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Latitude 0° - 9°
Declination CONTRARY name to Latitude

Sight-Reduction Tables for Latitude 0° - 9°

Declination CONTRARY name to Latitude

Revision V1.2 - Apr2017

Warning and Terms of Usage:

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

Use these Tables only for training and exercising!

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Purpose and Scope

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

The tables on the following pages were calculated according to:

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

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

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

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

For practical Sight Reduction this manual is used as follows:

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

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

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

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	90 00.0 -60.0 0.0	89 00.0 -24.9 90.0	88 00.0 -14.2 90.0	87 00.0 -09.7 90.0	86 00.0 -07.4 90.0
1°	89 00.0 -60.0 180.0	88 35.1 -49.3 135.0	87 45.8 -35.5 116.6	86 50.3 -26.6 108.4	85 52.6 -20.9 104.0
2°	88 00.0 -60.0 180.0	87 45.8 -55.5 153.4	87 10.3 -46.6 135.0	86 23.7 -38.2 123.7	85 31.7 -31.6 116.6
3°	87 00.0 -60.0 180.0	86 50.3 -57.7 161.6	86 23.7 -52.0 146.3	85 45.5 -45.4 135.0	85 00.1 -39.4 126.9
4°	86 00.0 -60.0 180.0	85 52.6 -58.5 166.0	85 31.7 -54.8 153.5	85 00.1 -49.8 143.2	84 20.7 -44.7 135.1
5°	85 00.0 -60.0 180.0	84 54.1 -59.0 168.7	84 36.9 -56.3 158.3	84 10.3 -52.6 149.1	83 36.0 -48.4 141.4
6°	84 00.0 -60.0 180.0	83 55.1 -59.3 170.6	83 40.6 -57.3 161.6	83 17.7 -54.5 153.5	82 47.6 -51.0 146.4
7°	83 00.0 -60.0 180.0	82 55.8 -59.5 171.9	82 43.3 -58.0 164.1	82 23.2 -55.6 156.9	81 56.6 -52.9 150.4
8°	82 00.0 -60.0 180.0	81 56.3 -59.6 172.9	81 45.3 -58.4 166.1	81 27.6 -56.6 159.6	81 03.7 -54.2 153.6
9°	81 00.0 -60.0 180.0	80 56.7 -59.7 173.7	80 46.9 -58.7 167.6	80 31.0 -57.2 161.7	80 09.5 -55.3 156.2
10°	80 00.0 -60.0 180.0	79 57.0 -59.7 174.3	79 48.2 -58.9 168.8	79 33.8 -57.6 163.5	79 14.2 -56.0 158.4
11°	79 00.0 -60.0 180.0	78 57.3 -59.8 174.9	78 49.3 -59.1 169.8	78 36.2 -58.0 164.9	78 18.2 -56.6 160.3
12°	78 00.0 -60.0 180.0	77 57.5 -59.8 175.3	77 50.2 -59.2 170.7	77 38.2 -58.4 166.2	77 21.6 -57.1 161.8
13°	77 00.0 -60.0 180.0	76 57.7 -59.8 175.7	76 51.0 -59.4 171.4	76 39.8 -58.5 167.2	76 24.5 -57.5 163.2
14°	76 00.0 -60.0 180.0	75 57.9 -59.9 176.0	75 51.6 -59.4 172.0	75 41.3 -58.7 168.1	75 27.0 -57.7 164.4
15°	75 00.0 -60.0 180.0	74 58.0 -59.8 176.3	74 52.2 -59.5 172.6	74 42.6 -58.9 168.9	74 29.3 -58.1 165.4
16°	74 00.0 -60.0 180.0	73 58.2 -59.9 176.5	73 52.7 -59.5 173.1	73 43.7 -59.0 169.7	73 31.2 -58.2 166.3
17°	73 00.0 -60.0 180.0	72 58.3 -59.9 176.7	72 53.2 -59.6 173.5	72 44.7 -59.1 170.3	72 33.0 -58.5 167.1
18°	72 00.0 -60.0 180.0	71 58.4 -59.9 176.9	71 53.6 -59.7 173.9	71 45.6 -59.2 170.8	71 34.5 -58.6 167.9
19°	71 00.0 -60.0 180.0	70 58.5 -59.9 177.1	70 53.9 -59.6 174.2	70 46.4 -59.3 171.4	70 35.9 -58.7 168.5
20°	70 00.0 -60.0 180.0	69 58.6 -60.0 177.3	69 54.3 -59.7 174.5	69 47.1 -59.3 171.8	69 37.2 -58.8 169.2
21°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.4	68 54.6 -59.8 174.8	68 47.8 -59.4 172.2	68 38.4 -59.0 169.7
22°	68 00.0 -60.0 180.0	67 58.7 -59.9 177.5	67 54.8 -59.7 175.1	67 48.4 -59.5 172.6	67 39.4 -59.0 170.2
23°	67 00.0 -60.0 180.0	66 58.8 -60.0 177.6	66 55.1 -59.8 175.3	66 48.9 -59.4 173.0	66 40.4 -59.1 170.7
24°	66 00.0 -60.0 180.0	65 58.8 -59.9 177.8	65 55.3 -59.8 175.5	65 49.5 -59.6 173.3	65 41.3 -59.2 171.1
25°	65 00.0 -60.0 180.0	64 58.9 -60.0 177.9	64 55.5 -59.8 175.7	64 49.9 -59.5 173.6	64 42.1 -59.2 171.5
26°	64 00.0 -60.0 180.0	63 58.9 -59.9 178.0	63 55.7 -59.8 175.9	63 50.4 -59.6 173.9	63 42.9 -59.3 171.9
27°	63 00.0 -60.0 180.0	62 59.0 -60.0 178.0	62 55.9 -59.8 176.1	62 50.8 -59.6 174.1	62 43.6 -59.3 172.2
28°	62 00.0 -60.0 180.0	61 59.0 -59.9 178.1	61 56.1 -59.9 176.2	61 51.2 -59.7 174.4	61 44.3 -59.3 172.5
29°	61 00.0 -60.0 180.0	60 59.1 -60.0 178.2	60 56.2 -59.8 176.4	60 51.5 -59.6 174.6	60 45.0 -59.5 172.8

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	85 00.0 -05.9 90.0	84 00.0 -04.9 90.0	83 00.0 -04.2 90.0	82 00.0 -03.7 90.0	81 00.0 -03.3 90.0
1°	84 54.1 -17.2 101.3	83 55.1 -14.5 99.5	82 55.8 -12.5 98.2	81 56.3 -11.0 97.1	80 56.7 -09.8 96.4
2°	84 36.9 -26.6 111.8	83 40.6 -22.9 108.5	82 43.3 -20.1 106.0	81 45.3 -17.7 104.1	80 46.9 -15.9 102.6
3°	84 10.3 -34.3 121.0	83 17.7 -30.1 116.6	82 23.2 -26.6 113.3	81 27.6 -23.9 110.6	80 31.0 -21.5 108.5
4°	83 36.0 -40.0 128.7	82 47.6 -35.9 123.8	81 56.6 -32.3 119.8	81 03.7 -29.2 116.7	80 09.5 -26.6 114.1
5°	82 56.0 -44.3 135.1	82 11.7 -40.4 129.9	81 24.3 -36.9 125.7	80 34.5 -33.8 122.2	79 42.9 -31.1 119.2
6°	82 11.7 -47.4 140.3	81 31.3 -43.9 135.2	80 47.4 -40.6 130.8	80 00.7 -37.6 127.1	79 11.8 -34.8 123.9
7°	81 24.3 -49.8 144.6	80 47.4 -46.7 139.6	80 06.8 -43.7 135.2	79 23.1 -40.8 131.4	78 37.0 -38.2 128.1
8°	80 34.5 -51.6 148.2	80 00.7 -48.9 143.4	79 23.1 -46.1 139.1	78 42.3 -43.5 135.3	77 58.8 -40.9 131.9
9°	79 42.9 -53.0 151.2	79 11.8 -50.6 146.6	78 37.0 -48.2 142.4	77 58.8 -45.6 138.7	77 17.9 -43.3 135.4
10°	78 49.9 -54.1 153.7	78 21.2 -51.9 149.3	77 48.8 -49.7 145.3	77 13.2 -47.5 141.7	76 34.6 -45.2 138.4
11°	77 55.8 -55.0 155.8	77 29.3 -53.1 151.7	76 59.1 -51.1 147.9	76 25.7 -49.1 144.4	75 49.4 -47.0 141.2
12°	77 00.8 -55.6 157.7	76 36.2 -54.0 153.8	76 08.0 -52.2 150.2	75 36.6 -50.3 146.8	75 02.4 -48.4 143.6
13°	76 05.2 -56.2 159.3	75 42.2 -54.7 155.6	75 15.8 -53.1 152.2	74 46.3 -51.4 148.9	74 14.0 -49.7 145.9
14°	75 09.0 -56.6 160.7	74 47.5 -55.3 157.3	74 22.7 -53.8 154.0	73 54.9 -52.3 150.8	73 24.3 -50.7 147.9
15°	74 12.4 -57.0 162.0	73 52.2 -55.8 158.7	73 28.9 -54.6 155.5	73 02.6 -53.1 152.6	72 33.6 -51.6 149.7
16°	73 15.4 -57.4 163.1	72 56.4 -56.3 160.0	72 34.3 -55.0 157.0	72 09.5 -53.8 154.1	71 42.0 -52.4 151.4
17°	72 18.0 -57.6 164.1	72 00.1 -56.6 161.1	71 39.3 -55.6 158.3	71 15.7 -54.3 155.5	70 49.6 -53.1 152.9
18°	71 20.4 -57.8 165.0	71 03.5 -57.0 162.2	70 43.7 -55.9 159.4	70 21.4 -54.9 156.8	69 56.5 -53.6 154.3
19°	70 22.6 -58.0 165.8	70 06.5 -57.2 163.1	69 47.8 -56.3 160.5	69 26.5 -55.3 158.0	69 02.9 -54.3 155.6
20°	69 24.6 -58.3 166.5	69 09.3 -57.5 164.0	68 51.5 -56.6 161.5	68 31.2 -55.7 159.1	68 08.6 -54.6 156.7
21°	68 26.3 -58.3 167.2	68 11.8 -57.7 164.8	67 54.9 -56.9 162.4	67 35.5 -56.0 160.1	67 14.0 -55.1 157.8
22°	67 28.0 -58.5 167.8	67 14.1 -57.8 165.5	66 58.0 -57.2 163.2	66 39.5 -56.3 161.0	66 18.9 -55.4 158.8
23°	66 29.5 -58.6 168.4	66 16.3 -58.0 166.2	66 00.8 -57.3 164.0	65 43.2 -56.6 161.8	65 23.5 -55.8 159.8
24°	65 30.9 -58.7 168.9	65 18.3 -58.2 166.8	65 03.5 -57.5 164.7	64 46.6 -56.8 162.6	64 27.7 -56.0 160.6
25°	64 32.2 -58.8 169.4	64 20.1 -58.3 167.4	64 06.0 -57.7 165.4	63 49.8 -57.1 163.4	63 31.7 -56.3 161.5
26°	63 33.4 -58.9 169.9	63 21.8 -58.4 167.9	63 08.3 -57.9 166.0	62 52.7 -57.2 164.1	62 35.4 -56.6 162.2
27°	62 34.5 -58.9 170.3	62 23.4 -58.5 168.4	62 10.4 -58.0 166.5	61 55.5 -57.4 164.7	61 38.8 -56.7 162.9
28°	61 35.6 -59.1 170.7	61 24.9 -58.6 168.9	61 12.4 -58.1 167.1	60 58.1 -57.5 165.3	60 42.1 -57.0 163.6
29°	60 36.5 -59.0 171.1	60 26.3 -58.7 169.3	60 14.3 -58.2 167.6	60 00.6 -57.7 165.9	59 45.1 -57.1 164.2

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°	80 00.0 -03.0 90.0	79 00.0 -02.7 90.0	78 00.0 -02.5 90.0	77 00.0 -02.3 90.0	76 00.0 -02.1 90.0
1°	79 57.0 -08.8 95.7	78 57.3 -08.0 95.2	77 57.5 -07.3 94.8	76 57.7 -06.7 94.4	75 57.9 -06.3 94.1
2°	79 48.2 -14.4 101.4	78 49.3 -13.1 100.4	77 50.2 -12.0 99.5	76 51.0 -11.2 98.8	75 51.6 -10.3 98.2
3°	79 33.8 -19.6 106.8	78 36.2 -18.0 105.4	77 38.2 -16.6 104.1	76 39.8 -15.3 103.1	75 41.3 -14.3 102.2
4°	79 14.2 -24.3 111.9	78 18.2 -22.4 110.1	77 21.6 -20.8 108.6	76 24.5 -19.3 107.3	75 27.0 -18.0 106.1
5°	78 49.9 -28.7 116.7	77 55.8 -26.5 114.6	77 00.8 -24.6 112.8	76 05.2 -23.0 111.3	75 09.0 -21.5 109.9
6°	78 21.2 -32.4 121.2	77 29.3 -30.2 118.8	76 36.2 -28.2 116.8	75 42.2 -26.4 115.0	74 47.5 -24.8 113.5
7°	77 48.8 -35.6 125.3	76 59.1 -33.4 122.8	76 08.0 -31.4 120.6	75 15.8 -29.5 118.6	74 22.7 -27.8 116.9
8°	77 13.2 -38.6 129.0	76 25.7 -36.3 126.4	75 36.6 -34.2 124.1	74 46.3 -32.3 122.0	73 54.9 -30.6 120.2
9°	76 34.6 -41.0 132.4	75 49.4 -38.9 129.7	75 02.4 -36.8 127.3	74 14.0 -34.9 125.1	73 24.3 -33.1 123.2
10°	75 53.6 -43.1 135.4	75 10.5 -41.0 132.7	74 25.6 -39.0 130.3	73 39.1 -37.2 128.1	72 51.2 -35.4 126.1
11°	75 10.5 -44.9 138.2	74 29.5 -42.9 135.5	73 46.6 -41.1 133.1	73 01.9 -39.2 130.8	72 15.8 -37.4 128.8
12°	74 25.6 -46.5 140.8	73 46.6 -44.7 138.1	73 05.5 -42.8 135.6	72 22.7 -41.0 133.4	71 38.4 -39.4 131.3
13°	73 39.1 -47.9 143.1	73 01.9 -46.1 140.4	72 22.7 -44.3 138.0	71 41.7 -42.7 135.7	70 59.0 -41.0 133.7
14°	72 51.2 -49.0 145.1	72 15.8 -47.4 142.6	71 38.4 -45.8 140.2	70 59.0 -44.1 137.9	70 18.0 -42.5 135.9
15°	72 02.2 -50.1 147.1	71 28.4 -48.5 144.5	70 52.6 -46.9 142.2	70 14.9 -45.4 140.0	69 35.5 -43.8 137.9
16°	71 12.1 -51.0 148.8	70 39.9 -49.5 146.4	70 05.7 -48.1 144.1	69 29.5 -46.5 141.9	68 51.7 -45.1 139.8
17°	70 21.1 -51.7 150.4	69 50.4 -50.4 148.0	69 17.6 -48.9 145.8	68 43.0 -47.6 143.7	68 06.6 -46.2 141.6
18°	69 29.4 -52.5 151.9	69 00.0 -51.1 149.6	68 28.7 -49.9 147.4	67 55.4 -48.5 145.3	67 20.4 -47.2 143.3
19°	68 36.9 -53.0 153.2	68 08.9 -51.9 151.0	67 38.8 -50.6 148.9	67 06.9 -49.4 146.8	66 33.2 -48.1 144.9
20°	67 43.9 -53.6 154.5	67 17.0 -52.4 152.3	66 48.2 -51.3 150.3	66 17.5 -50.1 148.3	65 45.1 -48.8 146.4
21°	66 50.3 -54.1 155.7	66 24.6 -53.0 153.6	65 56.9 -51.9 151.6	65 27.4 -50.7 149.6	64 56.3 -49.6 147.8
22°	65 56.2 -54.5 156.7	65 31.6 -53.5 154.7	65 05.0 -52.4 152.8	64 36.7 -51.4 150.9	64 06.7 -50.3 149.1
23°	65 01.7 -54.8 157.8	64 38.1 -54.0 155.8	64 12.6 -53.0 153.9	63 45.3 -51.9 152.1	63 16.4 -50.9 150.3
24°	64 06.9 -55.3 158.7	63 44.1 -54.3 156.8	63 19.6 -53.4 155.0	62 53.4 -52.4 153.2	62 25.5 -51.4 151.5
25°	63 11.6 -55.5 159.6	62 49.8 -54.7 157.7	62 26.2 -53.8 156.0	62 01.0 -52.9 154.2	61 34.1 -51.9 152.6
26°	62 16.1 -55.8 160.4	61 55.1 -55.0 158.6	61 32.4 -54.1 156.9	61 08.1 -53.3 155.2	60 42.2 -52.4 153.6
27°	61 20.3 -56.0 161.2	61 00.1 -55.3 159.5	60 38.3 -54.5 157.8	60 14.8 -53.7 156.2	59 49.8 -52.8 154.6
28°	60 24.3 -56.3 161.9	60 04.8 -55.5 160.3	59 43.8 -54.9 158.6	59 21.1 -54.0 157.1	58 57.0 -53.2 155.5
29°	59 28.0 -56.5 162.6	59 09.3 -55.9 161.0	58 48.9 -55.0 159.4	58 27.1 -54.3 157.9	58 03.8 -53.5 156.4

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	75 00.0 -02.0 90.0	74 00.0 -01.8 90.0	73 00.0 -01.7 90.0	72 00.0 -01.6 90.0	71 00.0 -01.5 90.0
1°	74 58.0 -05.8 93.9	73 58.2 -05.5 93.6	72 58.3 -05.1 93.4	71 58.4 -04.8 93.2	70 58.5 -04.6 93.1
2°	74 52.2 -09.6 97.7	73 52.7 -09.0 97.2	72 53.2 -08.5 96.8	71 53.6 -08.0 96.4	70 53.9 -07.5 96.1
3°	74 42.6 -13.3 101.4	73 43.7 -12.5 100.8	72 44.7 -11.7 100.2	71 45.6 -11.1 99.6	70 46.4 -10.5 99.1
4°	74 29.3 -16.9 105.1	73 31.2 -15.8 104.2	72 33.0 -15.0 103.5	71 34.5 -14.1 102.8	70 35.9 -13.3 102.1
5°	74 12.4 -20.2 108.7	73 15.4 -19.0 107.6	72 18.0 -17.9 106.7	71 20.4 -16.9 105.8	70 22.6 -16.1 105.0
6°	73 52.2 -23.3 112.1	72 56.4 -22.1 110.9	72 00.1 -20.8 109.8	71 03.5 -19.8 108.8	70 06.5 -18.7 107.9
7°	73 28.9 -26.3 115.4	72 34.3 -24.8 114.0	71 39.3 -23.6 112.8	70 43.7 -22.3 111.7	69 47.8 -21.3 110.7
8°	73 02.6 -29.0 118.5	72 09.5 -27.5 117.0	71 15.7 -26.1 115.7	70 21.4 -24.9 114.5	69 26.5 -23.6 113.3
9°	72 33.6 -31.4 121.5	71 42.0 -29.9 119.9	70 49.6 -28.5 118.4	69 56.5 -27.1 117.1	69 02.9 -26.0 115.9
10°	72 02.2 -33.8 124.3	71 12.1 -32.2 122.6	70 21.1 -30.7 121.1	69 29.4 -29.4 119.7	68 36.9 -28.0 118.4
11°	71 28.4 -35.8 126.9	70 39.9 -34.2 125.2	69 50.4 -32.8 123.6	69 00.0 -31.3 122.2	68 08.9 -30.1 120.8
12°	70 52.6 -37.7 129.4	70 05.7 -36.2 127.6	69 17.6 -34.6 126.0	68 28.7 -33.3 124.5	67 38.8 -31.9 123.1
13°	70 14.9 -39.4 131.7	69 29.5 -37.8 129.9	68 43.0 -36.4 128.3	67 55.4 -35.0 126.8	67 06.9 -33.7 125.3
14°	69 35.5 -40.9 133.9	68 51.7 -39.5 132.1	68 06.6 -38.0 130.5	67 20.4 -36.6 128.9	66 33.2 -35.3 127.4
15°	68 54.6 -42.4 136.0	68 12.2 -40.9 134.2	67 28.6 -39.5 132.5	66 43.8 -38.1 130.9	65 57.9 -36.7 129.5
16°	68 12.2 -43.6 137.9	67 31.3 -42.2 136.1	66 49.1 -40.9 134.4	66 05.7 -39.5 132.9	65 21.2 -38.2 131.4
17°	67 28.6 -44.8 139.8	66 49.1 -43.4 138.0	66 08.2 -42.0 136.3	65 26.2 -40.8 134.7	64 43.0 -39.5 133.2
18°	66 43.8 -45.9 141.5	66 05.7 -44.5 139.7	65 26.2 -43.2 138.0	64 45.4 -41.9 136.4	64 03.5 -40.6 134.9
19°	65 57.9 -46.8 143.1	65 21.2 -45.6 141.3	64 43.0 -44.3 139.7	64 03.5 -43.0 138.1	63 22.9 -41.8 136.6
20°	65 11.1 -47.6 144.6	64 35.6 -46.4 142.9	63 58.7 -45.2 141.2	63 20.5 -44.0 139.7	62 41.1 -42.8 138.2
21°	64 23.5 -48.4 146.0	63 49.2 -47.2 144.3	63 13.5 -46.0 142.7	62 36.5 -44.9 141.2	61 58.3 -43.7 139.7
22°	63 35.1 -49.2 147.4	63 02.0 -48.0 145.7	62 27.5 -46.9 144.1	61 51.6 -45.7 142.6	61 14.6 -44.6 141.1
23°	62 45.9 -49.8 148.6	62 14.0 -48.8 147.0	61 40.6 -47.6 145.4	61 05.9 -46.5 143.9	60 30.0 -45.4 142.5
24°	61 56.1 -50.4 149.8	61 25.2 -49.3 148.2	60 53.0 -48.3 146.7	60 19.4 -47.2 145.2	59 44.6 -46.2 143.8
25°	61 05.7 -50.9 151.0	60 35.9 -49.9 149.4	60 04.7 -48.9 147.9	59 32.2 -47.9 146.5	58 58.4 -46.8 145.1
26°	60 14.8 -51.4 152.0	59 46.0 -50.5 150.5	59 15.8 -49.5 149.1	58 44.3 -48.5 147.6	58 11.6 -47.5 146.3
27°	59 23.4 -51.9 153.1	58 55.5 -51.0 151.6	58 26.3 -50.0 150.2	57 55.8 -49.1 148.8	57 24.1 -48.1 147.4
28°	58 31.5 -52.4 154.0	58 04.5 -51.4 152.6	57 36.3 -50.6 151.2	57 06.7 -49.6 149.8	56 36.0 -48.7 148.5
29°	57 39.1 -52.7 155.0	57 13.1 -51.9 153.6	56 45.7 -50.9 152.2	56 17.1 -50.1 150.9	55 47.3 -49.2 149.6

Declination CONTRARY name to Latitude

Latitude 0°

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°	70 00.0 -01.4 90.0	69 00.0 -01.4 90.0	68 00.0 -01.3 90.0	67 00.0 -01.2 90.0	66 00.0 -01.2 90.0
1°	69 58.6 -04.3 92.9	68 58.6 -04.0 92.8	67 58.7 -03.9 92.7	66 58.8 -03.7 92.6	65 58.8 -03.5 92.5
2°	69 54.3 -07.2 95.8	68 54.6 -06.8 95.6	67 54.8 -06.4 95.3	66 55.1 -06.2 95.1	65 55.3 -05.8 94.9
3°	69 47.1 -09.9 98.7	68 47.8 -09.4 98.3	67 48.4 -09.0 98.0	66 48.9 -08.5 97.6	65 49.5 -08.2 97.3
4°	69 37.2 -12.6 101.6	68 38.4 -12.1 101.0	67 39.4 -11.4 100.6	66 40.4 -10.9 100.1	65 41.3 -10.4 99.8
5°	69 24.6 -15.3 104.3	68 26.3 -14.5 103.7	67 28.0 -13.9 103.1	66 29.5 -13.2 102.6	65 30.9 -12.6 102.1
6°	69 09.3 -17.8 107.1	68 11.8 -16.9 106.3	67 14.1 -16.1 105.7	66 16.3 -15.5 105.1	65 18.3 -14.8 104.5
7°	68 51.5 -20.3 109.7	67 54.9 -19.4 108.9	66 58.0 -18.5 108.1	66 00.8 -17.6 107.4	65 03.5 -16.9 106.8
8°	68 31.2 -22.6 112.3	67 35.5 -21.5 111.4	66 39.5 -20.6 110.6	65 43.2 -19.7 109.8	64 46.6 -18.9 109.1
9°	68 08.6 -24.7 114.8	67 14.0 -23.7 113.8	66 18.9 -22.7 112.9	65 23.5 -21.8 112.1	64 27.7 -20.8 111.3
10°	67 43.9 -26.9 117.3	66 50.3 -25.7 116.2	65 56.2 -24.6 115.2	65 01.7 -23.6 114.3	64 06.9 -22.8 113.4
11°	67 17.0 -28.8 119.6	66 24.6 -27.7 118.5	65 31.6 -26.6 117.4	64 38.1 -25.5 116.4	63 44.1 -24.5 115.5
12°	66 48.2 -30.7 121.9	65 56.9 -29.5 120.7	65 05.0 -28.3 119.6	64 12.6 -27.3 118.5	63 19.6 -26.2 117.6
13°	66 17.5 -32.4 124.0	65 27.4 -31.1 122.8	64 36.7 -30.0 121.6	63 45.3 -28.9 120.6	62 53.4 -27.9 119.6
14°	65 45.1 -34.0 126.1	64 56.3 -32.8 124.8	64 06.7 -31.6 123.6	63 16.4 -30.5 122.5	62 25.5 -29.4 121.5
15°	65 11.1 -35.5 128.1	64 23.5 -34.3 126.8	63 35.1 -33.1 125.6	62 45.9 -31.9 124.4	61 56.1 -30.9 123.4
16°	64 35.6 -36.9 130.0	63 49.2 -35.7 128.7	63 02.0 -34.5 127.4	62 14.0 -33.4 126.3	61 25.2 -32.2 125.2
17°	63 58.7 -38.2 131.8	63 13.5 -37.0 130.5	62 27.5 -35.9 129.2	61 40.6 -34.7 128.0	60 53.0 -33.6 126.9
18°	63 20.5 -39.4 133.5	62 36.5 -38.2 132.2	61 51.6 -37.0 130.9	61 05.9 -35.9 129.7	60 19.4 -34.8 128.6
19°	62 41.1 -40.6 135.2	61 58.3 -39.4 133.9	61 14.6 -38.2 132.6	60 30.0 -37.1 131.4	59 44.6 -36.0 130.2
20°	62 00.5 -41.6 136.8	61 18.9 -40.4 135.4	60 36.4 -39.3 134.2	59 52.9 -38.2 133.0	59 08.6 -37.1 131.8
21°	61 18.9 -42.5 138.3	60 38.5 -41.4 137.0	59 57.1 -40.3 135.7	59 14.7 -39.2 134.5	58 31.5 -38.1 133.3
22°	60 36.4 -43.5 139.8	59 57.1 -42.4 138.4	59 16.8 -41.3 137.2	58 35.5 -40.2 136.0	57 53.4 -39.1 134.8
23°	59 52.9 -44.3 141.1	59 14.7 -43.2 139.8	58 35.5 -42.1 138.6	57 55.3 -41.0 137.4	57 14.3 -40.1 136.2
24°	59 08.6 -45.1 142.5	58 31.5 -44.0 141.2	57 53.4 -43.0 139.9	57 14.3 -42.0 138.7	56 34.2 -40.9 137.6
25°	58 23.5 -45.8 143.7	57 47.5 -44.8 142.5	57 10.4 -43.8 141.2	56 32.3 -42.7 140.0	55 53.3 -41.7 138.9
26°	57 37.7 -46.5 145.0	57 02.7 -45.5 143.7	56 26.6 -44.4 142.5	55 49.6 -43.5 141.3	55 11.6 -42.4 140.2
27°	56 51.2 -47.1 146.1	56 17.2 -46.1 144.9	55 42.2 -45.2 143.7	55 06.1 -44.1 142.5	54 29.2 -43.2 141.4
28°	56 04.1 -47.7 147.2	55 31.1 -46.8 146.0	54 57.0 -45.8 144.8	54 22.0 -44.9 143.7	53 46.0 -43.9 142.6
29°	55 16.4 -48.3 148.3	54 44.3 -47.3 147.1	54 11.2 -46.4 145.9	53 37.1 -45.4 144.8	53 02.1 -44.5 143.7

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°	65 00.0 -01.1 90.0	64 00.0 -01.1 90.0	63 00.0 -01.0 90.0	62 00.0 -01.0 90.0	61 00.0 -00.9 90.0
1°	64 58.9 -03.4 92.4	63 58.9 -03.2 92.3	62 59.0 -03.1 92.2	61 59.0 -02.9 92.1	60 59.1 -02.9 92.1
2°	64 55.5 -05.6 94.7	63 55.7 -05.3 94.6	62 55.9 -05.1 94.4	61 56.1 -04.9 94.3	60 56.2 -04.7 94.1
3°	64 49.9 -07.8 97.1	63 50.4 -07.5 96.8	62 50.8 -07.2 96.6	61 51.2 -06.9 96.4	60 51.5 -06.5 96.2
4°	64 42.1 -09.9 99.4	63 42.9 -09.5 99.1	62 43.6 -09.1 98.8	61 44.3 -08.7 98.5	60 45.0 -08.5 98.2
5°	64 32.2 -12.1 101.7	63 33.4 -11.6 101.3	62 34.5 -11.1 100.9	61 35.6 -10.7 100.6	60 36.5 -10.2 100.2
6°	64 20.1 -14.1 104.0	63 21.8 -13.5 103.5	62 23.4 -13.0 103.0	61 24.9 -12.5 102.6	60 26.3 -12.0 102.2
7°	64 06.0 -16.2 106.2	63 08.3 -15.6 105.6	62 10.4 -14.9 105.1	61 12.4 -14.3 104.7	60 14.3 -13.7 104.2
8°	63 49.8 -18.1 108.4	62 52.7 -17.3 107.8	61 55.5 -16.7 107.2	60 58.1 -16.0 106.7	60 00.6 -15.5 106.2
9°	63 31.7 -20.1 110.5	62 35.4 -19.3 109.9	61 38.8 -18.5 109.2	60 42.1 -17.8 108.6	59 45.1 -17.1 108.1
10°	63 11.6 -21.8 112.6	62 16.1 -21.0 111.9	61 20.3 -20.2 111.2	60 24.3 -19.5 110.6	59 28.0 -18.7 110.0
11°	62 49.8 -23.6 114.7	61 55.1 -22.7 113.9	61 00.1 -21.8 113.2	60 04.8 -21.0 112.5	59 09.3 -20.4 111.8
12°	62 26.2 -25.2 116.7	61 32.4 -24.3 115.9	60 38.3 -23.5 115.1	59 43.8 -22.7 114.4	58 48.9 -21.8 113.7
13°	62 01.0 -26.9 118.6	61 08.1 -25.9 117.8	60 14.8 -25.0 117.0	59 21.1 -24.1 116.2	58 27.1 -23.3 115.5
14°	61 34.1 -28.4 120.5	60 42.2 -27.4 119.6	59 49.8 -26.4 118.8	58 57.0 -25.5 118.0	58 03.8 -24.7 117.2
15°	61 05.7 -29.8 122.4	60 14.8 -28.8 121.4	59 23.4 -27.9 120.5	58 31.5 -27.0 119.7	57 39.1 -26.0 118.9
16°	60 35.9 -31.2 124.2	59 46.0 -30.2 123.2	58 55.5 -29.2 122.3	58 04.5 -28.2 121.4	57 13.1 -27.4 120.6
17°	60 04.7 -32.5 125.9	59 15.8 -31.5 124.9	58 26.3 -30.5 124.0	57 36.3 -29.6 123.1	56 45.7 -28.6 122.2
18°	59 32.2 -33.8 127.6	58 44.3 -32.7 126.5	57 55.8 -31.7 125.6	57 06.7 -30.7 124.7	56 17.1 -29.8 123.8
19°	58 58.4 -34.9 129.2	58 11.6 -33.9 128.1	57 24.1 -32.9 127.2	56 36.0 -31.9 126.3	55 47.3 -30.9 125.4
20°	58 23.5 -36.0 130.7	57 37.7 -35.0 129.7	56 51.2 -34.0 128.7	56 04.1 -33.0 127.8	55 16.4 -32.1 126.9
21°	57 47.5 -37.1 132.2	57 02.7 -36.1 131.2	56 17.2 -35.0 130.2	55 31.1 -34.1 129.3	54 44.3 -33.1 128.4
22°	57 10.4 -38.1 133.7	56 26.6 -37.0 132.7	55 42.2 -36.1 131.7	54 57.0 -35.0 130.7	54 11.2 -34.1 129.8
23°	56 32.3 -39.0 135.1	55 49.6 -38.0 134.1	55 06.1 -36.9 133.1	54 22.0 -36.0 132.1	53 37.1 -35.0 131.2
24°	55 53.3 -39.8 136.5	55 11.6 -38.8 135.4	54 29.2 -37.9 134.4	53 46.0 -36.9 133.5	53 02.1 -35.9 132.6
25°	55 13.5 -40.7 137.8	54 32.8 -39.7 136.8	53 51.3 -38.7 135.8	53 09.1 -37.8 134.8	52 26.2 -36.8 133.9
26°	54 32.8 -41.5 139.1	53 53.1 -40.5 138.1	53 12.6 -39.6 137.1	52 31.3 -38.5 136.1	51 49.4 -37.7 135.2
27°	53 51.3 -42.2 140.3	53 12.6 -41.3 139.3	52 33.0 -40.2 138.3	51 52.8 -39.4 137.3	51 11.7 -38.4 136.4
28°	53 09.1 -42.9 141.5	52 31.3 -41.9 140.5	51 52.8 -40.1 139.5	51 13.4 -40.1 138.6	50 33.3 -39.1 137.6
29°	52 26.2 -43.6 142.7	51 49.4 -42.7 141.7	51 11.7 -41.6 140.7	50 33.3 -40.7 139.7	49 54.2 -39.8 138.8

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Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	60 00.0 -00.9 90.0	59 00.0 -00.9 90.0	58 00.0 -00.8 90.0	57 00.0 -00.8 90.0	56 00.0 -00.8 90.0
1°	59 59.1 -02.7 92.0	58 59.1 -02.6 91.9	57 59.2 -02.5 91.9	56 59.2 -02.4 91.8	55 59.2 -02.3 91.8
2°	59 56.4 -04.5 94.0	58 56.5 -04.3 93.9	57 56.7 -04.2 93.8	56 56.8 -04.0 93.7	55 56.9 -03.9 93.6
3°	59 51.9 -06.4 96.0	58 52.2 -06.1 95.8	57 52.5 -05.9 95.6	56 52.8 -05.7 95.5	55 53.0 -05.4 95.4
4°	59 45.5 -08.0 98.0	58 46.1 -07.8 97.7	57 46.6 -07.4 97.5	56 47.1 -07.2 97.3	55 47.6 -06.9 97.1
5°	59 37.5 -09.9 99.9	58 38.3 -09.4 99.6	57 39.2 -09.1 99.4	56 39.9 -08.7 99.1	55 40.7 -08.5 98.9
6°	59 27.6 -11.5 101.9	58 28.9 -11.1 101.5	57 30.1 -10.7 101.2	56 31.2 -10.3 100.9	55 32.2 -09.9 100.6
7°	59 16.1 -13.2 103.8	58 17.8 -12.8 103.4	57 19.4 -12.3 103.0	56 20.9 -11.8 102.7	55 22.3 -11.4 102.4
8°	59 02.9 -14.9 105.7	58 05.0 -14.3 105.3	57 07.1 -13.8 104.9	56 09.1 -13.4 104.5	55 10.9 -12.8 104.1
9°	58 48.0 -16.5 107.6	57 50.7 -15.9 107.1	56 53.3 -15.3 106.6	55 55.7 -14.7 106.2	54 58.1 -14.3 105.8
10°	58 31.5 -18.1 109.4	57 34.8 -17.4 108.9	56 38.0 -16.8 108.4	55 41.0 -16.2 107.9	54 43.8 -15.6 107.5
11°	58 13.4 -19.5 111.2	57 17.4 -18.9 110.7	56 21.2 -18.3 110.1	55 24.8 -17.6 109.6	54 28.2 -17.0 109.2
12°	57 53.9 -21.1 113.0	56 58.5 -20.3 112.4	56 02.9 -19.6 111.9	55 07.2 -19.0 111.3	54 11.2 -18.4 110.8
13°	57 32.8 -22.5 114.8	56 38.2 -21.7 114.1	55 43.3 -21.0 113.5	54 48.2 -20.3 113.0	53 52.8 -19.6 112.4
14°	57 10.3 -23.9 116.5	56 16.5 -23.1 115.8	55 22.3 -22.3 115.2	54 27.9 -21.6 114.6	53 33.2 -20.9 114.0
15°	56 46.4 -25.2 118.2	55 53.4 -24.4 117.5	55 00.0 -23.6 116.8	54 06.3 -22.8 116.2	53 12.3 -22.1 115.6
16°	56 21.2 -26.4 119.8	55 29.0 -25.6 119.1	54 36.4 -24.8 118.4	53 43.5 -24.1 117.8	52 50.2 -23.3 117.1
17°	55 54.8 -27.8 121.4	55 03.4 -26.9 120.7	54 11.6 -26.0 120.0	53 19.4 -25.2 119.3	52 26.9 -24.4 118.7
18°	55 27.0 -28.9 123.0	54 36.5 -28.0 122.2	53 45.6 -27.2 121.5	52 54.2 -26.3 120.8	52 02.5 -25.5 120.2
19°	54 58.1 -30.0 124.6	54 08.5 -29.1 123.8	53 18.4 -28.3 123.0	52 27.9 -27.4 122.3	51 37.0 -26.6 121.6
20°	54 28.1 -31.1 126.1	53 39.4 -30.2 125.2	52 50.1 -29.3 124.5	52 00.5 -28.5 123.8	51 10.4 -27.7 123.1
21°	53 57.0 -32.2 127.5	53 09.2 -31.3 126.7	52 20.8 -30.4 125.9	51 32.0 -29.5 125.2	50 42.7 -28.6 124.5
22°	53 24.8 -33.1 128.9	52 37.9 -32.2 128.1	51 50.4 -31.3 127.3	51 02.5 -30.5 126.6	50 14.1 -29.6 125.8
23°	52 51.7 -34.1 130.3	52 05.7 -33.2 129.5	51 19.1 -32.3 128.7	50 32.0 -31.4 127.9	49 44.5 -30.6 127.2
24°	52 17.6 -35.0 131.7	51 32.5 -34.1 130.8	50 46.8 -33.1 130.0	50 00.6 -32.3 129.3	49 13.9 -31.4 128.5
25°	51 42.6 -35.9 133.0	50 58.4 -34.9 132.2	50 13.7 -34.1 131.3	49 28.3 -33.1 130.6	48 42.5 -32.3 129.8
26°	51 06.7 -36.6 134.3	50 23.5 -35.8 133.4	49 39.6 -34.8 132.6	48 55.2 -34.0 131.8	48 10.2 -33.1 131.1
27°	50 30.1 -37.5 135.5	49 47.7 -36.5 134.7	49 04.8 -35.7 133.9	48 21.2 -34.7 133.1	47 37.1 -33.9 132.3
28°	49 52.6 -38.2 136.8	49 11.2 -37.4 135.9	48 29.1 -36.4 135.1	47 46.5 -35.6 134.3	47 03.2 -34.6 133.6
29°	49 14.4 -39.0 137.9	48 33.8 -38.0 137.1	47 52.7 -37.1 136.3	47 10.9 -36.2 135.5	46 28.6 -35.4 134.7

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°	55 00.0 -00.7 90.0	54 00.0 -00.7 90.0	53 00.0 -00.7 90.0	52 00.0 -00.7 90.0	51 00.0 -00.6 90.0
1°	54 59.3 -02.3 91.7	53 59.3 -02.2 91.7	52 59.3 -02.1 91.7	51 59.3 -02.0 91.6	50 59.4 -02.0 91.6
2°	54 57.0 -03.7 93.5	53 57.1 -03.6 93.4	52 57.2 -03.4 93.3	51 57.3 -03.3 93.2	50 57.4 -03.2 93.2
3°	54 53.3 -05.2 95.2	53 53.5 -05.0 95.1	52 53.8 -04.9 95.0	51 54.0 -04.7 94.9	50 54.2 -04.5 94.8
4°	54 48.1 -06.7 97.0	53 48.5 -06.4 96.8	52 48.9 -06.2 96.6	51 49.3 -06.0 96.5	50 49.7 -05.8 96.3
5°	54 41.4 -08.1 98.7	53 42.1 -07.9 98.5	52 42.7 -07.6 98.3	51 43.3 -07.3 98.1	50 43.9 -07.1 97.9
6°	54 33.3 -09.6 100.4	53 34.2 -09.2 100.1	52 35.1 -08.9 99.9	51 36.0 -08.6 99.7	50 36.8 -08.3 99.5
7°	54 23.7 -11.0 102.1	53 25.0 -10.6 101.8	52 26.2 -10.2 101.5	51 27.4 -09.9 101.3	50 28.5 -09.5 101.0
8°	54 12.7 -12.4 103.8	53 14.4 -12.0 103.4	52 16.0 -11.6 103.1	51 17.5 -11.1 102.9	50 19.0 -10.8 102.6
9°	54 00.3 -13.8 105.4	53 02.4 -13.3 105.1	52 04.4 -12.8 104.7	51 06.4 -12.4 104.4	50 08.2 -12.0 104.1
10°	53 46.5 -15.1 107.1	52 49.1 -14.6 106.7	51 51.6 -14.1 106.3	50 54.0 -13.7 106.0	49 56.2 -13.1 105.7
11°	53 31.4 -16.4 108.7	52 34.5 -15.9 108.3	51 37.5 -15.4 107.9	50 40.3 -14.8 107.5	49 43.1 -14.4 107.2
12°	53 15.0 -17.7 110.3	52 18.6 -17.1 109.9	51 22.1 -16.5 109.5	50 25.5 -16.0 109.0	49 28.7 -15.5 108.7
13°	52 57.3 -19.0 111.9	52 01.5 -18.3 111.4	51 05.6 -17.8 111.0	50 09.5 -17.2 110.6	49 13.2 -16.6 110.1
14°	52 38.3 -20.2 113.5	51 43.2 -19.6 113.0	50 47.8 -18.9 112.5	49 52.3 -18.3 112.0	48 56.6 -17.7 111.6
15°	52 18.1 -21.4 115.0	51 23.6 -20.7 114.5	50 28.9 -20.0 114.0	49 34.0 -19.4 113.5	48 38.9 -18.8 113.1
16°	51 56.7 -22.6 116.6	51 02.9 -21.8 116.0	50 08.9 -21.2 115.5	49 14.6 -20.5 115.0	48 20.1 -19.9 114.5
17°	51 34.1 -23.6 118.1	50 41.1 -23.0 117.5	49 47.7 -22.2 116.9	48 54.1 -21.6 116.4	48 00.2 -20.9 115.9
18°	51 10.5 -24.8 119.5	50 18.1 -24.0 118.9	49 25.5 -23.3 118.4	48 32.5 -22.5 117.8	47 39.3 -21.9 117.3
19°	50 45.7 -25.8 121.0	49 54.1 -25.0 120.4	49 02.2 -24.3 119.8	48 10.0 -23.6 119.2	47 17.4 -22.8 118.7
20°	50 19.9 -26.8 122.4	49 29.1 -26.1 121.8	48 37.9 -25.3 121.2	47 46.4 -24.6 120.6	46 54.6 -23.8 120.0
21°	49 53.1 -27.9 123.8	49 03.0 -27.0 123.1	48 12.6 -26.3 122.5	47 21.8 -25.4 121.9	46 30.8 -24.8 121.4
22°	49 25.2 -28.7 125.2	48 36.0 -28.0 124.5	47 46.3 -27.1 123.9	46 56.4 -26.4 123.3	46 06.0 -25.6 122.7
23°	48 56.5 -29.7 126.5	48 08.0 -28.8 125.8	47 19.2 -28.1 125.2	46 30.0 -27.3 124.6	45 40.4 -26.5 124.0
24°	48 26.8 -30.6 127.8	47 39.2 -29.8 127.1	46 51.1 -28.9 126.5	46 02.7 -28.1 125.9	45 13.9 -27.4 125.3
25°	47 56.2 -31.4 129.1	47 09.4 -30.6 128.4	46 22.2 -29.8 127.8	45 34.6 -29.0 127.1	44 46.5 -28.1 126.5
26°	47 24.8 -32.3 130.4	46 38.8 -31.4 129.7	45 52.4 -30.5 129.0	45 05.6 -29.7 128.4	44 18.4 -29.0 127.8
27°	46 52.5 -33.0 131.6	46 07.4 -32.2 130.9	45 21.9 -31.4 130.3	44 35.9 -30.6 129.6	43 49.4 -29.7 129.0
28°	46 19.5 -33.8 132.8	45 35.2 -32.9 132.1	44 50.5 -32.1 131.5	44 05.3 -31.2 130.8	43 19.7 -30.5 130.2
29°	45 45.7 -34.5 134.0	45 02.3 -33.6 133.3	44 18.4 -32.8 132.6	43 34.1 -32.0 132.0	42 49.2 -31.1 131.4

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	50 00.0 -00.6 90.0	49 00.0 -00.6 90.0	48 00.0 -00.6 90.0	47 00.0 -00.6 90.0	46 00.0 -00.5 90.0
1°	49 59.4 -01.9 91.6	48 59.4 -01.8 91.5	47 59.4 -01.7 91.5	46 59.4 -01.6 91.5	45 59.5 -01.7 91.4
2°	49 57.5 -03.1 93.1	48 57.6 -03.0 93.0	47 57.7 -02.9 93.0	46 57.8 -02.8 92.9	45 57.8 -02.7 92.9
3°	49 54.4 -04.4 94.7	48 54.6 -04.2 94.6	47 54.8 -04.1 94.5	46 55.0 -04.0 94.4	45 55.1 -03.8 94.3
4°	49 50.0 -05.5 96.2	48 50.4 -05.4 96.1	47 50.7 -05.2 96.0	46 51.0 -05.0 95.9	45 51.3 -04.8 95.7
5°	49 44.5 -06.9 97.8	48 45.0 -06.6 97.6	47 45.5 -06.3 97.4	46 46.0 -06.1 97.3	45 46.5 -05.9 97.2
6°	49 37.6 -08.0 99.3	48 38.4 -07.7 99.1	47 39.2 -07.5 98.9	46 39.9 -07.3 98.8	45 40.6 -07.0 98.6
7°	49 29.6 -09.2 100.8	48 30.7 -08.9 100.6	47 31.7 -08.6 100.4	46 32.6 -08.3 100.2	45 33.6 -08.1 100.0
8°	49 20.4 -10.4 102.3	48 21.8 -10.1 102.1	47 23.1 -09.8 101.9	46 24.3 -09.4 101.6	45 25.5 -09.0 101.4
9°	49 10.0 -11.6 103.8	48 11.7 -11.2 103.6	47 13.3 -10.8 103.3	46 14.9 -10.4 103.1	45 16.5 -10.2 102.8
10°	48 58.4 -12.7 105.3	48 00.5 -12.3 105.0	47 02.5 -11.9 104.8	46 04.5 -11.5 104.5	45 06.3 -11.1 104.2
11°	48 45.7 -13.9 106.8	47 48.2 -13.4 106.5	46 50.6 -12.9 106.2	45 53.0 -12.6 105.9	44 55.2 -12.1 105.6
12°	48 31.8 -15.0 108.3	47 34.8 -14.5 108.0	46 37.7 -14.1 107.6	45 40.4 -13.5 107.3	44 43.1 -13.1 107.0
13°	48 16.8 -16.1 109.8	47 20.3 -15.6 109.4	46 23.6 -15.0 109.0	45 26.9 -14.6 108.7	44 30.0 -14.1 108.4
14°	48 00.7 -17.1 111.2	47 04.7 -16.6 110.8	46 08.6 -16.1 110.4	45 12.3 -15.6 110.1	44 15.9 -15.1 109.7
15°	47 43.6 -18.2 112.6	46 48.1 -17.6 112.2	45 52.5 -17.1 111.8	44 56.7 -16.5 111.4	44 00.8 -16.0 111.1
16°	47 25.4 -19.3 114.0	46 30.5 -18.6 113.6	45 35.4 -18.0 113.2	44 40.2 -17.5 112.8	43 44.8 -16.9 112.4
17°	47 06.1 -20.2 115.4	46 11.9 -19.7 115.0	45 17.4 -19.0 114.6	44 22.7 -18.4 114.1	43 27.9 -17.9 113.8
18°	46 45.9 -21.2 116.8	45 52.2 -20.5 116.3	44 58.4 -20.0 115.9	44 04.3 -19.3 115.5	43 10.0 -18.7 115.1
19°	46 24.7 -22.2 118.2	45 31.7 -21.5 117.7	44 38.4 -20.8 117.2	43 45.0 -20.2 116.8	42 51.3 -19.6 116.4
20°	46 02.5 -23.1 119.5	45 10.2 -22.5 119.0	44 17.6 -21.8 118.5	43 24.8 -21.1 118.1	42 31.7 -20.4 117.7
21°	45 39.4 -24.0 120.8	44 47.7 -23.3 120.3	43 55.8 -22.6 119.8	43 03.7 -22.0 119.4	42 11.3 -21.3 118.9
22°	45 15.4 -24.9 122.2	44 24.4 -24.1 121.6	43 33.2 -23.5 121.1	42 41.7 -22.8 120.6	41 50.0 -22.1 120.2
23°	44 50.5 -25.8 123.4	44 00.3 -25.1 122.9	43 09.7 -24.3 122.4	42 18.9 -23.5 121.9	41 27.9 -22.9 121.4
24°	44 24.7 -26.5 124.7	43 35.2 -25.8 124.2	42 45.4 -25.1 123.6	41 55.4 -24.4 123.1	41 05.0 -23.7 122.7
25°	43 58.2 -27.4 126.0	43 09.4 -26.6 125.4	42 20.3 -25.8 124.9	41 31.0 -25.2 124.4	40 41.3 -24.4 123.9
26°	43 30.8 -28.2 127.2	42 42.8 -27.4 126.6	41 54.5 -26.7 126.1	41 05.8 -25.9 125.6	40 16.9 -25.2 125.1
27°	43 02.6 -28.9 128.4	42 15.4 -28.2 127.8	41 27.8 -27.3 127.3	40 39.9 -26.6 126.8	39 51.7 -25.9 126.3
28°	42 33.7 -29.7 129.6	41 47.2 -28.8 129.0	41 00.5 -28.1 128.5	40 13.3 -27.3 127.9	39 25.8 -26.6 127.4
29°	42 04.0 -30.4 130.8	41 18.4 -29.6 130.2	40 32.4 -28.8 129.6	39 46.0 -28.0 129.1	38 59.2 -27.2 128.6

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°	45 00.0 -00.5 90.0	44 00.0 -00.5 90.0	43 00.0 -00.5 90.0	42 00.0 -00.5 90.0	41 00.0 -00.5 90.0
1°	44 59.5 -01.6 91.4	43 59.5 -01.5 91.4	42 59.5 -01.5 91.4	41 59.5 -01.4 91.3	40 59.5 -01.3 91.3
2°	44 57.9 -02.6 92.8	43 58.0 -02.5 92.8	42 58.0 -02.4 92.7	41 58.1 -02.3 92.7	40 58.2 -02.3 92.6
3°	44 55.3 -03.7 94.2	43 55.5 -03.6 94.2	42 55.6 -03.4 94.1	41 55.8 -03.3 94.0	40 55.9 -03.2 94.0
4°	44 51.6 -04.7 95.6	43 51.9 -04.5 95.6	42 52.2 -04.4 95.5	41 52.5 -04.3 95.4	40 52.7 -04.1 95.3
5°	44 46.9 -05.7 97.1	43 47.4 -05.5 96.9	42 47.8 -05.3 96.8	41 48.2 -05.1 96.7	40 48.6 -04.9 96.6
6°	44 41.2 -06.7 98.5	43 41.9 -06.6 98.3	42 42.5 -06.3 98.2	41 43.1 -06.1 98.1	40 43.7 -05.9 97.9
7°	44 34.5 -07.8 99.9	43 35.3 -07.5 99.7	42 36.2 -07.3 99.5	41 37.0 -07.0 99.4	40 37.8 -06.8 99.2
8°	44 26.7 -08.8 101.2	43 27.8 -08.4 101.1	42 28.9 -08.2 100.9	41 30.0 -07.9 100.7	40 31.0 -07.6 100.5
9°	44 17.9 -09.7 102.6	43 19.4 -09.5 102.4	42 20.7 -09.1 102.2	41 22.1 -08.8 102.0	40 23.4 -08.5 101.9
10°	44 08.2 -10.8 104.0	43 09.9 -10.4 103.8	42 11.6 -10.0 103.6	41 13.3 -09.8 103.3	40 14.9 -09.4 103.2
11°	43 57.4 -11.7 105.4	42 59.5 -11.3 105.1	42 01.6 -11.0 104.9	41 03.5 -10.6 104.7	40 05.5 -10.3 104.4
12°	43 45.7 -12.7 106.7	42 48.2 -12.3 106.5	41 50.6 -11.9 106.2	40 52.9 -11.4 106.0	39 55.2 -11.1 105.7
13°	43 33.0 -13.7 108.1	42 35.9 -13.2 107.8	41 38.7 -12.7 107.5	40 41.5 -12.4 107.3	39 44.1 -11.9 107.0
14°	43 19.3 -14.5 109.4	42 22.7 -14.1 109.1	41 26.0 -13.7 108.8	40 29.1 -13.2 108.5	39 32.2 -12.8 108.3
15°	43 04.8 -15.5 110.8	42 08.6 -15.0 110.4	41 12.3 -14.5 110.1	40 15.9 -14.0 109.8	39 19.4 -13.5 109.5
16°	42 49.3 -16.4 112.1	41 53.6 -15.9 111.7	40 57.8 -15.3 111.4	40 01.9 -14.9 111.1	39 05.9 -14.4 110.8
17°	42 32.9 -17.3 113.4	41 37.7 -16.7 113.0	40 42.5 -16.2 112.7	39 47.0 -15.7 112.4	38 51.5 -15.2 112.1
18°	42 15.6 -18.1 114.7	41 21.0 -17.6 114.3	40 26.3 -17.1 114.0	39 31.3 -16.4 113.6	38 36.3 -15.9 113.3
19°	41 57.5 -19.0 116.0	41 03.4 -18.4 115.6	40 09.2 -17.8 115.2	39 14.9 -17.3 114.9	38 20.4 -16.8 114.5
20°	41 38.5 -19.9 117.2	40 45.0 -19.2 116.8	39 51.4 -18.6 116.5	38 57.6 -18.0 116.1	38 03.6 -17.4 115.7
21°	41 18.6 -20.6 118.5	40 25.8 -20.0 118.1	39 32.8 -19.4 117.7	38 39.6 -18.8 117.3	37 46.2 -18.3 117.0
22°	40 58.0 -21.5 119.7	40 05.8 -20.8 119.3	39 13.4 -20.2 118.9	38 20.8 -19.6 118.5	37 27.9 -18.9 118.2
23°	40 36.5 -22.2 121.0	39 45.0 -21.6 120.5	38 53.2 -20.9 120.1	38 01.2 -20.3 119.7	37 09.0 -19.6 119.4
24°	40 14.3 -23.0 122.2	39 23.4 -22.3 121.8	38 32.3 -21.6 121.3	37 40.9 -21.0 120.9	36 49.4 -20.4 120.5
25°	39 51.3 -23.7 123.4	39 01.1 -23.0 123.0	38 10.7 -22.4 122.5	37 19.9 -21.6 122.1	36 29.0 -21.0 121.7
26°	39 27.6 -24.4 124.6	38 38.1 -23.8 124.1	37 48.3 -23.0 123.7	36 58.3 -22.4 123.3	36 08.0 -21.7 122.9
27°	39 03.2 -25.2 125.8	38 14.3 -24.4 125.3	37 25.3 -23.8 124.9	36 35.9 -23.0 124.4	35 46.3 -22.4 124.0
28°	38 38.0 -25.8 126.9	37 49.9 -25.1 126.5	37 01.5 -24.4 126.0	36 12.9 -23.7 125.6	35 23.9 -23.0 125.2
29°	38 12.2 -26.5 128.1	37 24.8 -25.8 127.6	36 37.1 -25.0 127.2	35 49.2 -24.3 126.7	35 00.9 -23.6 126.3

Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	40 00.0 -00.4 90.0	39 00.0 -00.4 90.0	38 00.0 -00.4 90.0	37 00.0 -00.4 90.0	36 00.0 -00.4 90.0
1°	39 59.6 -01.4 91.3	38 59.6 -01.3 91.3	37 59.6 -01.2 91.3	36 59.6 -01.2 91.3	35 59.6 -01.1 91.2
2°	39 58.2 -02.2 92.6	38 58.3 -02.1 92.6	37 58.4 -02.1 92.5	36 58.4 -01.9 92.5	35 58.5 -01.9 92.5
3°	39 56.0 -03.0 93.9	38 56.2 -03.0 93.9	37 56.3 -02.8 93.8	36 56.5 -02.8 93.8	35 56.6 -02.7 93.7
4°	39 53.0 -04.0 95.2	38 53.2 -03.8 95.1	37 53.5 -03.7 95.1	36 53.7 -03.5 95.0	35 53.9 -03.4 94.9
5°	39 49.0 -04.8 96.5	38 49.4 -04.6 96.4	37 49.8 -04.5 96.3	36 50.2 -04.4 96.3	35 50.5 -04.2 96.2
6°	39 44.2 -05.6 97.8	38 44.8 -05.5 97.7	37 45.3 -05.3 97.6	36 45.8 -05.1 97.5	35 46.3 -04.9 97.4
7°	39 38.6 -06.6 99.1	38 39.3 -06.3 99.0	37 40.0 -06.1 98.9	36 40.7 -05.8 98.7	35 41.4 -05.6 98.6
8°	39 32.0 -07.4 100.4	38 33.0 -07.1 100.3	37 33.9 -06.8 100.1	36 34.9 -06.7 100.0	35 35.8 -06.5 99.9
9°	39 24.6 -08.2 101.7	38 25.9 -08.0 101.5	37 27.1 -07.7 101.4	36 28.2 -07.4 101.2	35 29.3 -07.1 101.1
10°	39 16.4 -09.1 103.0	38 17.9 -08.7 102.8	37 19.4 -08.5 102.6	36 20.8 -08.2 102.5	35 22.2 -07.9 102.3
11°	39 07.3 -09.9 104.2	38 09.2 -09.6 104.0	37 10.9 -09.2 103.9	36 12.6 -08.9 103.7	35 14.3 -08.6 103.5
12°	38 57.4 -10.7 105.5	37 59.6 -10.4 105.3	37 01.7 -10.0 105.1	36 03.7 -09.6 104.9	35 05.7 -09.3 104.7
13°	38 46.7 -11.5 106.8	37 49.2 -11.1 106.5	36 51.7 -10.8 106.3	35 54.1 -10.4 106.1	34 56.4 -10.0 105.9
14°	38 35.2 -12.4 108.0	37 38.1 -11.9 107.8	36 40.9 -11.5 107.6	35 43.7 -11.1 107.3	34 46.4 -10.8 107.1
15°	38 22.8 -13.1 109.3	37 26.2 -12.7 109.0	36 29.4 -12.3 108.8	35 32.6 -11.9 108.5	34 35.6 -11.4 108.3
16°	38 09.7 -13.9 110.5	37 13.5 -13.5 110.3	36 17.1 -13.0 110.0	35 20.7 -12.5 109.8	34 24.2 -12.1 109.5
17°	37 55.8 -14.7 111.8	37 00.0 -14.2 111.5	36 04.1 -13.7 111.2	35 08.2 -13.3 110.9	34 12.1 -12.8 110.7
18°	37 41.1 -15.4 113.0	36 45.8 -14.9 112.7	35 50.4 -14.4 112.4	34 54.9 -14.0 112.1	33 59.3 -13.5 111.9
19°	37 25.7 -16.2 114.2	36 30.9 -15.7 113.9	35 36.0 -15.2 113.6	34 40.9 -14.6 113.3	33 45.8 -14.1 113.1
20°	37 09.5 -16.9 115.4	36 15.2 -16.3 115.1	35 20.8 -15.8 114.8	34 26.3 -15.3 114.5	33 31.7 -14.8 114.2
21°	36 52.6 -17.6 116.6	35 58.9 -17.1 116.3	35 05.0 -16.5 116.0	34 11.0 -16.0 115.7	33 16.9 -15.5 115.4
22°	36 35.0 -18.4 117.8	35 41.8 -17.8 117.5	34 48.5 -17.2 117.1	33 55.0 -16.6 116.8	33 01.4 -16.1 116.5
23°	36 16.6 -19.0 119.0	35 24.0 -18.4 118.6	34 31.3 -17.8 118.3	33 38.4 -17.3 118.0	32 45.3 -16.6 117.7
24°	35 57.6 -19.7 120.2	35 05.6 -19.1 119.8	34 13.5 -18.5 119.5	33 21.1 -17.9 119.1	32 28.7 -17.4 118.8
25°	35 37.9 -20.4 121.3	34 46.5 -19.7 121.0	33 55.0 -19.2 120.6	33 03.2 -18.5 120.3	32 11.3 -17.9 120.0
26°	35 17.5 -21.1 122.5	34 26.8 -20.4 122.1	33 35.8 -19.7 121.8	32 44.7 -19.1 121.4	31 53.4 -18.5 121.1
27°	34 56.4 -21.6 123.6	34 06.4 -21.0 123.3	33 16.1 -20.4 122.9	32 25.6 -19.7 122.5	31 34.9 -19.1 122.2
28°	34 34.8 -22.3 124.8	33 45.4 -21.7 124.4	32 55.7 -20.9 124.0	32 05.9 -20.3 123.7	31 15.8 -19.6 123.3
29°	34 12.5 -22.9 125.9	33 23.7 -22.2 125.5	32 34.8 -21.6 125.1	31 45.6 -20.9 124.8	30 56.2 -20.2 124.4

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	35 00.0 -00.4 90.0	34 00.0 -00.4 90.0	33 00.0 -00.3 90.0	32 00.0 -00.3 90.0	31 00.0 -00.3 90.0
1°	34 59.6 -01.1 91.2	33 59.6 -01.0 91.2	32 59.7 -01.1 91.2	31 59.7 -01.0 91.2	30 59.7 -01.0 91.2
2°	34 58.5 -01.8 92.4	33 58.6 -01.8 92.4	32 58.6 -01.7 92.4	31 58.7 -01.6 92.4	30 58.7 -01.5 92.3
3°	34 56.7 -02.6 93.7	33 56.8 -02.4 93.6	32 56.9 -02.3 93.6	31 57.1 -02.3 93.5	30 57.2 -02.2 93.5
4°	34 54.1 -03.3 94.9	33 54.4 -03.2 94.8	32 54.6 -03.1 94.8	31 54.8 -03.0 94.7	30 55.0 -02.9 94.7
5°	34 50.8 -04.0 96.1	33 51.2 -03.9 96.0	32 51.5 -03.7 96.0	31 51.8 -03.6 95.9	30 52.1 -03.4 95.8
6°	34 46.8 -04.7 97.3	33 47.3 -04.6 97.2	32 47.8 -04.4 97.1	31 48.2 -04.2 97.1	30 48.7 -04.1 97.0
7°	34 42.1 -05.5 98.5	33 42.7 -05.2 98.4	32 43.4 -05.1 98.3	31 44.0 -04.9 98.2	30 44.6 -04.7 98.2
8°	34 36.6 -06.1 99.7	33 37.5 -06.0 99.6	32 38.3 -05.7 99.5	31 39.1 -05.5 99.4	30 39.9 -05.3 99.3
9°	34 30.5 -06.9 100.9	33 31.5 -06.6 100.8	32 32.6 -06.4 100.7	31 33.6 -06.1 100.6	30 34.6 -05.9 100.5
10°	34 23.6 -07.6 102.1	33 24.9 -07.3 102.0	32 26.2 -07.1 101.9	31 27.5 -06.8 101.7	30 28.7 -06.5 101.6
11°	34 16.0 -08.3 103.3	33 17.6 -08.0 103.2	32 19.1 -07.7 103.0	31 20.7 -07.4 102.9	30 22.2 -07.2 102.8
12°	34 07.7 -09.0 104.5	33 09.6 -08.7 104.4	32 11.4 -08.3 104.2	31 13.3 -08.1 104.1	30 15.0 -07.7 103.9
13°	33 58.7 -09.7 105.7	33 00.9 -09.3 105.6	32 03.1 -09.0 105.4	31 05.2 -08.6 105.2	30 07.3 -08.3 105.1
14°	33 49.0 -10.4 106.9	32 51.6 -10.0 106.7	31 54.1 -09.6 106.6	30 56.6 -09.3 106.4	29 59.0 -09.0 106.2
15°	33 38.6 -11.0 108.1	32 41.6 -10.7 107.9	31 44.5 -10.3 107.7	30 47.3 -09.9 107.5	29 50.0 -09.5 107.4
16°	33 27.6 -11.7 109.3	32 30.9 -11.2 109.1	31 34.2 -10.9 108.9	30 37.4 -10.5 108.7	29 40.5 -10.1 108.5
17°	33 15.9 -12.4 110.5	32 19.7 -12.0 110.2	31 23.3 -11.5 110.0	30 26.9 -11.1 109.8	29 30.4 -10.6 109.6
18°	33 03.5 -13.0 111.6	32 07.7 -12.5 111.4	31 11.8 -12.1 111.2	30 15.8 -11.6 111.0	29 19.8 -11.3 110.8
19°	32 50.5 -13.6 112.8	31 55.2 -13.2 112.6	30 59.7 -12.7 112.3	30 04.2 -12.3 112.1	29 08.5 -11.8 111.9
20°	32 36.9 -14.3 114.0	31 42.0 -13.8 113.7	30 47.0 -13.3 113.5	29 51.9 -12.8 113.2	28 56.7 -12.3 113.0
21°	32 22.6 -14.9 115.1	31 28.2 -14.4 114.8	30 33.7 -13.9 114.6	29 39.1 -13.4 114.4	28 44.4 -12.9 114.1
22°	32 07.7 -15.6 116.3	31 13.8 -15.0 116.0	30 19.8 -14.5 115.7	29 25.7 -14.0 115.5	28 31.5 -13.5 115.2
23°	31 52.1 -16.1 117.4	30 58.8 -15.6 117.1	30 05.3 -15.0 116.8	29 11.7 -14.5 116.6	28 18.0 -14.0 116.3
24°	31 36.0 -16.7 118.5	30 43.2 -16.1 118.2	29 50.3 -15.6 118.0	28 57.2 -15.0 117.7	28 04.0 -14.5 117.4
25°	31 19.3 -17.3 119.7	30 27.1 -16.8 119.4	29 34.7 -16.2 119.1	28 42.2 -15.6 118.8	27 49.5 -15.0 118.5
26°	31 02.0 -17.9 120.8	30 10.3 -17.3 120.5	29 18.5 -16.7 120.2	28 26.6 -16.1 119.9	27 34.5 -15.5 119.6
27°	30 44.1 -18.5 121.9	29 53.0 -17.8 121.6	29 01.8 -17.2 121.3	28 10.5 -16.7 121.0	27 19.0 -16.1 120.7
28°	30 25.6 -19.0 123.0	29 35.2 -18.4 122.7	28 44.6 -17.8 122.4	27 53.8 -17.1 122.1	27 02.9 -16.5 121.8
29°	30 06.6 -19.6 124.1	29 16.8 -18.9 123.8	28 26.8 -18.2 123.5	27 36.7 -17.6 123.2	26 46.4 -17.0 122.9

Declination CONTRARY name to Latitude

Latitude 0°

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	30 00.0 -00.3 90.0	29 00.0 -00.3 90.0	28 00.0 -00.3 90.0	27 00.0 -00.3 90.0	26 00.0 -00.3 90.0
1°	29 59.7 -00.9 91.2	28 59.7 -00.9 91.1	27 59.7 -00.8 91.1	26 59.7 -00.8 91.1	25 59.7 -00.7 91.1
2°	29 58.8 -01.5 92.3	28 58.8 -01.4 92.3	27 58.9 -01.4 92.3	26 58.9 -01.3 92.2	25 59.0 -01.3 92.2
3°	29 57.3 -02.1 93.5	28 57.4 -02.0 93.4	27 57.5 -02.0 93.4	26 57.6 -01.9 93.4	25 57.7 -01.8 93.3
4°	29 55.2 -02.7 94.6	28 55.4 -02.6 94.6	27 55.5 -02.5 94.5	26 55.7 -02.4 94.5	25 55.9 -02.3 94.4
5°	29 52.5 -03.4 95.8	28 52.8 -03.2 95.7	27 53.0 -03.0 95.7	26 53.3 -02.9 95.6	25 53.6 -02.8 95.6
6°	29 49.1 -03.9 96.9	28 49.6 -03.8 96.9	27 50.0 -03.6 96.8	26 50.4 -03.4 96.7	25 50.8 -03.3 96.7
7°	29 45.2 -04.5 98.1	28 45.8 -04.3 98.0	27 46.4 -04.2 97.9	26 47.0 -04.0 97.8	25 47.5 -03.8 97.8
8°	29 40.7 -05.1 99.2	28 41.5 -04.9 99.1	27 42.2 -04.7 99.0	26 43.0 -04.5 99.0	25 43.7 -04.3 98.9
9°	29 35.6 -05.7 100.4	28 36.6 -05.5 100.3	27 37.5 -05.2 100.2	26 38.5 -05.1 100.1	25 39.4 -04.8 100.0
10°	29 29.9 -06.3 101.5	28 31.1 -06.0 101.4	27 32.3 -05.8 101.3	26 33.4 -05.5 101.2	25 34.6 -05.3 101.1
11°	29 23.6 -06.8 102.7	28 25.1 -06.6 102.5	27 26.5 -06.3 102.4	26 27.9 -06.1 102.3	25 29.3 -05.8 102.2
12°	29 16.8 -07.5 103.8	28 18.5 -07.2 103.7	27 20.2 -06.9 103.5	26 21.8 -06.5 103.4	25 23.5 -06.3 103.3
13°	29 09.3 -08.0 104.9	28 11.3 -07.7 104.8	27 13.3 -07.4 104.7	26 15.3 -07.1 104.5	25 17.2 -06.8 104.4
14°	29 01.3 -08.6 106.1	28 03.6 -08.2 105.9	27 05.9 -07.9 105.8	26 08.2 -07.6 105.6	25 10.4 -07.3 105.5
15°	28 52.7 -09.1 107.2	27 55.4 -08.8 107.0	26 58.0 -08.4 106.9	26 00.6 -08.1 106.7	25 03.1 -07.8 106.6
16°	28 43.6 -09.7 108.3	27 46.6 -09.3 108.2	26 49.6 -09.0 108.0	25 52.5 -08.6 107.8	24 55.3 -08.2 107.7
17°	28 33.9 -10.3 109.4	27 37.3 -09.9 109.3	26 40.6 -09.5 109.1	25 43.9 -09.1 108.9	24 47.1 -08.7 108.8
18°	28 23.6 -10.8 110.6	27 27.4 -10.4 110.4	26 31.1 -09.9 110.2	25 34.8 -09.6 110.0	24 38.4 -09.2 109.9
19°	28 12.8 -11.3 111.7	27 17.0 -10.9 111.5	26 21.2 -10.5 111.3	25 25.2 -10.0 111.1	24 29.2 -09.6 111.0
20°	28 01.5 -11.9 112.8	27 06.1 -11.4 112.6	26 10.7 -11.0 112.4	25 15.2 -10.6 112.2	24 19.6 -10.1 112.0
21°	27 49.6 -12.5 113.9	26 54.7 -12.0 113.7	25 59.7 -11.5 113.5	25 04.6 -11.0 113.3	24 09.5 -10.6 113.1
22°	27 37.1 -12.9 115.0	26 42.7 -12.4 114.8	25 48.2 -12.0 114.6	24 53.6 -11.5 114.4	23 58.9 -11.0 114.2
23°	27 24.2 -13.5 116.1	26 30.3 -13.0 115.9	25 36.2 -12.4 115.7	24 42.1 -11.9 115.5	23 47.9 -11.4 115.3
24°	27 10.7 -13.9 117.2	26 17.3 -13.4 117.0	25 23.8 -12.9 116.8	24 30.2 -12.4 116.6	23 36.5 -11.9 116.4
25°	26 56.8 -14.5 118.3	26 03.9 -13.9 118.1	25 10.9 -13.4 117.8	24 17.8 -12.9 117.6	23 24.6 -12.4 117.4
26°	26 42.3 -15.0 119.4	25 50.0 -14.4 119.1	24 57.5 -13.9 118.9	24 04.9 -13.3 118.7	23 12.2 -12.7 118.5
27°	26 27.3 -15.4 120.5	25 35.6 -14.9 120.2	24 43.6 -14.3 120.0	23 51.6 -13.7 119.8	22 59.5 -13.2 119.5
28°	26 11.9 -16.0 121.5	25 20.7 -15.4 121.3	24 29.3 -14.7 121.1	23 37.9 -14.2 120.8	22 46.3 -13.6 120.6
29°	25 55.9 -16.4 122.6	25 05.3 -15.8 122.4	24 14.6 -15.2 122.1	23 23.7 -14.6 121.9	22 32.7 -14.0 121.7

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°	25 00.0 -00.2 90.0	24 00.0 -00.2 90.0	23 00.0 -00.2 90.0	22 00.0 -00.2 90.0	21 00.0 -00.2 90.0
1°	24 59.8 -00.8 91.1	23 59.8 -00.7 91.1	22 59.8 -00.7 91.1	21 59.8 -00.6 91.1	20 59.8 -00.6 91.1
2°	24 59.0 -01.2 92.2	23 59.1 -01.2 92.2	22 59.1 -01.1 92.2	21 59.2 -01.1 92.2	20 59.2 -01.0 92.1
3°	24 57.8 -01.7 93.3	23 57.9 -01.6 93.3	22 58.0 -01.6 93.3	21 58.1 -01.5 93.2	20 58.2 -01.4 93.2
4°	24 56.1 -02.2 94.4	23 56.3 -02.1 94.4	22 56.4 -02.0 94.3	21 56.6 -01.9 94.3	20 56.8 -01.8 94.3
5°	24 53.9 -02.7 95.5	23 54.2 -02.6 95.5	22 54.4 -02.4 95.4	21 54.7 -02.3 95.4	20 55.0 -02.2 95.4
6°	24 51.2 -03.1 96.6	23 51.6 -03.0 96.6	22 52.0 -02.9 96.5	21 52.4 -02.7 96.5	20 52.8 -02.6 96.4
7°	24 48.1 -03.7 97.7	23 48.6 -03.5 97.7	22 49.1 -03.3 97.6	21 49.7 -03.2 97.5	20 50.2 -03.0 97.5
8°	24 44.4 -04.1 98.8	23 45.1 -03.9 98.7	22 45.8 -03.7 98.7	21 46.5 -03.6 98.6	20 47.2 -03.4 98.6
9°	24 40.3 -04.6 99.9	23 41.2 -04.4 99.8	22 42.1 -04.2 99.8	21 42.9 -04.0 99.7	20 43.8 -03.8 99.6
10°	24 35.7 -05.1 101.0	23 36.8 -04.9 100.9	22 37.9 -04.7 100.8	21 38.9 -04.4 100.8	20 40.0 -04.2 100.7
11°	24 30.6 -05.5 102.1	23 31.9 -05.3 102.0	22 33.2 -05.0 101.9	21 34.5 -04.8 101.8	20 35.8 -04.6 101.8
12°	24 25.1 -06.1 103.2	23 26.6 -05.7 103.1	22 28.2 -05.5 103.0	21 29.7 -05.2 102.9	20 31.2 -05.0 102.8
13°	24 19.0 -06.5 104.3	23 20.9 -06.2 104.2	22 22.7 -05.9 104.1	21 24.5 -05.7 104.0	20 26.2 -05.3 103.9
14°	24 12.5 -06.9 105.4	23 14.7 -06.7 105.3	22 16.8 -06.4 105.2	21 18.8 -06.0 105.1	20 20.9 -05.8 105.0
15°	24 05.6 -07.4 106.5	23 08.0 -07.1 106.3	22 10.4 -06.7 106.2	21 12.8 -06.4 106.1	20 15.1 -06.1 106.0
16°	23 58.2 -07.9 107.6	23 00.9 -07.5 107.4	22 03.7 -07.2 107.3	21 06.4 -06.9 107.2	20 09.0 -06.5 107.1
17°	23 50.3 -08.4 108.6	22 53.4 -08.0 108.5	21 56.5 -07.6 108.4	20 59.5 -07.2 108.2	20 02.5 -06.9 108.1
18°	23 41.9 -08.7 109.7	22 45.4 -08.4 109.6	21 48.9 -08.0 109.4	20 52.3 -07.6 109.3	19 55.6 -07.2 109.2
19°	23 33.2 -09.3 110.8	22 37.0 -08.8 110.7	21 40.9 -08.4 110.5	20 44.7 -08.1 110.4	19 48.4 -07.6 110.2
20°	23 23.9 -09.6 111.9	22 28.2 -09.2 111.7	21 32.5 -08.9 111.6	20 36.6 -08.4 111.4	19 40.8 -08.0 111.3
21°	23 14.3 -10.1 113.0	22 19.0 -09.7 112.8	21 23.6 -09.2 112.6	20 28.2 -08.8 112.5	19 32.8 -08.4 112.4
22°	23 04.2 -10.6 114.0	22 09.3 -10.1 113.9	21 14.4 -09.6 113.7	20 19.4 -09.1 113.5	19 24.4 -08.7 113.4
23°	22 53.6 -10.9 115.1	21 59.2 -10.4 114.9	21 04.8 -10.0 114.8	20 10.3 -09.6 114.6	19 15.7 -09.1 114.5
24°	22 42.7 -11.4 116.2	21 48.8 -10.9 116.0	20 54.8 -10.4 115.8	20 00.7 -09.9 115.7	19 06.6 -09.4 115.5
25°	22 31.3 -11.8 117.2	21 37.9 -11.3 117.0	20 44.4 -10.8 116.9	19 50.8 -10.3 116.7	18 57.2 -09.8 116.5
26°	22 19.5 -12.3 118.3	21 26.6 -11.7 118.1	20 33.6 -11.2 117.9	19 40.5 -10.6 117.7	18 47.4 -10.1 117.6
27°	22 07.2 -12.6 119.3	21 14.9 -12.1 119.2	20 22.4 -11.5 119.0	19 29.9 -11.0 118.8	18 37.3 -10.5 118.6
28°	21 54.6 -13.0 120.4	21 02.8 -12.5 120.2	20 10.9 -11.9 120.0	19 18.9 -11.4 119.8	18 26.8 -10.8 119.7
29°	21 41.6 -13.5 121.5	20 50.3 -12.8 121.2	19 59.0 -12.3 121.1	19 07.5 -11.7 120.9	18 16.0 -11.2 120.7

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Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	20 00.0 -00.2 90.0	19 00.0 -00.2 90.0	18 00.0 -00.2 90.0	17 00.0 -00.2 90.0	16 00.0 -00.2 90.0
1°	19 59.8 -00.6 91.1	18 59.8 -00.5 91.1	17 59.8 -00.5 91.1	16 59.8 -00.4 91.0	15 59.8 -00.4 91.0
2°	19 59.2 -00.9 92.1	18 59.3 -00.9 92.1	17 59.3 -00.8 92.1	16 59.4 -00.8 92.1	15 59.4 -00.8 92.1
3°	19 58.3 -01.3 93.2	18 58.4 -01.3 93.2	17 58.5 -01.2 93.2	16 58.6 -01.2 93.1	15 58.6 -01.0 93.1
4°	19 57.0 -01.8 94.3	18 57.1 -01.6 94.2	17 57.3 -01.5 94.2	16 57.4 -01.4 94.2	15 57.6 -01.4 94.2
5°	19 55.2 -02.1 95.3	18 55.5 -02.0 95.3	17 55.8 -01.9 95.3	16 56.0 -01.8 95.2	15 56.2 -01.6 95.2
6°	19 53.1 -02.4 96.4	18 53.5 -02.3 96.3	17 53.9 -02.2 96.3	16 54.2 -02.0 96.3	15 54.6 -01.9 96.2
7°	19 50.7 -02.9 97.4	18 51.2 -02.7 97.4	17 51.7 -02.6 97.4	16 52.2 -02.4 97.3	15 52.7 -02.3 97.3
8°	19 47.8 -03.2 98.5	18 48.5 -03.1 98.5	17 49.1 -02.8 98.4	16 49.8 -02.7 98.4	15 50.4 -02.5 98.3
9°	19 44.6 -03.6 99.6	18 45.4 -03.4 99.5	17 46.3 -03.3 99.5	16 47.1 -03.1 99.4	15 47.9 -02.9 99.4
10°	19 41.0 -04.0 100.6	18 42.0 -03.7 100.6	17 43.0 -03.5 100.5	16 44.0 -03.3 100.4	15 45.0 -03.1 100.4
11°	19 37.0 -04.3 101.7	18 38.3 -04.1 101.6	17 39.5 -03.9 101.6	16 40.7 -03.6 101.5	15 41.9 -03.4 101.4
12°	19 32.7 -04.7 102.7	18 34.2 -04.5 102.7	17 35.6 -04.2 102.6	16 37.1 -04.0 102.5	15 38.5 -03.7 102.5
13°	19 28.0 -05.1 103.8	18 29.7 -04.8 103.7	17 31.4 -04.5 103.6	16 33.1 -04.3 103.6	15 34.8 -04.0 103.5
14°	19 22.9 -05.4 104.9	18 24.9 -05.2 104.8	17 26.9 -04.9 104.7	16 28.8 -04.6 104.6	15 30.8 -04.3 104.5
15°	19 17.5 -05.8 105.9	18 19.7 -05.5 105.8	17 22.0 -05.2 105.7	16 24.2 -04.8 105.7	15 26.5 -04.6 105.6
16°	19 11.7 -06.2 107.0	18 14.2 -05.8 106.9	17 16.8 -05.5 106.8	16 19.4 -05.2 106.7	15 21.9 -04.9 106.6
17°	19 05.5 -06.5 108.0	18 08.4 -06.2 107.9	17 11.3 -05.8 107.8	16 14.2 -05.5 107.7	15 17.0 -05.2 107.6
18°	18 59.0 -06.9 109.1	18 02.2 -06.5 109.0	17 05.5 -06.2 108.9	16 08.7 -05.8 108.8	15 11.8 -05.4 108.7
19°	18 52.1 -07.3 110.1	17 55.7 -06.8 110.0	16 59.3 -06.5 109.9	16 02.9 -06.1 109.8	15 06.4 -05.7 109.7
20°	18 44.8 -07.6 111.2	17 48.9 -07.2 111.1	16 52.8 -06.7 110.9	15 56.8 -06.4 110.8	15 00.7 -06.0 110.7
21°	18 37.2 -07.9 112.2	17 41.7 -07.5 112.1	16 46.1 -07.1 112.0	15 50.4 -06.7 111.9	14 54.7 -06.3 111.8
22°	18 29.3 -08.3 113.3	17 34.2 -07.9 113.1	16 39.0 -07.4 113.0	15 43.7 -07.0 112.9	14 48.4 -06.5 112.8
23°	18 21.0 -08.6 114.3	17 26.3 -08.1 114.2	16 31.6 -07.7 114.1	15 36.7 -07.2 113.9	14 41.9 -06.8 113.8
24°	18 12.4 -08.9 115.4	17 18.2 -08.5 115.2	16 23.9 -08.1 115.1	15 29.5 -07.6 115.0	14 35.1 -07.1 114.9
25°	18 03.5 -09.3 116.4	17 09.7 -08.8 116.3	16 15.8 -08.3 116.1	15 21.9 -07.8 116.0	14 28.0 -07.4 115.9
26°	17 54.2 -09.6 117.4	17 00.9 -09.1 117.3	16 07.5 -08.6 117.2	15 14.1 -08.1 117.0	14 20.6 -07.6 116.9
27°	17 44.6 -10.0 118.5	16 51.8 -09.4 118.3	15 58.9 -08.9 118.2	15 06.0 -08.4 118.0	14 13.0 -07.9 117.9
28°	17 34.6 -10.3 119.5	16 42.4 -09.8 119.4	15 50.0 -09.2 119.2	14 57.6 -08.6 119.1	14 05.1 -08.1 118.9
29°	17 24.3 -10.5 120.5	16 32.6 -10.0 120.4	15 40.8 -09.5 120.2	14 49.0 -09.0 120.1	13 57.0 -08.4 120.0

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°	15 00.0 -00.1 90.0	14 00.0 -00.1 90.0	13 00.0 -00.1 90.0	12 00.0 -00.1 90.0	11 00.0 -00.1 90.0
1°	14 59.9 -00.5 91.0	13 59.9 -00.4 91.0	12 59.9 -00.4 91.0	11 59.9 -00.3 91.0	10 59.9 -00.3 91.0
2°	14 59.4 -00.7 92.1	13 59.5 -00.7 92.1	12 59.5 -00.6 92.1	11 59.6 -00.6 92.0	10 59.6 -00.5 92.0
3°	14 58.7 -00.9 93.1	13 58.8 -00.9 93.1	12 58.9 -00.8 93.1	11 59.0 -00.8 93.1	10 59.1 -00.7 93.1
4°	14 57.8 -01.3 94.1	13 57.9 -01.2 94.1	12 58.1 -01.1 94.1	11 58.2 -01.0 94.1	10 58.4 -00.9 94.1
5°	14 56.5 -01.5 95.2	13 56.7 -01.4 95.2	12 57.0 -01.3 95.1	11 57.2 -01.2 95.1	10 57.5 -01.2 95.1
6°	14 55.0 -01.9 96.2	13 55.3 -01.7 96.2	12 55.7 -01.6 96.2	11 56.0 -01.4 96.1	10 56.3 -01.3 96.1
7°	14 53.1 -02.1 97.2	13 53.6 -01.9 97.2	12 54.1 -01.8 97.2	11 54.6 -01.7 97.2	10 55.0 -01.5 97.1
8°	14 51.0 -02.3 98.3	13 51.7 -02.2 98.2	12 52.3 -02.1 98.2	11 52.9 -01.9 98.2	10 53.5 -01.7 98.1
9°	14 48.7 -02.7 99.3	13 49.5 -02.5 99.3	12 50.2 -02.3 99.2	11 51.0 -02.1 99.2	10 51.8 -01.9 99.2
10°	14 46.0 -02.9 100.3	13 47.0 -02.7 100.3	12 47.9 -02.5 100.3	11 48.9 -02.3 100.2	10 49.9 -02.2 100.2
11°	14 43.1 -03.2 101.4	13 44.3 -03.0 101.3	12 45.4 -02.7 101.3	11 46.6 -02.6 101.2	10 47.7 -02.3 101.2
12°	14 39.9 -03.5 102.4	13 41.3 -03.3 102.4	12 42.7 -03.0 102.3	11 44.0 -02.7 102.3	10 45.4 -02.5 102.2
13°	14 36.4 -03.7 103.4	13 38.0 -03.4 103.4	12 39.7 -03.3 103.3	11 41.3 -03.0 103.3	10 42.9 -02.7 103.2
14°	14 32.7 -04.0 104.5	13 34.6 -03.8 104.4	12 36.4 -03.4 104.4	11 38.3 -03.2 104.3	10 40.2 -03.0 104.3
15°	14 28.7 -04.3 105.5	13 30.8 -04.0 105.4	12 33.0 -03.7 105.4	11 35.1 -03.4 105.3	10 37.2 -03.1 105.3
16°	14 24.4 -04.6 106.5	13 26.8 -04.2 106.5	12 29.3 -03.9 106.4	11 31.7 -03.6 106.3	10 34.1 -03.3 106.3
17°	14 19.8 -04.8 107.6	13 22.6 -04.5 107.5	12 25.4 -04.2 107.4	11 28.1 -03.8 107.4	10 30.8 -03.5 107.3
18°	14 15.0 -05.1 108.6	13 18.1 -04.7 108.5	12 21.2 -04.4 108.4	11 24.3 -04.1 108.4	10 27.3 -03.7 108.3
19°	14 09.9 -05.3 109.6	13 13.4 -05.0 109.5	12 16.8 -04.6 109.5	11 20.2 -04.2 109.4	10 23.6 -03.9 109.3
20°	14 04.6 -05.6 110.6	13 08.4 -05.2 110.6	12 12.2 -04.8 110.5	11 16.0 -04.5 110.4	10 19.7 -04.0 110.3
21°	13 59.0 -05.9 111.7	13 03.2 -05.5 111.6	12 07.4 -05.1 111.5	11 11.5 -04.6 111.4	10 15.7 -04.3 111.4
22°	13 53.1 -06.1 112.7	12 57.7 -05.7 112.6	12 02.3 -05.3 112.5	11 06.9 -04.9 112.4	10 11.4 -04.4 112.4
23°	13 47.0 -06.4 113.7	12 52.0 -05.9 113.6	11 57.0 -05.5 113.5	11 02.0 -05.1 113.5	10 07.0 -04.7 113.4
24°	13 40.6 -06.6 114.7	12 46.1 -06.2 114.6	11 51.5 -05.7 114.6	10 56.9 -05.2 114.5	10 02.3 -04.8 114.4
25°	13 34.0 -06.9 115.8	12 39.9 -06.4 115.7	11 45.8 -05.9 115.6	10 51.7 -05.5 115.5	9 57.5 -05.0 115.4
26°	13 27.1 -07.1 116.8	12 33.5 -06.6 116.7	11 39.9 -06.2 116.6	10 46.2 -05.7 116.5	9 52.5 -05.2 116.4
27°	13 20.0 -07.4 117.8	12 26.9 -06.9 117.7	11 33.7 -06.5 117.6	10 40.5 -05.8 117.5	9 47.3 -05.4 117.4
28°	13 12.6 -07.6 118.8	12 20.0 -07.1 118.7	11 27.4 -06.6 118.6	10 34.7 -06.1 118.5	9 41.9 -05.5 118.4
29°	13 05.0 -07.8 119.8	12 12.9 -07.3 119.7	11 20.8 -06.8 119.6	10 28.6 -06.2 119.5	9 36.4 -05.7 119.5

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	10 00.0 -00.1 90.0	9 00.0 -00.1 90.0	8 00.0 -00.1 90.0	7 00.0 -00.1 90.0	6 00.0 -00.1 90.0
1°	9 59.9 -00.3 91.0	8 59.9 -00.2 91.0	7 59.9 -00.2 91.0	6 59.9 -00.2 91.0	5 59.9 -00.1 91.0
2°	9 59.6 -00.4 92.0	8 59.7 -00.4 92.0	7 59.7 -00.4 92.0	6 59.7 -00.3 92.0	5 59.8 -00.3 92.0
3°	9 59.2 -00.7 93.0	8 59.3 -00.6 93.0	7 59.3 -00.5 93.0	6 59.4 -00.4 93.0	5 59.5 -00.4 93.0
4°	9 58.5 -00.8 94.1	8 58.7 -00.8 94.0	7 58.8 -00.6 94.0	6 59.0 -00.6 94.0	5 59.1 -00.5 94.0
5°	9 57.7 -01.0 95.1	8 57.9 -00.9 95.1	7 58.2 -00.8 95.0	6 58.4 -00.7 95.0	5 58.6 -00.6 95.0
6°	9 56.7 -01.2 96.1	8 57.0 -01.1 96.1	7 57.4 -01.0 96.1	6 57.7 -00.8 96.0	5 58.0 -00.7 96.0
7°	9 55.5 -01.4 97.1	8 55.9 -01.2 97.1	7 56.4 -01.1 97.1	6 56.9 -01.0 97.1	5 57.3 -00.8 97.0
8°	9 54.1 -01.6 98.1	8 54.7 -01.4 98.1	7 55.3 -01.2 98.1	6 55.9 -01.1 98.1	5 56.5 -00.9 98.0
9°	9 52.5 -01.7 99.1	8 53.3 -01.6 99.1	7 54.1 -01.4 99.1	6 54.8 -01.2 99.1	5 55.6 -01.1 99.0
10°	9 50.8 -01.9 100.2	8 51.7 -01.7 100.1	7 52.7 -01.6 100.1	6 53.6 -01.4 100.1	5 54.5 -01.1 100.1
11°	9 48.9 -02.1 101.2	8 50.0 -01.9 101.1	7 51.1 -01.7 101.1	6 52.2 -01.4 101.1	5 53.4 -01.3 101.1
12°	9 46.8 -02.3 102.2	8 48.1 -02.1 102.1	7 49.4 -01.8 102.1	6 50.8 -01.6 102.1	5 52.1 -01.4 102.1
13°	9 44.5 -02.5 103.2	8 46.0 -02.2 103.2	7 47.6 -01.9 103.1	6 49.2 -01.7 103.1	5 50.7 -01.4 103.1
14°	9 42.0 -02.6 104.2	8 43.8 -02.3 104.2	7 45.7 -02.2 104.1	6 47.5 -01.9 104.1	5 49.3 -01.6 104.1
15°	9 39.4 -02.9 105.2	8 41.5 -02.6 105.2	7 43.5 -02.2 105.1	6 45.6 -01.9 105.1	5 47.7 -01.7 105.1
16°	9 36.5 -03.0 106.2	8 38.9 -02.7 106.2	7 41.3 -02.4 106.1	6 43.7 -02.1 106.1	5 46.0 -01.8 106.1
17°	9 33.5 -03.1 107.2	8 36.2 -02.8 107.2	7 38.9 -02.5 107.2	6 41.6 -02.3 107.1	5 44.2 -01.9 107.1
18°	9 30.4 -03.4 108.3	8 33.4 -03.0 108.2	7 36.4 -02.7 108.2	6 39.3 -02.3 108.1	5 42.3 -02.0 108.1
19°	9 27.0 -03.5 109.3	8 30.4 -03.2 109.2	7 33.7 -02.8 109.2	6 37.0 -02.4 109.1	5 40.3 -02.1 109.1
20°	9 23.5 -03.7 110.3	8 27.2 -03.3 110.2	7 30.9 -03.0 110.2	6 34.6 -02.6 110.1	5 38.2 -02.2 110.1
21°	9 19.8 -03.9 111.3	8 23.9 -03.5 111.2	7 27.9 -03.1 111.2	6 32.0 -02.7 111.1	5 36.0 -02.3 111.1
22°	9 15.9 -04.0 112.3	8 20.4 -03.6 112.2	7 24.8 -03.2 112.2	6 29.3 -02.8 112.1	5 33.7 -02.4 112.1
23°	9 11.9 -04.2 113.3	8 16.8 -03.8 113.3	7 21.6 -03.3 113.2	6 26.5 -03.0 113.2	5 31.3 -02.5 113.1
24°	9 07.7 -04.4 114.3	8 13.0 -04.0 114.3	7 18.3 -03.5 114.2	6 23.5 -03.0 114.2	5 28.8 -02.6 114.1
25°	9 03.3 -04.6 115.3	8 09.0 -04.0 115.3	7 14.8 -03.6 115.2	6 20.5 -03.2 115.2	5 26.2 -02.7 115.1
26°	8 58.7 -04.7 116.3	8 05.0 -04.3 116.3	7 11.2 -03.8 116.2	6 17.3 -03.3 116.2	5 23.5 -02.9 116.1
27°	8 54.0 -04.8 117.4	8 00.7 -04.3 117.3	7 07.4 -03.9 117.2	6 14.0 -03.4 117.2	5 20.6 -02.9 117.1
28°	8 49.2 -05.1 118.4	7 56.4 -04.6 118.3	7 03.5 -04.0 118.2	6 10.6 -03.5 118.2	5 17.7 -03.0 118.1
29°	8 44.1 -05.2 119.4	7 51.8 -04.6 119.3	6 59.5 -04.1 119.2	6 07.1 -03.6 119.2	5 14.7 -03.1 119.1

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°	5 00.0 +00.0 90.0	4 00.0 +00.0 90.0	3 00.0 +00.0 90.0	2 00.0 +00.0 90.0	1 00.0 +00.0 90.0
1°	5 00.0 -00.2 91.0	4 00.0 -00.1 91.0	3 00.0 -00.1 91.0	2 00.0 -00.1 91.0	1 00.0 +00.0 91.0
2°	4 59.8 -00.2 92.0	3 59.9 -00.2 92.0	2 59.9 -00.1 92.0	1 59.9 -00.1 92.0	1 00.0 -00.1 92.0
3°	4 59.6 -00.3 93.0	3 59.7 -00.3 93.0	2 59.8 -00.2 93.0	1 59.8 -00.1 93.0	0 59.9 +00.0 93.0
4°	4 59.3 -00.4 94.0	3 59.4 -00.3 94.0	2 59.6 -00.3 94.0	1 59.7 -00.2 94.0	0 59.9 -00.1 94.0
5°	4 58.9 -00.5 95.0	3 59.1 -00.4 95.0	2 59.3 -00.3 95.0	1 59.5 -00.2 95.0	0 59.8 -00.1 95.0
6°	4 58.4 -00.6 96.0	3 58.7 -00.5 96.0	2 59.0 -00.3 96.0	1 59.3 -00.2 96.0	0 59.7 -00.1 96.0
7°	4 57.8 -00.7 97.0	3 58.2 -00.5 97.0	2 58.7 -00.5 97.0	1 59.1 -00.3 97.0	0 59.6 -00.2 97.0
8°	4 57.1 -00.8 98.0	3 57.7 -00.7 98.0	2 58.2 -00.4 98.0	1 58.8 -00.3 98.0	0 59.4 -00.1 98.0
9°	4 56.3 -00.9 99.0	3 57.0 -00.7 99.0	2 57.8 -00.5 99.0	1 58.5 -00.3 99.0	0 59.3 -00.2 99.0
10°	4 55.4 -00.9 100.0	3 56.3 -00.7 100.0	2 57.3 -00.6 100.0	1 58.2 -00.4 100.0	0 59.1 -00.2 100.0
11°	4 54.5 -01.1 101.0	3 55.6 -00.9 101.0	2 56.7 -00.6 101.0	1 57.8 -00.4 101.0	0 58.9 -00.2 101.0
12°	4 53.4 -01.1 102.0	3 54.7 -00.9 102.0	2 56.1 -00.7 102.0	1 57.4 -00.5 102.0	0 58.7 -00.2 102.0
13°	4 52.3 -01.2 103.0	3 53.8 -00.9 103.0	2 55.4 -00.8 103.0	1 56.9 -00.5 103.0	0 58.5 -00.3 103.0
14°	4 51.1 -01.3 104.1	3 52.9 -01.1 104.0	2 54.6 -00.7 104.0	1 56.4 -00.5 104.0	0 58.2 -00.2 104.0
15°	4 49.8 -01.4 105.1	3 51.8 -01.1 105.0	2 53.9 -00.9 105.0	1 55.9 -00.6 105.0	0 58.0 -00.3 105.0
16°	4 48.4 -01.5 106.1	3 50.7 -01.2 106.0	2 53.0 -00.9 106.0	1 55.3 -00.5 106.0	0 57.7 -00.3 106.0
17°	4 46.9 -01.6 107.1	3 49.5 -01.3 107.0	2 52.1 -00.9 107.0	1 54.8 -00.7 107.0	0 57.4 -00.3 107.0
18°	4 45.3 -01.7 108.1	3 48.2 -01.3 108.0	2 51.2 -01.0 108.0	1 54.1 -00.6 108.0	0 57.1 -00.4 108.0
19°	4 43.6 -01.7 109.1	3 46.9 -01.4 109.0	2 50.2 -01.1 109.0	1 53.5 -00.7 109.0	0 56.7 -00.3 109.0
20°	4 41.9 -01.9 110.1	3 45.5 -01.5 110.0	2 49.1 -01.1 110.0	1 52.8 -00.8 110.0	0 56.4 -00.4 110.0
21°	4 40.0 -01.9 111.1	3 44.0 -01.5 111.0	2 48.0 -01.1 111.0	1 52.0 -00.7 111.0	0 56.0 -00.4 111.0
22°	4 38.1 -02.0 112.1	3 42.5 -01.6 112.0	2 46.9 -01.2 112.0	1 51.3 -00.8 112.0	0 55.6 -00.4 112.0
23°	4 36.1 -02.1 113.1	3 40.9 -01.7 113.1	2 45.7 -01.3 113.0	1 50.5 -00.9 113.0	0 55.2 -00.4 113.0
24°	4 34.0 -02.2 114.1	3 39.2 -01.7 114.1	2 44.4 -01.3 114.0	1 49.6 -00.8 114.0	0 54.8 -00.4 114.0
25°	4 31.8 -02.2 115.1	3 37.5 -01.8 115.1	2 43.1 -01.3 115.0	1 48.8 -00.9 115.0	0 54.4 -00.5 115.0
26°	4 29.6 -02.4 116.1	3 35.7 -01.9 116.1	2 41.8 -01.4 116.0	1 47.9 -01.0 116.0	0 53.9 -00.4 116.0
27°	4 27.2 -02.4 117.1	3 33.8 -01.9 117.1	2 40.4 -01.5 117.0	1 46.9 -01.0 117.0	0 53.5 -00.5 117.0
28°	4 24.8 -02.5 118.1	3 31.9 -02.0 118.1	2 38.9 -01.5 118.0	1 45.9 -01.0 118.0	0 53.0 -00.5 118.0
29°	4 22.3 -02.6 119.1	3 29.9 -02.1 119.1	2 37.4 -01.5 119.0	1 44.9 -01.0 119.0	0 52.5 -00.5 119.0

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 +00.0 90.0	-1 00.0 +00.0			
1°	0 00.0 +00.0 91.0	-1 00.0 +00.0			
2°	0 00.0 +00.0 92.0	-1 00.0 +00.1			
3°	0 00.0 +00.0 93.0	-0 59.9 +00.0			
4°	0 00.0 +00.0 94.0	-0 59.9 +00.1			
5°	0 00.0 +00.0 95.0	-0 59.8 +00.1			
6°	0 00.0 +00.0 96.0	-0 59.7 +00.1			
7°	0 00.0 +00.0 97.0	-0 59.6 +00.2			
8°	0 00.0 +00.0 98.0	-0 59.4 +00.1			
9°	0 00.0 +00.0 99.0	-0 59.3 +00.2			
10°	0 00.0 +00.0 100.0	-0 59.1 +00.2			
11°	0 00.0 +00.0 101.0	-0 58.9 +00.2			
12°	0 00.0 +00.0 102.0	-0 58.7 +00.2			
13°	0 00.0 +00.0 103.0	-0 58.5 +00.3			
14°	0 00.0 +00.0 104.0	-0 58.2 +00.2			
15°	0 00.0 +00.0 105.0	-0 58.0 +00.3			
16°	0 00.0 +00.0 106.0	-0 57.7 +00.3			
17°	0 00.0 +00.0 107.0	-0 57.4 +00.3			
18°	0 00.0 +00.0 108.0	-0 57.1 +00.4			
19°	0 00.0 +00.0 109.0	-0 56.7 +00.3			
20°	0 00.0 +00.0 110.0	-0 56.4 +00.4			
21°	0 00.0 +00.0 111.0	-0 56.0 +00.4			
22°	0 00.0 +00.0 112.0	-0 55.6 +00.4			
23°	0 00.0 +00.0 113.0	-0 55.2 +00.4			
24°	0 00.0 +00.0 114.0	-0 54.8 +00.4			
25°	0 00.0 +00.0 115.0	-0 54.4 +00.5			
26°	0 00.0 +00.0 116.0	-0 53.9 +00.4			
27°	0 00.0 +00.0 117.0	-0 53.5 +00.5			
28°	0 00.0 +00.0 118.0	-0 53.0 +00.5			
29°	0 00.0 +00.0 119.0	-0 52.5 +00.5			

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

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	89 00.0 -60.0 180.0	88 35.1 -49.3 135.0	87 45.8 -35.5 116.6	86 50.3 -26.6 108.4	85 52.6 -20.9 104.0
1°	88 00.0 -60.0 180.0	87 45.8 -55.5 153.4	87 10.3 -46.6 135.0	86 23.7 -38.2 123.7	85 31.7 -31.7 116.6
2°	87 00.0 -60.0 180.0	86 50.3 -57.7 161.6	86 23.7 -52.0 146.3	85 45.5 -45.5 135.0	85 00.0 -39.4 126.9
3°	86 00.0 -60.0 180.0	85 52.6 -58.5 166.0	85 31.7 -54.8 153.4	85 00.0 -49.8 143.1	84 20.0 -44.7 135.0
4°	85 00.0 -60.0 180.0	84 54.1 -59.1 168.7	84 36.9 -56.3 158.2	84 10.2 -52.6 149.1	83 35.9 -48.4 141.4
5°	84 00.0 -60.0 180.0	83 55.0 -59.3 170.6	83 40.6 -57.4 161.6	83 17.6 -54.4 153.5	82 47.5 -51.0 146.4
6°	83 00.0 -60.0 180.0	82 55.7 -59.4 171.9	82 43.2 -57.9 164.1	82 23.2 -55.7 156.9	81 56.5 -52.9 150.3
7°	82 00.0 -60.0 180.0	81 56.3 -59.6 172.9	81 45.3 -58.4 166.0	81 27.5 -56.5 159.5	81 03.6 -54.2 153.5
8°	81 00.0 -60.0 180.0	80 56.7 -59.7 173.7	80 46.9 -58.7 167.5	80 31.0 -57.2 161.7	80 09.4 -55.3 156.2
9°	80 00.0 -60.0 180.0	79 57.0 -59.7 174.3	79 48.2 -58.9 168.8	79 33.8 -57.7 163.4	79 14.1 -56.0 158.4
10°	79 00.0 -60.0 180.0	78 57.3 -59.8 174.9	78 49.3 -59.1 169.8	78 36.1 -58.0 164.9	78 18.1 -56.6 160.2
11°	78 00.0 -60.0 180.0	77 57.5 -59.8 175.3	77 50.2 -59.3 170.6	77 38.1 -58.3 166.1	77 21.5 -57.1 161.8
12°	77 00.0 -60.0 180.0	76 57.7 -59.8 175.7	76 50.9 -59.3 171.4	76 39.8 -58.6 167.2	76 24.4 -57.5 163.1
13°	76 00.0 -60.0 180.0	75 57.9 -59.9 176.0	75 51.6 -59.4 172.0	75 41.2 -58.7 168.1	75 26.9 -57.8 164.3
14°	75 00.0 -60.0 180.0	74 58.0 -59.8 176.3	74 52.2 -59.5 172.5	74 42.5 -58.9 168.9	74 29.1 -58.0 165.3
15°	74 00.0 -60.0 180.0	73 58.2 -59.9 176.5	73 52.7 -59.6 173.0	73 43.6 -59.0 169.6	73 31.1 -58.3 166.3
16°	73 00.0 -60.0 180.0	72 58.3 -59.9 176.7	72 53.1 -59.6 173.5	72 44.6 -59.1 170.2	72 32.8 -58.4 167.1
17°	72 00.0 -60.0 180.0	71 58.4 -59.9 176.9	71 53.5 -59.6 173.8	71 45.5 -59.2 170.8	71 34.4 -58.6 167.8
18°	71 00.0 -60.0 180.0	70 58.5 -59.9 177.1	70 53.9 -59.7 174.2	70 46.3 -59.3 171.3	70 35.8 -58.7 168.5
19°	70 00.0 -60.0 180.0	69 58.6 -60.0 177.2	69 54.2 -59.7 174.5	69 47.0 -59.3 171.8	69 37.1 -58.9 169.1
20°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.4	68 54.5 -59.7 174.8	68 47.7 -59.4 172.2	68 38.2 -58.9 169.6
21°	68 00.0 -60.0 180.0	67 58.7 -59.9 177.5	67 54.8 -59.8 175.0	67 48.3 -59.4 172.6	67 39.3 -59.0 170.1
22°	67 00.0 -60.0 180.0	66 58.8 -60.0 177.6	66 55.0 -59.7 175.3	66 48.9 -59.5 172.9	66 40.3 -59.1 170.6
23°	66 00.0 -60.0 180.0	65 58.8 -59.9 177.7	65 55.3 -59.8 175.5	65 49.4 -59.6 173.2	65 41.2 -59.2 171.0
24°	65 00.0 -60.0 180.0	64 58.9 -60.0 177.8	64 55.5 -59.8 175.7	64 49.8 -59.5 173.5	64 42.0 -59.2 171.4
25°	64 00.0 -60.0 180.0	63 58.9 -59.9 177.9	63 55.7 -59.8 175.9	63 50.3 -59.6 173.8	63 42.8 -59.3 171.8
26°	63 00.0 -60.0 180.0	62 59.0 -60.0 178.0	62 55.9 -59.9 176.0	62 50.7 -59.6 174.1	62 43.5 -59.3 172.1
27°	62 00.0 -60.0 180.0	61 59.0 -60.0 178.1	61 56.0 -59.8 176.2	61 51.1 -59.7 174.3	61 44.2 -59.4 172.5
28°	61 00.0 -60.0 180.0	60 59.0 -59.9 178.2	60 56.2 -59.9 176.4	60 51.4 -59.6 174.6	60 44.8 -59.4 172.8
29°	60 00.0 -60.0 180.0	59 59.1 -60.0 178.3	59 56.3 -59.8 176.5	59 51.8 -59.7 174.8	59 45.4 -59.4 173.0

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°	84 54.1 -17.2 101.3	83 55.1 -14.6 99.4	82 55.8 -12.6 98.1	81 56.3 -11.0 97.1	80 56.7 -09.8 96.3
1°	84 36.9 -26.7 111.8	83 40.5 -22.9 108.4	82 43.2 -20.1 105.9	81 45.3 -17.9 104.0	80 46.9 -16.0 102.5
2°	84 10.2 -34.3 121.0	83 17.6 -30.2 116.6	82 23.1 -26.7 113.2	81 27.4 -23.9 110.6	80 30.9 -21.7 108.4
3°	83 35.9 -40.0 128.7	82 47.4 -35.8 123.7	81 56.4 -32.3 119.8	81 03.5 -29.3 116.6	80 09.2 -26.6 114.0
4°	82 55.9 -44.3 135.0	82 11.6 -40.4 129.9	81 24.1 -36.9 125.6	80 34.2 -33.8 122.1	79 42.6 -31.1 119.1
5°	82 11.6 -47.5 140.3	81 31.2 -44.0 135.1	80 47.2 -40.7 130.7	80 00.4 -37.6 127.0	79 11.5 -34.9 123.8
6°	81 24.1 -49.8 144.6	80 47.2 -46.7 139.5	80 06.5 -43.7 135.1	79 22.8 -40.9 131.3	78 36.6 -38.2 128.0
7°	80 34.3 -51.6 148.1	80 00.5 -48.9 143.3	79 22.8 -46.2 139.0	78 41.9 -43.5 135.2	77 58.4 -41.0 131.8
8°	79 42.7 -53.0 151.1	79 11.6 -50.6 146.5	78 36.6 -48.1 142.3	77 58.4 -45.7 138.6	77 17.4 -43.3 135.2
9°	78 49.7 -54.1 153.6	78 21.0 -52.0 149.3	77 48.5 -49.8 145.3	77 12.7 -47.5 141.6	76 34.1 -45.3 138.3
10°	77 55.6 -54.9 155.8	77 29.0 -53.1 151.6	76 58.7 -51.0 147.8	76 25.2 -49.0 144.3	75 48.8 -47.0 141.1
11°	77 00.7 -55.7 157.6	76 35.9 -53.9 153.7	76 07.7 -52.2 150.1	75 36.2 -50.4 146.7	75 01.8 -48.4 143.5
12°	76 05.0 -56.2 159.2	75 42.0 -54.8 155.5	75 15.5 -53.1 152.1	74 45.8 -51.4 148.8	74 13.4 -49.7 145.8
13°	75 08.8 -56.6 160.7	74 47.2 -55.3 157.2	74 22.4 -53.9 153.8	73 54.4 -52.3 150.7	73 23.7 -50.7 147.8
14°	74 12.2 -57.0 161.9	73 51.9 -55.8 158.6	73 28.5 -54.5 155.4	73 02.1 -53.1 152.4	72 33.0 -51.6 149.6
15°	73 15.2 -57.4 163.0	72 56.1 -56.3 159.9	72 34.0 -55.1 156.9	72 09.0 -53.8 154.0	71 41.4 -52.4 151.3
16°	72 17.8 -57.6 164.0	71 59.8 -56.6 161.0	71 38.9 -55.6 158.2	71 15.2 -54.3 155.4	70 49.0 -53.1 152.8
17°	71 20.2 -57.8 164.9	71 03.2 -57.0 162.1	70 43.3 -55.9 159.3	70 20.9 -54.9 156.7	69 55.9 -53.7 154.2
18°	70 22.4 -58.1 165.7	70 06.2 -57.2 163.0	69 47.4 -56.3 160.4	69 26.0 -55.3 157.9	69 02.2 -54.2 155.4
19°	69 24.3 -58.2 166.5	69 09.0 -57.5 163.9	68 51.1 -56.7 161.4	68 30.7 -55.7 158.9	68 08.0 -54.7 156.6
20°	68 26.1 -58.3 167.1	68 11.5 -57.7 164.7	67 54.4 -56.9 162.3	67 35.0 -56.0 159.9	67 13.3 -55.1 157.7
21°	67 27.8 -58.5 167.7	67 13.8 -57.8 165.4	66 57.5 -57.1 163.1	66 39.0 -56.3 160.9	66 12.2 -55.4 158.7
22°	66 29.3 -58.6 168.3	66 16.0 -58.0 166.1	66 00.4 -57.3 163.9	65 42.7 -56.6 161.7	65 28.8 -55.8 159.6
23°	65 30.7 -58.7 168.8	65 18.0 -58.2 166.7	65 03.1 -57.6 164.6	64 46.1 -56.9 162.5	64 27.0 -56.0 160.5
24°	64 32.0 -58.8 169.3	64 19.8 -58.3 167.3	64 05.5 -57.7 165.2	63 49.2 -57.0 163.3	63 31.0 -56.3 161.3
25°	63 33.2 -58.9 169.8	63 21.5 -58.4 167.8	63 07.8 -57.8 165.9	62 52.2 -57.2 163.9	62 34.7 -56.6 162.1
26°	62 34.3 -59.0 170.2	62 23.1 -58.5 168.3	62 10.0 -58.0 166.4	61 55.0 -57.4 164.6	61 38.1 -56.7 162.8
27°	61 35.3 -59.0 170.6	61 24.6 -58.6 168.8	61 12.0 -58.1 167.0	60 57.6 -57.6 165.2	60 41.4 -57.0 163.5
28°	60 36.3 -59.0 171.0	60 26.0 -58.7 169.2	60 13.9 -58.2 167.5	60 00.0 -57.7 165.8	59 44.4 -57.1 164.1
29°	59 37.3 -59.2 171.3	59 27.3 -58.7 169.6	59 15.7 -58.3 168.0	59 02.3 -57.8 166.3	58 47.3 -57.3 164.7

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	79 57.0 -08.9 95.7	78 57.3 -08.1 95.1	77 57.5 -07.4 94.7	76 57.7 -06.8 94.3	75 57.9 -06.4 94.0
1°	79 48.1 -14.4 101.3	78 49.2 -13.2 100.3	77 50.1 -12.2 99.4	76 50.9 -11.3 98.7	75 51.5 -10.4 98.1
2°	79 33.7 -19.7 106.7	78 36.0 -18.1 105.3	77 37.9 -16.6 104.0	76 39.6 -15.4 103.0	75 41.1 -14.4 102.1
3°	79 14.0 -24.5 111.8	78 17.9 -22.5 110.0	77 21.3 -20.9 108.5	76 24.2 -19.4 107.1	75 26.7 -18.1 106.0
4°	78 49.5 -28.7 116.6	77 55.4 -26.6 114.5	77 00.4 -24.7 112.7	76 04.8 -23.1 111.1	75 08.6 -21.7 109.7
5°	78 20.8 -32.4 121.1	77 28.8 -30.2 118.7	76 35.7 -28.3 116.7	75 41.7 -26.5 114.9	74 46.9 -24.9 113.3
6°	77 48.4 -35.7 125.2	76 58.6 -33.5 122.6	76 07.4 -31.4 120.4	75 15.2 -29.6 118.5	74 22.0 -27.9 116.8
7°	77 12.7 -38.6 128.9	76 25.1 -36.4 126.2	75 36.0 -34.3 123.9	74 45.6 -32.4 121.9	73 54.1 -30.6 120.0
8°	76 34.1 -41.0 132.2	75 48.7 -38.8 129.6	75 01.7 -36.9 127.2	74 13.2 -35.0 125.0	73 23.5 -33.2 123.1
9°	75 53.1 -43.2 135.3	75 09.9 -41.1 132.6	74 24.8 -39.1 130.2	73 38.2 -37.2 127.9	72 50.3 -35.5 125.9
10°	75 09.9 -45.0 138.1	74 28.8 -43.0 135.4	73 45.7 -41.0 132.9	73 01.0 -39.3 130.7	72 14.8 -37.5 128.6
11°	74 24.9 -46.5 140.6	73 45.8 -44.7 137.9	73 04.7 -42.9 135.5	72 21.7 -41.0 133.2	71 37.3 -39.4 131.1
12°	73 38.4 -47.9 142.9	73 01.1 -46.1 140.3	72 21.8 -44.4 137.8	71 40.7 -42.7 135.6	70 57.9 -41.1 133.5
13°	72 50.5 -49.0 145.0	72 15.0 -47.4 142.4	71 37.4 -45.7 140.0	70 58.0 -44.2 137.8	70 16.8 -42.5 135.7
14°	72 01.5 -50.1 146.9	71 27.6 -48.5 144.4	70 51.7 -47.0 142.0	70 13.8 -45.4 139.8	69 34.3 -43.9 137.7
15°	71 11.4 -51.0 148.7	70 39.1 -49.6 146.2	70 04.7 -48.1 143.9	69 28.4 -46.6 141.7	68 50.4 -45.1 139.7
16°	70 20.4 -51.8 150.3	69 49.5 -50.4 147.9	69 16.6 -49.0 145.6	68 41.8 -47.6 143.5	68 05.3 -46.3 141.5
17°	69 28.6 -52.4 151.7	68 59.1 -51.2 149.4	68 27.6 -49.9 147.2	67 54.2 -48.5 145.1	67 19.0 -47.2 143.1
18°	68 36.2 -53.1 153.1	68 07.9 -51.8 150.8	67 37.7 -50.6 148.7	67 05.7 -49.4 146.7	66 31.8 -48.1 144.7
19°	67 43.1 -53.6 154.3	67 16.1 -52.5 152.2	66 47.1 -51.3 150.1	66 16.3 -50.1 148.1	65 43.7 -48.9 146.2
20°	66 49.5 -54.1 155.5	66 23.6 -53.0 153.4	65 55.8 -51.9 151.4	65 26.2 -50.8 149.4	64 54.8 -49.6 147.6
21°	65 55.4 -54.5 156.6	65 30.6 -53.5 154.5	65 03.9 -52.5 152.6	64 35.4 -51.4 150.7	64 05.2 -50.3 148.9
22°	65 00.9 -54.9 157.6	64 37.1 -53.9 155.6	64 11.4 -52.9 153.7	63 44.0 -51.9 151.9	63 14.9 -50.9 150.1
23°	64 06.0 -55.2 158.5	63 43.2 -54.4 156.6	63 18.5 -53.4 154.8	62 52.1 -52.5 153.0	62 24.0 -51.4 151.3
24°	63 10.8 -55.5 159.4	62 48.8 -54.7 157.6	62 25.1 -53.8 155.8	61 59.6 -52.9 154.0	61 32.6 -52.0 152.4
25°	62 15.3 -55.8 160.2	61 54.1 -55.0 158.5	61 31.3 -54.2 156.7	61 06.7 -53.3 155.0	60 40.6 -52.3 153.4
26°	61 19.5 -56.1 161.0	60 59.1 -55.3 159.3	60 37.1 -54.5 157.6	60 13.4 -53.6 156.0	59 48.3 -52.8 154.4
27°	60 23.4 -56.3 161.8	60 03.8 -55.6 160.1	59 42.6 -54.8 158.5	59 19.8 -54.1 156.9	58 55.5 -53.2 155.3
28°	59 27.1 -56.4 162.4	59 08.2 -55.8 160.8	58 47.8 -55.1 159.2	58 25.7 -54.3 157.7	58 02.3 -53.6 156.2
29°	58 30.7 -56.7 163.1	58 12.4 -56.0 161.5	57 52.7 -55.4 160.0	57 31.4 -54.6 158.5	57 08.7 -53.8 157.0

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°	74 58.0 -05.9 93.7	73 58.2 -05.6 93.5	72 58.3 -05.3 93.3	71 58.4 -05.0 93.1	70 58.5 -04.7 92.9
1°	74 52.1 -09.8 97.6	73 52.6 -09.2 97.1	72 53.0 -08.6 96.7	71 53.4 -08.1 96.3	70 53.8 -07.8 96.0
2°	74 42.3 -13.4 101.3	73 43.4 -12.6 100.6	72 44.4 -11.9 100.0	71 45.3 -11.3 99.5	70 46.0 -10.6 99.0
3°	74 28.9 -17.0 105.0	73 30.8 -16.0 104.1	72 32.5 -15.1 103.3	71 34.0 -14.2 102.6	70 35.4 -13.5 101.9
4°	74 11.9 -20.3 108.5	73 14.8 -19.1 107.5	72 17.4 -18.0 106.5	71 19.8 -17.1 105.6	70 21.9 -16.2 104.9
5°	73 51.6 -23.5 112.0	72 55.7 -22.2 110.7	71 59.4 -21.0 109.6	71 02.7 -19.9 108.6	70 05.7 -18.9 107.7
6°	73 28.1 -26.4 115.2	72 33.5 -24.9 113.9	71 38.4 -23.7 112.6	70 42.8 -22.5 111.5	69 46.8 -21.4 110.5
7°	73 01.7 -29.0 118.3	72 08.6 -27.6 116.9	71 14.7 -26.2 115.5	70 20.3 -25.0 114.3	69 25.4 -23.8 113.2
8°	72 32.7 -31.6 121.3	71 41.0 -30.0 119.7	70 48.5 -28.6 118.3	69 55.3 -27.2 117.0	69 01.6 -26.1 115.7
9°	72 01.1 -33.8 124.1	71 11.0 -32.3 122.4	70 19.9 -30.8 120.9	69 28.1 -29.5 119.5	68 35.5 -28.2 118.2
10°	71 27.3 -35.9 126.7	70 38.7 -34.3 125.0	69 49.1 -32.9 123.4	68 58.6 -31.5 122.0	68 07.3 -30.1 120.6
11°	70 51.4 -37.7 129.2	70 04.4 -36.2 127.5	69 16.2 -34.7 125.8	68 27.1 -33.3 124.3	67 37.2 -32.1 122.9
12°	70 13.7 -39.5 131.5	69 28.2 -38.0 129.8	68 41.5 -36.5 128.1	67 53.8 -35.1 126.6	67 05.1 -33.7 125.1
13°	69 34.2 -41.0 133.7	68 50.2 -39.5 131.9	68 05.0 -38.1 130.3	67 18.7 -36.7 128.7	66 31.4 -35.4 127.2
14°	68 53.2 -42.4 135.8	68 10.7 -41.0 134.0	67 26.9 -39.5 132.3	66 42.0 -38.2 130.7	65 56.0 -36.9 129.2
15°	68 10.8 -43.7 137.7	67 29.7 -42.2 135.9	66 47.4 -40.9 134.2	66 03.8 -39.6 132.6	65 19.1 -38.2 131.1
16°	67 27.1 -44.8 139.5	66 47.5 -43.5 137.8	66 06.5 -42.2 136.1	65 24.2 -40.8 134.5	64 40.9 -39.6 133.0
17°	66 42.3 -45.9 141.3	66 04.0 -44.6 139.5	65 24.3 -43.2 137.8	64 43.4 -42.0 136.2	64 01.3 -40.7 134.7
18°	65 56.4 -46.8 142.9	65 19.4 -45.5 141.1	64 41.1 -44.3 139.4	64 01.4 -43.0 137.9	63 20.6 -41.8 136.4
19°	65 09.6 -47.7 144.4	64 33.9 -46.5 142.6	63 56.8 -45.3 141.0	63 18.4 -44.0 139.4	62 38.8 -42.9 137.9
20°	64 21.9 -48.5 145.8	63 47.4 -47.3 144.1	63 11.5 -46.1 142.5	62 34.4 -45.0 140.9	61 55.9 -43.7 139.4
21°	63 33.4 -49.2 147.1	63 00.1 -48.0 145.5	62 25.4 -46.9 143.9	61 49.4 -45.8 142.3	61 12.2 -44.7 140.9
22°	62 44.2 -49.8 148.4	62 12.1 -48.8 146.8	61 38.5 -47.6 145.2	61 03.6 -46.5 143.7	60 27.5 -45.5 142.2
23°	61 54.4 -50.4 149.6	61 23.3 -49.3 148.0	60 50.9 -48.3 146.5	60 17.1 -47.3 145.0	59 42.0 -46.2 143.6
24°	61 04.0 -51.0 150.7	60 34.0 -50.0 149.2	60 02.6 -49.0 147.7	59 29.8 -47.9 146.2	58 55.8 -46.9 144.8
25°	60 13.0 -51.4 151.8	59 44.0 -50.5 150.3	59 13.6 -49.5 148.8	58 41.9 -48.5 147.4	58 08.9 -47.5 146.0
26°	59 21.6 -51.9 152.8	58 53.5 -51.0 151.3	58 24.1 -50.1 149.9	57 53.4 -49.1 148.5	57 21.4 -48.1 147.1
27°	58 29.7 -52.3 153.8	58 02.5 -51.4 152.4	57 34.0 -50.5 150.9	57 04.3 -49.7 149.6	56 33.3 -48.7 148.2
28°	57 37.4 -52.8 154.7	57 11.1 -51.9 153.3	56 43.5 -51.0 151.9	56 14.6 -50.1 150.6	55 44.6 -49.2 149.3
29°	56 44.6 -53.0 155.6	56 19.2 -52.2 154.2	55 52.5 -51.4 152.9	55 24.5 -50.5 151.6	54 55.4 -49.7 150.3

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	69 58.6 -04.5 92.7	68 58.6 -04.2 92.6	67 58.7 -04.1 92.5	66 58.8 -03.9 92.4	65 58.8 -03.7 92.2
1°	69 54.1 -07.3 95.7	68 54.4 -07.0 95.4	67 54.6 -06.6 95.1	66 54.9 -06.4 94.9	65 55.1 -06.1 94.7
2°	69 46.8 -10.1 98.5	68 47.4 -09.6 98.1	67 48.0 -09.2 97.8	66 48.5 -08.7 97.4	65 49.0 -08.4 97.1
3°	69 36.7 -12.9 101.4	68 37.8 -12.2 100.9	67 38.8 -11.6 100.4	66 39.8 -11.1 99.9	65 40.6 -10.6 99.5
4°	69 23.8 -15.4 104.2	68 25.6 -14.7 103.5	67 27.2 -14.0 102.9	66 28.7 -13.4 102.4	65 30.0 -12.8 101.9
5°	69 08.4 -18.0 106.9	68 10.9 -17.2 106.1	67 13.2 -16.4 105.5	66 15.3 -15.7 104.8	65 17.2 -15.0 104.3
6°	68 50.4 -20.4 109.6	67 53.7 -19.4 108.7	66 56.8 -18.6 107.9	65 59.6 -17.8 107.2	65 02.2 -17.1 106.6
7°	68 30.0 -22.7 112.1	67 34.3 -21.7 111.2	66 38.2 -20.8 110.4	65 41.8 -19.9 109.6	64 45.1 -19.1 108.8
8°	68 07.3 -24.9 114.6	67 12.6 -23.9 113.6	66 17.4 -22.9 112.7	65 21.9 -21.9 111.8	64 26.0 -21.0 111.0
9°	67 42.4 -27.0 117.1	66 48.7 -25.9 116.0	65 54.5 -24.8 115.0	65 00.0 -23.9 114.1	64 05.0 -22.9 113.2
10°	67 15.4 -29.0 119.4	66 22.8 -27.8 118.3	65 29.7 -26.7 117.2	64 36.1 -25.6 116.2	63 42.1 -24.7 115.3
11°	66 46.4 -30.7 121.6	65 55.0 -29.5 120.4	65 03.0 -28.4 119.3	64 10.5 -27.4 118.3	63 17.4 -26.4 117.3
12°	66 15.7 -32.5 123.8	65 25.5 -31.3 122.6	64 34.6 -30.2 121.4	63 43.1 -29.1 120.3	62 51.0 -28.0 119.3
13°	65 43.2 -34.1 125.9	64 54.2 -32.9 124.6	64 04.4 -31.7 123.4	63 14.0 -30.6 122.3	62 23.0 -29.5 121.2
14°	65 09.1 -35.6 127.8	64 21.3 -34.4 126.5	63 32.7 -33.2 125.3	62 43.4 -32.1 124.2	61 53.5 -31.1 123.1
15°	64 33.5 -37.0 129.7	63 46.9 -35.8 128.4	62 59.5 -34.6 127.2	62 11.3 -33.5 126.0	61 22.4 -32.4 124.9
16°	63 56.5 -38.3 131.5	63 11.1 -37.1 130.2	62 24.9 -36.0 129.0	61 37.8 -34.8 127.8	60 50.0 -33.7 126.7
17°	63 18.2 -39.5 133.3	62 34.0 -38.3 131.9	61 48.9 -37.1 130.7	61 03.0 -36.0 129.5	60 16.3 -34.9 128.3
18°	62 38.7 -40.7 134.9	61 55.7 -39.5 133.6	61 11.8 -38.3 132.3	60 27.0 -37.2 131.1	59 41.4 -36.1 130.0
19°	61 58.0 -41.6 136.5	61 16.2 -40.5 135.2	60 33.5 -39.4 133.9	59 49.8 -38.3 132.7	59 05.3 -37.2 131.5
20°	61 16.4 -42.7 138.0	60 35.7 -41.5 136.7	59 54.1 -40.4 135.4	59 11.5 -39.3 134.2	58 28.1 -38.2 133.0
21°	60 33.7 -43.5 139.5	59 54.2 -42.4 138.1	59 13.7 -41.3 136.9	58 32.2 -40.2 135.7	57 49.9 -39.2 134.5
22°	59 50.2 -44.4 140.9	59 11.8 -43.3 139.5	58 32.4 -42.2 138.3	57 52.0 -41.2 137.1	57 10.7 -40.1 135.9
23°	59 05.8 -45.1 142.2	58 28.5 -44.1 140.9	57 50.2 -43.1 139.6	57 10.8 -42.0 138.4	56 30.6 -41.0 137.3
24°	58 20.7 -45.9 143.5	57 44.4 -44.8 142.2	57 07.1 -43.8 140.9	56 28.8 -42.8 139.7	55 49.6 -41.8 138.6
25°	57 34.8 -46.5 144.7	56 59.6 -45.5 143.4	56 23.3 -44.5 142.2	55 46.0 -43.5 141.0	55 07.8 -42.5 139.9
26°	56 48.3 -47.2 145.8	56 14.1 -46.2 144.6	55 38.8 -45.2 143.4	55 02.5 -44.2 142.2	54 25.3 -43.3 141.1
27°	56 01.1 -47.7 147.0	55 27.9 -46.8 145.7	54 53.6 -45.9 144.5	54 18.3 -44.9 143.4	53 42.0 -43.9 142.3
28°	55 13.4 -48.3 148.0	54 41.1 -47.4 146.8	54 07.7 -46.4 145.6	53 33.4 -45.5 144.5	52 58.1 -44.6 143.4
29°	54 25.1 -48.8 149.1	53 53.7 -47.9 147.9	53 21.3 -47.0 146.7	52 47.9 -46.1 145.6	52 13.5 -45.2 144.5

