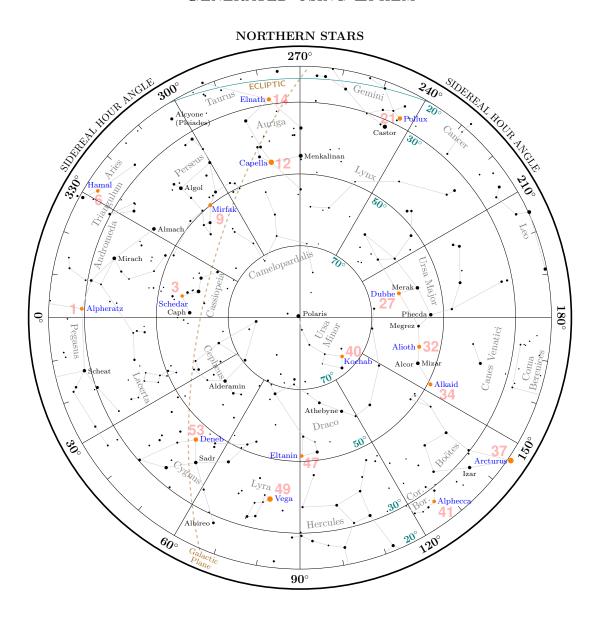
## GENERATED USING EPHEM



## THE NAUTICAL ALMANAC

## 25.08.2011

Original author: Enno Rodegerdts
Enhancements: Andrew Bauer

October 20, 2023

Disclaimer: These are computer generated tables - use them at your own risk. The accuracy has been randomly checked, but cannot be guaranteed. The author claims no liability for any consequences arising from use of these tables. Besides, this publication only contains the 'daily pages' of the Nautical Almanac: an official version of the Nautical Almanac is indispensable.

## August 25, 26, 27 (Thu., Fri., Sat.)

	Aries Venus		nus	Mars		Jupiter		Saturn	
Thu	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	332°55.0	176°41.4	<b>N</b> 11°24.5	227° 24.6	<b>N</b> 23°16.8	294°35.1	N13°37.1	138° 42.5	<b>S</b> 03°34.4
1	347°57.4	191°40.9	23.4	242°25.3	16.6	309°37.5	37.1	153°44.8	34.5
2	2°59.9	206°40.5	22.3	257°26.0	16.5	324°39.9	37.1	168°47.0	34.6
3	18°02.4	221°40.0	• • 21.1	272°26.7	• • 16.4	339°42.3	• • 37.1	183°49.2	• • 34.7
4	33°04.8	236°39.5	20.0	287°27.4	16.2	354° 44.7	37.1	198°51.5	34.8
5	48°07.3	251°39.0	18.9	302°28.1	16.1	9°47.2	37.1	213°53.7	34.9
6	63°09.8	266°38.5	<b>N</b> 11°17.8	317°28.8	N23°15.9	24°49.6	N13°37.1	228°55.9	<b>S</b> 03°35.0
7	78°12.2	281°38.0	16.7	332°29.6	15.8	39°52.0	37.1	243°58.2	35.1
8	93°14.7	296°37.6	15.6	347°30.3	15.7	54°54.4	37.2	259°00.4	35.2
9	108°17.2	311°37.1	• • 14.5	2°31.0	• • 15.5	69°56.8	• • 37.2	274°02.6	• • 35.3
10	123°19.6	326°36.6	13.3	17°31.7	15.4	84°59.3	37.2	289°04.9	35.4
11	138°22.1	341°36.1	12.2	32°32.4	15.2	100°01.7	37.2	304°07.1	35.5
12	153°24.5	356°35.6	$N11^{\circ}11.1$	47°33.1	N23°15.1	115°04.1	N13°37.2	319°09.4	<b>S</b> 03°35.6
13	168°27.0	11°35.2	10.0	62°33.9	14.9	130°06.5	37.2	334°11.6	35.7
14	183°29.5	26°34.7	08.9	77°34.6	14.8	145°08.9	37.2	349°13.8	35.9
15	198°31.9	41°34.2	• • 07.8	92°35.3	• • 14.7	160°11.4	• • 37.2	4°16.1	• • 36.0
16	213°34.4	56°33.7	06.6	107°36.0	14.5	175°13.8	37.2	19° 18.3	36.1
17	228°36.9	71°33.2	05.5	122°36.7	14.4	190°16.2	37.2	34°20.5	36.2
18	243°39.3	86°32.8	$N11^{\circ}04.4$	137°37.4	N23°14.2	205°18.6	N13°37.2	49°22.8	<b>S</b> 03°36.3
19	258°41.8	101°32.3	03.3	152°38.2	14.1	220°21.1	37.2	64°25.0	36.4
20	273°44.3	116°31.8	02.2	167°38.9	13.9	235°23.5	37.2	79°27.2	36.5
21	288°46.7	131°31.3	$11^{\circ}01.0$	182°39.6	• • 13.8	250°25.9	• • 37.2	94° 29.5	• • 36.6
22	303°49.2	146°30.9	$10^{\circ}59.9$	197°40.3	13.7	265°28.3	37.2	109°31.7	36.7
23	318°51.7	161°30.4	58.8	212°41.0	13.5	280°30.7	37.2	124°33.9	36.8
Mer.p	bass. 01:48	$\nu$ -0.5' $d$ -1	1.1′ m -3.8	ν 0.7′ d -0	0.1′ m 1.4	ν 2.4′ d 0	.0′ m -2.5	ν 2.2' d -0.1' m 0.9	

