.4 102.8	43 23.6 +34.2 102.0	42 36.6 +34.1 101.3
18°	46 18.4 +34.2 103.2	45 31.7 +34.0 102.4	44 44.8 +33.8 101.7	43 57.8 +33.6 100.9	43 10.7 +33.5 100.2
19°	46 52.6 +33.4 102.0	46 05.7 +33.2 101.2	45 18.6 +33.1 100.5	44 31.4 +32.9 99.8	43 44.2 +32.7 99.0
20°	47 26.0 +32.7 100.8	46 38.9 +32.5 100.0	45 51.7 +32.3 99.3	45 04.3 +32.2 98.6	44 16.9 +32.0 97.9
21°	47 58.7 +31.8 99.6	47 11.4 +31.6 98.8	46 24.0 +31.5 98.1	45 36.5 +31.3 97.4	44 48.9 +31.3 96.7
22°	48 30.5 +30.9 98.3	47 43.0 +30.8 97.6	46 55.5 +30.6 96.8	46 07.8 +30.6 96.1	45 20.2 +30.5 95.5
23°	49 01.4 +30.0 97.0	48 13.8 +29.9 96.3	47 26.1 +29.9 95.6	46 38.4 +29.8 94.9	45 50.7 +29.6 94.2
24°	49 31.4 +29.2 95.7	48 43.7 +29.1 95.0	47 56.0 +28.9 94.3	47 08.2 +28.8 93.6	46 20.3 +28.9 93.0
25°	50 00.6 +28.1 94.3	49 12.8 +28.0 93.6	48 24.9 +28.1 93.0	47 37.0 +28.0 92.3	46 49.2 +27.9 91.7
26°	50 28.7 +27.2 92.9	49 40.8 +27.2 92.3	48 53.0 +27.0 91.6	48 05.0 +27.1 91.0	47 17.1 +27.1 90.4
27°	50 55.9 +26.1 91.5	50 08.0 +26.1 90.9	49 20.0 +26.1 90.3	48 32.1 +26.1 89.7	47 44.2 +26.2 89.1
28°	51 22.0 +25.0 90.1	50 34.1 +25.0 89.5	49 46.1 +25.1 88.9	48 58.2 +25.2 88.3	48 10.4 +25.1 87.7
29°	51 47.0 +24.0 88.6	50 59.1 +24.0 88.0	50 11.2 +24.1 87.5	49 23.4 +24.1 86.9	48 35.5 +24.3 86.4

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	30 53.2 +42.0 116.8	30 10.3 +41.6 116.0	29 27.1 +41.3 115.2	28 43.6 +41.0 114.4	27 59.8 +40.8 113.6
1°	31 35.2 +41.5 116.0	30 51.9 +41.3 115.1	30 08.4 +41.0 114.3	29 24.6 +40.7 113.6	28 40.6 +40.4 112.8
2°	32 16.7 +41.3 115.1	31 33.2 +40.9 114.3	30 49.4 +40.7 113.5	30 05.3 +40.4 112.7	29 21.0 +40.1 111.9
3°	32 58.0 +40.9 114.2	32 14.1 +40.6 113.4	31 30.1 +40.3 112.6	30 45.7 +40.0 111.9	30 01.1 +39.8 111.1
4°	33 38.9 +40.5 113.4	32 54.7 +40.2 112.6	32 10.4 +39.9 111.8	31 25.7 +39.7 111.0	30 40.9 +39.4 110.2
5°	34 19.4 +40.1 112.5	33 34.9 +39.9 111.7	32 50.3 +39.6 110.9	32 05.4 +39.3 110.1	31 20.3 +39.1 109.3
6°	34 59.5 +39.7 111.6	34 14.8 +39.4 110.8	33 29.9 +39.1 110.0	32 44.7 +38.9 109.2	31 59.4 +38.6 108.4
7°	35 39.2 +39.2 110.7	34 54.2 +39.0 109.9	34 09.0 +38.8 109.1	33 23.6 +38.5 108.3	32 38.0 +38.3 107.5
8°	36 18.4 +38.9 109.7	35 33.2 +38.6 108.9	34 47.8 +38.3 108.1	34 02.1 +38.1 107.4	33 16.3 +37.9 106.6
9°	36 57.3 +38.3 108.8	36 11.8 +38.1 108.0	35 26.1 +37.9 107.2	34 40.2 +37.7 106.4	33 54.2 +37.4 105.7
10°	37 35.6 +37.9 107.8	36 49.9 +37.6 107.0	36 04.0 +37.4 106.3	35 17.9 +37.2 105.5	34 31.6 +37.0 104.7
11°	38 13.5 +37.4 106.8	37 27.5 +37.2 106.0	36 41.4 +36.9 105.3	35 55.1 +36.7 104.5	35 08.6 +36.6 103.8
12°	38 50.9 +36.9 105.8	38 04.7 +36.6 105.1	37 18.3 +36.5 104.3	36 31.8 +36.3 103.5	35 45.2 +36.0 102.8
13°	39 27.8 +36.3 104.8	38 41.3 +36.2 104.0	37 54.8 +35.9 103.3	37 08.1 +35.7 102.6	36 21.2 +35.6 101.8
14°	40 04.1 +35.7 103.8	39 17.5 +35.5 103.0	38 30.7 +35.4 102.3	37 43.8 +35.2 101.5	36 56.8 +35.1 100.8
15°	40 39.8 +35.2 102.7	39 53.0 +35.0 102.0	39 06.1 +34.8 101.2	38 19.0 +34.7 100.5	37 31.9 +34.5 99.8
16°	41 15.0 +34.6 101.6	40 28.0 +34.4 100.9	39 40.9 +34.3 100.2	38 53.7 +34.1 99.5	38 06.4 +34.0 98.8
17°	41 49.6 +33.9 100.6	41 02.4 +33.8 99.8	40 15.2 +33.6 99.1	39 27.8 +33.5 98.4	38 40.4 +33.3 97.7
18°	42 23.5 +33.3 99.4	41 36.2 +33.1 98.7	40 48.8 +33.0 98.0	40 01.3 +32.9 97.3	39 13.7 +32.8 96.6
19°	42 56.8 +32.6 98.3	42 09.3 +32.5 97.6	41 21.8 +32.4 96.9	40 34.2 +32.3 96.2	39 46.5 +32.2 95.6
20°	43 29.4 +31.9 97.2	42 41.8 +31.8 96.5	41 54.2 +31.7 95.8	41 06.5 +31.6 95.1	40 18.7 +31.6 94.5
21°	44 01.3 +31.1 96.0	43 13.6 +31.1 95.3	42 25.9 +31.0 94.6	41 38.1 +30.9 94.0	40 50.3 +30.8 93.3
22°	44 32.4 +30.4 94.8	43 44.7 +30.3 94.1	42 56.9 +30.2 93.5	42 09.0 +30.2 92.8	41 21.1 +30.2 92.2
23°	45 02.8 +29.7 93.6	44 15.0 +29.6 92.9	43 27.1 +29.6 92.3	42 39.2 +29.6 91.7	41 51.3 +29.5 91.0
24°	45 32.5 +28.8 92.3	44 44.6 +28.7 91.7	43 56.7 +28.7 91.1	43 08.8 +28.7 90.5	42 20.8 +28.8 89.9
25°	46 01.3 +27.9 91.1	45 13.3 +28.0 90.5	44 25.4 +28.0 89.9	43 37.5 +28.0 89.3	42 49.6 +28.0 88.7
26°	46 29.2 +27.1 89.8	45 41.3 +27.1 89.2	44 53.4 +27.1 88.6	44 05.5 +27.2 88.0	43 17.6 +27.2 87.5
27°	46 56.3 +26.2 88.5	46 08.4 +26.2 87.9	45 20.5 +26.3 87.4	44 32.7 +26.3 86.8	43 44.8 +26.5 86.2
28°	47 22.5 +25.2 87.2	46 34.6 +25.4 86.6	45 46.8 +25.4 86.1	44 59.0 +25.5 85.5	44 11.3 +25.6 85.0
29°	47 47.7 +24.3 85.8	47 00.0 +24.4 85.3	46 12.2 +24.5 84.8	45 24.5 +24.7 84.2	44 36.9 +24.7 83.7

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°	27 15.8 +40.5 112.9	26 31.5 +40.2 112.1	25 47.0 +40.0 111.3	25 02.3 +39.7 110.6	24 17.3 +39.5 109.9
1°	27 56.3 +40.1 112.0	27 11.7 +39.9 111.3	26 27.0 +39.6 110.5	25 42.0 +39.4 109.8	24 56.8 +39.2 109.1
2°	28 36.4 +39.9 111.2	27 51.6 +39.6 110.4	27 06.6 +39.4 109.7	26 21.4 +39.1 108.9	25 36.0 +38.9 108.2
3°	29 16.3 +39.5 110.3	28 31.2 +39.3 109.6	27 46.0 +39.0 108.8	27 00.5 +38.9 108.1	26 14.9 +38.6 107.4
4°	29 55.8 +39.2 109.5	29 10.5 +39.0 108.7	28 25.0 +38.8 108.0	27 39.4 +38.5 107.2	26 53.5 +38.3 106.5
5°	30 35.0 +38.8 108.6	29 49.5 +38.6 107.8	29 03.8 +38.3 107.1	28 17.9 +38.1 106.4	27 31.8 +38.0 105.6
6°	31 13.8 +38.5 107.7	30 28.1 +38.2 106.9	29 42.1 +38.1 106.2	28 56.0 +37.9 105.5	28 09.8 +37.6 104.8
7°	31 52.3 +38.0 106.8	31 06.3 +37.8 106.0	30 20.2 +37.6 105.3	29 33.9 +37.4 104.6	28 47.4 +37.3 103.9
8°	32 30.3 +37.7 105.9	31 44.1 +37.5 105.1	30 57.8 +37.3 104.4	30 11.3 +37.1 103.7	29 24.7 +36.9 103.0
9°	33 08.0 +37.2 104.9	32 21.6 +37.1 104.2	31 35.1 +36.9 103.5	30 48.4 +36.7 102.8	30 01.6 +36.6 102.1
10°	33 45.2 +36.8 104.0	32 58.7 +36.6 103.3	32 12.0 +36.4 102.6	31 25.1 +36.3 101.9	30 38.2 +36.1 101.2
11°	34 22.0 +36.4 103.1	33 35.3 +36.2 102.3	32 48.4 +36.0 101.6	32 01.4 +35.9 100.9	31 14.3 +35.8 100.2
12°	34 58.4 +35.9 102.1	34 11.5 +35.7 101.4	33 24.4 +35.6 100.7	32 37.3 +35.4 100.0	31 50.1 +35.3 99.3
13°	35 34.3 +35.4 101.1	34 47.2 +35.3 100.4	34 00.0 +35.1 99.7	33 12.7 +35.0 99.0	32 25.4 +34.9 98.3
14°	36 09.7 +34.9 100.1	35 22.5 +34.7 99.4	34 35.1 +34.7 98.7	33 47.7 +34.6 98.0	33 00.3 +34.4 97.4
15°	36 44.6 +34.4 99.1	35 57.2 +34.3 98.4	35 09.8 +34.1 97.7	34 22.3 +34.0 97.1	33 34.7 +33.9 96.4
16°	37 19.0 +33.8 98.1	36 31.5 +33.7 97.4	35 43.9 +33.7 96.7	34 56.3 +33.6 96.1	34 08.6 +33.5 95.4
17°	37 52.8 +33.3 97.0	37 05.2 +33.2 96.4	36 17.6 +33.1 95.7	35 29.9 +33.0 95.0	34 42.1 +33.0 94.4
18°	38 26.1 +32.7 96.0	37 38.4 +32.7 95.3	36 50.7 +32.5 94.7	36 02.9 +32.5 94.0	35 15.1 +32.4 93.4
19°	38 58.8 +32.1 94.9	38 11.1 +32.0 94.2	37 23.2 +32.0 93.6	36 35.4 +32.0 93.0	35 47.5 +32.0 92.3
20°	39 30.9 +31.5 93.8	38 43.1 +31.4 93.2	37 55.2 +31.4 92.5	37 07.4 +31.3 91.9	36 19.5 +31.3 91.3
21°	40 02.4 +30.9 92.7	39 14.5 +30.8 92.1	38 26.6 +30.8 91.4	37 38.7 +30.8 90.8	36 50.8 +30.8 90.2
22°	40 33.3 +30.1 91.6	39 45.3 +30.2 91.0	38 57.4 +30.2 90.3	38 09.5 +30.2 89.7	37 21.6 +30.2 89.2
23°	41 03.4 +29.5 90.4	40 15.5 +29.5 89.8	39 27.6 +29.5 89.2	38 39.7 +29.5 88.6	37 51.8 +29.6 88.1
24°	41 32.9 +28.8 89.3	40 45.0 +28.8 88.7	39 57.1 +28.9 88.1	39 09.2 +28.9 87.5	38 21.4 +28.9 87.0
25°	42 01.7 +28.0 88.1	41 13.8 +28.1 87.5	40 26.0 +28.1 87.0	39 38.1 +28.2 86.4	38 50.3 +28.3 85.8
26°	42 29.7 +27.3 86.9	41 41.9 +27.4 86.3	40 54.1 +27.5 85.8	40 06.3 +27.6 85.2	39 18.6 +27.6 84.7
27°	42 57.0 +26.6 85.7	42 09.3 +26.6 85.1	41 21.6 +26.7 84.6	40 33.9 +26.8 84.1	39 46.2 +27.0 83.5
28°	43 23.6 +25.7 84.5	42 35.9 +25.8 83.9	41 48.3 +25.9 83.4	41 00.7 +26.1 82.9	40 13.2 +26.2 82.4
29°	43 49.3 +24.9 83.2	43 01.7 +25.0 82.7	42 14.2 +25.2 82.2	41 26.8 +25.3 81.7	40 39.4 +25.5 81.2

Declination SAME name as Latitude

Latitude 37°

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°	23 32.1 +39.3 109.2	22 46.8 +39.0 108.4	22 01.2 +38.8 107.7	21 15.5 +38.6 107.0	20 29.6 +38.4 106.4
1°	24 11.4 +39.0 108.3	23 25.8 +38.8 107.6	22 40.0 +38.6 106.9	21 54.1 +38.4 106.2	21 08.0 +38.2 105.5
2°	24 50.4 +38.7 107.5	24 04.6 +38.5 106.8	23 18.6 +38.3 106.1	22 32.5 +38.1 105.4	21 46.2 +38.0 104.7
3°	25 29.1 +38.4 106.7	24 43.1 +38.2 105.9	23 56.9 +38.1 105.2	23 10.6 +37.9 104.6	22 24.2 +37.6 103.9
4°	26 07.5 +38.1 105.8	25 21.3 +37.9 105.1	24 35.0 +37.7 104.4	23 48.5 +37.5 103.7	23 01.8 +37.5 103.0
5°	26 45.6 +37.8 104.9	25 59.2 +37.6 104.2	25 12.7 +37.4 103.5	24 26.0 +37.3 102.9	23 39.3 +37.1 102.2
6°	27 23.4 +37.4 104.1	26 36.8 +37.3 103.4	25 50.1 +37.2 102.7	25 03.3 +37.0 102.0	24 16.4 +36.8 101.3
7°	28 00.8 +37.1 103.2	27 14.1 +37.0 102.5	26 27.3 +36.8 101.8	25 40.3 +36.7 101.1	24 53.2 +36.6 100.4
8°	28 37.9 +36.8 102.3	27 51.1 +36.6 101.6	27 04.1 +36.4 100.9	26 17.0 +36.3 100.2	25 29.8 +36.2 99.6
9°	29 14.7 +36.4 101.4	28 27.7 +36.2 100.7	27 40.5 +36.2 100.0	26 53.3 +36.0 99.4	26 06.0 +35.9 98.7
10°	29 51.1 +36.0 100.5	29 03.9 +35.9 99.8	28 16.7 +35.7 99.1	27 29.3 +35.7 98.5	26 41.9 +35.5 97.8
11°	30 27.1 +35.6 99.5	29 39.8 +35.5 98.9	28 52.4 +35.4 98.2	28 05.0 +35.2 97.5	27 17.4 +35.2 96.9
12°	31 02.7 +35.2 98.6	30 15.3 +35.1 97.9	29 27.8 +35.0 97.3	28 40.2 +34.9 96.6	27 52.6 +34.8 96.0
13°	31 37.9 +34.8 97.7	30 50.4 +34.7 97.0	30 02.8 +34.6 96.3	29 15.1 +34.6 95.7	28 27.4 +34.5 95.1
14°	32 12.7 +34.3 96.7	31 25.1 +34.2 96.0	30 37.4 +34.2 95.4	29 49.7 +34.1 94.8	29 01.9 +34.1 94.1
15°	32 47.0 +33.9 95.7	31 59.3 +33.8 95.1	31 11.6 +33.7 94.4	30 23.8 +33.7 93.8	29 36.0 +33.6 93.2
16°	33 20.9 +33.4 94.7	32 33.1 +33.4 94.1	31 45.3 +33.3 93.5	30 57.5 +33.2 92.8	30 09.6 +33.2 92.2
17°	33 54.3 +32.9 93.7	33 06.5 +32.9 93.1	32 18.6 +32.9 92.5	31 30.7 +32.9 91.9	30 42.8 +32.8 91.3
18°	34 27.2 +32.5 92.7	33 39.4 +32.4 92.1	32 51.5 +32.3 91.5	32 03.6 +32.3 90.9	31 15.6 +32.4 90.3
19°	34 59.7 +31.8 91.7	34 11.8 +31.8 91.1	33 23.8 +31.9 90.5	32 35.9 +31.9 89.9	31 48.0 +31.9 89.3
20°	35 31.5 +31.4 90.7	34 43.6 +31.4 90.1	33 55.7 +31.4 89.5	33 07.8 +31.4 88.9	32 19.9 +31.4 88.3
21°	36 02.9 +30.8 89.6	35 15.0 +30.8 89.0	34 27.1 +30.8 88.4	33 39.2 +30.9 87.9	32 51.3 +30.9 87.3
22°	36 33.7 +30.2 88.6	35 45.8 +30.2 88.0	34 57.9 +30.3 87.4	34 10.1 +30.3 86.8	33 22.2 +30.4 86.3
23°	37 03.9 +29.6 87.5	36 16.0 +29.7 86.9	35 28.2 +29.7 86.3	34 40.4 +29.8 85.8	33 52.6 +29.9 85.2
24°	37 33.5 +29.0 86.4	36 45.7 +29.1 85.8	35 57.9 +29.2 85.3	35 10.2 +29.3 84.7	34 22.5 +29.4 84.2
25°	38 02.5 +28.4 85.3	37 14.8 +28.5 84.7	36 27.1 +28.6 84.2	35 39.5 +28.6 83.6	34 51.9 +28.7 83.1
26°	38 30.9 +27.7 84.2	37 43.3 +27.8 83.6	36 55.7 +27.9 83.1	36 08.1 +28.1 82.6	35 20.6 +28.3 82.0
27°	38 58.6 +27.1 83.0	38 11.1 +27.2 82.5	37 23.6 +27.3 82.0	36 36.2 +27.5 81.5	35 48.9 +27.6 81.0
28°	39 25.7 +26.4 81.9	38 38.3 +26.5 81.4	37 50.9 +26.7 80.9	37 03.7 +26.8 80.4	36 16.5 +27.0 79.9
29°	39 52.1 +25.6 80.7	39 04.8 +25.8 80.2	38 17.6 +26.0 79.7	37 30.5 +26.2 79.2	36 43.5 +26.4 78.7

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	19 43.5 +38.3 105.7	18 57.3 +38.1 105.0	18 11.0 +37.9 104.3	17 24.5 +37.7 103.7	16 37.9 +37.5 103.0
1°	20 21.8 +38.0 104.9	19 35.4 +37.9 104.2	18 48.9 +37.7 103.5	18 02.2 +37.6 102.9	17 15.4 +37.4 102.2
2°	20 59.8 +37.8 104.0	20 13.3 +37.6 103.4	19 26.6 +37.4 102.7	18 39.8 +37.3 102.0	17 52.8 +37.2 101.4
3°	21 37.6 +37.5 103.2	20 50.9 +37.3 102.5	20 04.0 +37.3 101.9	19 17.1 +37.1 101.2	18 30.0 +37.0 100.5
4°	22 15.1 +37.3 102.4	21 28.2 +37.2 101.7	20 41.3 +36.9 101.0	19 54.2 +36.8 100.4	19 07.0 +36.7 99.7
5°	22 52.4 +37.0 101.5	22 05.4 +36.8 100.8	21 18.2 +36.8 100.2	20 31.0 +36.6 99.5	19 43.7 +36.5 98.9
6°	23 29.4 +36.7 100.6	22 42.2 +36.6 100.0	21 55.0 +36.4 99.3	21 07.6 +36.4 98.7	20 20.2 +36.3 98.0
7°	24 06.1 +36.4 99.8	23 18.8 +36.3 99.1	22 31.4 +36.2 98.5	21 44.0 +36.1 97.8	20 56.5 +36.0 97.2
8°	24 42.5 +36.1 98.9	23 55.1 +36.0 98.3	23 07.6 +35.9 97.6	22 20.1 +35.8 97.0	21 32.5 +35.7 96.3
9°	25 18.6 +35.8 98.0	24 31.1 +35.7 97.4	23 43.5 +35.6 96.7	22 55.9 +35.5 96.1	22 08.2 +35.5 95.5
10°	25 54.4 +35.4 97.1	25 06.8 +35.3 96.5	24 19.1 +35.3 95.9	23 31.4 +35.3 95.2	22 43.7 +35.2 94.6
11°	26 29.8 +35.1 96.2	25 42.1 +35.1 95.6	24 54.4 +35.0 95.0	24 06.7 +34.9 94.3	23 18.9 +34.9 93.7
12°	27 04.9 +34.8 95.3	26 17.2 +34.7 94.7	25 29.4 +34.7 94.1	24 41.6 +34.6 93.4	23 53.8 +34.5 92.8
13°	27 39.7 +34.4 94.4	26 51.9 +34.3 93.8	26 04.1 +34.3 93.2	25 16.2 +34.3 92.5	24 28.3 +34.3 91.9
14°	28 14.1 +34.0 93.5	27 26.2 +34.0 92.9	26 38.4 +33.9 92.2	25 50.5 +33.9 91.6	25 02.6 +33.9 91.0
15°	28 48.1 +33.6 92.5	28 00.2 +33.6 91.9	27 12.3 +33.6 91.3	26 24.4 +33.6 90.7	25 36.5 +33.6 90.1
16°	29 21.7 +33.2 91.6	28 33.8 +33.2 91.0	27 45.9 +33.2 90.4	26 58.0 +33.2 89.8	26 10.1 +33.2 89.2
17°	29 54.9 +32.8 90.6	29 07.0 +32.8 90.0	28 19.1 +32.8 89.4	27 31.2 +32.8 88.8	26 43.3 +32.8 88.3
18°	30 27.7 +32.4 89.7	29 39.8 +32.4 89.1	28 51.9 +32.4 88.5	28 04.0 +32.4 87.9	27 16.1 +32.5 87.3
19°	31 00.1 +31.9 88.7	30 12.2 +31.9 88.1	29 24.3 +32.0 87.5	28 36.4 +32.1 86.9	27 48.6 +32.1 86.4
20°	31 32.0 +31.5 87.7	30 44.1 +31.5 87.1	29 56.3 +31.5 86.5	29 08.5 +31.6 86.0	28 20.7 +31.7 85.4
21°	32 03.5 +30.9 86.7	31 15.6 +31.1 86.1	30 27.8 +31.1 85.6	29 40.1 +31.2 85.0	28 52.4 +31.2 84.4
22°	32 34.4 +30.5 85.7	31 46.7 +30.5 85.1	30 58.9 +30.7 84.6	30 11.3 +30.7 84.0	29 23.6 +30.9 83.5
23°	33 04.9 +30.0 84.7	32 17.2 +30.1 84.1	31 29.6 +30.1 83.6	30 42.0 +30.3 83.0	29 54.5 +30.3 82.5
24°	33 34.9 +29.4 83.6	32 47.3 +29.5 83.1	31 59.7 +29.7 82.5	31 12.3 +29.7 82.0	30 24.8 +29.9 81.5
25°	34 04.3 +28.9 82.6	33 16.8 +29.1 82.0	32 29.4 +29.2 81.5	31 42.0 +29.3 81.0	30 54.7 +29.5 80.5
26°	34 33.2 +28.4 81.5	33 45.9 +28.4 81.0	32 58.6 +28.6 80.5	32 11.3 +28.8 80.0	31 24.2 +29.0 79.5
27°	35 01.6 +27.7 80.4	34 14.3 +28.0 79.9	33 27.2 +28.1 79.4	32 40.1 +28.3 78.9	31 53.2 +28.4 78.4
28°	35 29.3 +27.2 79.4	34 42.3 +27.3 78.9	33 55.3 +27.6 78.4	33 08.4 +27.8 77.9	32 21.6 +27.9 77.4
29°	35 56.5 +26.6 78.3	35 09.6 +26.8 77.8	34 22.9 +26.9 77.3	33 36.2 +27.1 76.8	32 49.5 +27.5 76.3

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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°	15 51.1 +37.5 102.4	15 04.2 +37.3 101.7	14 17.3 +37.1 101.1	13 30.2 +37.0 100.4	12 43.0 +37.0 99.8
1°	16 28.6 +37.2 101.5	15 41.5 +37.2 100.9	14 54.4 +37.0 100.3	14 07.2 +36.9 99.6	13 20.0 +36.7 99.0
2°	17 05.8 +37.1 100.7	16 18.7 +36.9 100.1	15 31.4 +36.9 99.4	14 44.1 +36.8 98.8	13 56.7 +36.7 98.2
3°	17 42.9 +36.8 99.9	16 55.6 +36.7 99.3	16 08.3 +36.6 98.6	15 20.9 +36.5 98.0	14 33.4 +36.4 97.4
4°	18 19.7 +36.6 99.1	17 32.3 +36.6 98.4	16 44.9 +36.4 97.8	15 57.4 +36.4 97.2	15 09.8 +36.3 96.5
5°	18 56.3 +36.4 98.2	18 08.9 +36.3 97.6	17 21.3 +36.3 97.0	16 33.8 +36.1 96.3	15 46.1 +36.1 95.7
6°	19 32.7 +36.2 97.4	18 45.2 +36.1 96.8	17 57.6 +36.0 96.1	17 09.9 +36.0 95.5	16 22.2 +35.9 94.9
7°	20 08.9 +35.9 96.5	19 21.3 +35.8 95.9	18 33.6 +35.8 95.3	17 45.9 +35.7 94.7	16 58.1 +35.7 94.0
8°	20 44.8 +35.7 95.7	19 57.1 +35.6 95.1	19 09.4 +35.5 94.4	18 21.6 +35.5 93.8	17 33.8 +35.4 93.2
9°	21 20.5 +35.4 94.8	20 32.7 +35.4 94.2	19 44.9 +35.3 93.6	18 57.1 +35.3 93.0	18 09.2 +35.3 92.3
10°	21 55.9 +35.1 94.0	21 08.1 +35.1 93.3	20 20.2 +35.1 92.7	19 32.4 +35.0 92.1	18 44.5 +35.0 91.5
11°	22 31.0 +34.9 93.1	21 43.2 +34.8 92.5	20 55.3 +34.8 91.9	20 07.4 +34.8 91.2	19 19.5 +34.7 90.6
12°	23 05.9 +34.5 92.2	22 18.0 +34.5 91.6	21 30.1 +34.5 91.0	20 42.2 +34.5 90.4	19 54.2 +34.6 89.8
13°	23 40.4 +34.3 91.3	22 52.5 +34.2 90.7	22 04.6 +34.2 90.1	21 16.7 +34.2 89.5	20 28.8 +34.2 88.9
14°	24 14.7 +33.9 90.4	23 26.7 +34.0 89.8	22 38.8 +34.0 89.2	21 50.9 +34.0 88.6	21 03.0 +34.0 88.0
15°	24 48.6 +33.6 89.5	24 00.7 +33.6 88.9	23 12.8 +33.6 88.3	22 24.9 +33.6 87.7	21 37.0 +33.7 87.1
16°	25 22.2 +33.2 88.6	24 34.3 +33.2 88.0	23 46.4 +33.3 87.4	22 58.5 +33.4 86.8	22 10.7 +33.4 86.2
17°	25 55.4 +32.9 87.7	25 07.5 +33.0 87.1	24 19.7 +33.0 86.5	23 31.9 +33.0 85.9	22 44.1 +33.1 85.3
18°	26 28.3 +32.5 86.7	25 40.5 +32.5 86.2	24 52.7 +32.6 85.6	24 04.9 +32.7 85.0	23 17.2 +32.8 84.4
19°	27 00.8 +32.1 85.8	26 13.0 +32.2 85.2	25 25.3 +32.3 84.7	24 37.6 +32.4 84.1	23 50.0 +32.4 83.5
20°	27 32.9 +31.8 84.8	26 45.2 +31.9 84.3	25 57.6 +31.9 83.7	25 10.0 +32.0 83.2	24 22.4 +32.2 82.6
21°	28 04.7 +31.3 83.9	27 17.1 +31.4 83.3	26 29.5 +31.6 82.8	25 42.0 +31.7 82.2	24 54.6 +31.7 81.7
22°	28 36.0 +31.0 82.9	27 48.5 +31.1 82.4	27 01.1 +31.1 81.8	26 13.7 +31.2 81.3	25 26.3 +31.4 80.7
23°	29 07.0 +30.5 81.9	28 19.6 +30.6 81.4	27 32.2 +30.8 80.9	26 44.9 +30.9 80.3	25 57.7 +31.1 79.8
24°	29 37.5 +30.0 80.9	28 50.2 +30.2 80.4	28 03.0 +30.3 79.9	27 15.8 +30.5 79.4	26 28.8 +30.6 78.8
25°	30 07.5 +29.6 79.9	29 20.4 +29.7 79.4	28 33.3 +29.9 78.9	27 46.3 +30.1 78.4	26 59.4 +30.3 77.9
26°	30 37.1 +29.2 78.9	29 50.1 +29.3 78.4	29 03.2 +29.5 77.9	28 16.4 +29.7 77.4	27 29.7 +29.9 76.9
27°	31 06.3 +28.6 77.9	30 19.4 +28.9 77.4	29 32.7 +29.0 76.9	28 46.1 +29.2 76.4	27 59.6 +29.4 75.9
28°	31 34.9 +28.1 76.9	30 48.3 +28.3 76.4	30 01.7 +28.6 75.9	29 15.3 +28.8 75.4	28 29.0 +29.0 74.9
29°	32 03.0 +27.7 75.9	31 16.6 +27.9 75.4	30 30.3 +28.1 74.9	29 44.1 +28.3 74.4	28 58.0 +28.5 73.9

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°	11 55.7 +36.9 99.2	11 08.4 +36.7 98.5	10 21.0 +36.6 97.9	9 33.5 +36.5 97.3	8 45.9 +36.5 96.7
1°	12 32.6 +36.7 98.4	11 45.1 +36.6 97.7	10 57.6 +36.5 97.1	10 10.0 +36.5 96.5	9 22.4 +36.4 95.9
2°	13 09.3 +36.5 97.5	12 21.7 +36.5 96.9	11 34.1 +36.4 96.3	10 46.5 +36.3 95.7	9 58.8 +36.2 95.1
3°	13 45.8 +36.4 96.7	12 58.2 +36.3 96.1	12 10.5 +36.3 95.5	11 22.8 +36.2 94.9	10 35.0 +36.2 94.3
4°	14 22.2 +36.2 95.9	13 34.5 +36.1 95.3	12 46.8 +36.0 94.7	11 59.0 +36.0 94.1	11 11.2 +36.0 93.4
5°	14 58.4 +36.0 95.1	14 10.6 +36.0 94.5	13 22.8 +36.0 93.8	12 35.0 +35.9 93.2	11 47.2 +35.8 92.6
6°	15 34.4 +35.9 94.3	14 46.6 +35.8 93.6	13 58.8 +35.7 93.0	13 10.9 +35.7 92.4	12 23.0 +35.7 91.8
7°	16 10.3 +35.6 93.4	15 22.4 +35.6 92.8	14 34.5 +35.6 92.2	13 46.6 +35.6 91.6	12 58.7 +35.6 91.0
8°	16 45.9 +35.4 92.6	15 58.0 +35.4 92.0	15 10.1 +35.4 91.4	14 22.2 +35.4 90.8	13 34.3 +35.4 90.2
9°	17 21.3 +35.3 91.7	16 33.4 +35.2 91.1	15 45.5 +35.2 90.5	14 57.6 +35.2 89.9	14 09.7 +35.2 89.3
10°	17 56.6 +35.0 90.9	17 08.6 +35.0 90.3	16 20.7 +35.0 89.7	15 32.8 +35.0 89.1	14 44.9 +35.0 88.5
11°	18 31.6 +34.7 90.0	17 43.6 +34.8 89.4	16 55.7 +34.8 88.8	16 07.8 +34.8 88.2	15 19.9 +34.9 87.6
12°	19 06.3 +34.6 89.2	18 18.4 +34.6 88.6	17 30.5 +34.6 88.0	16 42.6 +34.7 87.4	15 54.8 +34.6 86.8
13°	19 40.9 +34.2 88.3	18 53.0 +34.3 87.7	18 05.1 +34.3 87.1	17 17.3 +34.3 86.5	16 29.4 +34.5 85.9
14°	20 15.1 +34.1 87.4	19 27.3 +34.0 86.8	18 39.4 +34.2 86.3	17 51.6 +34.2 85.7	17 03.9 +34.2 85.1
15°	20 49.2 +33.7 86.5	20 01.3 +33.8 86.0	19 13.6 +33.8 85.4	18 25.8 +33.9 84.8	17 38.1 +34.0 84.2
16°	21 22.9 +33.5 85.7	20 35.1 +33.6 85.1	19 47.4 +33.6 84.5	18 59.7 +33.7 83.9	18 12.1 +33.8 83.4
17°	21 56.4 +33.1 84.8	21 08.7 +33.2 84.2	20 21.0 +33.3 83.6	19 33.4 +33.4 83.1	18 45.9 +33.5 82.5
18°	22 29.5 +32.9 83.9	21 41.9 +33.0 83.3	20 54.3 +33.1 82.7	20 06.8 +33.2 82.2	19 19.4 +33.3 81.6
19°	23 02.4 +32.6 83.0	22 14.9 +32.6 82.4	21 27.4 +32.8 81.8	20 40.0 +32.9 81.3	19 52.7 +33.0 80.7
20°	23 35.0 +32.2 82.0	22 47.5 +32.4 81.5	22 00.2 +32.4 80.9	21 12.9 +32.6 80.4	20 25.7 +32.7 79.8
21°	24 07.2 +31.9 81.1	23 19.9 +32.0 80.6	22 32.6 +32.2 80.0	21 45.5 +32.3 79.5	20 58.4 +32.5 78.9
22°	24 39.1 +31.5 80.2	23 51.9 +31.7 79.7	23 04.8 +31.8 79.1	22 17.8 +32.0 78.6	21 30.9 +32.1 78.0
23°	25 10.6 +31.2 79.3	24 23.6 +31.3 78.7	23 36.6 +31.6 78.2	22 49.8 +31.7 77.7	22 03.0 +31.9 77.1
24°	25 41.8 +30.8 78.3	24 54.9 +31.0 77.8	24 08.2 +31.1 77.3	23 21.5 +31.3 76.7	22 34.9 +31.5 76.2
25°	26 12.6 +30.5 77.4	25 25.9 +30.7 76.8	24 39.3 +30.8 76.3	23 52.8 +31.0 75.8	23 06.4 +31.2 75.3
26°	26 43.1 +30.0 76.4	25 56.6 +30.2 75.9	25 10.1 +30.5 75.4	24 23.8 +30.7 74.9	23 37.6 +30.9 74.4
27°	27 13.1 +29.7 75.4	26 26.8 +29.9 74.9	25 40.6 +30.1 74.4	24 54.5 +30.3 73.9	24 08.5 +30.5 73.4
28°	27 42.8 +29.2 74.4	26 56.7 +29.4 74.0	26 10.7 +29.7 73.5	25 24.8 +29.9 73.0	24 39.0 +30.2 72.5
29°	28 12.0 +28.8 73.5	27 26.1 +29.1 73.0	26 40.4 +29.3 72.5	25 54.7 +29.6 72.0	25 09.2 +29.8 71.5

Declination SAME name as Latitude

Latitude 37°

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°	7 58.3 +36.4 96.1	7 10.6 +36.4 95.4	6 22.9 +36.3 94.8	5 35.1 +36.3 94.2	4 47.3 +36.2 93.6
1°	8 34.7 +36.3 95.3	7 47.0 +36.2 94.6	6 59.2 +36.2 94.0	6 11.4 +36.1 93.4	5 23.5 +36.2 92.8
2°	9 11.0 +36.2 94.4	8 23.2 +36.2 93.8	7 35.4 +36.1 93.2	6 47.5 +36.1 92.6	5 59.7 +36.0 92.0
3°	9 47.2 +36.1 93.6	8 59.4 +36.0 93.0	8 11.5 +36.1 92.4	7 23.6 +36.1 91.8	6 35.7 +36.0 91.2
4°	10 23.3 +36.0 92.8	9 35.4 +36.0 92.2	8 47.6 +35.9 91.6	7 59.7 +35.9 91.0	7 11.7 +35.9 90.4
5°	10 59.3 +35.8 92.0	10 11.4 +35.8 91.4	9 23.5 +35.8 90.8	8 35.6 +35.8 90.2	7 47.6 +35.9 89.6
6°	11 35.1 +35.7 91.2	10 47.2 +35.7 90.6	9 59.3 +35.7 90.0	9 11.4 +35.7 89.4	8 23.5 +35.7 88.8
7°	12 10.8 +35.6 90.4	11 22.9 +35.6 89.8	10 35.0 +35.6 89.2	9 47.1 +35.6 88.6	8 59.2 +35.6 88.0
8°	12 46.4 +35.4 89.5	11 58.5 +35.4 89.0	11 10.6 +35.4 88.4	10 22.7 +35.4 87.8	9 34.8 +35.5 87.2
9°	13 21.8 +35.2 88.7	12 33.9 +35.2 88.1	11 46.0 +35.3 87.5	10 58.1 +35.4 86.9	10 10.3 +35.4 86.3
10°	13 57.0 +35.1 87.9	13 09.1 +35.1 87.3	12 21.3 +35.1 86.7	11 33.5 +35.2 86.1	10 45.7 +35.2 85.5
11°	14 32.1 +34.9 87.1	13 44.2 +35.0 86.5	12 56.4 +35.0 85.9	12 08.7 +35.0 85.3	11 20.9 +35.1 84.7
12°	15 07.0 +34.7 86.2	14 19.2 +34.7 85.6	13 31.4 +34.8 85.0	12 43.7 +34.9 84.5	11 56.0 +35.0 83.9
13°	15 41.7 +34.5 85.4	14 53.9 +34.6 84.8	14 06.2 +34.7 84.2	13 18.6 +34.7 83.6	12 31.0 +34.8 83.0
14°	16 16.2 +34.3 84.5	15 28.5 +34.4 83.9	14 40.9 +34.4 83.4	13 53.3 +34.5 82.8	13 05.8 +34.6 82.2
15°	16 50.5 +34.0 83.7	16 02.9 +34.1 83.1	15 15.3 +34.3 82.5	14 27.8 +34.4 81.9	13 40.4 +34.5 81.4
16°	17 24.5 +33.9 82.8	16 37.0 +34.0 82.2	15 49.6 +34.1 81.7	15 02.2 +34.2 81.1	14 14.9 +34.3 80.5
17°	17 58.4 +33.6 81.9	17 11.0 +33.7 81.4	16 23.7 +33.8 80.8	15 36.4 +34.0 80.2	14 49.2 +34.1 79.7
18°	18 32.0 +33.4 81.1	17 44.7 +33.5 80.5	16 57.5 +33.7 79.9	16 10.4 +33.7 79.4	15 23.3 +33.9 78.8
19°	19 05.4 +33.2 80.2	18 18.2 +33.3 79.6	17 31.2 +33.4 79.1	16 44.1 +33.6 78.5	15 57.2 +33.7 78.0
20°	19 38.6 +32.8 79.3	18 51.5 +33.0 78.7	18 04.6 +33.1 78.2	17 17.7 +33.3 77.6	16 30.9 +33.5 77.1
21°	20 11.4 +32.6 78.4	19 24.5 +32.8 77.9	18 37.7 +33.0 77.3	17 51.0 +33.1 76.8	17 04.4 +33.3 76.2
22°	20 44.0 +32.4 77.5	19 57.3 +32.5 77.0	19 10.7 +32.6 76.4	18 24.1 +32.9 75.9	17 37.7 +33.1 75.4
23°	21 16.4 +32.0 76.6	20 29.8 +32.2 76.1	19 43.3 +32.4 75.5	18 57.0 +32.6 75.0	18 10.8 +32.8 74.5
24°	21 48.4 +31.7 75.7	21 02.0 +31.9 75.2	20 15.7 +32.2 74.7	19 29.6 +32.3 74.1	18 43.6 +32.5 73.6
25°	22 20.1 +31.4 74.8	21 33.9 +31.7 74.3	20 47.9 +31.8 73.7	20 01.9 +32.1 73.2	19 16.1 +32.3 72.7
26°	22 51.5 +31.1 73.9	22 05.6 +31.3 73.4	21 19.7 +31.6 72.8	20 34.0 +31.8 72.3	19 48.4 +32.0 71.8
27°	23 22.6 +30.8 72.9	22 36.9 +31.0 72.4	21 51.3 +31.2 71.9	21 05.8 +31.5 71.4	20 20.4 +31.8 70.9
28°	23 53.4 +30.4 72.0	23 07.9 +30.7 71.5	22 22.5 +31.0 71.0	21 37.3 +31.2 70.5	20 52.2 +31.4 70.0
29°	24 23.8 +30.1 71.0	23 38.6 +30.3 70.6	22 53.5 +30.6 70.1	22 08.5 +30.9 69.6	21 23.6 +31.2 69.1

