## GENERATED USING EPHEM



## THE NAUTICAL ALMANAC FOR THE SUN

## from 1.5.2021

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DIP corrects for height of eye over the surface. This value has to be subtracted from the sextant altitude  $(H_s)$ . The correction in degrees for height of eye in meters is given by the following formula:

$$d = 0.0293\sqrt{m}$$

This is the first correction (apart from index error) that has to be applied to the measured altitude.

The next correction is for refraction in the earth's atmosphere. As usual this table is correct for  $10^{\circ}$ C and a pressure of 1010 hPa. This correction has to be applied to apparent altitude ( $H_a$ ). The exact values can be calculated by the following formula.

$$R_0 = \cot\left(H_a + \frac{7.31}{H_a + 4.4}\right)$$

For other than standard conditions, calculate a correction factor for  $R_0$  by:

$$f = \frac{0.28P}{T + 273}$$

where P is the pressure in hectopascal and T is the temperature in  ${}^{\circ}$ C.

Semidiameter has to be added for lower limb sights and subtracted for upper limb sights. The value for semidiameter is tabulated in the daily pages.

To correct your sextant altitude  $H_s$  do the following: Calculate  $H_a$  by

$$H_a = H_s + I - d$$

where I is the sextant's index error and d is DIP. Then calculate the observed altitude  $H_o$  by

$$H_o = H_a - R + P \pm SD$$

where R is refraction, P is parallax and SD is the semidiameter.

Sight reduction tables can be downloaded for the US government's internet pages. Search for HO-229 or HO-249. These values can also be calculated with two, relatively simple, formulas:

$$\sin H_c = \sin L \sin d + \cos L \cos d \cos LHA$$

and

$$\cos A = \frac{\sin d - \sin L \sin H_c}{\cos L \cos H_c}$$

where A is the azimuth angle, L is the latitude, d is the declination and LHA is the local hour angle. The azimuth  $(Z_n)$  is given by the following rule:

- if the LHA is greater than  $180^{\circ}$ ,  $Z_n = A$
- if the LHA is less than  $180^{\circ}$ ,  $Z_n = 360^{\circ} A$

## 2021 May 01 to May. 15

01	GHA	Dec	04	GHA	Dec	07	GHA	Dec	10	GHA	Dec	13	GHA	Dec
0	180°43.1	<b>N</b> 15°04.7	0	180°47.9	<b>N</b> 15°58.0	0	180°51.5	<b>N</b> 16°48.9	0	180°53.8	N17°37.4	0	180°54.7	N18°23.1
1	195°43.2	05.5	1	195°48.0	58.7	1	195°51.6	49.6	1	195°53.8	38.0	1	195°54.7	23.7
2	210°43.2	06.2	2	210°48.1	$15^{\circ}59.5$	2	210°51.6	50.3	2	210°53.8	38.7	2	210°54.7	24.3
3	225°43.3	• • 07.0	3	225°48.1	16°00.2	3	225°51.6	• • 51.0	3	225°53.8	• • 39.3	3	225°54.8	• • 25.0
4	240°43.4	07.7	4	240°48.2	00.9	4	240°51.7	51.7	4	240°53.9	40.0	4	240°54.8	25.6
5	255°43.5	08.5	5	255°48.2	01.6	5	255°51.7	52.4	5	255°53.9	40.6	5	255°54.8	26.2
6	270°43.5	$N15^{\circ}09.2$	6	270°48.3	$N16^{\circ}02.3$	6	270°51.7	$N16^{\circ}53.1$	6	270°53.9	$N17^{\circ}41.3$	6	270°54.8	<b>N</b> 18°26.8
7	285°43.6	10.0	7	285°48.3	03.1	7	285°51.8	53.8	7	285°53.9	41.9	7	285°54.8	27.4
8	300°43.7	10.7	8	300°48.4	03.8	8	300°51.8	54.4	8	300°53.9	42.6	8	300°54.8	28.0
9	315°43.8	•• 11.5	9	315°48.5	• • 04.5	9	315°51.9	•• 55.1	9	315°54.0	• • 43.2	9	315°54.8	• • 28.6
10	330°43.8	12.2	10	330°48.5	05.2	10	330°51.9	55.8	10	330°54.0	43.9	10	330°54.8	29.3
11	345°43.9	13.0	11	345°48.6	05.9	11	345°51.9	56.5	11	345°54.0	44.5	11	345°54.8	29.9
12	0°44.0	$N15^{\circ}13.7$	12	0°48.6	$N16^{\circ}06.7$	12	0°52.0	<b>N</b> 16°57.2	12	0°54.0	N17°45.2	12	0°54.8	<b>N</b> 18°30.5
13	15°44.1	14.5	13	15°48.7	07.4	13	15°52.0	57.9	13	15°54.0	45.8	13	15°54.8	31.1
14	30°44.1	15.3	14	30°48.7	08.1	14	30°52.1	58.5	14	30°54.1	46.5	14	30°54.8	31.7
15	45°44.2	• • 16.0	15	45°48.8	• • 08.8	15	45°52.1	• • 59.2	15	45°54.1	• • 47.1	15	45°54.8	• • 32.3
16	60°44.3	16.7	16	60°48.8	09.5	16	60°52.1	$16^{\circ}59.9$	16	60°54.1	47.8	16	60°54.8	32.9
17	75°44.3	17.5	17	75°48.9	10.2	17	75°52.2	$17^{\circ}00.6$	17	75°54.1	48.4	17	75°54.8	33.5
18	90°44.4	$N15^{\circ}18.2$	18	90°49.0	$N16^{\circ}11.0$	18	90°52.2	$N17^{\circ}01.3$	18	90°54.1	$N17^{\circ}49.0$	18	90°54.8	N18°34.1
19	105°44.5	19.0	19	105°49.0	11.7	19	105°52.2	02.0	19	105°54.2	49.7	19	105°54.8	34.7
20	120°44.6	19.7	20	120°49.1	12.4	20	120°52.3	02.6	20	120°54.2	50.3	20	120°54.8	35.3
21	135°44.6	• • 20.5	21	135°49.1	• • 13.1	21	135°52.3	• • 03.3	21	135°54.2	• • 51.0	21	135°54.8	• • 35.9
22	150°44.7	21.2	22	150°49.2	13.8	22	150°52.3	04.0	22	150°54.2	51.6	22	150°54.8	36.5
23	165°44.8	22.0	23	165°49.2	14.5	23	165°52.4	04.7	23	165°54.2	52.3	23	165°54.8	37.2
	SD.=15.9	d=0.8		SD.=15.9	d=0.7		SD.=15.9	d=0.7		SD.=15.8	d=0.7		SD.=15.8	d=0.6