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°	64 58.9 -03.6 92.1	63 58.9 -03.4 92.0	62 59.0 -03.4 92.0	61 59.0 -03.2 91.9	60 59.1 -03.1 91.8
1°	64 55.3 -05.8 94.5	63 55.5 -05.6 94.3	62 55.6 -05.3 94.2	61 55.8 -05.2 94.0	60 56.0 -05.0 93.9
2°	64 49.5 -08.0 96.8	63 49.9 -07.7 96.6	62 50.3 -07.4 96.3	61 50.6 -07.1 96.1	60 51.0 -06.9 95.9
3°	64 41.5 -10.2 99.2	63 42.2 -09.8 98.8	62 42.9 -09.4 98.5	61 43.5 -09.0 98.2	60 44.1 -08.6 97.9
4°	64 31.3 -12.3 101.5	63 32.4 -11.8 101.0	62 33.5 -11.3 100.7	61 34.5 -10.9 100.3	60 35.5 -10.5 100.0
5°	64 19.0 -14.4 103.7	63 20.6 -13.7 103.2	62 22.2 -13.3 102.8	61 23.6 -12.7 102.4	60 25.0 -12.3 102.0
6°	64 04.6 -16.4 106.0	63 06.9 -15.8 105.4	62 08.9 -15.1 104.9	61 10.9 -14.5 104.4	60 12.7 -14.0 103.9
7°	63 48.2 -18.3 108.2	62 51.1 -17.6 107.5	61 53.8 -16.9 106.9	60 56.4 -16.3 106.4	59 58.7 -15.7 105.9
8°	63 29.9 -20.2 110.3	62 33.5 -19.4 109.6	61 36.9 -18.7 109.0	60 40.1 -18.1 108.4	59 43.0 -17.3 107.8
9°	63 09.7 -22.0 112.4	62 14.1 -21.2 111.7	61 18.2 -20.4 111.0	60 22.0 -19.6 110.3	59 25.7 -19.0 109.7
10°	62 47.7 -23.8 114.4	61 52.9 -22.9 113.7	60 57.8 -22.1 112.9	60 02.4 -21.3 112.2	59 06.7 -20.5 111.6
11°	62 23.9 -25.4 116.4	61 30.0 -24.5 115.6	60 35.7 -23.6 114.8	59 41.1 -22.8 114.1	58 46.2 -22.1 113.4
12°	61 58.5 -27.0 118.4	61 05.5 -26.1 117.5	60 12.1 -25.2 116.7	59 18.3 -24.3 115.9	58 24.1 -23.5 115.2
13°	61 31.5 -28.6 120.3	60 39.4 -27.6 119.4	59 46.9 -26.7 118.5	58 54.0 -25.8 117.7	58 00.6 -24.9 116.9
14°	61 02.9 -30.0 122.1	60 11.8 -29.0 121.2	59 20.2 -28.0 120.3	58 28.2 -27.1 119.4	57 35.7 -26.2 118.6
15°	60 32.9 -31.3 123.9	59 42.8 -30.3 122.9	58 52.2 -29.4 122.0	58 01.1 -28.5 121.1	57 09.5 -27.5 120.3
16°	60 01.6 -32.7 125.6	59 12.5 -31.6 124.6	58 22.8 -30.6 123.7	57 32.6 -29.7 122.8	56 42.0 -28.8 121.9
17°	59 28.9 -33.8 127.3	58 40.9 -32.9 126.2	57 52.2 -31.9 125.3	57 02.9 -30.9 124.4	56 13.2 -30.0 123.5
18°	58 55.1 -35.1 128.9	58 08.0 -34.0 127.8	57 20.3 -33.0 126.9	56 32.0 -32.0 125.9	55 43.2 -31.1 125.1
19°	58 20.0 -36.1 130.4	57 34.0 -35.1 129.4	56 47.3 -34.1 128.4	56 00.0 -33.2 127.5	55 12.1 -32.2 126.6
20°	57 43.9 -37.2 131.9	56 58.9 -36.2 130.9	56 13.2 -35.2 129.9	55 26.8 -34.2 128.9	54 39.9 -33.3 128.0
21°	57 06.7 -38.2 133.4	56 22.7 -37.1 132.3	55 38.0 -36.1 131.3	54 52.6 -35.1 130.4	54 06.6 -34.2 129.5
22°	56 28.5 -39.1 134.8	55 45.6 -38.1 133.8	55 01.9 -37.1 132.7	54 17.5 -36.2 131.8	53 32.4 -35.2 130.9
23°	55 49.4 -39.9 136.2	55 07.5 -39.0 135.1	54 24.8 -38.0 134.1	53 41.3 -37.0 133.1	52 57.2 -36.0 132.2
24°	55 09.5 -40.8 137.5	54 28.5 -39.8 136.4	53 46.8 -38.8 135.4	53 04.3 -37.8 134.5	52 21.2 -37.0 133.5
25°	54 28.7 -41.6 138.8	53 48.7 -40.6 137.7	53 08.0 -39.7 136.7	52 26.5 -38.7 135.7	51 44.2 -37.7 134.8
26°	53 47.1 -42.3 140.0	53 08.1 -41.3 138.9	52 28.3 -40.3 137.9	51 47.8 -39.5 137.0	51 06.5 -38.5 136.1
27°	53 04.8 -43.0 141.2	52 26.8 -42.0 140.1	51 48.0 -41.1 139.1	51 08.3 -40.1 138.2	50 28.0 -39.3 137.3
28°	52 21.8 -43.6 142.3	51 44.8 -42.7 141.3	51 06.9 -41.8 140.3	50 28.2 -40.9 139.4	49 48.7 -39.9 138.4
29°	51 38.2 -44.2 143.4	51 02.1 -43.4 142.4	50 25.1 -42.5 141.5	49 47.3 -41.5 140.5	49 08.8 -40.6 139.6

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	59 59.1 -03.0 91.7	58 59.1 -02.9 91.7	57 59.2 -02.8 91.6	56 59.2 -02.7 91.5	55 59.2 -02.6 91.5
1°	59 56.1 -04.8 93.7	58 56.2 -04.6 93.6	57 56.4 -04.5 93.5	56 56.5 -04.4 93.4	55 56.6 -04.2 93.3
2°	59 51.3 -06.6 95.7	58 51.6 -06.4 95.5	57 51.9 -06.2 95.4	56 52.1 -05.9 95.2	55 52.4 -05.7 95.0
3°	59 44.7 -08.3 97.7	58 45.2 -08.0 97.5	57 45.7 -07.7 97.2	56 46.2 -07.5 97.0	55 46.7 -07.3 96.8
4°	59 36.4 -10.1 99.7	58 37.2 -09.7 99.4	57 38.0 -09.4 99.1	56 38.7 -09.0 98.8	55 39.4 -08.7 98.6
5°	59 26.3 -11.8 101.6	58 27.5 -11.4 101.2	57 28.6 -11.0 100.9	56 29.7 -10.6 100.6	55 30.7 -10.3 100.3
6°	59 14.5 -13.5 103.5	58 16.1 -13.0 103.1	57 17.6 -12.5 102.7	56 19.1 -12.2 102.4	55 20.4 -11.7 102.1
7°	59 01.0 -15.2 105.4	58 03.1 -14.6 105.0	57 05.1 -14.1 104.6	56 06.9 -13.6 104.2	55 08.7 -13.1 103.8
8°	58 45.8 -16.7 107.3	57 48.5 -16.2 106.8	56 51.0 -15.6 106.3	55 53.3 -15.0 105.9	54 55.6 -14.6 105.5
9°	58 29.1 -18.3 109.1	57 32.3 -17.6 108.6	56 35.4 -17.1 108.1	55 38.3 -16.5 107.6	54 41.0 -15.9 107.2
10°	58 10.8 -19.8 110.9	57 14.7 -19.2 110.4	56 18.3 -18.5 109.8	55 21.8 -17.9 109.3	54 25.1 -17.3 108.8
11°	57 51.0 -21.3 112.7	56 55.5 -20.5 112.1	55 59.8 -19.9 111.5	55 03.9 -19.2 111.0	54 07.8 -18.6 110.5
12°	57 29.7 -22.7 114.5	56 35.0 -22.0 113.8	55 39.9 -21.2 113.2	54 44.7 -20.6 112.6	53 49.2 -19.9 112.1
13°	57 07.0 -24.1 116.2	56 13.0 -23.3 115.5	55 18.7 -22.5 114.9	54 24.1 -21.8 114.3	53 29.3 -21.1 113.7
14°	56 42.9 -25.4 117.9	55 49.7 -24.6 117.2	54 56.2 -23.9 116.5	54 02.3 -23.1 115.9	53 08.2 -22.4 115.3
15°	56 17.5 -26.7 119.5	55 25.1 -25.9 118.8	54 32.3 -25.0 118.1	53 39.2 -24.2 117.4	52 45.8 -23.5 116.8
16°	55 50.8 -27.9 121.1	54 59.2 -27.0 120.4	54 07.3 -26.2 119.6	53 15.0 -25.5 119.0	52 22.3 -24.7 118.3
17°	55 22.9 -29.1 122.7	54 32.2 -28.2 121.9	53 41.1 -27.4 121.2	52 49.5 -26.5 120.5	51 57.6 -25.7 119.8
18°	54 53.8 -30.2 124.2	54 04.0 -29.3 123.4	53 13.7 -28.5 122.7	52 23.0 -27.7 121.9	51 31.9 -26.9 121.3
19°	54 23.6 -31.3 125.7	53 34.7 -30.4 124.9	52 45.2 -29.5 124.1	51 55.3 -28.6 123.4	51 05.0 -27.8 122.7
20°	53 52.3 -32.3 127.2	53 04.3 -31.4 126.3	52 15.7 -30.5 125.6	51 26.7 -29.7 124.8	50 37.2 -28.9 124.1
21°	53 20.0 -33.3 128.6	52 32.9 -32.4 127.7	51 45.2 -31.5 127.0	50 57.0 -30.7 126.2	50 08.3 -29.8 125.5
22°	52 46.7 -34.2 130.0	52 00.5 -33.4 129.1	51 13.7 -32.5 128.3	50 26.3 -31.5 127.5	49 38.5 -30.7 126.8
23°	52 12.5 -35.2 131.3	51 27.1 -34.2 130.5	50 41.2 -33.3 129.7	49 54.8 -32.5 128.9	49 07.8 -31.6 128.1
24°	51 37.3 -36.0 132.6	50 52.9 -35.1 131.8	50 07.9 -34.2 131.0	49 22.3 -33.3 130.2	48 36.2 -32.5 129.4
25°	51 01.3 -36.8 133.9	50 17.8 -35.9 133.1	49 33.7 -35.0 132.2	48 49.0 -34.2 131.4	48 03.7 -33.2 130.7
26°	50 24.5 -37.6 135.2	49 41.9 -36.7 134.3	48 58.7 -35.8 133.5	48 14.8 -34.9 132.7	47 30.5 -34.1 131.9
27°	49 46.9 -38.3 136.4	49 05.2 -37.4 135.5	48 22.9 -36.6 134.7	47 39.9 -35.7 133.9	46 56.4 -34.8 133.1
28°	49 08.6 -39.1 137.6	48 27.8 -38.2 136.7	47 46.3 -37.3 135.9	47 04.2 -36.3 135.1	46 21.6 -35.5 134.3
29°	48 29.5 -39.7 138.7	47 49.6 -38.8 137.9	47 09.0 -37.9 137.0	46 27.9 -37.1 136.2	45 46.1 -36.2 135.5

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°	54 59.3 -02.6 91.4	53 59.3 -02.5 91.4	52 59.3 -02.4 91.3	51 59.3 -02.3 91.3	50 59.4 -02.4 91.2
1°	54 56.7 -04.1 93.2	53 56.8 -04.0 93.1	52 56.9 -03.8 93.0	51 57.0 -03.7 92.9	50 57.0 -03.6 92.8
2°	54 52.6 -05.5 94.9	53 52.8 -05.3 94.8	52 53.1 -05.2 94.6	51 53.3 -05.1 94.5	50 53.4 -04.8 94.4
3°	54 47.1 -07.0 96.6	53 47.5 -06.8 96.5	52 47.9 -06.6 96.3	51 48.2 -06.3 96.1	50 48.6 -06.2 96.0
4°	54 40.1 -08.5 98.4	53 40.7 -08.2 98.1	52 41.3 -07.9 97.9	51 41.9 -07.7 97.7	50 42.4 -07.4 97.6
5°	54 31.6 -09.9 100.1	53 32.5 -09.5 99.8	52 33.4 -09.3 99.6	51 34.2 -08.9 99.3	50 35.0 -08.7 99.1
6°	54 21.7 -11.3 101.8	53 23.0 -11.0 101.5	52 24.1 -10.5 101.2	51 25.3 -10.3 100.9	50 26.3 -09.9 100.7
7°	54 10.4 -12.7 103.4	53 12.0 -12.2 103.1	52 13.6 -11.9 102.8	51 15.0 -11.5 102.5	50 16.4 -11.1 102.2
8°	53 57.7 -14.0 105.1	52 59.8 -13.6 104.7	52 01.7 -13.2 104.4	51 03.5 -12.7 104.1	50 05.3 -12.3 103.8
9°	53 43.7 -15.5 106.8	52 46.2 -15.0 106.4	51 48.5 -14.4 106.0	50 50.8 -14.0 105.6	49 53.0 -13.5 105.3
10°	53 28.2 -16.7 108.4	52 31.2 -16.1 108.0	51 34.1 -15.6 107.5	50 36.8 -15.1 107.2	49 39.5 -14.7 106.8
11°	53 11.5 -18.0 110.0	52 15.1 -17.5 109.5	51 18.5 -16.9 109.1	50 21.7 -16.3 108.7	49 24.8 -15.8 108.3
12°	52 53.5 -19.2 111.6	51 57.6 -18.6 111.1	51 01.6 -18.1 110.6	50 05.4 -17.5 110.2	49 09.0 -17.0 109.8
13°	52 34.3 -20.5 113.1	51 39.0 -19.8 112.6	50 43.5 -19.2 112.1	49 47.9 -18.6 111.7	48 52.0 -18.0 111.2
14°	52 13.8 -21.7 114.7	51 19.2 -21.0 114.1	50 24.3 -20.3 113.6	49 29.3 -19.8 113.1	48 34.0 -19.1 112.7
15°	51 52.1 -22.8 116.2	50 58.2 -22.1 115.6	50 04.0 -21.5 115.1	49 09.5 -20.7 114.6	48 14.9 -20.2 114.1
16°	51 29.3 -23.9 117.7	50 36.1 -23.2 117.1	49 42.5 -22.5 116.5	48 48.8 -21.9 116.0	47 54.7 -21.2 115.5
17°	51 05.4 -25.0 119.2	50 12.9 -24.3 118.5	49 20.0 -23.5 118.0	48 26.9 -22.8 117.4	47 33.5 -22.1 116.9
18°	50 40.4 -26.0 120.6	49 48.6 -25.3 120.0	48 56.5 -24.6 119.4	48 04.1 -23.9 118.8	47 11.4 -23.2 118.3
19°	50 14.4 -27.1 122.0	49 23.3 -26.3 121.4	48 31.9 -25.5 120.8	47 40.2 -24.8 120.2	46 48.2 -24.1 119.6
20°	49 47.3 -28.0 123.4	48 57.0 -27.2 122.7	48 06.4 -26.5 122.1	47 15.4 -25.7 121.5	46 24.1 -25.0 121.0
21°	49 19.3 -29.0 124.8	48 29.8 -28.2 124.1	47 39.9 -27.4 123.5	46 49.7 -26.6 122.9	45 59.1 -25.9 122.3
22°	48 50.3 -29.9 126.1	48 01.6 -29.1 125.4	47 12.5 -28.3 124.8	46 23.1 -27.6 124.2	45 33.2 -26.7 123.6
23°	48 20.4 -30.8 127.4	47 32.5 -29.9 126.7	46 44.2 -29.1 126.1	45 55.5 -28.3 125.4	45 06.5 -27.6 124.8
24°	47 49.6 -31.6 128.7	47 02.6 -30.8 128.0	46 15.1 -30.0 127.3	45 27.2 -29.2 126.7	44 38.9 -28.4 126.1
25°	47 18.0 -32.4 130.0	46 31.8 -31.6 129.3	45 45.1 -30.8 128.6	44 58.0 -30.0 127.9	44 10.5 -29.2 127.3
26°	46 45.6 -33.2 131.2	46 00.2 -32.4 130.5	45 14.3 -31.5 129.8	44 28.0 -30.7 129.2	43 41.3 -29.9 128.5
27°	46 12.4 -34.0 132.4	45 27.8 -33.1 131.7	44 42.8 -32.3 131.0	43 57.3 -31.5 130.4	43 11.4 -30.7 129.7
28°	45 38.4 -34.7 133.6	44 54.7 -33.8 132.9	44 10.5 -33.0 132.2	43 25.8 -32.2 131.5	42 40.7 -31.4 130.9
29°	45 03.7 -35.3 134.7	44 20.9 -34.6 134.0	43 37.5 -33.7 133.4	42 53.6 -32.8 132.7	42 09.3 -32.0 132.1

Declination CONTRARY name to Latitude

Latitude 1°

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	49 59.4 -02.3 91.2	48 59.4 -02.2 91.2	47 59.4 -02.1 91.1	46 59.4 -02.1 91.1	45 59.5 -02.1 91.0
1°	49 57.1 -03.5 92.7	48 57.2 -03.4 92.7	47 57.3 -03.3 92.6	46 57.3 -03.2 92.5	45 57.4 -03.1 92.5
2°	49 53.6 -04.7 94.3	48 53.8 -04.6 94.2	47 54.0 -04.5 94.1	46 54.1 -04.3 94.0	45 54.3 -04.2 93.9
3°	49 48.9 -06.0 95.8	48 49.2 -05.8 95.7	47 49.5 -05.6 95.6	46 49.8 -05.4 95.5	45 50.1 -05.3 95.3
4°	49 42.9 -07.1 97.4	48 43.4 -06.9 97.2	47 43.9 -06.7 97.1	46 44.4 -06.6 96.9	45 44.8 -06.3 96.8
5°	49 35.8 -08.4 98.9	48 36.5 -08.2 98.7	47 37.2 -07.9 98.5	46 37.8 -07.6 98.4	45 38.5 -07.4 98.2
6°	49 27.4 -09.6 100.4	48 28.3 -09.2 100.2	47 29.3 -09.0 100.0	46 30.2 -08.7 99.8	45 31.1 -08.5 99.6
7°	49 17.8 -10.8 102.0	48 19.1 -10.5 101.7	47 20.3 -10.1 101.5	46 21.5 -09.8 101.2	45 22.6 -09.5 101.0
8°	49 07.0 -11.9 103.5	48 08.6 -11.5 103.2	47 10.2 -11.2 102.9	46 11.7 -10.9 102.7	45 13.1 -10.5 102.4
9°	48 55.1 -13.1 105.0	47 57.1 -12.7 104.7	46 59.0 -12.3 104.4	46 00.8 -11.9 104.1	45 02.6 -11.5 103.8
10°	48 42.0 -14.2 106.4	47 44.4 -13.8 106.1	46 46.7 -13.3 105.8	45 48.9 -12.9 105.5	44 51.1 -12.5 105.2
11°	48 27.8 -15.4 107.9	47 30.6 -14.8 107.6	46 33.4 -14.4 107.2	45 36.0 -13.9 106.9	44 38.6 -13.5 106.6
12°	48 12.4 -16.4 109.4	47 15.8 -15.9 109.0	46 19.0 -15.4 108.6	45 22.1 -15.0 108.3	44 25.1 -14.5 108.0
13°	47 56.0 -17.5 110.8	46 59.9 -17.0 110.4	46 03.6 -16.4 110.0	45 07.1 -15.9 109.7	44 10.6 -15.4 109.3
14°	47 38.5 -18.5 112.2	46 42.9 -17.9 111.8	45 47.2 -17.5 111.4	44 51.2 -16.9 111.0	43 55.2 -16.4 110.7
15°	47 20.0 -19.5 113.6	46 25.0 -19.0 113.2	45 29.7 -18.4 112.8	44 34.3 -17.8 112.4	43 38.8 -17.3 112.0
16°	47 00.5 -20.6 115.0	46 06.0 -19.9 114.6	45 11.3 -19.3 114.1	44 16.5 -18.7 113.7	43 21.5 -18.2 113.3
17°	46 39.9 -21.5 116.4	45 46.1 -20.9 115.9	44 52.0 -20.3 115.5	43 57.8 -19.7 115.0	43 03.3 -19.1 114.6
18°	46 18.4 -22.5 117.8	45 25.2 -21.8 117.3	44 31.7 -21.1 116.8	43 38.1 -20.6 116.3	42 44.2 -19.9 115.9
19°	45 55.9 -23.4 119.1	45 03.4 -22.7 118.6	44 10.6 -22.1 118.1	43 17.5 -21.4 117.6	42 24.3 -20.8 117.2
20°	45 32.5 -24.3 120.4	44 40.7 -23.6 119.9	43 48.5 -22.9 119.4	42 56.1 -22.2 118.9	42 03.5 -21.6 118.5
21°	45 08.2 -25.1 121.7	44 17.1 -24.5 121.2	43 25.6 -23.8 120.7	42 33.9 -23.1 120.2	41 41.9 -22.4 119.7
22°	44 43.1 -26.0 123.0	43 52.6 -25.3 122.4	43 01.8 -24.5 121.9	42 10.8 -23.9 121.4	41 19.5 -23.2 120.9
23°	44 17.1 -26.9 124.3	43 27.3 -26.1 123.7	42 37.3 -25.4 123.2	41 46.9 -24.7 122.7	40 56.3 -24.0 122.2
24°	43 50.2 -27.6 125.5	43 01.2 -26.9 124.9	42 11.9 -26.2 124.4	41 22.2 -25.4 123.9	40 32.3 -24.8 123.4
25°	43 22.6 -28.4 126.7	42 34.3 -27.6 126.2	41 45.7 -26.9 125.6	40 56.8 -26.2 125.1	40 07.5 -25.4 124.6
26°	42 54.2 -29.2 127.9	42 06.7 -28.4 127.4	41 18.8 -27.6 126.8	40 30.6 -26.9 126.3	39 42.1 -26.2 125.8
27°	42 25.0 -29.9 129.1	41 38.3 -29.1 128.5	40 51.2 -28.4 128.0	40 03.7 -27.6 127.4	39 15.9 -26.8 126.9
28°	41 55.1 -30.5 130.3	41 09.2 -29.8 129.7	40 22.8 -29.0 129.1	39 36.1 -28.2 128.6	38 49.1 -27.5 128.1
29°	41 24.6 -31.3 131.4	40 39.4 -30.5 130.9	39 53.8 -29.7 130.3	39 07.9 -29.0 129.7	38 21.6 -28.2 129.2

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°	44 59.5 -02.0 91.0	43 59.5 -02.0 91.0	42 59.5 -01.9 90.9	41 59.5 -01.9 90.9	40 59.5 -01.8 90.9
1°	44 57.5 -03.1 92.4	43 57.5 -02.9 92.4	42 57.6 -02.9 92.3	41 57.6 -02.8 92.2	40 57.7 -02.7 92.2
2°	44 54.4 -04.1 93.8	43 54.6 -04.0 93.7	42 54.7 -03.9 93.7	41 54.8 -03.7 93.6	40 55.0 -03.7 93.5
3°	44 50.3 -05.1 95.2	43 50.6 -05.0 95.1	42 50.8 -04.8 95.0	41 51.1 -04.7 94.9	40 51.3 -04.6 94.8
4°	44 45.2 -06.1 96.6	43 45.6 -05.9 96.5	42 46.0 -05.8 96.4	41 46.4 -05.6 96.3	40 46.7 -05.4 96.2
5°	44 39.1 -07.2 98.0	43 39.7 -07.0 97.9	42 40.2 -06.7 97.7	41 40.8 -06.6 97.6	40 41.3 -06.4 97.5
6°	44 31.9 -08.2 99.4	43 32.7 -07.9 99.3	42 33.5 -07.7 99.1	41 34.2 -07.4 98.9	40 34.9 -07.2 98.8
7°	44 23.7 -09.2 100.8	43 24.8 -08.9 100.6	42 25.8 -08.7 100.4	41 26.8 -08.4 100.3	40 27.7 -08.1 100.1
8°	44 14.5 -10.2 102.2	43 15.9 -09.9 102.0	42 17.1 -09.5 101.8	41 18.4 -09.3 101.6	40 19.6 -09.0 101.4
9°	44 04.3 -11.1 103.6	43 06.0 -10.8 103.3	42 07.6 -10.5 103.1	41 09.1 -10.1 102.9	40 10.6 -09.8 102.7
10°	43 53.2 -12.2 104.9	42 55.2 -11.8 104.7	41 57.1 -11.4 104.4	40 59.0 -11.1 104.2	40 00.8 -10.7 104.0
11°	43 41.0 -13.1 106.3	42 43.4 -12.7 106.0	41 45.7 -12.3 105.7	40 47.9 -11.9 105.5	39 50.1 -11.5 105.3
12°	43 27.9 -14.0 107.6	42 30.7 -13.6 107.3	41 33.4 -13.2 107.1	40 36.0 -12.7 106.8	39 38.6 -12.4 106.5
13°	43 13.9 -14.9 109.0	42 17.1 -14.5 108.7	41 20.2 -14.0 108.4	40 23.3 -13.7 108.1	39 26.2 -13.2 107.8
14°	42 59.0 -15.9 110.3	42 02.6 -15.4 110.0	41 06.2 -14.9 109.7	40 09.6 -14.4 109.3	39 13.0 -14.0 109.1
15°	42 43.1 -16.8 111.6	41 47.2 -16.2 111.3	40 51.3 -15.8 110.9	39 55.2 -15.3 110.6	38 59.0 -14.8 110.3
16°	42 26.3 -17.6 112.9	41 31.0 -17.1 112.6	40 35.5 -16.6 112.2	39 39.9 -16.1 111.9	38 44.2 -15.6 111.6
17°	42 08.7 -18.5 114.2	41 13.9 -18.0 113.8	40 18.9 -17.4 113.5	39 23.8 -16.8 113.1	38 28.6 -16.4 112.8
18°	41 50.2 -19.4 115.5	40 55.9 -18.7 115.1	40 01.5 -18.2 114.7	39 07.0 -17.7 114.4	38 12.2 -17.1 114.0
19°	41 30.8 -20.2 116.8	40 37.2 -19.6 116.4	39 43.3 -19.0 116.0	38 49.3 -18.4 115.6	37 55.1 -17.9 115.2
20°	41 10.6 -20.9 118.0	40 17.6 -20.4 117.6	39 24.3 -19.7 117.2	38 30.9 -19.2 116.8	37 37.2 -18.6 116.4
21°	40 49.7 -21.8 119.3	39 57.2 -21.1 118.8	39 04.6 -20.6 118.4	38 11.7 -19.9 118.0	37 18.6 -19.3 117.6
22°	40 27.9 -22.6 120.5	39 36.1 -21.9 120.0	38 44.0 -21.2 119.6	37 51.8 -20.7 119.2	36 59.3 -20.0 118.8
23°	40 05.3 -23.3 121.7	39 14.2 -22.7 121.3	38 22.8 -22.0 120.8	37 31.1 -21.3 120.4	36 39.3 -20.7 120.0
24°	39 42.0 -24.0 122.9	38 51.5 -23.3 122.4	38 00.8 -22.7 122.0	37 09.8 -22.0 121.6	36 18.6 -21.4 121.2
25°	39 18.0 -24.7 124.1	38 28.2 -24.1 123.6	37 38.1 -23.4 123.2	36 47.8 -22.7 122.7	35 57.2 -22.1 122.3
26°	38 53.3 -25.5 125.3	38 04.1 -24.7 124.8	37 14.7 -24.0 124.3	36 25.1 -23.4 123.9	35 35.1 -22.6 123.5
27°	38 27.8 -26.1 126.4	37 39.4 -25.4 125.9	36 50.7 -24.7 125.5	36 01.7 -24.0 125.0	35 12.5 -23.4 124.6
28°	38 01.7 -26.8 127.6	37 14.0 -26.1 127.1	36 26.0 -25.4 126.6	35 37.7 -24.6 126.2	34 49.1 -23.9 125.7
29°	37 34.9 -27.4 128.7	36 47.9 -26.7 128.2	36 00.6 -25.9 127.7	35 13.1 -25.3 127.3	34 25.2 -24.5 126.9

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Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	39 59.6 -01.8 90.8	38 59.6 -01.8 90.8	37 59.6 -01.7 90.8	36 59.6 -01.7 90.8	35 59.6 -01.7 90.7
1°	39 57.8 -02.7 92.1	38 57.8 -02.6 92.1	37 57.9 -02.6 92.0	36 57.9 -02.5 92.0	35 57.9 -02.4 92.0
2°	39 55.1 -03.6 93.4	38 55.2 -03.5 93.4	37 55.3 -03.4 93.3	36 55.4 -03.3 93.3	35 55.5 -03.2 93.2
3°	39 51.5 -04.4 94.7	38 51.7 -04.3 94.7	37 51.9 -04.1 94.6	36 52.1 -04.0 94.5	35 52.3 -03.9 94.4
4°	39 47.1 -05.3 96.0	38 47.4 -05.1 95.9	37 47.8 -05.0 95.8	36 48.1 -04.9 95.8	35 48.4 -04.7 95.7
5°	39 41.8 -06.2 97.3	38 42.3 -06.0 97.2	37 42.8 -05.8 97.1	36 43.2 -05.6 97.0	35 43.7 -05.5 96.9
6°	39 35.6 -07.0 98.6	38 36.3 -06.8 98.5	37 37.0 -06.6 98.4	36 37.6 -06.4 98.2	35 38.2 -06.2 98.1
7°	39 28.6 -07.8 99.9	38 29.5 -07.6 99.8	37 30.4 -07.4 99.6	36 31.2 -07.1 99.5	35 32.0 -06.9 99.3
8°	39 20.8 -08.7 101.2	38 21.9 -08.4 101.0	37 23.0 -08.2 100.9	36 24.1 -07.9 100.7	35 25.1 -07.6 100.6
9°	39 12.1 -09.6 102.5	38 13.5 -09.3 102.3	37 14.8 -08.9 102.1	36 16.2 -08.7 101.9	35 17.5 -08.4 101.8
10°	39 02.5 -10.3 103.8	38 04.2 -10.0 103.5	37 05.9 -09.7 103.4	36 07.5 -09.4 103.2	35 09.1 -09.1 103.0
11°	38 52.2 -11.2 105.0	37 54.2 -10.8 104.8	36 56.2 -10.5 104.6	35 58.1 -10.2 104.4	35 00.0 -09.9 104.2
12°	38 41.0 -12.0 106.3	37 43.4 -11.6 106.0	36 45.7 -11.2 105.8	35 47.9 -10.8 105.6	34 50.1 -10.5 105.4
13°	38 29.0 -12.8 107.5	37 31.8 -12.4 107.3	36 34.5 -12.0 107.0	35 37.1 -11.6 106.8	34 39.6 -11.2 106.6
14°	38 16.2 -13.5 108.8	37 19.4 -13.1 108.5	36 22.5 -12.8 108.3	35 25.5 -12.4 108.0	34 28.4 -12.0 107.8
15°	38 02.7 -14.4 110.0	37 06.3 -13.9 109.7	36 09.7 -13.4 109.5	35 13.1 -13.0 109.2	34 16.4 -12.6 109.0
16°	37 48.3 -15.1 111.3	36 52.4 -14.7 111.0	35 56.3 -14.2 110.7	35 00.1 -13.7 110.4	34 03.8 -13.2 110.2
17°	37 33.2 -15.8 112.5	36 37.7 -15.3 112.2	35 42.1 -14.9 111.9	34 46.4 -14.4 111.6	33 50.6 -14.0 111.3
18°	37 17.4 -16.6 113.7	36 22.4 -16.1 113.4	35 27.2 -15.6 113.1	34 32.0 -15.1 112.8	33 36.6 -14.6 112.5
19°	37 00.8 -17.4 114.9	36 06.3 -16.8 114.6	35 11.6 -16.2 114.3	34 16.9 -15.8 114.0	33 22.0 -15.3 113.7
20°	36 43.4 -18.0 116.1	35 49.5 -17.5 115.8	34 55.4 -17.0 115.4	34 01.1 -16.4 115.1	33 06.7 -15.8 114.8
21°	36 25.4 -18.7 117.3	35 32.0 -18.2 116.9	34 38.4 -17.6 116.6	33 44.7 -17.0 116.3	32 50.9 -16.6 116.0
22°	36 06.7 -19.5 118.5	35 13.8 -18.8 118.1	34 20.8 -18.2 117.8	33 27.7 -17.7 117.4	32 34.3 -17.1 117.1
23°	35 47.2 -20.1 119.6	34 55.0 -19.5 119.3	34 02.6 -18.9 118.9	33 10.0 -18.3 118.6	32 17.2 -17.7 118.2
24°	35 27.1 -20.7 120.8	34 35.5 -20.1 120.4	33 43.7 -19.5 120.1	32 51.7 -19.0 119.7	31 59.5 -18.4 119.4
25°	35 06.4 -21.4 121.9	34 15.4 -20.8 121.6	33 24.2 -20.2 121.2	32 32.7 -19.5 120.8	31 41.1 -18.9 120.5
26°	34 45.0 -22.0 123.1	33 54.6 -21.4 122.7	33 04.0 -20.7 122.3	32 13.2 -20.1 122.0	31 22.2 -19.5 121.6
27°	34 23.0 -22.7 124.2	33 33.2 -22.0 123.8	32 43.3 -21.4 123.4	31 53.1 -20.7 123.1	31 02.7 -20.0 122.7
28°	34 00.3 -23.2 125.3	33 11.2 -22.5 124.9	32 21.9 -21.9 124.5	31 32.4 -21.2 124.2	30 42.7 -20.6 123.8
29°	33 37.1 -23.9 126.4	32 48.7 -23.2 126.0	32 00.0 -22.4 125.6	31 11.2 -21.8 125.3	30 22.1 -21.2 124.9

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°	34 59.6 -01.6 90.7	33 59.6 -01.6 90.7	32 59.7 -01.6 90.6	31 59.7 -01.6 90.6	30 59.7 -01.6 90.6
1°	34 58.0 -02.4 91.9	33 58.0 -02.3 91.9	32 58.1 -02.3 91.8	31 58.1 -02.2 91.8	30 58.1 -02.1 91.8
2°	34 55.6 -03.1 93.1	33 55.7 -03.0 93.1	32 55.8 -02.9 93.0	31 55.9 -02.9 93.0	30 56.0 -02.8 92.9
3°	34 52.5 -03.8 94.4	33 52.7 -03.7 94.3	32 52.9 -03.7 94.2	31 53.0 -03.5 94.2	30 53.2 -03.4 94.1
4°	34 48.7 -04.6 95.6	33 49.0 -04.5 95.5	32 49.2 -04.2 95.4	31 49.5 -04.1 95.3	30 49.8 -04.1 95.3
5°	34 44.1 -05.3 96.8	33 44.5 -05.1 96.7	32 45.0 -05.0 96.6	31 45.4 -04.9 96.5	30 45.7 -04.6 96.4
6°	34 38.8 -06.0 98.0	33 39.4 -05.8 97.9	32 40.0 -05.6 97.8	31 40.5 -05.4 97.7	30 41.1 -05.3 97.6
7°	34 32.8 -06.7 99.2	33 33.6 -06.5 99.1	32 34.4 -06.3 99.0	31 35.1 -06.1 98.8	30 35.8 -05.9 98.7
8°	34 26.1 -07.4 100.4	33 27.1 -07.2 100.3	32 28.1 -07.0 100.1	31 29.0 -06.7 100.0	30 29.9 -06.5 99.9
9°	34 18.7 -08.1 101.6	33 19.9 -07.8 101.5	32 21.1 -07.6 101.3	31 22.3 -07.4 101.2	30 23.4 -07.1 101.0
10°	34 10.6 -08.8 102.8	33 12.1 -08.5 102.6	32 13.5 -08.2 102.5	31 14.9 -07.9 102.3	30 16.3 -07.7 102.2
11°	34 01.8 -09.5 104.0	33 03.6 -09.2 103.8	32 05.3 -08.9 103.7	31 07.0 -08.6 103.5	30 08.6 -08.3 103.3
12°	33 52.3 -10.2 105.2	32 54.4 -09.9 105.0	31 56.4 -09.5 104.8	30 58.4 -09.2 104.7	30 00.3 -08.9 104.5
13°	33 42.1 -10.9 106.4	32 44.5 -10.5 106.2	31 46.9 -10.2 106.0	30 49.2 -09.9 105.8	29 51.4 -09.5 105.6
14°	33 31.2 -11.5 107.6	32 34.0 -11.2 107.4	31 36.7 -10.8 107.1	30 39.3 -10.4 107.0	29 41.9 -10.0 106.8
15°	33 19.7 -12.2 108.7	32 22.8 -11.8 108.5	31 25.9 -11.4 108.3	30 28.9 -11.0 108.1	29 31.9 -10.7 107.9
16°	33 07.5 -12.9 109.9	32 11.0 -12.4 109.7	31 14.5 -12.0 109.5	30 17.9 -11.6 109.2	29 21.2 -11.2 109.0
17°	32 54.6 -13.5 111.1	31 58.6 -13.0 110.8	31 02.5 -12.6 110.6	30 06.3 -12.2 110.4	29 10.0 -11.8 110.2
18°	32 41.1 -14.1 112.2	31 45.6 -13.7 112.0	30 49.9 -13.2 111.7	29 54.1 -12.8 111.5	28 58.2 -12.3 111.3
19°	32 27.0 -14.8 113.4	31 31.9 -14.3 113.1	30 36.7 -13.8 112.9	29 41.3 -13.3 112.6	28 45.9 -12.9 112.4
20°	32 12.2 -15.3 114.5	31 17.6 -14.9 114.3	30 22.9 -14.4 114.0	29 28.0 -13.9 113.8	28 33.0 -13.4 113.5
21°	31 56.9 -16.0 115.7	31 02.7 -15.4 115.4	30 08.5 -15.0 115.1	29 14.1 -14.5 114.9	28 19.6 -13.9 114.6
22°	31 40.9 -16.6 116.8	30 47.3 -16.1 116.5	29 53.5 -15.5 116.2	28 59.6 -14.9 116.0	28 05.7 -14.5 115.7
23°	31 24.3 -17.2 117.9	30 31.2 -16.6 117.6	29 38.0 -16.1 117.4	28 44.7 -15.6 117.1	27 51.2 -15.0 116.8
24°	31 07.1 -17.7 119.1	30 14.6 -17.2 118.8	29 21.9 -16.6 118.5	28 29.1 -16.0 118.2	27 36.2 -15.5 117.9
25°	30 49.4 -18.4 120.2	29 57.4 -17.7 119.9	29 05.3 -17.1 119.6	28 13.1 -16.6 119.3	27 20.7 -16.1 119.0
26°	30 31.0 -18.8 121.3	29 39.7 -18.3 121.0	28 48.2 -17.7 120.7	27 56.5 -17.1 120.4	27 04.6 -16.5 120.1
27°	30 12.2 -19.5 122.4	29 21.4 -18.8 122.1	28 30.5 -18.2 121.7	27 39.4 -17.6 121.5	26 48.1 -17.0 121.2
28°	29 52.7 -19.9 123.5	29 02.6 -19.3 123.1	28 12.3 -18.7 122.8	27 21.8 -18.1 122.5	26 31.1 -17.5 122.2
29°	29 32.8 -20.5 124.6	28 43.3 -19.9 124.2	27 53.6 -19.2 123.9	27 03.7 -18.6 123.6	26 13.6 -17.9 123.3

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°	29 59.7 -01.5 90.6	28 59.7 -01.5 90.6	27 59.7 -01.4 90.5	26 59.7 -01.4 90.5	25 59.7 -01.4 90.5
1°	29 58.2 -02.1 91.7	28 58.2 -02.0 91.7	27 58.3 -02.1 91.7	26 58.3 -02.0 91.6	25 58.3 -01.9 91.6
2°	29 56.1 -02.7 92.9	28 56.2 -02.7 92.8	27 56.2 -02.5 92.8	26 56.3 -02.5 92.8	25 56.4 -02.4 92.7
3°	29 53.4 -03.4 94.0	28 53.5 -03.2 94.0	27 53.7 -03.2 93.9	26 53.8 -03.0 93.9	25 54.0 -03.0 93.8
4°	29 50.0 -03.9 95.2	28 50.3 -03.8 95.1	27 50.5 -03.6 95.1	26 50.8 -03.6 95.0	25 51.0 -03.4 94.9
5°	29 46.1 -04.5 96.3	28 46.5 -04.4 96.3	27 46.9 -04.3 96.2	26 47.2 -04.1 96.1	25 47.6 -04.0 96.0
6°	29 41.6 -05.1 97.5	28 42.1 -04.9 97.4	27 42.6 -04.7 97.3	26 43.1 -04.6 97.2	25 43.6 -04.5 97.1
7°	29 36.5 -05.7 98.6	28 37.2 -05.5 98.5	27 37.9 -05.4 98.4	26 38.5 -05.1 98.3	25 39.1 -04.9 98.3
8°	29 30.8 -06.3 99.8	28 31.7 -06.1 99.7	27 32.5 -05.8 99.6	26 33.4 -05.7 99.5	25 34.2 -05.5 99.4
9°	29 24.5 -06.8 100.9	28 25.6 -06.6 100.8	27 26.7 -06.4 100.7	26 27.7 -06.2 100.6	25 28.7 -05.9 100.5
10°	29 17.7 -07.5 102.1	28 19.0 -07.2 101.9	27 20.3 -07.0 101.8	26 21.5 -06.6 101.7	25 22.8 -06.5 101.6
11°	29 10.2 -08.0 103.2	28 11.8 -07.7 103.1	27 13.3 -07.4 102.9	26 14.9 -07.2 102.8	25 16.3 -06.9 102.7
12°	29 02.2 -08.6 104.3	28 04.1 -08.3 104.2	27 05.9 -08.0 104.0	26 07.7 -07.7 103.9	25 09.4 -07.4 103.8
13°	28 53.6 -09.1 105.5	27 55.8 -08.9 105.3	26 57.9 -08.5 105.1	26 00.0 -08.2 105.0	25 02.0 -07.9 104.9
14°	28 44.5 -09.8 106.6	27 46.9 -09.3 106.4	26 49.4 -09.1 106.3	25 51.8 -08.7 106.1	24 54.1 -08.4 106.0
15°	28 34.7 -10.2 107.7	27 37.6 -09.9 107.5	26 40.3 -09.5 107.4	25 43.1 -09.2 107.2	24 45.7 -08.8 107.0
16°	28 24.5 -10.8 108.8	27 27.7 -10.5 108.6	26 30.8 -10.1 108.5	25 33.9 -09.7 108.3	24 36.9 -09.3 108.1
17°	28 13.7 -11.4 110.0	27 17.2 -10.9 109.8	26 20.7 -10.5 109.6	25 24.2 -10.2 109.4	24 27.6 -09.8 109.2
18°	28 02.3 -11.9 111.1	27 06.3 -11.5 110.9	26 10.2 -11.1 110.7	25 14.0 -10.6 110.5	24 17.8 -10.2 110.3
19°	27 50.4 -12.4 112.2	26 54.8 -12.0 112.0	25 59.1 -11.5 111.8	25 03.4 -11.1 111.6	24 07.6 -10.7 111.4
20°	27 38.0 -13.0 113.3	26 42.8 -12.5 113.1	25 47.6 -12.0 112.9	24 52.3 -11.6 112.7	23 56.9 -11.2 112.5
21°	27 25.0 -13.4 114.4	26 30.3 -13.0 114.2	25 35.6 -12.6 113.9	24 40.7 -12.1 113.7	23 45.7 -11.6 113.5
22°	27 11.6 -14.0 115.5	26 17.3 -13.4 115.2	25 23.0 -13.0 115.0	24 28.6 -12.5 114.8	23 34.1 -12.0 114.6
23°	26 57.6 -14.5 116.6	26 03.9 -14.0 116.3	25 10.0 -13.4 116.1	24 16.1 -12.9 115.9	23 22.1 -12.5 115.7
24°	26 43.1 -15.0 117.7	25 49.9 -14.4 117.4	24 56.6 -13.9 117.2	24 03.2 -13.4 117.0	23 09.6 -12.8 116.7
25°	26 28.1 -15.4 118.7	25 35.5 -15.0 118.5	24 42.7 -14.4 118.3	23 49.8 -13.9 118.0	22 56.8 -13.4 117.8
26°	26 12.7 -16.0 119.8	25 20.5 -15.3 119.6	24 28.3 -14.8 119.3	23 35.9 -14.2 119.1	22 43.4 -13.7 118.9
27°	25 56.7 -16.4 120.9	25 05.2 -15.9 120.6	24 13.5 -15.3 120.4	23 21.7 -14.7 120.1	22 29.7 -14.1 119.9
28°	25 40.3 -16.9 122.0	24 49.3 -16.3 121.7	23 58.2 -15.7 121.4	23 07.0 -15.2 121.2	22 15.6 -14.6 121.0
29°	25 23.4 -17.3 123.0	24 33.0 -16.7 122.8	23 42.5 -16.1 122.5	22 51.8 -15.5 122.2	22 01.0 -14.9 122.0

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°	24 59.8 -01.4 90.5	23 59.8 -01.4 90.4	22 59.8 -01.4 90.4	21 59.8 -01.4 90.4	20 59.8 -01.3 90.4
1°	24 58.4 -01.9 91.6	23 58.4 -01.9 91.5	22 58.4 -01.8 91.5	21 58.4 -01.7 91.5	20 58.5 -01.7 91.5
2°	24 56.5 -02.4 92.7	23 56.5 -02.3 92.6	22 56.6 -02.2 92.6	21 56.7 -02.2 92.6	20 56.8 -02.2 92.5
3°	24 54.1 -02.9 93.8	23 54.2 -02.7 93.7	22 54.4 -02.7 93.7	21 54.5 -02.6 93.6	20 54.6 -02.5 93.6
4°	24 51.2 -03.3 94.9	23 51.5 -03.3 94.8	22 51.7 -03.1 94.8	21 51.9 -03.0 94.7	20 52.1 -02.9 94.7
5°	24 47.9 -03.8 96.0	23 48.2 -03.7 95.9	22 48.6 -03.6 95.8	21 48.9 -03.5 95.8	20 49.2 -03.3 95.7
6°	24 44.1 -04.3 97.1	23 44.5 -04.1 97.0	22 45.0 -04.0 96.9	21 45.4 -03.8 96.9	20 45.9 -03.8 96.8
7°	24 39.8 -04.8 98.2	23 40.4 -04.6 98.1	22 41.0 -04.5 98.0	21 41.6 -04.3 97.9	20 42.1 -04.1 97.9
8°	24 35.0 -05.3 99.3	23 35.8 -05.1 99.2	22 36.5 -04.8 99.1	21 37.3 -04.7 99.0	20 38.0 -04.5 98.9
9°	24 29.7 -05.7 100.4	23 30.7 -05.5 100.3	22 31.7 -05.3 100.2	21 32.6 -05.1 100.1	20 33.5 -04.9 100.0
10°	24 24.0 -06.2 101.5	23 25.2 -06.0 101.4	22 26.4 -05.8 101.3	21 27.5 -05.5 101.2	20 28.6 -05.2 101.1
11°	24 17.8 -06.7 102.5	23 19.2 -06.4 102.4	22 20.6 -06.1 102.3	21 22.0 -05.9 102.2	20 23.4 -05.7 102.1
12°	24 11.1 -07.1 103.6	23 12.8 -06.8 103.5	22 14.5 -06.6 103.4	21 16.1 -06.3 103.3	20 17.7 -06.0 103.2
13°	24 04.0 -07.6 104.7	23 06.0 -07.3 104.6	22 07.9 -07.0 104.5	21 09.8 -06.7 104.4	20 11.7 -06.5 104.2
14°	23 56.4 -08.0 105.8	22 58.7 -07.8 105.7	22 00.9 -07.4 105.5	21 03.1 -07.1 105.4	20 05.2 -06.8 105.3
15°	23 48.4 -08.6 106.9	22 50.9 -08.1 106.8	21 53.5 -07.9 106.6	20 56.0 -07.5 106.5	19 58.4 -07.2 106.4
16°	23 39.8 -08.9 108.0	22 42.8 -08.6 107.8	21 45.6 -08.2 107.7	20 48.5 -07.9 107.6	19 51.2 -07.5 107.4
17°	23 30.9 -09.4 109.1	22 34.2 -09.1 108.9	21 37.4 -08.7 108.8	20 40.6 -08.3 108.6	19 43.7 -07.9 108.5
18°	23 21.5 -09.8 110.1	22 25.1 -09.4 110.0	21 28.7 -09.0 109.8	20 32.3 -08.7 109.7	19 35.8 -08.3 109.5
19°	23 11.7 -10.3 111.2	22 15.7 -09.9 111.0	21 19.7 -09.5 110.9	20 23.6 -09.1 110.7	19 27.5 -08.7 110.6
20°	23 01.4 -10.7 112.3	22 05.8 -10.2 112.1	21 10.2 -09.8 111.9	20 14.5 -09.4 111.8	19 18.8 -09.0 111.6
21°	22 50.7 -11.2 113.3	21 55.6 -10.7 113.2	21 00.4 -10.3 113.0	20 05.1 -09.8 112.8	19 09.8 -09.4 112.7
22°	22 39.5 -11.5 114.4	21 44.9 -11.1 114.2	20 50.1 -10.6 114.0	19 55.3 -10.2 113.9	19 00.4 -09.7 113.7
23°	22 28.0 -12.0 115.5	21 33.8 -11.5 115.3	20 39.5 -11.0 115.1	19 45.1 -10.5 114.9	18 50.7 -10.1 114.8
24°	22 16.0 -12.4 116.5	21 22.3 -11.9 116.3	20 28.5 -11.4 116.2	19 34.6 -10.9 116.0	18 40.6 -10.4 115.8
25°	22 03.6 -12.7 117.6	21 10.4 -12.2 117.4	20 17.1 -11.7 117.2	19 23.7 -11.2 117.0	18 30.2 -10.7 116.8
26°	21 50.9 -13.2 118.6	20 58.2 -12.7 118.4	20 05.4 -12.2 118.2	19 12.5 -11.6 118.1	18 19.5 -11.1 117.9
27°	21 37.7 -13.6 119.7	20 45.5 -13.0 119.5	19 53.2 -12.5 119.3	19 00.9 -12.0 119.1	18 08.4 -11.4 118.9
28°	21 24.1 -14.0 120.7	20 32.5 -13.4 120.5	19 40.7 -12.8 120.3	18 48.9 -12.3 120.1	17 57.0 -11.8 119.9
29°	21 10.1 -14.3 121.8	20 19.1 -13.8 121.6	19 27.9 -13.2 121.4	18 36.6 -12.6 121.2	17 45.2 -12.0 121.0

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	19 59.8 -01.3 90.4	18 59.8 -01.3 90.3	17 59.8 -01.2 90.3	16 59.8 -01.2 90.3	15 59.8 -01.2 90.3
1°	19 58.5 -01.7 91.4	18 58.5 -01.6 91.4	17 58.6 -01.7 91.4	16 58.6 -01.6 91.4	15 58.6 -01.5 91.3
2°	19 56.8 -02.0 92.5	18 56.9 -02.0 92.5	17 56.9 -01.9 92.4	16 57.0 -01.9 92.4	15 57.1 -01.9 92.4
3°	19 54.8 -02.5 93.6	18 54.9 -02.4 93.5	17 55.0 -02.3 93.5	16 55.1 -02.2 93.4	15 55.2 -02.1 93.4
4°	19 52.3 -02.8 94.6	18 52.5 -02.7 94.6	17 52.7 -02.6 94.5	16 52.9 -02.5 94.5	15 53.1 -02.4 94.4
5°	19 49.5 -03.2 95.7	18 49.8 -03.1 95.6	17 50.1 -03.0 95.6	16 50.4 -02.9 95.5	15 50.7 -02.8 95.5
6°	19 46.3 -03.6 96.7	18 46.7 -03.4 96.7	17 47.1 -03.3 96.6	16 47.5 -03.1 96.6	15 47.9 -03.0 96.5
7°	19 42.7 -03.9 97.8	18 43.3 -03.8 97.7	17 43.8 -03.6 97.7	16 44.4 -03.5 97.6	15 44.9 -03.3 97.6
8°	19 38.8 -04.3 98.9	18 39.5 -04.1 98.8	17 40.2 -04.0 98.7	16 40.9 -03.8 98.7	15 41.6 -03.6 98.6
9°	19 34.5 -04.7 99.9	18 35.4 -04.5 99.8	17 36.2 -04.3 99.8	16 37.1 -04.1 99.7	15 38.0 -03.9 99.6
10°	19 29.8 -05.1 101.0	18 30.9 -04.9 100.9	17 31.9 -04.6 100.8	16 33.0 -04.4 100.7	15 34.1 -04.2 100.7
11°	19 24.7 -05.4 102.0	18 26.0 -05.2 101.9	17 27.3 -04.9 101.9	16 28.6 -04.7 101.8	15 29.9 -04.5 101.7
12°	19 19.3 -05.8 103.1	18 20.8 -05.5 103.0	17 22.4 -05.3 102.9	16 23.9 -05.0 102.8	15 25.4 -04.8 102.7
13°	19 13.5 -06.2 104.1	18 15.3 -05.9 104.0	17 17.1 -05.6 103.9	16 18.9 -05.4 103.9	15 20.6 -05.0 103.8
14°	19 07.3 -06.5 105.2	18 09.4 -06.2 105.1	17 11.5 -05.9 105.0	16 13.5 -05.6 104.9	15 15.6 -05.4 104.8
15°	19 00.8 -06.8 106.2	18 03.2 -06.5 106.1	17 05.6 -06.3 106.0	16 07.9 -05.9 105.9	15 10.2 -05.6 105.8
16°	18 54.0 -07.2 107.3	17 56.7 -06.9 107.2	16 59.3 -06.5 107.1	16 02.0 -06.2 107.0	15 04.6 -05.9 106.9
17°	18 46.8 -07.6 108.3	17 49.8 -07.2 108.2	16 52.8 -06.9 108.1	15 55.8 -06.6 108.0	14 58.7 -06.2 107.9
18°	18 39.2 -07.9 109.4	17 42.6 -07.6 109.3	16 45.9 -07.2 109.2	15 49.2 -06.8 109.0	14 52.5 -06.4 108.9
19°	18 31.3 -08.3 110.4	17 35.0 -07.8 110.3	16 38.7 -07.4 110.2	15 42.4 -07.1 110.1	14 46.1 -06.8 110.0
20°	18 23.0 -08.6 111.5	17 27.2 -08.2 111.4	16 31.3 -07.8 111.2	15 35.3 -07.4 111.1	14 39.3 -07.0 111.0
21°	18 14.4 -08.9 112.5	17 19.0 -08.5 112.4	16 23.5 -08.1 112.3	15 27.9 -07.7 112.1	14 32.3 -07.2 112.0
22°	18 05.5 -09.3 113.6	17 10.5 -08.9 113.4	16 15.4 -08.4 113.3	15 20.2 -07.9 113.2	14 25.1 -07.6 113.0
23°	17 56.2 -09.6 114.6	17 01.6 -09.1 114.5	16 07.0 -08.7 114.3	15 12.3 -08.3 114.2	14 17.5 -07.8 114.1
24°	17 46.6 -09.9 115.6	16 52.5 -09.5 115.5	15 58.3 -09.0 115.3	15 04.0 -08.5 115.2	14 09.7 -08.0 115.1
25°	17 36.7 -10.3 116.7	16 43.0 -09.7 116.5	15 49.3 -09.3 116.4	14 55.5 -08.8 116.2	14 01.7 -08.3 116.1
26°	17 26.4 -10.6 117.7	16 33.3 -10.1 117.6	15 40.0 -09.5 117.4	14 46.7 -09.0 117.3	13 53.4 -08.6 117.1
27°	17 15.8 -10.9 118.7	16 23.2 -10.4 118.6	15 30.5 -09.9 118.4	14 37.7 -09.3 118.3	13 44.8 -08.8 118.1
28°	17 04.9 -11.2 119.8	16 12.8 -10.6 119.6	15 20.6 -10.1 119.5	14 28.4 -09.6 119.3	13 36.0 -09.1 119.2
29°	16 53.7 -11.5 120.8	16 02.2 -11.0 120.6	15 10.5 -10.4 120.5	14 18.8 -09.9 120.3	13 26.9 -09.3 120.2

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	14 59.9 -01.3 90.3	13 59.9 -01.2 90.2	12 59.9 -01.2 90.2	11 59.9 -01.2 90.2	10 59.9 -01.2 90.2
1°	14 58.6 -01.5 91.3	13 58.7 -01.5 91.3	12 58.7 -01.5 91.3	11 58.7 -01.4 91.2	10 58.7 -01.3 91.2
2°	14 57.1 -01.8 92.3	13 57.2 -01.7 92.3	12 57.2 -01.6 92.3	11 57.3 -01.6 92.3	10 57.4 -01.6 92.2
3°	14 55.3 -02.0 93.4	13 55.5 -02.0 93.3	12 55.6 -01.9 93.3	11 55.7 -01.9 93.3	10 55.8 -01.8 93.2
4°	14 53.3 -02.4 94.4	13 53.5 -02.3 94.4	12 53.7 -02.2 94.3	11 53.8 -02.0 94.3	10 54.0 -02.0 94.3
5°	14 50.9 -02.6 95.4	13 51.2 -02.5 95.4	12 51.5 -02.4 95.4	11 51.8 -02.3 95.3	10 52.0 -02.1 95.3
6°	14 48.3 -02.9 96.5	13 48.7 -02.7 96.4	12 49.1 -02.6 96.4	11 49.5 -02.5 96.3	10 49.9 -02.4 96.3
7°	14 45.4 -03.1 97.5	13 46.0 -03.1 97.5	12 46.5 -02.9 97.4	11 47.0 -02.8 97.4	10 47.5 -02.6 97.3
8°	14 42.3 -03.5 98.5	13 42.9 -03.2 98.5	12 43.6 -03.1 98.4	11 44.2 -02.9 98.4	10 44.9 -02.8 98.3
9°	14 38.8 -03.7 99.6	13 39.7 -03.6 99.5	12 40.5 -03.4 99.5	11 41.3 -03.1 99.4	10 42.1 -03.0 99.4
10°	14 35.1 -04.0 100.6	13 36.1 -03.7 100.5	12 37.1 -03.5 100.5	11 38.2 -03.4 100.4	10 39.1 -03.1 100.4
11°	14 31.1 -04.2 101.6	13 32.4 -04.1 101.6	12 33.6 -03.8 101.5	11 34.8 -03.6 101.4	10 36.0 -03.4 101.4
12°	14 26.9 -04.6 102.7	13 28.3 -04.3 102.6	12 29.8 -04.1 102.5	11 31.2 -03.8 102.5	10 32.6 -03.5 102.4
13°	14 22.3 -04.8 103.7	13 24.0 -04.5 103.6	12 25.7 -04.2 103.5	11 27.4 -04.0 103.5	10 29.1 -03.8 103.4
14°	14 17.5 -05.0 104.7	13 19.5 -04.8 104.6	12 21.5 -04.5 104.6	11 23.4 -04.2 104.5	10 25.3 -03.9 104.4
15°	14 12.5 -05.3 105.8	13 14.7 -05.0 105.7	12 17.0 -04.8 105.6	11 19.2 -04.5 105.5	10 21.4 -04.2 105.4
16°	14 07.2 -05.6 106.8	13 09.7 -05.2 106.7	12 12.2 -04.9 106.6	11 14.7 -04.6 106.5	10 17.2 -04.3 106.5
17°	14 01.6 -05.9 107.8	13 04.5 -05.6 107.7	12 07.3 -05.2 107.6	11 10.1 -04.8 107.5	10 12.9 -04.5 107.5
18°	13 55.7 -06.1 108.8	12 58.9 -05.7 108.7	12 02.1 -05.4 108.6	11 05.3 -05.1 108.6	10 08.4 -04.7 108.5
19°	13 49.6 -06.3 109.9	12 53.2 -06.0 109.8	11 56.7 -05.6 109.7	11 00.2 -05.2 109.6	10 03.7 -04.9 109.5
20°	13 43.3 -06.6 110.9	12 47.2 -06.2 110.8	11 51.1 -05.8 110.7	10 55.0 -05.5 110.6	9 58.8 -05.1 110.5
21°	13 36.7 -06.9 111.9	12 41.0 -06.4 111.8	11 45.3 -06.1 111.7	10 49.5 -05.6 111.6	9 53.7 -05.2 111.5
22°	13 29.8 -07.1 112.9	12 34.6 -06.7 112.8	11 39.2 -06.2 112.7	10 43.9 -05.9 112.6	9 48.5 -05.4 112.5
23°	13 22.7 -07.3 113.9	12 27.9 -06.9 113.8	11 33.0 -06.5 113.7	10 38.0 -06.0 113.6	9 43.1 -05.6 113.5
24°	13 15.4 -07.6 115.0	12 21.0 -07.2 114.9	11 26.5 -06.7 114.7	10 32.0 -06.2 114.6	9 37.5 -05.8 114.6
25°	13 07.8 -07.8 116.0	12 13.8 -07.3 115.9	11 19.8 -06.9 115.8	10 25.8 -06.4 115.7	9 31.7 -06.0 115.6
26°	13 00.0 -08.1 117.0	12 06.5 -07.6 116.9	11 12.9 -07.1 116.8	10 19.4 -06.7 116.7	9 25.7 -06.1 116.6
27°	12 51.9 -08.3 118.0	11 58.9 -07.8 117.9	11 05.8 -07.2 117.8	10 12.7 -06.7 117.7	9 19.6 -06.3 117.6
28°	12 43.6 -08.6 119.0	11 51.1 -08.0 118.9	10 58.6 -07.5 118.8	10 06.0 -07.0 118.7	9 13.3 -06.5 118.6
29°	12 35.0 -08.7 120.0	11 43.1 -08.2 119.9	10 51.1 -07.7 119.8	9 59.0 -07.2 119.7	9 06.8 -06.6 119.6

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 59.9 -01.1 90.2	8 59.9 -01.1 90.2	7 59.9 -01.1 90.1	6 59.9 -01.1 90.1	5 59.9 -01.1 90.1
1°	9 58.8 -01.4 91.2	8 58.8 -01.3 91.2	7 58.8 -01.3 91.2	6 58.8 -01.2 91.1	5 58.8 -01.2 91.1
2°	9 57.4 -01.5 92.2	8 57.5 -01.5 92.2	7 57.5 -01.4 92.2	6 57.6 -01.4 92.1	5 57.6 -01.3 92.1
3°	9 55.9 -01.7 93.2	8 56.0 -01.6 93.2	7 56.1 -01.6 93.2	6 56.2 -01.5 93.1	5 56.3 -01.4 93.1
4°	9 54.2 -01.9 94.2	8 54.4 -01.8 94.2	7 54.5 -01.7 94.2	6 54.7 -01.6 94.2	5 54.9 -01.6 94.1
5°	9 52.3 -02.1 95.3	8 52.6 -02.0 95.2	7 52.8 -01.9 95.2	6 53.1 -01.8 95.2	5 53.3 -01.6 95.1
6°	9 50.2 -02.2 96.3	8 50.6 -02.1 96.2	7 50.9 -02.0 96.2	6 51.3 -01.9 96.2	5 51.7 -01.8 96.1
7°	9 48.0 -02.5 97.3	8 48.5 -02.3 97.2	7 48.9 -02.1 97.2	6 49.4 -02.0 97.2	5 49.9 -01.9 97.1
8°	9 45.5 -02.6 98.3	8 46.2 -02.5 98.3	7 46.8 -02.3 98.2	6 47.4 -02.1 98.2	5 48.0 -01.9 98.1
9°	9 42.9 -02.8 99.3	8 43.7 -02.6 99.3	7 44.5 -02.4 99.2	6 45.3 -02.3 99.2	5 46.1 -02.1 99.1
10°	9 40.1 -02.9 100.3	8 41.1 -02.8 100.3	7 42.1 -02.6 100.2	6 43.0 -02.3 100.2	5 44.0 -02.2 100.2
11°	9 37.2 -03.2 101.3	8 38.3 -02.9 101.3	7 39.5 -02.7 101.2	6 40.7 -02.5 101.2	5 41.8 -02.3 101.2
12°	9 34.0 -03.3 102.3	8 35.4 -03.1 102.3	7 36.8 -02.9 102.2	6 38.2 -02.7 102.2	5 39.5 -02.4 102.2
13°	9 30.7 -03.5 103.4	8 32.3 -03.2 103.3	7 33.9 -03.0 103.3	6 35.5 -02.7 103.2	5 37.1 -02.5 103.2
14°	9 27.2 -03.7 104.4	8 29.1 -03.4 104.3	7 30.9 -03.1 104.3	6 32.8 -02.9 104.2	5 34.6 -02.6 104.2
15°	9 23.5 -03.8 105.4	8 25.7 -03.6 105.3	7 27.8 -03.3 105.3	6 29.9 -03.0 105.2	5 32.0 -02.7 105.2
16°	9 19.7 -04.0 106.4	8 22.1 -03.7 106.3	7 24.5 -03.4 106.3	6 26.9 -03.1 106.2	5 29.3 -02.8 106.2
17°	9 15.7 -04.2 107.4	8 18.4 -03.9 107.3	7 21.1 -03.5 107.3	6 23.8 -03.2 107.2	5 26.5 -02.9 107.2
18°	9 11.5 -04.4 108.4	8 14.5 -04.0 108.3	7 17.6 -03.7 108.3	6 20.6 -03.3 108.2	5 23.6 -03.0 108.2
19°	9 07.1 -04.5 109.4	8 10.5 -04.1 109.4	7 13.9 -03.8 109.3	6 17.3 -03.5 109.2	5 20.6 -03.0 109.2
20°	9 02.6 -04.7 110.4	8 06.4 -04.3 110.4	7 10.1 -03.9 110.3	6 13.8 -03.5 110.2	5 17.6 -03.2 110.2
21°	8 57.9 -04.8 111.4	8 02.1 -04.5 111.4	7 06.2 -04.1 111.3	6 10.3 -03.7 111.2	5 14.4 -03.3 111.2
22°	8 53.1 -05.0 112.5	7 57.6 -04.6 112.4	7 02.1 -04.2 112.3	6 06.6 -03.8 112.3	5 11.1 -03.4 112.2
23°	8 48.1 -05.2 113.5	7 53.0 -04.7 113.4	6 57.9 -04.3 113.3	6 02.8 -03.9 113.3	5 07.7 -03.5 113.2
24°	8 42.9 -05.4 114.5	7 48.3 -04.9 114.4	6 53.6 -04.4 114.3	5 58.9 -04.0 114.3	5 04.2 -03.5 114.2
25°	8 37.5 -05.4 115.5	7 43.4 -05.1 115.4	6 49.2 -04.6 115.3	5 54.9 -04.1 115.3	5 00.7 -03.7 115.2
26°	8 32.1 -05.7 116.5	7 38.3 -05.1 116.4	6 44.6 -04.7 116.3	5 50.8 -04.2 116.3	4 57.0 -03.8 116.2
27°	8 26.4 -05.8 117.5	7 33.2 -05.3 117.4	6 39.9 -04.8 117.3	5 46.6 -04.3 117.3	4 53.2 -03.8 117.2
28°	8 20.6 -05.9 118.5	7 27.9 -05.5 118.4	6 35.1 -05.0 118.3	5 42.3 -04.5 118.3	4 49.4 -03.9 118.2
29°	8 14.7 -06.2 119.5	7 22.4 -05.6 119.4	6 30.1 -05.0 119.3	5 37.8 -04.5 119.3	4 45.5 -04.0 119.2

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	5 00.0 -01.1 90.1	4 00.0 -01.1 90.1	3 00.0 -01.1 90.1	2 00.0 -01.1 90.0	1 00.0 -01.1 90.0
1°	4 58.9 -01.2 91.1	3 58.9 -01.2 91.1	2 58.9 -01.1 91.1	1 58.9 -01.1 91.0	0 58.9 -01.0 91.0
2°	4 57.7 -01.3 92.1	3 57.7 -01.2 92.1	2 57.8 -01.2 92.1	1 57.8 -01.1 92.0	0 57.9 -01.1 92.0
3°	4 56.4 -01.4 93.1	3 56.5 -01.3 93.1	2 56.6 -01.3 93.1	1 56.7 -01.2 93.0	0 56.8 -01.1 93.0
4°	4 55.0 -01.4 94.1	3 55.2 -01.4 94.1	2 55.3 -01.2 94.1	1 55.5 -01.2 94.0	0 55.7 -01.2 94.0
5°	4 53.6 -01.6 95.1	3 53.8 -01.4 95.1	2 54.1 -01.4 95.1	1 54.3 -01.3 95.0	0 54.5 -01.1 95.0
6°	4 52.0 -01.6 96.1	3 52.4 -01.6 96.1	2 52.7 -01.4 96.1	1 53.0 -01.2 96.0	0 53.4 -01.2 96.0
7°	4 50.4 -01.8 97.1	3 50.8 -01.5 97.1	2 51.3 -01.4 97.1	1 51.8 -01.3 97.0	0 52.2 -01.1 97.0
8°	4 48.6 -01.8 98.1	3 49.3 -01.7 98.1	2 49.9 -01.5 98.1	1 50.5 -01.4 98.0	0 51.1 -01.2 98.0
9°	4 46.8 -01.9 99.1	3 47.6 -01.7 99.1	2 48.4 -01.6 99.1	1 49.1 -01.4 99.0	0 49.9 -01.2 99.0
10°	4 44.9 -02.0 100.1	3 45.9 -01.8 100.1	2 46.8 -01.6 100.1	1 47.7 -01.4 100.0	0 48.7 -01.3 100.0
11°	4 42.9 -02.0 101.1	3 44.1 -01.9 101.1	2 45.2 -01.7 101.1	1 46.3 -01.4 101.0	0 47.4 -01.2 101.0
12°	4 40.9 -02.2 102.1	3 42.2 -01.9 102.1	2 43.5 -01.7 102.1	1 44.9 -01.5 102.0	0 46.2 -01.2 102.0
13°	4 38.7 -02.2 103.1	3 40.3 -02.0 103.1	2 41.8 -01.7 103.1	1 43.4 -01.5 103.0	0 45.0 -01.3 103.0
14°	4 36.5 -02.4 104.1	3 38.3 -02.1 104.1	2 40.1 -01.8 104.1	1 41.9 -01.5 104.0	0 43.7 -01.3 104.0
15°	4 34.1 -02.4 105.1	3 36.2 -02.1 105.1	2 38.3 -01.9 105.1	1 40.4 -01.6 105.0	0 42.4 -01.3 105.0
16°	4 31.7 -02.5 106.1	3 34.1 -02.2 106.1	2 36.4 -01.9 106.1	1 38.8 -01.6 106.0	0 41.1 -01.3 106.0
17°	4 29.2 -02.6 107.1	3 31.9 -02.3 107.1	2 34.5 -01.9 107.1	1 37.2 -01.6 107.0	0 39.8 -01.3 107.0
18°	4 26.6 -02.6 108.1	3 29.6 -02.3 108.1	2 32.6 -02.0 108.1	1 35.6 -01.7 108.0	0 38.5 -01.3 108.0
19°	4 24.0 -02.8 109.1	3 27.3 -02.4 109.1	2 30.6 -02.0 109.1	1 33.9 -01.7 109.0	0 37.2 -01.3 109.0
20°	4 21.2 -02.8 110.1	3 24.9 -02.4 110.1	2 28.6 -02.1 110.1	1 32.2 -01.7 110.0	0 35.9 -01.4 110.0
21°	4 18.4 -02.9 111.1	3 22.5 -02.6 111.1	2 26.5 -02.1 111.1	1 30.5 -01.7 111.0	0 34.5 -01.4 111.0
22°	4 15.5 -03.0 112.1	3 19.9 -02.5 112.1	2 24.4 -02.2 112.1	1 28.8 -01.8 112.0	0 33.1 -01.3 112.0
23°	4 12.5 -03.0 113.1	3 17.4 -02.7 113.1	2 22.2 -02.2 113.1	1 27.0 -01.8 113.0	0 31.8 -01.4 113.0
24°	4 09.5 -03.1 114.2	3 14.7 -02.7 114.1	2 20.0 -02.3 114.1	1 25.2 -01.8 114.0	0 30.4 -01.4 114.0
25°	4 06.4 -03.2 115.2	3 12.0 -02.7 115.1	2 17.7 -02.3 115.1	1 23.4 -01.9 115.0	0 29.0 -01.4 115.0
26°	4 03.2 -03.3 116.2	3 09.3 -02.8 116.1	2 15.4 -02.3 116.1	1 21.5 -01.8 116.0	0 27.6 -01.4 116.0
27°	3 59.9 -03.4 117.2	3 06.5 -02.9 117.1	2 13.1 -02.4 117.1	1 19.7 -01.9 117.0	0 26.2 -01.4 117.0
28°	3 56.5 -03.4 118.2	3 03.6 -02.9 118.1	2 10.7 -02.4 118.1	1 17.8 -02.0 118.0	0 24.8 -01.4 118.0
29°	3 53.1 -03.5 119.2	3 00.7 -03.0 119.1	2 08.3 -02.5 119.1	1 15.8 -01.9 119.0	0 23.4 -01.4 119.0

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 -01.0 90.0	-1 00.0 -01.0			
1°	-0 01.0 -01.1	-1 01.0 -01.0			
2°	-0 02.1 -01.0	-1 02.0 -01.0			
3°	-0 03.1 -01.1	-1 03.0 -01.0			
4°	-0 04.2 -01.0	-1 04.0 -01.0			
5°	-0 05.2 -01.1	-1 05.0 -00.9			
6°	-0 06.3 -01.0	-1 05.9 -01.0			
7°	-0 07.3 -01.0	-1 06.9 -00.9			
8°	-0 08.3 -01.1	-1 07.8 -00.8			
9°	-0 09.4 -01.0	-1 08.6 -00.9			
10°	-0 10.4 -01.0	-1 09.5 -00.8			
11°	-0 11.4 -01.1	-1 10.3 -00.9			
12°	-0 12.5 -01.0	-1 11.2 -00.8			
13°	-0 13.5 -01.0	-1 12.0 -00.7			
14°	-0 14.5 -01.0	-1 12.7 -00.8			
15°	-0 15.5 -01.0	-1 13.5 -00.7			
16°	-0 16.5 -01.0	-1 14.2 -00.7			
17°	-0 17.5 -01.0	-1 14.9 -00.7			
18°	-0 18.5 -01.0	-1 15.6 -00.7			
19°	-0 19.5 -01.0	-1 16.3 -00.6			
20°	-0 20.5 -01.0	-1 16.9 -00.6			
21°	-0 21.5 -01.0	-1 17.5 -00.6			
22°	-0 22.5 -00.9	-1 18.1 -00.6			
23°	-0 23.4 -01.0	-1 18.7 -00.5			
24°	-0 24.4 -01.0	-1 19.2 -00.5			
25°	-0 25.4 -00.9	-1 19.7 -00.5			
26°	-0 26.3 -00.9	-1 20.2 -00.5			
27°	-0 27.2 -01.0	-1 20.7 -00.4			
28°	-0 28.2 -00.9	-1 21.1 -00.5			
29°	-0 29.1 -00.9	-1 21.6 -00.4			

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

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	88 00.0 -60.0 180.0	87 45.8 -55.5 153.4	87 10.3 -46.6 135.0	86 23.7 -38.2 123.7	85 31.7 -31.7 116.5
1°	87 00.0 -60.0 180.0	86 50.3 -57.7 161.6	86 23.7 -52.0 146.3	85 45.5 -45.5 135.0	85 00.0 -39.4 126.8
2°	86 00.0 -60.0 180.0	85 52.6 -58.5 166.0	85 31.7 -54.8 153.4	85 00.0 -49.8 143.1	84 20.6 -44.7 135.0
3°	85 00.0 -60.0 180.0	84 54.1 -59.1 168.7	84 36.9 -56.4 158.2	84 10.2 -52.6 149.0	83 35.9 -48.5 141.3
4°	84 00.0 -60.0 180.0	83 55.0 -59.3 170.5	83 40.5 -57.3 161.6	83 17.6 -54.5 153.4	82 47.4 -51.0 146.3
5°	83 00.0 -60.0 180.0	82 55.7 -59.4 171.9	82 43.2 -57.9 164.1	82 23.1 -55.7 156.8	81 56.4 -52.9 150.3
6°	82 00.0 -60.0 180.0	81 56.3 -59.6 172.9	81 45.3 -58.4 166.0	81 27.4 -56.5 159.5	81 03.5 -54.2 153.5
7°	81 00.0 -60.0 180.0	80 56.7 -59.7 173.7	80 46.9 -58.7 167.5	80 30.9 -57.2 161.6	80 09.3 -55.3 156.1
8°	80 00.0 -60.0 180.0	79 57.0 -59.7 174.3	79 48.2 -58.9 168.7	79 33.7 -57.6 163.4	79 14.0 -56.0 158.3
9°	79 00.0 -60.0 180.0	78 57.3 -59.8 174.8	78 49.3 -59.1 169.8	78 36.1 -58.1 164.8	78 18.0 -56.6 160.1
10°	78 00.0 -60.0 180.0	77 57.5 -59.8 175.3	77 50.2 -59.3 170.6	77 38.0 -58.3 166.1	77 21.4 -57.1 161.7
11°	77 00.0 -60.0 180.0	76 57.7 -59.8 175.6	76 50.9 -59.3 171.3	76 39.7 -58.5 167.1	76 24.3 -57.5 163.1
12°	76 00.0 -60.0 180.0	75 57.9 -59.9 176.0	75 51.6 -59.4 172.0	75 41.2 -58.8 168.0	75 26.8 -57.8 164.2
13°	75 00.0 -60.0 180.0	74 58.0 -59.8 176.2	74 52.2 -59.5 172.5	74 42.4 -58.8 168.9	74 29.0 -58.0 165.3
14°	74 00.0 -60.0 180.0	73 58.2 -59.9 176.5	73 52.7 -59.6 173.0	73 43.6 -59.0 169.6	73 31.0 -58.3 166.2
15°	73 00.0 -60.0 180.0	72 58.3 -59.9 176.7	72 53.1 -59.6 173.4	72 44.6 -59.2 170.2	72 32.7 -58.4 167.0
16°	72 00.0 -60.0 180.0	71 58.4 -59.9 176.9	71 53.5 -59.6 173.8	71 45.4 -59.2 170.8	71 34.3 -58.6 167.8
17°	71 00.0 -60.0 180.0	70 58.5 -60.0 177.1	70 53.9 -59.7 174.1	70 46.2 -59.2 171.3	70 35.7 -58.8 168.4
18°	70 00.0 -60.0 180.0	69 58.5 -59.9 177.2	69 54.2 -59.7 174.5	69 47.0 -59.4 171.7	69 36.9 -58.8 169.0
19°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.4	68 54.5 -59.7 174.7	68 47.6 -59.4 172.1	68 38.1 -58.9 169.6
20°	68 00.0 -60.0 180.0	67 58.7 -59.9 177.5	67 54.8 -59.8 175.0	67 48.2 -59.4 172.5	67 39.2 -59.1 170.1
21°	67 00.0 -60.0 180.0	66 58.8 -60.0 177.6	66 55.0 -59.8 175.2	66 48.8 -59.5 172.9	66 40.1 -59.1 170.5
22°	66 00.0 -60.0 180.0	65 58.8 -59.9 177.7	65 55.2 -59.8 175.5	65 49.3 -59.5 173.2	65 41.0 -59.1 171.0
23°	65 00.0 -60.0 180.0	64 58.9 -60.0 177.8	64 55.4 -59.8 175.7	64 49.8 -59.6 173.5	64 41.9 -59.3 171.4
24°	64 00.0 -60.0 180.0	63 58.9 -59.9 177.9	63 55.6 -59.8 175.8	63 50.2 -59.6 173.8	63 42.6 -59.2 171.7
25°	63 00.0 -60.0 180.0	62 59.0 -60.0 178.0	62 55.8 -59.8 176.0	62 50.6 -59.6 174.0	62 43.4 -59.4 172.1
26°	62 00.0 -60.0 180.0	61 59.0 -60.0 178.1	61 56.0 -59.8 176.2	61 51.0 -59.6 174.3	61 44.0 -59.3 172.4
27°	61 00.0 -60.0 180.0	60 59.0 -59.9 178.2	60 56.2 -59.9 176.3	60 51.4 -59.7 174.5	60 44.7 -59.4 172.7
28°	60 00.0 -60.0 180.0	59 59.1 -60.0 178.2	59 56.3 -59.9 176.5	59 51.7 -59.7 174.7	59 45.3 -59.5 173.0
29°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.3	58 56.4 -59.8 176.6	58 52.0 -59.7 174.9	58 45.8 -59.4 173.2

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	84 36.9 -26.7 111.7	83 40.6 -23.0 108.4	82 43.3 -20.2 105.9	81 45.3 -17.9 103.9	80 46.9 -16.0 102.4
1°	84 10.2 -34.3 120.9	83 17.6 -30.2 116.5	82 23.1 -26.8 113.1	81 27.4 -24.0 110.5	80 30.9 -21.7 108.4
2°	83 35.9 -40.1 128.6	82 47.4 -35.9 123.7	81 56.3 -32.3 119.7	81 03.4 -29.3 116.5	80 09.2 -26.8 113.9
3°	82 55.8 -44.3 135.0	82 11.5 -40.5 129.8	81 24.0 -37.0 125.5	80 34.1 -33.9 122.0	79 42.4 -31.1 119.0
4°	82 11.5 -47.5 140.2	81 31.0 -43.9 135.0	80 47.0 -40.7 130.6	80 00.2 -37.7 126.9	79 11.3 -35.0 123.7
5°	81 24.0 -49.8 144.5	80 47.1 -46.8 139.4	80 06.3 -43.7 135.0	79 22.5 -40.8 131.2	78 36.3 -38.2 127.9
6°	80 34.2 -51.6 148.1	80 00.3 -48.9 143.2	79 22.6 -46.2 138.9	78 41.7 -43.6 135.1	77 58.1 -41.0 131.7
7°	79 42.6 -53.1 151.0	79 11.4 -50.6 146.4	78 36.4 -48.2 142.2	77 58.1 -45.7 138.5	77 17.1 -43.4 135.1
8°	78 49.5 -54.1 153.6	78 20.8 -52.0 149.2	77 48.2 -49.7 145.2	77 12.4 -47.5 141.5	76 33.7 -45.3 138.2
9°	77 55.4 -54.9 155.7	77 28.8 -53.1 151.6	76 58.5 -51.1 147.7	76 24.9 -49.1 144.2	75 48.4 -47.0 140.9
10°	77 00.5 -55.6 157.6	76 35.7 -54.0 153.6	76 07.4 -52.2 150.0	75 35.8 -50.3 146.6	75 01.4 -48.5 143.4
11°	76 04.9 -56.2 159.2	75 41.7 -54.7 155.5	75 15.2 -53.2 152.0	74 45.5 -51.5 148.7	74 12.9 -49.6 145.6
12°	75 08.7 -56.7 160.6	74 47.0 -55.3 157.1	74 22.0 -53.8 153.7	73 54.0 -52.3 150.6	73 23.3 -50.8 147.6
13°	74 12.0 -57.0 161.8	73 51.7 -55.9 158.5	73 28.2 -54.6 155.3	73 01.7 -53.1 152.3	72 32.5 -51.6 149.5
14°	73 15.0 -57.3 162.9	72 55.8 -56.2 159.8	72 33.6 -55.1 156.8	72 08.6 -53.8 153.9	71 40.9 -52.4 151.1
15°	72 17.7 -57.7 163.9	71 59.6 -56.7 160.9	71 38.5 -55.5 158.1	71 14.8 -54.4 155.3	70 48.5 -52.4 152.6
16°	71 20.0 -57.8 164.8	71 02.9 -57.0 162.0	70 43.0 -56.0 159.2	70 20.4 -54.9 156.6	69 55.3 -53.7 154.0
17°	70 22.2 -58.0 165.6	70 05.9 -57.2 162.9	69 47.0 -56.3 160.3	69 25.5 -55.3 157.7	69 01.6 -54.2 155.3
18°	69 24.2 -58.3 166.4	69 08.7 -57.5 163.8	68 50.7 -56.6 161.3	68 30.2 -55.7 158.8	68 07.4 -54.7 156.5
19°	68 25.9 -58.3 167.0	68 11.2 -57.6 164.6	67 54.1 -56.9 162.2	67 34.5 -56.0 159.8	67 12.7 -55.0 157.5
20°	67 27.6 -58.5 167.7	67 13.6 -57.9 165.3	66 57.2 -57.2 163.0	66 38.5 -56.3 160.7	66 17.7 -55.5 158.6
21°	66 29.1 -58.6 168.2	66 15.7 -58.0 166.0	66 00.0 -57.3 163.8	65 42.2 -56.6 161.6	65 22.2 -55.8 159.5
22°	65 30.5 -58.7 168.8	65 17.7 -58.2 166.6	65 02.7 -57.5 164.5	64 45.6 -56.8 162.4	64 26.4 -56.0 160.4
23°	64 31.8 -58.8 169.2	64 19.5 -58.3 167.2	64 05.2 -57.7 165.1	63 48.8 -57.1 163.1	63 30.4 -56.4 161.2
24°	63 33.0 -58.9 169.7	63 21.2 -58.4 167.7	63 07.5 -57.9 165.7	62 51.7 -57.2 163.8	62 34.0 -56.5 161.9
25°	62 34.1 -59.0 170.1	62 22.8 -58.5 168.2	62 09.6 -58.0 166.3	61 54.5 -57.4 164.5	61 37.5 -56.8 162.6
26°	61 35.1 -59.0 170.5	61 24.3 -58.6 168.7	61 11.6 -58.1 166.9	60 57.1 -57.6 165.1	60 40.7 -56.9 163.3
27°	60 36.1 -59.1 170.9	60 25.7 -58.7 169.1	60 13.5 -58.2 167.4	59 59.5 -57.7 165.6	59 43.8 -57.1 163.9
28°	59 37.0 -59.1 171.2	59 27.0 -58.7 169.5	59 15.3 -58.3 167.8	59 01.8 -57.8 166.2	58 46.7 -57.3 164.5
29°	58 37.9 -59.2 171.6	58 28.3 -58.8 169.9	58 17.0 -58.5 168.3	58 04.0 -58.0 166.7	57 49.4 -57.5 165.1

Latitude 2°

Declination CONTRARY name to Latitude

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	79 48.2 -14.5 101.2	78 49.3 -13.3 100.2	77 50.2 -12.3 99.3	76 51.0 -11.4 98.6	75 51.6 -10.5 98.0
1°	79 33.7 -19.8 106.6	78 36.0 -18.2 105.2	77 37.9 -16.7 103.9	76 39.6 -15.5 102.9	75 41.1 -14.5 102.0
2°	79 13.9 -24.5 111.7	78 17.8 -22.6 109.9	77 21.2 -21.0 108.4	76 24.1 -19.5 107.0	75 26.6 -18.3 105.9
3°	78 49.4 -28.8 116.5	77 55.2 -26.6 114.4	77 00.2 -24.8 112.6	76 04.6 -23.2 111.0	75 08.3 -21.7 109.6
4°	78 20.6 -32.5 121.0	77 28.6 -30.4 118.6	76 35.4 -28.3 116.6	75 41.4 -26.6 114.8	74 46.6 -25.0 113.2
5°	77 48.1 -35.8 125.0	76 58.2 -33.5 122.5	76 07.1 -31.6 120.3	75 14.8 -29.7 118.4	74 21.6 -28.0 116.6
6°	77 12.3 -38.6 128.8	76 24.7 -36.4 126.1	75 35.5 -34.4 123.8	74 45.1 -32.5 121.7	73 53.6 -30.8 119.9
7°	76 33.7 -41.1 132.1	75 48.3 -39.0 129.4	75 01.1 -36.9 127.0	74 12.6 -35.0 124.9	73 22.8 -33.3 122.9
8°	75 52.6 -43.2 135.2	75 09.3 -41.1 132.5	74 24.2 -39.1 130.0	73 37.6 -37.3 127.8	72 49.5 -35.5 125.8
9°	75 09.4 -45.0 138.0	74 28.2 -43.0 135.3	73 45.1 -41.1 132.8	73 00.3 -39.3 130.5	72 14.0 -37.6 128.5
10°	74 24.4 -46.5 140.5	73 45.2 -44.7 137.8	73 04.0 -42.9 135.3	72 21.0 -41.2 133.1	71 36.4 -39.5 131.0
11°	73 37.9 -48.0 142.8	73 00.5 -46.2 140.1	72 21.1 -44.5 137.7	71 39.8 -42.7 135.4	70 56.9 -41.1 133.3
12°	72 49.9 -49.1 144.9	72 14.3 -47.4 142.3	71 36.6 -45.8 139.9	70 57.1 -44.2 137.6	70 15.8 -42.6 135.5
13°	72 00.8 -50.1 146.8	71 26.9 -48.6 144.2	70 50.8 -47.0 141.9	70 12.9 -45.5 139.6	69 33.2 -43.9 137.6
14°	71 10.7 -51.0 148.5	70 38.3 -49.5 146.1	70 03.8 -48.1 143.7	69 27.4 -46.6 141.5	68 49.3 -45.2 139.5
15°	70 19.7 -51.8 150.1	69 48.8 -50.5 147.7	69 15.7 -49.0 145.4	68 40.8 -47.7 143.3	68 04.1 -46.3 141.3
16°	69 27.9 -52.4 151.6	68 58.3 -51.2 149.3	68 26.7 -49.9 147.0	67 53.1 -48.5 144.9	67 17.8 -47.2 142.9
17°	68 35.5 -53.1 152.9	68 07.1 -51.8 150.7	67 36.8 -50.7 148.5	67 04.6 -49.4 146.5	66 30.6 -48.1 144.5
18°	67 42.4 -53.6 154.2	67 15.3 -52.5 152.0	66 46.1 -51.3 149.9	66 15.2 -50.2 147.9	65 42.5 -49.0 146.0
19°	66 48.8 -54.1 155.4	66 22.8 -53.1 153.2	65 54.8 -51.9 151.2	65 25.0 -50.8 149.3	64 53.5 -49.6 147.4
20°	65 54.7 -54.5 156.4	65 29.7 -53.5 154.4	65 02.9 -52.5 152.4	64 34.2 -51.4 150.5	64 03.9 -50.3 148.7
21°	65 00.2 -54.9 157.4	64 36.2 -53.9 155.5	64 10.4 -53.0 153.5	63 42.8 -51.9 151.7	63 13.6 -51.0 149.9
22°	64 05.3 -55.2 158.4	63 42.3 -54.4 156.5	63 17.4 -53.4 154.6	62 50.9 -52.5 152.8	62 22.6 -51.4 151.1
23°	63 10.1 -55.6 159.3	62 47.9 -54.7 157.4	62 24.0 -53.8 155.6	61 58.4 -52.9 153.9	61 31.2 -52.0 152.2
24°	62 14.5 -55.8 160.1	61 53.2 -55.0 158.3	61 30.2 -54.2 156.5	61 05.5 -53.3 154.8	60 39.2 -52.4 153.2
25°	61 18.7 -56.0 160.9	60 58.2 -55.3 159.1	60 36.0 -54.5 157.4	60 12.2 -53.7 155.8	59 46.8 -52.8 154.2
26°	60 22.7 -56.3 161.6	60 02.9 -55.6 159.9	59 41.5 -54.8 158.3	59 18.5 -54.0 156.7	58 54.0 -53.2 155.1
27°	59 26.4 -56.5 162.3	59 07.3 -55.8 160.7	58 46.7 -55.2 159.1	58 24.5 -54.4 157.5	58 00.8 -53.6 156.0
28°	58 29.9 -56.7 162.9	58 11.5 -56.1 161.4	57 51.5 -55.3 159.8	57 30.1 -54.6 158.3	57 07.2 -53.8 156.8
29°	57 33.2 -56.9 163.6	57 15.4 -56.2 162.0	56 56.2 -55.6 160.5	56 35.5 -54.9 159.1	56 13.4 -54.2 157.6

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°	74 52.2 -09.9 97.4	73 52.7 -09.3 96.9	72 53.2 -08.8 96.5	71 53.6 -08.3 96.1	70 53.9 -07.9 95.8
1°	74 42.3 -13.6 101.2	73 43.4 -12.8 100.5	72 44.4 -12.1 99.9	71 45.3 -11.4 99.3	70 46.0 -10.8 98.8
2°	74 28.7 -17.1 104.8	73 30.6 -16.1 103.9	72 32.3 -15.2 103.1	71 33.9 -14.4 102.4	70 35.2 -13.6 101.8
3°	74 11.6 -20.4 108.4	73 14.5 -19.2 107.3	72 17.1 -18.2 106.3	71 19.5 -17.3 105.5	70 21.6 -16.4 104.7
4°	73 51.2 -23.6 111.8	72 55.3 -22.3 110.6	71 58.9 -21.1 109.5	71 02.2 -20.0 108.4	70 05.2 -19.1 107.5
5°	73 27.6 -26.5 115.1	72 33.0 -25.1 113.7	71 37.8 -23.8 112.5	70 42.2 -22.7 111.3	69 46.1 -21.5 110.3
6°	73 01.1 -29.1 118.2	72 07.9 -27.7 116.7	71 14.0 -26.3 115.3	70 19.5 -25.0 114.1	69 24.6 -24.0 113.0
7°	72 32.0 -31.7 121.1	71 40.2 -30.1 119.5	70 47.7 -28.7 118.1	69 54.5 -27.5 116.8	69 00.6 -26.2 115.6
8°	72 00.3 -33.9 123.9	71 10.1 -32.4 122.3	70 19.0 -31.0 120.7	69 27.0 -29.5 119.3	68 34.4 -28.3 118.0
9°	71 26.4 -35.9 126.6	70 37.7 -34.4 124.8	69 48.0 -32.9 123.2	68 57.5 -31.6 121.8	68 06.1 -30.3 120.4
10°	70 50.5 -37.9 129.0	70 03.3 -36.3 127.3	69 15.1 -34.9 125.6	68 25.9 -33.5 124.1	67 35.8 -32.1 122.7
11°	70 12.6 -39.5 131.4	69 27.0 -38.0 129.6	68 40.2 -36.5 127.9	67 52.4 -35.2 126.4	67 03.7 -33.9 124.9
12°	69 33.1 -41.1 133.6	68 49.0 -39.6 131.7	68 03.7 -38.2 130.1	67 17.2 -36.8 128.5	66 29.8 -35.5 127.0
13°	68 52.0 -42.5 135.6	68 09.4 -41.0 133.8	67 25.5 -39.6 132.1	66 40.4 -38.2 130.5	65 54.3 -36.9 129.0
14°	68 09.5 -43.7 137.5	67 28.4 -42.4 135.7	66 45.9 -41.0 134.0	66 02.2 -39.7 132.4	65 17.4 -38.4 130.9
15°	67 25.8 -44.9 139.4	66 46.0 -43.5 137.6	66 04.9 -42.2 135.8	65 22.5 -40.9 134.2	64 39.0 -39.6 132.7
16°	66 40.9 -45.9 141.1	66 02.5 -44.6 139.3	65 22.7 -43.3 137.6	64 41.6 -42.0 136.0	63 59.4 -40.8 134.5
17°	65 55.0 -46.9 142.7	65 17.9 -45.6 140.9	64 39.4 -44.4 139.2	63 59.6 -43.1 137.6	63 18.6 -41.9 136.1
18°	65 08.1 -47.7 144.2	64 32.3 -46.5 142.4	63 55.0 -45.2 140.8	63 16.5 -44.1 139.2	62 36.7 -42.9 137.7
19°	64 20.4 -48.5 145.6	63 45.8 -47.3 143.9	63 09.8 -46.2 142.2	62 32.4 -45.0 140.7	61 53.8 -43.8 139.2
20°	63 31.9 -49.2 146.9	62 58.5 -48.1 145.2	62 23.6 -47.0 143.6	61 47.4 -45.8 142.1	61 10.0 -44.8 140.6
21°	62 42.7 -49.8 148.2	62 10.4 -48.8 146.5	61 36.6 -47.7 145.0	61 01.6 -46.6 143.4	60 25.2 -45.5 142.0
22°	61 52.9 -50.5 149.4	61 21.6 -49.4 147.8	60 48.9 -48.3 146.2	60 15.0 -47.3 144.7	59 39.7 -46.2 143.3
23°	61 02.4 -51.0 150.5	60 32.2 -50.0 148.9	60 00.6 -49.0 147.4	59 27.7 -48.0 146.0	58 53.5 -47.0 144.5
24°	60 11.4 -51.4 151.6	59 42.2 -50.5 150.1	59 11.6 -49.6 148.6	58 39.7 -48.6 147.1	58 06.5 -47.6 145.7
25°	59 20.0 -52.0 152.6	58 51.7 -51.0 151.1	58 22.0 -50.0 149.7	57 51.1 -49.1 148.2	57 18.9 -48.1 146.9
26°	58 28.0 -52.3 153.6	58 00.7 -51.5 152.1	57 32.0 -50.6 150.7	57 02.0 -49.7 149.3	56 30.8 -48.8 148.0
27°	57 35.7 -52.8 154.5	57 09.2 -51.9 153.1	56 41.4 -51.0 151.7	56 12.3 -50.1 150.3	55 42.0 -49.2 149.0
28°	56 42.9 -53.0 155.4	56 17.3 -52.3 154.0	55 50.4 -51.5 152.6	55 22.2 -50.6 151.3	54 52.8 -49.7 150.0
29°	55 49.9 -53.5 156.2	55 25.0 -52.6 154.9	54 58.9 -51.8 153.5	54 31.6 -51.0 152.2	54 03.1 -50.2 151.0

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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°	69 54.3 -07.5 95.5	68 54.6 -07.2 95.2	67 54.8 -06.8 94.9	66 55.1 -06.6 94.7	65 55.3 -06.3 94.5
1°	69 46.8 -10.3 98.4	68 47.4 -09.8 97.9	67 48.0 -09.4 97.6	66 48.5 -08.9 97.2	65 49.0 -08.6 96.9
2°	69 36.5 -13.0 101.2	68 37.6 -12.4 100.7	67 38.6 -11.8 100.2	66 39.6 -11.4 99.7	65 40.4 -10.8 99.3
3°	69 23.5 -15.6 104.0	68 25.2 -14.9 103.3	67 26.8 -14.2 102.7	66 28.2 -13.6 102.2	65 29.6 -13.1 101.7
4°	69 07.9 -18.2 106.7	68 10.3 -17.3 106.0	67 12.6 -16.6 105.3	66 14.6 -15.8 104.6	65 16.5 -15.2 104.0
5°	68 49.7 -20.5 109.4	67 53.0 -19.6 108.5	66 56.0 -18.8 107.7	65 58.8 -18.0 107.0	65 01.3 -17.2 106.3
6°	68 29.2 -22.9 111.9	67 33.4 -21.9 111.0	66 37.2 -20.9 110.1	65 40.8 -20.1 109.3	64 44.1 -19.3 108.6
7°	68 06.3 -25.1 114.4	67 11.5 -24.0 113.4	66 16.3 -23.1 112.5	65 20.7 -22.1 111.6	64 24.8 -21.2 110.8
8°	67 41.2 -27.1 116.9	66 47.5 -26.1 115.8	65 53.2 -24.9 114.8	64 58.6 -24.0 113.8	64 03.6 -23.1 113.0
9°	67 14.1 -29.1 119.2	66 21.4 -27.9 118.0	65 28.3 -26.9 117.0	64 34.6 -25.8 116.0	63 40.5 -24.9 115.1
10°	66 45.0 -30.9 121.4	65 53.5 -29.7 120.2	65 01.4 -28.6 119.1	64 08.8 -27.6 118.1	63 15.6 -26.6 117.1
11°	66 14.1 -32.6 123.6	65 23.8 -31.4 122.3	64 32.8 -30.3 121.2	63 41.2 -29.2 120.1	62 49.0 -28.1 119.1
12°	65 41.5 -34.2 125.6	64 52.4 -33.0 124.4	64 02.5 -31.8 123.2	63 12.0 -30.8 122.0	62 20.9 -29.7 121.0
13°	65 07.3 -35.7 127.6	64 19.4 -34.5 126.3	63 30.7 -33.4 125.1	62 41.2 -32.2 123.9	61 51.2 -31.2 122.8
14°	64 31.6 -37.1 129.5	63 44.9 -35.9 128.2	62 57.3 -34.7 126.9	62 09.0 -33.6 125.8	61 20.0 -32.5 124.6
15°	63 54.5 -38.4 131.3	63 09.0 -37.2 130.0	62 22.6 -36.1 128.7	61 35.4 -34.9 127.5	60 47.5 -33.9 126.4
16°	63 16.1 -39.6 133.0	62 31.8 -38.4 131.7	61 46.5 -37.2 130.4	61 00.5 -36.2 129.2	60 13.6 -35.0 128.1
17°	62 36.5 -40.7 134.7	61 53.4 -39.6 133.3	61 09.3 -38.4 132.1	60 24.3 -37.3 130.8	59 38.6 -36.2 129.7
18°	61 55.8 -41.8 136.3	61 13.8 -40.6 134.9	60 30.9 -39.5 133.6	59 47.0 -38.3 132.4	59 02.4 -37.4 131.2
19°	61 14.0 -42.7 137.8	60 33.2 -41.6 136.4	59 51.4 -40.5 135.1	59 08.7 -39.4 133.9	58 25.0 -38.3 132.8
20°	60 31.3 -43.6 139.2	59 51.6 -42.5 137.9	59 10.9 -41.4 136.6	58 29.3 -40.4 135.4	57 46.7 -39.3 134.2
21°	59 47.7 -44.4 140.6	59 09.1 -43.3 139.3	58 29.5 -42.3 138.0	57 48.9 -41.2 136.8	57 07.4 -40.2 135.6
22°	59 03.3 -45.2 141.9	58 25.8 -44.2 140.6	57 47.2 -43.1 139.3	57 07.7 -42.1 138.1	56 27.2 -41.1 137.0
23°	58 18.1 -45.9 143.2	57 41.6 -44.9 141.9	57 04.1 -43.9 140.6	56 25.6 -42.9 139.4	55 46.1 -41.8 138.3
24°	57 32.2 -46.6 144.4	56 56.7 -45.6 143.1	56 20.2 -44.6 141.9	55 42.7 -43.6 140.7	55 04.3 -42.7 139.5
25°	56 45.6 -47.2 145.6	56 11.1 -46.2 144.3	55 35.6 -45.2 143.1	54 59.1 -44.3 141.9	54 21.6 -43.3 140.8
26°	55 58.4 -47.8 146.7	55 24.9 -46.8 145.4	54 50.4 -45.9 144.2	54 14.8 -44.9 143.1	53 38.3 -44.0 141.9
27°	55 10.6 -48.3 147.7	54 38.1 -47.4 146.5	54 04.5 -46.5 145.3	53 29.9 -45.6 144.2	52 54.3 -44.6 143.1
28°	54 22.3 -48.8 148.8	53 50.7 -48.0 147.6	53 18.0 -47.1 146.4	52 44.3 -46.1 145.3	52 09.7 -45.3 144.2
29°	53 33.5 -49.4 149.8	53 02.7 -48.4 148.6	52 30.9 -47.5 147.4	51 58.2 -46.7 146.3	51 24.4 -45.8 145.2

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°	64 55.5 -06.0 94.3	63 55.7 -05.8 94.1	62 55.9 -05.6 93.9	61 56.1 -05.5 93.8	60 56.2 -05.2 93.6
1°	64 49.5 -08.3 96.6	63 49.9 -07.9 96.4	62 50.3 -07.7 96.1	61 50.6 -07.3 95.9	60 51.0 -07.1 95.7
2°	64 41.2 -10.4 98.9	63 42.0 -10.0 98.6	62 42.6 -09.6 98.3	61 43.3 -09.3 98.0	60 43.9 -09.0 97.7
3°	64 30.8 -12.5 101.2	63 32.0 -12.1 100.8	62 33.0 -11.5 100.4	61 34.0 -11.1 100.0	60 34.9 -10.7 99.7
4°	64 18.3 -14.6 103.5	63 19.9 -14.0 103.0	62 21.5 -13.5 102.5	61 22.9 -13.0 102.1	60 24.2 -12.5 101.7
5°	64 03.7 -16.6 105.7	63 05.9 -15.9 105.2	62 08.0 -15.4 104.6	61 09.9 -14.8 104.1	60 11.7 -14.3 103.7
6°	63 47.1 -18.5 107.9	62 50.0 -17.9 107.3	61 52.6 -17.1 106.7	60 55.1 -16.5 106.1	59 57.4 -15.9 105.6
7°	63 28.6 -20.4 110.1	62 32.1 -19.6 109.4	61 35.5 -19.0 108.7	60 38.6 -18.3 108.1	59 41.5 -17.6 107.5
8°	63 08.2 -22.2 112.2	62 12.5 -21.4 111.4	61 16.5 -20.6 110.7	60 20.3 -19.9 110.0	59 23.9 -19.2 109.4
9°	62 46.0 -24.0 114.2	61 51.1 -23.1 113.4	60 55.9 -22.3 112.6	60 00.4 -21.5 111.9	59 04.7 -20.8 111.3
10°	62 22.0 -25.6 116.2	61 28.0 -24.7 115.3	60 33.6 -23.8 114.5	59 38.9 -23.0 113.8	58 43.9 -22.3 113.1
11°	61 56.4 -27.2 118.1	61 03.3 -26.3 117.2	60 09.8 -25.4 116.4	59 15.9 -24.5 115.6	58 21.6 -23.7 114.9
12°	61 29.2 -28.7 120.0	60 37.0 -27.7 119.1	59 44.4 -26.8 118.2	58 51.4 -26.0 117.4	57 57.9 -25.1 116.6
13°	61 00.5 -30.1 121.8	60 09.3 -29.2 120.9	59 17.6 -28.2 120.0	58 25.4 -27.3 119.1	57 32.8 -26.4 118.3
14°	60 30.4 -31.5 123.6	59 40.1 -30.5 122.6	58 49.4 -29.6 121.7	57 58.1 -28.6 120.8	57 06.4 -27.8 120.0
15°	59 58.9 -32.8 125.3	59 09.6 -31.8 124.3	58 19.8 -30.8 123.4	57 29.5 -29.9 122.5	56 38.6 -28.9 121.6
16°	59 26.1 -34.0 127.0	58 37.8 -33.0 126.0	57 49.0 -32.0 125.0	56 59.6 -31.1 124.1	56 09.7 -30.2 123.2
17°	58 52.1 -35.2 128.6	58 04.8 -34.1 127.5	57 17.0 -33.2 126.6	56 28.5 -32.2 125.6	55 39.5 -31.3 124.7
18°	58 16.9 -36.3 130.1	57 30.7 -35.3 129.1	56 43.8 -34.2 128.1	55 56.3 -33.3 127.1	55 08.2 -32.3 126.2
19°	57 40.6 -37.3 131.6	56 55.4 -36.3 130.6	56 09.6 -35.3 129.6	55 23.0 -34.3 128.6	54 35.9 -33.4 127.7
20°	57 03.3 -38.3 133.1	56 19.1 -37.2 132.0	55 34.3 -36.3 131.0	54 48.7 -35.3 130.0	54 02.5 -34.4 129.1
21°	56 25.0 -39.2 134.5	55 41.9 -38.2 133.4	54 58.0 -37.3 132.4	54 13.4 -36.3 131.4	53 28.1 -35.3 130.5
22°	55 45.8 -40.0 135.9	55 03.7 -39.1 134.8	54 20.7 -38.1 133.8	53 37.1 -37.2 132.8	52 52.8 -36.3 131.9
23°	55 05.8 -40.9 137.2	54 24.6 -39.9 136.1	53 42.6 -38.9 135.1	52 59.9 -37.9 134.1	52 16.5 -37.0 133.2
24°	54 24.9 -41.6 138.4	53 44.7 -40.7 137.4	53 03.7 -39.7 136.4	52 22.0 -38.8 135.4	51 39.5 -37.9 134.4
25°	53 43.3 -42.4 139.7	53 04.0 -41.4 138.6	52 24.0 -40.5 137.6	51 43.2 -39.6 136.6	51 01.6 -38.6 135.7
26°	53 00.9 -43.1 140.8	52 22.6 -42.1 139.8	51 43.5 -41.2 138.8	51 03.6 -40.3 137.8	50 23.0 -39.4 136.9
27°	52 17.8 -43.7 142.0	51 40.5 -42.8 141.0	51 02.3 -41.9 140.0	50 23.3 -40.9 139.0	49 43.6 -40.0 138.1
28°	51 34.1 -44.3 143.1	50 57.7 -43.4 142.1	50 20.4 -42.5 141.1	49 42.4 -41.6 140.1	49 03.6 -40.8 139.2
29°	50 49.8 -44.9 144.2	50 14.3 -44.0 143.2	49 37.9 -43.1 142.2	49 00.8 -42.3 141.2	48 22.8 -41.3 140.3

Latitude 2°

Declination CONTRARY name to Latitude

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	59 56.4 -05.1 93.5	58 56.5 -04.9 93.3	57 56.7 -04.8 93.2	56 56.8 -04.7 93.1	55 56.9 -04.5 93.0
1°	59 51.3 -06.9 95.4	58 51.6 -06.6 95.3	57 51.9 -06.5 95.1	56 52.1 -06.2 94.9	55 52.4 -06.1 94.7
2°	59 44.4 -08.6 97.4	58 45.0 -08.4 97.2	57 45.4 -08.0 96.9	56 45.9 -07.8 96.7	55 46.3 -07.5 96.5
3°	59 35.8 -10.4 99.4	58 36.6 -10.0 99.1	57 37.4 -09.7 98.8	56 38.1 -09.4 98.5	55 38.8 -09.1 98.3
4°	59 25.4 -12.0 101.3	58 26.6 -11.7 101.0	57 27.7 -11.3 100.6	56 28.7 -10.9 100.3	55 29.7 -10.5 100.0
5°	59 13.4 -13.8 103.2	58 14.9 -13.2 102.8	57 16.4 -12.8 102.5	56 17.8 -12.4 102.1	55 19.2 -12.0 101.8
6°	58 59.6 -15.4 105.1	58 01.7 -14.9 104.7	57 03.6 -14.4 104.3	56 05.4 -13.9 103.9	55 07.2 -13.5 103.5
7°	58 44.2 -17.0 107.0	57 46.8 -16.4 106.5	56 49.2 -15.8 106.0	55 51.5 -15.3 105.6	54 53.7 -14.8 105.2
8°	58 27.2 -18.5 108.8	57 30.4 -17.9 108.3	56 33.4 -17.4 107.8	55 36.2 -16.8 107.3	54 38.9 -16.2 106.9
9°	58 08.7 -20.1 110.7	57 12.5 -19.4 110.1	56 16.0 -18.7 109.5	55 19.4 -18.1 109.0	54 22.7 -17.6 108.5
10°	57 48.6 -21.5 112.4	56 53.1 -20.8 111.8	55 57.3 -20.2 111.2	55 01.3 -19.5 110.7	54 05.1 -18.9 110.1
11°	57 27.1 -22.9 114.2	56 32.3 -22.2 113.5	55 37.1 -21.4 112.9	54 41.8 -20.8 112.3	53 46.2 -20.2 111.8
12°	57 04.2 -24.3 115.9	56 10.1 -23.6 115.2	55 15.7 -22.8 114.5	54 21.0 -22.1 113.9	53 26.0 -21.4 113.3
13°	56 39.9 -25.7 117.6	55 46.5 -24.8 116.8	54 52.9 -24.1 116.2	53 58.9 -23.3 115.5	53 04.6 -22.6 114.9
14°	56 14.2 -26.9 119.2	55 21.7 -26.1 118.5	54 28.8 -25.3 117.7	53 35.6 -24.5 117.1	52 42.0 -23.7 116.4
15°	55 47.3 -28.1 120.8	54 55.6 -27.2 120.0	54 03.5 -26.4 119.3	53 11.1 -25.7 118.6	52 18.3 -25.0 118.0
16°	55 19.2 -29.2 122.4	54 28.4 -28.4 121.6	53 37.1 -27.6 120.8	52 45.4 -26.8 120.1	51 53.3 -26.0 119.4
17°	54 50.0 -30.4 123.9	54 00.0 -29.6 123.1	53 09.5 -28.7 122.3	52 18.6 -27.8 121.6	51 27.3 -27.0 120.9
18°	54 19.6 -31.5 125.4	53 30.4 -30.5 124.5	52 40.8 -29.7 123.8	51 50.8 -28.9 123.0	51 00.3 -28.1 122.3
19°	53 48.1 -32.5 126.8	52 59.9 -31.6 126.0	52 11.1 -30.7 125.2	51 21.9 -29.9 124.4	50 32.2 -29.1 123.7
20°	53 15.6 -33.4 128.2	52 28.3 -32.6 127.4	51 40.4 -31.7 126.6	50 52.0 -30.9 125.8	50 03.1 -30.0 125.1
21°	52 42.2 -34.4 129.6	51 55.7 -33.5 128.8	51 08.7 -32.6 127.9	50 21.1 -31.7 127.2	49 33.1 -30.9 126.4
22°	52 07.8 -35.3 131.0	51 22.2 -34.4 130.1	50 36.1 -33.6 129.3	49 49.4 -32.7 128.5	49 02.2 -31.8 127.7
23°	51 32.5 -36.2 132.3	50 47.8 -35.2 131.4	50 02.5 -34.3 130.6	49 16.7 -33.5 129.8	48 30.4 -32.6 129.0
24°	50 56.3 -36.9 133.5	50 12.6 -36.1 132.7	49 28.2 -35.2 131.8	48 43.2 -34.3 131.0	47 57.8 -33.5 130.3
25°	50 19.4 -37.7 134.8	49 36.5 -36.8 133.9	48 53.0 -35.9 133.1	48 08.9 -35.0 132.3	47 24.3 -34.2 131.5
26°	49 41.7 -38.5 136.0	48 59.7 -37.6 135.1	48 17.1 -36.7 134.3	47 33.9 -35.9 133.5	46 50.1 -35.0 132.7
27°	49 03.2 -39.2 137.2	48 22.1 -38.3 136.3	47 40.4 -37.4 135.5	46 58.0 -36.5 134.7	46 15.1 -35.7 133.9
28°	48 24.0 -39.8 138.3	47 43.8 -38.9 137.5	47 03.0 -38.1 136.6	46 21.5 -37.2 135.8	45 39.4 -36.4 135.1
29°	47 44.2 -40.5 139.4	47 04.9 -39.6 138.6	46 24.9 -38.8 137.8	45 44.3 -37.9 137.0	45 03.0 -37.0 136.2

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°	54 57.0 -04.4 92.9	53 57.1 -04.3 92.8	52 57.2 -04.1 92.7	51 57.3 -04.0 92.6	50 57.4 -04.0 92.5
1°	54 52.6 -05.8 94.6	53 52.8 -05.7 94.4	52 53.1 -05.6 94.3	51 53.3 -05.4 94.2	50 53.4 -05.2 94.1
2°	54 46.8 -07.4 96.3	53 47.1 -07.1 96.1	52 47.5 -06.9 96.0	51 47.9 -06.7 95.8	50 48.2 -06.5 95.6
3°	54 39.4 -08.8 98.0	53 40.0 -08.5 97.8	52 40.6 -08.2 97.6	51 41.2 -08.1 97.4	50 41.7 -07.8 97.2
4°	54 30.6 -10.2 99.7	53 31.5 -09.9 99.5	52 32.4 -09.6 99.2	51 33.1 -09.3 99.0	50 33.9 -09.0 98.8
5°	54 20.4 -11.6 101.4	53 21.6 -11.2 101.1	52 22.8 -10.9 100.8	51 23.8 -10.5 100.6	50 24.9 -10.3 100.3
6°	54 08.8 -13.0 103.1	53 10.4 -12.6 102.8	52 11.9 -12.3 102.5	51 13.3 -11.9 102.1	50 14.6 -11.5 101.9
7°	53 55.8 -14.4 104.8	52 57.8 -14.0 104.4	51 59.6 -13.4 104.0	51 01.4 -13.0 103.7	50 03.1 -12.6 103.4
8°	53 41.4 -15.7 106.4	52 43.8 -15.2 106.0	51 46.2 -14.8 105.6	50 48.4 -14.3 105.3	49 50.5 -13.9 104.9
9°	53 25.7 -17.0 108.0	52 28.6 -16.5 107.6	51 31.4 -16.0 107.2	50 34.1 -15.5 106.8	49 36.6 -15.0 106.4
10°	53 08.7 -18.3 109.7	52 12.1 -17.7 109.2	51 15.4 -17.1 108.7	50 18.6 -16.7 108.3	49 21.6 -16.2 107.9
11°	52 50.4 -19.5 111.2	51 54.4 -18.9 110.7	50 58.3 -18.4 110.3	50 01.9 -17.8 109.8	49 05.4 -17.2 109.4
12°	52 30.9 -20.8 112.8	51 35.5 -20.1 112.3	50 39.9 -19.5 111.8	49 44.1 -18.9 111.3	48 48.2 -18.4 110.8
13°	52 10.1 -21.9 114.3	51 15.4 -21.3 113.8	50 20.4 -20.7 113.3	49 25.2 -20.0 112.8	48 29.8 -19.4 112.3
14°	51 48.2 -23.1 115.8	50 54.1 -22.4 115.3	49 59.7 -21.7 114.7	49 05.2 -21.1 114.2	48 10.4 -20.5 113.7
15°	51 25.1 -24.1 117.3	50 31.7 -23.5 116.7	49 38.0 -22.8 116.2	48 44.1 -22.1 115.6	47 49.9 -21.5 115.1
16°	51 01.0 -25.3 118.8	50 08.2 -24.5 118.2	49 15.2 -23.8 117.6	48 22.0 -23.2 117.0	47 28.4 -22.5 116.5
17°	50 35.7 -26.3 120.2	49 43.7 -25.5 119.6	48 51.4 -24.8 119.0	47 58.8 -24.1 118.4	47 05.9 -23.4 117.9
18°	50 09.4 -27.3 121.6	49 18.2 -26.6 121.0	48 26.6 -25.8 120.4	47 34.7 -25.1 119.8	46 42.5 -24.4 119.2
19°	49 42.1 -28.3 123.0	48 51.6 -27.4 122.4	48 00.8 -26.7 121.7	47 09.6 -26.0 121.1	46 18.1 -25.2 120.5
20°	49 13.8 -29.2 124.4	48 24.2 -28.5 123.7	47 34.1 -27.7 123.1	46 43.6 -26.8 122.4	45 52.9 -26.2 121.8
21°	48 44.6 -30.1 125.7	47 55.7 -29.3 125.0	47 06.4 -28.5 124.4	46 16.8 -27.8 123.7	45 26.7 -27.0 123.1
22°	48 14.5 -30.9 127.0	47 26.4 -30.1 126.3	46 37.9 -29.4 125.6	45 49.0 -28.6 125.0	44 59.7 -27.8 124.4
23°	47 43.6 -31.8 128.3	46 56.3 -31.0 127.6	46 08.5 -30.2 126.9	45 20.4 -29.4 126.3	44 31.9 -28.7 125.6
24°	47 11.8 -32.7 129.5	46 25.3 -31.8 128.8	45 38.3 -30.9 128.2	44 51.0 -30.2 127.5	44 03.2 -29.4 126.9
25°	46 39.1 -33.3 130.8	45 53.5 -32.6 130.1	45 07.4 -31.8 129.4	44 20.8 -31.0 128.7	43 33.8 -30.2 128.1
26°	46 05.8 -34.2 132.0	45 20.9 -33.3 131.3	44 35.6 -32.5 130.6	43 49.8 -31.6 129.9	43 03.6 -30.9 129.3
27°	45 31.6 -34.8 133.2	44 47.6 -34.0 132.4	44 03.1 -33.2 131.7	43 18.2 -32.4 131.1	42 32.7 -31.6 130.4
28°	44 56.8 -35.6 134.3	44 13.6 -34.7 133.6	43 29.9 -33.9 132.9	42 45.8 -33.1 132.2	42 01.1 -32.2 131.6
29°	44 21.2 -36.1 135.4	43 38.9 -35.4 134.7	42 56.0 -34.5 134.0	42 12.7 -33.7 133.4	41 28.9 -33.0 132.7

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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°	49 57.5 -03.9 92.4	48 57.6 -03.8 92.3	47 57.7 -03.7 92.2	46 57.8 -03.7 92.1	45 57.8 -03.5 92.1
1°	49 53.6 -05.1 93.9	48 53.8 -05.0 93.8	47 54.0 -04.9 93.7	46 54.1 -04.7 93.6	45 54.3 -04.6 93.5
2°	49 48.5 -06.3 95.5	48 48.8 -06.1 95.3	47 49.1 -06.0 95.2	46 49.4 -05.9 95.1	45 49.7 -05.7 94.9
3°	49 42.2 -07.6 97.0	48 42.7 -07.4 96.8	47 43.1 -07.1 96.7	46 43.5 -06.9 96.5	45 44.0 -06.8 96.4
4°	49 34.6 -08.7 98.5	48 35.3 -08.5 98.3	47 36.0 -08.3 98.1	46 36.6 -08.0 98.0	45 37.2 -07.8 97.8
5°	49 25.9 -10.0 100.1	48 26.8 -09.7 99.8	47 27.7 -09.4 99.6	46 28.6 -09.2 99.4	45 29.4 -08.9 99.2
6°	49 15.9 -11.1 101.6	48 17.1 -10.8 101.3	47 18.3 -10.5 101.1	46 19.4 -10.1 100.8	45 20.5 -09.9 100.6
7°	49 04.8 -12.3 103.1	48 06.3 -11.9 102.8	47 07.8 -11.6 102.5	46 09.3 -11.3 102.3	45 10.6 -10.9 102.0
8°	48 52.5 -13.5 104.6	47 54.4 -13.0 104.3	46 56.2 -12.6 104.0	45 58.0 -12.3 103.7	44 59.7 -11.9 103.4
9°	48 39.0 -14.5 106.1	47 41.4 -14.2 105.7	46 43.6 -13.7 105.4	45 45.7 -13.3 105.1	44 47.8 -12.9 104.8
10°	48 24.5 -15.7 107.5	47 27.2 -15.2 107.2	46 29.9 -14.8 106.8	45 32.4 -14.3 106.5	44 34.9 -13.9 106.2
11°	48 08.8 -16.8 109.0	47 12.0 -16.2 108.6	46 15.1 -15.8 108.2	45 18.1 -15.3 107.9	44 21.0 -14.9 107.5
12°	47 52.0 -17.8 110.4	46 55.8 -17.3 110.0	45 59.3 -16.7 109.6	45 02.8 -16.3 109.2	44 06.1 -15.8 108.9
13°	47 34.2 -18.8 111.8	46 38.5 -18.3 111.4	45 42.6 -17.8 111.0	44 46.5 -17.2 110.6	43 50.3 -16.7 110.2
14°	47 15.4 -19.9 113.2	46 20.2 -19.3 112.8	45 24.8 -18.7 112.3	44 29.3 -18.2 111.9	43 33.6 -17.7 111.5
15°	46 55.5 -20.9 114.6	46 00.9 -20.3 114.1	45 06.1 -19.7 113.7	44 11.1 -19.1 113.3	43 15.9 -18.6 112.9
16°	46 34.6 -21.8 116.0	45 40.6 -21.2 115.5	44 46.4 -20.6 115.0	43 52.0 -20.0 114.6	42 57.3 -19.4 114.2
17°	46 12.8 -22.8 117.3	45 19.4 -22.1 116.8	44 25.8 -21.5 116.4	43 32.0 -20.9 115.9	42 37.9 -20.3 115.5
18°	45 50.0 -23.7 118.7	44 57.3 -23.0 118.2	44 04.3 -22.4 117.7	43 11.1 -21.8 117.2	42 17.6 -21.1 116.7
19°	45 26.3 -24.5 120.0	44 34.3 -23.9 119.5	43 41.9 -23.2 118.9	42 49.3 -22.6 118.5	41 56.5 -22.0 118.0
20°	45 01.8 -25.5 121.3	44 10.4 -24.8 120.7	43 18.7 -24.1 120.2	42 26.7 -23.3 119.7	41 34.5 -22.7 119.2
21°	44 36.3 -26.3 122.6	43 45.6 -25.5 122.0	42 54.6 -24.8 121.5	42 03.4 -24.2 121.0	41 11.8 -23.5 120.5
22°	44 10.0 -27.1 123.8	43 20.1 -26.4 123.2	42 29.8 -25.7 122.7	41 39.2 -25.0 122.2	40 48.3 -24.3 121.7
23°	43 42.9 -27.8 125.1	42 53.7 -27.2 124.5	42 04.1 -26.4 123.9	41 14.2 -25.7 123.4	40 24.0 -25.0 122.9
24°	43 15.1 -28.7 126.3	42 26.5 -27.9 125.7	41 37.7 -27.2 125.1	40 48.5 -26.5 124.6	39 59.0 -25.8 124.1
25°	42 46.4 -29.4 127.5	41 58.6 -28.6 126.9	41 10.5 -27.9 126.3	40 22.0 -27.2 125.8	39 33.2 -26.4 125.3
26°	42 17.0 -30.1 128.7	41 30.0 -29.4 128.1	40 42.6 -28.6 127.5	39 54.8 -27.8 126.9	39 06.8 -27.2 126.4
27°	41 46.9 -30.8 129.8	41 00.6 -30.0 129.2	40 14.0 -29.3 128.7	39 27.0 -28.6 128.1	38 39.6 -27.8 127.6
28°	41 16.1 -31.5 131.0	40 30.6 -30.7 130.4	39 44.7 -29.9 129.8	38 58.4 -29.1 129.2	38 11.8 -28.4 128.7
29°	40 44.6 -32.1 132.1	39 59.9 -31.4 131.5	39 14.8 -30.6 130.9	38 29.3 -29.9 130.4	37 43.4 -29.1 129.8