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°	3 59.5 +36.2 93.0	3 11.6 +36.2 92.4	2 23.7 +36.2 91.8	1 35.8 +36.1 91.2	0 47.9 +36.1 90.6
1°	4 35.7 +36.1 92.2	3 47.8 +36.1 91.6	2 59.9 +36.0 91.0	2 11.9 +36.1 90.4	1 24.0 +36.1 89.8
2°	5 11.8 +36.0 91.4	4 23.9 +36.0 90.8	3 35.9 +36.1 90.2	2 48.0 +36.1 89.6	2 00.1 +36.1 89.0
3°	5 47.8 +36.0 90.6	4 59.9 +36.0 90.0	4 12.0 +36.0 89.4	3 24.1 +36.0 88.8	2 36.2 +36.0 88.2
4°	6 23.8 +35.9 89.8	5 35.9 +35.9 89.2	4 48.0 +35.9 88.6	4 00.1 +36.0 88.0	3 12.2 +36.0 87.4
5°	6 59.7 +35.9 89.0	6 11.8 +35.9 88.4	5 23.9 +35.9 87.8	4 36.1 +35.9 87.2	3 48.2 +36.0 86.6
6°	7 35.6 +35.7 88.2	6 47.7 +35.8 87.6	5 59.8 +35.8 87.0	5 12.0 +35.8 86.4	4 24.2 +35.9 85.8
7°	8 11.3 +35.7 87.4	7 23.5 +35.6 86.8	6 35.6 +35.8 86.2	5 47.8 +35.8 85.6	5 00.1 +35.8 85.0
8°	8 47.0 +35.5 86.6	7 59.1 +35.6 86.0	7 11.4 +35.6 85.4	6 23.6 +35.7 84.8	5 35.9 +35.8 84.2
9°	9 22.5 +35.4 85.7	8 34.7 +35.5 85.2	7 47.0 +35.6 84.6	6 59.3 +35.6 84.0	6 11.7 +35.7 83.4
10°	9 57.9 +35.3 84.9	9 10.2 +35.4 84.3	8 22.6 +35.4 83.8	7 34.9 +35.6 83.2	6 47.4 +35.6 82.6
11°	10 33.2 +35.2 84.1	9 45.6 +35.2 83.5	8 58.0 +35.3 82.9	8 10.5 +35.4 82.3	7 23.0 +35.6 81.8
12°	11 08.4 +35.1 83.3	10 20.8 +35.2 82.7	9 33.3 +35.3 82.1	8 45.9 +35.3 81.5	7 58.6 +35.4 81.0
13°	11 43.5 +34.9 82.5	10 56.0 +35.0 81.9	10 08.6 +35.1 81.3	9 21.2 +35.3 80.7	8 34.0 +35.3 80.1
14°	12 18.4 +34.7 81.6	11 31.0 +34.8 81.0	10 43.7 +35.0 80.5	9 56.5 +35.1 79.9	9 09.3 +35.3 79.3
15°	12 53.1 +34.6 80.8	12 05.8 +34.7 80.2	11 18.7 +34.8 79.6	10 31.6 +34.9 79.1	9 44.6 +35.1 78.5
16°	13 27.7 +34.4 79.9	12 40.5 +34.6 79.4	11 53.5 +34.7 78.8	11 06.5 +34.9 78.2	10 19.7 +35.0 77.7
17°	14 02.1 +34.3 79.1	13 15.1 +34.4 78.5	12 28.2 +34.5 78.0	11 41.4 +34.7 77.4	10 54.7 +34.8 76.8
18°	14 36.4 +34.0 78.3	13 49.5 +34.2 77.7	13 02.7 +34.4 77.1	12 16.1 +34.5 76.6	11 29.5 +34.7 76.0
19°	15 10.4 +33.9 77.4	14 23.7 +34.0 76.9	13 37.1 +34.2 76.3	12 50.6 +34.4 75.7	12 04.2 +34.6 75.2
20°	15 44.3 +33.7 76.6	14 57.7 +33.9 76.0	14 11.3 +34.0 75.5	13 25.0 +34.2 74.9	12 38.8 +34.4 74.3
21°	16 18.0 +33.4 75.7	15 31.6 +33.6 75.1	14 45.3 +33.9 74.6	13 59.2 +34.0 74.1	13 13.2 +34.2 73.5
22°	16 51.4 +33.2 74.8	16 05.2 +33.5 74.3	15 19.2 +33.6 73.7	14 33.2 +33.9 73.2	13 47.4 +34.1 72.7
23°	17 24.6 +33.1 74.0	16 38.7 +33.2 73.4	15 52.8 +33.4 72.9	15 07.1 +33.6 72.3	14 21.5 +33.9 71.8
24°	17 57.7 +32.7 73.1	17 11.9 +33.0 72.5	16 26.2 +33.3 72.0	15 40.7 +33.5 71.5	14 55.4 +33.6 71.0
25°	18 30.4 +32.6 72.2	17 44.9 +32.7 71.7	16 59.5 +33.0 71.2	16 14.2 +33.2 70.6	15 29.0 +33.5 70.1
26°	19 03.0 +32.2 71.3	18 17.6 +32.5 70.8	17 32.5 +32.7 70.3	16 47.4 +33.0 69.8	16 02.5 +33.3 69.2
27°	19 35.2 +32.0 70.4	18 50.1 +32.3 69.9	18 05.2 +32.5 69.4	17 20.4 +32.8 68.9	16 35.8 +33.1 68.4
28°	20 07.2 +31.7 69.5	19 22.4 +32.0 69.0	18 37.7 +32.3 68.5	17 53.2 +32.6 68.0	17 08.9 +32.8 67.5
29°	20 38.9 +31.5 68.6	19 54.4 +31.7 68.1	19 10.0 +32.0 67.6	18 25.8 +32.3 67.1	17 41.7 +32.6 66.6

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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 +36.1 90.0	-0 47.9 +36.1	-1 35.8 +36.1	-2 23.7 +36.1	-3 11.6 +36.2
1°	0 36.1 +36.1 89.2	-0 11.8 +36.1	-0 59.7 +36.1	-1 47.6 +36.2	-2 35.4 +36.2
2°	1 12.2 +36.1 88.4	0 24.3 +36.1 87.8	-0 23.6 +36.2	-1 11.4 +36.2	-1 59.2 +36.2
3°	1 48.3 +36.1 87.6	1 00.4 +36.1 87.0	0 12.6 +36.1 86.4	-0 35.2 +36.2	-1 23.0 +36.3
4°	2 24.4 +36.0 86.8	1 36.5 +36.1 86.2	0 48.7 +36.2 85.6	0 01.0 +36.2 85.0	-0 46.7 +36.2
5°	3 00.4 +36.0 86.0	2 12.6 +36.1 85.4	1 24.9 +36.1 84.8	0 37.2 +36.2 84.2	-0 10.5 +36.3
6°	3 36.4 +36.0 85.2	2 48.7 +36.0 84.6	2 01.0 +36.1 84.0	1 13.4 +36.1 83.4	0 25.8 +36.2 82.8
7°	4 12.4 +35.9 84.4	3 24.7 +36.0 83.8	2 37.1 +36.1 83.2	1 49.5 +36.2 82.6	1 02.0 +36.3 82.0
8°	4 48.3 +35.8 83.6	4 00.7 +35.9 83.0	3 13.2 +36.0 82.4	2 25.7 +36.1 81.8	1 38.3 +36.2 81.2
9°	5 24.1 +35.8 82.8	4 36.6 +35.9 82.2	3 49.2 +36.0 81.6	3 01.8 +36.1 81.0	2 14.5 +36.2 80.4
10°	5 59.9 +35.7 82.0	5 12.5 +35.8 81.4	4 25.2 +35.9 80.8	3 37.9 +36.0 80.2	2 50.7 +36.2 79.6
11°	6 35.6 +35.7 81.2	5 48.3 +35.8 80.6	5 01.1 +35.9 80.0	4 13.9 +36.0 79.4	3 26.9 +36.1 78.8
12°	7 11.3 +35.5 80.4	6 24.1 +35.7 79.8	5 37.0 +35.8 79.2	4 49.9 +36.0 78.6	4 03.0 +36.1 78.0
13°	7 46.8 +35.5 79.6	6 59.8 +35.5 79.0	6 12.8 +35.7 78.4	5 25.9 +35.9 77.8	4 39.1 +36.0 77.2
14°	8 22.3 +35.4 78.7	7 35.3 +35.6 78.2	6 48.5 +35.7 77.6	6 01.8 +35.8 77.0	5 15.1 +36.0 76.4
15°	8 57.7 +35.2 77.9	8 10.9 +35.4 77.3	7 24.2 +35.5 76.8	6 37.6 +35.7 76.2	5 51.1 +35.9 75.6
16°	9 32.9 +35.1 77.1	8 46.3 +35.3 76.5	7 59.7 +35.5 76.0	7 13.3 +35.6 75.4	6 27.0 +35.8 74.8
17°	10 08.0 +35.1 76.3	9 21.6 +35.1 75.7	8 35.2 +35.3 75.1	7 48.9 +35.6 74.6	7 02.8 +35.7 74.0
18°	10 43.1 +34.8 75.5	9 56.7 +35.1 74.9	9 10.5 +35.3 74.3	8 24.5 +35.4 73.8	7 38.5 +35.7 73.2
19°	11 17.9 +34.8 74.6	10 31.8 +34.9 74.1	9 45.8 +35.1 73.5	8 59.9 +35.4 72.9	8 14.2 +35.5 72.4
20°	11 52.7 +34.6 73.8	11 06.7 +34.8 73.2	10 20.9 +35.0 72.7	9 35.3 +35.2 72.1	8 49.7 +35.5 71.6
21°	12 27.3 +34.4 73.0	11 41.5 +34.7 72.4	10 55.9 +34.9 71.9	10 10.5 +35.1 71.3	9 25.2 +35.3 70.7
22°	13 01.7 +34.3 72.1	12 16.2 +34.5 71.6	11 30.8 +34.8 71.0	10 45.6 +34.9 70.5	10 00.5 +35.2 69.9
23°	13 36.0 +34.1 71.3	12 50.7 +34.4 70.7	12 05.6 +34.5 70.2	11 20.5 +34.9 69.6	10 35.7 +35.1 69.1
24°	14 10.1 +34.0 70.4	13 25.1 +34.1 69.9	12 40.1 +34.5 69.4	11 55.4 +34.7 68.8	11 10.8 +34.9 68.3
25°	14 44.1 +33.7 69.6	13 59.2 +34.0 69.0	13 14.6 +34.2 68.5	12 30.1 +34.5 68.0	11 45.7 +34.8 67.4
26°	15 17.8 +33.6 68.7	14 33.2 +33.8 68.2	13 48.8 +34.1 67.7	13 04.6 +34.4 67.1	12 20.5 +34.7 66.6
27°	15 51.4 +33.3 67.9	15 07.0 +33.7 67.3	14 22.9 +33.9 66.8	13 39.0 +34.1 66.3	12 55.2 +34.4 65.8
28°	16 24.7 +33.1 67.0	15 40.7 +33.4 66.5	14 56.8 +33.7 66.0	14 13.1 +34.1 65.5	13 29.6 +34.4 64.9
29°	16 57.8 +32.9 66.1	16 14.1 +33.2 65.6	15 30.5 +33.6 65.1	14 47.2 +33.8 64.6	14 04.0 +34.1 64.1

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°	-3 59.5 +36.2	-4 47.3 +36.2	-5 35.1 +36.3	-6 22.9 +36.4	-7 10.6 +36.4
1°	-3 23.3 +36.3	-4 11.1 +36.4	-4 58.8 +36.4	-5 46.5 +36.4	-6 34.2 +36.5
2°	-2 47.0 +36.3	-3 34.7 +36.3	-4 22.4 +36.4	-5 10.1 +36.5	-5 57.7 +36.6
3°	-2 10.7 +36.3	-2 58.4 +36.4	-3 46.0 +36.4	-4 33.6 +36.6	-5 21.1 +36.6
4°	-1 34.4 +36.3	-2 22.0 +36.4	-3 09.6 +36.5	-3 57.0 +36.6	-4 44.5 +36.7
5°	-0 58.1 +36.4	-1 45.6 +36.4	-2 33.1 +36.6	-3 20.4 +36.6	-4 07.8 +36.8
6°	-0 21.7 +36.3	-1 09.2 +36.5	-1 56.5 +36.5	-2 43.8 +36.7	-3 31.0 +36.8
7°	0 14.6 +36.4 81.4	-0 32.7 +36.4	-1 20.0 +36.6	-2 07.1 +36.6	-2 54.2 +36.8
8°	0 51.0 +36.3 80.6	0 03.7 +36.5 80.0	-0 43.4 +36.6	-1 30.5 +36.7	-2 17.4 +36.8
9°	1 27.3 +36.3 79.8	0 40.2 +36.4 79.2	-0 06.8 +36.5	-0 53.8 +36.8	-1 40.6 +36.9
10°	2 03.6 +36.3 79.0	1 16.6 +36.5 78.4	0 29.7 +36.6 77.8	-0 17.0 +36.7	-1 03.7 +36.9
11°	2 39.9 +36.3 78.2	1 53.1 +36.4 77.6	1 06.3 +36.6 77.0	0 19.7 +36.7 76.4	-0 26.8 +36.8
12°	3 16.2 +36.2 77.4	2 29.5 +36.4 76.8	1 42.9 +36.5 76.2	0 56.4 +36.7 75.6	0 10.0 +36.9 75.0
13°	3 52.4 +36.2 76.6	3 05.9 +36.3 76.0	2 19.4 +36.5 75.4	1 33.1 +36.7 74.8	0 46.9 +36.9 74.3
14°	4 28.6 +36.1 75.8	3 42.2 +36.3 75.2	2 55.9 +36.5 74.6	2 09.8 +36.7 74.1	1 23.8 +36.8 73.5
15°	5 04.7 +36.1 75.0	4 18.5 +36.3 74.4	3 32.4 +36.4 73.9	2 46.5 +36.6 73.3	2 00.6 +36.9 72.7
16°	5 40.8 +36.0 74.2	4 54.8 +36.2 73.6	4 08.8 +36.4 73.1	3 23.1 +36.6 72.5	2 37.5 +36.8 71.9
17°	6 16.8 +35.9 73.4	5 31.0 +36.1 72.8	4 45.2 +36.4 72.3	3 59.7 +36.5 71.7	3 14.3 +36.7 71.1
18°	6 52.7 +35.9 72.6	6 07.1 +36.0 72.0	5 21.6 +36.2 71.5	4 36.2 +36.5 70.9	3 51.0 +36.7 70.3
19°	7 28.6 +35.7 71.8	6 43.1 +36.0 71.2	5 57.8 +36.2 70.7	5 12.7 +36.4 70.1	4 27.7 +36.7 69.5
20°	8 04.3 +35.7 71.0	7 19.1 +35.9 70.4	6 34.0 +36.2 69.9	5 49.1 +36.4 69.3	5 04.4 +36.6 68.7
21°	8 40.0 +35.6 70.2	7 55.0 +35.8 69.6	7 10.2 +36.0 69.1	6 25.5 +36.3 68.5	5 41.0 +36.6 67.9
22°	9 15.6 +35.4 69.4	8 30.8 +35.7 68.8	7 46.2 +36.0 68.2	7 01.8 +36.2 67.7	6 17.6 +36.4 67.1
23°	9 51.0 +35.4 68.5	9 06.5 +35.6 68.0	8 22.2 +35.8 67.4	7 38.0 +36.1 66.9	6 54.0 +36.4 66.3
24°	10 26.4 +35.2 67.7	9 42.1 +35.5 67.2	8 58.0 +35.8 66.6	8 14.1 +36.0 66.1	7 30.4 +36.3 65.5
25°	11 01.6 +35.0 66.9	10 17.6 +35.3 66.4	9 33.8 +35.6 65.8	8 50.1 +36.0 65.3	8 06.7 +36.2 64.7
26°	11 36.6 +35.0 66.1	10 52.9 +35.2 65.5	10 09.4 +35.5 65.0	9 26.1 +35.8 64.5	8 42.9 +36.1 63.9
27°	12 11.6 +34.7 65.2	11 28.1 +35.1 64.7	10 44.9 +35.4 64.2	10 01.9 +35.7 63.6	9 19.0 +36.0 63.1
28°	12 46.3 +34.7 64.4	12 03.2 +34.9 63.9	11 20.3 +35.2 63.4	10 37.6 +35.5 62.8	9 55.0 +35.9 62.3
29°	13 21.0 +34.4 63.6	12 38.1 +34.8 63.1	11 55.5 +35.1 62.5	11 13.1 +35.4 62.0	10 30.9 +35.8 61.5

Declination SAME name as Latitude

Latitude 37°

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°	-7 58.3 +36.5	-8 45.9 +36.6	-9 33.5 +36.7		
1°	-7 21.8 +36.6	-8 09.3 +36.6	-8 56.8 +36.8	-9 44.2 +36.9	
2°	-6 45.2 +36.7	-7 32.7 +36.8	-8 20.0 +36.8	-9 07.3 +36.9	-9 54.5 +37.0
3°	-6 08.5 +36.7	-6 55.9 +36.9	-7 43.2 +37.0	-8 30.4 +37.1	-9 17.5 +37.3
4°	-5 31.8 +36.8	-6 19.0 +36.9	-7 06.2 +37.0	-7 53.3 +37.2	-8 40.2 +37.3
5°	-4 55.0 +36.9	-5 42.1 +37.0	-6 29.2 +37.1	-7 16.1 +37.2	-8 02.9 +37.4
6°	-4 18.1 +36.9	-5 05.1 +37.0	-5 52.1 +37.2	-6 38.9 +37.4	-7 25.5 +37.4
7°	-3 41.2 +36.9	-4 28.1 +37.1	-5 14.9 +37.3	-6 01.5 +37.4	-6 48.1 +37.6
8°	-3 04.3 +37.0	-3 51.0 +37.1	-4 37.6 +37.3	-5 24.1 +37.4	-6 10.5 +37.6
9°	-2 27.3 +37.0	-3 13.9 +37.2	-4 00.3 +37.3	-4 46.7 +37.5	-5 32.9 +37.7
10°	-1 50.3 +37.1	-2 36.7 +37.2	-3 23.0 +37.4	-4 09.2 +37.6	-4 55.2 +37.7
11°	-1 13.2 +37.0	-1 59.5 +37.2	-2 45.6 +37.4	-3 31.6 +37.6	-4 17.5 +37.8
12°	-0 36.2 +37.1	-1 22.3 +37.3	-2 08.2 +37.4	-2 54.0 +37.6	-3 39.7 +37.8
13°	0 00.9 +37.0 73.7	-0 45.0 +37.2	-1 30.8 +37.4	-2 16.4 +37.6	-3 01.9 +37.9
14°	0 37.9 +37.1 72.9	-0 07.8 +37.3	-0 53.4 +37.5	-1 38.8 +37.7	-2 24.0 +37.9
15°	1 15.0 +37.0 72.1	0 29.5 +37.2 71.5	-0 15.9 +37.5	-1 01.1 +37.7	-1 46.1 +37.9
16°	1 52.0 +37.0 71.3	1 06.7 +37.2 70.7	0 21.6 +37.4 70.1	-0 23.4 +37.7	-1 08.2 +37.9
17°	2 29.0 +37.0 70.5	1 43.9 +37.2 69.9	0 59.0 +37.4 69.3	0 14.3 +37.6 68.7	-0 30.3 +37.9
18°	3 06.0 +36.9 69.7	2 21.1 +37.2 69.1	1 36.4 +37.5 68.5	0 51.9 +37.7 67.9	0 07.6 +38.0 67.3
19°	3 42.9 +36.9 68.9	2 58.3 +37.2 68.3	2 13.9 +37.4 67.8	1 29.6 +37.7 67.2	0 45.6 +37.9 66.6
20°	4 19.8 +36.9 68.1	3 35.5 +37.1 67.6	2 51.3 +37.3 67.0	2 07.3 +37.6 66.4	1 23.5 +37.9 65.8
21°	4 56.7 +36.8 67.3	4 12.6 +37.0 66.8	3 28.6 +37.4 66.2	2 44.9 +37.6 65.6	2 01.4 +37.8 65.0
22°	5 33.5 +36.7 66.6	4 49.6 +37.0 66.0	4 06.0 +37.3 65.4	3 22.5 +37.6 64.8	2 39.2 +37.9 64.2
23°	6 10.2 +36.7 65.8	5 26.6 +37.0 65.2	4 43.3 +37.2 64.6	4 00.1 +37.5 64.0	3 17.1 +37.8 63.5
24°	6 46.9 +36.6 65.0	6 03.6 +36.9 64.4	5 20.5 +37.2 63.8	4 37.6 +37.5 63.3	3 54.9 +37.8 62.7
25°	7 23.5 +36.5 64.2	6 40.5 +36.8 63.6	5 57.7 +37.1 63.0	5 15.1 +37.4 62.5	4 32.7 +37.7 61.9
26°	8 00.0 +36.4 63.4	7 17.3 +36.7 62.8	6 34.8 +37.0 62.2	5 52.5 +37.3 61.7	5 10.4 +37.6 61.1
27°	8 36.4 +36.3 62.6	7 54.0 +36.6 62.0	7 11.8 +36.9 61.5	6 29.8 +37.3 60.9	5 48.0 +37.6 60.3
28°	9 12.7 +36.2 61.8	8 30.6 +36.5 61.2	7 48.7 +36.9 60.7	7 07.1 +37.2 60.1	6 25.6 +37.6 59.6
29°	9 48.9 +36.1 60.9	9 07.1 +36.5 60.4	8 25.6 +36.7 59.9	7 44.3 +37.1 59.3	7 03.2 +37.4 58.8

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°					
1°					
2°					
3°					
4°	-9 27.1 +37.4				
5°	-8 49.7 +37.6	-9 36.3 +37.7			
6°	-8 12.1 +37.6	-8 58.6 +37.8	-9 44.9 +38.0		
7°	-7 34.5 +37.7	-8 20.8 +37.9	-9 06.9 +38.1	-9 52.9 +38.3	
8°	-6 56.8 +37.8	-7 42.9 +38.0	-8 28.8 +38.2	-9 14.6 +38.3	
9°	-6 19.0 +37.9	-7 04.9 +38.1	-7 50.6 +38.2	-8 36.3 +38.5	-9 21.7 +38.7
10°	-5 41.1 +37.9	-6 26.8 +38.1	-7 12.4 +38.3	-7 57.8 +38.5	-8 43.0 +38.7
11°	-5 03.2 +38.0	-5 48.7 +38.2	-6 34.1 +38.4	-7 19.3 +38.7	-8 04.3 +38.9
12°	-4 25.2 +38.1	-5 10.5 +38.2	-5 55.7 +38.5	-6 40.6 +38.7	-7 25.4 +38.9
13°	-3 47.1 +38.0	-4 32.3 +38.3	-5 17.2 +38.5	-6 01.9 +38.7	-6 46.5 +39.0
14°	-3 09.1 +38.1	-3 54.0 +38.4	-4 38.7 +38.6	-5 23.2 +38.8	-6 07.5 +39.1
15°	-2 31.0 +38.2	-3 15.6 +38.4	-4 00.1 +38.6	-4 44.4 +38.9	-5 28.4 +39.1
16°	-1 52.8 +38.1	-2 37.2 +38.4	-3 21.5 +38.7	-4 05.5 +38.9	-4 49.3 +39.2
17°	-1 14.7 +38.2	-1 58.8 +38.4	-2 42.8 +38.7	-3 26.6 +39.0	-4 10.1 +39.2
18°	-0 36.5 +38.2	-1 20.4 +38.4	-2 04.1 +38.7	-2 47.6 +38.9	-3 30.9 +39.2
19°	0 01.7 +38.2 66.0	-0 42.0 +38.5	-1 25.4 +38.7	-2 08.7 +39.0	-2 51.7 +39.3
20°	0 39.9 +38.1 65.2	-0 03.5 +38.4	-0 46.7 +38.7	-1 29.7 +39.1	-2 12.4 +39.3
21°	1 18.0 +38.2 64.4	0 34.9 +38.5 63.8	-0 08.0 +38.8	-0 50.6 +39.0	-1 33.1 +39.4
22°	1 56.2 +38.1 63.7	1 13.4 +38.4 63.1	0 30.8 +38.7 62.5	-0 11.6 +39.0	-0 53.7 +39.3
23°	2 34.3 +38.1 62.9	1 51.8 +38.4 62.3	1 09.5 +38.7 61.7	0 27.4 +39.0 61.1	-0 14.4 +39.3
24°	3 12.4 +38.1 62.1	2 30.2 +38.4 61.5	1 48.2 +38.7 60.9	1 06.4 +39.0 60.3	0 24.9 +39.4 59.7
25°	3 50.5 +38.0 61.3	3 08.6 +38.3 60.8	2 26.9 +38.7 60.2	1 45.4 +39.0 59.6	1 04.3 +39.3 59.0
26°	4 28.5 +38.0 60.6	3 46.9 +38.3 60.0	3 05.6 +38.6 59.4	2 24.4 +39.0 58.8	1 43.6 +39.3 58.2
27°	5 06.5 +37.9 59.8	4 25.2 +38.3 59.2	3 44.2 +38.6 58.6	3 03.4 +38.9 58.1	2 22.9 +39.2 57.5
28°	5 44.4 +37.9 59.0	5 03.5 +38.2 58.4	4 22.8 +38.5 57.9	3 42.3 +38.9 57.3	3 02.1 +39.3 56.7
29°	6 22.3 +37.8 58.2	5 41.7 +38.1 57.7	5 01.3 +38.5 57.1	4 21.2 +38.9 56.5	3 41.4 +39.2 56.0

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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°					
1°					
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5°					
6°					
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9°					
10°					
11°	-9 28.1 +39.0				
12°	-8 49.1 +39.1				
13°	-8 10.0 +39.2				
14°	-7 30.8 +39.2				
15°	-6 51.6 +39.3				
16°		-9 33.7 +39.3			
17°		-8 54.4 +39.4			
18°		-8 15.0 +39.5	-9 38.6 +39.7		
19°		-7 35.5 +39.6	-8 58.9 +39.7	-9 42.6 +40.0	
20°			-8 19.2 +39.9	-9 02.6 +40.1	-9 45.8 +40.3
21°	-6 12.3 +39.4	-6 55.9 +39.6	-7 39.3 +39.9	-8 22.5 +40.2	-9 05.5 +40.5
22°	-5 32.9 +39.4	-6 16.3 +39.7	-6 59.4 +40.0	-7 42.3 +40.2	-8 25.0 +40.6
23°	-4 53.5 +39.5	-5 36.6 +39.8	-6 19.4 +40.0	-7 02.1 +40.4	-7 44.4 +40.6
24°	-4 14.0 +39.6	-4 56.8 +39.8	-5 39.4 +40.1	-6 21.7 +40.4	-7 03.8 +40.7
25°	-3 34.4 +39.5	-4 17.0 +39.9	-4 59.3 +40.2	-5 41.3 +40.5	-6 23.1 +40.8
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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 °
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14°					
15°					
16°	-9 48.2 +40.8				
17°	-9 07.4 +40.9				
18°	-8 26.5 +40.9				
19°	-7 45.6 +41.0				
20°	-7 04.6 +41.1				
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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°	52 00.0 +60.0 180.0	51 59.3 +60.0 178.4	51 57.3 +60.0 176.8	51 54.0 +59.8 175.1	51 49.3 +59.8 173.5
1°	53 00.0 +60.0 180.0	52 59.3 +60.0 178.3	52 57.3 +59.9 176.7	52 53.8 +59.9 175.0	52 49.1 +59.7 173.4
2°	54 00.0 +60.0 180.0	53 59.3 +60.0 178.3	53 57.2 +59.9 176.6	53 53.7 +59.8 174.9	53 48.8 +59.7 173.2
3°	55 00.0 +60.0 180.0	54 59.3 +60.0 178.3	54 57.1 +60.0 176.5	54 53.5 +59.9 174.8	54 48.5 +59.8 173.1
4°	56 00.0 +60.0 180.0	55 59.3 +59.9 178.2	55 57.1 +59.9 176.4	55 53.4 +59.8 174.7	55 48.3 +59.7 172.9
5°	57 00.0 +60.0 180.0	56 59.2 +60.0 178.2	56 57.0 +59.9 176.3	56 53.2 +59.8 174.5	56 48.0 +59.7 172.7
6°	58 00.0 +60.0 180.0	57 59.2 +60.0 178.1	57 56.9 +59.9 176.2	57 53.0 +59.9 174.4	57 47.7 +59.6 172.5
7°	59 00.0 +60.0 180.0	58 59.2 +60.0 178.1	58 56.8 +59.9 176.1	58 52.9 +59.8 174.2	58 47.3 +59.7 172.3
8°	60 00.0 +60.0 180.0	59 59.2 +60.0 178.0	59 56.7 +59.9 176.0	59 52.7 +59.8 174.1	59 47.0 +59.6 172.1
9°	61 00.0 +60.0 180.0	60 59.2 +59.9 178.0	60 56.6 +59.9 175.9	60 52.5 +59.7 173.9	60 46.6 +59.6 171.9
10°	62 00.0 +60.0 180.0	61 59.1 +60.0 177.9	61 56.5 +59.9 175.8	61 52.2 +59.8 173.7	61 46.2 +59.6 171.6
11°	63 00.0 +60.0 180.0	62 59.1 +60.0 177.8	62 56.4 +59.9 175.7	62 52.0 +59.7 173.5	62 45.8 +59.5 171.4
12°	64 00.0 +60.0 180.0	63 59.1 +59.9 177.8	63 56.3 +59.9 175.5	63 51.7 +59.8 173.3	63 45.3 +59.6 171.1
13°	65 00.0 +60.0 180.0	64 59.0 +60.0 177.7	64 56.2 +59.9 175.4	64 51.5 +59.7 173.1	64 44.9 +59.4 170.8
14°	66 00.0 +60.0 180.0	65 59.0 +60.0 177.6	65 56.1 +59.8 175.2	65 51.2 +59.7 172.9	65 44.3 +59.5 170.5
15°	67 00.0 +60.0 180.0	66 59.0 +59.9 177.5	66 55.9 +59.9 175.1	66 50.9 +59.6 172.6	66 43.8 +59.4 170.2
16°	68 00.0 +60.0 180.0	67 58.9 +60.0 177.4	67 55.8 +59.8 174.9	67 50.5 +59.6 172.3	67 43.2 +59.3 169.8
17°	69 00.0 +60.0 180.0	68 58.9 +60.0 177.3	68 55.6 +59.8 174.7	68 50.1 +59.6 172.0	68 42.5 +59.3 169.4
18°	70 00.0 +60.0 180.0	69 58.9 +59.9 177.2	69 55.4 +59.8 174.5	69 49.7 +59.6 171.7	69 41.8 +59.2 169.0
19°	71 00.0 +60.0 180.0	70 58.8 +59.9 177.1	70 55.2 +59.8 174.2	70 49.3 +59.5 171.3	70 41.0 +59.1 168.5
20°	72 00.0 +60.0 180.0	71 58.7 +60.0 177.0	71 55.0 +59.7 173.9	71 48.8 +59.4 170.9	71 40.1 +59.0 168.0
21°	73 00.0 +60.0 180.0	72 58.7 +59.9 176.8	72 54.7 +59.8 173.6	72 48.2 +59.4 170.5	72 39.1 +58.9 167.4
22°	74 00.0 +60.0 180.0	73 58.6 +59.9 176.6	73 54.5 +59.6 173.3	73 47.6 +59.3 170.0	73 38.0 +58.8 166.7
23°	75 00.0 +60.0 180.0	74 58.5 +59.9 176.4	74 54.1 +59.7 172.9	74 46.9 +59.2 169.4	74 36.8 +58.6 166.0
24°	76 00.0 +60.0 180.0	75 58.4 +59.9 176.2	75 53.8 +59.6 172.5	75 46.1 +59.1 168.8	75 35.4 +58.4 165.2
25°	77 00.0 +60.0 180.0	76 58.3 +59.9 176.0	76 53.4 +59.5 172.0	76 45.2 +58.9 168.1	76 33.8 +58.2 164.2
26°	78 00.0 +60.0 180.0	77 58.2 +59.9 175.7	77 52.9 +59.4 171.4	77 44.1 +58.8 167.2	77 32.0 +57.9 163.1
27°	79 00.0 +60.0 180.0	78 58.1 +59.8 175.3	78 52.3 +59.4 170.7	78 42.9 +58.5 166.2	78 29.9 +57.4 161.8
28°	80 00.0 +60.0 180.0	79 57.9 +59.8 174.9	79 51.7 +59.2 169.9	79 41.4 +58.2 165.0	79 27.3 +57.0 160.3
29°	81 00.0 +60.0 180.0	80 57.7 +59.7 174.4	80 50.9 +58.9 168.9	80 39.6 +57.8 163.6	80 24.3 +56.2 158.5

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	51 43.3 +59.6 171.9	51 36.0 +59.5 170.3	51 27.4 +59.3 168.7	51 17.5 +59.1 167.1	51 06.4 +58.8 165.6
1°	52 42.9 +59.6 171.7	52 35.5 +59.4 170.1	52 26.7 +59.2 168.5	52 16.6 +59.0 166.9	52 05.2 +58.7 165.3
2°	53 42.5 +59.6 171.5	53 34.9 +59.4 169.9	53 25.9 +59.2 168.2	53 15.6 +58.9 166.6	53 03.9 +58.7 164.9
3°	54 42.1 +59.6 171.3	54 34.3 +59.4 169.6	54 25.1 +59.2 167.9	54 14.5 +58.9 166.2	54 02.6 +58.6 164.6
4°	55 41.7 +59.5 171.1	55 33.7 +59.3 169.4	55 24.3 +59.1 167.6	55 13.4 +58.9 165.9	55 01.2 +58.6 164.2
5°	56 41.2 +59.5 170.9	56 33.0 +59.3 169.1	56 23.4 +59.0 167.3	56 12.3 +58.8 165.6	55 59.8 +58.5 163.8
6°	57 40.7 +59.5 170.7	57 32.3 +59.3 168.8	57 22.4 +59.0 167.0	57 11.1 +58.7 165.2	56 58.3 +58.4 163.4
7°	58 40.2 +59.5 170.4	58 31.6 +59.2 168.5	58 21.4 +59.0 166.7	58 09.8 +58.7 164.8	57 56.7 +58.3 163.0
8°	59 39.7 +59.4 170.2	59 30.8 +59.2 168.2	59 20.4 +58.9 166.3	59 08.5 +58.5 164.4	58 55.0 +58.2 162.5
9°	60 39.1 +59.4 169.9	60 30.0 +59.1 167.9	60 19.3 +58.8 165.9	60 07.0 +58.5 164.0	59 53.2 +58.1 162.1
10°	61 38.5 +59.4 169.6	61 29.1 +59.1 167.5	61 18.1 +58.8 165.5	61 05.5 +58.4 163.5	60 51.3 +58.0 161.6
11°	62 37.9 +59.3 169.3	62 28.2 +59.0 167.2	62 16.9 +58.6 165.1	62 03.9 +58.3 163.0	61 49.3 +57.9 161.0
12°	63 37.2 +59.2 168.9	63 27.2 +58.9 166.8	63 15.5 +58.6 164.6	63 02.2 +58.1 162.5	62 47.2 +57.7 160.5
13°	64 36.4 +59.2 168.6	64 26.1 +58.9 166.3	64 14.1 +58.5 164.1	64 00.3 +58.0 162.0	63 44.9 +57.5 159.8
14°	65 35.6 +59.1 168.2	65 25.0 +58.8 165.9	65 12.6 +58.3 163.6	64 58.3 +57.9 161.4	64 42.4 +57.3 159.2
15°	66 34.7 +59.1 167.8	66 23.8 +58.6 165.4	66 10.9 +58.2 163.1	65 56.2 +57.7 160.7	65 39.7 +57.2 158.5
16°	67 33.8 +59.0 167.3	67 22.4 +58.6 164.9	67 09.1 +58.1 162.4	66 53.9 +57.5 160.1	66 36.9 +56.9 157.7
17°	68 32.8 +58.9 166.8	68 21.0 +58.4 164.3	68 07.2 +57.9 161.8	67 51.4 +57.3 159.3	67 33.8 +56.7 156.9
18°	69 31.7 +58.7 166.3	69 19.4 +58.3 163.6	69 05.1 +57.6 161.1	68 48.7 +57.1 158.5	68 30.5 +56.3 156.0
19°	70 30.4 +58.7 165.7	70 17.7 +58.0 163.0	70 02.7 +57.5 160.3	69 45.8 +56.7 157.6	69 26.8 +56.0 155.1
20°	71 29.1 +58.5 165.1	71 15.7 +57.9 162.2	71 00.2 +57.2 159.4	70 42.5 +56.4 156.7	70 22.8 +55.6 154.0
21°	72 27.6 +58.3 164.3	72 13.6 +57.7 161.4	71 57.4 +56.9 158.4	71 38.9 +56.1 155.6	71 18.4 +55.1 152.9
22°	73 25.9 +58.1 163.5	73 11.3 +57.3 160.4	72 54.3 +56.5 157.4	72 35.0 +55.6 154.5	72 13.5 +54.7 151.6
23°	74 24.0 +57.9 162.6	74 08.6 +57.1 159.4	73 50.8 +56.1 156.2	73 30.6 +55.0 153.2	73 08.2 +53.9 150.2
24°	75 21.9 +57.6 161.6	75 05.7 +56.6 158.2	74 46.9 +55.5 154.9	74 25.6 +54.5 151.7	74 02.1 +53.3 148.7
25°	76 19.5 +57.2 160.5	76 02.3 +56.1 156.9	75 42.4 +55.0 153.4	75 20.1 +53.6 150.1	74 55.4 +52.4 147.0
26°	77 16.7 +56.8 159.2	76 58.4 +55.6 155.4	76 37.4 +54.2 151.7	76 13.7 +52.8 148.3	75 47.8 +51.3 145.0
27°	78 13.5 +56.2 157.6	77 54.0 +54.7 153.6	77 31.6 +53.2 149.8	77 06.5 +51.7 146.2	76 39.1 +50.0 142.9
28°	79 09.7 +55.4 155.8	78 48.7 +53.8 151.6	78 24.8 +52.1 147.6	77 58.2 +50.3 143.9	77 29.1 +48.6 140.4
29°	80 05.1 +54.5 153.7	79 42.5 +52.6 149.2	79 16.9 +50.5 145.0	78 48.5 +48.6 141.2	78 17.7 +46.6 137.6