Fri	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	333°54.1	176°29.9	N10°57.7	227°41.7	N23°13.4	295°33.2	N13°37.2	139°36.2	<b>S</b> 03°36.9
1	348°56.6	191°29.4	56.6	242°42.5	13.2	310°35.6	37.2	154°38.4	37.0
2	3°59.0	206°29.0	55.4	257°43.2	13.1	325°38.0	37.2	169°40.6	37.1
3	19°01.5	221°28.5	• • 54.3	272°43.9	• • 12.9	340°40.4	• • 37.2	184°42.9	• • 37.2
4	34°04.0	236°28.0	53.2	287°44.6	12.8	355°42.9	37.2	199°45.1	37.3
5	49°06.4	251°27.5	52.1	302°45.3	12.6	10°45.3	37.2	214°47.3	37.4
6	64°08.9	266°27.1	<b>N</b> 10°50.9	317°46.1	N23°12.5	25° 47.7	N13°37.2	229°49.6	<b>S</b> 03°37.5
7	79°11.4	281°26.6	49.8	332°46.8	12.3	40°50.2	37.2	244°51.8	37.6
8	94°13.8	296°26.1	48.7	347° 47.5	12.2	55°52.6	37.2	259°54.0	37.7
9	109°16.3	311°25.6	• • 47.5	2°48.2	• • 12.0	70°55.0	• • 37.2	274°56.3	• • 37.8
10	124°18.8	326°25.2	46.4	17°48.9	11.9	85°57.4	37.2	289°58.5	37.9
11	139°21.2	341°24.7	45.3	32°49.7	11.7	100°59.9	37.2	305°00.7	38.0
12	154°23.7	356°24.2	<b>N</b> 10°44.2	47°50.4	N23°11.6	116°02.3	N13°37.2	320°03.0	<b>S</b> 03°38.1
13	169°26.2	11°23.8	43.0	62°51.1	11.4	131°04.7	37.2	335°05.2	38.2
14	184°28.6	26°23.3	41.9	77°51.8	11.3	146°07.2	37.2	350°07.4	38.3
15	199°31.1	41°22.8	• • 40.8	92°52.5	• • 11.1	161°09.6	• • 37.2	5°09.7	• • 38.4
16	214°33.5	56°22.3	39.6	107°53.3	11.0	176°12.0	37.3	20°11.9	38.5
17	229°36.0	71°21.9	38.5	122°54.0	10.8	191°14.5	37.3	35°14.1	38.6
18	244°38.5	86°21.4	<b>N</b> 10°37.4	137°54.7	$N23^{\circ}10.7$	206°16.9	N13°37.3	50°16.3	<b>S</b> 03°38.7
19	259°40.9	101°20.9	36.2	152°55.4	10.5	221°19.3	37.3	65°18.6	38.8
20	274°43.4	116°20.5	35.1	167°56.1	10.4	236°21.7	37.3	80°20.8	38.9
21	289°45.9	131°20.0	• • 34.0	182°56.9	• • 10.2	251°24.2	• • 37.3	95°23.0	• • 39.0
22	304°48.3	146°19.5	32.8	197°57.6	10.1	266°26.6	37.3	110°25.3	39.1
23	319°50.8	161°19.1	31.7	212°58.3	09.9	281°29.0	37.3	125°27.5	39.2
Mer.p	oass. 01:44	$\nu$ -0.5' $d$ -1	1.1′ m -3.8	ν 0.7′ d -0	0.1′ m 1.4	ν 2.4′ d 0	.0′ m -2.5	ν 2.2′ d -0	0.1′ m 0.9