02	GHA	Dec	05	GHA	Dec	08	GHA	Dec	11	GHA	Dec	14	GHA	Dec
0	180°44.8	N15°22.7	0	180°49.3	<b>N</b> 16° 15.3	0	180°52.4	<b>N</b> 17°05.4	0	180°54.2	<b>N</b> 17°52.9	0	180°54.8	N18°37.8
1	195°44.9	23.5	1	195°49.3	16.0	1	195°52.4	06.0	1	195°54.3	53.5	1	195°54.8	38.4
2	210°45.0	24.2	2	210°49.4	16.7	2	210°52.5	06.7	2	210°54.3	54.2	2	210°54.8	39.0
3	225°45.1	• • 25.0	3	225°49.4	• • 17.4	3	225°52.5	• • 07.4	3	225°54.3	• • 54.8	3	225°54.8	· · 39.6
4	240°45.1	25.7	4	240°49.5	18.1	4	240°52.5	08.1	4	240°54.3	55.5	4	240°54.8	40.2
5	255° 45.2	26.5	5	255° 49.5	18.8	5	255°52.6	08.7	5	255°54.3	56.1	5	255°54.8	40.8
6	270°45.3	$N15^{\circ}27.2$	6	270°49.6	$N16^{\circ}19.5$	6	270°52.6	$N17^{\circ}09.4$	6	270°54.3	$N17^{\circ}56.7$	6	270°54.8	<b>N</b> 18°41.4
7	285°45.3	27.9	7	285°49.6	20.2	7	285°52.6	10.1	7	285°54.3	57.4	7	285°54.8	42.0
8	300°45.4	28.7	8	300°49.7	20.9	8	300°52.7	10.8	8	300°54.4	58.0	8	300°54.8	42.6
9	315° 45.5	• • 29.4	9	315°49.7	• • 21.7	9	315°52.7	• • 11.4	9	315°54.4	• • 58.7	9	315°54.8	• • 43.2
10	330°45.5	30.2	10	330°49.8	22.4	10	330°52.7	12.1	10	330°54.4	59.3	10	330°54.8	43.8
11	345°45.6	30.9	11	345°49.8	23.1	11	345°52.8	12.8	11	345°54.4	$17^{\circ}59.9$	11	345°54.7	44.4
12	0°45.7	$N15^{\circ}31.6$	12	0°49.9	$N16^{\circ}23.8$	12	0°52.8	$N17^{\circ}13.5$	12	0°54.4	<b>N</b> 18°00.6	12	0°54.7	<b>N</b> 18°45.0
13	15°45.7	32.4	13	15°49.9	24.5	13	15°52.8	14.1	13	15°54.4	01.2	13	15°54.7	45.6
14	30°45.8	33.1	14	30°50.0	25.2	14	30°52.9	14.8	14	30°54.4	01.8	14	30°54.7	46.2
15	45° 45.9	• • 33.9	15	45°50.0	• • 25.9	15	45°52.9	• • 15.5	15	45°54.5	• • 02.5	15	45°54.7	• • 46.7
16	60°45.9	34.6	16	60°50.1	26.6	16	60°52.9	16.2	16	60°54.5	03.1	16	60°54.7	47.3
17	75°46.0	35.3	17	75°50.1	27.3	17	75°53.0	16.8	17	75°54.5	03.7	17	75°54.7	47.9
18	90°46.1	$N15^{\circ}36.1$	18	90°50.2	$N16^{\circ}28.0$	18	90°53.0	$N17^{\circ}17.5$	18	90°54.5	<b>N</b> 18°04.4	18	90°54.7	<b>N</b> 18°48.5
19	105°46.1	36.8	19	105°50.2	28.7	19	105°53.0	18.2	19	105°54.5	05.0	19	105°54.7	49.1
20	120°46.2	37.6	20	120°50.3	29.4	20	120°53.0	18.8	20	120°54.5	05.6	20	120°54.7	49.7
21	135°46.3	• • 38.3	21	135°50.3	• • 30.1	21	135°53.1	• • 19.5	21	135°54.5	• • 06.3	21	135°54.7	• • 50.3
22	150°46.3	39.0	22	150°50.4	30.8	22	150°53.1	20.2	22	150°54.5	06.9	22	150°54.7	50.9
23	165°46.4	39.8	23	165°50.4	31.5	23	165°53.1	20.8	23	165°54.6	07.5	23	165°54.7	51.5
	SD.=15.9	d=0.7		SD.=15.9	d=0.7		SD.=15.8	d=0.7		SD.=15.8	d=0.6		SD.=15.8	d=0.6