Latitude 38°

Declination SAME name as Latitude

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	50 54.0 +58.5 164.0	50 40.3 +58.3 162.5	50 25.5 +57.9 161.0	50 09.5 +57.6 159.4	49 52.3 +57.3 158.0
1°	51 52.5 +58.5 163.7	51 38.6 +58.2 162.1	51 23.4 +57.9 160.5	51 07.1 +57.5 159.0	50 49.6 +57.1 157.5
2°	52 51.0 +58.4 163.3	52 36.8 +58.0 161.7	52 21.3 +57.7 160.1	52 04.6 +57.4 158.5	51 46.7 +57.0 157.0
3°	53 49.4 +58.3 162.9	53 34.8 +58.0 161.3	53 19.0 +57.7 159.7	53 02.0 +57.3 158.1	52 43.7 +56.9 156.5
4°	54 47.7 +58.2 162.5	54 32.8 +57.9 160.8	54 16.7 +57.5 159.2	53 59.3 +57.1 157.6	53 40.6 +56.7 156.0
5°	55 45.9 +58.2 162.1	55 30.7 +57.8 160.4	55 14.2 +57.4 158.7	54 56.4 +57.0 157.0	54 37.3 +56.6 155.4
6°	56 44.1 +58.0 161.6	56 28.5 +57.7 159.9	56 11.6 +57.3 158.2	55 53.4 +56.8 156.5	55 33.9 +56.4 154.8
7°	57 42.1 +58.0 161.2	57 26.2 +57.5 159.4	57 08.9 +57.1 157.6	56 50.2 +56.7 155.9	56 30.3 +56.2 154.2
8°	58 40.1 +57.8 160.7	58 23.7 +57.5 158.9	58 06.0 +57.0 157.1	57 46.9 +56.5 155.3	57 26.5 +56.0 153.6
9°	59 37.9 +57.7 160.2	59 21.2 +57.2 158.3	59 03.0 +56.8 156.5	58 43.4 +56.3 154.7	58 22.5 +55.8 152.9
10°	60 35.6 +57.6 159.6	60 18.4 +57.1 157.7	59 59.8 +56.5 155.8	59 39.7 +56.1 154.0	59 18.3 +55.5 152.2
11°	61 33.2 +57.3 159.0	61 15.5 +56.9 157.1	60 56.3 +56.4 155.2	60 35.8 +55.8 153.3	60 13.8 +55.3 151.4
12°	62 30.5 +57.3 158.4	62 12.4 +56.7 156.4	61 52.7 +56.1 154.4	61 31.6 +55.6 152.5	61 09.1 +55.0 150.6
13°	63 27.8 +57.0 157.7	63 09.1 +56.4 155.7	62 48.8 +55.9 153.7	62 27.2 +55.2 151.7	62 04.1 +54.6 149.8
14°	64 24.8 +56.8 157.0	64 05.5 +56.2 154.9	63 44.7 +55.6 152.9	63 22.4 +55.0 150.9	62 58.7 +54.3 148.9
15°	65 21.6 +56.5 156.3	65 01.7 +55.9 154.1	64 40.3 +55.3 152.0	64 17.4 +54.5 149.9	63 53.0 +53.8 147.9
16°	66 18.1 +56.3 155.5	65 57.6 +55.6 153.2	65 35.6 +54.9 151.1	65 11.9 +54.2 149.0	64 46.8 +53.5 146.9
17°	67 14.4 +55.9 154.6	66 53.2 +55.3 152.3	66 30.5 +54.4 150.1	66 06.1 +53.7 147.9	65 40.3 +52.9 145.8
18°	68 10.3 +55.6 153.6	67 48.5 +54.8 151.3	67 24.9 +54.1 149.0	66 59.8 +53.2 146.8	66 33.2 +52.4 144.7
19°	69 05.9 +55.2 152.6	68 43.3 +54.4 150.2	68 19.0 +53.5 147.9	67 53.0 +52.7 145.6	67 25.6 +51.7 143.4
20°	70 01.1 +54.8 151.5	69 37.7 +53.8 149.0	69 12.5 +52.9 146.6	68 45.7 +52.0 144.3	68 17.3 +51.1 142.1
21°	70 55.9 +54.2 150.2	70 31.5 +53.2 147.7	70 05.4 +52.2 145.3	69 37.7 +51.2 142.9	69 08.4 +50.3 140.6
22°	71 50.1 +53.6 148.9	71 24.7 +52.6 146.3	70 57.6 +51.5 143.8	70 28.9 +50.4 141.4	69 58.7 +49.3 139.1
23°	72 43.7 +52.8 147.4	72 17.3 +51.7 144.7	71 49.1 +50.6 142.2	71 19.3 +49.5 139.7	70 48.0 +48.4 137.4
24°	73 36.5 +52.1 145.8	73 09.0 +50.8 143.0	72 39.7 +49.6 140.4	72 08.8 +48.4 137.9	71 36.4 +47.2 135.5
25°	74 28.6 +51.0 144.0	73 59.8 +49.8 141.1	73 29.3 +48.4 138.5	72 57.2 +47.1 135.9	72 23.6 +45.9 133.5
26°	75 19.6 +49.9 142.0	74 49.6 +48.4 139.1	74 17.7 +47.1 136.3	73 44.3 +45.7 133.8	73 09.5 +44.4 131.4
27°	76 09.5 +48.5 139.7	75 38.0 +46.9 136.8	75 04.8 +45.4 134.0	74 30.0 +44.0 131.4	73 53.9 +42.7 129.0
28°	76 58.0 +46.8 137.2	76 24.9 +45.2 134.2	75 50.2 +43.6 131.4	75 14.0 +42.1 128.8	74 36.6 +40.7 126.4
29°	77 44.8 +44.8 134.3	77 10.1 +43.0 131.3	76 33.8 +41.4 128.5	75 56.1 +39.9 125.9	75 17.3 +38.5 123.6

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°	49 34.0 +56.9 156.5	49 14.6 +56.5 155.0	48 54.1 +56.1 153.6	48 32.5 +55.7 152.2	48 10.0 +55.2 150.8
1°	50 30.9 +56.8 156.0	50 11.1 +56.4 154.5	49 50.2 +56.0 153.0	49 28.2 +55.6 151.6	49 05.2 +55.2 150.2
2°	51 27.7 +56.6 155.5	51 07.5 +56.2 154.0	50 46.2 +55.7 152.5	50 23.8 +55.3 151.0	50 00.4 +54.9 149.6
3°	52 24.3 +56.4 154.9	52 03.7 +56.0 153.4	51 41.9 +55.7 151.9	51 19.1 +55.2 150.4	50 55.3 +54.7 149.0
4°	53 20.7 +56.3 154.4	52 59.7 +55.9 152.8	52 37.6 +55.4 151.3	52 14.3 +54.9 149.8	51 50.0 +54.4 148.3
5°	54 17.0 +56.2 153.8	53 55.6 +55.6 152.2	53 33.0 +55.2 150.6	53 09.2 +54.7 149.1	52 44.4 +54.3 147.6
6°	55 13.2 +55.9 153.2	54 51.2 +55.5 151.6	54 28.2 +54.9 150.0	54 03.9 +54.5 148.4	53 38.7 +53.9 146.9
7°	56 09.1 +55.7 152.5	55 46.7 +55.2 150.9	55 23.1 +54.7 149.3	54 58.4 +54.2 147.7	54 32.6 +53.7 146.1
8°	57 04.8 +55.5 151.9	56 41.9 +55.0 150.2	56 17.8 +54.5 148.5	55 52.6 +53.9 146.9	55 26.3 +53.3 145.4
9°	58 00.3 +55.3 151.2	57 36.9 +54.7 149.4	57 12.3 +54.1 147.8	56 46.5 +53.6 146.1	56 19.6 +53.0 144.6
10°	58 55.6 +55.0 150.4	58 31.6 +54.4 148.7	58 06.4 +53.9 147.0	57 40.1 +53.2 145.3	57 12.6 +52.7 143.7
11°	59 50.6 +54.6 149.6	59 26.0 +54.1 147.9	59 00.3 +53.4 146.1	58 33.3 +52.9 144.4	58 05.3 +52.3 142.8
12°	60 45.2 +54.4 148.8	60 20.1 +53.7 147.0	59 53.7 +53.1 145.2	59 26.2 +52.5 143.5	58 57.6 +51.8 141.9
13°	61 39.6 +54.0 147.9	61 13.8 +53.4 146.1	60 46.8 +52.7 144.3	60 18.7 +52.0 142.6	59 49.4 +51.3 140.9
14°	62 33.6 +53.6 147.0	62 07.2 +52.9 145.1	61 39.5 +52.3 143.3	61 10.7 +51.5 141.5	60 40.7 +50.9 139.8
15°	63 27.2 +53.1 146.0	63 00.1 +52.4 144.1	62 31.8 +51.7 142.3	62 02.2 +51.0 140.5	61 31.6 +50.3 138.7
16°	64 20.3 +52.7 144.9	63 52.5 +52.0 143.0	63 23.5 +51.1 141.1	62 53.2 +50.4 139.3	62 21.9 +49.6 137.6
17°	65 13.0 +52.2 143.8	64 44.5 +51.3 141.8	64 14.6 +50.6 140.0	63 43.6 +49.8 138.1	63 11.5 +49.0 136.3
18°	66 05.2 +51.5 142.6	65 35.8 +50.7 140.6	65 05.2 +49.9 138.7	64 33.4 +49.1 136.8	64 00.5 +48.3 135.0
19°	66 56.7 +50.9 141.3	66 26.5 +50.0 139.3	65 55.1 +49.1 137.4	65 22.5 +48.3 135.5	64 48.8 +47.4 133.7
20°	67 47.6 +50.1 139.9	67 16.5 +49.2 137.9	66 44.2 +48.3 135.9	66 10.8 +47.4 134.0	65 36.2 +46.6 132.2
21°	68 37.7 +49.3 138.5	68 05.7 +48.3 136.4	67 32.5 +47.4 134.4	66 58.2 +46.5 132.5	66 22.8 +45.6 130.7
22°	69 27.0 +48.3 136.9	68 54.0 +47.4 134.8	68 19.9 +46.4 132.8	67 44.7 +45.4 130.8	67 08.4 +44.5 129.0
23°	70 15.3 +47.3 135.2	69 41.4 +46.2 133.0	69 06.3 +45.2 131.0	68 30.1 +44.2 129.1	67 52.9 +43.3 127.3
24°	71 02.6 +46.1 133.3	70 27.6 +45.0 131.2	69 51.5 +43.9 129.1	69 14.3 +42.9 127.2	68 36.2 +42.0 125.4
25°	71 48.7 +44.7 131.3	71 12.6 +43.6 129.1	70 35.4 +42.5 127.1	69 57.2 +41.5 125.2	69 18.2 +40.5 123.4
26°	72 33.4 +43.2 129.1	71 56.2 +42.0 127.0	71 17.9 +40.9 125.0	70 38.7 +39.9 123.1	69 58.7 +38.9 121.3
27°	73 16.6 +41.4 126.7	72 38.2 +40.2 124.6	71 58.8 +39.1 122.6	71 18.6 +38.0 120.8	70 37.6 +37.1 119.0
28°	73 58.0 +39.4 124.2	73 18.4 +38.2 122.1	72 37.9 +37.1 120.1	71 56.6 +36.1 118.3	71 14.7 +35.1 116.6
29°	74 37.4 +37.2 121.4	73 56.6 +36.0 119.4	73 15.0 +34.9 117.5	72 32.7 +33.9 115.7	71 49.8 +33.0 114.1

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Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	47 46.4 +54.8 149.4	47 21.8 +54.5 148.1	46 56.4 +54.0 146.7	46 30.0 +53.5 145.4	46 02.7 +53.1 144.1
1°	48 41.2 +54.7 148.8	48 16.3 +54.2 147.4	47 50.4 +53.7 146.1	47 23.5 +53.3 144.8	46 55.8 +52.8 143.5
2°	49 35.9 +54.5 148.2	49 10.5 +54.0 146.8	48 44.1 +53.6 145.4	48 16.8 +53.1 144.1	47 48.6 +52.6 142.8
3°	50 30.4 +54.2 147.5	50 04.5 +53.8 146.1	49 37.7 +53.2 144.7	49 09.9 +52.8 143.4	48 41.2 +52.4 142.0
4°	51 24.6 +54.0 146.8	50 58.3 +53.4 145.4	50 30.9 +53.0 144.0	50 02.7 +52.5 142.6	49 33.6 +52.0 141.3
5°	52 18.6 +53.7 146.1	51 51.7 +53.3 144.7	51 23.9 +52.7 143.3	50 55.2 +52.2 141.9	50 25.6 +51.7 140.5
6°	53 12.3 +53.4 145.4	52 45.0 +52.9 143.9	52 16.6 +52.4 142.5	51 47.4 +51.9 141.1	51 17.3 +51.3 139.7
7°	54 05.7 +53.2 144.6	53 37.9 +52.6 143.1	53 09.0 +52.1 141.7	52 39.3 +51.5 140.3	52 08.6 +51.0 138.9
8°	54 58.9 +52.8 143.8	54 30.5 +52.2 142.3	54 01.1 +51.7 140.8	53 30.8 +51.1 139.4	52 59.6 +50.6 138.0
9°	55 51.7 +52.4 143.0	55 22.7 +51.9 141.5	54 52.8 +51.3 140.0	54 21.9 +50.7 138.5	53 50.2 +50.1 137.1
10°	56 44.1 +52.1 142.1	56 14.6 +51.5 140.6	55 44.1 +50.9 139.1	55 12.6 +50.3 137.6	54 40.3 +49.7 136.2
11°	57 36.2 +51.6 141.2	57 06.1 +51.0 139.6	56 35.0 +50.4 138.1	56 02.9 +49.8 136.6	55 30.0 +49.2 135.2
12°	58 27.8 +51.2 140.2	57 57.1 +50.5 138.7	57 25.4 +49.9 137.1	56 52.7 +49.4 135.6	56 19.2 +48.7 134.2
13°	59 19.0 +50.7 139.2	58 47.6 +50.1 137.6	58 15.3 +49.4 136.1	57 42.1 +48.7 134.6	57 07.9 +48.2 133.1
14°	60 09.7 +50.2 138.2	59 37.7 +49.5 136.5	59 04.7 +48.8 135.0	58 30.8 +48.2 133.5	57 56.1 +47.5 132.0
15°	60 59.9 +49.5 137.0	60 27.2 +48.8 135.4	59 53.5 +48.2 133.8	59 19.0 +47.5 132.3	58 43.6 +46.9 130.8
16°	61 49.4 +49.0 135.9	61 16.0 +48.3 134.2	60 41.7 +47.5 132.6	60 06.5 +46.8 131.1	59 30.5 +46.1 129.6
17°	62 38.4 +48.2 134.6	62 04.3 +47.5 133.0	61 29.2 +46.8 131.4	60 53.3 +46.1 129.8	60 16.6 +45.4 128.3
18°	63 26.6 +47.5 133.3	62 51.8 +46.7 131.6	62 16.0 +46.0 130.0	61 39.4 +45.2 128.5	61 02.0 +44.5 127.0
19°	64 14.1 +46.6 131.9	63 38.5 +45.8 130.3	63 02.0 +45.1 128.6	62 24.6 +44.4 127.1	61 46.5 +43.7 125.6
20°	65 00.7 +45.8 130.5	64 24.3 +45.0 128.8	63 47.1 +44.1 127.2	63 09.0 +43.4 125.6	62 30.2 +42.7 124.1
21°	65 46.5 +44.7 128.9	65 09.3 +43.9 127.2	64 31.2 +43.1 125.6	63 52.4 +42.4 124.1	63 12.9 +41.6 122.6
22°	66 31.2 +43.6 127.3	65 53.2 +42.7 125.6	65 14.3 +42.0 124.0	64 34.8 +41.2 122.4	63 54.5 +40.5 121.0
23°	67 14.8 +42.4 125.5	66 35.9 +41.6 123.8	65 56.3 +40.8 122.2	65 16.0 +40.0 120.7	64 35.0 +39.3 119.3
24°	67 57.2 +41.1 123.7	67 17.5 +40.2 122.0	66 37.1 +39.4 120.4	65 56.0 +38.6 118.9	65 14.3 +37.9 117.5
25°	68 38.3 +39.6 121.7	67 57.7 +38.8 120.0	67 16.5 +37.9 118.5	66 34.6 +37.2 117.0	65 52.2 +36.6 115.6
26°	69 17.9 +38.0 119.6	68 36.5 +37.1 118.0	67 54.4 +36.4 116.5	67 11.8 +35.7 115.0	66 28.8 +34.9 113.6
27°	69 55.9 +36.2 117.4	69 13.6 +35.4 115.8	68 30.8 +34.6 114.3	67 47.5 +33.9 112.9	67 03.7 +33.3 111.6
28°	70 32.1 +34.3 115.0	69 49.0 +33.5 113.5	69 05.4 +32.8 112.1	68 21.4 +32.1 110.7	67 37.0 +31.5 109.4
29°	71 06.4 +32.2 112.5	70 22.5 +31.4 111.1	69 38.2 +30.7 109.7	68 53.5 +30.1 108.4	68 08.5 +29.5 107.2

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°	45 34.6 +52.6 142.9	45 05.6 +52.2 141.6	44 35.9 +51.7 140.4	44 05.3 +51.3 139.2	43 34.1 +50.8 138.0
1°	46 27.2 +52.4 142.2	45 57.8 +51.9 140.9	45 27.6 +51.5 139.7	44 56.6 +51.0 138.5	44 24.9 +50.5 137.3
2°	47 19.6 +52.1 141.5	46 49.7 +51.7 140.2	46 19.1 +51.1 138.9	45 47.6 +50.7 137.7	45 15.4 +50.3 136.5
3°	48 11.7 +51.9 140.7	47 41.4 +51.3 139.4	47 10.2 +50.9 138.2	46 38.3 +50.4 136.9	46 05.7 +49.9 135.7
4°	49 03.6 +51.5 140.0	48 32.7 +51.0 138.7	48 01.1 +50.5 137.4	47 28.7 +50.0 136.1	46 55.6 +49.5 134.9
5°	49 55.1 +51.1 139.2	49 23.7 +50.7 137.9	48 51.6 +50.2 136.6	48 18.7 +49.7 135.3	47 45.1 +49.2 134.1
6°	50 46.2 +50.9 138.3	50 14.4 +50.3 137.0	49 41.8 +49.8 135.7	49 08.4 +49.3 134.5	48 34.3 +48.8 133.2
7°	51 37.1 +50.4 137.5	51 04.7 +49.9 136.2	50 31.6 +49.4 134.9	49 57.7 +48.9 133.6	49 23.1 +48.4 132.3
8°	52 27.5 +50.1 136.6	51 54.6 +49.5 135.3	51 21.0 +48.9 134.0	50 46.6 +48.4 132.7	50 11.5 +47.9 131.4
9°	53 17.6 +49.6 135.7	52 44.1 +49.1 134.4	52 09.9 +48.6 133.0	51 35.0 +48.0 131.7	50 59.4 +47.4 130.5
10°	54 07.2 +49.1 134.8	53 33.2 +48.6 133.4	52 58.5 +48.0 132.1	52 23.0 +47.5 130.8	51 46.8 +47.0 129.5
11°	54 56.3 +48.6 133.8	54 21.8 +48.0 132.4	53 46.5 +47.5 131.1	53 10.5 +46.9 129.7	52 33.8 +46.4 128.5
12°	55 44.9 +48.1 132.7	55 09.8 +47.5 131.4	54 34.0 +46.9 130.0	53 57.4 +46.4 128.7	53 20.2 +45.8 127.4
13°	56 33.0 +47.5 131.7	55 57.3 +46.9 130.3	55 20.9 +46.3 128.9	54 43.8 +45.7 127.6	54 06.0 +45.2 126.3
14°	57 20.5 +46.9 130.5	56 44.2 +46.3 129.1	56 07.2 +45.7 127.8	55 29.5 +45.1 126.5	54 51.2 +44.5 125.2
15°	58 07.4 +46.2 129.4	57 30.5 +45.6 128.0	56 52.9 +45.0 126.6	56 14.6 +44.4 125.3	55 35.7 +43.9 124.0
16°	58 53.6 +45.5 128.2	58 16.1 +44.9 126.8	57 37.9 +44.3 125.4	56 59.0 +43.7 124.1	56 19.6 +43.1 122.8
17°	59 39.1 +44.8 126.9	59 01.0 +44.1 125.5	58 22.2 +43.4 124.1	57 42.7 +42.9 122.8	57 02.7 +42.3 121.5
18°	60 23.9 +43.9 125.5	59 45.1 +43.2 124.1	59 05.6 +42.6 122.8	58 25.6 +42.0 121.5	57 45.0 +41.5 120.2
19°	61 07.8 +42.9 124.1	60 28.3 +42.3 122.8	59 48.2 +41.7 121.4	59 07.6 +41.1 120.1	58 26.5 +40.5 118.9
20°	61 50.7 +42.0 122.7	61 10.6 +41.4 121.3	60 29.9 +40.8 120.0	59 48.7 +40.2 118.7	59 07.0 +39.6 117.4
21°	62 32.7 +41.0 121.2	61 52.0 +40.3 119.8	61 10.7 +39.7 118.5	60 28.9 +39.1 117.2	59 46.6 +38.5 116.0
22°	63 13.7 +39.8 119.6	62 32.3 +39.2 118.2	61 50.4 +38.5 116.9	61 08.0 +37.9 115.6	60 25.1 +37.4 114.4
23°	63 53.5 +38.6 117.9	63 11.5 +37.9 116.5	62 28.9 +37.4 115.2	61 45.9 +36.8 114.0	61 02.5 +36.3 112.8
24°	64 32.1 +37.3 116.1	63 49.4 +36.7 114.8	63 06.3 +36.0 113.5	62 22.7 +35.5 112.3	61 38.8 +35.0 111.2
25°	65 09.4 +35.8 114.3	64 26.1 +35.2 113.0	63 42.3 +34.7 111.7	62 58.2 +34.2 110.6	62 13.8 +33.7 109.4
26°	65 45.2 +34.4 112.3	65 01.3 +33.7 111.1	64 17.0 +33.2 109.9	63 32.4 +32.7 108.7	62 47.5 +32.2 107.6
27°	66 19.6 +32.6 110.3	65 35.0 +32.2 109.1	64 50.2 +31.6 107.9	64 05.1 +31.1 106.8	63 19.7 +30.7 105.8
28°	66 52.2 +30.9 108.2	66 07.2 +30.4 107.0	65 21.8 +30.0 105.9	64 36.2 +29.6 104.9	63 50.4 +29.2 103.8
29°	67 23.1 +29.1 106.0	66 37.6 +28.5 104.9	65 51.8 +28.1 103.8	65 05.8 +27.7 102.8	64 19.6 +27.4 101.8

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°	43 02.1 +50.4 136.8	42 29.4 +49.9 135.7	41 56.0 +49.5 134.6	41 22.0 +49.1 133.5	40 47.4 +48.6 132.4
1°	43 52.5 +50.0 136.1	43 19.3 +49.7 134.9	42 45.5 +49.2 133.8	42 11.1 +48.7 132.7	41 36.0 +48.4 131.6
2°	44 42.5 +49.8 135.3	44 09.0 +49.3 134.2	43 34.7 +48.9 133.0	42 59.8 +48.5 131.9	42 24.4 +47.9 130.8
3°	45 32.3 +49.5 134.5	44 58.3 +48.9 133.4	44 23.6 +48.5 132.2	43 48.3 +48.0 131.1	43 12.3 +47.6 130.0
4°	46 21.8 +49.0 133.7	45 47.2 +48.7 132.5	45 12.1 +48.1 131.4	44 36.3 +47.7 130.3	43 59.9 +47.3 129.2
5°	47 10.8 +48.7 132.9	46 35.9 +48.2 131.7	46 00.2 +47.8 130.5	45 24.0 +47.3 129.4	44 47.2 +46.8 128.3
6°	47 59.5 +48.3 132.0	47 24.1 +47.8 130.8	46 48.0 +47.3 129.7	46 11.3 +46.8 128.5	45 34.0 +46.4 127.4
7°	48 47.8 +47.9 131.1	48 11.9 +47.4 129.9	47 35.3 +46.9 128.8	46 58.1 +46.5 127.6	46 20.4 +46.0 126.5
8°	49 35.7 +47.4 130.2	48 59.3 +46.9 129.0	48 22.2 +46.4 127.8	47 44.6 +45.9 126.7	47 06.4 +45.5 125.6
9°	50 23.1 +46.9 129.2	49 46.2 +46.4 128.0	49 08.6 +46.0 126.9	48 30.5 +45.5 125.7	47 51.9 +44.9 124.6
10°	51 10.0 +46.4 128.3	50 32.6 +45.9 127.0	49 54.6 +45.4 125.9	49 16.0 +44.9 124.7	48 36.8 +44.5 123.6
11°	51 56.4 +45.9 127.2	51 18.5 +45.4 126.0	50 40.0 +44.8 124.8	50 00.9 +44.4 123.7	49 21.3 +43.9 122.6
12°	52 42.3 +45.3 126.2	52 03.9 +44.7 125.0	51 24.8 +44.3 123.8	50 45.3 +43.8 122.6	50 05.2 +43.3 121.5
13°	53 27.6 +44.7 125.1	52 48.6 +44.2 123.9	52 09.1 +43.6 122.7	51 29.1 +43.1 121.6	50 48.5 +42.7 120.4
14°	54 12.3 +44.0 124.0	53 32.8 +43.4 122.7	52 52.7 +43.0 121.6	52 12.2 +42.5 120.4	51 31.2 +42.0 119.3
15°	54 56.3 +43.3 122.8	54 16.2 +42.8 121.6	53 35.7 +42.3 120.4	52 54.7 +41.8 119.3	52 13.2 +41.4 118.2
16°	55 39.6 +42.5 121.6	54 59.0 +42.1 120.4	54 18.0 +41.5 119.2	53 36.5 +41.0 118.1	52 54.6 +40.5 117.0
17°	56 22.1 +41.8 120.3	55 41.1 +41.2 119.1	54 59.5 +40.8 118.0	54 17.5 +40.3 116.8	53 35.1 +39.9 115.7
18°	57 03.9 +40.9 119.0	56 22.3 +40.4 117.8	55 40.3 +39.9 116.7	54 57.8 +39.4 115.5	54 15.0 +38.9 114.5
19°	57 44.8 +40.0 117.6	57 02.7 +39.5 116.5	56 20.2 +39.0 115.3	55 37.2 +38.6 114.2	54 53.9 +38.1 113.1
20°	58 24.8 +39.0 116.2	57 42.2 +38.5 115.1	56 59.2 +38.0 113.9	56 15.8 +37.6 112.9	55 32.0 +37.2 111.8
21°	59 03.8 +38.1 114.8	58 20.7 +37.5 113.6	57 37.2 +37.1 112.5	56 53.4 +36.6 111.4	56 09.2 +36.2 110.4
22°	59 41.9 +36.9 113.2	58 58.2 +36.5 112.1	58 14.3 +36.0 111.0	57 30.0 +35.6 110.0	56 45.4 +35.2 109.0
23°	60 18.8 +35.7 111.7	59 34.7 +35.3 110.6	58 50.3 +34.8 109.5	58 05.6 +34.4 108.5	57 20.6 +34.1 107.5
24°	60 54.5 +34.6 110.0	60 10.0 +34.1 109.0	59 25.1 +33.7 107.9	58 40.0 +33.3 106.9	57 54.7 +32.9 105.9
25°	61 29.1 +33.2 108.3	60 44.1 +32.7 107.3	59 58.8 +32.4 106.3	59 13.3 +32.0 105.3	58 27.6 +31.7 104.3
26°	62 02.3 +31.8 106.6	61 16.8 +31.5 105.6	60 31.2 +31.1 104.6	59 45.3 +30.8 103.6	58 59.3 +30.4 102.7
27°	62 34.1 +30.3 104.8	61 48.3 +30.0 103.8	61 02.3 +29.6 102.8	60 16.1 +29.3 101.9	59 29.7 +29.1 101.0
28°	63 04.4 +28.8 102.9	62 18.3 +28.4 101.9	61 31.9 +28.2 101.0	60 45.4 +28.0 100.1	59 58.8 +27.7 99.3
29°	63 33.2 +27.2 100.9	62 46.7 +26.9 100.0	62 00.1 +26.6 99.1	61 13.4 +26.4 98.3	60 26.5 +26.3 97.5

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°	40 12.2 +48.2 131.3	39 36.4 +47.8 130.3	39 00.1 +47.3 129.2	38 23.2 +46.9 128.2	37 45.8 +46.6 127.2
1°	41 00.4 +47.9 130.5	40 24.2 +47.4 129.5	39 47.4 +47.1 128.5	39 10.1 +46.7 127.4	38 32.4 +46.2 126.4
2°	41 48.3 +47.5 129.7	41 11.6 +47.2 128.7	40 34.5 +46.7 127.6	39 56.8 +46.3 126.6	39 18.6 +45.9 125.6
3°	42 35.8 +47.2 128.9	41 58.8 +46.7 127.9	41 21.2 +46.3 126.8	40 43.1 +45.9 125.8	40 04.5 +45.5 124.8
4°	43 23.0 +46.8 128.1	42 45.5 +46.4 127.0	42 07.5 +45.9 126.0	41 29.0 +45.5 124.9	40 50.0 +45.1 123.9
5°	44 09.8 +46.4 127.2	43 31.9 +45.9 126.1	42 53.4 +45.5 125.1	42 14.5 +45.1 124.1	41 35.1 +44.7 123.1
6°	44 56.2 +45.9 126.3	44 17.8 +45.5 125.2	43 38.9 +45.1 124.2	42 59.6 +44.7 123.2	42 19.8 +44.3 122.2
7°	45 42.1 +45.5 125.4	45 03.3 +45.1 124.3	44 24.0 +44.7 123.3	43 44.3 +44.2 122.2	43 04.1 +43.8 121.2
8°	46 27.6 +45.1 124.5	45 48.4 +44.6 123.4	45 08.7 +44.2 122.3	44 28.5 +43.8 121.3	43 47.9 +43.4 120.3
9°	47 12.7 +44.5 123.5	46 33.0 +44.1 122.4	45 52.9 +43.6 121.4	45 12.3 +43.2 120.3	44 31.3 +42.8 119.3
10°	47 57.2 +44.0 122.5	47 17.1 +43.6 121.4	46 36.5 +43.2 120.4	45 55.5 +42.8 119.4	45 14.1 +42.3 118.3
11°	48 41.2 +43.5 121.5	48 00.7 +43.0 120.4	47 19.7 +42.6 119.4	46 38.3 +42.1 118.3	45 56.4 +41.8 117.3
12°	49 24.7 +42.8 120.4	48 43.7 +42.4 119.4	48 02.3 +42.0 118.3	47 20.4 +41.6 117.3	46 38.2 +41.2 116.3
13°	50 07.5 +42.3 119.3	49 26.1 +41.8 118.3	48 44.3 +41.3 117.2	48 02.0 +41.0 116.2	47 19.4 +40.6 115.2
14°	50 49.8 +41.5 118.2	50 07.9 +41.1 117.2	49 25.6 +40.8 116.1	48 43.0 +40.3 115.1	48 00.0 +40.0 114.1
15°	51 31.3 +40.9 117.1	50 49.0 +40.5 116.0	50 06.4 +40.0 115.0	49 23.3 +39.7 114.0	48 40.0 +39.3 113.0
16°	52 12.2 +40.2 115.9	51 29.5 +39.7 114.8	50 46.4 +39.3 113.8	50 03.0 +38.9 112.8	49 19.3 +38.6 111.9
17°	52 52.4 +39.3 114.7	52 09.2 +39.0 113.6	51 25.7 +38.6 112.6	50 41.9 +38.2 111.6	49 57.9 +37.8 110.7
18°	53 31.7 +38.6 113.4	52 48.2 +38.1 112.4	52 04.3 +37.8 111.4	51 20.1 +37.4 110.4	50 35.7 +37.1 109.5
19°	54 10.3 +37.7 112.1	53 26.3 +37.3 111.1	52 42.1 +36.9 110.1	51 57.5 +36.6 109.2	51 12.8 +36.2 108.2
20°	54 48.0 +36.7 110.8	54 03.6 +36.4 109.8	53 19.0 +36.0 108.8	52 34.1 +35.7 107.9	51 49.0 +35.4 106.9
21°	55 24.7 +35.9 109.4	54 40.0 +35.5 108.4	53 55.0 +35.1 107.5	53 09.8 +34.8 106.5	52 24.4 +34.5 105.6
22°	56 00.6 +34.8 108.0	55 15.5 +34.4 107.0	54 30.1 +34.2 106.1	53 44.6 +33.8 105.2	52 58.9 +33.5 104.3
23°	56 35.4 +33.7 106.5	55 49.9 +33.4 105.6	55 04.3 +33.1 104.6	54 18.4 +32.8 103.8	53 32.4 +32.6 102.9
24°	57 09.1 +32.6 105.0	56 23.3 +32.3 104.1	55 37.4 +32.0 103.2	54 51.2 +31.8 102.3	54 05.0 +31.5 101.5
25°	57 41.7 +31.4 103.4	56 55.6 +31.1 102.5	56 09.4 +30.9 101.7	55 23.0 +30.7 100.8	54 36.5 +30.4 100.0
26°	58 13.1 +30.2 101.8	57 26.7 +30.0 101.0	56 40.3 +29.7 100.1	55 53.7 +29.5 99.3	55 06.9 +29.4 98.5
27°	58 43.3 +28.8 100.2	57 56.7 +28.6 99.3	57 10.0 +28.4 98.5	56 23.2 +28.2 97.7	55 36.3 +28.1 97.0
28°	59 12.1 +27.5 98.5	58 25.3 +27.3 97.7	57 38.4 +27.2 96.9	56 51.4 +27.1 96.1	56 04.4 +26.9 95.4
29°	59 39.6 +26.1 96.7	58 52.6 +26.0 96.0	58 05.6 +25.8 95.2	57 18.5 +25.7 94.5	56 31.3 +25.6 93.8

Declination SAME name as Latitude

Latitude 38°

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°	37 07.9 +46.2 126.3	36 29.6 +45.7 125.3	35 50.7 +45.5 124.4	35 11.5 +45.0 123.4	34 31.8 +44.7 122.5
1°	37 54.1 +45.8 125.5	37 15.3 +45.5 124.5	36 36.2 +45.0 123.6	35 56.5 +44.7 122.6	35 16.5 +44.4 121.7
2°	38 39.9 +45.5 124.6	38 00.8 +45.1 123.7	37 21.2 +44.8 122.7	36 41.2 +44.4 121.8	36 00.9 +44.0 120.9
3°	39 25.4 +45.1 123.8	38 45.9 +44.7 122.8	38 06.0 +44.3 121.9	37 25.6 +44.0 120.9	36 44.9 +43.6 120.0
4°	40 10.5 +44.7 122.9	39 30.6 +44.4 122.0	38 50.3 +44.0 121.0	38 09.6 +43.6 120.1	37 28.5 +43.2 119.2
5°	40 55.2 +44.4 122.1	40 15.0 +43.9 121.1	39 34.3 +43.5 120.1	38 53.2 +43.2 119.2	38 11.7 +42.9 118.3
6°	41 39.6 +43.8 121.2	40 58.9 +43.5 120.2	40 17.8 +43.2 119.2	39 36.4 +42.8 118.3	38 54.6 +42.4 117.4
7°	42 23.4 +43.5 120.3	41 42.4 +43.1 119.3	41 01.0 +42.7 118.3	40 19.2 +42.3 117.4	39 37.0 +42.0 116.5
8°	43 06.9 +42.9 119.3	42 25.5 +42.5 118.3	41 43.7 +42.2 117.4	41 01.5 +41.9 116.5	40 19.0 +41.5 115.6
9°	43 49.8 +42.5 118.3	43 08.0 +42.1 117.4	42 25.9 +41.7 116.4	41 43.4 +41.4 115.5	41 00.5 +41.1 114.6
10°	44 32.3 +42.0 117.4	43 50.1 +41.6 116.4	43 07.6 +41.2 115.5	42 24.8 +40.9 114.5	41 41.6 +40.6 113.6
11°	45 14.3 +41.4 116.4	44 31.7 +41.1 115.4	43 48.8 +40.7 114.5	43 05.7 +40.3 113.5	42 22.2 +40.0 112.6
12°	45 55.7 +40.8 115.3	45 12.8 +40.4 114.4	44 29.5 +40.2 113.4	43 46.0 +39.8 112.5	43 02.2 +39.5 111.6
13°	46 36.5 +40.2 114.3	45 53.2 +39.9 113.3	45 09.7 +39.5 112.4	44 25.8 +39.2 111.5	43 41.7 +38.9 110.6
14°	47 16.7 +39.6 113.2	46 33.1 +39.3 112.2	45 49.2 +38.9 111.3	45 05.0 +38.6 110.4	44 20.6 +38.3 109.5
15°	47 56.3 +38.9 112.1	47 12.4 +38.5 111.1	46 28.1 +38.3 110.2	45 43.6 +38.0 109.3	44 58.9 +37.7 108.4
16°	48 35.2 +38.3 110.9	47 50.9 +38.0 110.0	47 06.4 +37.6 109.1	46 21.6 +37.3 108.2	45 36.6 +37.0 107.3
17°	49 13.5 +37.5 109.7	48 28.9 +37.1 108.8	47 44.0 +36.9 107.9	46 58.9 +36.6 107.1	46 13.6 +36.3 106.2
18°	49 51.0 +36.7 108.5	49 06.0 +36.5 107.6	48 20.9 +36.1 106.8	47 35.5 +35.9 105.9	46 49.9 +35.7 105.1
19°	50 27.7 +36.0 107.3	49 42.5 +35.6 106.4	48 57.0 +35.4 105.5	48 11.4 +35.1 104.7	47 25.6 +34.8 103.9
20°	51 03.7 +35.1 106.0	50 18.1 +34.8 105.2	49 32.4 +34.6 104.3	48 46.5 +34.3 103.5	48 00.4 +34.1 102.7
21°	51 38.8 +34.2 104.7	50 52.9 +34.0 103.9	50 07.0 +33.7 103.0	49 20.8 +33.5 102.2	48 34.5 +33.3 101.4
22°	52 13.0 +33.2 103.4	51 26.9 +33.0 102.6	50 40.7 +32.8 101.7	49 54.3 +32.6 100.9	49 07.8 +32.5 100.2
23°	52 46.2 +32.4 102.0	51 59.9 +32.1 101.2	51 13.5 +31.9 100.4	50 26.9 +31.8 99.6	49 40.3 +31.5 98.9
24°	53 18.6 +31.3 100.6	52 32.0 +31.2 99.8	51 45.4 +30.9 99.1	50 58.7 +30.7 98.3	50 11.8 +30.7 97.5
25°	53 49.9 +30.2 99.2	53 03.2 +30.0 98.4	52 16.3 +30.0 97.7	51 29.4 +29.8 96.9	50 42.5 +29.7 96.2
26°	54 20.1 +29.2 97.7	53 33.2 +29.1 97.0	52 46.3 +28.9 96.2	51 59.2 +28.8 95.5	51 12.2 +28.7 94.8
27°	54 49.3 +28.0 96.2	54 02.3 +27.9 95.5	53 15.2 +27.8 94.8	52 28.0 +27.8 94.1	51 40.9 +27.6 93.4
28°	55 17.3 +26.8 94.7	54 30.2 +26.7 94.0	53 43.0 +26.6 93.3	52 55.8 +26.6 92.6	52 08.5 +26.6 92.0
29°	55 44.1 +25.6 93.1	54 56.9 +25.5 92.4	54 09.6 +25.5 91.8	53 22.4 +25.4 91.1	52 35.1 +25.5 90.5