Sat	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
0	334°53.3	176°18.6	N10°30.6	227°59.0	N23°09.8	296°31.5	N13°37.3	140°29.7	<b>S</b> 03°39.3
1	349°55.7	191°18.1	29.4	242°59.8	09.6	311°33.9	37.3	155°32.0	39.4
2	4°58.2	206°17.7	28.3	258°00.5	09.5	326° 36.3	37.3	170°34.2	39.6
3	20°00.6	221°17.2	• • 27.2	273°01.2	•• 09.3	341°38.8	• • 37.3	185°36.4	• • 39.7
4	35°03.1	236°16.7	26.0	288°01.9	09.2	356°41.2	37.3	200°38.7	39.8
5	50°05.6	251°16.3	24.9	303°02.7	09.0	11°43.6	37.3	215°40.9	39.9
6	65°08.0	266°15.8	$N10^{\circ}23.8$	318°03.4	<b>N</b> 23°08.9	26°46.1	N13°37.3	230°43.1	<b>S</b> 03°40.0
7	80°10.5	281°15.3	22.6	333°04.1	08.7	41°48.5	37.3	245°45.4	40.1
8	95°13.0	296°14.9	21.5	348°04.8	08.5	56°51.0	37.3	260°47.6	40.2
9	110°15.4	311°14.4	• • 20.3	3°05.6	• • 08.4	71°53.4	• • 37.3	275°49.8	• • 40.3
10	125°17.9	326°14.0	19.2	18°06.3	08.2	86°55.8	37.3	290°52.0	40.4
11	140°20.4	341°13.5	18.1	33°07.0	08.1	101°58.3	37.3	305°54.3	40.5
12	155°22.8	356°13.0	$N10^{\circ}16.9$	48°07.7	<b>N</b> 23°07.9	117°00.7	N13°37.3	320°56.5	<b>S</b> 03°40.6
13	170°25.3	11°12.6	15.8	63°08.5	07.8	132°03.1	37.3	335°58.7	40.7
14	185°27.8	26°12.1	14.6	78°09.2	07.6	147°05.6	37.3	351°01.0	40.8
15	200°30.2	41°11.6	•• 13.5	93°09.9	• • 07.5	162°08.0	• • 37.3	6°03.2	• • 40.9
16	215°32.7	56°11.2	12.4	108°10.6	07.3	177° 10.5	37.3	21°05.4	41.0
17	230°35.1	71°10.7	11.2	123°11.4	07.1	192°12.9	37.2	36°07.7	41.1
18	245°37.6	86°10.3	$N10^{\circ}10.1$	138°12.1	<b>N</b> 23°07.0	207°15.3	N13°37.2	51°09.9	<b>S</b> 03°41.2
19	260°40.1	101°09.8	08.9	153°12.8	06.8	222° 17.8	37.2	66°12.1	41.3
20	275°42.5	116°09.3	07.8	168°13.5	06.7	237°20.2	37.2	81°14.3	41.4
21	290°45.0	131°08.9	• • 06.6	183°14.3	• • 06.5	252°22.7	• • 37.2	96°16.6	• • 41.5
22	305°47.5	146°08.4	05.5	198°15.0	06.3	267°25.1	37.2	111° 18.8	41.6
23	320°49.9	161°08.0	04.3	213° 15.7	06.2	282°27.5	37.2	126°21.0	41.7
Mer.p	bass. 01:40	$\nu$ -0.5' $d$ -1	1.1′ m -3.8	ν 0.7′ d -	0.2′ m 1.4	ν 2.4′ d 0	.0′ m -2.5	ν 2.2′ d -0	).1′ m 0.9