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°	44 57.9 -03.5 92.0	43 58.0 -03.4 91.9	42 58.0 -03.3 91.9	41 58.1 -03.3 91.8	40 58.2 -03.2 91.7
1°	44 54.4 -04.5 93.4	43 54.6 -04.5 93.3	42 54.7 -04.3 93.2	41 54.8 -04.2 93.1	40 55.0 -04.2 93.1
2°	44 49.9 -05.5 94.8	43 50.1 -05.4 94.7	42 50.4 -05.3 94.6	41 50.6 -05.1 94.5	40 50.8 -05.0 94.4
3°	44 44.4 -06.6 96.2	43 44.7 -06.4 96.1	42 45.1 -06.2 95.9	41 45.5 -06.1 95.8	40 45.8 -05.9 95.7
4°	44 37.8 -07.6 97.6	43 38.3 -07.4 97.5	42 38.9 -07.2 97.3	41 39.4 -07.0 97.2	40 39.9 -06.8 97.0
5°	44 30.2 -08.6 99.0	43 30.9 -08.3 98.8	42 31.7 -08.2 98.6	41 32.4 -07.9 98.5	40 33.1 -07.7 98.3
6°	44 21.6 -09.6 100.4	43 22.6 -09.4 100.2	42 23.5 -09.0 100.0	41 24.5 -08.9 99.8	40 25.4 -08.6 99.6
7°	44 12.0 -10.6 101.8	43 13.2 -10.3 101.5	42 14.5 -10.0 101.3	41 15.6 -09.7 101.1	40 16.8 -09.5 100.9
8°	44 01.4 -11.6 103.1	43 02.9 -11.2 102.9	42 04.5 -11.0 102.7	41 05.9 -10.6 102.4	40 07.3 -10.3 102.2
9°	43 49.8 -12.6 104.5	42 51.7 -12.2 104.2	41 53.5 -11.8 104.0	40 55.3 -11.5 103.7	39 57.0 -11.1 103.5
10°	43 37.2 -13.5 105.9	42 39.5 -13.1 105.6	41 41.7 -12.7 105.3	40 43.8 -12.3 105.0	39 45.9 -12.0 104.8
11°	43 23.7 -14.4 107.2	42 26.4 -14.0 106.9	41 29.0 -13.6 106.6	40 31.5 -13.2 106.3	39 33.9 -12.8 106.1
12°	43 09.3 -15.3 108.5	42 12.4 -14.9 108.2	41 15.4 -14.5 107.9	40 18.3 -14.1 107.6	39 21.1 -13.6 107.3
13°	42 54.0 -16.3 109.9	41 57.5 -15.8 109.5	41 00.9 -15.3 109.2	40 04.2 -14.8 108.9	39 07.5 -14.5 108.6
14°	42 37.7 -17.1 111.2	41 41.7 -16.6 110.8	40 45.6 -16.2 110.5	39 49.4 -15.7 110.1	38 53.0 -15.2 109.8
15°	42 20.6 -18.1 112.5	41 25.1 -17.5 112.1	40 29.4 -16.9 111.7	39 33.7 -16.5 111.4	38 37.8 -16.0 111.1
16°	42 02.5 -18.8 113.8	41 07.6 -18.3 113.4	40 12.5 -17.8 113.0	39 17.2 -17.3 112.6	38 21.8 -16.8 112.3
17°	41 43.7 -19.7 115.0	40 49.3 -19.2 114.6	39 54.7 -18.6 114.2	38 59.9 -18.0 113.9	38 05.0 -17.5 113.5
18°	41 24.0 -20.6 116.3	40 30.1 -19.9 115.9	39 36.1 -19.4 115.5	38 41.9 -18.9 115.1	37 47.5 -18.3 114.7
19°	41 03.4 -21.3 117.5	40 10.2 -20.8 117.1	39 16.7 -20.1 116.7	38 23.0 -19.5 116.3	37 29.2 -19.0 115.9
20°	40 42.1 -22.1 118.8	39 49.4 -21.5 118.3	38 56.6 -20.9 117.9	38 03.5 -20.3 117.5	37 10.2 -19.7 117.1
21°	40 20.0 -22.9 120.0	39 27.9 -22.2 119.6	38 35.7 -21.6 119.1	37 43.2 -21.0 118.7	36 50.5 -20.4 118.3
22°	39 57.1 -23.6 121.2	39 05.7 -23.0 120.8	38 14.1 -22.4 120.3	37 22.2 -21.7 119.9	36 30.1 -21.1 119.5
23°	39 33.5 -24.4 122.4	38 42.7 -23.6 121.9	37 51.7 -23.0 121.5	37 00.5 -22.4 121.1	36 09.0 -21.8 120.6
24°	39 09.1 -25.0 123.6	38 19.1 -24.4 123.1	37 28.7 -23.7 122.7	36 38.1 -23.1 122.2	35 47.2 -22.4 121.8
25°	38 44.1 -25.8 124.8	37 54.7 -25.1 124.3	37 05.0 -24.4 123.8	36 15.0 -23.7 123.4	35 24.8 -23.0 122.9
26°	38 18.3 -26.4 125.9	37 29.6 -25.7 125.4	36 40.6 -25.0 125.0	35 51.3 -24.3 124.5	35 01.8 -23.7 124.1
27°	37 51.9 -27.0 127.1	37 03.9 -26.3 126.6	36 15.6 -25.6 126.1	35 27.0 -25.0 125.6	34 38.1 -24.2 125.2
28°	37 24.9 -27.7 128.2	36 37.6 -27.0 127.7	35 50.0 -26.3 127.2	35 02.0 -25.5 126.7	34 13.9 -24.9 126.3
29°	36 57.2 -28.4 129.3	36 10.6 -27.6 128.8	35 23.7 -26.9 128.3	34 36.5 -26.2 127.8	33 49.0 -25.5 127.4

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°	39 58.2 -03.1 91.7	38 58.3 -03.1 91.6	37 58.4 -03.1 91.6	36 58.4 -03.0 91.5	35 58.5 -03.0 91.5
1°	39 55.1 -04.1 93.0	38 55.2 -04.0 92.9	37 55.3 -03.9 92.8	36 55.4 -03.8 92.8	35 55.5 -03.7 92.7
2°	39 51.0 -04.9 94.3	38 51.2 -04.8 94.2	37 51.4 -04.7 94.1	36 51.6 -04.6 94.0	35 51.8 -04.5 93.9
3°	39 46.1 -05.8 95.6	38 46.4 -05.6 95.5	37 46.7 -05.5 95.4	36 47.0 -05.3 95.2	35 47.3 -05.2 95.1
4°	39 40.3 -06.6 96.9	38 40.8 -06.5 96.7	37 41.2 -06.2 96.6	36 41.7 -06.2 96.5	35 42.1 -06.0 96.4
5°	39 33.7 -07.5 98.2	38 34.3 -07.2 98.0	37 35.0 -07.1 97.9	36 35.5 -06.9 97.7	35 36.1 -06.7 97.6
6°	39 26.2 -08.3 99.4	38 27.1 -08.2 99.3	37 27.9 -07.9 99.1	36 28.6 -07.6 99.0	35 29.4 -07.4 98.8
7°	39 17.9 -09.2 100.7	38 18.9 -08.9 100.5	37 20.0 -08.7 100.4	36 21.0 -08.4 100.2	35 22.0 -08.2 100.0
8°	39 08.7 -10.0 102.0	38 10.0 -09.7 101.8	37 11.3 -09.4 101.6	36 12.6 -09.2 101.4	35 13.8 -08.9 101.3
9°	38 58.7 -10.8 103.3	38 00.3 -10.5 103.1	37 01.9 -10.2 102.9	36 03.4 -09.9 102.7	35 04.9 -09.7 102.5
10°	38 47.9 -11.7 104.5	37 49.8 -11.3 104.3	36 51.7 -11.0 104.1	35 53.5 -10.7 103.9	34 55.2 -10.3 103.7
11°	38 36.2 -12.4 105.8	37 38.5 -12.1 105.5	36 40.7 -11.7 105.3	35 42.8 -11.3 105.1	34 44.9 -11.0 104.9
12°	38 23.8 -13.2 107.0	37 26.4 -12.8 106.8	36 29.0 -12.5 106.5	35 31.5 -12.1 106.3	34 33.9 -11.8 106.1
13°	38 10.6 -14.0 108.3	37 13.6 -13.6 108.0	36 16.5 -13.2 107.7	35 19.4 -12.8 107.5	34 22.1 -12.4 107.3
14°	37 56.6 -14.8 109.5	37 00.0 -14.4 109.2	36 03.3 -13.9 109.0	35 06.6 -13.5 108.7	34 09.7 -13.1 108.4
15°	37 41.8 -15.6 110.7	36 45.6 -15.0 110.4	35 49.4 -14.6 110.2	34 53.1 -14.2 109.9	33 56.6 -13.7 109.6
16°	37 26.2 -16.3 112.0	36 30.6 -15.8 111.7	35 34.8 -15.4 111.4	34 38.9 -14.9 111.1	33 42.9 -14.5 110.8
17°	37 09.9 -17.0 113.2	36 14.8 -16.6 112.9	35 19.4 -16.0 112.5	34 24.0 -15.6 112.2	33 28.4 -15.0 112.0
18°	36 52.9 -17.7 114.4	35 58.2 -17.2 114.0	35 03.4 -16.7 113.7	34 08.4 -16.2 113.4	33 13.4 -15.8 113.1
19°	36 35.2 -18.5 115.6	35 41.0 -17.9 115.2	34 46.7 -17.4 114.9	33 52.2 -16.8 114.6	32 57.6 -16.3 114.3
20°	36 16.7 -19.1 116.8	35 23.1 -18.6 116.4	34 29.3 -18.0 116.1	33 35.4 -17.5 115.7	32 41.3 -17.0 115.4
21°	35 57.6 -19.8 117.9	35 04.5 -19.2 117.6	34 11.3 -18.7 117.2	33 17.9 -18.1 116.9	32 24.3 -17.6 116.5
22°	35 37.8 -20.5 119.1	34 45.3 -19.9 118.7	33 52.6 -19.3 118.2	32 59.8 -18.8 118.0	32 06.7 -18.1 117.7
23°	35 17.3 -21.1 120.2	34 25.4 -20.5 119.9	33 33.3 -19.9 119.5	32 41.0 -19.3 119.1	31 48.6 -18.8 118.8
24°	34 56.2 -21.8 121.4	34 04.9 -21.2 121.0	33 13.4 -20.6 120.6	32 21.7 -20.0 120.3	31 29.8 -19.4 119.9
25°	34 34.4 -22.4 122.5	33 43.7 -21.7 122.1	32 52.8 -21.1 121.7	32 01.7 -20.5 121.4	31 10.4 -19.9 121.0
26°	34 12.0 -23.0 123.6	33 22.0 -22.4 123.2	32 31.7 -21.7 122.9	31 41.2 -21.1 122.5	30 50.5 -20.4 122.1
27°	33 49.0 -23.6 124.8	32 59.6 -22.9 124.4	32 10.0 -22.3 124.0	31 20.1 -21.6 123.6	30 30.1 -21.0 123.2
28°	33 25.4 -24.2 125.9	32 36.7 -23.5 125.5	31 47.7 -22.8 125.1	30 58.5 -22.2 124.7	30 09.1 -21.6 124.3
29°	33 01.2 -24.7 127.0	32 13.2 -24.1 126.5	31 24.9 -23.4 126.1	30 36.3 -22.7 125.8	29 47.5 -22.0 125.4

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	34 58.5 -02.9 91.4	33 58.6 -02.9 91.3	32 58.6 -02.8 91.3	31 58.7 -02.8 91.2	30 58.7 -02.7 91.2
1°	34 55.6 -03.6 92.6	33 55.7 -03.6 92.6	32 55.8 -03.5 92.5	31 55.9 -03.4 92.4	30 56.0 -03.4 92.4
2°	34 52.0 -04.4 93.8	33 52.1 -04.2 93.8	32 52.3 -04.2 93.7	31 52.5 -04.1 93.6	30 52.6 -04.0 93.5
3°	34 47.6 -05.1 95.1	33 47.9 -05.0 95.0	32 48.1 -04.8 94.9	31 48.4 -04.8 94.8	30 48.6 -04.6 94.7
4°	34 42.5 -05.8 96.3	33 42.9 -05.7 96.2	32 43.3 -05.6 96.1	31 43.6 -05.4 95.9	30 44.0 -05.3 95.9
5°	34 36.7 -06.6 97.5	33 37.2 -06.4 97.4	32 37.7 -06.2 97.2	31 38.2 -06.0 97.1	30 38.7 -05.8 97.0
6°	34 30.1 -07.2 98.7	33 30.8 -07.0 98.5	32 31.5 -06.8 98.4	31 32.2 -06.6 98.3	30 32.9 -06.5 98.2
7°	34 22.9 -08.0 99.9	33 23.8 -07.7 99.7	32 24.7 -07.5 99.6	31 25.6 -07.3 99.5	30 26.4 -07.1 99.3
8°	34 14.9 -08.6 101.1	33 16.1 -08.4 100.9	32 17.2 -08.2 100.8	31 18.3 -07.9 100.6	30 19.3 -07.7 100.5
9°	34 06.3 -09.3 102.3	33 07.7 -09.1 102.1	32 09.0 -08.8 101.9	31 10.4 -08.6 101.8	30 11.6 -08.2 101.6
10°	33 57.0 -10.1 103.5	32 58.6 -09.7 103.3	32 00.2 -09.4 103.1	31 01.8 -09.1 102.9	30 03.4 -08.9 102.8
11°	33 46.9 -10.7 104.7	32 48.9 -10.4 104.5	31 50.8 -10.1 104.3	30 52.7 -09.8 104.1	29 54.5 -09.5 103.9
12°	33 36.2 -11.4 105.8	32 38.5 -11.0 105.6	31 40.7 -10.7 105.4	30 42.9 -10.4 105.2	29 45.0 -10.0 105.0
13°	33 24.8 -12.0 107.0	32 27.5 -11.7 106.8	31 30.0 -11.3 106.6	30 32.5 -10.9 106.4	29 35.0 -10.7 106.2
14°	33 12.8 -12.7 108.2	32 15.8 -12.3 108.0	31 18.7 -11.9 107.7	30 21.6 -11.6 107.5	29 24.3 -11.1 107.3
15°	33 00.1 -13.4 109.4	32 03.5 -13.0 109.1	31 06.8 -12.6 108.9	30 10.0 -12.1 108.7	29 13.2 -11.8 108.4
16°	32 46.7 -13.9 110.5	31 50.5 -13.5 110.3	30 54.2 -13.1 110.0	29 57.9 -12.8 109.8	29 01.4 -12.3 109.6
17°	32 32.8 -14.7 111.7	31 37.0 -14.2 111.4	30 41.1 -13.7 111.2	29 45.1 -13.3 110.9	28 49.1 -12.9 110.7
18°	32 18.1 -15.2 112.8	31 22.8 -14.8 112.5	30 27.4 -14.3 112.3	29 31.8 -13.8 112.0	28 36.2 -13.4 111.8
19°	32 02.9 -15.9 114.0	31 08.0 -15.3 113.7	30 13.1 -14.9 113.4	29 18.0 -14.4 113.2	28 22.8 -13.9 112.9
20°	31 47.0 -16.4 115.1	30 52.7 -16.0 114.8	29 58.2 -15.5 114.5	29 03.6 -15.0 114.3	28 08.9 -14.5 114.0
21°	31 30.6 -17.0 116.2	30 36.7 -16.5 115.9	29 42.7 -16.0 115.6	28 48.6 -15.5 115.4	27 54.4 -15.0 115.1
22°	31 13.6 -17.7 117.4	30 20.2 -17.1 117.0	29 26.7 -16.5 116.8	28 33.1 -16.0 116.5	27 39.4 -15.5 116.2
23°	30 55.9 -18.2 118.5	30 03.1 -17.6 118.2	29 10.2 -17.1 117.9	28 17.1 -16.5 117.6	27 23.9 -16.0 117.3
24°	30 37.7 -18.7 119.6	29 45.5 -18.2 119.3	28 53.1 -17.6 119.0	28 00.6 -17.1 118.7	27 07.9 -16.5 118.4
25°	30 19.0 -19.3 120.7	29 27.3 -18.7 120.4	28 35.5 -18.2 120.0	27 43.5 -17.6 119.7	26 51.4 -17.0 119.5
26°	29 59.7 -19.9 121.8	29 08.6 -19.3 121.4	28 17.3 -18.6 121.1	27 25.9 -18.0 120.8	26 34.4 -17.5 120.5
27°	29 39.8 -20.4 122.9	28 49.3 -19.7 122.5	27 58.7 -19.2 122.2	27 07.9 -18.6 121.9	26 16.9 -18.0 121.6
28°	29 19.4 -20.9 123.9	28 29.6 -20.3 123.6	27 39.5 -19.6 123.3	26 49.3 -19.0 123.0	25 58.9 -18.4 122.7
29°	28 58.5 -21.4 125.0	28 09.3 -20.7 124.7	27 19.9 -20.1 124.3	26 30.3 -19.5 124.0	25 40.5 -18.9 123.7

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	29 58.8 -02.7 91.2	28 58.8 -02.6 91.1	27 58.9 -02.7 91.1	26 58.9 -02.6 91.0	25 59.0 -02.6 91.0
1°	29 56.1 -03.3 92.3	28 56.2 -03.3 92.3	27 56.2 -03.2 92.2	26 56.3 -03.1 92.1	25 56.4 -03.1 92.1
2°	29 52.8 -04.0 93.5	28 52.9 -03.8 93.4	27 53.0 -03.7 93.3	26 53.2 -03.7 93.3	25 53.3 -03.6 93.2
3°	29 48.8 -04.5 94.6	28 49.1 -04.4 94.5	27 49.3 -04.3 94.5	26 49.5 -04.2 94.4	25 49.7 -04.1 94.3
4°	29 44.3 -05.1 95.8	28 44.7 -05.0 95.7	27 45.0 -04.9 95.6	26 45.3 -04.7 95.5	25 45.6 -04.6 95.4
5°	29 39.2 -05.7 96.9	28 39.7 -05.6 96.8	27 40.1 -05.4 96.7	26 40.6 -05.3 96.6	25 41.0 -05.1 96.5
6°	29 33.5 -06.3 98.1	28 34.1 -06.1 97.9	27 34.7 -05.9 97.8	26 35.3 -05.8 97.7	25 35.9 -05.6 97.6
7°	29 27.2 -06.9 99.2	28 28.0 -06.7 99.1	27 28.8 -06.5 99.0	26 29.5 -06.2 98.8	25 30.3 -06.1 98.7
8°	29 20.3 -07.4 100.3	28 21.3 -07.2 100.2	27 22.3 -07.0 100.1	26 23.3 -06.8 99.9	25 24.2 -06.6 99.8
9°	29 12.9 -08.0 101.5	28 14.1 -07.8 101.3	27 15.3 -07.6 101.2	26 16.5 -07.4 101.1	25 17.6 -07.1 100.9
10°	29 04.9 -08.6 102.6	28 06.3 -08.3 102.5	27 07.7 -08.0 102.3	26 09.1 -07.8 102.2	25 10.5 -07.6 102.0
11°	28 56.3 -09.2 103.7	27 58.0 -08.9 103.6	26 59.7 -08.6 103.4	26 01.3 -08.3 103.3	25 02.9 -08.0 103.1
12°	28 47.1 -09.7 104.9	27 49.1 -09.4 104.7	26 51.1 -09.1 104.5	25 53.0 -08.8 104.4	24 54.9 -08.5 104.2
13°	28 37.4 -10.3 106.0	27 39.7 -10.0 105.8	26 42.0 -09.7 105.6	25 44.2 -09.3 105.5	24 46.4 -09.0 105.3
14°	28 27.1 -10.9 107.1	27 29.7 -10.5 106.9	26 32.3 -10.1 106.7	25 34.9 -09.8 106.6	24 37.4 -09.5 106.4
15°	28 16.2 -11.3 108.2	27 19.2 -11.0 108.0	26 22.2 -10.6 107.8	25 25.1 -10.3 107.7	24 27.9 -09.9 107.5
16°	28 04.9 -12.0 109.3	27 08.2 -11.5 109.1	26 11.6 -11.2 108.9	25 14.8 -10.8 108.7	24 18.0 -10.4 108.6
17°	27 52.9 -12.4 110.5	26 56.7 -12.0 110.2	26 00.4 -11.6 110.0	25 04.0 -11.2 109.8	24 07.6 -10.8 109.6
18°	27 40.5 -13.0 111.6	26 44.7 -12.6 111.3	25 48.8 -12.1 111.1	24 52.8 -11.7 110.9	23 56.8 -11.3 110.7
19°	27 27.5 -13.5 112.7	26 32.1 -13.0 112.4	25 36.7 -12.6 112.2	24 41.1 -12.1 112.0	23 45.5 -11.8 111.8
20°	27 14.0 -14.0 113.8	26 19.1 -13.5 113.5	25 24.1 -13.1 113.3	24 29.0 -12.7 113.1	23 33.7 -12.1 112.9
21°	27 00.0 -14.5 114.9	26 05.6 -14.1 114.6	25 11.0 -13.5 114.4	24 16.3 -13.0 114.1	23 21.6 -12.6 113.9
22°	26 45.5 -15.0 115.9	25 51.5 -14.4 115.7	24 57.5 -14.0 115.4	24 03.3 -13.6 115.2	23 09.0 -13.1 115.0
23°	26 30.5 -15.5 117.0	25 37.1 -15.0 116.8	24 43.5 -14.5 116.5	23 49.7 -13.9 116.3	22 55.9 -13.4 116.1
24°	26 15.0 -15.9 118.1	25 22.1 -15.5 117.8	24 29.0 -14.9 117.6	23 35.8 -14.4 117.3	22 42.5 -13.9 117.1
25°	25 59.1 -16.5 119.2	25 06.6 -15.8 118.9	24 14.1 -15.4 118.7	23 21.4 -14.8 118.4	22 28.6 -14.3 118.2
26°	25 42.6 -16.9 120.2	24 50.8 -16.4 120.0	23 58.7 -15.7 119.7	23 06.6 -15.2 119.5	22 14.3 -14.7 119.2
27°	25 25.7 -17.3 121.3	24 34.4 -16.8 121.0	23 43.0 -16.2 120.8	22 51.4 -15.7 120.5	21 59.6 -15.0 120.3
28°	25 08.4 -17.9 122.4	24 17.6 -17.2 122.1	23 26.8 -16.7 121.8	22 35.7 -16.0 121.6	21 44.6 -15.5 121.3
29°	24 50.5 -18.2 123.4	24 00.4 -17.6 123.1	23 10.1 -17.0 122.9	22 19.7 -16.5 122.6	21 29.1 -15.9 122.3

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°	24 59.0 -02.5 90.9	23 59.1 -02.6 90.9	22 59.1 -02.5 90.8	21 59.2 -02.5 90.8	20 59.2 -02.4 90.8
1°	24 56.5 -03.1 92.0	23 56.5 -02.9 92.0	22 56.6 -02.9 91.9	21 56.7 -02.9 91.9	20 56.8 -02.9 91.8
2°	24 53.4 -03.5 93.1	23 53.6 -03.5 93.1	22 53.7 -03.4 93.0	21 53.8 -03.3 93.0	20 53.9 -03.2 92.9
3°	24 49.9 -04.0 94.2	23 50.1 -03.9 94.2	22 50.3 -03.8 94.1	21 50.5 -03.7 94.0	20 50.7 -03.7 94.0
4°	24 45.9 -04.5 95.3	23 46.2 -04.4 95.3	22 46.5 -04.3 95.2	21 46.8 -04.2 95.1	20 47.0 -04.0 95.0
5°	24 41.4 -05.0 96.4	23 41.8 -04.8 96.3	22 42.2 -04.7 96.3	21 42.6 -04.5 96.2	20 43.0 -04.4 96.1
6°	24 36.4 -05.4 97.5	23 37.0 -05.3 97.4	22 37.5 -05.1 97.3	21 38.1 -05.0 97.3	20 38.6 -04.9 97.2
7°	24 31.0 -05.9 98.6	23 31.7 -05.7 98.5	22 32.4 -05.6 98.4	21 33.1 -05.4 98.3	20 33.7 -05.2 98.2
8°	24 25.1 -06.4 99.7	23 26.0 -06.2 99.6	22 26.8 -05.9 99.5	21 27.7 -05.8 99.4	20 28.5 -05.6 99.3
9°	24 18.7 -06.8 100.8	23 19.8 -06.6 100.7	22 20.9 -06.5 100.6	21 21.9 -06.2 100.5	20 22.9 -06.0 100.4
10°	24 11.9 -07.4 101.9	23 13.2 -07.1 101.8	22 14.4 -06.8 101.7	21 15.7 -06.6 101.5	20 16.9 -06.3 101.4
11°	24 04.5 -07.7 103.0	23 06.1 -07.5 102.9	22 07.6 -07.2 102.7	21 09.1 -07.0 102.6	20 10.6 -06.8 102.5
12°	23 56.8 -08.3 104.1	22 58.6 -08.0 103.9	22 00.4 -07.7 103.8	21 02.1 -07.4 103.7	20 03.8 -07.1 103.5
13°	23 48.5 -08.7 105.2	22 50.6 -08.4 105.0	21 52.7 -08.1 104.9	20 54.7 -07.8 104.7	19 56.7 -07.5 104.6
14°	23 39.8 -09.1 106.2	22 42.2 -08.8 106.1	21 44.6 -08.5 105.9	20 46.9 -08.2 105.8	19 49.2 -07.9 105.7
15°	23 30.7 -09.6 107.3	22 33.4 -09.2 107.2	21 36.1 -08.9 107.0	20 38.7 -08.5 106.9	19 41.3 -08.2 106.7
16°	23 21.1 -10.0 108.4	22 24.2 -09.7 108.2	21 27.2 -09.3 108.1	20 30.2 -09.0 107.9	19 33.1 -08.6 107.8
17°	23 11.1 -10.5 109.5	22 14.5 -10.0 109.3	21 17.9 -09.7 109.1	20 21.2 -09.3 109.0	19 24.5 -09.0 108.8
18°	23 00.6 -10.8 110.5	22 04.5 -10.5 110.4	21 08.2 -10.1 110.2	20 11.9 -09.7 110.0	19 15.5 -09.3 109.9
19°	22 49.8 -11.4 111.6	21 54.0 -10.9 111.4	20 58.1 -10.5 111.2	20 02.2 -10.1 111.1	19 06.2 -09.7 110.9
20°	22 38.4 -11.7 112.7	21 43.1 -11.3 112.5	20 47.6 -10.8 112.3	19 52.1 -10.4 112.1	18 56.5 -10.0 112.0
21°	22 26.7 -12.1 113.7	21 31.8 -11.7 113.5	20 36.8 -11.3 113.3	19 41.7 -10.8 113.2	18 46.5 -10.4 113.0
22°	22 14.6 -12.6 114.8	21 20.1 -12.1 114.6	20 25.5 -11.6 114.4	19 30.9 -11.2 114.2	18 36.1 -10.7 114.0
23°	22 02.0 -13.0 115.8	21 08.0 -12.5 115.6	20 13.9 -12.0 115.4	19 19.7 -11.5 115.3	18 25.4 -11.0 115.1
24°	21 49.0 -13.3 116.9	20 55.5 -12.8 116.7	20 01.9 -12.4 116.5	19 08.2 -11.9 116.3	18 14.4 -11.4 116.1
25°	21 35.7 -13.8 117.9	20 42.7 -13.3 117.7	19 49.5 -12.7 117.5	18 56.3 -12.2 117.3	18 03.0 -11.7 117.1
26°	21 21.9 -14.1 119.0	20 29.4 -13.6 118.8	19 36.8 -13.1 118.6	18 44.1 -12.6 118.4	17 51.3 -12.1 118.2
27°	21 07.8 -14.5 120.0	20 15.8 -14.0 119.8	19 23.7 -13.4 119.6	18 31.5 -12.8 119.4	17 39.2 -12.3 119.2
28°	20 53.3 -14.9 121.1	20 01.8 -14.3 120.8	19 10.3 -13.8 120.6	18 18.7 -13.3 120.4	17 26.9 -12.7 120.2
29°	20 38.4 -15.3 122.1	19 47.5 -14.7 121.9	18 56.5 -14.1 121.7	18 05.4 -13.5 121.4	17 14.2 -13.0 121.2

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	19 59.2 -02.4 90.7	18 59.3 -02.4 90.7	17 59.3 -02.4 90.6	16 59.4 -02.4 90.6	15 59.4 -02.3 90.6
1°	19 56.8 -02.8 91.8	18 56.9 -02.8 91.7	17 56.9 -02.7 91.7	16 57.0 -02.7 91.7	15 57.1 -02.7 91.6
2°	19 54.0 -03.2 92.9	18 54.1 -03.1 92.8	17 54.2 -03.0 92.8	16 54.3 -02.9 92.7	15 54.4 -02.9 92.7
3°	19 50.8 -03.5 93.9	18 51.0 -03.4 93.9	17 51.2 -03.4 93.8	16 51.4 -03.3 93.7	15 51.5 -03.2 93.7
4°	19 47.3 -03.9 95.0	18 47.6 -03.9 94.9	17 47.8 -03.7 94.8	16 48.1 -03.7 94.8	15 48.3 -03.5 94.7
5°	19 43.4 -04.3 96.0	18 43.7 -04.1 96.0	17 44.1 -04.1 95.9	16 44.4 -03.9 95.8	15 44.8 -03.8 95.8
6°	19 39.1 -04.7 97.1	18 39.6 -04.6 97.0	17 40.0 -04.3 96.9	16 40.5 -04.2 96.9	15 41.0 -04.1 96.8
7°	19 34.4 -05.1 98.2	18 35.0 -04.8 98.1	17 35.7 -04.8 98.0	16 36.3 -04.6 97.9	15 36.9 -04.4 97.8
8°	19 29.3 -05.4 99.2	18 30.2 -05.3 99.1	17 30.9 -05.0 99.0	16 31.7 -04.8 99.0	15 32.5 -04.7 98.9
9°	19 23.9 -05.7 100.3	18 24.9 -05.5 100.2	17 25.9 -05.4 100.1	16 26.9 -05.2 100.0	15 27.8 -05.0 99.9
10°	19 18.2 -06.2 101.3	18 19.4 -06.0 101.2	17 20.5 -05.7 101.1	16 21.7 -05.5 101.0	15 22.8 -05.2 100.9
11°	19 12.0 -06.5 102.4	18 13.4 -06.2 102.3	17 14.8 -06.0 102.2	16 16.2 -05.8 102.1	15 17.6 -05.6 102.0
12°	19 05.5 -06.8 103.4	18 07.2 -06.6 103.3	17 08.8 -06.3 103.2	16 10.4 -06.0 103.1	15 12.0 -05.8 103.0
13°	18 58.7 -07.2 104.5	18 00.6 -06.9 104.4	17 02.5 -06.7 104.2	16 04.4 -06.4 104.1	15 06.2 -06.1 104.0
14°	18 51.5 -07.6 105.5	17 53.7 -07.3 105.4	16 55.8 -06.9 105.3	15 58.0 -06.7 105.2	15 00.1 -06.4 105.1
15°	18 43.9 -07.9 106.6	17 46.4 -07.6 106.4	16 48.9 -07.3 106.3	15 51.3 -07.0 106.2	14 53.7 -06.6 106.1
16°	18 36.0 -08.3 107.6	17 38.8 -07.9 107.5	16 41.6 -07.6 107.4	15 44.3 -07.2 107.2	14 47.1 -07.0 107.1
17°	18 27.7 -08.6 108.7	17 30.9 -08.3 108.5	16 34.0 -07.9 108.4	15 37.1 -07.6 108.3	14 40.1 -07.2 108.2
18°	18 19.1 -08.9 109.7	17 22.6 -08.5 109.6	16 26.1 -08.2 109.4	15 29.5 -07.8 109.3	14 32.9 -07.4 109.2
19°	18 10.2 -09.3 110.8	17 14.1 -08.9 110.6	16 17.9 -08.5 110.5	15 21.7 -08.1 110.3	14 25.5 -07.8 110.2
20°	18 00.9 -09.6 111.8	17 05.2 -09.2 111.6	16 09.4 -08.8 111.5	15 13.6 -08.4 111.4	14 17.7 -08.0 111.2
21°	17 51.3 -10.0 112.8	16 56.0 -09.5 112.7	16 00.6 -09.1 112.5	15 05.2 -08.7 112.4	14 09.7 -08.2 112.2
22°	17 41.3 -10.2 113.9	16 46.5 -09.9 113.7	15 51.5 -09.4 113.6	14 56.5 -08.9 113.4	14 01.5 -08.5 113.3
23°	17 31.1 -10.6 114.9	16 36.6 -10.1 114.7	15 42.1 -09.6 114.6	14 47.6 -09.2 114.4	13 53.0 -08.8 114.3
24°	17 20.5 -10.9 115.9	16 26.5 -10.4 115.8	15 32.5 -10.0 115.6	14 38.4 -09.5 115.5	13 44.2 -09.0 115.3
25°	17 09.6 -11.2 117.0	16 16.1 -10.7 116.8	15 22.5 -10.2 116.6	14 28.9 -09.8 116.5	13 35.2 -09.3 116.3
26°	16 58.4 -11.5 118.0	16 05.4 -11.0 117.8	15 12.3 -10.5 117.6	14 19.1 -10.0 117.5	13 25.9 -09.5 117.3
27°	16 46.9 -11.9 119.0	15 54.4 -11.3 118.8	15 01.8 -10.8 118.7	14 09.1 -10.2 118.5	13 16.4 -09.7 118.4
28°	16 35.0 -12.1 120.0	15 43.1 -11.6 119.9	14 51.0 -11.0 119.7	13 58.9 -10.5 119.5	13 06.7 -10.0 119.4
29°	16 22.9 -12.4 121.1	15 31.5 -11.9 120.9	14 40.0 -11.3 120.7	13 48.4 -10.8 120.5	12 56.7 -10.2 120.4

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°	14 59.4 -02.3 90.5	13 59.5 -02.3 90.5	12 59.5 -02.3 90.5	11 59.6 -02.3 90.4	10 59.6 -02.2 90.4
1°	14 57.1 -02.6 91.6	13 57.2 -02.6 91.5	12 57.2 -02.5 91.5	11 57.3 -02.5 91.4	10 57.4 -02.5 91.4
2°	14 54.5 -02.8 92.6	13 54.6 -02.8 92.6	12 54.7 -02.7 92.5	11 54.8 -02.7 92.5	10 54.9 -02.6 92.4
3°	14 51.7 -03.2 93.6	13 51.8 -03.0 93.6	12 52.0 -03.0 93.5	11 52.1 -02.9 93.5	10 52.3 -02.9 93.4
4°	14 48.5 -03.4 94.7	13 48.8 -03.4 94.6	12 49.0 -03.2 94.6	11 49.2 -03.1 94.5	10 49.4 -03.0 94.5
5°	14 45.1 -03.7 95.7	13 45.4 -03.5 95.6	12 45.8 -03.5 95.6	11 46.1 -03.4 95.5	10 46.4 -03.2 95.5
6°	14 41.4 -03.9 96.7	13 41.9 -03.9 96.7	12 42.3 -03.7 96.6	11 42.7 -03.5 96.5	10 43.2 -03.5 96.5
7°	14 37.5 -04.3 97.8	13 38.0 -04.0 97.7	12 38.6 -03.9 97.6	11 39.2 -03.8 97.6	10 39.7 -03.6 97.5
8°	14 33.2 -04.5 98.8	13 34.0 -04.4 98.7	12 34.7 -04.2 98.7	11 35.4 -04.0 98.6	10 36.1 -03.8 98.5
9°	14 28.7 -04.8 99.8	13 29.6 -04.6 99.8	12 30.5 -04.4 99.7	11 31.4 -04.2 99.6	10 32.3 -04.0 99.5
10°	14 23.9 -05.0 100.9	13 25.0 -04.8 100.8	12 26.1 -04.6 100.7	11 27.2 -04.4 100.6	10 28.3 -04.3 100.6
11°	14 18.9 -05.3 101.9	13 20.2 -05.1 101.8	12 21.5 -04.9 101.7	11 22.8 -04.7 101.6	10 24.0 -04.4 101.6
12°	14 13.6 -05.6 102.9	13 15.1 -05.3 102.8	12 16.6 -05.0 102.7	11 18.1 -04.8 102.7	10 19.6 -04.6 102.6
13°	14 08.0 -05.8 103.9	13 09.8 -05.6 103.8	12 11.6 -05.3 103.8	11 13.3 -05.0 103.7	10 15.0 -04.7 103.6
14°	14 02.2 -06.1 105.0	13 04.2 -05.8 104.9	12 06.3 -05.6 104.8	11 08.3 -05.3 104.7	10 10.3 -05.0 104.6
15°	13 56.1 -06.4 106.0	12 58.4 -06.0 105.9	12 00.7 -05.7 105.8	11 03.0 -05.4 105.7	10 05.3 -05.2 105.6
16°	13 49.7 -06.6 107.0	12 52.4 -06.3 106.9	11 55.0 -06.0 106.8	10 57.6 -05.7 106.7	10 00.1 -05.3 106.6
17°	13 43.1 -06.8 108.0	12 46.1 -06.5 107.9	11 49.0 -06.2 107.8	10 51.9 -05.8 107.7	9 54.8 -05.5 107.6
18°	13 36.3 -07.1 109.1	12 39.6 -06.8 109.0	11 42.8 -06.4 108.8	10 46.1 -06.1 108.7	9 49.3 -05.7 108.7
19°	13 29.2 -07.4 110.1	12 32.8 -07.0 110.0	11 36.4 -06.6 109.9	10 40.0 -06.2 109.8	9 43.6 -05.9 109.7
20°	13 21.8 -07.6 111.1	12 25.8 -07.2 111.0	11 29.8 -06.8 110.9	10 33.8 -06.5 110.8	9 37.7 -06.1 110.7
21°	13 14.2 -07.8 112.1	12 18.6 -07.4 112.0	11 23.0 -07.0 111.9	10 27.3 -06.6 111.8	9 31.6 -06.2 111.7
22°	13 06.4 -08.1 113.1	12 11.2 -07.7 113.0	11 16.0 -07.3 112.9	10 20.7 -06.8 112.8	9 25.4 -06.4 112.7
23°	12 58.3 -08.3 114.2	12 03.5 -07.8 114.0	11 08.7 -07.4 113.9	10 13.9 -07.0 113.8	9 19.0 -06.5 113.7
24°	12 50.0 -08.6 115.2	11 55.7 -08.1 115.0	11 01.3 -07.6 114.9	10 06.9 -07.2 114.8	9 12.5 -06.8 114.7
25°	12 41.4 -08.8 116.2	11 47.6 -08.3 116.1	10 53.7 -07.9 115.9	9 59.7 -07.3 115.8	9 05.7 -06.9 115.7
26°	12 32.6 -09.0 117.2	11 39.3 -08.6 117.1	10 45.8 -08.0 116.9	9 52.4 -07.6 116.8	8 58.8 -07.0 116.7
27°	12 23.6 -09.2 118.2	11 30.7 -08.7 118.1	10 37.8 -08.2 118.0	9 44.8 -07.7 117.8	8 51.8 -07.3 117.7
28°	12 14.4 -09.5 119.2	11 22.0 -08.9 119.1	10 29.6 -08.4 119.0	9 37.1 -07.9 118.8	8 44.5 -07.4 118.7
29°	12 04.9 -09.7 120.2	11 13.1 -09.2 120.1	10 21.2 -08.6 120.0	9 29.2 -08.1 119.8	8 37.1 -07.5 119.7

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 59.6 -02.2 90.4	8 59.7 -02.2 90.3	7 59.7 -02.2 90.3	6 59.7 -02.1 90.2	5 59.8 -02.2 90.2
1°	9 57.4 -02.4 91.4	8 57.5 -02.4 91.3	7 57.5 -02.3 91.3	6 57.6 -02.3 91.3	5 57.6 -02.2 91.2
2°	9 55.0 -02.6 92.4	8 55.1 -02.5 92.3	7 55.2 -02.5 92.3	6 55.3 -02.5 92.3	5 55.4 -02.4 92.2
3°	9 52.4 -02.7 93.4	8 52.6 -02.7 93.4	7 52.7 -02.6 93.3	6 52.8 -02.5 93.3	5 53.0 -02.5 93.2
4°	9 49.7 -03.0 94.4	8 49.9 -02.9 94.4	7 50.1 -02.8 94.3	6 50.3 -02.7 94.3	5 50.5 -02.6 94.2
5°	9 46.7 -03.1 95.4	8 47.0 -03.0 95.4	7 47.3 -02.9 95.3	6 47.6 -02.8 95.3	5 47.9 -02.7 95.2
6°	9 43.6 -03.3 96.4	8 44.0 -03.2 96.4	7 44.4 -03.1 96.3	6 44.8 -02.9 96.3	5 45.2 -02.8 96.2
7°	9 40.3 -03.5 97.4	8 40.8 -03.3 97.4	7 41.3 -03.1 97.3	6 41.9 -03.1 97.3	5 42.4 -02.9 97.2
8°	9 36.8 -03.7 98.5	8 37.5 -03.5 98.4	7 38.2 -03.4 98.3	6 38.8 -03.1 98.3	5 39.5 -03.0 98.2
9°	9 33.1 -03.8 99.5	8 34.0 -03.7 99.4	7 34.8 -03.5 99.4	6 35.7 -03.3 99.3	5 36.5 -03.1 99.2
10°	9 29.3 -04.0 100.5	8 30.3 -03.8 100.4	7 31.3 -03.6 100.4	6 32.4 -03.5 100.3	5 33.4 -03.3 100.3
11°	9 25.3 -04.2 101.5	8 26.5 -03.9 101.4	7 27.7 -03.7 101.4	6 28.9 -03.5 101.3	5 30.1 -03.3 101.3
12°	9 21.1 -04.4 102.5	8 22.6 -04.2 102.4	7 24.0 -03.9 102.4	6 25.4 -03.6 102.3	5 26.8 -03.4 102.3
13°	9 16.7 -04.5 103.5	8 18.4 -04.2 103.4	7 20.1 -04.0 103.4	6 21.8 -03.8 103.3	5 23.4 -03.5 103.3
14°	9 12.2 -04.7 104.5	8 14.2 -04.5 104.5	7 16.1 -04.2 104.4	6 18.0 -03.9 104.3	5 19.9 -03.6 104.3
15°	9 07.5 -04.8 105.5	8 09.7 -04.5 105.5	7 11.9 -04.2 105.4	6 14.1 -04.0 105.3	5 16.3 -03.7 105.3
16°	9 02.7 -05.1 106.5	8 05.2 -04.7 106.5	7 07.7 -04.5 106.4	6 10.1 -04.1 106.3	5 12.6 -03.8 106.3
17°	8 57.6 -05.2 107.6	8 00.5 -04.9 107.5	7 03.2 -04.5 107.4	6 06.0 -04.2 107.3	5 08.8 -03.9 107.3
18°	8 52.4 -05.3 108.6	7 55.6 -05.0 108.5	6 58.7 -04.7 108.4	6 01.8 -04.3 108.3	5 04.9 -04.0 108.3
19°	8 47.1 -05.5 109.6	7 50.6 -05.2 109.5	6 54.0 -04.8 109.4	5 57.5 -04.5 109.3	5 00.9 -04.1 109.3
20°	8 41.6 -05.7 110.6	7 45.4 -05.3 110.5	6 49.2 -04.9 110.4	5 53.0 -04.5 110.3	4 56.8 -04.2 110.3
21°	8 35.9 -05.8 111.6	7 40.1 -05.4 111.5	6 44.3 -05.0 111.4	5 48.5 -04.7 111.3	4 52.6 -04.2 111.3
22°	8 30.1 -06.0 112.6	7 34.7 -05.6 112.5	6 39.3 -05.2 112.4	5 43.8 -04.7 112.3	4 48.4 -04.4 112.3
23°	8 24.1 -06.1 113.6	7 29.1 -05.7 113.5	6 34.1 -05.3 113.4	5 39.1 -04.9 113.3	4 44.0 -04.4 113.3
24°	8 18.0 -06.3 114.6	7 23.4 -05.8 114.5	6 28.8 -05.4 114.4	5 34.2 -04.9 114.4	4 39.6 -04.5 114.3
25°	8 11.7 -06.5 115.6	7 17.6 -06.0 115.5	6 23.4 -05.5 115.4	5 29.3 -05.1 115.4	4 35.1 -04.6 115.3
26°	8 05.2 -06.6 116.6	7 11.6 -06.1 116.5	6 17.9 -05.6 116.4	5 24.2 -05.1 116.4	4 30.5 -04.7 116.3
27°	7 58.6 -06.7 117.6	7 05.5 -06.2 117.5	6 12.3 -05.7 117.4	5 19.1 -05.3 117.4	4 25.8 -04.8 117.3
28°	7 51.9 -06.9 118.6	6 59.3 -06.4 118.5	6 06.6 -05.9 118.4	5 13.8 -05.3 118.4	4 21.0 -04.8 118.3
29°	7 45.0 -07.0 119.6	6 52.9 -06.5 119.5	6 00.7 -06.0 119.4	5 08.5 -05.5 119.4	4 16.2 -05.0 119.3

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 59.8 -02.1 90.2	3 59.9 -02.2 90.1	2 59.9 -02.1 90.1	1 59.9 -02.1 90.1	1 00.0 -02.1 90.0
1°	4 57.7 -02.3 91.2	3 57.7 -02.2 91.1	2 57.8 -02.2 91.1	1 57.8 -02.1 91.1	0 57.9 -02.2 91.0
2°	4 55.4 -02.3 92.2	3 55.5 -02.3 92.1	2 55.6 -02.2 92.1	1 55.7 -02.2 92.1	0 55.7 -02.1 92.0
3°	4 53.1 -02.4 93.2	3 53.2 -02.3 93.1	2 53.4 -02.3 93.1	1 53.5 -02.2 93.1	0 53.6 -02.2 93.0
4°	4 50.7 -02.5 94.2	3 50.9 -02.4 94.1	2 51.1 -02.4 94.1	1 51.3 -02.3 94.1	0 51.4 -02.1 94.0
5°	4 48.2 -02.6 95.2	3 48.5 -02.5 95.1	2 48.7 -02.4 95.1	1 49.0 -02.3 95.1	0 49.3 -02.2 95.0
6°	4 45.6 -02.7 96.2	3 46.0 -02.6 96.1	2 46.3 -02.4 96.1	1 46.7 -02.3 96.1	0 47.1 -02.2 96.0
7°	4 42.9 -02.8 97.2	3 43.4 -02.6 97.2	2 43.9 -02.5 97.1	1 44.4 -02.3 97.1	0 44.9 -02.2 97.0
8°	4 40.1 -02.8 98.2	3 40.8 -02.7 98.2	2 41.4 -02.5 98.1	1 42.1 -02.4 98.1	0 42.7 -02.2 98.0
9°	4 37.3 -03.0 99.2	3 38.1 -02.8 99.2	2 38.9 -02.6 99.1	1 39.7 -02.4 99.1	0 40.5 -02.3 99.0
10°	4 34.3 -03.0 100.2	3 35.3 -02.8 100.2	2 36.3 -02.6 100.1	1 37.3 -02.5 100.1	0 38.2 -02.2 100.0
11°	4 31.3 -03.1 101.2	3 32.5 -02.9 101.2	2 33.7 -02.7 101.1	1 34.8 -02.5 101.1	0 36.0 -02.3 101.0
12°	4 28.2 -03.2 102.2	3 29.6 -02.9 102.2	2 31.0 -02.7 102.1	1 32.3 -02.4 102.1	0 33.7 -02.3 102.0
13°	4 25.0 -03.2 103.2	3 26.7 -03.1 103.2	2 28.3 -02.8 103.1	1 29.9 -02.6 103.1	0 31.4 -02.2 103.0
14°	4 21.8 -03.4 104.2	3 23.6 -03.0 104.2	2 25.5 -02.8 104.1	1 27.3 -02.5 104.1	0 29.2 -02.3 104.0
15°	4 18.4 -03.4 105.2	3 20.6 -03.2 105.2	2 22.7 -02.9 105.1	1 24.8 -02.6 105.1	0 26.9 -02.3 105.0
16°	4 15.0 -03.5 106.2	3 17.4 -03.2 106.2	2 19.8 -02.9 106.1	1 22.2 -02.6 106.1	0 24.6 -02.3 106.0
17°	4 11.5 -03.6 107.2	3 14.2 -03.2 107.2	2 16.9 -02.9 107.1	1 19.6 -02.6 107.1	0 22.3 -02.3 107.0
18°	4 07.9 -03.6 108.2	3 11.0 -03.4 108.2	2 14.0 -03.0 108.1	1 17.0 -02.7 108.1	0 20.0 -02.4 108.0
19°	4 04.3 -03.8 109.2	3 07.6 -03.3 109.2	2 11.0 -03.0 109.1	1 14.3 -02.7 109.1	0 17.6 -02.3 109.0
20°	4 00.5 -03.8 110.2	3 04.3 -03.5 110.2	2 08.0 -03.1 110.1	1 11.6 -02.7 110.1	0 15.3 -02.3 110.0
21°	3 56.7 -03.8 111.2	3 00.8 -03.5 111.2	2 04.9 -03.1 111.1	1 08.9 -02.7 111.1	0 13.0 -02.3 111.0
22°	3 52.9 -04.0 112.2	2 57.3 -03.5 112.2	2 01.8 -03.1 112.1	1 06.2 -02.7 112.1	0 10.7 -02.4 112.0
23°	3 48.9 -04.0 113.2	2 53.8 -03.6 113.2	1 58.7 -03.2 113.1	1 03.5 -02.8 113.1	0 08.3 -02.3 113.0
24°	3 44.9 -04.1 114.2	2 50.2 -03.6 114.2	1 55.5 -03.2 114.1	1 00.7 -02.7 114.1	0 06.0 -02.4 114.0
25°	3 40.8 -04.1 115.2	2 46.6 -03.7 115.2	1 52.3 -03.3 115.1	0 58.0 -02.8 115.1	0 03.6 -02.3 115.0
26°	3 36.7 -04.2 116.2	2 42.9 -03.8 116.2	1 49.0 -03.2 116.1	0 55.2 -02.8 116.1	0 01.3 -02.3 116.0
27°	3 32.5 -04.3 117.2	2 39.1 -03.8 117.2	1 45.8 -03.3 117.1	0 52.4 -02.9 117.1	-0 01.0 -02.4
28°	3 28.2 -04.4 118.2	2 35.3 -03.8 118.2	1 42.5 -03.4 118.1	0 49.5 -02.8 118.1	-0 03.4 -02.3
29°	3 23.8 -04.4 119.2	2 31.5 -03.9 119.2	1 39.1 -03.4 119.1	0 46.7 -02.8 119.1	-0 05.7 -02.4

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 -02.1 90.0	-1 00.0 -02.0			
1°	-0 02.1 -02.1	-1 02.0 -02.1			
2°	-0 04.2 -02.1	-1 04.1 -02.1			
3°	-0 06.3 -02.1	-1 06.2 -02.0			
4°	-0 08.4 -02.1	-1 08.2 -02.0			
5°	-0 10.5 -02.0	-1 10.2 -02.0			
6°	-0 12.5 -02.1	-1 12.2 -01.9			
7°	-0 14.6 -02.1	-1 14.1 -02.0			
8°	-0 16.7 -02.1	-1 16.1 -01.9			
9°	-0 18.8 -02.0	-1 18.0 -01.9			
10°	-0 20.8 -02.1	-1 19.9 -01.9			
11°	-0 22.9 -02.0	-1 21.8 -01.8			
12°	-0 24.9 -02.1	-1 23.6 -01.8			
13°	-0 27.0 -02.0	-1 25.4 -01.8			
14°	-0 29.0 -02.1	-1 27.2 -01.8			
15°	-0 31.1 -02.0	-1 29.0 -01.7			
16°	-0 33.1 -02.0	-1 30.7 -01.7			
17°	-0 35.1 -02.0	-1 32.4 -01.7			
18°	-0 37.1 -02.0	-1 34.1 -01.7			
19°	-0 39.1 -01.9	-1 35.8 -01.6			
20°	-0 41.0 -02.0	-1 37.4 -01.6			
21°	-0 43.0 -01.9	-1 39.0 -01.6			
22°	-0 44.9 -02.0	-1 40.6 -01.5			
23°	-0 46.9 -01.9	-1 42.1 -01.5			
24°	-0 48.8 -01.9	-1 43.6 -01.5			
25°	-0 50.7 -01.9	-1 45.1 -01.4			
26°	-0 52.6 -01.9	-1 46.5 -01.4			
27°	-0 54.5 -01.8	-1 47.9 -01.4			
28°	-0 56.3 -01.9	-1 49.3 -01.3			
29°	-0 58.2 -01.8	-1 50.6 -01.3			

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

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	87 00.0 -60.0 180.0	86 50.3 -57.7 161.6	86 23.7 -52.0 146.3	85 45.5 -45.5 135.0	85 00.1 -39.5 126.8
1°	86 00.0 -60.0 180.0	85 52.6 -58.5 166.0	85 31.7 -54.8 153.4	85 00.0 -49.8 143.1	84 20.6 -44.7 135.0
2°	85 00.0 -60.0 180.0	84 54.1 -59.1 168.7	84 36.9 -56.4 158.2	84 10.2 -52.7 149.0	83 35.9 -48.5 141.3
3°	84 00.0 -60.0 180.0	83 55.0 -59.3 170.5	83 40.5 -57.3 161.6	83 17.5 -54.4 153.4	82 47.4 -51.1 146.3
4°	83 00.0 -60.0 180.0	82 55.7 -59.4 171.9	82 43.2 -57.9 164.1	82 23.1 -55.7 156.8	81 56.3 -52.9 150.2
5°	82 00.0 -60.0 180.0	81 56.3 -59.6 172.9	81 45.3 -58.4 166.0	81 27.4 -56.5 159.5	81 03.4 -54.2 153.4
6°	81 00.0 -60.0 180.0	80 56.7 -59.7 173.7	80 46.9 -58.7 167.5	80 30.9 -57.2 161.6	80 09.2 -55.3 156.1
7°	80 00.0 -60.0 180.0	79 57.0 -59.7 174.3	79 48.2 -59.0 168.7	79 33.7 -57.7 163.3	79 13.9 -56.0 158.2
8°	79 00.0 -60.0 180.0	78 57.3 -59.8 174.8	78 49.2 -59.1 169.7	78 36.0 -58.0 164.8	78 17.9 -56.6 160.1
9°	78 00.0 -60.0 180.0	77 57.5 -59.8 175.3	77 50.1 -59.2 170.6	77 38.0 -58.3 166.0	77 21.3 -57.1 161.7
10°	77 00.0 -60.0 180.0	76 57.7 -59.8 175.6	76 50.9 -59.3 171.3	76 39.7 -58.6 167.1	76 24.2 -57.5 163.0
11°	76 00.0 -60.0 180.0	75 57.9 -59.9 175.9	75 51.6 -59.5 171.9	75 41.1 -58.7 168.0	75 26.7 -57.8 164.2
12°	75 00.0 -60.0 180.0	74 58.0 -59.8 176.2	74 52.1 -59.5 172.5	74 42.4 -58.9 168.8	74 28.9 -58.0 165.2
13°	74 00.0 -60.0 180.0	73 58.2 -59.9 176.5	73 52.6 -59.5 173.0	73 43.5 -59.0 169.5	73 30.9 -58.3 166.1
14°	73 00.0 -60.0 180.0	72 58.3 -59.9 176.7	72 53.1 -59.6 173.4	72 44.5 -59.1 170.1	72 32.6 -58.4 167.0
15°	72 00.0 -60.0 180.0	71 58.4 -59.9 176.9	71 53.5 -59.7 173.8	71 45.4 -59.2 170.7	71 34.2 -58.6 167.7
16°	71 00.0 -60.0 180.0	70 58.5 -60.0 177.1	70 53.8 -59.6 174.1	70 46.2 -59.3 171.2	70 35.6 -58.8 168.4
17°	70 00.0 -60.0 180.0	69 58.5 -59.9 177.2	69 54.2 -59.7 174.4	69 46.9 -59.3 171.7	69 36.8 -58.8 169.0
18°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.3	68 54.5 -59.8 174.7	68 47.6 -59.4 172.1	68 38.0 -58.9 169.5
19°	68 00.0 -60.0 180.0	67 58.7 -60.0 177.5	67 54.7 -59.7 175.0	67 48.2 -59.5 172.5	67 39.1 -59.1 170.0
20°	67 00.0 -60.0 180.0	66 58.7 -59.9 177.6	66 55.0 -59.8 175.2	66 48.7 -59.5 172.8	66 40.0 -59.1 170.5
21°	66 00.0 -60.0 180.0	65 58.8 -59.9 177.7	65 55.2 -59.8 175.4	65 49.2 -59.5 173.1	65 40.9 -59.1 170.9
22°	65 00.0 -60.0 180.0	64 58.9 -60.0 177.8	64 55.4 -59.8 175.6	64 49.7 -59.6 173.4	64 41.8 -59.3 171.3
23°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.9	63 55.6 -59.8 175.8	63 50.1 -59.5 173.7	63 42.5 -59.2 171.7
24°	63 00.0 -60.0 180.0	62 58.9 -59.9 178.0	62 55.8 -59.8 176.0	62 50.6 -59.7 174.0	62 43.3 -59.4 172.0
25°	62 00.0 -60.0 180.0	61 59.0 -60.0 178.1	61 56.0 -59.9 176.1	61 50.9 -59.6 174.2	61 43.9 -59.3 172.3
26°	61 00.0 -60.0 180.0	60 59.0 -59.9 178.1	60 56.1 -59.8 176.3	60 51.3 -59.7 174.5	60 44.6 -59.4 172.6
27°	60 00.0 -60.0 180.0	59 59.1 -60.0 178.2	59 56.3 -59.9 176.4	59 51.6 -59.7 174.7	59 45.2 -59.5 172.9
28°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.3	58 56.4 -59.8 176.6	58 51.9 -59.7 174.9	58 45.7 -59.5 173.2
29°	58 00.0 -60.0 180.0	57 59.1 -59.9 178.4	57 56.6 -59.9 176.7	57 52.2 -59.7 175.1	57 46.2 -59.5 173.4

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	84 10.3 -34.4 120.9	83 17.7 -30.3 116.5	82 23.2 -26.8 113.1	81 27.6 -24.1 110.4	80 31.0 -21.8 108.3
1°	83 35.9 -40.1 128.6	82 47.4 -35.9 123.6	81 56.4 -32.4 119.7	81 03.5 -29.4 116.5	80 09.2 -26.8 113.8
2°	82 55.8 -44.3 135.0	82 11.5 -40.5 129.7	81 24.0 -37.0 125.5	80 34.1 -33.9 121.9	79 42.4 -31.2 119.0
3°	82 11.5 -47.5 140.2	81 31.0 -44.0 135.0	80 47.0 -40.8 130.6	80 00.2 -37.8 126.8	79 11.2 -35.0 123.6
4°	81 24.0 -49.9 144.5	80 47.0 -46.8 139.4	80 06.2 -43.7 135.0	79 22.4 -40.9 131.2	78 36.2 -38.3 127.8
5°	80 34.1 -51.6 148.0	80 00.2 -48.9 143.1	79 22.5 -46.3 138.8	78 41.5 -43.6 135.0	77 57.9 -41.1 131.6
6°	79 42.5 -53.1 151.0	79 11.3 -50.7 146.3	78 36.2 -48.1 142.2	77 57.9 -45.7 138.4	77 16.8 -43.3 135.0
7°	78 49.4 -54.1 153.5	78 20.6 -52.0 149.1	77 48.1 -49.8 145.1	77 12.2 -47.6 141.4	76 33.5 -45.4 138.1
8°	77 55.3 -54.9 155.6	77 28.6 -53.1 151.5	76 58.3 -51.2 147.6	76 24.6 -49.1 144.1	75 48.1 -47.1 140.8
9°	77 00.4 -55.7 157.5	76 35.5 -54.0 153.6	76 07.1 -52.2 149.9	75 35.5 -50.3 146.5	75 01.0 -48.4 143.3
10°	76 04.7 -56.2 159.1	75 41.5 -54.7 155.4	75 14.9 -53.1 151.9	74 45.2 -51.5 148.6	74 12.6 -49.8 145.5
11°	75 08.5 -56.6 160.5	74 46.8 -55.3 157.0	74 21.8 -53.9 153.7	73 53.7 -52.3 150.5	73 22.8 -50.7 147.5
12°	74 11.9 -57.0 161.8	73 51.5 -55.9 158.4	73 27.9 -54.6 155.2	73 01.4 -53.2 152.2	72 32.1 -51.7 149.3
13°	73 14.9 -57.4 162.9	72 55.6 -56.3 159.7	72 33.3 -55.1 156.7	72 08.2 -53.8 153.8	71 40.4 -52.4 151.0
14°	72 17.5 -57.6 163.9	71 59.3 -56.6 160.9	71 38.2 -55.5 158.0	71 14.4 -54.4 155.2	70 48.0 -53.1 152.5
15°	71 19.9 -57.9 164.8	71 02.7 -57.0 161.9	70 42.7 -56.0 159.1	70 20.0 -54.9 156.5	69 54.9 -53.8 153.9
16°	70 22.0 -58.0 165.6	70 05.7 -57.2 162.8	69 46.7 -56.3 160.2	69 25.1 -55.3 157.6	69 01.1 -54.2 155.2
17°	69 24.0 -58.2 166.3	69 08.5 -57.5 163.7	68 50.4 -56.7 161.2	68 29.8 -55.7 158.7	68 06.9 -54.7 156.3
18°	68 25.8 -58.4 167.0	68 11.0 -57.7 164.5	67 53.7 -56.9 162.1	67 34.1 -56.0 159.7	67 12.2 -55.1 157.4
19°	67 27.4 -58.5 167.6	67 13.3 -57.9 165.2	66 56.8 -57.1 162.9	66 38.1 -56.4 160.6	66 17.1 -55.4 158.4
20°	66 28.9 -58.6 168.2	66 15.4 -58.0 165.9	65 59.7 -57.4 163.7	65 41.7 -56.6 161.5	65 21.7 -55.8 159.4
21°	65 30.3 -58.7 168.7	65 17.4 -58.1 166.5	65 02.3 -57.5 164.4	64 45.1 -56.8 162.3	64 25.9 -56.1 160.2
22°	64 31.6 -58.8 169.2	64 19.3 -58.3 167.1	64 04.8 -57.7 165.0	63 48.3 -57.1 163.0	63 29.8 -56.3 161.0
23°	63 32.8 -58.9 169.6	63 21.0 -58.4 167.6	63 07.1 -57.9 165.6	62 51.2 -57.2 163.7	62 33.5 -56.6 161.8
24°	62 33.9 -58.9 170.0	62 22.6 -58.6 168.1	62 09.2 -58.0 166.2	61 54.0 -57.4 164.3	61 36.9 -56.8 162.5
25°	61 35.0 -59.1 170.4	61 24.0 -58.6 168.6	61 11.2 -58.1 166.8	60 56.6 -57.6 164.9	60 40.1 -56.9 163.2
26°	60 35.9 -59.0 170.8	60 25.4 -58.6 169.0	60 13.1 -58.2 167.3	59 59.0 -57.7 165.5	59 43.2 -57.1 163.8
27°	59 36.9 -59.2 171.2	59 26.8 -58.8 169.4	59 14.9 -58.3 167.7	59 01.3 -57.8 166.1	58 46.1 -57.3 164.4
28°	58 37.7 -59.2 171.5	58 28.0 -58.8 169.8	58 16.6 -58.4 168.2	58 03.5 -58.0 166.6	57 48.8 -57.5 165.0
29°	57 38.5 -59.2 171.8	57 29.2 -58.9 170.2	57 18.2 -58.5 168.6	57 05.5 -58.0 167.1	56 51.3 -57.5 165.5

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	79 33.8 -19.8 106.5	78 36.2 -18.3 105.1	77 38.2 -16.9 103.8	76 39.8 -15.6 102.8	75 41.3 -14.6 101.9
1°	79 14.0 -24.6 111.7	78 17.9 -22.7 109.8	77 21.3 -21.1 108.3	76 24.2 -19.6 106.9	75 26.7 -18.4 105.7
2°	78 49.4 -28.9 116.5	77 55.2 -26.7 114.3	77 00.2 -24.9 112.5	76 04.6 -23.3 110.9	75 08.3 -21.8 109.5
3°	78 20.5 -32.6 120.9	77 28.5 -30.4 118.5	76 35.3 -28.4 116.5	75 41.3 -26.7 114.7	74 46.5 -25.2 113.1
4°	77 47.9 -35.8 125.0	76 58.1 -33.7 122.4	76 06.9 -31.7 120.2	75 14.6 -29.8 118.2	74 21.3 -28.1 116.5
5°	77 12.1 -38.7 128.7	76 24.4 -36.5 126.0	75 35.2 -34.4 123.7	74 44.8 -32.6 121.6	73 53.2 -30.8 119.7
6°	76 33.4 -41.1 132.0	75 47.9 -38.9 129.3	75 00.8 -37.0 126.9	74 12.2 -35.1 124.7	73 22.4 -33.4 122.8
7°	75 52.3 -43.3 135.1	75 09.0 -41.2 132.4	74 23.8 -39.2 129.9	73 37.1 -37.4 127.7	72 49.0 -35.6 125.6
8°	75 09.0 -45.0 137.9	74 27.8 -43.1 135.1	73 44.6 -41.2 132.7	72 59.7 -39.4 130.4	72 13.4 -37.7 128.3
9°	74 24.0 -46.6 140.4	73 44.7 -44.7 137.7	73 03.4 -42.9 135.2	72 20.3 -41.2 132.9	71 35.7 -39.5 130.8
10°	73 37.4 -47.9 142.7	73 00.0 -46.2 140.0	72 20.5 -44.5 137.5	71 39.1 -42.8 135.3	70 56.2 -41.2 133.2
11°	72 49.5 -49.2 144.7	72 13.8 -47.5 142.1	71 36.0 -45.9 139.7	70 56.3 -44.2 137.5	70 15.0 -42.7 135.3
12°	72 00.3 -50.1 146.6	71 26.3 -48.6 144.1	70 50.1 -47.0 141.7	70 12.1 -45.5 139.5	69 32.3 -44.0 137.4
13°	71 10.2 -51.0 148.4	70 37.7 -49.6 145.9	70 03.1 -48.1 143.6	69 26.6 -46.7 141.4	68 48.3 -45.2 139.3
14°	70 19.2 -51.8 150.0	69 48.1 -50.5 147.6	69 15.0 -49.1 145.3	68 39.9 -47.7 143.1	68 03.1 -46.3 141.1
15°	69 27.4 -52.5 151.4	68 57.6 -51.2 149.1	68 25.9 -49.9 146.9	67 52.2 -48.6 144.8	67 16.8 -47.3 142.8
16°	68 34.9 -53.1 152.8	68 06.4 -51.9 150.5	67 36.0 -50.7 148.4	67 03.6 -49.4 146.3	66 29.5 -48.2 144.3
17°	67 41.8 -53.7 154.1	67 14.5 -52.5 151.9	66 45.3 -51.4 149.7	66 14.2 -50.2 147.7	65 41.3 -48.9 145.8
18°	66 48.1 -54.1 155.2	66 22.0 -53.0 153.1	65 53.9 -51.9 151.0	65 24.0 -50.8 149.1	64 52.4 -49.7 147.2
19°	65 54.0 -54.5 156.3	65 29.0 -53.6 154.2	65 02.0 -52.5 152.2	64 33.2 -51.5 150.3	64 02.7 -50.4 148.5
20°	64 59.5 -54.9 157.3	64 35.4 -53.9 155.3	64 09.5 -53.0 153.4	63 41.7 -51.9 151.5	63 12.3 -50.9 149.7
21°	64 04.6 -55.2 158.2	63 41.5 -54.4 156.3	63 16.5 -53.5 154.4	62 49.8 -52.5 152.6	62 21.4 -51.5 150.9
22°	63 09.4 -55.6 159.1	62 47.1 -54.7 157.2	62 23.0 -53.8 155.4	61 57.3 -52.9 153.7	61 29.9 -52.0 152.0
23°	62 13.8 -55.8 159.9	61 52.4 -55.1 158.1	61 29.2 -54.2 156.4	61 04.4 -53.4 154.7	60 37.9 -52.4 153.0
24°	61 18.0 -56.1 160.7	60 57.3 -55.3 159.0	60 35.0 -54.5 157.2	60 11.0 -53.7 155.6	59 45.5 -52.9 154.0
25°	60 21.9 -56.3 161.4	60 02.0 -55.6 159.7	59 40.5 -54.9 158.1	59 17.3 -54.0 156.5	58 52.6 -53.2 154.9
26°	59 25.6 -56.5 162.1	59 06.4 -55.8 160.5	58 45.6 -55.1 158.9	58 23.3 -54.4 157.3	57 59.4 -53.6 155.8
27°	58 29.1 -56.7 162.8	58 10.6 -56.1 161.2	57 50.5 -55.4 159.6	57 28.9 -54.6 158.1	57 05.8 -53.9 156.6
28°	57 32.4 -56.8 163.4	57 14.5 -56.2 161.9	56 55.1 -55.6 160.3	56 34.3 -55.0 158.9	56 11.9 -54.1 157.4
29°	56 35.6 -57.1 164.0	56 18.3 -56.5 162.5	55 59.5 -55.8 161.0	55 39.3 -55.1 159.6	55 17.8 -54.5 158.2

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°	74 42.6 -13.7 101.1	73 43.7 -12.9 100.3	72 44.7 -12.2 99.7	71 45.6 -11.6 99.2	70 46.4 -11.0 98.6
1°	74 28.9 -17.3 104.7	73 30.8 -16.3 103.8	72 32.5 -15.4 103.0	71 34.0 -14.5 102.3	70 35.4 -13.8 101.6
2°	74 11.6 -20.5 108.3	73 14.5 -19.4 107.2	72 17.1 -18.3 106.2	71 19.5 -17.5 105.3	70 21.6 -16.6 104.5
3°	73 51.1 -23.7 111.7	72 55.1 -22.4 110.4	71 58.8 -21.3 109.3	71 02.0 -20.1 108.3	70 05.0 -19.2 107.4
4°	73 27.4 -26.6 114.9	72 32.7 -25.2 113.6	71 37.5 -23.9 112.3	70 41.9 -22.8 111.2	69 45.8 -21.7 110.1
5°	73 00.8 -29.3 118.1	72 07.5 -27.8 116.5	71 13.6 -26.5 115.2	70 19.1 -25.2 113.9	69 24.1 -24.1 112.8
6°	72 31.5 -31.8 121.0	71 39.7 -30.2 119.4	70 47.1 -28.8 117.9	69 53.9 -27.6 116.6	69 00.0 -26.3 115.4
7°	71 59.7 -33.9 123.8	71 09.5 -32.5 122.1	70 18.3 -31.1 120.6	69 26.3 -29.7 119.2	68 33.7 -28.5 117.9
8°	71 25.8 -36.1 126.4	70 37.0 -34.5 124.7	69 47.2 -33.0 123.1	68 56.6 -31.7 121.6	68 05.2 -30.4 120.2
9°	70 49.7 -37.9 128.9	70 02.5 -36.4 127.1	69 14.2 -35.0 125.5	68 24.9 -33.6 123.9	67 34.8 -32.3 122.5
10°	70 11.8 -39.6 131.2	69 26.1 -38.1 129.4	68 39.2 -36.6 127.7	67 51.3 -35.3 126.2	67 02.5 -34.0 124.7
11°	69 32.2 -41.2 133.4	68 48.0 -39.7 131.6	68 02.6 -38.3 129.9	67 16.0 -36.9 128.3	66 28.5 -35.6 126.8
12°	68 51.0 -42.5 135.4	68 08.3 -41.1 133.6	67 24.3 -39.7 131.9	66 39.1 -38.3 130.3	65 52.9 -37.0 128.8
13°	68 08.5 -43.8 137.4	67 27.2 -42.4 135.5	66 44.6 -41.0 133.8	66 00.8 -39.7 132.2	65 15.9 -38.5 130.7
14°	67 24.7 -44.9 139.2	66 44.8 -43.6 137.4	66 03.6 -42.3 135.6	65 21.1 -41.0 134.0	64 37.4 -39.7 132.5
15°	66 39.8 -46.0 140.9	66 01.2 -44.6 139.1	65 21.3 -43.4 137.4	64 40.1 -42.1 135.8	63 57.7 -40.9 134.2
16°	65 53.8 -46.9 142.5	65 16.6 -45.7 140.7	64 37.9 -44.4 139.0	63 58.0 -43.2 137.4	63 16.8 -41.9 135.9
17°	65 06.9 -47.8 144.0	64 30.9 -46.6 142.2	63 53.5 -45.3 140.6	63 14.8 -44.2 139.0	62 34.9 -43.0 137.5
18°	64 19.1 -48.5 145.4	63 44.3 -47.3 143.7	63 08.2 -46.3 142.0	62 30.6 -45.0 140.5	61 51.9 -43.9 139.0
19°	63 30.6 -49.3 146.7	62 57.0 -48.2 145.0	62 21.9 -47.0 143.4	61 45.6 -45.9 141.9	61 08.0 -44.8 140.4
20°	62 41.3 -49.8 148.0	62 08.8 -48.8 146.3	61 34.9 -47.7 144.7	60 59.7 -46.7 143.2	60 23.2 -45.6 141.7
21°	61 51.5 -50.5 149.2	61 20.0 -49.4 147.6	60 47.2 -48.4 146.0	60 13.0 -47.3 144.5	59 37.6 -46.3 143.0
22°	61 01.0 -51.0 150.3	60 30.6 -50.0 148.7	59 58.8 -49.0 147.2	59 25.7 -48.0 145.7	58 51.3 -47.0 144.3
23°	60 10.0 -51.5 151.4	59 40.6 -50.6 149.8	59 09.8 -49.6 148.3	58 37.7 -48.7 146.9	58 04.3 -47.6 145.5
24°	59 18.5 -52.0 152.4	58 50.0 -51.0 150.9	58 20.2 -50.1 149.4	57 49.0 -49.1 148.0	57 16.7 -48.2 146.6
25°	58 26.5 -52.4 153.4	57 59.0 -51.5 151.9	57 30.1 -50.6 150.5	56 59.9 -49.7 149.1	56 28.5 -48.8 147.7
26°	57 34.1 -52.7 154.3	57 07.5 -52.0 152.8	56 39.5 -51.1 151.4	56 10.2 -50.2 150.1	55 39.7 -49.3 148.8
27°	56 41.4 -53.1 155.2	56 15.5 -52.3 153.8	55 48.4 -51.5 152.4	55 20.0 -50.6 151.0	54 50.4 -49.7 149.8
28°	55 48.3 -53.5 156.0	55 23.2 -52.6 154.6	54 56.9 -51.8 153.3	54 29.4 -51.0 152.0	54 00.7 -50.2 150.7
29°	54 54.8 -53.7 156.8	54 30.6 -53.0 155.5	54 05.1 -52.2 154.2	53 38.4 -51.5 152.9	53 10.5 -50.6 151.6

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	69 47.1 -10.4 98.2	68 47.8 -10.0 97.8	67 48.4 -09.6 97.4	66 48.9 -09.1 97.0	65 49.5 -08.9 96.7
1°	69 36.7 -13.2 101.0	68 37.8 -12.6 100.5	67 38.8 -12.0 100.0	66 39.8 -11.6 99.5	65 40.6 -11.0 99.1
2°	69 23.5 -15.8 103.8	68 25.2 -15.1 103.2	67 26.8 -14.4 102.6	66 28.2 -13.8 102.0	65 29.6 -13.3 101.5
3°	69 07.7 -18.3 106.5	68 10.1 -17.5 105.8	67 12.4 -16.8 105.1	66 14.4 -16.0 104.4	65 16.3 -15.4 103.8
4°	68 49.4 -20.8 109.2	67 52.6 -19.8 108.3	66 55.6 -19.0 107.5	65 58.4 -18.2 106.8	65 00.9 -17.5 106.1
5°	68 28.6 -23.0 111.8	67 32.8 -22.0 110.8	66 36.6 -21.1 109.9	65 40.2 -20.3 109.1	64 43.4 -19.5 108.4
6°	68 05.6 -25.2 114.3	67 10.8 -24.2 113.2	66 15.5 -23.2 112.3	65 19.9 -22.3 111.4	64 23.9 -21.4 110.6
7°	67 40.4 -27.3 116.7	66 46.6 -26.2 115.6	65 52.3 -25.1 114.6	64 57.6 -24.2 113.6	64 02.5 -23.3 112.7
8°	67 13.1 -29.2 119.0	66 20.4 -28.1 117.8	65 27.2 -27.0 116.8	64 33.4 -26.0 115.8	63 39.2 -25.0 114.8
9°	66 43.9 -31.0 121.2	65 52.3 -29.8 120.0	65 00.2 -28.8 118.9	64 07.4 -27.7 117.8	63 14.2 -26.7 116.9
10°	66 12.9 -32.8 123.4	65 22.5 -31.6 122.1	64 31.4 -30.4 120.9	63 39.7 -29.4 119.9	62 47.5 -28.4 118.8
11°	65 40.1 -34.3 125.4	64 50.9 -33.1 124.1	64 01.0 -32.0 122.9	63 10.3 -30.9 121.8	62 19.1 -29.8 120.7
12°	65 05.8 -35.8 127.4	64 17.8 -34.7 126.1	63 29.0 -33.5 124.8	62 39.4 -32.3 123.7	61 49.3 -31.4 122.6
13°	64 30.0 -37.2 129.3	63 43.1 -36.0 127.9	62 55.5 -34.9 126.7	62 07.1 -33.8 125.5	61 17.9 -32.6 124.4
14°	63 52.8 -38.5 131.1	63 07.1 -37.3 129.7	62 20.6 -36.1 128.5	61 33.3 -35.0 127.3	60 45.3 -34.0 126.1
15°	63 14.3 -39.7 132.8	62 29.8 -38.5 131.4	61 44.5 -37.4 130.2	60 58.3 -36.3 128.9	60 11.3 -35.2 127.8
16°	62 34.6 -40.8 134.5	61 51.3 -39.6 133.1	61 07.1 -38.5 131.8	60 22.0 -37.4 130.6	59 36.1 -36.4 129.4
17°	61 53.8 -41.8 136.0	61 11.7 -40.7 134.7	60 28.6 -39.6 133.4	59 44.6 -38.5 132.1	58 59.7 -37.4 131.0
18°	61 12.0 -42.8 137.5	60 31.0 -41.7 136.2	59 49.0 -40.6 134.9	59 06.1 -39.5 133.6	58 22.3 -38.4 132.5
19°	60 29.2 -43.7 139.0	59 49.3 -42.6 137.6	59 08.4 -41.5 136.3	58 26.6 -40.5 135.1	57 43.9 -39.4 133.9
20°	59 45.5 -44.5 140.3	59 06.7 -43.4 139.0	58 26.9 -42.3 137.7	57 46.1 -41.3 136.5	57 04.5 -40.4 135.3
21°	59 01.0 -45.2 141.7	58 23.3 -44.2 140.3	57 44.6 -43.2 139.1	57 04.8 -42.2 137.8	56 24.1 -41.1 136.7
22°	58 15.8 -46.0 142.9	57 39.1 -45.0 141.6	57 01.4 -44.0 140.3	56 22.6 -42.9 139.1	55 43.0 -42.0 138.0
23°	57 29.8 -46.7 144.1	56 54.1 -45.6 142.8	56 17.4 -44.7 141.6	55 39.7 -43.7 140.4	55 01.0 -42.7 139.2
24°	56 43.1 -47.2 145.3	56 08.5 -46.3 144.0	55 32.7 -45.3 142.8	54 56.0 -44.4 141.6	54 18.3 -43.4 140.4
25°	55 55.9 -47.9 146.4	55 22.2 -46.9 145.1	54 47.4 -46.0 143.9	54 11.6 -45.0 142.8	53 34.9 -44.1 141.6
26°	55 08.0 -48.3 147.5	54 35.3 -47.5 146.2	54 01.4 -46.5 145.0	53 26.6 -45.6 143.9	52 50.8 -44.7 142.7
27°	54 19.7 -48.9 148.5	53 47.8 -48.0 147.3	53 14.9 -47.1 146.1	52 41.0 -46.2 145.0	52 06.1 -45.3 143.8
28°	53 30.8 -49.4 149.5	52 59.8 -48.5 148.3	52 27.8 -47.6 147.1	51 54.8 -46.8 146.0	51 20.8 -45.9 144.9
29°	52 41.4 -49.7 150.4	52 11.3 -48.9 149.3	51 40.2 -48.1 148.1	51 08.0 -47.2 147.0	50 34.9 -46.3 145.9

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	64 49.9 -08.4 96.4	63 50.4 -08.2 96.1	62 50.8 -07.9 95.9	61 51.2 -07.7 95.6	60 51.5 -07.4 95.4
1°	64 41.5 -10.7 98.7	63 42.2 -10.2 98.4	62 42.9 -09.9 98.0	61 43.5 -09.5 97.7	60 44.1 -09.2 97.4
2°	64 30.8 -12.7 101.0	63 32.0 -12.3 100.6	62 33.0 -11.8 100.2	61 34.0 -11.4 99.8	60 34.9 -11.0 99.4
3°	64 18.1 -14.8 103.3	63 19.7 -14.3 102.8	62 21.2 -13.7 102.3	61 22.6 -13.2 101.9	60 23.9 -12.7 101.4
4°	64 03.3 -16.8 105.5	63 05.4 -16.1 104.9	62 07.5 -15.6 104.4	61 09.4 -15.1 103.9	60 11.2 -14.6 103.4
5°	63 46.5 -18.8 107.7	62 49.3 -18.1 107.0	61 51.9 -17.4 106.4	60 54.3 -16.7 105.9	59 56.6 -16.2 105.4
6°	63 27.7 -20.6 109.8	62 31.2 -19.8 109.1	61 34.5 -19.2 108.5	60 37.6 -18.5 107.8	59 40.4 -17.8 107.3
7°	63 07.1 -22.4 111.9	62 11.4 -21.7 111.2	61 15.3 -20.8 110.4	60 19.1 -20.1 109.8	59 22.6 -19.5 109.2
8°	62 44.7 -24.2 114.0	61 49.7 -23.2 113.1	60 54.5 -22.5 112.4	59 59.0 -21.8 111.7	59 03.1 -21.0 111.0
9°	62 20.5 -25.8 115.9	61 26.5 -24.9 115.1	60 32.0 -24.0 114.3	59 37.2 -23.2 113.5	58 42.1 -22.4 112.8
10°	61 54.7 -27.3 117.9	61 01.6 -26.5 117.0	60 08.0 -25.6 116.1	59 14.0 -24.8 115.3	58 19.7 -24.0 114.6
11°	61 27.4 -28.9 119.8	60 35.1 -27.9 118.8	59 42.4 -27.0 117.9	58 49.2 -26.1 117.1	57 55.7 -25.3 116.3
12°	60 58.5 -30.3 121.6	60 07.2 -29.4 120.6	59 15.4 -28.4 119.7	58 23.1 -27.5 118.8	57 30.4 -26.7 118.0
13°	60 28.2 -31.7 123.3	59 37.8 -30.6 122.3	58 47.0 -29.8 121.4	57 55.6 -28.8 120.5	57 03.7 -27.9 119.7
14°	59 56.5 -32.9 125.0	59 07.2 -32.0 124.0	58 17.2 -31.0 123.1	57 26.8 -30.1 122.2	56 35.8 -29.2 121.3
15°	59 23.6 -34.2 126.7	58 35.2 -33.1 125.7	57 46.2 -32.1 124.7	56 56.7 -31.2 123.8	56 06.6 -30.3 122.9
16°	58 49.4 -35.3 128.3	58 02.1 -34.3 127.3	57 14.1 -33.4 126.3	56 25.5 -32.4 125.3	55 36.3 -31.5 124.4
17°	58 14.1 -36.4 129.9	57 27.8 -35.4 128.8	56 40.7 -34.4 127.8	55 53.1 -33.5 126.8	55 04.8 -32.5 125.9
18°	57 37.7 -37.4 131.3	56 52.4 -36.5 130.3	56 06.3 -35.4 129.3	55 19.6 -34.5 128.3	54 32.3 -33.6 127.4
19°	57 00.3 -38.4 132.8	56 15.9 -37.3 131.7	55 30.9 -36.5 130.7	54 45.1 -35.5 129.7	53 58.7 -34.5 128.8
20°	56 21.9 -39.3 134.2	55 38.6 -38.4 133.1	54 54.4 -37.3 132.1	54 09.6 -36.4 131.1	53 24.2 -35.5 130.2
21°	55 42.6 -40.2 135.5	55 00.2 -39.2 134.5	54 17.1 -38.2 133.4	53 33.2 -37.2 132.5	52 48.7 -36.4 131.5
22°	55 02.4 -41.0 136.9	54 21.0 -40.0 135.8	53 38.9 -39.1 134.8	52 56.0 -38.2 133.8	52 12.3 -37.2 132.8
23°	54 21.4 -41.7 138.1	53 41.0 -40.8 137.1	52 59.8 -39.8 136.0	52 17.8 -38.9 135.0	51 35.1 -38.0 134.1
24°	53 39.7 -42.5 139.3	53 00.2 -41.5 138.3	52 20.0 -40.6 137.3	51 38.9 -39.7 136.3	50 57.1 -38.7 135.3
25°	52 57.2 -43.1 140.5	52 18.7 -42.2 139.5	51 39.4 -41.3 138.5	50 59.2 -40.3 137.5	50 18.4 -39.5 136.5
26°	52 14.1 -43.8 141.7	51 36.5 -42.9 140.6	50 58.1 -42.0 139.6	50 18.9 -41.1 138.6	49 38.9 -40.2 137.7
27°	51 30.3 -44.4 142.8	50 53.6 -43.5 141.7	50 16.1 -42.6 140.7	49 37.8 -41.7 139.8	48 58.7 -40.8 138.8
28°	50 45.9 -45.0 143.8	50 10.1 -44.1 142.8	49 33.5 -43.2 141.8	48 56.1 -42.4 140.9	48 17.9 -41.5 140.0
29°	50 00.9 -45.5 144.9	49 26.0 -44.6 143.9	48 50.3 -43.8 142.9	48 13.7 -42.9 141.9	47 36.4 -42.0 141.0

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	59 51.9 -07.2 95.2	58 52.2 -07.0 95.0	57 52.5 -06.8 94.8	56 52.8 -06.6 94.6	55 53.0 -06.3 94.4
1°	59 44.7 -08.9 97.2	58 45.2 -08.6 96.9	57 45.7 -08.3 96.7	56 46.2 -08.1 96.4	55 46.7 -07.9 96.2
2°	59 35.8 -10.6 99.1	58 36.6 -10.3 98.8	57 37.4 -10.0 98.5	56 38.1 -09.7 98.2	55 38.8 -09.4 98.0
3°	59 25.2 -12.4 101.1	58 26.3 -11.9 100.7	57 27.4 -11.6 100.3	56 28.4 -11.2 100.0	55 29.4 -10.9 99.7
4°	59 12.8 -14.0 103.0	58 14.4 -13.6 102.6	57 15.8 -13.1 102.2	56 17.2 -12.7 101.8	55 18.5 -12.3 101.4
5°	58 58.8 -15.7 104.9	58 00.8 -15.1 104.4	57 02.7 -14.6 104.0	56 04.5 -14.2 103.6	55 06.2 -13.7 103.2
6°	58 43.1 -17.2 106.7	57 45.7 -16.7 106.2	56 48.1 -16.2 105.7	55 50.3 -15.6 105.3	54 52.5 -15.2 104.9
7°	58 25.9 -18.8 108.6	57 29.0 -18.2 108.0	56 31.9 -17.6 107.5	55 34.7 -17.0 107.0	54 37.3 -16.5 106.5
8°	58 07.1 -20.3 110.4	57 10.8 -19.6 109.8	56 14.3 -19.0 109.2	55 17.7 -18.5 108.7	54 20.8 -17.8 108.2
9°	57 46.8 -21.8 112.1	56 51.2 -21.1 111.5	55 55.3 -20.4 110.9	54 59.2 -19.7 110.4	54 03.0 -19.2 109.8
10°	57 25.0 -23.2 113.9	56 30.1 -22.5 113.2	55 34.9 -21.8 112.6	54 39.5 -21.1 112.0	53 43.8 -20.5 111.4
11°	57 01.8 -24.5 115.6	56 07.6 -23.7 114.9	55 13.1 -23.0 114.2	54 18.4 -22.4 113.6	53 23.3 -21.6 113.0
12°	56 37.3 -25.8 117.3	55 43.9 -25.1 116.5	54 50.1 -24.3 115.8	53 56.0 -23.5 115.2	53 01.7 -22.9 114.6
13°	56 11.5 -27.1 118.9	55 18.8 -26.3 118.1	54 25.8 -25.5 117.4	53 32.5 -24.8 116.7	52 38.8 -24.0 116.1
14°	55 44.4 -28.3 120.5	54 52.5 -27.4 119.7	54 00.3 -26.7 119.0	53 07.7 -25.9 118.3	52 14.8 -25.2 117.6
15°	55 16.1 -29.5 122.0	54 25.1 -28.7 121.2	53 33.6 -27.8 120.5	52 41.8 -27.0 119.8	51 49.6 -26.2 119.1
16°	54 46.6 -30.6 123.6	53 56.4 -29.7 122.7	53 05.8 -28.9 122.0	52 14.8 -28.1 121.2	51 23.4 -27.3 120.5
17°	54 16.0 -31.6 125.0	53 26.7 -30.8 124.2	52 36.9 -29.9 123.4	51 46.7 -29.1 122.7	50 56.1 -28.3 121.9
18°	53 44.4 -32.7 126.5	52 55.9 -31.7 125.6	52 07.0 -30.9 124.8	51 17.6 -30.1 124.1	50 27.8 -29.3 123.3
19°	53 11.7 -33.6 127.9	52 24.2 -32.8 127.0	51 36.1 -31.9 126.2	50 47.5 -31.0 125.4	49 58.5 -30.3 124.7
20°	52 38.1 -34.6 129.3	51 51.4 -33.7 128.4	51 04.2 -32.8 127.6	50 16.5 -32.0 126.8	49 28.2 -31.1 126.0
21°	52 03.5 -35.4 130.6	51 17.7 -34.5 129.7	50 31.4 -33.7 128.9	49 44.5 -32.8 128.1	48 57.1 -32.0 127.3
22°	51 28.1 -36.3 131.9	50 43.2 -35.4 131.0	49 57.7 -34.5 130.2	49 11.7 -33.7 129.4	48 25.1 -32.8 128.6
23°	50 51.8 -37.1 133.2	50 07.8 -36.2 132.3	49 23.2 -35.4 131.5	48 38.0 -34.5 130.7	47 52.3 -33.7 129.9
24°	50 14.7 -37.9 134.4	49 31.6 -37.0 133.5	48 47.8 -36.1 132.7	48 03.5 -35.2 131.9	47 18.6 -34.4 131.1
25°	49 36.8 -38.6 135.6	48 54.6 -37.7 134.7	48 11.7 -36.8 133.9	47 28.3 -36.0 133.1	46 44.2 -35.1 132.3
26°	48 58.2 -39.3 136.8	48 16.9 -38.5 135.9	47 34.9 -37.6 135.1	46 52.3 -36.7 134.3	46 09.1 -35.9 133.5
27°	48 18.9 -39.9 137.9	47 38.4 -39.0 137.1	46 57.3 -38.2 136.2	46 15.6 -37.4 135.4	45 33.2 -36.5 134.6
28°	47 39.0 -40.6 139.1	46 59.4 -39.8 138.2	46 19.1 -38.9 137.4	45 38.2 -38.0 136.5	44 56.7 -37.2 135.8
29°	46 58.4 -41.2 140.1	46 19.6 -40.3 139.3	45 40.2 -39.5 138.5	45 00.2 -38.7 137.6	44 19.5 -37.8 136.9

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°	54 53.3 -06.2 94.3	53 53.5 -06.0 94.1	52 53.8 -05.9 94.0	51 54.0 -05.8 93.8	50 54.2 -05.6 93.7
1°	54 47.1 -07.7 96.0	53 47.5 -07.5 95.8	52 47.9 -07.3 95.6	51 48.2 -07.0 95.4	50 48.6 -06.9 95.3
2°	54 39.4 -09.1 97.7	53 40.0 -08.8 97.5	52 40.6 -08.6 97.3	51 41.2 -08.4 97.0	50 41.7 -08.2 96.8
3°	54 30.3 -10.5 99.4	53 31.2 -10.2 99.2	52 32.0 -09.9 98.9	51 32.8 -09.7 98.6	50 33.5 -09.4 98.4
4°	54 19.8 -12.0 101.1	53 21.0 -11.6 100.8	52 22.1 -11.3 100.5	51 23.1 -10.9 100.2	50 24.1 -10.6 100.0
5°	54 07.8 -13.3 102.8	53 09.4 -13.0 102.4	52 10.8 -12.5 102.1	51 12.2 -12.2 101.8	50 13.5 -11.8 101.5
6°	53 54.5 -14.7 104.5	52 56.4 -14.2 104.1	51 58.3 -13.8 103.7	51 00.0 -13.4 103.4	50 01.7 -13.1 103.0
7°	53 39.8 -16.0 106.1	52 42.2 -15.5 105.7	51 44.5 -15.1 105.3	50 46.6 -14.6 104.9	49 48.6 -14.2 104.5
8°	53 23.8 -17.3 107.7	52 26.7 -16.8 107.3	51 29.4 -16.3 106.8	50 32.0 -15.9 106.4	49 34.4 -15.3 106.0
9°	53 06.5 -18.6 109.3	52 09.9 -18.1 108.8	51 13.1 -17.5 108.4	50 16.1 -16.9 107.9	49 19.1 -16.5 107.5
10°	52 47.9 -19.8 110.9	51 51.8 -19.2 110.4	50 55.6 -18.7 109.9	49 59.2 -18.2 109.4	49 02.6 -17.6 109.0
11°	52 28.1 -21.0 112.4	51 32.6 -20.4 111.9	50 36.9 -19.8 111.4	49 41.0 -19.2 110.9	48 45.0 -18.7 110.5
12°	52 07.1 -22.2 114.0	51 12.2 -21.6 113.4	50 17.1 -20.9 112.9	49 21.8 -20.3 112.4	48 26.3 -19.8 111.9
13°	51 44.9 -23.4 115.5	50 50.6 -22.6 114.9	49 56.2 -22.0 114.3	49 01.5 -21.4 113.8	48 06.5 -20.7 113.3
14°	51 21.5 -24.4 117.0	50 28.0 -23.8 116.4	49 34.2 -23.1 115.8	48 40.1 -22.4 115.2	47 45.8 -21.8 114.7
15°	50 57.1 -25.5 118.4	50 04.2 -24.8 117.8	49 11.1 -24.1 117.2	48 17.7 -23.5 116.6	47 24.0 -22.8 116.1
16°	50 31.6 -26.6 119.9	49 39.4 -25.8 119.2	48 47.0 -25.1 118.6	47 54.2 -24.4 118.0	47 01.2 -23.7 117.5
17°	50 05.0 -27.5 121.3	49 13.6 -26.8 120.6	48 21.9 -26.1 120.0	47 29.8 -25.3 119.4	46 37.5 -24.7 118.8
18°	49 37.5 -28.5 122.6	48 46.8 -27.7 122.0	47 55.8 -27.0 121.3	47 04.5 -26.3 120.7	46 12.8 -25.5 120.1
19°	49 09.0 -29.4 124.0	48 19.1 -28.6 123.3	47 28.8 -27.8 122.7	46 38.2 -27.1 122.0	45 47.3 -26.5 121.4
20°	48 39.6 -30.4 125.3	47 50.5 -29.6 124.6	47 01.0 -28.8 124.0	46 11.1 -28.0 123.3	45 20.8 -27.3 122.7
21°	48 09.2 -31.1 126.6	47 20.9 -30.4 125.9	46 32.2 -29.6 125.2	45 43.1 -28.9 124.6	44 53.5 -28.1 124.0
22°	47 38.1 -32.1 127.9	46 50.5 -31.2 127.2	46 02.6 -30.4 126.5	45 14.2 -29.6 125.8	44 25.4 -28.8 125.2
23°	47 06.0 -32.8 129.1	46 19.3 -32.0 128.4	45 32.2 -31.2 127.7	44 44.6 -30.5 127.1	43 56.6 -29.7 126.4
24°	46 33.2 -33.6 130.4	45 47.3 -32.7 129.6	45 01.0 -32.0 128.9	44 14.1 -31.1 128.3	43 26.9 -30.4 127.6
25°	45 59.6 -34.3 131.6	45 14.6 -33.5 130.8	44 29.0 -32.7 130.1	43 43.0 -31.9 129.5	42 56.5 -31.1 128.8
26°	45 25.3 -35.0 132.7	44 41.1 -34.2 132.0	43 56.3 -33.4 131.3	43 11.1 -32.6 130.6	42 25.4 -31.9 130.1
27°	44 50.3 -35.7 133.9	44 06.9 -34.9 133.2	43 22.9 -34.1 132.5	42 38.5 -33.3 131.8	41 53.5 -32.4 131.0
28°	44 14.6 -36.4 135.0	43 32.0 -35.6 134.3	42 48.8 -34.7 133.6	42 05.2 -34.0 132.9	41 21.1 -33.2 132.3
29°	43 38.2 -36.9 136.1	42 56.4 -36.1 135.4	42 14.1 -35.4 134.7	41 31.2 -34.5 134.0	40 47.9 -33.7 133.4

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	49 54.4 -05.5 93.6	48 54.6 -05.4 93.4	47 54.8 -05.3 93.3	46 55.0 -05.2 93.2	45 55.1 -05.0 93.1
1°	49 48.9 -06.7 95.1	48 49.2 -06.5 95.0	47 49.5 -06.4 94.8	46 49.8 -06.3 94.7	45 50.1 -06.1 94.5
2°	49 42.2 -08.0 96.7	48 42.7 -07.8 96.5	47 43.1 -07.5 96.3	46 43.5 -07.3 96.1	45 44.0 -07.2 96.0
3°	49 34.2 -09.1 98.2	48 34.9 -08.9 98.0	47 35.6 -08.7 97.8	46 36.2 -08.5 97.6	45 36.8 -08.3 97.4
4°	49 25.1 -10.3 99.7	48 26.0 -10.0 99.5	47 26.9 -09.8 99.2	46 27.7 -09.5 99.0	45 28.5 -09.2 98.8
5°	49 14.8 -11.5 101.2	48 16.0 -11.2 100.9	47 17.1 -10.9 100.7	46 18.2 -10.6 100.4	45 19.3 -10.3 100.2
6°	49 03.3 -12.7 102.7	48 04.8 -12.3 102.4	47 06.2 -11.9 102.1	46 07.6 -11.6 101.9	45 09.0 -11.4 101.6
7°	48 50.6 -13.8 104.2	47 52.5 -13.4 103.9	46 54.3 -13.1 103.6	45 56.0 -12.7 103.3	44 57.6 -12.3 103.0
8°	48 36.8 -14.9 105.7	47 39.1 -14.5 105.3	46 41.2 -14.1 105.0	45 43.3 -13.7 104.7	44 45.3 -13.3 104.4
9°	48 21.9 -16.0 107.1	47 24.6 -15.6 106.8	46 27.1 -15.1 106.4	45 29.6 -14.7 106.1	44 32.0 -14.3 105.7
10°	48 05.9 -17.1 108.6	47 09.0 -16.6 108.2	46 12.0 -16.1 107.8	45 14.9 -15.7 107.4	44 17.7 -15.3 107.1
11°	47 48.8 -18.2 110.0	46 52.4 -17.7 109.6	45 55.9 -17.2 109.2	44 59.2 -16.6 108.8	44 02.4 -16.2 108.5
12°	47 30.6 -19.2 111.4	46 34.7 -18.6 111.0	45 38.7 -18.1 110.6	44 42.6 -17.7 110.2	43 46.2 -17.1 109.8
13°	47 11.4 -20.2 112.8	46 16.1 -19.6 112.4	45 20.6 -19.1 111.9	44 24.9 -18.5 111.5	43 29.1 -18.0 111.1
14°	46 51.2 -21.2 114.2	45 56.5 -20.6 113.7	45 01.5 -20.0 113.3	44 06.4 -19.5 112.8	43 11.1 -18.9 112.4
15°	46 30.0 -22.1 115.6	45 35.9 -21.5 115.1	44 41.5 -20.9 114.6	43 46.9 -20.3 114.2	42 52.2 -19.8 113.7
16°	46 07.9 -23.1 116.9	45 14.4 -22.5 116.4	44 20.6 -21.8 115.9	43 26.6 -21.2 115.5	42 32.4 -20.7 115.0
17°	45 44.8 -24.0 118.3	44 51.9 -23.3 117.7	43 58.8 -22.7 117.2	43 05.4 -22.1 116.7	42 11.7 -21.4 116.3
18°	45 20.8 -24.8 119.6	44 28.6 -24.2 119.0	43 36.1 -23.6 118.5	42 43.3 -22.9 118.0	41 50.3 -22.3 117.5
19°	44 56.0 -25.8 120.9	44 04.4 -25.1 120.3	43 12.5 -24.4 119.8	42 20.4 -23.8 119.3	41 28.0 -23.1 118.8
20°	44 30.2 -26.5 122.1	43 39.3 -25.8 121.6	42 48.1 -25.1 121.0	41 56.6 -24.5 120.5	41 04.9 -23.9 120.0
21°	44 03.7 -27.4 123.4	43 13.5 -26.7 122.8	42 23.0 -26.0 122.3	41 32.1 -25.2 121.7	40 41.0 -24.6 121.2
22°	43 36.3 -28.1 124.6	42 46.8 -27.4 124.0	41 57.0 -26.7 123.5	41 06.9 -26.1 122.9	40 16.4 -25.3 122.4
23°	43 08.2 -29.0 125.8	42 19.4 -28.2 125.2	41 30.3 -27.5 124.7	40 40.8 -26.7 124.1	39 51.1 -26.1 123.6
24°	42 39.2 -29.6 127.0	41 51.2 -28.9 126.4	41 02.8 -28.1 125.9	40 14.1 -27.5 125.3	39 25.0 -26.7 124.8
25°	42 09.6 -30.4 128.2	41 22.3 -29.6 127.6	40 34.7 -28.9 127.0	39 46.6 -28.1 126.5	38 58.3 -27.4 125.9
26°	41 39.2 -31.0 129.4	40 52.7 -30.3 128.8	40 05.8 -29.6 128.2	39 18.5 -28.8 127.6	38 30.9 -28.1 127.1
27°	41 08.2 -31.7 130.5	40 22.4 -30.9 129.9	39 36.2 -30.1 129.3	38 49.7 -29.5 128.7	38 02.8 -28.7 128.2
28°	40 36.5 -32.4 131.6	39 51.5 -31.6 131.0	39 06.1 -30.9 130.4	38 20.2 -30.0 129.9	37 34.1 -29.4 129.3
29°	40 04.1 -32.9 132.7	39 19.9 -32.2 132.1	38 35.2 -31.4 131.5	37 50.2 -30.7 131.0	37 04.7 -29.9 130.4

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°	44 55.3 -05.0 93.0	43 55.5 -04.9 92.9	42 55.6 -04.8 92.8	41 55.8 -04.7 92.7	40 55.9 -04.6 92.6
1°	44 50.3 -05.9 94.4	43 50.6 -05.9 94.3	42 50.8 -05.7 94.2	41 51.1 -05.6 94.0	40 51.3 -05.5 93.9
2°	44 44.4 -07.1 95.8	43 44.7 -06.8 95.7	42 45.1 -06.7 95.5	41 45.5 -06.6 95.4	40 45.8 -06.4 95.2
3°	44 37.3 -08.0 97.2	43 37.9 -07.8 97.0	42 38.4 -07.6 96.9	41 38.9 -07.5 96.7	40 39.4 -07.3 96.6
4°	44 29.3 -09.0 98.6	43 30.1 -08.9 98.4	42 30.8 -08.6 98.2	41 31.4 -08.3 98.0	40 32.1 -08.2 97.9
5°	44 20.3 -10.1 100.0	43 21.2 -09.7 99.8	42 22.2 -09.5 99.6	41 23.1 -09.3 99.4	40 23.9 -09.0 99.2
6°	44 10.2 -11.0 101.4	43 11.5 -10.8 101.1	42 12.7 -10.5 100.9	41 13.8 -10.2 100.7	40 14.9 -09.9 100.5
7°	43 59.2 -12.0 102.7	43 00.7 -11.6 102.5	42 02.2 -11.3 102.2	41 03.6 -11.0 102.0	40 05.0 -10.8 101.7
8°	43 47.2 -12.9 104.1	42 49.1 -12.6 103.8	41 50.9 -12.3 103.5	40 52.6 -12.0 103.3	39 54.2 -11.6 103.0
9°	43 34.3 -13.9 105.4	42 36.5 -13.5 105.1	41 38.6 -13.1 104.8	40 40.6 -12.7 104.6	39 42.6 -12.4 104.3
10°	43 20.4 -14.9 106.8	42 23.0 -14.5 106.5	41 25.5 -14.1 106.1	40 27.9 -13.7 105.9	39 30.2 -13.3 105.6
11°	43 05.5 -15.7 108.1	42 08.5 -15.3 107.8	41 11.4 -14.9 107.4	40 14.2 -14.5 107.1	39 16.9 -14.1 106.8
12°	42 49.8 -16.6 109.4	41 53.2 -16.2 109.1	40 56.5 -15.7 108.7	39 59.7 -15.3 108.4	39 02.8 -14.8 108.1
13°	42 33.2 -17.6 110.7	41 37.0 -17.0 110.4	40 40.8 -16.6 110.0	39 44.4 -16.1 109.7	38 48.0 -15.7 109.3
14°	42 15.6 -18.4 112.0	41 20.0 -17.9 111.6	40 24.2 -17.4 111.3	39 28.3 -16.9 110.9	38 32.3 -16.4 110.6
15°	41 57.2 -19.2 113.3	41 02.1 -18.7 112.9	40 06.8 -18.2 112.5	39 11.4 -17.7 112.2	38 15.9 -17.2 111.8
16°	41 38.0 -20.1 114.6	40 43.4 -19.5 114.2	39 48.6 -18.9 113.8	38 53.7 -18.4 113.4	37 58.7 -18.0 113.0
17°	41 17.9 -20.9 115.8	40 23.9 -20.3 115.4	39 29.7 -19.8 115.0	38 35.3 -19.2 114.6	37 40.7 -18.7 114.2
18°	40 57.0 -21.7 117.1	40 03.6 -21.1 116.6	39 09.9 -20.5 116.2	38 16.1 -20.0 115.8	37 22.0 -19.4 115.4
19°	40 35.3 -22.4 118.3	39 42.5 -21.9 117.9	38 49.4 -21.3 117.4	37 56.1 -20.7 117.0	37 02.6 -20.1 116.6
20°	40 12.9 -23.2 119.5	39 20.6 -22.6 119.1	38 28.1 -21.9 118.6	37 35.4 -21.3 118.2	36 42.5 -20.8 117.8
21°	39 49.7 -24.0 120.7	38 58.0 -23.3 120.3	38 06.2 -22.7 119.8	37 14.1 -22.1 119.4	36 21.7 -21.4 119.0
22°	39 25.7 -24.7 121.9	38 34.7 -24.0 121.4	37 43.5 -23.4 121.0	36 52.0 -22.8 120.5	36 00.3 -22.2 120.1
23°	39 01.0 -25.3 123.1	38 10.7 -24.7 122.6	37 20.1 -24.1 122.1	36 29.2 -23.4 121.7	35 38.1 -22.7 121.3
24°	38 35.7 -26.1 124.3	37 46.0 -25.4 123.8	36 56.0 -24.7 123.3	36 05.8 -24.0 122.8	35 15.4 -23.4 122.4
25°	38 09.6 -26.7 125.4	37 20.6 -26.0 124.9	36 31.3 -25.3 124.4	35 41.8 -24.7 124.0	34 52.0 -24.1 123.5
26°	37 42.9 -27.4 126.5	36 54.6 -26.7 126.0	36 06.0 -26.0 125.6	35 17.1 -25.3 125.1	34 27.9 -24.6 124.6
27°	37 15.5 -28.0 127.7	36 27.9 -27.3 127.2	35 40.0 -26.6 126.7	34 51.8 -25.9 126.2	34 03.3 -25.2 125.7
28°	36 47.5 -28.6 128.8	36 00.6 -27.8 128.3	35 13.4 -27.1 127.8	34 25.9 -26.5 127.3	33 38.1 -25.8 126.8
29°	36 18.9 -29.2 129.9	35 32.8 -28.5 129.4	34 46.3 -27.8 128.9	33 59.4 -27.0 128.4	33 12.3 -26.3 127.9

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°	39 56.0 -04.5 92.5	38 56.2 -04.5 92.4	37 56.3 -04.4 92.3	36 56.5 -04.4 92.3	35 56.6 -04.3 92.2
1°	39 51.5 -05.4 93.8	38 51.7 -05.3 93.7	37 51.9 -05.2 93.6	36 52.1 -05.1 93.5	35 52.3 -05.0 93.4
2°	39 46.1 -06.2 95.1	38 46.4 -06.1 95.0	37 46.7 -06.0 94.9	36 47.0 -05.8 94.8	35 47.3 -05.7 94.6
3°	39 39.9 -07.2 96.4	38 40.3 -07.0 96.3	37 40.7 -06.8 96.1	36 41.2 -06.7 96.0	35 41.6 -06.5 95.9
4°	39 32.7 -07.9 97.7	38 33.3 -07.7 97.5	37 33.9 -07.6 97.4	36 34.5 -07.4 97.2	35 35.1 -07.3 97.1
5°	39 24.8 -08.8 99.0	38 25.6 -08.6 98.8	37 26.3 -08.3 98.6	36 27.1 -08.2 98.5	35 27.8 -08.0 98.3
6°	39 16.0 -09.7 100.3	38 17.0 -09.4 100.1	37 18.0 -09.2 99.9	36 18.9 -08.9 99.7	35 19.8 -08.7 99.5
7°	39 06.3 -10.5 101.5	38 07.6 -10.2 101.3	37 08.8 -09.9 101.1	36 10.0 -09.7 100.9	35 11.1 -09.4 100.7
8°	38 55.8 -11.3 102.8	37 57.4 -11.0 102.6	36 58.9 -10.7 102.4	36 00.3 -10.4 102.1	35 01.7 -10.1 101.9
9°	38 44.5 -12.1 104.1	37 46.4 -11.8 103.8	36 48.2 -11.5 103.6	35 49.9 -11.2 103.4	34 51.6 -10.9 103.1
10°	38 32.4 -12.9 105.3	37 34.6 -12.5 105.1	36 36.7 -12.2 104.8	35 38.7 -11.8 104.6	34 40.7 -11.5 104.3
11°	38 19.5 -13.7 106.6	37 22.1 -13.4 106.3	36 24.5 -12.9 106.0	35 26.9 -12.6 105.8	34 29.2 -12.3 105.5
12°	38 05.8 -14.4 107.8	37 08.7 -14.0 107.5	36 11.6 -13.7 107.2	35 14.3 -13.3 107.0	34 16.9 -12.9 106.7
13°	37 51.4 -15.3 109.0	36 54.7 -14.8 108.7	35 57.9 -14.4 108.4	35 01.0 -14.0 108.2	34 04.0 -13.6 107.9
14°	37 36.1 -15.9 110.3	36 39.9 -15.6 109.9	35 43.5 -15.1 109.6	34 47.0 -14.7 109.4	33 50.4 -14.2 109.1
15°	37 20.2 -16.8 111.5	36 24.3 -16.2 111.1	35 28.4 -15.8 110.8	34 32.3 -15.3 110.5	33 36.2 -14.9 110.2
16°	37 03.4 -17.4 112.7	36 08.1 -17.0 112.3	35 12.6 -16.5 112.0	34 17.0 -16.0 111.7	33 21.3 -15.6 111.4
17°	36 46.0 -18.2 113.9	35 51.1 -17.6 113.5	34 56.1 -17.1 113.2	34 01.0 -16.7 112.9	33 05.7 -16.2 112.6
18°	36 27.8 -18.8 115.1	35 33.5 -18.4 114.7	34 39.0 -17.9 114.4	33 44.3 -17.3 114.0	32 49.5 -16.8 113.7
19°	36 09.0 -19.6 116.2	35 15.1 -19.0 115.9	34 21.1 -18.4 115.5	33 27.0 -17.9 115.2	32 32.7 -17.4 114.8
20°	35 49.4 -20.2 117.4	34 56.1 -19.6 117.0	34 02.7 -19.1 116.7	33 09.1 -18.6 116.3	32 15.3 -18.1 116.0
21°	35 29.2 -20.9 118.6	34 36.5 -20.3 118.2	33 43.6 -19.8 117.8	32 50.5 -19.2 117.4	31 57.2 -18.6 117.1
22°	35 08.3 -21.5 119.7	34 16.2 -20.9 119.3	33 23.8 -20.3 118.9	32 31.3 -19.8 118.6	31 38.6 -19.2 118.2
23°	34 46.8 -22.1 120.8	33 55.3 -21.6 120.4	33 03.5 -20.9 120.1	32 11.5 -20.3 119.7	31 19.4 -19.8 119.3
24°	34 24.7 -22.8 122.0	33 33.7 -22.1 121.6	32 42.6 -21.6 121.2	31 51.2 -20.9 120.8	30 59.6 -20.3 120.4
25°	34 01.9 -23.4 123.1	33 11.6 -22.8 122.7	32 21.0 -22.1 122.3	31 30.3 -21.5 121.9	30 39.3 -20.9 121.5
26°	33 38.5 -24.0 124.2	32 48.8 -23.3 123.8	31 58.9 -22.7 123.4	31 08.8 -22.1 123.0	30 18.4 -21.4 122.6
27°	33 14.5 -24.5 125.3	32 25.5 -23.9 124.9	31 36.2 -23.2 124.5	30 46.7 -22.5 124.1	29 57.0 -21.9 123.7
28°	32 50.0 -25.1 126.4	32 01.6 -24.4 126.0	31 13.0 -23.7 125.6	30 24.2 -23.1 125.2	29 35.1 -22.5 124.8
29°	32 24.9 -25.6 127.5	31 37.2 -24.9 127.0	30 49.3 -24.3 126.6	30 01.1 -23.7 126.2	29 12.6 -23.0 125.8

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°	34 56.7 -04.2 92.1	33 56.8 -04.1 92.0	32 56.9 -04.0 91.9	31 57.1 -04.1 91.9	30 57.2 -04.0 91.8
1°	34 52.5 -04.9 93.3	33 52.7 -04.8 93.2	32 52.9 -04.8 93.1	31 53.0 -04.6 93.0	30 53.2 -04.6 93.0
2°	34 47.6 -05.7 94.5	33 47.9 -05.6 94.4	32 48.1 -05.4 94.3	31 48.4 -05.4 94.2	30 48.6 -05.2 94.1
3°	34 41.9 -06.3 95.7	33 42.3 -06.2 95.6	32 42.7 -06.1 95.5	31 43.0 -05.9 95.4	30 43.4 -05.9 95.3
4°	34 35.6 -07.1 96.9	33 36.1 -06.9 96.8	32 36.6 -06.8 96.7	31 37.1 -06.6 96.6	30 37.5 -06.4 96.4
5°	34 28.5 -07.8 98.2	33 29.2 -07.6 98.0	32 29.8 -07.4 97.9	31 30.5 -07.2 97.7	30 31.1 -07.1 97.6
6°	34 20.7 -08.5 99.4	33 21.6 -08.3 99.2	32 22.4 -08.0 99.0	31 23.3 -07.9 98.9	30 24.0 -07.6 98.7
7°	34 12.2 -09.1 100.6	33 13.3 -08.9 100.4	32 14.4 -08.7 100.2	31 15.4 -08.5 100.1	30 16.4 -08.3 99.9
8°	34 03.1 -09.9 101.7	33 04.4 -09.6 101.6	32 05.7 -09.4 101.4	31 06.9 -09.1 101.2	30 08.1 -08.8 101.0
9°	33 53.2 -10.6 102.9	32 54.8 -10.3 102.7	31 56.3 -10.0 102.5	30 57.8 -09.7 102.4	29 59.3 -09.5 102.2
10°	33 42.6 -11.2 104.1	32 44.5 -10.9 103.9	31 46.3 -10.6 103.7	30 48.1 -10.3 103.5	29 49.8 -10.0 103.3
11°	33 31.4 -11.9 105.3	32 33.6 -11.6 105.1	31 35.7 -11.2 104.9	30 37.8 -11.0 104.7	29 39.8 -10.6 104.5
12°	33 19.5 -12.5 106.5	32 22.0 -12.2 106.2	31 24.5 -11.9 106.0	30 26.8 -11.5 105.8	29 29.2 -11.2 105.6
13°	33 07.0 -13.2 107.6	32 09.8 -12.8 107.4	31 12.6 -12.4 107.2	30 15.3 -12.1 106.9	29 18.0 -11.8 106.7
14°	32 53.8 -13.9 108.8	31 57.0 -13.5 108.6	31 00.2 -13.1 108.3	30 03.2 -12.7 108.1	29 06.2 -12.3 107.8
15°	32 39.9 -14.5 110.0	31 43.5 -14.0 109.7	30 47.1 -13.7 109.4	29 50.5 -13.2 109.2	28 53.9 -12.8 109.0
16°	32 25.4 -15.1 111.1	31 29.5 -14.7 110.8	30 33.4 -14.2 110.6	29 37.3 -13.8 110.3	28 41.1 -13.5 110.1
17°	32 10.3 -15.7 112.3	31 14.8 -15.3 112.0	30 19.2 -14.8 111.7	29 23.5 -14.4 111.4	28 27.6 -13.9 111.2
18°	31 54.6 -16.3 113.4	30 59.5 -15.8 113.1	30 04.4 -15.4 112.8	29 09.1 -14.9 112.6	28 13.7 -14.5 112.3
19°	31 38.3 -17.0 114.5	30 43.7 -16.4 114.2	29 49.0 -16.0 113.9	28 54.2 -15.5 113.7	27 59.2 -15.0 113.4
20°	31 21.3 -17.5 115.7	30 27.3 -17.0 115.3	29 33.0 -16.5 115.1	28 38.7 -16.0 114.8	27 44.2 -15.5 114.5
21°	31 03.8 -18.1 116.8	30 10.3 -17.6 116.5	29 16.5 -17.0 116.2	28 22.7 -16.5 115.9	27 28.7 -16.0 115.6
22°	30 45.7 -18.6 117.9	29 52.7 -18.1 117.6	28 59.5 -17.6 117.3	28 06.2 -17.1 117.0	27 12.7 -16.5 116.7
23°	30 27.1 -19.2 119.0	29 34.6 -18.7 118.7	28 41.9 -18.1 118.3	27 49.1 -17.5 118.0	26 56.2 -17.0 117.7
24°	30 07.9 -19.8 120.1	29 15.9 -19.1 119.8	28 23.8 -18.6 119.4	27 31.6 -18.1 119.1	26 39.2 -17.5 118.8
25°	29 48.1 -20.3 121.2	28 56.8 -19.7 120.8	28 05.2 -19.1 120.5	27 13.5 -18.5 120.2	26 21.7 -18.0 119.9
26°	29 27.8 -20.8 122.3	28 37.1 -20.2 121.9	27 46.1 -19.6 121.6	26 55.0 -19.0 121.3	26 03.7 -18.4 120.9
27°	29 07.0 -21.3 123.3	28 16.9 -20.7 123.0	27 26.5 -20.1 122.6	26 36.0 -19.5 122.3	25 45.3 -18.9 122.0
28°	28 45.7 -21.8 124.4	27 56.2 -21.2 124.1	27 06.4 -20.5 123.7	26 16.5 -19.9 123.4	25 26.4 -19.4 123.1
29°	28 23.9 -22.3 125.5	27 35.0 -21.7 125.1	26 45.9 -21.0 124.8	25 56.6 -20.4 124.4	25 07.0 -19.7 124.1

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	29 57.3 -03.9 91.7	28 57.4 -03.9 91.7	27 57.5 -03.8 91.6	26 57.6 -03.8 91.5	25 57.7 -03.7 91.5
1°	29 53.4 -04.6 92.9	28 53.5 -04.4 92.8	27 53.7 -04.4 92.7	26 53.8 -04.3 92.6	25 54.0 -04.3 92.6
2°	29 48.8 -05.1 94.0	28 49.1 -05.1 93.9	27 49.3 -05.0 93.9	26 49.5 -04.8 93.8	25 49.7 -04.8 93.7
3°	29 43.7 -05.7 95.2	28 44.0 -05.6 95.1	27 44.3 -05.4 95.0	26 44.7 -05.4 94.9	25 44.9 -05.2 94.8
4°	29 38.0 -06.3 96.3	28 38.4 -06.1 96.2	27 38.9 -06.1 96.1	26 39.3 -05.9 96.0	25 39.7 -05.8 95.9
5°	29 31.7 -06.9 97.5	28 32.3 -06.7 97.3	27 32.8 -06.5 97.2	26 33.4 -06.4 97.1	25 33.9 -06.2 97.0
6°	29 24.8 -07.5 98.6	28 25.6 -07.3 98.5	27 26.3 -07.1 98.3	26 27.0 -06.9 98.2	25 27.7 -06.8 98.1
7°	29 17.3 -08.0 99.7	28 18.3 -07.9 99.6	27 19.2 -07.6 99.5	26 20.1 -07.5 99.3	25 20.9 -07.2 99.2
8°	29 09.3 -08.6 100.9	28 10.4 -08.4 100.7	27 11.6 -08.2 100.6	26 12.6 -07.9 100.4	25 13.7 -07.7 100.3
9°	29 00.7 -09.2 102.0	28 02.0 -08.9 101.9	27 03.4 -08.7 101.7	26 04.7 -08.4 101.5	25 06.0 -08.2 101.4
10°	28 51.5 -09.8 103.1	27 53.1 -09.5 103.0	26 54.7 -09.2 102.8	25 56.3 -09.0 102.6	24 57.8 -08.7 102.5
11°	28 41.7 -10.3 104.3	27 43.6 -10.0 104.1	26 45.5 -09.7 103.9	25 47.3 -09.4 103.7	24 49.1 -09.2 103.6
12°	28 31.4 -10.8 105.4	27 33.6 -10.5 105.2	26 35.8 -10.2 105.0	25 37.9 -09.9 104.8	24 39.9 -09.6 104.7
13°	28 20.6 -11.4 106.5	27 23.1 -11.1 106.3	26 25.6 -10.8 106.1	25 28.0 -10.4 105.9	24 30.3 -10.1 105.8
14°	28 09.2 -12.0 107.6	27 12.0 -11.6 107.4	26 14.8 -11.2 107.2	25 17.6 -10.9 107.0	24 20.2 -10.5 106.8
15°	27 57.2 -12.5 108.7	27 00.4 -12.1 108.5	26 03.6 -11.7 108.3	25 06.7 -11.4 108.1	24 09.7 -11.0 107.9
16°	27 44.7 -13.0 109.8	26 48.3 -12.6 109.6	25 51.9 -12.3 109.4	24 55.3 -11.8 109.2	23 58.7 -11.5 109.0
17°	27 31.7 -13.5 110.9	26 35.7 -13.1 110.7	25 39.6 -12.7 110.5	24 43.5 -12.3 110.3	23 47.2 -11.9 110.1
18°	27 18.2 -14.0 112.0	26 22.6 -13.6 111.8	25 26.9 -13.1 111.6	24 31.2 -12.8 111.3	23 35.3 -12.3 111.1
19°	27 04.2 -14.6 113.1	26 09.0 -14.1 112.9	25 13.8 -13.7 112.6	24 18.4 -13.2 112.4	23 23.0 -12.8 112.2
20°	26 49.6 -15.0 114.2	25 54.9 -14.5 114.0	25 00.1 -14.1 113.7	24 05.2 -13.6 113.5	23 10.2 -13.2 113.3
21°	26 34.6 -15.5 115.3	25 40.4 -15.1 115.0	24 46.0 -14.5 114.8	23 51.6 -14.1 114.6	22 57.0 -13.6 114.3
22°	26 19.1 -16.0 116.4	25 25.3 -15.5 116.1	24 31.5 -15.0 115.9	23 37.5 -14.5 115.6	22 43.4 -14.0 115.4
23°	26 03.1 -16.5 117.5	25 09.8 -15.9 117.2	24 16.5 -15.5 116.9	23 23.0 -14.9 116.7	22 29.4 -14.4 116.4
24°	25 46.6 -17.0 118.5	24 53.9 -16.4 118.3	24 01.0 -15.9 118.0	23 08.1 -15.4 117.7	22 15.0 -14.9 117.5
25°	25 29.6 -17.4 119.6	24 37.5 -16.9 119.3	23 45.1 -16.3 119.0	22 52.7 -15.8 118.8	22 00.1 -15.2 118.5
26°	25 12.2 -17.8 120.7	24 20.6 -17.3 120.4	23 28.8 -16.7 120.1	22 36.9 -16.2 119.8	21 44.9 -15.7 119.6
27°	24 54.4 -18.3 121.7	24 03.3 -17.7 121.4	23 12.1 -17.1 121.1	22 20.7 -16.5 120.9	21 29.2 -16.0 120.6
28°	24 36.1 -18.8 122.8	23 45.6 -18.1 122.5	22 55.0 -17.6 122.2	22 04.2 -17.0 121.9	21 13.2 -16.4 121.6
29°	24 17.3 -19.1 123.8	23 27.5 -18.6 123.5	22 37.4 -17.9 123.2	21 47.2 -17.4 122.9	20 56.8 -16.7 122.7

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°	24 57.8 -03.7 91.4	23 57.9 -03.7 91.3	22 58.0 -03.6 91.3	21 58.1 -03.6 91.2	20 58.2 -03.6 91.2
1°	24 54.1 -04.2 92.5	23 54.2 -04.1 92.4	22 54.4 -04.1 92.4	21 54.5 -04.0 92.3	20 54.6 -03.9 92.2
2°	24 49.9 -04.7 93.6	23 50.1 -04.6 93.5	22 50.3 -04.5 93.4	21 50.5 -04.4 93.4	20 50.7 -04.4 93.3
3°	24 45.2 -05.1 94.7	23 45.5 -05.0 94.6	22 45.8 -05.0 94.5	21 46.1 -04.9 94.4	20 46.3 -04.7 94.4
4°	24 40.1 -05.6 95.8	23 40.5 -05.5 95.7	22 40.8 -05.3 95.6	21 41.2 -05.3 95.5	20 41.6 -05.2 95.4
5°	24 34.5 -06.1 96.9	23 35.0 -06.0 96.8	22 35.5 -05.9 96.7	21 35.9 -05.6 96.6	20 36.4 -05.5 96.5
6°	24 28.4 -06.6 98.0	23 29.0 -06.4 97.9	22 29.6 -06.2 97.8	21 30.3 -06.1 97.7	20 30.9 -05.9 97.5
7°	24 21.8 -07.1 99.1	23 22.6 -06.9 99.0	22 23.4 -06.7 98.8	21 24.2 -06.5 98.7	20 25.0 -06.4 98.6
8°	24 14.7 -07.5 100.2	23 15.7 -07.3 100.0	22 16.7 -07.1 99.9	21 17.7 -06.9 99.8	20 18.6 -06.7 99.7
9°	24 07.2 -07.9 101.3	23 08.4 -07.7 101.1	22 09.6 -07.5 101.0	21 10.8 -07.3 100.9	20 11.9 -07.0 100.7
10°	23 59.3 -08.5 102.3	23 00.7 -08.2 102.2	22 02.1 -07.9 102.1	21 03.5 -07.7 101.9	20 04.9 -07.5 101.8
11°	23 50.8 -08.8 103.4	22 52.5 -08.6 103.3	21 54.2 -08.3 103.1	20 55.8 -08.1 103.0	19 57.4 -07.8 102.8
12°	23 42.0 -09.4 104.5	22 43.9 -09.0 104.3	21 45.9 -08.8 104.2	20 47.7 -08.4 104.0	19 49.6 -08.2 103.9
13°	23 32.6 -09.7 105.6	22 34.9 -09.5 105.4	21 37.1 -09.2 105.3	20 39.3 -08.9 105.1	19 41.4 -08.6 105.0
14°	23 22.9 -10.3 106.7	22 25.4 -09.9 106.5	21 27.9 -09.5 106.3	20 30.4 -09.2 106.2	19 32.8 -08.9 106.0
15°	23 12.6 -10.6 107.7	22 15.5 -10.3 107.5	21 18.4 -10.0 107.4	20 21.2 -09.6 107.2	19 23.9 -09.3 107.1
16°	23 02.0 -11.1 108.8	22 05.2 -10.7 108.6	21 08.4 -10.3 108.4	20 11.6 -10.0 108.3	19 14.6 -09.6 108.1
17°	22 50.9 -11.5 109.9	21 54.5 -11.1 109.7	20 58.1 -10.8 109.5	20 01.6 -10.4 109.3	19 05.0 -10.0 109.1
18°	22 39.4 -11.9 110.9	21 43.4 -11.5 110.7	20 47.3 -11.1 110.5	19 51.2 -10.7 110.4	18 55.0 -10.4 110.2
19°	22 27.5 -12.4 112.0	21 31.9 -11.9 111.8	20 36.2 -11.5 111.6	19 40.5 -11.1 111.4	18 44.6 -10.6 111.2
20°	22 15.1 -12.7 113.0	21 20.0 -12.3 112.8	20 24.7 -11.9 112.6	19 29.4 -11.5 112.4	18 34.0 -11.1 112.3
21°	22 02.4 -13.2 114.1	21 07.7 -12.7 113.9	20 12.8 -12.2 113.7	19 17.9 -11.8 113.5	18 22.9 -11.3 113.3
22°	21 49.2 -13.5 115.2	20 55.0 -13.1 114.9	20 00.6 -12.6 114.7	19 06.1 -12.1 114.5	18 11.6 -11.7 114.3
23°	21 35.7 -14.0 116.2	20 41.9 -13.5 116.0	19 48.0 -13.0 115.8	18 54.0 -12.5 115.6	17 59.9 -12.1 115.4
24°	21 21.7 -14.3 117.2	20 28.4 -13.8 117.0	19 35.0 -13.3 116.8	18 41.5 -12.9 116.6	17 47.8 -12.3 116.4
25°	21 07.4 -14.7 118.3	20 14.6 -14.2 118.1	19 21.7 -13.7 117.8	18 28.6 -13.1 117.6	17 35.5 -12.7 117.4
26°	20 52.7 -15.1 119.3	20 00.4 -14.6 119.1	19 08.0 -14.0 118.9	18 15.5 -13.5 118.7	17 22.8 -12.9 118.4
27°	20 37.6 -15.4 120.4	19 45.8 -14.9 120.1	18 54.0 -14.4 119.9	18 02.0 -13.9 119.7	17 09.9 -13.3 119.5
28°	20 22.2 -15.9 121.4	19 30.9 -15.2 121.2	18 39.6 -14.7 120.9	17 48.1 -14.1 120.7	16 56.6 -13.6 120.5
29°	20 06.3 -16.1 122.4	19 15.7 -15.6 122.2	18 24.9 -15.0 121.9	17 34.0 -14.4 121.7	16 43.0 -13.9 121.5