03	GHA	Dec	06	GHA	Dec	09	GHA	Dec	12	GHA	Dec	15	GHA	Dec
0	180°46.5	<b>N</b> 15°40.5	0	180° 50.5	<b>N</b> 16°32.2	0	180°53.2	N17°21.5	0	180°54.6	<b>N</b> 18°08.2	0	180°54.7	N18°52.1
1	195°46.5	41.2	1	195°50.5	32.9	1	195°53.2	22.2	1	195°54.6	8.80	1	195°54.7	52.7
2	210°46.6	42.0	2	210°50.6	33.6	2	210°53.2	22.8	2	210°54.6	09.4	2	210°54.7	53.3
3	225°46.7	• • 42.7	3	225°50.6	• • 34.3	3	225°53.2	• • 23.5	3	225°54.6	• • 10.0	3	225°54.6	• • 53.9
4	240°46.7	43.4	4	240°50.7	35.0	4	240°53.3	24.2	4	240°54.6	10.7	4	240°54.6	54.4
5	255°46.8	44.2	5	255° 50.7	35.7	5	255°53.3	24.8	5	255°54.6	11.3	5	255°54.6	55.0
6	270°46.8	<b>N</b> 15°44.9	6	270°50.7	<b>N</b> 16°36.4	6	270°53.3	$N17^{\circ}25.5$	6	270°54.6	<b>N</b> 18°11.9	6	270°54.6	<b>N</b> 18°55.6
7	285°46.9	45.6	7	285°50.8	37.1	7	285°53.4	26.2	7	285°54.6	12.6	7	285°54.6	56.2
8	300°47.0	46.4	8	300°50.8	37.8	8	300°53.4	26.8	8	300°54.6	13.2	8	300°54.6	56.8
9	315°47.0	• • 47.1	9	315°50.9	• • 38.5	9	315°53.4	• • 27.5	9	315°54.6	• • 13.8	9	315°54.6	• • 57.4
10	330°47.1	47.8	10	330°50.9	39.2	10	330°53.4	28.1	10	330°54.7	14.4	10	330°54.6	58.0
11	345°47.2	48.6	11	345°51.0	39.9	11	345°53.5	28.8	11	345°54.7	15.1	11	345°54.6	58.5
12	0°47.2	<b>N</b> 15°49.3	12	0°51.0	<b>N</b> 16°40.6	12	0°53.5	$N17^{\circ}29.5$	12	0°54.7	<b>N</b> 18°15.7	12	0°54.6	<b>N</b> 18°59.1
13	15°47.3	50.0	13	15°51.0	41.3	13	15°53.5	30.1	13	15°54.7	16.3	13	15°54.6	18°59.7
14	30°47.3	50.7	14	30°51.1	42.0	14	30°53.5	30.8	14	30°54.7	16.9	14	30°54.5	19°00.3
15	45°47.4	• • 51.5	15	45°51.1	• • 42.7	15	45°53.6	• • 31.4	15	45°54.7	•• 17.5	15	45°54.5	• • 00.9
16	60°47.5	52.2	16	60°51.2	43.4	16	60°53.6	32.1	16	60°54.7	18.2	16	60°54.5	01.5
17	75°47.5	52.9	17	75°51.2	44.1	17	75°53.6	32.8	17	75°54.7	18.8	17	75°54.5	02.0
18	90°47.6	N15°53.7	18	90°51.3	<b>N</b> 16°44.8	18	90°53.6	$N17^{\circ}33.4$	18	90°54.7	<b>N</b> 18°19.4	18	90°54.5	N19°02.6
19	105°47.6	54.4	19	105°51.3	45.5	19	105°53.7	34.1	19	105°54.7	20.0	19	105°54.5	03.2
20	120°47.7	55.1	20	120°51.3	46.2	20	120°53.7	34.7	20	120°54.7	20.6	20	120°54.5	03.8
21	135°47.8	• • 55.8	21	135°51.4	• • 46.9	21	135°53.7	• • 35.4	21	135°54.7	• • 21.3	21	135°54.5	• • 04.4
22	150°47.8	56.6	22	150°51.4	47.6	22	150°53.7	36.0	22	150°54.7	21.9	22	150°54.5	04.9
23	165°47.9	57.3	23	165°51.5	48.2	23	165°53.8	36.7	23	165°54.7	22.5	23	165°54.4	05.5
	SD.=15.9	d=0.7		SD.=15.9	d=0.7		SD.=15.8	d=0.7		SD.=15.8	d=0.6		SD.=15.8	d=0.6