	Stars	
	SHA	Dec
Alpheratz	357°44.5	29°09.4
Ankaa Schedar	353°16.5 349°41.6	-42°14.2 56°36.1
Diphda	348°56.9	-17°55.1
Achernar	335°27.3	-57°10.3
Hamal Polaris	328°02.0 318°15.3	23°31.1 89°18.6
Acamar	315°19.1	-40°15.1
Menkar	314°16.3	4°08.3
Mirfak Aldebaran	308°42.1 290°50.9	49°54.0 16°32.0
Rigel	281°13.4	-8°11.2
Capella	280°36.5	46°00.4
Bellatrix Elnath	278°33.5 278°14.3	6°21.6 28°36.9
Alnilam	275°47.8	$-1^{\circ}11.6$
Betelgeuse	271°02.8	7°24.6
Canopus Sirius	263°57.0 258°35.0	-52°41.9 -16°43.8
Adhara	255°13.8	-28°59.1
Procyon	245°01.3	5°11.7
Pollux Avior	243°29.6 234°19.2	27°59.8 -59°32.7
Suhail	222°53.8	-43°28.8
Miaplacidus	221°40.9	-69°45.9
Alphard Regulus	217°57.7 207°45.2	-8°42.6 11°54.6
Dubhe	207 45.2 193°53.8	61°41.3
Denebola	$182^{\circ}35.2$	14°30.4
Gienah	175°53.9 173°11.4	-17°36.4 -63°10.0
Acrux Gacrux	173°11.4 172°02.9	-63°10.0 -57°10.9
Alioth	$166^{\circ}22.1$	55°53.9
Spica	158°32.8	-11°13.3
Alkaid Hadar	153°00.1 148°50.1	49°15.5 -60°26.0
Menkent	148°09.3	-36°25.8
Arcturus	145°57.0	19°07.4
Rigil Kent. Kochab	139°53.7 137°20.2	-60°53.2 74°06.7
Zuben'ubi	137°20.2 137°06.9	-16°05.4
Alphecca	$126^{\circ}12.1$	26°40.8
Antares	112°27.8 107°30.6	-26°27.5 -69°03.1
Atria Sabik	107 30.6 102°13.9	-09 03.1 -15°44.3
Shaula	96°23.5	-37°06.7
Rasalhague	96°07.5 90°46.5	12°33.3
Eltanin Kaus Aust.	90°46.5 83°45.3	51°29.6 -34°22.7
Vega	80°39.6	38°48.0
Nunki	75°59.6	-26°16.8
Altair Peacock	62°09.2 53°20.6	8°54.2 -56°41.8
Deneb	49°31.9	45°19.6
Enif	33°48.0	9°56.0
Al Na'ir Fomalhaut	27°44.8 15°25.0	-46°54.0 -29°33.4
Scheat	13°54.3	28°09.0
Markab	13°39.3	15°16.3
Aug 25 Thu	SHA	Mer.pass
Venus Mars	203°46.4 254°29.6	12:14 08:50
Jupiter	321°40.1	04:21
Saturn	165°47.6	14:43
Aug 26 Fri	SHA	Mer.pass
Venus Mars	202°35.8 253°47.6	12:14 08:49
Jupiter	321°39.1	04:17
Saturn	165°42.0	14:39
Aug 27 Sat	SHA	Mer.pass
Venus	201°25.3	12:15
Mars Jupiter	253°05.8 321°38.2	08:48 04:13
Saturn	165°36.5	14:36

Horizontal parallax Venus: Mars:

