

I slightly modified Thorstensen's code to print out the time between evening twilight and morning twilight. For Okie-Tex site (site code = o) near Kenton OK I used same time zone as for Oklahoma City.

W. Romanishin- August 2013 - email: wromanishin at ou.edu - Here is stuff from John T. intro:

***** 2023 Night-time Astronomical Calendar for VATT *****

By John Thorstensen, Dartmouth College

This calendar is designed to provide information useful for the planning of nighttime observations. The format should minimize confusion; each line gives the phenomena for a single (local!) night, and each line is labeled with both evening and morning (local) day and date. Note that all times given are LOCAL CIVIL (zone) times.

The rise/set times printed are the times at which the center of the object is 50 arcminutes below the geometrical horizon. At the given twilight, the center of the sun is 0.0 degrees below the geometrical horizon.

The moon positions (and rise/set times) are generated by an implementation of the Low-Precision formulae in the Astronomical Almanac. The Almanac states that the error seldom exceeds 0.3 degrees. Topocentric corrections are included. Comparisons with tables for Kitt Peak in the NOAO Newsletter indicate that the rise-set times are good to +/- 2 min or so. The moon's RA, Dec, and illuminated fraction are given for local midnight, regardless of whether the moon is actually up at that time. Note that the moonrise and moonset times are not printed if they occur near mid-day.

The LST at evening and morning twilight are tabulated. This gives an accurate idea of the range of RA's accessible during the night.

The JD is given (severely rounded off) for local midnight. Again, this avoids any ambiguity.

Some credits: The sidereal time and Julian date routines were originally coded in PL/I by Steve Maker of Dartmouth College. The algorithms originated in the old American Ephemeris. The routine to convert JD back to calendar date is adapted from Numerical Recipes in C, by Press et al.

CAUTIONS: I believe that the program which generates these tables is reasonably accurate. However, it has not been exhaustively tested, so you should be sure to run 'sanity checks' on the results. Also, in view of the approximations used, the results should not be used when high precision is needed. Extension to dates far from the present (1990) should be done with great caution. The code has not been tested for the eastern or southern hemispheres. Rise/set times are slightly inaccurate and rather confusing at circumpolar latitudes, where the concept of a 'night' is blurry.

The daylight savings time conventions (if used) are quite specific (to U. S., post-1986) and subject to change. I know that the code has many infelicities; if you should find actual errors, please notify
John.Thorstensen@dartmouth.edu

[This output comes from a (hopefully) portable, completely self-contained program in the c language. It is available from the author and may be used freely for scientific or educational purposes. If you use it for profit, please contact the author to arrange a (modest!) fee.
Source code is copyright John Thorstensen, 1990.]

MOON PHASES FOR 2023, at VATT

Times and dates are given in local time, zone = 7 hr West.
They are generally better than +- 2 minutes.

The end of the previous year and the beginning of the next
are included for continuity.

NEW		1ST		FULL		LAST	
Dec 23	3 18	Dec 29	18 23	Jan 06	16 10	Jan 14	19 13
Jan 21	13 56	Jan 28	8 20	Feb 05	11 31	Feb 13	9 03
Feb 20	0 09	Feb 27	1 07	Mar 07	5 43	Mar 14	19 10
Mar 21	10 27	Mar 28	19 33	Apr 05	21 37	Apr 13	2 13
Apr 19	21 16	Apr 27	14 21	May 05	10 37	May 12	7 29
May 19	8 56	May 27	8 24	Jun 03	20 44	Jun 10	12 32
Jun 17	21 39	Jun 26	0 51	Jul 03	4 41	Jul 09	18 49
Jul 17	11 33	Jul 25	15 08	Aug 01	11 33	Aug 08	3 30
Aug 16	2 39	Aug 24	2 58	Aug 30	18 37	Sep 06	15 23
Sep 14	18 40	Sep 22	12 33	Sep 29	2 58	Oct 06	6 49
Oct 14	10 55	Oct 21	20 30	Oct 28	13 24	Nov 05	1 39
Nov 13	2 27	Nov 20	3 51	Nov 27	2 17	Dec 04	22 52
Dec 12	16 32	Dec 19	11 40	Dec 26	17 34	Jan 03	20 33

Calendar for VATT, west longitude (h.m.s) = 7 19 34, latitude (d.m) = 32 42.1
 Rise/set times in Mountain time (7 hr W), uncorrected for elevation, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2023 JANUARY *****