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	19 58.3 -03.5 91.1	18 58.4 -03.5 91.0	17 58.5 -03.5 91.0	16 58.6 -03.5 90.9	15 58.6 -03.4 90.9
1°	19 54.8 -04.0 92.2	18 54.9 -03.9 92.1	17 55.0 -03.8 92.0	16 55.1 -03.7 92.0	15 55.2 -03.7 91.9
2°	19 50.8 -04.2 93.2	18 51.0 -04.2 93.1	17 51.2 -04.2 93.1	16 51.4 -04.1 93.0	15 51.5 -04.0 92.9
3°	19 46.6 -04.7 94.3	18 46.8 -04.6 94.2	17 47.0 -04.4 94.1	16 47.3 -04.4 94.0	15 47.5 -04.3 94.0
4°	19 41.9 -05.0 95.3	18 42.2 -04.9 95.2	17 42.6 -04.8 95.2	16 42.9 -04.7 95.1	15 43.2 -04.6 95.0
5°	19 36.9 -05.4 96.4	18 37.3 -05.2 96.3	17 37.8 -05.2 96.2	16 38.2 -05.0 96.1	15 38.6 -04.9 96.0
6°	19 31.5 -05.8 97.4	18 32.1 -05.7 97.4	17 32.6 -05.4 97.3	16 33.2 -05.3 97.2	15 33.7 -05.2 97.1
7°	19 25.7 -06.1 98.5	18 26.4 -05.9 98.4	17 27.2 -05.8 98.3	16 27.9 -05.7 98.2	15 28.5 -05.4 98.1
8°	19 19.6 -06.5 99.6	18 20.5 -06.3 99.5	17 21.4 -06.2 99.3	16 22.2 -05.9 99.2	15 23.1 -05.8 99.1
9°	19 13.1 -06.9 100.6	18 14.2 -06.7 100.5	17 15.2 -06.4 100.4	16 16.3 -06.2 100.3	15 17.3 -06.0 100.2
10°	19 06.2 -07.2 101.7	18 07.5 -07.0 101.5	17 08.8 -06.8 101.4	16 10.1 -06.6 101.3	15 11.3 -06.3 101.2
11°	18 59.0 -07.6 102.7	18 00.5 -07.3 102.6	17 02.0 -07.0 102.5	16 03.5 -06.8 102.4	15 05.0 -06.6 102.2
12°	18 51.4 -07.9 103.8	17 53.2 -07.7 103.6	16 55.0 -07.4 103.5	15 56.7 -07.1 103.4	14 58.4 -06.9 103.3
13°	18 43.5 -08.3 104.8	17 45.5 -07.9 104.7	16 47.6 -07.7 104.5	15 49.6 -07.5 104.4	14 51.5 -07.1 104.3
14°	18 35.2 -08.6 105.9	17 37.6 -08.3 105.7	16 39.9 -08.0 105.6	15 42.1 -07.7 105.4	14 44.4 -07.5 105.3
15°	18 26.6 -09.0 106.9	17 29.3 -08.7 106.8	16 31.9 -08.4 106.6	15 34.4 -08.0 106.5	14 36.9 -07.6 106.4
16°	18 17.6 -09.3 107.9	17 20.6 -08.9 107.8	16 23.5 -08.6 107.6	15 26.4 -08.3 107.5	14 29.3 -08.0 107.4
17°	18 08.3 -09.6 109.0	17 11.7 -09.3 108.8	16 14.9 -08.9 108.7	15 18.1 -08.5 108.5	14 21.3 -08.2 108.4
18°	17 58.7 -09.9 110.0	17 02.4 -09.6 109.9	16 06.0 -09.2 109.7	15 09.6 -08.9 109.6	14 13.1 -08.5 109.4
19°	17 48.8 -10.3 111.1	16 52.8 -09.9 110.9	15 56.8 -09.5 110.7	15 00.7 -09.1 110.6	14 04.6 -08.7 110.4
20°	17 38.5 -10.6 112.1	16 42.9 -10.2 111.9	15 47.3 -09.8 111.8	14 51.6 -09.4 111.6	13 55.9 -09.0 111.5
21°	17 27.9 -11.0 113.1	16 32.7 -10.5 113.0	15 37.5 -10.1 112.8	14 42.2 -09.6 112.6	13 46.9 -09.2 112.5
22°	17 16.9 -11.2 114.2	16 22.2 -10.8 114.0	15 27.4 -10.3 113.8	14 32.6 -09.9 113.6	13 37.7 -09.5 113.5
23°	17 05.7 -11.6 115.2	16 11.4 -11.1 115.0	15 17.1 -10.7 114.8	14 22.7 -10.2 114.7	13 28.2 -09.8 114.5
24°	16 54.1 -11.8 116.2	16 00.3 -11.4 116.0	15 06.4 -10.9 115.9	14 12.5 -10.5 115.7	13 18.4 -09.9 115.5
25°	16 42.3 -12.2 117.2	15 48.9 -11.6 117.0	14 55.5 -11.1 116.9	14 02.0 -10.7 116.7	13 08.5 -10.2 116.5
26°	16 30.1 -12.5 118.3	15 37.3 -12.0 118.1	14 44.4 -11.5 117.9	13 51.3 -10.9 117.7	12 58.3 -10.5 117.6
27°	16 17.6 -12.7 119.3	15 25.3 -12.2 119.1	14 32.9 -11.7 118.9	13 40.4 -11.2 118.7	12 47.8 -10.7 118.6
28°	16 04.9 -13.1 120.3	15 13.1 -12.5 120.1	14 21.2 -12.0 119.9	13 29.2 -11.4 119.7	12 37.1 -10.9 119.6
29°	15 51.8 -13.3 121.3	15 00.6 -12.8 121.1	14 09.2 -12.2 120.9	13 17.8 -11.7 120.7	12 26.2 -11.1 120.6

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	14 58.7 -03.4 90.8	13 58.8 -03.3 90.7	12 58.9 -03.3 90.7	11 59.0 -03.3 90.6	10 59.1 -03.3 90.6
1°	14 55.3 -03.6 91.8	13 55.5 -03.7 91.8	12 55.6 -03.6 91.7	11 55.7 -03.6 91.7	10 55.8 -03.5 91.6
2°	14 51.7 -04.0 92.9	13 51.8 -03.8 92.8	12 52.0 -03.8 92.7	11 52.1 -03.7 92.7	10 52.3 -03.7 92.6
3°	14 47.7 -04.2 93.9	13 48.0 -04.2 93.8	12 48.2 -04.1 93.8	11 48.4 -04.0 93.7	10 48.6 -03.9 93.6
4°	14 43.5 -04.5 94.9	13 43.8 -04.4 94.9	12 44.1 -04.3 94.8	11 44.4 -04.2 94.7	10 44.7 -04.1 94.6
5°	14 39.0 -04.7 96.0	13 39.4 -04.6 95.9	12 39.8 -04.5 95.8	11 40.2 -04.4 95.7	10 40.6 -04.3 95.7
6°	14 34.3 -05.1 97.0	13 34.8 -04.9 96.9	12 35.3 -04.8 96.8	11 35.8 -04.6 96.8	10 36.3 -04.5 96.7
7°	14 29.2 -05.3 98.0	13 29.9 -05.2 97.9	12 30.5 -05.0 97.9	11 31.2 -04.9 97.8	10 31.8 -04.7 97.7
8°	14 23.9 -05.6 99.1	13 24.7 -05.4 99.0	12 25.5 -05.2 98.9	11 26.3 -05.0 98.8	10 27.1 -04.9 98.7
9°	14 18.3 -05.8 100.1	13 19.3 -05.6 100.0	12 20.3 -05.4 99.9	11 21.3 -05.3 99.8	10 22.2 -05.0 99.7
10°	14 12.5 -06.1 101.1	13 13.7 -05.9 101.0	12 14.9 -05.7 100.9	11 16.0 -05.4 100.8	10 17.2 -05.3 100.7
11°	14 06.4 -06.4 102.1	13 07.8 -06.1 102.0	12 09.2 -05.9 101.9	11 10.6 -05.7 101.8	10 11.9 -05.4 101.7
12°	14 00.0 -06.6 103.2	13 01.7 -06.4 103.1	12 03.3 -06.1 102.9	11 04.9 -05.9 102.9	10 06.5 -05.7 102.8
13°	13 53.4 -06.8 104.2	12 55.3 -06.6 104.1	11 57.2 -06.3 104.0	10 59.0 -06.0 103.9	10 00.8 -05.8 103.8
14°	13 46.6 -07.2 105.2	12 48.7 -06.8 105.1	11 50.9 -06.6 105.0	10 53.0 -06.3 104.9	9 55.0 -06.0 104.8
15°	13 39.4 -07.3 106.2	12 41.9 -07.1 106.1	11 44.3 -06.8 106.0	10 46.7 -06.5 105.9	9 49.0 -06.1 105.8
16°	13 32.1 -07.7 107.2	12 34.8 -07.3 107.1	11 37.5 -06.9 107.0	10 40.2 -06.6 106.9	9 42.9 -06.4 106.8
17°	13 24.4 -07.8 108.3	12 27.5 -07.5 108.1	11 30.6 -07.2 108.0	10 33.6 -06.9 107.9	9 36.5 -06.5 107.8
18°	13 16.6 -08.2 109.3	12 20.0 -07.8 109.2	11 23.4 -07.4 109.0	10 26.7 -07.0 108.9	9 30.0 -06.7 108.8
19°	13 08.4 -08.3 110.3	12 12.2 -08.0 110.2	11 16.0 -07.6 110.1	10 19.7 -07.3 109.9	9 23.3 -06.9 109.8
20°	13 00.1 -08.6 111.3	12 04.2 -08.1 111.2	11 08.4 -07.8 111.1	10 12.4 -07.4 110.9	9 16.4 -07.0 110.8
21°	12 51.5 -08.8 112.3	11 56.1 -08.5 112.2	11 00.6 -08.1 112.1	10 05.0 -07.6 112.0	9 09.4 -07.2 111.8
22°	12 42.7 -09.1 113.4	11 47.6 -08.6 113.2	10 52.5 -08.2 113.1	9 57.4 -07.8 113.0	9 02.2 -07.4 112.8
23°	12 33.6 -09.3 114.4	11 39.0 -08.8 114.2	10 44.3 -08.4 114.1	9 49.6 -07.9 114.0	8 54.8 -07.5 113.8
24°	12 24.3 -09.5 115.4	11 30.2 -09.1 115.2	10 35.9 -08.6 115.1	9 41.7 -08.2 115.0	8 47.3 -07.7 114.8
25°	12 14.8 -09.7 116.4	11 21.1 -09.2 116.2	10 27.3 -08.7 116.1	9 33.5 -08.3 116.0	8 39.6 -07.8 115.9
26°	12 05.1 -09.9 117.4	11 11.9 -09.5 117.2	10 18.6 -09.0 117.1	9 25.2 -08.5 117.0	8 31.8 -08.0 116.9
27°	11 55.2 -10.2 118.4	11 02.4 -09.6 118.3	10 09.6 -09.1 118.1	9 16.7 -08.6 118.0	8 23.8 -08.2 117.9
28°	11 45.0 -10.4 119.4	10 52.8 -09.9 119.3	10 00.5 -09.4 119.1	9 08.1 -08.8 119.0	8 15.6 -08.3 118.9
29°	11 34.6 -10.6 120.4	10 42.9 -10.0 120.3	9 51.1 -09.5 120.1	8 59.3 -09.0 120.0	8 07.3 -08.4 119.9

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 59.2 -03.3 90.5	8 59.3 -03.3 90.5	7 59.3 -03.2 90.4	6 59.4 -03.2 90.4	5 59.5 -03.2 90.3
1°	9 55.9 -03.5 91.5	8 56.0 -03.4 91.5	7 56.1 -03.4 91.4	6 56.2 -03.4 91.4	5 56.3 -03.3 91.3
2°	9 52.4 -03.6 92.6	8 52.6 -03.6 92.5	7 52.7 -03.5 92.4	6 52.8 -03.4 92.4	5 53.0 -03.5 92.3
3°	9 48.8 -03.8 93.6	8 49.0 -03.8 93.5	7 49.2 -03.7 93.4	6 49.4 -03.6 93.4	5 49.5 -03.5 93.3
4°	9 45.0 -04.0 94.6	8 45.2 -03.9 94.5	7 45.5 -03.8 94.5	6 45.8 -03.8 94.4	5 46.0 -03.6 94.3
5°	9 41.0 -04.2 95.6	8 41.3 -04.1 95.5	7 41.7 -04.0 95.5	6 42.0 -03.8 95.4	5 42.4 -03.8 95.3
6°	9 36.8 -04.4 96.6	8 37.2 -04.2 96.5	7 37.7 -04.1 96.5	6 38.2 -04.0 96.4	5 38.6 -03.8 96.3
7°	9 32.4 -04.5 97.6	8 33.0 -04.4 97.5	7 33.6 -04.2 97.5	6 34.2 -04.1 97.4	5 34.8 -04.0 97.3
8°	9 27.9 -04.7 98.6	8 28.6 -04.5 98.6	7 29.4 -04.4 98.5	6 30.1 -04.2 98.4	5 30.8 -04.0 98.3
9°	9 23.2 -04.9 99.6	8 24.1 -04.7 99.6	7 25.0 -04.5 99.5	6 25.9 -04.3 99.4	5 26.8 -04.2 99.3
10°	9 18.3 -05.1 100.6	8 19.4 -04.8 100.6	7 20.5 -04.7 100.5	6 21.6 -04.5 100.4	5 22.6 -04.2 100.3
11°	9 13.2 -05.2 101.7	8 14.6 -05.0 101.6	7 15.8 -04.7 101.5	6 17.1 -04.5 101.4	5 18.4 -04.4 101.3
12°	9 08.0 -05.4 102.7	8 09.6 -05.2 102.6	7 11.1 -04.9 102.5	6 12.6 -04.7 102.4	5 14.0 -04.4 102.3
13°	9 02.6 -05.5 103.7	8 04.4 -05.3 103.6	7 06.2 -05.1 103.5	6 07.9 -04.8 103.4	5 09.6 -04.5 103.4
14°	8 57.1 -05.7 104.7	7 59.1 -05.4 104.6	7 01.1 -05.1 104.5	6 03.1 -04.9 104.4	5 05.1 -04.7 104.4
15°	8 51.4 -05.9 105.7	7 53.7 -05.6 105.6	6 56.0 -05.3 105.5	5 58.2 -05.0 105.4	5 00.4 -04.7 105.4
16°	8 45.5 -06.0 106.7	7 48.1 -05.7 106.6	6 50.7 -05.5 106.5	5 53.2 -05.1 106.4	4 55.7 -04.8 106.4
17°	8 39.5 -06.2 107.7	7 42.4 -05.9 107.6	6 45.2 -05.5 107.5	5 48.1 -05.2 107.4	4 50.9 -04.9 107.4
18°	8 33.3 -06.4 108.7	7 36.5 -06.0 108.6	6 39.7 -05.7 108.5	5 42.9 -05.3 108.4	4 46.0 -05.0 108.4
19°	8 26.9 -06.5 109.7	7 30.5 -06.1 109.6	6 34.0 -05.7 109.5	5 37.6 -05.5 109.4	4 41.0 -05.0 109.4
20°	8 20.4 -06.6 110.7	7 24.4 -06.3 110.6	6 28.3 -05.9 110.5	5 32.1 -05.5 110.4	4 36.0 -05.2 110.4
21°	8 13.8 -06.8 111.7	7 18.1 -06.4 111.6	6 22.4 -06.1 111.5	5 26.6 -05.6 111.4	4 30.8 -05.2 111.4
22°	8 07.0 -07.0 112.7	7 11.7 -06.6 112.6	6 16.3 -06.1 112.5	5 21.0 -05.7 112.4	4 25.3 -05.3 112.4
23°	8 00.0 -07.1 113.7	7 05.1 -06.6 113.6	6 10.2 -06.2 113.5	5 15.3 -05.9 113.4	4 20.3 -05.4 113.4
24°	7 52.9 -07.2 114.7	6 58.5 -06.8 114.6	6 04.0 -06.4 114.5	5 09.4 -05.9 114.4	4 14.9 -05.5 114.4
25°	7 45.7 -07.4 115.7	6 51.7 -06.9 115.6	5 57.6 -06.4 115.5	5 03.5 -06.0 115.4	4 09.4 -05.5 115.3
26°	7 38.3 -07.5 116.7	6 44.8 -07.1 116.6	5 51.2 -06.6 116.5	4 57.5 -06.1 116.4	4 03.9 -05.7 116.3
27°	7 30.8 -07.7 117.7	6 37.7 -07.1 117.6	5 44.6 -06.7 117.5	4 51.4 -06.1 117.4	3 58.2 -05.6 117.3
28°	7 23.1 -07.8 118.7	6 30.6 -07.3 118.6	5 37.9 -06.7 118.5	4 45.3 -06.3 118.4	3 52.6 -05.8 118.3
29°	7 15.3 -07.9 119.7	6 23.3 -07.4 119.6	5 31.2 -06.9 119.5	4 39.0 -06.3 119.4	3 46.8 -05.8 119.3

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 59.6 -03.2 90.3	3 59.7 -03.2 90.2	2 59.8 -03.2 90.2	1 59.8 -03.1 90.1	0 59.9 -03.1 90.1
1°	4 56.4 -03.3 91.3	3 56.5 -03.3 91.2	2 56.6 -03.2 91.2	1 56.7 -03.2 91.1	0 56.8 -03.2 91.1
2°	4 53.1 -03.4 92.3	3 53.2 -03.3 92.2	2 53.4 -03.3 92.2	1 53.5 -03.3 92.1	0 53.6 -03.2 92.0
3°	4 49.7 -03.4 93.3	3 49.9 -03.4 93.2	2 50.1 -03.4 93.2	1 50.2 -03.2 93.1	0 50.4 -03.2 93.0
4°	4 46.3 -03.6 94.3	3 46.5 -03.5 94.2	2 46.7 -03.3 94.2	1 47.0 -03.3 94.1	0 47.2 -03.2 94.0
5°	4 42.7 -03.6 95.3	3 43.0 -03.5 95.2	2 43.4 -03.5 95.2	1 43.7 -03.3 95.1	0 44.0 -03.2 95.0
6°	4 39.1 -03.8 96.3	3 39.5 -03.6 96.2	2 39.9 -03.4 96.2	1 40.4 -03.4 96.1	0 40.8 -03.3 96.0
7°	4 35.3 -03.8 97.3	3 35.9 -03.7 97.2	2 36.5 -03.6 97.2	1 37.0 -03.4 97.1	0 37.5 -03.2 97.0
8°	4 31.5 -03.9 98.3	3 32.2 -03.7 98.2	2 32.9 -03.5 98.2	1 33.6 -03.4 98.1	0 34.3 -03.3 98.0
9°	4 27.6 -03.9 99.3	3 28.5 -03.8 99.2	2 29.4 -03.7 99.2	1 30.2 -03.4 99.1	0 31.0 -03.2 99.0
10°	4 23.7 -04.1 100.3	3 24.7 -03.8 100.2	2 25.7 -03.6 100.2	1 26.8 -03.5 100.1	0 27.8 -03.3 100.0
11°	4 19.6 -04.1 101.3	3 20.9 -04.0 101.2	2 22.1 -03.7 101.2	1 23.3 -03.5 101.1	0 24.5 -03.3 101.0
12°	4 15.5 -04.2 102.3	3 16.9 -03.9 102.2	2 18.4 -03.8 102.2	1 19.8 -03.5 102.1	0 21.2 -03.3 102.0
13°	4 11.3 -04.3 103.3	3 13.0 -04.1 103.2	2 14.6 -03.8 103.1	1 16.3 -03.6 103.1	0 17.9 -03.3 103.0
14°	4 07.0 -04.4 104.3	3 08.9 -04.1 104.2	2 10.8 -03.8 104.1	1 12.7 -03.5 104.1	0 14.6 -03.3 104.0
15°	4 02.6 -04.4 105.3	3 04.8 -04.1 105.2	2 07.0 -03.9 105.1	1 09.2 -03.6 105.1	0 11.3 -03.3 105.0
16°	3 58.2 -04.5 106.3	3 00.7 -04.2 106.2	2 03.1 -03.9 106.1	1 05.6 -03.6 106.1	0 08.0 -03.3 106.0
17°	3 53.7 -04.6 107.3	2 56.5 -04.3 107.2	1 59.2 -03.9 107.1	1 02.0 -03.6 107.1	0 04.7 -03.3 107.0
18°	3 49.1 -04.6 108.3	2 52.2 -04.3 108.2	1 55.3 -04.0 108.1	0 58.4 -03.7 108.1	0 01.4 -03.3 108.0
19°	3 44.5 -04.7 109.3	2 47.9 -04.3 109.2	1 51.3 -04.0 109.1	0 54.7 -03.6 109.1	-0 01.9 -03.3
20°	3 39.8 -04.8 110.3	2 43.6 -04.4 110.2	1 47.3 -04.0 110.1	0 51.1 -03.7 110.1	-0 05.2 -03.3
21°	3 35.0 -04.8 111.3	2 39.2 -04.5 111.2	1 43.3 -04.1 111.1	0 47.4 -03.7 111.1	-0 08.5 -03.3
22°	3 30.2 -05.0 112.3	2 34.7 -04.5 112.2	1 39.2 -04.1 112.1	0 43.7 -03.7 112.1	-0 11.8 -03.3
23°	3 25.2 -04.9 113.3	2 30.2 -04.6 113.2	1 35.1 -04.1 113.1	0 40.0 -03.7 113.1	-0 15.1 -03.3
24°	3 20.3 -05.1 114.3	2 25.6 -04.6 114.2	1 31.0 -04.2 114.1	0 36.3 -03.8 114.1	-0 18.4 -03.3
25°	3 15.2 -05.0 115.3	2 21.0 -04.6 115.2	1 26.8 -04.2 115.1	0 32.5 -03.7 115.1	-0 21.7 -03.3
26°	3 10.2 -05.2 116.3	2 16.4 -04.7 116.2	1 22.6 -04.2 116.1	0 28.8 -03.7 116.1	-0 25.0 -03.3
27°	3 05.0 -05.2 117.3	2 11.7 -04.7 117.2	1 18.4 -04.2 117.1	0 25.1 -03.8 117.1	-0 28.3 -03.3
28°	2 59.8 -05.3 118.3	2 07.0 -04.7 118.2	1 14.2 -04.3 118.1	0 21.3 -03.7 118.1	-0 31.6 -03.2
29°	2 54.5 -05.3 119.3	2 02.3 -04.8 119.2	1 09.9 -04.3 119.1	0 17.6 -03.8 119.1	-0 34.8 -03.3

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 -03.1 90.0	-0 59.9 -03.1			
1°	-0 03.1 -03.2	-1 03.0 -03.2			
2°	-0 06.3 -03.1	-1 06.2 -03.1			
3°	-0 09.4 -03.2	-1 09.3 -03.0			
4°	-0 12.6 -03.1	-1 12.3 -03.1			
5°	-0 15.7 -03.1	-1 15.4 -03.0			
6°	-0 18.8 -03.1	-1 18.4 -03.0			
7°	-0 21.9 -03.1	-1 21.4 -03.0			
8°	-0 25.0 -03.1	-1 24.4 -02.9			
9°	-0 28.1 -03.1	-1 27.3 -03.0			
10°	-0 31.2 -03.1	-1 30.3 -02.9			
11°	-0 34.3 -03.1	-1 33.2 -02.8			
12°	-0 37.4 -03.1	-1 36.0 -02.9			
13°	-0 40.5 -03.0	-1 38.9 -02.8			
14°	-0 43.5 -03.1	-1 41.7 -02.8			
15°	-0 46.6 -03.0	-1 44.5 -02.7			
16°	-0 49.6 -03.0	-1 47.2 -02.7			
17°	-0 52.6 -03.0	-1 49.9 -02.7			
18°	-0 55.6 -03.0	-1 52.6 -02.6			
19°	-0 58.6 -02.9	-1 55.2 -02.7			
20°	-1 01.5 -03.0	-1 57.9 -02.5			
21°	-1 04.5 -02.9	-2 00.4 -02.6			
22°	-1 07.4 -02.9	-2 03.0 -02.5			
23°	-1 10.3 -02.9	-2 05.5 -02.4			
24°	-1 13.2 -02.8	-2 07.9 -02.5			
25°	-1 16.0 -02.9	-2 10.4 -02.4			
26°	-1 18.9 -02.8	-2 12.8 -02.3			
27°	-1 21.7 -02.8	-2 15.1 -02.3			
28°	-1 24.5 -02.7	-2 17.4 -02.3			
29°	-1 27.2 -02.8	-2 19.7 -02.2			

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

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	86 00.0 -60.0 180.0	85 52.6 -58.5 166.0	85 31.7 -54.8 153.4	85 00.1 -49.9 143.1	84 20.7 -44.8 134.9
1°	85 00.0 -60.0 180.0	84 54.1 -59.1 168.7	84 36.9 -56.4 158.2	84 10.2 -52.6 149.0	83 35.9 -48.5 141.3
2°	84 00.0 -60.0 180.0	83 55.0 -59.3 170.5	83 40.5 -57.3 161.5	83 17.6 -54.5 153.4	82 47.4 -51.1 146.3
3°	83 00.0 -60.0 180.0	82 55.7 -59.4 171.9	82 43.2 -57.9 164.0	82 23.1 -55.7 156.8	81 56.3 -52.9 150.2
4°	82 00.0 -60.0 180.0	81 56.3 -59.6 172.9	81 45.3 -58.4 166.0	81 27.4 -56.5 159.4	81 03.4 -54.2 153.4
5°	81 00.0 -60.0 180.0	80 56.7 -59.7 173.7	80 46.9 -58.7 167.5	80 30.9 -57.2 161.6	80 09.2 -55.3 156.0
6°	80 00.0 -60.0 180.0	79 57.0 -59.7 174.3	79 48.2 -59.0 168.7	79 33.7 -57.7 163.3	79 13.9 -56.0 158.2
7°	79 00.0 -60.0 180.0	78 57.3 -59.8 174.8	78 49.2 -59.1 169.7	78 36.0 -58.1 164.8	78 17.9 -56.7 160.0
8°	78 00.0 -60.0 180.0	77 57.5 -59.8 175.2	77 50.1 -59.2 170.6	77 37.9 -58.3 166.0	77 21.2 -57.1 161.6
9°	77 00.0 -60.0 180.0	76 57.7 -59.8 175.6	76 50.9 -59.4 171.3	76 39.6 -58.5 167.1	76 24.1 -57.5 163.0
10°	76 00.0 -60.0 180.0	75 57.9 -59.9 175.9	75 51.5 -59.4 171.9	75 41.1 -58.8 168.0	75 26.6 -57.8 164.1
11°	75 00.0 -60.0 180.0	74 58.0 -59.9 176.2	74 52.1 -59.5 172.5	74 42.3 -58.8 168.8	74 28.8 -58.0 165.2
12°	74 00.0 -60.0 180.0	73 58.1 -59.8 176.5	73 52.6 -59.5 172.9	73 43.5 -59.0 169.5	73 30.8 -58.3 166.1
13°	73 00.0 -60.0 180.0	72 58.3 -59.9 176.7	72 53.1 -59.6 173.4	72 44.5 -59.2 170.1	72 32.5 -58.4 166.9
14°	72 00.0 -60.0 180.0	71 58.4 -59.9 176.9	71 53.5 -59.7 173.7	71 45.3 -59.2 170.7	71 34.1 -58.6 167.6
15°	71 00.0 -60.0 180.0	70 58.5 -60.0 177.0	70 53.8 -59.7 174.1	70 46.1 -59.2 171.2	70 35.5 -58.8 168.3
16°	70 00.0 -60.0 180.0	69 58.5 -59.9 177.2	69 54.1 -59.7 174.4	69 46.9 -59.4 171.6	69 36.7 -58.8 168.9
17°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.3	68 54.4 -59.7 174.7	68 47.5 -59.4 172.0	68 37.9 -58.9 169.5
18°	68 00.0 -60.0 180.0	67 58.7 -60.0 177.5	67 54.7 -59.7 174.9	67 48.1 -59.4 172.4	67 39.0 -59.1 170.0
19°	67 00.0 -60.0 180.0	66 58.7 -59.9 177.6	66 55.0 -59.8 175.2	66 48.7 -59.5 172.8	66 39.9 -59.1 170.4
20°	66 00.0 -60.0 180.0	65 58.8 -60.0 177.7	65 55.2 -59.8 175.4	65 49.2 -59.5 173.1	65 40.8 -59.1 170.8
21°	65 00.0 -60.0 180.0	64 58.8 -59.9 177.8	64 55.4 -59.8 175.6	64 49.7 -59.6 173.4	64 41.7 -59.3 171.2
22°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.9	63 55.6 -59.8 175.8	63 50.1 -59.6 173.7	63 42.4 -59.3 171.6
23°	63 00.0 -60.0 180.0	62 58.9 -59.9 178.0	62 55.8 -59.9 176.0	62 50.5 -59.6 173.9	62 43.1 -59.3 171.9
24°	62 00.0 -60.0 180.0	61 59.0 -60.0 178.1	61 55.9 -59.8 176.1	61 50.9 -59.7 174.2	61 43.8 -59.4 172.3
25°	61 00.0 -60.0 180.0	60 59.0 -59.9 178.1	60 56.1 -59.9 176.3	60 51.2 -59.6 174.4	60 44.4 -59.4 172.6
26°	60 00.0 -60.0 180.0	59 59.1 -60.0 178.2	59 56.2 -59.8 176.4	59 51.6 -59.7 174.6	59 45.0 -59.4 172.9
27°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.3	58 56.4 -59.9 176.5	58 51.9 -59.7 174.8	58 45.6 -59.5 173.1
28°	58 00.0 -60.0 180.0	57 59.1 -59.9 178.3	57 56.5 -59.9 176.7	57 52.2 -59.7 175.0	57 46.1 -59.5 173.4
29°	57 00.0 -60.0 180.0	56 59.2 -60.0 178.4	56 56.6 -59.8 176.8	56 52.5 -59.8 175.2	56 46.6 -59.5 173.6

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	83 36.0 -40.1 128.6	82 47.6 -36.0 123.6	81 56.6 -32.5 119.6	81 03.7 -29.5 116.4	80 09.5 -26.9 113.8
1°	82 55.9 -44.4 134.9	82 11.6 -40.6 129.7	81 24.1 -37.1 125.4	80 34.2 -34.0 121.9	79 42.6 -31.3 118.9
2°	82 11.5 -47.5 140.1	81 31.0 -44.0 134.9	80 47.0 -40.8 130.5	80 00.2 -37.8 126.7	79 11.3 -35.1 123.5
3°	81 24.0 -49.9 144.4	80 47.0 -46.8 139.3	80 06.2 -43.8 134.9	79 22.4 -40.9 131.1	78 36.2 -38.4 127.8
4°	80 34.1 -51.7 148.0	80 00.2 -49.0 143.1	79 22.4 -46.2 138.8	78 41.5 -43.7 134.9	77 57.8 -41.1 131.6
5°	79 42.4 -53.0 150.9	79 11.2 -50.7 146.3	78 36.2 -48.3 142.1	77 57.8 -45.7 138.3	77 16.7 -43.4 135.0
6°	78 49.4 -54.1 153.4	78 20.5 -52.0 149.0	77 47.9 -49.8 145.0	77 12.1 -47.7 141.3	76 33.3 -45.4 138.0
7°	77 55.3 -55.0 155.6	77 28.5 -53.1 151.4	76 58.1 -51.1 147.6	76 24.4 -49.1 144.0	75 47.9 -47.1 140.7
8°	77 00.3 -55.7 157.4	76 35.4 -54.0 153.5	76 07.0 -52.3 149.8	75 35.3 -50.4 146.4	75 00.8 -48.5 143.2
9°	76 04.6 -56.2 159.0	75 41.4 -54.7 155.3	75 14.7 -53.1 151.8	74 44.9 -51.4 148.5	74 12.3 -49.8 145.4
10°	75 08.4 -56.6 160.4	74 46.7 -55.4 156.9	74 21.6 -53.9 153.6	73 53.5 -52.4 150.4	73 22.5 -50.8 147.4
11°	74 11.8 -57.1 161.7	73 51.3 -55.9 158.3	73 27.7 -54.6 155.1	73 01.1 -53.2 152.1	72 31.7 -51.6 149.2
12°	73 14.7 -57.3 162.8	72 55.4 -56.3 159.6	72 33.1 -55.1 156.6	72 07.9 -53.8 153.7	71 40.1 -52.5 150.9
13°	72 17.4 -57.7 163.8	71 59.1 -56.6 160.8	71 38.0 -55.6 157.9	71 14.1 -54.4 155.1	70 47.6 -53.1 152.4
14°	71 19.7 -57.8 164.7	71 02.5 -57.0 161.8	70 42.4 -56.0 159.0	70 19.7 -54.9 156.3	69 54.5 -53.8 153.8
15°	70 21.9 -58.1 165.5	70 05.5 -57.2 162.8	69 46.4 -56.3 160.1	69 24.8 -55.3 157.5	69 00.7 -54.2 155.0
16°	69 23.8 -58.2 166.2	69 08.3 -57.5 163.6	68 50.1 -56.6 161.1	68 29.5 -55.8 158.6	68 06.5 -54.7 156.2
17°	68 25.6 -58.3 166.9	68 10.8 -57.7 164.4	67 53.5 -57.0 162.0	67 33.7 -56.0 159.6	67 11.8 -55.2 157.3
18°	67 27.3 -58.5 167.5	67 13.1 -57.9 165.1	66 56.5 -57.1 162.8	66 37.7 -56.3 160.5	66 16.6 -55.4 158.3
19°	66 28.8 -58.7 168.1	66 15.2 -58.0 165.8	65 59.4 -57.4 163.5	65 41.4 -56.7 161.4	65 21.2 -55.8 159.2
20°	65 30.1 -58.7 168.6	65 17.2 -58.2 166.4	65 02.0 -57.5 164.3	64 44.7 -56.8 162.1	64 25.4 -56.1 160.1
21°	64 31.4 -58.8 169.1	64 19.0 -58.3 167.0	64 04.5 -57.7 164.9	63 47.9 -57.1 162.9	63 29.3 -56.4 160.9
22°	63 32.6 -58.9 169.5	63 20.7 -58.4 167.5	63 06.8 -57.9 165.5	62 50.8 -57.2 163.6	62 32.9 -56.5 161.7
23°	62 33.7 -58.9 170.0	62 22.3 -58.5 168.0	62 08.9 -58.0 166.1	61 53.6 -57.4 164.2	61 36.4 -56.8 162.4
24°	61 34.8 -59.0 170.4	61 23.8 -58.6 168.5	61 10.9 -58.1 166.6	60 56.2 -57.6 164.8	60 39.6 -57.0 163.0
25°	60 35.8 -59.1 170.7	60 25.2 -58.7 168.9	60 12.8 -58.2 167.2	59 58.6 -57.7 165.4	59 42.6 -57.1 163.7
26°	59 36.7 -59.2 171.1	59 26.5 -58.7 169.4	59 14.6 -58.4 167.6	59 00.9 -57.9 165.9	58 45.5 -57.3 164.3
27°	58 37.5 -59.1 171.4	58 27.8 -58.9 169.7	58 16.2 -58.4 168.1	58 03.0 -57.9 166.4	57 48.2 -57.4 164.8
28°	57 38.4 -59.3 171.7	57 28.9 -58.9 170.1	57 17.8 -58.5 168.5	57 05.1 -58.1 166.9	56 50.8 -57.6 165.4
29°	56 39.1 -59.2 172.0	56 30.0 -58.9 170.5	56 19.3 -58.6 168.9	56 07.0 -58.1 167.4	55 53.2 -57.7 165.9

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°	79 14.2 -24.7 111.6	78 18.2 -22.8 109.7	77 21.6 -21.2 108.2	76 24.5 -19.7 106.8	75 27.0 -18.4 105.6
1°	78 49.5 -28.9 116.4	77 55.4 -26.8 114.2	77 00.4 -25.0 112.4	76 04.8 -23.4 110.8	75 08.6 -22.0 109.4
2°	78 20.6 -32.7 120.8	77 28.6 -30.5 118.4	76 35.4 -28.5 116.4	75 41.4 -26.8 114.6	74 46.6 -25.3 113.0
3°	77 47.9 -35.9 124.9	76 58.1 -33.8 122.3	76 06.9 -31.7 120.1	75 14.6 -29.9 118.1	74 21.3 -28.2 116.4
4°	77 12.0 -38.7 128.6	76 24.3 -36.5 125.9	75 35.2 -34.6 123.6	74 44.7 -32.7 121.5	73 53.1 -30.9 119.6
5°	76 33.3 -41.2 131.9	75 47.8 -39.1 129.2	75 00.6 -37.0 126.8	74 12.0 -35.2 124.6	73 22.2 -33.5 122.6
6°	75 52.1 -43.3 135.0	75 08.7 -41.2 132.3	74 23.6 -39.3 129.8	73 36.8 -37.4 127.5	72 48.7 -35.7 125.5
7°	75 08.8 -45.1 137.8	74 27.5 -43.1 135.0	73 44.3 -41.3 132.5	72 59.4 -39.5 130.3	72 13.0 -37.8 128.2
8°	74 23.7 -46.6 140.3	73 44.4 -44.8 137.6	73 03.0 -43.0 135.1	72 19.9 -41.3 132.8	71 35.2 -39.6 130.7
9°	73 37.1 -48.0 142.5	72 59.6 -46.3 139.9	72 20.0 -44.5 137.4	71 38.6 -42.8 135.1	70 55.6 -41.2 133.0
10°	72 49.1 -49.2 144.6	72 13.3 -47.5 142.0	71 35.5 -45.9 139.6	70 55.8 -44.3 137.3	70 14.4 -42.8 135.2
11°	71 59.9 -50.2 146.5	71 25.8 -48.6 144.0	70 49.6 -47.1 141.6	70 11.5 -45.6 139.3	69 31.6 -44.0 137.2
12°	71 09.7 -51.0 148.3	70 37.2 -49.7 145.8	70 02.5 -48.2 143.4	69 25.9 -46.7 141.2	68 47.6 -45.3 139.1
13°	70 18.7 -51.8 149.9	69 47.5 -50.4 147.4	69 14.3 -49.1 145.1	68 39.2 -47.8 143.0	68 02.3 -46.4 140.9
14°	69 26.9 -52.6 151.3	68 57.1 -51.3 149.0	68 25.2 -50.0 146.7	67 51.4 -48.6 144.6	67 15.9 -47.3 142.6
15°	68 34.3 -53.1 152.7	68 05.8 -51.9 150.4	67 35.2 -50.7 148.2	67 02.8 -49.5 146.1	66 28.6 -48.2 144.2
16°	67 41.2 -53.6 153.9	67 13.9 -52.6 151.7	66 44.5 -51.3 149.6	66 13.3 -50.2 147.6	65 40.4 -49.0 145.6
17°	66 47.6 -54.1 155.1	66 21.3 -53.0 152.9	65 53.2 -52.0 150.9	65 23.1 -50.8 148.9	64 51.4 -49.8 147.0
18°	65 53.5 -54.6 156.2	65 28.3 -53.6 154.1	65 01.2 -52.6 152.1	64 32.3 -51.5 150.2	64 01.6 -50.4 148.3
19°	64 58.9 -54.9 157.2	64 34.7 -54.0 155.1	64 08.6 -53.0 153.2	63 40.8 -52.0 151.3	63 11.2 -50.9 149.5
20°	64 04.0 -55.3 158.1	63 40.7 -54.3 156.1	63 15.6 -53.4 154.3	62 48.8 -52.5 152.4	62 20.3 -51.5 150.7
21°	63 08.7 -55.5 159.0	62 46.4 -54.8 157.1	62 22.2 -53.9 155.3	61 56.3 -53.0 153.5	61 28.8 -52.1 151.8
22°	62 13.2 -55.8 159.8	61 51.6 -55.0 158.0	61 28.3 -54.2 156.2	61 03.3 -53.3 154.5	60 36.7 -52.4 152.8
23°	61 17.4 -56.1 160.6	60 56.6 -55.4 158.8	60 34.1 -54.6 157.1	60 10.0 -53.8 155.4	59 44.3 -52.9 153.8
24°	60 21.3 -56.3 161.3	60 01.2 -55.6 159.6	59 39.5 -54.8 157.9	59 16.2 -54.0 156.3	58 51.4 -53.2 154.7
25°	59 25.0 -56.6 162.0	59 05.6 -55.8 160.3	58 44.7 -55.2 158.7	58 22.2 -54.4 157.1	57 58.2 -53.6 155.6
26°	58 28.4 -56.7 162.6	58 09.8 -56.1 161.0	57 49.5 -55.3 159.5	57 27.8 -54.7 157.9	57 04.6 -54.0 156.4
27°	57 31.7 -56.8 163.3	57 13.7 -56.2 161.7	56 54.2 -55.7 160.2	56 33.1 -54.9 158.7	56 10.6 -54.2 157.2
28°	56 34.9 -57.1 163.8	56 17.5 -56.5 162.3	55 58.5 -55.8 160.8	55 38.2 -55.2 159.4	55 16.4 -54.4 158.0
29°	55 37.8 -57.1 164.4	55 21.0 -56.6 162.9	55 02.7 -56.0 161.5	54 43.0 -55.4 160.1	54 22.0 -54.8 158.7

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°	74 29.3 -17.4 104.6	73 31.2 -16.4 103.7	72 33.0 -15.6 102.9	71 34.5 -14.7 102.1	70 35.9 -14.0 101.5
1°	74 11.9 -20.7 108.1	73 14.8 -19.5 107.0	72 17.4 -18.5 106.1	71 19.8 -17.6 105.2	70 21.9 -16.7 104.4
2°	73 51.2 -23.8 111.6	72 55.3 -22.6 110.3	71 58.9 -21.4 109.2	71 02.2 -20.3 108.1	70 05.2 -19.4 107.2
3°	73 27.4 -26.8 114.8	72 32.7 -25.3 113.4	71 37.5 -24.0 112.1	70 41.9 -23.0 111.0	69 45.8 -21.9 110.0
4°	73 00.6 -29.3 117.9	72 07.4 -28.0 116.4	71 13.5 -26.7 115.0	70 18.9 -25.3 113.8	69 23.9 -24.2 112.6
5°	72 31.3 -31.9 120.9	71 39.4 -30.3 119.2	70 46.8 -28.9 117.8	69 53.6 -27.7 116.4	68 59.7 -26.5 115.2
6°	71 59.4 -34.1 123.6	71 09.1 -32.6 121.9	70 17.9 -31.2 120.4	69 25.9 -29.9 119.0	68 33.2 -28.6 117.7
7°	71 25.3 -36.1 126.3	70 36.5 -34.6 124.5	69 46.7 -33.2 122.9	68 56.0 -31.8 121.4	68 04.6 -30.6 120.1
8°	70 49.2 -38.0 128.7	70 01.9 -36.5 126.9	69 13.5 -35.0 125.3	68 24.2 -33.7 123.8	67 34.0 -32.4 122.3
9°	70 11.2 -39.7 131.0	69 25.4 -38.2 129.2	68 38.5 -36.8 127.5	67 50.5 -35.4 126.0	67 01.6 -34.1 124.5
10°	69 31.5 -41.3 133.2	68 47.2 -39.8 131.4	68 01.7 -38.3 129.7	67 15.1 -37.0 128.1	66 27.5 -35.7 126.6
11°	68 50.2 -42.6 135.3	68 07.4 -41.1 133.4	67 23.4 -39.8 131.7	66 38.1 -38.4 130.1	65 51.8 -37.1 128.6
12°	68 07.6 -43.8 137.2	67 26.3 -42.5 135.4	66 43.6 -41.2 133.6	65 59.7 -39.9 132.0	65 14.7 -38.6 130.5
13°	67 23.8 -45.0 139.0	66 43.8 -43.7 137.2	66 02.4 -42.3 135.5	65 19.8 -41.0 133.8	64 36.1 -39.8 132.3
14°	66 38.8 -46.1 140.7	66 00.1 -44.7 138.9	65 20.1 -43.5 137.2	64 38.8 -42.2 135.6	63 56.3 -41.0 134.0
15°	65 52.7 -46.9 142.3	65 15.4 -45.7 140.5	64 36.6 -44.4 138.8	63 56.6 -43.3 137.2	63 15.3 -42.0 135.7
16°	65 05.8 -47.8 143.8	64 29.7 -46.6 142.0	63 52.2 -45.4 140.3	63 13.3 -44.2 138.8	62 33.3 -43.1 137.2
17°	64 18.0 -48.6 145.2	63 43.1 -47.5 143.5	63 06.8 -46.3 141.8	62 29.1 -45.1 140.2	61 50.2 -44.0 138.7
18°	63 29.4 -49.3 146.5	62 55.6 -48.1 144.8	62 20.5 -47.1 143.2	61 44.0 -46.0 141.6	61 06.2 -44.8 140.2
19°	62 40.1 -49.9 147.8	62 07.5 -48.9 146.1	61 33.4 -47.8 144.5	60 58.0 -46.7 143.0	60 21.4 -45.7 141.5
20°	61 50.2 -50.5 149.0	61 18.6 -49.5 147.3	60 45.6 -48.4 145.8	60 11.3 -47.4 144.3	59 35.7 -46.3 142.8
21°	60 59.7 -51.1 150.1	60 29.1 -50.0 148.5	59 57.2 -49.1 147.0	59 23.9 -48.1 145.5	58 49.4 -47.1 144.0
22°	60 08.6 -51.5 151.2	59 39.1 -50.6 149.6	59 08.1 -49.6 148.1	58 35.8 -48.6 146.6	58 02.3 -47.7 145.2
23°	59 17.1 -52.0 152.2	58 48.5 -51.1 150.7	58 18.5 -50.2 149.2	57 47.2 -49.3 147.8	57 14.6 -48.3 146.4
24°	58 25.1 -52.4 153.2	57 57.4 -51.5 151.7	57 28.3 -50.6 150.2	56 57.9 -49.7 148.8	56 26.3 -48.8 147.5
25°	57 32.7 -52.8 154.1	57 05.9 -52.0 152.6	56 37.7 -51.1 151.2	56 08.2 -50.2 149.8	55 37.5 -49.3 148.5
26°	56 39.9 -53.1 155.0	56 13.9 -52.3 153.5	55 46.6 -51.5 152.1	55 18.0 -50.7 150.8	54 48.2 -49.8 149.5
27°	55 46.8 -53.5 155.8	55 21.6 -52.7 154.4	54 55.1 -51.9 153.0	54 27.3 -51.0 151.7	53 58.4 -50.2 150.4
28°	54 53.3 -53.7 156.6	54 28.9 -53.0 155.2	54 03.2 -52.3 153.9	53 36.3 -51.5 152.6	53 08.2 -50.7 151.4
29°	53 59.6 -54.1 157.4	53 35.9 -53.3 156.0	53 10.9 -52.5 154.7	52 44.8 -51.8 153.5	52 17.5 -51.0 152.3

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	69 37.2 -13.4 100.8	68 38.4 -12.8 100.3	67 39.4 -12.2 99.8	66 40.4 -11.7 99.3	65 41.3 -11.3 98.9
1°	69 23.8 -15.9 103.6	68 25.6 -15.3 103.0	67 27.2 -14.6 102.4	66 28.7 -14.1 101.8	65 30.0 -13.5 101.3
2°	69 07.9 -18.5 106.4	68 10.3 -17.7 105.6	67 12.6 -17.0 104.9	66 14.6 -16.2 104.2	65 16.5 -15.6 103.6
3°	68 49.4 -20.9 109.0	67 52.6 -20.0 108.1	66 55.6 -19.2 107.3	65 58.4 -18.4 106.6	65 00.9 -17.7 105.9
4°	68 28.5 -23.2 111.6	67 32.6 -22.2 110.6	66 36.4 -21.3 109.7	65 40.0 -20.5 108.9	64 43.2 -19.7 108.2
5°	68 05.3 -25.4 114.1	67 10.4 -24.3 113.0	66 15.1 -23.3 112.1	65 19.5 -22.5 111.2	64 23.5 -21.6 110.4
6°	67 39.9 -27.4 116.5	66 46.1 -26.4 115.4	65 51.8 -25.4 114.3	64 57.0 -24.4 113.4	64 01.9 -23.5 112.5
7°	67 12.5 -29.4 118.8	66 19.7 -28.2 117.6	65 26.4 -27.1 116.5	64 32.6 -26.1 115.5	63 38.4 -25.2 114.6
8°	66 43.1 -31.2 121.0	65 51.5 -30.0 119.8	64 59.3 -29.0 118.7	64 06.5 -27.9 117.6	63 13.2 -26.9 116.6
9°	66 11.9 -32.9 123.2	65 21.5 -31.7 121.9	64 30.3 -30.6 120.7	63 38.6 -29.5 119.6	62 46.3 -28.5 118.6
10°	65 39.0 -34.4 125.2	64 49.8 -33.3 123.9	63 59.7 -32.1 122.7	63 09.1 -31.1 121.6	62 17.8 -30.1 120.5
11°	65 04.6 -36.0 127.2	64 16.5 -34.8 125.9	63 27.6 -33.6 124.6	62 38.0 -32.5 123.4	61 47.7 -31.4 122.4
12°	64 28.6 -37.3 129.1	63 41.7 -36.1 127.7	62 54.0 -35.0 126.5	62 05.5 -33.9 125.3	61 16.3 -32.9 124.1
13°	63 51.3 -38.6 130.9	63 05.6 -37.4 129.5	62 19.0 -36.3 128.2	61 31.6 -35.2 127.0	60 43.4 -34.1 125.9
14°	63 12.7 -39.7 132.6	62 28.2 -38.6 131.2	61 42.7 -37.5 129.9	60 56.4 -36.4 128.7	60 09.3 -35.3 127.5
15°	62 33.0 -40.9 134.2	61 49.6 -39.8 132.8	61 05.2 -38.6 131.5	60 20.0 -37.5 130.3	59 34.0 -36.5 129.1
16°	61 52.1 -41.9 135.8	61 09.8 -40.8 134.4	60 26.6 -39.7 133.1	59 42.5 -38.6 131.9	58 57.5 -37.6 130.7
17°	61 10.2 -42.9 137.3	60 29.0 -41.7 135.9	59 46.9 -40.7 134.6	59 03.9 -39.7 133.4	58 19.9 -38.5 132.2
18°	60 27.3 -43.8 138.7	59 47.3 -42.7 137.4	59 06.2 -41.6 136.1	58 24.2 -40.5 134.8	57 41.4 -39.6 133.6
19°	59 43.5 -44.5 140.1	59 04.6 -43.5 138.7	58 24.6 -42.4 137.5	57 43.7 -41.5 136.2	57 01.8 -40.4 135.0
20°	58 59.0 -45.4 141.4	58 21.1 -44.3 140.1	57 42.2 -43.3 138.8	57 02.2 -42.2 137.6	56 21.4 -41.3 136.4
21°	58 13.6 -46.0 142.7	57 36.8 -45.1 141.3	56 58.9 -44.1 140.1	56 20.0 -43.1 138.9	55 40.1 -42.0 137.7
22°	57 27.6 -46.7 143.9	56 51.7 -45.7 142.6	56 14.8 -44.7 141.3	55 36.9 -43.7 140.1	54 58.1 -42.8 138.9
23°	56 40.9 -47.3 145.0	56 06.0 -46.3 143.7	55 30.1 -45.4 142.5	54 53.2 -44.5 141.3	54 15.3 -43.5 140.1
24°	55 53.6 -47.9 146.1	55 19.7 -47.0 144.9	54 44.7 -46.0 143.6	54 08.7 -45.1 142.5	53 31.8 -44.2 141.3
25°	55 05.7 -48.5 147.2	54 32.7 -47.5 145.9	53 58.7 -46.7 144.7	53 23.6 -45.7 143.6	52 47.6 -44.8 142.4
26°	54 17.2 -48.9 148.2	53 45.2 -48.1 147.0	53 12.0 -47.1 145.8	52 37.9 -46.3 144.6	52 02.8 -45.4 143.5
27°	53 28.3 -49.4 149.2	52 57.1 -48.5 148.0	52 24.9 -47.7 146.8	51 51.6 -46.8 145.7	51 17.4 -45.9 144.6
28°	52 38.9 -49.8 150.1	52 08.6 -49.0 149.0	51 37.2 -48.1 147.8	51 04.8 -47.3 146.7	50 31.5 -46.5 145.6
29°	51 49.1 -50.2 151.1	51 19.6 -49.4 149.9	50 49.1 -48.6 148.8	50 17.5 -47.7 147.7	49 45.0 -46.9 146.6

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°	64 42.1 -10.8 98.5	63 42.9 -10.5 98.1	62 43.6 -10.1 97.8	61 44.3 -09.8 97.5	60 45.0 -09.5 97.2
1°	64 31.3 -13.0 100.8	63 32.4 -12.5 100.4	62 33.5 -12.0 99.9	61 34.5 -11.6 99.6	60 35.5 -11.3 99.2
2°	64 18.3 -15.0 103.1	63 19.9 -14.5 102.5	62 21.5 -14.0 102.1	61 22.9 -13.5 101.6	60 24.2 -13.0 101.2
3°	64 03.3 -17.1 105.3	63 05.4 -16.4 104.7	62 07.5 -15.8 104.1	61 09.4 -15.3 103.6	60 11.2 -14.8 103.2
4°	63 46.2 -18.9 107.5	62 49.0 -18.2 106.8	61 51.7 -17.7 106.2	60 54.1 -17.0 105.6	59 56.4 -16.5 105.1
5°	63 27.3 -20.9 109.6	62 30.8 -20.1 108.9	61 34.0 -19.4 108.2	60 37.1 -18.8 107.6	59 39.9 -18.1 107.0
6°	63 06.4 -22.6 111.7	62 10.7 -21.8 110.9	61 14.6 -21.0 110.2	60 18.3 -20.3 109.5	59 21.8 -19.7 108.9
7°	62 43.8 -24.3 113.7	61 48.9 -23.6 112.9	60 53.6 -22.7 112.1	59 58.0 -22.0 111.4	59 02.1 -21.2 110.7
8°	62 19.5 -26.0 115.7	61 25.3 -25.1 114.8	60 30.9 -24.3 114.0	59 36.0 -23.5 113.3	58 40.9 -22.7 112.5
9°	61 53.5 -27.6 117.6	61 00.2 -26.6 116.7	60 06.6 -25.8 115.9	59 12.5 -24.9 115.1	58 18.2 -24.2 114.3
10°	61 25.9 -29.0 119.5	60 33.6 -28.1 118.6	59 40.8 -27.2 117.7	58 47.6 -26.4 116.8	57 54.0 -25.6 116.0
11°	60 56.9 -30.5 121.3	60 05.5 -29.5 120.3	59 13.6 -28.6 119.4	58 21.2 -27.7 118.6	57 28.4 -26.8 117.7
12°	60 26.4 -31.8 123.1	59 36.0 -30.9 122.1	58 45.0 -29.9 121.1	57 53.5 -29.0 120.2	57 01.6 -28.2 119.4
13°	59 54.6 -33.1 124.8	59 05.1 -32.1 123.8	58 15.1 -31.2 122.8	57 24.5 -30.3 121.9	56 33.4 -29.3 121.0
14°	59 21.5 -34.3 126.4	58 33.0 -33.3 125.4	57 43.9 -32.4 124.4	56 54.2 -31.4 123.5	56 04.1 -30.6 122.6
15°	58 47.2 -35.5 128.0	57 59.7 -34.5 127.0	57 11.5 -33.4 126.0	56 22.8 -32.5 125.0	55 33.5 -31.6 124.1
16°	58 11.7 -36.5 129.6	57 25.2 -35.5 128.5	56 38.1 -34.6 127.5	55 50.3 -33.7 126.5	55 01.9 -32.8 125.6
17°	57 35.2 -37.6 131.1	56 49.7 -36.6 130.0	56 03.5 -35.6 129.0	55 16.6 -34.6 128.0	54 29.1 -33.7 127.1
18°	56 57.6 -38.5 132.5	56 13.1 -37.5 131.4	55 27.9 -36.6 130.4	54 42.0 -35.7 129.4	53 55.4 -34.7 128.5
19°	56 19.1 -39.4 133.9	55 35.6 -38.5 132.8	54 51.3 -37.5 131.8	54 06.3 -36.5 130.8	53 20.7 -35.6 129.8
20°	55 39.7 -40.3 135.2	54 57.1 -39.3 134.2	54 13.8 -38.3 133.1	53 29.8 -37.4 132.1	52 45.1 -36.5 131.2
21°	54 59.4 -41.1 136.6	54 17.8 -40.1 135.5	53 35.5 -39.2 134.4	52 52.4 -38.3 133.4	52 08.6 -37.4 132.5
22°	54 18.3 -41.8 137.8	53 37.7 -40.9 136.7	52 56.3 -40.0 135.7	52 14.1 -39.1 134.7	51 31.2 -38.1 133.7
23°	53 36.5 -42.6 139.0	52 56.8 -41.6 138.0	52 16.3 -40.7 136.9	51 35.0 -39.8 135.9	50 53.1 -38.9 135.0
24°	52 53.9 -43.3 140.2	52 15.2 -42.4 139.1	51 35.6 -41.4 138.1	50 55.2 -40.5 137.1	50 14.2 -39.7 136.2
25°	52 10.6 -43.8 141.3	51 32.8 -43.0 140.3	50 54.2 -42.1 139.3	50 14.7 -41.2 138.3	49 34.5 -40.3 137.3
26°	51 26.8 -44.5 142.4	50 49.8 -43.5 141.4	50 12.1 -42.7 140.4	49 33.5 -41.8 139.4	48 54.2 -40.9 138.5
27°	50 42.3 -45.1 143.5	50 06.3 -44.2 142.5	49 29.4 -43.3 141.5	48 51.7 -42.4 140.5	48 13.3 -41.6 139.6
28°	49 57.2 -45.6 144.6	49 22.1 -44.8 143.5	48 46.1 -43.9 142.5	48 09.3 -43.0 141.6	47 31.7 -42.1 140.7
29°	49 11.6 -46.1 145.6	48 37.3 -45.2 144.5	48 02.2 -44.4 143.6	47 26.3 -43.6 142.6	46 49.6 -42.8 141.7

Latitude 4°

Declination CONTRARY name to Latitude

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	59 45.5 -09.1 96.9	58 46.1 -08.9 96.6	57 46.6 -08.6 96.4	56 47.1 -08.4 96.1	55 47.6 -08.2 95.9
1°	59 36.4 -11.0 98.8	58 37.2 -10.6 98.5	57 38.0 -10.3 98.2	56 38.7 -10.0 97.9	55 39.4 -09.7 97.7
2°	59 25.4 -12.6 100.8	58 26.6 -12.2 100.4	57 27.7 -11.9 100.1	56 28.7 -11.5 99.7	55 29.7 -11.2 99.4
3°	59 12.8 -14.3 102.7	58 14.4 -13.9 102.3	57 15.8 -13.4 101.9	56 17.2 -13.0 101.5	55 18.5 -12.6 101.1
4°	58 58.5 -15.9 104.6	58 00.5 -15.4 104.1	57 02.4 -14.9 103.7	56 04.2 -14.5 103.3	55 05.9 -14.0 102.9
5°	58 42.6 -17.5 106.5	57 45.1 -16.9 105.9	56 47.5 -16.4 105.4	55 49.7 -15.9 105.0	54 51.9 -15.5 104.5
6°	58 25.1 -19.1 108.3	57 28.2 -18.5 107.7	56 31.1 -17.9 107.2	55 33.8 -17.3 106.7	54 36.4 -16.8 106.2
7°	58 06.0 -20.5 110.1	57 09.7 -19.9 109.5	56 13.2 -19.3 108.9	55 16.5 -18.7 108.4	54 19.6 -18.2 107.9
8°	57 45.5 -22.0 111.9	56 49.8 -21.3 111.2	55 53.9 -20.7 110.6	54 57.8 -20.1 110.0	54 01.4 -19.4 109.5
9°	57 23.5 -23.5 113.6	56 28.5 -22.7 112.9	55 33.2 -22.0 112.3	54 37.7 -21.3 111.7	53 42.0 -20.7 111.1
10°	57 00.0 -24.7 115.3	56 05.8 -24.0 114.6	55 11.2 -23.3 113.9	54 16.4 -22.7 113.3	53 21.3 -22.0 112.7
11°	56 35.3 -26.1 117.0	55 41.8 -25.3 116.2	54 47.9 -24.5 115.5	53 53.7 -23.8 114.9	52 59.3 -23.1 114.2
12°	56 09.2 -27.3 118.6	55 16.5 -26.5 117.8	54 23.4 -25.8 117.1	53 29.9 -25.0 116.4	52 36.2 -24.3 115.8
13°	55 41.9 -28.5 120.2	54 50.0 -27.8 119.4	53 57.6 -26.9 118.6	53 04.9 -26.1 117.9	52 11.9 -25.5 117.3
14°	55 13.4 -29.7 121.7	54 22.2 -28.8 120.9	53 30.7 -28.0 120.2	52 38.8 -27.3 119.4	51 46.4 -26.5 118.7
15°	54 43.7 -30.8 123.2	53 53.4 -29.9 122.4	53 02.7 -29.1 121.6	52 11.5 -28.3 120.9	51 19.9 -27.5 120.2
16°	54 12.9 -31.8 124.7	53 23.5 -31.0 123.9	52 33.6 -30.2 123.1	51 43.2 -29.3 122.3	50 52.4 -28.5 121.6
17°	53 41.1 -32.9 126.2	52 52.5 -32.0 125.3	52 03.4 -31.1 124.5	51 13.9 -30.4 123.7	50 23.9 -29.6 123.0
18°	53 08.2 -33.8 127.6	52 20.5 -32.9 126.7	51 32.3 -32.1 125.9	50 43.5 -31.2 125.1	49 54.3 -30.4 124.3
19°	52 34.4 -34.7 128.9	51 47.6 -33.9 128.1	51 00.2 -33.0 127.2	50 12.3 -32.2 126.4	49 23.9 -31.4 125.7
20°	51 59.7 -35.6 130.3	51 13.7 -34.7 129.4	50 27.2 -33.9 128.5	49 40.1 -33.0 127.7	48 52.5 -32.2 127.0
21°	51 24.1 -36.5 131.6	50 39.0 -35.6 130.7	49 53.3 -34.7 129.8	49 07.1 -33.9 129.0	48 20.3 -33.0 128.2
22°	50 47.6 -37.2 132.8	50 03.4 -36.3 131.9	49 18.6 -35.5 131.1	48 33.2 -34.6 130.3	47 47.3 -33.8 129.5
23°	50 10.4 -38.0 134.1	49 27.1 -37.2 133.2	48 43.1 -36.3 132.3	47 58.6 -35.5 131.5	47 13.5 -34.6 130.7
24°	49 32.4 -38.8 135.3	48 49.9 -37.9 134.4	48 06.8 -37.0 133.5	47 23.1 -36.1 132.7	46 38.9 -35.4 131.9
25°	48 53.6 -39.4 136.4	48 12.0 -38.5 135.5	47 29.8 -37.7 134.7	46 47.0 -36.9 133.9	46 03.5 -36.0 133.1
26°	48 14.2 -40.1 137.6	47 33.5 -39.2 136.7	46 52.1 -38.4 135.8	46 10.1 -37.5 135.0	45 27.5 -36.7 134.2
27°	47 34.1 -40.7 138.7	46 54.3 -39.9 137.8	46 13.7 -39.0 137.0	45 32.6 -38.2 136.1	44 50.8 -37.4 135.4
28°	46 53.4 -41.3 139.8	46 14.4 -40.5 138.9	45 34.7 -39.6 138.1	44 54.4 -38.8 137.2	44 13.4 -37.9 136.5
29°	46 12.1 -41.9 140.8	45 33.9 -41.0 140.0	44 55.1 -40.2 139.1	44 15.6 -39.4 138.3	43 35.5 -38.6 137.5

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°	54 48.1 -08.0 95.7	53 48.5 -07.8 95.5	52 48.9 -07.6 95.3	51 49.3 -07.4 95.1	50 49.7 -07.3 94.9
1°	54 40.1 -09.5 97.4	53 40.7 -09.2 97.2	52 41.3 -08.9 96.9	51 41.9 -08.8 96.7	50 42.4 -08.5 96.5
2°	54 30.6 -10.8 99.1	53 31.5 -10.5 98.8	52 32.4 -10.3 98.6	51 33.1 -10.0 98.3	50 33.9 -09.8 98.1
3°	54 19.8 -12.3 100.8	53 21.0 -12.0 100.5	52 22.1 -11.6 100.2	51 23.1 -11.3 99.9	50 24.1 -10.9 99.6
4°	54 07.5 -13.6 102.5	53 09.0 -13.2 102.1	52 10.5 -12.9 101.8	51 11.8 -12.5 101.5	50 13.2 -12.2 101.1
5°	53 53.9 -15.0 104.1	52 55.8 -14.6 103.7	51 57.6 -14.2 103.4	50 59.3 -13.8 103.0	50 01.0 -13.4 102.7
6°	53 38.9 -16.4 105.8	52 41.2 -15.8 105.3	51 43.4 -15.4 104.9	50 45.5 -14.9 104.6	49 47.6 -14.6 104.2
7°	53 22.5 -17.6 107.4	52 25.4 -17.2 106.9	51 28.0 -16.6 106.5	50 30.6 -16.2 106.1	49 33.0 -15.7 105.7
8°	53 04.9 -18.9 109.0	52 08.2 -18.3 108.5	51 11.4 -17.8 108.0	50 14.4 -17.3 107.6	49 17.3 -16.8 107.2
9°	52 46.0 -20.1 110.6	51 49.9 -19.5 110.0	50 53.6 -19.0 109.6	49 57.1 -18.5 109.1	49 00.5 -18.0 108.6
10°	52 25.9 -21.3 112.1	51 30.4 -20.8 111.6	50 34.6 -20.1 111.0	49 38.6 -19.5 110.6	48 42.5 -19.0 110.1
11°	52 04.6 -22.5 113.6	51 09.6 -21.8 113.1	50 14.5 -21.3 112.5	49 19.1 -20.7 112.0	48 23.5 -20.1 111.5
12°	51 42.1 -23.6 115.1	50 47.8 -23.0 114.5	49 53.2 -22.3 114.0	48 58.4 -21.7 113.4	48 03.4 -21.1 112.9
13°	51 18.5 -24.7 116.6	50 24.8 -24.0 116.0	49 30.9 -23.3 115.4	48 36.7 -22.7 114.9	47 42.3 -22.1 114.3
14°	50 53.8 -25.8 118.1	50 00.8 -25.0 117.4	49 07.6 -24.4 116.8	48 14.0 -23.7 116.3	47 20.2 -23.1 115.7
15°	50 28.0 -26.8 119.5	49 35.8 -26.1 118.8	48 43.2 -25.4 118.2	47 50.3 -24.7 117.6	46 57.1 -24.0 117.1
16°	50 01.2 -27.8 120.9	49 09.7 -27.1 120.2	48 17.8 -26.3 119.6	47 25.6 -25.6 119.0	46 33.1 -25.0 118.4
17°	49 33.4 -28.7 122.3	48 42.6 -27.9 121.6	47 51.5 -27.3 120.9	47 00.0 -26.6 120.3	46 08.1 -25.8 119.7
18°	49 04.7 -29.7 123.6	48 14.7 -28.9 122.9	47 24.2 -28.1 122.3	46 33.4 -27.4 121.6	45 42.3 -26.7 121.0
19°	48 35.0 -30.5 124.9	47 45.8 -29.8 124.2	46 56.1 -29.0 123.6	46 06.0 -28.3 122.9	45 15.6 -27.6 122.3
20°	48 04.5 -31.4 126.2	47 16.0 -30.6 125.5	46 27.1 -29.9 124.8	45 37.7 -29.1 124.2	44 48.0 -28.3 123.5
21°	47 33.1 -32.2 127.5	46 45.4 -31.5 126.8	45 57.2 -30.6 126.1	45 08.6 -29.9 125.4	44 19.7 -29.2 124.8
22°	47 00.9 -33.1 128.7	46 13.9 -32.2 128.0	45 26.6 -31.5 127.3	44 38.7 -30.6 126.6	43 50.5 -29.9 126.0
23°	46 27.8 -33.7 130.0	45 41.7 -33.0 129.2	44 55.1 -32.2 128.5	44 08.1 -31.4 127.8	43 20.6 -30.7 127.2
24°	45 54.1 -34.6 131.2	45 08.7 -33.7 130.4	44 22.9 -32.9 129.7	43 36.7 -32.2 129.0	42 49.9 -31.3 128.4
25°	45 19.5 -35.2 132.3	44 35.0 -34.4 131.6	43 50.0 -33.6 130.9	43 04.5 -32.8 130.2	42 18.6 -32.1 129.5
26°	44 44.3 -35.9 133.5	44 00.6 -35.1 132.7	43 16.4 -34.3 132.0	42 31.7 -33.5 131.3	41 46.5 -32.7 130.7
27°	44 08.4 -36.5 134.6	43 25.5 -35.7 133.9	42 42.1 -34.9 133.1	41 58.2 -34.1 132.5	41 13.8 -33.3 131.8
28°	43 31.9 -37.1 135.7	42 49.8 -36.3 135.0	42 07.2 -35.5 134.2	41 24.1 -34.8 133.6	40 40.5 -34.0 132.9
29°	42 54.8 -37.8 136.8	42 13.5 -37.0 136.0	41 31.7 -36.2 135.3	40 49.3 -35.3 134.6	40 06.5 -34.6 134.0

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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°	49 50.0 -07.1 94.8	48 50.4 -07.0 94.6	47 50.7 -06.8 94.4	46 51.0 -06.6 94.3	45 51.3 -06.5 94.1
1°	49 42.9 -08.3 96.3	48 43.4 -08.1 96.1	47 43.9 -07.9 95.9	46 44.4 -07.8 95.7	45 44.8 -07.6 95.6
2°	49 34.6 -09.5 97.8	48 35.3 -09.3 97.6	47 36.0 -09.1 97.4	46 36.6 -08.9 97.2	45 37.2 -08.7 97.0
3°	49 25.1 -10.7 99.3	48 26.0 -10.4 99.1	47 26.9 -10.2 98.8	46 27.7 -09.9 98.6	45 28.5 -09.6 98.4
4°	49 14.4 -11.9 100.8	48 15.6 -11.6 100.6	47 16.7 -11.3 100.3	46 17.8 -11.0 100.0	45 18.9 -10.8 99.8
5°	49 02.5 -13.0 102.3	48 04.0 -12.7 102.0	47 05.4 -12.3 101.7	46 06.8 -12.0 101.5	45 08.1 -11.7 101.2
6°	48 49.5 -14.2 103.8	47 51.3 -13.8 103.5	46 53.1 -13.4 103.2	45 54.8 -13.1 102.9	44 56.4 -12.7 102.6
7°	48 35.3 -15.3 105.3	47 37.5 -14.8 104.9	46 39.7 -14.5 104.6	45 41.7 -14.1 104.3	44 43.7 -13.8 104.0
8°	48 20.0 -16.3 106.8	47 22.7 -16.0 106.4	46 25.2 -15.5 106.0	45 27.6 -15.1 105.7	44 29.9 -14.7 105.3
9°	48 03.7 -17.5 108.2	47 06.7 -16.9 107.8	46 09.7 -16.5 107.4	45 12.5 -16.1 107.0	44 15.2 -15.6 106.7
10°	47 46.2 -18.5 109.6	46 49.8 -18.0 109.2	45 53.2 -17.5 108.8	44 56.4 -17.0 108.4	43 59.6 -16.6 108.0
11°	47 27.7 -19.5 111.0	46 31.8 -19.0 110.6	45 35.7 -18.5 110.2	44 39.4 -18.0 109.8	43 43.0 -17.5 109.4
12°	47 08.2 -20.5 112.4	46 12.8 -20.0 112.0	45 17.2 -19.5 111.5	44 21.4 -18.9 111.1	43 25.5 -18.4 110.7
13°	46 47.7 -21.5 113.8	45 52.8 -20.9 113.3	44 57.7 -20.3 112.9	44 02.5 -19.8 112.4	43 07.1 -19.3 112.0
14°	46 26.2 -22.5 115.2	45 31.9 -21.9 114.7	44 37.4 -21.3 114.2	43 42.7 -20.7 113.7	42 47.8 -20.2 113.3
15°	46 03.7 -23.4 116.5	45 10.0 -22.8 116.0	44 16.1 -22.2 115.5	43 22.0 -21.6 115.0	42 27.6 -21.0 114.6
16°	45 40.3 -24.3 117.8	44 47.2 -23.6 117.3	43 53.9 -23.0 116.8	43 00.4 -22.4 116.3	42 06.6 -21.8 115.8
17°	45 16.0 -25.2 119.1	44 23.6 -24.5 118.6	43 30.9 -23.9 118.1	42 38.0 -23.3 117.6	41 44.8 -22.6 117.1
18°	44 50.8 -26.0 120.4	43 59.1 -25.4 119.9	43 07.0 -24.6 119.3	42 14.7 -24.0 118.8	41 22.2 -23.5 118.3
19°	44 24.8 -26.8 121.7	43 33.7 -26.1 121.1	42 42.4 -25.5 120.6	41 50.7 -24.8 120.0	40 58.7 -24.2 119.5
20°	43 58.0 -27.7 122.9	43 07.6 -27.0 122.4	42 16.9 -26.3 121.8	41 25.9 -25.6 121.3	40 34.5 -24.9 120.7
21°	43 30.3 -28.4 124.2	42 40.6 -27.7 123.6	41 50.6 -27.0 123.0	41 00.3 -26.4 122.5	40 09.6 -25.6 121.9
22°	43 01.9 -29.2 125.4	42 12.9 -28.4 124.8	41 23.6 -27.8 124.2	40 33.9 -27.0 123.7	39 44.0 -26.4 123.1
23°	42 32.7 -29.9 126.6	41 44.5 -29.2 126.0	40 55.8 -28.4 125.4	40 06.9 -27.8 124.8	39 17.6 -27.1 124.3
24°	42 02.8 -30.6 127.7	41 15.3 -29.9 127.1	40 27.4 -29.2 126.5	39 39.1 -28.4 126.0	38 50.5 -27.7 125.4
25°	41 32.2 -31.3 128.9	40 45.4 -30.5 128.3	39 58.2 -29.8 127.7	39 10.7 -29.1 127.1	38 22.8 -28.4 126.6
26°	41 00.9 -31.9 130.0	40 14.9 -31.2 129.4	39 28.4 -30.4 128.8	38 41.6 -29.7 128.2	37 54.4 -29.0 127.7
27°	40 29.0 -32.6 131.1	39 43.7 -31.8 130.5	38 58.0 -31.1 129.9	38 11.9 -30.3 129.4	37 25.4 -29.6 128.8
28°	39 56.4 -33.2 132.2	39 11.9 -32.5 131.6	38 26.9 -31.7 131.0	37 41.6 -31.0 130.4	36 55.8 -30.2 129.9
29°	39 23.2 -33.8 133.3	38 39.4 -33.0 132.7	37 55.2 -32.2 132.1	37 10.6 -31.5 131.5	36 25.6 -30.8 131.0

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°	44 51.6 -06.4 94.0	43 51.9 -06.3 93.9	42 52.2 -06.2 93.7	41 52.5 -06.1 93.6	40 52.7 -06.0 93.5
1°	44 45.2 -07.4 95.4	43 45.6 -07.3 95.2	42 46.0 -07.1 95.1	41 46.4 -07.0 94.9	40 46.7 -06.8 94.8
2°	44 37.8 -08.5 96.8	43 38.3 -08.2 96.6	42 38.9 -08.1 96.4	41 39.4 -08.0 96.3	40 39.9 -07.8 96.1
3°	44 29.3 -09.5 98.2	43 30.1 -09.3 98.0	42 30.8 -09.1 97.8	41 31.4 -08.8 97.6	40 32.1 -08.6 97.4
4°	44 19.8 -10.4 99.6	43 20.8 -10.2 99.3	42 21.7 -09.9 99.1	41 22.6 -09.7 98.9	40 23.5 -09.6 98.7
5°	44 09.4 -11.5 100.9	43 10.6 -11.2 100.7	42 11.8 -10.9 100.4	41 12.9 -10.7 100.2	40 13.9 -10.3 100.0
6°	43 57.9 -12.4 102.3	42 59.4 -12.1 102.0	42 00.9 -11.8 101.8	41 02.2 -11.5 101.5	40 03.6 -11.2 101.3
7°	43 45.5 -13.3 103.7	42 47.3 -13.0 103.4	41 49.1 -12.7 103.1	40 50.7 -12.3 102.8	39 52.4 -12.1 102.6
8°	43 32.2 -14.3 105.0	42 34.3 -13.9 104.7	41 36.4 -13.6 104.4	40 38.4 -13.3 104.1	39 40.3 -12.9 103.8
9°	43 17.9 -15.3 106.3	42 20.4 -14.9 106.0	41 22.8 -14.5 105.7	40 25.1 -14.0 105.4	39 27.4 -13.7 105.1
10°	43 02.6 -16.1 107.7	42 05.5 -15.7 107.3	41 08.3 -15.3 107.0	40 11.1 -15.0 106.7	39 13.7 -14.6 106.4
11°	42 46.5 -17.1 109.0	41 49.8 -16.6 108.6	40 53.0 -16.1 108.3	39 56.1 -15.7 107.9	38 59.1 -15.3 107.6
12°	42 29.4 -17.9 110.3	41 33.2 -17.4 109.9	40 36.9 -17.0 109.5	39 40.4 -16.5 109.2	38 43.8 -16.1 108.9
13°	42 11.5 -18.8 111.6	41 15.8 -18.3 111.2	40 19.9 -17.8 110.8	39 23.9 -17.4 110.4	38 27.7 -16.9 110.1
14°	41 52.7 -19.6 112.9	40 57.5 -19.1 112.4	40 02.1 -18.6 112.1	39 06.5 -18.1 111.7	38 10.8 -17.6 111.3
15°	41 33.1 -20.5 114.1	40 38.4 -19.9 113.7	39 43.5 -19.4 113.3	38 48.4 -18.8 112.9	37 53.2 -18.3 112.5
16°	41 12.6 -21.2 115.4	40 18.5 -20.7 114.9	39 24.1 -20.1 114.5	38 29.6 -19.7 114.1	37 34.9 -19.1 113.7
17°	40 51.4 -22.0 116.6	39 57.8 -21.5 116.2	39 04.0 -20.9 115.7	38 09.9 -20.3 115.3	37 15.8 -19.9 114.9
18°	40 29.4 -22.9 117.8	39 36.3 -22.2 117.4	38 43.1 -21.7 116.9	37 49.6 -21.1 116.5	36 55.9 -20.5 116.1
19°	40 06.5 -23.5 119.1	39 14.1 -23.0 118.6	38 21.4 -22.3 118.1	37 28.5 -21.7 117.7	36 35.4 -21.1 117.3
20°	39 43.0 -24.3 120.3	38 51.1 -23.6 119.8	37 59.1 -23.1 119.3	37 06.8 -22.5 118.9	36 14.3 -21.9 118.4
21°	39 18.7 -25.0 121.4	38 27.5 -24.4 121.0	37 36.0 -23.7 120.5	36 44.3 -23.1 120.0	35 52.4 -22.5 119.6
22°	38 53.7 -25.7 122.6	38 03.1 -25.0 122.1	37 12.3 -24.4 121.6	36 21.2 -23.8 121.2	35 29.9 -23.2 120.7
23°	38 28.0 -26.4 123.8	37 38.1 -25.7 123.3	36 47.9 -25.1 122.8	35 57.4 -24.4 122.3	35 06.7 -23.7 121.9
24°	38 01.6 -27.0 124.9	37 12.4 -26.4 124.4	36 22.8 -25.6 123.9	35 33.0 -25.0 123.4	34 43.0 -24.4 123.0
25°	37 34.6 -27.7 126.0	36 46.0 -27.0 125.5	35 57.2 -26.4 125.0	35 08.0 -25.6 124.6	34 18.6 -25.0 124.1
26°	37 06.9 -28.3 127.2	36 19.0 -27.6 126.6	35 30.8 -26.9 126.1	34 42.4 -26.3 125.7	33 53.6 -25.6 125.2
27°	36 38.6 -28.9 128.3	35 51.4 -28.1 127.7	35 03.9 -27.4 127.2	34 16.1 -26.8 126.8	33 28.0 -26.1 126.3
28°	36 09.7 -29.5 129.3	35 23.3 -28.8 128.8	34 36.5 -28.1 128.3	33 49.3 -27.3 127.8	33 01.9 -26.7 127.4
29°	35 40.2 -30.0 130.4	34 54.5 -29.3 129.9	34 08.4 -28.6 129.4	33 22.0 -27.9 128.9	32 35.2 -27.2 128.4

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°	39 53.0 -05.9 93.3	38 53.2 -05.8 93.2	37 53.5 -05.7 93.1	36 53.7 -05.6 93.0	35 53.9 -05.5 92.9
1°	39 47.1 -06.8 94.6	38 47.4 -06.6 94.5	37 47.8 -06.6 94.4	36 48.1 -06.4 94.3	35 48.4 -06.3 94.1
2°	39 40.3 -07.6 95.9	38 40.8 -07.5 95.8	37 41.2 -07.3 95.6	36 41.7 -07.2 95.5	35 42.1 -07.0 95.4
3°	39 32.7 -08.4 97.2	38 33.3 -08.2 97.1	37 33.9 -08.1 96.9	36 34.5 -07.9 96.7	35 35.1 -07.8 96.6
4°	39 24.3 -09.3 98.5	38 25.1 -09.1 98.3	37 25.8 -08.9 98.1	36 26.6 -08.7 98.0	35 27.3 -08.5 97.8
5°	39 15.0 -10.1 99.8	38 16.0 -09.9 99.6	37 16.9 -09.6 99.4	36 17.9 -09.5 99.2	35 18.8 -09.3 99.0
6°	39 04.9 -11.0 101.1	38 06.1 -10.7 100.8	37 07.3 -10.5 100.6	36 08.4 -10.2 100.4	35 09.5 -09.9 100.2
7°	38 53.9 -11.8 102.3	37 55.4 -11.5 102.1	36 56.8 -11.1 101.9	35 58.2 -10.9 101.6	34 59.6 -10.7 101.4
8°	38 42.1 -12.5 103.6	37 43.9 -12.2 103.3	36 45.7 -12.0 103.1	35 47.3 -11.6 102.9	34 48.9 -11.3 102.6
9°	38 29.6 -13.4 104.8	37 31.7 -13.1 104.6	36 33.7 -12.7 104.3	35 35.7 -12.4 104.1	34 37.6 -12.1 103.8
10°	38 16.2 -14.2 106.1	37 18.6 -13.7 105.8	36 21.0 -13.4 105.5	35 23.3 -13.1 105.3	34 25.5 -12.7 105.0
11°	38 02.0 -14.9 107.3	37 04.9 -14.6 107.0	36 07.6 -14.2 106.7	35 10.2 -13.8 106.5	34 12.8 -13.4 106.2
12°	37 47.1 -15.7 108.5	36 50.3 -15.2 108.2	35 53.4 -14.8 107.9	34 56.4 -14.4 107.6	33 59.4 -14.1 107.4
13°	37 31.4 -16.4 109.8	36 35.1 -16.0 109.4	35 38.6 -15.6 109.1	34 42.0 -15.2 108.8	33 45.3 -14.8 108.5
14°	37 15.0 -17.1 111.0	36 19.1 -16.7 110.6	35 23.0 -16.3 110.3	34 26.8 -15.8 110.0	33 30.5 -15.4 109.7
15°	36 57.9 -17.9 112.2	36 02.4 -17.4 111.8	35 06.7 -16.9 111.5	34 11.0 -16.5 111.2	33 15.1 -16.0 110.9
16°	36 40.0 -18.6 113.4	35 45.0 -18.1 113.0	34 49.8 -17.6 112.7	33 54.5 -17.1 112.3	32 59.1 -16.7 112.0
17°	36 21.4 -19.3 114.5	35 26.9 -18.8 114.2	34 32.2 -18.3 113.8	33 37.4 -17.8 113.5	32 42.4 -17.3 113.2
18°	36 02.1 -19.9 115.7	35 08.1 -19.4 115.3	34 13.9 -18.9 115.0	33 19.6 -18.4 114.6	32 25.1 -17.9 114.3
19°	35 42.2 -20.7 116.9	34 48.7 -20.1 116.5	33 55.0 -19.5 116.1	33 01.2 -19.0 115.8	32 07.2 -18.5 115.4
20°	35 21.5 -21.3 118.0	34 28.6 -20.7 117.6	33 35.5 -20.2 117.3	32 42.2 -19.6 116.9	31 48.7 -19.1 116.5
21°	35 00.2 -21.9 119.2	34 07.9 -21.4 118.8	33 15.3 -20.7 118.4	32 22.6 -20.2 118.0	31 29.6 -19.6 117.7
22°	34 38.3 -22.5 120.3	33 46.5 -21.9 119.9	32 54.6 -21.4 119.5	32 02.4 -20.8 119.1	31 10.0 -20.2 118.8
23°	34 15.8 -23.2 121.4	33 24.6 -22.5 121.0	32 33.2 -21.9 120.6	31 41.6 -21.4 120.2	30 49.8 -20.8 119.9
24°	33 52.6 -23.7 122.6	33 02.1 -23.2 122.1	32 11.3 -22.6 121.7	31 20.2 -21.9 121.3	30 29.0 -21.3 120.9
25°	33 28.9 -24.4 123.7	32 38.9 -23.7 123.2	31 48.7 -23.0 122.8	30 58.3 -22.4 122.4	30 07.7 -21.8 122.0
26°	33 04.5 -24.9 124.7	32 15.2 -24.2 124.3	31 25.7 -23.6 123.9	30 35.9 -23.0 123.5	29 45.9 -22.4 123.1
27°	32 39.6 -25.4 125.8	31 51.0 -24.8 125.4	31 02.1 -24.2 125.0	30 12.9 -23.5 124.6	29 23.5 -22.9 124.2
28°	32 14.2 -26.0 126.9	31 26.2 -25.3 126.5	30 37.9 -24.6 126.0	29 49.4 -24.0 125.6	29 00.6 -23.3 125.2
29°	31 48.2 -26.5 128.0	31 00.9 -25.9 127.5	30 13.3 -25.2 127.1	29 25.4 -24.5 126.7	28 37.3 -23.9 126.3

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	34 54.1 -05.4 92.8	33 54.4 -05.4 92.7	32 54.6 -05.4 92.6	31 54.8 -05.3 92.5	30 55.0 -05.2 92.4
1°	34 48.7 -06.2 94.0	33 49.0 -06.1 93.9	32 49.2 -05.9 93.8	31 49.5 -05.9 93.7	30 49.8 -05.8 93.6
2°	34 42.5 -06.9 95.2	33 42.9 -06.8 95.1	32 43.3 -06.7 95.0	31 43.6 -06.5 94.8	30 44.0 -06.5 94.7
3°	34 35.6 -07.6 96.4	33 36.1 -07.5 96.3	32 36.6 -07.3 96.1	31 37.1 -07.2 96.0	30 37.5 -07.0 95.9
4°	34 28.0 -08.4 97.6	33 28.6 -08.1 97.5	32 29.3 -08.0 97.3	31 29.9 -07.8 97.2	30 30.5 -07.6 97.0
5°	34 19.6 -09.0 98.8	33 20.5 -08.8 98.7	32 21.3 -08.6 98.5	31 22.1 -08.4 98.3	30 22.9 -08.3 98.2
6°	34 10.6 -09.7 100.0	33 11.7 -09.5 99.8	32 12.7 -09.3 99.7	31 13.7 -09.1 99.5	30 14.6 -08.8 99.3
7°	34 00.9 -10.4 101.2	33 02.2 -10.2 101.0	32 03.4 -09.9 100.8	31 04.6 -09.7 100.6	30 05.8 -09.5 100.5
8°	33 50.5 -11.1 102.4	32 52.0 -10.8 102.2	31 53.5 -10.5 102.0	30 54.9 -10.2 101.8	29 56.3 -10.0 101.6
9°	33 39.4 -11.7 103.6	32 41.2 -11.4 103.4	31 43.0 -11.2 103.2	30 44.7 -10.9 102.9	29 46.3 -10.6 102.7
10°	33 27.7 -12.4 104.8	32 29.8 -12.1 104.5	31 31.8 -11.8 104.3	30 33.8 -11.5 104.1	29 35.7 -11.2 103.9
11°	33 15.3 -13.1 105.9	32 17.7 -12.8 105.7	31 20.0 -12.4 105.5	30 22.3 -12.1 105.2	29 24.5 -11.7 105.0
12°	33 02.2 -13.7 107.1	32 04.9 -13.3 106.8	31 07.6 -13.0 106.6	30 10.2 -12.6 106.4	29 12.8 -12.4 106.1
13°	32 48.5 -14.4 108.3	31 51.6 -14.0 108.0	30 54.6 -13.6 107.7	29 57.6 -13.3 107.5	29 00.4 -12.8 107.3
14°	32 34.1 -15.0 109.4	31 37.6 -14.6 109.1	30 41.0 -14.2 108.9	29 44.3 -13.8 108.6	28 47.6 -13.4 108.4
15°	32 19.1 -15.6 110.6	31 23.0 -15.2 110.3	30 26.8 -14.7 110.0	29 30.5 -14.3 109.7	28 34.2 -14.0 109.5
16°	32 03.5 -16.2 111.7	31 07.8 -15.7 111.4	30 12.1 -15.4 111.1	29 16.2 -14.9 110.9	28 20.2 -14.5 110.6
17°	31 47.3 -16.8 112.8	30 52.1 -16.4 112.5	29 56.7 -15.9 112.2	29 01.3 -15.5 112.0	28 05.7 -15.0 111.7
18°	31 30.5 -17.4 114.0	30 35.7 -16.9 113.7	29 40.8 -16.4 113.4	28 45.8 -16.0 113.1	27 50.7 -15.5 112.8
19°	31 13.1 -18.0 115.1	30 18.8 -17.5 114.8	29 24.4 -17.0 114.5	28 29.8 -16.5 114.2	27 35.2 -16.1 113.9
20°	30 55.1 -18.6 116.2	30 01.3 -18.0 115.9	29 07.4 -17.5 115.6	28 13.3 -17.0 115.3	27 19.1 -16.5 115.0
21°	30 36.5 -19.1 117.3	29 43.3 -18.6 117.0	28 49.9 -18.1 116.7	27 56.3 -17.6 116.3	27 02.6 -17.1 116.0
22°	30 17.4 -19.6 118.4	29 24.7 -19.1 118.1	28 31.8 -18.6 117.7	27 38.7 -18.0 117.4	26 45.5 -17.5 117.1
23°	29 57.8 -20.2 119.5	29 05.6 -19.6 119.2	28 13.2 -19.1 118.8	27 20.7 -18.5 118.5	26 28.0 -18.0 118.2
24°	29 37.6 -20.8 120.6	28 46.0 -20.2 120.2	27 54.1 -19.5 119.9	27 02.2 -19.0 119.6	26 10.0 -18.4 119.3
25°	29 16.8 -21.2 121.7	28 25.8 -20.6 121.3	27 34.6 -20.1 121.0	26 43.2 -19.5 120.6	25 51.6 -19.0 120.3
26°	28 55.6 -21.7 122.7	28 05.2 -21.2 122.4	27 14.5 -20.5 122.0	26 23.7 -20.0 121.7	25 32.6 -19.3 121.4
27°	28 33.9 -22.3 123.8	27 44.0 -21.6 123.4	26 54.0 -21.0 123.1	26 03.7 -20.4 122.7	25 13.3 -19.8 122.4
28°	28 11.6 -22.7 124.9	27 22.4 -22.1 124.5	26 33.0 -21.5 124.1	25 43.3 -20.8 123.8	24 53.5 -20.3 123.5
29°	27 48.9 -23.2 125.9	27 00.3 -22.5 125.5	26 11.5 -21.9 125.2	25 22.5 -21.3 124.8	24 33.2 -20.6 124.5

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°	29 55.2 -05.2 92.3	28 55.4 -05.1 92.2	27 55.5 -05.0 92.1	26 55.7 -04.9 92.0	25 55.9 -04.9 91.9
1°	29 50.0 -05.7 93.5	28 50.3 -05.6 93.4	27 50.5 -05.5 93.3	26 50.8 -05.5 93.2	25 51.0 -05.4 93.1
2°	29 44.3 -06.3 94.6	28 44.7 -06.3 94.5	27 45.0 -06.1 94.4	26 45.3 -06.0 94.3	25 45.6 -05.9 94.2
3°	29 38.0 -06.9 95.7	28 38.4 -06.7 95.6	27 38.9 -06.7 95.5	26 39.3 -06.5 95.4	25 39.7 -06.4 95.3
4°	29 31.1 -07.5 96.9	28 31.7 -07.4 96.8	27 32.2 -07.2 96.6	26 32.8 -07.1 96.5	25 33.3 -06.9 96.4
5°	29 23.6 -08.1 98.0	28 24.3 -07.9 97.9	27 25.0 -07.7 97.7	26 25.7 -07.5 97.6	25 26.4 -07.4 97.5
6°	29 15.5 -08.6 99.2	28 16.4 -08.4 99.0	27 17.3 -08.2 98.9	26 18.2 -08.1 98.7	25 19.0 -07.9 98.6
7°	29 06.9 -09.2 100.3	28 08.0 -09.0 100.1	27 09.1 -08.8 100.0	26 10.1 -08.6 99.8	25 11.1 -08.4 99.7
8°	28 57.7 -09.8 101.4	27 59.0 -09.5 101.3	27 00.3 -09.3 101.1	26 01.5 -09.0 100.9	25 02.7 -08.8 100.8
9°	28 47.9 -10.3 102.6	27 49.5 -10.1 102.4	26 51.0 -09.8 102.2	25 52.5 -09.6 102.0	24 53.9 -09.3 101.8
10°	28 37.6 -10.9 103.7	27 39.4 -10.6 103.5	26 41.2 -10.4 103.3	25 42.9 -10.1 103.1	24 44.6 -09.8 102.9
11°	28 26.7 -11.5 104.8	27 28.8 -11.2 104.6	26 30.8 -10.8 104.4	25 32.8 -10.5 104.2	24 34.8 -10.3 104.0
12°	28 15.2 -11.9 105.9	27 17.6 -11.6 105.7	26 20.0 -11.3 105.5	25 22.3 -11.0 105.3	24 24.5 -10.7 105.1
13°	28 03.3 -12.6 107.0	27 06.0 -12.2 106.8	26 08.7 -11.9 106.6	25 11.3 -11.5 106.4	24 13.8 -11.2 106.2
14°	27 50.7 -13.0 108.1	26 53.8 -12.7 107.9	25 56.8 -12.3 107.7	24 59.8 -12.0 107.5	24 02.6 -11.6 107.3
15°	27 37.7 -13.6 109.2	26 41.1 -13.1 109.0	25 44.5 -12.8 108.8	24 47.8 -12.4 108.5	23 51.0 -12.0 108.3
16°	27 24.1 -14.1 110.3	26 28.0 -13.7 110.1	25 31.7 -13.3 109.9	24 35.4 -12.9 109.6	23 39.0 -12.6 109.4
17°	27 10.0 -14.5 111.4	26 14.3 -14.2 111.2	25 18.4 -13.7 110.9	24 22.5 -13.4 110.7	23 26.4 -12.9 110.5
18°	26 55.5 -15.1 112.5	26 00.1 -14.6 112.3	25 04.7 -14.2 112.0	24 09.1 -13.8 111.8	23 13.5 -13.4 111.5
19°	26 40.4 -15.6 113.6	25 45.5 -15.1 113.3	24 50.5 -14.7 113.1	23 55.3 -14.2 112.8	23 00.1 -13.8 112.6
20°	26 24.8 -16.1 114.7	25 30.4 -15.6 114.4	24 35.8 -15.1 114.1	23 41.1 -14.6 113.9	22 46.3 -14.2 113.7
21°	26 08.7 -16.5 115.8	25 14.8 -16.1 115.5	24 20.7 -15.6 115.2	23 26.5 -15.1 115.0	22 32.1 -14.6 114.7
22°	25 52.2 -17.0 116.8	24 58.7 -16.5 116.5	24 05.1 -16.0 116.3	23 11.4 -15.5 116.0	22 17.5 -15.0 115.8
23°	25 35.2 -17.5 117.9	24 42.2 -16.9 117.6	23 49.1 -16.4 117.3	22 55.9 -15.9 117.1	22 02.5 -15.4 116.8
24°	25 17.7 -17.9 118.9	24 25.3 -17.4 118.7	23 32.7 -16.9 118.4	22 40.0 -16.4 118.1	21 47.1 -15.8 117.8
25°	24 59.8 -18.3 120.0	24 07.9 -17.8 119.7	23 15.8 -17.2 119.4	22 23.6 -16.7 119.1	21 31.3 -16.2 118.9
26°	24 41.5 -18.8 121.1	23 50.1 -18.2 120.8	22 58.6 -17.7 120.5	22 06.9 -17.1 120.2	21 15.1 -16.6 119.9
27°	24 22.7 -19.3 122.1	23 31.9 -18.7 121.8	22 40.9 -18.1 121.5	21 49.8 -17.5 121.2	20 58.5 -16.9 120.9
28°	24 03.4 -19.6 123.1	23 13.2 -19.0 122.8	22 22.8 -18.4 122.5	21 32.3 -17.9 122.2	20 41.6 -17.3 122.0
29°	23 43.8 -20.1 124.2	22 54.2 -19.5 123.9	22 04.4 -18.9 123.6	21 14.4 -18.2 123.3	20 24.3 -17.6 123.0

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°	24 56.1 -04.9 91.9	23 56.3 -04.8 91.8	22 56.4 -04.7 91.7	21 56.6 -04.7 91.6	20 56.8 -04.7 91.5
1°	24 51.2 -05.3 93.0	23 51.5 -05.3 92.9	22 51.7 -05.2 92.8	21 51.9 -05.1 92.7	20 52.1 -05.1 92.6
2°	24 45.9 -05.8 94.1	23 46.2 -05.7 94.0	22 46.5 -05.7 93.9	21 46.8 -05.6 93.8	20 47.0 -05.4 93.7
3°	24 40.1 -06.3 95.2	23 40.5 -06.2 95.0	22 40.8 -06.0 94.9	21 41.2 -06.0 94.8	20 41.6 -05.9 94.7
4°	24 33.8 -06.8 96.2	23 34.3 -06.6 96.1	22 34.8 -06.5 96.0	21 35.2 -06.3 95.9	20 35.7 -06.3 95.8
5°	24 27.0 -07.2 97.3	23 27.7 -07.1 97.2	22 28.3 -07.0 97.1	21 28.9 -06.8 97.0	20 29.4 -06.6 96.9
6°	24 19.8 -07.7 98.4	23 20.6 -07.6 98.3	22 21.3 -07.3 98.2	21 22.1 -07.2 98.0	20 22.8 -07.0 97.9
7°	24 12.1 -08.2 99.5	23 13.0 -07.9 99.4	22 14.0 -07.8 99.2	21 14.9 -07.6 99.1	20 15.8 -07.4 99.0
8°	24 03.9 -08.6 100.6	23 05.1 -08.4 100.5	22 06.2 -08.2 100.3	21 07.3 -08.0 100.2	20 08.4 -07.8 100.0
9°	23 55.3 -09.1 101.7	22 56.7 -08.9 101.5	21 58.0 -08.6 101.4	20 59.3 -08.4 101.2	20 00.6 -08.2 101.1
10°	23 46.2 -09.5 102.8	22 47.8 -09.2 102.6	21 49.4 -09.0 102.4	20 50.9 -08.7 102.3	19 52.4 -08.5 102.1
11°	23 36.7 -10.0 103.8	22 38.6 -09.7 103.7	21 40.4 -09.4 103.5	20 42.2 -09.2 103.4	19 43.9 -08.9 103.2
12°	23 26.7 -10.4 104.9	22 28.9 -10.2 104.7	21 31.0 -09.9 104.6	20 33.0 -09.5 104.4	19 35.0 -09.3 104.2
13°	23 16.3 -10.8 106.0	22 18.7 -10.5 105.8	21 21.1 -10.2 105.6	20 23.5 -10.0 105.5	19 25.7 -09.6 105.3
14°	23 05.5 -11.3 107.1	22 08.2 -10.9 106.9	21 10.9 -10.6 106.7	20 13.5 -10.3 106.5	19 16.1 -09.9 106.3
15°	22 54.2 -11.7 108.1	21 57.3 -11.4 107.9	21 00.3 -11.0 107.7	20 03.2 -10.6 107.6	19 06.2 -10.4 107.4
16°	22 42.5 -12.2 109.2	21 45.9 -11.8 109.0	20 49.3 -11.4 108.8	19 52.6 -11.1 108.6	18 55.8 -10.7 108.4
17°	22 30.3 -12.5 110.3	21 34.1 -12.1 110.0	20 37.9 -11.8 109.8	19 41.5 -11.3 109.7	18 45.1 -11.0 109.5
18°	22 17.8 -13.0 111.3	21 22.0 -12.6 111.1	20 26.1 -12.1 110.9	19 30.2 -11.8 110.7	18 34.1 -11.3 110.5
19°	22 04.8 -13.3 112.4	21 09.4 -12.9 112.1	20 14.0 -12.6 111.9	19 18.4 -12.1 111.7	18 22.8 -11.7 111.5
20°	21 51.5 -13.8 113.4	20 56.5 -13.3 113.2	20 01.4 -12.8 113.0	19 06.3 -12.5 112.8	18 11.1 -12.1 112.6
21°	21 37.7 -14.1 114.5	20 43.2 -13.7 114.2	19 48.6 -13.3 114.0	18 53.8 -12.7 113.8	17 59.0 -12.3 113.6
22°	21 23.6 -14.6 115.5	20 29.5 -14.1 115.3	19 35.3 -13.6 115.1	18 41.1 -13.2 114.8	17 46.7 -12.7 114.6
23°	21 09.0 -14.9 116.6	20 15.4 -14.4 116.3	19 21.7 -13.9 116.1	18 27.9 -13.4 115.9	17 34.0 -13.0 115.7
24°	20 54.1 -15.3 117.6	20 01.0 -14.8 117.3	19 07.8 -14.3 117.1	18 14.5 -13.8 116.9	17 21.0 -13.3 116.7
25°	20 38.8 -15.6 118.6	19 46.2 -15.1 118.4	18 53.5 -14.6 118.1	18 00.7 -14.1 117.9	17 07.7 -13.6 117.7
26°	20 23.2 -16.1 119.7	19 31.1 -15.5 119.4	18 38.9 -15.0 119.2	17 46.6 -14.5 118.9	16 54.1 -13.9 118.7
27°	20 07.1 -16.3 120.7	19 15.6 -15.8 120.4	18 23.9 -15.3 120.2	17 32.1 -14.7 120.0	16 40.2 -14.2 119.7
28°	19 50.8 -16.8 121.7	18 59.8 -16.2 121.5	18 08.6 -15.6 121.2	17 17.4 -15.1 121.0	16 26.0 -14.5 120.7
29°	19 34.0 -17.0 122.7	18 43.6 -16.5 122.5	17 53.0 -15.9 122.2	17 02.3 -15.3 122.0	16 11.5 -14.8 121.8

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	19 57.0 -04.7 91.5	18 57.1 -04.6 91.4	17 57.3 -04.6 91.3	16 57.4 -04.5 91.2	15 57.6 -04.5 91.1
1°	19 52.3 -05.0 92.5	18 52.5 -04.9 92.4	17 52.7 -04.9 92.3	16 52.9 -04.8 92.3	15 53.1 -04.8 92.2
2°	19 47.3 -05.4 93.6	18 47.6 -05.4 93.5	17 47.8 -05.2 93.4	16 48.1 -05.2 93.3	15 48.3 -05.1 93.2
3°	19 41.9 -05.8 94.6	18 42.2 -05.6 94.5	17 42.6 -05.6 94.4	16 42.9 -05.5 94.3	15 43.2 -05.4 94.3
4°	19 36.1 -06.1 95.7	18 36.6 -06.0 95.6	17 37.0 -05.9 95.5	16 37.4 -05.8 95.4	15 37.8 -05.7 95.3
5°	19 30.0 -06.5 96.7	18 30.6 -06.4 96.6	17 31.1 -06.2 96.5	16 31.6 -06.1 96.4	15 32.1 -05.9 96.3
6°	19 23.5 -06.9 97.8	18 24.2 -06.7 97.7	17 24.9 -06.6 97.6	16 25.5 -06.4 97.5	15 26.2 -06.3 97.4
7°	19 16.6 -07.2 98.9	18 17.5 -07.1 98.7	17 18.3 -06.8 98.6	16 19.1 -06.7 98.5	15 19.9 -06.5 98.4
8°	19 09.4 -07.6 99.9	18 10.4 -07.3 99.8	17 11.5 -07.2 99.7	16 12.4 -07.0 99.5	15 13.4 -06.8 99.4
9°	19 01.8 -07.9 101.0	18 03.1 -07.8 100.8	17 04.3 -07.5 100.7	16 05.4 -07.3 100.6	15 06.6 -07.1 100.4
10°	18 53.9 -08.3 102.0	17 55.3 -08.0 101.9	16 56.8 -07.9 101.7	15 58.1 -07.6 101.6	14 59.5 -07.4 101.5
11°	18 45.6 -08.6 103.0	17 47.3 -08.4 102.9	16 48.9 -08.1 102.8	15 50.5 -07.8 102.6	14 52.1 -07.6 102.5
12°	18 37.0 -09.0 104.1	17 38.9 -08.7 103.9	16 40.8 -08.4 103.8	15 42.7 -08.2 103.7	14 44.5 -07.9 103.5
13°	18 28.0 -09.3 105.1	17 30.2 -09.0 105.0	16 32.4 -08.8 104.8	15 34.5 -08.5 104.7	14 36.6 -08.2 104.6
14°	18 18.7 -09.7 106.2	17 21.2 -09.4 106.0	16 23.6 -09.0 105.9	15 26.0 -08.7 105.7	14 28.4 -08.5 105.6
15°	18 09.0 -10.0 107.2	17 11.8 -09.7 107.1	16 14.6 -09.4 106.9	15 17.3 -09.1 106.7	14 19.9 -08.7 106.6
16°	17 59.0 -10.3 108.3	17 02.1 -09.9 108.1	16 05.2 -09.6 107.9	15 08.2 -09.3 107.8	14 11.2 -09.0 107.6
17°	17 48.7 -10.7 109.3	16 52.2 -10.3 109.1	15 55.6 -10.0 108.9	14 58.9 -09.5 108.8	14 02.2 -09.2 108.6
18°	17 38.0 -10.9 110.3	16 41.9 -10.6 110.1	15 45.6 -10.2 110.0	14 49.4 -09.9 109.8	13 53.0 -09.5 109.7
19°	17 27.1 -11.3 111.4	16 31.3 -10.9 111.2	15 35.4 -10.5 111.0	14 39.5 -10.1 110.8	13 43.5 -09.7 110.7
20°	17 15.8 -11.6 112.4	16 20.4 -11.2 112.2	15 24.9 -10.8 112.0	14 29.4 -10.4 111.9	13 33.8 -10.0 111.7
21°	17 04.2 -12.0 113.4	16 09.2 -11.5 113.2	15 14.1 -11.0 113.0	14 19.0 -10.6 112.9	13 23.8 -10.2 112.7
22°	16 52.2 -12.2 114.4	15 57.7 -11.8 114.2	15 03.1 -11.3 114.1	14 08.4 -10.9 113.9	13 13.6 -10.4 113.7
23°	16 40.0 -12.5 115.5	15 45.9 -12.0 115.3	14 51.8 -11.6 115.1	13 57.5 -11.1 114.9	13 03.2 -10.7 114.7
24°	16 27.5 -12.8 116.5	15 33.9 -12.4 116.3	14 40.2 -11.9 116.1	13 46.4 -11.4 115.9	12 52.5 -10.9 115.7
25°	16 14.7 -13.1 117.5	15 21.5 -12.6 117.3	14 28.3 -12.1 117.1	13 35.0 -11.7 116.9	12 41.6 -11.2 116.7
26°	16 01.6 -13.4 118.5	15 08.9 -12.9 118.3	14 16.2 -12.4 118.1	13 23.3 -11.8 117.9	12 30.4 -11.4 117.8
27°	15 48.2 -13.7 119.5	14 56.0 -13.1 119.3	14 03.8 -12.6 119.1	13 11.5 -12.1 118.9	12 19.0 -11.5 118.8
28°	15 34.5 -13.9 120.5	14 42.9 -13.4 120.3	13 51.2 -12.9 120.1	12 59.4 -12.4 119.9	12 07.5 -11.9 119.8
29°	15 20.6 -14.3 121.5	14 29.5 -13.7 121.3	13 38.3 -13.1 121.1	12 47.0 -12.5 120.9	11 55.6 -12.0 120.8

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	14 57.8 -04.5 91.1	13 57.9 -04.4 91.0	12 58.1 -04.4 90.9	11 58.2 -04.4 90.8	10 58.4 -04.4 90.8
1°	14 53.3 -04.8 92.1	13 53.5 -04.7 92.0	12 53.7 -04.7 91.9	11 53.8 -04.6 91.9	10 54.0 -04.6 91.8
2°	14 48.5 -05.0 93.1	13 48.8 -05.0 93.1	12 49.0 -04.9 93.0	11 49.2 -04.8 92.9	10 49.4 -04.7 92.8
3°	14 43.5 -05.3 94.2	13 43.8 -05.2 94.1	12 44.1 -05.1 94.0	11 44.4 -05.0 93.9	10 44.7 -05.0 93.8
4°	14 38.2 -05.5 95.2	13 38.6 -05.5 95.1	12 39.0 -05.4 95.0	11 39.4 -05.3 94.9	10 39.7 -05.1 94.8
5°	14 32.7 -05.9 96.2	13 33.1 -05.7 96.1	12 33.6 -05.6 96.0	11 34.1 -05.5 95.9	10 34.6 -05.4 95.9
6°	14 26.8 -06.1 97.3	13 27.4 -05.9 97.2	12 28.0 -05.8 97.1	11 28.6 -05.6 97.0	10 29.2 -05.5 96.9
7°	14 20.7 -06.4 98.3	13 21.5 -06.2 98.2	12 22.2 -06.0 98.1	11 23.0 -05.9 98.0	10 23.7 -05.8 97.9
8°	14 14.3 -06.6 99.3	13 15.3 -06.5 99.2	12 16.2 -06.3 99.1	11 17.1 -06.1 99.0	10 17.9 -05.9 98.9
9°	14 07.7 -06.9 100.3	13 08.8 -06.7 100.2	12 09.9 -06.5 100.1	11 11.0 -06.3 100.0	10 12.0 -06.1 99.9
10°	14 00.8 -07.1 101.4	13 02.1 -06.9 101.2	12 03.4 -06.7 101.1	11 04.7 -06.5 101.0	10 05.9 -06.3 100.9
11°	13 53.7 -07.4 102.4	12 55.2 -07.2 102.3	11 56.7 -06.9 102.1	10 58.2 -06.7 102.0	9 59.6 -06.5 101.9
12°	13 46.3 -07.7 103.4	12 48.0 -07.4 103.3	11 49.8 -07.2 103.2	10 51.5 -06.9 103.0	9 53.1 -06.6 102.9
13°	13 38.6 -07.9 104.4	12 40.6 -07.6 104.3	11 42.6 -07.4 104.2	10 44.6 -07.1 104.1	9 46.5 -06.9 103.9
14°	13 30.7 -08.2 105.4	12 33.0 -07.9 105.3	11 35.2 -07.5 105.2	10 37.5 -07.3 105.1	9 39.6 -07.0 104.9
15°	13 22.5 -08.4 106.5	12 25.1 -08.1 106.3	11 27.7 -07.8 106.2	10 30.2 -07.5 106.1	9 32.6 -07.1 106.0
16°	13 14.1 -08.6 107.5	12 17.0 -08.3 107.3	11 19.9 -08.0 107.2	10 22.7 -07.7 107.1	9 25.5 -07.4 107.0
17°	13 05.5 -08.9 108.5	12 08.7 -08.5 108.4	11 11.9 -08.2 108.2	10 15.0 -07.8 108.1	9 18.1 -07.5 108.0
18°	12 56.6 -09.1 109.5	12 00.2 -08.8 109.4	11 03.7 -08.4 109.2	10 07.2 -08.1 109.1	9 10.6 -07.7 109.0
19°	12 47.5 -09.3 110.5	11 51.4 -08.9 110.4	10 55.3 -08.6 110.2	9 59.1 -08.2 110.1	9 02.9 -07.9 110.0
20°	12 38.2 -09.6 111.5	11 42.5 -09.2 111.4	10 46.7 -08.8 111.2	9 50.9 -08.4 111.1	8 55.0 -08.0 111.0
21°	12 28.6 -09.8 112.5	11 33.3 -09.4 112.4	10 37.9 -09.0 112.2	9 42.5 -08.6 112.1	8 47.0 -08.2 112.0
22°	12 18.8 -10.0 113.6	11 23.9 -09.6 113.4	10 28.9 -09.1 113.3	9 33.9 -08.7 113.1	8 38.8 -08.3 113.0
23°	12 08.8 -10.3 114.6	11 14.3 -09.8 114.4	10 19.8 -09.4 114.3	9 25.2 -08.9 114.1	8 30.5 -08.5 114.0
24°	11 58.5 -10.4 115.6	11 04.5 -10.0 115.4	10 10.4 -09.5 115.3	9 16.3 -09.1 115.1	8 22.0 -08.6 115.0
25°	11 48.1 -10.7 116.6	10 54.5 -10.2 116.4	10 00.9 -09.7 116.3	9 07.2 -09.3 116.1	8 13.4 -08.8 116.0
26°	11 37.4 -10.9 117.6	10 44.3 -10.4 117.4	9 51.2 -09.9 117.3	8 57.9 -09.4 117.1	8 04.6 -08.9 117.0
27°	11 26.5 -11.1 118.6	10 33.9 -10.5 118.4	9 41.3 -10.1 118.3	8 48.5 -09.6 118.1	7 55.7 -09.1 118.0
28°	11 15.4 -11.2 119.6	10 23.4 -10.8 119.4	9 31.2 -10.3 119.3	8 38.9 -09.7 119.1	7 46.6 -09.2 119.0
29°	11 04.2 -11.5 120.6	10 12.6 -10.9 120.4	9 20.9 -10.4 120.3	8 29.2 -09.9 120.1	7 37.4 -09.3 120.0

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 58.5 -04.3 90.7	8 58.7 -04.3 90.6	7 58.8 -04.3 90.6	6 59.0 -04.3 90.5	5 59.1 -04.2 90.4
1°	9 54.2 -04.5 91.7	8 54.4 -04.5 91.6	7 54.5 -04.4 91.6	6 54.7 -04.4 91.5	5 54.9 -04.4 91.4
2°	9 49.7 -04.7 92.7	8 49.9 -04.7 92.7	7 50.1 -04.6 92.6	6 50.3 -04.5 92.5	5 50.5 -04.5 92.4
3°	9 45.0 -04.9 93.7	8 45.2 -04.8 93.7	7 45.5 -04.7 93.6	6 45.8 -04.7 93.5	5 46.0 -04.6 93.4
4°	9 40.1 -05.1 94.8	8 40.4 -04.9 94.7	7 40.8 -04.9 94.6	6 41.1 -04.8 94.5	5 41.4 -04.7 94.4
5°	9 35.0 -05.2 95.8	8 35.5 -05.2 95.7	7 35.9 -05.0 95.6	6 36.3 -04.9 95.5	5 36.7 -04.7 95.4
6°	9 29.8 -05.4 96.8	8 30.3 -05.2 96.7	7 30.9 -05.2 96.6	6 31.4 -05.0 96.5	5 32.0 -04.9 96.4
7°	9 24.4 -05.6 97.8	8 25.1 -05.5 97.7	7 25.7 -05.2 97.6	6 26.4 -05.1 97.5	5 27.1 -05.0 97.4
8°	9 18.8 -05.8 98.8	8 19.6 -05.5 98.7	7 20.5 -05.5 98.6	6 21.3 -05.3 98.5	5 22.1 -05.1 98.4
9°	9 13.0 -05.9 99.8	8 14.1 -05.8 99.7	7 15.0 -05.5 99.6	6 16.0 -05.3 99.5	5 17.0 -05.2 99.4
10°	9 07.1 -06.1 100.8	8 08.3 -05.9 100.7	7 09.5 -05.7 100.6	6 10.7 -05.5 100.5	5 11.8 -05.3 100.4
11°	9 01.0 -06.2 101.8	8 02.4 -06.0 101.7	7 03.8 -05.8 101.6	6 05.2 -05.6 101.5	5 06.5 -05.3 101.4
12°	8 54.8 -06.4 102.8	7 56.4 -06.2 102.7	6 58.0 -05.9 102.6	5 59.6 -05.7 102.5	5 01.2 -05.5 102.4
13°	8 48.4 -06.6 103.8	7 50.2 -06.3 103.7	6 52.1 -06.1 103.6	5 53.9 -05.8 103.5	4 55.7 -05.6 103.4
14°	8 41.8 -06.7 104.8	7 43.9 -06.4 104.7	6 46.0 -06.2 104.6	5 48.1 -05.9 104.5	4 50.1 -05.6 104.4
15°	8 35.1 -06.9 105.8	7 37.5 -06.6 105.7	6 39.8 -06.3 105.6	5 42.2 -06.0 105.5	4 44.5 -05.7 105.4
16°	8 28.2 -07.1 106.8	7 30.9 -06.7 106.7	6 33.5 -06.4 106.6	5 36.2 -06.1 106.5	4 38.8 -05.8 106.4
17°	8 21.1 -07.1 107.8	7 24.2 -06.9 107.7	6 27.1 -06.5 107.6	5 30.1 -06.2 107.5	4 33.0 -05.9 107.4
18°	8 14.0 -07.4 108.9	7 17.3 -07.0 108.7	6 20.6 -06.7 108.6	5 23.9 -06.4 108.5	4 27.1 -06.0 108.4
19°	8 06.6 -07.5 109.9	7 10.3 -07.1 109.7	6 13.9 -06.7 109.6	5 17.5 -06.4 109.5	4 21.1 -06.0 109.4
20°	7 59.1 -07.6 110.9	7 03.2 -07.3 110.7	6 07.2 -06.9 110.6	5 11.1 -06.5 110.5	4 15.1 -06.2 110.4
21°	7 51.5 -07.8 111.9	6 55.9 -07.4 111.7	6 00.3 -07.0 111.6	5 04.6 -06.6 111.5	4 08.9 -06.2 111.4
22°	7 43.7 -07.9 112.9	6 48.5 -07.5 112.7	5 53.3 -07.1 112.6	4 58.0 -06.6 112.5	4 02.7 -06.2 112.4
23°	7 35.8 -08.1 113.9	6 41.0 -07.6 113.7	5 46.2 -07.2 113.6	4 51.4 -06.8 113.5	3 56.5 -06.4 113.4
24°	7 27.7 -08.1 114.9	6 33.4 -07.7 114.7	5 39.0 -07.3 114.6	4 44.6 -06.9 114.5	3 50.1 -06.4 114.4
25°	7 19.6 -08.4 115.9	6 25.7 -07.9 115.7	5 31.7 -07.4 115.6	4 37.7 -06.9 115.5	3 43.7 -06.5 115.4
26°	7 11.2 -08.4 116.9	6 17.8 -08.0 116.7	5 24.3 -07.5 116.6	4 30.8 -07.0 116.5	3 37.2 -06.5 116.4
27°	7 02.8 -08.6 117.9	6 09.8 -08.0 117.7	5 16.8 -07.6 117.6	4 23.8 -07.1 117.5	3 30.7 -06.7 117.4
28°	6 54.2 -08.7 118.9	6 01.8 -08.2 118.7	5 09.2 -07.6 118.6	4 16.7 -07.2 118.5	3 24.0 -06.6 118.4
29°	6 45.5 -08.8 119.8	5 53.6 -08.3 119.7	5 01.6 -07.8 119.6	4 09.5 -07.3 119.5	3 17.4 -06.8 119.4

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 59.3 -04.3 90.3	3 59.4 -04.2 90.3	2 59.6 -04.3 90.2	1 59.7 -04.2 90.1	0 59.9 -04.2 90.1
1°	4 55.0 -04.3 91.4	3 55.2 -04.3 91.3	2 55.3 -04.2 91.2	1 55.5 -04.2 91.1	0 55.7 -04.3 91.1
2°	4 50.7 -04.4 92.4	3 50.9 -04.4 92.3	2 51.1 -04.4 92.2	1 51.3 -04.3 92.1	0 51.4 -04.2 92.1
3°	4 46.3 -04.6 93.4	3 46.5 -04.4 93.3	2 46.7 -04.3 93.2	1 47.0 -04.3 93.1	0 47.2 -04.2 93.1
4°	4 41.7 -04.5 94.4	3 42.1 -04.5 94.3	2 42.4 -04.4 94.2	1 42.7 -04.4 94.1	0 43.0 -04.3 94.1
5°	4 37.2 -04.7 95.4	3 37.6 -04.6 95.3	2 38.0 -04.5 95.2	1 38.3 -04.3 95.1	0 38.7 -04.2 95.1
6°	4 32.5 -04.8 96.4	3 33.0 -04.7 96.3	2 33.5 -04.5 96.2	1 34.0 -04.4 96.1	0 34.5 -04.3 96.1
7°	4 27.7 -04.8 97.4	3 28.3 -04.7 97.3	2 29.0 -04.6 97.2	1 29.6 -04.4 97.1	0 30.2 -04.3 97.1
8°	4 22.9 -05.0 98.4	3 23.6 -04.7 98.3	2 24.4 -04.6 98.2	1 25.2 -04.5 98.1	0 25.9 -04.3 98.1
9°	4 17.9 -05.0 99.4	3 18.9 -04.9 99.3	2 19.8 -04.7 99.2	1 20.7 -04.5 99.1	0 21.6 -04.3 99.0
10°	4 12.9 -05.0 100.4	3 14.0 -04.8 100.3	2 15.1 -04.6 100.2	1 16.2 -04.5 100.1	0 17.3 -04.3 100.0
11°	4 07.9 -05.2 101.4	3 09.2 -05.0 101.3	2 10.5 -04.8 101.2	1 11.7 -04.5 101.1	0 13.0 -04.3 101.0
12°	4 02.7 -05.2 102.4	3 04.2 -05.0 102.3	2 05.7 -04.7 102.2	1 07.2 -04.5 102.1	0 08.7 -04.3 102.0
13°	3 57.5 -05.3 103.3	2 59.2 -05.0 103.3	2 01.0 -04.8 103.2	1 02.7 -04.6 103.1	0 04.4 -04.3 103.0
14°	3 52.2 -05.4 104.3	2 54.2 -05.1 104.3	1 56.2 -04.9 104.2	0 58.1 -04.6 104.1	0 00.1 -04.4 104.0
15°	3 46.8 -05.4 105.3	2 49.1 -05.2 105.3	1 51.3 -04.9 105.2	0 53.5 -04.6 105.1	-0 04.3 -04.3
16°	3 41.4 -05.5 106.3	2 43.9 -05.2 106.3	1 46.4 -04.9 106.2	0 48.9 -04.6 106.1	-0 08.6 -04.3
17°	3 35.9 -05.6 107.3	2 38.7 -05.2 107.3	1 41.5 -04.9 107.2	0 44.3 -04.6 107.1	-0 12.9 -04.3
18°	3 30.3 -05.6 108.3	2 33.5 -05.3 108.3	1 36.6 -05.0 108.2	0 39.7 -04.6 108.1	-0 17.2 -04.3
19°	3 24.7 -05.7 109.3	2 28.2 -05.4 109.2	1 31.6 -05.0 109.2	0 35.1 -04.7 109.1	-0 21.5 -04.3
20°	3 19.0 -05.8 110.3	2 22.8 -05.4 110.2	1 26.6 -05.0 110.2	0 30.4 -04.6 110.1	-0 25.8 -04.3
21°	3 13.2 -05.8 111.3	2 17.4 -05.4 111.2	1 21.6 -05.0 111.2	0 25.8 -04.7 111.1	-0 30.1 -04.2
22°	3 07.4 -05.9 112.3	2 12.0 -05.5 112.2	1 16.6 -05.1 112.2	0 21.1 -04.6 112.1	-0 34.3 -04.3
23°	3 01.5 -05.9 113.3	2 06.5 -05.5 113.2	1 11.5 -05.1 113.2	0 16.5 -04.7 113.1	-0 38.6 -04.3
24°	2 55.6 -06.0 114.3	2 01.0 -05.5 114.2	1 06.4 -05.1 114.2	0 11.8 -04.7 114.1	-0 42.9 -04.2
25°	2 49.6 -06.0 115.3	1 55.5 -05.6 115.2	1 01.3 -05.1 115.1	0 07.1 -04.7 115.1	-0 47.1 -04.2
26°	2 43.6 -06.1 116.3	1 49.9 -05.6 116.2	0 56.2 -05.1 116.1	0 02.4 -04.6 116.1	-0 51.3 -04.2
27°	2 37.5 -06.1 117.3	1 44.3 -05.6 117.2	0 51.1 -05.2 117.1	-0 02.2 -04.7	-0 55.5 -04.2
28°	2 31.4 -06.2 118.3	1 38.7 -05.7 118.2	0 45.9 -05.2 118.1	-0 06.9 -04.7	-0 59.7 -04.2
29°	2 25.2 -06.2 119.3	1 33.0 -05.7 119.2	0 40.7 -05.2 119.1	-0 11.6 -04.7	-1 03.9 -04.2

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 -04.2 90.0	-0 59.9 -04.1			
1°	-0 04.2 -04.2	-1 04.0 -04.2			
2°	-0 08.4 -04.2	-1 08.2 -04.1			
3°	-0 12.6 -04.1	-1 12.3 -04.1			
4°	-0 16.7 -04.2	-1 16.4 -04.1			
5°	-0 20.9 -04.2	-1 20.5 -04.1			
6°	-0 25.1 -04.1	-1 24.6 -04.0			
7°	-0 29.2 -04.2	-1 28.6 -04.1			
8°	-0 33.4 -04.1	-1 32.7 -03.9			
9°	-0 37.5 -04.1	-1 36.6 -04.0			
10°	-0 41.6 -04.2	-1 40.6 -03.9			
11°	-0 45.8 -04.1	-1 44.5 -03.9			
12°	-0 49.9 -04.0	-1 48.4 -03.9			
13°	-0 53.9 -04.1	-1 52.3 -03.8			
14°	-0 58.0 -04.1	-1 56.1 -03.8			
15°	-1 02.1 -04.0	-1 59.9 -03.8			
16°	-1 06.1 -04.0	-2 03.7 -03.7			
17°	-1 10.1 -04.0	-2 07.4 -03.7			
18°	-1 14.1 -04.0	-2 11.1 -03.6			
19°	-1 18.1 -03.9	-2 14.7 -03.6			
20°	-1 22.0 -03.9	-2 18.3 -03.6			
21°	-1 25.9 -03.9	-2 21.9 -03.5			
22°	-1 29.8 -03.9	-2 25.4 -03.4			
23°	-1 33.7 -03.9	-2 28.8 -03.5			
24°	-1 37.6 -03.8	-2 32.3 -03.3			
25°	-1 41.4 -03.7	-2 35.6 -03.4			
26°	-1 45.1 -03.8	-2 39.0 -03.3			
27°	-1 48.9 -03.7	-2 42.3 -03.2			
28°	-1 52.6 -03.7	-2 45.5 -03.2			
29°	-1 56.3 -03.6	-2 48.7 -03.1			