0.1 0.1

h	Su	n			Moon		
Thu	GHA	Dec	GHA	ν	Dec	d	HP
0	179°25.4	N10°57.0	235°01.2	8.2'	N21°48.0	-4.7'	57.2'
1	194°25.6	56.2	249°28.5	8.2	21°43.3	-4.8'	57.2°
2	209°25.7	55.3	263°55.7	8.2'	21°38.5	-4.9'	57.3'
3	224°25.9	• • 54.4	278°22.9	8.2'	21°33.6	-5.0'	57.3'
4	239°26.1 254°26.2	53.6 52.7	292°50.1 307°17.3	8.2' 8.2'	21°28.6 21°23.4	-5.2' -5.3'	57.4' 57.4'
5	269°26.4	52.7 N10°51.9	307 17.3 321°44.5	8.2'	N21°18.1	-5.3 -5.4'	57.4'
6 7	284°26.6	N10 51.9 51.0	321 44.5 336°11.7	8.2'	N21 18.1 21°12.7	-5.4 -5.6'	57.4 57.5'
8	299°26.7	50.1	350°38.9	8.2	21°07.1	-5.7	57.5'
9	314°26.9	• • 49.3	5°06.1	8.2'	21°01.4	-5.8'	57.6'
10	329°27.1	48.4	19°33.2	8.2'	20°55.6	-5.9'	57.6
11	344°27.3	47.5	34°00.4	8.2'	20°49.6	-6.1'	57.6'
12 13	359°27.4 14°27.6	<b>N</b> 10°46.7 45.8	48°27.6 62°54.8	8.2' 8.2'	<b>N</b> 20°43.6 20°37.4	-6.2' -6.3'	57.7' 57.7'
14	29°27.8	45.0	77°21.9	8.2	20°31.0	-6.5'	57.7'
15	44°27.9	• • 44.1	91°49.1	8.2'	20°24.6	-6.6'	57.8'
16	59°28.1	43.2	106°16.3	8.2'	20°18.0	-6.7'	57.8'
17	74°28.3	42.4	120°43.4	8.2'	20°11.3	-6.8'	57.9'
18	89°28.5 104°28.6	<b>N</b> 10°41.5 40.6	135°10.6 149°37.8	8.2' 8.2'	<b>N</b> 20°04.4 19°57.5	-7.0' -7.1'	57.9' 57.9'
19 20	119°28.8	39.8	164°05.0	8.2'	19°57.5	-7.1 -7.2'	57.9 58.0'
21	134°29.0	• • 38.9	178°32.2	8.2	19°43.1	-7.3	58.0'
22	149°29.2	38.1	192°59.4	8.2'	19°35.8	-7.5'	58.0'
23	164°29.3	37.2	207°26.6	8.2'	19°28.3	-7.6'	58.1'
	SD = 15.8'	d = -0.9'			SD = 15.6'		
Fri	GHA	Dec	GHA	ν	Dec	d	HP
0	179°29.5	N10°36.3	221°53.8	8.2'	N19°20.7	-7.7'	58.1'
1 2	194°29.7 209°29.8	35.5 34.6	236°21.0 250°48.2	8.2' 8.2'	19°13.0 19°05.2	-7.8' -8.0'	58.2' 58.2'
3	209 29.8 224°30.0	• • 33.7	265°15.4	8.2	18°57.2	-8.1'	58.2'
4	239°30.2	32.9	279°42.6	8.2'	18°49.2	-8.2'	58.3'
5	254°30.4	32.0	294°09.9	8.3'	18°41.0	-8.3'	58.3'
6	269°30.5	<b>N</b> 10°31.1	308°37.1	8.3'	<b>N</b> 18°32.6	-8.4'	58.3'
7	284°30.7 299°30.9	30.3	323°04.4	8.3'	18°24.2	-8.6'	58.4'
8	299°30.9 314°31.1	29.4 •• 28.5	337°31.7 351°59.0	8.3' 8.3'	18°15.6 18°07.0	-8.7' -8.8'	58.4' 58.5'
10	329°31.2	27.7	6°26.3	8.3	17°58.2	-8.9'	58.5
11	344°31.4	26.8	20°53.6	8.3'	17°49.3	-9.0'	58.5'
12	359°31.6	<b>N</b> 10°25.9	35°20.9	8.3'	<b>N</b> 17°40.2	-9.1'	58.6'
13	14°31.8	25.0	49°48.2	8.3'	17°31.1	-9.3'	58.6'
14 15	29°31.9 44°32.1	24.2 •• 23.3	64°15.6 78°42.9	8.4' 8.4'	17°21.8 17°12.5	-9.4' -9.5'	58.6' 58.7'
16	59°32.3	22.4	93°10.3	8.4	17°12.3	-9.6'	58.7'
17	74°32.5	21.6	107°37.7	8.4'	16°53.4	-9.7'	58.7'
18	89°32.6	<b>N</b> 10°20.7	122°05.1	8.4'	<b>N</b> 16°43.7	-9.8'	58.8'
19	104°32.8	19.8	136°32.5	8.4'	16°33.8	-9.9'	58.8'
20	119°33.0 134°33.2	19.0	150°59.9 165°27.4	8.4'	16°23.9 16°13.9	-10.0'	58.9'
21 22	134 33.2 149°33.3	· · 18.1 17.2	179°54.8	8.5' 8.5'	16°13.9 16°03.7	-10.1' -10.3'	58.9' 58.9'
23	164°33.5	16.3	194°22.3	8.5'	15°53.5	-10.4	59.0'
	SD = 15.8'	d = -0.9'			SD = 15.9'		
Sat	GHA	Dec	GHA	ν	Dec	d	HP
0	179°33.7	<b>N</b> 10°15.5	208°49.8	8.5'	<b>N</b> 15°43.1	-10.5'	59.0'
1	194°33.9	14.6	223°17.3	8.5'	15°32.6	-10.6'	59.0'
2	209°34.1 224°34.2	13.7 •• 12.9	237°44.8 252°12.4	8.5' 8.6'	15°22.1 15°11.4	-10.7' -10.8'	59.1' 59.1'
4	239°34.4	12.0	266°39.9	8.6'	15 11.4 15°00.6	-10.8 -10.9'	59.1'
5	254°34.6	11.1	281°07.5	8.6'	14°49.7	-11.0'	59.2'
6	269°34.8	$N10^{\circ}10.2$	295°35.1	8.6'	$N14^{\circ}38.8$	-11.1'	59.2'
7	284°34.9	09.4	310°02.7	8.6'	14°27.7	-11.2'	59.2'
8	299°35.1 314°35.3	08.5 •• 07.6	324°30.3 338°58.0	8.6' 8.7'	14°16.5 14°05.2	-11.3' -11.4'	59.3' 59.3'
10	314°35.3 329°35.5	06.7	353° 58.0 353° 25.7	8.7' 8.7'	14°05.2 13°53.9	-11.4 -11.5'	59.3' 59.3'
11	344°35.7	05.9	7°53.3	8.7'	13°42.4	-11.6'	59.4'
12	359°35.8	<b>N</b> 10°05.0	22°21.0	8.7'	<b>N</b> 13°30.8	-11.7'	59.4'
13	14°36.0	04.1	36°48.7	8.7'	13°19.2	-11.7'	59.4'
14	29°36.2	03.2	51°16.5	8.7'	13°07.4	-11.8'	59.5'
15 16	44°36.4 59°36.6	· · 02.4 01.5	65°44.2 80°12.0	8.8' 8.8'	12°55.6 12°43.7	-11.9' -12.0'	59.5' 59.5'
17	74°36.7	10°00.6	94°39.7	o.o 8.8'	12 43.7 12°31.7	-12.0 -12.1'	59.5 59.6'
	89°36.9	N09°59.7	109°07.5	8.8'	N12°19.6	-12.2'	59.6'
18	104°37.1	58.8	123°35.3	8.8'	12°07.4	-12.3'	59.6'
18 19				0.01	11°55.1	-12.3'	59.6'
19 20	119°37.3	58.0	138°03.2	8.8'			
19 20 21	119°37.3 134°37.5	• • 57.1	152°31.0	8.9'	11°42.8	-12.4'	59.7'
19 20 21 22	119°37.3 134°37.5 149°37.6	· · 57.1 56.2	152°31.0 166°58.9	8.9' 8.9'	11°42.8 11°30.4	-12.4' -12.5'	59.7' 59.7'
19 20 21	119°37.3 134°37.5	• • 57.1	152°31.0	8.9'	11°42.8	-12.4'	59.7'