4 06.7 1 195°52.9 46.7 1 195°50.1 23.6 1 195°46.2 57.5 1 195°41.4 07.2 2 210°52.8 47.2 2 210°50.1 24.1 2 210°46.2 57.9 2 210°41.4 07.8 3 225°52.8 0.47.7 3 225°50.0 0.24.6 3 225°46.1 0.58.3 3 225°41.4 08.4 4 240°52.8 48.3 4 240°50.0 25.1 4 240°46.0 58.8 4 240°41.4 09.0 5 255°52.7 48.8 5 255°49.9 25.6 5 255°46.0 59.2 5 255°46.1 3 10.1 7 285°52.7 49.9 7 285°49.8 26.6 7 285°45.8 21°00.1 7 285°43.3 10.1 7 285°52.7 49.9 7 285°49.8 26.6 7 285°45.8 21°00.1 7 285°43.3 10.7 8 300°52.6 50.4 8 300°49.8 27.1 8 300°45.8 00.6 8 300°44.3 11.8 10 330°52.6 51.5 10 330°49.7 28.0 10 330°45.6 01.4 10 330°44.3 11.8 10 330°52.6 51.5 10 330°49.7 28.0 10 330°45.6 01.4 10 330°44.3 11.8 10 330°52.6 55.0 51.5 10 330°49.7 28.0 10 330°45.6 01.4 10 330°44.3 12.4 11 345°52.5 52.0 11 345°49.6 28.5 11 345°45.6 01.9 11 345°45.6 2 13.5 13 15°52.5 53.1 13 15°49.5 29.5 13 15°45.7 02.3 12 0°44.2 13.5 13 15°52.5 53.1 13 15°49.5 29.5 13 15°45.5 02.8 13 15°44.2 13.5 13 15°52.5 53.1 13 15°49.5 29.5 13 15°45.5 02.8 13 15°44.2 14.1 14 30°52.4 53.6 14 30°49.5 30.0 14 30°45.4 03.2 14 30°46.2 15.2 16 60°52.4 54.6 16 60°49.4 31.0 16 60°45.3 04.1 16 60°45.3 14.1 16 60°42.1 15.2 16 60°52.4 54.6 16 60°49.4 31.0 16 60°45.3 04.1 16 60°45.3 14.1 16 60°45.2 15.2 16 60°52.2 57.3 21 135°49.7 19.0 16.4 18 90°52.3 55.2 17 75°49.3 31.4 17 75°45.2 04.5 17 75°40.2 11.5 16°52.2 57.3 21 135°49.1 13.5 04.1 16.6 06°45.3 04.1 16 60°45.3 15.4 16.6 06°52.2 57.3 21 135°49.1 13.5 04.1 16.6 06°45.3 04.1 16.6 06°45.3 16.6 05.2 15.5 16.7 20 120°49.2 32.9 20 120°45.0 05.8 20 120°33 1 16°52.2 57.3 21 135°49.1 133.4 21 135°44.9 10.6 32.1 135°33 1 16°40.2 15.8 12 135°44.9 10.6 32.1 135°33 1 11.8 12 135°52.2 57.3 21 135°49.1 133.4 21 135°44.9 10.6 32.1 135°33 1 11.6 0.5 15.8 12 135°44.9 10.6 32.1 135°33 1 11.6 0.5 15.8 12.1 135°52.2 57.3 21 135°49.1 133.4 21 135°44.9 10.6 3.2 150°33 1 11.5 0.5 1.5 10.5 1.5 10.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	N20°57.0 57.5 57.9 58.3 58.8 59.2 N20°59.7 21°00.1 00.6 01.4 01.9 N21°02.3 02.8 03.2 03.6 04.1 04.5 N21°05.0 05.4	180°46.3 195°46.2 210°46.2 225°46.1 240°46.0 270°45.9 285°45.8 300°45.8 315°45.6 345°45.6 0°45.5 15°45.5 30°45.4 45°45.3 60°45.3 75°45.2	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	N20°23.2 23.6 24.1 ·· 24.6 25.1 25.6 N20°26.1 26.6 27.1 ·· 27.6 28.0 28.5 N20°29.0 29.5 30.0 ·· 30.5 31.0	180°50.1 195°50.1 210°50.1 225°50.0 240°50.0 255°49.9 270°49.8 300°49.8 315°49.7 330°49.7 345°49.6 0°49.6 15°49.5 30°49.5	0 1 2 3 4 5 6 7 8 9 10 11 12 13	N19°46.1 46.7 47.2 • 47.7 48.3 48.8 N19°49.3 49.9 50.4 • 50.9 51.5 52.0 N19°52.5	180° 52.9 195° 52.9 210° 52.8 225° 52.8 240° 52.8 255° 52.7 270° 52.7 285° 52.7 300° 52.6 315° 52.6 330° 52.6 345° 52.5	0 1 2 3 4 5 6 7 8 9 10	N19°06.1 06.7 07.2 · 07.8 08.4 09.0 N19°09.5 10.1 10.7 · 11.3 11.8	GHA  180°54.4 195°54.4 210°54.4 225°54.4 240°54.4 255°54.4 270°54.3 380°54.3 315°54.3 330°54.3	16 0 1 2 3 4 5 6
4	1 2 3 4 4 5 6 7 8 9 10 11 12 13 14 15 166 17 18 19 20 21 22	57.5 57.9 58.3 58.8 59.2 N20°59.7 21°00.1 00.6 01.4 01.9 N21°02.3 02.8 03.2 03.6 04.1 04.5 N21°05.0 05.4	195° 46.2 210° 46.2 225° 46.1 240° 46.0 255° 46.0 270° 45.9 285° 45.8 300° 45.8 315° 45.7 330° 45.6 0° 45.5 15° 45.5 30° 45.4 45° 45.3 60° 45.3 75° 45.2	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	23.6 24.1 · 24.6 25.1 25.6 N20° 26.1 26.6 27.1 · 27.6 28.0 28.5 N20° 29.0 29.5 30.0 · 30.5 31.0	195°50.1 210°50.1 225°50.0 240°50.0 255°49.9 270°49.9 285°49.8 300°49.8 315°49.7 330°49.7 345°49.6 0°49.6 15°49.5 30°49.5	1 2 3 4 5 6 7 8 9 10 11 12 13	46.7 47.2 • 47.7 48.8 N19° 49.3 49.9 50.4 • 50.9 51.5 52.0 N19° 52.5	195° 52.9 210° 52.8 225° 52.8 240° 52.8 255° 52.7 270° 52.7 285° 52.7 315° 52.6 315° 52.6 345° 52.5	1 2 3 4 5 6 7 8 9 10 11	06.7 07.2 •• 07.8 08.4 09.0 N19°09.5 10.1 10.7 •• 11.3 11.8	195° 54.4 210° 54.4 225° 54.4 240° 54.4 255° 54.4 270° 54.3 385° 54.3 315° 54.3 330° 54.3	1 2 3 4 5
4	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	57.9  58.3  58.8  59.2  N20° 59.7  21° 00.1  00.6  10.9  N21° 02.3  02.8  03.2  03.6  04.1  04.5  N21° 05.0  05.4	210°46.2 225°46.1 240°46.0 255°46.0 270°45.9 285°45.8 300°45.8 315°45.7 330°45.6 0°45.5 15°45.5 30°45.4 45°45.3 60°45.3 75°45.2	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	24.1 · · 24.6 25.1 25.6 N20° 26.1 26.6 27.1 · · 27.6 28.0 28.5 N20° 29.0 29.5 30.0 · · 30.5 31.0	210°50.1 225°50.0 240°50.0 255°49.9 270°49.9 285°49.8 300°49.8 315°49.7 330°49.7 345°49.6 0°49.6 15°49.5 30°49.5	2 3 4 5 6 7 8 9 10 11 12 13	47.2 · 47.7 48.3 48.8 N19° 49.3 49.9 50.4 · 50.9 51.5 52.0 N19° 52.5	210° 52.8 225° 52.8 240° 52.8 255° 52.7 270° 52.7 285° 52.7 300° 52.6 315° 52.6 330° 52.6 345° 52.5	2 3 4 5 6 7 8 9 10 11	07.2 · 07.8 08.4 09.0 N19°09.5 10.1 10.7 · 11.3 11.8	210° 54.4 225° 54.4 240° 54.4 255° 54.4 270° 54.3 285° 54.3 300° 54.3 315° 54.3 330° 54.3	2 3 4 5
4 · · · · · · · · · · · · · · · · · · ·	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	58.3 58.8 59.2 N20°59.7 21°00.1 00.6 01.0 01.4 01.9 N21°02.3 02.8 03.2 03.6 04.1 04.5 N21°05.0 05.4	225°46.1 240°46.0 255°46.0 270°45.9 285°45.8 300°45.8 315°45.7 330°45.6 0°45.5 15°45.5 30°45.4 45°45.3 60°45.3 75°45.2	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	. · · 24.6 25.1 25.6 N20° 26.1 26.6 27.1 · · 27.6 28.0 28.5 N20° 29.0 29.5 30.0 · · 30.5 31.0	225°50.0 240°50.0 255°49.9 270°49.9 285°49.8 300°49.8 315°49.7 330°49.7 0°49.6 15°49.5 30°49.5	3 4 5 6 7 8 9 10 11 12 13	•• 47.7 48.3 48.8 N19° 49.3 50.4 •• 50.9 51.5 52.0 N19° 52.5	225° 52.8 240° 52.8 255° 52.7 270° 52.7 300° 52.6 315° 52.6 330° 52.6 345° 52.5	3 4 5 6 7 8 9 10 11	07.8 08.4 09.0 <b>N</b> 19°09.5 10.1 10.7 11.3 11.8	225° 54.4 240° 54.4 255° 54.4 270° 54.3 285° 54.3 300° 54.3 315° 54.3 330° 54.3	3 4 5