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

Declination CONTRARY name to Latitude

Latitude 5°

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°	85 00.0 -60.0 180.0	84 54.1 -59.1 168.7	84 36.9 -56.3 158.2	84 10.3 -52.7 149.0	83 36.0 -48.5 141.3
1°	84 00.0 -60.0 180.0	83 55.0 -59.3 170.5	83 40.6 -57.4 161.5	83 17.6 -54.5 153.4	82 47.5 -51.1 146.2
2°	83 00.0 -60.0 180.0	82 55.7 -59.4 171.9	82 43.2 -57.9 164.0	82 23.1 -55.7 156.8	81 56.4 -53.0 150.2
3°	82 00.0 -60.0 180.0	81 56.3 -59.6 172.9	81 45.3 -58.4 165.9	81 27.4 -56.5 159.4	81 03.4 -54.2 153.4
4°	81 00.0 -60.0 180.0	80 56.7 -59.7 173.6	80 46.9 -58.8 167.4	80 30.9 -57.3 161.5	80 09.2 -55.3 156.0
5°	80 00.0 -60.0 180.0	79 57.0 -59.7 174.3	79 48.1 -58.9 168.7	79 33.6 -57.6 163.3	79 13.9 -56.1 158.2
6°	79 00.0 -60.0 180.0	78 57.3 -59.8 174.8	78 49.2 -59.1 169.7	78 36.0 -58.1 164.7	78 17.8 -56.6 160.0
7°	78 00.0 -60.0 180.0	77 57.5 -59.8 175.2	77 50.1 -59.2 170.5	77 37.9 -58.3 166.0	77 21.2 -57.1 161.6
8°	77 00.0 -60.0 180.0	76 57.7 -59.8 175.6	76 50.9 -59.4 171.3	76 39.6 -58.6 167.0	76 24.1 -57.5 162.9
9°	76 00.0 -60.0 180.0	75 57.9 -59.9 175.9	75 51.5 -59.4 171.9	75 41.0 -58.7 167.9	75 26.6 -57.8 164.1
10°	75 00.0 -60.0 180.0	74 58.0 -59.9 176.2	74 52.1 -59.5 172.4	74 42.3 -58.9 168.7	74 28.8 -58.1 165.1
11°	74 00.0 -60.0 180.0	73 58.1 -59.8 176.4	73 52.6 -59.6 172.9	73 43.4 -59.0 169.4	73 30.7 -58.2 166.0
12°	73 00.0 -60.0 180.0	72 58.3 -59.9 176.7	72 53.0 -59.6 173.3	72 44.4 -59.1 170.1	72 32.5 -58.5 166.9
13°	72 00.0 -60.0 180.0	71 58.4 -60.0 176.9	71 53.4 -59.6 173.7	71 45.3 -59.2 170.6	71 34.0 -58.6 167.6
14°	71 00.0 -60.0 180.0	70 58.4 -59.9 177.0	70 53.8 -59.7 174.1	70 46.1 -59.3 171.1	70 35.4 -58.7 168.2
15°	70 00.0 -60.0 180.0	69 58.5 -59.9 177.2	69 54.1 -59.7 174.4	69 46.8 -59.3 171.6	69 36.7 -58.9 168.8
16°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.3	68 54.4 -59.7 174.7	68 47.5 -59.4 172.0	68 37.8 -58.9 169.4
17°	68 00.0 -60.0 180.0	67 58.7 -60.0 177.4	67 54.7 -59.8 174.9	67 48.1 -59.5 172.4	67 38.9 -59.1 169.9
18°	67 00.0 -60.0 180.0	66 58.7 -59.9 177.6	66 54.9 -59.7 175.1	66 48.6 -59.5 172.7	66 39.8 -59.1 170.4
19°	66 00.0 -60.0 180.0	65 58.8 -60.0 177.7	65 55.2 -59.8 175.4	65 49.1 -59.5 173.1	65 40.7 -59.1 170.8
20°	65 00.0 -60.0 180.0	64 58.8 -59.9 177.8	64 55.4 -59.8 175.6	64 49.6 -59.6 173.4	64 41.6 -59.3 171.2
21°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.9	63 55.6 -59.9 175.7	63 50.0 -59.6 173.6	63 42.3 -59.3 171.5
22°	63 00.0 -60.0 180.0	62 58.9 -59.9 178.0	62 55.7 -59.8 175.9	62 50.4 -59.6 173.9	62 43.0 -59.3 171.9
23°	62 00.0 -60.0 180.0	61 59.0 -60.0 178.0	61 55.9 -59.8 176.1	61 50.8 -59.6 174.1	61 43.7 -59.4 172.2
24°	61 00.0 -60.0 180.0	60 59.0 -59.9 178.1	60 56.1 -59.9 176.2	60 51.2 -59.7 174.4	60 44.3 -59.4 172.5
25°	60 00.0 -60.0 180.0	59 59.1 -60.0 178.2	59 56.2 -59.8 176.4	59 51.5 -59.7 174.6	59 44.9 -59.4 172.8
26°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.3	58 56.4 -59.9 176.5	58 51.8 -59.7 174.8	58 45.5 -59.5 173.1
27°	58 00.0 -60.0 180.0	57 59.1 -59.9 178.3	57 56.5 -59.9 176.6	57 52.1 -59.7 175.0	57 46.0 -59.5 173.3
28°	57 00.0 -60.0 180.0	56 59.2 -60.0 178.4	56 56.6 -59.9 176.8	56 52.4 -59.7 175.1	56 46.5 -59.5 173.5
29°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.4	55 56.7 -59.8 176.9	55 52.7 -59.8 175.3	55 47.0 -59.6 173.8

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	82 56.0 -44.4 134.9	82 11.7 -40.5 129.7	81 24.3 -37.1 125.4	80 34.5 -34.1 121.8	79 42.9 -31.4 118.8
1°	82 11.6 -47.6 140.1	81 31.2 -44.1 134.9	80 47.2 -40.9 130.4	80 00.4 -37.9 126.7	79 11.5 -35.2 123.5
2°	81 24.0 -49.9 144.4	80 47.1 -46.9 139.3	80 06.3 -43.8 134.9	79 22.5 -41.0 131.0	78 36.3 -38.4 127.7
3°	80 34.1 -51.7 147.9	80 00.2 -49.0 143.0	79 22.5 -46.3 138.7	78 41.5 -43.7 134.9	77 57.9 -41.2 131.5
4°	79 42.4 -53.0 150.9	79 11.2 -50.7 146.2	78 36.2 -48.3 142.0	77 57.8 -45.8 138.3	77 16.7 -43.5 134.9
5°	78 49.4 -54.2 153.4	78 20.5 -52.0 149.0	77 47.9 -49.8 144.9	77 12.0 -47.6 141.3	76 33.2 -45.4 137.9
6°	77 55.2 -55.0 155.5	77 28.5 -53.2 151.4	76 58.1 -51.2 147.5	76 24.4 -49.2 143.9	75 47.8 -47.2 140.7
7°	77 00.2 -55.6 157.4	76 35.3 -54.0 153.4	76 06.9 -52.3 149.7	75 35.2 -50.4 146.3	75 00.6 -48.5 143.1
8°	76 04.6 -56.3 159.0	75 41.3 -54.8 155.2	75 14.6 -53.2 151.7	74 44.8 -51.5 148.4	74 12.1 -49.8 145.3
9°	75 08.3 -56.6 160.4	74 46.5 -55.3 156.8	74 21.4 -53.9 153.5	73 53.3 -52.4 150.3	73 22.3 -50.8 147.3
10°	74 11.7 -57.1 161.6	73 51.2 -55.9 158.3	73 27.5 -54.6 155.1	73 00.9 -53.2 152.0	72 31.5 -51.7 149.1
11°	73 14.6 -57.3 162.7	72 55.3 -56.3 159.5	72 32.9 -55.1 156.5	72 07.7 -53.9 153.6	71 39.8 -52.5 150.8
12°	72 17.3 -57.7 163.7	71 59.0 -56.7 160.7	71 37.8 -55.6 157.8	71 13.8 -54.4 155.0	70 47.3 -53.2 152.3
13°	71 19.6 -57.8 164.6	71 02.3 -57.0 161.7	70 42.2 -56.0 158.9	70 19.4 -54.9 156.3	69 54.1 -53.7 153.7
14°	70 21.8 -58.1 165.4	70 05.3 -57.2 162.7	69 46.2 -56.3 160.0	69 24.5 -55.3 157.4	69 00.4 -54.3 154.9
15°	69 23.7 -58.2 166.2	69 08.1 -57.5 163.5	68 49.9 -56.7 161.0	68 29.2 -55.8 158.5	68 06.1 -54.7 156.1
16°	68 25.5 -58.4 166.8	68 10.6 -57.7 164.3	67 53.2 -56.9 161.9	67 33.4 -56.0 159.5	67 11.4 -55.2 157.2
17°	67 27.1 -58.5 167.4	67 12.9 -57.9 165.0	66 56.3 -57.2 162.7	66 37.4 -56.4 160.4	66 16.2 -55.5 158.2
18°	66 28.6 -58.6 168.0	66 15.0 -58.0 165.7	65 59.1 -57.3 163.5	65 41.0 -56.6 161.3	65 20.7 -55.8 159.1
19°	65 30.0 -58.7 168.5	65 17.0 -58.2 166.3	65 01.8 -57.6 164.2	64 44.4 -56.9 162.0	64 24.9 -56.1 160.0
20°	64 31.3 -58.8 169.0	64 18.8 -58.3 166.9	64 04.2 -57.7 164.8	63 47.5 -57.0 162.8	63 28.8 -56.3 160.8
21°	63 32.5 -58.9 169.5	63 20.5 -58.4 167.4	63 06.5 -57.9 165.4	62 50.5 -57.3 163.5	62 32.5 -56.6 161.5
22°	62 33.6 -59.0 169.9	62 22.1 -58.5 167.9	62 08.6 -58.0 166.0	61 53.2 -57.4 164.1	61 35.9 -56.8 162.2
23°	61 34.6 -59.0 170.3	61 23.6 -58.6 168.4	61 10.6 -58.1 166.5	60 55.8 -57.6 164.7	60 39.1 -57.0 162.9
24°	60 35.6 -59.1 170.7	60 25.0 -58.7 168.8	60 12.5 -58.2 167.1	59 58.2 -57.7 165.3	59 42.1 -57.1 163.5
25°	59 36.5 -59.1 171.0	59 26.3 -58.8 169.3	59 14.3 -58.4 167.5	59 00.5 -57.9 165.8	58 45.0 -57.3 164.1
26°	58 37.4 -59.2 171.3	58 27.5 -58.8 169.7	58 15.9 -58.4 168.0	58 02.6 -57.9 166.3	57 47.7 -57.5 164.7
27°	57 38.2 -59.2 171.7	57 28.7 -58.9 170.0	57 17.5 -58.5 168.4	57 04.7 -58.1 166.8	56 50.7 -57.6 165.2
28°	56 39.0 -59.3 172.0	56 29.8 -59.0 170.4	56 19.0 -58.6 168.8	56 06.6 -58.2 167.3	55 52.7 -57.7 165.7
29°	55 39.7 -59.3 172.2	55 30.8 -59.0 170.7	55 20.4 -58.6 169.2	55 08.4 -58.2 167.7	54 55.0 -57.8 166.2

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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°	78 49.9 -29.1 116.3	77 55.8 -27.0 114.2	77 00.8 -25.1 112.3	76 05.2 -23.5 110.7	75 09.0 -22.1 109.3
1°	78 20.8 -32.7 120.7	77 28.8 -30.6 118.3	76 35.7 -28.6 116.3	75 41.7 -26.9 114.5	74 46.9 -25.3 112.9
2°	77 48.1 -36.0 124.8	76 58.2 -33.8 122.2	76 07.1 -31.9 120.0	75 14.8 -30.0 118.0	74 21.6 -28.4 116.3
3°	77 12.1 -38.8 128.5	76 24.4 -36.6 125.8	75 35.2 -34.6 123.5	74 44.8 -32.8 121.4	73 53.2 -31.0 119.5
4°	76 33.3 -41.3 131.8	75 47.8 -39.1 129.1	75 00.6 -37.1 126.7	74 12.0 -35.3 124.5	73 22.2 -33.6 122.5
5°	75 52.0 -43.3 134.9	75 08.7 -41.3 132.1	74 23.5 -39.4 129.7	73 36.7 -37.5 127.4	72 48.6 -35.8 125.4
6°	75 08.7 -45.2 137.7	74 27.4 -43.2 134.9	73 44.1 -41.3 132.4	72 59.2 -39.6 130.1	72 12.8 -37.9 128.0
7°	74 23.5 -46.7 140.2	73 44.2 -44.9 137.5	73 02.8 -43.1 135.0	72 19.6 -41.3 132.7	71 34.9 -39.7 130.5
8°	73 36.8 -48.0 142.4	72 59.3 -46.3 139.8	72 19.7 -44.6 137.3	71 38.3 -42.9 135.0	70 55.2 -41.3 132.9
9°	72 48.8 -49.2 144.5	72 13.0 -47.6 141.9	71 35.1 -45.9 139.5	70 55.4 -44.4 137.2	70 13.9 -42.8 135.1
10°	71 59.6 -50.2 146.4	71 25.4 -48.7 143.9	70 49.2 -47.2 141.4	70 11.0 -45.6 139.2	69 31.1 -44.1 137.1
11°	71 09.4 -51.1 148.1	70 36.7 -49.6 145.7	70 02.0 -48.2 143.3	69 25.4 -46.8 141.1	68 47.0 -45.4 139.0
12°	70 18.3 -51.9 149.7	69 47.1 -50.5 147.3	69 13.8 -49.2 145.0	68 38.6 -47.8 142.8	68 01.6 -46.4 140.8
13°	69 26.4 -52.5 151.2	68 56.6 -51.3 148.8	68 24.6 -50.0 146.6	67 50.8 -48.7 144.5	67 15.2 -47.4 142.4
14°	68 33.9 -53.1 152.5	68 05.3 -52.0 150.3	67 34.6 -50.7 148.1	67 02.1 -49.5 146.0	66 27.8 -48.3 144.0
15°	67 40.8 -53.7 153.8	67 13.3 -52.5 151.6	66 43.9 -51.4 149.4	66 12.6 -50.2 147.4	65 39.5 -49.0 145.5
16°	66 47.1 -54.1 154.9	66 20.8 -53.1 152.8	65 52.5 -52.0 150.7	65 22.4 -50.9 148.7	64 50.5 -49.8 146.8
17°	65 53.0 -54.6 156.0	65 27.7 -53.6 153.9	65 00.5 -52.6 151.9	64 31.5 -51.5 150.0	64 00.7 -50.4 148.1
18°	64 58.4 -54.9 157.0	64 34.1 -54.0 155.0	64 07.9 -53.0 153.1	63 40.0 -52.1 151.2	63 10.3 -51.0 149.3
19°	64 03.5 -55.3 158.0	63 40.1 -54.4 156.0	63 14.9 -53.5 154.1	62 47.9 -52.5 152.3	62 19.3 -51.6 150.5
20°	63 08.2 -55.6 158.8	62 45.7 -54.8 156.9	62 21.4 -53.9 155.1	61 55.4 -53.0 153.3	61 27.7 -52.0 151.6
21°	62 12.6 -55.8 159.7	61 50.9 -55.0 157.8	61 27.5 -54.2 156.0	61 02.4 -53.4 154.3	60 35.7 -52.5 152.6
22°	61 16.8 -56.1 160.4	60 55.9 -55.4 158.6	60 33.3 -54.6 156.9	60 09.0 -53.7 155.2	59 43.2 -52.9 153.6
23°	60 20.7 -56.4 161.2	60 00.5 -55.6 159.4	59 38.7 -54.9 157.7	59 15.3 -54.1 156.1	58 50.3 -53.3 154.5
24°	59 24.3 -56.5 161.8	59 04.9 -55.9 160.2	58 43.8 -55.1 158.5	58 21.2 -54.4 156.9	57 57.0 -53.6 155.4
25°	58 27.8 -56.7 162.5	58 09.0 -56.0 160.9	57 48.7 -55.4 159.3	57 26.8 -54.7 157.7	57 03.4 -54.0 156.2
26°	57 31.1 -56.9 163.1	57 13.0 -56.3 161.5	56 53.3 -55.7 160.0	56 32.1 -55.0 158.5	56 09.4 -54.2 157.0
27°	56 34.2 -57.0 163.7	56 16.7 -56.5 162.2	55 57.6 -55.8 160.7	55 37.1 -55.2 159.2	55 15.2 -54.5 157.8
28°	55 37.2 -57.2 164.2	55 20.2 -56.6 162.8	55 01.8 -56.1 161.3	54 41.9 -55.4 159.9	54 20.7 -54.7 158.5
29°	54 40.0 -57.3 164.8	54 23.6 -56.8 163.3	54 05.7 -56.2 161.9	53 46.5 -55.6 160.6	53 26.0 -55.0 159.2

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°	74 12.4 -20.8 108.0	73 15.4 -19.7 106.9	72 18.0 -18.6 105.9	71 20.4 -17.7 105.0	70 22.6 -16.9 104.2
1°	73 51.6 -24.0 111.4	72 55.7 -22.7 110.2	71 59.4 -21.6 109.0	71 02.7 -20.5 108.0	70 05.7 -19.6 107.0
2°	73 27.6 -26.8 114.7	72 33.0 -25.5 113.3	71 37.8 -24.2 112.0	70 42.2 -23.1 110.8	69 46.1 -22.0 109.8
3°	73 00.8 -29.5 117.8	72 07.5 -28.1 116.3	71 13.6 -26.8 114.9	70 19.1 -25.5 113.6	69 24.1 -24.4 112.5
4°	72 31.3 -32.0 120.7	71 39.4 -30.4 119.1	70 46.8 -29.1 117.6	69 53.6 -27.9 116.3	68 59.7 -26.7 115.0
5°	71 59.3 -34.2 123.5	71 09.0 -32.7 121.8	70 17.7 -31.3 120.2	69 25.7 -29.9 118.8	68 33.0 -28.7 117.5
6°	71 25.1 -36.3 126.1	70 36.3 -34.8 124.4	69 46.4 -33.3 122.7	68 55.8 -32.0 121.3	68 04.3 -30.7 119.9
7°	70 48.8 -38.1 128.6	70 01.5 -36.6 126.8	69 13.1 -35.1 125.1	68 23.8 -33.8 123.6	67 33.6 -32.6 122.2
8°	70 10.7 -39.7 130.9	69 24.9 -38.3 129.1	68 38.0 -36.9 127.4	67 50.0 -35.6 125.8	67 01.0 -34.2 124.3
9°	69 31.0 -41.4 133.1	68 46.6 -39.8 131.2	68 01.1 -38.5 129.5	67 14.4 -37.1 127.9	66 26.8 -35.8 126.4
10°	68 49.6 -42.6 135.1	68 06.8 -41.3 133.3	67 22.6 -39.9 131.5	66 37.3 -38.5 129.9	65 51.0 -37.3 128.4
11°	68 07.0 -44.0 137.0	67 25.5 -42.5 135.2	66 42.7 -41.2 133.5	65 58.8 -39.9 131.8	65 13.7 -38.7 130.3
12°	67 23.0 -45.0 138.8	66 43.0 -43.8 137.0	66 01.5 -42.4 135.3	65 18.9 -41.2 133.6	64 35.0 -39.9 132.1
13°	66 38.0 -46.1 140.5	65 59.2 -44.8 138.7	65 19.1 -43.5 137.0	64 37.7 -42.3 135.4	63 55.1 -41.0 133.8
14°	65 51.9 -47.0 142.1	65 14.4 -45.7 140.3	64 35.6 -44.6 138.6	63 55.4 -43.3 137.0	63 14.1 -42.2 135.5
15°	65 04.9 -47.9 143.6	64 28.7 -46.7 141.8	63 51.0 -45.5 140.1	63 12.1 -44.3 138.5	62 31.9 -43.1 137.0
16°	64 17.0 -48.6 145.0	63 42.0 -47.5 143.3	63 05.5 -46.3 141.6	62 27.8 -45.2 140.0	61 48.8 -44.1 138.5
17°	63 28.4 -49.4 146.3	62 54.5 -48.2 144.6	62 19.2 -47.1 143.0	61 42.6 -46.0 141.4	61 04.7 -44.9 139.9
18°	62 39.0 -49.9 147.6	62 06.3 -48.9 145.9	61 32.1 -47.9 144.3	60 56.6 -46.8 142.8	60 19.8 -45.7 141.3
19°	61 49.1 -50.6 148.8	61 17.4 -49.6 147.1	60 44.2 -48.5 145.6	60 09.8 -47.5 144.0	59 34.1 -46.5 142.6
20°	60 58.5 -51.1 149.9	60 27.8 -50.1 148.3	59 55.7 -49.1 146.7	59 22.3 -48.1 145.3	58 47.6 -47.1 143.8
21°	60 07.4 -51.5 151.0	59 37.7 -50.6 149.4	59 06.6 -49.7 147.9	58 34.2 -48.7 146.4	58 00.5 -47.8 145.0
22°	59 15.9 -52.1 152.0	58 47.1 -51.1 150.5	58 16.9 -50.2 149.0	57 45.5 -49.3 147.5	57 12.7 -48.3 146.1
23°	58 23.8 -52.4 153.0	57 56.0 -51.6 151.5	57 26.7 -50.7 150.0	56 56.2 -49.8 148.6	56 24.4 -48.9 147.2
24°	57 31.4 -52.8 153.9	57 04.4 -52.0 152.4	56 36.0 -51.1 151.0	56 06.4 -50.3 149.6	55 35.5 -49.3 148.2
25°	56 38.6 -53.2 154.7	56 12.4 -52.4 153.3	55 44.9 -51.5 151.9	55 16.1 -50.7 150.6	54 46.2 -49.9 149.2
26°	55 45.4 -53.5 155.6	55 20.0 -52.7 154.2	54 53.4 -52.0 152.8	54 25.4 -51.1 151.5	53 56.3 -50.3 150.2
27°	54 51.9 -53.8 156.4	54 27.3 -53.0 155.0	54 01.4 -52.2 153.7	53 34.3 -51.5 152.4	53 06.0 -50.7 151.1
28°	53 58.1 -54.0 157.1	53 34.3 -53.4 155.8	53 09.2 -52.6 154.5	52 42.8 -51.8 153.2	52 15.3 -51.0 152.0
29°	53 04.1 -54.3 157.9	52 40.9 -53.6 156.6	52 16.6 -53.0 155.3	51 51.0 -52.2 154.1	51 24.3 -51.5 152.8

Declination CONTRARY name to Latitude

Latitude 5°

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	69 24.6 -16.2 103.5	68 26.3 -15.4 102.8	67 28.0 -14.8 102.2	66 29.5 -14.2 101.6	65 30.9 -13.7 101.1
1°	69 08.4 -18.7 106.2	68 10.9 -17.9 105.4	67 13.2 -17.2 104.7	66 15.3 -16.5 104.0	65 17.2 -15.9 103.4
2°	68 49.7 -21.1 108.8	67 53.0 -20.2 108.0	66 56.0 -19.4 107.1	65 58.8 -18.6 106.4	65 01.3 -17.9 105.7
3°	68 28.6 -23.3 111.4	67 32.8 -22.4 110.4	66 36.6 -21.5 109.5	65 40.2 -20.7 108.7	64 43.4 -19.9 108.0
4°	68 05.3 -25.6 113.9	67 10.4 -24.5 112.9	66 15.1 -23.5 111.9	65 19.5 -22.7 111.0	64 23.5 -21.8 110.2
5°	67 39.7 -27.6 116.3	66 45.9 -26.5 115.2	65 51.6 -25.5 114.2	64 56.8 -24.5 113.2	64 01.7 -23.7 112.3
6°	67 12.1 -29.5 118.6	66 19.4 -28.4 117.4	65 26.1 -27.4 116.3	64 32.3 -26.4 115.3	63 38.0 -25.4 114.4
7°	66 42.6 -31.3 120.8	65 51.0 -30.2 119.6	64 58.7 -29.1 118.5	64 05.9 -28.1 117.4	63 12.6 -27.1 116.4
8°	66 11.3 -33.0 123.0	65 20.8 -31.9 121.7	64 29.6 -30.7 120.5	63 37.8 -29.7 119.4	62 45.5 -28.7 118.4
9°	65 38.3 -34.6 125.0	64 48.9 -33.4 123.7	63 58.9 -32.3 122.5	63 08.1 -31.2 121.3	62 16.8 -30.2 120.3
10°	65 03.7 -36.1 127.0	64 15.5 -34.9 125.6	63 26.6 -33.8 124.4	62 36.9 -32.7 123.2	61 46.6 -31.7 122.1
11°	64 27.6 -37.4 128.9	63 40.6 -36.2 127.5	62 52.8 -35.1 126.2	62 04.2 -34.0 125.0	61 14.9 -33.0 123.9
12°	63 50.2 -38.7 130.6	63 04.4 -37.6 129.3	62 17.7 -36.4 128.0	61 30.2 -35.3 126.8	60 41.9 -34.2 125.6
13°	63 11.5 -39.9 132.4	62 26.8 -38.7 131.0	61 41.3 -37.6 129.7	60 54.9 -36.6 128.4	60 07.7 -35.5 127.3
14°	62 31.6 -41.0 134.0	61 48.1 -39.9 132.6	61 03.7 -38.8 131.3	60 18.3 -37.6 130.1	59 32.2 -36.6 128.9
15°	61 50.6 -42.0 135.6	61 08.2 -40.8 134.2	60 24.9 -39.8 132.9	59 40.7 -38.8 131.6	58 55.6 -37.7 130.4
16°	61 08.6 -43.0 137.1	60 27.4 -41.9 135.7	59 45.1 -40.8 134.4	59 01.9 -39.7 133.1	58 17.9 -38.7 131.9
17°	60 25.6 -43.8 138.5	59 45.5 -42.8 137.1	59 04.3 -41.7 135.8	58 22.2 -40.7 134.6	57 39.2 -39.7 133.4
18°	59 41.8 -44.6 139.9	59 02.7 -43.6 138.5	58 22.6 -42.6 137.2	57 41.5 -41.5 136.0	56 59.5 -40.5 134.8
19°	58 57.2 -45.5 141.2	58 19.1 -44.4 139.8	57 40.0 -43.3 138.5	57 00.0 -42.4 137.3	56 19.0 -41.4 136.1
20°	58 11.7 -46.1 142.4	57 34.7 -45.1 141.1	56 56.7 -44.2 139.8	56 17.6 -43.1 138.6	55 37.6 -42.2 137.4
21°	57 25.6 -46.8 143.6	56 49.6 -45.8 142.3	56 12.5 -44.8 141.0	55 34.5 -43.9 139.8	54 55.4 -42.9 138.6
22°	56 38.8 -47.3 144.8	56 03.8 -46.4 143.5	55 27.7 -45.5 142.2	54 50.6 -44.5 141.0	54 12.5 -43.6 139.8
23°	55 51.5 -48.0 145.9	55 17.4 -47.1 144.6	54 42.2 -46.1 143.4	54 06.1 -45.2 142.2	53 28.9 -44.3 141.0
24°	55 03.5 -48.5 146.9	54 30.3 -47.5 145.7	53 56.1 -46.7 144.5	53 20.9 -45.8 143.3	52 44.6 -44.8 142.1
25°	54 15.0 -49.0 148.0	53 42.8 -48.2 146.7	53 09.4 -47.2 145.5	52 35.1 -46.4 144.3	51 59.8 -45.5 143.2
26°	53 26.0 -49.4 148.9	52 54.6 -48.5 147.7	52 22.2 -47.7 146.5	51 48.7 -46.8 145.4	51 14.3 -46.0 144.3
27°	52 36.6 -49.9 149.9	52 06.1 -49.1 148.7	51 34.5 -48.3 147.5	51 01.9 -47.4 146.4	50 28.3 -46.5 145.3
28°	51 46.7 -50.3 150.8	51 17.0 -49.5 149.6	50 46.2 -48.6 148.5	50 14.5 -47.8 147.4	49 41.8 -47.0 146.3
29°	50 56.4 -50.6 151.7	50 27.5 -49.8 150.5	49 57.6 -49.1 149.4	49 26.7 -48.3 148.3	48 54.8 -47.5 147.2

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°	64 32.2 -13.2 100.6	63 33.4 -12.8 100.1	62 34.5 -12.3 99.7	61 35.6 -12.0 99.3	60 36.5 -11.5 98.9
1°	64 19.0 -15.3 102.8	63 20.6 -14.7 102.3	62 22.2 -14.2 101.8	61 23.6 -13.7 101.4	60 25.0 -13.3 100.9
2°	64 03.7 -17.2 105.1	63 05.9 -16.6 104.5	62 08.0 -16.1 103.9	61 09.9 -15.6 103.4	60 11.7 -15.1 102.9
3°	63 46.5 -19.2 107.2	62 49.3 -18.5 106.6	61 51.9 -17.9 106.0	60 54.3 -17.2 105.4	59 56.6 -16.7 104.8
4°	63 27.3 -21.1 109.4	62 30.8 -20.4 108.7	61 34.0 -19.6 108.0	60 37.1 -19.0 107.3	59 39.9 -18.3 106.7
5°	63 06.2 -22.8 111.5	62 10.4 -22.0 110.7	61 14.4 -21.3 110.0	60 18.1 -20.6 109.3	59 21.6 -20.0 108.6
6°	62 43.4 -24.6 113.5	61 48.4 -23.7 112.7	60 53.1 -22.9 111.9	59 57.5 -22.2 111.2	59 01.6 -21.5 110.5
7°	62 18.8 -26.1 115.5	61 24.7 -25.3 114.6	60 30.2 -24.5 113.8	59 35.3 -23.7 113.0	58 40.1 -22.9 112.3
8°	61 52.7 -27.8 117.4	60 59.4 -26.9 116.5	60 05.7 -26.0 115.6	59 11.6 -25.2 114.8	58 17.2 -24.4 114.0
9°	61 24.9 -29.2 119.3	60 32.5 -28.3 118.3	59 39.7 -27.5 117.4	58 46.4 -26.6 116.6	57 52.8 -25.8 115.8
10°	60 55.7 -30.7 121.1	60 04.2 -29.7 120.1	59 12.2 -28.8 119.2	58 19.8 -27.9 118.3	57 27.0 -27.1 117.5
11°	60 25.0 -32.0 122.8	59 34.5 -31.0 121.8	58 43.4 -30.1 120.9	57 51.9 -29.2 120.0	56 59.9 -28.4 119.1
12°	59 53.0 -33.2 124.5	59 03.5 -32.3 123.5	58 13.3 -31.3 122.5	57 22.7 -30.5 121.6	56 31.5 -29.6 120.7
13°	59 19.8 -34.5 126.2	58 31.2 -33.5 125.1	57 42.0 -32.5 124.1	56 52.2 -31.6 123.2	56 01.9 -30.7 122.3
14°	58 45.3 -35.6 127.8	57 57.7 -34.6 126.7	57 09.5 -33.7 125.7	56 20.6 -32.7 124.7	55 31.2 -31.8 123.8
15°	58 09.7 -36.7 129.3	57 23.1 -35.7 128.2	56 35.8 -34.8 127.2	55 47.9 -33.8 126.2	54 59.4 -32.9 125.3
16°	57 33.0 -37.7 130.8	56 47.4 -36.7 129.7	56 01.0 -35.7 128.7	55 14.1 -34.9 127.7	54 26.5 -34.0 126.7
17°	56 55.3 -38.6 132.2	56 10.7 -37.7 131.1	55 25.3 -36.7 130.1	54 39.2 -35.8 129.1	53 52.5 -34.8 128.1
18°	56 16.7 -39.6 133.6	55 33.0 -38.6 132.5	54 48.6 -37.7 131.5	54 03.4 -36.7 130.5	53 17.7 -35.8 129.5
19°	55 37.1 -40.4 135.0	54 54.4 -39.4 133.9	54 10.9 -38.5 132.8	53 26.7 -37.5 131.8	52 41.9 -36.7 130.9
20°	54 56.7 -41.2 136.3	54 15.0 -40.3 135.2	53 32.4 -39.3 134.1	52 49.2 -38.5 133.1	52 05.2 -37.5 132.1
21°	54 15.5 -42.0 137.5	53 34.7 -41.0 136.4	52 53.1 -40.1 135.4	52 10.7 -39.1 134.4	51 27.7 -38.3 133.4
22°	53 33.5 -42.6 138.7	52 53.7 -41.8 137.6	52 13.0 -40.8 136.6	51 31.6 -40.0 135.6	50 49.4 -39.1 134.6
23°	52 50.9 -43.4 139.9	52 11.9 -42.4 138.8	51 32.2 -41.6 137.8	50 51.6 -40.6 136.8	50 10.3 -39.7 135.8
24°	52 07.5 -44.0 141.0	51 29.5 -43.1 140.0	50 50.6 -42.2 138.9	50 11.0 -41.3 138.0	49 30.6 -40.5 137.0
25°	51 23.5 -44.6 142.1	50 46.4 -43.7 141.1	50 08.4 -42.8 140.1	49 29.7 -42.0 139.1	48 50.1 -41.0 138.1
26°	50 38.9 -45.1 143.2	50 02.7 -44.3 142.2	49 25.6 -43.4 141.1	48 47.7 -42.5 140.2	48 09.1 -41.7 139.2
27°	49 53.8 -45.7 144.2	49 18.4 -44.8 143.2	48 42.2 -44.0 142.2	48 05.2 -43.2 141.2	47 27.4 -42.3 140.3
28°	49 08.1 -46.1 145.2	48 33.6 -45.3 144.2	47 58.2 -44.5 143.2	47 22.0 -43.6 142.3	46 45.1 -42.8 141.3
29°	48 22.0 -46.7 146.2	47 48.3 -45.9 145.2	47 13.7 -45.0 144.2	46 38.4 -44.2 143.3	46 02.3 -43.4 142.4

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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°	59 37.5 -11.2 98.6	58 38.3 -10.8 98.3	57 39.2 -10.6 97.9	56 39.9 -10.2 97.6	55 40.7 -10.0 97.4
1°	59 26.3 -12.9 100.5	58 27.5 -12.6 100.1	57 28.6 -12.2 99.8	56 29.7 -11.9 99.4	55 30.7 -11.5 99.1
2°	59 13.4 -14.6 102.4	58 14.9 -14.1 102.0	57 16.4 -13.7 101.6	56 17.8 -13.3 101.2	55 19.2 -13.0 100.8
3°	58 58.8 -16.2 104.3	58 00.8 -15.7 103.8	57 02.7 -15.2 103.4	56 04.5 -14.8 103.0	55 06.2 -14.3 102.5
4°	58 42.6 -17.8 106.2	57 45.1 -17.2 105.7	56 47.5 -16.7 105.2	55 49.7 -16.2 104.7	54 51.9 -15.8 104.2
5°	58 24.8 -19.3 108.0	57 27.9 -18.7 107.4	56 30.8 -18.2 106.9	55 33.5 -17.6 106.4	54 36.1 -17.1 105.9
6°	58 05.5 -20.8 109.8	57 09.2 -20.2 109.2	56 12.6 -19.6 108.6	55 15.9 -19.0 108.1	54 19.0 -18.5 107.6
7°	57 44.7 -22.3 111.6	56 49.0 -21.6 110.9	55 53.0 -20.9 110.3	54 56.9 -20.4 109.7	54 00.5 -19.7 109.2
8°	57 22.4 -23.6 113.3	56 27.4 -23.0 112.6	55 32.1 -22.3 112.0	54 36.5 -21.6 111.4	53 40.8 -21.0 110.8
9°	56 58.8 -25.0 115.0	56 04.4 -24.2 114.3	55 09.8 -23.5 113.6	54 14.9 -22.9 113.0	53 19.8 -22.3 112.4
10°	56 33.8 -26.3 116.7	55 40.2 -25.6 115.9	54 46.3 -24.8 115.2	53 52.0 -24.1 114.5	52 57.5 -23.4 113.9
11°	56 07.5 -27.6 118.3	55 14.6 -26.7 117.5	54 21.5 -26.0 116.8	53 27.9 -25.2 116.1	52 34.1 -24.6 115.4
12°	55 39.9 -28.7 119.9	54 47.9 -28.0 119.1	53 55.5 -27.2 118.3	53 02.7 -26.4 117.6	52 09.5 -25.7 116.9
13°	55 11.2 -29.9 121.4	54 19.9 -29.0 120.6	53 28.3 -28.3 119.8	52 36.3 -27.5 119.1	51 43.8 -26.7 118.4
14°	54 41.3 -31.0 122.9	53 50.9 -30.2 122.1	53 00.0 -29.3 121.3	52 08.8 -28.6 120.6	51 17.1 -27.8 119.8
15°	54 10.3 -32.0 124.4	53 20.7 -31.1 123.6	52 30.7 -30.4 122.7	51 40.2 -29.6 122.0	50 49.3 -28.8 121.2
16°	53 38.3 -33.1 125.8	52 49.6 -32.2 125.0	52 00.3 -31.3 124.2	51 10.6 -30.5 123.4	50 20.5 -29.7 122.6
17°	53 05.2 -34.0 127.2	52 17.4 -33.2 126.4	51 29.0 -32.3 125.5	50 40.1 -31.5 124.7	49 50.8 -30.7 124.0
18°	52 31.2 -34.9 128.6	51 44.2 -34.0 127.7	50 56.7 -33.2 126.9	50 08.6 -32.3 126.1	49 20.1 -31.6 125.3
19°	51 56.3 -35.8 129.9	51 10.2 -34.9 129.0	50 23.5 -34.1 128.2	49 36.3 -33.3 127.4	48 48.5 -32.4 126.6
20°	51 20.5 -36.6 131.2	50 35.3 -35.8 130.3	49 49.4 -34.9 129.5	49 03.0 -34.1 128.7	48 16.1 -33.3 127.9
21°	50 43.9 -37.4 132.5	49 59.5 -36.5 131.6	49 14.5 -35.7 130.7	48 28.9 -34.8 129.9	47 42.8 -34.0 129.1
22°	50 06.5 -38.2 133.7	49 23.0 -37.3 132.8	48 38.8 -36.4 132.0	47 54.1 -35.6 131.1	47 08.8 -34.8 130.3
23°	49 28.3 -38.8 134.9	48 45.7 -38.0 134.0	48 02.4 -37.2 133.2	47 18.5 -36.4 132.3	46 34.0 -35.5 131.5
24°	48 49.5 -39.6 136.1	48 07.7 -38.8 135.2	47 25.2 -37.9 134.3	46 42.1 -37.0 133.5	45 58.5 -36.2 132.7
25°	48 09.9 -40.2 137.2	47 28.9 -39.3 136.3	46 47.3 -38.5 135.5	46 05.1 -37.7 134.6	45 22.3 -36.9 133.8
26°	47 29.7 -40.9 138.3	46 49.6 -40.0 137.4	46 08.8 -39.2 136.6	45 27.4 -38.4 135.7	44 45.4 -37.6 134.9
27°	46 48.8 -41.4 139.4	46 09.6 -40.6 138.5	45 29.6 -39.8 137.7	44 49.0 -38.9 136.8	44 07.8 -38.1 136.0
28°	46 07.4 -42.0 140.4	45 29.0 -41.2 139.6	44 49.8 -40.3 138.7	44 10.1 -39.5 137.9	43 29.7 -38.7 137.1
29°	45 25.4 -42.6 141.5	44 47.8 -41.7 140.6	44 09.5 -40.9 139.8	43 30.6 -40.1 138.9	42 51.0 -39.3 138.2

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°	54 41.4 -09.8 97.1	53 42.1 -09.6 96.8	52 42.7 -09.3 96.6	51 43.3 -09.1 96.4	50 43.9 -08.9 96.1
1°	54 31.6 -11.2 98.8	53 32.5 -10.9 98.5	52 33.4 -10.6 98.2	51 34.2 -10.4 98.0	50 35.0 -10.1 97.7
2°	54 20.4 -12.6 100.5	53 21.6 -12.2 100.2	52 22.8 -12.0 99.8	51 23.8 -11.6 99.5	50 24.9 -11.4 99.3
3°	54 07.8 -13.9 102.2	53 09.4 -13.6 101.8	52 10.8 -13.2 101.4	51 12.2 -12.9 101.1	50 13.5 -12.5 100.8
4°	53 53.9 -15.4 103.8	52 55.8 -14.9 103.4	51 57.6 -14.5 103.0	50 59.3 -14.1 102.7	50 01.0 -13.8 102.3
5°	53 38.5 -16.6 105.5	52 40.9 -16.2 105.0	51 43.1 -15.8 104.6	50 45.2 -15.3 104.2	49 47.2 -14.9 103.8
6°	53 21.9 -17.9 107.1	52 24.7 -17.4 106.6	51 27.3 -16.9 106.2	50 29.9 -16.5 105.7	49 32.3 -16.1 105.3
7°	53 04.0 -19.2 108.7	52 07.3 -18.7 108.2	51 10.4 -18.2 107.7	50 13.4 -17.7 107.2	49 16.2 -17.2 106.8
8°	52 44.8 -20.4 110.2	51 48.6 -19.8 109.7	50 52.2 -19.3 109.2	49 55.7 -18.8 108.7	48 59.0 -18.3 108.3
9°	52 24.4 -21.6 111.8	51 28.8 -21.1 111.2	50 32.9 -20.4 110.7	49 36.9 -19.9 110.2	48 40.7 -19.3 109.7
10°	52 02.8 -22.8 113.3	51 07.7 -22.1 112.7	50 12.5 -21.6 112.2	49 17.0 -20.9 111.6	48 21.4 -20.4 111.1
11°	51 40.0 -23.9 114.8	50 45.6 -23.3 114.2	49 50.9 -22.6 113.6	48 56.1 -22.0 113.1	48 01.0 -21.5 112.6
12°	51 16.1 -25.0 116.3	50 22.3 -24.3 115.7	49 28.3 -23.6 115.1	48 34.1 -23.1 114.5	47 39.5 -22.4 113.9
13°	50 51.1 -26.0 117.7	49 58.0 -25.3 117.1	49 04.7 -24.7 116.5	48 11.0 -24.0 115.9	47 17.1 -23.4 115.3
14°	50 25.1 -27.1 119.1	49 32.7 -26.4 118.5	48 40.0 -25.7 117.9	47 47.0 -25.0 117.2	46 53.7 -24.3 116.7
15°	49 58.0 -28.0 120.5	49 06.3 -27.3 119.9	48 14.3 -26.6 119.2	47 22.0 -25.9 118.6	46 29.4 -25.3 118.0
16°	49 30.0 -29.0 121.9	48 39.0 -28.2 121.2	47 47.7 -27.5 120.6	46 56.1 -26.8 119.9	46 04.1 -26.1 119.3
17°	49 01.0 -29.9 123.2	48 10.8 -29.2 122.5	47 20.2 -28.4 121.9	46 29.3 -27.7 121.2	45 38.0 -27.0 120.6
18°	48 31.1 -30.8 124.6	47 41.6 -30.0 123.8	46 51.8 -29.3 123.2	46 01.6 -28.6 122.5	45 11.0 -27.8 121.9
19°	48 00.3 -31.6 125.8	47 11.6 -30.8 125.1	46 22.5 -30.1 124.4	45 33.0 -29.3 123.8	44 43.2 -28.7 123.1
20°	47 28.7 -32.5 127.1	46 40.8 -31.7 126.4	45 52.4 -30.9 125.7	45 03.7 -30.2 125.0	44 14.5 -29.4 124.4
21°	46 56.2 -33.2 128.4	46 09.1 -32.5 127.6	45 21.5 -31.7 126.9	44 33.5 -30.9 126.2	43 45.1 -30.2 125.6
22°	46 23.0 -34.0 129.6	45 36.6 -33.2 128.8	44 49.8 -32.4 128.1	44 02.6 -31.7 127.4	43 14.9 -30.9 126.8
23°	45 49.0 -34.7 130.8	45 03.4 -33.9 130.0	44 17.4 -33.1 129.3	43 30.9 -32.3 128.6	42 44.0 -31.6 127.9
24°	45 14.3 -35.4 131.9	44 29.5 -34.6 131.2	43 44.3 -33.8 130.5	42 58.6 -33.1 129.8	42 12.4 -32.3 129.1
25°	44 38.9 -36.1 133.1	43 54.9 -35.3 132.3	43 10.5 -34.5 131.6	42 25.5 -33.7 130.9	41 40.1 -32.9 130.2
26°	44 02.8 -36.7 134.2	43 19.6 -35.9 133.4	42 36.0 -35.2 132.7	41 51.8 -34.3 132.0	41 07.2 -33.6 131.3
27°	43 26.1 -37.4 135.3	42 43.7 -36.5 134.5	42 00.8 -35.7 133.8	41 17.5 -35.0 133.1	40 33.6 -34.2 132.4
28°	42 48.7 -37.9 136.3	42 07.2 -37.1 135.6	41 25.1 -36.3 134.9	40 42.5 -35.6 134.2	39 59.4 -34.8 133.5
29°	42 10.8 -38.5 137.4	41 30.1 -37.7 136.7	40 48.8 -36.9 135.9	40 06.9 -36.1 135.2	39 24.6 -35.3 134.6

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	49 44.5 -08.7 95.9	48 45.0 -08.5 95.7	47 45.5 -08.3 95.5	46 46.0 -08.2 95.3	45 46.5 -08.0 95.2
1°	49 35.8 -09.9 97.5	48 36.5 -09.7 97.2	47 37.2 -09.5 97.0	46 37.8 -09.2 96.8	45 38.5 -09.1 96.6
2°	49 25.9 -11.1 99.0	48 26.8 -10.8 98.7	47 27.7 -10.6 98.5	46 28.6 -10.4 98.2	45 29.4 -10.1 98.0
3°	49 14.8 -12.3 100.5	48 16.0 -12.0 100.2	47 17.1 -11.7 99.9	46 18.2 -11.4 99.6	45 19.3 -11.2 99.4
4°	49 02.5 -13.4 102.0	48 04.0 -13.1 101.7	47 05.4 -12.7 101.4	46 06.8 -12.4 101.1	45 08.1 -12.1 100.8
5°	48 49.1 -14.5 103.5	47 50.9 -14.1 103.1	46 52.7 -13.8 102.8	45 54.4 -13.5 102.5	44 56.0 -13.2 102.2
6°	48 34.6 -15.7 104.9	47 36.8 -15.3 104.6	46 38.9 -14.9 104.2	45 40.9 -14.5 103.9	44 42.8 -14.1 103.5
7°	48 18.9 -16.7 106.4	47 21.5 -16.3 106.0	46 24.0 -15.9 105.6	45 26.4 -15.5 105.3	44 28.7 -15.1 104.9
8°	48 02.2 -17.8 107.8	47 05.2 -17.3 107.4	46 08.1 -16.9 107.0	45 10.9 -16.4 106.6	44 13.6 -16.0 106.3
9°	47 44.4 -18.9 109.3	46 47.9 -18.4 108.8	45 51.2 -17.8 108.4	44 54.5 -17.5 108.0	43 57.6 -17.0 107.6
10°	47 25.5 -19.8 110.7	46 29.5 -19.3 110.2	45 33.4 -18.9 109.8	44 37.0 -18.3 109.3	43 40.6 -17.9 108.9
11°	47 05.7 -20.9 112.1	46 10.2 -20.3 111.6	45 14.5 -19.8 111.1	44 18.7 -19.3 110.7	43 22.7 -18.8 110.3
12°	46 44.8 -21.8 113.4	45 49.9 -21.3 112.9	44 54.7 -20.7 112.5	43 59.4 -20.2 112.0	43 03.9 -19.7 111.6
13°	46 23.0 -22.8 114.8	45 28.6 -22.2 114.3	44 34.0 -21.6 113.8	43 39.2 -21.1 113.3	42 44.2 -20.5 112.8
14°	46 00.2 -23.7 116.1	45 06.4 -23.1 115.6	44 12.4 -22.5 115.1	43 18.1 -21.9 114.6	42 23.7 -21.4 114.1
15°	45 36.5 -24.6 117.4	44 43.3 -24.0 116.9	43 49.9 -23.4 116.4	42 56.2 -22.8 115.9	42 02.3 -22.2 115.4
16°	45 11.9 -25.5 118.7	44 19.3 -24.8 118.2	43 26.5 -24.2 117.6	42 33.4 -23.6 117.1	41 40.1 -23.0 116.6
17°	44 46.4 -26.3 120.0	43 54.5 -25.7 119.4	43 02.3 -25.0 118.9	42 09.8 -24.4 118.4	41 17.1 -23.8 117.9
18°	44 20.1 -27.2 121.3	43 28.8 -26.4 120.7	42 37.3 -25.8 120.1	41 45.4 -25.1 119.6	40 53.3 -24.5 119.1
19°	43 52.9 -27.9 122.5	43 02.4 -27.3 121.9	42 11.5 -26.6 121.4	41 20.3 -25.9 120.8	40 28.8 -25.3 120.3
20°	43 25.0 -28.7 123.7	42 35.1 -28.0 123.1	41 44.9 -27.3 122.6	40 54.4 -26.7 122.0	40 03.5 -25.9 121.5
21°	42 56.3 -29.5 124.9	42 07.1 -28.7 124.3	41 17.6 -28.1 123.8	40 27.7 -27.3 123.2	39 37.6 -26.7 122.6
22°	42 26.8 -30.1 126.1	41 38.4 -29.5 125.5	40 49.5 -28.7 124.9	40 00.4 -28.1 124.4	39 10.9 -27.4 123.8
23°	41 56.7 -30.9 127.3	41 08.9 -30.1 126.7	40 20.8 -29.4 126.1	39 32.3 -28.7 125.5	38 43.5 -28.0 125.0
24°	41 25.8 -31.5 128.4	40 38.8 -30.8 127.8	39 51.4 -30.1 127.2	39 03.6 -29.4 126.6	38 15.5 -28.7 126.1
25°	40 54.3 -32.2 129.6	40 08.0 -31.5 128.9	39 21.3 -30.7 128.3	38 34.2 -30.0 127.8	37 46.8 -29.3 127.2
26°	40 22.1 -32.9 130.7	39 36.5 -32.1 130.1	38 50.6 -31.4 129.5	38 04.2 -30.6 128.9	37 17.5 -29.9 128.3
27°	39 49.2 -33.4 131.8	39 04.4 -32.6 131.2	38 19.2 -31.9 130.5	37 33.6 -31.2 130.0	36 47.6 -30.5 129.4
28°	39 15.8 -34.0 132.9	38 31.8 -33.3 132.2	37 47.3 -32.5 131.6	37 02.4 -31.8 131.0	36 17.1 -31.0 130.5
29°	38 41.8 -34.6 133.9	37 58.5 -33.8 133.3	37 14.8 -33.1 132.7	36 30.6 -32.3 132.1	35 46.1 -31.6 131.5

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°	44 46.9 -07.8 95.0	43 47.4 -07.7 94.8	42 47.8 -07.6 94.6	41 48.2 -07.4 94.5	40 48.6 -07.3 94.3
1°	44 39.1 -08.9 96.4	43 39.7 -08.8 96.2	42 40.2 -08.5 96.0	41 40.8 -08.4 95.8	40 41.3 -08.2 95.6
2°	44 30.2 -09.9 97.8	43 30.9 -09.7 97.5	42 31.7 -09.5 97.3	41 32.4 -09.3 97.1	40 33.1 -09.2 96.9
3°	44 20.3 -10.9 99.1	43 21.2 -10.6 98.9	42 22.2 -10.4 98.7	41 23.1 -10.2 98.5	40 23.9 -10.0 98.2
4°	44 09.4 -11.9 100.5	43 10.6 -11.6 100.3	42 11.8 -11.4 100.0	41 12.9 -11.1 99.8	40 13.9 -10.8 99.5
5°	43 57.5 -12.8 101.9	42 59.0 -12.5 101.6	42 00.4 -12.2 101.3	41 01.8 -12.0 101.1	40 03.1 -11.7 100.8
6°	43 44.7 -13.8 103.2	42 46.5 -13.5 102.9	41 48.2 -13.2 102.6	40 49.8 -12.8 102.4	39 51.4 -12.5 102.1
7°	43 30.9 -14.7 104.6	42 33.0 -14.4 104.3	41 35.0 -14.0 104.0	40 37.0 -13.7 103.7	39 38.9 -13.4 103.4
8°	43 16.2 -15.7 105.9	42 18.6 -15.2 105.6	41 21.0 -14.9 105.3	40 23.3 -14.5 104.9	39 25.5 -14.2 104.6
9°	43 00.5 -16.5 107.2	42 03.4 -16.2 106.9	41 06.1 -15.7 106.5	40 08.8 -15.4 106.2	39 11.3 -14.9 105.9
10°	42 44.0 -17.5 108.6	41 47.2 -17.0 108.2	40 50.4 -16.6 107.8	39 53.4 -16.1 107.5	38 56.4 -15.8 107.1
11°	42 26.5 -18.3 109.8	41 30.2 -17.8 109.5	40 33.8 -17.4 109.1	39 37.3 -17.0 108.7	38 40.6 -16.5 108.4
12°	42 08.2 -19.2 111.1	41 12.4 -18.7 110.7	40 16.4 -18.2 110.3	39 20.3 -17.8 110.0	38 24.1 -17.4 109.6
13°	41 49.0 -20.0 112.4	40 53.7 -19.5 112.0	39 58.2 -19.0 111.6	39 02.5 -18.5 111.2	38 06.7 -18.0 110.8
14°	41 29.0 -20.8 113.7	40 34.2 -20.3 113.2	39 39.2 -19.8 112.8	38 44.0 -19.3 112.4	37 48.7 -18.8 112.0
15°	41 08.2 -21.6 114.9	40 13.9 -21.1 114.5	39 19.4 -20.5 114.0	38 24.7 -20.0 113.6	37 29.9 -19.5 113.2
16°	40 46.6 -22.4 116.2	39 52.8 -21.8 115.7	38 58.9 -21.3 115.3	38 04.7 -20.7 114.8	37 10.4 -20.3 114.4
17°	40 24.2 -23.2 117.4	39 31.0 -22.6 116.9	38 37.6 -22.1 116.5	37 44.0 -21.5 116.0	36 50.1 -20.9 115.6
18°	40 01.0 -23.9 118.6	39 08.4 -23.3 118.1	38 15.5 -22.7 117.6	37 22.5 -22.2 117.2	36 29.2 -21.6 116.8
19°	39 37.1 -24.7 119.8	38 45.1 -24.1 119.3	37 52.8 -23.4 118.8	37 00.3 -22.8 118.4	36 07.6 -22.2 117.9
20°	39 12.4 -25.3 121.0	38 21.0 -24.7 120.5	37 29.4 -24.1 120.0	36 37.5 -23.5 119.5	35 45.4 -22.9 119.1
21°	38 47.1 -26.1 122.1	37 56.3 -25.4 121.6	37 05.3 -24.8 121.1	36 14.0 -24.1 120.7	35 22.5 -23.6 120.2
22°	38 21.0 -26.7 123.3	37 30.9 -26.0 122.8	36 40.5 -25.4 122.3	35 49.9 -24.8 121.8	34 58.9 -24.1 121.3
23°	37 54.3 -27.3 124.4	37 04.9 -26.7 123.9	36 15.1 -26.0 123.4	35 25.1 -25.4 122.9	34 34.8 -24.8 122.5
24°	37 27.0 -28.0 125.5	36 38.2 -27.3 125.0	35 49.1 -26.6 124.5	34 59.7 -26.0 124.0	34 10.0 -25.3 123.6
25°	36 59.0 -28.6 126.7	36 10.9 -27.9 126.1	35 22.5 -27.3 125.6	34 33.7 -26.6 125.1	33 44.7 -25.9 124.7
26°	36 30.4 -29.2 127.8	35 43.0 -28.5 127.2	34 55.2 -27.8 126.7	34 07.1 -27.1 126.2	33 18.8 -26.5 125.7
27°	36 01.2 -29.8 128.8	35 14.5 -29.1 128.3	34 27.4 -28.4 127.8	33 40.0 -27.7 127.3	32 52.3 -27.0 126.8
28°	35 31.4 -30.3 129.9	34 45.4 -29.6 129.4	33 59.0 -28.9 128.9	33 12.3 -28.2 128.4	32 25.3 -27.5 127.9
29°	35 01.1 -30.9 131.0	34 15.8 -30.2 130.4	33 30.1 -29.4 129.9	32 44.1 -28.7 129.4	31 57.8 -28.1 128.9

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°	39 49.0 -07.2 94.2	38 49.4 -07.1 94.0	37 49.8 -07.0 93.9	36 50.2 -07.0 93.8	35 50.5 -06.8 93.6
1°	39 41.8 -08.1 95.5	38 42.3 -08.0 95.3	37 42.8 -07.8 95.2	36 43.2 -07.7 95.0	35 43.7 -07.6 94.8
2°	39 33.7 -08.9 96.8	38 34.3 -08.7 96.6	37 35.0 -08.7 96.4	36 35.5 -08.4 96.2	35 36.1 -08.3 96.1
3°	39 24.8 -09.8 98.0	38 25.6 -09.6 97.8	37 26.3 -09.4 97.7	36 27.1 -09.2 97.5	35 27.8 -09.0 97.3
4°	39 15.0 -10.6 99.3	38 16.0 -10.4 99.1	37 16.9 -10.1 98.9	36 17.9 -10.0 98.7	35 18.8 -09.8 98.5
5°	39 04.4 -11.5 100.6	38 05.6 -11.2 100.4	37 06.8 -11.0 100.1	36 07.9 -10.7 99.9	35 09.0 -10.5 99.7
6°	38 52.9 -12.2 101.8	37 54.4 -11.9 101.6	36 55.8 -11.7 101.4	35 57.2 -11.4 101.1	34 58.5 -11.1 100.9
7°	38 40.7 -13.0 103.1	37 42.5 -12.8 102.8	36 44.1 -12.4 102.6	35 45.8 -12.2 102.3	34 47.4 -11.9 102.1
8°	38 27.7 -13.9 104.4	37 29.7 -13.5 104.1	36 31.7 -13.2 103.8	35 33.6 -12.9 103.5	34 35.5 -12.6 103.3
9°	38 13.8 -14.6 105.6	37 16.2 -14.3 105.3	36 18.5 -13.9 105.0	35 20.7 -13.5 104.7	34 22.9 -13.2 104.5
10°	37 59.2 -15.4 106.8	37 01.9 -15.0 106.5	36 04.6 -14.6 106.2	35 07.2 -14.3 105.9	34 09.7 -14.0 105.7
11°	37 43.8 -16.1 108.1	36 46.9 -15.7 107.7	35 50.0 -15.4 107.4	34 52.9 -15.0 107.1	33 55.7 -14.6 106.8
12°	37 27.7 -16.9 109.3	36 31.2 -16.4 108.9	35 34.6 -16.0 108.6	34 37.9 -15.6 108.3	33 41.1 -15.2 108.0
13°	37 10.8 -17.6 110.5	36 14.8 -17.2 110.1	35 18.6 -16.8 109.8	34 22.3 -16.3 109.5	33 25.9 -15.9 109.2
14°	36 53.2 -18.3 111.7	35 57.6 -17.9 111.3	35 01.8 -17.4 111.0	34 06.0 -17.0 110.6	33 10.0 -16.6 110.3
15°	36 34.9 -19.0 112.9	35 39.7 -18.5 112.5	34 44.4 -18.0 112.1	33 49.0 -17.6 111.8	32 53.4 -17.1 111.5
16°	36 15.9 -19.7 114.0	35 21.2 -19.2 113.7	34 26.4 -18.7 113.3	33 31.4 -18.2 112.9	32 36.3 -17.8 112.6
17°	35 56.2 -20.4 115.2	35 02.0 -19.9 114.8	34 07.7 -19.4 114.4	33 13.2 -18.9 114.1	32 18.5 -18.3 113.7
18°	35 35.8 -21.1 116.4	34 42.1 -20.5 116.0	33 48.3 -20.0 115.6	32 54.3 -19.5 115.2	32 00.2 -19.0 114.9
19°	35 14.7 -21.7 117.5	34 21.6 -21.1 117.1	33 28.3 -20.6 116.7	32 34.8 -20.0 116.3	31 41.2 -19.5 116.0
20°	34 53.0 -22.3 118.7	34 00.5 -21.8 118.2	33 07.7 -21.2 117.8	32 14.8 -20.7 117.5	31 21.7 -20.2 117.1
21°	34 30.7 -22.9 119.8	33 38.7 -22.3 119.4	32 46.5 -21.8 119.0	31 54.1 -21.2 118.6	31 01.5 -20.6 118.2
22°	34 07.8 -23.6 120.9	33 16.4 -23.0 120.5	32 24.7 -22.3 120.1	31 32.9 -21.8 119.7	30 40.9 -21.2 119.3
23°	33 44.2 -24.1 122.0	32 53.4 -23.5 121.6	32 02.4 -22.9 121.2	31 11.1 -22.3 120.8	30 19.7 -21.8 120.4
24°	33 20.1 -24.7 123.1	32 29.9 -24.1 122.7	31 39.5 -23.5 122.2	30 48.8 -22.9 121.8	29 57.9 -22.2 121.4
25°	32 55.4 -25.3 124.2	32 05.8 -24.6 123.8	31 16.0 -24.0 123.3	30 25.9 -23.3 122.9	29 35.7 -22.8 122.5
26°	32 30.1 -25.8 125.3	31 41.2 -25.2 124.8	30 52.0 -24.5 124.4	30 02.6 -23.9 124.0	29 12.9 -23.3 123.6
27°	32 04.3 -26.3 126.3	31 16.0 -25.7 125.9	30 27.5 -25.1 125.5	29 38.7 -24.4 125.0	28 49.6 -23.8 124.6
28°	31 38.0 -26.9 127.4	30 50.3 -26.2 126.9	30 02.4 -25.5 126.5	29 14.3 -24.9 126.1	28 25.8 -24.2 125.7
29°	31 11.1 -27.4 128.4	30 24.1 -26.7 128.0	29 36.9 -26.0 127.6	28 49.4 -25.4 127.1	28 01.6 -24.7 126.7

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°	34 50.8 -06.7 93.5	33 51.2 -06.7 93.4	32 51.5 -06.5 93.2	31 51.8 -06.4 93.1	30 52.1 -06.4 93.0
1°	34 44.1 -07.4 94.7	33 44.5 -07.3 94.6	32 45.0 -07.3 94.4	31 45.4 -07.2 94.3	30 45.7 -07.0 94.2
2°	34 36.7 -08.2 95.9	33 37.2 -08.0 95.8	32 37.7 -07.9 95.6	31 38.2 -07.7 95.5	30 38.7 -07.6 95.3
3°	34 28.5 -08.9 97.1	33 29.2 -08.7 96.9	32 29.8 -08.5 96.8	31 30.5 -08.4 96.6	30 31.1 -08.2 96.5
4°	34 19.6 -09.5 98.3	33 20.5 -09.4 98.1	32 21.3 -09.2 98.0	31 22.1 -09.0 97.8	30 22.9 -08.9 97.6
5°	34 10.1 -10.3 99.5	33 11.1 -10.0 99.3	32 12.1 -09.8 99.1	31 13.1 -09.6 98.9	30 14.0 -09.4 98.8
6°	33 59.8 -10.9 100.7	33 01.1 -10.7 100.5	32 02.3 -10.5 100.3	31 03.5 -10.3 100.1	30 04.6 -10.0 99.9
7°	33 48.9 -11.6 101.9	32 50.4 -11.4 101.7	31 51.8 -11.1 101.4	30 53.2 -10.8 101.2	29 54.6 -10.6 101.0
8°	33 37.3 -12.3 103.1	32 39.0 -12.0 102.8	31 40.7 -11.7 102.6	30 42.4 -11.5 102.4	29 44.0 -11.2 102.2
9°	33 25.0 -12.9 104.2	32 27.0 -12.6 104.0	31 29.0 -12.3 103.8	30 30.9 -12.0 103.5	29 32.8 -11.8 103.3
10°	33 12.1 -13.6 105.4	32 14.4 -13.3 105.1	31 16.7 -13.0 104.9	30 18.9 -12.7 104.7	29 21.0 -12.3 104.4
11°	32 58.5 -14.3 106.6	32 01.1 -13.8 106.3	31 03.7 -13.5 106.0	30 06.2 -13.2 105.8	29 08.7 -12.9 105.6
12°	32 44.2 -14.8 107.7	31 47.3 -14.5 107.4	30 50.2 -14.1 107.2	29 53.0 -13.7 106.9	28 55.8 -13.4 106.7
13°	32 29.4 -15.5 108.9	31 32.8 -15.1 108.6	30 36.1 -14.8 108.3	29 39.3 -14.4 108.0	28 42.4 -14.0 107.8
14°	32 13.9 -16.1 110.0	31 17.7 -15.7 109.7	30 21.3 -15.3 109.4	29 24.9 -14.9 109.2	28 28.4 -14.5 108.9
15°	31 57.8 -16.8 111.2	31 02.0 -16.3 110.8	30 06.0 -15.8 110.5	29 10.0 -15.4 110.3	28 13.9 -15.0 110.0
16°	31 41.0 -17.3 112.3	30 45.7 -16.9 112.0	29 50.2 -16.4 111.7	28 54.6 -16.0 111.4	27 58.9 -15.6 111.1
17°	31 23.7 -17.9 113.4	30 28.8 -17.4 113.1	29 33.8 -17.0 112.8	28 38.6 -16.5 112.5	27 43.3 -16.1 112.2
18°	31 05.8 -18.4 114.5	30 11.4 -18.0 114.2	29 16.8 -17.5 113.9	28 22.1 -17.1 113.6	27 27.2 -16.5 113.3
19°	30 47.4 -19.0 115.6	29 53.4 -18.5 115.3	28 59.3 -18.0 115.0	28 05.0 -17.5 114.7	27 10.7 -17.1 114.3
20°	30 28.4 -19.6 116.7	29 34.9 -19.1 116.4	28 41.3 -18.6 116.1	27 47.5 -18.1 115.7	26 53.6 -17.6 115.4
21°	30 08.8 -20.2 117.8	29 15.8 -19.6 117.5	28 22.7 -19.0 117.1	27 29.4 -18.5 116.8	26 36.0 -18.0 116.5
22°	29 48.6 -20.6 118.9	28 56.2 -20.1 118.6	28 03.7 -19.6 118.2	27 10.9 -19.0 117.9	26 18.0 -18.5 117.6
23°	29 28.0 -21.2 120.0	28 36.1 -20.6 119.6	27 44.1 -20.1 119.3	26 51.9 -19.5 118.9	25 59.5 -19.0 118.6
24°	29 06.8 -21.7 121.1	28 15.5 -21.1 120.7	27 24.0 -20.5 120.3	26 32.4 -20.0 120.0	25 40.5 -19.4 119.7
25°	28 45.1 -22.1 122.1	27 54.4 -21.6 121.8	27 03.5 -21.0 121.4	26 12.4 -20.4 121.1	25 21.1 -19.9 120.7
26°	28 23.0 -22.7 123.2	27 32.8 -22.0 122.8	26 42.5 -21.5 122.5	25 52.0 -20.9 122.1	25 01.2 -20.3 121.8
27°	28 00.3 -23.1 124.2	27 10.8 -22.6 123.9	26 21.0 -21.9 123.5	25 31.1 -21.3 123.1	24 40.9 -20.7 122.8
28°	27 37.2 -23.7 125.3	26 48.2 -22.9 124.9	25 59.1 -22.3 124.5	25 09.8 -21.8 124.2	24 20.2 -21.1 123.8
29°	27 13.5 -24.0 126.3	26 25.3 -23.5 125.9	25 36.8 -22.8 125.6	24 48.0 -22.1 125.2	23 59.1 -21.6 124.9

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	29 52.5 -06.4 92.9	28 52.8 -06.3 92.8	27 53.0 -06.1 92.7	26 53.3 -06.1 92.5	25 53.6 -06.0 92.4
1°	29 46.1 -06.9 94.0	28 46.5 -06.8 93.9	27 46.9 -06.8 93.8	26 47.2 -06.6 93.7	25 47.6 -06.6 93.5
2°	29 39.2 -07.5 95.2	28 39.7 -07.4 95.0	27 40.1 -07.3 94.9	26 40.6 -07.2 94.8	25 41.0 -07.1 94.6
3°	29 31.7 -08.1 96.3	28 32.3 -08.0 96.2	27 32.8 -07.8 96.0	26 33.4 -07.7 95.9	25 33.9 -07.5 95.7
4°	29 23.6 -08.7 97.4	28 24.3 -08.5 97.3	27 25.0 -08.3 97.1	26 25.7 -08.2 97.0	25 26.4 -08.1 96.8
5°	29 14.9 -09.2 98.6	28 15.8 -09.0 98.4	27 16.7 -08.9 98.3	26 17.5 -08.7 98.1	25 18.3 -08.5 97.9
6°	29 05.7 -09.8 99.7	28 06.8 -09.6 99.5	27 07.8 -09.4 99.4	26 08.8 -09.2 99.2	25 09.8 -09.0 99.0
7°	28 55.9 -10.4 100.8	27 57.2 -10.2 100.7	26 58.4 -09.9 100.5	25 59.6 -09.7 100.3	25 00.8 -09.5 100.1
8°	28 45.5 -10.9 102.0	27 47.0 -10.7 101.8	26 48.5 -10.4 101.6	25 49.9 -10.2 101.4	24 51.3 -10.0 101.2
9°	28 34.6 -11.5 103.1	27 36.3 -11.2 102.9	26 38.1 -11.0 102.7	25 39.7 -10.7 102.5	24 41.3 -10.4 102.3
10°	28 23.1 -12.0 104.2	27 25.1 -11.7 104.0	26 27.1 -11.4 103.8	25 29.0 -11.1 103.6	24 30.9 -10.9 103.4
11°	28 11.1 -12.6 105.3	27 13.4 -12.2 105.1	26 15.7 -12.0 104.9	25 17.9 -11.7 104.7	24 20.0 -11.3 104.5
12°	27 58.5 -13.1 106.4	27 01.2 -12.8 106.2	26 03.7 -12.4 106.0	25 06.2 -12.1 105.8	24 08.7 -11.8 105.5
13°	27 45.4 -13.6 107.5	26 48.4 -13.3 107.3	25 51.3 -12.9 107.1	24 54.1 -12.6 106.8	23 56.9 -12.3 106.6
14°	27 31.8 -14.1 108.6	26 35.1 -13.7 108.4	25 38.4 -13.4 108.1	24 41.5 -13.0 107.9	23 44.6 -12.7 107.7
15°	27 17.7 -14.7 109.7	26 21.4 -14.3 109.5	25 25.0 -13.9 109.2	24 28.5 -13.5 109.0	23 31.9 -13.1 108.8
16°	27 03.0 -15.1 110.8	26 07.1 -14.7 110.6	25 11.1 -14.3 110.3	24 15.0 -13.9 110.1	23 18.8 -13.5 109.8
17°	26 47.9 -15.6 111.9	25 52.4 -15.2 111.6	24 56.8 -14.8 111.4	24 01.1 -14.4 111.1	23 05.3 -14.0 110.9
18°	26 32.3 -16.2 113.0	25 37.2 -15.7 112.7	24 42.0 -15.3 112.4	23 46.7 -14.8 112.2	22 51.3 -14.4 111.9
19°	26 16.1 -16.6 114.1	25 21.5 -16.1 113.8	24 26.7 -15.6 113.5	23 31.9 -15.3 113.2	22 36.9 -14.8 113.0
20°	25 59.5 -17.0 115.1	25 05.4 -16.6 114.8	24 11.1 -16.2 114.6	23 16.6 -15.6 114.3	22 22.1 -15.2 114.0
21°	25 42.5 -17.6 116.2	24 48.8 -17.1 115.9	23 54.9 -16.5 115.6	23 01.0 -16.1 115.3	22 06.9 -15.6 115.1
22°	25 24.9 -18.0 117.3	24 31.7 -17.5 117.0	23 38.4 -17.0 116.7	22 44.9 -16.5 116.4	21 51.3 -16.0 116.1
23°	25 06.9 -18.4 118.3	24 14.2 -17.9 118.0	23 21.4 -17.4 117.7	22 28.4 -16.9 117.4	21 35.3 -16.4 117.2
24°	24 48.5 -18.9 119.4	23 56.3 -18.3 119.0	23 04.0 -17.8 118.8	22 11.5 -17.2 118.5	21 18.9 -16.7 118.2
25°	24 29.6 -19.3 120.4	23 38.0 -18.8 120.1	22 46.2 -18.2 119.8	21 54.3 -17.7 119.5	21 02.2 -17.2 119.2
26°	24 10.3 -19.7 121.4	23 19.2 -19.1 121.1	22 28.0 -18.6 120.8	21 36.6 -18.0 120.5	20 45.0 -17.5 120.2
27°	23 50.6 -20.1 122.5	23 00.1 -19.6 122.2	22 09.4 -19.0 121.8	21 18.6 -18.5 121.6	20 27.5 -17.8 121.3
28°	23 30.5 -20.6 123.5	22 40.5 -19.9 123.2	21 50.4 -19.3 122.9	21 00.1 -18.7 122.6	20 09.7 -18.2 122.3
29°	23 09.9 -20.9 124.5	22 20.6 -20.3 124.2	21 31.1 -19.7 123.9	20 41.4 -19.2 123.6	19 51.5 -18.5 123.3

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°	24 53.9 -06.0 92.3	23 54.2 -06.0 92.2	22 54.4 -05.8 92.1	21 54.7 -05.8 92.0	20 55.0 -05.8 91.9
1°	24 47.9 -06.5 93.4	23 48.2 -06.4 93.3	22 48.6 -06.4 93.2	21 48.9 -06.3 93.1	20 49.2 -06.2 93.0
2°	24 41.4 -06.9 94.5	23 41.8 -06.8 94.4	22 42.2 -06.7 94.3	21 42.6 -06.7 94.2	20 43.0 -06.6 94.0
3°	24 34.5 -07.5 95.6	23 35.0 -07.3 95.5	22 35.5 -07.2 95.4	21 35.9 -07.0 95.2	20 36.4 -07.0 95.1
4°	24 27.0 -07.9 96.7	23 27.7 -07.8 96.6	22 28.3 -07.7 96.4	21 28.9 -07.5 96.3	20 29.4 -07.3 96.2
5°	24 19.1 -08.3 97.8	23 19.9 -08.2 97.6	22 20.6 -08.0 97.5	21 21.4 -07.9 97.4	20 22.1 -07.8 97.2
6°	24 10.8 -08.9 98.9	23 11.7 -08.7 98.7	22 12.6 -08.5 98.6	21 13.5 -08.3 98.4	20 14.3 -08.1 98.3
7°	24 01.9 -09.2 100.0	23 03.0 -09.0 99.8	22 04.1 -08.8 99.6	21 05.2 -08.7 99.5	20 06.2 -08.5 99.3
8°	23 52.7 -09.8 101.0	22 54.0 -09.5 100.9	21 55.3 -09.3 100.7	20 56.5 -09.1 100.5	19 57.7 -08.8 100.4
9°	23 42.9 -10.2 102.1	22 44.5 -10.0 101.9	21 46.0 -09.7 101.8	20 47.4 -09.4 101.6	19 48.9 -09.3 101.4
10°	23 32.7 -10.6 103.2	22 34.5 -10.3 103.0	21 36.3 -10.1 102.8	20 38.0 -09.9 102.7	19 39.6 -09.6 102.5
11°	23 22.1 -11.0 104.3	22 24.2 -10.8 104.1	21 26.2 -10.5 103.9	20 28.1 -10.2 103.7	19 30.0 -09.9 103.5
12°	23 11.1 -11.5 105.3	22 13.4 -11.2 105.1	21 15.7 -10.9 105.0	20 17.9 -10.6 104.8	19 20.1 -10.4 104.6
13°	22 59.6 -12.0 106.4	22 02.2 -11.6 106.2	21 04.8 -11.3 106.0	20 07.3 -11.0 105.8	19 09.7 -10.6 105.6
14°	22 47.6 -12.3 107.5	21 50.6 -12.0 107.3	20 53.5 -11.7 107.1	19 56.3 -11.3 106.9	18 59.1 -11.0 106.7
15°	22 35.3 -12.8 108.5	21 38.6 -12.4 108.3	20 41.8 -12.0 108.1	19 45.0 -11.7 107.9	18 48.1 -11.4 107.7
16°	22 22.5 -13.1 109.6	21 26.2 -12.8 109.4	20 29.8 -12.5 109.2	19 33.3 -12.1 108.9	18 36.7 -11.7 108.7
17°	22 09.4 -13.6 110.6	21 13.4 -13.2 110.4	20 17.3 -12.8 110.2	19 21.2 -12.4 110.0	18 25.0 -12.0 109.8
18°	21 55.8 -14.0 111.7	21 00.2 -13.6 111.5	20 04.5 -13.1 111.2	19 08.8 -12.8 111.0	18 13.0 -12.4 110.8
19°	21 41.8 -14.3 112.7	20 46.6 -13.9 112.5	19 51.4 -13.5 112.3	18 56.0 -13.1 112.1	18 00.6 -12.7 111.8
20°	21 27.5 -14.8 113.8	20 32.7 -14.3 113.5	19 37.9 -13.9 113.3	18 42.9 -13.4 113.1	17 47.9 -13.0 112.9
21°	21 12.7 -15.1 114.8	20 18.4 -14.7 114.6	19 24.0 -14.2 114.3	18 29.5 -13.8 114.1	17 34.9 -13.4 113.9
22°	20 57.6 -15.6 115.9	20 03.7 -15.0 115.6	19 09.8 -14.6 115.4	18 15.7 -14.1 115.1	17 21.5 -13.6 114.9
23°	20 42.0 -15.8 116.9	19 48.7 -15.4 116.6	18 55.2 -14.9 116.4	18 01.6 -14.4 116.2	17 07.9 -13.9 115.9
24°	20 26.2 -16.3 117.9	19 33.3 -15.7 117.7	18 40.3 -15.2 117.4	17 47.2 -14.8 117.2	16 54.0 -14.3 117.0
25°	20 09.9 -16.6 119.0	19 17.6 -16.1 118.7	18 25.1 -15.6 118.4	17 32.4 -15.0 118.2	16 39.7 -14.5 118.0
26°	19 53.3 -16.9 120.0	19 01.5 -16.4 119.7	18 09.5 -15.9 119.5	17 17.4 -15.4 119.2	16 25.2 -14.9 119.0
27°	19 36.4 -17.3 121.0	18 45.1 -16.8 120.7	17 53.6 -16.2 120.5	17 02.0 -15.6 120.2	16 10.3 -15.1 120.0
28°	19 19.1 -17.6 122.0	18 28.3 -17.0 121.7	17 37.4 -16.5 121.5	16 46.4 -16.0 121.2	15 55.2 -15.4 121.0
29°	19 01.5 -18.0 123.0	18 11.3 -17.4 122.8	17 20.9 -16.8 122.5	16 30.4 -16.2 122.2	15 39.8 -15.7 122.0

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	19 55.2 -05.7 91.8	18 55.5 -05.7 91.7	17 55.8 -05.7 91.6	16 56.0 -05.6 91.5	15 56.2 -05.5 91.4
1°	19 49.5 -06.1 92.9	18 49.8 -06.1 92.8	17 50.1 -06.0 92.7	16 50.4 -06.0 92.6	15 50.7 -05.9 92.5
2°	19 43.4 -06.5 93.9	18 43.7 -06.4 93.8	17 44.1 -06.3 93.7	16 44.4 -06.2 93.6	15 44.8 -06.2 93.5
3°	19 36.9 -06.9 95.0	18 37.3 -06.7 94.9	17 37.8 -06.7 94.8	16 38.2 -06.6 94.6	15 38.6 -06.5 94.5
4°	19 30.0 -07.2 96.0	18 30.6 -07.1 95.9	17 31.1 -07.0 95.8	16 31.6 -06.8 95.7	15 32.1 -06.7 95.6
5°	19 22.8 -07.6 97.1	18 23.5 -07.5 97.0	17 24.1 -07.3 96.8	16 24.8 -07.2 96.7	15 25.4 -07.0 96.6
6°	19 15.2 -08.0 98.1	18 16.0 -07.8 98.0	17 16.8 -07.6 97.9	16 17.6 -07.5 97.8	15 18.4 -07.4 97.6
7°	19 07.2 -08.3 99.2	18 08.2 -08.1 99.1	17 09.2 -08.0 98.9	16 10.1 -07.7 98.8	15 11.0 -07.6 98.7
8°	18 58.9 -08.6 100.2	18 00.1 -08.5 100.1	17 01.2 -08.2 100.0	16 02.4 -08.1 99.8	15 03.4 -07.8 99.7
9°	18 50.3 -09.0 101.3	17 51.6 -08.8 101.1	16 53.0 -08.6 101.0	15 54.3 -08.4 100.8	14 55.6 -08.2 100.7
10°	18 41.3 -09.4 102.3	17 42.8 -09.1 102.2	16 44.4 -08.9 102.0	15 45.9 -08.6 101.9	14 47.4 -08.4 101.7
11°	18 31.9 -09.7 103.4	17 33.7 -09.4 103.2	16 35.5 -09.2 103.1	15 37.3 -09.0 102.9	14 39.0 -08.7 102.8
12°	18 22.2 -10.0 104.4	17 24.3 -09.8 104.2	16 26.3 -09.5 104.1	15 28.3 -09.2 103.9	14 30.3 -08.9 103.8
13°	18 12.2 -10.4 105.5	17 14.5 -10.0 105.3	16 16.8 -09.7 105.1	15 19.1 -09.5 105.0	14 21.4 -09.3 104.8
14°	18 01.8 -10.7 106.5	17 04.5 -10.4 106.3	16 07.1 -10.1 106.1	15 09.6 -09.7 106.0	14 12.1 -09.4 105.8
15°	17 51.1 -11.0 107.5	16 54.1 -10.7 107.3	15 57.0 -10.4 107.2	14 59.9 -10.1 107.0	14 02.7 -09.8 106.8
16°	17 40.1 -11.4 108.6	16 43.4 -11.0 108.4	15 46.6 -10.6 108.2	14 49.8 -10.3 108.0	13 52.9 -09.9 107.9
17°	17 28.7 -11.7 109.6	16 32.4 -11.3 109.4	15 36.0 -11.0 109.2	14 39.5 -10.6 109.0	13 43.0 -10.3 108.9
18°	17 17.0 -11.9 110.6	16 21.1 -11.6 110.4	15 25.0 -11.2 110.2	14 28.9 -10.8 110.1	13 32.7 -10.4 109.9
19°	17 05.1 -12.3 111.6	16 09.5 -11.9 111.4	15 13.8 -11.5 111.3	14 18.1 -11.1 111.1	13 22.3 -10.8 110.9
20°	16 52.8 -12.6 112.7	15 57.6 -12.2 112.5	15 02.3 -11.8 112.3	14 07.0 -11.4 112.1	13 11.5 -10.9 111.9
21°	16 40.2 -12.9 113.7	15 45.4 -12.5 113.5	14 50.5 -12.0 113.3	13 55.6 -11.6 113.1	13 00.6 -11.2 112.9
22°	16 27.3 -13.2 114.7	15 32.9 -12.7 114.5	14 38.5 -12.3 114.3	13 44.0 -11.9 114.1	12 49.4 -11.4 113.9
23°	16 14.1 -13.5 115.7	15 20.2 -13.0 115.5	14 26.2 -12.5 115.3	13 32.1 -12.1 115.1	12 38.0 -11.7 114.9
24°	16 00.6 -13.7 116.7	15 07.2 -13.3 116.5	14 13.7 -12.8 116.3	13 20.0 -12.3 116.1	12 26.3 -11.8 115.9
25°	15 46.9 -14.1 117.7	14 53.9 -13.5 117.5	14 00.9 -13.1 117.3	13 07.7 -12.6 117.1	12 14.5 -12.1 116.9
26°	15 32.8 -14.3 118.8	14 40.4 -13.8 118.5	13 47.8 -13.3 118.3	12 55.1 -12.7 118.1	12 02.4 -12.3 117.9
27°	15 18.5 -14.6 119.8	14 26.6 -14.1 119.5	13 34.5 -13.5 119.3	12 42.4 -13.1 119.1	11 50.1 -12.5 118.9
28°	15 03.9 -14.8 120.8	14 12.5 -14.3 120.5	13 21.0 -13.8 120.3	12 29.3 -13.2 120.1	11 37.6 -12.7 119.9
29°	14 49.1 -15.1 121.8	13 58.2 -14.6 121.6	13 07.2 -14.0 121.3	12 16.1 -13.5 121.1	11 24.9 -12.9 120.9

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°	14 56.5 -05.6 91.3	13 56.7 -05.5 91.2	12 57.0 -05.5 91.2	11 57.2 -05.4 91.1	10 57.5 -05.5 91.0
1°	14 50.9 -05.8 92.4	13 51.2 -05.8 92.3	12 51.5 -05.7 92.2	11 51.8 -05.7 92.1	10 52.0 -05.6 92.0
2°	14 45.1 -06.1 93.4	13 45.4 -06.0 93.3	12 45.8 -06.0 93.2	11 46.1 -05.9 93.1	10 46.4 -05.8 93.0
3°	14 39.0 -06.3 94.4	13 39.4 -06.3 94.3	12 39.8 -06.2 94.2	11 40.2 -06.1 94.1	10 40.6 -06.0 94.0
4°	14 32.7 -06.7 95.5	13 33.1 -06.5 95.3	12 33.6 -06.4 95.2	11 34.1 -06.3 95.1	10 34.6 -06.3 95.0
5°	14 26.0 -06.9 96.5	13 26.6 -06.8 96.4	12 27.2 -06.6 96.3	11 27.8 -06.5 96.1	10 28.3 -06.4 96.0
6°	14 19.1 -07.2 97.5	13 19.8 -07.0 97.4	12 20.6 -06.9 97.3	11 21.3 -06.8 97.2	10 21.9 -06.5 97.0
7°	14 11.9 -07.4 98.5	13 12.8 -07.2 98.4	12 13.7 -07.1 98.3	11 14.5 -06.9 98.2	10 15.4 -06.8 98.1
8°	14 04.5 -07.7 99.6	13 05.6 -07.5 99.4	12 06.6 -07.3 99.3	11 07.6 -07.2 99.2	10 08.6 -07.0 99.1
9°	13 56.8 -07.9 100.6	12 58.1 -07.8 100.4	11 59.3 -07.6 100.3	11 00.4 -07.3 100.2	10 01.6 -07.1 100.1
10°	13 48.9 -08.2 101.6	12 50.3 -08.0 101.5	11 51.7 -07.7 101.3	10 53.1 -07.5 101.2	9 54.5 -07.4 101.1
11°	13 40.7 -08.5 102.6	12 42.3 -08.2 102.5	11 44.0 -08.0 102.3	10 45.6 -07.8 102.2	9 47.1 -07.5 102.1
12°	13 32.2 -08.7 103.6	12 34.1 -08.4 103.5	11 36.0 -08.2 103.4	10 37.8 -07.9 103.2	9 39.6 -07.7 103.1
13°	13 23.5 -08.9 104.7	12 25.7 -08.7 104.5	11 27.8 -08.4 104.4	10 29.9 -08.1 104.2	9 31.9 -07.8 104.1
14°	13 14.6 -09.2 105.7	12 17.0 -08.8 105.5	11 19.4 -08.6 105.4	10 21.8 -08.3 105.2	9 24.1 -08.0 105.1
15°	13 05.4 -09.4 106.7	12 08.2 -09.1 106.5	11 10.8 -08.8 106.4	10 13.5 -08.5 106.2	9 16.1 -08.2 106.1
16°	12 56.0 -09.6 107.7	11 59.1 -09.4 107.5	11 02.0 -09.0 107.4	10 05.0 -08.7 107.3	9 07.9 -08.4 107.1
17°	12 46.4 -09.9 108.7	11 49.7 -09.5 108.6	10 53.0 -09.2 108.4	9 56.3 -08.9 108.3	8 59.5 -08.5 108.1
18°	12 36.5 -10.1 109.7	11 40.2 -09.8 109.6	10 43.8 -09.3 109.4	9 47.4 -09.0 109.3	8 51.0 -08.7 109.1
19°	12 26.4 -10.4 110.7	11 30.4 -09.9 110.6	10 34.5 -09.6 110.4	9 38.4 -09.2 110.3	8 42.3 -08.8 110.1
20°	12 16.0 -10.5 111.7	11 20.5 -10.2 111.6	10 24.9 -09.8 111.4	9 29.2 -09.4 111.3	8 33.5 -09.0 111.1
21°	12 05.5 -10.8 112.7	11 10.3 -10.3 112.6	10 15.1 -09.9 112.4	9 19.8 -09.5 112.3	8 24.5 -09.2 112.1
22°	11 54.7 -11.0 113.8	11 00.0 -10.6 113.6	10 05.2 -10.2 113.4	9 10.3 -09.7 113.3	8 15.3 -09.2 113.1
23°	11 43.7 -11.2 114.8	10 49.4 -10.7 114.6	9 55.0 -10.3 114.4	9 00.6 -09.9 114.3	8 06.1 -09.5 114.1
24°	11 32.5 -11.4 115.8	10 38.7 -11.0 115.6	9 44.7 -10.5 115.4	8 50.7 -10.0 115.3	7 56.6 -09.6 115.1
25°	11 21.1 -11.6 116.8	10 27.7 -11.1 116.6	9 34.2 -10.6 116.4	8 40.7 -10.2 116.3	7 47.0 -09.7 116.1
26°	11 09.5 -11.8 117.8	10 16.6 -11.3 117.6	9 23.6 -10.8 117.4	8 30.5 -10.3 117.3	7 37.3 -09.8 117.1
27°	10 57.7 -12.0 118.8	10 05.3 -11.5 118.6	9 12.8 -11.0 118.4	8 20.2 -10.5 118.3	7 27.5 -10.0 118.1
28°	10 45.7 -12.1 119.8	9 53.8 -11.7 119.6	9 01.8 -11.2 119.4	8 09.7 -10.7 119.3	7 17.5 -10.1 119.1
29°	10 33.6 -12.4 120.8	9 42.1 -11.8 120.6	8 50.6 -11.3 120.4	7 59.0 -10.7 120.2	7 07.4 -10.3 120.1

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 57.7 -05.4 90.9	8 57.9 -05.3 90.8	7 58.2 -05.4 90.7	6 58.4 -05.3 90.6	5 58.6 -05.3 90.5
1°	9 52.3 -05.6 91.9	8 52.6 -05.6 91.8	7 52.8 -05.5 91.7	6 53.1 -05.5 91.6	5 53.3 -05.4 91.5
2°	9 46.7 -05.7 92.9	8 47.0 -05.7 92.8	7 47.3 -05.6 92.7	6 47.6 -05.6 92.6	5 47.9 -05.5 92.5
3°	9 41.0 -06.0 93.9	8 41.3 -05.8 93.8	7 41.7 -05.8 93.7	6 42.0 -05.7 93.6	5 42.4 -05.7 93.5
4°	9 35.0 -06.1 94.9	8 35.5 -06.1 94.8	7 35.9 -05.9 94.7	6 36.3 -05.8 94.6	5 36.7 -05.7 94.5
5°	9 28.9 -06.3 95.9	8 29.4 -06.1 95.8	7 30.0 -06.1 95.7	6 30.5 -05.9 95.6	5 31.0 -05.8 95.5
6°	9 22.6 -06.4 96.9	8 23.3 -06.3 96.8	7 23.9 -06.2 96.7	6 24.6 -06.1 96.6	5 25.2 -05.9 96.5
7°	9 16.2 -06.7 97.9	8 17.0 -06.5 97.8	7 17.7 -06.3 97.7	6 18.5 -06.2 97.6	5 19.3 -06.1 97.5
8°	9 09.5 -06.8 99.0	8 10.5 -06.6 98.8	7 11.4 -06.4 98.7	6 12.3 -06.3 98.6	5 13.2 -06.1 98.5
9°	9 02.7 -06.9 100.0	8 03.9 -06.8 99.8	7 05.0 -06.6 99.7	6 06.0 -06.4 99.6	5 07.1 -06.2 99.5
10°	8 55.8 -07.1 101.0	7 57.1 -06.9 100.8	6 58.4 -06.7 100.7	5 59.6 -06.5 100.6	5 00.9 -06.3 100.5
11°	8 48.7 -07.3 102.0	7 50.2 -07.1 101.9	6 51.7 -06.9 101.7	5 53.1 -06.6 101.6	4 54.6 -06.4 101.5
12°	8 41.4 -07.4 103.0	7 43.1 -07.2 102.9	6 44.8 -06.9 102.7	5 46.5 -06.7 102.6	4 48.2 -06.5 102.5
13°	8 34.0 -07.6 104.0	7 35.9 -07.3 103.9	6 37.9 -07.1 103.7	5 39.8 -06.8 103.6	4 41.7 -06.5 103.5
14°	8 26.4 -07.8 105.0	7 28.6 -07.5 104.9	6 30.8 -07.2 104.7	5 33.0 -06.9 104.6	4 35.2 -06.7 104.5
15°	8 18.6 -07.9 106.0	7 21.1 -07.6 105.9	6 23.6 -07.3 105.7	5 26.1 -07.0 105.6	4 28.5 -06.7 105.5
16°	8 10.7 -08.0 107.0	7 13.5 -07.7 106.9	6 16.3 -07.4 106.7	5 19.1 -07.1 106.6	4 21.8 -06.8 106.5
17°	8 02.7 -08.2 108.0	7 05.8 -07.8 107.9	6 08.9 -07.5 107.7	5 12.0 -07.3 107.6	4 15.0 -06.9 107.5
18°	7 54.5 -08.3 109.0	6 58.0 -08.0 108.9	6 01.4 -07.7 108.7	5 04.7 -07.3 108.6	4 08.1 -07.0 108.5
19°	7 46.2 -08.5 110.0	6 50.0 -08.1 109.9	5 53.7 -07.7 109.7	4 57.4 -07.3 109.6	4 01.1 -07.0 109.5
20°	7 37.7 -08.6 111.0	6 41.9 -08.3 110.9	5 46.0 -07.9 110.7	4 50.1 -07.5 110.6	3 54.1 -07.1 110.5
21°	7 29.1 -08.8 112.0	6 33.6 -08.3 111.8	5 38.1 -07.9 111.7	4 42.6 -07.6 111.6	3 47.0 -07.2 111.5
22°	7 20.3 -08.8 113.0	6 25.3 -08.5 112.8	5 30.2 -08.1 112.7	4 35.0 -07.6 112.6	3 39.8 -07.2 112.5
23°	7 11.5 -09.0 114.0	6 16.8 -08.5 113.8	5 22.1 -08.1 113.7	4 27.4 -07.7 113.6	3 32.6 -07.3 113.5
24°	7 02.5 -09.2 115.0	6 08.3 -08.7 114.8	5 14.0 -08.3 114.7	4 19.7 -07.8 114.6	3 25.3 -07.4 114.5
25°	6 53.3 -09.2 116.0	5 59.6 -08.8 115.8	5 05.7 -08.3 115.7	4 11.9 -07.9 115.6	3 17.9 -07.4 115.5
26°	6 44.1 -09.4 117.0	5 50.8 -08.9 116.8	4 57.4 -08.4 116.7	4 04.0 -08.0 116.6	3 10.5 -07.5 116.5
27°	6 34.7 -09.5 118.0	5 41.9 -09.0 117.8	4 49.0 -08.5 117.7	3 56.0 -08.0 117.6	3 03.0 -07.5 117.5
28°	6 25.2 -09.6 119.0	5 32.9 -09.1 118.8	4 40.5 -08.6 118.7	3 48.0 -08.1 118.6	2 55.5 -07.6 118.4
29°	6 15.6 -09.7 119.9	5 23.8 -09.2 119.8	4 31.9 -08.7 119.7	3 39.9 -08.1 119.6	2 47.9 -07.6 119.4

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 58.9 -05.3 90.4	3 59.1 -05.3 90.3	2 59.3 -05.2 90.3	1 59.5 -05.2 90.2	0 59.8 -05.3 90.1
1°	4 53.6 -05.4 91.4	3 53.8 -05.3 91.3	2 54.1 -05.4 91.3	1 54.3 -05.3 91.2	0 54.5 -05.2 91.1
2°	4 48.2 -05.5 92.4	3 48.5 -05.5 92.3	2 48.7 -05.3 92.3	1 49.0 -05.3 92.2	0 49.3 -05.3 92.1
3°	4 42.7 -05.5 93.4	3 43.0 -05.4 93.3	2 43.4 -05.4 93.3	1 43.7 -05.4 93.2	0 44.0 -05.3 93.1
4°	4 37.2 -05.7 94.4	3 37.6 -05.6 94.3	2 38.0 -05.5 94.3	1 38.3 -05.3 94.2	0 38.7 -05.3 94.1
5°	4 31.5 -05.7 95.4	3 32.0 -05.6 95.3	2 32.5 -05.5 95.2	1 33.0 -05.4 95.2	0 33.4 -05.3 95.1
6°	4 25.8 -05.8 96.4	3 26.4 -05.7 96.3	2 27.0 -05.6 96.2	1 27.6 -05.5 96.2	0 28.1 -05.3 96.1
7°	4 20.0 -05.9 97.4	3 20.7 -05.7 97.3	2 21.4 -05.6 97.2	1 22.1 -05.4 97.1	0 22.8 -05.3 97.1
8°	4 14.1 -06.0 98.4	3 15.0 -05.8 98.3	2 15.8 -05.6 98.2	1 16.7 -05.5 98.1	0 17.5 -05.3 98.1
9°	4 08.1 -06.0 99.4	3 09.2 -05.9 99.3	2 10.2 -05.7 99.2	1 11.2 -05.5 99.1	0 12.2 -05.4 99.1
10°	4 02.1 -06.1 100.4	3 03.3 -05.9 100.3	2 04.5 -05.7 100.2	1 05.7 -05.5 100.1	0 06.8 -05.3 100.0
11°	3 56.0 -06.2 101.4	2 57.4 -06.0 101.3	1 58.8 -05.8 101.2	1 00.2 -05.6 101.1	0 01.5 -05.3 101.0
12°	3 49.8 -06.2 102.4	2 51.4 -06.0 102.3	1 53.0 -05.7 102.2	0 54.6 -05.5 102.1	-0 03.8 -05.4
13°	3 43.6 -06.3 103.4	2 45.4 -06.0 103.3	1 47.3 -05.9 103.2	0 49.1 -05.6 103.1	-0 09.2 -05.3
14°	3 37.3 -06.4 104.4	2 39.4 -06.1 104.3	1 41.4 -05.8 104.2	0 43.5 -05.6 104.1	-0 14.5 -05.3
15°	3 30.9 -06.4 105.4	2 33.3 -06.2 105.3	1 35.6 -05.9 105.2	0 37.9 -05.6 105.1	-0 19.8 -05.3
16°	3 24.5 -06.6 106.4	2 27.1 -06.2 106.3	1 29.7 -05.9 106.2	0 32.3 -05.6 106.1	-0 25.1 -05.3
17°	3 17.9 -06.5 107.4	2 20.9 -06.3 107.3	1 23.8 -05.9 107.2	0 26.7 -05.6 107.1	-0 30.4 -05.3
18°	3 11.4 -06.6 108.4	2 14.6 -06.2 108.3	1 17.9 -06.0 108.2	0 21.1 -05.6 108.1	-0 35.7 -05.3
19°	3 04.8 -06.7 109.4	2 08.4 -06.4 109.3	1 11.9 -05.9 109.2	0 15.5 -05.7 109.1	-0 41.0 -05.3
20°	2 58.1 -06.7 110.4	2 02.0 -06.3 110.3	1 06.0 -06.0 110.2	0 09.8 -05.6 110.1	-0 46.3 -05.3
21°	2 51.4 -06.8 111.4	1 55.7 -06.4 111.3	1 00.0 -06.1 111.2	0 04.2 -05.6 111.1	-0 51.6 -05.2
22°	2 44.6 -06.9 112.4	1 49.3 -06.5 112.3	0 53.9 -06.0 112.2	-0 01.4 -05.7	-0 56.8 -05.3
23°	2 37.7 -06.8 113.4	1 42.8 -06.4 113.3	0 47.9 -06.0 113.2	-0 07.1 -05.6	-1 02.1 -05.2
24°	2 30.9 -07.0 114.4	1 36.4 -06.5 114.3	0 41.9 -06.1 114.2	-0 12.7 -05.6	-1 07.3 -05.2
25°	2 23.9 -06.9 115.4	1 29.9 -06.5 115.3	0 35.8 -06.1 115.2	-0 18.3 -05.6	-1 12.5 -05.1
26°	2 17.0 -07.0 116.4	1 23.4 -06.6 116.3	0 29.7 -06.0 116.2	-0 23.9 -05.6	-1 17.6 -05.2
27°	2 10.0 -07.1 117.3	1 16.8 -06.5 117.2	0 23.7 -06.1 117.2	-0 29.5 -05.6	-1 22.8 -05.1
28°	2 02.9 -07.1 118.3	1 10.3 -06.6 118.2	0 17.6 -06.1 118.1	-0 35.1 -05.6	-1 27.9 -05.1
29°	1 55.8 -07.1 119.3	1 03.7 -06.6 119.2	0 11.5 -06.1 119.1	-0 40.7 -05.6	-1 33.0 -05.1

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 -05.2 90.0	-0 59.8 -05.2			
1°	-0 05.2 -05.3	-1 05.0 -05.2			
2°	-0 10.5 -05.2	-1 10.2 -05.2			
3°	-0 15.7 -05.2	-1 15.4 -05.1			
4°	-0 20.9 -05.2	-1 20.5 -05.2			
5°	-0 26.1 -05.2	-1 25.7 -05.1			
6°	-0 31.3 -05.2	-1 30.8 -05.0			
7°	-0 36.5 -05.2	-1 35.8 -05.1			
8°	-0 41.7 -05.2	-1 40.9 -05.0			
9°	-0 46.9 -05.1	-1 45.9 -05.0			
10°	-0 52.0 -05.2	-1 50.9 -05.0			
11°	-0 57.2 -05.1	-1 55.9 -04.9			
12°	-1 02.3 -05.1	-2 00.8 -04.9			
13°	-1 07.4 -05.1	-2 05.7 -04.8			
14°	-1 12.5 -05.1	-2 10.5 -04.8			
15°	-1 17.6 -05.0	-2 15.3 -04.8			
16°	-1 22.6 -05.0	-2 20.1 -04.7			
17°	-1 27.6 -05.0	-2 24.8 -04.7			
18°	-1 32.6 -05.0	-2 29.5 -04.6			
19°	-1 37.6 -04.9	-2 34.1 -04.6			
20°	-1 42.5 -04.9	-2 38.7 -04.5			
21°	-1 47.4 -04.9	-2 43.2 -04.5			
22°	-1 52.3 -04.8	-2 47.7 -04.5			
23°	-1 57.1 -04.8	-2 52.2 -04.3			
24°	-2 01.9 -04.8	-2 56.5 -04.4			
25°	-2 06.7 -04.7	-3 00.9 -04.3			
26°	-2 11.4 -04.7	-3 05.2 -04.2			
27°	-2 16.1 -04.6	-3 09.4 -04.1			
28°	-2 20.7 -04.6	-3 13.5 -04.1			
29°	-2 25.3 -04.6	-3 17.6 -04.1			

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

Dec	LHA 000° / 360°	LHA 001° / 359°	LHA 002° / 358°	LHA 003° / 357°	LHA 004° / 356°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	84 00.0 -60.0 180.0	83 55.1 -59.4 170.5	83 40.6 -57.4 161.5	83 17.7 -54.5 153.4	82 47.6 -51.1 146.2
1°	83 00.0 -60.0 180.0	82 55.7 -59.4 171.9	82 43.2 -57.9 164.0	82 23.2 -55.8 156.7	81 56.5 -53.0 150.2
2°	82 00.0 -60.0 180.0	81 56.3 -59.6 172.9	81 45.3 -58.4 165.9	81 27.4 -56.5 159.4	81 03.5 -54.3 153.4
3°	81 00.0 -60.0 180.0	80 56.7 -59.7 173.6	80 46.9 -58.7 167.4	80 30.9 -57.2 161.5	80 09.2 -55.3 156.0
4°	80 00.0 -60.0 180.0	79 57.0 -59.7 174.3	79 48.2 -59.0 168.7	79 33.7 -57.7 163.3	79 13.9 -56.1 158.1
5°	79 00.0 -60.0 180.0	78 57.3 -59.8 174.8	78 49.2 -59.1 169.7	78 36.0 -58.1 164.7	78 17.8 -56.6 160.0
6°	78 00.0 -60.0 180.0	77 57.5 -59.8 175.2	77 50.1 -59.2 170.5	77 37.9 -58.3 165.9	77 21.2 -57.1 161.5
7°	77 00.0 -60.0 180.0	76 57.7 -59.8 175.6	76 50.9 -59.4 171.2	76 39.6 -58.6 167.0	76 24.1 -57.5 162.9
8°	76 00.0 -60.0 180.0	75 57.9 -59.9 175.9	75 51.5 -59.4 171.9	75 41.0 -58.7 167.9	75 26.6 -57.9 164.0
9°	75 00.0 -60.0 180.0	74 58.0 -59.9 176.2	74 52.1 -59.5 172.4	74 42.3 -58.9 168.7	74 28.7 -58.0 165.1
10°	74 00.0 -60.0 180.0	73 58.1 -59.8 176.4	73 52.6 -59.6 172.9	73 43.4 -59.0 169.4	73 30.7 -58.3 166.0
11°	73 00.0 -60.0 180.0	72 58.3 -59.9 176.6	72 53.0 -59.6 173.3	72 44.4 -59.1 170.0	72 32.4 -58.5 166.8
12°	72 00.0 -60.0 180.0	71 58.4 -60.0 176.8	71 53.4 -59.6 173.7	71 45.3 -59.2 170.6	71 33.9 -58.6 167.5
13°	71 00.0 -60.0 180.0	70 58.4 -59.9 177.0	70 53.8 -59.7 174.0	70 46.1 -59.3 171.1	70 35.3 -58.7 168.2
14°	70 00.0 -60.0 180.0	69 58.5 -59.9 177.2	69 54.1 -59.7 174.3	69 46.8 -59.4 171.6	69 36.6 -58.9 168.8
15°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.3	68 54.4 -59.7 174.6	68 47.4 -59.4 172.0	68 37.7 -58.9 169.3
16°	68 00.0 -60.0 180.0	67 58.7 -60.0 177.4	67 54.7 -59.8 174.9	67 48.0 -59.4 172.3	67 38.8 -59.0 169.8
17°	67 00.0 -60.0 180.0	66 58.7 -59.9 177.6	66 54.9 -59.8 175.1	66 48.6 -59.5 172.7	66 39.8 -59.2 170.3
18°	66 00.0 -60.0 180.0	65 58.8 -60.0 177.7	65 55.1 -59.8 175.3	65 49.1 -59.5 173.0	65 40.6 -59.1 170.7
19°	65 00.0 -60.0 180.0	64 58.8 -59.9 177.8	64 55.3 -59.8 175.5	64 49.6 -59.6 173.3	64 41.5 -59.3 171.1
20°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.9	63 55.5 -59.8 175.7	63 50.0 -59.6 173.6	63 42.2 -59.2 171.5
21°	63 00.0 -60.0 180.0	62 58.9 -59.9 177.9	62 55.7 -59.8 175.9	62 50.4 -59.6 173.9	62 43.0 -59.4 171.8
22°	62 00.0 -60.0 180.0	61 59.0 -60.0 178.0	61 55.9 -59.9 176.1	61 50.8 -59.7 174.1	61 43.6 -59.3 172.2
23°	61 00.0 -60.0 180.0	60 59.0 -60.0 178.1	60 56.0 -59.8 176.2	60 51.1 -59.6 174.3	60 44.3 -59.5 172.5
24°	60 00.0 -60.0 180.0	59 59.0 -59.9 178.2	59 56.2 -59.9 176.4	59 51.5 -59.7 174.5	59 44.8 -59.4 172.7
25°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.2	58 56.3 -59.8 176.5	58 51.8 -59.7 174.7	58 45.4 -59.5 173.0
26°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.3	57 56.5 -59.9 176.6	57 52.1 -59.8 174.9	57 45.9 -59.5 173.2
27°	57 00.0 -60.0 180.0	56 59.1 -59.9 178.4	56 56.6 -59.9 176.7	56 52.3 -59.7 175.1	56 46.4 -59.5 173.5
28°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.4	55 56.7 -59.9 176.8	55 52.6 -59.7 175.3	55 46.9 -59.6 173.7
29°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.5	54 56.8 -59.9 177.0	54 52.9 -59.8 175.4	54 47.3 -59.5 173.9

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	82 11.7 -47.6 140.1	81 31.3 -44.1 134.8	80 47.4 -40.9 130.4	80 00.7 -37.9 126.6	79 11.8 -35.2 123.4
1°	81 24.1 -49.9 144.3	80 47.2 -46.9 139.3	80 06.5 -43.9 134.8	79 22.8 -41.1 131.0	78 36.6 -38.5 127.6
2°	80 34.2 -51.7 147.9	80 00.3 -49.0 143.0	79 22.6 -46.4 138.7	78 41.7 -43.8 134.8	77 58.1 -41.3 131.4
3°	79 42.5 -53.1 150.8	79 11.3 -50.8 146.2	78 36.2 -48.3 142.0	77 57.9 -45.8 138.2	77 16.8 -43.5 134.8
4°	78 49.4 -54.2 153.4	78 20.5 -52.0 148.9	77 47.9 -49.8 144.9	77 12.1 -47.7 141.2	76 33.3 -45.5 137.8
5°	77 55.2 -55.0 155.5	77 28.5 -53.2 151.3	76 58.1 -51.3 147.4	76 24.4 -49.2 143.9	75 47.8 -47.2 140.6
6°	77 00.2 -55.7 157.3	76 35.3 -54.0 153.4	76 06.8 -52.3 149.7	75 35.2 -50.5 146.2	75 00.6 -48.6 143.0
7°	76 04.5 -56.2 158.9	75 41.3 -54.8 155.2	75 14.5 -53.2 151.6	74 44.7 -51.5 148.3	74 12.0 -49.8 145.2
8°	75 08.3 -56.7 160.3	74 46.5 -55.4 156.8	74 21.3 -53.9 153.4	73 53.2 -52.5 150.2	73 22.2 -50.9 147.2
9°	74 11.6 -57.0 161.6	73 51.1 -55.9 158.2	73 27.4 -54.6 155.0	73 00.7 -53.2 151.9	72 31.3 -51.7 149.0
10°	73 14.6 -57.4 162.7	72 55.2 -56.3 159.5	72 32.8 -55.1 156.4	72 07.5 -53.8 153.5	71 39.6 -52.5 150.7
11°	72 17.2 -57.6 163.7	71 58.9 -56.7 160.6	71 37.7 -55.7 157.7	71 13.7 -54.5 154.9	70 47.1 -53.2 152.2
12°	71 19.6 -57.9 164.6	71 02.2 -57.0 161.7	70 42.0 -56.0 158.9	70 19.2 -54.9 156.2	69 53.9 -53.8 153.6
13°	70 21.7 -58.1 165.4	70 05.2 -57.3 162.6	69 46.0 -56.3 159.9	69 24.3 -55.4 157.3	69 00.1 -54.3 154.8
14°	69 23.6 -58.2 166.1	69 07.9 -57.5 163.5	68 49.7 -56.7 160.9	68 28.9 -55.7 158.4	68 05.8 -54.8 156.0
15°	68 25.4 -58.4 166.8	68 10.4 -57.7 164.2	67 53.0 -56.9 161.8	67 33.2 -56.1 159.4	67 11.0 -55.1 157.1
16°	67 27.0 -58.5 167.4	67 12.7 -57.8 165.0	66 56.1 -57.2 162.6	66 37.1 -56.4 160.3	66 15.9 -55.5 158.1
17°	66 28.5 -58.6 167.9	66 14.9 -58.1 165.6	65 58.9 -57.4 163.4	65 40.7 -56.6 161.1	65 20.4 -55.9 159.0
18°	65 29.9 -58.7 168.5	65 16.8 -58.2 166.2	65 01.5 -57.5 164.1	64 44.1 -56.9 161.9	64 24.5 -56.1 159.9
19°	64 31.2 -58.9 169.0	64 18.6 -58.3 166.8	64 04.0 -57.8 164.7	63 47.2 -57.1 162.7	63 28.4 -56.3 160.7
20°	63 32.3 -58.9 169.4	63 20.3 -58.4 167.4	63 06.2 -57.8 165.3	62 50.1 -57.2 163.4	62 32.1 -56.6 161.4
21°	62 33.4 -58.9 169.8	62 21.9 -58.5 167.9	62 08.4 -58.1 165.9	61 52.9 -57.5 164.0	61 35.5 -56.8 162.1
22°	61 34.5 -59.0 170.2	61 23.4 -58.6 168.3	61 10.3 -58.1 166.4	60 55.4 -57.6 164.6	60 38.7 -57.0 162.8
23°	60 35.5 -59.1 170.6	60 24.8 -58.7 168.8	60 12.2 -58.2 167.0	59 57.8 -57.7 165.2	59 41.7 -57.2 163.4
24°	59 36.4 -59.2 170.9	59 26.1 -58.8 169.2	59 14.0 -58.4 167.4	59 00.1 -57.8 165.7	58 44.5 -57.3 164.0
25°	58 37.2 -59.2 171.3	58 27.3 -58.8 169.6	58 15.6 -58.4 167.9	58 02.3 -58.0 166.2	57 47.2 -57.4 164.6
26°	57 38.0 -59.2 171.6	57 28.5 -58.9 169.9	57 17.2 -58.5 168.3	57 04.3 -58.1 166.7	56 49.8 -57.6 165.1
27°	56 38.8 -59.3 171.9	56 29.6 -59.0 170.3	56 18.7 -58.6 168.7	56 06.2 -58.2 167.2	55 52.2 -57.7 165.6
28°	55 39.5 -59.3 172.2	55 30.6 -59.0 170.6	55 20.1 -58.7 169.1	55 08.0 -58.2 167.6	54 54.5 -57.9 166.1
29°	54 40.2 -59.3 172.4	54 31.6 -59.0 170.9	54 21.4 -58.7 169.5	54 09.8 -58.4 168.0	53 56.6 -57.9 166.6

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	78 21.2 -32.8 120.7	77 29.3 -30.7 118.3	76 36.2 -28.8 116.2	75 42.2 -27.0 114.4	74 47.5 -25.5 112.7
1°	77 48.4 -36.1 124.7	76 58.6 -33.9 122.2	76 07.4 -31.9 119.9	75 15.2 -30.1 117.9	74 22.0 -28.4 116.2
2°	77 12.3 -38.9 128.4	76 24.7 -36.8 125.7	75 35.5 -34.7 123.4	74 45.1 -32.9 121.3	73 53.6 -31.2 119.4
3°	76 33.4 -41.3 131.8	75 47.9 -39.2 129.0	75 00.8 -37.2 126.6	74 12.2 -35.4 124.4	73 22.4 -33.7 122.4
4°	75 52.1 -43.4 134.8	75 08.7 -41.3 132.1	74 23.6 -39.5 129.6	73 36.8 -37.6 127.3	72 48.7 -35.9 125.2
5°	75 08.7 -45.2 137.6	74 27.4 -43.3 134.8	73 44.1 -41.4 132.3	72 59.2 -39.7 130.0	72 12.8 -38.0 127.9
6°	74 23.5 -46.8 140.1	73 44.1 -44.9 137.3	73 02.7 -43.1 134.8	72 19.5 -41.4 132.5	71 34.8 -39.8 130.4
7°	73 36.7 -48.1 142.3	72 59.2 -46.4 139.7	72 19.6 -44.7 137.2	71 38.1 -43.0 134.9	70 55.0 -41.4 132.7
8°	72 48.6 -49.2 144.4	72 12.8 -47.6 141.8	71 34.9 -46.0 139.3	70 55.1 -44.4 137.0	70 13.6 -42.9 134.9
9°	71 59.4 -50.2 146.3	71 25.2 -48.7 143.7	70 48.9 -47.2 141.3	70 10.7 -45.7 139.1	69 30.7 -44.2 136.9
10°	71 09.2 -51.2 148.0	70 36.5 -49.7 145.5	70 01.7 -48.3 143.2	69 25.0 -46.9 140.9	68 46.5 -45.4 138.8
11°	70 18.0 -51.9 149.6	69 46.8 -50.6 147.2	69 13.4 -49.2 144.9	68 38.1 -47.8 142.7	68 01.1 -46.5 140.6
12°	69 26.1 -52.5 151.1	68 56.2 -51.3 148.7	68 24.2 -50.0 146.5	67 50.3 -48.7 144.3	67 14.6 -47.4 142.3
13°	68 33.6 -53.2 152.4	68 04.9 -52.0 150.1	67 34.2 -50.8 147.9	67 01.6 -49.6 145.8	66 27.2 -48.3 143.8
14°	67 40.4 -53.7 153.7	67 12.9 -52.6 151.4	66 43.4 -51.5 149.3	66 12.0 -50.3 147.3	65 38.9 -49.1 145.3
15°	66 46.7 -54.2 154.8	66 20.3 -53.1 152.7	65 51.9 -52.0 150.6	65 21.7 -50.9 148.6	64 49.8 -49.9 146.7
16°	65 52.5 -54.5 155.9	65 27.2 -53.6 153.8	64 59.9 -52.6 151.8	64 30.8 -51.6 149.8	63 59.9 -50.4 148.0
17°	64 58.0 -55.0 156.9	64 33.6 -54.1 154.9	64 07.3 -53.1 152.9	63 39.2 -52.0 151.0	63 09.5 -51.1 149.2
18°	64 03.0 -55.3 157.8	63 39.5 -54.4 155.9	63 14.2 -53.5 154.0	62 47.2 -52.6 152.1	62 18.4 -51.6 150.3
19°	63 07.7 -55.6 158.7	62 45.1 -54.8 156.8	62 20.7 -53.9 154.9	61 54.6 -53.0 153.1	61 26.8 -52.1 151.4
20°	62 12.1 -55.9 159.5	61 50.3 -55.1 157.7	61 26.8 -54.3 155.9	61 01.6 -53.4 154.1	60 34.7 -52.5 152.4
21°	61 16.2 -56.1 160.3	60 55.2 -55.3 158.5	60 32.5 -54.6 156.8	60 08.2 -53.8 155.1	59 42.2 -52.9 153.4
22°	60 20.1 -56.3 161.0	59 59.9 -55.7 159.3	59 37.9 -54.9 157.6	59 14.4 -54.1 155.9	58 49.3 -53.3 154.3
23°	59 23.8 -56.5 161.7	59 04.2 -55.8 160.0	58 43.0 -55.1 158.4	58 20.3 -54.5 156.8	57 56.0 -53.7 155.2
24°	58 27.3 -56.8 162.3	58 08.4 -56.1 160.7	57 47.9 -55.5 159.1	57 25.8 -54.7 157.6	57 02.3 -53.9 156.0
25°	57 30.5 -56.9 163.0	57 12.3 -56.3 161.4	56 52.4 -55.6 159.8	56 31.1 -54.9 158.3	56 08.4 -54.3 156.8
26°	56 33.6 -57.0 163.5	56 16.0 -56.5 162.0	55 56.8 -55.9 160.5	55 36.2 -55.3 159.0	55 14.1 -54.5 157.6
27°	55 36.6 -57.2 164.1	55 19.5 -56.7 162.6	55 00.9 -56.0 161.1	54 40.9 -55.4 159.7	54 19.6 -54.8 158.3
28°	54 39.4 -57.3 164.6	54 22.8 -56.8 163.2	54 04.9 -56.3 161.8	53 45.5 -55.6 160.4	53 24.8 -55.0 159.0
29°	53 42.1 -57.5 165.1	53 26.0 -56.9 163.7	53 08.6 -56.4 162.4	52 49.9 -55.9 161.0	52 29.8 -55.2 159.7

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°	73 52.2 -24.1 111.3	72 56.4 -22.9 110.0	72 00.1 -21.7 108.9	71 03.5 -20.7 107.8	70 06.5 -19.7 106.9
1°	73 28.1 -27.0 114.6	72 33.5 -25.6 113.1	71 38.4 -24.4 111.9	70 42.8 -23.3 110.7	69 46.8 -22.2 109.6
2°	73 01.1 -29.6 117.7	72 07.9 -28.2 116.1	71 14.0 -26.9 114.7	70 19.5 -25.6 113.5	69 24.6 -24.6 112.3
3°	72 31.5 -32.1 120.6	71 39.7 -30.6 119.0	70 47.1 -29.2 117.5	69 53.9 -28.0 116.1	69 00.0 -26.8 114.9
4°	71 59.4 -34.3 123.4	71 09.1 -32.8 121.7	70 17.9 -31.5 120.1	69 25.9 -30.1 118.7	68 33.2 -28.9 117.3
5°	71 25.1 -36.4 126.0	70 36.3 -34.9 124.2	69 46.4 -33.4 122.6	68 55.8 -32.2 121.1	68 04.3 -30.9 119.7
6°	70 48.7 -38.2 128.4	70 01.4 -36.7 126.6	69 13.0 -35.3 125.0	68 23.6 -33.9 123.4	67 33.4 -32.6 122.0
7°	70 10.5 -39.9 130.8	69 24.7 -38.4 128.9	68 37.7 -37.0 127.2	67 49.7 -35.7 125.6	67 00.8 -34.4 124.2
8°	69 30.6 -41.3 132.9	68 46.3 -40.0 131.1	68 00.7 -38.5 129.4	67 14.0 -37.2 127.7	66 26.4 -36.0 126.2
9°	68 49.3 -42.8 135.0	68 06.3 -41.3 133.1	67 22.2 -40.0 131.4	66 36.8 -38.7 129.7	65 50.4 -37.4 128.2
10°	68 06.5 -44.0 136.9	67 25.0 -42.7 135.0	66 42.2 -41.3 133.3	65 58.1 -40.0 131.6	65 13.0 -38.7 130.1
11°	67 22.5 -45.2 138.7	66 42.3 -43.8 136.8	66 00.9 -42.6 135.1	65 18.1 -41.2 133.4	64 34.3 -40.1 131.9
12°	66 37.3 -46.1 140.4	65 58.5 -44.8 138.5	65 18.3 -43.6 136.8	64 36.9 -42.4 135.2	63 54.2 -41.1 133.6
13°	65 51.2 -47.1 141.9	65 13.7 -45.9 140.1	64 34.7 -44.6 138.4	63 54.5 -43.4 136.8	63 13.1 -42.3 135.3
14°	65 04.1 -47.9 143.4	64 27.8 -46.7 141.7	63 50.1 -45.6 140.0	63 11.1 -44.4 138.3	62 30.8 -43.2 136.8
15°	64 16.2 -48.7 144.8	63 41.1 -47.6 143.1	63 04.5 -46.4 141.4	62 26.7 -45.3 139.8	61 47.6 -44.2 138.3
16°	63 27.5 -49.4 146.2	62 53.5 -48.3 144.4	62 18.1 -47.2 142.8	61 41.4 -46.1 141.2	61 03.4 -45.0 139.7
17°	62 38.1 -50.0 147.4	62 05.2 -48.9 145.7	61 30.9 -47.9 144.1	60 55.3 -46.8 142.6	60 18.4 -45.8 141.1
18°	61 48.1 -50.6 148.6	61 16.3 -49.6 146.9	60 43.0 -48.5 145.4	60 08.5 -47.6 143.8	59 32.6 -46.5 142.3
19°	60 57.5 -51.1 149.7	60 26.7 -50.2 148.1	59 54.5 -49.2 146.5	59 20.9 -48.2 145.0	58 46.1 -47.2 143.6
20°	60 06.4 -51.6 150.8	59 36.5 -50.7 149.2	59 05.3 -49.7 147.7	58 32.7 -48.8 146.2	57 58.9 -47.8 144.8
21°	59 14.8 -52.1 151.8	58 45.8 -51.1 150.2	58 15.6 -50.3 148.7	57 43.9 -49.3 147.3	57 11.1 -48.4 145.9
22°	58 22.7 -52.5 152.8	57 54.7 -51.6 151.2	57 25.3 -50.7 149.8	56 54.6 -49.8 148.3	56 22.7 -48.9 147.0
23°	57 30.2 -52.8 153.7	57 03.1 -52.1 152.2	56 34.6 -51.2 150.8	56 04.8 -50.3 149.4	55 33.8 -49.5 148.0
24°	56 37.4 -53.2 154.5	56 11.0 -52.4 153.1	55 43.4 -51.6 151.7	55 14.5 -50.8 150.3	54 44.3 -49.9 149.0
25°	55 44.2 -53.5 155.4	55 18.6 -52.7 154.0	54 51.8 -52.0 152.6	54 23.7 -51.1 151.2	53 54.4 -50.3 149.9
26°	54 50.7 -53.9 156.2	54 25.9 -53.1 154.8	53 59.8 -52.3 153.4	53 32.6 -51.6 152.1	53 04.1 -50.8 150.9
27°	53 56.8 -54.0 156.9	53 32.8 -53.4 155.6	53 07.5 -52.6 154.3	52 41.0 -51.9 153.0	52 13.3 -51.1 151.7
28°	53 02.8 -54.4 157.7	52 39.4 -53.6 156.3	52 14.9 -53.0 155.1	51 49.1 -52.2 153.8	51 22.2 -51.5 152.6
29°	52 08.4 -54.6 158.4	51 45.8 -53.9 157.1	51 21.9 -53.2 155.8	50 56.9 -52.5 154.6	50 30.7 -51.8 153.4

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°	69 09.3 -18.9 106.0	68 11.8 -18.1 105.2	67 14.1 -17.3 104.5	66 16.3 -16.7 103.8	65 18.3 -16.1 103.2
1°	68 50.4 -21.2 108.7	67 53.7 -20.3 107.8	66 56.8 -19.6 107.0	65 59.6 -18.8 106.2	65 02.2 -18.1 105.5
2°	68 29.2 -23.6 111.2	67 33.4 -22.6 110.3	66 37.2 -21.7 109.4	65 40.8 -20.9 108.5	64 44.1 -20.2 107.8
3°	68 05.6 -25.7 113.7	67 10.8 -24.7 112.7	66 15.5 -23.7 111.7	65 19.9 -22.9 110.8	64 23.9 -22.0 109.9
4°	67 39.9 -27.8 116.1	66 46.1 -26.7 115.0	65 51.8 -25.7 114.0	64 57.0 -24.7 113.0	64 01.9 -23.9 112.1
5°	67 12.1 -29.6 118.4	66 19.4 -28.6 117.3	65 26.1 -27.6 116.2	64 32.3 -26.6 115.1	63 38.0 -25.6 114.2
6°	66 42.5 -31.5 120.7	65 50.8 -30.3 119.4	64 58.5 -29.2 118.3	64 05.7 -28.2 117.2	63 12.4 -27.3 116.2
7°	66 11.0 -33.2 122.8	65 20.5 -32.0 121.5	64 29.3 -31.0 120.3	63 37.5 -29.9 119.2	62 45.1 -28.9 118.1
8°	65 37.8 -34.7 124.8	64 48.5 -33.6 123.5	63 58.3 -32.4 122.3	63 07.6 -31.4 121.1	62 16.2 -30.4 120.0
9°	65 03.1 -36.2 126.8	64 14.9 -35.0 125.4	63 25.9 -33.9 124.2	62 36.2 -32.9 123.0	61 45.8 -31.8 121.9
10°	64 26.9 -37.6 128.7	63 39.9 -36.4 127.3	62 52.0 -35.3 126.0	62 03.3 -34.2 124.8	61 14.0 -33.2 123.7
11°	63 49.3 -38.8 130.4	63 03.5 -37.7 129.1	62 16.7 -36.6 127.8	61 29.1 -35.4 126.5	60 40.8 -34.4 125.4
12°	63 10.5 -40.0 132.2	62 25.8 -38.9 130.8	61 40.1 -37.7 129.5	60 53.7 -36.7 128.2	60 06.4 -35.6 127.0
13°	62 30.5 -41.1 133.8	61 46.9 -39.9 132.4	61 02.4 -38.9 131.1	60 17.0 -37.8 129.8	59 30.8 -36.8 128.6
14°	61 49.4 -42.1 135.3	61 07.0 -41.0 134.0	60 23.5 -39.9 132.6	59 39.2 -38.9 131.4	58 54.0 -37.8 130.2
15°	61 07.3 -43.1 136.8	60 26.0 -42.0 135.5	59 43.6 -40.9 134.1	59 00.3 -39.8 132.9	58 16.2 -38.9 131.7
16°	60 24.2 -43.9 138.3	59 44.0 -42.9 136.9	59 02.7 -41.8 135.6	58 20.5 -40.8 134.3	57 37.3 -39.8 133.1
17°	59 40.3 -44.7 139.6	59 01.1 -43.7 138.3	58 20.9 -42.7 136.9	57 39.7 -41.7 135.7	56 57.5 -40.6 134.5
18°	58 55.6 -45.5 140.9	58 17.4 -44.5 139.6	57 38.2 -43.5 138.3	56 58.0 -42.5 137.0	56 16.9 -41.5 135.8
19°	58 10.1 -46.2 142.2	57 32.9 -45.2 140.8	56 54.7 -44.2 139.5	56 15.5 -43.2 138.3	55 35.4 -42.3 137.1
20°	57 23.9 -46.9 143.4	56 47.7 -45.9 142.1	56 10.5 -44.9 140.8	55 32.3 -44.0 139.5	54 53.1 -43.0 138.4
21°	56 37.0 -47.4 144.5	56 01.8 -46.5 143.2	55 25.6 -45.6 142.0	54 48.3 -44.6 140.7	54 10.1 -43.7 139.6
22°	55 49.6 -48.0 145.6	55 15.3 -47.1 144.3	54 40.0 -46.2 143.1	54 03.7 -45.3 141.9	53 26.4 -44.4 140.7
23°	55 01.6 -48.6 146.7	54 28.2 -47.6 145.4	53 53.8 -46.7 144.2	53 18.4 -45.9 143.0	52 42.0 -45.0 141.8
24°	54 13.0 -49.0 147.7	53 40.6 -48.2 146.4	53 07.1 -47.3 145.2	52 32.5 -46.4 144.1	51 57.0 -45.5 142.9
25°	53 24.0 -49.5 148.7	52 52.4 -48.7 147.4	52 19.8 -47.9 146.3	51 46.1 -47.0 145.1	51 11.5 -46.1 144.0
26°	52 34.5 -50.0 149.6	52 03.7 -49.1 148.4	51 31.9 -48.2 147.2	50 59.1 -47.4 146.1	50 25.4 -46.6 145.0
27°	51 44.5 -50.3 150.5	51 14.6 -49.5 149.3	50 43.7 -48.8 148.2	50 11.7 -47.9 147.1	49 38.8 -47.1 146.0
28°	50 54.2 -50.7 151.4	50 25.1 -49.9 150.2	49 54.9 -49.1 149.1	49 23.8 -48.4 148.0	48 51.7 -47.6 146.9
29°	50 03.5 -51.1 152.2	49 35.2 -50.3 151.1	49 05.8 -49.5 150.0	48 35.4 -48.7 148.9	48 04.1 -47.9 147.8