Lat.	Tw	ilight	Sunrise	Sunset	Twi	light
Lat.	Naut.	Civil	Juillise	Juliset	Civil	Naut.
N 72°	-:-	01:35	03:28	20:31	22:19	-:-
N 70°	-:-	02:20	03:47	20:13	21:38	-:-
68°	-:-	02:49	04:02	19:59	21:10	-:-
66°	01:22	03:11	04:14	19:48	20:50	22:33
64°	02:02	03:27	04:24	19:38	20:34	21:56
62°	02:29	03:41	04:32	19:30	20:20	21:31
60°	02:49	03:53	04:40	19:23	20:09	21:12
N 58°	03:05	04:02	04:46	19:16	20:00	20:56
56°	03:18	04:11	04:52	19:11	19:51	20:43
54°	03:30	04:18	04:57	19:06	19:44	20:32
52°	03:40	04:25	05:01	19:01	19:38	20:22
50°	03:48	04:31	05:05	18:57	19:32	20:14
45°	04:06	04:43	05:14	18:49	19:19	19:57
<b>N</b> 40°	04:20	04:53	05:22	18:41	19:10	19:43
35°	04:31	05:02	05:28	18:35	19:01	19:32
30°	04:40	05:09	05:33	18:30	18:55	19:24
20°	04:54	05:20	05:43	18:21	18:43	19:10
N 10° 0°	05:05	05:30	05:51	18:13	18:34	18:59
_	05:13	05:38	05:59	18:05	18:26	18:51
<b>S</b> 10°	05:20	05:45	06:06	17:58	18:19	18:44
20°	05:26	05:52	06:14	17:50	18:13	18:38
30° 35°	05:31	05:58	06:23	17:42	18:06	18:34
40°	05:33 05:34	06:02 06:06	06:28 06:33	17:37 17:31	18:02 17:58	18:32 18:30
40 45°	05:34	06:00	06:33	17:31	17:56	18:29
1	ŀ					
<b>S</b> 50° 52°	05:37 05:38	06:15 06:17	06:48 06:51	17:17 17:13	17:50	18:27 18:27
52°	05:38	06:17	06:51	17:13	17:48 17:46	18:27 18:27
56°	05:38	06:19	07:00	17:09	17:40	18:26
58°	05:39	06:24	07:04	17:00	17:43	18:26
S 60°	05:39	06:27	07:04	16:55	17:38	18:26
Lat.		Moonrise	<b>.</b>		Moonset	<b>.</b>