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours	
Sun Jan 01/Mon Jan 02	6 27	17 25	18 52	5 54 7 22	1 19 12 22	.....	3 39	81	3 06.4	18 05	11.0
Mon Jan 02/Tue Jan 03	6 31	17 25	18 53	5 54 7 22	1 23 12 26	.....	4 40	88	3 56.8	22 07	11.0
Tue Jan 03/Wed Jan 04	6 35	17 26	18 54	5 55 7 22	1 28 12 31	.....	5 39	93	4 49.1	25 05	11.0
Wed Jan 04/Thu Jan 05	6 39	17 27	18 55	5 55 7 22	1 33 12 35	15 33	6 35	97	5 43.0	26 51	11.0
Thu Jan 05/Fri Jan 06	6 43	17 28	18 55	5 55 7 23	1 37 12 39	16 22	7 27	99	6 37.5	27 19	11.0
Fri Jan 06/Sat Jan 07	6 47	17 28	18 56	5 55 7 23	1 42 12 43	17 15	8 13	100	7 31.5	26 27	11.0
Sat Jan 07/Sun Jan 08	6 51	17 29	18 57	5 55 7 23	1 47 12 47	18 11	.....	98	8 23.9	24 22	11.0
Sun Jan 08/Mon Jan 09	6 55	17 30	18 57	5 55 7 23	1 51 12 51	19 08	.....	95	9 14.0	21 11	11.0
Mon Jan 09/Tue Jan 10	6 59	17 31	18 58	5 55 7 23	1 56 12 55	20 06	.....	90	10 01.8	17 08	11.0
Tue Jan 10/Wed Jan 11	7 03	17 32	18 59	5 55 7 23	2 01 12 59	21 03	.....	83	10 47.5	12 23	10.9
Wed Jan 11/Thu Jan 12	7 07	17 33	19 00	5 55 7 22	2 05 13 03	21 59	.....	76	11 31.8	7 07	10.9
Thu Jan 12/Fri Jan 13	7 10	17 34	19 01	5 55 7 22	2 10 13 07	22 55	.....	67	12 15.6	1 32	10.9
Fri Jan 13/Sat Jan 14	7 14	17 34	19 01	5 55 7 22	2 15 13 11	23 52	.....	57	12 59.9	- 4 12	10.9
Sat Jan 14/Sun Jan 15	7 18	17 35	19 02	5 55 7 22	2 20 13 15	0 52	.....	47	13 45.9	- 9 55	10.9
Sun Jan 15/Mon Jan 16	7 22	17 36	19 03	5 55 7 22	2 24 13 19	1 54	.....	37	14 34.9	-15 22	10.9
Mon Jan 16/Tue Jan 17	7 26	17 37	19 04	5 55 7 21	2 29 13 22	3 01	.....	27	15 27.8	-20 16	10.9
Tue Jan 17/Wed Jan 18	7 30	17 38	19 04	5 55 7 21	2 34 13 26	4 12	.....	17	16 25.6	-24 12	10.8
Wed Jan 18/Thu Jan 19	7 34	17 39	19 05	5 55 7 21	2 39 13 30	5 23	.....	10	17 28.3	-26 46	10.8
Thu Jan 19/Fri Jan 20	7 38	17 40	19 06	5 55 7 21	2 43 13 34	6 31	.....	4	18 34.4	-27 34	10.8
Fri Jan 20/Sat Jan 21	7 42	17 41	19 07	5 54 7 20	2 48 13 37	7 31	16 22	1	19 41.4	-26 22	10.8
Sat Jan 21/Sun Jan 22	7 46	17 42	19 08	5 54 7 20	2 53 13 41	.....	17 37	0	20 46.4	-23 16	10.8
Sun Jan 22/Mon Jan 23	7 50	17 43	19 08	5 54 7 19	2 58 13 45	.....	18 54	3	21 47.6	-18 36	10.8
Mon Jan 23/Tue Jan 24	7 54	17 44	19 09	5 54 7 19	3 02 13 48	.....	20 08	9	22 44.3	-12 52	10.7
Tue Jan 24/Wed Jan 25	7 58	17 45	19 10	5 53 7 18	3 07 13 52	.....	21 18	16	23 37.2	- 6 35	10.7
Wed Jan 25/Thu Jan 26	8 02	17 46	19 11	5 53 7 18	3 12 13 55	.....	22 25	25	0 27.4	- 0 08	10.7
Thu Jan 26/Fri Jan 27	8 06	17 47	19 12	5 52 7 17	3 17 13 59	.....	23 29	35	1 16.0	6 08	10.7
Fri Jan 27/Sat Jan 28	8 10	17 48	19 13	5 52 7 17	3 21 14 03	.....	0 31	46	2 04.2	11 56	10.7
Sat Jan 28/Sun Jan 29	8 14	17 48	19 13	5 52 7 16	3 26 14 06	.....	1 33	56	2 53.0	17 04	10.6
Sun Jan 29/Mon Jan 30	8 17	17 49	19 14	5 51 7 16	3 31 14 09	.....	2 34	66	3 43.2	21 20	10.6
Mon Jan 30/Tue Jan 31	8 21	17 50	19 15	5 51 7 15	3 36 14 13	.....	3 33	75	4 35.0	24 34	10.6
Tue Jan 31/Wed Feb 01	8 25	17 51	19 16	5 50 7 14	3 40 14 16	.....	4 31	83	5 28.2	26 37	10.6

***** 2023 FEBRUARY *****

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours	
Wed Feb 01/Thu Feb 02	8 29	17 52	19 17	5 49 7 14	3 45 14 20	.....	5 24	89	6 22.4	27 23	10.5
Thu Feb 02/Fri Feb 03	8 33	17 53	19 17	5 49 7 13	3 50 14 23	.....	6 11	94	7 16.3	26 50	10.5
Fri Feb 03/Sat Feb 04	8 37	17 54	19 18	5 48 7 12	3 55 14 26	16 04	6 53	98	8 09.1	25 02	10.5
Sat Feb 04/Sun Feb 05	8 41	17 55	19 19	5 48 7 11	3 59 14 30	17 02	7 30	100	8 59.9	22 05	10.5
Sun Feb 05/Mon Feb 06	8 45	17 56	19 20	5 47 7 11	4 04 14 33	18 00	8 02	100	9 48.5	18 11	10.5
Mon Feb 06/Tue Feb 07	8 49	17 57	19 21	5 46 7 10	4 09 14 36	18 57	.....	98	10 35.0	13 32	10.4
Tue Feb 07/Wed Feb 08	8 53	17 58	19 21	5 46 7 09	4 14 14 39	19 54	.....	94	11 19.9	8 19	10.4
Wed Feb 08/Thu Feb 09	8 57	17 59	19 22	5 45 7 08	4 18 14 43	20 50	.....	89	12 03.9	2 44	10.4
Thu Feb 09/Fri Feb 10	9 01	18 00	19 23	5 44 7 07	4 23 14 46	21 46	.....	81	12 47.9	- 3 01	10.4
Fri Feb 10/Sat Feb 11	9 05	18 01	19 24	5 43 7 06	4 28 14 49	22 44	.....	73	13 33.1	- 8 45	10.3
Sat Feb 11/Sun Feb 12	9 09	18 01	19 25	5 43 7 06	4 33 14 52	23 44	.....	64	14 20.5	-14 14	10.3
Sun Feb 12/Mon Feb 13	9 13	18 02	19 25	5 42 7 05	4 37 14 55	0 48	.....	53	15 11.1	-19 13	10.3
Mon Feb 13/Tue Feb 14	9 17	18 03	19 26	5 41 7 04	4 42 14 58	1 55	.....	42	16 05.9	-23 23	10.2
Tue Feb 14/Wed Feb 15	9 21	18 04	19 27	5 40 7 03	4 47 15 01	3 04	.....	32	17 05.1	-26 21	10.2
Wed Feb 15/Thu Feb 16	9 25	18 05	19 28	5 39 7 02	4 52 15 05	4 11	.....	22	18 08.3	-27 45	10.2
Thu Feb 16/Fri Feb 17	9 28	18 06	19 29	5 38 7 01	4 56 15 08	5 13	.....	13	19 13.6	-27 20	10.2
Fri Feb 17/Sat Feb 18	9 32	18 07	19 29	5 37 7 00	5 01 15 11	6 08	.....	6	20 18.5	-25 00	10.1
Sat Feb 18/Sun Feb 19	9 36	18 08	19 30	5 36 6 59	5 06 15 14	6 54	16 24	2	21 20.8	-20 57	10.1
Sun Feb 19/Mon Feb 20	9 40	18 09	19 31	5 35 6 58	5 10 15 16	7 32	17 40	0	22 19.5	-15 34	10.1
Mon Feb 20/Tue Feb 21	9 44	18 09	19 32	5 34 6 57	5 15 15 19	.....	18 53	2	23 14.5	- 9 21	10.0
Tue Feb 21/Wed Feb 22	9 48	18 10	19 33	5 33 6 55	5 20 15 22	.....	20 03	6	0 06.6	- 2 44	10.0
Wed Feb 22/Thu Feb 23	9 52	18 11	19 33	5 32 6 54	5 25 15 25	.....	21 10	12	0 57.0	3 50	10.0
Thu Feb 23/Fri Feb 24	9 56	18 12	19 34	5 31 6 53	5 29 15 28	.....	22 16	20	1 46.5	10 02	10.0
Fri Feb 24/Sat Feb 25	10 00	18 13	19 35	5 30 6 52	5 34 15 31	.....	23 20	29	2 36.3	15 35	9.9
Sat Feb 25/Sun Feb 26	10 04	18 14	19 36	5 29 6 51	5 39 15 34	.....	0 23	39	3 27.1	20 15	9.9
Sun Feb 26/Mon Feb 27	10 08	18 14	19 36	5 28 6 50	5 44 15 37	.....	1 25	49	4 19.2	23 52	9.9
Mon Feb 27/Tue Feb 28	10 12	18 15	19 37	5 27 6 49	5 48 15 40	.....	2 24	59	5 12.6	26 16	9.8
Tue Feb 28/Wed Mar 01	10 16	18 16	19 38	5 26 6 47	5 53 15 42	.....	3 19	68	6 06.7	27 24	9.8