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°	64 20.1 -15.5 102.6	63 21.8 -14.9 102.1	62 23.4 -14.5 101.6	61 24.9 -14.0 101.1	60 26.3 -13.6 100.7
1°	64 04.6 -17.5 104.9	63 06.9 -16.9 104.2	62 08.9 -16.3 103.7	61 10.9 -15.8 103.1	60 12.7 -15.3 102.6
2°	63 47.1 -19.4 107.0	62 50.0 -18.8 106.4	61 52.6 -18.1 105.7	60 55.1 -17.5 105.1	59 57.4 -17.0 104.6
3°	63 27.7 -21.3 109.2	62 31.2 -20.5 108.4	61 34.5 -19.9 107.7	60 37.6 -19.3 107.1	59 40.4 -18.6 106.5
4°	63 06.4 -23.0 111.2	62 10.7 -22.3 110.5	61 14.6 -21.5 109.7	60 18.3 -20.8 109.0	59 21.8 -20.2 108.4
5°	62 43.4 -24.8 113.3	61 48.4 -23.9 112.4	60 53.1 -23.2 111.6	59 57.5 -22.4 110.9	59 01.6 -21.7 110.2
6°	62 18.6 -26.4 115.2	61 24.5 -25.6 114.4	60 29.9 -24.7 113.5	59 35.1 -24.0 112.7	58 39.9 -23.2 112.0
7°	61 52.2 -27.9 117.2	60 58.9 -27.0 116.2	60 05.2 -26.2 115.4	59 11.1 -25.4 114.5	58 16.7 -24.7 113.8
8°	61 24.3 -29.4 119.0	60 31.9 -28.5 118.1	59 39.0 -27.6 117.2	58 45.7 -26.8 116.3	57 52.0 -26.0 115.5
9°	60 54.9 -30.9 120.8	60 03.4 -29.9 119.8	59 11.4 -29.0 118.9	58 18.9 -28.2 118.0	57 26.0 -27.3 117.2
10°	60 24.0 -32.1 122.6	59 33.5 -31.3 121.6	58 42.4 -30.4 120.6	57 50.7 -29.4 119.7	56 58.7 -28.6 118.8
11°	59 51.9 -33.5 124.3	59 02.2 -32.4 123.2	58 12.0 -31.5 122.3	57 21.3 -30.6 121.3	56 30.1 -29.8 120.4
12°	59 18.4 -34.6 125.9	58 29.8 -33.7 124.9	57 40.5 -32.7 123.9	56 50.7 -31.9 122.9	56 00.3 -30.9 122.0
13°	58 43.8 -35.8 127.5	57 56.1 -34.8 126.4	57 07.8 -33.9 125.4	56 18.8 -32.9 124.4	55 29.4 -32.1 123.5
14°	58 08.0 -36.8 129.0	57 21.3 -35.8 128.0	56 33.9 -34.9 126.9	55 45.9 -34.0 125.9	54 57.3 -33.1 125.0
15°	57 31.2 -37.9 130.5	56 45.5 -36.9 129.4	55 59.0 -35.9 128.4	55 11.9 -35.0 127.4	54 24.2 -34.1 126.4
16°	56 53.3 -38.7 132.0	56 08.6 -37.8 130.9	55 23.1 -36.9 129.8	54 36.9 -35.9 128.8	53 50.1 -35.1 127.8
17°	56 14.6 -39.7 133.3	55 30.8 -38.8 132.2	54 46.2 -37.8 131.2	54 01.0 -36.9 130.2	53 15.0 -35.9 129.2
18°	55 34.9 -40.6 134.7	54 52.0 -39.6 133.6	54 08.4 -38.6 132.5	53 24.1 -37.8 131.5	52 39.1 -36.9 130.5
19°	54 54.3 -41.3 136.0	54 12.4 -40.3 134.9	53 29.8 -39.5 133.8	52 46.3 -38.5 132.8	52 02.2 -37.6 131.8
20°	54 13.0 -42.1 137.2	53 32.1 -41.2 136.1	52 50.3 -40.2 135.1	52 07.8 -39.4 134.1	51 24.6 -38.5 133.1
21°	53 30.9 -42.8 138.4	52 50.9 -41.9 137.3	52 10.1 -41.0 136.3	51 28.4 -40.0 135.3	50 46.1 -39.2 134.3
22°	52 48.1 -43.4 139.6	52 09.0 -42.5 138.5	51 29.1 -41.7 137.5	50 48.4 -40.8 136.5	50 06.9 -39.9 135.5
23°	52 04.7 -44.1 140.7	51 26.5 -43.2 139.7	50 47.4 -42.3 138.6	50 07.6 -41.4 137.6	49 27.0 -40.6 136.7
24°	51 20.6 -44.7 141.8	50 43.3 -43.8 140.8	50 05.1 -42.9 139.7	49 26.2 -42.1 138.7	48 46.4 -41.2 137.8
25°	50 35.9 -45.2 142.9	49 59.5 -44.4 141.8	49 22.2 -43.5 140.8	48 44.1 -42.7 139.8	48 05.2 -41.8 138.9
26°	49 50.7 -45.8 143.9	49 15.1 -44.9 142.9	48 38.7 -44.1 141.9	48 01.4 -43.2 140.9	47 23.4 -42.4 139.9
27°	49 04.9 -46.2 144.9	48 30.2 -45.5 143.9	47 54.6 -44.6 142.9	47 18.2 -43.8 141.9	46 41.0 -43.0 141.0
28°	48 18.7 -46.8 145.9	47 44.7 -45.9 144.9	47 10.0 -45.1 143.9	46 34.4 -44.3 142.9	45 58.0 -43.5 142.0
29°	47 31.9 -47.1 146.8	46 58.8 -46.4 145.8	46 24.9 -45.6 144.8	45 50.1 -44.8 143.9	45 14.5 -43.9 143.0

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	59 27.6 -13.1 100.3	58 28.9 -12.8 99.9	57 30.1 -12.5 99.5	56 31.2 -12.1 99.1	55 32.2 -11.8 98.8
1°	59 14.5 -14.9 102.2	58 16.1 -14.4 101.7	57 17.6 -14.0 101.3	56 19.1 -13.7 100.9	55 20.4 -13.2 100.5
2°	58 59.6 -16.5 104.1	58 01.7 -16.0 103.6	57 03.6 -15.5 103.1	56 05.4 -15.1 102.7	55 07.2 -14.7 102.2
3°	58 43.1 -18.0 105.9	57 45.7 -17.5 105.4	56 48.1 -17.0 104.9	55 50.3 -16.5 104.4	54 52.5 -16.1 103.9
4°	58 25.1 -19.6 107.8	57 28.2 -19.0 107.2	56 31.1 -18.5 106.6	55 33.8 -17.9 106.1	54 36.4 -17.4 105.6
5°	58 05.5 -21.1 109.5	57 09.2 -20.5 108.9	56 12.6 -19.9 108.3	55 15.9 -19.3 107.8	54 19.0 -18.8 107.3
6°	57 44.4 -22.5 111.3	56 48.7 -21.9 110.7	55 52.7 -21.2 110.0	54 56.6 -20.6 109.4	54 00.2 -20.0 108.9
7°	57 21.9 -23.9 113.0	56 26.8 -23.2 112.3	55 31.5 -22.5 111.7	54 36.0 -22.0 111.1	53 40.2 -21.3 110.5
8°	56 58.0 -25.3 114.7	56 03.6 -24.5 114.0	55 09.0 -23.8 113.3	54 14.0 -23.1 112.7	53 18.9 -22.6 112.0
9°	56 32.7 -26.5 116.4	55 39.1 -25.8 115.6	54 45.2 -25.1 114.9	53 50.9 -24.4 114.2	52 56.3 -23.7 113.6
10°	56 06.2 -27.8 118.0	55 13.3 -27.0 117.2	54 20.1 -26.3 116.5	53 26.5 -25.5 115.8	52 32.6 -24.8 115.1
11°	55 38.4 -28.9 119.6	54 46.3 -28.1 118.8	53 53.8 -27.4 118.0	53 01.0 -26.7 117.3	52 07.8 -26.0 116.6
12°	55 09.5 -30.1 121.1	54 18.2 -29.3 120.3	53 26.4 -28.5 119.5	52 34.3 -27.7 118.8	51 41.8 -27.0 118.1
13°	54 39.4 -31.2 122.6	53 48.9 -30.4 121.8	52 57.9 -29.5 121.0	52 06.6 -28.8 120.2	51 14.8 -28.0 119.5
14°	54 08.2 -32.3 124.1	53 18.5 -31.4 123.2	52 28.4 -30.6 122.4	51 37.8 -29.8 121.6	50 46.8 -29.1 120.9
15°	53 35.9 -33.2 125.5	52 47.1 -32.4 124.7	51 57.8 -31.6 123.8	51 08.0 -30.8 123.0	50 17.7 -30.0 122.3
16°	53 02.7 -34.2 126.9	52 14.7 -33.3 126.0	51 26.2 -32.5 125.2	50 37.2 -31.7 124.4	49 47.7 -30.9 123.6
17°	52 28.5 -35.1 128.3	51 41.4 -34.3 127.4	50 53.7 -33.4 126.5	50 05.5 -32.6 125.7	49 16.8 -31.8 124.9
18°	51 53.4 -36.0 129.6	51 07.1 -35.1 128.7	50 20.3 -34.3 127.8	49 32.9 -33.5 127.0	48 45.0 -32.6 126.2
19°	51 17.4 -36.8 130.9	50 32.0 -35.9 130.0	49 46.0 -35.1 129.1	48 59.4 -34.2 128.3	48 12.4 -33.5 127.5
20°	50 40.6 -37.5 132.1	49 56.1 -36.7 131.2	49 10.9 -35.9 130.4	48 25.2 -35.1 129.5	47 38.9 -34.3 128.7
21°	50 03.1 -38.4 133.4	49 19.4 -37.5 132.5	48 35.0 -36.6 131.6	47 50.1 -35.8 130.8	47 04.6 -35.0 130.0
22°	49 24.7 -39.0 134.6	48 41.9 -38.2 133.7	47 58.4 -37.4 132.8	47 14.3 -36.5 131.9	46 29.6 -35.7 131.1
23°	48 45.7 -39.7 135.7	48 03.7 -38.9 134.8	47 21.0 -38.0 133.9	46 37.8 -37.2 133.1	45 53.9 -36.4 132.3
24°	48 06.0 -40.4 136.8	47 24.8 -39.5 135.9	46 43.0 -38.7 135.1	46 00.6 -37.9 134.2	45 17.5 -37.1 133.4
25°	47 25.6 -41.0 137.9	46 45.3 -40.2 137.1	46 04.3 -39.3 136.2	45 22.7 -38.5 135.4	44 40.4 -37.7 134.5
26°	46 44.6 -41.6 139.0	46 05.1 -40.7 138.1	45 25.0 -40.0 137.3	44 44.2 -39.2 136.4	44 02.7 -38.3 135.6
27°	46 03.0 -42.1 140.1	45 24.4 -41.3 139.2	44 45.0 -40.5 138.3	44 05.0 -39.7 137.5	43 24.4 -38.9 136.7
28°	45 20.9 -42.7 141.1	44 43.1 -41.9 140.2	44 04.5 -41.0 139.4	43 25.3 -40.2 138.5	42 45.5 -39.4 137.7
29°	44 38.2 -43.1 142.1	44 01.2 -42.4 141.2	43 23.5 -41.6 140.4	42 45.1 -40.8 139.6	42 06.1 -40.0 138.8

Dec	LHA 035° / 325°	LHA 036° / 324°	LHA 037° / 323°	LHA 038° / 322°	LHA 039° / 321°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	54 33.3 -11.6 98.5	53 34.2 -11.2 98.2	52 35.1 -11.0 97.9	51 36.0 -10.7 97.6	50 36.8 -10.5 97.4
1°	54 21.7 -12.9 100.2	53 23.0 -12.6 99.8	52 24.1 -12.2 99.5	51 25.3 -12.0 99.2	50 26.3 -11.7 98.9
2°	54 08.8 -14.3 101.9	53 10.4 -14.0 101.5	52 11.9 -13.6 101.1	51 13.3 -13.3 100.8	50 14.6 -12.9 100.4
3°	53 54.5 -15.6 103.5	52 56.4 -15.2 103.1	51 58.3 -14.9 102.7	51 00.0 -14.5 102.3	50 01.7 -14.1 102.0
4°	53 38.9 -17.0 105.1	52 41.2 -16.5 104.7	51 43.4 -16.1 104.3	50 45.5 -15.6 103.9	49 47.6 -15.3 103.5
5°	53 21.9 -18.2 106.8	52 24.7 -17.8 106.3	51 27.3 -17.2 105.8	50 29.9 -16.9 105.4	49 32.3 -16.4 105.0
6°	53 03.7 -19.5 108.3	52 06.9 -18.9 107.8	51 10.1 -18.5 107.3	50 13.0 -18.0 106.9	49 15.9 -17.6 106.4
7°	52 44.2 -20.8 109.9	51 48.0 -20.2 109.4	50 51.6 -19.7 108.9	49 55.0 -19.1 108.4	48 58.3 -18.6 107.9
8°	52 23.4 -21.9 111.5	51 27.8 -21.3 110.9	50 31.9 -20.7 110.4	49 35.9 -20.2 109.8	48 39.7 -19.7 109.4
9°	52 01.5 -23.0 113.0	51 06.5 -22.5 112.4	50 11.2 -21.9 111.8	49 15.7 -21.3 111.3	48 20.0 -20.8 110.8
10°	51 38.5 -24.2 114.5	50 44.0 -23.5 113.9	49 49.3 -22.9 113.3	48 54.4 -22.4 112.7	47 59.2 -21.7 112.2
11°	51 14.3 -25.3 115.9	50 20.5 -24.6 115.3	49 26.4 -24.0 114.7	48 32.0 -23.3 114.1	47 37.5 -22.8 113.6
12°	50 49.0 -26.3 117.4	49 55.9 -25.7 116.7	49 02.4 -25.0 116.1	48 08.7 -24.3 115.5	47 14.7 -23.7 114.9
13°	50 22.7 -27.3 118.8	49 30.2 -26.6 118.1	48 37.4 -25.9 117.5	47 44.4 -25.3 116.9	46 51.0 -24.7 116.3
14°	49 55.4 -28.3 120.2	49 03.6 -27.6 119.5	48 11.5 -26.9 118.8	47 19.1 -26.2 118.2	46 26.3 -25.5 117.6
15°	49 27.1 -29.3 121.5	48 36.0 -28.5 120.8	47 44.6 -27.8 120.2	46 52.9 -27.1 119.5	46 00.8 -26.5 118.9
16°	48 57.8 -30.1 122.9	48 07.5 -29.4 122.2	47 16.8 -28.7 121.5	46 25.8 -28.0 120.8	45 34.3 -27.2 120.2
17°	48 27.7 -31.1 124.2	47 38.1 -30.3 123.5	46 48.1 -29.5 122.8	45 57.8 -28.9 122.1	45 07.1 -28.2 121.5
18°	47 56.6 -31.8 125.5	47 07.8 -31.1 124.7	46 18.6 -30.4 124.0	45 28.9 -29.6 123.4	44 38.9 -28.9 122.7
19°	47 24.8 -32.7 126.7	46 36.7 -31.9 126.0	45 48.2 -31.1 125.3	44 59.3 -30.4 124.6	44 10.0 -29.7 123.9
20°	46 52.1 -33.5 128.0	46 04.8 -32.7 127.2	45 17.1 -31.9 126.5	44 28.9 -31.2 125.8	43 40.3 -30.4 125.2
21°	46 18.6 -34.2 129.2	45 32.1 -33.4 128.4	44 45.2 -32.7 127.7	43 57.7 -31.9 127.0	43 09.9 -31.2 126.3
22°	45 44.4 -34.9 130.4	44 58.7 -34.1 129.6	44 12.5 -33.4 128.9	43 25.8 -32.6 128.2	42 38.7 -31.9 127.5
23°	45 09.5 -35.6 131.5	44 24.6 -34.9 130.8	43 39.1 -34.0 130.0	42 53.2 -33.3 129.3	42 06.8 -32.5 128.7
24°	44 33.9 -36.3 132.7	43 49.7 -35.4 131.9	43 05.1 -34.7 131.2	42 19.9 -33.9 130.5	41 34.3 -33.2 129.8
25°	43 57.6 -36.9 133.8	43 14.3 -36.2 133.0	42 30.4 -35.4 132.3	41 46.0 -34.6 131.6	41 01.1 -33.8 130.9
26°	43 20.7 -37.5 134.9	42 38.1 -36.7 134.1	41 55.0 -35.9 133.4	41 11.4 -35.2 132.7	40 27.3 -34.4 132.0
27°	42 43.2 -38.1 135.9	42 01.4 -37.3 135.2	41 19.1 -36.6 134.4	40 36.2 -35.8 133.7	39 52.9 -35.1 133.1
28°	42 05.1 -38.7 137.0	41 24.1 -37.9 136.2	40 42.5 -37.1 135.5	40 00.4 -36.3 134.8	39 17.8 -35.5 134.1
29°	41 26.4 -39.1 138.0	40 46.2 -38.4 137.2	40 05.4 -37.6 136.5	39 24.1 -36.8 135.8	38 42.3 -36.1 135.1

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	49 37.6 -10.2 97.1	48 38.4 -10.1 96.9	47 39.2 -09.9 96.6	46 39.9 -09.7 96.4	45 40.6 -09.5 96.2
1°	49 27.4 -11.5 98.6	48 28.3 -11.2 98.3	47 29.3 -11.0 98.1	46 30.2 -10.8 97.8	45 31.1 -10.6 97.6
2°	49 15.9 -12.6 100.1	48 17.1 -12.3 99.8	47 18.3 -12.1 99.5	46 19.4 -11.8 99.3	45 20.5 -11.5 99.0
3°	49 03.3 -13.8 101.6	48 04.8 -13.5 101.3	47 06.2 -13.1 101.0	46 07.6 -12.8 100.7	45 09.0 -12.6 100.4
4°	48 49.5 -14.9 103.1	47 51.3 -14.5 102.7	46 53.1 -14.2 102.4	45 54.8 -13.9 102.1	44 56.4 -13.6 101.8
5°	48 34.6 -16.0 104.6	47 36.8 -15.6 104.2	46 38.9 -15.3 103.8	45 40.9 -14.9 103.5	44 42.8 -14.5 103.1
6°	48 18.6 -17.1 106.0	47 21.2 -16.7 105.6	46 23.6 -16.2 105.2	45 26.0 -15.9 104.9	44 28.3 -15.5 104.5
7°	48 01.5 -18.2 107.5	47 04.5 -17.7 107.0	46 07.4 -17.3 106.6	45 10.1 -16.8 106.2	44 12.8 -16.5 105.9
8°	47 43.3 -19.2 108.9	46 46.8 -18.8 108.4	45 50.1 -18.3 108.0	44 53.3 -17.8 107.6	43 56.3 -17.4 107.2
9°	47 24.1 -20.2 110.3	46 28.0 -19.7 109.8	45 31.8 -19.2 109.4	44 35.5 -18.8 108.9	43 38.9 -18.2 108.5
10°	47 03.9 -21.2 111.7	46 08.3 -20.6 111.2	45 12.6 -20.2 110.7	44 16.7 -19.7 110.3	43 20.7 -19.2 109.8
11°	46 42.7 -22.2 113.0	45 47.7 -21.7 112.5	44 52.4 -21.0 112.0	43 57.0 -20.5 111.6	43 01.5 -20.1 111.1
12°	46 20.5 -23.1 114.4	45 26.0 -22.5 113.9	44 31.4 -22.0 113.4	43 36.5 -21.5 112.9	42 41.4 -20.9 112.4
13°	45 57.4 -24.1 115.7	45 03.5 -23.4 115.2	44 09.4 -22.9 114.7	43 15.0 -22.3 114.2	42 20.5 -21.7 113.7
14°	45 33.3 -24.9 117.0	44 40.1 -24.4 116.5	43 46.5 -23.7 116.0	42 52.7 -23.1 115.4	41 58.8 -22.6 114.9
15°	45 08.4 -25.8 118.3	44 15.7 -25.1 117.8	43 22.8 -24.5 117.2	42 29.6 -23.9 116.7	41 36.2 -23.4 116.2
16°	44 42.6 -26.6 119.6	43 50.6 -26.0 119.0	42 58.3 -25.4 118.5	42 05.7 -24.7 117.9	41 12.8 -24.1 117.4
17°	44 16.0 -27.4 120.9	43 24.6 -26.8 120.3	42 32.9 -26.1 119.7	41 41.0 -25.5 119.2	40 48.7 -24.9 118.6
18°	43 48.6 -28.3 122.1	42 57.8 -27.5 121.5	42 06.8 -26.9 120.9	41 15.5 -26.3 120.4	40 23.8 -25.6 119.8
19°	43 20.3 -29.0 123.3	42 30.3 -28.3 122.7	41 39.9 -27.6 122.1	40 49.2 -27.0 121.6	39 58.2 -26.3 121.0
20°	42 51.3 -29.7 124.5	42 02.0 -29.0 123.9	41 12.3 -28.4 123.3	40 22.2 -27.6 122.7	39 31.9 -27.0 122.2
21°	42 21.6 -30.4 125.7	41 33.0 -29.8 125.1	40 43.9 -29.0 124.5	39 54.6 -28.4 123.9	39 04.9 -27.7 123.3
22°	41 51.2 -31.2 126.9	41 03.2 -30.4 126.2	40 14.9 -29.7 125.6	39 26.2 -29.0 125.0	38 37.2 -28.4 124.5
23°	41 20.0 -31.8 128.0	40 32.8 -31.1 127.4	39 45.2 -30.4 126.8	38 57.2 -29.7 126.2	38 08.8 -28.9 125.6
24°	40 48.2 -32.4 129.1	40 01.7 -31.7 128.5	39 14.8 -31.0 127.9	38 27.5 -30.3 127.3	37 39.9 -29.6 126.7
25°	40 15.8 -33.1 130.2	39 30.0 -32.3 129.6	38 43.8 -31.6 129.0	37 57.2 -30.9 128.4	37 10.3 -30.2 127.8
26°	39 42.7 -33.7 131.3	38 57.7 -33.0 130.7	38 12.2 -32.2 130.1	37 26.3 -31.5 129.5	36 40.1 -30.8 128.9
27°	39 09.0 -34.2 132.4	38 24.7 -33.5 131.8	37 40.0 -32.8 131.1	36 54.8 -32.0 130.5	36 09.3 -31.3 130.0
28°	38 34.8 -34.8 133.4	37 51.2 -34.1 132.8	37 07.2 -33.3 132.2	36 22.8 -32.6 131.6	35 38.0 -31.9 131.0
29°	38 00.0 -35.4 134.5	37 17.1 -34.6 133.8	36 33.9 -33.9 133.2	35 50.2 -33.1 132.6	35 06.1 -32.4 132.0

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°	44 41.2 -09.3 96.0	43 41.9 -09.2 95.8	42 42.5 -09.0 95.6	41 43.1 -08.9 95.4	40 43.7 -08.8 95.2
1°	44 31.9 -10.3 97.4	43 32.7 -10.1 97.1	42 33.5 -10.0 96.9	41 34.2 -09.7 96.7	40 34.9 -09.5 96.5
2°	44 21.6 -11.4 98.7	43 22.6 -11.1 98.5	42 23.5 -10.8 98.2	41 24.5 -10.7 98.0	40 25.4 -10.5 97.8
3°	44 10.2 -12.3 100.1	43 11.5 -12.1 99.8	42 12.7 -11.8 99.6	41 13.8 -11.6 99.3	40 14.9 -11.3 99.1
4°	43 57.9 -13.2 101.5	42 59.4 -12.9 101.2	42 00.9 -12.7 100.9	41 02.2 -12.4 100.6	40 03.6 -12.2 100.4
5°	43 44.7 -14.2 102.8	42 46.5 -13.9 102.5	41 48.2 -13.6 102.2	40 49.8 -13.3 101.9	39 51.4 -13.0 101.6
6°	43 30.5 -15.2 104.2	42 32.6 -14.8 103.8	41 34.6 -14.5 103.5	40 36.5 -14.1 103.2	39 38.4 -13.8 102.9
7°	43 15.3 -16.0 105.5	42 17.8 -15.7 105.1	41 20.1 -15.3 104.8	40 22.4 -15.0 104.5	39 24.6 -14.6 104.2
8°	42 59.3 -17.0 106.8	42 02.1 -16.6 106.4	41 04.8 -16.2 106.1	40 07.4 -15.8 105.8	39 10.0 -15.5 105.4
9°	42 42.3 -17.9 108.1	41 45.5 -17.4 107.7	40 48.6 -17.0 107.4	39 51.6 -16.6 107.0	38 54.5 -16.2 106.7
10°	42 24.4 -18.7 109.4	41 28.1 -18.3 109.0	40 31.6 -17.8 108.6	39 35.0 -17.4 108.3	38 38.3 -17.0 107.9
11°	42 05.7 -19.5 110.7	41 09.8 -19.1 110.3	40 13.8 -18.6 109.9	39 17.6 -18.2 109.5	38 21.3 -17.8 109.1
12°	41 46.2 -20.4 112.0	40 50.7 -19.9 111.5	39 55.2 -19.5 111.1	38 59.4 -18.9 110.7	38 03.5 -18.5 110.4
13°	41 25.8 -21.3 113.2	40 30.8 -20.7 112.8	39 35.7 -20.2 112.4	38 40.5 -19.7 112.0	37 45.0 -19.2 111.6
14°	41 04.5 -22.0 114.5	40 10.1 -21.4 114.0	39 15.5 -20.9 113.6	38 20.8 -20.5 113.2	37 25.8 -19.9 112.8
15°	40 42.5 -22.7 115.7	39 48.7 -22.3 115.2	38 54.6 -21.7 114.8	38 00.3 -21.1 114.4	37 05.9 -20.7 113.9
16°	40 19.8 -23.6 116.9	39 26.4 -22.9 116.4	38 32.9 -22.4 116.0	37 39.2 -21.9 115.5	36 45.2 -21.3 115.1
17°	39 56.2 -24.3 118.1	39 03.5 -23.7 117.6	38 10.5 -23.1 117.2	37 17.3 -22.6 116.7	36 23.9 -22.0 116.3
18°	39 31.9 -25.0 119.3	38 39.8 -24.4 118.8	37 47.4 -23.8 118.3	36 54.7 -23.2 117.9	36 01.9 -22.7 117.4
19°	39 06.9 -25.7 120.5	38 15.4 -25.1 120.0	37 23.6 -24.5 119.5	36 31.5 -23.9 119.0	35 39.2 -23.3 118.6
20°	38 41.2 -26.3 121.7	37 50.3 -25.7 121.1	36 59.1 -25.1 120.6	36 07.6 -24.5 120.2	35 15.9 -23.9 119.7
21°	38 14.9 -27.1 122.8	37 24.6 -26.4 122.3	36 34.0 -25.8 121.8	35 43.1 -25.1 121.3	34 52.0 -24.5 120.8
22°	37 47.8 -27.6 123.9	36 58.2 -27.1 123.4	36 08.2 -26.4 122.9	35 18.0 -25.8 122.4	34 27.5 -25.2 121.9
23°	37 20.2 -28.4 125.1	36 31.1 -27.6 124.5	35 41.8 -27.0 124.0	34 52.2 -26.3 123.5	34 02.3 -25.7 123.0
24°	36 51.8 -28.9 126.2	36 03.5 -28.2 125.6	35 14.8 -27.5 125.1	34 25.9 -26.9 124.6	33 36.6 -26.3 124.1
25°	36 22.9 -29.5 127.2	35 35.3 -28.9 126.7	34 47.3 -28.2 126.2	33 59.0 -27.5 125.7	33 10.3 -26.8 125.2
26°	35 53.4 -30.0 128.3	35 06.4 -29.3 127.8	34 19.1 -28.7 127.3	33 31.5 -28.1 126.8	32 43.5 -27.4 126.3
27°	35 23.4 -30.7 129.4	34 37.1 -30.0 128.8	33 50.4 -29.2 128.3	33 03.4 -28.5 127.8	32 16.1 -27.8 127.3
28°	34 52.7 -31.1 130.4	34 07.1 -30.4 129.9	33 21.2 -29.8 129.4	32 34.9 -29.1 128.9	31 48.3 -28.4 128.4
29°	34 21.6 -31.7 131.5	33 36.7 -31.0 130.9	32 51.4 -30.2 130.4	32 05.8 -29.6 129.9	31 19.9 -28.9 129.4

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°	39 44.2 -08.6 95.0	38 44.8 -08.5 94.8	37 45.3 -08.3 94.7	36 45.8 -08.2 94.5	35 46.3 -08.1 94.3
1°	39 35.6 -09.4 96.3	38 36.3 -09.2 96.1	37 37.0 -09.1 95.9	36 37.6 -09.0 95.7	35 38.2 -08.8 95.6
2°	39 26.2 -10.2 97.6	38 27.1 -10.1 97.4	37 27.9 -09.9 97.2	36 28.6 -09.7 97.0	35 29.4 -09.6 96.8
3°	39 16.0 -11.1 98.9	38 17.0 -10.9 98.6	37 18.0 -10.7 98.4	36 18.9 -10.5 98.2	35 19.8 -10.3 98.0
4°	39 04.9 -12.0 100.1	38 06.1 -11.7 99.9	37 07.3 -11.5 99.6	36 08.4 -11.2 99.4	35 09.5 -11.0 99.2
5°	38 52.9 -12.7 101.4	37 54.4 -12.4 101.1	36 55.8 -12.2 100.9	35 57.2 -11.9 100.6	34 58.5 -11.7 100.4
6°	38 40.2 -13.5 102.6	37 42.0 -13.3 102.4	36 43.6 -12.9 102.1	35 45.3 -12.7 101.8	34 46.8 -12.4 101.6
7°	38 26.7 -14.3 103.9	37 28.7 -14.0 103.6	36 30.7 -13.7 103.3	35 32.6 -13.4 103.0	34 34.4 -13.1 102.8
8°	38 12.4 -15.1 105.1	37 14.7 -14.7 104.8	36 17.0 -14.4 104.5	35 19.2 -14.1 104.2	34 21.3 -13.7 104.0
9°	37 57.3 -15.8 106.3	37 00.0 -15.5 106.0	36 02.6 -15.1 105.7	35 05.1 -14.8 105.4	34 07.6 -14.5 105.1
10°	37 41.5 -16.6 107.6	36 44.5 -16.2 107.2	35 47.5 -15.8 106.9	34 50.3 -15.4 106.6	33 53.1 -15.1 106.3
11°	37 24.9 -17.4 108.8	36 28.3 -16.9 108.4	35 31.7 -16.6 108.1	34 34.9 -16.1 107.8	33 38.0 -15.7 107.5
12°	37 07.5 -18.0 110.0	36 11.4 -17.6 109.6	35 15.1 -17.2 109.3	34 18.8 -16.8 109.0	33 22.3 -16.4 108.6
13°	36 49.5 -18.8 111.2	35 53.8 -18.3 110.8	34 57.9 -17.8 110.5	34 02.0 -17.5 110.1	33 05.9 -17.1 109.8
14°	36 30.7 -19.4 112.4	35 35.5 -19.0 112.0	34 40.1 -18.6 111.6	33 44.5 -18.1 111.3	32 48.8 -17.6 110.9
15°	36 11.3 -20.2 113.5	35 16.5 -19.7 113.1	34 21.5 -19.2 112.8	33 26.4 -18.7 112.4	32 31.2 -18.3 112.1
16°	35 51.1 -20.8 114.7	34 56.8 -20.3 114.3	34 02.3 -19.8 113.9	33 07.7 -19.3 113.5	32 12.9 -18.8 113.2
17°	35 30.3 -21.5 115.9	34 36.5 -20.9 115.4	33 42.5 -20.4 115.1	32 48.4 -19.9 114.7	31 54.1 -19.4 114.3
18°	35 08.8 -22.1 117.0	34 15.6 -21.6 116.6	33 22.1 -21.0 116.2	32 28.5 -20.6 115.8	31 34.7 -20.1 115.4
19°	34 46.7 -22.7 118.1	33 54.0 -22.2 117.7	33 01.1 -21.7 117.3	32 07.9 -21.0 116.9	31 14.6 -20.5 116.5
20°	34 24.0 -23.4 119.3	33 31.8 -22.8 118.8	32 39.4 -22.2 118.4	31 46.9 -21.7 118.0	30 54.1 -21.1 117.6
21°	34 00.6 -23.9 120.4	33 09.0 -23.3 119.9	32 17.2 -22.8 119.5	31 25.2 -22.2 119.1	30 33.0 -21.7 118.7
22°	33 36.7 -24.5 121.5	32 45.7 -23.9 121.0	31 54.4 -23.3 120.6	31 03.0 -22.8 120.2	30 11.3 -22.2 119.8
23°	33 12.2 -25.1 122.6	32 21.8 -24.5 122.1	31 31.1 -23.9 121.7	30 40.2 -23.3 121.3	29 49.1 -22.7 120.9
24°	32 47.1 -25.7 123.7	31 57.3 -25.0 123.2	31 07.2 -24.4 122.8	30 16.9 -23.8 122.3	29 26.4 -23.2 121.9
25°	32 21.4 -26.2 124.7	31 32.3 -25.6 124.3	30 42.8 -24.9 123.8	29 53.1 -24.3 123.4	29 03.2 -23.7 123.0
26°	31 55.2 -26.7 125.8	31 06.7 -26.1 125.3	30 17.9 -25.4 124.9	29 28.8 -24.8 124.5	28 39.5 -24.2 124.0
27°	31 28.5 -27.2 126.8	30 40.6 -26.5 126.4	29 52.5 -26.0 125.9	29 04.0 -25.3 125.5	28 15.3 -24.7 125.1
28°	31 01.3 -27.7 127.9	30 14.1 -27.1 127.4	29 26.5 -26.4 127.0	28 38.7 -25.7 126.5	27 50.6 -25.1 126.1
29°	30 33.6 -28.2 128.9	29 47.0 -27.5 128.4	29 00.1 -26.8 128.0	28 13.0 -26.2 127.6	27 25.5 -25.5 127.1

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°	34 46.8 -08.0 94.2	33 47.3 -07.9 94.0	32 47.8 -07.8 93.9	31 48.2 -07.7 93.7	30 48.7 -07.6 93.6
1°	34 38.8 -08.7 95.4	33 39.4 -08.6 95.2	32 40.0 -08.5 95.1	31 40.5 -08.3 94.9	30 41.1 -08.2 94.7
2°	34 30.1 -09.4 96.6	33 30.8 -09.2 96.4	32 31.5 -09.1 96.2	31 32.2 -08.9 96.1	30 32.9 -08.9 95.9
3°	34 20.7 -10.1 97.8	33 21.6 -09.9 97.6	32 22.4 -09.7 97.4	31 23.3 -09.6 97.2	30 24.0 -09.4 97.0
4°	34 10.6 -10.8 99.0	33 11.7 -10.6 98.8	32 12.7 -10.4 98.6	31 13.7 -10.2 98.4	30 14.6 -10.0 98.2
5°	33 59.8 -11.4 100.2	33 01.1 -11.3 100.0	32 02.3 -11.0 99.7	31 03.5 -10.9 99.5	30 04.6 -10.6 99.3
6°	33 48.4 -12.2 101.4	32 49.8 -11.9 101.1	31 51.3 -11.7 100.9	30 52.6 -11.4 100.7	29 54.0 -11.2 100.5
7°	33 36.2 -12.8 102.5	32 37.9 -12.5 102.3	31 39.6 -12.3 102.1	30 41.2 -12.0 101.8	29 42.8 -11.8 101.6
8°	33 23.4 -13.5 103.7	32 25.4 -13.2 103.4	31 27.3 -12.9 103.2	30 29.2 -12.6 103.0	29 31.0 -12.3 102.7
9°	33 09.9 -14.1 104.9	32 12.2 -13.8 104.6	31 14.4 -13.4 104.3	30 16.6 -13.2 104.1	29 18.7 -12.9 103.9
10°	32 55.8 -14.7 106.0	31 58.4 -14.4 105.7	31 01.0 -14.1 105.5	30 03.4 -13.8 105.2	29 05.8 -13.5 105.0
11°	32 41.1 -15.4 107.2	31 44.0 -15.0 106.9	30 46.9 -14.7 106.6	29 49.6 -14.3 106.3	28 52.3 -14.0 106.1
12°	32 25.7 -16.0 108.3	31 29.0 -15.7 108.0	30 32.2 -15.3 107.7	29 35.3 -14.9 107.5	28 38.3 -14.5 107.2
13°	32 09.7 -16.7 109.5	31 13.3 -16.2 109.2	30 16.9 -15.8 108.9	29 20.4 -15.4 108.6	28 23.8 -15.1 108.3
14°	31 53.0 -17.2 110.6	30 57.1 -16.8 110.3	30 01.1 -16.4 110.0	29 05.0 -16.0 109.7	28 08.7 -15.6 109.4
15°	31 35.8 -17.8 111.7	30 40.3 -17.3 111.4	29 44.7 -16.9 111.1	28 49.0 -16.5 110.8	27 53.1 -16.1 110.5
16°	31 18.0 -18.4 112.8	30 23.0 -18.0 112.5	29 27.8 -17.5 112.2	28 32.5 -17.1 111.9	27 37.0 -16.6 111.6
17°	30 59.6 -18.9 114.0	30 05.0 -18.4 113.6	29 10.3 -18.0 113.3	28 15.4 -17.5 113.0	27 20.4 -17.1 112.7
18°	30 40.7 -19.5 115.1	29 46.6 -19.1 114.7	28 52.3 -18.6 114.4	27 57.9 -18.1 114.1	27 03.3 -17.6 113.7
19°	30 21.2 -20.1 116.2	29 27.5 -19.5 115.8	28 33.7 -19.0 115.5	27 39.8 -18.6 115.1	26 45.7 -18.1 114.8
20°	30 01.1 -20.6 117.3	29 08.0 -20.1 116.9	28 14.7 -19.6 116.5	27 21.2 -19.0 116.2	26 27.6 -18.5 115.9
21°	29 40.5 -21.1 118.3	28 47.9 -20.6 118.0	27 55.1 -20.0 117.6	27 02.2 -19.6 117.3	26 09.1 -19.1 116.9
22°	29 19.4 -21.6 119.4	28 27.3 -21.0 119.0	27 35.1 -20.6 118.7	26 42.6 -20.0 118.3	25 50.0 -19.5 118.0
23°	28 57.8 -22.2 120.5	28 06.3 -21.6 120.1	27 14.5 -21.0 119.7	26 22.6 -20.4 119.4	25 30.5 -19.9 119.0
24°	28 35.6 -22.6 121.5	27 44.7 -22.1 121.2	26 53.5 -21.5 120.8	26 02.2 -20.9 120.4	25 10.6 -20.3 120.1
25°	28 13.0 -23.1 122.6	27 22.6 -22.5 122.2	26 32.0 -21.9 121.8	25 41.3 -21.4 121.5	24 50.3 -20.8 121.1
26°	27 49.9 -23.6 123.6	27 00.1 -22.9 123.2	26 10.1 -22.4 122.9	25 19.9 -21.8 122.5	24 29.5 -21.2 122.2
27°	27 26.3 -24.0 124.7	26 37.2 -23.5 124.3	25 47.7 -22.8 123.9	24 58.1 -22.2 123.5	24 08.3 -21.6 123.2
28°	27 02.3 -24.5 125.7	26 13.7 -23.8 125.3	25 24.9 -23.2 124.9	24 35.9 -22.6 124.6	23 46.7 -22.1 124.2
29°	26 37.8 -24.9 126.7	25 49.9 -24.3 126.3	25 01.7 -23.6 125.9	24 13.3 -23.0 125.6	23 24.6 -22.4 125.2

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°	29 49.1 -07.5 93.5	28 49.6 -07.5 93.3	27 50.0 -07.4 93.2	26 50.4 -07.3 93.0	25 50.8 -07.2 92.9
1°	29 41.6 -08.1 94.6	28 42.1 -08.0 94.4	27 42.6 -07.9 94.3	26 43.1 -07.8 94.2	25 43.6 -07.7 94.0
2°	29 33.5 -08.7 95.7	28 34.1 -08.5 95.6	27 34.7 -08.4 95.4	26 35.3 -08.3 95.3	25 35.9 -08.2 95.1
3°	29 24.8 -09.3 96.9	28 25.6 -09.2 96.7	27 26.3 -09.0 96.5	26 27.0 -08.8 96.4	25 27.7 -08.7 96.2
4°	29 15.5 -09.8 98.0	28 16.4 -09.6 97.8	27 17.3 -09.5 97.7	26 18.2 -09.4 97.5	25 19.0 -09.2 97.3
5°	29 05.7 -10.4 99.1	28 06.8 -10.2 98.9	27 07.8 -10.0 98.8	26 08.8 -09.8 98.6	25 09.8 -09.7 98.4
6°	28 55.3 -11.0 100.3	27 56.6 -10.8 100.1	26 57.8 -10.6 99.9	25 59.0 -10.4 99.7	25 00.1 -10.1 99.5
7°	28 44.3 -11.5 101.4	27 45.8 -11.3 101.2	26 47.2 -11.0 101.0	25 48.6 -10.8 100.8	24 50.0 -10.6 100.6
8°	28 32.8 -12.1 102.5	27 34.5 -11.8 102.3	26 36.2 -11.6 102.1	25 37.8 -11.3 101.9	24 39.4 -11.1 101.7
9°	28 20.7 -12.6 103.6	27 22.7 -12.3 103.4	26 24.6 -12.0 103.2	25 26.5 -11.8 103.0	24 28.3 -11.5 102.7
10°	28 08.1 -13.1 104.7	27 10.4 -12.9 104.5	26 12.6 -12.6 104.3	25 14.7 -12.3 104.0	24 16.8 -12.0 103.8
11°	27 55.0 -13.7 105.8	26 57.5 -13.3 105.6	26 00.0 -13.0 105.4	25 02.4 -12.7 105.1	24 04.8 -12.4 104.9
12°	27 41.3 -14.2 106.9	26 44.2 -13.9 106.7	25 47.0 -13.5 106.4	24 49.7 -13.2 106.2	23 52.4 -12.9 106.0
13°	27 27.1 -14.7 108.0	26 30.3 -14.3 107.8	25 33.5 -14.0 107.5	24 36.5 -13.6 107.3	23 39.5 -13.3 107.0
14°	27 12.4 -15.2 109.1	26 16.0 -14.9 108.9	25 19.5 -14.5 108.6	24 22.9 -14.1 108.3	23 26.2 -13.8 108.1
15°	26 57.2 -15.7 110.2	26 01.1 -15.3 109.9	25 05.0 -14.9 109.7	24 08.8 -14.6 109.4	23 12.4 -14.1 109.2
16°	26 41.5 -16.2 111.3	25 45.8 -15.7 111.0	24 50.1 -15.4 110.7	23 54.2 -15.0 110.5	22 58.3 -14.6 110.2
17°	26 25.3 -16.7 112.4	25 30.1 -16.3 112.1	24 34.7 -15.8 111.8	23 39.2 -15.4 111.5	22 43.7 -15.0 111.3
18°	26 08.6 -17.1 113.4	25 13.8 -16.7 113.1	24 18.9 -16.3 112.9	23 23.8 -15.8 112.6	22 28.7 -15.4 112.3
19°	25 51.5 -17.7 114.5	24 57.1 -17.1 114.2	24 02.6 -16.7 113.9	23 08.0 -16.2 113.6	22 13.3 -15.8 113.4
20°	25 33.8 -18.0 115.6	24 40.0 -17.6 115.3	23 45.9 -17.1 115.0	22 51.8 -16.7 114.7	21 57.5 -16.2 114.4
21°	25 15.8 -18.5 116.6	24 22.4 -18.1 116.3	23 28.8 -17.5 116.0	22 35.1 -17.0 115.7	21 41.3 -16.6 115.4
22°	24 57.3 -19.0 117.7	24 04.3 -18.4 117.4	23 11.3 -18.0 117.1	22 18.1 -17.5 116.8	21 24.7 -17.0 116.5
23°	24 38.3 -19.4 118.7	23 45.9 -18.9 118.4	22 53.3 -18.3 118.1	22 00.6 -17.8 117.8	21 07.7 -17.3 117.5
24°	24 18.9 -19.8 119.8	23 27.0 -19.3 119.4	22 35.0 -18.8 119.1	21 42.8 -18.3 118.8	20 50.4 -17.7 118.5
25°	23 59.1 -20.2 120.8	23 07.7 -19.6 120.5	22 16.2 -19.1 120.1	21 24.5 -18.5 119.8	20 32.7 -18.0 119.6
26°	23 38.9 -20.7 121.8	22 48.1 -20.1 121.5	21 57.1 -19.5 121.2	21 06.0 -19.0 120.9	20 14.7 -18.4 120.6
27°	23 18.2 -21.0 122.8	22 28.0 -20.4 122.5	21 37.6 -19.9 122.2	20 47.0 -19.3 121.9	19 56.3 -18.8 121.6
28°	22 57.2 -21.4 123.9	22 07.6 -20.9 123.5	21 17.7 -20.2 123.2	20 27.7 -19.7 122.9	19 37.5 -19.1 122.6
29°	22 35.8 -21.8 124.9	21 46.7 -21.2 124.5	20 57.5 -20.6 124.2	20 08.0 -20.0 123.9	19 18.4 -19.4 123.6

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°	24 51.2 -07.1 92.8	23 51.6 -07.1 92.7	22 52.0 -07.0 92.5	21 52.4 -07.0 92.4	20 52.8 -06.9 92.3
1°	24 44.1 -07.7 93.9	23 44.5 -07.5 93.7	22 45.0 -07.5 93.6	21 45.4 -07.3 93.5	20 45.9 -07.3 93.4
2°	24 36.4 -08.0 95.0	23 37.0 -08.0 94.8	22 37.5 -07.9 94.7	21 38.1 -07.8 94.6	20 38.6 -07.7 94.4
3°	24 28.4 -08.6 96.1	23 29.0 -08.4 95.9	22 29.6 -08.3 95.8	21 30.3 -08.2 95.6	20 30.9 -08.1 95.5
4°	24 19.8 -09.0 97.2	23 20.6 -08.9 97.0	22 21.3 -08.7 96.8	21 22.1 -08.6 96.7	20 22.8 -08.5 96.5
5°	24 10.8 -09.5 98.2	23 11.7 -09.3 98.1	22 12.6 -09.2 97.9	21 13.5 -09.0 97.7	20 14.3 -08.8 97.6
6°	24 01.3 -10.0 99.3	23 02.4 -09.8 99.1	22 03.4 -09.5 99.0	21 04.5 -09.4 98.8	20 05.5 -09.2 98.6
7°	23 51.3 -10.4 100.4	22 52.6 -10.2 100.2	21 53.9 -10.0 100.0	20 55.1 -09.8 99.9	19 56.3 -09.6 99.7
8°	23 40.9 -10.8 101.5	22 42.4 -10.6 101.3	21 43.9 -10.4 101.1	20 45.3 -10.1 100.9	19 46.7 -09.9 100.7
9°	23 30.1 -11.3 102.5	22 31.8 -11.0 102.4	21 33.5 -10.8 102.2	20 35.2 -10.6 102.0	19 36.8 -10.3 101.8
10°	23 18.8 -11.7 103.6	22 20.8 -11.4 103.4	21 22.7 -11.1 103.2	20 24.6 -10.9 103.0	19 26.5 -10.7 102.8
11°	23 07.1 -12.1 104.7	22 09.4 -11.9 104.5	21 11.6 -11.6 104.3	20 13.7 -11.3 104.1	19 15.8 -11.0 103.9
12°	22 55.0 -12.6 105.7	21 57.5 -12.2 105.5	21 00.0 -12.0 105.3	20 02.4 -11.6 105.1	19 04.8 -11.4 104.9
13°	22 42.4 -13.0 106.8	21 45.3 -12.7 106.6	20 48.0 -12.3 106.4	19 50.8 -12.1 106.2	18 53.4 -11.7 106.0
14°	22 29.4 -13.4 107.9	21 32.6 -13.1 107.6	20 35.7 -12.7 107.4	19 38.7 -12.3 107.2	18 41.7 -12.1 107.0
15°	22 16.0 -13.8 108.9	21 19.5 -13.4 108.7	20 23.0 -13.1 108.5	19 26.4 -12.8 108.2	18 29.6 -12.3 108.0
16°	22 02.2 -14.2 110.0	21 06.1 -13.8 109.7	20 09.9 -13.4 109.5	19 13.6 -13.1 109.3	18 17.3 -12.8 109.1
17°	21 48.0 -14.6 111.0	20 52.3 -14.2 110.8	19 56.5 -13.9 110.5	19 00.5 -13.4 110.3	18 04.5 -13.0 110.1
18°	21 33.4 -14.9 112.1	20 38.1 -14.6 111.8	19 42.6 -14.1 111.6	18 47.1 -13.8 111.3	17 51.5 -13.4 111.1
19°	21 18.5 -15.4 113.1	20 23.5 -14.9 112.8	19 28.5 -14.5 112.6	18 33.3 -14.1 112.4	17 38.1 -13.7 112.1
20°	21 03.1 -15.8 114.1	20 08.6 -15.3 113.9	19 14.0 -14.9 113.6	18 19.2 -14.4 113.4	17 24.4 -14.0 113.2
21°	20 47.3 -16.1 115.2	19 53.3 -15.7 114.9	18 59.1 -15.2 114.7	18 04.8 -14.7 114.4	17 10.4 -14.3 114.2
22°	20 31.2 -16.5 116.2	19 37.6 -16.0 115.9	18 43.9 -15.5 115.7	17 50.1 -15.1 115.4	16 56.1 -14.6 115.2
23°	20 14.7 -16.8 117.2	19 21.6 -16.3 117.0	18 28.4 -15.9 116.7	17 35.0 -15.4 116.5	16 41.5 -14.9 116.2
24°	19 57.9 -17.2 118.2	19 05.3 -16.7 118.0	18 12.5 -16.1 117.7	17 19.6 -15.6 117.5	16 26.6 -15.2 117.2
25°	19 40.7 -17.5 119.3	18 48.6 -17.0 119.0	17 56.4 -16.5 118.7	17 04.0 -16.0 118.5	16 11.4 -15.4 118.2
26°	19 23.2 -17.9 120.3	18 31.6 -17.3 120.0	17 39.9 -16.8 119.7	16 48.0 -16.3 119.5	15 56.0 -15.8 119.2
27°	19 05.3 -18.1 121.3	18 14.3 -17.7 121.0	17 23.1 -17.1 120.7	16 31.7 -16.5 120.5	15 40.2 -16.0 120.2
28°	18 47.2 -18.6 122.3	17 56.6 -17.9 122.0	17 06.0 -17.4 121.8	16 15.2 -16.9 121.5	15 24.2 -16.3 121.2
29°	18 28.6 -18.8 123.3	17 38.7 -18.3 123.0	16 48.6 -17.7 122.8	15 58.3 -17.1 122.5	15 07.9 -16.5 122.2

Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	19 53.1 -06.8 92.2	18 53.5 -06.8 92.1	17 53.9 -06.8 91.9	16 54.2 -06.7 91.8	15 54.6 -06.7 91.7
1°	19 46.3 -07.2 93.2	18 46.7 -07.1 93.1	17 47.1 -07.1 93.0	16 47.5 -07.0 92.9	15 47.9 -06.9 92.7
2°	19 39.1 -07.6 94.3	18 39.6 -07.5 94.2	17 40.0 -07.4 94.0	16 40.5 -07.3 93.9	15 41.0 -07.3 93.8
3°	19 31.5 -08.0 95.3	18 32.1 -07.9 95.2	17 32.6 -07.7 95.1	16 33.2 -07.7 94.9	15 33.7 -07.5 94.8
4°	19 23.5 -08.3 96.4	18 24.2 -08.2 96.3	17 24.9 -08.1 96.1	16 25.5 -07.9 96.0	15 26.2 -07.8 95.8
5°	19 15.2 -08.7 97.4	18 16.0 -08.5 97.3	17 16.8 -08.4 97.2	16 17.6 -08.2 97.0	15 18.4 -08.1 96.9
6°	19 06.5 -09.0 98.5	18 07.5 -08.9 98.3	17 08.4 -08.7 98.2	16 09.4 -08.6 98.0	15 10.3 -08.4 97.9
7°	18 57.5 -09.4 99.5	17 58.6 -09.2 99.4	16 59.7 -09.0 99.2	16 00.8 -08.8 99.1	15 01.9 -08.7 98.9
8°	18 48.1 -09.8 100.6	17 49.4 -09.5 100.4	16 50.7 -09.3 100.3	15 52.0 -09.2 100.1	14 53.2 -08.9 99.9
9°	18 38.3 -10.0 101.6	17 39.9 -09.9 101.5	16 41.4 -09.6 101.3	15 42.8 -09.4 101.1	14 44.3 -09.2 101.0
10°	18 28.3 -10.4 102.7	17 30.0 -10.1 102.5	16 31.8 -10.0 102.3	15 33.4 -09.7 102.2	14 35.1 -09.5 102.0
11°	18 17.9 -10.8 103.7	17 19.9 -10.5 103.5	16 21.8 -10.2 103.3	15 23.7 -09.9 103.2	14 25.6 -09.7 103.0
12°	18 07.1 -11.1 104.7	17 09.4 -10.8 104.6	16 11.6 -10.5 104.4	15 13.8 -10.3 104.2	14 15.9 -10.0 104.0
13°	17 56.0 -11.4 105.8	16 58.6 -11.1 105.6	16 01.1 -10.9 105.4	15 03.5 -10.5 105.2	14 05.9 -10.2 105.0
14°	17 44.6 -11.7 106.8	16 47.5 -11.5 106.6	15 50.2 -11.1 106.4	14 53.0 -10.8 106.2	13 55.7 -10.5 106.1
15°	17 32.9 -12.1 107.8	16 36.0 -11.7 107.6	15 39.1 -11.4 107.4	14 42.2 -11.1 107.3	13 45.2 -10.8 107.1
16°	17 20.8 -12.3 108.9	16 24.3 -12.0 108.7	15 27.7 -11.6 108.5	14 31.1 -11.3 108.3	13 34.4 -11.0 108.1
17°	17 08.5 -12.7 109.9	16 12.3 -12.3 109.7	15 16.1 -12.0 109.5	14 19.8 -11.6 109.3	13 23.4 -11.2 109.1
18°	16 55.8 -13.0 110.9	16 00.0 -12.6 110.7	15 04.1 -12.2 110.5	14 08.2 -11.8 110.3	13 12.2 -11.5 110.1
19°	16 42.8 -13.3 111.9	15 47.4 -12.9 111.7	14 51.9 -12.5 111.5	13 56.4 -12.1 111.3	13 00.7 -11.7 111.1
20°	16 29.5 -13.5 112.9	15 34.5 -13.1 112.7	14 39.4 -12.7 112.5	13 44.3 -12.3 112.3	12 49.0 -11.9 112.1
21°	16 16.0 -13.9 114.0	15 21.4 -13.5 113.7	14 26.7 -13.0 113.5	13 32.0 -12.6 113.3	12 37.1 -12.1 113.1
22°	16 02.1 -14.2 115.0	15 07.9 -13.7 114.7	14 13.7 -13.2 114.5	13 19.4 -12.8 114.3	12 25.0 -12.4 114.1
23°	15 47.9 -14.4 116.0	14 54.2 -13.9 115.8	14 00.5 -13.5 115.5	13 06.6 -13.1 115.3	12 12.6 -12.6 115.1
24°	15 33.5 -14.7 117.0	14 40.3 -14.2 116.8	13 47.0 -13.8 116.5	12 53.5 -13.2 116.3	12 00.0 -12.8 116.1
25°	15 18.8 -15.0 118.0	14 26.1 -14.5 117.8	13 33.2 -14.0 117.5	12 40.3 -13.5 117.3	11 47.2 -13.0 117.1
26°	15 03.8 -15.2 119.0	14 11.6 -14.7 118.8	13 19.2 -14.2 118.5	12 26.8 -13.8 118.3	11 34.2 -13.2 118.1
27°	14 48.6 -15.5 120.0	13 56.9 -15.0 119.8	13 05.0 -14.4 119.5	12 13.0 -13.9 119.3	11 21.0 -13.4 119.1
28°	14 33.1 -15.7 121.0	13 41.9 -15.2 120.8	12 50.6 -14.7 120.5	11 59.1 -14.1 120.3	11 07.6 -13.7 120.1
29°	14 17.4 -16.0 122.0	13 26.7 -15.4 121.8	12 35.9 -14.9 121.5	11 45.0 -14.4 121.3	10 53.9 -13.8 121.1

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	14 55.0 -06.7 91.6	13 55.3 -06.6 91.5	12 55.7 -06.6 91.4	11 56.0 -06.5 91.3	10 56.3 -06.4 91.2
1°	14 48.3 -06.9 92.6	13 48.7 -06.8 92.5	12 49.1 -06.8 92.4	11 49.5 -06.8 92.3	10 49.9 -06.7 92.2
2°	14 41.4 -07.1 93.7	13 41.9 -07.1 93.5	12 42.3 -07.0 93.4	11 42.7 -06.9 93.3	10 43.2 -06.9 93.2
3°	14 34.3 -07.5 94.7	13 34.8 -07.4 94.6	12 35.3 -07.3 94.4	11 35.8 -07.2 94.3	10 36.3 -07.1 94.2
4°	14 26.8 -07.7 95.7	13 27.4 -07.6 95.6	12 28.0 -07.4 95.5	11 28.6 -07.3 95.3	10 29.2 -07.3 95.2
5°	14 19.1 -08.0 96.7	13 19.8 -07.8 96.6	12 20.6 -07.7 96.5	11 21.3 -07.6 96.3	10 21.9 -07.4 96.2
6°	14 11.1 -08.2 97.8	13 12.0 -08.1 97.6	12 12.9 -08.0 97.5	11 13.7 -07.8 97.4	10 14.5 -07.6 97.2
7°	14 02.9 -08.5 98.8	13 03.9 -08.3 98.6	12 04.9 -08.1 98.5	11 05.9 -08.0 98.4	10 06.9 -07.9 98.2
8°	13 54.4 -08.7 99.8	12 55.6 -08.5 99.7	11 56.8 -08.4 99.5	10 57.9 -08.2 99.4	9 59.0 -08.0 99.2
9°	13 45.7 -09.0 100.8	12 47.1 -08.8 100.7	11 48.4 -08.6 100.5	10 49.7 -08.4 100.4	9 51.0 -08.2 100.2
10°	13 36.7 -09.2 101.8	12 38.3 -09.0 101.7	11 39.8 -08.8 101.5	10 41.3 -08.5 101.4	9 42.8 -08.3 101.3
11°	13 27.5 -09.5 102.9	12 29.3 -09.3 102.7	11 31.0 -09.0 102.5	10 32.8 -08.8 102.4	9 34.5 -08.6 102.3
12°	13 18.0 -09.7 103.9	12 20.0 -09.4 103.7	11 22.0 -09.2 103.6	10 24.0 -08.9 103.4	9 25.9 -08.7 103.3
13°	13 08.3 -10.0 104.9	12 10.6 -09.7 104.7	11 12.8 -09.4 104.6	10 15.1 -09.2 104.4	9 17.2 -08.8 104.3
14°	12 58.3 -10.2 105.9	12 00.9 -09.9 105.7	11 03.4 -09.6 105.6	10 05.9 -09.3 105.4	9 08.4 -09.1 105.3
15°	12 48.1 -10.4 106.9	11 51.0 -10.1 106.7	10 53.8 -09.8 106.6	9 56.6 -09.5 106.4	8 59.3 -09.2 106.3
16°	12 37.7 -10.7 107.9	11 40.9 -10.4 107.7	10 44.0 -10.0 107.6	9 47.1 -09.7 107.4	8 50.1 -09.3 107.3
17°	12 27.0 -10.9 108.9	11 30.5 -10.5 108.7	10 34.0 -10.2 108.6	9 37.4 -09.8 108.4	8 40.8 -09.5 108.3
18°	12 16.1 -11.1 109.9	11 20.0 -10.7 109.8	10 23.8 -10.4 109.6	9 27.6 -10.0 109.4	8 31.3 -09.7 109.3
19°	12 05.0 -11.3 110.9	11 09.3 -11.0 110.8	10 13.4 -10.5 110.6	9 17.6 -10.2 110.4	8 21.6 -09.8 110.3
20°	11 53.7 -11.5 111.9	10 58.3 -11.1 111.8	10 02.9 -10.7 111.6	9 07.4 -10.4 111.4	8 11.8 -10.0 111.3
21°	11 42.2 -11.7 112.9	10 47.2 -11.3 112.8	9 52.2 -11.0 112.6	8 57.0 -10.5 112.4	8 01.8 -10.1 112.3
22°	11 30.5 -12.0 113.9	10 35.9 -11.5 113.8	9 41.2 -11.0 113.6	8 46.5 -10.6 113.4	7 51.7 -10.2 113.3
23°	11 18.5 -12.1 114.9	10 24.4 -11.7 114.8	9 30.2 -11.3 114.6	8 35.9 -10.9 114.4	7 41.5 -10.4 114.2
24°	11 06.4 -12.4 115.9	10 12.7 -11.9 115.8	9 18.9 -11.4 115.6	8 25.0 -10.9 115.4	7 31.1 -10.5 115.2
25°	10 54.0 -12.5 116.9	10 00.8 -12.0 116.7	9 07.5 -11.6 116.6	8 14.1 -11.1 116.4	7 20.6 -10.7 116.2
26°	10 41.5 -12.7 117.9	9 48.8 -12.3 117.7	8 55.9 -11.7 117.6	8 03.0 -11.3 117.4	7 09.9 -10.7 117.2
27°	10 28.8 -12.9 118.9	9 36.5 -12.4 118.7	8 44.2 -11.9 118.6	7 51.7 -11.4 118.4	6 59.2 -10.9 118.2
28°	10 15.9 -13.1 119.9	9 24.1 -12.5 119.7	8 32.3 -12.1 119.5	7 40.3 -11.5 119.4	6 48.3 -11.1 119.2
29°	10 02.8 -13.3 120.9	9 11.6 -12.8 120.7	8 20.2 -12.2 120.5	7 28.8 -11.7 120.4	6 37.2 -11.1 120.2

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 56.7 -06.5 91.1	8 57.0 -06.4 90.9	7 57.4 -06.5 90.8	6 57.7 -06.4 90.7	5 58.0 -06.3 90.6
1°	9 50.2 -06.6 92.1	8 50.6 -06.6 92.0	7 50.9 -06.5 91.8	6 51.3 -06.5 91.7	5 51.7 -06.5 91.6
2°	9 43.6 -06.8 93.1	8 44.0 -06.8 93.0	7 44.4 -06.7 92.8	6 44.8 -06.6 92.7	5 45.2 -06.6 92.6
3°	9 36.8 -07.0 94.1	8 37.2 -06.9 94.0	7 37.7 -06.8 93.9	6 38.2 -06.8 93.7	5 38.6 -06.6 93.6
4°	9 29.8 -07.2 95.1	8 30.3 -07.0 95.0	7 30.9 -07.0 94.9	6 31.4 -06.8 94.7	5 32.0 -06.8 94.6
5°	9 22.6 -07.3 96.1	8 23.3 -07.2 96.0	7 23.9 -07.1 95.9	6 24.6 -07.0 95.7	5 25.2 -06.9 95.6
6°	9 15.3 -07.5 97.1	8 16.1 -07.4 97.0	7 16.8 -07.2 96.9	6 17.6 -07.1 96.7	5 18.3 -07.0 96.6
7°	9 07.8 -07.7 98.1	8 08.7 -07.5 98.0	7 09.6 -07.4 97.9	6 10.5 -07.2 97.7	5 11.3 -07.0 97.6
8°	9 00.1 -07.8 99.1	8 01.2 -07.7 99.0	7 02.2 -07.4 98.9	6 03.3 -07.3 98.7	5 04.3 -07.2 98.6
9°	8 52.3 -08.0 100.1	7 53.5 -07.8 100.0	6 54.8 -07.7 99.9	5 56.0 -07.5 99.7	4 57.1 -07.2 99.6
10°	8 44.3 -08.1 101.1	7 45.7 -07.9 101.0	6 47.1 -07.7 100.9	5 48.5 -07.5 100.7	4 49.9 -07.3 100.6
11°	8 36.2 -08.4 102.1	7 37.8 -08.1 102.0	6 39.4 -07.8 101.9	5 41.0 -07.6 101.7	4 42.6 -07.5 101.6
12°	8 27.8 -08.4 103.1	7 29.7 -08.2 103.0	6 31.6 -08.0 102.9	5 33.4 -07.8 102.7	4 35.1 -07.4 102.6
13°	8 19.4 -08.6 104.1	7 21.5 -08.3 104.0	6 23.6 -08.1 103.9	5 25.6 -07.8 103.7	4 27.7 -07.6 103.6
14°	8 10.8 -08.8 105.1	7 13.2 -08.5 105.0	6 15.5 -08.2 104.8	5 17.8 -07.9 104.7	4 20.1 -07.7 104.6
15°	8 02.0 -08.9 106.1	7 04.7 -08.6 106.0	6 07.3 -08.3 105.8	5 09.9 -08.0 105.7	4 12.4 -07.7 105.6
16°	7 53.1 -09.0 107.1	6 56.1 -08.7 107.0	5 59.0 -08.4 106.8	5 01.9 -08.1 106.7	4 04.7 -07.8 106.6
17°	7 44.1 -09.2 108.1	6 47.4 -08.9 108.0	5 50.6 -08.5 107.8	4 53.8 -08.2 107.7	3 56.9 -07.9 107.6
18°	7 34.9 -09.3 109.1	6 38.5 -09.0 109.0	5 42.1 -08.7 108.8	4 45.6 -08.3 108.7	3 49.0 -07.9 108.6
19°	7 25.6 -09.4 110.1	6 29.5 -09.0 110.0	5 33.4 -08.7 109.8	4 37.3 -08.4 109.7	3 41.1 -08.0 109.6
20°	7 16.2 -09.6 111.1	6 20.5 -09.2 111.0	5 24.7 -08.8 110.8	4 28.9 -08.4 110.7	3 33.1 -08.1 110.6
21°	7 06.6 -09.7 112.1	6 11.3 -09.4 112.0	5 15.9 -08.9 111.8	4 20.5 -08.6 111.7	3 25.0 -08.2 111.5
22°	6 56.9 -09.9 113.1	6 01.9 -09.4 112.9	5 07.0 -09.0 112.8	4 11.9 -08.6 112.7	3 16.8 -08.1 112.5
23°	6 47.0 -09.9 114.1	5 52.5 -09.5 113.9	4 58.0 -09.1 113.8	4 03.3 -08.6 113.7	3 08.7 -08.3 113.5
24°	6 37.1 -10.1 115.1	5 43.0 -09.6 114.9	4 48.9 -09.2 114.8	3 54.7 -08.8 114.7	3 00.4 -08.3 114.5
25°	6 27.0 -10.2 116.1	5 33.4 -09.7 115.9	4 39.7 -09.3 115.8	3 45.9 -08.8 115.6	2 52.1 -08.4 115.5
26°	6 16.8 -10.3 117.1	5 23.7 -09.9 116.9	4 30.4 -09.3 116.8	3 37.1 -08.9 116.6	2 43.7 -08.4 116.5
27°	6 06.5 -10.4 118.1	5 13.8 -09.9 117.9	4 21.1 -09.5 117.8	3 28.2 -08.9 117.6	2 35.3 -08.4 117.5
28°	5 56.1 -10.5 119.0	5 03.9 -10.0 118.9	4 11.6 -09.5 118.8	3 19.3 -09.0 118.6	2 26.9 -08.5 118.5
29°	5 45.6 -10.6 120.0	4 53.9 -10.1 119.9	4 02.1 -09.5 119.7	3 10.3 -09.0 119.6	2 18.4 -08.5 119.5

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 58.4 -06.4 90.5	3 58.7 -06.3 90.4	2 59.0 -06.3 90.3	1 59.3 -06.3 90.2	0 59.7 -06.3 90.1
1°	4 52.0 -06.4 91.5	3 52.4 -06.4 91.4	2 52.7 -06.4 91.3	1 53.0 -06.3 91.2	0 53.4 -06.3 91.1
2°	4 45.6 -06.5 92.5	3 46.0 -06.5 92.4	2 46.3 -06.4 92.3	1 46.7 -06.3 92.2	0 47.1 -06.3 92.1
3°	4 39.1 -06.6 93.5	3 39.5 -06.5 93.4	2 39.9 -06.4 93.3	1 40.4 -06.4 93.2	0 40.8 -06.3 93.1
4°	4 32.5 -06.7 94.5	3 33.0 -06.6 94.4	2 33.5 -06.5 94.3	1 34.0 -06.4 94.2	0 34.5 -06.4 94.1
5°	4 25.8 -06.8 95.5	3 26.4 -06.7 95.4	2 27.0 -06.6 95.3	1 27.6 -06.5 95.2	0 28.1 -06.3 95.1
6°	4 19.0 -06.8 96.5	3 19.7 -06.7 96.4	2 20.4 -06.6 96.3	1 21.1 -06.5 96.2	0 21.8 -06.4 96.1
7°	4 12.2 -06.9 97.5	3 13.0 -06.7 97.4	2 13.8 -06.6 97.3	1 14.6 -06.4 97.2	0 15.4 -06.3 97.1
8°	4 05.3 -07.0 98.5	3 06.3 -06.9 98.4	2 07.2 -06.7 98.3	1 08.2 -06.6 98.2	0 09.1 -06.4 98.1
9°	3 58.3 -07.1 99.5	2 59.4 -06.9 99.4	2 00.5 -06.7 99.3	1 01.6 -06.5 99.2	0 02.7 -06.3 99.1
10°	3 51.2 -07.1 100.5	2 52.5 -06.9 100.4	1 53.8 -06.7 100.3	0 55.1 -06.5 100.2	-0 03.6 -06.4
11°	3 44.1 -07.2 101.5	2 45.6 -07.0 101.4	1 47.1 -06.8 101.3	0 48.6 -06.6 101.1	-0 10.0 -06.3
12°	3 36.9 -07.3 102.5	2 38.6 -07.0 102.4	1 40.3 -06.8 102.3	0 42.0 -06.6 102.1	-0 16.3 -06.4
13°	3 29.6 -07.3 103.5	2 31.6 -07.1 103.4	1 33.5 -06.8 103.2	0 35.4 -06.6 103.1	-0 22.7 -06.3
14°	3 22.3 -07.4 104.5	2 24.5 -07.1 104.4	1 26.7 -06.9 104.2	0 28.8 -06.6 104.1	-0 29.0 -06.4
15°	3 14.9 -07.4 105.5	2 17.4 -07.2 105.3	1 19.8 -06.8 105.2	0 22.2 -06.6 105.1	-0 35.4 -06.3
16°	3 07.5 -07.5 106.5	2 10.2 -07.2 106.3	1 13.0 -06.9 106.2	0 15.6 -06.6 106.1	-0 41.7 -06.3
17°	3 00.0 -07.6 107.5	2 03.0 -07.2 107.3	1 06.1 -07.0 107.2	0 09.0 -06.6 107.1	-0 48.0 -06.3
18°	2 52.4 -07.6 108.4	1 55.8 -07.3 108.3	0 59.1 -06.9 108.2	0 02.4 -06.6 108.1	-0 54.3 -06.3
19°	2 44.8 -07.6 109.4	1 48.5 -07.3 109.3	0 52.2 -07.0 109.2	-0 04.2 -06.6	-1 00.6 -06.2
20°	2 37.2 -07.7 110.4	1 41.2 -07.3 110.3	0 45.2 -06.9 110.2	-0 10.8 -06.6	-1 06.8 -06.3
21°	2 29.5 -07.8 111.4	1 33.9 -07.4 111.3	0 38.3 -07.0 111.2	-0 17.4 -06.6	-1 13.1 -06.2
22°	2 21.7 -07.8 112.4	1 26.5 -07.4 112.3	0 31.3 -07.0 112.2	-0 24.0 -06.6	-1 19.3 -06.2
23°	2 13.9 -07.8 113.4	1 19.1 -07.4 113.3	0 24.3 -07.0 113.2	-0 30.6 -06.6	-1 25.5 -06.2
24°	2 06.1 -07.9 114.4	1 11.7 -07.4 114.3	0 17.3 -07.0 114.2	-0 37.2 -06.5	-1 31.7 -06.1
25°	1 58.2 -07.9 115.4	1 04.3 -07.5 115.3	0 10.3 -07.0 115.2	-0 43.7 -06.6	-1 37.8 -06.1
26°	1 50.3 -07.9 116.4	0 56.8 -07.4 116.3	0 03.3 -07.0 116.2	-0 50.3 -06.5	-1 43.9 -06.1
27°	1 42.4 -08.0 117.4	0 49.4 -07.5 117.3	-0 03.7 -07.0	-0 56.8 -06.6	-1 50.0 -06.0
28°	1 34.4 -08.0 118.4	0 41.9 -07.5 118.3	-0 10.7 -07.0	-1 03.4 -06.5	-1 56.0 -06.1
29°	1 26.4 -08.0 119.4	0 34.4 -07.5 119.2	-0 17.7 -07.0	-1 09.9 -06.4	-2 02.1 -05.9

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 -06.3 90.0	-0 59.7 -06.2			
1°	-0 06.3 -06.2	-1 05.9 -06.3			
2°	-0 12.5 -06.3	-1 12.2 -06.2			
3°	-0 18.8 -06.3	-1 18.4 -06.2			
4°	-0 25.1 -06.2	-1 24.6 -06.2			
5°	-0 31.3 -06.3	-1 30.8 -06.1			
6°	-0 37.6 -06.2	-1 36.9 -06.1			
7°	-0 43.8 -06.2	-1 43.0 -06.1			
8°	-0 50.0 -06.2	-1 49.1 -06.1			
9°	-0 56.2 -06.2	-1 55.2 -06.0			
10°	-1 02.4 -06.2	-2 01.2 -06.0			
11°	-1 08.6 -06.1	-2 07.2 -05.9			
12°	-1 14.7 -06.1	-2 13.1 -05.9			
13°	-1 20.8 -06.1	-2 19.0 -05.9			
14°	-1 26.9 -06.1	-2 24.9 -05.8			
15°	-1 33.0 -06.1	-2 30.7 -05.8			
16°	-1 39.1 -06.0	-2 36.5 -05.7			
17°	-1 45.1 -06.0	-2 42.2 -05.7			
18°	-1 51.1 -05.9	-2 47.9 -05.6			
19°	-1 57.0 -05.9	-2 53.5 -05.6			
20°	-2 02.9 -05.9	-2 59.1 -05.5			
21°	-2 08.8 -05.8	-3 04.6 -05.4			
22°	-2 14.6 -05.8	-3 10.0 -05.4			
23°	-2 20.4 -05.8	-3 15.4 -05.4			
24°	-2 26.2 -05.7	-3 20.8 -05.3			
25°	-2 31.9 -05.7	-3 26.1 -05.2			
26°	-2 37.6 -05.6	-3 31.3 -05.1			
27°	-2 43.2 -05.6	-3 36.4 -05.1			
28°	-2 48.8 -05.5	-3 41.5 -05.1			
29°	-2 54.3 -05.5	-3 46.6 -04.9			

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°					
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°					

Declination CONTRARY name to Latitude

Latitude 7°

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°	83 00.0 -60.0 180.0	82 55.8 -59.5 171.8	82 43.3 -58.0 164.0	82 23.2 -55.7 156.7	81 56.6 -53.0 150.2
1°	82 00.0 -60.0 180.0	81 56.3 -59.6 172.9	81 45.3 -58.4 165.9	81 27.5 -56.6 159.4	81 03.6 -54.3 153.3
2°	81 00.0 -60.0 180.0	80 56.7 -59.7 173.6	80 46.9 -58.7 167.4	80 30.9 -57.2 161.5	80 09.3 -55.4 155.9
3°	80 00.0 -60.0 180.0	79 57.0 -59.7 174.3	79 48.2 -59.0 168.6	79 33.7 -57.7 163.2	79 13.9 -56.0 158.1
4°	79 00.0 -60.0 180.0	78 57.3 -59.8 174.8	78 49.2 -59.1 169.7	78 36.0 -58.1 164.7	78 17.9 -56.7 159.9
5°	78 00.0 -60.0 180.0	77 57.5 -59.8 175.2	77 50.1 -59.2 170.5	77 37.9 -58.3 165.9	77 21.2 -57.1 161.5
6°	77 00.0 -60.0 180.0	76 57.7 -59.8 175.6	76 50.9 -59.4 171.2	76 39.6 -58.6 167.0	76 24.1 -57.5 162.8
7°	76 00.0 -60.0 180.0	75 57.9 -59.9 175.9	75 51.5 -59.4 171.8	75 41.0 -58.7 167.9	75 26.6 -57.9 164.0
8°	75 00.0 -60.0 180.0	74 58.0 -59.9 176.2	74 52.1 -59.5 172.4	74 42.3 -58.9 168.7	74 28.7 -58.0 165.0
9°	74 00.0 -60.0 180.0	73 58.1 -59.8 176.4	73 52.6 -59.6 172.9	73 43.4 -59.0 169.4	73 30.7 -58.3 166.0
10°	73 00.0 -60.0 180.0	72 58.3 -59.9 176.6	72 53.0 -59.6 173.3	72 44.4 -59.2 170.0	72 32.4 -58.5 166.8
11°	72 00.0 -60.0 180.0	71 58.4 -60.0 176.8	71 53.4 -59.6 173.7	71 45.2 -59.2 170.6	71 33.9 -58.6 167.5
12°	71 00.0 -60.0 180.0	70 58.4 -60.0 177.0	70 53.8 -59.7 174.0	70 46.0 -59.3 171.1	70 35.3 -58.8 168.2
13°	70 00.0 -60.0 180.0	69 58.5 -59.9 177.2	69 54.1 -59.7 174.3	69 46.7 -59.3 171.5	69 36.5 -58.8 168.8
14°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.3	68 54.4 -59.7 174.6	68 47.4 -59.4 171.9	68 37.7 -59.0 169.3
15°	68 00.0 -60.0 180.0	67 58.7 -60.0 177.4	67 54.7 -59.8 174.9	67 48.0 -59.5 172.3	67 38.7 -59.0 169.8
16°	67 00.0 -60.0 180.0	66 58.7 -59.9 177.5	66 54.9 -59.8 175.1	66 48.5 -59.5 172.7	66 39.7 -59.1 170.3
17°	66 00.0 -60.0 180.0	65 58.8 -60.0 177.7	65 55.1 -59.8 175.3	65 49.0 -59.5 173.0	65 40.6 -59.2 170.7
18°	65 00.0 -60.0 180.0	64 58.8 -59.9 177.8	64 55.3 -59.8 175.5	64 49.5 -59.6 173.3	64 41.4 -59.2 171.1
19°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.8	63 55.5 -59.8 175.7	63 49.9 -59.6 173.6	63 42.2 -59.3 171.4
20°	63 00.0 -60.0 180.0	62 58.9 -59.9 177.9	62 55.7 -59.8 175.9	62 50.3 -59.6 173.8	62 42.9 -59.4 171.8
21°	62 00.0 -60.0 180.0	61 59.0 -60.0 178.0	61 55.9 -59.9 176.0	61 50.7 -59.6 174.1	61 43.5 -59.3 172.1
22°	61 00.0 -60.0 180.0	60 59.0 -60.0 178.1	60 56.0 -59.8 176.2	60 51.1 -59.7 174.3	60 44.2 -59.4 172.4
23°	60 00.0 -60.0 180.0	59 59.0 -59.9 178.2	59 56.2 -59.9 176.3	59 51.4 -59.7 174.5	59 44.8 -59.5 172.7
24°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.2	58 56.3 -59.9 176.5	58 51.7 -59.7 174.7	58 45.3 -59.5 172.9
25°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.3	57 56.4 -59.8 176.6	57 52.0 -59.7 174.9	57 45.8 -59.5 173.2
26°	57 00.0 -60.0 180.0	56 59.1 -59.9 178.4	56 56.6 -59.9 176.7	56 52.3 -59.7 175.1	56 46.3 -59.5 173.4
27°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.4	55 56.7 -59.9 176.8	55 52.6 -59.8 175.2	55 46.8 -59.6 173.7
28°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.5	54 56.8 -59.9 176.9	54 52.8 -59.7 175.4	54 47.2 -59.5 173.9
29°	54 00.0 -60.0 180.0	53 59.2 -59.9 178.5	53 56.9 -59.9 177.0	53 53.1 -59.8 175.5	53 47.7 -59.6 174.1

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	81 24.3 -50.0 144.3	80 47.4 -46.9 139.2	80 06.8 -44.0 134.8	79 23.1 -41.2 130.9	78 37.0 -38.6 127.6
1°	80 34.3 -51.7 147.9	80 00.5 -49.1 143.0	79 22.8 -46.4 138.6	78 41.9 -43.8 134.8	77 58.4 -41.3 131.4
2°	79 42.6 -53.2 150.8	79 11.4 -50.8 146.2	78 36.4 -48.3 141.9	77 58.1 -45.9 138.1	77 17.1 -43.6 134.7
3°	78 49.4 -54.1 153.3	78 20.6 -52.1 148.9	77 48.1 -50.0 144.8	77 12.2 -47.8 141.1	76 33.5 -45.6 137.8
4°	77 55.3 -55.1 155.5	77 28.5 -53.2 151.3	76 58.1 -51.2 147.4	76 24.4 -49.2 143.8	75 47.9 -47.3 140.5
5°	77 00.2 -55.7 157.3	76 35.3 -54.0 153.3	76 06.9 -52.4 149.6	75 35.2 -50.5 146.2	75 00.6 -48.6 142.9
6°	76 04.5 -56.2 158.9	75 41.3 -54.8 155.1	75 14.5 -53.2 151.6	74 44.7 -51.6 148.3	74 12.0 -49.9 145.2
7°	75 08.3 -56.7 160.3	74 46.5 -55.4 156.7	74 21.3 -54.0 153.3	73 53.1 -52.4 150.2	73 22.1 -50.9 147.1
8°	74 11.6 -57.1 161.5	73 51.1 -55.9 158.2	73 27.3 -54.6 154.9	73 00.7 -53.3 151.9	72 31.2 -51.8 149.0
9°	73 14.5 -57.4 162.6	72 55.2 -56.4 159.4	72 32.7 -55.1 156.3	72 07.4 -53.9 153.4	71 39.4 -52.5 150.6
10°	72 17.1 -57.6 163.6	71 58.8 -56.7 160.6	71 37.6 -55.7 157.6	71 13.5 -54.4 154.8	70 46.9 -53.2 152.1
11°	71 19.5 -57.9 164.5	71 02.1 -57.0 161.6	70 41.9 -56.0 158.8	70 19.1 -55.0 156.1	69 53.7 -53.8 153.5
12°	70 21.6 -58.1 165.3	70 05.1 -57.3 162.5	69 45.9 -56.4 159.8	69 24.1 -55.4 157.2	68 59.9 -54.4 154.7
13°	69 23.5 -58.2 166.0	69 07.8 -57.5 163.4	68 49.5 -56.7 160.8	68 28.7 -55.7 158.3	68 05.5 -54.7 155.9
14°	68 25.3 -58.4 166.7	68 10.3 -57.7 164.2	67 52.8 -56.9 161.7	67 33.0 -56.1 159.3	67 10.8 -55.2 157.0
15°	67 26.9 -58.5 167.3	67 12.6 -57.9 164.9	66 55.9 -57.2 162.5	66 36.9 -56.4 160.2	66 15.6 -55.5 158.0
16°	66 28.4 -58.6 167.9	66 14.7 -58.0 165.6	65 58.7 -57.4 163.3	65 40.5 -56.7 161.0	65 20.1 -55.9 158.9
17°	65 29.8 -58.8 168.4	65 16.7 -58.2 166.2	65 01.3 -57.6 164.0	64 43.8 -56.9 161.8	64 24.2 -56.1 159.7
18°	64 31.0 -58.8 168.9	64 18.5 -58.3 166.7	64 03.7 -57.7 164.6	63 46.9 -57.1 162.6	63 28.1 -56.4 160.5
19°	63 32.2 -58.9 169.3	63 20.2 -58.5 167.3	63 06.0 -57.9 165.2	62 49.8 -57.2 163.3	62 31.7 -56.6 161.3
20°	62 33.3 -58.9 169.8	62 21.7 -58.5 167.8	62 08.1 -58.0 165.8	61 52.6 -57.5 163.9	61 35.1 -56.8 162.0
21°	61 34.4 -59.1 170.2	61 23.2 -58.6 168.2	61 10.1 -58.1 166.4	60 55.1 -57.6 164.5	60 38.3 -57.0 162.7
22°	60 35.3 -59.1 170.5	60 24.6 -58.7 168.7	60 12.0 -58.3 166.9	59 57.5 -57.7 165.1	59 41.3 -57.2 163.3
23°	59 36.2 -59.1 170.9	59 25.9 -58.8 169.1	59 13.7 -58.3 167.3	58 59.8 -57.9 165.6	58 44.1 -57.3 163.9
24°	58 37.1 -59.2 171.2	58 27.1 -58.8 169.5	58 15.4 -58.5 167.8	58 01.9 -58.0 166.1	57 46.8 -57.5 164.5
25°	57 37.9 -59.2 171.5	57 28.3 -58.9 169.9	57 16.9 -58.5 168.2	57 03.9 -58.0 166.6	56 49.3 -57.6 165.0
26°	56 38.7 -59.3 171.8	56 29.4 -59.0 170.2	56 18.4 -58.6 168.6	56 05.9 -58.2 167.0	55 51.7 -57.7 165.5
27°	55 39.4 -59.3 172.1	55 30.4 -59.0 170.5	55 19.8 -58.6 169.0	55 07.7 -58.3 167.5	54 54.0 -57.8 166.0
28°	54 40.1 -59.3 172.4	54 31.4 -59.1 170.8	54 21.2 -58.8 169.4	54 09.4 -58.3 167.9	53 56.2 -57.9 166.4
29°	53 40.8 -59.4 172.6	53 32.3 -59.1 171.2	53 22.4 -58.7 169.7	53 11.1 -58.5 168.3	52 58.3 -58.1 166.9

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°	77 48.8 -36.1 124.7	76 59.1 -34.0 122.1	76 08.0 -32.0 119.8	75 15.8 -30.2 117.8	74 22.7 -28.6 116.0
1°	77 12.7 -39.0 128.3	76 25.1 -36.8 125.7	75 36.0 -34.9 123.3	74 45.6 -33.0 121.2	73 54.1 -31.3 119.3
2°	76 33.7 -41.4 131.7	75 48.3 -39.3 129.0	75 01.1 -37.3 126.5	74 12.6 -35.5 124.3	73 22.8 -33.8 122.3
3°	75 52.3 -43.5 134.7	75 09.0 -41.5 132.0	74 23.8 -39.5 129.5	73 37.1 -37.7 127.2	72 49.0 -36.0 125.1
4°	75 08.8 -45.3 137.5	74 27.5 -43.3 134.7	73 44.3 -41.5 132.2	72 59.4 -39.8 129.9	72 13.0 -38.1 127.8
5°	74 23.5 -46.8 140.0	73 44.2 -45.0 137.3	73 02.8 -43.2 134.7	72 19.6 -41.5 132.4	71 34.9 -39.9 130.3
6°	73 36.7 -48.1 142.3	72 59.2 -46.5 139.6	72 19.6 -44.8 137.1	71 38.1 -43.1 134.8	70 55.0 -41.5 132.6
7°	72 48.6 -49.3 144.3	72 12.7 -47.6 141.7	71 34.8 -46.1 139.2	70 55.0 -44.5 136.9	70 13.5 -42.9 134.8
8°	71 59.3 -50.3 146.2	71 25.1 -48.8 143.6	70 48.7 -47.2 141.2	70 10.5 -45.8 138.9	69 30.6 -44.3 136.8
9°	71 09.0 -51.2 147.9	70 36.3 -49.8 145.4	70 01.5 -48.3 143.1	69 24.7 -46.8 140.8	68 46.3 -45.5 138.7
10°	70 17.8 -51.9 149.5	69 46.5 -50.6 147.1	69 13.2 -49.3 144.8	68 37.9 -47.9 142.6	68 00.8 -46.6 140.5
11°	69 25.9 -52.6 151.0	68 55.9 -51.3 148.6	68 23.9 -50.1 146.3	67 50.0 -48.8 144.2	67 14.2 -47.5 142.1
12°	68 33.3 -53.2 152.3	68 04.6 -52.1 150.0	67 33.8 -50.8 147.8	67 01.2 -49.7 145.7	66 26.7 -48.4 143.7
13°	67 40.1 -53.7 153.6	67 12.5 -52.6 151.3	66 43.0 -51.5 149.2	66 11.5 -50.3 147.1	65 38.3 -49.1 145.1
14°	66 46.4 -54.2 154.7	66 19.9 -53.1 152.5	65 51.5 -52.1 150.4	65 21.2 -51.0 148.4	64 49.2 -49.9 146.5
15°	65 52.2 -54.6 155.8	65 26.8 -53.7 153.7	64 59.4 -52.6 151.6	64 30.2 -51.6 149.7	63 59.3 -50.5 147.8
16°	64 57.6 -55.0 156.8	64 33.1 -54.0 154.7	64 06.8 -53.1 152.8	63 38.6 -52.1 150.9	63 08.8 -51.1 149.0
17°	64 02.6 -55.3 157.7	63 39.1 -54.5 155.7	63 13.7 -53.6 153.8	62 46.5 -52.6 152.0	62 17.7 -51.7 150.2
18°	63 07.3 -55.6 158.6	62 44.6 -54.8 156.7	62 20.1 -53.9 154.8	61 53.9 -53.0 153.0	61 26.0 -52.1 151.2
19°	62 11.7 -55.9 159.4	61 49.8 -55.1 157.5	61 26.2 -54.3 155.7	61 00.9 -53.5 154.0	60 33.9 -52.5 152.3
20°	61 15.8 -56.1 160.2	60 54.7 -55.4 158.4	60 31.9 -54.6 156.6	60 07.4 -53.8 154.9	59 41.4 -53.0 153.2
21°	60 19.7 -56.4 160.9	59 59.3 -55.7 159.1	59 37.3 -55.0 157.4	59 13.6 -54.1 155.8	58 48.4 -53.4 154.1
22°	59 23.3 -56.6 161.6	59 03.6 -55.9 159.9	58 42.3 -55.2 158.2	58 19.5 -54.5 156.6	57 55.0 -53.6 155.0
23°	58 26.7 -56.7 162.2	58 07.7 -56.1 160.6	57 47.1 -55.4 159.0	57 25.0 -54.7 157.4	57 01.4 -54.0 155.9
24°	57 30.0 -56.9 162.8	57 11.6 -56.3 161.2	56 51.7 -55.7 159.7	56 30.3 -55.0 158.1	56 07.4 -54.3 156.6
25°	56 33.1 -57.1 163.4	56 15.3 -56.5 161.9	55 56.0 -55.9 160.3	55 35.3 -55.3 158.9	55 13.1 -54.6 157.4
26°	55 36.0 -57.2 164.0	55 18.8 -56.6 162.5	55 00.1 -56.0 161.0	54 40.0 -55.4 159.5	54 18.5 -54.8 158.1
27°	54 38.8 -57.3 164.5	54 22.2 -56.9 163.0	54 04.1 -56.3 161.6	53 44.6 -55.7 160.2	53 23.7 -55.0 158.8
28°	53 41.5 -57.5 165.0	53 25.3 -56.9 163.6	53 07.8 -56.4 162.2	52 48.9 -55.8 160.8	52 28.7 -55.3 159.5
29°	52 44.0 -57.6 165.5	52 28.4 -57.1 164.1	52 11.4 -56.6 162.7	51 53.1 -56.1 161.4	51 33.4 -55.4 160.1

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	73 28.9 -27.2 114.5	72 34.3 -25.7 113.0	71 39.3 -24.6 111.7	70 43.7 -23.4 110.6	69 47.8 -22.4 109.5
1°	73 01.7 -29.7 117.6	72 08.6 -28.4 116.0	71 14.7 -27.0 114.6	70 20.3 -25.8 113.3	69 25.4 -24.8 112.2
2°	72 32.0 -32.3 120.5	71 40.2 -30.7 118.8	70 47.7 -29.4 117.3	69 54.5 -28.2 116.0	69 00.6 -26.9 114.7
3°	71 59.7 -34.4 123.3	71 09.5 -33.0 121.5	70 18.3 -31.6 120.0	69 26.3 -30.3 118.5	68 33.7 -29.1 117.2
4°	71 25.3 -36.5 125.9	70 36.5 -35.0 124.1	69 46.7 -33.6 122.5	68 56.0 -32.2 121.0	68 04.6 -31.0 119.6
5°	70 48.8 -38.3 128.3	70 01.5 -36.8 126.5	69 13.1 -35.4 124.8	68 23.8 -34.1 123.3	67 33.6 -32.8 121.8
6°	70 10.5 -40.0 130.6	69 24.7 -38.5 128.8	68 37.7 -37.1 127.1	67 49.7 -35.8 125.5	67 00.8 -34.6 124.0
7°	69 30.5 -41.4 132.8	68 46.2 -40.1 130.9	68 00.6 -38.7 129.2	67 13.9 -37.3 127.6	66 26.2 -36.0 126.1
8°	68 49.1 -42.9 134.8	68 06.1 -41.4 133.0	67 21.9 -40.1 131.2	66 36.6 -38.8 129.6	65 50.2 -37.6 128.0
9°	68 06.2 -44.1 136.7	67 24.7 -42.8 134.9	66 41.8 -41.4 133.1	65 57.8 -40.2 131.5	65 12.6 -38.9 129.9
10°	67 22.1 -45.2 138.5	66 41.9 -43.9 136.7	66 00.4 -42.6 134.9	65 17.6 -41.3 133.3	64 33.7 -40.1 131.7
11°	66 36.9 -46.2 140.2	65 58.0 -44.9 138.4	65 17.8 -43.7 136.6	64 36.3 -42.5 135.0	63 53.6 -41.3 133.4
12°	65 50.7 -47.2 141.8	65 13.1 -45.9 140.0	64 34.1 -44.7 138.2	63 53.8 -43.5 136.6	63 12.3 -42.4 135.1
13°	65 03.5 -48.0 143.3	64 27.2 -46.9 141.5	63 49.4 -45.7 139.8	63 10.3 -44.5 138.2	62 29.9 -43.3 136.6
14°	64 15.5 -48.7 144.7	63 40.3 -47.6 142.9	63 03.7 -46.5 141.2	62 25.8 -45.4 139.6	61 46.6 -44.2 138.1
15°	63 26.8 -49.5 146.0	62 52.7 -48.3 144.3	62 17.2 -47.2 142.6	61 40.4 -46.1 141.0	61 02.4 -45.1 139.5
16°	62 37.3 -50.0 147.2	62 04.4 -49.0 145.5	61 30.0 -48.0 143.9	60 54.3 -47.0 142.3	60 17.3 -45.9 140.8
17°	61 47.3 -50.7 148.4	61 15.4 -49.7 146.8	60 42.0 -48.6 145.2	60 07.3 -47.6 143.6	59 31.4 -46.6 142.1
18°	60 56.6 -51.2 149.5	60 25.7 -50.2 147.9	59 53.4 -49.3 146.3	59 19.7 -48.2 144.8	58 44.8 -47.3 143.4
19°	60 05.4 -51.6 150.6	59 35.5 -50.7 149.0	59 04.1 -49.8 147.5	58 31.5 -48.9 146.0	57 57.5 -47.9 144.5
20°	59 13.8 -52.1 151.6	58 44.8 -51.3 150.1	58 14.3 -50.3 148.5	57 42.6 -49.4 147.1	57 09.6 -48.4 145.7
21°	58 21.7 -52.5 152.6	57 53.5 -51.6 151.0	57 24.0 -50.7 149.6	56 53.2 -49.9 148.1	56 21.2 -49.0 146.7
22°	57 29.2 -52.9 153.5	57 01.9 -52.1 152.0	56 33.3 -51.3 150.5	56 03.3 -50.3 149.1	55 32.2 -49.5 147.8
23°	56 36.3 -53.2 154.4	56 09.8 -52.4 152.9	55 42.0 -51.6 151.5	55 13.0 -50.8 150.1	54 42.7 -50.0 148.8
24°	55 43.1 -53.6 155.2	55 17.4 -52.8 153.8	54 50.4 -52.0 152.4	54 22.2 -51.3 151.0	53 52.7 -50.4 149.7
25°	54 49.5 -53.8 156.0	54 24.6 -53.1 154.6	53 58.4 -52.4 153.2	53 30.9 -51.5 151.9	53 02.3 -50.8 150.6
26°	53 55.7 -54.2 156.7	53 31.5 -53.4 155.4	53 06.0 -52.7 154.0	52 39.4 -52.0 152.8	52 11.5 -51.2 151.5
27°	53 01.5 -54.3 157.5	52 38.1 -53.7 156.1	52 13.3 -52.9 154.8	51 47.4 -52.2 153.6	51 20.3 -51.5 152.3
28°	52 07.2 -54.7 158.2	51 44.4 -54.0 156.9	51 20.4 -53.3 155.6	50 55.2 -52.6 154.4	50 28.8 -51.8 153.1
29°	51 12.5 -54.8 158.8	50 50.4 -54.2 157.6	50 27.1 -53.5 156.3	50 02.6 -52.9 155.1	49 37.0 -52.2 153.9

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	68 51.5 -21.5 108.5	67 54.9 -20.6 107.6	66 58.0 -19.8 106.8	66 00.8 -19.0 106.0	65 03.5 -18.4 105.3
1°	68 30.0 -23.7 111.1	67 34.3 -22.8 110.1	66 38.2 -21.9 109.2	65 41.8 -21.1 108.3	64 45.1 -20.3 107.6
2°	68 06.3 -25.9 113.6	67 11.5 -24.9 112.5	66 16.3 -24.0 111.5	65 20.7 -23.1 110.6	64 24.8 -22.3 109.7
3°	67 40.4 -27.9 116.0	66 46.6 -26.9 114.8	65 52.3 -25.9 113.8	64 57.6 -25.0 112.8	64 02.5 -24.1 111.9
4°	67 12.5 -29.9 118.3	66 19.7 -28.7 117.1	65 26.4 -27.7 116.0	64 32.6 -26.7 114.9	63 38.4 -25.8 114.0
5°	66 42.6 -31.6 120.5	65 51.0 -30.5 119.2	64 58.7 -29.4 118.1	64 05.9 -28.4 117.0	63 12.6 -27.5 116.0
6°	66 11.0 -33.3 122.6	65 20.5 -32.2 121.3	64 29.3 -31.1 120.1	63 37.5 -30.1 119.0	62 45.1 -29.1 117.9
7°	65 37.7 -34.9 124.7	64 48.3 -33.7 123.3	63 58.2 -32.7 122.1	63 07.4 -31.6 120.9	62 16.0 -30.6 119.8
8°	65 02.8 -36.3 126.6	64 14.6 -35.2 125.2	63 25.5 -34.0 124.0	62 35.8 -33.0 122.8	61 45.4 -32.0 121.7
9°	64 26.5 -37.7 128.5	63 39.4 -36.6 127.1	62 51.5 -35.5 125.8	62 02.8 -34.4 124.6	61 13.4 -33.3 123.4
10°	63 48.8 -39.0 130.2	63 02.8 -37.8 128.9	62 16.0 -36.7 127.6	61 28.4 -35.6 126.3	60 40.1 -34.6 125.1
11°	63 09.8 -40.1 132.0	62 25.0 -39.0 130.6	61 39.3 -37.8 129.2	60 52.8 -36.8 128.0	60 05.5 -35.8 126.8
12°	62 29.7 -41.2 133.6	61 46.0 -40.0 132.2	61 01.5 -39.1 130.9	60 16.0 -38.0 129.6	59 29.7 -36.9 128.4
13°	61 48.5 -42.2 135.1	61 06.0 -41.2 133.7	60 22.4 -40.0 132.4	59 38.0 -39.0 131.1	58 52.8 -38.0 129.9
14°	61 06.3 -43.2 136.6	60 24.8 -42.0 135.2	59 42.4 -41.0 133.9	58 59.0 -40.0 132.6	58 14.8 -39.0 131.4
15°	60 23.1 -44.0 138.0	59 42.8 -43.0 136.7	59 01.4 -42.0 135.3	58 19.0 -40.9 134.1	57 35.8 -39.9 132.8
16°	59 39.1 -44.9 139.4	58 59.8 -43.8 138.0	58 19.4 -42.7 136.7	57 38.1 -41.8 135.4	56 55.9 -40.8 134.2
17°	58 54.2 -45.5 140.7	58 16.0 -44.6 139.3	57 36.7 -43.6 138.0	56 56.3 -42.6 136.8	56 15.1 -41.6 135.6
18°	58 08.7 -46.3 142.0	57 31.4 -45.3 140.6	56 53.1 -44.3 139.3	56 13.7 -43.3 138.0	55 33.5 -42.4 136.8
19°	57 22.4 -47.0 143.1	56 46.1 -46.0 141.8	56 08.8 -45.1 140.5	55 30.4 -44.1 139.3	54 51.1 -43.2 138.1
20°	56 35.4 -47.5 144.3	56 00.1 -46.6 143.0	55 23.7 -45.6 141.7	54 46.3 -44.7 140.5	54 07.9 -43.8 139.3
21°	55 47.9 -48.1 145.4	55 13.5 -47.2 144.1	54 38.1 -46.3 142.8	54 01.6 -45.4 141.6	53 24.1 -44.5 140.4
22°	54 59.8 -48.6 146.4	54 26.3 -47.7 145.2	53 51.8 -46.9 143.9	53 16.2 -46.0 142.7	52 39.6 -45.0 141.6
23°	54 11.2 -49.1 147.4	53 38.6 -48.3 146.2	53 04.9 -47.4 145.0	52 30.2 -46.5 143.8	51 54.6 -45.7 142.6
24°	53 22.1 -49.6 148.4	52 50.3 -48.7 147.2	52 17.5 -47.8 146.0	51 43.7 -47.0 144.8	51 08.9 -46.2 143.7
25°	52 32.5 -50.0 149.4	52 01.6 -49.2 148.1	51 29.7 -48.4 147.0	50 56.7 -47.5 145.8	50 22.7 -46.7 144.7
26°	51 42.5 -50.4 150.3	51 12.4 -49.6 149.1	50 41.3 -48.8 147.9	50 09.2 -48.0 146.8	49 36.0 -47.1 145.7
27°	50 52.1 -50.7 151.1	50 22.8 -49.9 150.0	49 52.5 -49.2 148.8	49 21.2 -48.5 147.7	48 48.9 -47.7 146.6
28°	50 01.4 -51.1 152.0	49 32.9 -50.4 150.8	49 03.3 -49.6 149.7	48 32.7 -48.8 148.6	48 01.2 -48.0 147.5
29°	49 10.3 -51.5 152.8	48 42.5 -50.7 151.6	48 13.7 -50.0 150.5	47 43.9 -49.2 149.5	47 13.2 -48.5 148.4

Dec	LHA 025° / 335°	LHA 026° / 334°	LHA 027° / 333°	LHA 028° / 332°	LHA 029° / 331°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	64 06.0 -17.8 104.6	63 08.3 -17.2 104.0	62 10.4 -16.6 103.5	61 12.4 -16.0 102.9	60 14.3 -15.6 102.4
1°	63 48.2 -19.6 106.8	62 51.1 -19.0 106.1	61 53.8 -18.3 105.5	60 56.4 -17.8 104.9	59 58.7 -17.2 104.3
2°	63 28.6 -21.5 109.0	62 32.1 -20.7 108.2	61 35.5 -20.2 107.5	60 38.6 -19.5 106.9	59 41.5 -18.9 106.2
3°	63 07.1 -23.3 111.0	62 11.4 -22.5 110.2	61 15.3 -21.7 109.5	60 19.1 -21.1 108.8	59 22.6 -20.5 108.1
4°	62 43.8 -25.0 113.1	61 48.9 -24.2 112.2	60 53.6 -23.4 111.4	59 58.0 -22.7 110.7	59 02.1 -22.0 110.0
5°	62 18.8 -26.6 115.0	61 24.7 -25.8 114.1	60 30.2 -25.0 113.3	59 35.3 -24.2 112.5	58 40.1 -23.4 111.8
6°	61 52.2 -28.1 116.9	60 58.9 -27.2 116.0	60 05.2 -26.4 115.1	59 11.1 -25.6 114.3	58 16.7 -24.9 113.5
7°	61 24.1 -29.6 118.8	60 31.7 -28.8 117.8	59 38.8 -27.9 116.9	58 45.5 -27.1 116.0	57 51.8 -26.3 115.2
8°	60 54.5 -31.1 120.6	60 02.9 -30.1 119.6	59 10.9 -29.2 118.7	58 18.4 -28.3 117.8	57 25.5 -27.5 116.9
9°	60 23.4 -32.3 122.3	59 32.8 -31.4 121.3	58 41.7 -30.5 120.3	57 50.1 -29.7 119.4	56 58.0 -28.8 118.6
10°	59 51.1 -33.6 124.0	59 01.4 -32.6 123.0	58 11.2 -31.8 122.0	57 20.4 -30.8 121.0	56 29.2 -30.1 120.2
11°	59 17.5 -34.9 125.7	58 28.8 -33.9 124.6	57 39.4 -32.9 123.6	56 49.6 -32.1 122.6	55 59.1 -31.1 121.7
12°	58 42.6 -35.9 127.3	57 54.9 -35.0 126.2	57 06.5 -34.0 125.1	56 17.5 -33.1 124.2	55 28.0 -32.3 123.2
13°	58 06.7 -37.0 128.8	57 19.9 -36.0 127.7	56 32.5 -35.1 126.6	55 44.4 -34.2 125.7	54 55.7 -33.3 124.7
14°	57 29.7 -38.0 130.3	56 43.9 -37.0 129.2	55 57.4 -36.1 128.1	55 10.2 -35.2 127.1	54 22.4 -34.3 126.1
15°	56 51.7 -38.9 131.7	56 06.9 -38.0 130.6	55 21.3 -37.1 129.5	54 35.0 -36.1 128.5	53 48.1 -35.2 127.5
16°	56 12.8 -39.8 133.1	55 28.9 -38.9 132.0	54 44.2 -37.9 130.9	53 58.9 -37.1 129.9	53 12.9 -36.2 128.9
17°	55 33.0 -40.7 134.4	54 50.0 -39.7 133.3	54 06.3 -38.8 132.2	53 21.8 -37.9 131.2	52 36.7 -37.0 130.2
18°	54 52.3 -41.5 135.7	54 10.3 -40.5 134.6	53 27.5 -39.6 133.5	52 43.9 -38.7 132.5	51 59.7 -37.9 131.5
19°	54 10.8 -42.2 136.9	53 29.8 -41.3 135.8	52 47.9 -40.4 134.8	52 05.2 -39.5 133.7	51 21.8 -38.6 132.8
20°	53 28.6 -42.9 138.1	52 48.5 -42.0 137.0	52 07.5 -41.1 136.0	51 25.7 -40.2 135.0	50 43.2 -39.3 134.0
21°	52 45.7 -43.5 139.3	52 06.5 -42.7 138.2	51 26.4 -41.8 137.2	50 45.5 -40.9 136.1	50 03.9 -40.1 135.2
22°	52 02.2 -44.2 140.4	51 23.8 -43.3 139.3	50 44.6 -42.5 138.3	50 04.6 -41.6 137.3	49 23.8 -40.7 136.3
23°	51 18.0 -44.8 141.5	50 40.5 -43.9 140.5	50 02.1 -43.0 139.4	49 23.0 -42.2 138.4	48 43.1 -41.4 137.4
24°	50 33.2 -45.4 142.6	49 56.6 -44.5 141.5	49 19.1 -43.7 140.5	48 40.8 -42.8 139.5	48 01.7 -41.9 138.5
25°	49 47.8 -45.8 143.6	49 12.1 -45.1 142.6	48 35.4 -44.2 141.5	47 58.0 -43.4 140.5	47 19.8 -42.6 139.6
26°	49 02.0 -46.4 144.6	48 27.0 -45.5 143.6	47 51.2 -44.7 142.5	47 14.6 -43.9 141.6	46 37.2 -43.1 140.6
27°	48 15.6 -46.8 145.6	47 41.5 -46.0 144.5	47 06.5 -45.2 143.5	46 30.7 -44.4 142.6	45 54.1 -43.6 141.6
28°	47 28.8 -47.3 146.5	46 55.5 -46.5 145.5	46 21.3 -45.7 144.5	45 46.3 -44.9 143.5	45 10.5 -44.0 142.6
29°	46 41.5 -47.6 147.4	46 09.0 -46.9 146.4	45 35.6 -46.1 145.4	45 01.4 -45.3 144.5	44 26.5 -44.6 143.6

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	59 16.1 -15.1 101.9	58 17.8 -14.7 101.5	57 19.4 -14.3 101.0	56 20.9 -14.0 100.6	55 22.3 -13.6 100.2
1°	59 01.0 -16.8 103.8	58 03.1 -16.3 103.3	57 05.1 -15.9 102.8	56 06.9 -15.4 102.4	55 08.7 -15.0 102.0
2°	58 44.2 -18.3 105.7	57 46.8 -17.8 105.1	56 49.2 -17.3 104.6	55 51.5 -16.8 104.1	54 53.7 -16.4 103.6
3°	58 25.9 -19.9 107.5	57 29.0 -19.3 106.9	56 31.9 -18.7 106.3	55 34.7 -18.2 105.8	54 37.3 -17.7 105.3
4°	58 06.0 -21.3 109.3	57 09.7 -20.7 108.7	56 13.2 -20.2 108.1	55 16.5 -19.6 107.5	54 19.6 -19.1 107.0
5°	57 44.7 -22.8 111.0	56 49.0 -22.2 110.4	55 53.0 -21.5 109.7	54 56.9 -20.9 109.1	54 00.5 -20.3 108.6
6°	57 21.9 -24.2 112.8	56 26.8 -23.4 112.1	55 31.5 -22.8 111.4	54 36.0 -22.2 110.8	53 40.2 -21.6 110.2
7°	56 57.7 -25.5 114.5	56 03.4 -24.8 113.7	55 08.7 -24.1 113.0	54 13.8 -23.5 112.4	53 18.6 -22.9 111.7
8°	56 32.2 -26.8 116.1	55 38.6 -26.1 115.3	54 44.6 -25.3 114.6	53 50.3 -24.6 113.9	52 55.7 -24.0 113.3
9°	56 05.4 -28.0 117.7	55 12.5 -27.2 116.9	54 19.3 -26.5 116.2	53 25.7 -25.8 115.5	52 31.7 -25.1 114.8
10°	55 37.4 -29.2 119.3	54 45.3 -28.4 118.5	53 52.8 -27.7 117.7	52 59.9 -27.0 117.0	52 06.6 -26.2 116.3
11°	55 08.2 -30.3 120.8	54 16.9 -29.6 120.0	53 25.1 -28.8 119.2	52 32.9 -28.0 118.5	51 40.4 -27.3 117.7
12°	54 37.9 -31.4 122.3	53 47.3 -30.6 121.5	52 56.3 -29.8 120.7	52 04.9 -29.0 119.9	51 13.1 -28.3 119.2
13°	54 06.5 -32.5 123.8	53 16.7 -31.6 122.9	52 26.5 -30.8 122.1	51 35.9 -30.1 121.3	50 44.8 -29.3 120.6
14°	53 34.0 -33.4 125.2	52 45.1 -32.6 124.3	51 55.7 -31.8 123.5	51 05.8 -31.0 122.7	50 15.5 -30.3 121.9
15°	53 00.6 -34.4 126.6	52 12.5 -33.5 125.7	51 23.9 -32.7 124.9	50 34.8 -31.9 124.1	49 45.2 -31.1 123.3
16°	52 26.2 -35.3 128.0	51 39.0 -34.5 127.1	50 51.2 -33.6 126.2	50 02.9 -32.9 125.4	49 14.1 -32.1 124.6
17°	51 50.9 -36.1 129.3	51 04.5 -35.3 128.4	50 17.6 -34.5 127.5	49 30.0 -33.6 126.7	48 42.0 -32.8 125.9
18°	51 14.8 -37.0 130.6	50 29.2 -36.1 129.7	49 43.1 -35.3 128.8	48 56.4 -34.5 127.9	48 09.2 -33.7 127.1
19°	50 37.8 -37.8 131.8	49 53.1 -36.9 130.9	49 07.8 -36.1 130.0	48 21.9 -35.3 129.2	47 35.5 -34.5 128.4
20°	50 00.0 -38.5 133.0	49 16.2 -37.7 132.1	48 31.7 -36.8 131.2	47 46.6 -36.0 130.4	47 01.0 -35.2 129.6
21°	49 21.5 -39.2 134.2	48 38.5 -38.3 133.3	47 54.9 -37.6 132.4	47 10.6 -36.7 131.6	46 25.8 -35.9 130.8
22°	48 42.3 -39.9 135.4	48 00.2 -39.1 134.5	47 17.3 -38.2 133.6	46 33.9 -37.4 132.7	45 49.9 -36.7 131.9
23°	48 02.4 -40.5 136.5	47 21.1 -39.7 135.6	46 39.1 -38.9 134.7	45 56.5 -38.1 133.9	45 13.2 -37.2 133.0
24°	47 21.9 -41.1 137.6	46 41.4 -40.3 136.7	46 00.2 -39.5 135.8	45 18.4 -38.7 135.0	44 36.0 -37.9 134.2
25°	46 40.8 -41.7 138.7	46 01.1 -40.9 137.8	45 20.7 -40.1 136.9	44 39.7 -39.3 136.1	43 58.1 -38.5 135.2
26°	45 59.1 -42.3 139.7	45 20.2 -41.5 138.8	44 40.6 -40.6 137.9	44 00.4 -39.8 137.1	43 19.6 -39.1 136.3
27°	45 16.8 -42.8 140.7	44 38.7 -41.9 139.8	44 00.0 -41.2 139.0	43 20.6 -40.4 138.1	42 40.5 -39.6 137.3
28°	44 34.0 -43.3 141.7	43 56.8 -42.6 140.8	43 18.8 -41.7 140.0	42 40.2 -41.0 139.2	42 00.9 -40.1 138.4
29°	43 50.7 -43.8 142.7	43 14.2 -42.9 141.8	42 37.1 -42.2 141.0	41 59.2 -41.4 140.1	41 20.8 -40.7 139.3

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°	54 23.7 -13.3 99.9	53 25.0 -13.0 99.5	52 26.2 -12.6 99.2	51 27.4 -12.4 98.9	50 28.5 -12.1 98.6
1°	54 10.4 -14.6 101.5	53 12.0 -14.2 101.2	52 13.6 -14.0 100.8	51 15.0 -13.6 100.4	50 16.4 -13.3 100.1
2°	53 55.8 -16.0 103.2	52 57.8 -15.6 102.8	51 59.6 -15.1 102.4	51 01.4 -14.8 102.0	50 03.1 -14.5 101.6
3°	53 39.8 -17.3 104.8	52 42.2 -16.8 104.4	51 44.5 -16.5 103.9	50 46.6 -16.0 103.5	49 48.6 -15.6 103.1
4°	53 22.5 -18.5 106.4	52 25.4 -18.1 106.0	51 28.0 -17.6 105.5	50 30.6 -17.2 105.0	49 33.0 -16.8 104.6
5°	53 04.0 -19.8 108.0	52 07.3 -19.3 107.5	51 10.4 -18.8 107.0	50 13.4 -18.4 106.5	49 16.2 -17.9 106.1
6°	52 44.2 -21.1 109.6	51 48.0 -20.5 109.0	50 51.6 -20.0 108.5	49 55.0 -19.4 108.0	48 58.3 -19.0 107.6
7°	52 23.1 -22.2 111.1	51 27.5 -21.7 110.6	50 31.6 -21.1 110.0	49 35.6 -20.6 109.5	48 39.3 -20.0 109.0
8°	52 00.9 -23.4 112.6	51 05.8 -22.7 112.1	50 10.5 -22.2 111.5	49 15.0 -21.6 110.9	48 19.3 -21.1 110.4
9°	51 37.5 -24.4 114.1	50 43.1 -23.9 113.5	49 48.3 -23.2 112.9	48 53.4 -22.7 112.4	47 58.2 -22.1 111.8
10°	51 13.1 -25.6 115.6	50 19.2 -24.9 115.0	49 25.1 -24.3 114.3	48 30.7 -23.7 113.8	47 36.1 -23.1 113.2
11°	50 47.5 -26.6 117.0	49 54.3 -25.9 116.4	49 00.8 -25.3 115.7	48 07.0 -24.6 115.1	47 13.0 -24.0 114.6
12°	50 20.9 -27.6 118.5	49 28.4 -26.9 117.8	48 35.5 -26.2 117.1	47 42.4 -25.6 116.5	46 49.0 -25.0 115.9
13°	49 53.3 -28.6 119.8	49 01.5 -27.9 119.1	48 09.3 -27.2 118.5	47 16.8 -26.5 117.8	46 24.0 -25.9 117.2
14°	49 24.7 -29.5 121.2	48 33.6 -28.8 120.5	47 42.1 -28.1 119.8	46 50.3 -27.4 119.2	45 58.1 -26.7 118.5
15°	48 55.2 -30.4 122.5	48 04.8 -29.6 121.8	47 14.0 -28.9 121.1	46 22.9 -28.3 120.5	45 31.4 -27.6 119.8
16°	48 24.8 -31.2 123.8	47 35.2 -30.6 123.1	46 45.1 -29.8 122.4	45 54.6 -29.1 121.7	45 03.8 -28.5 121.1
17°	47 53.6 -32.2 125.1	47 04.6 -31.3 124.4	46 15.3 -30.7 123.7	45 25.5 -29.9 123.0	44 35.3 -29.2 122.3
18°	47 21.4 -32.9 126.4	46 33.3 -32.2 125.6	45 44.6 -31.4 124.9	44 55.6 -30.7 124.2	44 06.1 -29.9 123.5
19°	46 48.5 -33.7 127.6	46 01.1 -32.9 126.8	45 13.2 -32.2 126.1	44 24.9 -31.4 125.4	43 36.2 -30.8 124.7
20°	46 14.8 -34.4 128.8	45 28.2 -33.7 128.0	44 41.0 -32.9 127.3	43 53.5 -32.2 126.6	43 05.4 -31.4 125.9
21°	45 40.4 -35.1 130.0	44 54.5 -34.3 129.2	44 08.1 -33.6 128.5	43 21.3 -32.9 127.8	42 34.0 -32.1 127.1
22°	45 05.3 -35.9 131.1	44 20.2 -35.1 130.4	43 34.5 -34.3 129.6	42 48.4 -33.5 128.9	42 01.9 -32.8 128.2
23°	44 29.4 -36.4 132.3	43 45.1 -35.7 131.5	43 00.2 -34.9 130.8	42 14.9 -34.2 130.0	41 29.1 -33.5 129.4
24°	43 53.0 -37.1 133.4	43 09.4 -36.3 132.6	42 25.3 -35.6 131.9	41 40.7 -34.8 131.1	40 55.6 -34.0 130.5
25°	43 15.9 -37.7 134.4	42 33.1 -37.0 133.7	41 49.7 -36.1 132.9	41 05.9 -35.4 132.2	40 21.6 -34.7 131.5
26°	42 38.2 -38.3 135.5	41 56.1 -37.5 134.8	41 13.6 -36.8 134.0	40 30.5 -36.0 133.3	39 46.9 -35.2 132.6
27°	41 59.9 -38.9 136.6	41 18.6 -38.0 135.8	40 36.8 -37.3 135.1	39 54.5 -36.5 134.3	39 11.7 -35.8 133.7
28°	41 21.0 -39.3 137.6	40 40.6 -38.6 136.8	39 59.5 -37.8 136.1	39 18.0 -37.1 135.4	38 35.9 -36.4 134.7
29°	40 41.7 -39.9 138.6	40 02.0 -39.1 137.8	39 21.7 -38.4 137.1	38 40.9 -37.6 136.4	37 59.5 -36.8 135.7

Declination CONTRARY name to Latitude

Latitude 7°

Dec	LHA 040° / 320°	LHA 041° / 319°	LHA 042° / 318°	LHA 043° / 317°	LHA 044° / 316°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	49 29.6 -11.8 98.3	48 30.7 -11.6 98.0	47 31.7 -11.4 97.7	46 32.6 -11.1 97.4	45 33.6 -11.0 97.2
1°	49 17.8 -13.0 99.8	48 19.1 -12.8 99.5	47 20.3 -12.5 99.2	46 21.5 -12.2 98.9	45 22.6 -12.0 98.6
2°	49 04.8 -14.2 101.3	48 06.3 -13.8 100.9	47 07.8 -13.5 100.6	46 09.3 -13.3 100.3	45 10.6 -13.0 100.0
3°	48 50.6 -15.3 102.7	47 52.5 -15.0 102.4	46 54.3 -14.6 102.0	45 56.0 -14.3 101.7	44 57.6 -13.9 101.4
4°	48 35.3 -16.4 104.2	47 37.5 -16.0 103.8	46 39.7 -15.7 103.4	45 41.7 -15.3 103.1	44 43.7 -15.0 102.7
5°	48 18.9 -17.4 105.7	47 21.5 -17.0 105.2	46 24.0 -16.6 104.8	45 26.4 -16.3 104.5	44 28.7 -15.9 104.1
6°	48 01.5 -18.6 107.1	47 04.5 -18.1 106.7	46 07.4 -17.7 106.2	45 10.1 -17.2 105.8	44 12.8 -16.9 105.4
7°	47 42.9 -19.5 108.5	46 46.4 -19.1 108.1	45 49.7 -18.6 107.6	44 52.9 -18.2 107.2	43 55.9 -17.8 106.8
8°	47 23.4 -20.6 109.9	46 27.3 -20.1 109.4	45 31.1 -19.6 109.0	44 34.7 -19.2 108.5	43 38.1 -18.7 108.1
9°	47 02.8 -21.6 111.3	46 07.2 -21.0 110.8	45 11.5 -20.6 110.3	44 15.5 -20.0 109.9	43 19.4 -19.5 109.4
10°	46 41.2 -22.5 112.7	45 46.2 -22.0 112.1	44 50.9 -21.4 111.6	43 55.5 -21.0 111.2	42 59.9 -20.5 110.7
11°	46 18.7 -23.4 114.0	45 24.2 -22.9 113.5	44 29.5 -22.4 113.0	43 34.5 -21.8 112.5	42 39.4 -21.3 112.0
12°	45 55.3 -24.4 115.3	45 01.3 -23.8 114.8	44 07.1 -23.2 114.3	43 12.7 -22.6 113.8	42 18.1 -22.1 113.3
13°	45 30.9 -25.3 116.6	44 37.5 -24.6 116.1	43 43.9 -24.0 115.5	42 50.1 -23.5 115.0	41 56.0 -22.9 114.5
14°	45 05.6 -26.1 117.9	44 12.9 -25.5 117.4	43 19.9 -24.9 116.8	42 26.6 -24.3 116.3	41 33.1 -23.8 115.8
15°	44 39.5 -26.9 119.2	43 47.4 -26.3 118.6	42 55.0 -25.7 118.0	42 02.3 -25.1 117.5	41 09.3 -24.4 117.0
16°	44 12.6 -27.8 120.5	43 21.1 -27.1 119.9	42 29.3 -26.5 119.3	41 37.2 -25.8 118.7	40 44.9 -25.3 118.2
17°	43 44.8 -28.5 121.7	42 54.0 -27.9 121.1	42 02.8 -27.2 120.5	41 11.4 -26.6 119.9	40 19.6 -25.9 119.4
18°	43 16.3 -29.3 122.9	42 26.1 -28.6 122.3	41 35.6 -27.9 121.7	40 44.8 -27.3 121.1	39 53.7 -26.7 120.6
19°	42 47.0 -30.0 124.1	41 57.5 -29.3 123.5	41 07.7 -28.7 122.9	40 17.5 -28.0 122.3	39 27.0 -27.4 121.7
20°	42 17.0 -30.7 125.3	41 28.2 -30.0 124.6	40 39.0 -29.3 124.0	39 49.5 -28.7 123.4	38 59.6 -28.0 122.9
21°	41 46.3 -31.4 126.4	40 58.2 -30.7 125.8	40 09.7 -30.0 125.2	39 20.8 -29.3 124.6	38 31.6 -28.7 124.0
22°	41 14.9 -32.1 127.6	40 27.5 -31.4 126.9	39 39.7 -30.7 126.3	38 51.5 -30.0 125.7	38 02.9 -29.3 125.1
23°	40 42.8 -32.7 128.7	39 56.1 -32.0 128.0	39 09.0 -31.3 127.4	38 21.5 -30.6 126.8	37 33.6 -29.9 126.2
24°	40 10.1 -33.3 129.8	39 24.1 -32.6 129.1	38 37.7 -31.9 128.5	37 50.9 -31.2 127.9	37 03.7 -30.5 127.3
25°	39 36.8 -34.0 130.9	38 51.5 -33.2 130.2	38 05.8 -32.5 129.6	37 19.7 -31.7 129.0	36 33.2 -31.0 128.4
26°	39 02.8 -34.5 131.9	38 18.3 -33.8 131.3	37 33.3 -33.0 130.7	36 48.0 -32.4 130.0	36 02.2 -31.7 129.5
27°	38 28.3 -35.0 133.0	37 44.5 -34.3 132.3	37 00.3 -33.6 131.7	36 15.6 -32.8 131.1	35 30.5 -32.1 130.5
28°	37 53.3 -35.6 134.0	37 10.2 -34.8 133.4	36 26.7 -34.1 132.7	35 42.8 -33.4 132.1	34 58.4 -32.7 131.5
29°	37 17.7 -36.1 135.0	36 35.4 -35.4 134.4	35 52.6 -34.6 133.8	35 09.4 -33.9 133.1	34 25.7 -33.2 132.6