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	33 51.8 +44.3 121.6	33 11.3 +44.0 120.7	32 30.5 +43.6 119.9	31 49.3 +43.3 119.0	31 07.8 +43.0 118.2
1°	34 36.1 +44.0 120.8	33 55.3 +43.7 119.9	33 14.1 +43.4 119.0	32 32.6 +43.0 118.2	31 50.8 +42.7 117.3
2°	35 20.1 +43.6 120.0	34 39.0 +43.3 119.1	33 57.5 +42.9 118.2	33 15.6 +42.7 117.4	32 33.5 +42.3 116.5
3°	36 03.7 +43.3 119.1	35 22.3 +42.9 118.2	34 40.4 +42.7 117.4	33 58.3 +42.3 116.5	33 15.8 +42.0 115.7
4°	36 47.0 +42.9 118.3	36 05.2 +42.6 117.4	35 23.1 +42.2 116.5	34 40.6 +41.9 115.7	33 57.8 +41.7 114.8
5°	37 29.9 +42.5 117.4	36 47.8 +42.2 116.5	36 05.3 +41.9 115.6	35 22.5 +41.6 114.8	34 39.5 +41.2 113.9
6°	38 12.4 +42.1 116.5	37 30.0 +41.7 115.6	36 47.2 +41.4 114.7	36 04.1 +41.1 113.9	35 20.7 +40.9 113.0
7°	38 54.5 +41.7 115.6	38 11.7 +41.4 114.7	37 28.6 +41.1 113.8	36 45.2 +40.8 113.0	36 01.6 +40.4 112.1
8°	39 36.2 +41.2 114.7	38 53.1 +40.9 113.8	38 09.7 +40.6 112.9	37 26.0 +40.3 112.1	36 42.0 +40.1 111.2
9°	40 17.4 +40.7 113.7	39 34.0 +40.4 112.8	38 50.3 +40.1 112.0	38 06.3 +39.8 111.1	37 22.1 +39.5 110.3
10°	40 58.1 +40.3 112.7	40 14.4 +39.9 111.9	39 30.4 +39.6 111.0	38 46.1 +39.4 110.2	38 01.6 +39.1 109.3
11°	41 38.4 +39.7 111.8	40 54.3 +39.5 110.9	40 10.0 +39.2 110.0	39 25.5 +38.9 109.2	38 40.7 +38.7 108.4
12°	42 18.1 +39.2 110.7	41 33.8 +38.9 109.9	40 49.2 +38.6 109.0	40 04.4 +38.3 108.2	39 19.4 +38.1 107.4
13°	42 57.3 +38.6 109.7	42 12.7 +38.3 108.9	41 27.8 +38.1 108.0	40 42.7 +37.9 107.2	39 57.5 +37.6 106.4
14°	43 35.9 +38.0 108.7	42 51.0 +37.8 107.8	42 05.9 +37.5 107.0	41 20.6 +37.2 106.2	40 35.1 +37.0 105.4
15°	44 13.9 +37.4 107.6	43 28.8 +37.1 106.8	42 43.4 +36.9 105.9	41 57.8 +36.7 105.1	41 12.1 +36.5 104.3
16°	44 51.3 +36.8 106.5	44 05.9 +36.5 105.7	43 20.3 +36.3 104.9	42 34.5 +36.1 104.1	41 48.6 +35.8 103.3
17°	45 28.1 +36.1 105.4	44 42.4 +35.9 104.6	43 56.6 +35.6 103.7	43 10.6 +35.4 103.0	42 24.4 +35.3 102.2
18°	46 04.2 +35.4 104.2	45 18.3 +35.2 103.4	44 32.2 +35.0 102.6	43 46.0 +34.8 101.8	42 59.7 +34.6 101.1
19°	46 39.6 +34.6 103.1	45 53.5 +34.4 102.3	45 07.2 +34.2 101.5	44 20.8 +34.1 100.7	43 34.3 +33.9 100.0
20°	47 14.2 +33.9 101.9	46 27.9 +33.7 101.1	45 41.4 +33.6 100.3	44 54.9 +33.4 99.6	44 08.2 +33.2 98.8
21°	47 48.1 +33.1 100.6	47 01.6 +32.9 99.9	46 15.0 +32.8 99.1	45 28.3 +32.6 98.4	44 41.4 +32.5 97.7
22°	48 21.2 +32.3 99.4	47 34.5 +32.2 98.6	46 47.8 +31.9 97.9	46 00.9 +31.8 97.2	45 13.9 +31.8 96.5
23°	48 53.5 +31.4 98.1	48 06.7 +31.2 97.4	47 19.7 +31.2 96.7	46 32.7 +31.1 96.0	45 45.7 +31.0 95.3
24°	49 24.9 +30.5 96.8	48 37.9 +30.5 96.1	47 50.9 +30.3 95.4	47 03.8 +30.2 94.7	46 16.7 +30.1 94.0
25°	49 55.4 +29.6 95.5	49 08.4 +29.4 94.8	48 21.2 +29.4 94.1	47 34.0 +29.4 93.4	46 46.8 +29.3 92.8
26°	50 25.0 +28.6 94.1	49 37.8 +28.6 93.4	48 50.6 +28.5 92.8	48 03.4 +28.5 92.1	47 16.1 +28.5 91.5
27°	50 53.6 +27.6 92.7	50 06.4 +27.6 92.1	49 19.1 +27.6 91.4	48 31.9 +27.5 90.8	47 44.6 +27.5 90.2
28°	51 21.2 +26.6 91.3	50 34.0 +26.5 90.7	49 46.7 +26.6 90.1	48 59.4 +26.6 89.5	48 12.1 +26.7 88.9
29°	51 47.8 +25.5 89.9	51 00.5 +25.5 89.3	50 13.3 +25.5 88.7	49 26.0 +25.6 88.1	48 38.8 +25.6 87.5

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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°	30 26.0 +42.6 117.3	29 43.8 +42.4 116.5	29 01.3 +42.1 115.7	28 18.6 +41.8 114.9	27 35.6 +41.5 114.1
1°	31 08.6 +42.4 116.5	30 26.2 +42.1 115.7	29 43.4 +41.8 114.9	29 00.4 +41.5 114.1	28 17.1 +41.2 113.3
2°	31 51.0 +42.1 115.7	31 08.3 +41.7 114.9	30 25.2 +41.5 114.0	29 41.9 +41.2 113.2	28 58.3 +41.0 112.5
3°	32 33.1 +41.7 114.8	31 50.0 +41.4 114.0	31 06.7 +41.1 113.2	30 23.1 +40.9 112.4	29 39.3 +40.6 111.6
4°	33 14.8 +41.3 114.0	32 31.4 +41.1 113.2	31 47.8 +40.8 112.3	31 04.0 +40.5 111.6	30 19.9 +40.3 110.8
5°	33 56.1 +41.0 113.1	33 12.5 +40.7 112.3	32 28.6 +40.4 111.5	31 44.5 +40.2 110.7	31 00.2 +39.9 109.9
6°	34 37.1 +40.6 112.2	33 53.2 +40.3 111.4	33 09.0 +40.1 110.6	32 24.7 +39.8 109.8	31 40.1 +39.6 109.0
7°	35 17.7 +40.1 111.3	34 33.5 +39.9 110.5	33 49.1 +39.7 109.7	33 04.5 +39.4 108.9	32 19.7 +39.1 108.1
8°	35 57.8 +39.8 110.4	35 13.4 +39.5 109.6	34 28.8 +39.2 108.8	33 43.9 +39.0 108.0	32 58.8 +38.8 107.2
9°	36 37.6 +39.3 109.5	35 52.9 +39.1 108.7	35 08.0 +38.8 107.9	34 22.9 +38.6 107.1	33 37.6 +38.4 106.3
10°	37 16.9 +38.9 108.5	36 32.0 +38.6 107.7	35 46.8 +38.4 106.9	35 01.5 +38.2 106.2	34 16.0 +38.0 105.4
11°	37 55.8 +38.3 107.6	37 10.6 +38.1 106.8	36 25.2 +38.0 106.0	35 39.7 +37.7 105.2	34 54.0 +37.5 104.5
12°	38 34.1 +37.9 106.6	37 48.7 +37.7 105.8	37 03.2 +37.4 105.0	36 17.4 +37.3 104.3	35 31.5 +37.1 103.5
13°	39 12.0 +37.4 105.6	38 26.4 +37.1 104.8	37 40.6 +37.0 104.0	36 54.7 +36.7 103.3	36 08.6 +36.6 102.5
14°	39 49.4 +36.8 104.6	39 03.5 +36.7 103.8	38 17.6 +36.4 103.0	37 31.4 +36.3 102.3	36 45.2 +36.1 101.6
15°	40 26.2 +36.3 103.5	39 40.2 +36.0 102.8	38 54.0 +35.9 102.0	38 07.7 +35.7 101.3	37 21.3 +35.5 100.6
16°	41 02.5 +35.6 102.5	40 16.2 +35.5 101.7	39 29.9 +35.3 101.0	38 43.4 +35.2 100.3	37 56.8 +35.1 99.5
17°	41 38.1 +35.1 101.4	40 51.7 +34.9 100.7	40 05.2 +34.8 99.9	39 18.6 +34.6 99.2	38 31.9 +34.5 98.5
18°	42 13.2 +34.5 100.3	41 26.6 +34.3 99.6	40 40.0 +34.1 98.9	39 53.2 +34.0 98.2	39 06.4 +33.9 97.5
19°	42 47.7 +33.7 99.2	42 00.9 +33.7 98.5	41 14.1 +33.6 97.8	40 27.2 +33.5 97.1	39 40.3 +33.3 96.4
20°	43 21.4 +33.1 98.1	42 34.6 +33.0 97.4	41 47.7 +32.8 96.7	41 00.7 +32.8 96.0	40 13.6 +32.7 95.3
21°	43 54.5 +32.4 96.9	43 07.6 +32.3 96.2	42 20.5 +32.2 95.5	41 33.5 +32.1 94.9	40 46.3 +32.1 94.2
22°	44 26.9 +31.7 95.8	43 39.9 +31.5 95.1	42 52.7 +31.5 94.4	42 05.6 +31.4 93.7	41 18.4 +31.4 93.1
23°	44 58.6 +30.9 94.6	44 11.4 +30.9 93.9	43 24.2 +30.8 93.2	42 37.0 +30.8 92.6	41 49.8 +30.7 91.9
24°	45 29.5 +30.1 93.4	44 42.3 +30.0 92.7	43 55.0 +30.1 92.0	43 07.8 +30.0 91.4	42 20.5 +30.0 90.8
25°	45 59.6 +29.3 92.1	45 12.3 +29.3 91.5	44 25.1 +29.2 90.8	43 37.8 +29.2 90.2	42 50.5 +29.3 89.6
26°	46 28.9 +28.4 90.9	45 41.6 +28.4 90.2	44 54.3 +28.5 89.6	44 07.0 +28.5 89.0	43 19.8 +28.5 88.4
27°	46 57.3 +27.6 89.6	46 10.0 +27.6 89.0	45 22.8 +27.6 88.4	44 35.5 +27.7 87.8	43 48.3 +27.7 87.2
28°	47 24.9 +26.6 88.3	46 37.6 +26.7 87.7	45 50.4 +26.8 87.1	45 03.2 +26.8 86.5	44 16.0 +26.9 86.0
29°	47 51.5 +25.7 86.9	47 04.3 +25.8 86.4	46 17.2 +25.8 85.8	45 30.0 +26.0 85.3	44 42.9 +26.1 84.7

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°	26 52.3 +41.2 113.3	26 08.7 +41.0 112.6	25 24.9 +40.8 111.8	24 40.9 +40.5 111.0	23 56.7 +40.3 110.3
1°	27 33.5 +41.0 112.5	26 49.7 +40.8 111.7	26 05.7 +40.5 111.0	25 21.4 +40.3 110.2	24 37.0 +40.0 109.5
2°	28 14.5 +40.7 111.7	27 30.5 +40.4 110.9	26 46.2 +40.2 110.2	26 01.7 +40.0 109.4	25 17.0 +39.7 108.7
3°	28 55.2 +40.4 110.8	28 10.9 +40.1 110.1	27 26.4 +39.9 109.3	26 41.7 +39.6 108.6	25 56.7 +39.5 107.8
4°	29 35.6 +40.0 110.0	28 51.0 +39.8 109.2	28 06.3 +39.6 108.5	27 21.3 +39.4 107.7	26 36.2 +39.2 107.0
5°	30 15.6 +39.7 109.1	29 30.8 +39.5 108.4	28 45.9 +39.2 107.6	28 00.7 +39.0 106.9	27 15.4 +38.8 106.1
6°	30 55.3 +39.3 108.3	30 10.3 +39.1 107.5	29 25.1 +38.9 106.8	28 39.7 +38.8 106.0	27 54.2 +38.5 105.3
7°	31 34.6 +39.0 107.4	30 49.4 +38.8 106.6	30 04.0 +38.6 105.9	29 18.5 +38.3 105.1	28 32.7 +38.2 104.4
8°	32 13.6 +38.6 106.5	31 28.2 +38.4 105.7	30 42.6 +38.2 105.0	29 56.8 +38.0 104.3	29 10.9 +37.9 103.5
9°	32 52.2 +38.2 105.6	32 06.6 +37.9 104.8	31 20.8 +37.8 104.1	30 34.8 +37.7 103.4	29 48.8 +37.5 102.6
10°	33 30.4 +37.7 104.7	32 44.5 +37.6 103.9	31 58.6 +37.4 103.2	31 12.5 +37.2 102.5	30 26.3 +37.0 101.7
11°	34 08.1 +37.4 103.7	33 22.1 +37.2 103.0	32 36.0 +37.0 102.3	31 49.7 +36.9 101.5	31 03.3 +36.8 100.8
12°	34 45.5 +36.9 102.8	33 59.3 +36.7 102.0	33 13.0 +36.6 101.3	32 26.6 +36.4 100.6	31 40.1 +36.3 99.9
13°	35 22.4 +36.4 101.8	34 36.0 +36.3 101.1	33 49.6 +36.1 100.4	33 03.0 +36.0 99.7	32 16.4 +35.8 99.0
14°	35 58.8 +35.9 100.8	35 12.3 +35.8 100.1	34 25.7 +35.7 99.4	33 39.0 +35.6 98.7	32 52.2 +35.5 98.0
15°	36 34.7 +35.5 99.8	35 48.1 +35.3 99.1	35 01.4 +35.2 98.4	34 14.6 +35.0 97.7	33 27.7 +35.0 97.0
16°	37 10.2 +34.9 98.8	36 23.4 +34.8 98.1	35 36.6 +34.7 97.4	34 49.6 +34.6 96.7	34 02.7 +34.5 96.1
17°	37 45.1 +34.4 97.8	36 58.2 +34.3 97.1	36 11.3 +34.1 96.4	35 24.2 +34.1 95.7	34 37.2 +34.0 95.1
18°	38 19.5 +33.8 96.8	37 32.5 +33.7 96.1	36 45.4 +33.7 95.4	35 58.3 +33.6 94.7	35 11.2 +33.5 94.1
19°	38 53.3 +33.2 95.7	38 06.2 +33.2 95.0	37 19.1 +33.1 94.4	36 31.9 +33.1 93.7	35 44.7 +33.0 93.1
20°	39 26.5 +32.6 94.6	38 39.4 +32.5 94.0	37 52.2 +32.5 93.3	37 05.0 +32.5 92.7	36 17.7 +32.5 92.0
21°	39 59.1 +32.1 93.5	39 11.9 +32.0 92.9	38 24.7 +31.9 92.2	37 37.5 +31.9 91.6	36 50.2 +31.9 91.0
22°	40 31.2 +31.3 92.4	39 43.9 +31.3 91.8	38 56.6 +31.4 91.2	38 09.4 +31.3 90.5	37 22.1 +31.3 89.9
23°	41 02.5 +30.7 91.3	40 15.2 +30.7 90.7	39 28.0 +30.7 90.1	38 40.7 +30.7 89.4	37 53.4 +30.7 88.8
24°	41 33.2 +30.0 90.2	40 45.9 +30.1 89.5	39 58.7 +30.0 88.9	39 11.4 +30.1 88.3	38 24.1 +30.2 87.7
25°	42 03.2 +29.3 89.0	41 16.0 +29.3 88.4	40 28.7 +29.4 87.8	39 41.5 +29.4 87.2	38 54.3 +29.4 86.6
26°	42 32.5 +28.6 87.8	41 45.3 +28.6 87.2	40 58.1 +28.6 86.7	40 10.9 +28.7 86.1	39 23.7 +28.8 85.5
27°	43 01.1 +27.8 86.6	42 13.9 +27.9 86.1	41 26.7 +28.0 85.5	40 39.6 +28.1 84.9	39 52.5 +28.2 84.4
28°	43 28.9 +27.0 85.4	42 41.8 +27.1 84.8	41 54.7 +27.2 84.3	41 07.7 +27.3 83.8	40 20.7 +27.4 83.2
29°	43 55.9 +26.2 84.2	43 08.9 +26.3 83.6	42 21.9 +26.4 83.1	41 35.0 +26.6 82.6	40 48.1 +26.7 82.0

Declination SAME name as Latitude

Latitude 38°

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°	23 12.2 +40.1 109.6	22 27.6 +39.8 108.8	21 42.7 +39.7 108.1	20 57.7 +39.5 107.4	20 12.5 +39.3 106.7
1°	23 52.3 +39.8 108.8	23 07.4 +39.6 108.0	22 22.4 +39.4 107.3	21 37.2 +39.2 106.6	20 51.8 +39.0 105.9
2°	24 32.1 +39.5 107.9	23 47.0 +39.4 107.2	23 01.8 +39.1 106.5	22 16.4 +38.9 105.8	21 30.8 +38.8 105.1
3°	25 11.6 +39.3 107.1	24 26.4 +39.0 106.4	23 40.9 +38.9 105.7	22 55.3 +38.7 105.0	22 09.6 +38.5 104.3
4°	25 50.9 +39.0 106.3	25 05.4 +38.8 105.5	24 19.8 +38.6 104.8	23 34.0 +38.5 104.1	22 48.1 +38.3 103.4
5°	26 29.9 +38.6 105.4	25 44.2 +38.5 104.7	24 58.4 +38.3 104.0	24 12.5 +38.1 103.3	23 26.4 +38.0 102.6
6°	27 08.5 +38.4 104.6	26 22.7 +38.2 103.9	25 36.7 +38.0 103.1	24 50.6 +37.9 102.4	24 04.4 +37.7 101.8
7°	27 46.9 +38.0 103.7	27 00.9 +37.8 103.0	26 14.7 +37.7 102.3	25 28.5 +37.5 101.6	24 42.1 +37.4 100.9
8°	28 24.9 +37.7 102.8	27 38.7 +37.6 102.1	26 52.4 +37.4 101.4	26 06.0 +37.3 100.7	25 19.5 +37.2 100.0
9°	29 02.6 +37.3 101.9	28 16.3 +37.1 101.2	27 29.8 +37.1 100.5	26 43.3 +36.9 99.8	25 56.7 +36.8 99.2
10°	29 39.9 +37.0 101.0	28 53.4 +36.9 100.3	28 06.9 +36.7 99.6	27 20.2 +36.6 99.0	26 33.5 +36.5 98.3
11°	30 16.9 +36.5 100.1	29 30.3 +36.4 99.4	28 43.6 +36.3 98.7	27 56.8 +36.2 98.1	27 10.0 +36.1 97.4
12°	30 53.4 +36.2 99.2	30 06.7 +36.1 98.5	29 19.9 +36.0 97.8	28 33.0 +35.9 97.2	27 46.1 +35.8 96.5
13°	31 29.6 +35.8 98.3	30 42.8 +35.6 97.6	29 55.9 +35.5 96.9	29 08.9 +35.5 96.2	28 21.9 +35.4 95.6
14°	32 05.4 +35.3 97.3	31 18.4 +35.3 96.7	30 31.4 +35.2 96.0	29 44.4 +35.1 95.3	28 57.3 +35.0 94.7
15°	32 40.7 +34.9 96.4	31 53.7 +34.8 95.7	31 06.6 +34.8 95.0	30 19.5 +34.7 94.4	29 32.3 +34.7 93.7
16°	33 15.6 +34.5 95.4	32 28.5 +34.4 94.7	31 41.4 +34.3 94.1	30 54.2 +34.3 93.4	30 07.0 +34.2 92.8
17°	33 50.1 +33.9 94.4	33 02.9 +33.9 93.8	32 15.7 +33.9 93.1	31 28.5 +33.8 92.5	30 41.2 +33.8 91.8
18°	34 24.0 +33.5 93.4	33 36.8 +33.4 92.8	32 49.6 +33.4 92.1	32 02.3 +33.4 91.5	31 15.0 +33.4 90.9
19°	34 57.5 +33.0 92.4	34 10.2 +33.0 91.8	33 23.0 +32.9 91.1	32 35.7 +32.9 90.5	31 48.4 +33.0 89.9
20°	35 30.5 +32.4 91.4	34 43.2 +32.4 90.8	33 55.9 +32.4 90.1	33 08.6 +32.5 89.5	32 21.4 +32.4 88.9
21°	36 02.9 +31.9 90.4	35 15.6 +31.9 89.7	34 28.3 +32.0 89.1	33 41.1 +31.9 88.5	32 53.8 +32.0 87.9
22°	36 34.8 +31.3 89.3	35 47.5 +31.4 88.7	35 00.3 +31.4 88.1	34 13.0 +31.5 87.5	33 25.8 +31.5 86.9
23°	37 06.1 +30.8 88.2	36 18.9 +30.8 87.6	35 31.7 +30.8 87.1	34 44.5 +30.9 86.5	33 57.3 +31.0 85.9
24°	37 36.9 +30.2 87.2	36 49.7 +30.2 86.6	36 02.5 +30.3 86.0	35 15.4 +30.3 85.4	34 28.3 +30.4 84.9
25°	38 07.1 +29.5 86.1	37 19.9 +29.6 85.5	36 32.8 +29.7 84.9	35 45.7 +29.8 84.4	34 58.7 +29.9 83.8
26°	38 36.6 +28.9 85.0	37 49.5 +29.0 84.4	37 02.5 +29.1 83.8	36 15.5 +29.2 83.3	35 28.6 +29.3 82.7
27°	39 05.5 +28.3 83.8	38 18.5 +28.4 83.3	37 31.6 +28.5 82.7	36 44.7 +28.6 82.2	35 57.9 +28.8 81.7
28°	39 33.8 +27.5 82.7	38 46.9 +27.7 82.2	38 00.1 +27.8 81.6	37 13.3 +28.0 81.1	36 26.7 +28.1 80.6
29°	40 01.3 +26.9 81.5	39 14.6 +27.0 81.0	38 27.9 +27.2 80.5	37 41.3 +27.4 80.0	36 54.8 +27.5 79.5

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	19 27.2 +39.0 106.0	18 41.6 +38.9 105.3	17 56.0 +38.7 104.6	17 10.2 +38.5 104.0	16 24.2 +38.4 103.3
1°	20 06.2 +38.9 105.2	19 20.5 +38.7 104.5	18 34.7 +38.5 103.8	17 48.7 +38.4 103.2	17 02.6 +38.2 102.5
2°	20 45.1 +38.6 104.4	19 59.2 +38.5 103.7	19 13.2 +38.3 103.0	18 27.1 +38.1 102.4	17 40.8 +38.1 101.7
3°	21 23.7 +38.4 103.6	20 37.7 +38.2 102.9	19 51.5 +38.1 102.2	19 05.2 +38.0 101.5	18 18.9 +37.8 100.9
4°	22 02.1 +38.1 102.8	21 15.9 +38.0 102.1	20 29.6 +37.8 101.4	19 43.2 +37.7 100.7	18 56.7 +37.6 100.1
5°	22 40.2 +37.8 101.9	21 53.9 +37.7 101.2	21 07.4 +37.6 100.6	20 20.9 +37.5 99.9	19 34.3 +37.4 99.2
6°	23 18.0 +37.6 101.1	22 31.6 +37.5 100.4	21 45.0 +37.4 99.7	20 58.4 +37.2 99.1	20 11.7 +37.1 98.4
7°	23 55.6 +37.3 100.2	23 09.1 +37.1 99.5	22 22.4 +37.1 98.9	21 35.6 +37.0 98.2	20 48.8 +36.9 97.6
8°	24 32.9 +37.0 99.4	23 46.2 +36.9 98.7	22 59.5 +36.8 98.0	22 12.6 +36.7 97.4	21 25.7 +36.6 96.7
9°	25 09.9 +36.7 98.5	24 23.1 +36.6 97.8	23 36.3 +36.5 97.2	22 49.3 +36.5 96.5	22 02.3 +36.4 95.9
10°	25 46.6 +36.4 97.6	24 59.7 +36.3 97.0	24 12.8 +36.2 96.3	23 25.8 +36.1 95.6	22 38.7 +36.1 95.0
11°	26 23.0 +36.1 96.7	25 36.0 +36.0 96.1	24 49.0 +35.9 95.4	24 01.9 +35.9 94.8	23 14.8 +35.8 94.1
12°	26 59.1 +35.7 95.8	26 12.0 +35.7 95.2	25 24.9 +35.6 94.5	24 37.8 +35.5 93.9	23 50.6 +35.5 93.3
13°	27 34.8 +35.4 94.9	26 47.7 +35.3 94.3	26 00.5 +35.3 93.6	25 13.3 +35.2 93.0	24 26.1 +35.2 92.4
14°	28 10.2 +34.9 94.0	27 23.0 +34.9 93.4	26 35.8 +34.9 92.7	25 48.5 +34.9 92.1	25 01.3 +34.8 91.5
15°	28 45.1 +34.6 93.1	27 57.9 +34.6 92.5	27 10.7 +34.5 91.8	26 23.4 +34.5 91.2	25 36.1 +34.6 90.6
16°	29 19.7 +34.3 92.2	28 32.5 +34.2 91.5	27 45.2 +34.2 90.9	26 57.9 +34.2 90.3	26 10.7 +34.2 89.7
17°	29 54.0 +33.8 91.2	29 06.7 +33.8 90.6	28 19.4 +33.8 90.0	27 32.1 +33.8 89.4	26 44.9 +33.8 88.8
18°	30 27.8 +33.3 90.3	29 40.5 +33.4 89.6	28 53.2 +33.4 89.0	28 05.9 +33.5 88.4	27 18.7 +33.4 87.8
19°	31 01.1 +33.0 89.3	30 13.9 +32.9 88.7	29 26.6 +33.0 88.1	28 39.4 +33.0 87.5	27 52.1 +33.1 86.9
20°	31 34.1 +32.5 88.3	30 46.8 +32.6 87.7	29 59.6 +32.6 87.1	29 12.4 +32.6 86.5	28 25.2 +32.7 85.9
21°	32 06.6 +32.0 87.3	31 19.4 +32.0 86.7	30 32.2 +32.1 86.2	29 45.0 +32.2 85.6	28 57.9 +32.3 85.0
22°	32 38.6 +31.5 86.3	31 51.4 +31.6 85.7	31 04.3 +31.7 85.2	30 17.2 +31.8 84.6	29 30.2 +31.8 84.0
23°	33 10.1 +31.1 85.3	32 23.0 +31.2 84.7	31 36.0 +31.2 84.2	30 49.0 +31.3 83.6	30 02.0 +31.4 83.0
24°	33 41.2 +30.5 84.3	32 54.2 +30.6 83.7	32 07.2 +30.7 83.2	31 20.3 +30.8 82.6	30 33.4 +31.0 82.1
25°	34 11.7 +30.0 83.3	33 24.8 +30.1 82.7	32 37.9 +30.3 82.2	31 51.1 +30.4 81.6	31 04.4 +30.5 81.1
26°	34 41.7 +29.5 82.2	33 54.9 +29.6 81.7	33 08.2 +29.7 81.1	32 21.5 +29.8 80.6	31 34.9 +30.0 80.1
27°	35 11.2 +28.9 81.1	34 24.5 +29.0 80.6	33 37.9 +29.2 80.1	32 51.3 +29.4 79.6	32 04.9 +29.5 79.0
28°	35 40.1 +28.3 80.1	34 53.5 +28.5 79.5	34 07.1 +28.6 79.0	33 20.7 +28.8 78.5	32 34.4 +29.0 78.0
29°	36 08.4 +27.7 79.0	35 22.0 +27.9 78.5	34 35.7 +28.1 78.0	33 49.5 +28.3 77.5	33 03.4 +28.5 77.0

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Latitude 38°

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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°	15 38.1 +38.3 102.6	14 51.9 +38.2 102.0	14 05.6 +38.0 101.3	13 19.2 +37.9 100.7	12 32.7 +37.8 100.0
1°	16 16.4 +38.1 101.8	15 30.1 +37.9 101.2	14 43.6 +37.9 100.5	13 57.1 +37.7 99.9	13 10.5 +37.6 99.2
2°	16 54.5 +37.9 101.0	16 08.0 +37.8 100.4	15 21.5 +37.6 99.7	14 34.8 +37.6 99.1	13 48.1 +37.5 98.4
3°	17 32.4 +37.7 100.2	16 45.8 +37.6 99.6	15 59.1 +37.5 98.9	15 12.4 +37.4 98.3	14 25.6 +37.3 97.6
4°	18 10.1 +37.5 99.4	17 23.4 +37.4 98.7	16 36.6 +37.3 98.1	15 49.8 +37.2 97.4	15 02.9 +37.1 96.8
5°	18 47.6 +37.2 98.6	18 00.8 +37.2 97.9	17 13.9 +37.1 97.3	16 27.0 +37.0 96.6	15 40.0 +36.9 96.0
6°	19 24.8 +37.1 97.7	18 38.0 +36.9 97.1	17 51.0 +36.9 96.4	17 04.0 +36.8 95.8	16 16.9 +36.8 95.2
7°	20 01.9 +36.8 96.9	19 14.9 +36.8 96.3	18 27.9 +36.7 95.6	17 40.8 +36.6 95.0	16 53.7 +36.5 94.3
8°	20 38.7 +36.6 96.1	19 51.7 +36.5 95.4	19 04.6 +36.4 94.8	18 17.4 +36.4 94.1	17 30.2 +36.4 93.5
9°	21 15.3 +36.3 95.2	20 28.2 +36.2 94.6	19 41.0 +36.2 93.9	18 53.8 +36.2 93.3	18 06.6 +36.1 92.7
10°	21 51.6 +36.0 94.4	21 04.4 +36.0 93.7	20 17.2 +36.0 93.1	19 30.0 +35.9 92.5	18 42.7 +35.9 91.8
11°	22 27.6 +35.8 93.5	21 40.4 +35.7 92.9	20 53.2 +35.7 92.2	20 05.9 +35.7 91.6	19 18.6 +35.7 91.0
12°	23 03.4 +35.4 92.6	22 16.1 +35.5 92.0	21 28.9 +35.4 91.4	20 41.6 +35.4 90.7	19 54.3 +35.4 90.1
13°	23 38.8 +35.2 91.7	22 51.6 +35.1 91.1	22 04.3 +35.1 90.5	21 17.0 +35.2 89.9	20 29.7 +35.2 89.3
14°	24 14.0 +34.9 90.9	23 26.7 +34.9 90.2	22 39.4 +34.9 89.6	21 52.2 +34.8 89.0	21 04.9 +34.9 88.4
15°	24 48.9 +34.5 90.0	24 01.6 +34.5 89.4	23 14.3 +34.6 88.7	22 27.0 +34.6 88.1	21 39.8 +34.6 87.5
16°	25 23.4 +34.2 89.1	24 36.1 +34.2 88.5	23 48.9 +34.2 87.8	23 01.6 +34.3 87.2	22 14.4 +34.3 86.7
17°	25 57.6 +33.8 88.2	25 10.3 +33.9 87.5	24 23.1 +34.0 87.0	23 35.9 +34.0 86.4	22 48.7 +34.1 85.8
18°	26 31.4 +33.5 87.2	25 44.2 +33.6 86.6	24 57.1 +33.6 86.0	24 09.9 +33.7 85.5	23 22.8 +33.7 84.9
19°	27 04.9 +33.2 86.3	26 17.8 +33.2 85.7	25 30.7 +33.2 85.1	24 43.6 +33.3 84.5	23 56.5 +33.4 84.0
20°	27 38.1 +32.7 85.4	26 51.0 +32.8 84.8	26 03.9 +32.9 84.2	25 16.9 +33.0 83.6	24 29.9 +33.1 83.1
21°	28 10.8 +32.4 84.4	27 23.8 +32.4 83.8	26 36.8 +32.5 83.3	25 49.9 +32.6 82.7	25 03.0 +32.7 82.1
22°	28 43.2 +31.9 83.5	27 56.2 +32.1 82.9	27 09.3 +32.2 82.3	26 22.5 +32.3 81.8	25 35.7 +32.4 81.2
23°	29 15.1 +31.5 82.5	28 28.3 +31.6 81.9	27 41.5 +31.7 81.4	26 54.8 +31.9 80.8	26 08.1 +32.1 80.3
24°	29 46.6 +31.1 81.5	28 59.9 +31.2 81.0	28 13.2 +31.4 80.4	27 26.7 +31.4 79.9	26 40.2 +31.6 79.3
25°	30 17.7 +30.6 80.5	29 31.1 +30.8 80.0	28 44.6 +30.9 79.4	27 58.1 +31.1 78.9	27 11.8 +31.2 78.4
26°	30 48.3 +30.2 79.5	30 01.9 +30.3 79.0	29 15.5 +30.5 78.5	28 29.2 +30.7 77.9	27 43.0 +30.9 77.4
27°	31 18.5 +29.7 78.5	30 32.2 +29.9 78.0	29 46.0 +30.1 77.5	28 59.9 +30.2 77.0	28 13.9 +30.4 76.4
28°	31 48.2 +29.2 77.5	31 02.1 +29.4 77.0	30 16.1 +29.6 76.5	29 30.1 +29.8 76.0	28 44.3 +30.0 75.5
29°	32 17.4 +28.7 76.5	31 31.5 +28.9 76.0	30 45.7 +29.1 75.5	29 59.9 +29.4 75.0	29 14.3 +29.6 74.5

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°	11 46.1 +37.7 99.4	10 59.4 +37.6 98.7	10 12.6 +37.5 98.1	9 25.8 +37.4 97.5	8 38.9 +37.3 96.8
1°	12 23.8 +37.5 98.6	11 37.0 +37.4 97.9	10 50.1 +37.4 97.3	10 03.2 +37.2 96.7	9 16.2 +37.2 96.0
2°	13 01.3 +37.4 97.8	12 14.4 +37.3 97.1	11 27.5 +37.2 96.5	10 40.4 +37.2 95.9	9 53.4 +37.1 95.2
3°	13 38.7 +37.2 97.0	12 51.7 +37.1 96.3	12 04.7 +37.1 95.7	11 17.6 +37.0 95.1	10 30.5 +37.0 94.4
4°	14 15.9 +37.0 96.2	13 28.8 +37.0 95.5	12 41.8 +36.9 94.9	11 54.6 +36.9 94.3	11 07.5 +36.8 93.6
5°	14 52.9 +36.9 95.3	14 05.8 +36.9 94.7	13 18.7 +36.8 94.1	12 31.5 +36.8 93.5	11 44.3 +36.7 92.8
6°	15 29.8 +36.7 94.5	14 42.7 +36.6 93.9	13 55.5 +36.6 93.3	13 08.3 +36.6 92.6	12 21.0 +36.6 92.0
7°	16 06.5 +36.5 93.7	15 19.3 +36.5 93.1	14 32.1 +36.5 92.5	13 44.9 +36.4 91.8	12 57.6 +36.4 91.2
8°	16 43.0 +36.4 92.9	15 55.8 +36.3 92.3	15 08.6 +36.2 91.6	14 21.3 +36.2 91.0	13 34.0 +36.3 90.4
9°	17 19.4 +36.1 92.0	16 32.1 +36.1 91.4	15 44.8 +36.1 90.8	14 57.5 +36.1 90.2	14 10.3 +36.1 89.6
10°	17 55.5 +35.9 91.2	17 08.2 +35.9 90.6	16 20.9 +35.9 90.0	15 33.6 +35.9 89.4	14 46.4 +35.9 88.7
11°	18 31.4 +35.6 90.4	17 44.1 +35.6 89.8	16 56.8 +35.7 89.1	16 09.5 +35.7 88.5	15 22.3 +35.7 87.9
12°	19 07.0 +35.5 89.5	18 19.7 +35.5 88.9	17 32.5 +35.4 88.3	16 45.2 +35.5 87.7	15 58.0 +35.5 87.1
13°	19 42.5 +35.1 88.7	18 55.2 +35.2 88.1	18 07.9 +35.3 87.4	17 20.7 +35.3 86.8	16 33.5 +35.4 86.2
14°	20 17.6 +35.0 87.8	19 30.4 +35.0 87.2	18 43.2 +35.0 86.6	17 56.0 +35.1 86.0	17 08.9 +35.1 85.4
15°	20 52.6 +34.6 86.9	20 05.4 +34.7 86.3	19 18.2 +34.8 85.7	18 31.1 +34.8 85.1	17 44.0 +34.9 84.5
16°	21 27.2 +34.4 86.1	20 40.1 +34.4 85.5	19 53.0 +34.5 84.9	19 05.9 +34.6 84.3	18 18.9 +34.6 83.7
17°	22 01.6 +34.1 85.2	21 14.5 +34.2 84.6	20 27.5 +34.2 84.0	19 40.5 +34.3 83.4	18 53.5 +34.5 82.8
18°	22 35.7 +33.8 84.3	21 48.7 +33.9 83.7	21 01.7 +34.0 83.1	20 14.8 +34.1 82.5	19 28.0 +34.1 82.0
19°	23 09.5 +33.5 83.4	22 22.6 +33.6 82.8	21 35.7 +33.7 82.2	20 48.9 +33.8 81.7	20 02.1 +34.0 81.1
20°	23 43.0 +33.2 82.5	22 56.2 +33.3 81.9	22 09.4 +33.4 81.3	21 22.7 +33.5 80.8	20 36.1 +33.6 80.2
21°	24 16.2 +32.9 81.6	23 29.5 +32.9 81.0	22 42.8 +33.1 80.4	21 56.2 +33.3 79.9	21 09.7 +33.4 79.3
22°	24 49.1 +32.5 80.7	24 02.4 +32.7 80.1	23 15.9 +32.8 79.5	22 29.5 +32.9 79.0	21 43.1 +33.1 78.4
23°	25 21.6 +32.1 79.7	24 35.1 +32.3 79.2	23 48.7 +32.5 78.6	23 02.4 +32.6 78.1	22 16.2 +32.8 77.5
24°	25 53.7 +31.8 78.8	25 07.4 +32.0 78.2	24 21.2 +32.1 77.7	23 35.0 +32.3 77.2	22 49.0 +32.4 76.6
25°	26 25.5 +31.4 77.8	25 39.4 +31.5 77.3	24 53.3 +31.8 76.8	24 07.3 +32.0 76.2	23 21.4 +32.2 75.7
26°	26 56.9 +31.1 76.9	26 10.9 +31.3 76.4	25 25.1 +31.4 75.8	24 39.3 +31.6 75.3	23 53.6 +31.8 74.8
27°	27 28.0 +30.6 75.9	26 42.2 +30.8 75.4	25 56.5 +31.0 74.9	25 10.9 +31.2 74.4	24 25.4 +31.5 73.9
28°	27 58.6 +30.2 75.0	27 13.0 +30.4 74.4	26 27.5 +30.7 73.9	25 42.1 +30.9 73.4	24 56.9 +31.1 72.9
29°	28 28.8 +29.8 74.0	27 43.4 +30.1 73.5	26 58.2 +30.2 73.0	26 13.0 +30.5 72.5	25 28.0 +30.8 72.0