Calendar for VATT, west longitude (h.m.s) = 7 19 34, latitude (d.m) = 32 42.1
 Rise/set times in Mountain time (7 hr W), uncorrected for elevation, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2023 MARCH *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Wed Mar 01/Thu Mar 02	10 20	18 17	19 39	5 25	6 46	5 58	15 45	.....	4 09	76	7 00.7	27 12	9.8
Thu Mar 02/Fri Mar 03	10 24	18 18	19 39	5 23	6 45	6 02	15 48	.....	4 53	84	7 53.8	25 43	9.7
Fri Mar 03/Sat Mar 04	10 28	18 18	19 40	5 22	6 44	6 07	15 51	.....	5 31	90	8 45.0	23 03	9.7
Sat Mar 04/Sun Mar 05	10 32	18 19	19 41	5 21	6 43	6 12	15 53	.....	6 04	95	9 34.2	19 22	9.7
Sun Mar 05/Mon Mar 06	10 35	18 20	19 42	5 20	6 41	6 16	15 56	16 50	6 33	98	10 21.3	14 51	9.6
Mon Mar 06/Tue Mar 07	10 39	18 21	19 42	5 18	6 40	6 21	15 59	17 47	7 00	100	11 06.9	9 42	9.6
Tue Mar 07/Wed Mar 08	10 43	18 21	19 43	5 17	6 39	6 26	16 01	18 44	7 26	99	11 51.5	4 05	9.6
Wed Mar 08/Thu Mar 09	10 47	18 22	19 44	5 16	6 38	6 31	16 04	19 41	.....	97	12 35.9	- 1 45	9.5
Thu Mar 09/Fri Mar 10	10 51	18 23	19 45	5 15	6 36	6 35	16 07	20 39	.....	92	13 21.2	- 7 37	9.5
Fri Mar 10/Sat Mar 11	10 55	18 24	19 46	5 13	6 35	6 40	16 09	21 39	.....	86	14 08.3	-13 16	9.5
Sat Mar 11/Sun Mar 12	10 59	18 24	19 46	5 12	6 34	6 45	16 12	22 41	.....	78	14 58.3	-18 27	9.4
Sun Mar 12/Mon Mar 13	11 03	18 25	19 47	5 11	6 33	6 49	16 15	23 46	.....	69	15 51.8	-22 50	9.4
Mon Mar 13/Tue Mar 14	11 07	18 26	19 48	5 09	6 31	6 54	16 17	0 53	.....	58	16 49.3	-26 05	9.4
Tue Mar 14/Wed Mar 15	11 11	18 27	19 49	5 08	6 30	6 59	16 20	2 00	.....	47	17 50.4	-27 54	9.3
Wed Mar 15/Thu Mar 16	11 15	18 27	19 49	5 07	6 29	7 04	16 23	3 02	.....	36	18 53.6	-28 00	9.3
Thu Mar 16/Fri Mar 17	11 19	18 28	19 50	5 05	6 27	7 08	16 25	3 58	.....	25	19 57.0	-26 18	9.3
Fri Mar 17/Sat Mar 18	11 23	18 29	19 51	5 04	6 26	7 13	16 28	4 45	.....	16	20 58.5	-22 53	9.2
Sat Mar 18/Sun Mar 19	11 27	18 30	19 52	5 03	6 25	7 18	16 30	5 26	.....	8	21 57.0	-18 03	9.2
Sun Mar 19/Mon Mar 20	11 31	18 30	19 53	5 01	6 23	7 23	16 33	6 01	.....	3	22 52.4	-12 10	9.1
Mon Mar 20/Tue Mar 21	11 35	18 31	19 53	5 00	6 22	7 27	16 35	6 33	17 39	0	23 45.0	- 5 41	9.1
Tue Mar 21/Wed Mar 22	11 39	18 32	19 54	4 59	6 21	7 32	16 38	7 04	18 47	0	0 35.9	0 59	9.1
Wed Mar 22/Thu Mar 23	11 42	18 33	19 55	4 57	6 20	7 37	16 40	.....	19 54	3	1 26.0	7 29	9.0
Thu Mar 23/Fri Mar 24	11 46	18 33	19 56	4 56	6 18	7 42	16 43	.....	21 00	8	2 16.3	13 26	9.0
Fri Mar 24/Sat Mar 25	11 50	18 34	19 57	4 54	6 17	7 46	16 46	.....	22 06	15	3 07.6	18 36	9.0
Sat Mar 25/Sun Mar 26	11 54	18 35	19 57	4 53	6 16	7 51	16 48	.....	23 11	23	4 00.3	22 43	8.9
Sun Mar 26/Mon Mar 27	11 58	18 35	19 58	4 52	6 14	7 56	16 51	.....	0 13	32	4 54.2	25 37	8.9
Mon Mar 27/Tue Mar 28	12 02	18 36	19 59	4 50	6 13	8 01	16 53	.....	1 11	41	5 48.9	27 12	8.9
Tue Mar 28/Wed Mar 29	12 06	18 37	20 00	4 49	6 12	8 05	16 56	.....	2 04	51	6 43.4	27 25	8.8
Wed Mar 29/Thu Mar 30	12 10	18 37	20 01	4 47	6 10	8 10	16 58	.....	2 50	61	7 37.0	26 19	8.8
Thu Mar 30/Fri Mar 31	12 14	18 38	20 02	4 46	6 09	8 15	17 01	.....	3 30	70	8 28.7	24 01	8.7
Fri Mar 31/Sat Apr 01	12 18	18 39	20 02	4 44	6 08	8 20	17 03	.....	4 04	78	9 18.4	20 38	8.7