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3	8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	00.6 01.0 01.4 01.9 N21°02.3 02.8 03.2 03.6 04.1 04.5 N21°05.0 05.4	300° 45.8 315° 45.7 330° 45.6 345° 45.6 0° 45.5 15° 45.5 30° 45.4 45° 45.3 60° 45.3 75° 45.2	8 9 10 11 12 13 14 15 16 17	27.1 · · 27.6 28.0 28.5 N20° 29.0 29.5 30.0 · · 30.5 31.0	285° 49.8 300° 49.8 315° 49.7 330° 49.7 345° 49.6 0° 49.6 15° 49.5 30° 49.5	8 9 10 11 12 13	50.4 •• 50.9 51.5 52.0 <b>N</b> 19° 52.5	300°52.6 315°52.6 330°52.6 345°52.5	8 9 10 11	10.7 · · 11.3 11.8	300° 54.3 315° 54.3 330° 54.3	
3	9 10 11 12 13 14 15 16 17 18 19 20 21 22	00.6 01.0 01.4 01.9 N21°02.3 02.8 03.2 03.6 04.1 04.5 N21°05.0 05.4	315° 45.7 330° 45.6 345° 45.6 0° 45.5 15° 45.5 30° 45.4 45° 45.3 60° 45.3 75° 45.2	9 10 11 12 13 14 15 16 17	27.1 · · 27.6 28.0 28.5 N20° 29.0 29.5 30.0 · · 30.5 31.0	315° 49.7 330° 49.7 345° 49.6 0° 49.6 15° 49.5 30° 49.5	9 10 11 12 13	50.4 •• 50.9 51.5 52.0 <b>N</b> 19° 52.5	315°52.6 330°52.6 345°52.5	9 10 11	10.7 · · 11.3 11.8	315°54.3 330°54.3	7
3	10 11 12 13 14 15 16 17 18 19 20 21 22	01.4 01.9 N21° 02.3 02.8 03.2 · · 03.6 04.1 04.5 N21° 05.0 05.4	330°45.6 345°45.6 0°45.5 15°45.5 30°45.4 45°45.3 60°45.3 75°45.2	10 11 12 13 14 15 16 17	28.0 28.5 N20° 29.0 29.5 30.0 · · 30.5 31.0	330°49.7 345°49.6 0°49.6 15°49.5 30°49.5	10 11 12 13	51.5 52.0 <b>N</b> 19°52.5	330°52.6 345°52.5	10 11	11.8	330°54.3	8
3	11 12 13 14 15 16 17 18 19 20 21 22	01.9 N21°02.3 02.8 03.2 · · 03.6 04.1 04.5 N21°05.0 05.4	345° 45.6 0° 45.5 15° 45.5 30° 45.4 45° 45.3 60° 45.3 75° 45.2	11 12 13 14 15 16 17	28.5 N20° 29.0 29.5 30.0 · 30.5 31.0	330°49.7 345°49.6 0°49.6 15°49.5 30°49.5	11 12 13	52.0 <b>N</b> 19°52.5	345°52.5	11			9
3	12 13 14 15 16 17 18 19 20 21 22	N21°02.3 02.8 03.2 · · 03.6 04.1 04.5 N21°05.0 05.4	345° 45.6 0° 45.5 15° 45.5 30° 45.4 45° 45.3 60° 45.3 75° 45.2	12 13 14 15 16 17	N20° 29.0 29.5 30.0 · · 30.5 31.0	345°49.6 0°49.6 15°49.5 30°49.5	12 13	<b>N</b> 19°52.5			12.4		10
2 13.5 13 15°52.5 53.1 13 15°49.5 29.5 13 15°45.5 02.8 13 15°46.2 14.1 14 30°52.4 53.6 14 30°49.5 30.0 14 30°45.4 03.2 14 30°40.4 15.2 16 60°52.4 54.6 16 60°49.4 31.0 16 60°45.3 04.1 16 60°40.4 15.8 17 75°52.3 55.2 17 75°49.3 31.4 17 75°45.2 04.5 17 75°40.2 N19°16.4 18 90°52.3 N19°55.7 18 90°49.3 N20°31.9 18 90°45.1 N21°05.0 18 90°30.1 16.9 19 105°52.3 56.2 19 105°49.2 32.4 19 105°45.1 05.4 19 105°30.1 17.5 20 120°52.2 56.7 20 120°49.2 32.9 20 120°45.0 05.8 20 120°30.1 18.6 22 150°52.2 57.8 22 150°49.1 33.8 22 150°44.9 06.7 22 150°30.1 19.2 23 165°52.1 58.3 23 165°49.0 34.3 23 165°44.8 07.1 23 165°30.8 d=0.6 SD.=15.8 d=0.5 SD.=15.8 d=0.5 SD.=15.8 d=0.4 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°30.0 190°30.1 195°44.7 08.0 1 195°30.1 195°44.7 08.0 1 195°30.1 195°44.7 08.0 1 195°30.1 195°44.7 08.0 1 195°30.1 195°30.1 195°52.1 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°30.0 20.3 1 195°52.1 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°30.0 20.3 1 195°52.1 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°30.0 20.3 1 195°52.1 S9.3 1 195°48.9 35.3 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.9 06.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 0 100.0 1 195°30.0 1 195°30.0 1 195°30.0 1 195°30.0 1 195°	13 14 15 16 17 18 19 20 21 22	02.8 03.2 ·· 03.6 04.1 04.5 <b>N</b> 21°05.0 05.4	15° 45.5 30° 45.4 45° 45.3 60° 45.3 75° 45.2	13 14 15 16 17	29.5 30.0 · · 30.5 31.0	15°49.5 30°49.5	13		0°52.5				11
2 13.5 13 15°52.5 53.1 13 15°49.5 29.5 13 15°45.5 02.8 13 15°46.2 14.1 14 30°52.4 53.6 14 30°49.5 30.0 14 30°45.4 03.2 14 30°40.4 15.2 16 60°52.4 54.6 16 60°49.4 31.0 16 60°45.3 04.1 16 60°40.4 15.8 17 75°52.3 55.2 17 75°49.3 31.4 17 75°45.2 04.5 17 75°40.2 N19°16.4 18 90°52.3 N19°55.7 18 90°49.3 N20°31.9 18 90°45.1 N21°05.0 18 90°30.1 16.9 19 105°52.3 56.2 19 105°49.2 32.4 19 105°45.1 05.4 19 105°30.1 17.5 20 120°52.2 56.7 20 120°49.2 32.9 20 120°45.0 05.8 20 120°30.1 18.6 22 150°52.2 57.8 22 150°49.1 33.8 22 150°44.9 06.7 22 150°30.1 19.2 23 165°52.1 58.3 23 165°49.0 34.3 23 165°44.8 07.1 23 165°30.8 d=0.6 SD.=15.8 d=0.5 SD.=15.8 d=0.5 SD.=15.8 d=0.4 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°30.0 190°30.1 195°44.7 08.0 1 195°30.1 195°44.7 08.0 1 195°30.1 195°44.7 08.0 1 195°30.1 195°44.7 08.0 1 195°30.1 195°30.1 195°52.1 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°30.0 20.3 1 195°52.1 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°30.0 20.3 1 195°52.1 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°30.0 20.3 1 195°52.1 S9.3 1 195°48.9 35.3 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.9 06.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°30.0 1 195°44.7 08.0 1 195°30.0 1 195°44.7 0 100.0 1 195°30.0 1 195°30.0 1 195°30.0 1 195°30.0 1 195°	13 14 15 16 17 18 19 20 21 22	02.8 03.2 ·· 03.6 04.1 04.5 <b>N</b> 21°05.0 05.4	15° 45.5 30° 45.4 45° 45.3 60° 45.3 75° 45.2	13 14 15 16 17	29.5 30.0 · · 30.5 31.0	15°49.5 30°49.5	13			12	N19°13 0	0°54.3	12