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Latitude 38°

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°	7 51.9 +37.2 96.2	7 04.9 +37.1 95.6	6 17.8 +37.1 94.9	5 30.7 +37.0 94.3	4 43.5 +37.0 93.7
1°	8 29.1 +37.2 95.4	7 42.0 +37.1 94.8	6 54.9 +37.1 94.2	6 07.7 +37.0 93.5	5 20.5 +37.0 92.9
2°	9 06.3 +37.0 94.6	8 19.1 +37.0 94.0	7 32.0 +36.9 93.4	6 44.7 +37.0 92.7	5 57.5 +36.9 92.1
3°	9 43.3 +37.0 93.8	8 56.1 +36.9 93.2	8 08.9 +36.9 92.6	7 21.7 +36.8 91.9	6 34.4 +36.8 91.3
4°	10 20.3 +36.8 93.0	9 33.0 +36.8 92.4	8 45.8 +36.8 91.8	7 58.5 +36.8 91.2	7 11.2 +36.8 90.5
5°	10 57.1 +36.7 92.2	10 09.8 +36.7 91.6	9 22.6 +36.6 91.0	8 35.3 +36.6 90.4	7 48.0 +36.7 89.7
6°	11 33.8 +36.5 91.4	10 46.5 +36.5 90.8	9 59.2 +36.6 90.2	9 11.9 +36.6 89.6	8 24.7 +36.5 88.9
7°	12 10.3 +36.4 90.6	11 23.0 +36.5 90.0	10 35.8 +36.4 89.4	9 48.5 +36.4 88.7	9 01.2 +36.5 88.1
8°	12 46.7 +36.3 89.8	11 59.5 +36.2 89.2	11 12.2 +36.3 88.6	10 24.9 +36.3 87.9	9 37.7 +36.3 87.3
9°	13 23.0 +36.1 89.0	12 35.7 +36.1 88.3	11 48.5 +36.1 87.7	11 01.2 +36.2 87.1	10 14.0 +36.3 86.5
10°	13 59.1 +35.9 88.1	13 11.8 +36.0 87.5	12 24.6 +36.0 86.9	11 37.4 +36.1 86.3	10 50.3 +36.1 85.7
11°	14 35.0 +35.8 87.3	13 47.8 +35.8 86.7	13 00.6 +35.9 86.1	12 13.5 +35.9 85.5	11 26.4 +35.9 84.9
12°	15 10.8 +35.6 86.5	14 23.6 +35.6 85.9	13 36.5 +35.7 85.3	12 49.4 +35.7 84.7	12 02.3 +35.8 84.1
13°	15 46.4 +35.4 85.6	14 59.2 +35.5 85.0	14 12.2 +35.5 84.4	13 25.1 +35.6 83.9	12 38.1 +35.7 83.3
14°	16 21.8 +35.1 84.8	15 34.7 +35.2 84.2	14 47.7 +35.3 83.6	14 00.7 +35.4 83.0	13 13.8 +35.5 82.4
15°	16 56.9 +35.0 84.0	16 09.9 +35.1 83.4	15 23.0 +35.2 82.8	14 36.1 +35.3 82.2	13 49.3 +35.4 81.6
16°	17 31.9 +34.8 83.1	16 45.0 +34.8 82.5	15 58.2 +34.9 81.9	15 11.4 +35.0 81.4	14 24.7 +35.1 80.8
17°	18 06.7 +34.5 82.3	17 19.8 +34.7 81.7	16 33.1 +34.7 81.1	15 46.4 +34.9 80.5	14 59.8 +35.0 79.9
18°	18 41.2 +34.3 81.4	17 54.5 +34.4 80.8	17 07.8 +34.6 80.2	16 21.3 +34.6 79.7	15 34.8 +34.8 79.1
19°	19 15.5 +34.0 80.5	18 28.9 +34.1 80.0	17 42.4 +34.3 79.4	16 55.9 +34.5 78.8	16 09.6 +34.6 78.2
20°	19 49.5 +33.8 79.6	19 03.0 +34.0 79.1	18 16.7 +34.0 78.5	17 30.4 +34.2 78.0	16 44.2 +34.4 77.4
21°	20 23.3 +33.5 78.8	19 37.0 +33.6 78.2	18 50.7 +33.9 77.7	18 04.6 +34.0 77.1	17 18.6 +34.1 76.5
22°	20 56.8 +33.3 77.9	20 10.6 +33.4 77.3	19 24.6 +33.5 76.8	18 38.6 +33.7 76.2	17 52.7 +33.9 75.7
23°	21 30.1 +32.9 77.0	20 44.0 +33.2 76.4	19 58.1 +33.3 75.9	19 12.3 +33.5 75.4	18 26.6 +33.7 74.8
24°	22 03.0 +32.7 76.1	21 17.2 +32.8 75.5	20 31.4 +33.1 75.0	19 45.8 +33.3 74.5	19 00.3 +33.5 73.9
25°	22 35.7 +32.3 75.2	21 50.0 +32.6 74.6	21 04.5 +32.7 74.1	20 19.1 +32.9 73.6	19 33.8 +33.2 73.1
26°	23 08.0 +32.0 74.3	22 22.6 +32.2 73.7	21 37.2 +32.5 73.2	20 52.0 +32.7 72.7	20 07.0 +32.9 72.2
27°	23 40.0 +31.7 73.3	22 54.8 +31.9 72.8	22 09.7 +32.2 72.3	21 24.7 +32.4 71.8	20 39.9 +32.6 71.3
28°	24 11.7 +31.4 72.4	23 26.7 +31.6 71.9	22 41.9 +31.8 71.4	21 57.1 +32.1 70.9	21 12.5 +32.4 70.4
29°	24 43.1 +31.0 71.5	23 58.3 +31.3 71.0	23 13.7 +31.5 70.5	22 29.2 +31.8 70.0	21 44.9 +32.0 69.5

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	3 56.3 +37.0 93.1	3 09.1 +36.9 92.5	2 21.8 +37.0 91.8	1 34.6 +36.9 91.2	0 47.3 +36.9 90.6
1°	4 33.3 +36.9 92.3	3 46.0 +37.0 91.7	2 58.8 +36.9 91.1	2 11.5 +36.9 90.4	1 24.2 +36.9 89.8
2°	5 10.2 +36.9 91.5	4 23.0 +36.9 90.9	3 35.7 +36.9 90.3	2 48.4 +36.9 89.7	2 01.1 +36.9 89.0
3°	5 47.1 +36.9 90.7	4 59.9 +36.8 90.1	4 12.6 +36.8 89.5	3 25.3 +36.9 88.9	2 38.0 +36.9 88.2
4°	6 24.0 +36.7 89.9	5 36.7 +36.7 89.3	4 49.4 +36.8 88.7	4 02.2 +36.8 88.1	3 14.9 +36.8 87.5
5°	7 00.7 +36.7 89.1	6 13.4 +36.7 88.5	5 26.2 +36.7 87.9	4 39.0 +36.7 87.3	3 51.7 +36.8 86.7
6°	7 37.4 +36.6 88.3	6 50.1 +36.7 87.7	6 02.9 +36.7 87.1	5 15.7 +36.7 86.5	4 28.5 +36.8 85.9
7°	8 14.0 +36.5 87.5	7 26.8 +36.5 86.9	6 39.6 +36.5 86.3	5 52.4 +36.6 85.7	5 05.3 +36.6 85.1
8°	8 50.5 +36.4 86.7	8 03.3 +36.4 86.1	7 16.1 +36.5 85.5	6 29.0 +36.6 84.9	5 41.9 +36.7 84.3
9°	9 26.9 +36.2 85.9	8 39.7 +36.3 85.3	7 52.6 +36.4 84.7	7 05.6 +36.4 84.1	6 18.6 +36.5 83.5
10°	10 03.1 +36.2 85.1	9 16.0 +36.3 84.5	8 29.0 +36.3 83.9	7 42.0 +36.4 83.3	6 55.1 +36.5 82.7
11°	10 39.3 +36.0 84.3	9 52.3 +36.1 83.7	9 05.3 +36.2 83.1	8 18.4 +36.3 82.5	7 31.6 +36.3 81.9
12°	11 15.3 +35.9 83.5	10 28.4 +36.0 82.9	9 41.5 +36.1 82.3	8 54.7 +36.1 81.7	8 07.9 +36.3 81.1
13°	11 51.2 +35.8 82.7	11 04.4 +35.8 82.1	10 17.6 +35.9 81.5	9 30.8 +36.1 80.9	8 44.2 +36.2 80.3
14°	12 27.0 +35.6 81.8	11 40.2 +35.7 81.3	10 53.5 +35.8 80.7	10 06.9 +35.9 80.1	9 20.4 +36.0 79.5
15°	13 02.6 +35.4 81.0	12 15.9 +35.6 80.4	11 29.3 +35.7 79.8	10 42.8 +35.9 79.3	9 56.4 +36.0 78.7
16°	13 38.0 +35.3 80.2	12 51.5 +35.4 79.6	12 05.0 +35.6 79.0	11 18.7 +35.6 78.4	10 32.4 +35.8 77.9
17°	14 13.3 +35.1 79.4	13 26.9 +35.2 78.8	12 40.6 +35.4 78.2	11 54.3 +35.6 77.6	11 08.2 +35.7 77.0
18°	14 48.4 +35.0 78.5	14 02.1 +35.1 77.9	13 16.0 +35.2 77.4	12 29.9 +35.4 76.8	11 43.9 +35.6 76.2
19°	15 23.4 +34.7 77.7	14 37.2 +34.9 77.1	13 51.2 +35.0 76.5	13 05.3 +35.2 76.0	12 19.5 +35.4 75.4
20°	15 58.1 +34.5 76.8	15 12.1 +34.7 76.3	14 26.2 +34.9 75.7	13 40.5 +35.0 75.1	12 54.9 +35.2 74.6
21°	16 32.6 +34.4 76.0	15 46.8 +34.5 75.4	15 01.1 +34.7 74.9	14 15.5 +34.9 74.3	13 30.1 +35.1 73.7
22°	17 07.0 +34.1 75.1	16 21.3 +34.3 74.6	15 35.8 +34.5 74.0	14 50.4 +34.7 73.5	14 05.2 +34.9 72.9
23°	17 41.1 +33.9 74.3	16 55.6 +34.1 73.7	16 10.3 +34.3 73.2	15 25.1 +34.5 72.6	14 40.1 +34.7 72.1
24°	18 15.0 +33.6 73.4	17 29.7 +33.9 72.8	16 44.6 +34.1 72.3	15 59.6 +34.3 71.8	15 14.8 +34.5 71.2
25°	18 48.6 +33.4 72.5	18 03.6 +33.6 72.0	17 18.7 +33.9 71.4	16 33.9 +34.1 70.9	15 49.3 +34.4 70.4
26°	19 22.0 +33.2 71.6	18 37.2 +33.4 71.1	17 52.6 +33.6 70.6	17 08.0 +33.9 70.0	16 23.7 +34.1 69.5
27°	19 55.2 +32.9 70.8	19 10.6 +33.1 70.2	18 26.2 +33.4 69.7	17 41.9 +33.7 69.2	16 57.8 +33.9 68.7
28°	20 28.1 +32.6 69.9	19 43.7 +32.9 69.3	18 59.6 +33.1 68.8	18 15.6 +33.4 68.3	17 31.7 +33.7 67.8
29°	21 00.7 +32.3 69.0	20 16.6 +32.6 68.5	19 32.7 +32.9 67.9	18 49.0 +33.1 67.4	18 05.4 +33.4 66.9

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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 +36.9 90.0	-0 47.3 +37.0	-1 34.6 +37.0	-2 21.8 +37.0	-3 09.1 +37.0
1°	0 36.9 +37.0 89.2	-0 10.3 +36.9	-0 57.6 +37.0	-1 44.8 +37.0	-2 32.1 +37.1
2°	1 13.9 +36.9 88.4	0 26.6 +37.0 87.8	-0 20.6 +37.0	-1 07.8 +37.0	-1 55.0 +37.1
3°	1 50.8 +36.9 87.6	1 03.6 +36.9 87.0	0 16.4 +36.9 86.4	-0 30.8 +37.0	-1 17.9 +37.0
4°	2 27.7 +36.9 86.8	1 40.5 +36.9 86.2	0 53.3 +37.0 85.6	0 06.2 +37.0 85.0	-0 40.9 +37.1
5°	3 04.6 +36.8 86.1	2 17.4 +36.9 85.4	1 30.3 +36.9 84.8	0 43.2 +37.0 84.2	-0 03.8 +37.1
6°	3 41.4 +36.8 85.3	2 54.3 +36.8 84.7	2 07.2 +37.0 84.0	1 20.2 +37.0 83.4	0 33.3 +37.1 82.8
7°	4 18.2 +36.7 84.5	3 31.1 +36.9 83.9	2 44.2 +36.9 83.3	1 57.2 +37.0 82.6	1 10.4 +37.0 82.0
8°	4 54.9 +36.7 83.7	4 08.0 +36.7 83.1	3 21.1 +36.8 82.5	2 34.2 +37.0 81.9	1 47.4 +37.1 81.2
9°	5 31.6 +36.6 82.9	4 44.7 +36.7 82.3	3 57.9 +36.8 81.7	3 11.2 +36.9 81.1	2 24.5 +37.0 80.5
10°	6 08.2 +36.6 82.1	5 21.4 +36.7 81.5	4 34.7 +36.8 80.9	3 48.1 +36.8 80.3	3 01.5 +37.0 79.7
11°	6 44.8 +36.5 81.3	5 58.1 +36.6 80.7	5 11.5 +36.7 80.1	4 24.9 +36.9 79.5	3 38.5 +36.9 78.9
12°	7 21.3 +36.3 80.5	6 34.7 +36.5 79.9	5 48.2 +36.6 79.3	5 01.8 +36.7 78.7	4 15.4 +36.9 78.1
13°	7 57.6 +36.3 79.7	7 11.2 +36.4 79.1	6 24.8 +36.5 78.5	5 38.5 +36.7 77.9	4 52.3 +36.9 77.3
14°	8 33.9 +36.2 78.9	7 47.6 +36.3 78.3	7 01.3 +36.5 77.7	6 15.2 +36.6 77.1	5 29.2 +36.7 76.5
15°	9 10.1 +36.1 78.1	8 23.9 +36.3 77.5	7 37.8 +36.4 76.9	6 51.8 +36.6 76.3	6 05.9 +36.8 75.7
16°	9 46.2 +36.0 77.3	9 00.2 +36.1 76.7	8 14.2 +36.3 76.1	7 28.4 +36.4 75.5	6 42.7 +36.6 74.9
17°	10 22.2 +35.8 76.5	9 36.3 +36.0 75.9	8 50.5 +36.2 75.3	8 04.8 +36.4 74.7	7 19.3 +36.5 74.1
18°	10 58.0 +35.8 75.6	10 12.3 +35.9 75.1	9 26.7 +36.1 74.5	8 41.2 +36.2 73.9	7 55.8 +36.5 73.3
19°	11 33.8 +35.5 74.8	10 48.2 +35.8 74.2	10 02.8 +35.9 73.7	9 17.4 +36.2 73.1	8 32.3 +36.3 72.5
20°	12 09.3 +35.5 74.0	11 24.0 +35.6 73.4	10 38.7 +35.8 72.9	9 53.6 +36.0 72.3	9 08.6 +36.3 71.7
21°	12 44.8 +35.3 73.2	11 59.6 +35.5 72.6	11 14.5 +35.7 72.0	10 29.6 +35.9 71.5	9 44.9 +36.1 70.9
22°	13 20.1 +35.1 72.3	12 35.1 +35.3 71.8	11 50.2 +35.6 71.2	11 05.5 +35.8 70.7	10 21.0 +36.0 70.1
23°	13 55.2 +34.9 71.5	13 10.4 +35.2 71.0	12 25.8 +35.4 70.4	11 41.3 +35.7 69.8	10 57.0 +35.9 69.3
24°	14 30.1 +34.8 70.7	13 45.6 +35.0 70.1	13 01.2 +35.2 69.6	12 17.0 +35.5 69.0	11 32.9 +35.7 68.5
25°	15 04.9 +34.6 69.8	14 20.6 +34.8 69.3	13 36.4 +35.1 68.7	12 52.5 +35.3 68.2	12 08.6 +35.6 67.6
26°	15 39.5 +34.3 69.0	14 55.4 +34.6 68.4	14 11.5 +34.9 67.9	13 27.8 +35.2 67.4	12 44.2 +35.5 66.8
27°	16 13.8 +34.2 68.1	15 30.0 +34.5 67.6	14 46.4 +34.7 67.1	14 03.0 +35.0 66.5	13 19.7 +35.3 66.0
28°	16 48.0 +34.0 67.3	16 04.5 +34.2 66.7	15 21.1 +34.6 66.2	14 38.0 +34.8 65.7	13 55.0 +35.1 65.2
29°	17 22.0 +33.7 66.4	16 38.7 +34.1 65.9	15 55.7 +34.3 65.4	15 12.8 +34.6 64.8	14 30.1 +34.9 64.3

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	-3 56.3 +37.1	-4 43.5 +37.1	-5 30.7 +37.2	-6 17.8 +37.2	-7 04.9 +37.3
1°	-3 19.2 +37.0	-4 06.4 +37.1	-4 53.5 +37.2	-5 40.6 +37.3	-6 27.6 +37.3
2°	-2 42.2 +37.2	-3 29.3 +37.2	-4 16.3 +37.2	-5 03.3 +37.3	-5 50.3 +37.4
3°	-2 05.0 +37.1	-2 52.1 +37.2	-3 39.1 +37.3	-4 26.0 +37.4	-5 12.9 +37.5
4°	-1 27.9 +37.2	-2 14.9 +37.3	-3 01.8 +37.3	-3 48.6 +37.4	-4 35.4 +37.5
5°	-0 50.7 +37.1	-1 37.6 +37.2	-2 24.5 +37.4	-3 11.2 +37.4	-3 57.9 +37.6
6°	-0 13.6 +37.2	-1 00.4 +37.3	-1 47.1 +37.3	-2 33.8 +37.5	-3 20.3 +37.6
7°	0 23.6 +37.2 81.4	-0 23.1 +37.2	-1 09.8 +37.4	-1 56.3 +37.5	-2 42.7 +37.6
8°	1 00.8 +37.1 80.6	0 14.1 +37.3 80.0	-0 32.4 +37.4	-1 18.8 +37.5	-2 05.1 +37.6
9°	1 37.9 +37.1 79.8	0 51.4 +37.3 79.2	0 05.0 +37.4 78.6	-0 41.3 +37.5	-1 27.5 +37.7
10°	2 15.0 +37.2 79.1	1 28.7 +37.2 78.4	0 42.4 +37.4 77.8	-0 03.8 +37.6	-0 49.8 +37.7
11°	2 52.2 +37.0 78.3	2 05.9 +37.2 77.7	1 19.8 +37.3 77.1	0 33.8 +37.5 76.4	-0 12.1 +37.6
12°	3 29.2 +37.1 77.5	2 43.1 +37.2 76.9	1 57.1 +37.4 76.3	1 11.3 +37.5 75.7	0 25.5 +37.7 75.0
13°	4 06.3 +37.0 76.7	3 20.3 +37.2 76.1	2 34.5 +37.3 75.5	1 48.8 +37.5 74.9	1 03.2 +37.6 74.3
14°	4 43.3 +36.9 75.9	3 57.5 +37.1 75.3	3 11.8 +37.3 74.7	2 26.3 +37.4 74.1	1 40.8 +37.7 73.5
15°	5 20.2 +36.9 75.1	4 34.6 +37.0 74.5	3 49.1 +37.2 73.9	3 03.7 +37.4 73.3	2 18.5 +37.6 72.7
16°	5 57.1 +36.8 74.3	5 11.6 +37.0 73.7	4 26.3 +37.2 73.1	3 41.1 +37.4 72.5	2 56.1 +37.6 71.9
17°	6 33.9 +36.7 73.5	5 48.6 +36.9 72.9	5 03.5 +37.1 72.3	4 18.5 +37.3 71.7	3 33.7 +37.5 71.1
18°	7 10.6 +36.7 72.7	6 25.5 +36.9 72.1	5 40.6 +37.1 71.6	4 55.8 +37.3 71.0	4 11.2 +37.5 70.4
19°	7 47.3 +36.5 71.9	7 02.4 +36.8 71.3	6 17.7 +37.0 70.8	5 33.1 +37.2 70.2	4 48.7 +37.4 69.6
20°	8 23.8 +36.5 71.1	7 39.2 +36.6 70.6	6 54.7 +36.9 70.0	6 10.3 +37.2 69.4	5 26.1 +37.4 68.8
21°	9 00.3 +36.3 70.3	8 15.8 +36.6 69.8	7 31.6 +36.8 69.2	6 47.5 +37.0 68.6	6 03.5 +37.3 68.0
22°	9 36.6 +36.3 69.5	8 52.4 +36.5 69.0	8 08.4 +36.7 68.4	7 24.5 +37.0 67.8	6 40.8 +37.3 67.2
23°	10 12.9 +36.1 68.7	9 28.9 +36.4 68.1	8 45.1 +36.7 67.6	8 01.5 +36.9 67.0	7 18.1 +37.1 66.4
24°	10 49.0 +36.0 67.9	10 05.3 +36.2 67.3	9 21.8 +36.5 66.8	8 38.4 +36.8 66.2	7 55.2 +37.1 65.6
25°	11 25.0 +35.9 67.1	10 41.5 +36.2 66.5	9 58.3 +36.4 66.0	9 15.2 +36.7 65.4	8 32.3 +37.0 64.8
26°	12 00.9 +35.7 66.3	11 17.7 +36.0 65.7	10 34.7 +36.3 65.2	9 51.9 +36.5 64.6	9 09.3 +36.8 64.1
27°	12 36.6 +35.6 65.4	11 53.7 +35.8 64.9	11 11.0 +36.1 64.4	10 28.4 +36.5 63.8	9 46.1 +36.8 63.3
28°	13 12.2 +35.4 64.6	12 29.5 +35.7 64.1	11 47.1 +36.0 63.5	11 04.9 +36.3 63.0	10 22.9 +36.6 62.4
29°	13 47.6 +35.2 63.8	13 05.2 +35.6 63.3	12 23.1 +35.9 62.7	11 41.2 +36.2 62.2	10 59.5 +36.5 61.6

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°	-7 51.9 +37.3	-8 38.9 +37.4	-9 25.8 +37.5		
1°	-7 14.6 +37.5	-8 01.5 +37.5	-8 48.3 +37.6	-9 35.0 +37.7	
2°	-6 37.1 +37.4	-7 24.0 +37.6	-8 10.7 +37.7	-8 57.3 +37.8	-9 43.9 +37.9
3°	-5 59.7 +37.6	-6 46.4 +37.7	-7 33.0 +37.8	-8 19.5 +37.8	-9 06.0 +38.0
4°	-5 22.1 +37.6	-6 08.7 +37.7	-6 55.2 +37.8	-7 41.7 +38.0	-8 28.0 +38.1
5°	-4 44.5 +37.7	-5 31.0 +37.8	-6 17.4 +37.9	-7 03.7 +38.1	-7 49.9 +38.2
6°	-4 06.8 +37.7	-4 53.2 +37.9	-5 39.5 +38.0	-6 25.6 +38.1	-7 11.7 +38.3
7°	-3 29.1 +37.8	-4 15.3 +37.8	-5 01.5 +38.1	-5 47.5 +38.2	-6 33.4 +38.3
8°	-2 51.3 +37.7	-3 37.5 +38.0	-4 23.4 +38.0	-5 09.3 +38.2	-5 55.1 +38.5
9°	-2 13.6 +37.8	-2 59.5 +37.9	-3 45.4 +38.2	-4 31.1 +38.3	-5 16.6 +38.4
10°	-1 35.8 +37.9	-2 21.6 +38.0	-3 07.2 +38.1	-3 52.8 +38.3	-4 38.2 +38.5
11°	-0 57.9 +37.8	-1 43.6 +38.0	-2 29.1 +38.2	-3 14.5 +38.4	-3 59.7 +38.6
12°	-0 20.1 +37.9	-1 05.6 +38.1	-1 50.9 +38.2	-2 36.1 +38.4	-3 21.1 +38.6
13°	0 17.8 +37.8 73.7	-0 27.5 +38.0	-1 12.7 +38.2	-1 57.7 +38.4	-2 42.5 +38.6
14°	0 55.6 +37.8 72.9	0 10.5 +38.0 72.3	-0 34.5 +38.3	-1 19.3 +38.5	-2 03.9 +38.6
15°	1 33.4 +37.8 72.1	0 48.5 +38.0 71.5	0 03.8 +38.2 70.9	-0 40.8 +38.4	-1 25.3 +38.7
16°	2 11.2 +37.8 71.3	1 26.5 +38.0 70.7	0 42.0 +38.2 70.1	-0 02.4 +38.4	-0 46.6 +38.7
17°	2 49.0 +37.8 70.5	2 04.5 +38.0 69.9	1 20.2 +38.2 69.3	0 36.0 +38.5 68.7	-0 07.9 +38.6
18°	3 26.8 +37.7 69.8	2 42.5 +37.9 69.2	1 58.4 +38.2 68.6	1 14.5 +38.4 68.0	0 30.7 +38.7 67.3
19°	4 04.5 +37.7 69.0	3 20.4 +37.9 68.4	2 36.6 +38.1 67.8	1 52.9 +38.4 67.2	1 09.4 +38.7 66.6
20°	4 42.2 +37.6 68.2	3 58.3 +37.9 67.6	3 14.7 +38.1 67.0	2 31.3 +38.4 66.4	1 48.1 +38.6 65.8
21°	5 19.8 +37.5 67.4	4 36.2 +37.8 66.8	3 52.8 +38.1 66.2	3 09.7 +38.3 65.6	2 26.7 +38.6 65.0
22°	5 57.3 +37.5 66.6	5 14.0 +37.8 66.1	4 30.9 +38.0 65.5	3 48.0 +38.3 64.9	3 05.3 +38.6 64.3
23°	6 34.8 +37.5 65.9	5 51.8 +37.7 65.3	5 08.9 +38.0 64.7	4 26.3 +38.2 64.1	3 43.9 +38.5 63.5
24°	7 12.3 +37.3 65.1	6 29.5 +37.6 64.5	5 46.9 +37.9 63.9	5 04.5 +38.2 63.3	4 22.4 +38.5 62.7
25°	7 49.6 +37.2 64.3	7 07.1 +37.5 63.7	6 24.8 +37.8 63.1	5 42.7 +38.2 62.6	5 00.9 +38.4 62.0
26°	8 26.8 +37.2 63.5	7 44.6 +37.5 62.9	7 02.6 +37.8 62.4	6 20.9 +38.0 61.8	5 39.3 +38.4 61.2
27°	9 04.0 +37.0 62.7	8 22.1 +37.3 62.1	7 40.4 +37.7 61.6	6 58.9 +38.0 61.0	6 17.7 +38.3 60.4
28°	9 41.0 +37.0 61.9	8 59.4 +37.3 61.3	8 18.1 +37.5 60.8	7 36.9 +37.9 60.2	6 56.0 +38.2 59.7
29°	10 18.0 +36.8 61.1	9 36.7 +37.2 60.5	8 55.6 +37.5 60.0	8 14.8 +37.8 59.4	7 34.2 +38.2 58.9

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°					
1°					
2°					
3°	-9 52.3 +38.1				
4°	-9 14.2 +38.3				
5°	-8 35.9 +38.3	-9 21.9 +38.5			
6°	-7 57.6 +38.4	-8 43.4 +38.6	-9 29.1 +38.8		
7°	-7 19.2 +38.5	-8 04.8 +38.7	-8 50.3 +38.9	-9 35.6 +39.0	
8°	-6 40.7 +38.6	-7 26.1 +38.7	-8 11.4 +38.9	-8 56.6 +39.1	-9 41.6 +39.3
9°	-6 02.1 +38.7	-6 47.4 +38.9	-7 32.5 +39.0	-8 17.5 +39.3	-9 02.3 +39.5
10°	-5 23.4 +38.7	-6 08.5 +38.9	-6 53.5 +39.1	-7 38.2 +39.3	-8 22.8 +39.5
11°	-4 44.7 +38.7	-5 29.6 +38.9	-6 14.4 +39.2	-6 58.9 +39.3	-7 43.3 +39.6
12°	-4 06.0 +38.8	-4 50.7 +39.0	-5 35.2 +39.2	-6 19.6 +39.5	-7 03.7 +39.7
13°	-3 27.2 +38.8	-4 11.7 +39.1	-4 56.0 +39.3	-5 40.1 +39.5	-6 24.0 +39.7
14°	-2 48.4 +38.9	-3 32.6 +39.1	-4 16.7 +39.3	-5 00.6 +39.5	-5 44.3 +39.8
15°	-2 09.5 +38.9	-2 53.5 +39.1	-3 37.4 +39.4	-4 21.1 +39.6	-5 04.5 +39.8
16°	-1 30.6 +38.9	-2 14.4 +39.1	-2 58.0 +39.3	-3 41.5 +39.7	-4 24.7 +39.9
17°	-0 51.7 +38.9	-1 35.3 +39.2	-2 18.7 +39.5	-3 01.8 +39.6	-3 44.8 +39.9
18°	-0 12.8 +38.9	-0 56.1 +39.1	-1 39.2 +39.4	-2 22.2 +39.7	-3 04.9 +40.0
19°	0 26.1 +38.9 66.0	-0 17.0 +39.2	-0 59.8 +39.4	-1 42.5 +39.7	-2 24.9 +40.0
20°	1 05.0 +38.9 65.2	0 22.2 +39.2 64.6	-0 20.4 +39.5	-1 02.8 +39.8	-1 44.9 +40.0
21°	1 43.9 +38.9 64.4	1 01.4 +39.1 63.8	0 19.1 +39.4 63.2	-0 23.0 +39.7	-1 04.9 +40.0
22°	2 22.8 +38.9 63.7	1 40.5 +39.2 63.1	0 58.5 +39.4 62.5	0 16.7 +39.7 61.9	-0 24.9 +40.0
23°	3 01.7 +38.8 62.9	2 19.7 +39.1 62.3	1 37.9 +39.4 61.7	0 56.4 +39.7 61.1	0 15.1 +40.0 60.5
24°	3 40.5 +38.8 62.2	2 58.8 +39.1 61.6	2 17.3 +39.4 61.0	1 36.1 +39.7 60.4	0 55.1 +40.1 59.8
25°	4 19.3 +38.7 61.4	3 37.9 +39.0 60.8	2 56.7 +39.4 60.2	2 15.8 +39.7 59.6	1 35.2 +39.9 59.0
26°	4 58.0 +38.7 60.6	4 16.9 +39.0 60.0	3 36.1 +39.3 59.5	2 55.5 +39.6 58.9	2 15.1 +40.0 58.3
27°	5 36.7 +38.6 59.9	4 55.9 +39.0 59.3	4 15.4 +39.3 58.7	3 35.1 +39.6 58.1	2 55.1 +39.9 57.5
28°	6 15.3 +38.6 59.1	5 34.9 +38.9 58.5	4 54.7 +39.2 57.9	4 14.7 +39.6 57.4	3 35.0 +39.9 56.8
29°	6 53.9 +38.4 58.3	6 13.8 +38.8 57.8	5 33.9 +39.2 57.2	4 54.3 +39.5 56.6	4 14.9 +39.9 56.0

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°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°	-9 46.9 +39.7				
10°	-9 07.2 +39.7	-9 51.5 +40.0			
11°	-8 27.5 +39.8	-9 11.5 +40.1	-9 55.3 +40.3		
12°	-7 47.7 +39.9	-8 31.4 +40.1	-9 15.0 +40.4	-9 58.3 +40.6	
13°	-7 07.8 +40.0	-7 51.3 +40.2	-8 34.6 +40.5	-9 17.7 +40.7	
14°	-6 27.8 +40.0	-7 11.1 +40.3	-7 54.1 +40.5	-8 37.0 +40.9	-9 19.6 +41.1
15°	-5 47.8 +40.1	-6 30.8 +40.4	-7 13.6 +40.6	-7 56.1 +40.8	-8 38.5 +41.2
16°	-5 07.7 +40.2	-5 50.4 +40.4	-6 33.0 +40.7	-7 15.3 +41.0	-7 57.3 +41.2
17°	-4 27.5 +40.2	-5 10.0 +40.5	-5 52.3 +40.8	-6 34.3 +41.0	-7 16.1 +41.3
18°	-3 47.3 +40.2	-4 29.5 +40.5	-5 11.5 +40.8	-5 53.3 +41.1	-6 34.8 +41.4
19°	-3 07.1 +40.3	-3 49.0 +40.5	-4 30.7 +40.8	-5 12.2 +41.2	-5 53.4 +41.5
20°	-2 26.8 +40.3	-3 08.5 +40.6	-3 49.9 +40.9	-4 31.0 +41.1	-5 11.9 +41.4
21°	-1 46.5 +40.3	-2 27.9 +40.6	-3 09.0 +40.9	-3 49.9 +41.2	-4 30.5 +41.6
22°	-1 06.2 +40.3	-1 47.3 +40.6	-2 28.1 +40.9	-3 08.7 +41.3	-3 48.9 +41.5
23°	-0 25.9 +40.3	-1 06.7 +40.7	-1 47.2 +41.0	-2 27.4 +41.3	-3 07.4 +41.6
24°	0 14.4 +40.4 59.1	-0 26.0 +40.6	-1 06.2 +40.9	-1 46.1 +41.3	-2 25.8 +41.6
25°	0 54.8 +40.3 58.4	0 14.6 +40.6 57.8	-0 25.3 +41.0	-1 04.8 +41.2	-1 44.2 +41.7
26°	1 35.1 +40.3 57.7	0 55.2 +40.7 57.1	0 15.7 +41.0 56.4	-0 23.6 +41.4	-1 02.5 +41.6
27°	2 15.4 +40.2 56.9	1 35.9 +40.6 56.3	0 56.7 +40.9 55.7	0 17.8 +41.2 55.1	-0 20.9 +41.7
28°	2 55.6 +40.3 56.2	2 16.5 +40.6 55.6	1 37.6 +41.0 55.0	0 59.0 +41.3 54.4	0 20.8 +41.6 53.8
29°	3 35.9 +40.2 55.4	2 57.1 +40.5 54.8	2 18.6 +40.9 54.3	1 40.3 +41.3 53.7	1 02.4 +41.6 53.0

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°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°	-9 20.5 +41.4				
16°	-8 39.1 +41.5	-9 20.6 +41.8			
17°	-7 57.6 +41.6	-8 38.8 +41.9			
18°	-7 16.0 +41.7	-7 56.9 +42.0			
19°	-6 34.3 +41.7	-7 14.9 +42.0			
20°	-5 52.6 +41.8	-6 32.9 +42.1			
21°	-5 10.8 +41.9	-5 50.8 +42.2			
22°	-4 28.9 +41.9	-5 08.6 +42.2			
23°	-3 47.0 +41.9	-4 26.4 +42.2			
24°	-3 05.1 +41.9	-3 44.2 +42.3			
25°	-2 23.2 +42.0	-3 01.9 +42.3			
26°	-1 41.2 +42.0	-2 19.6 +42.3			
27°	-0 59.2 +42.0	-1 37.3 +42.4			
28°	-0 17.2 +42.0	-0 54.9 +42.3			
29°	0 24.8 +42.0 52.4	-0 12.6 +42.4			

Declination SAME name as Latitude

Latitude 39°

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°	51 00.0 +60.0 180.0	50 59.4 +59.9 178.4	50 57.4 +60.0 176.8	50 54.2 +59.9 175.2	50 49.7 +59.8 173.7
1°	52 00.0 +60.0 180.0	51 59.3 +60.0 178.4	51 57.4 +59.9 176.8	51 54.1 +59.8 175.1	51 49.5 +59.7 173.5
2°	53 00.0 +60.0 180.0	52 59.3 +60.0 178.3	52 57.3 +59.9 176.7	52 53.9 +59.9 175.0	52 49.2 +59.8 173.4
3°	54 00.0 +60.0 180.0	53 59.3 +60.0 178.3	53 57.2 +60.0 176.6	53 53.8 +59.8 174.9	53 49.0 +59.7 173.2
4°	55 00.0 +60.0 180.0	54 59.3 +60.0 178.3	54 57.2 +59.9 176.5	54 53.6 +59.9 174.8	54 48.7 +59.7 173.1
5°	56 00.0 +60.0 180.0	55 59.3 +60.0 178.2	55 57.1 +59.9 176.4	55 53.5 +59.8 174.7	55 48.4 +59.7 172.9
6°	57 00.0 +60.0 180.0	56 59.3 +59.9 178.2	56 57.0 +60.0 176.4	56 53.3 +59.9 174.5	56 48.1 +59.7 172.7
7°	58 00.0 +60.0 180.0	57 59.2 +60.0 178.1	57 57.0 +59.9 176.3	57 53.2 +59.8 174.4	57 47.8 +59.7 172.5
8°	59 00.0 +60.0 180.0	58 59.2 +60.0 178.1	58 56.9 +59.9 176.2	58 53.0 +59.8 174.2	58 47.5 +59.7 172.3
9°	60 00.0 +60.0 180.0	59 59.2 +60.0 178.0	59 56.8 +59.9 176.1	59 52.8 +59.8 174.1	59 47.2 +59.6 172.1
10°	61 00.0 +60.0 180.0	60 59.2 +59.9 178.0	60 56.7 +59.9 175.9	60 52.6 +59.8 173.9	60 46.8 +59.6 171.9
11°	62 00.0 +60.0 180.0	61 59.1 +60.0 177.9	61 56.6 +59.9 175.8	61 52.4 +59.7 173.7	61 46.4 +59.6 171.7
12°	63 00.0 +60.0 180.0	62 59.1 +60.0 177.8	62 56.5 +59.9 175.7	62 52.1 +59.8 173.6	62 46.0 +59.6 171.4
13°	64 00.0 +60.0 180.0	63 59.1 +60.0 177.8	63 56.4 +59.9 175.6	63 51.9 +59.7 173.4	63 45.6 +59.5 171.2
14°	65 00.0 +60.0 180.0	64 59.1 +59.9 177.7	64 56.3 +59.8 175.4	64 51.6 +59.7 173.1	64 45.1 +59.5 170.9
15°	66 00.0 +60.0 180.0	65 59.0 +60.0 177.6	65 56.1 +59.9 175.3	65 51.3 +59.7 172.9	65 44.6 +59.5 170.6
16°	67 00.0 +60.0 180.0	66 59.0 +60.0 177.5	66 56.0 +59.9 175.1	66 51.0 +59.7 172.6	66 44.1 +59.4 170.2
17°	68 00.0 +60.0 180.0	67 59.0 +59.9 177.4	67 55.9 +59.8 174.9	67 50.7 +59.6 172.4	67 43.5 +59.3 169.9
18°	69 00.0 +60.0 180.0	68 58.9 +60.0 177.3	68 55.7 +59.8 174.7	68 50.3 +59.6 172.1	68 42.8 +59.3 169.5
19°	70 00.0 +60.0 180.0	69 58.9 +59.9 177.2	69 55.5 +59.8 174.5	69 49.9 +59.6 171.7	69 42.1 +59.3 169.0
20°	71 00.0 +60.0 180.0	70 58.8 +60.0 177.1	70 55.3 +59.8 174.2	70 49.5 +59.5 171.4	70 41.4 +59.1 168.6
21°	72 00.0 +60.0 180.0	71 58.8 +59.9 177.0	71 55.1 +59.8 174.0	71 49.0 +59.5 171.0	71 40.5 +59.1 168.0
22°	73 00.0 +60.0 180.0	72 58.7 +59.9 176.8	72 54.9 +59.7 173.7	72 48.5 +59.3 170.6	72 39.6 +58.9 167.5
23°	74 00.0 +60.0 180.0	73 58.6 +60.0 176.7	73 54.6 +59.7 173.3	73 47.8 +59.4 170.1	73 38.5 +58.8 166.8
24°	75 00.0 +60.0 180.0	74 58.6 +59.9 176.5	74 54.3 +59.6 173.0	74 47.2 +59.2 169.5	74 37.3 +58.7 166.1
25°	76 00.0 +60.0 180.0	75 58.5 +59.9 176.3	75 53.9 +59.6 172.5	75 46.4 +59.1 168.9	75 36.0 +58.4 165.3
26°	77 00.0 +60.0 180.0	76 58.4 +59.9 176.0	76 53.5 +59.6 172.0	76 45.5 +59.0 168.1	76 34.4 +58.2 164.3
27°	78 00.0 +60.0 180.0	77 58.3 +59.8 175.7	77 53.1 +59.4 171.5	77 44.5 +58.8 167.3	77 32.6 +57.9 163.3
28°	79 00.0 +60.0 180.0	78 58.1 +59.9 175.4	78 52.5 +59.4 170.8	78 43.3 +58.5 166.3	78 30.5 +57.6 162.0
29°	80 00.0 +60.0 180.0	79 58.0 +59.8 175.0	79 51.9 +59.2 170.0	79 41.8 +58.3 165.2	79 28.1 +57.0 160.5