***** 2023 APRIL *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Sat Apr 01/Sun Apr 02	12 22	18 40	20 03	4 43	6 06	8 25	17 06	.....	4 35	86	10 05.9	16 21	8.7
Sun Apr 02/Mon Apr 03	12 26	18 40	20 04	4 41	6 05	8 29	17 08	.....	5 03	92	10 51.8	11 22	8.6
Mon Apr 03/Tue Apr 04	12 30	18 41	20 05	4 40	6 04	8 34	17 11	.....	5 29	96	11 36.7	5 50	8.6
Tue Apr 04/Wed Apr 05	12 34	18 42	20 06	4 39	6 03	8 39	17 13	17 32	5 55	99	12 21.4	- 0 02	8.5
Wed Apr 05/Thu Apr 06	12 38	18 42	20 07	4 37	6 01	8 44	17 16	18 30	6 21	100	13 06.9	- 6 02	8.5
Thu Apr 06/Fri Apr 07	12 42	18 43	20 08	4 36	6 00	8 49	17 18	19 30	6 50	99	13 54.2	-11 54	8.5
Fri Apr 07/Sat Apr 08	12 46	18 44	20 09	4 34	5 59	8 53	17 21	20 33	.....	95	14 44.2	-17 22	8.4
Sat Apr 08/Sun Apr 09	12 50	18 45	20 09	4 33	5 58	8 58	17 23	21 39	.....	89	15 37.8	-22 06	8.4
Sun Apr 09/Mon Apr 10	12 53	18 45	20 10	4 31	5 56	9 03	17 26	22 46	.....	82	16 35.2	-25 44	8.3
Mon Apr 10/Tue Apr 11	12 57	18 46	20 11	4 30	5 55	9 08	17 28	23 53	.....	72	17 36.1	-27 55	8.3
Tue Apr 11/Wed Apr 12	13 01	18 47	20 12	4 28	5 54	9 13	17 31	0 57	.....	62	18 39.0	-28 26	8.3
Wed Apr 12/Thu Apr 13	13 05	18 47	20 13	4 27	5 53	9 18	17 33	1 53	.....	50	19 42.0	-27 09	8.2
Thu Apr 13/Fri Apr 14	13 09	18 48	20 14	4 26	5 51	9 23	17 36	2 42	.....	39	20 43.0	-24 11	8.2
Fri Apr 14/Sat Apr 15	13 13	18 49	20 15	4 24	5 50	9 27	17 38	3 24	.....	28	21 41.0	-19 48	8.2
Sat Apr 15/Sun Apr 16	13 17	18 50	20 16	4 23	5 49	9 32	17 41	3 59	.....	19	22 35.8	-14 19	8.1
Sun Apr 16/Mon Apr 17	13 21	18 50	20 17	4 21	5 48	9 37	17 43	4 32	.....	11	23 27.8	- 8 07	8.1
Mon Apr 17/Tue Apr 18	13 25	18 51	20 18	4 20	5 47	9 42	17 46	5 02	.....	5	0 18.0	- 1 36	8.0
Tue Apr 18/Wed Apr 19	13 29	18 52	20 19	4 18	5 45	9 47	17 48	5 31	17 35	1	1 07.4	4 55	8.0
Wed Apr 19/Thu Apr 20	13 33	18 52	20 20	4 17	5 44	9 52	17 51	6 02	18 41	0	1 57.1	11 05	8.0
Thu Apr 20/Fri Apr 21	13 37	18 53	20 21	4 16	5 43	9 57	17 53	6 36	19 47	1	2 47.9	16 35	7.9
Fri Apr 21/Sat Apr 22	13 41	18 54	20 22	4 14	5 42	10 02	17 56	.....	20 52	5	3 40.3	21 10	7.9
Sat Apr 22/Sun Apr 23	13 45	18 55	20 23	4 13	5 41	10 07	17 58	.....	21 57	10	4 34.3	24 35	7.8
Sun Apr 23/Mon Apr 24	13 49	18 55	20 24	4 12	5 40	10 12	18 01	.....	22 58	17	5 29.3	26 41	7.8
Mon Apr 24/Tue Apr 25	13 53	18 56	20 25	4 10	5 39	10 17	18 04	.....	23 54	26	6 24.6	27 23	7.8
Tue Apr 25/Wed Apr 26	13 57	18 57	20 26	4 09	5 38	10 22	18 06	.....	0 44	34	7 18.9	26 44	7.7
Wed Apr 26/Thu Apr 27	14 00	18 57	20 27	4 08	5 37	10 27	18 09	.....	1 27	44	8 11.4	24 49	7.7
Thu Apr 27/Fri Apr 28	14 04	18 58	20 28	4 06	5 36	10 32	18 11	.....	2 03	53	9 01.6	21 47	7.6
Fri Apr 28/Sat Apr 29	14 08	18 59	20 29	4 05	5 35	10 36	18 14	.....	2 35	63	9 49.4	17 49	7.6
Sat Apr 29/Sun Apr 30	14 12	19 00	20 30	4 04	5 34	10 41	18 17	.....	3 04	72	10 35.4	13 06	7.6
Sun Apr 30/Mon May 01	14 16	19 00	20 31	4 02	5 33	10 46	18 19	.....	3 31	80	11 20.1	7 47	7.5