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°	44 34.5 -10.8 96.9	43 35.3 -10.5 96.7	42 36.2 -10.4 96.5	41 37.0 -10.2 96.3	40 37.8 -10.1 96.0
1°	44 23.7 -11.7 98.3	43 24.8 -11.6 98.1	42 25.8 -11.3 97.8	41 26.8 -11.2 97.6	40 27.7 -10.9 97.3
2°	44 12.0 -12.8 99.7	43 13.2 -12.5 99.4	42 14.5 -12.3 99.1	41 15.6 -12.0 98.9	40 16.8 -11.8 98.6
3°	43 59.2 -13.7 101.1	43 00.7 -13.4 100.8	42 02.2 -13.1 100.5	41 03.6 -12.9 100.2	40 05.0 -12.6 99.9
4°	43 45.5 -14.6 102.4	42 47.3 -14.3 102.1	41 49.1 -14.1 101.8	40 50.7 -13.7 101.5	39 52.4 -13.5 101.2
5°	43 30.9 -15.6 103.7	42 33.0 -15.2 103.4	41 35.0 -14.9 103.1	40 37.0 -14.6 102.8	39 38.9 -14.3 102.5
6°	43 15.3 -16.5 105.1	42 17.8 -16.1 104.7	41 20.1 -15.7 104.4	40 22.4 -15.4 104.0	39 24.6 -15.1 103.7
7°	42 58.8 -17.3 106.4	42 01.7 -17.0 106.0	41 04.4 -16.6 105.7	40 07.0 -16.3 105.3	39 09.5 -15.9 105.0
8°	42 41.5 -18.3 107.7	41 44.7 -17.9 107.3	40 47.8 -17.5 106.9	39 50.7 -17.0 106.6	38 53.6 -16.7 106.2
9°	42 23.2 -19.1 109.0	41 26.8 -18.7 108.6	40 30.3 -18.3 108.2	39 33.7 -17.9 107.8	38 36.9 -17.4 107.4
10°	42 04.1 -20.0 110.3	41 08.1 -19.5 109.8	40 12.0 -19.0 109.4	39 15.8 -18.6 109.0	38 19.5 -18.2 108.7
11°	41 44.1 -20.8 111.5	40 48.6 -20.3 111.1	39 53.0 -19.9 110.7	38 57.2 -19.4 110.3	38 01.3 -19.0 109.9
12°	41 23.3 -21.6 112.8	40 28.3 -21.1 112.3	39 33.1 -20.6 111.9	38 37.8 -20.1 111.5	37 42.3 -19.6 111.1
13°	41 01.7 -22.4 114.0	40 07.2 -21.9 113.6	39 12.5 -21.3 113.1	38 17.7 -20.9 112.7	37 22.7 -20.4 112.3
14°	40 39.3 -23.1 115.3	39 45.3 -22.6 114.8	38 51.2 -22.1 114.3	37 56.8 -21.6 113.9	37 02.3 -21.1 113.5
15°	40 16.2 -24.0 116.5	39 22.7 -23.3 116.0	38 29.1 -22.8 115.5	37 35.2 -22.2 115.1	36 41.2 -21.8 114.6
16°	39 52.2 -24.6 117.7	38 59.4 -24.1 117.2	38 06.3 -23.5 116.7	37 13.0 -23.0 116.2	36 19.4 -22.4 115.8
17°	39 27.6 -25.4 118.9	38 35.3 -24.8 118.3	37 42.8 -24.2 117.9	36 50.0 -23.6 117.4	35 57.0 -23.0 116.9
18°	39 02.2 -26.0 120.0	38 10.5 -25.4 119.5	37 18.6 -24.9 119.0	36 26.4 -24.3 118.5	35 34.0 -23.8 118.1
19°	38 36.2 -26.7 121.2	37 45.1 -26.1 120.7	36 53.7 -25.5 120.2	36 02.1 -24.9 119.7	35 10.2 -24.3 119.2
20°	38 09.5 -27.4 122.3	37 19.0 -26.8 121.8	36 28.2 -26.1 121.3	35 37.2 -25.5 120.8	34 45.9 -24.9 120.3
21°	37 42.1 -28.0 123.5	36 52.2 -27.3 122.9	36 02.1 -26.7 122.4	35 11.7 -26.1 121.9	34 21.0 -25.5 121.4
22°	37 14.1 -28.7 124.6	36 24.9 -28.0 124.0	35 35.4 -27.4 123.5	34 45.6 -26.8 123.0	33 55.5 -26.1 122.5
23°	36 45.4 -29.2 125.7	35 56.9 -28.6 125.1	35 08.0 -27.9 124.6	34 18.8 -27.2 124.1	33 29.4 -26.7 123.6
24°	36 16.2 -29.8 126.8	35 28.3 -29.1 126.2	34 40.1 -28.5 125.7	33 51.6 -27.9 125.2	33 02.7 -27.2 124.7
25°	35 46.4 -30.4 127.8	34 59.2 -29.7 127.3	34 11.6 -29.0 126.7	33 23.7 -28.4 126.2	32 35.5 -27.7 125.7
26°	35 16.0 -30.9 128.9	34 29.5 -30.3 128.3	33 42.6 -29.6 127.8	32 55.3 -28.9 127.3	32 07.8 -28.2 126.8
27°	34 45.1 -31.5 129.9	33 59.2 -30.7 129.4	33 13.0 -30.1 128.8	32 26.4 -29.4 128.3	31 39.6 -28.8 127.8
28°	34 13.6 -32.0 131.0	33 28.5 -31.3 130.4	32 42.9 -30.6 129.9	31 57.0 -29.9 129.3	31 10.8 -29.2 128.8
29°	33 41.6 -32.4 132.0	32 57.2 -31.8 131.4	32 12.3 -31.0 130.9	31 27.1 -30.3 130.4	30 41.6 -29.7 129.9

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Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	39 38.6 -10.0 95.8	38 39.3 -09.8 95.6	37 40.0 -09.6 95.4	36 40.7 -09.5 95.2	35 41.4 -09.4 95.1
1°	39 28.6 -10.7 97.1	38 29.5 -10.6 96.9	37 30.4 -10.4 96.7	36 31.2 -10.2 96.5	35 32.0 -10.0 96.3
2°	39 17.9 -11.6 98.4	38 18.9 -11.3 98.2	37 20.0 -11.2 97.9	36 21.0 -11.0 97.7	35 22.0 -10.9 97.5
3°	39 06.3 -12.4 99.7	38 07.6 -12.2 99.4	37 08.8 -12.0 99.2	36 10.0 -11.8 98.9	35 11.1 -11.5 98.7
4°	38 53.9 -13.2 100.9	37 55.4 -12.9 100.6	36 56.8 -12.7 100.4	35 58.2 -12.4 100.1	34 59.6 -12.2 99.9
5°	38 40.7 -14.0 102.2	37 42.5 -13.8 101.9	36 44.1 -13.4 101.6	35 45.8 -13.2 101.3	34 47.4 -13.0 101.1
6°	38 26.7 -14.8 103.4	37 28.7 -14.4 103.1	36 30.7 -14.2 102.8	35 32.6 -13.9 102.5	34 34.4 -13.6 102.3
7°	38 11.9 -15.5 104.6	37 14.3 -15.3 104.3	36 16.5 -14.9 104.0	35 18.7 -14.6 103.7	34 20.8 -14.3 103.5
8°	37 56.4 -16.4 105.9	36 59.0 -15.9 105.5	36 01.6 -15.6 105.2	35 04.1 -15.3 104.9	34 06.5 -14.9 104.6
9°	37 40.0 -17.0 107.1	36 43.1 -16.7 106.8	35 46.0 -16.3 106.4	34 48.8 -15.9 106.1	33 51.6 -15.7 105.8
10°	37 23.0 -17.8 108.3	36 26.4 -17.4 107.9	35 29.7 -17.0 107.6	34 32.9 -16.7 107.3	33 35.9 -16.2 107.0
11°	37 05.2 -18.5 109.5	36 09.0 -18.1 109.1	35 12.7 -17.7 108.8	34 16.2 -17.3 108.4	33 19.7 -16.9 108.1
12°	36 46.7 -19.2 110.7	35 50.9 -18.8 110.3	34 55.0 -18.4 109.9	33 58.9 -17.9 109.6	33 02.8 -17.5 109.3
13°	36 27.5 -19.9 111.9	35 32.1 -19.4 111.5	34 36.6 -19.0 111.1	33 41.0 -18.6 110.7	32 45.3 -18.2 110.4
14°	36 07.6 -20.6 113.0	35 12.7 -20.1 112.6	34 17.6 -19.6 112.3	33 22.4 -19.1 111.9	32 27.1 -18.7 111.5
15°	35 47.0 -21.3 114.2	34 52.6 -20.8 113.8	33 58.0 -20.3 113.4	33 03.3 -19.8 113.0	32 08.4 -19.4 112.6
16°	35 25.7 -21.9 115.4	34 31.8 -21.4 114.9	33 37.7 -20.9 114.5	32 43.5 -20.4 114.1	31 49.0 -19.9 113.8
17°	35 03.8 -22.5 116.5	34 10.4 -22.0 116.1	33 16.8 -21.4 115.7	32 23.1 -21.0 115.3	31 29.1 -20.5 114.9
18°	34 41.3 -23.2 117.6	33 48.4 -22.6 117.2	32 55.4 -22.1 116.8	32 02.1 -21.6 116.4	31 08.6 -21.0 116.0
19°	34 18.1 -23.7 118.7	33 25.8 -23.2 118.3	32 33.3 -22.7 117.9	31 40.5 -22.1 117.5	30 47.6 -21.6 117.1
20°	33 54.4 -24.4 119.8	33 02.6 -23.8 119.4	32 10.6 -23.2 119.0	31 18.4 -22.6 118.6	30 26.0 -22.1 118.2
21°	33 30.0 -24.9 120.9	32 38.8 -24.3 120.5	31 47.4 -23.7 120.1	30 55.8 -23.2 119.6	30 03.9 -22.6 119.2
22°	33 05.1 -25.5 122.0	32 14.5 -24.9 121.6	31 23.7 -24.3 121.1	30 32.6 -23.8 120.7	29 41.3 -23.2 120.3
23°	32 39.6 -26.0 123.1	31 49.6 -25.4 122.7	30 59.4 -24.9 122.2	30 08.8 -24.2 121.8	29 18.1 -23.6 121.4
24°	32 13.6 -26.6 124.2	31 24.2 -25.9 123.7	30 34.5 -25.3 123.3	29 44.6 -24.7 122.8	28 54.5 -24.2 122.4
25°	31 47.0 -27.1 125.2	30 58.3 -26.5 124.8	30 09.2 -25.8 124.3	29 19.9 -25.2 123.9	28 30.3 -24.6 123.5
26°	31 19.9 -27.5 126.3	30 31.8 -26.9 125.8	29 43.4 -26.3 125.4	28 54.7 -25.7 124.9	28 05.7 -25.1 124.5
27°	30 52.4 -28.1 127.3	30 04.9 -27.5 126.8	29 17.1 -26.8 126.4	28 29.0 -26.2 125.9	27 40.6 -25.5 125.5
28°	30 24.3 -28.6 128.4	29 37.4 -27.9 127.9	28 50.3 -27.3 127.4	28 02.8 -26.6 127.0	27 15.1 -26.0 126.5
29°	29 55.7 -29.0 129.4	29 09.5 -28.3 128.9	28 23.0 -27.7 128.4	27 36.2 -27.0 128.0	26 49.1 -26.4 127.5

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°	34 42.1 -09.3 94.9	33 42.7 -09.1 94.7	32 43.4 -09.0 94.5	31 44.0 -08.9 94.4	30 44.6 -08.8 94.2
1°	34 32.8 -09.9 96.1	33 33.6 -09.8 95.9	32 34.4 -09.7 95.7	31 35.1 -09.5 95.5	30 35.8 -09.4 95.3
2°	34 22.9 -10.7 97.3	33 23.8 -10.5 97.1	32 24.7 -10.3 96.9	31 25.6 -10.2 96.7	30 26.4 -10.0 96.5
3°	34 12.2 -11.3 98.5	33 13.3 -11.1 98.2	32 14.4 -11.0 98.0	31 15.4 -10.8 97.8	30 16.4 -10.6 97.6
4°	34 00.9 -12.0 99.7	33 02.2 -11.8 99.4	32 03.4 -11.6 99.2	31 04.6 -11.4 99.0	30 05.8 -11.2 98.8
5°	33 48.9 -12.7 100.8	32 50.4 -12.5 100.6	31 51.8 -12.2 100.4	30 53.2 -12.0 100.1	29 54.6 -11.8 99.9
6°	33 36.2 -13.3 102.0	32 37.9 -13.0 101.8	31 39.6 -12.8 101.5	30 41.2 -12.6 101.3	29 42.8 -12.4 101.0
7°	33 22.9 -14.0 103.2	32 24.9 -13.8 102.9	31 26.8 -13.5 102.7	30 28.6 -13.1 102.4	29 30.4 -12.9 102.2
8°	33 08.9 -14.7 104.3	32 11.1 -14.3 104.1	31 13.3 -14.0 103.8	30 15.5 -13.8 103.5	29 17.5 -13.4 103.3
9°	32 54.2 -15.3 105.5	31 56.8 -15.0 105.2	30 59.3 -14.7 104.9	30 01.7 -14.3 104.7	29 04.1 -14.1 104.4
10°	32 38.9 -15.9 106.6	31 41.8 -15.5 106.3	30 44.6 -15.2 106.1	29 47.4 -14.9 105.8	28 50.0 -14.5 105.5
11°	32 23.0 -16.5 107.8	31 26.3 -16.2 107.5	30 29.4 -15.8 107.2	29 32.5 -15.5 106.9	28 35.5 -15.1 106.6
12°	32 06.5 -17.1 108.9	31 10.1 -16.7 108.6	30 13.6 -16.3 108.3	29 17.0 -16.0 108.0	28 20.4 -15.7 107.7
13°	31 49.4 -17.8 110.1	30 53.4 -17.3 109.7	29 57.3 -17.0 109.4	29 01.0 -16.5 109.1	28 04.7 -16.1 108.8
14°	31 31.6 -18.3 111.2	30 36.1 -17.9 110.8	29 40.3 -17.4 110.5	28 44.5 -17.1 110.2	27 48.6 -16.7 109.9
15°	31 13.3 -18.8 112.3	30 18.2 -18.5 111.9	29 22.9 -18.0 111.6	28 27.4 -17.5 111.3	27 31.9 -17.2 111.0
16°	30 54.5 -19.5 113.4	29 59.7 -19.0 113.0	29 04.9 -18.6 112.7	28 09.9 -18.1 112.4	27 14.7 -17.6 112.1
17°	30 35.0 -20.0 114.5	29 40.7 -19.5 114.1	28 46.3 -19.0 113.8	27 51.8 -18.6 113.5	26 57.1 -18.2 113.1
18°	30 15.0 -20.5 115.6	29 21.2 -20.0 115.2	28 27.3 -19.6 114.9	27 33.2 -19.1 114.5	26 38.9 -18.6 114.2
19°	29 54.5 -21.1 116.7	29 01.2 -20.6 116.3	28 07.7 -20.0 115.9	27 14.1 -19.6 115.6	26 20.3 -19.1 115.3
20°	29 33.4 -21.6 117.8	28 40.6 -21.0 117.4	27 47.7 -20.6 117.0	26 54.5 -20.0 116.7	26 01.2 -19.5 116.3
21°	29 11.8 -22.1 118.8	28 19.6 -21.6 118.4	27 27.1 -21.0 118.1	26 34.5 -20.5 117.7	25 41.7 -20.0 117.4
22°	28 49.7 -22.6 119.9	27 58.0 -22.0 119.5	27 06.1 -21.5 119.1	26 14.0 -21.0 118.8	25 21.7 -20.5 118.4
23°	28 27.1 -23.0 120.9	27 36.0 -22.6 120.6	26 44.6 -22.0 120.2	25 53.0 -21.4 119.8	25 01.2 -20.8 119.5
24°	28 04.1 -23.6 122.0	27 13.4 -22.9 121.6	26 22.6 -22.4 121.2	25 31.6 -21.9 120.8	24 40.4 -21.3 120.5
25°	27 40.5 -24.0 123.0	26 50.5 -23.5 122.6	26 00.2 -22.8 122.3	25 09.7 -22.2 121.9	24 19.1 -21.7 121.5
26°	27 16.5 -24.5 124.1	26 27.0 -23.8 123.7	25 37.4 -23.3 123.3	24 47.5 -22.7 122.9	23 57.4 -22.1 122.5
27°	26 52.0 -24.9 125.1	26 03.2 -24.3 124.7	25 14.1 -23.7 124.3	24 24.8 -23.1 123.9	23 35.3 -22.5 123.6
28°	26 27.1 -25.3 126.1	25 38.9 -24.7 125.7	24 50.4 -24.1 125.3	24 01.7 -23.5 124.9	23 12.8 -22.9 124.6
29°	26 01.8 -25.8 127.1	25 14.2 -25.1 126.7	24 26.3 -24.5 126.3	23 38.2 -23.9 125.9	22 49.9 -23.3 125.6

Declination CONTRARY name to Latitude

Latitude 7°

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	29 45.2 -08.7 94.0	28 45.8 -08.6 93.9	27 46.4 -08.5 93.7	26 47.0 -08.5 93.6	25 47.5 -08.4 93.4
1°	29 36.5 -09.3 95.2	28 37.2 -09.2 95.0	27 37.9 -09.1 94.8	26 38.5 -09.0 94.7	25 39.1 -08.8 94.5
2°	29 27.2 -09.9 96.3	28 28.0 -09.7 96.1	27 28.8 -09.6 95.9	26 29.5 -09.4 95.8	25 30.3 -09.4 95.6
3°	29 17.3 -10.4 97.4	28 18.3 -10.3 97.2	27 19.2 -10.1 97.1	26 20.1 -10.0 96.9	25 20.9 -09.8 96.7
4°	29 06.9 -11.0 98.6	28 08.0 -10.8 98.4	27 09.1 -10.7 98.2	26 10.1 -10.5 98.0	25 11.1 -10.3 97.8
5°	28 55.9 -11.6 99.7	27 57.2 -11.4 99.5	26 58.4 -11.2 99.3	25 59.6 -11.0 99.1	25 00.8 -10.8 98.9
6°	28 44.3 -12.1 100.8	27 45.8 -11.9 100.6	26 47.2 -11.6 100.4	25 48.6 -11.4 100.2	24 50.0 -11.2 100.0
7°	28 32.2 -12.7 101.9	27 33.9 -12.4 101.7	26 35.6 -12.2 101.5	25 37.2 -12.0 101.2	24 38.8 -11.8 101.0
8°	28 19.5 -13.2 103.0	27 21.5 -12.9 102.8	26 23.4 -12.7 102.6	25 25.2 -12.4 102.3	24 27.0 -12.1 102.1
9°	28 06.3 -13.7 104.1	27 08.6 -13.5 103.9	26 10.7 -13.1 103.6	25 12.8 -12.9 103.4	24 14.9 -12.7 103.2
10°	27 52.6 -14.3 105.2	26 55.1 -13.9 105.0	25 57.6 -13.7 104.7	24 59.9 -13.3 104.5	24 02.2 -13.0 104.3
11°	27 38.3 -14.7 106.3	26 41.2 -14.5 106.1	25 43.9 -14.1 105.8	24 46.6 -13.8 105.6	23 49.2 -13.5 105.3
12°	27 23.6 -15.3 107.4	26 26.7 -14.9 107.2	25 29.8 -14.6 106.9	24 32.8 -14.3 106.6	23 35.7 -14.0 106.4
13°	27 08.3 -15.8 108.5	26 11.8 -15.4 108.2	25 15.2 -15.1 108.0	24 18.5 -14.7 107.7	23 21.7 -14.4 107.5
14°	26 52.5 -16.3 109.6	25 56.4 -15.9 109.3	25 00.1 -15.5 109.0	24 03.8 -15.2 108.8	23 07.3 -14.7 108.5
15°	26 36.2 -16.7 110.7	25 40.5 -16.4 110.4	24 44.6 -16.0 110.1	23 48.6 -15.6 109.8	22 52.6 -15.3 109.6
16°	26 19.5 -17.3 111.8	25 24.1 -16.8 111.5	24 28.6 -16.4 111.2	23 33.0 -16.0 110.9	22 37.3 -15.6 110.6
17°	26 02.2 -17.7 112.8	25 07.3 -17.3 112.5	24 12.2 -16.8 112.2	23 17.0 -16.4 111.9	22 21.7 -16.0 111.7
18°	25 44.5 -18.1 113.9	24 50.0 -17.7 113.6	23 55.4 -17.3 113.3	23 00.6 -16.8 113.0	22 05.7 -16.4 112.7
19°	25 26.4 -18.6 114.9	24 32.3 -18.1 114.6	23 38.1 -17.7 114.3	22 43.8 -17.3 114.0	21 49.3 -16.8 113.7
20°	25 07.8 -19.1 116.0	24 14.2 -18.6 115.7	23 20.4 -18.1 115.4	22 26.5 -17.6 115.1	21 32.5 -17.2 114.8
21°	24 48.7 -19.5 117.0	23 55.6 -19.0 116.7	23 02.3 -18.5 116.4	22 08.9 -18.0 116.1	21 15.3 -17.5 115.8
22°	24 29.2 -19.9 118.1	23 36.6 -19.4 117.7	22 43.8 -18.9 117.4	21 50.9 -18.4 117.1	20 57.8 -17.9 116.8
23°	24 09.3 -20.3 119.1	23 17.2 -19.8 118.8	22 24.9 -19.3 118.5	21 32.5 -18.8 118.1	20 39.9 -18.3 117.8
24°	23 49.0 -20.8 120.1	22 57.4 -20.2 119.8	22 05.6 -19.7 119.5	21 13.7 -19.2 119.2	20 21.6 -18.6 118.9
25°	23 28.2 -21.1 121.2	22 37.2 -20.6 120.8	21 45.9 -20.0 120.5	20 54.5 -19.5 120.2	20 03.0 -19.0 119.9
26°	23 07.1 -21.6 122.2	22 16.6 -21.0 121.8	21 25.9 -20.4 121.5	20 35.0 -19.8 121.2	19 44.0 -19.3 120.9
27°	22 45.5 -21.9 123.2	21 55.6 -21.3 122.9	21 05.5 -20.8 122.5	20 15.2 -20.2 122.2	19 24.7 -19.6 121.9
28°	22 23.6 -22.3 124.2	21 34.3 -21.7 123.9	20 44.7 -21.1 123.5	19 55.0 -20.6 123.2	19 05.1 -20.0 122.9
29°	22 01.3 -22.6 125.2	21 12.6 -22.1 124.9	20 23.6 -21.4 124.5	19 34.4 -20.8 124.2	18 45.1 -20.3 123.9

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°	24 48.1 -08.3 93.3	23 48.6 -08.2 93.1	22 49.1 -08.1 93.0	21 49.7 -08.1 92.8	20 50.2 -08.1 92.7
1°	24 39.8 -08.8 94.3	23 40.4 -08.7 94.2	22 41.0 -08.6 94.0	21 41.6 -08.5 93.9	20 42.1 -08.4 93.7
2°	24 31.0 -09.2 95.4	23 31.7 -09.1 95.3	22 32.4 -09.0 95.1	21 33.1 -08.9 95.0	20 33.7 -08.7 94.8
3°	24 21.8 -09.7 96.5	23 22.6 -09.6 96.3	22 23.4 -09.4 96.2	21 24.2 -09.3 96.0	20 25.0 -09.2 95.9
4°	24 12.1 -10.2 97.6	23 13.0 -10.0 97.4	22 14.0 -09.9 97.2	21 14.9 -09.7 97.1	20 15.8 -09.6 96.9
5°	24 01.9 -10.6 98.7	23 03.0 -10.4 98.5	22 04.1 -10.2 98.3	21 05.2 -10.1 98.1	20 06.2 -09.9 98.0
6°	23 51.3 -11.0 99.8	22 52.6 -10.8 99.6	21 53.9 -10.7 99.4	20 55.1 -10.5 99.2	19 56.3 -10.3 99.0
7°	23 40.3 -11.5 100.8	22 41.8 -11.3 100.6	21 43.2 -11.0 100.4	20 44.6 -10.8 100.2	19 46.0 -10.6 100.1
8°	23 28.8 -11.9 101.9	22 30.5 -11.7 101.7	21 32.2 -11.5 101.5	20 33.8 -11.3 101.3	19 35.4 -11.1 101.1
9°	23 16.9 -12.4 103.0	22 18.8 -12.1 102.8	21 20.7 -11.9 102.5	20 22.5 -11.6 102.3	19 24.3 -11.3 102.1
10°	23 04.5 -12.8 104.0	22 06.7 -12.5 103.8	21 08.8 -12.2 103.6	20 10.9 -12.0 103.4	19 13.0 -11.8 103.2
11°	22 51.7 -13.2 105.1	21 54.2 -12.9 104.9	20 56.6 -12.6 104.6	19 58.9 -12.3 104.4	19 01.2 -12.0 104.2
12°	22 38.5 -13.6 106.2	21 41.3 -13.4 105.9	20 44.0 -13.1 105.7	19 46.6 -12.7 105.5	18 49.2 -12.5 105.3
13°	22 24.9 -14.1 107.2	21 27.9 -13.7 107.0	20 30.9 -13.3 106.7	19 33.9 -13.1 106.5	18 36.7 -12.7 106.3
14°	22 10.8 -14.4 108.3	21 14.2 -14.1 108.0	20 17.6 -13.8 107.8	19 20.8 -13.4 107.5	18 24.0 -13.1 107.3
15°	21 56.4 -14.8 109.3	21 00.1 -14.4 109.1	20 03.8 -14.1 108.8	19 07.4 -13.8 108.6	18 10.9 -13.4 108.3
16°	21 41.6 -15.3 110.3	20 45.7 -14.9 110.1	19 49.7 -14.5 109.8	18 53.6 -14.1 109.6	17 57.5 -13.7 109.4
17°	21 26.3 -15.6 111.4	20 30.8 -15.2 111.1	19 35.2 -14.8 110.9	18 39.5 -14.4 110.6	17 43.8 -14.1 110.4
18°	21 10.7 -16.0 112.4	20 15.6 -15.6 112.2	19 20.4 -15.1 111.9	18 25.1 -14.7 111.7	17 29.7 -14.3 111.4
19°	20 54.7 -16.3 113.5	20 00.0 -15.9 113.2	19 05.3 -15.5 112.9	18 10.4 -15.1 112.7	17 15.4 -14.7 112.4
20°	20 38.4 -16.7 114.5	19 44.1 -16.3 114.2	18 49.8 -15.9 114.0	17 55.3 -15.4 113.7	17 00.7 -15.0 113.4
21°	20 21.7 -17.1 115.5	19 27.8 -16.6 115.2	18 33.9 -16.1 115.0	17 39.9 -15.7 114.7	16 45.7 -15.2 114.5
22°	20 04.6 -17.5 116.5	19 11.2 -16.9 116.3	18 17.8 -16.5 116.0	17 24.2 -16.0 115.7	16 30.5 -15.6 115.5
23°	19 47.1 -17.7 117.6	18 54.3 -17.3 117.3	18 01.3 -16.8 117.0	17 08.2 -16.4 116.7	16 14.9 -15.8 116.5
24°	19 29.4 -18.1 118.6	18 37.0 -17.6 118.3	17 44.5 -17.1 118.0	16 51.8 -16.6 117.7	15 59.1 -16.1 117.5
25°	19 11.3 -18.5 119.6	18 19.4 -17.9 119.3	17 27.4 -17.4 119.0	16 35.2 -16.9 118.7	15 43.0 -16.4 118.5
26°	18 52.8 -18.8 120.6	18 01.5 -18.3 120.3	17 10.0 -17.7 120.0	16 18.3 -17.1 119.7	15 26.6 -16.7 119.5
27°	18 34.0 -19.0 121.6	17 43.2 -18.5 121.3	16 52.3 -18.0 121.0	16 01.2 -17.5 120.7	15 09.9 -16.9 120.5
28°	18 15.0 -19.4 122.6	17 24.7 -18.8 122.3	16 34.3 -18.3 122.0	15 43.7 -17.7 121.7	14 53.0 -17.2 121.5
29°	17 55.6 -19.7 123.6	17 05.9 -19.1 123.3	16 16.0 -18.5 123.0	15 26.0 -18.0 122.7	14 35.8 -17.4 122.5

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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°	19 50.7 -08.0 92.5	18 51.2 -07.9 92.4	17 51.7 -07.9 92.3	16 52.2 -07.8 92.1	15 52.7 -07.8 92.0
1°	19 42.7 -08.3 93.6	18 43.3 -08.3 93.4	17 43.8 -08.1 93.3	16 44.4 -08.1 93.2	15 44.9 -08.0 93.0
2°	19 34.4 -08.7 94.6	18 35.0 -08.6 94.5	17 35.7 -08.5 94.3	16 36.3 -08.4 94.2	15 36.9 -08.4 94.1
3°	19 25.7 -09.1 95.7	18 26.4 -08.9 95.5	17 27.2 -08.9 95.4	16 27.9 -08.8 95.2	15 28.5 -08.6 95.1
4°	19 16.6 -09.4 96.7	18 17.5 -09.3 96.6	17 18.3 -09.1 96.4	16 19.1 -09.0 96.3	15 19.9 -08.9 96.1
5°	19 07.2 -09.7 97.8	18 08.2 -09.6 97.6	17 09.2 -09.5 97.5	16 10.1 -09.3 97.3	15 11.0 -09.1 97.1
6°	18 57.5 -10.1 98.8	17 58.6 -09.9 98.7	16 59.7 -09.7 98.5	16 00.8 -09.6 98.3	15 01.9 -09.5 98.2
7°	18 47.4 -10.5 99.9	17 48.7 -10.3 99.7	16 50.0 -10.1 99.5	15 51.2 -09.9 99.4	14 52.4 -09.7 99.2
8°	18 36.9 -10.8 100.9	17 38.4 -10.6 100.7	16 39.9 -10.4 100.6	15 41.3 -10.2 100.4	14 42.7 -10.0 100.2
9°	18 26.1 -11.1 102.0	17 27.8 -10.9 101.8	16 29.5 -10.7 101.6	15 31.1 -10.4 101.4	14 32.7 -10.2 101.2
10°	18 15.0 -11.5 103.0	17 16.9 -11.2 102.8	16 18.8 -11.0 102.6	15 20.7 -10.8 102.4	14 22.5 -10.5 102.2
11°	18 03.5 -11.8 104.0	17 05.7 -11.6 103.8	16 07.8 -11.2 103.6	15 09.9 -11.0 103.4	14 12.0 -10.8 103.3
12°	17 51.7 -12.1 105.0	16 54.1 -11.8 104.8	15 56.6 -11.6 104.7	14 58.9 -11.3 104.5	14 01.2 -11.0 104.3
13°	17 39.6 -12.5 106.1	16 42.3 -12.1 105.9	15 45.0 -11.9 105.7	14 47.6 -11.5 105.5	13 50.2 -11.3 105.3
14°	17 27.1 -12.7 107.1	16 30.2 -12.5 106.9	15 33.1 -12.1 106.7	14 36.1 -11.8 106.5	13 38.9 -11.5 106.3
15°	17 14.4 -13.1 108.1	16 17.7 -12.7 107.9	15 21.0 -12.4 107.7	14 24.3 -12.1 107.5	13 27.4 -11.7 107.3
16°	17 01.3 -13.4 109.1	16 05.0 -13.0 108.9	15 08.6 -12.7 108.7	14 12.2 -12.3 108.5	13 15.7 -12.0 108.3
17°	16 47.9 -13.7 110.2	15 52.0 -13.3 109.9	14 55.9 -12.9 109.7	13 59.9 -12.6 109.5	13 03.7 -12.2 109.3
18°	16 34.2 -13.9 111.2	15 38.7 -13.6 111.0	14 43.0 -13.2 110.7	13 47.3 -12.8 110.5	12 51.5 -12.5 110.3
19°	16 20.3 -14.3 112.2	15 25.1 -13.9 112.0	14 29.8 -13.4 111.7	13 34.5 -13.1 111.5	12 39.0 -12.7 111.3
20°	16 06.0 -14.5 113.2	15 11.2 -14.1 113.0	14 16.4 -13.8 112.8	13 21.4 -13.3 112.5	12 26.3 -12.8 112.3
21°	15 51.5 -14.9 114.2	14 57.1 -14.4 114.0	14 02.6 -13.9 113.8	13 08.1 -13.5 113.5	12 13.5 -13.2 113.3
22°	15 36.6 -15.1 115.2	14 42.7 -14.6 115.0	13 48.7 -14.2 114.8	12 54.6 -13.8 114.5	12 00.3 -13.3 114.3
23°	15 21.5 -15.3 116.2	14 28.1 -14.9 116.0	13 34.5 -14.5 115.8	12 40.8 -14.0 115.5	11 47.0 -13.5 115.3
24°	15 06.2 -15.7 117.2	14 13.2 -15.2 117.0	13 20.0 -14.6 116.8	12 26.8 -14.2 116.5	11 33.5 -13.7 116.3
25°	14 50.5 -15.8 118.2	13 58.0 -15.4 118.0	13 05.4 -14.9 117.8	12 12.6 -14.4 117.5	11 19.8 -14.0 117.3
26°	14 34.7 -16.2 119.2	13 42.6 -15.6 119.0	12 50.5 -15.2 118.7	11 58.2 -14.6 118.5	11 05.8 -14.1 118.3
27°	14 18.5 -16.4 120.2	13 27.0 -15.9 120.0	12 35.3 -15.3 119.7	11 43.6 -14.9 119.5	10 51.7 -14.3 119.3
28°	14 02.1 -16.6 121.2	13 11.1 -16.1 121.0	12 20.0 -15.6 120.7	11 28.7 -15.0 120.5	10 37.4 -14.5 120.3
29°	13 45.5 -16.9 122.2	12 55.0 -16.3 122.0	12 04.4 -15.7 121.7	11 13.7 -15.2 121.5	10 22.9 -14.7 121.3

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	14 53.1 -07.7 91.9	13 53.6 -07.6 91.7	12 54.1 -07.6 91.6	11 54.6 -07.6 91.5	10 55.0 -07.5 91.4
1°	14 45.4 -07.9 92.9	13 46.0 -08.0 92.8	12 46.5 -07.9 92.6	11 47.0 -07.8 92.5	10 47.5 -07.8 92.4
2°	14 37.5 -08.3 93.9	13 38.0 -08.1 93.8	12 38.6 -08.1 93.6	11 39.2 -08.0 93.5	10 39.7 -07.9 93.4
3°	14 29.2 -08.5 94.9	13 29.9 -08.4 94.8	12 30.5 -08.3 94.7	11 31.2 -08.2 94.5	10 31.8 -08.1 94.4
4°	14 20.7 -08.8 96.0	13 21.5 -08.7 95.8	12 22.2 -08.5 95.7	11 23.0 -08.5 95.5	10 23.7 -08.3 95.4
5°	14 11.9 -09.0 97.0	13 12.8 -08.9 96.8	12 13.7 -08.8 96.7	11 14.5 -08.6 96.5	10 15.4 -08.5 96.4
6°	14 02.9 -09.3 98.0	13 03.9 -09.1 97.9	12 04.9 -09.0 97.7	11 05.9 -08.8 97.6	10 06.9 -08.7 97.4
7°	13 53.6 -09.5 99.0	12 54.8 -09.4 98.9	11 55.9 -09.1 98.7	10 57.1 -09.1 98.6	9 58.2 -08.9 98.4
8°	13 44.1 -09.8 100.0	12 45.4 -09.6 99.9	11 46.8 -09.5 99.7	10 48.0 -09.2 99.6	9 49.3 -09.0 99.4
9°	13 34.3 -10.0 101.1	12 35.8 -09.8 100.9	11 37.3 -09.6 100.7	10 38.8 -09.4 100.6	9 40.3 -09.3 100.4
10°	13 24.3 -10.3 102.1	12 26.0 -10.0 101.9	11 27.7 -09.8 101.7	10 29.4 -09.6 101.6	9 31.0 -09.3 101.4
11°	13 14.0 -10.5 103.1	12 16.0 -10.3 102.9	11 17.9 -10.0 102.7	10 19.8 -09.8 102.6	9 21.7 -09.6 102.4
12°	13 03.5 -10.8 104.1	12 05.7 -10.5 103.9	11 07.9 -10.3 103.7	10 10.0 -10.0 103.6	9 12.1 -09.7 103.4
13°	12 52.7 -10.9 105.1	11 55.2 -10.7 104.9	10 57.6 -10.4 104.8	10 00.0 -10.1 104.6	9 02.4 -09.9 104.4
14°	12 41.8 -11.3 106.1	11 44.5 -10.9 105.9	10 47.2 -10.6 105.8	9 49.9 -10.3 105.6	8 52.5 -10.0 105.4
15°	12 30.5 -11.4 107.1	11 33.6 -11.1 106.9	10 36.6 -10.8 106.8	9 39.6 -10.5 106.6	8 42.5 -10.2 106.4
16°	12 19.1 -11.6 108.1	11 22.5 -11.3 107.9	10 25.8 -11.0 107.8	9 29.1 -10.7 107.6	8 32.3 -10.4 107.4
17°	12 07.5 -11.9 109.1	11 11.2 -11.6 108.9	10 14.8 -11.2 108.8	9 18.4 -10.9 108.6	8 21.9 -10.5 108.4
18°	11 55.6 -12.1 110.1	10 59.6 -11.7 109.9	10 03.6 -11.3 109.8	9 07.5 -11.0 109.6	8 11.4 -10.6 109.4
19°	11 43.5 -12.3 111.1	10 47.9 -11.9 110.9	9 52.3 -11.6 110.8	8 56.5 -11.1 110.6	8 00.8 -10.8 110.4
20°	11 31.2 -12.5 112.1	10 36.0 -12.1 111.9	9 40.7 -11.7 111.7	8 45.4 -11.3 111.6	7 50.0 -11.0 111.4
21°	11 18.7 -12.7 113.1	10 23.9 -12.3 112.9	9 29.0 -11.8 112.7	8 34.1 -11.5 112.6	7 39.0 -11.0 112.4
22°	11 06.0 -12.9 114.1	10 11.6 -12.4 113.9	9 17.2 -12.1 113.7	8 22.6 -11.6 113.6	7 28.0 -11.2 113.4
23°	10 53.1 -13.0 115.1	9 59.2 -12.7 114.9	9 05.1 -12.2 114.7	8 11.0 -11.8 114.5	7 16.8 -11.3 114.4
24°	10 40.1 -13.3 116.1	9 46.5 -12.8 115.9	8 52.9 -12.3 115.7	7 59.2 -11.9 115.5	7 05.5 -11.5 115.4
25°	10 26.8 -13.5 117.1	9 33.7 -12.9 116.9	8 40.6 -12.5 116.7	7 47.3 -12.0 116.5	6 54.0 -11.6 116.3
26°	10 13.3 -13.6 118.1	9 20.8 -13.2 117.9	8 28.1 -12.7 117.7	7 35.3 -12.2 117.5	6 42.4 -11.7 117.3
27°	9 59.7 -13.8 119.1	9 07.6 -13.3 118.9	8 15.4 -12.8 118.7	7 23.1 -12.3 118.5	6 30.7 -11.8 118.3
28°	9 45.9 -14.0 120.1	8 54.3 -13.5 119.9	8 02.6 -12.9 119.7	7 10.8 -12.4 119.5	6 18.9 -11.9 119.3
29°	9 31.9 -14.1 121.1	8 40.8 -13.6 120.9	7 49.7 -13.1 120.7	6 58.4 -12.6 120.5	6 07.0 -12.0 120.3

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 55.5 -07.5 91.2	8 55.9 -07.4 91.1	7 56.4 -07.5 91.0	6 56.9 -07.5 90.9	5 57.3 -07.4 90.7
1°	9 48.0 -07.7 92.2	8 48.5 -07.7 92.1	7 48.9 -07.6 92.0	6 49.4 -07.5 91.9	5 49.9 -07.5 91.7
2°	9 40.3 -07.9 93.2	8 40.8 -07.8 93.1	7 41.3 -07.7 93.0	6 41.9 -07.7 92.9	5 42.4 -07.6 92.7
3°	9 32.4 -08.0 94.2	8 33.0 -07.9 94.1	7 33.6 -07.9 94.0	6 34.2 -07.8 93.9	5 34.8 -07.7 93.7
4°	9 24.4 -08.2 95.3	8 25.1 -08.1 95.1	7 25.7 -08.0 95.0	6 26.4 -07.9 94.9	5 27.1 -07.8 94.7
5°	9 16.2 -08.4 96.3	8 17.0 -08.3 96.1	7 17.7 -08.1 96.0	6 18.5 -08.0 95.8	5 19.3 -08.0 95.7
6°	9 07.8 -08.6 97.3	8 08.7 -08.4 97.1	7 09.6 -08.3 97.0	6 10.5 -08.2 96.8	5 11.3 -08.0 96.7
7°	8 59.2 -08.7 98.3	8 00.3 -08.5 98.1	7 01.3 -08.4 98.0	6 02.3 -08.2 97.8	5 03.3 -08.1 97.7
8°	8 50.5 -08.8 99.3	7 51.8 -08.7 99.1	6 52.9 -08.5 99.0	5 54.1 -08.3 98.8	4 55.2 -08.1 98.7
9°	8 41.7 -09.0 100.3	7 43.1 -08.9 100.1	6 44.4 -08.6 100.0	5 45.8 -08.5 99.8	4 47.1 -08.3 99.7
10°	8 32.7 -09.2 101.3	7 34.2 -08.9 101.1	6 35.8 -08.8 101.0	5 37.3 -08.5 100.8	4 38.8 -08.4 100.7
11°	8 23.5 -09.3 102.3	7 25.3 -09.1 102.1	6 27.0 -08.8 102.0	5 28.8 -08.7 101.8	4 30.4 -08.4 101.7
12°	8 14.2 -09.5 103.3	7 16.2 -09.3 103.1	6 18.2 -09.0 103.0	5 20.1 -08.7 102.8	4 22.0 -08.5 102.7
13°	8 04.7 -09.6 104.3	7 06.9 -09.3 104.1	6 09.2 -09.1 104.0	5 11.4 -08.9 103.8	4 13.5 -08.6 103.7
14°	7 55.1 -09.8 105.3	6 57.6 -09.5 105.1	6 00.1 -09.2 105.0	5 02.5 -08.9 104.8	4 04.9 -08.6 104.7
15°	7 45.3 -09.9 106.3	6 48.1 -09.6 106.1	5 50.9 -09.3 105.9	4 53.6 -09.0 105.8	3 56.3 -08.8 105.7
16°	7 35.4 -10.0 107.2	6 38.5 -09.7 107.1	5 41.6 -09.4 106.9	4 44.6 -09.1 106.8	3 47.5 -08.8 106.6
17°	7 25.4 -10.2 108.2	6 28.8 -09.8 108.1	5 32.2 -09.6 107.9	4 35.5 -09.2 107.8	3 38.7 -08.8 107.6
18°	7 15.2 -10.3 109.2	6 19.0 -10.0 109.1	5 22.6 -09.6 108.9	4 26.3 -09.3 108.8	3 29.9 -09.0 108.6
19°	7 04.9 -10.4 110.2	6 09.0 -10.1 110.1	5 13.0 -09.7 109.9	4 17.0 -09.3 109.8	3 20.9 -08.9 109.6
20°	6 54.5 -10.6 111.2	5 58.9 -10.1 111.1	5 03.3 -09.7 110.9	4 07.7 -09.4 110.8	3 12.0 -09.1 110.6
21°	6 43.9 -10.6 112.2	5 48.8 -10.3 112.1	4 53.6 -09.9 111.9	3 58.3 -09.5 111.7	3 02.9 -09.1 111.6
22°	6 33.3 -10.8 113.2	5 38.5 -10.4 113.0	4 43.7 -10.0 112.9	3 48.8 -09.6 112.7	2 53.8 -09.1 112.6
23°	6 22.5 -10.9 114.2	5 28.1 -10.4 114.0	4 33.7 -10.0 113.9	3 39.2 -09.6 113.7	2 44.7 -09.2 113.6
24°	6 11.6 -11.0 115.2	5 17.7 -10.6 115.0	4 23.7 -10.1 114.9	3 29.6 -09.7 114.7	2 35.5 -09.3 114.6
25°	6 00.6 -11.1 116.2	5 07.1 -10.6 116.0	4 13.6 -10.2 115.9	3 19.9 -09.7 115.7	2 26.2 -09.3 115.6
26°	5 49.5 -11.2 117.2	4 56.5 -10.8 117.0	4 03.4 -10.3 116.8	3 10.2 -09.8 116.7	2 16.9 -09.3 116.5
27°	5 38.3 -11.3 118.1	4 45.7 -10.8 118.0	3 53.1 -10.3 117.8	3 00.4 -09.9 117.7	2 07.6 -09.3 117.5
28°	5 27.0 -11.5 119.1	4 34.9 -10.9 119.0	3 42.8 -10.4 118.8	2 50.5 -09.9 118.7	1 58.3 -09.5 118.5
29°	5 15.5 -11.5 120.1	4 24.0 -11.0 120.0	3 32.4 -10.5 119.8	2 40.6 -09.9 119.7	1 48.8 -09.4 119.5

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 57.8 -07.4 90.6	3 58.2 -07.4 90.5	2 58.7 -07.4 90.4	1 59.1 -07.3 90.2	0 59.6 -07.4 90.1
1°	4 50.4 -07.5 91.6	3 50.8 -07.4 91.5	2 51.3 -07.4 91.4	1 51.8 -07.4 91.2	0 52.2 -07.3 91.1
2°	4 42.9 -07.6 92.6	3 43.4 -07.5 92.5	2 43.9 -07.4 92.4	1 44.4 -07.4 92.2	0 44.9 -07.4 92.1
3°	4 35.3 -07.6 93.6	3 35.9 -07.6 93.5	2 36.5 -07.5 93.3	1 37.0 -07.4 93.2	0 37.5 -07.3 93.1
4°	4 27.7 -07.7 94.6	3 28.3 -07.6 94.5	2 29.0 -07.6 94.3	1 29.6 -07.5 94.2	0 30.2 -07.4 94.1
5°	4 20.0 -07.8 95.6	3 20.7 -07.7 95.5	2 21.4 -07.6 95.3	1 22.1 -07.5 95.2	0 22.8 -07.4 95.1
6°	4 12.2 -07.9 96.6	3 13.0 -07.7 96.5	2 13.8 -07.6 96.3	1 14.6 -07.5 96.2	0 15.4 -07.4 96.1
7°	4 04.3 -07.9 97.6	3 05.3 -07.8 97.4	2 06.2 -07.6 97.3	1 07.1 -07.5 97.2	0 08.0 -07.3 97.1
8°	3 56.4 -08.0 98.6	2 57.5 -07.9 98.4	1 58.6 -07.7 98.3	0 59.6 -07.5 98.2	0 00.7 -07.4 98.1
9°	3 48.4 -08.1 99.6	2 49.6 -07.9 99.4	1 50.9 -07.8 99.3	0 52.1 -07.6 99.2	-0 06.7 -07.4
10°	3 40.3 -08.2 100.6	2 41.7 -07.9 100.4	1 43.1 -07.7 100.3	0 44.5 -07.5 100.2	-0 14.1 -07.4
11°	3 32.1 -08.2 101.5	2 33.8 -08.0 101.4	1 35.4 -07.8 101.3	0 37.0 -07.6 101.2	-0 21.5 -07.4
12°	3 23.9 -08.3 102.5	2 25.8 -08.1 102.4	1 27.6 -07.8 102.3	0 29.4 -07.6 102.2	-0 28.9 -07.3
13°	3 15.6 -08.3 103.5	2 17.7 -08.1 103.4	1 19.8 -07.9 103.3	0 21.8 -07.6 103.1	-0 36.2 -07.4
14°	3 07.3 -08.4 104.5	2 09.6 -08.1 104.4	1 11.9 -07.8 104.3	0 14.2 -07.6 104.1	-0 43.6 -07.3
15°	2 58.9 -08.4 105.5	2 01.5 -08.2 105.4	1 04.1 -07.9 105.3	0 06.6 -07.6 105.1	-0 50.9 -07.3
16°	2 50.5 -08.5 106.5	1 53.3 -08.2 106.4	0 56.2 -07.9 106.2	-0 01.0 -07.6	-0 58.2 -07.3
17°	2 42.0 -08.6 107.5	1 45.1 -08.2 107.4	0 48.3 -07.9 107.2	-0 08.6 -07.6	-1 05.5 -07.3
18°	2 33.4 -08.6 108.5	1 36.9 -08.2 108.4	0 40.4 -08.0 108.2	-0 16.2 -07.6	-1 12.8 -07.3
19°	2 24.8 -08.6 109.5	1 28.7 -08.3 109.3	0 32.4 -07.9 109.2	-0 23.8 -07.6	-1 20.1 -07.2
20°	2 16.2 -08.7 110.5	1 20.4 -08.3 110.3	0 24.5 -07.9 110.2	-0 31.4 -07.6	-1 27.3 -07.3
21°	2 07.5 -08.7 111.5	1 12.1 -08.4 111.3	0 16.6 -08.0 111.2	-0 39.0 -07.5	-1 34.6 -07.1
22°	1 58.8 -08.7 112.5	1 03.7 -08.3 112.3	0 08.6 -07.9 112.2	-0 46.5 -07.6	-1 41.7 -07.2
23°	1 50.1 -08.8 113.4	0 55.4 -08.4 113.3	0 00.7 -08.0 113.2	-0 54.1 -07.5	-1 48.9 -07.1
24°	1 41.3 -08.8 114.4	0 47.0 -08.3 114.3	-0 07.3 -07.9	-1 01.6 -07.5	-1 56.0 -07.1
25°	1 32.5 -08.9 115.4	0 38.7 -08.4 115.3	-0 15.2 -08.0	-1 09.1 -07.5	-2 03.1 -07.1
26°	1 23.6 -08.8 116.4	0 30.3 -08.4 116.3	-0 23.2 -07.9	-1 16.6 -07.5	-2 10.2 -07.0
27°	1 14.8 -08.9 117.4	0 21.9 -08.4 117.3	-0 31.1 -07.9	-1 24.1 -07.5	-2 17.2 -07.0
28°	1 05.9 -08.9 118.4	0 13.5 -08.4 118.3	-0 39.0 -07.9	-1 31.6 -07.4	-2 24.2 -06.9
29°	0 57.0 -08.9 119.4	0 05.1 -08.4 119.3	-0 46.9 -07.9	-1 39.0 -07.4	-2 31.1 -06.9

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 -07.3 90.0	-0 59.6 -07.3			
1°	-0 07.3 -07.3	-1 06.9 -07.2			
2°	-0 14.6 -07.3	-1 14.1 -07.3			
3°	-0 21.9 -07.3	-1 21.4 -07.2			
4°	-0 29.2 -07.3	-1 28.6 -07.2			
5°	-0 36.5 -07.3	-1 35.8 -07.2			
6°	-0 43.8 -07.3	-1 43.0 -07.2			
7°	-0 51.1 -07.2	-1 50.2 -07.1			
8°	-0 58.3 -07.2	-1 57.3 -07.1			
9°	-1 05.5 -07.3	-2 04.4 -07.0			
10°	-1 12.8 -07.1	-2 11.4 -07.0			
11°	-1 19.9 -07.2	-2 18.4 -07.0			
12°	-1 27.1 -07.2	-2 25.4 -06.9			
13°	-1 34.3 -07.1	-2 32.3 -06.9			
14°	-1 41.4 -07.1	-2 39.2 -06.8			
15°	-1 48.5 -07.0	-2 46.0 -06.8			
16°	-1 55.5 -07.0	-2 52.8 -06.7			
17°	-2 02.5 -07.0	-2 59.5 -06.7			
18°	-2 09.5 -06.9	-3 06.2 -06.6			
19°	-2 16.4 -06.9	-3 12.8 -06.6			
20°	-2 23.3 -06.9	-3 19.4 -06.5			
21°	-2 30.2 -06.8	-3 25.9 -06.4			
22°	-2 37.0 -06.8	-3 32.3 -06.4			
23°	-2 43.8 -06.7	-3 38.7 -06.3			
24°	-2 50.5 -06.6	-3 45.0 -06.2			
25°	-2 57.1 -06.6	-3 51.2 -06.2			
26°	-3 03.7 -06.6	-3 57.4 -06.1			
27°	-3 10.3 -06.5	-4 03.5 -06.0			
28°	-3 16.8 -06.4	-4 09.5 -05.9			
29°	-3 23.2 -06.4	-4 15.4 -05.9			

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°					
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°					

Declination CONTRARY name to Latitude

Latitude 8°

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°	82 00.0 -60.0 180.0	81 56.3 -59.6 172.9	81 45.3 -58.4 165.9	81 27.6 -56.6 159.4	81 03.7 -54.3 153.3
1°	81 00.0 -60.0 180.0	80 56.7 -59.7 173.6	80 46.9 -58.7 167.4	80 31.0 -57.3 161.5	80 09.4 -55.4 155.9
2°	80 00.0 -60.0 180.0	79 57.0 -59.7 174.3	79 48.2 -59.0 168.6	79 33.7 -57.7 163.2	79 14.0 -56.1 158.1
3°	79 00.0 -60.0 180.0	78 57.3 -59.8 174.8	78 49.2 -59.1 169.6	78 36.0 -58.1 164.7	78 17.9 -56.7 159.9
4°	78 00.0 -60.0 180.0	77 57.5 -59.8 175.2	77 50.1 -59.2 170.5	77 37.9 -58.3 165.9	77 21.2 -57.1 161.5
5°	77 00.0 -60.0 180.0	76 57.7 -59.8 175.6	76 50.9 -59.4 171.2	76 39.6 -58.6 166.9	76 24.1 -57.5 162.8
6°	76 00.0 -60.0 180.0	75 57.9 -59.9 175.9	75 51.5 -59.4 171.8	75 41.0 -58.7 167.8	75 26.6 -57.9 164.0
7°	75 00.0 -60.0 180.0	74 58.0 -59.9 176.2	74 52.1 -59.5 172.4	74 42.3 -58.9 168.6	74 28.7 -58.1 165.0
8°	74 00.0 -60.0 180.0	73 58.1 -59.9 176.4	73 52.6 -59.6 172.9	73 43.4 -59.0 169.3	73 30.6 -58.3 165.9
9°	73 00.0 -60.0 180.0	72 58.2 -59.9 176.6	72 53.0 -59.6 173.3	72 44.4 -59.2 170.0	72 32.3 -58.4 166.7
10°	72 00.0 -60.0 180.0	71 58.3 -59.9 176.8	71 53.4 -59.6 173.7	71 45.2 -59.2 170.5	71 33.9 -58.6 167.5
11°	71 00.0 -60.0 180.0	70 58.4 -59.9 177.0	70 53.8 -59.7 174.0	70 46.0 -59.3 171.0	70 35.3 -58.8 168.1
12°	70 00.0 -60.0 180.0	69 58.5 -59.9 177.1	69 54.1 -59.7 174.3	69 46.7 -59.3 171.5	69 36.5 -58.9 168.7
13°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.3	68 54.4 -59.8 174.6	68 47.4 -59.4 171.9	68 37.6 -58.9 169.3
14°	68 00.0 -60.0 180.0	67 58.7 -60.0 177.4	67 54.6 -59.7 174.8	67 48.0 -59.5 172.3	67 38.7 -59.1 169.7
15°	67 00.0 -60.0 180.0	66 58.7 -59.9 177.5	66 54.9 -59.8 175.1	66 48.5 -59.5 172.6	66 39.6 -59.1 170.2
16°	66 00.0 -60.0 180.0	65 58.8 -60.0 177.6	65 55.1 -59.8 175.3	65 49.0 -59.5 172.9	65 40.5 -59.2 170.6
17°	65 00.0 -60.0 180.0	64 58.8 -59.9 177.7	64 55.3 -59.8 175.5	64 49.5 -59.6 173.2	64 41.3 -59.2 171.0
18°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.8	63 55.5 -59.8 175.7	63 49.9 -59.6 173.5	63 42.1 -59.3 171.4
19°	63 00.0 -60.0 180.0	62 58.9 -59.9 177.9	62 55.7 -59.8 175.8	62 50.3 -59.6 173.8	62 42.8 -59.3 171.7
20°	62 00.0 -60.0 180.0	61 59.0 -60.0 178.0	61 55.9 -59.9 176.0	61 50.7 -59.7 174.0	61 43.5 -59.4 172.0
21°	61 00.0 -60.0 180.0	60 59.0 -60.0 178.1	60 56.0 -59.8 176.2	60 51.0 -59.6 174.2	60 44.1 -59.4 172.3
22°	60 00.0 -60.0 180.0	59 59.0 -59.9 178.1	59 56.2 -59.9 176.3	59 51.4 -59.7 174.5	59 44.7 -59.5 172.6
23°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.2	58 56.3 -59.9 176.4	58 51.7 -59.7 174.7	58 45.2 -59.4 172.9
24°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.3	57 56.4 -59.8 176.6	57 52.0 -59.8 174.8	57 45.8 -59.6 173.1
25°	57 00.0 -60.0 180.0	56 59.1 -59.9 178.3	56 56.6 -59.9 176.7	56 52.2 -59.7 175.0	56 46.2 -59.5 173.4
26°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.4	55 56.7 -59.9 176.8	55 52.5 -59.7 175.2	55 46.7 -59.5 173.6
27°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.4	54 56.8 -59.9 176.9	54 52.8 -59.8 175.4	54 47.2 -59.6 173.8
28°	54 00.0 -60.0 180.0	53 59.2 -60.0 178.5	53 56.9 -59.9 177.0	53 53.0 -59.8 175.5	53 47.6 -59.6 174.0
29°	53 00.0 -60.0 180.0	52 59.2 -59.9 178.5	52 57.0 -59.9 177.1	52 53.2 -59.8 175.6	52 48.0 -59.6 174.2

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	80 34.5 -51.8 147.8	80 00.7 -49.1 142.9	79 23.1 -46.5 138.6	78 42.3 -43.9 134.7	77 58.8 -41.4 131.3
1°	79 42.7 -53.2 150.8	79 11.6 -50.8 146.1	78 36.6 -48.4 141.9	77 58.4 -46.0 138.1	77 17.4 -43.7 134.7
2°	78 49.5 -54.2 153.3	78 20.8 -52.2 148.9	77 48.2 -49.9 144.8	77 12.4 -47.8 141.1	76 33.7 -45.6 137.7
3°	77 55.3 -55.0 155.4	77 28.6 -53.2 151.2	76 58.3 -51.3 147.3	76 24.6 -49.3 143.7	75 48.1 -47.3 140.4
4°	77 00.3 -55.7 157.3	76 35.4 -54.1 153.3	76 07.0 -52.4 149.6	75 35.3 -50.5 146.1	75 00.8 -48.7 142.9
5°	76 04.6 -56.3 158.8	75 41.3 -54.8 155.1	75 14.6 -53.3 151.5	74 44.8 -51.6 148.2	74 12.1 -49.9 145.1
6°	75 08.3 -56.7 160.2	74 46.5 -55.4 156.7	74 21.3 -54.0 153.3	73 53.2 -52.5 150.1	73 22.2 -51.0 147.1
7°	74 11.6 -57.1 161.5	73 51.1 -56.0 158.1	73 27.3 -54.6 154.9	73 00.7 -53.3 151.8	72 31.2 -51.8 148.9
8°	73 14.5 -57.4 162.6	72 55.1 -56.3 159.4	72 32.7 -55.2 156.3	72 07.4 -53.9 153.3	71 39.4 -52.6 150.5
9°	72 17.1 -57.6 163.6	71 58.8 -56.7 160.5	71 37.5 -55.6 157.6	71 13.5 -54.5 154.7	70 46.8 -53.2 152.0
10°	71 19.5 -57.9 164.5	71 02.1 -57.1 161.5	70 41.9 -56.1 158.7	70 19.0 -55.0 156.0	69 53.6 -53.9 153.4
11°	70 21.6 -58.1 165.3	70 05.0 -57.2 162.5	69 45.8 -56.4 159.8	69 24.0 -55.4 157.2	68 59.7 -54.3 154.6
12°	69 23.5 -58.3 166.0	69 07.8 -57.6 163.3	68 49.4 -56.7 160.7	68 28.6 -55.8 158.2	68 05.4 -54.8 155.8
13°	68 25.2 -58.4 166.7	68 10.2 -57.7 164.1	67 52.7 -56.9 161.6	67 32.8 -56.1 159.2	67 10.6 -55.2 156.9
14°	67 26.8 -58.5 167.3	67 12.5 -57.9 164.8	66 55.8 -57.2 162.4	66 36.7 -56.4 160.1	66 15.4 -55.6 157.9
15°	66 28.3 -58.6 167.8	66 14.6 -58.1 165.5	65 58.6 -57.4 163.2	65 40.3 -56.7 161.0	65 19.8 -55.9 158.8
16°	65 29.7 -58.8 168.3	65 16.5 -58.2 166.1	65 01.2 -57.6 163.9	64 43.6 -56.9 161.7	64 23.9 -56.1 159.6
17°	64 30.9 -58.8 168.8	64 18.3 -58.3 166.7	64 03.6 -57.8 164.5	63 46.7 -57.1 162.5	63 27.8 -56.4 160.4
18°	63 32.1 -58.9 169.3	63 20.0 -58.4 167.2	63 05.8 -57.9 165.2	62 49.6 -57.3 163.2	62 31.4 -56.6 161.2
19°	62 33.2 -58.9 169.7	62 21.6 -58.6 167.7	62 07.9 -58.0 165.7	61 52.3 -57.5 163.8	61 34.8 -56.9 161.9
20°	61 34.3 -59.1 170.1	61 23.0 -58.6 168.2	61 09.9 -58.2 166.3	60 54.8 -57.6 164.4	60 37.9 -57.0 162.6
21°	60 35.2 -59.1 170.5	60 24.4 -58.7 168.6	60 11.7 -58.2 166.8	59 57.2 -57.7 165.0	59 40.9 -57.2 163.2
22°	59 36.1 -59.1 170.8	59 25.7 -58.8 169.0	59 13.5 -58.4 167.2	58 59.5 -57.9 165.5	58 43.7 -57.3 163.8
23°	58 37.0 -59.2 171.1	58 26.9 -58.8 169.4	58 15.1 -58.4 167.7	58 01.6 -58.0 166.0	57 46.4 -57.5 164.3
24°	57 37.8 -59.3 171.4	57 28.1 -58.9 169.8	57 16.7 -58.5 168.1	57 03.6 -58.1 166.5	56 48.9 -57.6 164.9
25°	56 38.5 -59.2 171.7	56 29.2 -59.0 170.1	56 18.2 -58.6 168.5	56 05.5 -58.2 166.9	55 51.3 -57.7 165.4
26°	55 39.3 -59.3 172.0	55 30.2 -59.0 170.5	55 19.6 -58.7 168.9	55 07.3 -58.2 167.4	54 53.6 -57.9 165.8
27°	54 40.0 -59.4 172.3	54 31.2 -59.1 170.8	54 20.9 -58.7 169.3	54 09.1 -58.4 167.8	53 55.7 -57.9 166.3
28°	53 40.6 -59.4 172.5	53 32.1 -59.1 171.1	53 22.2 -58.8 169.6	53 10.7 -58.4 168.2	52 57.8 -58.0 166.7
29°	52 41.2 -59.4 172.8	52 33.0 -59.1 171.4	52 23.4 -58.9 169.9	52 12.3 -58.5 168.5	51 59.8 -58.1 167.2

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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°	77 13.2 -39.1 128.3	76 25.7 -37.0 125.6	75 36.6 -34.9 123.2	74 46.3 -33.1 121.1	73 54.9 -31.4 119.2
1°	76 34.1 -41.5 131.6	75 48.7 -39.4 128.9	75 01.7 -37.5 126.4	74 13.2 -35.6 124.2	73 23.5 -34.0 122.2
2°	75 52.6 -43.6 134.7	75 09.3 -41.5 131.9	74 24.2 -39.6 129.4	73 37.6 -37.9 127.1	72 49.5 -36.1 125.0
3°	75 09.0 -45.3 137.4	74 27.8 -43.4 134.7	73 44.6 -41.6 132.1	72 59.7 -39.8 129.8	72 13.4 -38.2 127.7
4°	74 23.7 -46.9 139.9	73 44.4 -45.1 137.2	73 03.0 -43.3 134.6	72 19.9 -41.6 132.3	71 35.2 -40.0 130.2
5°	73 36.8 -48.2 142.2	72 59.3 -46.5 139.5	72 19.7 -44.8 137.0	71 38.3 -43.2 134.7	70 55.2 -41.6 132.5
6°	72 48.6 -49.3 144.2	72 12.8 -47.7 141.6	71 34.9 -46.2 139.1	70 55.1 -44.6 136.8	70 13.6 -43.0 134.7
7°	71 59.3 -50.3 146.1	71 25.1 -48.9 143.5	70 48.7 -47.3 141.1	70 10.5 -45.8 138.8	69 30.6 -44.4 136.7
8°	71 09.0 -51.3 147.8	70 36.2 -49.8 145.3	70 01.4 -48.4 142.9	69 24.7 -47.0 140.7	68 46.2 -45.6 138.6
9°	70 17.7 -51.9 149.4	69 46.4 -50.6 147.0	69 13.0 -49.3 144.6	68 37.7 -48.0 142.4	68 00.6 -46.6 140.3
10°	69 25.8 -52.7 150.9	68 55.8 -51.4 148.5	68 23.7 -50.1 146.2	67 49.7 -48.8 144.1	67 14.0 -47.6 142.0
11°	68 33.1 -53.2 152.2	68 04.4 -52.1 149.9	67 33.6 -50.9 147.7	67 00.9 -49.7 145.6	66 26.4 -48.4 143.5
12°	67 39.9 -53.8 153.5	67 12.3 -52.7 151.2	66 42.7 -51.6 149.0	66 11.2 -50.4 147.0	65 38.0 -49.3 145.0
13°	66 46.1 -54.2 154.6	66 19.6 -53.2 152.4	65 51.1 -52.1 150.3	65 20.8 -51.0 148.3	64 48.7 -49.9 146.4
14°	65 51.9 -54.6 155.7	65 26.4 -53.6 153.5	64 59.0 -52.6 151.5	64 29.8 -51.7 149.5	63 58.8 -50.6 147.6
15°	64 57.3 -55.0 156.7	64 32.8 -54.1 154.6	64 06.4 -53.2 152.6	63 38.1 -52.1 150.7	63 08.2 -51.1 148.9
16°	64 02.3 -55.4 157.6	63 38.7 -54.5 155.6	63 13.2 -53.6 153.7	62 46.0 -52.7 151.8	62 17.1 -51.7 150.0
17°	63 06.9 -55.6 158.5	62 44.2 -54.8 156.5	62 19.6 -53.9 154.7	61 53.3 -53.0 152.8	61 25.4 -52.2 151.1
18°	62 11.3 -55.9 159.3	61 49.4 -55.2 157.4	61 25.7 -54.4 155.6	61 00.3 -53.5 153.8	60 33.2 -52.6 152.1
19°	61 15.4 -56.2 160.0	60 54.2 -55.4 158.2	60 31.3 -54.6 156.5	60 06.8 -53.9 154.7	59 40.6 -53.0 153.1
20°	60 19.2 -56.3 160.8	59 58.8 -55.7 159.0	59 36.7 -55.0 157.3	59 12.9 -54.2 155.6	58 47.6 -53.4 154.0
21°	59 22.9 -56.6 161.4	59 03.1 -55.9 159.7	58 41.7 -55.2 158.1	58 18.7 -54.4 156.4	57 54.2 -53.7 154.8
22°	58 26.3 -56.8 162.1	58 07.2 -56.1 160.4	57 46.5 -55.5 158.8	57 24.3 -54.8 157.2	57 00.5 -54.0 155.7
23°	57 29.5 -56.9 162.7	57 11.1 -56.4 161.1	56 51.0 -55.7 159.5	56 29.5 -55.0 158.0	56 06.5 -54.3 156.5
24°	56 32.6 -57.1 163.3	56 14.7 -56.5 161.7	55 55.3 -55.9 160.2	55 34.5 -55.3 158.7	55 12.2 -54.6 157.2
25°	55 35.5 -57.2 163.8	55 18.2 -56.7 162.3	54 59.4 -56.1 160.8	54 39.2 -55.5 159.4	54 17.6 -54.9 157.9
26°	54 38.3 -57.4 164.4	54 21.5 -56.8 162.9	54 03.3 -56.2 161.4	53 43.7 -55.7 160.0	53 22.7 -55.0 158.6
27°	53 40.9 -57.4 164.9	53 24.7 -57.0 163.4	53 07.1 -56.5 162.0	52 48.0 -55.8 160.6	52 27.7 -55.3 159.3
28°	52 43.5 -57.6 165.3	52 27.7 -57.1 163.9	52 10.6 -56.6 162.6	51 52.2 -56.1 161.2	51 32.4 -55.5 159.9
29°	51 45.9 -57.7 165.8	51 30.6 -57.2 164.4	51 14.0 -56.7 163.1	50 56.1 -56.2 161.8	50 36.9 -55.6 160.5

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	73 02.6 -29.9 117.4	72 09.5 -28.5 115.9	71 15.7 -27.2 114.5	70 21.4 -26.1 113.2	69 26.5 -24.9 112.0
1°	72 32.7 -32.4 120.4	71 41.0 -30.9 118.7	70 48.5 -29.5 117.2	69 55.3 -28.3 115.8	69 01.6 -27.2 114.6
2°	72 00.3 -34.5 123.1	71 10.1 -33.1 121.4	70 19.0 -31.8 119.8	69 27.0 -30.4 118.4	68 34.4 -29.2 117.0
3°	71 25.8 -36.6 125.8	70 37.0 -35.1 124.0	69 47.2 -33.7 122.3	68 56.6 -32.4 120.8	68 05.2 -31.2 119.4
4°	70 49.2 -38.5 128.2	70 01.9 -37.0 126.4	69 13.5 -35.5 124.7	68 24.2 -34.2 123.1	67 34.0 -33.0 121.7
5°	70 10.7 -40.1 130.5	69 24.9 -38.6 128.6	68 38.0 -37.3 126.9	67 50.0 -36.0 125.3	67 01.0 -34.6 123.8
6°	69 30.6 -41.5 132.7	68 46.3 -40.2 130.8	68 00.7 -38.8 129.0	67 14.0 -37.4 127.4	66 26.4 -36.2 125.9
7°	68 49.1 -43.0 134.7	68 06.1 -41.5 132.8	67 21.9 -40.2 131.1	66 36.6 -39.0 129.4	65 50.2 -37.7 127.9
8°	68 06.1 -44.2 136.6	67 24.6 -42.9 134.7	66 41.7 -41.5 133.0	65 57.6 -40.2 131.3	65 12.5 -39.0 129.7
9°	67 21.9 -45.3 138.4	66 41.7 -44.0 136.5	66 00.2 -42.7 134.8	65 17.4 -41.5 133.1	64 33.5 -40.3 131.5
10°	66 36.6 -46.3 140.1	65 57.7 -45.0 138.2	65 17.5 -43.8 136.5	64 35.9 -42.6 134.8	63 53.2 -41.4 133.2
11°	65 50.3 -47.2 141.6	65 12.7 -46.0 139.8	64 33.7 -44.8 138.1	63 53.3 -43.6 136.4	63 11.8 -42.5 134.9
12°	65 03.1 -48.1 143.1	64 26.7 -46.9 141.3	63 48.9 -45.8 139.6	63 09.7 -44.6 138.0	62 29.3 -43.4 136.4
13°	64 15.0 -48.8 144.5	63 39.8 -47.7 142.7	63 03.1 -46.5 141.1	62 25.1 -45.4 139.4	61 45.9 -44.4 137.9
14°	63 26.2 -49.5 145.8	62 52.1 -48.4 144.1	62 16.6 -47.4 142.4	61 39.7 -46.3 140.8	61 01.5 -45.2 139.3
15°	62 36.7 -50.1 147.1	62 03.7 -49.1 145.4	61 29.2 -48.0 143.7	60 53.4 -47.0 142.2	60 16.3 -45.9 140.6
16°	61 46.6 -50.7 148.3	61 14.6 -49.7 146.6	60 41.2 -48.7 145.0	60 06.4 -47.7 143.4	59 30.4 -46.7 141.9
17°	60 55.9 -51.2 149.4	60 24.9 -50.3 147.7	59 52.5 -49.3 146.1	59 18.7 -48.3 144.6	58 43.7 -47.4 143.1
18°	60 04.7 -51.7 150.4	59 34.6 -50.8 148.8	59 03.2 -49.9 147.3	58 30.4 -48.9 145.8	57 56.3 -47.9 144.3
19°	59 13.0 -52.2 151.4	58 43.8 -51.2 149.9	58 13.3 -50.4 148.3	57 41.5 -49.5 146.9	57 08.4 -48.6 145.4
20°	58 20.8 -52.5 152.4	57 52.6 -51.7 150.9	57 22.9 -50.8 149.4	56 52.0 -49.9 147.9	56 19.8 -49.0 146.5
21°	57 28.3 -53.0 153.3	57 00.9 -52.2 151.8	56 32.1 -51.3 150.3	56 02.1 -50.5 148.9	55 30.8 -49.6 147.5
22°	56 35.3 -53.2 154.2	56 08.7 -52.4 152.7	55 40.8 -51.7 151.3	55 11.6 -50.8 149.9	54 41.2 -50.0 148.5
23°	55 42.1 -53.6 155.0	55 16.3 -52.9 153.6	54 49.1 -52.0 152.2	54 20.8 -51.3 150.8	53 51.2 -50.5 149.5
24°	54 48.5 -53.9 155.8	54 23.4 -53.1 154.4	53 57.1 -52.4 153.0	53 29.5 -51.6 151.7	53 00.7 -50.8 150.4
25°	53 54.6 -54.2 156.5	53 30.3 -53.5 155.2	53 04.7 -52.7 153.8	52 37.9 -52.0 152.5	52 09.9 -51.3 151.2
26°	53 00.4 -54.4 157.3	52 36.8 -53.7 155.9	52 12.0 -53.1 154.6	51 45.9 -52.3 153.3	51 18.6 -51.5 152.1
27°	52 06.0 -54.6 158.0	51 43.1 -54.0 156.6	51 18.9 -53.3 155.4	50 53.6 -52.6 154.1	50 27.1 -51.9 152.9
28°	51 11.4 -54.9 158.6	50 49.1 -54.2 157.3	50 25.6 -53.6 156.1	50 01.0 -52.9 154.9	49 35.2 -52.2 153.7
29°	50 16.5 -55.0 159.3	49 54.9 -54.5 158.0	49 32.0 -53.8 156.8	49 08.1 -53.2 155.6	48 43.0 -52.5 154.4

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°	68 31.2 -23.9 110.9	67 35.5 -22.9 109.9	66 39.5 -22.1 109.0	65 43.2 -21.3 108.2	64 46.6 -20.6 107.4
1°	68 07.3 -26.1 113.4	67 12.6 -25.1 112.3	66 17.4 -24.2 111.3	65 21.9 -23.3 110.4	64 26.0 -22.4 109.5
2°	67 41.2 -28.1 115.8	66 47.5 -27.1 114.7	65 53.2 -26.0 113.6	64 58.6 -25.2 112.6	64 03.6 -24.4 111.7
3°	67 13.1 -30.0 118.1	66 20.4 -28.9 116.9	65 27.2 -27.9 115.8	64 33.4 -26.9 114.7	63 39.2 -26.0 113.8
4°	66 43.1 -31.8 120.3	65 51.5 -30.7 119.1	64 59.3 -29.7 117.9	64 06.5 -28.7 116.8	63 13.2 -27.7 115.8
5°	66 11.3 -33.5 122.4	65 20.8 -32.3 121.1	64 29.6 -31.3 119.9	63 37.8 -30.2 118.8	62 45.5 -29.3 117.7
6°	65 37.8 -35.0 124.5	64 48.5 -33.9 123.1	63 58.3 -32.8 121.9	63 07.6 -31.8 120.7	62 16.2 -30.8 119.6
7°	65 02.8 -36.5 126.4	64 14.6 -35.4 125.1	63 25.5 -34.2 123.8	62 35.8 -33.2 122.6	61 45.4 -32.2 121.4
8°	64 26.3 -37.8 128.3	63 39.2 -36.7 126.9	62 51.3 -35.6 125.6	62 02.6 -34.5 124.4	61 13.2 -33.5 123.2
9°	63 48.5 -39.1 130.1	63 02.5 -37.9 128.7	62 15.7 -36.8 127.3	61 28.1 -35.8 126.1	60 39.7 -34.8 124.9
10°	63 09.4 -40.3 131.8	62 24.6 -39.1 130.4	61 38.9 -38.1 129.0	60 52.3 -37.0 127.8	60 04.9 -35.9 126.6
11°	62 29.1 -41.3 133.4	61 45.5 -40.3 132.0	61 00.8 -39.1 130.6	60 15.3 -38.1 129.4	59 29.0 -37.1 128.2
12°	61 47.8 -42.3 134.9	61 05.2 -41.2 133.5	60 21.7 -40.2 132.2	59 37.2 -39.1 130.9	58 51.9 -38.1 129.7
13°	61 05.5 -43.3 136.4	60 24.0 -42.2 135.0	59 41.5 -41.2 133.7	58 58.1 -40.2 132.4	58 13.8 -39.2 131.2
14°	60 22.2 -44.1 137.8	59 41.8 -43.1 136.4	59 00.3 -42.0 135.1	58 17.9 -41.0 133.8	57 34.6 -40.0 132.6
15°	59 38.1 -45.0 139.2	58 58.7 -43.9 137.8	58 18.3 -42.9 136.5	57 36.9 -41.9 135.2	56 54.6 -41.0 134.0
16°	58 53.1 -45.6 140.5	58 14.8 -44.7 139.1	57 35.4 -43.7 137.8	56 55.0 -42.7 136.5	56 13.6 -41.7 135.3
17°	58 07.5 -46.4 141.7	57 30.1 -45.4 140.4	56 51.7 -44.4 139.1	56 12.3 -43.5 137.8	55 31.9 -42.6 136.6
18°	57 21.1 -47.0 142.9	56 44.7 -46.1 141.6	56 07.3 -45.2 140.3	55 28.8 -44.2 139.0	54 49.3 -43.2 137.8
19°	56 34.1 -47.6 144.1	55 58.6 -46.6 142.7	55 22.1 -45.7 141.4	54 44.6 -44.9 140.2	54 06.1 -43.9 139.0
20°	55 46.5 -48.2 145.2	55 12.0 -47.3 143.8	54 36.4 -46.4 142.6	53 59.7 -45.4 141.3	53 22.2 -44.6 140.2
21°	54 58.3 -48.7 146.2	54 24.7 -47.8 144.9	53 50.0 -47.0 143.7	53 14.3 -46.1 142.4	52 37.6 -45.2 141.3
22°	54 09.6 -49.2 147.2	53 36.9 -48.4 145.9	53 03.0 -47.4 144.7	52 28.2 -46.6 143.5	51 52.4 -45.8 142.4
23°	53 20.4 -49.6 148.2	52 48.5 -48.8 146.9	52 15.6 -48.0 145.7	51 41.6 -47.1 144.5	51 06.6 -46.2 143.4
24°	52 30.8 -50.1 149.1	51 59.7 -49.2 147.9	51 27.6 -48.4 146.7	50 54.5 -47.6 145.5	50 20.4 -46.8 144.4
25°	51 40.7 -50.4 150.0	51 10.5 -49.7 148.8	50 39.2 -48.9 147.6	50 06.9 -48.1 146.5	49 33.6 -47.3 145.4
26°	50 50.3 -50.9 150.9	50 20.8 -50.0 149.7	49 50.3 -49.3 148.5	49 18.8 -48.5 147.4	48 46.3 -47.7 146.3
27°	49 59.4 -51.1 151.7	49 30.8 -50.5 150.5	49 01.0 -49.7 149.4	48 30.3 -48.9 148.3	47 58.6 -48.1 147.2
28°	49 08.3 -51.5 152.5	48 40.3 -50.7 151.4	48 11.3 -50.0 150.3	47 41.4 -49.3 149.2	47 10.5 -48.6 148.1
29°	48 16.8 -51.8 153.3	47 49.6 -51.1 152.2	47 21.3 -50.4 151.1	46 52.1 -49.6 150.0	46 21.9 -48.9 149.0

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°	63 49.8 -19.9 106.6	62 52.7 -19.2 105.9	61 55.5 -18.6 105.3	60 58.1 -18.0 104.7	60 00.6 -17.6 104.1
1°	63 29.9 -21.7 108.7	62 33.5 -21.0 108.0	61 36.9 -20.4 107.3	60 40.1 -19.8 106.6	59 43.0 -19.1 106.0
2°	63 08.2 -23.5 110.8	62 12.5 -22.8 110.0	61 16.5 -22.0 109.3	60 20.3 -21.3 108.5	59 23.9 -20.8 107.9
3°	62 44.7 -25.2 112.8	61 49.7 -24.4 112.0	60 54.5 -23.6 111.2	59 59.0 -23.0 110.4	59 03.1 -22.2 109.7
4°	62 19.5 -26.8 114.8	61 25.3 -25.9 113.9	60 30.9 -25.2 113.1	59 36.0 -24.4 112.3	58 40.9 -23.7 111.5
5°	61 52.7 -28.4 116.7	60 59.4 -27.5 115.8	60 05.7 -26.7 114.9	59 11.6 -25.9 114.1	58 17.2 -25.2 113.3
6°	61 24.3 -29.8 118.6	60 31.9 -29.0 117.6	59 39.0 -28.1 116.7	58 45.7 -27.3 115.8	57 52.0 -26.5 115.0
7°	60 54.5 -31.3 120.4	60 02.9 -30.3 119.4	59 10.9 -29.4 118.4	58 18.4 -28.6 117.5	57 25.5 -27.8 116.7
8°	60 23.2 -32.5 122.1	59 32.6 -31.6 121.1	58 41.5 -30.8 120.1	57 49.8 -29.8 119.2	56 57.7 -29.0 118.3
9°	59 50.7 -33.8 123.8	59 01.0 -32.9 122.7	58 10.7 -31.9 121.7	57 20.0 -31.1 120.8	56 28.7 -30.3 119.9
10°	59 16.9 -35.0 125.4	58 28.1 -34.0 124.4	57 38.8 -33.1 123.3	56 48.9 -32.3 122.4	55 58.4 -31.4 121.4
11°	58 41.9 -36.1 127.0	57 54.1 -35.1 125.9	57 05.7 -34.3 124.9	56 16.6 -33.3 123.9	55 27.0 -32.4 122.9
12°	58 05.8 -37.2 128.5	57 19.0 -36.2 127.4	56 31.4 -35.2 126.4	55 43.3 -34.4 125.4	54 54.6 -33.5 124.4
13°	57 28.6 -38.1 130.0	56 42.8 -37.2 128.9	55 56.2 -36.3 127.8	55 08.9 -35.4 126.8	54 21.1 -34.5 125.9
14°	56 50.5 -39.1 131.4	56 05.6 -38.2 130.3	55 19.9 -37.2 129.2	54 33.5 -36.3 128.2	53 46.6 -35.5 127.2
15°	56 11.4 -40.0 132.8	55 27.4 -39.0 131.7	54 42.7 -38.2 130.6	53 57.2 -37.2 129.6	53 11.1 -36.3 128.6
16°	55 31.4 -40.8 134.1	54 48.4 -39.9 133.0	54 04.5 -38.9 131.9	53 20.0 -38.1 130.9	52 34.8 -37.2 129.9
17°	54 50.6 -41.6 135.4	54 08.5 -40.7 134.3	53 25.6 -39.8 133.2	52 41.9 -38.9 132.2	51 57.6 -38.1 131.2
18°	54 09.0 -42.3 136.7	53 27.8 -41.4 135.5	52 45.8 -40.5 134.5	52 03.0 -39.6 133.4	51 19.5 -38.7 132.5
19°	53 26.7 -43.1 137.9	52 46.4 -42.2 136.8	52 05.3 -41.3 135.7	51 23.4 -40.4 134.7	50 40.8 -39.6 133.7
20°	52 43.6 -43.7 139.0	52 04.2 -42.8 137.9	51 24.0 -41.9 136.9	50 43.0 -41.1 135.8	50 01.2 -40.2 134.8
21°	51 59.9 -44.3 140.1	51 21.4 -43.4 139.1	50 42.1 -42.6 138.0	50 01.9 -41.7 137.0	49 21.0 -40.9 136.0
22°	51 15.6 -44.9 141.2	50 38.0 -44.0 140.1	49 59.5 -43.2 139.1	49 20.2 -42.3 138.1	48 40.1 -41.5 137.1
23°	50 30.7 -45.4 142.3	49 54.0 -44.6 141.2	49 16.3 -43.8 140.2	48 37.9 -43.0 139.2	47 58.6 -42.1 138.2
24°	49 45.3 -46.0 143.3	49 09.4 -45.2 142.2	48 32.5 -44.3 141.2	47 54.9 -43.5 140.2	47 16.5 -42.7 139.2
25°	48 59.3 -46.4 144.3	48 24.2 -45.6 143.2	47 48.2 -44.8 142.2	47 11.4 -44.0 141.2	46 33.8 -43.2 140.3
26°	48 12.9 -46.9 145.2	47 38.6 -46.1 144.2	47 03.4 -45.3 143.2	46 27.4 -44.5 142.2	45 50.6 -43.7 141.3
27°	47 26.0 -47.4 146.2	46 52.5 -46.6 145.2	46 18.1 -45.8 144.2	45 42.9 -45.0 143.2	45 06.9 -44.2 142.3
28°	46 38.6 -47.8 147.1	46 05.9 -47.0 146.1	45 32.3 -46.2 145.1	44 57.9 -45.5 144.1	44 22.7 -44.7 143.2
29°	45 50.8 -48.1 148.0	45 18.9 -47.4 147.0	44 46.1 -46.7 146.0	44 12.4 -45.8 145.1	43 38.0 -45.1 144.1

Latitude 8°

Declination CONTRARY name to Latitude

Dec	LHA 030° / 330°	LHA 031° / 329°	LHA 032° / 328°	LHA 033° / 327°	LHA 034° / 326°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	59 02.9 -17.1 103.6	58 05.0 -16.5 103.0	57 07.1 -16.1 102.6	56 09.1 -15.8 102.1	55 10.9 -15.3 101.7
1°	58 45.8 -18.6 105.4	57 48.5 -18.1 104.9	56 51.0 -17.6 104.3	55 53.3 -17.1 103.8	54 55.6 -16.7 103.3
2°	58 27.2 -20.1 107.2	57 30.4 -19.6 106.6	56 33.4 -19.1 106.1	55 36.2 -18.5 105.5	54 38.9 -18.1 105.0
3°	58 07.1 -21.6 109.0	57 10.8 -21.0 108.4	56 14.3 -20.4 107.8	55 17.7 -19.9 107.2	54 20.8 -19.4 106.7
4°	57 45.5 -23.1 110.8	56 49.8 -22.4 110.1	55 53.9 -21.8 109.5	54 57.8 -21.3 108.9	54 01.4 -20.6 108.3
5°	57 22.4 -24.4 112.5	56 27.4 -23.8 111.8	55 32.1 -23.1 111.1	54 36.5 -22.5 110.5	53 40.8 -21.9 109.9
6°	56 58.0 -25.8 114.2	56 03.6 -25.0 113.4	55 09.0 -24.4 112.7	54 14.0 -23.7 112.1	53 18.9 -23.2 111.4
7°	56 32.2 -27.0 115.8	55 38.6 -26.3 115.1	54 44.6 -25.6 114.3	53 50.3 -24.9 113.6	52 55.7 -24.2 113.0
8°	56 05.2 -28.3 117.4	55 12.3 -27.5 116.6	54 19.0 -26.8 115.9	53 25.4 -26.1 115.2	52 31.5 -25.5 114.5
9°	55 36.9 -29.4 119.0	54 44.8 -28.7 118.2	53 52.2 -27.9 117.4	52 59.3 -27.2 116.7	52 06.0 -26.5 116.0
10°	55 07.5 -30.6 120.6	54 16.1 -29.8 119.7	53 24.3 -29.0 118.9	52 32.1 -28.3 118.1	51 39.5 -27.5 117.4
11°	54 36.9 -31.6 122.0	53 46.3 -30.8 121.2	52 55.3 -30.1 120.4	52 03.8 -29.3 119.6	51 12.0 -28.6 118.8
12°	54 05.3 -32.7 123.5	53 15.5 -31.9 122.6	52 25.2 -31.0 121.8	51 34.5 -30.3 121.0	50 43.4 -29.6 120.2
13°	53 32.6 -33.6 124.9	52 43.6 -32.8 124.0	51 54.2 -32.1 123.2	51 04.2 -31.3 122.4	50 13.8 -30.5 121.6
14°	52 59.0 -34.6 126.3	52 10.8 -33.8 125.4	51 22.1 -32.9 124.6	50 32.9 -32.1 123.7	49 43.3 -31.4 122.9
15°	52 24.4 -35.5 127.7	51 37.0 -34.6 126.8	50 49.2 -33.9 125.9	50 00.8 -33.1 125.0	49 11.9 -32.3 124.2
16°	51 48.9 -36.4 129.0	51 02.4 -35.5 128.1	50 15.3 -34.7 127.2	49 27.7 -33.9 126.3	48 39.6 -33.1 125.5
17°	51 12.5 -37.1 130.3	50 26.9 -36.4 129.3	49 40.6 -35.5 128.5	48 53.8 -34.7 127.6	48 06.5 -33.9 126.8
18°	50 35.4 -38.0 131.5	49 50.5 -37.1 130.6	49 05.1 -36.3 129.7	48 19.1 -35.5 128.8	47 32.6 -34.7 128.0
19°	49 57.4 -38.6 132.7	49 13.4 -37.8 131.8	48 28.8 -37.0 130.9	47 43.6 -36.2 130.0	46 57.9 -35.5 129.2
20°	49 18.8 -39.4 133.9	48 35.6 -38.5 133.0	47 51.8 -37.7 132.1	47 07.4 -36.9 131.2	46 22.4 -36.1 130.4
21°	48 39.4 -40.1 135.0	47 57.1 -39.3 134.1	47 14.1 -38.4 133.2	46 30.5 -37.6 132.4	45 46.3 -36.8 131.5
22°	47 59.3 -40.6 136.2	47 17.8 -39.8 135.2	46 35.7 -39.1 134.4	45 52.9 -38.3 133.5	45 09.5 -37.5 132.7
23°	47 18.7 -41.3 137.2	46 38.0 -40.5 136.3	45 56.6 -39.7 135.5	45 14.6 -38.9 134.6	44 32.0 -38.1 133.8
24°	46 37.4 -41.9 138.3	45 57.5 -41.1 137.4	45 16.9 -40.2 136.5	44 35.7 -39.4 135.7	43 53.9 -38.7 134.9
25°	45 55.5 -42.4 139.3	45 16.4 -41.6 138.4	44 36.7 -40.8 137.6	43 56.3 -40.1 136.7	43 15.2 -39.2 135.9
26°	45 13.1 -42.9 140.4	44 34.8 -42.1 139.5	43 55.9 -41.4 138.6	43 16.2 -40.5 137.8	42 36.0 -39.8 136.9
27°	44 30.2 -43.5 141.3	43 52.7 -42.7 140.5	43 14.5 -41.9 139.6	42 35.7 -41.1 138.8	41 56.2 -40.3 137.9
28°	43 46.7 -43.9 142.3	43 10.0 -43.1 141.4	42 32.6 -42.3 140.6	41 54.6 -41.6 139.7	41 15.9 -40.9 138.9
29°	43 02.8 -44.3 143.2	42 26.9 -43.6 142.4	41 50.3 -42.8 141.5	41 13.0 -42.1 140.7	40 35.0 -41.3 139.9

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°	54 12.7 -15.0 101.2	53 14.4 -14.6 100.8	52 16.0 -14.3 100.5	51 17.5 -14.0 100.1	50 19.0 -13.7 99.8
1°	53 57.7 -16.3 102.9	52 59.8 -16.0 102.5	52 01.7 -15.5 102.0	51 03.5 -15.1 101.7	50 05.3 -14.8 101.3
2°	53 41.4 -17.6 104.5	52 43.8 -17.1 104.1	51 46.2 -16.8 103.6	50 48.4 -16.4 103.2	49 50.5 -16.1 102.8
3°	53 23.8 -18.9 106.1	52 26.7 -18.5 105.6	51 29.4 -18.0 105.2	50 32.0 -17.6 104.7	49 34.4 -17.1 104.3
4°	53 04.9 -20.1 107.7	52 08.2 -19.6 107.2	51 11.4 -19.2 106.7	50 14.4 -18.7 106.2	49 17.3 -18.3 105.7
5°	52 44.8 -21.4 109.3	51 48.6 -20.8 108.7	50 52.2 -20.3 108.2	49 55.7 -19.8 107.7	48 59.0 -19.3 107.2
6°	52 23.4 -22.5 110.8	51 27.8 -22.0 110.2	50 31.9 -21.4 109.7	49 35.9 -20.9 109.1	48 39.7 -20.4 108.6
7°	52 00.9 -23.7 112.3	51 05.8 -23.1 111.7	50 10.5 -22.5 111.1	49 15.0 -22.0 110.6	48 19.3 -21.5 110.1
8°	51 37.2 -24.7 113.8	50 42.7 -24.1 113.2	49 48.0 -23.6 112.6	48 53.0 -23.0 112.0	47 57.8 -22.4 111.5
9°	51 12.5 -25.9 115.3	50 18.6 -25.2 114.6	49 24.4 -24.5 114.0	48 30.0 -24.0 113.4	47 35.4 -23.4 112.8
10°	50 46.6 -26.9 116.7	49 53.4 -26.2 116.0	48 59.9 -25.6 115.4	48 06.0 -24.9 114.8	47 12.0 -24.4 114.2
11°	50 19.7 -27.9 118.1	49 27.2 -27.2 117.4	48 34.3 -26.6 116.8	47 41.1 -25.9 116.1	46 47.6 -25.3 115.5
12°	49 51.8 -28.8 119.5	49 00.0 -28.2 118.8	48 07.7 -27.5 118.1	47 15.2 -26.9 117.5	46 22.3 -26.2 116.9
13°	49 23.0 -29.8 120.9	48 31.8 -29.1 120.1	47 40.2 -28.3 119.4	46 48.3 -27.7 118.8	45 56.1 -27.1 118.2
14°	48 53.2 -30.6 122.2	48 02.7 -29.9 121.5	47 11.9 -29.3 120.8	46 20.6 -28.5 120.1	45 29.0 -27.9 119.4
15°	48 22.6 -31.6 123.5	47 32.8 -30.8 122.7	46 42.6 -30.1 122.0	45 52.1 -29.4 121.3	45 01.1 -28.7 120.7
16°	47 51.0 -32.3 124.8	47 02.0 -31.6 124.0	46 12.5 -30.9 123.3	45 22.7 -30.2 122.6	44 32.4 -29.5 121.9
17°	47 18.7 -33.2 126.0	46 30.4 -32.4 125.2	45 41.6 -31.7 124.5	44 52.5 -31.0 123.8	44 02.9 -30.3 123.1
18°	46 45.5 -33.9 127.2	45 58.0 -33.2 126.5	45 09.9 -32.4 125.7	44 21.5 -31.7 125.0	43 32.6 -31.0 124.3
19°	46 11.6 -34.7 128.4	45 24.8 -33.9 127.7	44 37.5 -33.1 126.9	43 49.8 -32.4 126.2	43 01.6 -31.7 125.5
20°	45 36.9 -35.3 129.6	44 50.9 -34.6 128.8	44 04.4 -33.9 128.1	43 17.4 -33.2 127.4	42 29.9 -32.4 126.7
21°	44 01.6 -36.1 130.7	44 16.3 -35.3 130.0	43 30.5 -34.5 129.2	42 44.2 -33.8 128.5	41 57.5 -33.1 127.8
22°	44 25.5 -36.7 131.9	43 41.0 -35.9 131.1	42 56.0 -35.2 130.3	42 10.4 -34.4 129.6	41 24.4 -33.7 128.9
23°	43 48.8 -37.3 133.0	43 05.1 -36.6 132.2	42 20.8 -35.8 131.4	41 36.0 -35.0 130.7	40 50.7 -34.3 130.0
24°	43 11.5 -37.9 134.1	42 28.5 -37.1 133.3	41 45.0 -36.4 132.5	41 01.0 -35.7 131.8	40 16.4 -34.9 131.1
25°	42 33.6 -38.5 135.1	41 51.4 -37.7 134.3	41 08.6 -36.9 133.6	40 25.3 -36.2 132.9	39 41.5 -35.5 132.2
26°	41 55.1 -39.0 136.1	41 13.7 -38.3 135.4	40 31.7 -37.6 134.6	39 49.1 -36.8 133.9	39 06.0 -36.0 133.2
27°	41 16.1 -39.6 137.2	40 35.4 -38.8 136.4	39 54.1 -38.0 135.7	39 12.3 -37.3 134.9	38 30.0 -36.5 134.2
28°	40 36.5 -40.0 138.2	39 56.6 -39.3 137.4	39 16.1 -38.5 136.7	38 35.0 -37.8 135.9	37 53.5 -37.1 135.2
29°	39 56.5 -40.6 139.1	39 17.3 -39.8 138.4	38 37.6 -39.1 137.6	37 57.2 -38.2 136.9	37 16.4 -37.5 136.2

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Declination CONTRARY name to Latitude

Latitude 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°	49 20.4 -13.4 99.4	48 21.8 -13.2 99.1	47 23.1 -12.9 98.8	46 24.3 -12.6 98.5	45 25.5 -12.4 98.2
1°	49 07.0 -14.5 100.9	48 08.6 -14.2 100.6	47 10.2 -14.0 100.2	46 11.7 -13.7 99.9	45 13.1 -13.4 99.6
2°	48 52.5 -15.7 102.4	47 54.4 -15.3 102.0	46 56.2 -15.0 101.7	45 58.0 -14.7 101.3	44 59.7 -14.4 101.0
3°	48 36.8 -16.8 103.9	47 39.1 -16.4 103.5	46 41.2 -16.0 103.1	45 43.3 -15.7 102.7	44 45.3 -15.4 102.3
4°	48 20.0 -17.8 105.3	47 22.7 -17.5 104.9	46 25.2 -17.1 104.5	45 27.6 -16.7 104.1	44 29.9 -16.3 103.7
5°	48 02.2 -18.9 106.7	47 05.2 -18.4 106.3	46 08.1 -18.0 105.9	45 10.9 -17.6 105.4	44 13.6 -17.3 105.0
6°	47 43.3 -19.9 108.1	46 46.8 -19.5 107.7	45 50.1 -19.0 107.2	44 53.3 -18.6 106.8	43 56.3 -18.2 106.4
7°	47 23.4 -21.0 109.5	46 27.3 -20.5 109.1	45 31.1 -20.0 108.6	44 34.7 -19.6 108.1	43 38.1 -19.1 107.7
8°	47 02.4 -21.9 110.9	46 06.8 -21.4 110.4	45 11.1 -20.9 109.9	44 15.1 -20.4 109.5	43 19.0 -19.9 109.0
9°	46 40.5 -22.8 112.3	45 45.4 -22.3 111.8	44 50.2 -21.9 111.3	43 54.7 -21.3 110.8	42 59.1 -20.9 110.3
10°	46 17.7 -23.8 113.6	45 23.1 -23.2 113.1	44 28.3 -22.7 112.6	43 33.4 -22.2 112.1	42 38.2 -21.7 111.6
11°	45 53.9 -24.8 115.0	44 59.9 -24.2 114.4	44 05.6 -23.5 113.9	43 11.2 -23.0 113.3	42 16.5 -22.5 112.8
12°	45 29.1 -25.5 116.3	44 35.7 -25.0 115.7	43 42.1 -24.5 115.1	42 48.2 -23.9 114.6	41 54.0 -23.3 114.1
13°	45 03.6 -26.5 117.5	44 10.7 -25.8 117.0	43 17.6 -25.2 116.4	42 24.3 -24.7 115.8	41 30.7 -24.1 115.3
14°	44 37.1 -27.2 118.8	43 44.9 -26.6 118.2	42 52.4 -26.0 117.6	41 59.6 -25.4 117.1	41 06.6 -24.8 116.5
15°	44 09.9 -28.1 120.1	43 18.3 -27.4 119.4	42 26.4 -26.8 118.9	41 34.2 -26.2 118.3	40 41.8 -25.6 117.7
16°	43 41.8 -28.8 121.3	42 50.9 -28.2 120.7	41 59.6 -27.6 120.1	41 08.0 -26.9 119.5	40 16.2 -26.3 118.9
17°	43 13.0 -29.6 122.5	42 22.7 -28.9 121.9	41 32.0 -28.2 121.3	40 41.1 -27.6 120.7	39 49.9 -27.1 120.1
18°	42 43.4 -30.3 123.7	41 53.8 -29.7 123.0	41 03.8 -29.0 122.4	40 13.5 -28.4 121.8	39 22.8 -27.7 121.3
19°	42 13.1 -31.1 124.9	41 24.1 -30.3 124.2	40 34.8 -29.7 123.6	39 45.1 -29.0 123.0	38 55.1 -28.3 122.4
20°	41 42.0 -31.6 126.0	40 53.8 -31.0 125.4	40 05.1 -30.3 124.7	39 16.1 -29.6 124.1	38 26.8 -29.0 123.5
21°	41 10.4 -32.4 127.1	40 22.8 -31.7 126.5	39 34.8 -30.9 125.9	38 46.5 -30.3 125.2	37 57.8 -29.7 124.7
22°	40 38.0 -33.0 128.2	39 51.1 -32.2 127.6	39 03.9 -31.6 127.0	38 16.2 -30.9 126.3	37 28.1 -30.2 125.8
23°	40 05.0 -33.6 129.3	39 18.9 -32.9 128.7	38 32.3 -32.2 128.1	37 45.3 -31.5 127.4	36 57.9 -30.8 126.8
24°	39 31.4 -34.2 130.4	38 46.0 -33.5 129.8	38 00.1 -32.8 129.1	37 13.8 -32.1 128.5	36 27.1 -31.4 127.9
25°	38 57.2 -34.7 131.5	38 12.5 -34.0 130.8	37 27.3 -33.3 130.2	36 41.7 -32.6 129.6	35 55.7 -31.9 129.0
26°	38 22.5 -35.3 132.5	37 38.5 -34.6 131.9	36 54.0 -33.8 131.2	36 09.1 -33.1 130.6	35 23.8 -32.4 130.0
27°	37 47.2 -35.8 133.6	37 03.9 -35.1 132.9	36 20.2 -34.4 132.3	35 36.0 -33.7 131.6	34 51.4 -33.0 131.0
28°	37 11.4 -36.3 134.6	36 28.8 -35.6 133.9	35 45.8 -34.9 133.3	35 02.3 -34.2 132.7	34 18.4 -33.5 132.1
29°	36 35.1 -36.9 135.6	35 53.2 -36.1 134.9	35 10.9 -35.4 134.3	34 28.1 -34.6 133.7	33 44.9 -33.9 133.1

Dec	LHA 045° / 315°	LHA 046° / 314°	LHA 047° / 313°	LHA 048° / 312°	LHA 049° / 311°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	44 26.7 -12.2 97.9	43 27.8 -11.9 97.7	42 28.9 -11.8 97.4	41 30.0 -11.6 97.1	40 31.0 -11.4 96.9
1°	44 14.5 -13.1 99.3	43 15.9 -13.0 99.0	42 17.1 -12.6 98.7	41 18.4 -12.5 98.5	40 19.6 -12.3 98.2
2°	44 01.4 -14.2 100.7	43 02.9 -13.8 100.3	42 04.5 -13.6 100.0	41 05.9 -13.3 99.8	40 07.3 -13.1 99.5
3°	43 47.2 -15.0 102.0	42 49.1 -14.8 101.7	41 50.9 -14.5 101.4	40 52.6 -14.2 101.0	39 54.2 -13.9 100.7
4°	43 32.2 -16.0 103.3	42 34.3 -15.7 103.0	41 36.4 -15.4 102.7	40 38.4 -15.1 102.3	39 40.3 -14.8 102.0
5°	43 16.2 -16.9 104.7	42 18.6 -16.5 104.3	41 21.0 -16.2 103.9	40 23.3 -15.9 103.6	39 25.5 -15.5 103.3
6°	42 59.3 -17.8 106.0	42 02.1 -17.4 105.6	41 04.8 -17.0 105.2	40 07.4 -16.7 104.9	39 10.0 -16.4 104.5
7°	42 41.5 -18.7 107.3	41 44.7 -18.3 106.9	40 47.8 -17.9 106.5	39 50.7 -17.5 106.1	38 53.6 -17.1 105.8
8°	42 22.8 -19.6 108.6	41 26.4 -19.1 108.2	40 29.9 -18.7 107.7	39 33.2 -18.3 107.4	38 36.5 -18.0 107.0
9°	42 03.2 -20.3 109.8	41 07.3 -19.9 109.4	40 11.2 -19.5 109.0	39 14.9 -19.0 108.6	38 18.5 -18.6 108.2
10°	41 42.9 -21.2 111.1	40 47.4 -20.8 110.7	39 51.7 -20.3 110.2	38 55.9 -19.9 109.8	37 59.9 -19.4 109.4
11°	41 21.7 -22.0 112.4	40 26.6 -21.5 111.9	39 31.4 -21.0 111.5	38 36.0 -20.5 111.0	37 40.5 -20.1 110.6
12°	40 59.7 -22.8 113.6	40 05.1 -22.2 113.1	39 10.4 -21.8 112.7	38 15.5 -21.3 112.2	37 20.4 -20.8 111.8
13°	40 36.9 -23.6 114.8	39 42.9 -23.1 114.3	38 48.6 -22.5 113.9	37 54.2 -22.0 113.4	36 59.6 -21.5 113.0
14°	40 13.3 -24.2 116.0	39 19.8 -23.7 115.5	38 26.1 -23.2 115.1	37 32.2 -22.7 114.6	36 38.1 -22.2 114.1
15°	39 49.1 -25.1 117.2	38 56.1 -24.5 116.7	38 02.9 -23.9 116.2	37 09.5 -23.4 115.8	36 15.9 -22.9 115.3
16°	39 24.0 -25.7 118.4	38 31.6 -25.1 117.9	37 39.0 -24.6 117.4	36 46.1 -24.0 116.9	35 53.0 -23.5 116.4
17°	38 58.3 -26.4 119.6	38 06.5 -25.8 119.0	37 14.4 -25.2 118.5	36 22.1 -24.7 118.0	35 29.5 -24.1 117.6
18°	38 31.9 -27.1 120.7	37 40.7 -26.5 120.2	36 49.2 -25.9 119.7	35 57.4 -25.3 119.2	35 05.4 -24.7 118.7
19°	38 04.8 -27.7 121.9	37 14.2 -27.1 121.3	36 23.3 -26.5 120.8	35 32.1 -25.9 120.3	34 40.7 -25.3 119.8
20°	37 37.1 -28.4 123.0	36 47.1 -27.7 122.4	35 56.8 -27.1 121.9	35 06.2 -26.5 121.4	34 15.4 -25.9 120.9
21°	37 08.7 -28.9 124.1	36 19.4 -28.4 123.5	35 29.7 -27.7 123.0	34 39.7 -27.1 122.5	33 49.5 -26.5 122.0
22°	36 39.8 -29.6 125.2	35 51.0 -28.9 124.6	35 02.0 -28.3 124.1	34 12.6 -27.6 123.6	33 23.0 -27.1 123.1
23°	36 10.2 -30.1 126.3	35 22.1 -29.5 125.7	34 33.7 -28.8 125.2	33 45.0 -28.2 124.6	32 55.9 -27.5 124.1
24°	35 40.1 -30.7 127.3	34 52.6 -30.0 126.8	34 04.9 -29.4 126.2	33 16.8 -28.8 125.7	32 28.4 -28.1 125.2
25°	35 09.4 -31.3 128.4	34 22.6 -30.6 127.8	33 35.5 -29.9 127.3	32 48.0 -29.2 126.7	32 00.3 -28.6 126.2
26°	34 38.1 -31.8 129.4	33 52.0 -31.1 128.9	33 05.6 -30.4 128.3	32 18.8 -29.8 127.8	31 31.7 -29.1 127.3
27°	34 06.3 -32.2 130.5	33 20.9 -31.5 129.9	32 35.2 -30.9 129.3	31 49.0 -30.2 128.8	31 02.6 -29.6 128.3
28°	33 34.1 -32.8 131.5	32 49.4 -32.1 130.9	32 04.3 -31.4 130.4	31 18.8 -30.7 129.8	30 33.0 -30.0 129.3
29°	33 01.3 -33.2 132.5	32 17.3 -32.6 131.9	31 32.9 -31.9 131.4	30 48.1 -31.2 130.8	30 03.0 -30.5 130.3

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Dec	LHA 050° / 310°	LHA 051° / 309°	LHA 052° / 308°	LHA 053° / 307°	LHA 054° / 306°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	39 32.0 -11.2 96.7	38 33.0 -11.1 96.4	37 33.9 -10.9 96.2	36 34.9 -10.8 96.0	35 35.8 -10.7 95.8
1°	39 20.8 -12.1 97.9	38 21.9 -11.9 97.7	37 23.0 -11.7 97.4	36 24.1 -11.5 97.2	35 25.1 -11.3 97.0
2°	39 08.7 -12.9 99.2	38 10.0 -12.6 98.9	37 11.3 -12.4 98.7	36 12.6 -12.3 98.4	35 13.8 -12.1 98.2
3°	38 55.8 -13.7 100.5	37 57.4 -13.5 100.2	36 58.9 -13.2 99.9	36 00.3 -13.0 99.6	35 01.7 -12.8 99.4
4°	38 42.1 -14.4 101.7	37 43.9 -14.2 101.4	36 45.7 -14.0 101.1	35 47.3 -13.7 100.8	34 48.9 -13.4 100.6
5°	38 27.7 -15.3 102.9	37 29.7 -15.0 102.6	36 31.7 -14.7 102.3	35 33.6 -14.4 102.0	34 35.5 -14.2 101.8
6°	38 12.4 -16.0 104.2	37 14.7 -15.7 103.9	36 17.0 -15.4 103.5	35 19.2 -15.1 103.2	34 21.3 -14.8 102.9
7°	37 56.4 -16.8 105.4	36 59.0 -16.4 105.1	36 01.6 -16.1 104.7	35 04.1 -15.8 104.4	34 06.5 -15.5 104.1
8°	37 39.6 -17.6 106.6	36 42.6 -17.2 106.3	35 45.5 -16.8 105.9	34 48.3 -16.5 105.6	33 51.0 -16.1 105.3
9°	37 22.0 -18.2 107.8	36 25.4 -17.8 107.5	35 28.7 -17.5 107.1	34 31.8 -17.1 106.8	33 34.9 -16.8 106.4
10°	37 03.8 -19.0 109.0	36 07.6 -18.6 108.6	35 11.2 -18.2 108.3	34 14.7 -17.8 107.9	33 18.1 -17.4 107.6
11°	36 44.8 -19.7 110.2	35 49.0 -19.3 109.8	34 53.0 -18.8 109.4	33 56.9 -18.4 109.1	33 00.7 -18.0 108.7
12°	36 25.1 -20.3 111.4	35 29.7 -19.9 111.0	34 34.2 -19.5 110.6	33 38.5 -19.0 110.2	32 42.7 -18.6 109.9
13°	36 04.8 -21.0 112.5	35 09.8 -20.5 112.1	34 14.7 -20.1 111.7	33 19.5 -19.7 111.4	32 24.1 -19.3 111.0
14°	35 43.8 -21.7 113.7	34 49.3 -21.2 113.3	33 54.6 -20.7 112.9	32 59.8 -20.3 112.5	32 04.8 -19.8 112.1
15°	35 22.1 -22.4 114.9	34 28.1 -21.9 114.4	33 33.9 -21.4 114.0	32 39.5 -20.9 113.6	31 45.0 -20.4 113.2
16°	34 59.7 -22.9 116.0	34 06.2 -22.4 115.6	33 12.5 -21.9 115.1	32 18.6 -21.4 114.7	31 24.6 -21.0 114.3
17°	34 36.8 -23.6 117.1	33 43.8 -23.1 116.7	32 50.6 -22.5 116.2	31 57.2 -22.0 115.8	31 03.6 -21.5 115.4
18°	34 13.2 -24.2 118.2	33 20.7 -23.6 117.8	32 28.1 -23.1 117.3	31 35.2 -22.6 116.9	30 42.1 -22.0 116.5
19°	33 49.0 -24.7 119.3	32 57.1 -24.2 118.9	32 05.0 -23.7 118.4	31 12.6 -23.1 118.0	30 20.1 -22.6 117.6
20°	33 24.3 -25.4 120.4	32 32.9 -24.7 120.0	31 41.3 -24.2 119.5	30 49.5 -23.6 119.1	29 57.5 -23.1 118.7
21°	32 58.9 -25.9 121.5	32 08.2 -25.3 121.0	31 17.1 -24.7 120.6	30 25.9 -24.2 120.2	29 34.4 -23.6 119.7
22°	32 33.0 -26.4 122.6	31 42.9 -25.9 122.1	30 52.4 -25.2 121.7	30 01.7 -24.7 121.2	29 10.8 -24.1 120.8
23°	32 06.6 -26.9 123.6	31 17.0 -26.3 123.2	30 27.2 -25.8 122.7	29 37.0 -25.1 122.3	28 46.7 -24.6 121.8
24°	31 39.7 -27.5 124.7	30 50.7 -26.9 124.2	30 01.4 -26.2 123.8	29 11.9 -25.7 123.3	28 22.1 -25.1 122.9
25°	31 12.2 -28.0 125.7	30 23.8 -27.3 125.3	29 35.2 -26.7 124.8	28 46.2 -26.1 124.3	27 57.0 -25.5 123.9
26°	30 44.2 -28.4 126.8	29 56.5 -27.8 126.3	29 08.5 -27.2 125.8	28 20.1 -26.5 125.4	27 31.5 -25.9 124.9
27°	30 15.8 -28.9 127.8	29 28.7 -28.3 127.3	28 41.3 -27.7 126.8	27 53.6 -27.0 126.4	27 05.6 -26.4 125.9
28°	29 46.9 -29.4 128.8	29 00.4 -28.7 128.3	28 13.6 -28.0 127.8	27 26.6 -27.5 127.4	26 39.2 -26.8 126.9
29°	29 17.5 -29.8 129.8	28 31.7 -29.2 129.3	27 45.6 -28.6 128.8	26 59.1 -27.8 128.4	26 12.4 -27.2 127.9

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°	34 36.6 -10.5 95.6	33 37.5 -10.4 95.4	32 38.3 -10.2 95.2	31 39.1 -10.1 95.0	30 39.9 -10.0 94.8
1°	34 26.1 -11.2 96.8	33 27.1 -11.0 96.5	32 28.1 -10.9 96.3	31 29.0 -10.7 96.1	30 29.9 -10.6 95.9
2°	34 14.9 -11.8 98.0	33 16.1 -11.7 97.7	32 17.2 -11.5 97.5	31 18.3 -11.4 97.3	30 19.3 -11.2 97.1
3°	34 03.1 -12.6 99.1	33 04.4 -12.4 98.9	32 05.7 -12.2 98.7	31 06.9 -12.0 98.4	30 08.1 -11.8 98.2
4°	33 50.5 -13.2 100.3	32 52.0 -13.0 100.1	31 53.5 -12.8 99.8	30 54.9 -12.5 99.6	29 56.3 -12.3 99.3
5°	33 37.3 -13.9 101.5	32 39.0 -13.6 101.2	31 40.7 -13.4 101.0	30 42.4 -13.2 100.7	29 44.0 -13.0 100.5
6°	33 23.4 -14.5 102.7	32 25.4 -14.3 102.4	31 27.3 -14.0 102.1	30 29.2 -13.7 101.8	29 31.0 -13.5 101.6
7°	33 08.9 -15.2 103.8	32 11.1 -14.9 103.5	31 13.3 -14.6 103.2	30 15.5 -14.4 103.0	29 17.5 -14.0 102.7
8°	32 53.7 -15.8 105.0	31 56.2 -15.5 104.7	30 58.7 -15.2 104.4	30 01.1 -14.9 104.1	29 03.5 -14.6 103.8
9°	32 37.9 -16.5 106.1	31 40.7 -16.1 105.8	30 43.5 -15.7 105.5	29 46.2 -15.4 105.2	28 48.9 -15.2 104.9
10°	32 21.4 -17.0 107.3	31 24.6 -16.6 106.9	30 27.8 -16.4 106.6	29 30.8 -16.0 106.3	28 33.7 -15.7 106.0
11°	32 04.4 -17.7 108.4	31 08.0 -17.3 108.1	30 11.4 -16.9 107.7	29 14.8 -16.6 107.4	28 18.0 -16.2 107.1
12°	31 46.7 -18.2 109.5	30 50.7 -17.9 109.2	29 54.5 -17.4 108.8	28 58.2 -17.1 108.5	28 01.8 -16.7 108.2
13°	31 28.5 -18.8 110.6	30 32.8 -18.4 110.3	29 37.1 -18.0 109.9	28 41.1 -17.6 109.6	27 45.1 -17.2 109.3
14°	31 09.7 -19.4 111.7	30 14.4 -18.9 111.4	29 19.1 -18.6 111.0	28 23.5 -18.1 110.7	27 27.9 -17.7 110.4
15°	30 50.3 -19.9 112.8	29 55.5 -19.5 112.5	29 00.5 -19.0 112.1	28 05.4 -18.6 111.8	27 10.2 -18.2 111.5
16°	30 30.4 -20.5 113.9	29 36.0 -20.0 113.6	28 41.5 -19.6 113.2	27 46.8 -19.1 112.9	26 52.0 -18.7 112.5
17°	30 09.9 -21.1 115.0	29 16.0 -20.6 114.7	28 21.9 -20.1 114.3	27 27.7 -19.7 113.9	26 33.3 -19.2 113.6
18°	29 48.8 -21.5 116.1	28 55.4 -21.0 115.7	28 01.8 -20.6 115.4	27 08.0 -20.1 115.0	26 14.1 -19.6 114.7
19°	29 27.3 -22.1 117.2	28 34.4 -21.6 116.8	27 41.2 -21.0 116.4	26 47.9 -20.5 116.1	25 54.5 -20.1 115.7
20°	29 05.2 -22.5 118.3	28 12.8 -22.0 117.9	27 20.2 -21.5 117.5	26 27.4 -21.0 117.1	25 34.4 -20.5 116.8
21°	28 42.7 -23.1 119.3	27 50.8 -22.6 118.9	26 58.7 -22.0 118.5	26 06.4 -21.5 118.2	25 13.9 -21.0 117.8
22°	28 19.6 -23.5 120.4	27 28.2 -22.9 120.0	26 36.7 -22.5 119.6	25 44.9 -21.9 119.2	24 52.9 -21.4 118.8
23°	27 56.1 -24.0 121.4	27 05.3 -23.5 121.0	26 14.2 -22.9 120.6	25 23.0 -22.4 120.2	24 31.5 -21.8 119.9
24°	27 32.1 -24.5 122.4	26 41.8 -23.9 122.0	25 51.3 -23.3 121.6	25 00.6 -22.7 121.3	24 09.7 -22.2 120.9
25°	27 07.6 -24.9 123.5	26 17.9 -24.3 123.1	25 28.0 -23.7 122.7	24 37.9 -23.2 122.3	23 47.5 -22.6 121.9
26°	26 42.7 -25.3 124.5	25 53.6 -24.7 124.1	25 04.3 -24.2 123.7	24 14.7 -23.6 123.3	23 24.9 -23.0 122.9
27°	26 17.4 -25.8 125.5	25 28.9 -25.2 125.1	24 40.1 -24.5 124.7	23 51.1 -23.9 124.3	23 01.9 -23.3 123.9
28°	25 51.6 -26.2 126.5	25 03.7 -25.6 126.1	24 15.6 -25.0 125.7	23 27.2 -24.3 125.3	22 38.6 -23.8 124.9
29°	25 25.4 -26.6 127.5	24 38.1 -25.9 127.1	23 50.6 -25.3 126.7	23 02.9 -24.8 126.3	22 14.8 -24.1 125.9

Declination CONTRARY name to Latitude

Latitude 8°

Dec	LHA 060° / 300°	LHA 061° / 299°	LHA 062° / 298°	LHA 063° / 297°	LHA 064° / 296°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	29 40.7 -09.9 94.6	28 41.5 -09.8 94.4	27 42.2 -09.7 94.2	26 43.0 -09.6 94.1	25 43.7 -09.5 93.9
1°	29 30.8 -10.5 95.7	28 31.7 -10.4 95.5	27 32.5 -10.2 95.3	26 33.4 -10.1 95.2	25 34.2 -10.0 95.0
2°	29 20.3 -11.0 96.9	28 21.3 -10.9 96.7	27 22.3 -10.7 96.5	26 23.3 -10.7 96.3	25 24.2 -10.5 96.1
3°	29 09.3 -11.6 98.0	28 10.4 -11.4 97.8	27 11.6 -11.3 97.6	26 12.6 -11.1 97.4	25 13.7 -11.0 97.2
4°	28 57.7 -12.2 99.1	27 59.0 -12.0 98.9	27 00.3 -11.8 98.7	26 01.5 -11.6 98.5	25 02.7 -11.4 98.2
5°	28 45.5 -12.7 100.2	27 47.0 -12.5 100.0	26 48.5 -12.3 99.8	25 49.9 -12.1 99.5	24 51.3 -11.9 99.3
6°	28 32.8 -13.3 101.3	27 34.5 -13.0 101.1	26 36.2 -12.8 100.9	25 37.8 -12.6 100.6	24 39.4 -12.4 100.4
7°	28 19.5 -13.8 102.4	27 21.5 -13.5 102.2	26 23.4 -13.3 102.0	25 25.2 -13.0 101.7	24 27.0 -12.8 101.5
8°	28 05.7 -14.3 103.6	27 08.0 -14.1 103.3	26 10.1 -13.8 103.0	25 12.2 -13.5 102.8	24 14.2 -13.3 102.6
9°	27 51.4 -14.8 104.7	26 53.9 -14.5 104.4	25 56.3 -14.2 104.1	24 58.7 -14.0 103.9	24 00.9 -13.7 103.6
10°	27 36.6 -15.4 105.7	26 39.4 -15.1 105.5	25 42.1 -14.8 105.2	24 44.7 -14.5 104.9	23 47.2 -14.1 104.7
11°	27 21.2 -15.8 106.8	26 24.3 -15.5 106.6	25 27.3 -15.2 106.3	24 30.2 -14.8 106.0	23 33.1 -14.6 105.8
12°	27 05.4 -16.4 107.9	26 08.8 -16.0 107.6	25 12.1 -15.7 107.3	24 15.4 -15.4 107.1	23 18.5 -15.0 106.8
13°	26 49.0 -16.9 109.0	25 52.8 -16.5 108.7	24 56.4 -16.1 108.4	24 00.0 -15.7 108.1	23 03.5 -15.4 107.9
14°	26 32.1 -17.3 110.1	25 36.3 -17.0 109.8	24 40.3 -16.5 109.5	23 44.3 -16.2 109.2	22 48.1 -15.8 108.9
15°	26 14.8 -17.8 111.1	25 19.3 -17.4 110.8	24 23.8 -17.0 110.5	23 28.1 -16.6 110.2	22 32.3 -16.3 110.0
16°	25 57.0 -18.2 112.2	25 01.9 -17.8 111.9	24 06.8 -17.5 111.6	23 11.5 -17.1 111.3	22 16.0 -16.6 111.0
17°	25 38.8 -18.8 113.3	24 44.1 -18.3 112.9	23 49.3 -17.8 112.6	22 54.4 -17.4 112.3	21 59.4 -17.0 112.0
18°	25 20.0 -19.1 114.3	24 25.8 -18.7 114.0	23 31.5 -18.3 113.7	22 37.0 -17.8 113.4	21 42.4 -17.4 113.1
19°	25 00.9 -19.6 115.4	24 07.1 -19.1 115.0	23 13.2 -18.7 114.7	22 19.2 -18.3 114.4	21 25.0 -17.8 114.1
20°	24 41.3 -20.1 116.4	23 48.0 -19.6 116.1	22 54.5 -19.0 115.7	22 00.9 -18.6 115.4	21 07.2 -18.1 115.1
21°	24 21.2 -20.4 117.4	23 28.4 -19.9 117.1	22 35.5 -19.5 116.8	21 42.3 -18.9 116.5	20 49.1 -18.5 116.1
22°	24 00.8 -20.9 118.5	23 08.5 -20.4 118.1	22 16.0 -19.9 117.8	21 23.4 -19.4 117.5	20 30.6 -18.9 117.2
23°	23 39.9 -21.2 119.5	22 48.1 -20.7 119.2	21 56.1 -20.2 118.8	21 04.0 -19.7 118.5	20 11.7 -19.2 118.2
24°	23 18.7 -21.7 120.5	22 27.4 -21.1 120.2	21 35.9 -20.6 119.8	20 44.3 -20.1 119.5	19 52.5 -19.6 119.2
25°	22 57.0 -22.0 121.5	22 06.3 -21.5 121.2	21 15.3 -20.9 120.8	20 24.2 -20.4 120.5	19 32.9 -19.8 120.2
26°	22 35.0 -22.5 122.5	21 44.8 -21.9 122.2	20 54.4 -21.3 121.8	20 03.8 -20.7 121.5	19 13.1 -20.2 121.2
27°	22 12.5 -22.8 123.5	21 22.9 -22.2 123.2	20 33.1 -21.7 122.8	19 43.1 -21.1 122.5	18 52.9 -20.5 122.2
28°	21 49.7 -23.1 124.5	21 00.7 -22.6 124.2	20 11.4 -21.9 123.8	19 22.0 -21.4 123.5	18 32.4 -20.9 123.2
29°	21 26.6 -23.5 125.5	20 38.1 -22.9 125.2	19 49.5 -22.3 124.8	19 00.6 -21.7 124.5	18 11.5 -21.1 124.2

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°	24 44.4 -09.4 93.7	23 45.1 -09.3 93.5	22 45.8 -09.3 93.4	21 46.5 -09.2 93.2	20 47.2 -09.2 93.1
1°	24 35.0 -09.9 94.8	23 35.8 -09.8 94.6	22 36.5 -09.7 94.5	21 37.3 -09.6 94.3	20 38.0 -09.5 94.1
2°	24 25.1 -10.4 95.9	23 26.0 -10.3 95.7	22 26.8 -10.1 95.5	21 27.7 -10.0 95.3	20 28.5 -09.9 95.2
3°	24 14.7 -10.8 97.0	23 15.7 -10.6 96.8	22 16.7 -10.5 96.6	21 17.7 -10.4 96.4	20 18.6 -10.2 96.2
4°	24 03.9 -11.2 98.0	23 05.1 -11.1 97.8	22 06.2 -10.9 97.6	21 07.3 -10.8 97.5	20 08.4 -10.7 97.3
5°	23 52.7 -11.8 99.1	22 54.0 -11.6 98.9	21 55.3 -11.4 98.7	20 56.5 -11.2 98.5	19 57.7 -11.0 98.3
6°	23 40.9 -12.1 100.2	22 42.4 -11.9 100.0	21 43.9 -11.7 99.8	20 45.3 -11.5 99.6	19 46.7 -11.3 99.4
7°	23 28.8 -12.6 101.3	22 30.5 -12.4 101.0	21 32.2 -12.2 100.8	20 33.8 -12.0 100.6	19 35.4 -11.8 100.4
8°	23 16.2 -13.0 102.3	22 18.1 -12.8 102.1	21 20.0 -12.5 101.9	20 21.8 -12.3 101.7	19 23.6 -12.1 101.4
9°	23 03.2 -13.5 103.4	22 05.3 -13.1 103.2	21 07.5 -13.0 102.9	20 09.5 -12.7 102.7	19 11.5 -12.4 102.5
10°	22 49.7 -13.8 104.4	21 52.2 -13.6 104.2	20 54.5 -13.3 104.0	19 56.8 -13.0 103.7	18 59.1 -12.8 103.5
11°	22 35.9 -14.3 105.5	21 38.6 -14.0 105.3	20 41.2 -13.7 105.0	19 43.8 -13.4 104.8	18 46.3 -13.1 104.6
12°	22 21.6 -14.7 106.5	21 24.6 -14.4 106.3	20 27.5 -14.0 106.1	19 30.4 -13.7 105.8	18 33.2 -13.4 105.6
13°	22 06.9 -15.1 107.6	21 10.2 -14.7 107.3	20 13.5 -14.4 107.1	19 16.7 -14.1 106.8	18 19.8 -13.8 106.6
14°	21 51.8 -15.4 108.6	20 55.5 -15.1 108.4	19 59.1 -14.8 108.1	19 02.6 -14.5 107.9	18 06.0 -14.1 107.6
15°	21 36.4 -15.9 109.7	20 40.4 -15.5 109.4	19 44.3 -15.1 109.2	18 48.1 -14.7 108.9	17 51.9 -14.5 108.7
16°	21 20.5 -16.2 110.7	20 24.9 -15.9 110.4	19 29.2 -15.5 110.2	18 33.4 -15.2 109.9	17 37.4 -14.7 109.7
17°	21 04.3 -16.6 111.7	20 09.0 -16.2 111.5	19 13.7 -15.8 111.2	18 18.2 -15.4 110.9	17 22.7 -15.0 110.7
18°	20 47.7 -17.0 112.8	19 52.8 -16.5 112.5	18 57.9 -16.2 112.2	18 02.8 -15.7 112.0	17 07.7 -15.4 111.7
19°	20 30.7 -17.4 113.8	19 36.3 -16.9 113.5	18 41.7 -16.5 113.2	17 47.1 -16.1 113.0	16 52.3 -15.6 112.7
20°	20 13.3 -17.6 114.8	19 19.4 -17.3 114.5	18 25.2 -16.8 114.3	17 31.0 -16.3 114.0	16 36.7 -16.0 113.7
21°	19 55.7 -18.1 115.8	19 02.1 -17.6 115.6	18 08.4 -17.1 115.3	17 14.7 -16.7 115.0	16 20.7 -16.2 114.7
22°	19 37.6 -18.4 116.9	18 44.5 -17.9 116.6	17 51.3 -17.4 116.3	16 58.0 -17.0 116.0	16 04.5 -16.5 115.7
23°	19 19.2 -18.7 117.9	18 26.6 -18.2 117.6	17 33.9 -17.7 117.3	16 41.0 -17.2 117.0	15 48.0 -16.7 116.7
24°	19 00.5 -19.0 118.9	18 08.4 -18.5 118.6	17 16.2 -18.0 118.3	16 23.8 -17.5 118.0	15 31.3 -17.1 117.7
25°	18 41.5 -19.3 119.9	17 49.9 -18.8 119.6	16 58.2 -18.4 119.3	16 06.3 -17.8 119.0	15 14.2 -17.3 118.7
26°	18 22.2 -19.7 120.9	17 31.1 -19.1 120.6	16 39.8 -18.6 120.3	15 48.5 -18.1 120.0	14 56.9 -17.5 119.7
27°	18 02.5 -20.0 121.9	17 12.0 -19.5 121.6	16 21.2 -18.8 121.3	15 30.4 -18.4 121.0	14 39.4 -17.8 120.7
28°	17 42.5 -20.2 122.9	16 52.5 -19.7 122.6	16 02.4 -19.2 122.3	15 12.0 -18.6 122.0	14 21.6 -18.1 121.7
29°	17 22.3 -20.6 123.8	16 32.8 -19.9 123.5	15 43.2 -19.4 123.2	14 53.4 -18.8 123.0	14 03.5 -18.3 122.7