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	50 43.9 +59.6 172.1	50 36.8 +59.5 170.5	50 28.5 +59.4 169.0	50 19.0 +59.1 167.4	50 08.2 +58.9 165.9
1°	51 43.5 +59.7 171.9	51 36.3 +59.5 170.3	51 27.9 +59.2 168.7	51 18.1 +59.1 167.1	51 07.1 +58.8 165.6
2°	52 43.2 +59.6 171.7	52 35.8 +59.5 170.1	52 27.1 +59.3 168.5	52 17.2 +59.0 166.9	52 05.9 +58.8 165.3
3°	53 42.8 +59.6 171.5	53 35.3 +59.4 169.9	53 26.4 +59.2 168.2	53 16.2 +59.0 166.6	53 04.7 +58.8 164.9
4°	54 42.4 +59.6 171.3	54 34.7 +59.4 169.6	54 25.6 +59.2 167.9	54 15.2 +58.9 166.3	54 03.5 +58.6 164.6
5°	55 42.0 +59.5 171.1	55 34.1 +59.3 169.4	55 24.8 +59.1 167.7	55 14.1 +58.9 165.9	55 02.1 +58.6 164.2
6°	56 41.5 +59.5 170.9	56 33.4 +59.4 169.1	56 23.9 +59.1 167.3	56 13.0 +58.8 165.6	56 00.7 +58.5 163.8
7°	57 41.0 +59.5 170.7	57 32.8 +59.2 168.9	57 23.0 +59.1 167.0	57 11.8 +58.8 165.2	56 59.2 +58.5 163.4
8°	58 40.5 +59.5 170.4	58 32.0 +59.3 168.6	58 22.1 +58.9 166.7	58 10.6 +58.7 164.8	57 57.7 +58.4 163.0
9°	59 40.0 +59.5 170.2	59 31.3 +59.2 168.3	59 21.0 +59.0 166.3	59 09.3 +58.6 164.4	58 56.1 +58.2 162.6
10°	60 39.5 +59.4 169.9	60 30.5 +59.1 167.9	60 20.0 +58.8 166.0	60 07.9 +58.5 164.0	59 54.3 +58.2 162.1
11°	61 38.9 +59.3 169.6	61 29.6 +59.1 167.6	61 18.8 +58.8 165.6	61 06.4 +58.4 163.6	60 52.5 +58.0 161.6
12°	62 38.2 +59.4 169.3	62 28.7 +59.1 167.2	62 17.6 +58.7 165.1	62 04.8 +58.4 163.1	61 50.5 +57.9 161.1
13°	63 37.6 +59.2 169.0	63 27.8 +58.9 166.8	63 16.3 +58.6 164.7	63 03.2 +58.2 162.6	62 48.4 +57.8 160.5
14°	64 36.8 +59.2 168.6	64 26.7 +58.9 166.4	64 14.9 +58.5 164.2	64 01.4 +58.0 162.0	63 46.2 +57.6 159.9
15°	65 36.0 +59.2 168.2	65 25.6 +58.8 165.9	65 13.4 +58.4 163.7	64 59.4 +58.0 161.5	64 43.8 +57.4 159.3
16°	66 35.2 +59.1 167.8	66 24.4 +58.7 165.5	66 11.8 +58.3 163.1	65 57.4 +57.7 160.8	65 41.2 +57.2 158.6
17°	67 34.3 +59.0 167.4	67 23.1 +58.6 164.9	67 10.1 +58.1 162.5	66 55.1 +57.6 160.2	66 38.4 +57.0 157.8
18°	68 33.3 +58.9 166.9	68 21.7 +58.5 164.4	68 08.2 +57.9 161.9	67 52.7 +57.4 159.4	67 35.4 +56.7 157.0
19°	69 32.2 +58.8 166.4	69 20.2 +58.3 163.7	69 06.1 +57.8 161.2	68 50.1 +57.1 158.6	68 32.1 +56.5 156.2
20°	70 31.0 +58.7 165.8	70 18.5 +58.1 163.1	70 03.9 +57.5 160.4	69 47.2 +56.8 157.8	69 28.6 +56.1 155.2
21°	71 29.7 +58.5 165.1	71 16.6 +58.0 162.3	71 01.4 +57.2 159.5	70 44.0 +56.5 156.8	70 24.7 +55.7 154.2
22°	72 28.2 +58.4 164.4	72 14.6 +57.7 161.5	71 58.6 +57.0 158.6	71 40.5 +56.2 155.8	71 20.4 +55.3 153.0
23°	73 26.6 +58.2 163.6	73 12.3 +57.4 160.5	72 55.6 +56.6 157.5	72 36.7 +55.7 154.6	72 15.7 +54.7 151.8
24°	74 24.8 +57.9 162.8	74 09.7 +57.1 159.5	73 52.2 +56.2 156.4	73 32.4 +55.2 153.3	73 10.4 +54.1 150.4
25°	75 22.7 +57.7 161.8	75 06.8 +56.7 158.4	74 48.4 +55.7 155.1	74 27.6 +54.5 151.9	74 04.5 +53.4 148.9
26°	76 20.4 +57.3 160.6	76 03.5 +56.3 157.0	75 44.1 +55.0 153.6	75 22.1 +53.9 150.3	74 57.9 +52.6 147.2
27°	77 17.7 +56.8 159.3	76 59.8 +55.6 155.5	76 39.1 +54.3 151.9	76 16.0 +52.9 148.5	75 50.5 +51.5 145.3
28°	78 14.5 +56.3 157.8	77 55.4 +54.9 153.8	77 33.4 +53.4 150.0	77 08.9 +51.8 146.5	76 42.0 +50.3 143.1
29°	79 10.8 +55.6 156.0	78 50.3 +53.9 151.8	78 26.8 +52.3 147.8	78 00.7 +50.6 144.1	77 32.3 +48.7 140.7

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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°	49 56.2 +58.7 164.3	49 43.1 +58.3 162.8	49 28.7 +58.1 161.3	49 13.2 +57.8 159.9	48 56.6 +57.4 158.4
1°	50 54.9 +58.5 164.0	50 41.4 +58.3 162.5	50 26.8 +58.0 160.9	50 11.0 +57.7 159.4	49 54.0 +57.4 157.9
2°	51 53.4 +58.6 163.7	51 39.7 +58.2 162.1	51 24.8 +57.9 160.5	51 08.7 +57.5 159.0	50 51.4 +57.2 157.5
3°	52 52.0 +58.4 163.3	52 37.9 +58.2 161.7	52 22.7 +57.8 160.1	52 06.2 +57.5 158.5	51 48.6 +57.1 157.0
4°	53 50.4 +58.4 162.9	53 36.1 +58.0 161.3	53 20.5 +57.7 159.7	53 03.7 +57.3 158.1	52 45.7 +57.0 156.5
5°	54 48.8 +58.3 162.5	54 34.1 +58.0 160.9	54 18.2 +57.6 159.2	54 01.0 +57.3 157.6	53 42.7 +56.8 156.0
6°	55 47.1 +58.2 162.1	55 32.1 +57.8 160.4	55 15.8 +57.5 158.7	54 58.3 +57.0 157.1	54 39.5 +56.6 155.4
7°	56 45.3 +58.1 161.7	56 29.9 +57.8 159.9	56 13.3 +57.3 158.2	55 55.3 +57.0 156.5	55 36.1 +56.5 154.8
8°	57 43.4 +58.0 161.2	57 27.7 +57.6 159.4	57 10.6 +57.2 157.7	56 52.3 +56.7 155.9	56 32.6 +56.3 154.2
9°	58 41.4 +57.9 160.7	58 25.3 +57.5 158.9	58 07.8 +57.1 157.1	57 49.0 +56.6 155.3	57 28.9 +56.1 153.6
10°	59 39.3 +57.7 160.2	59 22.8 +57.3 158.4	59 04.9 +56.8 156.5	58 45.6 +56.4 154.7	58 25.0 +55.9 152.9
11°	60 37.0 +57.6 159.7	60 20.1 +57.1 157.8	60 01.7 +56.7 155.9	59 42.0 +56.2 154.0	59 20.9 +55.7 152.2
12°	61 34.6 +57.5 159.1	61 17.2 +57.0 157.1	60 58.4 +56.5 155.2	60 38.2 +55.9 153.3	60 16.6 +55.4 151.5
13°	62 32.1 +57.3 158.5	62 14.2 +56.8 156.5	61 54.9 +56.2 154.5	61 34.1 +55.7 152.6	61 12.0 +55.1 150.7
14°	63 29.4 +57.1 157.8	63 11.0 +56.5 155.8	62 51.1 +56.0 153.8	62 29.8 +55.4 151.8	62 07.1 +54.7 149.9
15°	64 26.5 +56.8 157.1	64 07.5 +56.3 155.0	63 47.1 +55.7 153.0	63 25.2 +55.0 150.9	63 01.8 +54.4 149.0
16°	65 23.3 +56.7 156.4	65 03.8 +56.1 154.2	64 42.8 +55.4 152.1	64 20.2 +54.7 150.0	63 56.2 +54.1 148.0
17°	66 20.0 +56.3 155.6	65 59.9 +55.7 153.3	65 38.2 +55.0 151.2	65 14.9 +54.4 149.1	64 50.3 +53.6 147.0
18°	67 16.3 +56.1 154.7	66 55.6 +55.3 152.4	66 33.2 +54.6 150.2	66 09.3 +53.8 148.0	65 43.9 +53.1 146.0
19°	68 12.4 +55.7 153.8	67 50.9 +55.0 151.4	67 27.8 +54.2 149.1	67 03.1 +53.4 146.9	66 37.0 +52.5 144.8
20°	69 08.1 +55.3 152.7	68 45.9 +54.5 150.3	68 22.0 +53.6 148.0	67 56.5 +52.8 145.7	67 29.5 +52.0 143.6
21°	70 03.4 +54.9 151.6	69 40.4 +54.0 149.1	69 15.6 +53.1 146.8	68 49.3 +52.2 144.5	68 21.5 +51.2 142.2
22°	70 58.3 +54.4 150.4	70 34.4 +53.4 147.9	70 08.7 +52.5 145.4	69 41.5 +51.4 143.1	69 12.7 +50.5 140.8
23°	71 52.7 +53.7 149.1	71 27.8 +52.7 146.5	71 01.2 +51.6 144.0	70 32.9 +50.7 141.6	70 03.2 +49.6 139.2
24°	72 46.4 +53.0 147.6	72 20.5 +51.9 144.9	71 52.8 +50.9 142.4	71 23.6 +49.7 139.9	70 52.8 +48.6 137.6
25°	73 39.4 +52.2 146.0	73 12.4 +51.0 143.2	72 43.7 +49.8 140.6	72 13.3 +48.6 138.1	71 41.4 +47.5 135.7
26°	74 31.6 +51.3 144.2	74 03.4 +50.0 141.4	73 33.5 +48.6 138.7	73 01.9 +47.4 136.1	72 28.9 +46.2 133.7
27°	75 22.9 +50.1 142.2	74 53.4 +48.7 139.3	74 22.1 +47.3 136.6	73 49.3 +46.0 134.0	73 15.1 +44.7 131.6
28°	76 13.0 +48.7 139.9	75 42.1 +47.2 137.0	75 09.4 +45.8 134.2	74 35.3 +44.3 131.6	73 59.8 +43.0 129.2
29°	77 01.7 +47.1 137.4	76 29.3 +45.4 134.4	75 55.2 +43.8 131.6	75 19.6 +42.4 129.0	74 42.8 +41.0 126.6

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°	48 38.9 +57.1 156.9	48 20.1 +56.7 155.5	48 00.2 +56.4 154.1	47 39.3 +56.0 152.7	47 17.4 +55.6 151.3
1°	49 36.0 +57.0 156.5	49 16.8 +56.6 155.0	48 56.6 +56.2 153.6	48 35.3 +55.8 152.2	48 13.0 +55.5 150.8
2°	50 33.0 +56.8 156.0	50 13.4 +56.5 154.5	49 52.8 +56.1 153.0	49 31.1 +55.7 151.6	49 08.5 +55.2 150.2
3°	51 29.8 +56.7 155.5	51 09.9 +56.3 154.0	50 48.9 +55.9 152.5	50 26.8 +55.5 151.0	50 03.7 +55.0 149.6
4°	52 26.5 +56.6 154.9	52 06.2 +56.2 153.4	51 44.8 +55.7 151.9	51 22.3 +55.3 150.4	50 58.7 +54.9 148.9
5°	53 23.1 +56.4 154.4	53 02.4 +55.9 152.8	52 40.5 +55.5 151.3	52 17.6 +55.0 149.8	51 53.6 +54.6 148.3
6°	54 19.5 +56.2 153.8	53 58.3 +55.8 152.2	53 36.0 +55.4 150.7	53 12.6 +54.9 149.1	52 48.2 +54.4 147.6
7°	55 15.7 +56.1 153.2	54 54.1 +55.6 151.6	54 31.4 +55.0 150.0	54 07.5 +54.6 148.4	53 42.6 +54.1 146.9
8°	56 11.8 +55.8 152.6	55 49.7 +55.3 150.9	55 26.4 +54.9 149.3	55 02.1 +54.3 147.7	54 36.7 +53.8 146.2
9°	57 07.6 +55.6 151.9	56 45.0 +55.1 150.2	56 21.3 +54.6 148.6	55 56.4 +54.1 147.0	55 30.5 +53.5 145.4
10°	58 03.2 +55.4 151.2	57 40.1 +54.9 149.5	57 15.9 +54.3 147.8	56 50.5 +53.7 146.2	56 24.0 +53.2 144.6
11°	58 58.6 +55.1 150.5	58 35.0 +54.5 148.7	58 10.2 +54.0 147.0	57 44.2 +53.5 145.4	57 17.2 +52.8 143.7
12°	59 53.7 +54.8 149.7	59 29.5 +54.3 147.9	59 04.2 +53.6 146.2	58 37.7 +53.0 144.5	58 10.0 +52.5 142.9
13°	60 48.5 +54.5 148.9	60 23.8 +53.8 147.1	59 57.8 +53.3 145.3	59 30.7 +52.6 143.6	59 02.5 +52.0 141.9
14°	61 43.0 +54.1 148.0	61 17.6 +53.6 146.2	60 51.1 +52.8 144.4	60 23.3 +52.3 142.6	59 54.5 +51.6 140.9
15°	62 37.1 +53.8 147.1	62 11.2 +53.0 145.2	61 43.9 +52.5 143.4	61 15.6 +51.7 141.6	60 46.1 +51.0 139.9
16°	63 30.9 +53.3 146.1	63 04.2 +52.7 144.2	62 36.4 +51.9 142.4	62 07.3 +51.2 140.6	61 37.1 +50.5 138.8
17°	64 24.2 +52.9 145.0	63 56.9 +52.1 143.1	63 28.3 +51.3 141.2	62 58.5 +50.6 139.4	62 27.6 +50.0 137.7
18°	65 17.1 +52.3 143.9	64 49.0 +51.5 142.0	64 19.6 +50.8 140.1	63 49.1 +50.1 138.2	63 17.6 +49.2 136.5
19°	66 09.4 +51.7 142.7	65 40.5 +51.0 140.7	65 10.4 +50.1 138.8	64 39.2 +49.3 137.0	64 06.8 +48.5 135.2
20°	67 01.1 +51.1 141.5	66 31.5 +50.2 139.4	66 00.5 +49.4 137.5	65 28.5 +48.5 135.6	64 55.3 +47.7 133.8
21°	67 52.2 +50.4 140.1	67 21.7 +49.4 138.0	66 49.9 +48.6 136.1	66 17.0 +47.7 134.2	65 43.0 +46.9 132.3
22°	68 42.6 +49.5 138.6	68 11.1 +48.6 136.5	67 38.5 +47.6 134.6	67 04.7 +46.7 132.6	66 29.9 +46.1 130.8
23°	69 32.1 +48.6 137.0	68 59.7 +47.6 134.9	68 26.1 +46.7 132.9	67 51.4 +45.8 131.0	67 15.8 +44.8 129.2
24°	70 20.7 +47.5 135.3	69 47.3 +46.5 133.2	69 12.8 +45.5 131.2	68 37.2 +44.5 129.3	68 00.6 +43.6 127.4
25°	71 08.2 +46.4 133.5	70 33.8 +45.3 131.3	69 58.3 +44.2 129.3	69 21.7 +43.2 127.4	68 44.2 +42.3 125.5
26°	71 54.6 +45.0 131.5	71 19.1 +43.9 129.3	70 42.5 +42.8 127.3	70 04.9 +41.9 125.4	69 26.5 +40.9 123.6
27°	72 39.6 +43.5 129.3	72 03.0 +42.3 127.2	71 25.3 +41.3 125.1	70 46.8 +40.2 123.2	70 07.4 +39.2 121.4
28°	73 23.1 +41.7 126.9	72 45.3 +40.6 124.8	72 06.6 +39.4 122.8	71 27.0 +38.4 120.9	70 46.6 +37.5 119.2
29°	74 04.8 +39.8 124.4	73 25.9 +38.5 122.3	72 46.0 +37.5 120.3	72 05.4 +36.5 118.5	71 24.1 +35.5 116.8

Declination SAME name as Latitude

Latitude 39°

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°	46 54.6 +55.2 150.0	46 30.8 +54.7 148.6	46 06.0 +54.4 147.3	45 40.4 +53.9 146.0	45 13.9 +53.5 144.7
1°	47 49.8 +55.0 149.4	47 25.5 +54.6 148.0	47 00.4 +54.1 146.7	46 34.3 +53.7 145.4	46 07.4 +53.3 144.1
2°	48 44.8 +54.8 148.8	48 20.1 +54.4 147.4	47 54.5 +54.0 146.0	47 28.0 +53.5 144.7	47 00.7 +53.0 143.4
3°	49 39.6 +54.6 148.2	49 14.5 +54.2 146.8	48 48.5 +53.7 145.4	48 21.5 +53.3 144.0	47 53.7 +52.8 142.7
4°	50 34.2 +54.4 147.5	50 08.7 +53.9 146.1	49 42.2 +53.4 144.7	49 14.8 +53.0 143.3	48 46.5 +52.5 142.0
5°	51 28.6 +54.1 146.8	51 02.6 +53.6 145.4	50 35.6 +53.2 144.0	50 07.8 +52.7 142.6	49 39.0 +52.2 141.3
6°	52 22.7 +53.9 146.1	51 56.2 +53.4 144.7	51 28.8 +52.9 143.3	51 00.5 +52.4 141.9	50 31.2 +51.9 140.5
7°	53 16.6 +53.6 145.4	52 49.6 +53.1 143.9	52 21.7 +52.6 142.5	51 52.9 +52.0 141.1	51 23.1 +51.6 139.7
8°	54 10.2 +53.3 144.6	53 42.7 +52.8 143.2	53 14.3 +52.2 141.7	52 44.9 +51.8 140.3	52 14.7 +51.2 138.9
9°	55 03.5 +53.0 143.9	54 35.5 +52.4 142.3	54 06.5 +51.9 140.9	53 36.7 +51.3 139.4	53 05.9 +50.8 138.0
10°	55 56.5 +52.6 143.0	55 27.9 +52.1 141.5	54 58.4 +51.5 140.0	54 28.0 +51.0 138.5	53 56.7 +50.4 137.1
11°	56 49.1 +52.3 142.2	56 20.0 +51.7 140.6	55 49.9 +51.1 139.1	55 19.0 +50.5 137.6	54 47.1 +50.0 136.2
12°	57 41.4 +51.8 141.3	57 11.7 +51.2 139.7	56 41.0 +50.7 138.2	56 09.5 +50.0 136.7	55 37.1 +49.4 135.2
13°	58 33.2 +51.4 140.3	58 02.9 +50.8 138.7	57 31.7 +50.2 137.2	56 59.5 +49.6 135.7	56 26.5 +49.0 134.2
14°	59 24.6 +50.9 139.3	58 53.7 +50.3 137.7	58 21.9 +49.6 136.1	57 49.1 +49.0 134.6	57 15.5 +48.4 133.1
15°	60 15.5 +50.4 138.2	59 44.0 +49.7 136.6	59 11.5 +49.1 135.0	58 38.1 +48.4 133.5	58 03.9 +47.8 132.0
16°	61 05.9 +49.8 137.1	60 33.7 +49.1 135.5	60 00.6 +48.4 133.9	59 26.5 +47.8 132.4	58 51.7 +47.1 130.9
17°	61 55.7 +49.2 136.0	61 22.8 +48.5 134.3	60 49.0 +47.8 132.7	60 14.3 +47.2 131.2	59 38.8 +46.5 129.7
18°	62 44.9 +48.5 134.7	62 11.3 +47.8 133.1	61 36.8 +47.1 131.5	61 01.5 +46.3 129.9	60 25.3 +45.7 128.4
19°	63 33.4 +47.8 133.4	62 59.1 +47.0 131.8	62 23.9 +46.2 130.1	61 47.8 +45.6 128.6	61 11.0 +44.9 127.1
20°	64 21.2 +46.9 132.1	63 46.1 +46.2 130.4	63 10.1 +45.5 128.7	62 33.4 +44.7 127.2	61 55.9 +44.0 125.7
21°	65 08.1 +46.0 130.6	64 32.3 +45.2 128.9	63 55.6 +44.4 127.3	63 18.1 +43.7 125.7	62 39.9 +43.0 124.2
22°	65 54.1 +45.1 129.0	65 17.5 +44.2 127.4	64 40.0 +43.5 125.7	64 01.8 +42.7 124.2	63 22.9 +42.0 122.7
23°	66 39.2 +43.9 127.4	66 01.7 +43.1 125.7	65 23.5 +42.3 124.1	64 44.5 +41.6 122.6	64 04.9 +40.8 121.1
24°	67 23.1 +42.7 125.7	66 44.8 +41.9 124.0	66 05.8 +41.1 122.4	65 26.1 +40.3 120.8	64 45.7 +39.7 119.4
25°	68 05.8 +41.5 123.8	67 26.7 +40.6 122.1	66 46.9 +39.8 120.6	66 06.4 +39.1 119.0	65 25.4 +38.3 117.6
26°	68 47.3 +39.9 121.8	68 07.3 +39.1 120.2	67 26.7 +38.3 118.6	66 45.5 +37.5 117.1	66 03.7 +36.9 115.7
27°	69 27.2 +38.4 119.7	68 46.4 +37.5 118.1	68 05.0 +36.7 116.6	67 23.0 +36.0 115.1	66 40.6 +35.3 113.7
28°	70 05.6 +36.6 117.5	69 23.9 +35.8 115.9	68 41.7 +35.0 114.4	67 59.0 +34.4 113.0	67 15.9 +33.7 111.7
29°	70 42.2 +34.6 115.2	69 59.7 +33.9 113.6	69 16.7 +33.2 112.2	68 33.4 +32.4 110.8	67 49.6 +31.8 109.5

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	44 46.5 +53.1 143.5	44 18.4 +52.6 142.2	43 49.4 +52.2 141.0	43 19.7 +51.8 139.8	42 49.2 +51.4 138.6
1°	45 39.6 +52.9 142.8	45 11.0 +52.4 141.5	44 41.6 +52.0 140.3	44 11.5 +51.5 139.1	43 40.6 +51.1 137.9
2°	46 32.5 +52.6 142.1	46 03.4 +52.2 140.9	45 33.6 +51.7 139.6	45 03.0 +51.2 138.4	44 31.7 +50.8 137.2
3°	47 25.1 +52.3 141.4	46 55.6 +51.8 140.1	46 25.3 +51.4 138.9	45 54.2 +51.0 137.6	45 22.5 +50.4 136.4
4°	48 17.4 +52.0 140.7	47 47.4 +51.6 139.4	47 16.7 +51.1 138.1	46 45.2 +50.6 136.9	46 12.9 +50.2 135.7
5°	49 09.4 +51.7 139.9	48 39.0 +51.2 138.6	48 07.8 +50.7 137.3	47 35.8 +50.3 136.1	47 03.1 +49.8 134.9
6°	50 01.1 +51.4 139.1	49 30.2 +50.9 137.8	48 58.5 +50.5 136.5	48 26.1 +49.9 135.3	47 52.9 +49.5 134.0
7°	50 52.5 +51.1 138.3	50 21.1 +50.6 137.0	49 49.0 +50.0 135.7	49 16.0 +49.6 134.4	48 42.4 +49.0 133.2
8°	51 43.6 +50.7 137.5	51 11.7 +50.1 136.2	50 39.0 +49.7 134.8	50 05.6 +49.1 133.6	49 31.4 +48.7 132.3
9°	52 34.3 +50.3 136.6	52 01.8 +49.8 135.3	51 28.7 +49.2 133.9	50 54.7 +48.7 132.7	50 20.1 +48.2 131.4
10°	53 24.6 +49.8 135.7	52 51.6 +49.3 134.4	52 17.9 +48.8 133.0	51 43.4 +48.3 131.7	51 08.3 +47.7 130.5
11°	54 14.4 +49.4 134.8	53 40.9 +48.9 133.4	53 06.7 +48.3 132.1	52 31.7 +47.7 130.8	51 56.0 +47.3 129.5
12°	55 03.8 +48.9 133.8	54 29.8 +48.3 132.4	53 55.0 +47.7 131.1	53 19.4 +47.3 129.8	52 43.3 +46.7 128.5
13°	55 52.7 +48.4 132.8	55 18.1 +47.8 131.4	54 42.7 +47.3 130.0	54 06.7 +46.7 128.7	53 30.0 +46.1 127.4
14°	56 41.1 +47.8 131.7	56 05.9 +47.2 130.3	55 30.0 +46.6 128.9	54 53.4 +46.0 127.6	54 16.1 +45.5 126.3
15°	57 28.9 +47.2 130.6	56 53.1 +46.6 129.2	56 16.6 +46.0 127.8	55 39.4 +45.5 126.5	55 01.6 +44.9 125.2
16°	58 16.1 +46.5 129.4	57 39.7 +45.9 128.0	57 02.6 +45.3 126.7	56 24.9 +44.7 125.3	55 46.5 +44.2 124.0
17°	59 02.6 +45.8 128.2	58 25.6 +45.2 126.8	57 47.9 +44.6 125.4	57 09.6 +44.0 124.1	56 30.7 +43.5 122.8
18°	59 48.4 +45.0 126.9	59 10.8 +44.4 125.5	58 32.5 +43.8 124.2	57 53.6 +43.3 122.9	57 14.2 +42.7 121.6
19°	60 33.4 +44.2 125.6	59 55.2 +43.6 124.2	59 16.3 +43.0 122.8	58 36.9 +42.3 121.5	57 56.9 +41.8 120.3
20°	61 17.6 +43.4 124.2	60 38.8 +42.7 122.8	59 59.3 +42.1 121.5	59 19.2 +41.5 120.2	58 38.7 +40.9 118.9
21°	62 01.0 +42.3 122.8	61 21.5 +41.7 121.4	60 41.4 +41.1 120.0	60 00.7 +40.5 118.7	59 19.6 +40.0 117.5
22°	62 43.3 +41.3 121.2	62 03.2 +40.6 119.9	61 22.5 +40.0 118.5	60 41.2 +39.5 117.2	59 59.6 +38.9 116.0
23°	63 24.6 +40.2 119.6	62 43.8 +39.6 118.3	62 02.5 +39.0 117.0	61 20.7 +38.4 115.7	60 38.5 +37.8 114.5
24°	64 04.8 +39.0 118.0	63 23.4 +38.3 116.6	62 41.5 +37.7 115.3	61 59.1 +37.2 114.1	61 16.3 +36.7 112.9
25°	64 43.8 +37.6 116.2	64 01.7 +37.1 114.9	63 19.2 +36.5 113.6	62 36.3 +35.9 112.4	61 53.0 +35.4 111.2
26°	65 21.4 +36.3 114.4	64 38.8 +35.6 113.1	63 55.7 +35.0 111.8	63 12.2 +34.5 110.6	62 28.4 +34.0 109.5
27°	65 57.7 +34.7 112.4	65 14.4 +34.1 111.2	64 30.7 +33.6 109.9	63 46.7 +33.1 108.8	63 02.4 +32.7 107.7
28°	66 32.4 +33.1 110.4	65 48.5 +32.5 109.2	65 04.3 +32.0 108.0	64 19.8 +31.6 106.9	63 35.1 +31.1 105.8
29°	67 05.5 +31.3 108.3	66 21.0 +30.8 107.1	65 36.3 +30.4 106.0	64 51.4 +29.9 104.9	64 06.2 +29.5 103.9

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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°	42 18.1 +50.9 137.5	41 46.2 +50.5 136.3	41 13.7 +50.0 135.2	40 40.5 +49.7 134.1	40 06.7 +49.2 133.0
1°	43 09.0 +50.6 136.7	42 36.7 +50.2 135.6	42 03.7 +49.8 134.5	41 30.2 +49.3 133.4	40 55.9 +49.0 132.3
2°	43 59.6 +50.4 136.0	43 26.9 +49.9 134.8	42 53.5 +49.5 133.7	42 19.5 +49.0 132.6	41 44.9 +48.6 131.5
3°	44 50.0 +50.0 135.2	44 16.8 +49.6 134.1	43 43.0 +49.1 132.9	43 08.5 +48.7 131.8	42 33.5 +48.3 130.7
4°	45 40.0 +49.7 134.5	45 06.4 +49.2 133.3	44 32.1 +48.8 132.1	43 57.2 +48.4 131.0	43 21.8 +47.9 129.9
5°	46 29.7 +49.4 133.7	45 55.6 +48.9 132.5	45 20.9 +48.5 131.3	44 45.6 +48.0 130.2	44 09.7 +47.5 129.1
6°	47 19.1 +48.9 132.8	46 44.5 +48.5 131.6	46 09.4 +48.0 130.5	45 33.6 +47.6 129.3	44 57.2 +47.2 128.2
7°	48 08.0 +48.6 132.0	47 33.0 +48.1 130.8	46 57.4 +47.6 129.6	46 21.2 +47.2 128.4	45 44.4 +46.7 127.3
8°	48 56.6 +48.2 131.1	48 21.1 +47.7 129.9	47 45.0 +47.3 128.7	47 08.4 +46.7 127.5	46 31.1 +46.3 126.4
9°	49 44.8 +47.7 130.2	49 08.8 +47.2 129.0	48 32.3 +46.7 127.8	47 55.1 +46.3 126.6	47 17.4 +45.8 125.5
10°	50 32.5 +47.2 129.2	49 56.0 +46.8 128.0	49 19.0 +46.3 126.8	48 41.4 +45.8 125.7	48 03.2 +45.4 124.5
11°	51 19.7 +46.7 128.2	50 42.8 +46.2 127.0	50 05.3 +45.7 125.8	49 27.2 +45.3 124.7	48 48.6 +44.8 123.5
12°	52 06.4 +46.2 127.2	51 29.0 +45.7 126.0	50 51.0 +45.2 124.8	50 12.5 +44.7 123.7	49 33.4 +44.3 122.5
13°	52 52.6 +45.7 126.2	52 14.7 +45.1 125.0	51 36.2 +44.6 123.8	50 57.2 +44.1 122.6	50 17.7 +43.6 121.5
14°	53 38.3 +45.0 125.1	52 59.8 +44.5 123.9	52 20.8 +44.0 122.7	51 41.3 +43.6 121.5	51 01.3 +43.1 120.4
15°	54 23.3 +44.3 124.0	53 44.3 +43.9 122.7	53 04.8 +43.4 121.6	52 24.9 +42.8 120.4	51 44.4 +42.4 119.3
16°	55 07.6 +43.7 122.8	54 28.2 +43.1 121.6	53 48.2 +42.6 120.4	53 07.7 +42.2 119.2	52 26.8 +41.7 118.1
17°	55 51.3 +42.9 121.6	55 11.3 +42.4 120.4	54 30.8 +41.9 119.2	53 49.9 +41.4 118.0	53 08.5 +41.0 116.9
18°	56 34.2 +42.1 120.3	55 53.7 +41.6 119.1	55 12.7 +41.2 118.0	54 31.3 +40.7 116.8	53 49.5 +40.2 115.7
19°	57 16.3 +41.3 119.0	56 35.3 +40.8 117.8	55 53.9 +40.2 116.7	55 12.0 +39.8 115.5	54 29.7 +39.4 114.4
20°	57 57.6 +40.4 117.7	57 16.1 +39.9 116.5	56 34.1 +39.5 115.3	55 51.8 +39.0 114.2	55 09.1 +38.5 113.1
21°	58 38.0 +39.4 116.3	57 56.0 +38.9 115.1	57 13.6 +38.4 113.9	56 30.8 +38.0 112.8	55 47.6 +37.6 111.8
22°	59 17.4 +38.4 114.8	58 34.9 +37.9 113.6	57 52.0 +37.5 112.5	57 08.8 +37.0 111.4	56 25.2 +36.6 110.4
23°	59 55.8 +37.4 113.3	59 12.8 +36.9 112.1	58 29.5 +36.4 111.0	57 45.8 +36.0 110.0	57 01.8 +35.6 108.9
24°	60 33.2 +36.1 111.7	59 49.7 +35.7 110.6	59 05.9 +35.3 109.5	58 21.8 +34.9 108.5	57 37.4 +34.5 107.4
25°	61 09.3 +35.0 110.1	60 25.4 +34.5 109.0	59 41.2 +34.0 107.9	58 56.7 +33.7 106.9	58 11.9 +33.4 105.9
26°	61 44.3 +33.6 108.4	60 59.9 +33.2 107.3	60 15.2 +32.9 106.3	59 30.4 +32.4 105.3	58 45.3 +32.1 104.3
27°	62 17.9 +32.2 106.6	61 33.1 +31.8 105.6	60 48.1 +31.4 104.6	60 02.8 +31.2 103.6	59 17.4 +30.9 102.7
28°	62 50.1 +30.8 104.8	62 04.9 +30.4 103.8	61 19.5 +30.1 102.8	60 34.0 +29.8 101.9	59 48.3 +29.5 101.0
29°	63 20.9 +29.1 102.9	62 35.3 +28.9 101.9	61 49.6 +28.6 101.0	61 03.8 +28.3 100.1	60 17.8 +28.1 99.2

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°	39 32.3 +48.8 131.9	38 57.4 +48.4 130.9	38 21.8 +48.1 129.9	37 45.8 +47.6 128.9	37 09.2 +47.2 127.9
1°	40 21.1 +48.6 131.2	39 45.8 +48.1 130.1	39 09.9 +47.6 129.1	38 33.4 +47.3 128.1	37 56.4 +47.0 127.1
2°	41 09.7 +48.1 130.4	40 33.9 +47.7 129.4	39 57.5 +47.4 128.3	39 20.7 +47.0 127.3	38 43.4 +46.5 126.3
3°	41 57.8 +47.9 129.6	41 21.6 +47.5 128.6	40 44.9 +47.0 127.5	40 07.7 +46.6 126.5	39 29.9 +46.3 125.5
4°	42 45.7 +47.5 128.8	42 09.1 +47.1 127.7	41 31.9 +46.7 126.7	40 54.3 +46.3 125.6	40 16.2 +45.8 124.6
5°	43 33.2 +47.1 128.0	42 56.2 +46.7 126.9	42 18.6 +46.3 125.8	41 40.6 +45.8 124.8	41 02.0 +45.5 123.8
6°	44 20.3 +46.7 127.1	43 42.9 +46.2 126.0	43 04.9 +45.9 125.0	42 26.4 +45.5 123.9	41 47.5 +45.1 122.9
7°	45 07.0 +46.3 126.2	44 29.1 +45.9 125.1	43 50.8 +45.4 124.1	43 11.9 +45.1 123.0	42 32.6 +44.7 122.0
8°	45 53.3 +45.9 125.3	45 15.0 +45.5 124.2	44 36.2 +45.0 123.2	43 57.0 +44.6 122.1	43 17.3 +44.2 121.1
9°	46 39.2 +45.4 124.4	46 00.5 +44.9 123.3	45 21.2 +44.6 122.2	44 41.6 +44.1 121.2	44 01.5 +43.7 120.2
10°	47 24.6 +44.9 123.4	46 45.4 +44.5 122.3	46 05.8 +44.0 121.3	45 25.7 +43.7 120.2	44 45.2 +43.3 119.2
11°	48 09.5 +44.3 122.4	47 29.9 +43.9 121.3	46 49.8 +43.6 120.3	46 09.4 +43.1 119.3	45 28.5 +42.7 118.2
12°	48 53.8 +43.9 121.4	48 13.8 +43.4 120.3	47 33.4 +42.9 119.3	46 52.5 +42.6 118.2	46 11.2 +42.2 117.2
13°	49 37.7 +43.2 120.4	48 57.2 +42.8 119.3	48 16.3 +42.4 118.2	47 35.1 +42.0 117.2	46 53.4 +41.6 116.2
14°	50 20.9 +42.6 119.3	49 40.0 +42.2 118.2	48 58.7 +41.8 117.2	48 17.1 +41.3 116.1	47 35.0 +41.0 115.1
15°	51 03.5 +42.0 118.2	50 22.2 +41.6 117.1	49 40.5 +41.2 116.1	48 58.4 +40.8 115.0	48 16.0 +40.4 114.0
16°	51 45.5 +41.3 117.0	51 03.8 +40.8 116.0	50 21.7 +40.4 114.9	49 39.2 +40.1 113.9	48 56.4 +39.7 112.9
17°	52 26.8 +40.5 115.9	51 44.6 +40.2 114.8	51 02.1 +39.8 113.8	50 19.3 +39.3 112.8	49 36.1 +39.0 111.8
18°	53 07.3 +39.8 114.6	52 24.8 +39.3 113.6	51 41.9 +38.9 112.6	50 58.6 +38.7 111.6	50 15.1 +38.3 110.6
19°	53 47.1 +39.0 113.4	53 04.1 +38.6 112.3	52 20.8 +38.2 111.3	51 37.3 +37.8 110.3	50 53.4 +37.5 109.4
20°	54 26.1 +38.1 112.1	53 42.7 +37.7 111.1	52 59.0 +37.4 110.1	52 15.1 +37.0 109.1	51 30.9 +36.7 108.1
21°	55 04.2 +37.2 110.7	54 20.4 +36.8 109.7	53 36.4 +36.5 108.7	52 52.1 +36.2 107.8	52 07.6 +35.8 106.9
22°	55 41.4 +36.2 109.4	54 57.2 +35.9 108.4	54 12.9 +35.5 107.4	53 28.3 +35.2 106.5	52 43.4 +35.0 105.5
23°	56 17.6 +35.2 107.9	55 33.1 +34.9 107.0	54 48.4 +34.6 106.0	54 03.5 +34.2 105.1	53 18.4 +34.0 104.2
24°	56 52.8 +34.2 106.5	56 08.0 +33.8 105.5	55 23.0 +33.5 104.6	54 37.7 +33.3 103.7	53 52.4 +33.0 102.8
25°	57 27.0 +33.0 104.9	56 41.8 +32.8 104.0	55 56.5 +32.5 103.1	55 11.0 +32.2 102.2	54 25.4 +31.9 101.4
26°	58 00.0 +31.8 103.4	57 14.6 +31.5 102.5	56 29.0 +31.3 101.6	55 43.2 +31.1 100.7	54 57.3 +30.9 99.9
27°	58 31.8 +30.6 101.8	57 46.1 +30.4 100.9	57 00.3 +30.1 100.0	56 14.3 +29.9 99.2	55 28.2 +29.8 98.4
28°	59 02.4 +29.3 100.1	58 16.5 +29.1 99.3	57 30.4 +28.9 98.4	56 44.2 +28.8 97.7	55 58.0 +28.6 96.9
29°	59 31.7 +27.9 98.4	58 45.6 +27.7 97.6	57 59.3 +27.6 96.8	57 13.0 +27.4 96.0	56 26.6 +27.3 95.3