Calendar for VATT, west longitude (h.m.s) = 7 19 34, latitude (d.m) = 32 42.1
 Rise/set times in Mountain time (7 hr W), uncorrected for elevation, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2023 MAY *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Mon May 01/Tue May 02	14 20	19 01	20 32	4 01	5 32	10 51	18 22	.....	3 56	87	12 04.6	2 02	7.5
Tue May 02/Wed May 03	14 24	19 02	20 33	4 00	5 31	10 56	18 25	.....	4 22	93	12 49.6	- 3 57	7.5
Wed May 03/Thu May 04	14 28	19 03	20 34	3 59	5 30	11 01	18 27	17 17	4 50	98	13 36.4	- 9 56	7.4
Thu May 04/Fri May 05	14 32	19 03	20 35	3 57	5 29	11 06	18 30	18 20	5 21	100	14 26.0	-15 40	7.4
Fri May 05/Sat May 06	14 36	19 04	20 36	3 56	5 28	11 11	18 33	19 25	5 57	100	15 19.4	-20 48	7.3
Sat May 06/Sun May 07	14 40	19 05	20 37	3 55	5 27	11 16	18 36	20 34	6 41	97	16 17.1	-24 55	7.3
Sun May 07/Mon May 08	14 44	19 06	20 38	3 54	5 26	11 21	18 38	21 43	.....	92	17 18.7	-27 38	7.3
Mon May 08/Tue May 09	14 48	19 06	20 39	3 53	5 25	11 26	18 41	22 50	.....	84	18 22.9	-28 38	7.2
Tue May 09/Wed May 10	14 52	19 07	20 40	3 52	5 25	11 31	18 44	23 50	.....	75	19 27.4	-27 46	7.2
Wed May 10/Thu May 11	14 56	19 08	20 41	3 51	5 24	11 36	18 47	0 41	.....	64	20 29.8	-25 08	7.2
Thu May 11/Fri May 12	15 00	19 08	20 42	3 49	5 23	11 41	18 50	1 24	.....	53	21 28.7	-21 01	7.1
Fri May 12/Sat May 13	15 04	19 09	20 43	3 48	5 22	11 46	18 53	2 01	.....	42	22 23.8	-15 46	7.1
Sat May 13/Sun May 14	15 08	19 10	20 44	3 47	5 22	11 51	18 55	2 33	.....	31	23 15.6	- 9 48	7.1
Sun May 14/Mon May 15	15 11	19 11	20 45	3 46	5 21	11 56	18 58	3 03	.....	21	0 05.2	- 3 26	7.0
Mon May 15/Tue May 16	15 15	19 11	20 46	3 45	5 20	12 01	19 01	3 32	.....	13	0 53.7	2 58	7.0
Tue May 16/Wed May 17	15 19	19 12	20 47	3 44	5 20	12 06	19 04	4 02	.....	6	1 42.3	9 09	7.0
Wed May 17/Thu May 18	15 23	19 13	20 48	3 43	5 19	12 11	19 07	4 34	17 31	2	2 31.8	14 47	6.9
Thu May 18/Fri May 19	15 27	19 13	20 49	3 43	5 18	12 16	19 10	5 09	18 36	0	3 23.0	19 37	6.9
Fri May 19/Sat May 20	15 31	19 14	20 50	3 42	5 18	12 21	19 13	5 49	19 41	0	4 16.1	23 25	6.9
Sat May 20/Sun May 21	15 35	19 15	20 51	3 41	5 17	12 26	19 17	.....	20 44	3	5 10.8	25 57	6.8
Sun May 21/Mon May 22	15 39	19 16	20 52	3 40	5 17	12 31	19 20	.....	21 43	7	6 06.1	27 07	6.8
Mon May 22/Tue May 23	15 43	19 16	20 53	3 39	5 16	12 36	19 23	.....	22 36	13	7 01.0	26 54	6.8
Tue May 23/Wed May 24	15 47	19 17	20 54	3 38	5 16	12 41	19 26	.....	23 22	20	7 54.2	25 23	6.7
Wed May 24/Thu May 25	15 51	19 18	20 55	3 38	5 15	12 45	19 29	.....	0 01	28	8 45.0	22 42	6.7
Thu May 25/Fri May 26	15 55	19 18	20 56	3 37	5 15	12 50	19 32	.....	0 35	37	9 33.3	19 03	6.7
Fri May 26/Sat May 27	15 59	19 19	20 57	3 36	5 14	12 55	19 36	.....	1 04	46	10 19.4	14 36	6.7
Sat May 27/Sun May 28	16 03	19 19	20 58	3 36	5 14	13 00	19 39	.....	1 31	56	11 03.9	9 33	6.6
Sun May 28/Mon May 29	16 07	19 20	20 59	3 35	5 14	13 05	19 42	.....	1 57	65	11 47.6	4 02	6.6
Mon May 29/Tue May 30	16 11	19 21	21 00	3 34	5 13	13 10	19 46	.....	2 22	74	12 31.6	- 1 47	6.6
Tue May 30/Wed May 31	16 15	19 21	21 00	3 34	5 13	13 14	19 49	.....	2 49	83	13 17.0	- 7 42	6.6
Wed May 31/Thu Jun 01	16 18	19 22	21 01	3 33	5 13	13 19	19 52	.....	3 18	90	14 05.0	-13 32	6.5

***** 2023 JUNE *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Thu Jun 01/Fri Jun 02	16 22	19 22	21 02	3 33	5 12	13 24	19 56	.....	3 52	96	14 56.9	-18 56	6.5
Fri Jun 02/Sat Jun 03	16 26	19 23	21 03	3 32	5 12	13 29	19 59	18 15	4 32	99	15 53.4	-23 32	6.5
Sat Jun 03/Sun Jun 04	16 30	19 24	21 04	3 32	5 12	13 33	20 03	19 25	5 21	100	16 54.8	-26 53	6.5
Sun Jun 04/Mon Jun 05	16 34	19 24	21 04	3 32	5 12	13 38	20 06	20 35	6 20	98	18 00.0	-28 34	6.5
Mon Jun 05/Tue Jun 06	16 38	19 25	21 05	3 31	5 12	13 43	20 10	21 40	.....	93	19 06.7	-28 18	6.4
Tue Jun 06/Wed Jun 07	16 42	19 25	21 06	3 31	5 11	13 47	20 14	22 36	.....	86	20 12.1	-26 05	6.4
Wed Jun 07/Thu Jun 08	16 46	19 26	21 06	3 31	5 11	13 52	20 17	23 23	.....	77	21 13.8	-22 12	6.4
Thu Jun 08/Fri Jun 09	16 50	19 26	21 07	3 30	5 11	13 57	20 21	0 02	.....	67	22 11.1	-17 04	6.4
Fri Jun 09/Sat Jun 10	16 54	19 27	21 08	3 30	5 11	14 01	20 25	0 36	.....	55	23 04.4	-11 08	6.4
Sat Jun 10/Sun Jun 11	16 58	19 27	21 08	3 30	5 11	14 06	20 29	1 07	.....	44	23 54.7	- 4 47	6.4
Sun Jun 11/Mon Jun 12	17 02	19 27	21 09	3 30	5 11	14 10	20 32	1 35	.....	33	0 43.2	1 37	6.4
Mon Jun 12/Tue Jun 13	17 06	19 28	21 09	3 30	5 11	14 15	20 36	2 04	.....	24	1 31.3	7 48	6.3
Tue Jun 13/Wed Jun 14	17 10	19 28	21 10	3 30	5 11	14 19	20 40	2 35	.....	15	2 19.9	13 30	6.3
Wed Jun 14/Thu Jun 15	17 14	19 29	21 10	3 30	5 11	14 23	20 44	3 08	.....	8	3 10.0	18 28	6.3
Thu Jun 15/Fri Jun 16	17 18	19 29	21 11	3 30	5 11	14 28	20 48	3 46	17 30	4	4 01.9	22 28	6.3
Fri Jun 16/Sat Jun 17	17 22	19 29	21 11	3 30	5 12	14 32	20 52	4 29	18 33	1	4 55.6	25 18	6.3
Sat Jun 17/Sun Jun 18	17 26	19 30	21 11	3 30	5 12	14 36	20 56	5 18	19 33	0	5 50.4	26 49	6.3
Sun Jun 18/Mon Jun 19	17 29	19 30	21 12	3 30	5 12	14 41	21 00	6 12	20 28	1	6 45.2	26 57	6.3
Mon Jun 19/Tue Jun 20	17 33	19 30	21 12	3 30	5 12	14 45	21 04	.....	21 16	4	7 38.8	25 46	6.3
Tue Jun 20/Wed Jun 21	17 37	19 30	21 12	3 30	5 12	14 49	21 08	.....	21 58	9	8 30.2	23 24	6.3
Wed Jun 21/Thu Jun 22	17 41	19 31	21 12	3 31	5 12	14 53	21 12	.....	22 34	15	9 19.0	20 00	6.3
Thu Jun 22/Fri Jun 23	17 45	19 31	21 13	3 31	5 13	14 57	21 17	.....	23 05	22	10 05.3	15 48	6.3
Fri Jun 23/Sat Jun 24	17 49	19 31	21 13	3 31	5 13	15 01	21 21	.....	23 33	31	10 49.6	10 58	6.3
Sat Jun 24/Sun Jun 25	17 53	19 31	21 13	3 32	5 13	15 05	21 25	.....	23 58	40	11 32.7	5 41	6.3
Sun Jun 25/Mon Jun 26	17 57	19 31	21 13	3 32	5 14	15 09	21 29	.....	0 23	49	12 15.6	0 04	6.3
Mon Jun 26/Tue Jun 27	18 01	19 31	21 13	3 32	5 14	15 13	21 34	.....	0 48	59	12 59.4	- 5 42	6.3
Tue Jun 27/Wed Jun 28	18 05	19 31	21 13	3 33	5 14	15 17	21 38	.....	1 16	69	13 45.2	-11 26	6.3
Wed Jun 28/Thu Jun 29	18 09	19 31	21 13	3 33	5 15	15 21	21 43	.....	1 47	78	14 34.3	-16 55	6.3
Thu Jun 29/Fri Jun 30	18 13	19 31	21 13	3 34	5 15	15 25	21 47	.....	2 23	86	15 28.0	-21 48	6.3
Fri Jun 30/Sat Jul 01	18 17	19 31	21 13	3 34	5 15	15 29	21 51	.....	3 08	93	16 26.9	-25 42	6.4