2 14.1 14 30°52.4 53.6 14 30°49.5 30.0 14 30°45.4 03.2 14 30°40.5 2.0 14.7 15 45°52.4 · · · 54.1 15 45°49.4 · · · 30.5 15 45°45.3 · · · 03.6 15 45°40.2 15.2 16 60°52.4 54.6 16 60°49.4 31.0 16 60°45.3 04.1 16 60°40.2 15.8 17 75°52.3 55.2 17 75°49.3 31.4 17 75°45.2 04.5 17 75°40.2 N19°16.4 18 90°52.3 N19°55.7 18 90°49.3 N20°31.9 18 90°45.1 N21°05.0 18 90°31.1 16.9 19 105°52.3 56.2 19 105°49.2 32.4 19 105°45.1 05.4 19 105°31.1 17.5 20 120°52.2 56.7 20 120°49.2 32.9 20 120°45.0 05.8 20 120°32 1 · · · 18.1 21 135°52.2 · · · 57.3 21 135°49.1 · · · 33.4 21 135°44.9 · · · 06.3 21 135°31.1 18.6 22 150°52.2 57.8 22 150°49.1 33.8 22 150°44.9 06.7 22 150°30.1 19.2 23 165°52.1 58.3 23 165°49.0 34.3 23 165°44.8 07.1 23 165°30.8 d=0.6 SD.=15.8 d=0.5 SD.=15.8 d=0.5 SD.=15.8 d=0.4 SD.=15.0 N19°19.8 0 180°52.1 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°30.0 20.3 1 195°52.1 59.3 1 195°48.9 35.3 1 195°44.7 08.0 1 195°30.0 1 195°3	14 15 16 17 18 19 20 21 22	03.2 · · 03.6 04.1 04.5 <b>N</b> 21°05.0 05.4	30°45.4 45°45.3 60°45.3 75°45.2	14 15 16 17	30.0 · · 30.5 31.0	30°49.5						15°54.2	13
2 · · · 14.7   15   45°52.4   · · · 54.1   15   45°49.4   · · · 30.5   15   45°45.3   · · · 03.6   15   45°40.4   2   15.2   16   60°52.4   54.6   16   60°49.4   31.0   16   60°45.3   04.1   16   60°40.4   2   15.8   17   75°52.3   55.2   17   75°49.3   31.4   17   75°45.2   04.5   17   75°40.2   2   N19°16.4   18   90°52.3   N19°55.7   18   90°49.3   N20°31.9   18   90°45.1   N21°05.0   18   90°31.1   3   16.9   19   105°52.3   56.2   19   105°49.2   32.4   19   105°45.1   05.4   19   105°31.1   3   1   17.5   20   120°52.2   56.7   20   120°49.2   32.9   20   120°45.0   05.8   20   120°32.1   3   1   18.6   22   150°52.2   57.3   21   135°49.1   · · 33.4   21   135°44.9   · · 06.3   21   135°32.1   3   1   18.6   22   150°52.2   57.8   22   150°49.1   33.8   22   150°44.9   06.7   22   150°32.1   3   1   19.2   23   165°52.1   58.3   23   165°49.0   34.3   23   165°44.8   07.1   23   165°32.8   4   40.6   SD.=15.8   d=0.5   SD.=15.8   d=0.5   SD.=15.8   d=0.4   SD.=15.0	15 16 17 18 19 20 21 22	•• 03.6 04.1 04.5 <b>N</b> 21°05.0 05.4	45°45.3 60°45.3 75°45.2	15 16 17	· · 30.5 31.0							30°54.2	14
2 15.2 16 60°52.4 54.6 16 60°49.4 31.0 16 60°45.3 04.1 16 60°40.4 15.8 17 75°52.3 55.2 17 75°49.3 31.4 17 75°45.2 04.5 17 75°40.2 N19°16.4 18 90°52.3 N19°55.7 18 90°49.3 N20°31.9 18 90°45.1 N21°05.0 18 90°32 1 16.9 19 105°52.3 56.2 19 105°49.2 32.4 19 105°45.1 05.4 19 105°45.1 17.5 20 120°52.2 56.7 20 120°49.2 32.9 20 120°45.0 05.8 20 120°32 1 ···18.1 21 135°52.2 ···57.3 21 135°49.1 ···33.4 21 135°44.9 ···06.3 21 135°32 1 18.6 22 150°52.2 57.8 22 150°49.1 33.8 22 150°44.9 06.7 22 150°32 1 19.2 23 165°52.1 58.3 23 165°49.0 34.3 23 165°44.8 07.1 23 165°32 8 d=0.6 SD.=15.8 d=0.5 SD.=15.8 d=0.5 SD.=15.8 d=0.4 SD.=15.8	16 17 18 19 20 21 22	04.1 04.5 <b>N</b> 21°05.0 05.4	60°45.3 75°45.2	16 17	31.0							45°54.2	15
2 15.8 17 75°52.3 55.2 17 75°49.3 31.4 17 75°45.2 04.5 17 75°40.2 N19°16.4 18 90°52.3 N19°55.7 18 90°49.3 N20°31.9 18 90°45.1 N21°05.0 18 90°39.1 16.9 19 105°52.3 56.2 19 105°49.2 32.4 19 105°45.1 05.4 19 105°39.1 17.5 20 120°52.2 56.7 20 120°49.2 32.9 20 120°45.0 05.8 20 120°30.1 18.1 21 135°52.2 · 57.3 21 135°49.1 · 33.4 21 135°44.9 · 06.3 21 135°39.1 18.6 22 150°52.2 57.8 22 150°49.1 33.8 22 150°44.9 06.7 22 150°30.1 19.2 23 165°52.1 58.3 23 165°49.0 34.3 23 165°44.8 07.1 23 165°30.8 d=0.6 SD.=15.8 d=0.5 SD.=15.8 d=0.5 SD.=15.8 d=0.4 SD.=15.0 N19°19.8 0 180°52.1 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°30.0 20.3 1 195°52.1 59.3 1 195°48.9 35.3 1 195°44.7 08.0 1 195°39.	17 18 19 20 21 22	04.5 <b>N</b> 21°05.0 05.4	75°45.2	17		60°49.4						60°54.2	16
2 N19°16.4 18 90°52.3 N19°55.7 18 90°49.3 N20°31.9 18 90°45.1 N21°05.0 18 90°39. 1 16.9 19 105°52.3 56.2 19 105°49.2 32.4 19 105°45.1 05.4 19 105°39. 1 17.5 20 120°52.2 56.7 20 120°49.2 32.9 20 120°45.0 05.8 20 120°3. 1 · · 18.1 21 135°52.2 · · 57.3 21 135°49.1 · · 33.4 21 135°44.9 · · 06.3 21 135°39. 1 18.6 22 150°52.2 57.8 22 150°49.1 33.8 22 150°44.9 06.7 22 150°3. 1 19.2 23 165°52.1 58.3 23 165°49.0 34.3 23 165°44.8 07.1 23 165°3. 8 d=0.6 SD.=15.8 d=0.5 SD.=15.8 d=0.5 SD.=15.8 d=0.4 SD.=15.  Dec 20 GHA Dec 23 GHA Dec 26 GHA Dec 29 GHA 0 N19°19.8 0 180°52.1 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°3.0 0 20.3 1 195°52.1 59.3 1 195°48.9 35.3 1 195°44.7 08.0 1 195°3.	18 19 20 21 22	<b>N</b> 21°05.0 05.4										75°54.2	17
1     16.9     19     105°52.3     56.2     19     105°49.2     32.4     19     105°45.1     05.4     19     105°39.1       1     17.5     20     120°52.2     56.7     20     120°49.2     32.9     20     120°45.0     05.8     20     120°36.1       1     · 18.1     21     135°52.2     · 57.3     21     135°49.1     · 33.4     21     135°44.9     · 06.3     21     135°36.1       1     18.6     22     150°52.2     57.8     22     150°49.1     33.8     22     150°44.9     06.7     22     150°36.1       1     19.2     23     165°52.1     58.3     23     165°49.0     34.3     23     165°44.8     07.1     23     165°3       8     d=0.6     SD.=15.8     d=0.5     SD.=15.8     d=0.5     SD.=15.8     d=0.4     SD.=15.8       b     Dec     20     GHA     Dec     23     GHA     Dec     26     GHA     Dec     29     GHA       0     N19°19.8     0     180°52.1     N19°58.8     0     180°49.0     N20°34.8     0     180°44.7     N21°07.6     0     180°36.0       0     20.3     1     195°52.1	19 20 21 22	05.4	90 45.1	TO I								90°54.2	18