Declination SAME name as Latitude

Latitude 39°

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°	36 32.2 +46.8 126.9	35 54.6 +46.5 125.9	35 16.6 +46.1 125.0	34 38.2 +45.7 124.0	33 59.3 +45.4 123.1
1°	37 19.0 +46.5 126.1	36 41.1 +46.1 125.1	36 02.7 +45.8 124.2	35 23.9 +45.5 123.2	34 44.7 +45.1 122.3
2°	38 05.5 +46.2 125.3	37 27.2 +45.9 124.3	36 48.5 +45.5 123.4	36 09.4 +45.1 122.4	35 29.8 +44.7 121.5
3°	38 51.7 +45.9 124.5	38 13.1 +45.4 123.5	37 34.0 +45.1 122.5	36 54.5 +44.7 121.6	36 14.5 +44.4 120.7
4°	39 37.6 +45.5 123.6	38 58.5 +45.1 122.7	38 19.1 +44.7 121.7	37 39.2 +44.4 120.8	36 58.9 +44.1 119.8
5°	40 23.1 +45.1 122.8	39 43.6 +44.8 121.8	39 03.8 +44.4 120.9	38 23.6 +44.0 119.9	37 43.0 +43.6 119.0
6°	41 08.2 +44.7 121.9	40 28.4 +44.3 120.9	39 48.2 +43.9 120.0	39 07.6 +43.6 119.0	38 26.6 +43.3 118.1
7°	41 52.9 +44.2 121.0	41 12.7 +43.9 120.0	40 32.1 +43.6 119.1	39 51.2 +43.2 118.1	39 09.9 +42.9 117.2
8°	42 37.1 +43.9 120.1	41 56.6 +43.5 119.1	41 15.7 +43.1 118.2	40 34.4 +42.8 117.2	39 52.8 +42.4 116.3
9°	43 21.0 +43.3 119.2	42 40.1 +43.0 118.2	41 58.8 +42.6 117.2	41 17.2 +42.3 116.3	40 35.2 +42.0 115.4
10°	44 04.3 +42.9 118.2	43 23.1 +42.5 117.3	42 41.4 +42.2 116.3	41 59.5 +41.8 115.4	41 17.2 +41.5 114.4
11°	44 47.2 +42.4 117.2	44 05.6 +42.0 116.3	43 23.6 +41.6 115.3	42 41.3 +41.3 114.4	41 58.7 +41.0 113.5
12°	45 29.6 +41.8 116.2	44 47.6 +41.4 115.3	44 05.2 +41.2 114.3	43 22.6 +40.8 113.4	42 39.7 +40.4 112.5
13°	46 11.4 +41.2 115.2	45 29.0 +40.9 114.3	44 46.4 +40.5 113.3	44 03.4 +40.2 112.4	43 20.1 +40.0 111.5
14°	46 52.6 +40.7 114.2	46 09.9 +40.3 113.2	45 26.9 +40.0 112.3	44 43.6 +39.7 111.3	44 00.1 +39.3 110.4
15°	47 33.3 +40.0 113.1	46 50.2 +39.7 112.1	46 06.9 +39.4 111.2	45 23.3 +39.1 110.3	44 39.4 +38.8 109.4
16°	48 13.3 +39.4 112.0	47 29.9 +39.1 111.0	46 46.3 +38.7 110.1	46 02.4 +38.4 109.2	45 18.2 +38.1 108.3
17°	48 52.7 +38.7 110.8	48 09.0 +38.3 109.9	47 25.0 +38.0 109.0	46 40.8 +37.7 108.1	45 56.3 +37.5 107.2
18°	49 31.4 +37.9 109.7	48 47.3 +37.7 108.7	48 03.0 +37.4 107.8	47 18.5 +37.1 106.9	46 33.8 +36.8 106.1
19°	50 09.3 +37.2 108.5	49 25.0 +36.8 107.5	48 40.4 +36.6 106.6	47 55.6 +36.4 105.8	47 10.6 +36.1 104.9
20°	50 46.5 +36.4 107.2	50 01.8 +36.1 106.3	49 17.0 +35.8 105.4	48 32.0 +35.5 104.6	47 46.7 +35.4 103.7
21°	51 22.9 +35.5 106.0	50 37.9 +35.3 105.1	49 52.8 +35.0 104.2	49 07.5 +34.8 103.4	48 22.1 +34.6 102.5
22°	51 58.4 +34.7 104.7	51 13.2 +34.4 103.8	50 27.8 +34.2 102.9	49 42.3 +34.0 102.1	48 56.7 +33.7 101.3
23°	52 33.1 +33.7 103.3	51 47.6 +33.5 102.5	51 02.0 +33.3 101.6	50 16.3 +33.1 100.8	49 30.4 +32.9 100.0
24°	53 06.8 +32.8 102.0	52 21.1 +32.6 101.1	51 35.3 +32.4 100.3	50 49.4 +32.2 99.5	50 03.3 +32.1 98.7
25°	53 39.6 +31.8 100.5	52 53.7 +31.6 99.7	52 07.7 +31.4 98.9	51 21.6 +31.2 98.2	50 35.4 +31.1 97.4
26°	54 11.4 +30.7 99.1	53 25.3 +30.5 98.3	52 39.1 +30.4 97.5	51 52.8 +30.3 96.8	51 06.5 +30.1 96.1
27°	54 42.1 +29.6 97.6	53 55.8 +29.5 96.9	53 09.5 +29.3 96.1	52 23.1 +29.2 95.4	51 36.6 +29.2 94.7
28°	55 11.7 +28.4 96.1	54 25.3 +28.3 95.4	53 38.8 +28.3 94.7	52 52.3 +28.2 93.9	52 05.8 +28.1 93.3
29°	55 40.1 +27.2 94.6	54 53.6 +27.2 93.9	54 07.1 +27.1 93.2	53 20.5 +27.0 92.5	52 33.9 +27.0 91.8

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°	33 20.1 +45.0 122.2	32 40.4 +44.7 121.3	32 00.4 +44.4 120.4	31 20.0 +44.0 119.5	30 39.2 +43.8 118.7
1°	34 05.1 +44.7 121.4	33 25.1 +44.4 120.5	32 44.8 +44.0 119.6	32 04.0 +43.8 118.7	31 23.0 +43.4 117.9
2°	34 49.8 +44.4 120.6	34 09.5 +44.1 119.7	33 28.8 +43.8 118.8	32 47.8 +43.4 117.9	32 06.4 +43.2 117.1
3°	35 34.2 +44.1 119.8	34 53.6 +43.7 118.9	34 12.6 +43.4 118.0	33 31.2 +43.1 117.1	32 49.6 +42.8 116.2
4°	36 18.3 +43.7 118.9	35 37.3 +43.4 118.0	34 56.0 +43.1 117.1	34 14.3 +42.8 116.3	33 32.4 +42.4 115.4
5°	37 02.0 +43.3 118.1	36 20.7 +43.0 117.2	35 39.1 +42.6 116.3	34 57.1 +42.4 115.4	34 14.8 +42.1 114.6
6°	37 45.3 +43.0 117.2	37 03.7 +42.6 116.3	36 21.7 +42.4 115.4	35 39.5 +42.0 114.5	34 56.9 +41.7 113.7
7°	38 28.3 +42.5 116.3	37 46.3 +42.2 115.4	37 04.1 +41.9 114.5	36 21.5 +41.6 113.7	35 38.6 +41.4 112.8
8°	39 10.8 +42.1 115.4	38 28.5 +41.8 114.5	37 46.0 +41.5 113.6	37 03.1 +41.2 112.8	36 20.0 +40.9 111.9
9°	39 52.9 +41.7 114.5	39 10.3 +41.4 113.6	38 27.5 +41.0 112.7	37 44.3 +40.8 111.9	37 00.9 +40.5 111.0
10°	40 34.6 +41.1 113.5	39 51.7 +40.9 112.6	39 08.5 +40.6 111.8	38 25.1 +40.3 110.9	37 41.4 +40.0 110.1
11°	41 15.7 +40.7 112.6	40 32.6 +40.3 111.7	39 49.1 +40.1 110.8	39 05.4 +39.8 110.0	38 21.4 +39.6 109.1
12°	41 56.4 +40.2 111.6	41 12.9 +39.9 110.7	40 29.2 +39.6 109.8	39 45.2 +39.4 109.0	39 01.0 +39.1 108.2
13°	42 36.6 +39.7 110.6	41 52.8 +39.4 109.7	41 08.8 +39.1 108.9	40 24.6 +38.8 108.0	39 40.1 +38.6 107.2
14°	43 16.3 +39.0 109.6	42 32.2 +38.8 108.7	41 47.9 +38.6 107.8	41 03.4 +38.3 107.0	40 18.7 +38.1 106.2
15°	43 55.3 +38.5 108.5	43 11.0 +38.2 107.7	42 26.5 +38.0 106.8	41 41.7 +37.8 106.0	40 56.8 +37.5 105.2
16°	44 33.8 +37.9 107.4	43 49.2 +37.7 106.6	43 04.5 +37.3 105.8	42 19.5 +37.2 104.9	41 34.3 +37.0 104.1
17°	45 11.7 +37.2 106.3	44 26.9 +37.0 105.5	43 41.8 +36.8 104.7	42 56.7 +36.5 103.9	42 11.3 +36.4 103.1
18°	45 48.9 +36.6 105.2	45 03.9 +36.3 104.4	44 18.6 +36.1 103.6	43 33.2 +35.9 102.8	42 47.7 +35.7 102.0
19°	46 25.5 +35.9 104.1	45 40.2 +35.6 103.3	44 54.7 +35.5 102.5	44 09.1 +35.3 101.7	43 23.4 +35.1 100.9
20°	47 01.4 +35.1 102.9	46 15.8 +35.0 102.1	45 30.2 +34.7 101.3	44 44.4 +34.6 100.5	43 58.5 +34.4 99.8
21°	47 36.5 +34.4 101.7	46 50.8 +34.2 100.9	46 04.9 +34.1 100.1	45 19.0 +33.9 99.4	44 32.9 +33.8 98.6
22°	48 10.9 +33.6 100.5	47 25.0 +33.4 99.7	46 39.0 +33.2 99.0	45 52.9 +33.1 98.2	45 06.7 +33.0 97.5
23°	48 44.5 +32.7 99.2	47 58.4 +32.6 98.5	47 12.2 +32.5 97.7	46 26.0 +32.3 97.0	45 39.7 +32.2 96.3
24°	49 17.2 +31.9 98.0	48 31.0 +31.7 97.2	47 44.7 +31.6 96.5	46 58.3 +31.6 95.8	46 11.9 +31.5 95.1
25°	49 49.1 +31.0 96.7	49 02.7 +30.9 95.9	48 16.3 +30.8 95.2	47 29.9 +30.7 94.5	46 43.4 +30.6 93.8
26°	50 20.1 +30.0 95.3	49 33.6 +30.0 94.6	48 47.1 +29.9 93.9	48 00.6 +29.8 93.2	47 14.0 +29.8 92.6
27°	50 50.1 +29.1 94.0	50 03.6 +29.0 93.3	49 17.0 +29.0 92.6	48 30.4 +29.0 91.9	47 43.8 +29.0 91.3
28°	51 19.2 +28.1 92.6	50 32.6 +28.0 91.9	49 46.0 +28.0 91.3	48 59.4 +28.0 90.6	48 12.8 +28.0 90.0
29°	51 47.3 +27.0 91.2	51 00.6 +27.1 90.5	50 14.0 +27.0 89.9	49 27.4 +27.0 89.3	48 40.8 +27.1 88.6

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Latitude 39°

Declination SAME name as Latitude

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	29 58.2 +43.4 117.8	29 16.8 +43.1 117.0	28 35.1 +42.8 116.2	27 53.1 +42.6 115.4	27 10.8 +42.3 114.6
1°	30 41.6 +43.2 117.0	29 59.9 +42.9 116.2	29 17.9 +42.6 115.4	28 35.7 +42.3 114.6	27 53.1 +42.1 113.8
2°	31 24.8 +42.8 116.2	30 42.8 +42.5 115.4	30 00.5 +42.3 114.6	29 18.0 +42.0 113.8	28 35.2 +41.7 113.0
3°	32 07.6 +42.5 115.4	31 25.3 +42.3 114.6	30 42.8 +41.9 113.7	30 00.0 +41.7 112.9	29 16.9 +41.4 112.1
4°	32 50.1 +42.2 114.6	32 07.6 +41.8 113.7	31 24.7 +41.7 112.9	30 41.7 +41.3 112.1	29 58.3 +41.2 111.3
5°	33 32.3 +41.8 113.7	32 49.4 +41.6 112.9	32 06.4 +41.2 112.1	31 23.0 +41.0 111.3	30 39.5 +40.7 110.5
6°	34 14.1 +41.4 112.9	33 31.0 +41.2 112.0	32 47.6 +41.0 111.2	32 04.0 +40.7 110.4	31 20.2 +40.5 109.6
7°	34 55.5 +41.1 112.0	34 12.2 +40.8 111.1	33 28.6 +40.5 110.3	32 44.7 +40.3 109.5	32 00.7 +40.0 108.7
8°	35 36.6 +40.6 111.1	34 53.0 +40.4 110.3	34 09.1 +40.2 109.4	33 25.0 +40.0 108.6	32 40.7 +39.8 107.9
9°	36 17.2 +40.3 110.2	35 33.4 +40.0 109.4	34 49.3 +39.7 108.5	34 05.0 +39.5 107.8	33 20.5 +39.3 107.0
10°	36 57.5 +39.8 109.2	36 13.4 +39.5 108.4	35 29.0 +39.3 107.6	34 44.5 +39.1 106.8	33 59.8 +38.9 106.1
11°	37 37.3 +39.3 108.3	36 52.9 +39.1 107.5	36 08.3 +38.9 106.7	35 23.6 +38.7 105.9	34 38.7 +38.5 105.1
12°	38 16.6 +38.9 107.4	37 32.0 +38.7 106.5	36 47.2 +38.5 105.8	36 02.3 +38.2 105.0	35 17.2 +38.0 104.2
13°	38 55.5 +38.4 106.4	38 10.7 +38.1 105.6	37 25.7 +37.9 104.8	36 40.5 +37.8 104.0	35 55.2 +37.6 103.2
14°	39 33.9 +37.8 105.4	38 48.8 +37.7 104.6	38 03.6 +37.5 103.8	37 18.3 +37.3 103.0	36 32.8 +37.1 102.3
15°	40 11.7 +37.4 104.4	39 26.5 +37.1 103.6	38 41.1 +36.9 102.8	37 55.6 +36.7 102.1	37 09.9 +36.6 101.3
16°	40 49.1 +36.7 103.3	40 03.6 +36.6 102.6	39 18.0 +36.4 101.8	38 32.3 +36.3 101.0	37 46.5 +36.1 100.3
17°	41 25.8 +36.2 102.3	40 40.2 +36.0 101.5	39 54.4 +35.9 100.8	39 08.6 +35.7 100.0	38 22.6 +35.6 99.3
18°	42 02.0 +35.6 101.2	41 16.2 +35.4 100.5	40 30.3 +35.3 99.7	39 44.3 +35.1 99.0	38 58.2 +35.0 98.3
19°	42 37.6 +34.9 100.1	41 51.6 +34.8 99.4	41 05.6 +34.6 98.6	40 19.4 +34.6 97.9	39 33.2 +34.4 97.2
20°	43 12.5 +34.3 99.0	42 26.4 +34.2 98.3	41 40.2 +34.1 97.6	40 54.0 +33.9 96.8	40 07.6 +33.9 96.1
21°	43 46.8 +33.6 97.9	43 00.6 +33.5 97.2	42 14.3 +33.4 96.5	41 27.9 +33.3 95.7	40 41.5 +33.2 95.1
22°	44 20.4 +32.9 96.7	43 34.1 +32.7 96.0	42 47.7 +32.7 95.3	42 01.2 +32.6 94.6	41 14.7 +32.6 94.0
23°	44 53.3 +32.1 95.6	44 06.8 +32.1 94.9	43 20.4 +32.0 94.2	42 33.8 +32.0 93.5	41 47.3 +31.9 92.8
24°	45 25.4 +31.4 94.4	44 38.9 +31.4 93.7	43 52.4 +31.3 93.0	43 05.8 +31.3 92.3	42 19.2 +31.2 91.7
25°	45 56.8 +30.6 93.1	45 10.3 +30.5 92.5	44 23.7 +30.5 91.8	43 37.1 +30.5 91.2	42 50.4 +30.5 90.5
26°	46 27.4 +29.8 91.9	45 40.8 +29.8 91.3	44 54.2 +29.7 90.6	44 07.6 +29.7 90.0	43 20.9 +29.8 89.4
27°	46 57.2 +28.9 90.6	46 10.6 +28.9 90.0	45 23.9 +29.0 89.4	44 37.3 +29.0 88.8	43 50.7 +29.0 88.2
28°	47 26.1 +28.1 89.3	46 39.5 +28.1 88.7	45 52.9 +28.1 88.1	45 06.3 +28.2 87.5	44 19.7 +28.2 86.9
29°	47 54.2 +27.1 88.0	47 07.6 +27.2 87.4	46 21.0 +27.2 86.9	45 34.5 +27.3 86.3	44 47.9 +27.4 85.7

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°	26 28.3 +42.0 113.8	25 45.5 +41.8 113.0	25 02.4 +41.6 112.2	24 19.2 +41.3 111.5	23 35.7 +41.0 110.7
1°	27 10.3 +41.8 113.0	26 27.3 +41.5 112.2	25 44.0 +41.3 111.4	25 00.5 +41.0 110.7	24 16.7 +40.9 109.9
2°	27 52.1 +41.5 112.2	27 08.8 +41.3 111.4	26 25.3 +41.0 110.6	25 41.5 +40.8 109.9	24 57.6 +40.5 109.1
3°	28 33.6 +41.2 111.4	27 50.1 +40.9 110.6	27 06.3 +40.7 109.8	26 22.3 +40.5 109.0	25 38.1 +40.3 108.3
4°	29 14.8 +40.9 110.5	28 31.0 +40.6 109.7	27 47.0 +40.4 109.0	27 02.8 +40.2 108.2	26 18.4 +40.0 107.5
5°	29 55.7 +40.5 109.7	29 11.6 +40.4 108.9	28 27.4 +40.1 108.1	27 43.0 +39.9 107.4	26 58.4 +39.7 106.6
6°	30 36.2 +40.2 108.8	29 52.0 +40.0 108.1	29 07.5 +39.8 107.3	28 22.9 +39.6 106.5	27 38.1 +39.4 105.8
7°	31 16.4 +39.9 108.0	30 32.0 +39.6 107.2	29 47.3 +39.5 106.4	29 02.5 +39.3 105.7	28 17.5 +39.1 104.9
8°	31 56.3 +39.5 107.1	31 11.6 +39.3 106.3	30 26.8 +39.1 105.6	29 41.8 +38.9 104.8	28 56.6 +38.8 104.1
9°	32 35.8 +39.1 106.2	31 50.9 +38.9 105.4	31 05.9 +38.7 104.7	30 20.7 +38.5 103.9	29 35.4 +38.3 103.2
10°	33 14.9 +38.7 105.3	32 29.8 +38.5 104.5	31 44.6 +38.3 103.8	30 59.2 +38.2 103.0	30 13.7 +38.1 102.3
11°	33 53.6 +38.3 104.4	33 08.3 +38.2 103.6	32 22.9 +38.0 102.9	31 37.4 +37.8 102.1	30 51.8 +37.6 101.4
12°	34 31.9 +37.8 103.4	33 46.5 +37.6 102.7	33 00.9 +37.5 102.0	32 15.2 +37.4 101.2	31 29.4 +37.3 100.5
13°	35 09.7 +37.5 102.5	34 24.1 +37.3 101.8	33 38.4 +37.2 101.0	32 52.6 +37.0 100.3	32 06.7 +36.8 99.6
14°	35 47.2 +36.9 101.5	35 01.4 +36.8 100.8	34 15.6 +36.6 100.1	33 29.6 +36.5 99.4	32 43.5 +36.5 98.6
15°	36 24.1 +36.5 100.6	35 38.2 +36.3 99.8	34 52.2 +36.2 99.1	34 06.1 +36.1 98.4	33 20.0 +36.0 97.7
16°	37 00.6 +35.9 99.6	36 14.5 +35.9 98.8	35 28.4 +35.8 98.1	34 42.2 +35.7 97.4	33 56.0 +35.5 96.7
17°	37 36.5 +35.5 98.6	36 50.4 +35.3 97.9	36 04.2 +35.2 97.1	35 17.9 +35.1 96.5	34 31.5 +35.1 95.8
18°	38 12.0 +34.9 97.5	37 25.7 +34.8 96.8	36 39.4 +34.7 96.1	35 53.0 +34.7 95.5	35 06.6 +34.5 94.8
19°	38 46.9 +34.3 96.5	38 00.5 +34.3 95.8	37 14.1 +34.2 95.1	36 27.7 +34.1 94.4	35 41.1 +34.1 93.8
20°	39 21.2 +33.8 95.4	38 34.8 +33.7 94.8	37 48.3 +33.6 94.1	37 01.8 +33.6 93.4	36 15.2 +33.6 92.8
21°	39 55.0 +33.2 94.4	39 08.5 +33.1 93.7	38 21.9 +33.1 93.0	37 35.4 +33.0 92.4	36 48.8 +33.0 91.7
22°	40 28.2 +32.5 93.3	39 41.6 +32.5 92.6	38 55.0 +32.5 92.0	38 08.4 +32.5 91.3	37 21.8 +32.4 90.7
23°	41 00.7 +31.9 92.2	40 14.1 +31.9 91.5	39 27.5 +31.8 90.9	38 40.9 +31.8 90.2	37 54.2 +31.9 89.6
24°	41 32.6 +31.2 91.0	40 46.0 +31.2 90.4	39 59.3 +31.3 89.8	39 12.7 +31.2 89.2	38 26.1 +31.2 88.5
25°	42 03.8 +30.5 89.9	41 17.2 +30.5 89.3	40 30.6 +30.5 88.7	39 43.9 +30.6 88.0	38 57.3 +30.7 87.4
26°	42 34.3 +29.8 88.7	41 47.7 +29.8 88.1	41 01.1 +29.9 87.5	40 14.5 +30.0 86.9	39 28.0 +30.0 86.3
27°	43 04.1 +29.1 87.6	42 17.5 +29.2 87.0	41 31.0 +29.2 86.4	40 44.5 +29.2 85.8	39 58.0 +29.3 85.2
28°	43 33.2 +28.3 86.4	42 46.7 +28.3 85.8	42 00.2 +28.4 85.2	41 13.7 +28.6 84.6	40 27.3 +28.7 84.1
29°	44 01.5 +27.5 85.1	43 15.0 +27.6 84.6	42 28.6 +27.7 84.0	41 42.3 +27.8 83.5	40 56.0 +27.9 82.9

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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°	22 51.9 +40.9 110.0	22 08.0 +40.7 109.2	21 23.9 +40.4 108.5	20 39.6 +40.2 107.8	19 55.1 +40.0 107.1
1°	23 32.8 +40.6 109.2	22 48.7 +40.4 108.4	22 04.3 +40.2 107.7	21 19.8 +40.0 107.0	20 35.1 +39.9 106.3
2°	24 13.4 +40.4 108.4	23 29.1 +40.1 107.6	22 44.5 +40.0 106.9	21 59.8 +39.8 106.2	21 15.0 +39.6 105.5
3°	24 53.8 +40.1 107.6	24 09.2 +39.9 106.8	23 24.5 +39.7 106.1	22 39.6 +39.6 105.4	21 54.6 +39.4 104.7
4°	25 33.9 +39.8 106.7	24 49.1 +39.7 106.0	24 04.2 +39.5 105.3	23 19.2 +39.2 104.6	22 34.0 +39.1 103.8
5°	26 13.7 +39.5 105.9	25 28.8 +39.3 105.2	24 43.7 +39.1 104.4	23 58.4 +39.1 103.7	23 13.1 +38.8 103.0
6°	26 53.2 +39.2 105.1	26 08.1 +39.0 104.3	25 22.8 +38.9 103.6	24 37.5 +38.7 102.9	23 51.9 +38.6 102.2
7°	27 32.4 +38.9 104.2	26 47.1 +38.8 103.5	26 01.7 +38.6 102.8	25 16.2 +38.4 102.1	24 30.5 +38.3 101.4
8°	28 11.3 +38.6 103.3	27 25.9 +38.4 102.6	26 40.3 +38.3 101.9	25 54.6 +38.2 101.2	25 08.8 +38.1 100.5
9°	28 49.9 +38.2 102.5	28 04.3 +38.1 101.8	27 18.6 +38.0 101.0	26 32.8 +37.8 100.3	25 46.9 +37.7 99.6
10°	29 28.1 +37.9 101.6	28 42.4 +37.7 100.9	27 56.6 +37.6 100.2	27 10.6 +37.5 99.5	26 24.6 +37.4 98.8
11°	30 06.0 +37.5 100.7	29 20.1 +37.4 100.0	28 34.2 +37.2 99.3	27 48.1 +37.2 98.6	27 02.0 +37.0 97.9
12°	30 43.5 +37.2 99.8	29 57.5 +37.0 99.1	29 11.4 +37.0 98.4	28 25.3 +36.8 97.7	27 39.0 +36.8 97.0
13°	31 20.7 +36.7 98.9	30 34.5 +36.7 98.2	29 48.4 +36.5 97.5	29 02.1 +36.4 96.8	28 15.8 +36.3 96.1
14°	31 57.4 +36.3 97.9	31 11.2 +36.2 97.3	30 24.9 +36.1 96.6	29 38.5 +36.1 95.9	28 52.1 +36.0 95.2
15°	32 33.7 +35.9 97.0	31 47.4 +35.8 96.3	31 01.0 +35.8 95.6	30 14.6 +35.7 95.0	29 28.1 +35.7 94.3
16°	33 09.6 +35.5 96.1	32 23.2 +35.4 95.4	31 36.8 +35.3 94.7	30 50.3 +35.3 94.0	30 03.8 +35.2 93.4
17°	33 45.1 +35.0 95.1	32 58.6 +35.0 94.4	32 12.1 +34.9 93.7	31 25.6 +34.8 93.1	30 39.0 +34.8 92.4
18°	34 20.1 +34.5 94.1	33 33.6 +34.4 93.4	32 47.0 +34.4 92.8	32 00.4 +34.4 92.1	31 13.8 +34.4 91.5
19°	34 54.6 +34.0 93.1	34 08.0 +34.0 92.5	33 21.4 +34.0 91.8	32 34.8 +34.0 91.2	31 48.2 +34.0 90.5
20°	35 28.6 +33.6 92.1	34 42.0 +33.5 91.5	33 55.4 +33.5 90.8	33 08.8 +33.5 90.2	32 22.2 +33.5 89.6
21°	36 02.2 +32.9 91.1	35 15.5 +33.0 90.4	34 28.9 +33.0 89.8	33 42.3 +33.0 89.2	32 55.7 +33.0 88.6
22°	36 35.1 +32.5 90.0	35 48.5 +32.5 89.4	35 01.9 +32.5 88.8	34 15.3 +32.5 88.2	33 28.7 +32.5 87.6
23°	37 07.6 +31.9 89.0	36 21.0 +31.9 88.4	35 34.4 +31.9 87.8	34 47.8 +32.0 87.2	34 01.2 +32.1 86.6
24°	37 39.5 +31.3 87.9	36 52.9 +31.3 87.3	36 06.3 +31.4 86.7	35 19.8 +31.4 86.1	34 33.3 +31.5 85.5
25°	38 10.8 +30.7 86.8	37 24.2 +30.8 86.3	36 37.7 +30.8 85.7	35 51.2 +30.9 85.1	35 04.8 +31.0 84.5
26°	38 41.5 +30.0 85.7	37 55.0 +30.1 85.2	37 08.5 +30.3 84.6	36 22.1 +30.4 84.0	35 35.8 +30.4 83.5
27°	39 11.5 +29.5 84.6	38 25.1 +29.6 84.1	37 38.8 +29.6 83.5	36 52.5 +29.7 82.9	36 06.2 +29.9 82.4
28°	39 41.0 +28.7 83.5	38 54.7 +28.8 83.0	38 08.4 +29.0 82.4	37 22.2 +29.2 81.9	36 36.1 +29.3 81.3
29°	40 09.7 +28.1 82.4	39 23.5 +28.3 81.8	38 37.4 +28.4 81.3	37 51.4 +28.5 80.8	37 05.4 +28.7 80.2

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°	19 10.4 +39.9 106.4	18 25.6 +39.7 105.7	17 40.6 +39.6 105.0	16 55.5 +39.4 104.3	16 10.3 +39.2 103.6
1°	19 50.3 +39.7 105.6	19 05.3 +39.5 104.9	18 20.2 +39.3 104.2	17 34.9 +39.2 103.5	16 49.5 +39.0 102.8
2°	20 30.0 +39.4 104.8	19 44.8 +39.3 104.1	18 59.5 +39.1 103.4	18 14.1 +39.0 102.7	17 28.5 +38.9 102.0
3°	21 09.4 +39.2 104.0	20 24.1 +39.0 103.3	19 38.6 +39.0 102.6	18 53.1 +38.7 101.9	18 07.4 +38.6 101.2
4°	21 48.6 +39.0 103.1	21 03.1 +38.9 102.4	20 17.6 +38.6 101.8	19 31.8 +38.6 101.1	18 46.0 +38.5 100.4
5°	22 27.6 +38.7 102.3	21 42.0 +38.6 101.6	20 56.2 +38.5 100.9	20 10.4 +38.4 100.3	19 24.5 +38.2 99.6
6°	23 06.3 +38.5 101.5	22 20.6 +38.3 100.8	21 34.7 +38.2 100.1	20 48.8 +38.1 99.4	20 02.7 +38.0 98.8
7°	23 44.8 +38.1 100.7	22 58.9 +38.0 100.0	22 12.9 +38.0 99.3	21 26.9 +37.8 98.6	20 40.7 +37.8 97.9
8°	24 22.9 +37.9 99.8	23 36.9 +37.8 99.1	22 50.9 +37.7 98.4	22 04.7 +37.6 97.8	21 18.5 +37.5 97.1
9°	25 00.8 +37.6 99.0	24 14.7 +37.5 98.3	23 28.6 +37.4 97.6	22 42.3 +37.3 96.9	21 56.0 +37.2 96.3
10°	25 38.4 +37.3 98.1	24 52.2 +37.2 97.4	24 06.0 +37.1 96.7	23 19.6 +37.1 96.1	22 33.2 +37.0 95.4
11°	26 15.7 +37.0 97.2	25 29.4 +36.9 96.6	24 43.1 +36.8 95.9	23 56.7 +36.7 95.2	23 10.2 +36.7 94.6
12°	26 52.7 +36.7 96.3	26 06.3 +36.6 95.7	25 19.9 +36.5 95.0	24 33.4 +36.5 94.4	23 46.9 +36.5 93.7
13°	27 29.4 +36.3 95.5	26 42.9 +36.3 94.8	25 56.4 +36.2 94.1	25 09.9 +36.2 93.5	24 23.4 +36.1 92.8
14°	28 05.7 +35.9 94.6	27 19.2 +35.9 93.9	26 32.6 +35.9 93.2	25 46.1 +35.8 92.6	24 59.5 +35.8 91.9
15°	28 41.6 +35.6 93.6	27 55.1 +35.5 93.0	27 08.5 +35.5 92.3	26 21.9 +35.5 91.7	25 35.3 +35.5 91.1
16°	29 17.2 +35.2 92.7	28 30.6 +35.2 92.1	27 44.0 +35.1 91.4	26 57.4 +35.1 90.8	26 10.8 +35.1 90.2
17°	29 52.4 +34.8 91.8	29 05.8 +34.8 91.2	28 19.1 +34.8 90.5	27 32.5 +34.8 89.9	26 45.9 +34.8 89.3
18°	30 27.2 +34.4 90.9	29 40.6 +34.3 90.2	28 53.9 +34.4 89.6	28 07.3 +34.4 89.0	27 20.7 +34.4 88.3
19°	31 01.6 +33.9 89.9	30 14.9 +34.0 89.3	29 28.3 +34.0 88.6	28 41.7 +34.0 88.0	27 55.1 +34.1 87.4
20°	31 35.5 +33.5 88.9	30 48.9 +33.6 88.3	30 02.3 +33.6 87.7	29 15.7 +33.7 87.1	28 29.2 +33.6 86.5
21°	32 09.0 +33.1 88.0	31 22.5 +33.1 87.3	30 35.9 +33.1 86.7	29 49.4 +33.2 86.1	29 02.8 +33.3 85.5
22°	32 42.1 +32.6 87.0	31 55.6 +32.6 86.4	31 09.0 +32.8 85.8	30 22.6 +32.7 85.2	29 36.1 +32.9 84.6
23°	33 14.7 +32.1 86.0	32 28.2 +32.2 85.4	31 41.8 +32.2 84.8	30 55.3 +32.4 84.2	30 09.0 +32.4 83.6
24°	33 46.8 +31.6 85.0	33 00.4 +31.7 84.4	32 14.0 +31.8 83.8	31 27.7 +31.9 83.2	30 41.4 +32.0 82.6
25°	34 18.4 +31.1 83.9	33 32.1 +31.2 83.4	32 45.8 +31.3 82.8	31 59.6 +31.4 82.2	31 13.4 +31.5 81.7
26°	34 49.5 +30.5 82.9	34 03.3 +30.6 82.3	33 17.1 +30.8 81.8	32 31.0 +30.9 81.2	31 44.9 +31.1 80.7
27°	35 20.0 +30.0 81.8	34 33.9 +30.2 81.3	33 47.9 +30.2 80.7	33 01.9 +30.4 80.2	32 16.0 +30.5 79.7
28°	35 50.0 +29.5 80.8	35 04.1 +29.5 80.2	34 18.1 +29.8 79.7	33 32.3 +29.9 79.2	32 46.5 +30.1 78.6
29°	36 19.5 +28.8 79.7	35 33.6 +29.0 79.2	34 47.9 +29.2 78.6	34 02.2 +29.4 78.1	33 16.6 +29.6 77.6

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°	15 24.9 +39.1 102.9	14 39.4 +38.9 102.2	13 53.7 +38.8 101.6	13 08.0 +38.7 100.9	12 22.2 +38.5 100.2
1°	16 04.0 +38.9 102.1	15 18.3 +38.8 101.4	14 32.5 +38.7 100.8	13 46.7 +38.5 100.1	13 00.7 +38.5 99.4
2°	16 42.9 +38.7 101.3	15 57.1 +38.6 100.6	15 11.2 +38.5 100.0	14 25.2 +38.4 99.3	13 39.2 +38.3 98.7
3°	17 21.6 +38.5 100.5	16 35.7 +38.4 99.8	15 49.7 +38.3 99.2	15 03.6 +38.3 98.5	14 17.5 +38.1 97.9
4°	18 00.1 +38.4 99.7	17 14.1 +38.3 99.0	16 28.0 +38.2 98.4	15 41.9 +38.0 97.7	14 55.6 +38.0 97.1
5°	18 38.5 +38.1 98.9	17 52.4 +38.0 98.2	17 06.2 +37.9 97.6	16 19.9 +37.9 96.9	15 33.6 +37.8 96.3
6°	19 16.6 +37.9 98.1	18 30.4 +37.8 97.4	17 44.1 +37.8 96.8	16 57.8 +37.6 96.1	16 11.4 +37.6 95.5
7°	19 54.5 +37.7 97.3	19 08.2 +37.6 96.6	18 21.9 +37.5 95.9	17 35.4 +37.5 95.3	16 49.0 +37.4 94.6
8°	20 32.2 +37.4 96.4	19 45.8 +37.4 95.8	18 59.4 +37.3 95.1	18 12.9 +37.3 94.5	17 26.4 +37.2 93.8
9°	21 09.6 +37.2 95.6	20 23.2 +37.1 94.9	19 36.7 +37.1 94.3	18 50.2 +37.0 93.6	18 03.6 +37.0 93.0
10°	21 46.8 +36.9 94.8	21 00.3 +36.9 94.1	20 13.8 +36.8 93.5	19 27.2 +36.8 92.8	18 40.6 +36.8 92.2
11°	22 23.7 +36.7 93.9	21 37.2 +36.6 93.3	20 50.6 +36.6 92.6	20 04.0 +36.6 92.0	19 17.4 +36.6 91.3
12°	23 00.4 +36.4 93.0	22 13.8 +36.4 92.4	21 27.2 +36.3 91.8	20 40.6 +36.3 91.1	19 54.0 +36.3 90.5
13°	23 36.8 +36.1 92.2	22 50.2 +36.0 91.5	22 03.5 +36.1 90.9	21 16.9 +36.1 90.3	20 30.3 +36.1 89.6
14°	24 12.9 +35.7 91.3	23 26.2 +35.8 90.7	22 39.6 +35.8 90.0	21 53.0 +35.8 89.4	21 06.4 +35.8 88.8
15°	24 48.6 +35.5 90.4	24 02.0 +35.5 89.8	23 15.4 +35.5 89.2	22 28.8 +35.5 88.5	21 42.2 +35.5 87.9
16°	25 24.1 +35.2 89.5	24 37.5 +35.2 88.9	23 50.9 +35.2 88.3	23 04.3 +35.2 87.7	22 17.7 +35.3 87.1
17°	25 59.3 +34.8 88.6	25 12.7 +34.8 88.0	24 26.1 +34.8 87.4	23 39.5 +34.9 86.8	22 53.0 +34.9 86.2
18°	26 34.1 +34.5 87.7	25 47.5 +34.5 87.1	25 00.9 +34.6 86.5	24 14.4 +34.6 85.9	23 27.9 +34.7 85.3
19°	27 08.6 +34.1 86.8	26 22.0 +34.2 86.2	25 35.5 +34.2 85.6	24 49.0 +34.3 85.0	24 02.6 +34.4 84.4
20°	27 42.7 +33.7 85.9	26 56.2 +33.8 85.3	26 09.7 +33.9 84.7	25 23.3 +34.0 84.1	24 37.0 +34.0 83.5
21°	28 16.4 +33.3 84.9	27 30.0 +33.4 84.4	26 43.6 +33.5 83.8	25 57.3 +33.5 83.2	25 11.0 +33.7 82.6
22°	28 49.7 +33.0 84.0	28 03.4 +33.0 83.4	27 17.1 +33.1 82.8	26 30.8 +33.3 82.3	25 44.7 +33.3 81.7
23°	29 22.7 +32.5 83.0	28 36.4 +32.6 82.5	27 50.2 +32.8 81.9	27 04.1 +32.8 81.3	26 18.0 +33.0 80.8
24°	29 55.2 +32.1 82.1	29 09.0 +32.3 81.5	28 23.0 +32.3 80.9	27 36.9 +32.5 80.4	26 51.0 +32.6 79.8
25°	30 27.3 +31.6 81.1	29 41.3 +31.7 80.5	28 55.3 +31.9 80.0	28 09.4 +32.1 79.4	27 23.6 +32.3 78.9
26°	30 58.9 +31.2 80.1	30 13.0 +31.4 79.6	29 27.2 +31.5 79.0	28 41.5 +31.7 78.5	27 55.9 +31.8 77.9
27°	31 30.1 +30.8 79.1	30 44.4 +30.9 78.6	29 58.7 +31.1 78.0	29 13.2 +31.2 77.5	28 27.7 +31.4 77.0
28°	32 00.9 +30.2 78.1	31 15.3 +30.4 77.6	30 29.8 +30.6 77.0	29 44.4 +30.8 76.5	28 59.1 +31.0 76.0
29°	32 31.1 +29.8 77.1	31 45.7 +30.0 76.6	31 00.4 +30.2 76.0	30 15.2 +30.4 75.5	29 30.1 +30.6 75.0