Calendar for VATT, west longitude (h.m.s) = 7 19 34, latitude (d.m) = 32 42.1
 Rise/set times in Mountain time (7 hr W), uncorrected for elevation, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2023 JULY *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Sat Jul 01/Sun Jul 02	18 21	19 31	21 13	3 35	5 16	15 33	21 56	18 13	4 02	98	17 30.9	-28 07	6.4
Sun Jul 02/Mon Jul 03	18 25	19 31	21 12	3 35	5 16	15 37	22 01	19 22	5 07	100	18 38.3	-28 40	6.4
Mon Jul 03/Tue Jul 04	18 29	19 31	21 12	3 36	5 17	15 40	22 05	20 23	6 20	99	19 46.1	-27 10	6.4
Tue Jul 04/Wed Jul 05	18 33	19 31	21 12	3 37	5 17	15 44	22 10	21 16	.....	95	20 51.4	-23 44	6.4
Wed Jul 05/Thu Jul 06	18 36	19 31	21 12	3 37	5 18	15 48	22 14	21 59	.....	88	21 52.4	-18 46	6.4
Thu Jul 06/Fri Jul 07	18 40	19 31	21 11	3 38	5 18	15 51	22 19	22 36	.....	79	22 48.8	-12 48	6.4
Fri Jul 07/Sat Jul 08	18 44	19 31	21 11	3 39	5 19	15 55	22 23	23 08	.....	69	23 41.5	- 6 18	6.5
Sat Jul 08/Sun Jul 09	18 48	19 31	21 10	3 39	5 19	15 58	22 28	23 38	.....	58	0 31.6	0 17	6.5
Sun Jul 09/Mon Jul 10	18 52	19 30	21 10	3 40	5 20	16 02	22 33	0 07	.....	47	1 20.5	6 40	6.5
Mon Jul 10/Tue Jul 11	18 56	19 30	21 10	3 41	5 20	16 05	22 38	0 37	.....	36	2 09.4	12 31	6.5
Tue Jul 11/Wed Jul 12	19 00	19 30	21 09	3 42	5 21	16 09	22 42	1 10	.....	27	2 59.3	17 39	6.5
Wed Jul 12/Thu Jul 13	19 04	19 29	21 08	3 42	5 21	16 12	22 47	1 46	.....	18	3 50.6	21 50	6.6
Thu Jul 13/Fri Jul 14	19 08	19 29	21 08	3 43	5 22	16 15	22 52	2 27	.....	11	4 43.7	24 52	6.6
Fri Jul 14/Sat Jul 15	19 12	19 29	21 07	3 44	5 23	16 19	22 57	3 14	.....	6	5 37.9	26 38	6.6
Sat Jul 15/Sun Jul 16	19 16	19 28	21 07	3 45	5 23	16 22	23 01	4 06	18 23	2	6 32.3	27 03	6.6
Sun Jul 16/Mon Jul 17	19 20	19 28	21 06	3 46	5 24	16 25	23 06	5 02	19 13	0	7 25.9	26 09	6.7
Mon Jul 17/Tue Jul 18	19 24	19 27	21 05	3 47	5 24	16 29	23 11	6 00	19 57	0	8 17.6	24 01	6.7
Tue Jul 18/Wed Jul 19	19 28	19 27	21 04	3 47	5 25	16 32	23 16	.....	20 34	2	9 06.8	20 50	6.7
Wed Jul 19/Thu Jul 20	19 32	19 27	21 04	3 48	5 26	16 35	23 21	.....	21 06	6	9 53.5	16 48	6.7
Thu Jul 20/Fri Jul 21	19 36	19 26	21 03	3 49	5 26	16 38	23 26	.....	21 35	11	10 37.9	12 07	6.8
Fri Jul 21/Sat Jul 22	19 40	19 25	21 02	3 50	5 27	16 41	23 30	.....	22 01	17	11 20.9	6 58	6.8
Sat Jul 22/Sun Jul 23	19 43	19 25	21 01	3 51	5 28	16 44	23 35	.....	22 26	25	12 03.1	1 30	6.8
Sun Jul 23/Mon Jul 24	19 47	19 24	21 00	3 52	5 28	16 47	23 40	.....	22 50	34	12 45.6	- 4 08	6.9
Mon Jul 24/Tue Jul 25	19 51	19 24	20 59	3 53	5 29	16 50	23 45	.....	23 16	43	13 29.5	- 9 46	6.9
Tue Jul 25/Wed Jul 26	19 55	19 23	20 58	3 54	5 29	16 53	23 50	.....	23 44	53	14 16.0	-15 11	6.9
Wed Jul 26/Thu Jul 27	19 59	19 22	20 58	3 55	5 30	16 56	23 55	.....	0 17	64	15 06.3	-20 10	7.0
Thu Jul 27/Fri Jul 28	20 03	19 22	20 57	3 56	5 31	16 59	24 00	.....	0 57	74	16 01.4	-24 22	7.0
Fri Jul 28/Sat Jul 29	20 07	19 21	20 55	3 57	5 32	17 02	0 05	.....	1 45	83	17 01.9	-27 21	7.0
Sat Jul 29/Sun Jul 30	20 11	19 20	20 54	3 58	5 32	17 05	0 10	.....	2 44	91	18 07.0	-28 43	7.1
Sun Jul 30/Mon Jul 31	20 15	19 19	20 53	3 59	5 33	17 08	0 15	18 04	3 54	96	19 14.6	-28 07	7.1
Mon Jul 31/Tue Aug 01	20 19	19 19	20 52	4 00	5 34	17 11	0 20	19 02	5 09	99	20 21.7	-25 28	7.1