Lat.		Moonrise	!		Moonset	
Ldt.	Thu	Fri	Sat	Thu	Fri	Sat
N 72°			00:10		20:11	19:28
N 70°	22:04		00:49	20:21	19:29	19:08
68°	23:10		01:16	19:14	19:01	18:52
66°	23:45		01:37	18:38	18:40	18:39
64°		00:11	01:53	18:12	18:22	18:28
62°	•• ••	00:31	02:06	17:51	18:08	18:19
60°		00:47	02:18	17:34	17:56	18:11
N 58°		01:00	02:28	17:20	17:45	18:04
56°	•• ••	01:12	02:36	17:08	17:36	17:58
54°	80:00	01:22	02:44	16:58	17:28	17:52
52°	00:19	01:31	02:50	16:48	17:20	17:47
50°	00:28	01:39	02:56	16:40	17:14	17:43
45°	00:49	01:57	03:10	16:21	16:59	17:32
<b>N</b> 40°	01:05	02:11	03:20	16:07	16:47	17:24
35°	01:19	02:22	03:29	15:54	16:37	17:17
30°	01:31	02:33	03:37	15:43	16:28	17:10
20°	01:51	02:50	03:51	15:24	16:13	16:59
<b>N</b> 10°	02:09	03:06	04:03	15:07	15:59	16:49
0°	02:26	03:20	04:14	14:52	15:46	16:40
<b>S</b> 10°	02:42	03:35	04:26	14:36	15:33	16:31
20°	03:00	03:50	04:38	14:19	15:19	16:21
30°	03:21	04:07	04:51	14:00	15:03	16:09
35°	03:32	04:18	04:59	13:49	14:54	16:02
40°	03:46	04:29	05:08	13:35	14:43	15:54
45°	04:02	04:43	05:18	13:20	14:31	15:45
<b>S</b> 50°	04:22	04:59	05:31	13:01	14:15	15:34
52°	04:31	05:07	05:36	12:52	14:08	15:29
54°	04:42	05:16	05:43	12:42	14:00	15:24
56°	04:54	05:25	05:50	12:30	13:51	15:17
58°	05:08	05:36	05:58	12:17	13:40	15:10
<b>S</b> 60°	05:24	05:49	06:07	12:01	13:29	15:02

		Sun		Moon			
Day	Eqn.of	f Time	Mer.	Mer.Pass.			
Day	00 <sup>h</sup>	12 <sup>h</sup>	Pass	Upper	Lower	Age	
	mm:ss	mm:ss	hh:mm	hh:mm	hh:mm		
25	02:18	02:10	12:02	08:39	21:06	26(21%)	
26	02:02	01:54	12:02	09:33	22:00	27(13%)	
27	01:45	01:37	12:02	10:27	22:54	28(6%)	