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Dec	LHA 070° / 290°	LHA 071° / 289°	LHA 072° / 288°	LHA 073° / 287°	LHA 074° / 286°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	19 47.8 -09.0 92.9	18 48.5 -09.0 92.7	17 49.1 -08.9 92.6	16 49.8 -08.9 92.4	15 50.4 -08.8 92.3
1°	19 38.8 -09.5 93.9	18 39.5 -09.3 93.8	17 40.2 -09.3 93.6	16 40.9 -09.2 93.5	15 41.6 -09.1 93.3
2°	19 29.3 -09.7 95.0	18 30.2 -09.7 94.8	17 30.9 -09.5 94.7	16 31.7 -09.5 94.5	15 32.5 -09.4 94.3
3°	19 19.6 -10.2 96.0	18 20.5 -10.1 95.9	17 21.4 -09.9 95.7	16 22.2 -09.8 95.5	15 23.1 -09.7 95.4
4°	19 09.4 -10.5 97.1	18 10.4 -10.3 96.9	17 11.5 -10.3 96.7	16 12.4 -10.0 96.6	15 13.4 -10.0 96.4
5°	18 58.9 -10.8 98.1	18 00.1 -10.7 97.9	17 01.2 -10.5 97.8	16 02.4 -10.4 97.6	15 03.4 -10.2 97.4
6°	18 48.1 -11.2 99.2	17 49.4 -11.0 99.0	16 50.7 -10.8 98.8	15 52.0 -10.7 98.6	14 53.2 -10.5 98.4
7°	18 36.9 -11.5 100.2	17 38.4 -11.3 100.0	16 39.9 -11.2 99.8	15 41.3 -10.9 99.6	14 42.7 -10.7 99.4
8°	18 25.4 -11.9 101.2	17 27.1 -11.7 101.0	16 28.7 -11.4 100.8	15 30.4 -11.3 100.7	14 32.0 -11.1 100.5
9°	18 13.5 -12.2 102.3	17 15.4 -11.9 102.1	16 17.3 -11.7 101.9	15 19.1 -11.5 101.7	14 20.9 -11.3 101.5
10°	18 01.3 -12.5 103.3	17 03.5 -12.3 103.1	16 05.6 -12.1 102.9	15 07.6 -11.8 102.7	14 09.6 -11.5 102.5
11°	17 48.8 -12.9 104.3	16 51.2 -12.6 104.1	15 53.5 -12.3 103.9	14 55.8 -12.0 103.7	13 58.1 -11.8 103.5
12°	17 35.9 -13.1 105.4	16 38.6 -12.9 105.1	15 41.2 -12.6 104.9	14 43.8 -12.3 104.7	13 46.3 -12.0 104.5
13°	17 22.8 -13.5 106.4	16 25.7 -13.1 106.2	15 28.6 -12.8 105.9	14 31.5 -12.6 105.7	13 34.3 -12.3 105.5
14°	17 09.3 -13.8 107.4	16 12.6 -13.5 107.2	15 15.8 -13.2 107.0	14 18.9 -12.8 106.7	13 22.0 -12.5 106.5
15°	16 55.5 -14.0 108.4	15 59.1 -13.7 108.2	15 02.6 -13.4 108.0	14 06.1 -13.1 107.7	13 09.5 -12.8 107.5
16°	16 41.5 -14.4 109.4	15 45.4 -14.0 109.2	14 49.2 -13.6 109.0	13 53.0 -13.3 108.8	12 56.7 -13.0 108.5
17°	16 27.1 -14.7 110.4	15 31.4 -14.3 110.2	14 35.6 -14.0 110.0	13 39.7 -13.6 109.8	12 43.7 -13.2 109.5
18°	16 12.4 -14.9 111.5	15 17.1 -14.6 111.2	14 21.6 -14.1 111.0	13 26.1 -13.8 110.8	12 30.5 -13.4 110.5
19°	15 57.5 -15.3 112.5	15 02.5 -14.8 112.2	14 07.5 -14.5 112.0	13 12.3 -14.0 111.8	12 17.1 -13.6 111.5
20°	15 42.2 -15.5 113.5	14 47.7 -15.1 113.2	13 53.0 -14.6 113.0	12 58.3 -14.3 112.8	12 03.5 -13.9 112.5
21°	15 26.7 -15.8 114.5	14 32.6 -15.3 114.2	13 38.4 -15.0 114.0	12 44.0 -14.5 113.8	11 49.6 -14.1 113.5
22°	15 10.9 -16.0 115.5	14 17.3 -15.6 115.2	13 23.4 -15.1 115.0	12 29.5 -14.7 114.7	11 35.5 -14.2 114.5
23°	14 54.9 -16.3 116.5	14 01.7 -15.9 116.2	13 08.3 -15.4 116.0	12 14.8 -14.9 115.7	11 21.3 -14.5 115.5
24°	14 38.6 -16.5 117.5	13 45.8 -16.0 117.2	12 52.9 -15.6 117.0	11 59.9 -15.1 116.7	11 06.8 -14.7 116.5
25°	14 22.1 -16.8 118.5	13 29.8 -16.3 118.2	12 37.3 -15.8 118.0	11 44.8 -15.3 117.7	10 52.1 -14.8 117.5
26°	14 05.3 -17.1 119.5	13 13.5 -16.6 119.2	12 21.5 -16.0 118.9	11 29.5 -15.6 118.7	10 37.3 -15.0 118.5
27°	13 48.2 -17.3 120.4	12 56.9 -16.7 120.2	12 05.5 -16.2 119.9	11 13.9 -15.7 119.7	10 22.3 -15.3 119.5
28°	13 30.9 -17.5 121.4	12 40.2 -17.0 121.2	11 49.3 -16.5 120.9	10 58.2 -15.9 120.7	10 07.0 -15.3 120.4
29°	13 13.4 -17.7 122.4	12 23.2 -17.2 122.1	11 32.8 -16.6 121.9	10 42.3 -16.1 121.7	9 51.7 -15.6 121.4

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°	14 51.0 -08.7 92.1	13 51.7 -08.8 92.0	12 52.3 -08.7 91.8	11 52.9 -08.7 91.7	10 53.5 -08.6 91.5
1°	14 42.3 -09.1 93.2	13 42.9 -08.9 93.0	12 43.6 -08.9 92.9	11 44.2 -08.8 92.7	10 44.9 -08.8 92.6
2°	14 33.2 -09.3 94.2	13 34.0 -09.3 94.0	12 34.7 -09.2 93.9	11 35.4 -09.1 93.7	10 36.1 -09.0 93.6
3°	14 23.9 -09.6 95.2	13 24.7 -09.4 95.0	12 25.5 -09.3 94.9	11 26.3 -09.2 94.7	10 27.1 -09.2 94.6
4°	14 14.3 -09.8 96.2	13 15.3 -09.7 96.1	12 16.2 -09.6 95.9	11 17.1 -09.5 95.7	10 17.9 -09.3 95.6
5°	14 04.5 -10.1 97.2	13 05.6 -10.0 97.1	12 06.6 -09.8 96.9	11 07.6 -09.7 96.7	10 08.6 -09.6 96.6
6°	13 54.4 -10.3 98.3	12 55.6 -10.2 98.1	11 56.8 -10.0 97.9	10 57.9 -09.9 97.7	9 59.0 -09.7 97.6
7°	13 44.1 -10.6 99.3	12 45.4 -10.4 99.1	11 46.8 -10.3 98.9	10 48.0 -10.0 98.7	9 49.3 -09.9 98.6
8°	13 33.5 -10.8 100.3	12 35.0 -10.6 100.1	11 36.5 -10.4 99.9	10 38.0 -10.3 99.8	9 39.4 -10.1 99.6
9°	13 22.7 -11.1 101.3	12 24.4 -10.9 101.1	11 26.1 -10.7 100.9	10 27.7 -10.4 100.8	9 29.3 -10.2 100.6
10°	13 11.6 -11.3 102.3	12 13.5 -11.0 102.1	11 15.4 -10.8 101.9	10 17.3 -10.7 101.8	9 19.1 -10.4 101.6
11°	13 00.3 -11.5 103.3	12 02.5 -11.3 103.1	11 04.6 -11.1 102.9	10 06.6 -10.8 102.8	9 08.7 -10.6 102.6
12°	12 48.8 -11.8 104.3	11 51.2 -11.5 104.1	10 53.5 -11.2 103.9	9 55.8 -11.0 103.8	8 58.1 -10.7 103.6
13°	12 37.0 -12.0 105.3	11 39.7 -11.8 105.1	10 42.3 -11.5 104.9	9 44.8 -11.1 104.8	8 47.4 -10.9 104.6
14°	12 25.0 -12.2 106.3	11 27.9 -11.9 106.1	10 30.8 -11.6 105.9	9 33.7 -11.4 105.7	8 36.5 -11.1 105.6
15°	12 12.8 -12.5 107.3	11 16.0 -12.1 107.1	10 19.2 -11.8 106.9	9 22.3 -11.4 106.7	8 25.4 -11.2 106.6
16°	12 00.3 -12.6 108.3	11 03.9 -12.3 108.1	10 07.4 -12.0 107.9	9 10.9 -11.7 107.7	8 14.2 -11.3 107.6
17°	11 47.7 -12.9 109.3	10 51.6 -12.5 109.1	9 55.4 -12.1 108.9	8 59.2 -11.8 108.7	8 02.9 -11.5 108.5
18°	11 34.8 -13.0 110.3	10 39.1 -12.7 110.1	9 43.3 -12.4 109.9	8 47.4 -12.0 109.7	7 51.4 -11.6 109.5
19°	11 21.8 -13.3 111.3	10 26.4 -12.9 111.1	9 30.9 -12.5 110.9	8 35.4 -12.1 110.7	7 39.8 -11.8 110.5
20°	11 08.5 -13.4 112.3	10 13.5 -13.0 112.1	9 18.4 -12.6 111.9	8 23.3 -12.3 111.7	7 28.0 -11.9 111.5
21°	10 55.1 -13.7 113.3	10 00.5 -13.3 113.1	9 05.8 -12.9 112.9	8 11.0 -12.4 112.7	7 16.1 -12.0 112.5
22°	10 41.4 -13.8 114.3	9 47.2 -13.4 114.1	8 52.9 -12.9 113.9	7 58.6 -12.6 113.7	7 04.1 -12.1 113.5
23°	10 27.6 -14.0 115.3	9 33.8 -13.6 115.1	8 40.0 -13.2 114.9	7 46.0 -12.7 114.7	6 52.0 -12.3 114.5
24°	10 13.6 -14.2 116.3	9 20.2 -13.7 116.1	8 26.8 -13.3 115.9	7 33.3 -12.8 115.7	6 39.7 -12.4 115.5
25°	9 59.4 -14.4 117.3	9 06.5 -13.9 117.0	8 13.5 -13.4 116.8	7 20.5 -13.0 116.6	6 27.3 -12.5 116.4
26°	9 45.0 -14.5 118.2	8 52.6 -14.0 118.0	8 00.1 -13.5 117.8	7 07.5 -13.1 117.6	6 14.8 -12.6 117.4
27°	9 30.5 -14.7 119.2	8 38.6 -14.2 119.0	7 46.6 -13.7 118.8	6 54.4 -13.2 118.6	6 02.2 -12.7 118.4
28°	9 15.8 -14.9 120.2	8 24.4 -14.4 120.0	7 32.9 -13.9 119.8	6 41.2 -13.3 119.6	5 49.5 -12.8 119.4
29°	9 00.9 -15.0 121.2	8 10.0 -14.5 121.0	7 19.0 -13.9 120.8	6 27.9 -13.4 120.6	5 36.7 -12.9 120.4

Declination CONTRARY name to Latitude

Latitude 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°	9 54.1 -08.6 91.4	8 54.7 -08.5 91.3	7 55.3 -08.5 91.1	6 55.9 -08.5 91.0	5 56.5 -08.5 90.8
1°	9 45.5 -08.7 92.4	8 46.2 -08.7 92.3	7 46.8 -08.6 92.1	6 47.4 -08.6 92.0	5 48.0 -08.5 91.8
2°	9 36.8 -08.9 93.4	8 37.5 -08.9 93.3	7 38.2 -08.8 93.1	6 38.8 -08.7 93.0	5 39.5 -08.7 92.8
3°	9 27.9 -09.1 94.4	8 28.6 -09.0 94.3	7 29.4 -08.9 94.1	6 30.1 -08.8 94.0	5 30.8 -08.7 93.8
4°	9 18.8 -09.3 95.4	8 19.6 -09.1 95.3	7 20.5 -09.1 95.1	6 21.3 -09.0 95.0	5 22.1 -08.9 94.8
5°	9 09.5 -09.4 96.4	8 10.5 -09.3 96.3	7 11.4 -09.2 96.1	6 12.3 -09.0 96.0	5 13.2 -08.9 95.8
6°	9 00.1 -09.6 97.4	8 01.2 -09.4 97.3	7 02.2 -09.3 97.1	6 03.3 -09.2 97.0	5 04.3 -09.1 96.8
7°	8 50.5 -09.7 98.4	7 51.8 -09.6 98.3	6 52.9 -09.4 98.1	5 54.1 -09.3 97.9	4 55.2 -09.1 97.8
8°	8 40.8 -09.9 99.4	7 42.2 -09.7 99.3	6 43.5 -09.5 99.1	5 44.8 -09.3 98.9	4 46.1 -09.2 98.8
9°	8 30.9 -10.0 100.4	7 32.5 -09.9 100.3	6 34.0 -09.7 100.1	5 35.5 -09.5 99.9	4 36.9 -09.3 99.8
10°	8 20.9 -10.2 101.4	7 22.6 -10.0 101.2	6 24.3 -09.8 101.1	5 26.0 -09.6 100.9	4 27.6 -09.3 100.8
11°	8 10.7 -10.4 102.4	7 12.6 -10.1 102.2	6 14.5 -09.9 102.1	5 16.4 -09.7 101.9	4 18.3 -09.5 101.8
12°	8 00.3 -10.5 103.4	7 02.5 -10.2 103.2	6 04.6 -10.0 103.1	5 06.7 -09.7 102.9	4 08.8 -09.5 102.7
13°	7 49.8 -10.6 104.4	6 52.3 -10.4 104.2	5 54.6 -10.1 104.1	4 57.0 -09.9 103.9	3 59.3 -09.6 103.7
14°	7 39.2 -10.8 105.4	6 41.9 -10.5 105.2	5 44.5 -10.2 105.1	4 47.1 -09.9 104.9	3 49.7 -09.7 104.7
15°	7 28.4 -10.8 106.4	6 31.4 -10.6 106.2	5 34.3 -10.3 106.0	4 37.2 -10.0 105.9	3 40.0 -09.7 105.7
16°	7 17.6 -11.1 107.4	6 20.8 -10.7 107.2	5 24.0 -10.4 107.0	4 27.2 -10.1 106.9	3 30.3 -09.8 106.7
17°	7 06.5 -11.1 108.4	6 10.1 -10.8 108.2	5 13.6 -10.5 108.0	4 17.1 -10.2 107.9	3 20.5 -09.8 107.7
18°	6 55.4 -11.3 109.4	5 59.3 -10.9 109.2	5 03.1 -10.5 109.0	4 06.9 -10.2 108.8	3 10.7 -09.9 108.7
19°	6 44.1 -11.4 110.3	5 48.4 -11.1 110.2	4 52.6 -10.7 110.0	3 56.7 -10.3 109.8	3 00.8 -10.0 109.7
20°	6 32.7 -11.5 111.3	5 37.3 -11.1 111.2	4 41.9 -10.8 111.0	3 46.4 -10.4 110.8	2 50.8 -10.0 110.7
21°	6 21.2 -11.6 112.3	5 26.2 -11.2 112.1	4 31.1 -10.8 112.0	3 36.0 -10.4 111.8	2 40.8 -10.0 111.6
22°	6 09.6 -11.7 113.3	5 15.0 -11.3 113.1	4 20.3 -10.9 113.0	3 25.6 -10.5 112.8	2 30.8 -10.1 112.6
23°	5 57.9 -11.9 114.3	5 03.7 -11.4 114.1	4 09.4 -11.0 113.9	3 15.1 -10.6 113.8	2 20.7 -10.2 113.6
24°	5 46.0 -11.9 115.3	4 52.3 -11.5 115.1	3 58.4 -11.0 114.9	3 04.5 -10.6 114.8	2 10.5 -10.2 114.6
25°	5 34.1 -12.0 116.3	4 40.8 -11.6 116.1	3 47.4 -11.2 115.9	2 53.9 -10.7 115.7	2 00.3 -10.2 115.6
26°	5 22.1 -12.2 117.2	4 29.2 -11.7 117.1	3 36.2 -11.1 116.9	2 43.2 -10.7 116.7	1 50.1 -10.2 116.6
27°	5 09.9 -12.2 118.2	4 17.5 -11.7 118.1	3 25.1 -11.3 117.9	2 32.5 -10.8 117.7	1 39.9 -10.3 117.6
28°	4 57.7 -12.3 119.2	4 05.8 -11.8 119.0	3 13.8 -11.3 118.9	2 21.7 -10.8 118.7	1 29.6 -10.3 118.5
29°	4 45.4 -12.4 120.2	3 54.0 -11.9 120.0	3 02.5 -11.3 119.9	2 10.9 -10.8 119.7	1 19.3 -10.3 119.5

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 57.1 -08.5 90.7	3 57.7 -08.4 90.6	2 58.2 -08.3 90.4	1 58.8 -08.3 90.3	0 59.4 -08.3 90.1
1°	4 48.6 -08.5 91.7	3 49.3 -08.5 91.6	2 49.9 -08.5 91.4	1 50.5 -08.4 91.3	0 51.1 -08.4 91.1
2°	4 40.1 -08.6 92.7	3 40.8 -08.6 92.5	2 41.4 -08.5 92.4	1 42.1 -08.5 92.3	0 42.7 -08.4 92.1
3°	4 31.5 -08.6 93.7	3 32.2 -08.6 93.5	2 32.9 -08.5 93.4	1 33.6 -08.4 93.3	0 34.3 -08.4 93.1
4°	4 22.9 -08.8 94.7	3 23.6 -08.6 94.5	2 24.4 -08.6 94.4	1 25.2 -08.5 94.2	0 25.9 -08.4 94.1
5°	4 14.1 -08.8 95.7	3 15.0 -08.7 95.5	2 15.8 -08.6 95.4	1 16.7 -08.5 95.2	0 17.5 -08.4 95.1
6°	4 05.3 -08.9 96.7	3 06.3 -08.8 96.5	2 07.2 -08.6 96.4	1 08.2 -08.6 96.2	0 09.1 -08.4 96.1
7°	3 56.4 -09.0 97.6	2 57.5 -08.9 97.5	1 58.6 -08.7 97.4	0 59.6 -08.5 97.2	0 00.7 -08.5 97.1
8°	3 47.4 -09.0 98.6	2 48.6 -08.8 98.5	1 49.9 -08.8 98.3	0 51.1 -08.6 98.2	-0 07.8 -08.4
9°	3 38.4 -09.2 99.6	2 39.8 -09.0 99.5	1 41.1 -08.7 99.3	0 42.5 -08.6 99.2	-0 16.2 -08.4
10°	3 29.2 -09.1 100.6	2 30.8 -08.9 100.5	1 32.4 -08.8 100.3	0 33.9 -08.6 100.2	-0 24.6 -08.4
11°	3 20.1 -09.3 101.6	2 21.9 -09.1 101.5	1 23.6 -08.8 101.3	0 25.3 -08.6 101.2	-0 33.0 -08.4
12°	3 10.8 -09.2 102.6	2 12.8 -09.0 102.4	1 14.8 -08.8 102.3	0 16.7 -08.6 102.2	-0 41.4 -08.3
13°	3 01.6 -09.4 103.6	2 03.8 -09.1 103.4	1 06.0 -08.9 103.3	0 08.1 -08.6 103.1	-0 49.7 -08.4
14°	2 52.2 -09.4 104.6	1 54.7 -09.1 104.4	0 57.1 -08.8 104.3	-0 00.5 -08.6	-0 58.1 -08.3
15°	2 42.8 -09.4 105.6	1 45.6 -09.2 105.4	0 48.3 -08.9 105.3	-0 09.1 -08.6	-1 06.4 -08.4
16°	2 33.4 -09.5 106.6	1 36.4 -09.2 106.4	0 39.4 -08.9 106.3	-0 17.7 -08.6	-1 14.8 -08.3
17°	2 23.9 -09.5 107.5	1 27.2 -09.2 107.4	0 30.5 -08.9 107.2	-0 26.3 -08.6	-1 23.1 -08.3
18°	2 14.4 -09.6 108.5	1 18.0 -09.2 108.4	0 21.6 -08.9 108.2	-0 34.9 -08.5	-1 31.4 -08.2
19°	2 04.8 -09.6 109.5	1 08.8 -09.3 109.4	0 12.7 -08.9 109.2	-0 43.4 -08.6	-1 39.6 -08.2
20°	1 55.2 -09.6 110.5	0 59.5 -09.3 110.4	0 03.8 -08.9 110.2	-0 52.0 -08.5	-1 47.8 -08.2
21°	1 45.6 -09.7 111.5	0 50.2 -09.2 111.3	-0 05.1 -08.9	-1 00.5 -08.6	-1 56.0 -08.2
22°	1 35.9 -09.7 112.5	0 41.0 -09.3 112.3	-0 14.0 -08.9	-1 09.1 -08.5	-2 04.2 -08.1
23°	1 26.2 -09.7 113.5	0 31.7 -09.4 113.3	-0 22.9 -08.9	-1 17.6 -08.5	-2 12.3 -08.1
24°	1 16.5 -09.8 114.5	0 22.3 -09.3 114.3	-0 31.8 -08.9	-1 26.1 -08.4	-2 20.4 -08.0
25°	1 06.7 -09.8 115.4	0 13.0 -09.3 115.3	-0 40.7 -08.9	-1 34.5 -08.5	-2 28.4 -08.0
26°	0 56.9 -09.7 116.4	0 03.7 -09.3 116.3	-0 49.6 -08.9	-1 43.0 -08.4	-2 36.4 -07.9
27°	0 47.2 -09.8 117.4	-0 05.6 -09.3	-0 58.5 -08.8	-1 51.4 -08.3	-2 44.3 -07.9
28°	0 37.4 -09.9 118.4	-0 14.9 -09.4	-1 07.3 -08.8	-1 59.7 -08.4	-2 52.2 -07.9
29°	0 27.5 -09.8 119.4	-0 24.3 -09.3	-1 16.1 -08.8	-2 08.1 -08.3	-3 00.1 -07.8

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

Latitude 8°

Declination CONTRARY name to Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -08.3 90.0	-0 59.4 -08.4			
1°	-0 08.3 -08.4	-1 07.8 -08.3			
2°	-0 16.7 -08.3	-1 16.1 -08.3			
3°	-0 25.0 -08.4	-1 24.4 -08.3			
4°	-0 33.4 -08.3	-1 32.7 -08.2			
5°	-0 41.7 -08.3	-1 40.9 -08.2			
6°	-0 50.0 -08.3	-1 49.1 -08.2			
7°	-0 58.3 -08.3	-1 57.3 -08.1			
8°	-1 06.6 -08.3	-2 05.4 -08.2			
9°	-1 14.9 -08.2	-2 13.6 -08.0			
10°	-1 23.1 -08.2	-2 21.6 -08.1			
11°	-1 31.3 -08.2	-2 29.7 -07.9			
12°	-1 39.5 -08.1	-2 37.6 -08.0			
13°	-1 47.6 -08.2	-2 45.6 -07.9			
14°	-1 55.8 -08.1	-2 53.5 -07.8			
15°	-2 03.9 -08.0	-3 01.3 -07.8			
16°	-2 11.9 -08.0	-3 09.1 -07.7			
17°	-2 19.9 -08.0	-3 16.8 -07.7			
18°	-2 27.9 -07.9	-3 24.5 -07.6			
19°	-2 35.8 -07.9	-3 32.1 -07.5			
20°	-2 43.7 -07.8	-3 39.6 -07.5			
21°	-2 51.5 -07.8	-3 47.1 -07.4			
22°	-2 59.3 -07.7	-3 54.5 -07.3			
23°	-3 07.0 -07.7	-4 01.8 -07.3			
24°	-3 14.7 -07.6	-4 09.1 -07.2			
25°	-3 22.3 -07.6	-4 16.3 -07.1			
26°	-3 29.9 -07.5	-4 23.4 -07.0			
27°	-3 37.4 -07.4	-4 30.4 -07.0			
28°	-3 44.8 -07.3	-4 37.4 -06.8			
29°	-3 52.1 -07.3	-4 44.2 -06.8			

Dec	LHA 095° / 265°	LHA 096° / 264°	LHA 097° / 263°	LHA 098° / 262°	LHA 099° / 261°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°					
1°					
2°					
3°					
4°					
5°					
6°					
7°					
8°					
9°					
10°					
11°					
12°					
13°					
14°					
15°					
16°					
17°					
18°					
19°					
20°					
21°					
22°					
23°					
24°					
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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°	81 00.0 -60.0 180.0	80 56.7 -59.7 173.6	80 46.9 -58.7 167.4	80 31.0 -57.2 161.5	80 09.5 -55.4 155.9
1°	80 00.0 -60.0 180.0	79 57.0 -59.7 174.3	79 48.2 -58.9 168.6	79 33.8 -57.7 163.2	79 14.1 -56.1 158.1
2°	79 00.0 -60.0 180.0	78 57.3 -59.8 174.8	78 49.3 -59.2 169.6	78 36.1 -58.1 164.7	78 18.0 -56.7 159.9
3°	78 00.0 -60.0 180.0	77 57.5 -59.8 175.2	77 50.1 -59.2 170.5	77 38.0 -58.4 165.9	77 21.3 -57.2 161.4
4°	77 00.0 -60.0 180.0	76 57.7 -59.8 175.6	76 50.9 -59.4 171.2	76 39.6 -58.6 166.9	76 24.1 -57.5 162.8
5°	76 00.0 -60.0 180.0	75 57.9 -59.9 175.9	75 51.5 -59.4 171.8	75 41.0 -58.7 167.8	75 26.6 -57.9 163.9
6°	75 00.0 -60.0 180.0	74 58.0 -59.9 176.2	74 52.1 -59.5 172.4	74 42.3 -58.9 168.6	74 28.7 -58.0 165.0
7°	74 00.0 -60.0 180.0	73 58.1 -59.9 176.4	73 52.6 -59.6 172.8	73 43.4 -59.0 169.3	73 30.7 -58.4 165.9
8°	73 00.0 -60.0 180.0	72 58.2 -59.9 176.6	72 53.0 -59.6 173.3	72 44.4 -59.2 169.9	72 32.3 -58.4 166.7
9°	72 00.0 -60.0 180.0	71 58.3 -59.9 176.8	71 53.4 -59.6 173.6	71 45.2 -59.2 170.5	71 33.9 -58.7 167.4
10°	71 00.0 -60.0 180.0	70 58.4 -59.9 177.0	70 53.8 -59.7 174.0	70 46.0 -59.3 171.0	70 35.2 -58.7 168.1
11°	70 00.0 -60.0 180.0	69 58.5 -59.9 177.1	69 54.1 -59.7 174.3	69 46.7 -59.3 171.5	69 36.5 -58.9 168.7
12°	69 00.0 -60.0 180.0	68 58.6 -59.9 177.3	68 54.4 -59.8 174.6	68 47.4 -59.5 171.9	68 37.6 -58.9 169.2
13°	68 00.0 -60.0 180.0	67 58.7 -60.0 177.4	67 54.6 -59.7 174.8	67 47.9 -59.4 172.2	67 38.7 -59.1 169.7
14°	67 00.0 -60.0 180.0	66 58.7 -59.9 177.5	66 54.9 -59.8 175.0	66 48.5 -59.5 172.6	66 39.6 -59.1 170.2
15°	66 00.0 -60.0 180.0	65 58.8 -60.0 177.6	65 55.1 -59.8 175.3	65 49.0 -59.5 172.9	65 40.5 -59.2 170.6
16°	65 00.0 -60.0 180.0	64 58.8 -59.9 177.7	64 55.3 -59.8 175.5	64 49.5 -59.6 173.2	64 41.3 -59.2 171.0
17°	64 00.0 -60.0 180.0	63 58.9 -60.0 177.8	63 55.5 -59.8 175.6	63 49.9 -59.6 173.5	63 42.1 -59.3 171.3
18°	63 00.0 -60.0 180.0	62 58.9 -59.9 177.9	62 55.7 -59.9 175.8	62 50.3 -59.6 173.7	62 42.8 -59.4 171.7
19°	62 00.0 -60.0 180.0	61 59.0 -60.0 178.0	61 55.8 -59.8 176.0	61 50.7 -59.7 174.0	61 43.4 -59.4 172.0
20°	61 00.0 -60.0 180.0	60 59.0 -60.0 178.1	60 56.0 -59.9 176.1	60 51.0 -59.7 174.2	60 44.0 -59.4 172.3
21°	60 00.0 -60.0 180.0	59 59.0 -59.9 178.1	59 56.1 -59.8 176.3	59 51.3 -59.7 174.4	59 44.6 -59.4 172.6
22°	59 00.0 -60.0 180.0	58 59.1 -60.0 178.2	58 56.3 -59.9 176.4	58 51.6 -59.7 174.6	58 45.2 -59.5 172.8
23°	58 00.0 -60.0 180.0	57 59.1 -60.0 178.3	57 56.4 -59.9 176.5	57 51.9 -59.7 174.8	57 45.7 -59.5 173.1
24°	57 00.0 -60.0 180.0	56 59.1 -59.9 178.3	56 56.5 -59.8 176.6	56 52.2 -59.7 175.0	56 46.2 -59.6 173.3
25°	56 00.0 -60.0 180.0	55 59.2 -60.0 178.4	55 56.7 -59.9 176.8	55 52.5 -59.8 175.1	55 46.6 -59.5 173.5
26°	55 00.0 -60.0 180.0	54 59.2 -60.0 178.4	54 56.8 -59.9 176.9	54 52.7 -59.7 175.3	54 47.1 -59.6 173.8
27°	54 00.0 -60.0 180.0	53 59.2 -60.0 178.5	53 56.9 -59.9 177.0	53 53.0 -59.8 175.5	53 47.5 -59.6 174.0
28°	53 00.0 -60.0 180.0	52 59.2 -59.9 178.5	52 57.0 -59.9 177.1	52 53.2 -59.8 175.6	52 47.9 -59.6 174.2
29°	52 00.0 -60.0 180.0	51 59.3 -60.0 178.6	51 57.1 -59.9 177.2	51 53.4 -59.8 175.7	51 48.3 -59.7 174.3

Dec	LHA 005° / 355°	LHA 006° / 354°	LHA 007° / 353°	LHA 008° / 352°	LHA 009° / 351°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	79 42.9 -53.2 150.8	79 11.8 -50.8 146.1	78 37.0 -48.5 141.9	77 58.8 -46.1 138.1	77 17.9 -43.8 134.6
1°	78 49.7 -54.3 153.3	78 21.0 -52.2 148.8	77 48.5 -50.0 144.8	77 12.7 -47.8 141.0	76 34.1 -45.7 137.7
2°	77 55.4 -55.0 155.4	77 28.8 -53.3 151.2	76 58.5 -51.4 147.3	76 24.9 -49.4 143.7	75 48.4 -47.4 140.4
3°	77 00.4 -55.8 157.2	76 35.5 -54.1 153.2	76 07.1 -52.4 149.5	75 35.5 -50.6 146.0	75 01.0 -48.7 142.8
4°	76 04.6 -56.3 158.8	75 41.4 -54.9 155.0	75 14.7 -53.3 151.5	74 44.9 -51.6 148.1	74 12.3 -50.0 145.0
5°	75 08.3 -56.7 160.2	74 46.5 -55.4 156.6	74 21.4 -54.0 153.2	73 53.3 -52.6 150.0	73 22.3 -51.0 147.0
6°	74 11.6 -57.1 161.4	73 51.1 -55.9 158.1	73 27.4 -54.7 154.8	73 00.7 -53.3 151.7	72 31.3 -51.9 148.8
7°	73 14.5 -57.4 162.5	72 55.2 -56.4 159.3	72 32.7 -55.2 156.2	72 07.4 -53.9 153.3	71 39.4 -52.6 150.4
8°	72 17.1 -57.7 163.5	71 58.8 -56.8 160.5	71 37.5 -55.7 157.5	71 13.5 -54.6 154.6	70 46.8 -53.3 151.9
9°	71 19.4 -57.9 164.4	71 02.0 -57.0 161.5	70 41.8 -56.0 158.6	70 18.9 -55.0 155.9	69 53.5 -53.9 153.3
10°	70 21.5 -58.1 165.2	70 05.0 -57.3 162.4	69 45.8 -56.4 159.7	69 23.9 -55.4 157.1	68 59.6 -54.3 154.5
11°	69 23.4 -58.2 165.9	69 07.7 -57.5 163.3	68 49.4 -56.8 160.7	68 28.5 -55.8 158.1	68 05.3 -54.9 155.7
12°	68 25.2 -58.4 166.6	68 10.2 -57.8 164.0	67 52.6 -56.9 161.5	67 32.7 -56.2 159.1	67 10.4 -55.2 156.8
13°	67 26.8 -58.5 167.2	67 12.4 -57.9 164.8	66 55.7 -57.3 162.4	66 36.5 -56.4 160.0	66 15.2 -55.6 157.8
14°	66 28.3 -58.7 167.8	66 14.5 -58.1 165.4	65 58.4 -57.4 163.1	65 40.1 -56.7 160.9	65 19.6 -55.9 158.7
15°	65 29.6 -58.7 168.3	65 16.4 -58.2 166.0	65 01.0 -57.6 163.8	64 43.4 -56.9 161.6	64 23.7 -56.1 159.5
16°	64 30.9 -58.9 168.8	64 18.2 -58.3 166.6	64 03.4 -57.7 164.5	63 46.5 -57.1 162.4	63 27.6 -56.4 160.3
17°	63 32.0 -58.9 169.2	63 19.9 -58.4 167.1	63 05.7 -57.9 165.1	62 49.4 -57.3 163.1	62 31.2 -56.7 161.1
18°	62 33.1 -58.9 169.6	62 21.5 -58.6 167.6	62 07.8 -58.1 165.6	61 52.1 -57.5 163.7	61 34.5 -56.8 161.8
19°	61 34.2 -59.1 170.0	61 22.9 -58.6 168.1	61 09.7 -58.1 166.2	60 54.6 -57.6 164.3	60 37.7 -57.1 162.4
20°	60 35.1 -59.1 170.4	60 24.3 -58.7 168.5	60 11.6 -58.3 166.7	59 57.0 -57.8 164.9	59 40.6 -57.2 163.1
21°	59 36.0 -59.1 170.7	59 25.6 -58.8 168.9	59 13.3 -58.4 167.2	58 59.2 -57.9 165.4	58 43.4 -57.3 163.7
22°	58 36.9 -59.2 171.1	58 26.8 -58.9 169.3	58 14.9 -58.4 167.6	58 01.3 -58.0 165.9	57 46.1 -57.5 164.2
23°	57 37.7 -59.3 171.4	57 27.9 -58.9 169.7	57 16.5 -58.6 168.0	57 03.3 -58.1 166.4	56 48.6 -57.7 164.7
24°	56 38.4 -59.2 171.7	56 29.0 -59.0 170.0	56 17.9 -58.6 168.4	56 05.2 -58.2 166.8	55 50.9 -57.7 165.3
25°	55 39.2 -59.4 172.0	55 30.0 -59.0 170.4	55 19.3 -58.6 168.8	55 07.0 -58.2 167.3	54 53.2 -57.8 165.7
26°	54 39.8 -59.3 172.2	54 31.0 -59.0 170.7	54 20.7 -58.8 169.2	54 08.8 -58.4 167.7	53 55.4 -58.0 166.2
27°	53 40.5 -59.4 172.5	53 32.0 -59.1 171.0	53 21.9 -58.8 169.5	53 10.4 -58.4 168.1	52 57.4 -58.0 166.6
28°	52 41.1 -59.4 172.7	52 32.9 -59.2 171.3	52 23.1 -58.8 169.8	52 12.0 -58.5 168.4	51 59.4 -58.1 167.0
29°	51 41.7 -59.4 172.9	51 33.7 -59.2 171.5	51 24.3 -58.9 170.2	51 13.5 -58.6 168.8	51 01.3 -58.2 167.4

Dec	LHA 010° / 350°	LHA 011° / 349°	LHA 012° / 348°	LHA 013° / 347°	LHA 014° / 346°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	76 34.6 -41.5 131.6	75 49.4 -39.5 128.8	75 02.4 -37.6 126.4	74 14.0 -35.8 124.1	73 24.3 -34.0 122.1
1°	75 53.1 -43.7 134.6	75 09.9 -41.7 131.8	74 24.8 -39.7 129.3	73 38.2 -37.9 127.0	72 50.3 -36.3 124.9
2°	75 09.4 -45.4 137.4	74 28.2 -43.5 134.6	73 45.1 -41.7 132.0	73 00.3 -40.0 129.7	72 14.0 -38.3 127.6
3°	74 24.0 -46.9 139.8	73 44.7 -45.1 137.1	73 03.4 -43.4 134.6	72 20.3 -41.7 132.2	71 35.7 -40.1 130.1
4°	73 37.1 -48.3 142.1	72 59.6 -46.6 139.4	72 20.0 -44.9 136.9	71 38.6 -43.2 134.6	70 55.6 -41.7 132.4
5°	72 48.8 -49.4 144.2	72 13.0 -47.8 141.5	71 35.1 -46.2 139.0	70 55.4 -44.7 136.7	70 13.9 -43.2 134.6
6°	71 59.4 -50.4 146.0	71 25.2 -48.9 143.4	70 48.9 -47.4 141.0	70 10.7 -46.0 138.7	69 30.7 -44.4 136.6
7°	71 09.0 -51.3 147.8	70 36.3 -49.9 145.2	70 01.5 -48.5 142.8	69 24.7 -47.0 140.6	68 46.3 -45.7 138.5
8°	70 17.7 -52.0 149.3	69 46.4 -50.7 146.9	69 13.0 -49.4 144.5	68 37.7 -48.0 142.3	68 00.6 -46.7 140.2
9°	69 25.7 -52.7 150.8	68 55.7 -51.4 148.4	68 23.6 -50.1 146.1	67 49.7 -49.0 143.9	67 13.9 -47.6 141.9
10°	68 33.0 -53.2 152.1	68 04.3 -52.2 149.8	67 33.5 -51.0 147.6	67 00.7 -49.7 145.4	66 26.3 -48.6 143.4
11°	67 39.8 -53.8 153.4	67 12.1 -52.7 151.1	66 42.5 -51.6 148.9	66 11.0 -50.4 146.8	65 37.7 -49.2 144.9
12°	66 46.0 -54.3 154.5	66 19.4 -53.2 152.3	65 50.9 -52.2 150.2	65 20.6 -51.1 148.2	64 48.5 -50.0 146.2
13°	65 51.7 -54.6 155.6	65 26.2 -53.7 153.4	64 58.7 -52.7 151.4	64 29.5 -51.7 149.4	63 58.5 -50.7 147.5
14°	64 57.1 -55.1 156.5	64 32.5 -54.1 154.5	64 06.0 -53.1 152.5	63 37.8 -52.2 150.6	63 07.8 -51.2 148.7
15°	64 02.0 -55.3 157.5	63 38.4 -54.5 155.5	63 12.9 -53.7 153.5	62 45.6 -52.7 151.7	62 16.6 -51.7 149.8
16°	63 06.7 -55.7 158.3	62 43.9 -54.9 156.4	62 19.2 -54.0 154.5	61 52.9 -53.1 152.7	61 24.9 -52.2 150.9
17°	62 11.0 -55.9 159.2	61 49.0 -55.2 157.3	61 25.2 -54.3 155.4	60 59.8 -53.6 153.7	60 32.7 -52.7 151.9
18°	61 15.1 -56.2 159.9	60 53.8 -55.4 158.1	60 30.9 -54.7 156.3	60 06.2 -53.8 154.6	59 40.0 -53.0 152.9
19°	60 18.9 -56.4 160.6	59 58.4 -55.7 158.9	59 36.2 -55.0 157.1	59 12.4 -54.3 155.5	58 47.0 -53.5 153.8
20°	59 22.5 -56.6 161.3	59 02.7 -56.0 159.6	58 41.2 -55.2 157.9	58 18.1 -54.5 156.3	57 53.5 -53.7 154.7
21°	58 25.9 -56.8 162.0	58 06.7 -56.1 160.3	57 46.0 -55.5 158.7	57 23.6 -54.8 157.1	56 59.8 -54.1 155.5
22°	57 29.1 -56.9 162.6	57 10.6 -56.4 161.0	56 50.5 -55.8 159.4	56 28.8 -55.0 157.8	56 05.7 -54.3 156.3
23°	56 32.2 -57.1 163.1	56 14.2 -56.5 161.6	55 54.7 -55.9 160.0	55 33.8 -55.3 158.5	55 11.4 -54.7 157.0
24°	55 35.1 -57.3 163.7	55 17.7 -56.7 162.2	54 58.8 -56.1 160.7	54 38.5 -55.5 159.2	54 16.7 -54.8 157.8
25°	54 37.8 -57.3 164.2	54 21.0 -56.9 162.7	54 02.7 -56.3 161.3	53 43.0 -55.7 159.8	53 21.9 -55.1 158.4
26°	53 40.5 -57.5 164.7	53 24.1 -57.0 163.3	53 06.4 -56.5 161.9	52 47.3 -55.9 160.5	52 26.8 -55.3 159.1
27°	52 43.0 -57.6 165.2	52 27.1 -57.1 163.8	52 09.9 -56.6 162.4	51 51.4 -56.1 161.1	51 31.5 -55.5 159.7
28°	51 45.4 -57.7 165.7	51 30.0 -57.2 164.3	51 13.3 -56.7 163.0	50 55.3 -56.2 161.6	50 36.0 -55.7 160.3
29°	50 47.7 -57.8 166.1	50 32.8 -57.4 164.8	50 16.6 -56.9 163.5	49 59.1 -56.4 162.2	49 40.3 -55.8 160.9

Dec	LHA 015° / 345°	LHA 016° / 344°	LHA 017° / 343°	LHA 018° / 342°	LHA 019° / 341°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	72 33.6 -32.5 120.3	71 42.0 -31.0 118.6	70 49.6 -29.7 117.1	69 56.5 -28.4 115.7	69 02.9 -27.4 114.4
1°	72 01.1 -34.7 123.0	71 11.0 -33.3 121.3	70 19.9 -31.9 119.7	69 28.1 -30.6 118.2	68 35.5 -29.4 116.9
2°	71 26.4 -36.7 125.6	70 37.7 -35.2 123.8	69 48.0 -33.8 122.2	68 57.5 -32.6 120.7	68 06.1 -31.3 119.3
3°	70 49.7 -38.5 128.1	70 02.5 -37.1 126.3	69 14.2 -35.7 124.6	68 24.9 -34.4 123.0	67 34.8 -33.2 121.5
4°	70 11.2 -40.2 130.4	69 25.4 -38.8 128.5	68 38.5 -37.4 126.8	67 50.5 -36.1 125.2	67 01.6 -34.8 123.7
5°	69 31.0 -41.7 132.5	68 46.6 -40.3 130.7	68 01.1 -38.9 128.9	67 14.4 -37.6 127.3	66 26.8 -36.4 125.7
6°	68 49.3 -43.1 134.6	68 06.3 -41.6 132.7	67 22.2 -40.4 130.9	66 36.8 -39.0 129.3	65 50.4 -37.8 127.7
7°	68 06.2 -44.3 136.5	67 24.7 -43.0 134.6	66 41.8 -41.6 132.8	65 57.8 -40.4 131.2	65 12.6 -39.1 129.6
8°	67 21.9 -45.4 138.2	66 41.7 -44.1 136.4	66 00.2 -42.8 134.6	65 17.4 -41.6 132.9	64 33.5 -40.4 131.4
9°	66 36.5 -46.4 139.9	65 57.6 -45.1 138.1	65 17.4 -43.9 136.3	64 35.8 -42.7 134.6	63 53.1 -41.6 133.1
10°	65 50.1 -47.3 141.5	65 12.5 -46.1 139.7	64 33.5 -45.0 137.9	63 53.1 -43.7 136.3	63 11.5 -42.5 134.7
11°	65 02.8 -48.1 143.0	64 26.4 -47.0 141.2	63 48.5 -45.8 139.4	63 09.4 -44.7 137.8	62 29.0 -43.6 136.2
12°	64 14.7 -48.9 144.4	63 39.4 -47.7 142.6	63 02.7 -46.6 140.9	62 24.7 -45.6 139.3	61 45.4 -44.5 137.7
13°	63 25.8 -49.5 145.7	62 51.7 -48.5 143.9	62 16.1 -47.5 142.3	61 39.1 -46.3 140.6	61 00.9 -45.3 139.1
14°	62 36.3 -50.2 146.9	62 03.2 -49.2 145.2	61 28.6 -48.1 143.6	60 52.8 -47.1 142.0	60 15.6 -46.0 140.4
15°	61 46.1 -50.8 148.1	61 14.0 -49.8 146.4	60 40.5 -48.8 144.8	60 05.7 -47.8 143.2	59 29.6 -46.8 141.7
16°	60 55.3 -51.3 149.2	60 24.2 -50.3 147.6	59 51.7 -49.3 146.0	59 17.9 -48.4 144.4	58 42.8 -47.4 142.9
17°	60 04.0 -51.7 150.3	59 33.9 -50.8 148.6	59 02.4 -50.0 147.1	58 29.5 -49.0 145.6	57 55.4 -48.1 144.1
18°	59 12.3 -52.2 151.3	58 43.1 -51.4 149.7	58 12.4 -50.4 148.1	57 40.5 -49.5 146.7	57 07.3 -48.6 145.2
19°	58 20.1 -52.6 152.2	57 51.7 -51.7 150.7	57 22.0 -50.9 149.2	56 51.0 -50.0 147.7	56 18.7 -49.1 146.3
20°	57 27.5 -53.0 153.1	57 00.0 -52.2 151.6	56 31.1 -51.3 150.1	56 01.0 -50.5 148.7	55 29.6 -49.7 147.3
21°	56 34.5 -53.3 154.0	56 07.8 -52.5 152.5	55 39.8 -51.8 151.1	55 10.5 -51.0 149.7	54 39.9 -50.1 148.3
22°	55 41.2 -53.7 154.8	55 15.3 -52.9 153.4	54 48.0 -52.1 151.9	54 19.5 -51.3 150.6	53 49.8 -50.5 149.2
23°	54 47.5 -53.9 155.6	54 22.4 -53.2 154.2	53 55.9 -52.4 152.8	53 28.2 -51.7 151.5	52 59.3 -50.9 150.1
24°	53 53.6 -54.2 156.3	53 29.2 -53.5 155.0	53 03.5 -52.8 153.6	52 36.5 -52.0 152.3	52 08.4 -51.3 151.0
25°	52 59.4 -54.4 157.1	52 35.7 -53.8 155.7	52 10.7 -53.1 154.4	51 44.5 -52.4 153.1	51 17.1 -51.6 151.9
26°	52 05.0 -54.7 157.8	51 41.9 -54.0 156.4	51 17.6 -53.3 155.2	50 52.1 -52.6 153.9	50 25.5 -52.0 152.7
27°	51 10.3 -54.9 158.4	50 47.9 -54.3 157.1	50 24.3 -53.6 155.9	49 59.5 -53.0 154.6	49 33.5 -52.2 153.4
28°	50 15.4 -55.1 159.1	49 53.6 -54.5 157.8	49 30.7 -53.9 156.6	49 06.5 -53.2 155.4	48 41.3 -52.6 154.2
29°	49 20.3 -55.3 159.7	48 59.1 -54.6 158.4	48 36.8 -54.1 157.2	48 13.3 -53.4 156.1	47 48.7 -52.8 154.9

Declination CONTRARY name to Latitude

Latitude 9°

Dec	LHA 020° / 340°	LHA 021° / 339°	LHA 022° / 338°	LHA 023° / 337°	LHA 024° / 336°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	68 08.6 -26.2 113.3	67 14.0 -25.3 112.2	66 18.9 -24.4 111.2	65 23.5 -23.5 110.2	64 27.7 -22.7 109.4
1°	67 42.4 -28.3 115.7	66 48.7 -27.3 114.5	65 54.5 -26.2 113.4	65 00.0 -25.4 112.4	64 05.0 -24.5 111.5
2°	67 14.1 -30.2 118.0	66 21.4 -29.1 116.7	65 28.3 -28.1 115.6	64 34.6 -27.2 114.6	63 40.5 -26.3 113.6
3°	66 43.9 -32.0 120.2	65 52.3 -30.8 118.9	65 00.2 -29.9 117.7	64 07.4 -28.8 116.6	63 14.2 -27.9 115.6
4°	66 11.9 -33.6 122.3	65 21.5 -32.6 121.0	64 30.3 -31.4 119.8	63 38.6 -30.5 118.6	62 46.3 -29.5 117.5
5°	65 38.3 -35.2 124.3	64 48.9 -34.0 123.0	63 58.9 -33.0 121.7	63 08.1 -31.9 120.5	62 16.8 -31.0 119.4
6°	65 03.1 -36.6 126.3	64 14.9 -35.5 124.9	63 25.9 -34.4 123.6	62 36.2 -33.4 122.4	61 45.8 -32.4 121.2
7°	64 26.5 -38.0 128.1	63 39.4 -36.9 126.7	62 51.5 -35.8 125.4	62 02.8 -34.7 124.2	61 13.4 -33.7 123.0
8°	63 48.5 -39.2 129.9	63 02.5 -38.1 128.5	62 15.7 -37.0 127.2	61 28.1 -36.0 125.9	60 39.7 -34.9 124.7
9°	63 09.3 -40.4 131.6	62 24.4 -39.2 130.2	61 38.7 -38.2 128.8	60 52.1 -37.1 127.6	60 04.8 -36.2 126.4
10°	62 28.9 -41.5 133.2	61 45.2 -40.4 131.8	61 00.5 -39.3 130.4	60 15.0 -38.3 129.2	59 28.6 -37.2 127.9
11°	61 47.4 -42.4 134.7	61 04.8 -41.4 133.3	60 21.2 -40.3 132.0	59 36.7 -39.3 130.7	58 51.4 -39.3 129.5
12°	61 05.0 -43.4 136.2	60 23.4 -42.3 134.8	59 40.9 -41.3 133.5	58 57.4 -40.3 132.2	58 13.1 -39.3 130.9
13°	60 21.6 -44.3 137.6	59 41.1 -43.2 136.2	58 59.6 -42.2 134.9	58 17.1 -41.1 133.6	57 33.8 -40.2 132.4
14°	59 37.3 -45.0 139.0	58 57.9 -44.0 137.6	58 17.4 -43.0 136.2	57 36.0 -42.1 135.0	56 53.6 -41.1 133.7
15°	58 52.3 -45.8 140.3	58 13.9 -44.8 138.9	57 34.4 -43.8 137.6	56 53.9 -42.8 136.3	56 12.5 -41.9 135.1
16°	58 06.5 -46.5 141.5	57 29.1 -45.5 140.1	56 50.6 -44.6 138.8	56 11.1 -43.6 137.6	55 30.9 -42.7 136.3
17°	57 20.0 -47.1 142.7	56 43.6 -46.2 141.3	56 06.0 -45.2 140.0	55 27.5 -44.3 138.8	54 47.9 -43.3 137.6
18°	56 32.9 -47.7 143.8	55 57.4 -46.8 142.5	55 20.8 -45.9 141.2	54 43.2 -45.0 140.0	54 04.6 -44.1 138.8
19°	55 45.2 -48.2 144.9	55 10.6 -47.3 143.6	54 34.9 -46.5 142.3	53 58.2 -45.6 141.1	53 20.5 -44.7 139.9
20°	54 57.0 -48.8 146.0	54 23.3 -48.0 144.7	53 48.4 -47.0 143.4	53 12.6 -46.2 142.2	52 35.8 -45.3 141.0
21°	54 08.2 -49.3 147.0	53 35.3 -48.4 145.7	53 01.4 -47.6 144.4	52 26.4 -46.7 143.2	51 50.5 -45.9 142.1
22°	53 18.9 -49.7 147.9	52 46.9 -48.9 146.7	52 13.8 -48.0 145.5	51 39.7 -47.2 144.3	51 04.6 -46.3 143.1
23°	52 29.2 -50.1 148.9	51 58.0 -49.3 147.6	51 25.8 -48.5 146.4	50 52.5 -47.7 145.3	50 18.3 -46.9 144.1
24°	51 39.1 -50.5 149.8	51 08.7 -49.7 148.5	50 37.3 -49.0 147.4	50 04.8 -48.2 146.2	49 31.4 -47.4 145.1
25°	50 48.6 -50.9 150.6	50 19.0 -50.1 149.4	49 48.3 -49.3 148.3	49 16.6 -48.5 147.1	48 44.0 -47.8 146.0
26°	49 57.7 -51.2 151.5	49 28.9 -50.5 150.3	48 59.0 -49.8 149.1	48 28.1 -49.0 148.0	47 56.2 -48.2 146.9
27°	49 06.5 -51.6 152.3	48 38.4 -50.9 151.1	48 09.2 -50.1 150.0	47 39.1 -49.4 148.9	47 08.0 -48.6 147.8
28°	48 14.9 -51.8 153.0	47 47.5 -51.1 151.9	47 19.1 -50.4 150.8	46 49.7 -49.7 149.7	46 19.4 -49.0 148.7
29°	47 23.1 -52.2 153.8	46 56.4 -51.5 152.7	46 28.7 -50.8 151.6	46 00.0 -50.1 150.5	45 30.4 -49.4 149.5

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°	63 31.7 -22.0 108.5	62 35.4 -21.3 107.8	61 38.8 -20.6 107.1	60 42.1 -20.1 106.4	59 45.1 -19.4 105.8
1°	63 09.7 -23.7 110.6	62 14.1 -23.0 109.8	61 18.2 -22.3 109.0	60 22.0 -21.6 108.3	59 25.7 -21.0 107.6
2°	62 46.0 -25.5 112.6	61 51.1 -24.6 111.8	60 55.9 -23.9 111.0	60 00.4 -23.2 110.2	59 04.7 -22.6 109.5
3°	62 20.5 -27.0 114.6	61 26.5 -26.3 113.7	60 32.0 -25.4 112.8	59 37.2 -24.7 112.0	58 42.1 -23.9 111.3
4°	61 53.5 -28.6 116.5	61 00.2 -27.7 115.6	60 06.6 -26.9 114.7	59 12.5 -26.1 113.8	58 18.2 -25.4 113.0
5°	61 24.9 -30.0 118.4	60 32.5 -29.1 117.4	59 39.7 -28.3 116.4	58 46.4 -27.5 115.6	57 52.8 -26.8 114.7
6°	60 54.9 -31.5 120.2	60 03.4 -30.6 119.1	59 11.4 -29.7 118.2	58 18.9 -28.8 117.3	57 26.0 -28.0 116.4
7°	60 23.4 -32.7 121.9	59 32.8 -31.8 120.9	58 41.7 -31.0 119.9	57 50.1 -30.1 118.9	56 58.0 -29.3 118.0
8°	59 50.7 -34.0 123.6	59 01.0 -33.1 122.5	58 10.7 -32.1 121.5	57 20.0 -31.3 120.5	56 28.7 -30.5 119.6
9°	59 16.7 -35.2 125.2	58 27.9 -34.2 124.1	57 38.6 -33.3 123.1	56 48.7 -32.5 122.1	55 58.2 -31.6 121.2
10°	58 41.5 -36.3 126.8	57 53.7 -35.3 125.7	57 05.3 -34.5 124.6	56 16.2 -33.5 123.6	55 26.6 -32.7 122.7
11°	58 05.2 -37.3 128.3	57 18.4 -36.4 127.2	56 30.8 -35.4 126.1	55 42.7 -34.6 125.1	54 53.9 -33.7 124.1
12°	57 27.9 -38.3 129.8	56 42.0 -37.4 128.6	55 55.4 -36.5 127.6	55 08.1 -35.6 126.6	54 20.2 -34.8 125.6
13°	56 49.6 -39.3 131.2	56 04.6 -38.3 130.1	55 18.9 -37.4 129.0	54 32.5 -36.5 128.0	53 45.4 -35.6 127.0
14°	56 10.3 -40.1 132.6	55 26.3 -39.2 131.4	54 41.5 -38.3 130.3	53 56.0 -37.4 129.3	53 09.8 -36.6 128.3
15°	55 30.2 -41.0 133.9	54 47.1 -40.1 132.8	54 03.2 -39.1 131.7	53 18.6 -38.3 130.6	52 33.2 -37.3 129.6
16°	54 49.2 -41.7 135.2	54 07.0 -40.8 134.0	53 24.1 -40.0 132.9	52 40.3 -39.1 131.9	51 55.9 -38.2 130.9
17°	54 07.5 -42.5 136.4	53 26.2 -41.6 135.3	52 44.1 -40.7 134.2	52 01.2 -39.8 133.1	51 17.7 -39.0 132.1
18°	53 25.0 -43.1 137.6	52 44.6 -42.2 136.5	52 03.4 -41.4 135.4	51 21.4 -40.5 134.4	50 38.7 -39.7 133.4
19°	52 41.9 -43.8 138.7	52 02.4 -43.0 137.6	51 22.0 -42.1 136.6	50 40.9 -41.2 135.5	49 59.0 -40.4 134.5
20°	51 58.1 -44.5 139.9	51 19.4 -43.6 138.8	50 39.9 -42.7 137.7	49 59.7 -41.9 136.7	49 18.6 -41.0 135.7
21°	51 13.6 -45.0 140.9	50 35.8 -44.1 139.9	49 57.2 -43.3 138.8	49 17.8 -42.5 137.8	48 37.6 -41.7 136.8
22°	50 28.6 -45.6 142.0	49 51.7 -44.7 140.9	49 13.9 -43.9 139.9	48 35.3 -43.1 138.8	47 55.9 -42.3 137.9
23°	49 43.0 -46.0 143.0	49 07.0 -45.3 141.9	48 30.0 -44.4 140.9	47 52.2 -43.6 139.9	47 13.6 -42.8 138.9
24°	48 57.0 -46.6 144.0	48 21.7 -45.8 142.9	47 45.6 -45.0 141.9	47 08.6 -44.2 140.9	46 30.8 -43.3 139.9
25°	48 10.4 -47.0 144.9	47 35.9 -46.2 143.9	47 00.6 -45.4 142.9	46 24.4 -44.6 141.9	45 47.5 -43.9 140.9
26°	47 23.4 -47.5 145.9	46 49.7 -46.7 144.8	46 15.2 -45.9 143.8	45 39.8 -45.1 142.9	45 03.6 -44.3 141.9
27°	46 35.9 -47.8 146.8	46 03.0 -47.1 145.8	45 29.3 -46.4 144.8	44 54.7 -45.6 143.8	44 19.3 -44.8 142.9
28°	45 48.1 -48.3 147.6	45 15.9 -47.5 146.6	44 42.9 -46.7 145.7	44 09.1 -46.0 144.7	43 34.5 -45.3 143.8
29°	44 59.8 -48.6 148.5	44 28.4 -47.8 147.5	43 56.2 -47.2 146.5	43 23.1 -46.4 145.6	42 49.2 -45.6 144.7

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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°	58 48.0 -18.9 105.2	57 50.7 -18.4 104.6	56 53.3 -17.9 104.1	55 55.7 -17.4 103.5	54 58.1 -17.1 103.1
1°	58 29.1 -20.4 107.0	57 32.3 -19.8 106.4	56 35.4 -19.4 105.8	55 38.3 -18.9 105.2	54 41.0 -18.3 104.7
2°	58 08.7 -21.9 108.8	57 12.5 -21.3 108.1	56 16.0 -20.7 107.5	55 19.4 -20.2 106.9	54 22.7 -19.7 106.4
3°	57 46.8 -23.3 110.5	56 51.2 -22.7 109.8	55 55.3 -22.1 109.2	54 59.2 -21.5 108.6	54 03.0 -21.0 108.0
4°	57 23.5 -24.7 112.2	56 28.5 -24.1 111.5	55 33.2 -23.4 110.8	54 37.7 -22.8 110.2	53 42.0 -22.2 109.6
5°	56 58.8 -26.1 113.9	56 04.4 -25.3 113.2	55 09.8 -24.6 112.5	54 14.9 -24.0 111.8	53 19.8 -23.5 111.1
6°	56 32.7 -27.3 115.6	55 39.1 -26.6 114.8	54 45.2 -25.9 114.0	53 50.9 -25.2 113.3	52 56.3 -24.6 112.7
7°	56 05.4 -28.5 117.2	55 12.5 -27.7 116.4	54 19.3 -27.1 115.6	53 25.7 -26.4 114.9	52 31.7 -25.7 114.2
8°	55 36.9 -29.6 118.7	54 44.8 -28.9 117.9	53 52.2 -28.2 117.1	52 59.3 -27.5 116.4	52 06.0 -26.8 115.6
9°	55 07.3 -30.8 120.3	54 15.9 -30.1 119.4	53 24.0 -29.2 118.6	52 31.8 -28.5 117.8	51 39.2 -27.8 117.1
10°	54 36.5 -31.9 121.8	53 45.8 -31.0 120.9	52 54.8 -30.4 120.1	52 03.3 -29.6 119.3	51 11.4 -28.9 118.5
11°	54 04.6 -32.9 123.2	53 14.8 -32.1 122.3	52 24.4 -31.3 121.5	51 33.7 -30.6 120.7	50 42.5 -29.8 119.9
12°	53 31.7 -33.9 124.6	52 42.7 -33.1 123.7	51 53.1 -32.2 122.9	51 03.1 -31.5 122.1	50 12.7 -30.8 121.3
13°	52 57.8 -34.8 126.0	52 09.6 -34.0 125.1	51 20.9 -33.2 124.2	50 31.6 -32.4 123.4	49 41.9 -31.6 122.6
14°	52 23.0 -35.7 127.4	51 35.6 -34.9 126.4	50 47.7 -34.1 125.6	49 59.2 -33.3 124.7	49 10.3 -32.6 123.9
15°	51 47.3 -36.6 128.7	51 00.7 -35.7 127.7	50 13.6 -34.9 126.9	49 25.9 -34.1 126.0	48 37.7 -33.3 125.2
16°	51 10.7 -37.3 129.9	50 25.0 -36.5 129.0	49 38.7 -35.8 128.1	48 51.8 -35.0 127.3	48 04.4 -34.2 126.4
17°	50 33.4 -38.1 131.2	49 48.5 -37.3 130.3	49 02.9 -36.5 129.4	48 16.8 -35.7 128.5	47 30.2 -34.9 127.7
18°	49 55.3 -38.9 132.4	49 11.2 -38.1 131.5	48 26.4 -37.2 130.6	47 41.1 -36.4 129.7	46 55.3 -35.7 128.9
19°	49 16.4 -39.5 133.6	48 33.1 -38.7 132.6	47 49.2 -37.9 131.7	47 04.7 -37.1 130.9	46 19.6 -36.4 130.0
20°	48 36.9 -40.3 134.7	47 54.4 -39.4 133.8	47 11.3 -38.6 132.9	46 27.6 -37.8 132.0	45 43.2 -37.0 131.2
21°	47 56.6 -40.8 135.8	47 15.0 -40.0 134.9	46 32.7 -39.3 134.0	45 49.8 -38.5 133.1	45 06.2 -37.7 132.3
22°	47 15.8 -41.5 136.9	46 35.0 -40.7 136.0	45 53.4 -39.8 135.1	45 11.3 -39.1 134.2	44 28.5 -38.3 133.4
23°	46 34.3 -42.0 138.0	45 54.3 -41.2 137.1	45 13.6 -40.4 136.2	44 32.2 -39.6 135.3	43 50.2 -38.8 134.5
24°	45 52.3 -42.5 139.0	45 13.1 -41.8 138.1	44 33.2 -41.0 137.2	43 52.6 -40.2 136.4	43 11.4 -39.5 135.5
25°	45 09.8 -43.1 140.0	44 31.3 -42.3 139.1	43 52.2 -41.6 138.2	43 12.4 -40.8 137.4	42 31.9 -40.0 136.5
26°	44 26.7 -43.6 141.0	43 49.0 -42.8 140.1	43 10.6 -42.0 139.2	42 31.6 -41.3 138.4	41 51.9 -40.5 137.6
27°	43 43.1 -44.0 141.9	43 06.2 -43.3 141.1	42 28.6 -42.5 140.2	41 50.3 -41.7 139.4	41 11.4 -41.0 138.5
28°	42 59.1 -44.5 142.9	42 22.9 -43.7 142.0	41 46.1 -43.0 141.1	41 08.6 -42.2 140.3	40 30.4 -41.4 139.5
29°	42 14.6 -44.9 143.8	41 39.2 -44.1 142.9	41 03.1 -43.4 142.1	40 26.4 -42.7 141.3	39 49.0 -42.0 140.5

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°	54 00.3 -16.6 102.6	53 02.4 -16.2 102.2	52 04.4 -15.9 101.7	51 06.4 -15.6 101.3	50 08.2 -15.2 100.9
1°	53 43.7 -18.0 104.2	52 46.2 -17.6 103.7	51 48.5 -17.1 103.3	50 50.8 -16.7 102.9	49 53.0 -16.4 102.4
2°	53 25.7 -19.2 105.8	52 28.6 -18.7 105.3	51 31.4 -18.3 104.8	50 34.1 -18.0 104.4	49 36.6 -17.5 103.9
3°	53 06.5 -20.5 107.4	52 09.9 -20.0 106.9	51 13.1 -19.5 106.4	50 16.1 -19.0 105.9	49 19.1 -18.6 105.4
4°	52 46.0 -21.6 109.0	51 49.9 -21.1 108.4	50 53.6 -20.7 107.9	49 57.1 -20.2 107.3	49 00.5 -19.8 106.9
5°	52 24.4 -22.9 110.5	51 28.8 -22.3 109.9	50 32.9 -21.7 109.4	49 36.9 -21.2 108.8	48 40.7 -20.7 108.3
6°	52 01.5 -24.0 112.0	51 06.5 -23.4 111.4	50 11.2 -22.9 110.8	49 15.7 -22.3 110.2	48 20.0 -21.8 109.7
7°	51 37.5 -25.0 113.5	50 43.1 -24.5 112.9	49 48.3 -23.9 112.2	48 53.4 -23.4 111.7	47 58.2 -22.8 111.1
8°	51 12.5 -26.2 115.0	50 18.6 -25.5 114.3	49 24.4 -24.9 113.7	48 30.0 -24.3 113.1	47 35.4 -23.8 112.5
9°	50 46.3 -27.2 116.4	49 53.1 -26.6 115.7	48 59.5 -25.9 115.1	48 05.7 -25.3 114.4	47 11.6 -24.7 113.8
10°	50 19.1 -28.1 117.8	49 26.5 -27.5 117.1	48 33.6 -26.8 116.4	47 40.4 -26.2 115.8	46 46.9 -25.6 115.2
11°	49 51.0 -29.2 119.2	48 59.0 -28.4 118.5	48 06.8 -27.8 117.8	47 14.2 -27.2 117.1	46 21.3 -26.5 116.5
12°	49 21.8 -30.0 120.5	48 30.6 -29.4 119.8	47 39.0 -28.7 119.1	46 47.0 -28.0 118.4	45 54.8 -27.4 117.8
13°	48 51.8 -31.0 121.8	48 01.2 -30.2 121.1	47 10.3 -29.5 120.4	46 19.0 -28.9 119.7	45 27.4 -28.2 119.1
14°	48 20.8 -31.7 123.1	47 31.0 -31.1 122.4	46 40.8 -30.4 121.7	45 50.1 -29.7 121.0	44 59.2 -29.1 120.3
15°	47 49.1 -32.7 124.4	46 59.9 -31.9 123.6	46 10.4 -31.2 122.9	45 20.4 -30.4 122.2	44 30.1 -29.8 121.5
16°	47 16.4 -33.4 125.6	46 28.0 -32.6 124.9	45 39.2 -31.9 124.1	44 50.0 -31.3 123.4	44 00.3 -30.6 122.7
17°	46 43.0 -34.1 126.9	45 55.4 -33.5 126.1	45 07.3 -32.7 125.4	44 18.7 -32.0 124.6	43 29.7 -31.2 123.9
18°	46 08.9 -34.9 128.1	45 21.9 -34.1 127.3	44 34.6 -33.5 126.5	43 46.7 -32.7 125.8	42 58.5 -32.0 125.1
19°	45 34.0 -35.6 129.2	44 47.8 -34.8 128.4	44 01.1 -34.1 127.7	43 14.0 -33.4 127.0	42 26.5 -32.7 126.3
20°	44 58.4 -36.3 130.4	44 13.0 -35.6 129.6	43 27.0 -34.7 128.8	42 40.6 -34.0 128.1	41 53.8 -33.4 127.4
21°	44 22.1 -36.9 131.5	43 37.4 -36.1 130.7	42 52.3 -35.5 129.9	42 06.6 -34.7 129.2	41 20.4 -33.9 128.5
22°	43 45.2 -37.5 132.6	43 01.3 -36.8 131.8	42 16.8 -36.0 131.0	41 31.9 -35.3 130.3	40 46.5 -34.6 129.6
23°	43 07.7 -38.2 133.7	42 24.5 -37.4 132.9	41 40.8 -36.6 132.1	40 56.6 -35.9 131.4	40 11.9 -35.2 130.7
24°	42 29.5 -38.6 134.7	41 47.1 -37.9 133.9	41 04.2 -37.2 133.2	40 20.7 -36.4 132.4	39 36.7 -35.7 131.7
25°	41 50.9 -39.3 135.7	41 09.2 -38.5 135.0	40 27.0 -37.7 134.2	39 44.3 -37.0 133.5	39 01.0 -36.3 132.8
26°	41 11.6 -39.7 136.8	40 30.7 -39.0 136.0	39 49.3 -38.3 135.2	39 07.3 -37.5 134.5	38 24.7 -36.7 133.8
27°	40 31.9 -40.3 137.7	39 51.7 -39.5 137.0	39 11.0 -38.7 136.2	38 29.8 -38.1 135.5	37 48.0 -37.3 134.8
28°	39 51.6 -40.7 138.7	39 12.2 -39.9 138.0	38 32.3 -39.3 137.2	37 51.7 -38.5 136.5	37 10.7 -37.8 135.8
29°	39 10.9 -41.2 139.7	38 32.3 -40.5 138.9	37 53.0 -39.7 138.2	37 13.2 -38.9 137.5	36 32.9 -38.3 136.8

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°	49 10.0 -14.9 100.6	48 11.7 -14.6 100.2	47 13.3 -14.3 99.9	46 14.9 -14.1 99.5	45 16.5 -13.9 99.2
1°	48 55.1 -16.1 102.0	47 57.1 -15.7 101.7	46 59.0 -15.4 101.3	46 00.8 -15.1 100.9	45 02.6 -14.8 100.6
2°	48 39.0 -17.1 103.5	47 41.4 -16.8 103.1	46 43.6 -16.5 102.7	45 45.7 -16.1 102.3	44 47.8 -15.8 101.9
3°	48 21.9 -18.2 104.9	47 24.6 -17.9 104.5	46 27.1 -17.4 104.1	45 29.6 -17.1 103.7	44 32.0 -16.8 103.3
4°	48 03.7 -19.3 106.4	47 06.7 -18.8 105.9	46 09.7 -18.5 105.5	45 12.5 -18.0 105.1	44 15.2 -17.6 104.7
5°	47 44.4 -20.3 107.8	46 47.9 -19.9 107.3	45 51.2 -19.4 106.9	44 54.5 -19.0 106.4	43 57.6 -18.7 106.0
6°	47 24.1 -21.3 109.2	46 28.0 -20.8 108.7	45 31.8 -20.3 108.2	44 35.5 -20.0 107.7	43 38.9 -19.5 107.3
7°	47 02.8 -22.3 110.6	46 07.2 -21.8 110.0	45 11.5 -21.3 109.5	44 15.5 -20.8 109.1	43 19.4 -20.3 108.6
8°	46 40.5 -23.2 111.9	45 45.4 -22.7 111.4	44 50.2 -22.2 110.9	43 54.7 -21.7 110.4	42 59.1 -21.3 109.9
9°	46 17.3 -24.2 113.3	45 22.7 -23.6 112.7	44 28.0 -23.1 112.2	43 33.0 -22.6 111.7	42 37.8 -22.1 111.2
10°	45 53.1 -25.0 114.6	44 59.1 -24.5 114.0	44 04.9 -24.0 113.5	43 10.4 -23.4 112.9	42 15.7 -22.9 112.4
11°	45 28.1 -25.9 115.9	44 34.6 -25.3 115.3	43 40.9 -24.7 114.7	42 47.0 -24.2 114.2	41 52.8 -23.7 113.7
12°	45 02.2 -26.8 117.2	44 09.3 -26.2 116.6	43 16.2 -25.6 116.0	42 22.8 -25.0 115.4	41 29.1 -24.4 114.9
13°	44 35.4 -27.6 118.4	43 43.1 -26.9 117.8	42 50.6 -26.4 117.2	41 57.8 -25.8 116.7	41 04.7 -25.3 116.1
14°	44 07.8 -28.4 119.7	43 16.2 -27.8 119.0	42 24.2 -27.1 118.4	41 32.0 -26.6 117.9	40 39.4 -25.9 117.3
15°	43 39.4 -29.1 120.9	42 48.4 -28.5 120.3	41 57.1 -27.9 119.7	41 05.4 -27.3 119.1	40 13.5 -26.7 118.5
16°	43 10.3 -29.9 122.1	42 19.9 -29.2 121.5	41 29.2 -28.6 120.8	40 38.1 -27.9 120.2	39 46.8 -27.4 119.7
17°	42 40.4 -30.6 123.3	41 50.7 -30.0 122.6	41 00.6 -29.3 122.0	40 10.2 -28.7 121.4	39 19.4 -28.0 120.8
18°	42 09.8 -31.3 124.4	41 20.7 -30.6 123.8	40 31.3 -30.0 123.2	39 41.5 -29.3 122.6	38 51.4 -28.7 122.0
19°	41 38.5 -32.0 125.6	40 50.1 -31.3 124.9	40 01.3 -30.6 124.3	39 12.2 -30.0 123.7	38 22.7 -29.4 123.1
20°	41 06.5 -32.7 126.7	40 18.8 -32.0 126.1	39 30.7 -31.3 125.4	38 42.2 -30.6 124.8	37 53.3 -29.9 124.2
21°	40 33.8 -33.2 127.8	39 46.8 -32.5 127.2	38 59.4 -31.9 126.5	38 11.6 -31.2 125.9	37 23.4 -30.6 125.3
22°	40 00.6 -33.9 128.9	39 14.3 -33.2 128.2	38 27.5 -32.5 127.6	37 40.4 -31.8 127.0	36 52.8 -31.1 126.4
23°	39 26.7 -34.4 130.0	38 41.1 -33.7 129.3	37 55.0 -33.0 128.7	37 08.6 -32.4 128.0	36 21.7 -31.7 127.4
24°	38 52.3 -35.0 131.0	38 07.4 -34.3 130.4	37 22.0 -33.6 129.7	36 36.2 -32.9 129.1	35 50.0 -32.2 128.5
25°	38 17.3 -35.6 132.1	37 33.1 -34.9 131.4	36 48.4 -34.1 130.8	36 03.3 -33.5 130.1	35 17.8 -32.8 129.5
26°	37 41.7 -36.0 133.1	36 58.2 -35.3 132.4	36 14.3 -34.7 131.8	35 29.8 -33.9 131.2	34 45.0 -33.2 130.5
27°	37 05.7 -36.6 134.1	36 22.9 -35.9 133.4	35 39.6 -35.1 132.8	34 55.9 -34.4 132.2	34 11.8 -33.8 131.6
28°	36 29.1 -37.1 135.1	35 47.0 -36.3 134.4	35 04.5 -35.7 133.8	34 21.5 -35.0 133.2	33 38.0 -34.2 132.6
29°	35 52.0 -37.5 136.1	35 10.7 -36.8 135.4	34 28.8 -36.1 134.8	33 46.5 -35.4 134.1	33 03.8 -34.7 133.5

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°	44 17.9 -13.6 98.9	43 19.4 -13.4 98.6	42 20.7 -13.1 98.3	41 22.1 -13.0 98.0	40 23.4 -12.8 97.7
1°	44 04.3 -14.5 100.2	43 06.0 -14.3 99.9	42 07.6 -14.1 99.6	41 09.1 -13.8 99.3	40 10.6 -13.6 99.0
2°	43 49.8 -15.5 101.6	42 51.7 -15.2 101.3	41 53.5 -14.9 100.9	40 55.3 -14.7 100.6	39 57.0 -14.4 100.3
3°	43 34.3 -16.4 102.9	42 36.5 -16.1 102.6	41 38.6 -15.8 102.2	40 40.6 -15.5 101.9	39 42.6 -15.2 101.6
4°	43 17.9 -17.4 104.3	42 20.4 -17.0 103.9	41 22.8 -16.7 103.5	40 25.1 -16.3 103.2	39 27.4 -16.1 102.8
5°	43 00.5 -18.2 105.6	42 03.4 -17.9 105.2	41 06.1 -17.5 104.8	40 08.8 -17.2 104.4	39 11.3 -16.8 104.1
6°	42 42.3 -19.1 106.9	41 45.5 -18.7 106.5	40 48.6 -18.3 106.1	39 51.6 -17.9 105.7	38 54.5 -17.6 105.3
7°	42 23.2 -20.0 108.2	41 26.8 -19.5 107.7	40 30.3 -19.1 107.3	39 33.7 -18.8 106.9	38 36.9 -18.4 106.5
8°	42 03.2 -20.7 109.4	41 07.3 -20.4 109.0	40 11.2 -19.9 108.6	39 14.9 -19.5 108.1	38 18.5 -19.1 107.7
9°	41 42.5 -21.6 110.7	40 46.9 -21.1 110.2	39 51.3 -20.7 109.8	38 55.4 -20.2 109.4	37 59.4 -19.8 108.9
10°	41 20.9 -22.4 111.9	40 25.8 -21.9 111.5	39 30.6 -21.5 111.0	38 35.2 -21.0 110.6	37 39.6 -20.6 110.1
11°	40 58.5 -23.2 113.2	40 03.9 -22.7 112.7	39 09.1 -22.2 112.2	38 14.2 -21.8 111.8	37 19.0 -21.2 111.3
12°	40 35.3 -24.0 114.4	39 41.2 -23.4 113.9	38 46.9 -22.9 113.4	37 52.4 -22.4 112.9	36 57.8 -22.0 112.5
13°	40 11.3 -24.6 115.6	39 17.8 -24.2 115.1	38 24.0 -23.6 114.6	37 30.0 -23.1 114.1	36 35.8 -22.6 113.7
14°	39 46.7 -25.4 116.8	38 53.6 -24.8 116.3	38 00.4 -24.3 115.8	37 06.9 -23.8 115.3	36 13.2 -23.3 114.8
15°	39 21.3 -26.1 118.0	38 28.8 -25.5 117.4	37 36.1 -25.0 116.9	36 43.1 -24.4 116.4	35 49.9 -23.9 115.9
16°	38 55.2 -26.8 119.1	38 03.3 -26.2 118.6	37 11.1 -25.6 118.1	36 18.7 -25.1 117.6	35 26.0 -24.5 117.1
17°	38 28.4 -27.5 120.3	37 37.1 -26.9 119.7	36 45.5 -26.3 119.2	35 53.6 -25.7 118.7	35 01.5 -25.2 118.2
18°	38 00.9 -28.0 121.4	37 10.2 -27.5 120.8	36 19.2 -26.9 120.3	35 27.9 -26.3 119.8	34 36.3 -25.7 119.3
19°	37 32.9 -28.8 122.5	36 42.7 -28.1 122.0	35 52.3 -27.5 121.4	35 01.6 -26.9 120.9	34 10.6 -26.3 120.4
20°	37 04.1 -29.3 123.6	36 14.6 -28.6 123.1	35 24.8 -28.1 122.5	34 34.7 -27.5 122.0	33 44.3 -26.9 121.5
21°	36 34.8 -29.9 124.7	35 46.0 -29.3 124.1	34 56.7 -28.6 123.6	34 07.2 -28.0 123.1	33 17.4 -27.4 122.6
22°	36 04.9 -30.4 125.8	35 16.7 -29.8 125.2	34 28.1 -29.2 124.7	33 39.2 -28.6 124.1	32 50.0 -28.0 123.6
23°	35 34.5 -31.1 126.8	34 46.9 -30.4 126.3	33 58.9 -29.7 125.7	33 10.6 -29.1 125.2	32 22.0 -28.4 124.7
24°	35 03.4 -31.5 127.9	34 16.5 -30.9 127.3	33 29.2 -30.3 126.8	32 41.5 -29.6 126.2	31 53.6 -29.0 125.7
25°	34 31.9 -32.1 128.9	33 45.6 -31.4 128.4	32 58.9 -30.7 127.8	32 11.9 -30.1 127.3	31 24.6 -29.5 126.7
26°	33 59.8 -32.6 130.0	33 14.2 -31.9 129.4	32 28.2 -31.3 128.8	31 41.8 -30.6 128.3	30 55.1 -29.9 127.7
27°	33 27.2 -33.1 131.0	32 42.3 -32.4 130.4	31 56.9 -31.7 129.8	31 11.2 -31.0 129.3	30 25.2 -30.4 128.8
28°	32 54.1 -33.5 132.0	32 09.9 -32.9 131.4	31 25.2 -32.1 130.8	30 40.2 -31.5 130.3	29 54.8 -30.8 129.8
29°	32 20.6 -34.0 132.9	31 37.0 -33.3 132.4	30 53.1 -32.7 131.8	30 08.7 -31.9 131.3	29 24.0 -31.3 130.7

Latitude 9°

Declination CONTRARY name to 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°	39 24.6 -12.5 97.5	38 25.9 -12.4 97.2	37 27.1 -12.3 97.0	36 28.2 -12.0 96.7	35 29.3 -11.8 96.5
1°	39 12.1 -13.4 98.7	38 13.5 -13.2 98.5	37 14.8 -12.9 98.2	36 16.2 -12.8 97.9	35 17.5 -12.6 97.7
2°	38 58.7 -14.2 100.0	38 00.3 -13.9 99.7	37 01.9 -13.7 99.4	36 03.4 -13.5 99.1	35 04.9 -13.3 98.9
3°	38 44.5 -14.9 101.2	37 46.4 -14.7 100.9	36 48.2 -14.5 100.6	35 49.9 -14.2 100.4	34 51.6 -14.0 100.1
4°	38 29.6 -15.8 102.5	37 31.7 -15.5 102.2	36 33.7 -15.2 101.9	35 35.7 -15.0 101.6	34 37.6 -14.7 101.3
5°	38 13.8 -16.5 103.7	37 16.2 -16.2 103.4	36 18.5 -15.9 103.1	35 20.7 -15.6 102.7	34 22.9 -15.3 102.4
6°	37 57.3 -17.3 104.9	37 00.0 -16.9 104.6	36 02.6 -16.6 104.2	35 05.1 -16.3 103.9	34 07.6 -16.0 103.6
7°	37 40.0 -18.0 106.1	36 43.1 -17.7 105.8	35 46.0 -17.3 105.4	34 48.8 -17.0 105.1	33 51.6 -16.7 104.8
8°	37 22.0 -18.7 107.4	36 25.4 -18.3 107.0	35 28.7 -18.0 106.6	34 31.8 -17.6 106.3	33 34.9 -17.3 105.9
9°	37 03.3 -19.4 108.5	36 07.1 -19.1 108.2	35 10.7 -18.7 107.8	34 14.2 -18.3 107.4	33 17.6 -17.9 107.1
10°	36 43.9 -20.2 109.7	35 48.0 -19.7 109.3	34 52.0 -19.3 108.9	33 55.9 -18.9 108.6	32 59.7 -18.5 108.2
11°	36 23.7 -20.8 110.9	35 28.3 -20.4 110.5	34 32.7 -19.9 110.1	33 37.0 -19.5 109.7	32 41.2 -19.2 109.3
12°	36 02.9 -21.4 112.1	35 07.9 -21.0 111.6	34 12.8 -20.6 111.2	33 17.5 -20.2 110.8	32 22.0 -19.7 110.5
13°	35 41.5 -22.2 113.2	34 46.9 -21.7 112.8	33 52.2 -21.2 112.4	32 57.3 -20.8 112.0	32 02.3 -20.4 111.6
14°	35 19.3 -22.8 114.4	34 25.2 -22.2 113.9	33 31.0 -21.8 113.5	32 36.5 -21.3 113.1	31 41.9 -20.8 112.7
15°	34 56.5 -23.4 115.5	34 03.0 -22.9 115.0	33 09.2 -22.4 114.6	32 15.2 -21.9 114.2	31 21.1 -21.5 113.8
16°	34 33.1 -24.0 116.6	33 40.1 -23.5 116.2	32 46.8 -23.0 115.7	31 53.3 -22.5 115.3	30 59.6 -22.0 114.9
17°	34 09.1 -24.6 117.7	33 16.6 -24.1 117.3	32 23.8 -23.6 116.8	31 30.8 -23.0 116.4	30 37.6 -22.5 116.0
18°	33 44.5 -25.1 118.8	32 52.5 -24.6 118.4	32 00.2 -24.1 117.9	31 07.8 -23.6 117.5	30 15.1 -23.1 117.0
19°	33 19.4 -25.8 119.9	32 27.9 -25.2 119.4	31 36.1 -24.6 119.0	30 44.2 -24.1 118.5	29 52.0 -23.5 118.1
20°	32 53.6 -26.3 121.0	32 02.7 -25.7 120.5	31 11.5 -25.1 120.0	30 20.1 -24.6 119.6	29 28.5 -24.1 119.2
21°	32 27.3 -26.8 122.1	31 37.0 -26.3 121.6	30 46.4 -25.7 121.1	29 55.5 -25.1 120.7	29 04.4 -24.6 120.2
22°	32 00.5 -27.3 123.1	31 10.7 -26.7 122.6	30 20.7 -26.2 122.2	29 30.4 -25.6 121.7	28 39.8 -25.0 121.3
23°	31 33.2 -27.9 124.2	30 44.0 -27.3 123.7	29 54.5 -26.6 123.2	29 04.8 -26.1 122.7	28 14.8 -25.5 122.3
24°	31 05.3 -28.4 125.2	30 16.7 -27.7 124.7	29 27.9 -27.2 124.2	28 38.7 -26.5 123.8	27 49.3 -25.9 123.3
25°	30 36.9 -28.8 126.2	29 49.0 -28.2 125.7	29 00.7 -27.5 125.2	28 12.2 -27.0 124.8	27 23.4 -26.4 124.3
26°	30 08.1 -29.3 127.2	29 20.8 -28.7 126.7	28 33.2 -28.1 126.3	27 45.2 -27.4 125.8	26 57.0 -26.8 125.3
27°	29 38.8 -29.7 128.2	28 52.1 -29.1 127.7	28 05.1 -28.5 127.3	27 17.8 -27.8 126.8	26 30.2 -27.2 126.3
28°	29 09.1 -30.2 129.2	28 23.0 -29.5 128.7	27 36.6 -28.8 128.3	26 50.0 -28.3 127.8	26 03.0 -27.6 127.3
29°	28 38.9 -30.6 130.2	27 53.5 -30.0 129.7	27 07.8 -29.3 129.2	26 21.7 -28.6 128.8	25 35.4 -28.1 128.3

Dec	LHA 055° / 305°	LHA 056° / 304°	LHA 057° / 303°	LHA 058° / 302°	LHA 059° / 301°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	34 30.5 -11.8 96.3	33 31.5 -11.6 96.0	32 32.6 -11.5 95.8	31 33.6 -11.3 95.6	30 34.6 -11.2 95.4
1°	34 18.7 -12.4 97.4	33 19.9 -12.2 97.2	32 21.1 -12.1 97.0	31 22.3 -11.9 96.7	30 23.4 -11.8 96.5
2°	34 06.3 -13.1 98.6	33 07.7 -12.9 98.4	32 09.0 -12.7 98.1	31 10.4 -12.6 97.9	30 11.6 -12.3 97.6
3°	33 53.2 -13.8 99.8	32 54.8 -13.6 99.5	31 56.3 -13.3 99.3	30 57.8 -13.1 99.0	29 59.3 -13.0 98.8
4°	33 39.4 -14.4 101.0	32 41.2 -14.2 100.7	31 43.0 -14.0 100.4	30 44.7 -13.8 100.2	29 46.3 -13.5 99.9
5°	33 25.0 -15.1 102.1	32 27.0 -14.8 101.8	31 29.0 -14.6 101.6	30 30.9 -14.3 101.3	29 32.8 -14.1 101.0
6°	33 09.9 -15.7 103.3	32 12.2 -15.4 103.0	31 14.4 -15.1 102.7	30 16.6 -14.9 102.4	29 18.7 -14.6 102.1
7°	32 54.2 -16.3 104.4	31 56.8 -16.1 104.1	30 59.3 -15.8 103.8	30 01.7 -15.5 103.5	29 04.1 -15.2 103.3
8°	32 37.9 -17.0 105.6	31 40.7 -16.6 105.3	30 43.5 -16.3 105.0	29 46.2 -16.0 104.7	28 48.9 -15.8 104.4
9°	32 20.9 -17.6 106.7	31 24.1 -17.2 106.4	30 27.2 -16.9 106.1	29 30.2 -16.5 105.8	28 33.1 -16.2 105.5
10°	32 03.3 -18.1 107.9	31 06.9 -17.8 107.5	30 10.3 -17.4 107.2	29 13.7 -17.2 106.9	28 16.9 -16.8 106.6
11°	31 45.2 -18.8 109.0	30 49.1 -18.4 108.6	29 52.9 -18.0 108.3	28 56.5 -17.6 108.0	28 00.1 -17.3 107.6
12°	31 26.4 -19.3 110.1	30 30.7 -18.9 109.7	29 34.9 -18.6 109.4	28 38.9 -18.2 109.1	27 42.8 -17.8 108.7
13°	31 07.1 -19.9 111.2	30 11.8 -19.5 110.8	29 16.3 -19.1 110.5	28 20.7 -18.6 110.1	27 25.0 -18.2 109.8
14°	30 47.2 -20.5 112.3	29 52.3 -20.0 111.9	28 57.2 -19.5 111.6	28 02.1 -19.2 111.2	27 06.8 -18.8 110.9
15°	30 26.7 -20.9 113.4	29 32.3 -20.6 113.0	28 37.7 -20.1 112.6	27 42.9 -19.7 112.3	26 48.0 -19.3 111.9
16°	30 05.8 -21.6 114.5	29 11.7 -21.0 114.1	28 17.6 -20.6 113.7	27 23.2 -20.1 113.4	26 28.7 -19.7 113.0
17°	29 44.2 -22.0 115.6	28 50.7 -21.6 115.2	27 57.0 -21.1 114.8	27 03.1 -20.6 114.4	26 09.0 -20.1 114.1
18°	29 22.2 -22.6 116.6	28 29.1 -22.0 116.2	27 35.9 -21.6 115.8	26 42.5 -21.1 115.5	25 48.9 -20.6 115.1
19°	28 59.6 -23.0 117.7	28 07.1 -22.6 117.3	27 14.3 -22.0 116.9	26 21.4 -21.6 116.5	25 28.3 -21.1 116.1
20°	28 36.6 -23.5 118.7	27 44.5 -23.0 118.3	26 52.3 -22.5 117.9	25 59.8 -22.0 117.5	25 07.2 -21.5 117.2
21°	28 13.1 -24.0 119.8	27 21.5 -23.4 119.4	26 29.8 -22.9 119.0	25 37.8 -22.4 118.6	24 45.7 -21.9 118.2
22°	27 49.1 -24.5 120.8	26 58.1 -23.9 120.4	26 06.9 -23.4 120.0	25 15.4 -22.8 119.6	24 23.8 -22.3 119.2
23°	27 24.6 -24.9 121.9	26 34.2 -24.4 121.4	25 43.5 -23.8 121.0	24 52.6 -23.3 120.6	24 01.5 -22.7 120.2
24°	26 59.7 -25.4 122.9	26 09.8 -24.8 122.5	25 19.7 -24.2 122.0	24 29.3 -23.6 121.6	23 38.8 -23.1 121.3
25°	26 34.3 -25.8 123.9	25 45.0 -25.2 123.5	24 55.5 -24.7 123.1	24 05.7 -24.1 122.7	23 15.7 -23.5 122.3
26°	26 08.5 -26.2 124.9	25 19.8 -25.6 124.5	24 30.8 -25.0 124.1	23 41.6 -24.4 123.7	22 52.2 -23.9 123.3
27°	25 42.3 -26.6 125.9	24 54.2 -26.0 125.5	24 05.8 -25.4 125.1	23 17.2 -24.8 124.7	22 28.3 -24.2 124.3
28°	25 15.7 -27.0 126.9	24 28.2 -26.4 126.5	23 40.4 -25.8 126.0	22 52.4 -25.2 125.6	22 04.1 -24.6 125.2
29°	24 48.7 -27.4 127.9	24 01.8 -26.7 127.4	23 14.6 -26.1 127.0	22 27.2 -25.5 126.6	21 39.5 -24.9 126.2

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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°	29 35.6 -11.1 95.2	28 36.6 -11.0 95.0	27 37.5 -10.8 94.8	26 38.5 -10.8 94.6	25 39.4 -10.7 94.4
1°	29 24.5 -11.6 96.3	28 25.6 -11.5 96.1	27 26.7 -11.4 95.9	26 27.7 -11.2 95.7	25 28.7 -11.1 95.5
2°	29 12.9 -12.2 97.4	28 14.1 -12.1 97.2	27 15.3 -11.9 97.0	26 16.5 -11.8 96.8	25 17.6 -11.6 96.5
3°	29 00.7 -12.8 98.5	28 02.0 -12.5 98.3	27 03.4 -12.4 98.1	26 04.7 -12.2 97.8	25 06.0 -12.1 97.6
4°	28 47.9 -13.3 99.7	27 49.5 -13.2 99.4	26 51.0 -12.9 99.2	25 52.5 -12.8 98.9	24 53.9 -12.6 98.7
5°	28 34.6 -13.9 100.8	27 36.3 -13.6 100.5	26 38.1 -13.5 100.3	25 39.7 -13.2 100.0	24 41.3 -13.0 99.8
6°	28 20.7 -14.4 101.9	27 22.7 -14.1 101.6	26 24.6 -13.9 101.4	25 26.5 -13.7 101.1	24 28.3 -13.4 100.9
7°	28 06.3 -14.9 103.0	27 08.6 -14.7 102.7	26 10.7 -14.4 102.4	25 12.8 -14.1 102.2	24 14.9 -14.0 101.9
8°	27 51.4 -15.4 104.1	26 53.9 -15.2 103.8	25 56.3 -14.9 103.5	24 58.7 -14.6 103.3	24 00.9 -14.3 103.0
9°	27 36.0 -16.0 105.2	26 38.7 -15.6 104.9	25 41.4 -15.3 104.6	24 44.1 -15.1 104.3	23 46.6 -14.8 104.1
10°	27 20.0 -16.4 106.2	26 23.1 -16.1 106.0	25 26.1 -15.8 105.7	24 29.0 -15.5 105.4	23 31.8 -15.2 105.1
11°	27 03.6 -16.9 107.3	26 07.0 -16.6 107.0	25 10.3 -16.3 106.7	24 13.5 -16.0 106.4	23 16.6 -15.6 106.2
12°	26 46.7 -17.5 108.4	25 50.4 -17.1 108.1	24 54.0 -16.7 107.8	23 57.5 -16.4 107.5	23 01.0 -16.1 107.2
13°	26 29.2 -17.9 109.5	25 33.3 -17.5 109.2	24 37.3 -17.2 108.9	23 41.1 -16.8 108.6	22 44.9 -16.4 108.3
14°	26 11.3 -18.3 110.5	25 15.8 -18.0 110.2	24 20.1 -17.6 109.9	23 24.3 -17.2 109.6	22 28.5 -16.9 109.3
15°	25 53.0 -18.9 111.6	24 57.8 -18.4 111.3	24 02.5 -18.0 111.0	23 07.1 -17.6 110.6	22 11.6 -17.3 110.3
16°	25 34.1 -19.3 112.7	24 39.4 -18.9 112.3	23 44.5 -18.5 112.0	22 49.5 -18.1 111.7	21 54.3 -17.6 111.4
17°	25 14.8 -19.7 113.7	24 20.5 -19.3 113.4	23 26.0 -18.8 113.0	22 31.4 -18.4 112.7	21 36.7 -18.0 112.4
18°	24 55.1 -20.1 114.7	24 01.2 -19.7 114.4	23 07.2 -19.3 114.1	22 13.0 -18.8 113.7	21 18.7 -18.4 113.4
19°	24 35.0 -20.6 115.8	23 41.5 -20.1 115.4	22 47.9 -19.6 115.1	21 54.2 -19.2 114.8	21 00.3 -18.7 114.5
20°	24 14.4 -21.0 116.8	23 21.4 -20.5 116.5	22 28.3 -20.0 116.1	21 35.0 -19.6 115.8	20 41.6 -19.1 115.5
21°	23 53.4 -21.4 117.8	23 00.9 -20.9 117.5	22 08.3 -20.5 117.1	21 15.4 -19.9 116.8	20 22.5 -19.5 116.5
22°	23 32.0 -21.8 118.9	22 40.0 -21.3 118.5	21 47.8 -20.7 118.2	20 55.5 -20.3 117.8	20 03.0 -19.8 117.5
23°	23 10.2 -22.2 119.9	22 18.7 -21.6 119.5	21 27.1 -21.2 119.2	20 35.2 -20.6 118.8	19 43.2 -20.1 118.5
24°	22 48.0 -22.5 120.9	21 57.1 -22.1 120.5	21 05.9 -21.5 120.2	20 14.6 -21.0 119.8	19 23.1 -20.5 119.5
25°	22 25.5 -23.0 121.9	21 35.0 -22.3 121.5	20 44.4 -21.8 121.2	19 53.6 -21.3 120.8	19 02.6 -20.7 120.5
26°	22 02.5 -23.3 122.9	21 12.7 -22.8 122.5	20 22.6 -22.2 122.2	19 32.3 -21.6 121.8	18 41.9 -21.1 121.5
27°	21 39.2 -23.6 123.9	20 49.9 -23.0 123.5	20 00.4 -22.5 123.2	19 10.7 -21.9 122.8	18 20.8 -21.4 122.5
28°	21 15.6 -24.0 124.9	20 26.9 -23.5 124.5	19 37.9 -22.8 124.1	18 48.8 -22.3 123.8	17 59.4 -21.7 123.4
29°	20 51.6 -24.3 125.8	20 03.4 -23.7 125.5	19 15.1 -23.2 125.1	18 26.5 -22.6 124.8	17 37.7 -22.0 124.4

Dec	LHA 065° / 295°	LHA 066° / 294°	LHA 067° / 293°	LHA 068° / 292°	LHA 069° / 291°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	24 40.3 -10.6 94.2	23 41.2 -10.5 94.0	22 42.1 -10.4 93.8	21 42.9 -10.3 93.6	20 43.8 -10.3 93.4
1°	24 29.7 -11.0 95.3	23 30.7 -10.9 95.1	22 31.7 -10.8 94.9	21 32.6 -10.7 94.7	20 33.5 -10.6 94.5
2°	24 18.7 -11.5 96.3	23 19.8 -11.4 96.1	22 20.9 -11.3 95.9	21 21.9 -11.1 95.7	20 22.9 -11.0 95.5
3°	24 07.2 -11.9 97.4	23 08.4 -11.7 97.2	22 09.6 -11.6 97.0	21 10.8 -11.5 96.8	20 11.9 -11.3 96.6
4°	23 55.3 -12.4 98.5	22 56.7 -12.2 98.3	21 58.0 -12.0 98.1	20 59.3 -11.9 97.8	20 00.6 -11.7 97.6
5°	23 42.9 -12.8 99.6	22 44.5 -12.7 99.3	21 46.0 -12.5 99.1	20 47.4 -12.2 98.9	19 48.9 -12.1 98.7
6°	23 30.1 -13.2 100.6	22 31.8 -13.0 100.4	21 33.5 -12.8 100.2	20 35.2 -12.7 99.9	19 36.8 -12.5 99.7
7°	23 16.9 -13.7 101.7	22 18.8 -13.5 101.4	21 20.7 -13.2 101.2	20 22.5 -13.0 101.0	19 24.3 -12.8 100.8
8°	23 03.2 -14.1 102.7	22 05.3 -13.8 102.5	21 07.5 -13.6 102.3	20 09.5 -13.3 102.0	19 11.5 -13.1 101.8
9°	22 49.1 -14.5 103.8	21 51.5 -14.3 103.5	20 53.9 -14.0 103.3	19 56.2 -13.8 103.1	18 58.4 -13.5 102.8
10°	22 34.6 -15.0 104.8	21 37.2 -14.6 104.6	20 39.9 -14.4 104.3	19 42.4 -14.1 104.1	18 44.9 -13.8 103.9
11°	22 19.6 -15.3 105.9	21 22.6 -15.0 105.6	20 25.5 -14.7 105.4	19 28.3 -14.4 105.1	18 31.1 -14.2 104.9
12°	22 04.3 -15.7 106.9	21 07.6 -15.4 106.7	20 10.8 -15.1 106.4	19 13.9 -14.8 106.2	18 16.9 -14.5 105.9
13°	21 48.6 -16.1 108.0	20 52.2 -15.8 107.7	19 55.7 -15.5 107.4	18 59.1 -15.1 107.2	18 02.4 -14.8 106.9
14°	21 32.5 -16.5 109.0	20 36.4 -16.1 108.7	19 40.2 -15.8 108.5	18 44.0 -15.5 108.2	17 47.6 -15.1 107.9
15°	21 16.0 -16.9 110.0	20 20.3 -16.5 109.8	19 24.4 -16.1 109.5	18 28.5 -15.7 109.2	17 32.5 -15.4 109.0
16°	20 59.1 -17.2 111.1	20 03.8 -16.9 110.8	19 08.3 -16.5 110.5	18 12.8 -16.1 110.2	17 17.1 -15.7 110.0
17°	20 41.9 -17.6 112.1	19 46.9 -17.2 111.8	18 51.8 -16.8 111.5	17 56.7 -16.5 111.3	17 01.4 -16.1 111.0
18°	20 24.3 -18.0 113.1	19 29.7 -17.5 112.8	18 35.0 -17.1 112.5	17 40.2 -16.7 112.3	16 45.3 -16.3 112.0
19°	20 06.3 -18.3 114.1	19 12.2 -17.9 113.8	18 17.9 -17.4 113.6	17 23.5 -17.0 113.3	16 29.0 -16.6 113.0
20°	19 48.0 -18.6 115.2	18 54.3 -18.2 114.9	18 00.5 -17.8 114.6	17 06.5 -17.3 114.3	16 12.4 -16.9 114.0
21°	19 29.4 -19.0 116.2	18 36.1 -18.5 115.9	17 42.7 -18.1 115.6	16 49.2 -17.6 115.3	15 55.5 -17.1 115.0
22°	19 10.4 -19.3 117.2	18 17.6 -18.9 116.9	17 24.6 -18.3 116.6	16 31.6 -17.9 116.3	15 38.4 -17.5 116.0
23°	18 51.1 -19.7 118.2	17 58.7 -19.1 117.9	17 06.3 -18.7 117.6	16 13.7 -18.2 117.3	15 20.9 -17.7 117.0
24°	18 31.4 -19.9 119.2	17 39.6 -19.4 118.9	16 47.6 -18.9 118.6	15 55.5 -18.4 118.3	15 03.2 -17.9 118.0
25°	18 11.5 -20.3 120.2	17 20.2 -19.8 119.8	16 28.7 -19.2 119.5	15 37.1 -18.7 119.2	14 45.3 -18.2 119.0
26°	17 51.2 -20.5 121.2	17 00.4 -20.0 120.8	16 09.5 -19.5 120.5	15 18.4 -19.0 120.2	14 27.1 -18.5 119.9
27°	17 30.7 -20.8 122.1	16 40.4 -20.3 121.8	15 50.0 -19.8 121.5	14 59.4 -19.2 121.2	14 08.6 -18.7 120.9
28°	17 09.9 -21.2 123.1	16 20.1 -20.5 122.8	15 30.2 -20.0 122.5	14 40.2 -19.5 122.2	13 49.9 -18.9 121.9
29°	16 48.7 -21.4 124.1	15 59.6 -20.8 123.8	15 10.2 -20.2 123.5	14 20.7 -19.7 123.2	13 31.0 -19.1 122.9

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°	19 44.6 -10.1 93.3	18 45.4 -10.0 93.1	17 46.3 -10.1 92.9	16 47.1 -10.0 92.7	15 47.9 -09.9 92.6
1°	19 34.5 -10.6 94.3	18 35.4 -10.5 94.1	17 36.2 -10.3 93.9	16 37.1 -10.2 93.8	15 38.0 -10.2 93.6
2°	19 23.9 -10.8 95.3	18 24.9 -10.7 95.2	17 25.9 -10.7 95.0	16 26.9 -10.6 94.8	15 27.8 -10.5 94.6
3°	19 13.1 -11.3 96.4	18 14.2 -11.1 96.2	17 15.2 -10.9 96.0	16 16.3 -10.9 95.8	15 17.3 -10.7 95.6
4°	19 01.8 -11.5 97.4	18 03.1 -11.5 97.2	17 04.3 -11.3 97.0	16 05.4 -11.1 96.8	15 06.6 -11.0 96.7
5°	18 50.3 -12.0 98.5	17 51.6 -11.7 98.3	16 53.0 -11.6 98.1	15 54.3 -11.5 97.9	14 55.6 -11.3 97.7
6°	18 38.3 -12.2 99.5	17 39.9 -12.1 99.3	16 41.4 -11.9 99.1	15 42.8 -11.7 98.9	14 44.3 -11.6 98.7
7°	18 26.1 -12.6 100.5	17 27.8 -12.4 100.3	16 29.5 -12.2 100.1	15 31.1 -12.0 99.9	14 32.7 -11.8 99.7
8°	18 13.5 -12.9 101.6	17 15.4 -12.7 101.3	16 17.3 -12.5 101.1	15 19.1 -12.2 100.9	14 20.9 -12.0 100.7
9°	18 00.6 -13.3 102.6	17 02.7 -13.0 102.4	16 04.8 -12.8 102.2	15 06.9 -12.6 101.9	14 08.9 -12.4 101.7
10°	17 47.3 -13.5 103.6	16 49.7 -13.3 103.4	15 52.0 -13.0 103.2	14 54.3 -12.8 102.9	13 56.5 -12.5 102.7
11°	17 33.8 -13.9 104.6	16 36.4 -13.6 104.4	15 39.0 -13.4 104.2	14 41.5 -13.1 104.0	13 44.0 -12.9 103.7
12°	17 19.9 -14.2 105.7	16 22.8 -13.9 105.4	15 25.6 -13.6 105.2	14 28.4 -13.3 105.0	13 31.1 -13.0 104.7
13°	17 05.7 -14.5 106.7	16 08.9 -14.2 106.4	15 12.0 -13.8 106.2	14 15.1 -13.6 106.0	13 18.1 -13.3 105.8
14°	16 51.2 -14.8 107.7	15 54.7 -14.4 107.4	14 58.2 -14.2 107.2	14 01.5 -13.8 107.0	13 04.8 -13.5 106.8
15°	16 36.4 -15.0 108.7	15 40.3 -14.8 108.5	14 44.0 -14.4 108.2	13 47.7 -14.1 108.0	12 51.3 -13.8 107.8
16°	16 21.4 -15.4 109.7	15 25.5 -15.0 109.5	14 29.6 -14.7 109.2	13 33.6 -14.3 109.0	12 37.5 -13.9 108.8
17°	16 06.0 -15.7 110.7	15 10.5 -15.3 110.5	14 14.9 -14.9 110.2	13 19.3 -14.5 110.0	12 23.6 -14.2 109.7
18°	15 50.3 -15.9 111.7	14 55.2 -15.5 111.5	14 00.0 -15.1 111.2	13 04.8 -14.8 111.0	12 09.4 -14.4 110.7
19°	15 34.4 -16.2 112.7	14 39.7 -15.8 112.5	13 44.9 -15.4 112.2	12 50.0 -15.0 112.0	11 55.0 -14.6 111.7
20°	15 18.2 -16.4 113.7	14 23.9 -16.0 113.5	13 29.5 -15.6 113.2	12 35.0 -15.2 113.0	11 40.4 -14.8 112.7
21°	15 01.8 -16.8 114.7	14 07.9 -16.3 114.5	13 13.9 -15.9 114.2	12 19.8 -15.5 114.0	11 25.6 -15.1 113.7
22°	14 45.0 -16.9 115.7	13 51.6 -16.5 115.5	12 58.0 -16.1 115.2	12 04.3 -15.6 114.9	11 10.5 -15.2 114.7
23°	14 28.1 -17.3 116.7	13 35.1 -16.8 116.4	12 41.9 -16.3 116.2	11 48.7 -15.9 115.9	10 55.3 -15.4 115.7
24°	14 10.8 -17.4 117.7	13 18.3 -17.0 117.4	12 25.6 -16.5 117.2	11 32.8 -16.0 116.9	10 39.9 -15.5 116.7
25°	13 53.4 -17.7 118.7	13 01.3 -17.2 118.4	12 09.1 -16.7 118.2	11 16.8 -16.2 117.9	10 24.4 -15.8 117.7
26°	13 35.7 -18.0 119.7	12 44.1 -17.4 119.4	11 52.4 -16.9 119.1	11 00.6 -16.5 118.9	10 08.6 -15.9 118.6
27°	13 17.7 -18.1 120.6	12 26.7 -17.7 120.4	11 35.5 -17.2 120.1	10 44.1 -16.6 119.9	9 52.7 -16.1 119.6
28°	12 59.6 -18.4 121.6	12 09.0 -17.8 121.4	11 18.3 -17.3 121.1	10 27.5 -16.8 120.8	9 36.6 -16.3 120.6
29°	12 41.2 -18.6 122.6	11 51.2 -18.1 122.3	11 01.0 -17.5 122.1	10 10.7 -16.9 121.8	9 20.3 -16.4 121.6

Dec	LHA 075° / 285°	LHA 076° / 284°	LHA 077° / 283°	LHA 078° / 282°	LHA 079° / 281°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	14 48.7 -09.9 92.4	13 49.5 -09.8 92.2	12 50.2 -09.7 92.1	11 51.0 -09.7 91.9	10 51.8 -09.7 91.7
1°	14 38.8 -10.1 93.4	13 39.7 -10.1 93.2	12 40.5 -10.0 93.1	11 41.3 -09.9 92.9	10 42.1 -09.8 92.7
2°	14 28.7 -10.4 94.4	13 29.6 -10.3 94.3	12 30.5 -10.2 94.1	11 31.4 -10.1 93.9	10 32.3 -10.1 93.8
3°	14 18.3 -10.6 95.5	13 19.3 -10.5 95.3	12 20.3 -10.4 95.1	11 21.3 -10.3 94.9	10 22.2 -10.2 94.8
4°	14 07.7 -10.9 96.5	13 08.8 -10.7 96.3	12 09.9 -10.6 96.1	11 11.0 -10.6 95.9	10 12.0 -10.4 95.8
5°	13 56.8 -11.1 97.5	12 58.1 -11.0 97.3	11 59.3 -10.9 97.1	11 00.4 -10.7 96.9	10 01.6 -10.6 96.8
6°	13 45.7 -11.4 98.5	12 47.1 -11.3 98.3	11 48.4 -11.1 98.1	10 49.7 -10.9 97.9	9 51.0 -10.7 97.8
7°	13 34.3 -11.6 99.5	12 35.8 -11.4 99.3	11 37.3 -11.2 99.1	10 38.8 -11.1 98.9	9 40.3 -11.0 98.8
8°	13 22.7 -11.9 100.5	12 24.4 -11.7 100.3	11 26.1 -11.5 100.1	10 27.7 -11.3 99.9	9 29.3 -11.1 99.7
9°	13 10.8 -12.1 101.5	12 12.7 -11.9 101.3	11 14.6 -11.7 101.1	10 16.4 -11.4 100.9	9 18.2 -11.2 100.7
10°	12 58.7 -12.3 102.5	12 00.8 -12.1 102.3	11 02.9 -11.9 102.1	10 05.0 -11.7 101.9	9 07.0 -11.5 101.7
11°	12 46.4 -12.6 103.5	11 48.7 -12.3 103.3	10 51.0 -12.0 103.1	9 53.3 -11.8 102.9	8 55.5 -11.6 102.7
12°	12 33.8 -12.8 104.5	11 36.4 -12.5 104.3	10 39.0 -12.3 104.1	9 41.5 -12.0 103.9	8 43.9 -11.7 103.7
13°	12 21.0 -13.0 105.5	11 23.9 -12.7 105.3	10 26.7 -12.4 105.1	9 29.5 -12.2 104.9	8 32.2 -11.9 104.7
14°	12 08.0 -13.2 106.5	11 11.2 -12.9 106.3	10 14.3 -12.6 106.1	9 17.3 -12.3 105.9	8 20.3 -12.0 105.7
15°	11 54.8 -13.4 107.5	10 58.3 -13.1 107.3	10 01.7 -12.8 107.1	9 05.0 -12.5 106.9	8 08.3 -12.2 106.7
16°	11 41.4 -13.7 108.5	10 45.2 -13.3 108.3	9 48.9 -13.0 108.1	8 52.5 -12.7 107.9	7 56.1 -12.4 107.7
17°	11 27.7 -13.8 109.5	10 31.9 -13.5 109.3	9 35.9 -13.2 109.1	8 39.8 -12.8 108.9	7 43.7 -12.4 108.7
18°	11 13.9 -14.0 110.5	10 18.4 -13.7 110.3	9 22.7 -13.3 110.1	8 27.0 -12.9 109.9	7 31.3 -12.6 109.7
19°	10 59.9 -14.2 111.5	10 04.7 -13.8 111.3	9 09.4 -13.4 111.1	8 14.1 -13.1 110.9	7 18.7 -12.7 110.6
20°	10 45.7 -14.5 112.5	9 50.9 -14.1 112.3	8 56.0 -13.6 112.1	8 01.0 -13.2 111.8	7 06.0 -12.9 111.6
21°	10 31.2 -14.5 113.5	9 36.8 -14.1 113.3	8 42.4 -13.8 113.0	7 47.8 -13.4 112.8	6 53.1 -13.0 112.6
22°	10 16.7 -14.8 114.5	9 22.7 -14.4 114.2	8 28.6 -13.9 114.0	7 34.4 -13.5 113.8	6 40.1 -13.0 113.6
23°	10 01.9 -15.0 115.5	9 08.3 -14.5 115.2	8 14.7 -14.1 115.0	7 20.9 -13.6 114.8	6 27.1 -13.2 114.6
24°	9 46.9 -15.1 116.4	8 53.8 -14.6 116.2	8 00.6 -14.2 116.0	7 07.3 -13.8 115.8	6 13.9 -13.3 115.6
25°	9 31.8 -15.3 117.4	8 39.2 -14.8 117.2	7 46.4 -14.3 117.0	6 53.5 -13.8 116.8	6 00.6 -13.5 116.5
26°	9 16.5 -15.4 118.4	8 24.4 -15.0 118.2	7 32.1 -14.5 117.9	6 39.7 -14.0 117.7	5 47.1 -13.5 117.5
27°	9 01.1 -15.6 119.4	8 09.4 -15.1 119.1	7 17.6 -14.6 118.9	6 25.7 -14.1 118.7	5 33.6 -13.6 118.5
28°	8 45.5 -15.7 120.4	7 54.3 -15.2 120.1	7 03.0 -14.7 119.9	6 11.6 -14.2 119.7	5 20.0 -13.7 119.5
29°	8 29.8 -15.9 121.3	7 39.1 -15.4 121.1	6 48.3 -14.9 120.9	5 57.4 -14.4 120.7	5 06.3 -13.8 120.5

Dec	LHA 080° / 280°	LHA 081° / 279°	LHA 082° / 278°	LHA 083° / 277°	LHA 084° / 276°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	9 52.5 -09.6 91.6	8 53.3 -09.6 91.4	7 54.1 -09.6 91.3	6 54.8 -09.5 91.1	5 55.6 -09.5 90.9
1°	9 42.9 -09.8 92.6	8 43.7 -09.7 92.4	7 44.5 -09.7 92.3	6 45.3 -09.6 92.1	5 46.1 -09.6 91.9
2°	9 33.1 -09.9 93.6	8 34.0 -09.9 93.4	7 34.8 -09.8 93.3	6 35.7 -09.8 93.1	5 36.5 -09.7 92.9
3°	9 23.2 -10.2 94.6	8 24.1 -10.0 94.4	7 25.0 -10.0 94.2	6 25.9 -09.9 94.1	5 26.8 -09.8 93.9
4°	9 13.0 -10.3 95.6	8 14.1 -10.2 95.4	7 15.0 -10.0 95.2	6 16.0 -10.0 95.1	5 17.0 -09.9 94.9
5°	9 02.7 -10.4 96.6	8 03.9 -10.4 96.4	7 05.0 -10.2 96.2	6 06.0 -10.0 96.1	5 07.1 -10.0 95.9
6°	8 52.3 -10.6 97.6	7 53.5 -10.4 97.4	6 54.8 -10.4 97.2	5 56.0 -10.2 97.1	4 57.1 -10.0 96.9
7°	8 41.7 -10.8 98.6	7 43.1 -10.6 98.4	6 44.4 -10.4 98.2	5 45.8 -10.3 98.0	4 47.1 -10.2 97.9
8°	8 30.9 -10.9 99.6	7 32.5 -10.8 99.4	6 34.0 -10.6 99.2	5 35.5 -10.4 99.0	4 36.9 -10.2 98.9
9°	8 20.0 -11.1 100.6	7 21.7 -10.9 100.4	6 23.4 -10.7 100.2	5 25.1 -10.5 100.0	4 26.7 -10.3 99.9
10°	8 08.9 -11.2 101.6	7 10.8 -11.0 101.4	6 12.7 -10.8 101.2	5 14.6 -10.6 101.0	4 16.4 -10.4 100.8
11°	7 57.7 -11.4 102.5	6 59.8 -11.1 102.4	6 01.9 -10.9 102.2	5 04.0 -10.7 102.0	4 06.0 -10.5 101.8
12°	7 46.3 -11.5 103.5	6 48.7 -11.2 103.4	5 51.0 -11.0 103.2	4 53.3 -10.8 103.0	3 55.5 -10.5 102.8
13°	7 34.8 -11.6 104.5	6 37.5 -11.4 104.3	5 40.0 -11.1 104.2	4 42.5 -10.8 104.0	3 45.0 -10.6 103.8
14°	7 23.2 -11.7 105.5	6 26.1 -11.5 105.3	5 28.9 -11.2 105.1	4 31.7 -10.9 105.0	3 34.4 -10.6 104.8
15°	7 11.5 -11.9 106.5	6 14.6 -11.6 106.3	5 17.7 -11.3 106.1	4 20.8 -11.0 106.0	3 23.8 -10.8 105.8
16°	6 59.6 -12.0 107.5	6 03.0 -11.7 107.3	5 06.4 -11.4 107.1	4 09.8 -11.1 106.9	3 13.0 -10.7 106.8
17°	6 47.6 -12.2 108.5	5 51.3 -11.8 108.3	4 55.0 -11.4 108.1	3 58.7 -11.2 107.9	3 02.3 -10.9 107.7
18°	6 35.4 -12.2 109.5	5 39.5 -11.9 109.3	4 43.6 -11.6 109.1	3 47.5 -11.2 108.9	2 51.4 -10.8 108.7
19°	6 23.2 -12.4 110.5	5 27.6 -12.0 110.3	4 32.0 -11.6 110.1	3 36.3 -11.3 109.9	2 40.6 -11.0 109.7
20°	6 10.8 -12.4 111.4	5 15.6 -12.0 111.2	4 20.4 -11.7 111.1	3 25.0 -11.3 110.9	2 29.6 -10.9 110.7
21°	5 58.4 -12.6 112.4	5 03.6 -12.2 112.2	4 08.7 -11.8 112.0	3 13.7 -11.4 111.9	2 18.7 -11.1 111.7
22°	5 45.8 -12.7 113.4	4 51.4 -12.3 113.2	3 56.9 -11.9 113.0	3 02.3 -11.5 112.8	2 07.6 -11.0 112.7
23°	5 33.1 -12.7 114.4	4 39.1 -12.3 114.2	3 45.0 -11.9 114.0	2 50.8 -11.5 113.8	1 56.6 -11.1 113.7
24°	5 20.4 -12.9 115.4	4 26.8 -12.4 115.2	3 33.1 -12.0 115.0	2 39.3 -11.5 114.8	1 45.5 -11.1 114.6
25°	5 07.5 -13.0 116.3	4 14.4 -12.5 116.2	3 21.1 -12.0 116.0	2 27.8 -11.6 115.8	1 34.4 -11.1 115.6
26°	4 54.5 -13.0 117.3	4 01.9 -12.6 117.1	3 09.1 -12.1 117.0	2 16.2 -11.6 116.8	1 23.3 -11.2 116.6
27°	4 41.5 -13.1 118.3	3 49.3 -12.6 118.1	2 57.0 -12.2 117.9	2 04.6 -11.7 117.8	1 12.1 -11.2 117.6
28°	4 28.4 -13.2 119.3	3 36.7 -12.7 119.1	2 44.8 -12.2 118.9	1 52.9 -11.7 118.7	1 00.9 -11.2 118.6
29°	4 15.2 -13.3 120.3	3 24.0 -12.8 120.1	2 32.6 -12.2 119.9	1 41.2 -11.7 119.7	0 49.7 -11.2 119.6

Dec	LHA 085° / 275°	LHA 086° / 274°	LHA 087° / 273°	LHA 088° / 272°	LHA 089° / 271°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	4 56.3 -09.5 90.8	3 57.0 -09.4 90.6	2 57.8 -09.4 90.5	1 58.5 -09.4 90.3	0 59.3 -09.4 90.2
1°	4 46.8 -09.5 91.8	3 47.6 -09.5 91.6	2 48.4 -09.5 91.5	1 49.1 -09.4 91.3	0 49.9 -09.4 91.1
2°	4 37.3 -09.7 92.8	3 38.1 -09.6 92.6	2 38.9 -09.5 92.4	1 39.7 -09.5 92.3	0 40.5 -09.5 92.1
3°	4 27.6 -09.7 93.8	3 28.5 -09.6 93.6	2 29.4 -09.6 93.4	1 30.2 -09.5 93.3	0 31.0 -09.4 93.1
4°	4 17.9 -09.8 94.7	3 18.9 -09.7 94.6	2 19.8 -09.6 94.4	1 20.7 -09.5 94.3	0 21.6 -09.4 94.1
5°	4 08.1 -09.8 95.7	3 09.2 -09.8 95.6	2 10.2 -09.7 95.4	1 11.2 -09.6 95.3	0 12.2 -09.5 95.1
6°	3 58.3 -09.9 96.7	2 59.4 -09.8 96.6	2 00.5 -09.6 96.4	1 01.6 -09.5 96.2	0 02.7 -09.4 96.1
7°	3 48.4 -10.0 97.7	2 49.6 -09.8 97.5	1 50.9 -09.8 97.4	0 52.1 -09.6 97.2	-0 06.7 -09.5
8°	3 38.4 -10.1 98.7	2 39.8 -09.9 98.5	1 41.1 -09.7 98.4	0 42.5 -09.6 98.2	-0 16.2 -09.4
9°	3 28.3 -10.1 99.7	2 29.9 -10.0 99.5	1 31.4 -09.8 99.4	0 32.9 -09.6 99.2	-0 25.6 -09.4
10°	3 18.2 -10.2 100.7	2 19.9 -10.0 100.5	1 21.6 -09.8 100.3	0 23.3 -09.6 100.2	-0 35.0 -09.4
11°	3 08.0 -10.3 101.7	2 09.9 -10.0 101.5	1 11.8 -09.8 101.3	0 13.7 -09.6 101.2	-0 44.4 -09.5
12°	2 57.7 -10.3 102.6	1 59.9 -10.1 102.5	1 02.0 -09.8 102.3	0 04.1 -09.6 102.2	-0 53.9 -09.3
13°	2 47.4 -10.3 103.6	1 49.8 -10.1 103.5	0 52.2 -09.9 103.3	-0 05.5 -09.6	-1 03.2 -09.4
14°	2 37.1 -10.4 104.6	1 39.7 -10.1 104.5	0 42.3 -09.8 104.3	-0 15.1 -09.6	-1 12.6 -09.4
15°	2 26.7 -10.4 105.6	1 29.6 -10.1 105.4	0 32.5 -09.9 105.3	-0 24.7 -09.6	-1 22.0 -09.3
16°	2 16.3 -10.5 106.6	1 19.5 -10.2 106.4	0 22.6 -09.9 106.3	-0 34.3 -09.6	-1 31.3 -09.3
17°	2 05.8 -10.5 107.6	1 09.3 -10.2 107.4	0 12.7 -09.9 107.3	-0 43.9 -09.6	-1 40.6 -09.2
18°	1 55.3 -10.6 108.6	0 59.1 -10.2 108.4	0 02.8 -09.9 108.2	-0 53.5 -09.5	-1 49.8 -09.3
19°	1 44.7 -10.5 109.5	0 48.9 -10.3 109.4	-0 07.1 -09.8	-1 03.0 -09.6	-1 59.1 -09.2
20°	1 34.2 -10.6 110.5	0 38.6 -10.2 110.4	-0 16.9 -09.9	-1 12.6 -09.5	-2 08.3 -09.1
21°	1 23.6 -10.7 111.5	0 28.4 -10.3 111.4	-0 26.8 -09.9	-1 22.1 -09.5	-2 17.4 -09.2
22°	1 12.9 -10.6 112.5	0 18.1 -10.2 112.3	-0 36.7 -09.9	-1 31.6 -09.5	-2 26.6 -09.0
23°	1 02.3 -10.7 113.5	0 07.9 -10.3 113.3	-0 46.6 -09.8	-1 41.1 -09.4	-2 35.6 -09.1
24°	0 51.6 -10.7 114.5	-0 02.4 -10.2	-0 56.4 -09.8	-1 50.5 -09.4	-2 44.7 -08.9
25°	0 40.9 -10.7 115.5	-0 12.6 -10.3	-1 06.2 -09.8	-1 59.9 -09.4	-2 53.6 -09.0
26°	0 30.2 -10.7 116.4	-0 22.9 -10.2	-1 16.0 -09.8	-2 09.3 -09.3	-3 02.6 -08.8
27°	0 19.5 -10.7 117.4	-0 33.1 -10.2	-1 25.8 -09.8	-2 18.6 -09.3	-3 11.4 -08.9
28°	0 08.8 -10.7 118.4	-0 43.3 -10.3	-1 35.6 -09.7	-2 27.9 -09.2	-3 20.3 -08.7
29°	-0 01.9 -10.7	-0 53.6 -10.2	-1 45.3 -09.7	-2 37.1 -09.2	-3 29.0 -08.7

Latitude 9°

Declination CONTRARY name to Latitude

Dec	LHA 090° / 270°	LHA 091° / 269°	LHA 092° / 268°	LHA 093° / 267°	LHA 094° / 266°
	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °	H ° ' dH ' Z °
0°	0 00.0 -09.4 90.0	-0 59.3 -09.3			
1°	-0 09.4 -09.4	-1 08.6 -09.4			
2°	-0 18.8 -09.3	-1 18.0 -09.3			
3°	-0 28.1 -09.4	-1 27.3 -09.3			
4°	-0 37.5 -09.4	-1 36.6 -09.3			
5°	-0 46.9 -09.3	-1 45.9 -09.3			
6°	-0 56.2 -09.3	-1 55.2 -09.2			
7°	-1 05.5 -09.4	-2 04.4 -09.2			
8°	-1 14.9 -09.2	-2 13.6 -09.1			
9°	-1 24.1 -09.3	-2 22.7 -09.1			
10°	-1 33.4 -09.2	-2 31.8 -09.0			
11°	-1 42.6 -09.2	-2 40.8 -09.0			
12°	-1 51.8 -09.2	-2 49.8 -09.0			
13°	-2 01.0 -09.1	-2 58.8 -08.9			
14°	-2 10.1 -09.1	-3 07.7 -08.8			
15°	-2 19.2 -09.1	-3 16.5 -08.8			
16°	-2 28.3 -09.0	-3 25.3 -08.7			
17°	-2 37.3 -08.9	-3 34.0 -08.7			
18°	-2 46.2 -09.0	-3 42.7 -08.6			
19°	-2 55.2 -08.8	-3 51.3 -08.5			
20°	-3 04.0 -08.8	-3 59.8 -08.5			
21°	-3 12.8 -08.8	-4 08.3 -08.3			
22°	-3 21.6 -08.7	-4 16.6 -08.3			
23°	-3 30.3 -08.6	-4 24.9 -08.3			
24°	-3 38.9 -08.5	-4 33.2 -08.1			
25°	-3 47.4 -08.5	-4 41.3 -08.1			
26°	-3 55.9 -08.5	-4 49.4 -07.9			
27°	-4 04.4 -08.3	-4 57.3 -07.9			
28°	-4 12.7 -08.3	-5 05.2 -07.8			
29°	-4 21.0 -08.2	-5 13.0 -07.7			

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

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