***** 2023 AUGUST *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Tue Aug 01/Wed Aug 02	20 23	19 18	20 51	4 01	5 34	17 14	0 24	19 50	6 26	99	21 25.8	-21 00	7.2
Wed Aug 02/Thu Aug 03	20 27	19 17	20 50	4 02	5 35	17 16	0 29	20 31	.....	96	22 25.7	-15 11	7.2
Thu Aug 03/Fri Aug 04	20 31	19 16	20 49	4 03	5 36	17 19	0 34	21 06	.....	90	23 21.6	- 8 34	7.2
Fri Aug 04/Sat Aug 05	20 35	19 15	20 48	4 04	5 36	17 22	0 39	21 38	.....	82	0 14.4	- 1 41	7.3
Sat Aug 05/Sun Aug 06	20 39	19 14	20 47	4 05	5 37	17 25	0 44	22 08	.....	72	1 05.5	5 04	7.3
Sun Aug 06/Mon Aug 07	20 43	19 14	20 45	4 06	5 38	17 27	0 49	22 38	.....	62	1 55.9	11 19	7.3
Mon Aug 07/Tue Aug 08	20 47	19 13	20 44	4 07	5 38	17 30	0 54	23 10	.....	51	2 46.8	16 47	7.4
Tue Aug 08/Wed Aug 09	20 51	19 12	20 43	4 08	5 39	17 33	0 59	23 46	.....	41	3 38.7	21 16	7.4
Wed Aug 09/Thu Aug 10	20 54	19 11	20 42	4 09	5 40	17 36	1 04	0 25	.....	31	4 32.0	24 36	7.5
Thu Aug 10/Fri Aug 11	20 58	19 10	20 40	4 10	5 40	17 38	1 09	1 11	.....	22	5 26.4	26 37	7.5
Fri Aug 11/Sat Aug 12	21 02	19 09	20 39	4 11	5 41	17 41	1 14	2 01	.....	15	6 20.9	27 17	7.5
Sat Aug 12/Sun Aug 13	21 06	19 08	20 38	4 12	5 42	17 43	1 19	2 56	.....	8	7 14.7	26 37	7.6
Sun Aug 13/Mon Aug 14	21 10	19 07	20 36	4 13	5 42	17 46	1 24	3 54	17 56	4	8 06.6	24 42	7.6
Mon Aug 14/Tue Aug 15	21 14	19 06	20 35	4 14	5 43	17 49	1 28	4 52	18 35	1	8 56.2	21 42	7.6
Tue Aug 15/Wed Aug 16	21 18	19 05	20 34	4 15	5 44	17 51	1 33	5 50	19 09	0	9 43.3	17 48	7.7
Wed Aug 16/Thu Aug 17	21 22	19 03	20 32	4 16	5 44	17 54	1 38	6 46	19 38	1	10 28.1	13 13	7.7
Thu Aug 17/Fri Aug 18	21 26	19 02	20 31	4 16	5 45	17 56	1 43	.....	20 05	3	11 11.1	8 08	7.8
Fri Aug 18/Sat Aug 19	21 30	19 01	20 30	4 17	5 46	17 59	1 48	.....	20 30	7	11 53.2	2 43	7.8
Sat Aug 19/Sun Aug 20	21 34	19 00	20 28	4 18	5 46	18 02	1 53	.....	20 54	13	12 35.2	- 2 53	7.8
Sun Aug 20/Mon Aug 21	21 38	18 59	20 27	4 19	5 47	18 04	1 58	.....	21 19	20	13 18.1	- 8 28	7.9
Mon Aug 21/Tue Aug 22	21 42	18 58	20 25	4 20	5 48	18 07	2 03	.....	21 46	28	14 02.9	-13 52	7.9
Tue Aug 22/Wed Aug 23	21 46	18 57	20 24	4 21	5 48	18 09	2 07	.....	22 16	38	14 50.8	-18 52	8.0
Wed Aug 23/Thu Aug 24	21 50	18 55	20 23	4 22	5 49	18 12	2 12	.....	22 52	48	15 42.7	-23 12	8.0
Thu Aug 24/Fri Aug 25	21 54	18 54	20 21	4 23	5 50	18 14	2 17	.....	23 35	59	16 39.3	-26 32	8.0
Fri Aug 25/Sat Aug 26	21 58	18 53	20 20	4 24	5 50	18 17	2 22	.....	0 27	69	17 40.6	-28 28	8.1
Sat Aug 26/Sun Aug 27	22 01	18 52	20 18	4 25	5 51	18 19	2 27	.....	1 30	79	18 45.3	-28 39	8.1
Sun Aug 27/Mon Aug 28	22 05	18 51	20 17	4 26	5 52	18 22	2 32	.....	2 41	88	19 51.2	-26 54	8.1
Mon Aug 28/Tue Aug 29	22 09	18 49	20 15	4 26	5 52	18 24	2 36	17 38	3 57	95	20 55.8	-23 14	8.2
Tue Aug 29/Wed Aug 30	22 13	18 48	20 14	4 27	5 53	18 27	2 41	18 22	5 13	99	21 57.4	-17 58	8.2
Wed Aug 30/Thu Aug 31	22 17	18 47	20 12	4 28	5 54	18 29	2 46	19 00	6 27	100	22 55.5	-11 33	8.3
Thu Aug 31/Fri Sep 01	22 21	18 46	20 11	4 29	5 54	18 31	2 51	19 33	.....	98	23 50.7	- 4 33	8.3