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	20 21 22		10E 0 4E 1	10			- 1					90 54.2 105°54.1	18 19
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	21 22			-			- 1					105 54.1 120°54.1	20
1     18.6     22     150°52.2     57.8     22     150°49.1     33.8     22     150°44.9     06.7     22     150°39.1       1     19.2     23     165°52.1     58.3     23     165°49.0     34.3     23     165°44.8     07.1     23     165°39.3       8     d=0.6     SD.=15.8     d=0.5     SD.=15.8     d=0.5     SD.=15.8     d=0.4     SD.=15.8       Dec     20     GHA     Dec     23     GHA     Dec     26     GHA     Dec     29     GHA       0     N19°19.8     0     180°52.1     N19°58.8     0     180°49.0     N20°34.8     0     180°44.7     N21°07.6     0     180°39.0       0     20.3     1     195°52.1     59.3     1     195°48.9     35.3     1     195°44.7     08.0     1     195°39.0	22			-			- 1						
1     19.2     23     165°52.1     58.3     23     165°49.0     34.3     23     165°44.8     07.1     23     165°39.8       8     d=0.6     SD.=15.8     d=0.5     SD.=15.8     d=0.5     SD.=15.8     d=0.4     SD.=15.8       Dec     20     GHA     Dec     23     GHA     Dec     26     GHA     Dec     29     GHA       0     N19°19.8     0     180°52.1     N19°58.8     0     180°49.0     N20°34.8     0     180°44.7     N21°07.6     0     180°39.0       0     20.3     1     195°52.1     59.3     1     195°48.9     35.3     1     195°44.7     08.0     1     195°39.0	1											135°54.1 150°54.1	21 22
B         d=0.6         SD.=15.8         d=0.5         SD.=15.8         d=0.5         SD.=15.8         d=0.4         SD.=15.8           Dec         20         GHA         Dec         23         GHA         Dec         26         GHA         Dec         29         GHA           0         N19°19.8         0         180°52.1         N19°58.8         0         180°49.0         N20°34.8         0         180°44.7         N21°07.6         0         180°39.0           0         20.3         1         195°52.1         59.3         1         195°48.9         35.3         1         195°44.7         08.0         1         195°39.0	1 22												22
Dec         20         GHA         Dec         23         GHA         Dec         26         GHA         Dec         29         GHA           0         N19°19.8         0         180°52.1         N19°58.8         0         180°49.0         N20°34.8         0         180°44.7         N21°07.6         0         180°39.0           0         20.3         1         195°52.1         59.3         1         195°48.9         35.3         1         195°44.7         08.0         1         195°39.0	23			23			23			23		165°54.1 SD.=15.8	23
0 N19°19.8 0 180°52.1 N19°58.8 0 180°49.0 N20°34.8 0 180°44.7 N21°07.6 0 180°36 0 20.3 1 195°52.1 59.3 1 195°48.9 35.3 1 195°44.7 08.0 1 195°36		u=0.4	3D.=13.0		u=0.5	3D.—13.0		u=0.5	JD.=13.0		u=0.0	3D.=13.0	
0 20.3   1   195°52.1 59.3   1   195°48.9 35.3   1   195°44.7 08.0   1   195°39							-			_		GHA	17
				-								180°54.0	0
												195°54.0	1
												210°54.0	2
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0 22.6 5 255°51.9 01.4 5 255°48.7 37.2 5 255°44.4 09.7 5 255°39	5	09.7	255°44.4	5	37.2	255°48.7	5	01.4	255°51.9	5	22.6	255°54.0	5
9 N19°23.1   6   270°51.9 N20°01.9   6   270°48.7 N20°37.6   6   270°44.3 N21°10.2   6   270°38	6	N21°10.2	270°44.3	6	N20°37.6	270°48.7	6	<b>N</b> 20°01.9	270°51.9	6	$N19^{\circ}23.1$	270°53.9	6
	7	10.6	285°44.3	7	38.1		7	02.5	285°51.8	7	23.7	285°53.9	7
9 24.3   8   300°51.8 03.0   8   300°48.6 38.6   8   300°44.2 11.0   8   300°38	8	11.0	300°44.2	8	38.6	300°48.6	8	03.0	300°51.8	8	24.3	300°53.9	8
$9  \cdot \cdot  24.8  \mid  9  \mid  315^\circ 51.8  \cdot \cdot  03.5  \mid  9  \mid  315^\circ 48.5  \cdot \cdot  39.1  \mid  9  \mid  315^\circ 44.1  \cdot \cdot  11.4  \mid  9  \mid  315^\circ 38  \mid  9  \mid $	9	• • 11.4	315°44.1	9	• • 39.1	315°48.5	9	• • 03.5	315°51.8	9	• • 24.8	315°53.9	9
8 25.4   10   330°51.7 04.0   10   330°48.5 39.5   10   330°44.1 11.9   10   330°38	10	11.9	330°44.1	10	39.5	330°48.5	10	04.0	330°51.7	10	25.4	330°53.8	.0
8 25.9   11   345°51.7 04.5   11   345°48.4 40.0   11   345°44.0 12.3   11   345°38	11	12.3	345°44.0	11	40.0	345°48.4	11	04.5	345°51.7	11	25.9	345°53.8	1
8 N19°26.5   12   0°51.7 N20°05.0   12   0°48.3 N20°40.5   12   0°43.9 N21°12.7   12   0°38	12	N21°12.7	0°43.9	12	N20°40.5	0°48.3	12	N20°05.0	0°51.7	12	N19°26.5	0°53.8	12
	1											15°53.8	13
	1			-								30°53.8	L4
												45°53.7	15
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	_			-			- 1					90 53.7 105°53.7	L8 [9
												105°53.7 120°53.6	20
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	1	16 0										165°53.6	22
6 32.6 23 165°51.2 10.7 23 165°47.7 45.6 23 165°43.2 17.4 23 165°37	22 23	16.9 17.4	165°43.2		45 D	100 47.7							