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°	11 36.2 +38.5 99.6	10 50.2 +38.4 98.9	10 04.1 +38.3 98.3	9 17.9 +38.2 97.6	8 31.7 +38.1 97.0
1°	12 14.7 +38.3 98.8	11 28.6 +38.2 98.1	10 42.4 +38.2 97.5	9 56.1 +38.1 96.8	9 09.8 +38.0 96.2
2°	12 53.0 +38.3 98.0	12 06.8 +38.2 97.3	11 20.6 +38.0 96.7	10 34.2 +38.0 96.1	9 47.8 +37.9 95.4
3°	13 31.3 +38.0 97.2	12 45.0 +37.9 96.6	11 58.6 +37.9 95.9	11 12.2 +37.9 95.3	10 25.7 +37.9 94.6
4°	14 09.3 +37.9 96.4	13 22.9 +37.9 95.8	12 36.5 +37.8 95.1	11 50.1 +37.7 94.5	11 03.6 +37.6 93.8
5°	14 47.2 +37.7 95.6	14 00.8 +37.7 95.0	13 14.3 +37.6 94.3	12 27.8 +37.6 93.7	11 41.2 +37.6 93.0
6°	15 24.9 +37.6 94.8	14 38.5 +37.5 94.2	13 51.9 +37.5 93.5	13 05.4 +37.4 92.9	12 18.8 +37.4 92.2
7°	16 02.5 +37.4 94.0	15 16.0 +37.3 93.4	14 29.4 +37.3 92.7	13 42.8 +37.3 92.1	12 56.2 +37.3 91.4
8°	16 39.9 +37.2 93.2	15 53.3 +37.2 92.5	15 06.7 +37.1 91.9	14 20.1 +37.1 91.3	13 33.5 +37.1 90.6
9°	17 17.1 +36.9 92.4	16 30.5 +36.9 91.7	15 43.8 +37.0 91.1	14 57.2 +37.0 90.5	14 10.6 +36.9 89.8
10°	17 54.0 +36.8 91.5	17 07.4 +36.8 90.9	16 20.8 +36.7 90.3	15 34.2 +36.7 89.6	14 47.5 +36.8 89.0
11°	18 30.8 +36.5 90.7	17 44.2 +36.5 90.1	16 57.5 +36.6 89.4	16 10.9 +36.6 88.8	15 24.3 +36.6 88.2
12°	19 07.3 +36.4 89.9	18 20.7 +36.3 89.2	17 34.1 +36.3 88.6	16 47.5 +36.4 88.0	16 00.9 +36.4 87.4
13°	19 43.7 +36.0 89.0	18 57.0 +36.1 88.4	18 10.4 +36.2 87.8	17 23.9 +36.1 87.2	16 37.3 +36.2 86.5
14°	20 19.7 +35.9 88.2	19 33.1 +35.9 87.5	18 46.6 +35.9 86.9	18 00.0 +36.0 86.3	17 13.5 +36.0 85.7
15°	20 55.6 +35.6 87.3	20 09.0 +35.6 86.7	19 22.5 +35.6 86.1	18 36.0 +35.7 85.5	17 49.5 +35.8 84.9
16°	21 31.2 +35.3 86.4	20 44.6 +35.4 85.8	19 58.1 +35.5 85.2	19 11.7 +35.5 84.6	18 25.3 +35.6 84.0
17°	22 06.5 +35.0 85.6	21 20.0 +35.1 85.0	20 33.6 +35.1 84.4	19 47.2 +35.2 83.8	19 00.9 +35.3 83.2
18°	22 41.5 +34.7 84.7	21 55.1 +34.8 84.1	21 08.7 +34.9 83.5	20 22.4 +35.0 82.9	19 36.2 +35.1 82.3
19°	23 16.2 +34.4 83.8	22 29.9 +34.5 83.2	21 43.6 +34.6 82.6	20 57.4 +34.7 82.0	20 11.3 +34.8 81.5
20°	23 50.6 +34.2 82.9	23 04.4 +34.2 82.3	22 18.2 +34.4 81.7	21 32.1 +34.5 81.2	20 46.1 +34.5 80.6
21°	24 24.8 +33.8 82.0	23 38.6 +33.9 81.4	22 52.6 +34.0 80.9	22 06.6 +34.1 80.3	21 20.6 +34.3 79.7
22°	24 58.6 +33.4 81.1	24 12.5 +33.6 80.5	23 26.6 +33.7 80.0	22 40.7 +33.9 79.4	21 54.9 +34.0 78.8
23°	25 32.0 +33.2 80.2	24 46.1 +33.3 79.6	24 00.3 +33.4 79.1	23 14.6 +33.5 78.5	22 28.9 +33.7 77.9
24°	26 05.2 +32.7 79.3	25 19.4 +32.9 78.7	24 33.7 +33.1 78.2	23 48.1 +33.2 77.6	23 02.6 +33.4 77.0
25°	26 37.9 +32.4 78.3	25 52.3 +32.6 77.8	25 06.8 +32.7 77.2	24 21.3 +32.9 76.7	23 36.0 +33.1 76.1
26°	27 10.3 +32.0 77.4	26 24.9 +32.1 76.8	25 39.5 +32.4 76.3	24 54.2 +32.6 75.8	24 09.1 +32.8 75.2
27°	27 42.3 +31.6 76.4	26 57.0 +31.8 75.9	26 11.9 +32.0 75.4	25 26.8 +32.2 74.8	24 41.9 +32.4 74.3
28°	28 13.9 +31.2 75.5	27 28.8 +31.5 74.9	26 43.9 +31.6 74.4	25 59.0 +31.9 73.9	25 14.3 +32.0 73.4
29°	28 45.1 +30.8 74.5	28 00.3 +31.0 74.0	27 15.5 +31.2 73.5	26 30.9 +31.4 73.0	25 46.3 +31.7 72.4

Declination SAME name as Latitude

Latitude 39°

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°	7 45.3 +38.1 96.3	6 59.0 +38.0 95.7	6 12.5 +38.0 95.1	5 26.1 +37.9 94.4	4 39.6 +37.8 93.8
1°	8 23.4 +38.0 95.6	7 37.0 +37.9 94.9	6 50.5 +37.9 94.3	6 04.0 +37.8 93.6	5 17.4 +37.8 93.0
2°	9 01.4 +37.9 94.8	8 14.9 +37.8 94.1	7 28.4 +37.8 93.5	6 41.8 +37.8 92.9	5 55.2 +37.8 92.2
3°	9 39.3 +37.7 94.0	8 52.7 +37.7 93.3	8 06.2 +37.7 92.7	7 19.6 +37.6 92.1	6 33.0 +37.6 91.4
4°	10 17.0 +37.7 93.2	9 30.4 +37.7 92.6	8 43.9 +37.6 91.9	7 57.2 +37.6 91.3	7 10.6 +37.6 90.7
5°	10 54.7 +37.5 92.4	10 08.1 +37.5 91.8	9 21.5 +37.4 91.1	8 34.8 +37.5 90.5	7 48.2 +37.5 89.9
6°	11 32.2 +37.4 91.6	10 45.6 +37.4 91.0	9 58.9 +37.4 90.3	9 12.3 +37.4 89.7	8 25.7 +37.4 89.1
7°	12 09.6 +37.2 90.8	11 23.0 +37.2 90.2	10 36.3 +37.3 89.5	9 49.7 +37.3 88.9	9 03.1 +37.3 88.3
8°	12 46.8 +37.2 90.0	12 00.2 +37.1 89.4	11 13.6 +37.1 88.7	10 27.0 +37.1 88.1	9 40.4 +37.2 87.5
9°	13 24.0 +36.9 89.2	12 37.3 +37.0 88.6	11 50.7 +37.0 87.9	11 04.1 +37.1 87.3	10 17.6 +37.0 86.7
10°	14 00.9 +36.8 88.4	13 14.3 +36.8 87.8	12 27.7 +36.9 87.1	11 41.2 +36.9 86.5	10 54.6 +37.0 85.9
11°	14 37.7 +36.6 87.6	13 51.1 +36.7 87.0	13 04.6 +36.7 86.3	12 18.1 +36.7 85.7	11 31.6 +36.8 85.1
12°	15 14.3 +36.5 86.8	14 27.8 +36.5 86.1	13 41.3 +36.5 85.5	12 54.8 +36.6 84.9	12 08.4 +36.7 84.3
13°	15 50.8 +36.2 85.9	15 04.3 +36.3 85.3	14 17.8 +36.4 84.7	13 31.4 +36.5 84.1	12 45.1 +36.5 83.5
14°	16 27.0 +36.1 85.1	15 40.6 +36.1 84.5	14 54.2 +36.2 83.9	14 07.9 +36.3 83.3	13 21.6 +36.4 82.7
15°	17 03.1 +35.8 84.3	16 16.7 +36.0 83.7	15 30.4 +36.0 83.1	14 44.2 +36.1 82.5	13 58.0 +36.2 81.8
16°	17 38.9 +35.7 83.4	16 52.7 +35.7 82.8	16 06.4 +35.8 82.2	15 20.3 +35.9 81.6	14 34.2 +36.0 81.0
17°	18 14.6 +35.4 82.6	17 28.4 +35.5 82.0	16 42.2 +35.7 81.4	15 56.2 +35.7 80.8	15 10.2 +35.8 80.2
18°	18 50.0 +35.2 81.7	18 03.9 +35.3 81.1	17 17.9 +35.4 80.5	16 31.9 +35.5 80.0	15 46.0 +35.7 79.4
19°	19 25.2 +34.9 80.9	18 39.2 +35.0 80.3	17 53.3 +35.1 79.7	17 07.4 +35.3 79.1	16 21.7 +35.4 78.5
20°	20 00.1 +34.7 80.0	19 14.2 +34.9 79.4	18 28.4 +35.0 78.8	17 42.7 +35.1 78.3	16 57.1 +35.3 77.7
21°	20 34.8 +34.4 79.1	19 49.1 +34.5 78.6	19 03.4 +34.7 78.0	18 17.8 +34.9 77.4	17 32.4 +35.0 76.8
22°	21 09.2 +34.2 78.3	20 23.6 +34.3 77.7	19 38.1 +34.5 77.1	18 52.7 +34.6 76.6	18 07.4 +34.8 76.0
23°	21 43.4 +33.8 77.4	20 57.9 +34.1 76.8	20 12.6 +34.2 76.3	19 27.3 +34.4 75.7	18 42.2 +34.6 75.1
24°	22 17.2 +33.6 76.5	21 32.0 +33.7 75.9	20 46.8 +33.9 75.4	20 01.7 +34.1 74.8	19 16.8 +34.3 74.3
25°	22 50.8 +33.3 75.6	22 05.7 +33.5 75.0	21 20.7 +33.7 74.5	20 35.8 +33.9 73.9	19 51.1 +34.1 73.4
26°	23 24.1 +32.9 74.7	22 39.2 +33.1 74.1	21 54.4 +33.3 73.6	21 09.7 +33.6 73.1	20 25.2 +33.8 72.5
27°	23 57.0 +32.7 73.8	23 12.3 +32.9 73.2	22 27.7 +33.1 72.7	21 43.3 +33.3 72.2	20 59.0 +33.5 71.6
28°	24 29.7 +32.2 72.8	23 45.2 +32.5 72.3	23 00.8 +32.8 71.8	22 16.6 +33.0 71.3	21 32.5 +33.2 70.7
29°	25 01.9 +32.0 71.9	24 17.7 +32.2 71.4	23 33.6 +32.4 70.9	22 49.6 +32.7 70.4	22 05.7 +33.0 69.8

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°	3 53.0 +37.8 93.2	3 06.5 +37.8 92.5	2 19.9 +37.7 91.9	1 33.3 +37.7 91.3	0 46.6 +37.8 90.6
1°	4 30.8 +37.8 92.4	3 44.3 +37.7 91.7	2 57.6 +37.8 91.1	2 11.0 +37.8 90.5	1 24.4 +37.7 89.9
2°	5 08.6 +37.7 91.6	4 22.0 +37.7 91.0	3 35.4 +37.7 90.3	2 48.8 +37.7 89.7	2 02.1 +37.7 89.1
3°	5 46.3 +37.7 90.8	4 59.7 +37.7 90.2	4 13.1 +37.6 89.6	3 26.5 +37.6 88.9	2 39.8 +37.7 88.3
4°	6 24.0 +37.6 90.0	5 37.4 +37.6 89.4	4 50.7 +37.6 88.8	4 04.1 +37.7 88.1	3 17.5 +37.7 87.5
5°	7 01.6 +37.5 89.2	6 15.0 +37.5 88.6	5 28.3 +37.6 88.0	4 41.8 +37.5 87.4	3 55.2 +37.6 86.7
6°	7 39.1 +37.4 88.5	6 52.5 +37.4 87.8	6 05.9 +37.5 87.2	5 19.3 +37.5 86.6	4 32.8 +37.6 86.0
7°	8 16.5 +37.3 87.7	7 29.9 +37.4 87.0	6 43.4 +37.4 86.4	5 56.8 +37.5 85.8	5 10.4 +37.5 85.2
8°	8 53.8 +37.2 86.9	8 07.3 +37.2 86.3	7 20.8 +37.3 85.6	6 34.3 +37.4 85.0	5 47.9 +37.4 84.4
9°	9 31.0 +37.2 86.1	8 44.5 +37.2 85.5	7 58.1 +37.2 84.8	7 11.7 +37.3 84.2	6 25.3 +37.4 83.6
10°	10 08.2 +37.0 85.3	9 21.7 +37.1 84.7	8 35.3 +37.1 84.0	7 49.0 +37.2 83.4	7 02.7 +37.2 82.8
11°	10 45.2 +36.8 84.5	9 58.8 +36.9 83.9	9 12.4 +37.1 83.3	8 26.2 +37.1 82.6	7 39.9 +37.2 82.0
12°	11 22.0 +36.8 83.7	10 35.7 +36.8 83.1	9 49.5 +36.9 82.5	9 03.3 +37.0 81.8	8 17.1 +37.1 81.2
13°	11 58.8 +36.6 82.9	11 12.5 +36.7 82.3	10 26.4 +36.8 81.7	9 40.3 +36.9 81.0	8 54.2 +37.1 80.4
14°	12 35.4 +36.4 82.1	11 49.2 +36.6 81.5	11 03.2 +36.6 80.9	10 17.2 +36.7 80.2	9 31.3 +36.8 79.6
15°	13 11.8 +36.3 81.2	12 25.8 +36.4 80.6	11 39.8 +36.5 80.0	10 53.9 +36.7 79.4	10 08.1 +36.8 78.8
16°	13 48.1 +36.2 80.4	13 02.2 +36.3 79.8	12 16.3 +36.4 79.2	11 30.6 +36.5 78.6	10 44.9 +36.7 78.0
17°	14 24.3 +35.9 79.6	13 38.5 +36.1 79.0	12 52.7 +36.3 78.4	12 07.1 +36.4 77.8	11 21.6 +36.5 77.2
18°	15 00.2 +35.8 78.8	14 14.6 +35.9 78.2	13 29.0 +36.0 77.6	12 43.5 +36.2 77.0	11 58.1 +36.4 76.4
19°	15 36.0 +35.6 77.9	14 50.5 +35.7 77.4	14 05.0 +35.9 76.8	13 19.7 +36.1 76.2	12 34.5 +36.2 75.6
20°	16 11.6 +35.4 77.1	15 26.2 +35.6 76.5	14 40.9 +35.8 75.9	13 55.8 +35.9 75.4	13 10.7 +36.1 74.8
21°	16 47.0 +35.2 76.3	16 01.8 +35.4 75.7	15 16.7 +35.5 75.1	14 31.7 +35.7 74.5	13 46.8 +35.9 74.0
22°	17 22.2 +35.0 75.4	16 37.2 +35.1 74.9	15 52.2 +35.4 74.3	15 07.4 +35.5 73.7	14 22.7 +35.7 73.1
23°	17 57.2 +34.8 74.6	17 12.3 +35.0 74.0	16 27.6 +35.1 73.4	15 42.9 +35.4 72.9	14 58.4 +35.6 72.3
24°	18 32.0 +34.5 73.7	17 47.3 +34.7 73.2	17 02.7 +34.9 72.6	16 18.3 +35.1 72.0	15 34.0 +35.4 71.5
25°	19 06.5 +34.3 72.8	18 22.0 +34.5 72.3	17 37.6 +34.8 71.7	16 53.4 +35.0 71.2	16 09.4 +35.1 70.6
26°	19 40.8 +34.0 72.0	18 56.5 +34.2 71.4	18 12.4 +34.4 70.9	17 28.4 +34.7 70.3	16 44.5 +35.0 69.8
27°	20 14.8 +33.7 71.1	19 30.7 +34.0 70.6	18 46.8 +34.3 70.0	18 03.1 +34.5 69.5	17 19.5 +34.7 68.9
28°	20 48.5 +33.5 70.2	20 04.7 +33.8 69.7	19 21.1 +34.0 69.2	18 37.6 +34.2 68.6	17 54.2 +34.6 68.1
29°	21 22.0 +33.2 69.3	20 38.5 +33.4 68.8	19 55.1 +33.7 68.3	19 11.8 +34.0 67.8	18 28.8 +34.2 67.2

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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 +37.8 90.0	-0 46.6 +37.7	-1 33.3 +37.8	-2 19.9 +37.8	-3 06.5 +37.9
1°	0 37.8 +37.7 89.2	-0 08.9 +37.8	-0 55.5 +37.8	-1 42.1 +37.9	-2 28.6 +37.8
2°	1 15.5 +37.7 88.4	0 28.9 +37.8 87.8	-0 17.7 +37.8	-1 04.2 +37.8	-1 50.8 +37.9
3°	1 53.2 +37.8 87.7	1 06.7 +37.7 87.0	0 20.1 +37.8 86.4	-0 26.4 +37.8	-1 12.9 +37.9
4°	2 31.0 +37.7 86.9	1 44.4 +37.7 86.3	0 57.9 +37.8 85.6	0 11.4 +37.9 85.0	-0 35.0 +37.9
5°	3 08.7 +37.6 86.1	2 22.1 +37.8 85.5	1 35.7 +37.7 84.9	0 49.3 +37.8 84.2	0 02.9 +37.9 83.6
6°	3 46.3 +37.6 85.3	2 59.9 +37.6 84.7	2 13.4 +37.8 84.1	1 27.1 +37.8 83.5	0 40.8 +37.9 82.8
7°	4 23.9 +37.6 84.5	3 37.5 +37.7 83.9	2 51.2 +37.7 83.3	2 04.9 +37.8 82.7	1 18.7 +37.9 82.0
8°	5 01.5 +37.5 83.8	4 15.2 +37.5 83.1	3 28.9 +37.7 82.5	2 42.7 +37.7 81.9	1 56.6 +37.8 81.3
9°	5 39.0 +37.4 83.0	4 52.7 +37.6 82.4	4 06.6 +37.6 81.7	3 20.4 +37.8 81.1	2 34.4 +37.8 80.5
10°	6 16.4 +37.4 82.2	5 30.3 +37.4 81.6	4 44.2 +37.5 81.0	3 58.2 +37.6 80.3	3 12.2 +37.8 79.7
11°	6 53.8 +37.3 81.4	6 07.7 +37.4 80.8	5 21.7 +37.6 80.2	4 35.8 +37.7 79.6	3 50.0 +37.8 78.9
12°	7 31.1 +37.2 80.6	6 45.1 +37.4 80.0	5 59.3 +37.4 79.4	5 13.5 +37.5 78.8	4 27.8 +37.7 78.2
13°	8 08.3 +37.1 79.8	7 22.5 +37.2 79.2	6 36.7 +37.4 78.6	5 51.0 +37.5 78.0	5 05.5 +37.6 77.4
14°	8 45.4 +37.0 79.0	7 59.7 +37.1 78.4	7 14.1 +37.3 77.8	6 28.5 +37.5 77.2	5 43.1 +37.6 76.6
15°	9 22.4 +37.0 78.2	8 36.8 +37.1 77.6	7 51.4 +37.2 77.0	7 06.0 +37.3 76.4	6 20.7 +37.5 75.8
16°	9 59.4 +36.8 77.4	9 13.9 +36.9 76.8	8 28.6 +37.1 76.2	7 43.3 +37.3 75.6	6 58.2 +37.4 75.0
17°	10 36.2 +36.6 76.6	9 50.8 +36.9 76.0	9 05.7 +37.0 75.4	8 20.6 +37.2 74.8	7 35.6 +37.4 74.2
18°	11 12.8 +36.6 75.8	10 27.7 +36.7 75.2	9 42.7 +36.8 74.6	8 57.8 +37.0 74.0	8 13.0 +37.2 73.5
19°	11 49.4 +36.4 75.0	11 04.4 +36.6 74.4	10 19.5 +36.8 73.8	9 34.8 +37.0 73.3	8 50.2 +37.2 72.7
20°	12 25.8 +36.2 74.2	11 41.0 +36.4 73.6	10 56.3 +36.6 73.0	10 11.8 +36.8 72.5	9 27.4 +37.0 71.9
21°	13 02.0 +36.1 73.4	12 17.4 +36.3 72.8	11 32.9 +36.6 72.2	10 48.6 +36.7 71.6	10 04.4 +37.0 71.1
22°	13 38.1 +36.0 72.6	12 53.7 +36.2 72.0	12 09.5 +36.3 71.4	11 25.3 +36.6 70.8	10 41.4 +36.8 70.3
23°	14 14.1 +35.8 71.7	13 29.9 +36.0 71.2	12 45.8 +36.2 70.6	12 01.9 +36.5 70.0	11 18.2 +36.6 69.5
24°	14 49.9 +35.5 70.9	14 05.9 +35.8 70.4	13 22.0 +36.1 69.8	12 38.4 +36.2 69.2	11 54.8 +36.6 68.7
25°	15 25.4 +35.5 70.1	14 41.7 +35.6 69.5	13 58.1 +35.9 69.0	13 14.6 +36.2 68.4	12 31.4 +36.4 67.8
26°	16 00.9 +35.2 69.2	15 17.3 +35.5 68.7	14 34.0 +35.7 68.1	13 50.8 +36.0 67.6	13 07.8 +36.2 67.0
27°	16 36.1 +35.0 68.4	15 52.8 +35.3 67.9	15 09.7 +35.5 67.3	14 26.8 +35.8 66.8	13 44.0 +36.1 66.2
28°	17 11.1 +34.8 67.5	16 28.1 +35.0 67.0	15 45.2 +35.4 66.5	15 02.6 +35.6 65.9	14 20.1 +35.9 65.4
29°	17 45.9 +34.5 66.7	17 03.1 +34.9 66.2	16 20.6 +35.1 65.6	15 38.2 +35.4 65.1	14 56.0 +35.7 64.6

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°	-3 53.0 +37.8	-4 39.6 +37.9	-5 26.1 +38.0	-6 12.5 +38.0	-6 59.0 +38.1
1°	-3 15.2 +37.9	-4 01.7 +38.0	-4 48.1 +38.0	-5 34.5 +38.0	-6 20.9 +38.2
2°	-2 37.3 +38.0	-3 23.7 +38.0	-4 10.1 +38.0	-4 56.5 +38.2	-5 42.7 +38.2
3°	-1 59.3 +37.9	-2 45.7 +38.0	-3 32.1 +38.1	-4 18.3 +38.2	-5 04.5 +38.2
4°	-1 21.4 +38.0	-2 07.7 +38.0	-2 54.0 +38.2	-3 40.1 +38.2	-4 26.3 +38.3
5°	-0 43.4 +38.0	-1 29.7 +38.1	-2 15.8 +38.1	-3 01.9 +38.2	-3 48.0 +38.4
6°	-0 05.4 +37.9	-0 51.6 +38.1	-1 37.7 +38.2	-2 23.7 +38.3	-3 09.6 +38.4
7°	0 32.5 +38.0 81.4	-0 13.5 +38.0	-0 59.5 +38.2	-1 45.4 +38.3	-2 31.2 +38.4
8°	1 10.5 +38.0 80.6	0 24.5 +38.1 80.0	-0 21.3 +38.2	-1 07.1 +38.3	-1 52.8 +38.4
9°	1 48.5 +37.9 79.9	1 02.6 +38.1 79.2	0 16.9 +38.1 78.6	-0 28.8 +38.3	-1 14.4 +38.5
10°	2 26.4 +37.9 79.1	1 40.7 +38.0 78.5	0 55.0 +38.2 77.8	0 09.5 +38.3 77.2	-0 35.9 +38.4
11°	3 04.3 +37.9 78.3	2 18.7 +38.0 77.7	1 33.2 +38.2 77.1	0 47.8 +38.3 76.5	0 02.5 +38.5 75.8
12°	3 42.2 +37.8 77.5	2 56.7 +38.0 76.9	2 11.4 +38.1 76.3	1 26.1 +38.3 75.7	0 41.0 +38.5 75.1
13°	4 20.0 +37.8 76.8	3 34.7 +37.9 76.1	2 49.5 +38.1 75.5	2 04.4 +38.3 74.9	1 19.5 +38.4 74.3
14°	4 57.8 +37.8 76.0	4 12.6 +37.9 75.4	3 27.6 +38.1 74.8	2 42.7 +38.2 74.1	1 57.9 +38.4 73.5
15°	5 35.6 +37.6 75.2	4 50.5 +37.9 74.6	4 05.7 +38.0 74.0	3 20.9 +38.2 73.4	2 36.3 +38.4 72.8
16°	6 13.2 +37.6 74.4	5 28.4 +37.8 73.8	4 43.7 +37.9 73.2	3 59.1 +38.2 72.6	3 14.7 +38.3 72.0
17°	6 50.8 +37.6 73.6	6 06.2 +37.7 73.0	5 21.6 +37.9 72.4	4 37.3 +38.1 71.8	3 53.0 +38.3 71.2
18°	7 28.4 +37.4 72.9	6 43.9 +37.6 72.3	5 59.5 +37.9 71.7	5 15.4 +38.0 71.0	4 31.3 +38.3 70.4
19°	8 05.8 +37.4 72.1	7 21.5 +37.6 71.5	6 37.4 +37.7 70.9	5 53.4 +38.0 70.3	5 09.6 +38.2 69.7
20°	8 43.2 +37.2 71.3	7 59.1 +37.4 70.7	7 15.1 +37.7 70.1	6 31.4 +37.9 69.5	5 47.8 +38.1 68.9
21°	9 20.4 +37.2 70.5	8 36.5 +37.4 69.9	7 52.8 +37.6 69.3	7 09.3 +37.8 68.7	6 25.9 +38.1 68.1
22°	9 57.6 +37.0 69.7	9 13.9 +37.3 69.1	8 30.4 +37.5 68.5	7 47.1 +37.8 67.9	7 04.0 +38.0 67.3
23°	10 34.6 +36.9 68.9	9 51.2 +37.1 68.3	9 07.9 +37.4 67.7	8 24.9 +37.6 67.1	7 42.0 +37.9 66.6
24°	11 11.5 +36.8 68.1	10 28.3 +37.1 67.5	9 45.3 +37.3 66.9	9 02.5 +37.6 66.4	8 19.9 +37.8 65.8
25°	11 48.3 +36.6 67.3	11 05.4 +36.9 66.7	10 22.6 +37.2 66.1	9 40.1 +37.4 65.6	8 57.7 +37.7 65.0
26°	12 24.9 +36.5 66.5	11 42.3 +36.7 65.9	10 59.8 +37.0 65.3	10 17.5 +37.3 64.8	9 35.4 +37.6 64.2
27°	13 01.4 +36.4 65.7	12 19.0 +36.7 65.1	11 36.8 +37.0 64.5	10 54.8 +37.2 64.0	10 13.0 +37.5 63.4
28°	13 37.8 +36.2 64.8	12 55.7 +36.4 64.3	12 13.8 +36.7 63.7	11 32.0 +37.1 63.2	10 50.5 +37.4 62.6
29°	14 14.0 +36.0 64.0	13 32.1 +36.4 63.5	12 50.5 +36.6 62.9	12 09.1 +36.9 62.4	11 27.9 +37.2 61.8

Declination SAME name as Latitude

Latitude 39°

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°	-7 45.3 +38.1	-8 31.7 +38.3	-9 17.9 +38.3		
1°	-7 07.2 +38.2	-7 53.4 +38.3	-8 39.6 +38.4	-9 25.7 +38.5	
2°	-6 29.0 +38.3	-7 15.1 +38.4	-8 01.2 +38.5	-8 47.2 +38.6	-9 33.1 +38.7
3°	-5 50.7 +38.4	-6 36.7 +38.4	-7 22.7 +38.6	-8 08.6 +38.7	-8 54.4 +38.8
4°	-5 12.3 +38.4	-5 58.3 +38.6	-6 44.1 +38.6	-7 29.9 +38.8	-8 15.6 +38.9
5°	-4 33.9 +38.5	-5 19.7 +38.5	-6 05.5 +38.7	-6 51.1 +38.8	-7 36.7 +39.0
6°	-3 55.4 +38.5	-4 41.2 +38.7	-5 26.8 +38.8	-6 12.3 +38.9	-6 57.7 +39.1
7°	-3 16.9 +38.5	-4 02.5 +38.7	-4 48.0 +38.8	-5 33.4 +39.0	-6 18.6 +39.1
8°	-2 38.4 +38.6	-3 23.8 +38.7	-4 09.2 +38.9	-4 54.4 +39.0	-5 39.5 +39.2
9°	-1 59.8 +38.6	-2 45.1 +38.7	-3 30.3 +38.9	-4 15.4 +39.1	-5 00.3 +39.2
10°	-1 21.2 +38.6	-2 06.4 +38.8	-2 51.4 +38.9	-3 36.3 +39.1	-4 21.1 +39.3
11°	-0 42.6 +38.6	-1 27.6 +38.8	-2 12.5 +39.0	-2 57.2 +39.1	-3 41.8 +39.3
12°	-0 04.0 +38.6	-0 48.8 +38.8	-1 33.5 +38.9	-2 18.1 +39.2	-3 02.5 +39.4
13°	0 34.6 +38.6 73.7	-0 10.0 +38.8	-0 54.6 +39.0	-1 38.9 +39.1	-2 23.1 +39.3
14°	1 13.2 +38.6 72.9	0 28.8 +38.7 72.3	-0 15.6 +39.0	-0 59.8 +39.2	-1 43.8 +39.4
15°	1 51.8 +38.6 72.1	1 07.5 +38.8 71.5	0 23.4 +39.0 70.9	-0 20.6 +39.2	-1 04.4 +39.4
16°	2 30.4 +38.6 71.4	1 46.3 +38.8 70.7	1 02.4 +39.0 70.1	0 18.6 +39.2 69.5	-0 25.0 +39.4
17°	3 09.0 +38.5 70.6	2 25.1 +38.7 70.0	1 41.4 +38.9 69.4	0 57.8 +39.2 68.7	0 14.4 +39.5 68.1
18°	3 47.5 +38.5 69.8	3 03.8 +38.7 69.2	2 20.3 +38.9 68.6	1 37.0 +39.1 68.0	0 53.9 +39.3 67.4
19°	4 26.0 +38.4 69.1	3 42.5 +38.7 68.4	2 59.2 +38.9 67.8	2 16.1 +39.2 67.2	1 33.2 +39.4 66.6
20°	5 04.4 +38.4 68.3	4 21.2 +38.6 67.7	3 38.1 +38.9 67.1	2 55.3 +39.1 66.5	2 12.6 +39.4 65.8
21°	5 42.8 +38.3 67.5	4 59.8 +38.5 66.9	4 17.0 +38.8 66.3	3 34.4 +39.0 65.7	2 52.0 +39.3 65.1
22°	6 21.1 +38.2 66.7	5 38.3 +38.5 66.1	4 55.8 +38.7 65.5	4 13.4 +39.1 64.9	3 31.3 +39.3 64.3
23°	6 59.3 +38.2 66.0	6 16.8 +38.5 65.4	5 34.5 +38.7 64.8	4 52.5 +38.9 64.2	4 10.6 +39.2 63.6
24°	7 37.5 +38.1 65.2	6 55.3 +38.3 64.6	6 13.2 +38.7 64.0	5 31.4 +38.9 63.4	4 49.8 +39.2 62.8
25°	8 15.6 +38.0 64.4	7 33.6 +38.3 63.8	6 51.9 +38.5 63.2	6 10.3 +38.9 62.7	5 29.0 +39.2 62.1
26°	8 53.6 +37.9 63.6	8 11.9 +38.2 63.0	7 30.4 +38.5 62.5	6 49.2 +38.8 61.9	6 08.2 +39.1 61.3
27°	9 31.5 +37.7 62.8	8 50.1 +38.1 62.3	8 08.9 +38.4 61.7	7 28.0 +38.7 61.1	6 47.3 +39.0 60.5
28°	10 09.2 +37.7 62.1	9 28.2 +37.9 61.5	8 47.3 +38.3 60.9	8 06.7 +38.6 60.3	7 26.3 +38.9 59.8
29°	10 46.9 +37.6 61.3	10 06.1 +37.9 60.7	9 25.6 +38.2 60.1	8 45.3 +38.5 59.6	8 05.2 +38.8 59.0

Dec	LHA 105° / 255°	LHA 106° / 254°	LHA 107° / 253°	LHA 108° / 252°	LHA 109° / 251°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°	-9 40.0 +38.9				
4°	-9 01.1 +39.0	-9 46.5 +39.1			
5°	-8 22.1 +39.2	-9 07.4 +39.3	-9 52.5 +39.4		
6°	-7 42.9 +39.2	-8 28.1 +39.4	-9 13.1 +39.6	-9 57.9 +39.7	
7°	-7 03.7 +39.3	-7 48.7 +39.4	-8 33.5 +39.6	-9 18.2 +39.8	
8°	-6 24.4 +39.3	-7 09.3 +39.6	-7 53.9 +39.7	-8 38.4 +39.9	-9 22.7 +40.0
9°	-5 45.1 +39.4	-6 29.7 +39.6	-7 14.2 +39.8	-7 58.5 +40.0	-8 42.7 +40.2
10°	-5 05.7 +39.5	-5 50.1 +39.6	-6 34.4 +39.8	-7 18.5 +40.0	-8 02.5 +40.3
11°	-4 26.2 +39.5	-5 10.5 +39.7	-5 54.6 +39.9	-6 38.5 +40.1	-7 22.2 +40.3
12°	-3 46.7 +39.5	-4 30.8 +39.8	-5 14.7 +40.0	-5 58.4 +40.2	-6 41.9 +40.4
13°	-3 07.2 +39.6	-3 51.0 +39.8	-4 34.7 +40.0	-5 18.2 +40.2	-6 01.5 +40.5
14°	-2 27.6 +39.6	-3 11.2 +39.8	-3 54.7 +40.0	-4 38.0 +40.3	-5 21.0 +40.5
15°	-1 48.0 +39.6	-2 31.4 +39.8	-3 14.7 +40.1	-3 57.7 +40.3	-4 40.5 +40.5
16°	-1 08.4 +39.7	-1 51.6 +39.9	-2 34.6 +40.1	-3 17.4 +40.4	-4 00.0 +40.6
17°	-0 28.7 +39.6	-1 11.7 +39.9	-1 54.5 +40.2	-2 37.0 +40.3	-3 19.4 +40.7
18°	0 10.9 +39.7 66.7	-0 31.8 +39.9	-1 14.3 +40.1	-1 56.7 +40.4	-2 38.7 +40.6
19°	0 50.6 +39.6 66.0	0 08.1 +39.9 65.4	-0 34.2 +40.1	-1 16.3 +40.4	-1 58.1 +40.7
20°	1 30.2 +39.6 65.2	0 48.0 +39.8 64.6	0 05.9 +40.2 64.0	-0 35.9 +40.5	-1 17.4 +40.7
21°	2 09.8 +39.6 64.5	1 27.8 +39.9 63.9	0 46.1 +40.1 63.2	0 04.6 +40.4 62.6	-0 36.7 +40.7
22°	2 49.4 +39.6 63.7	2 07.7 +39.8 63.1	1 26.2 +40.1 62.5	0 45.0 +40.4 61.9	0 04.0 +40.7 61.2
23°	3 29.0 +39.5 63.0	2 47.5 +39.8 62.4	2 06.3 +40.1 61.7	1 25.4 +40.4 61.1	0 44.7 +40.7 60.5
24°	4 08.5 +39.5 62.2	3 27.3 +39.8 61.6	2 46.4 +40.1 61.0	2 05.8 +40.3 60.4	1 25.4 +40.6 59.8
25°	4 48.0 +39.4 61.5	4 07.1 +39.8 60.9	3 26.5 +40.0 60.3	2 46.1 +40.4 59.7	2 06.0 +40.7 59.0
26°	5 27.4 +39.4 60.7	4 46.9 +39.6 60.1	4 06.5 +40.0 59.5	3 26.5 +40.3 58.9	2 46.7 +40.6 58.3
27°	6 06.8 +39.3 59.9	5 26.5 +39.7 59.4	4 46.5 +40.0 58.8	4 06.8 +40.3 58.2	3 27.3 +40.6 57.6
28°	6 46.1 +39.2 59.2	6 06.2 +39.5 58.6	5 26.5 +39.9 58.0	4 47.1 +40.2 57.4	4 07.9 +40.6 56.8
29°	7 25.3 +39.2 58.4	6 45.7 +39.5 57.8	6 06.4 +39.8 57.3	5 27.3 +40.1 56.7	4 48.5 +40.5 56.1

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Latitude 39°

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°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°	-9 26.6 +40.4				
10°	-8 46.2 +40.4	-9 29.8 +40.7			
11°	-8 05.8 +40.6	-8 49.1 +40.8	-9 32.3 +41.1		
12°	-7 25.2 +40.6	-8 08.3 +40.8	-8 51.2 +41.1	-9 33.9 +41.3	
13°	-6 44.6 +40.7	-7 27.5 +41.0	-8 10.1 +41.1	-8 52.6 +41.4	-9 34.8 +41.7
14°	-6 03.9 +40.7	-6 46.5 +40.9	-7 29.0 +41.3	-8 11.2 +41.5	-8 53.1 +41.7
15°	-5 23.2 +40.9	-6 05.6 +41.1	-6 47.7 +41.3	-7 29.7 +41.6	-8 11.4 +41.9
16°	-4 42.3 +40.8	-5 24.5 +41.1	-6 06.4 +41.4	-6 48.1 +41.7	-7 29.5 +41.9
17°	-4 01.5 +40.9	-4 43.4 +41.2	-5 25.0 +41.4	-6 06.4 +41.7	-6 47.6 +42.0
18°	-3 20.6 +40.9	-4 02.2 +41.2	-4 43.6 +41.5	-5 24.7 +41.7	-6 05.6 +42.0
19°	-2 39.7 +41.0	-3 21.0 +41.2	-4 02.1 +41.5	-4 43.0 +41.8	-5 23.6 +42.1
20°	-1 58.7 +40.9	-2 39.8 +41.3	-3 20.6 +41.5	-4 01.2 +41.8	-4 41.5 +42.1
21°	-1 17.8 +41.0	-1 58.5 +41.2	-2 39.1 +41.6	-3 19.4 +41.9	-3 59.4 +42.2
22°	-0 36.8 +41.0	-1 17.3 +41.3	-1 57.5 +41.6	-2 37.5 +41.9	-3 17.2 +42.2
23°	0 04.2 +41.0 59.9	-0 36.0 +41.3	-1 15.9 +41.6	-1 55.6 +41.9	-2 35.0 +42.2
24°	0 45.2 +41.0 59.2	0 05.3 +41.3 58.5	-0 34.3 +41.6	-1 13.7 +41.9	-1 52.8 +42.3
25°	1 26.2 +40.9 58.4	0 46.6 +41.3 57.8	0 07.3 +41.6 57.2	-0 31.8 +41.9	-1 10.5 +42.2
26°	2 07.1 +41.0 57.7	1 27.9 +41.2 57.1	0 48.9 +41.6 56.5	0 10.1 +42.0 55.8	-0 28.3 +42.3
27°	2 48.1 +40.9 57.0	2 09.1 +41.3 56.3	1 30.5 +41.5 55.7	0 52.1 +41.9 55.1	0 14.0 +42.2 54.5
28°	3 29.0 +40.9 56.2	2 50.4 +41.2 55.6	2 12.0 +41.6 55.0	1 34.0 +41.9 54.4	0 56.2 +42.3 53.8
29°	4 09.9 +40.8 55.5	3 31.6 +41.2 54.9	2 53.6 +41.5 54.3	2 15.9 +41.9 53.7	1 38.5 +42.2 53.1

Dec	LHA 115° / 245°	LHA 116° / 244°	LHA 117° / 243°	LHA 118° / 242°	LHA 119° / 241°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°	-9 34.8 +42.0				
15°	-8 52.8 +42.1	-9 34.0 +42.4			
16°	-8 10.7 +42.2	-8 51.6 +42.5	-9 32.2 +42.7		
17°	-7 28.5 +42.3	-8 09.1 +42.5	-8 49.5 +42.9		
18°	-6 46.2 +42.3	-7 26.6 +42.7	-8 06.6 +42.9		
19°	-6 03.9 +42.4	-6 43.9 +42.6	-7 23.7 +43.0		
20°	-5 21.5 +42.4	-6 01.3 +42.8	-6 40.7 +43.0		
21°	-4 39.1 +42.5	-5 18.5 +42.8	-5 57.7 +43.1		
22°	-3 56.6 +42.5	-4 35.7 +42.8	-5 14.6 +43.2		
23°	-3 14.1 +42.5	-3 52.9 +42.8	-4 31.4 +43.1		
24°	-2 31.6 +42.6	-3 10.1 +42.9	-3 48.3 +43.3		
25°	-1 49.0 +42.6	-2 27.2 +42.9	-3 05.0 +43.2		
26°	-1 06.4 +42.6	-1 44.3 +43.0	-2 21.8 +43.3		
27°	-0 23.8 +42.6	-1 01.3 +42.9	-1 38.5 +43.3		
28°	0 18.8 +42.5 53.2	-0 18.4 +42.9	-0 55.2 +43.2		
29°	1 01.3 +42.6 52.4	0 24.5 +43.0 51.8	-0 12.0 +43.3		

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