	100 00.0	02.0	0	100 01:2	10.1		100 1111	10.0		100 10.2	2111		100 0110	.0.0
	SD.=15.8	d=0.6		SD.=15.8	d=0.5		SD.=15.8	d=0.5		SD.=15.8	d=0.4		SD.=15.8	d=0.4
18	GHA	Dec	21	GHA	Dec	24	GHA	Dec	27	GHA	Dec	30	GHA	Dec
0	180°53.5	N19°33.1	0	180°51.2	<b>N</b> 20°11.2	0	180°47.7	<b>N</b> 20°46.1	0	180°43.1	<b>N</b> 21°17.8	0	180°37.4	<b>N</b> 21°46.2
1	195°53.5	33.7	1	195°51.1	11.7	1	195°47.6	46.5	1	195°43.0	18.2	1	195°37.3	46.5
2	210°53.5	34.2	2	210°51.1	12.2	2	210°47.6	47.0	2	210°42.9	18.6	2	210°37.2	46.9
3	225°53.5	• • 34.8	3	225°51.1	• • 12.7	3	225°47.5	• • 47.5	3	225°42.9	• • 19.0	3	225°37.2	• • 47.3
4	240°53.4	35.3	4	240°51.0	13.2	4	240°47.5	47.9	4	240°42.8	19.4	4	240°37.1	47.6
5	255°53.4	35.9	5	255°51.0	13.7	5	255°47.4	48.4	5	255°42.7	19.8	5	255°37.0	48.0
6	270°53.4	N19°36.4	6	270°50.9	N20°14.2	6	270°47.3	<b>N</b> 20°48.8	6	270°42.6	N21°20.3	6	270°36.9	N21°48.4
7	285°53.4	37.0	7	285°50.9	14.7	7	285°47.3	49.3	7	285°42.6	20.7	7	285°36.8	48.7
8	300°53.3	37.5	8	300° 50.9	15.2	8	300°47.2	49.8	8	300°42.5	21.1	8	300°36.7	49.1
9	315°53.3	• • 38.0	9	315°50.8	• • 15.7	9	315°47.2	• • 50.2	9	315°42.4	• • 21.5	9	315°36.6	• • 49.5
10	330°53.3	38.6	10	330° 50.8	16.2	10	330°47.1	50.7	10	330°42.4	21.9	10	330°36.5	49.8
11	345°53.2	39.1	11	345°50.7	16.7	11	345°47.1	51.1	11	345°42.3	22.3	11	345°36.5	50.2
12	0°53.2	N19°39.7	12	0°50.7	<b>N</b> 20°17.2	12	0°47.0	N20°51.6	12	0°42.2	N21°22.7	12	0°36.4	N21°50.6
13	15°53.2	40.2	13	15° 50.6	17.7	13	15°46.9	52.0	13	15°42.1	23.1	13	15°36.3	50.9
14	30°53.2	40.8	14	30°50.6	18.2	14	30°46.9	52.5	14	30°42.1	23.6	14	30°36.2	51.3
15	45°53.1	• • 41.3	15	45° 50.6	• • 18.7	15	45°46.8	• • 52.9	15	45°42.0	• • 24.0	15	45°36.1	• • 51.6
16	60°53.1	41.8	16	60°50.5	19.2	16	60°46.8	53.4	16	60°41.9	24.4	16	60°36.0	52.0
17	75°53.1	42.4	17	75°50.5	19.7	17	75°46.7	53.9	17	75°41.8	24.8	17	75°35.9	52.4
18	90°53.1	<b>N</b> 19°42.9	18	90°50.4	<b>N</b> 20°20.2	18	90°46.6	<b>N</b> 20°54.3	18	90°41.8	N21°25.2	18	90°35.8	N21°52.7
19	105°53.0	43.5	19	105°50.4	20.7	19	105°46.6	54.8	19	105°41.7	25.6	19	105°35.7	53.1
20	120°53.0	44.0	20	120°50.3	21.2	20	120°46.5	55.2	20	120°41.6	26.0	20	120°35.7	53.4
21	135°53.0	• • 44.5	21	135°50.3	• • 21.7	21	135°46.5	• • 55.7	21	135°41.5	• • 26.4	21	135°35.6	• • 53.8
22	150°52.9	45.1	22	150° 50.2	22.2	22	150°46.4	56.1	22	150°41.5	26.8	22	150°35.5	54.2
23	165°52.9	45.6	23	165°50.2	22.7	23	165°46.3	56.6	23	165°41.4	27.2	23	165°35.4	54.5
	SD.=15.8	d=0.5		SD.=15.8	d=0.5		SD.=15.8	d=0.5		SD.=15.8	d=0.4		SD.=15.8	d=0.4