Calendar for VATT, west longitude (h.m.s) = 7 19 34, latitude (d.m) = 32 42.1
 Rise/set times in Mountain time (7 hr W), uncorrected for elevation, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2023 SEPTEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Fri Sep 01/Sat Sep 02	22 25	18 44	20 09	4 30	5 55	18 34	2 56	20 05	.....	93	0 43.9	2 34	8.3
Sat Sep 02/Sun Sep 03	22 29	18 43	20 08	4 31	5 56	18 36	3 00	20 36	.....	85	1 36.3	9 19	8.4
Sun Sep 03/Mon Sep 04	22 33	18 42	20 06	4 31	5 56	18 39	3 05	21 08	.....	76	2 28.9	15 20	8.4
Mon Sep 04/Tue Sep 05	22 37	18 40	20 05	4 32	5 57	18 41	3 10	21 43	.....	66	3 22.3	20 21	8.5
Tue Sep 05/Wed Sep 06	22 41	18 39	20 03	4 33	5 57	18 44	3 15	22 22	.....	56	4 16.9	24 09	8.5
Wed Sep 06/Thu Sep 07	22 45	18 38	20 02	4 34	5 58	18 46	3 20	23 06	.....	46	5 12.4	26 34	8.5
Thu Sep 07/Fri Sep 08	22 49	18 37	20 00	4 35	5 59	18 49	3 24	23 56	.....	36	6 08.0	27 34	8.6
Fri Sep 08/Sat Sep 09	22 53	18 35	19 59	4 36	5 59	18 51	3 29	0 50	.....	27	7 02.6	27 11	8.6
Sat Sep 09/Sun Sep 10	22 57	18 34	19 58	4 36	6 00	18 54	3 34	1 47	.....	19	7 55.3	25 30	8.6
Sun Sep 10/Mon Sep 11	23 01	18 33	19 56	4 37	6 01	18 56	3 38	2 45	.....	12	8 45.6	22 41	8.7
Mon Sep 11/Tue Sep 12	23 05	18 31	19 55	4 38	6 01	18 58	3 43	3 43	17 11	7	9 33.2	18 57	8.7
Tue Sep 12/Wed Sep 13	23 09	18 30	19 53	4 39	6 02	19 01	3 48	4 40	17 42	3	10 18.4	14 28	8.8
Wed Sep 13/Thu Sep 14	23 12	18 29	19 52	4 39	6 03	19 03	3 53	5 36	18 09	1	11 01.8	9 25	8.8
Thu Sep 14/Fri Sep 15	23 16	18 27	19 50	4 40	6 03	19 06	3 57	6 31	18 34	0	11 44.1	4 01	8.8
Fri Sep 15/Sat Sep 16	23 20	18 26	19 49	4 41	6 04	19 08	4 02	.....	18 58	1	12 26.2	- 1 36	8.9
Sat Sep 16/Sun Sep 17	23 24	18 24	19 47	4 42	6 04	19 11	4 07	.....	19 23	4	13 08.8	- 7 14	8.9
Sun Sep 17/Mon Sep 18	23 28	18 23	19 46	4 42	6 05	19 13	4 11	.....	19 49	9	13 53.0	-12 42	8.9
Mon Sep 18/Tue Sep 19	23 32	18 22	19 44	4 43	6 06	19 16	4 16	.....	20 18	16	14 39.7	-17 47	9.0
Tue Sep 19/Wed Sep 20	23 36	18 20	19 43	4 44	6 06	19 18	4 21	.....	20 52	24	15 29.9	-22 15	9.0
Wed Sep 20/Thu Sep 21	23 40	18 19	19 41	4 45	6 07	19 21	4 25	.....	21 31	33	16 24.1	-25 47	9.1
Thu Sep 21/Fri Sep 22	23 44	18 18	19 40	4 45	6 08	19 23	4 30	.....	22 19	44	17 22.4	-28 03	9.1
Fri Sep 22/Sat Sep 23	23 48	18 16	19 39	4 46	6 08	19 26	4 35	.....	23 16	55	18 24.0	-28 46	9.1
Sat Sep 23/Sun Sep 24	23 52	18 15	19 37	4 47	6 09	19 28	4 39	.....	0 22	66	19 27.2	-27 43	9.2
Sun Sep 24/Mon Sep 25	23 56	18 14	19 36	4 47	6 10	19 31	4 44	.....	1 34	76	20 30.1	-24 51	9.2
Mon Sep 25/Tue Sep 26	24 00	18 12	19 34	4 48	6 10	19 33	4 49	.....	2 48	86	21 30.9	-20 20	9.2
Tue Sep 26/Wed Sep 27	0 04	18 11	19 33	4 49	6 11	19 36	4 53	16 53	4 01	93	22 28.9	-14 29	9.3
Wed Sep 27/Thu Sep 28	0 08	18 10	19 31	4 50	6 12	19 38	4 58	17 28	5 13	98	23 24.5	- 7 45	9.3
Thu Sep 28/Fri Sep 29	0 12	18 08	19 30	4 50	6 12	19 41	5 03	18 00	6 23	100	0 18.4	- 0 36	9.3
Fri Sep 29/Sat Sep 30	0 16	18 07	19 29	4 51	6 13	19 44	5 07	18 31	.....	99	1 11.6	6 28	9.4
Sat Sep 30/Sun Oct 01	0 19	18 06	19 27	4 52	6 14	19 46	5 12	19 03	.....	95	2 05.1	13 02	9.4

***** 2023 OCTOBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Sun Oct 01/Mon Oct 02	0 23	18 04	19 26	4 52	6 14	19 49	5 17	19 37	.....	89	2 59.8	18 42	9.4
Mon Oct 02/Tue Oct 03	0 27	18 03	19 25	4 53	6 15	19 51	5 21	20 16	.....	81	3 55.8	23 09	9.5
Tue Oct 03/Wed Oct 04	0 31	18 02	19 23	4 54	6 16	19 54	5 26	20 59	.....	72	4 53.0	26 11	9.5
Wed Oct 04/Thu Oct 05	0 35	18 00	19 22	4 55	6 16	19 57	5 31	21 48	.....	62	5 50.4	27 42	9.5
Thu Oct 05/Fri Oct 06	0 39	17 59	19 21	4 55	6 17	19 59	5 35	22 41	.....	52	6 46.8	27 43	9.6
Fri Oct 06/Sat Oct 07	0 43	17 58	19 19	4 56	6 18	20 02	5 40	23 38	.....	42	7 41.2	26 21	9.6
Sat Oct 07/Sun Oct 08	0 47	17 57	19 18	4 57	6 18	20 05	5 45	0 37	.....	33	8 32.8	23 47	9.6
Sun Oct 08/Mon Oct 09	0 51	17 55	19 17	4 57	6 19	20 07	5 49	1 35	.....	25	9 21.4	20 14	9.7
Mon Oct 09/Tue Oct 10	0 55	17 54	19 16	4 58	6 20	20 10	5 54	2 33	.....	17	10 07.3	15 53	9.7
Tue Oct 10/Wed Oct 11	0 59	17 53	19 14	4 59	6 21	20 13	5 58	3 29	.....	11	10 51.2	10 57	9.7
Wed Oct 11/Thu Oct 12	1 03	17 52	19 13	4 59	6 21	20 15	6 03	4 24	16 38	5	11 33.9	5 35	9.8
Thu Oct 12/Fri Oct 13	1 07	17 50	19 12	5 00	6 22	20 18	6 08	5 20	17 02	2	12 16.0	- 0 02	9.8
Fri Oct 13/Sat Oct 14	1 11	17 49	19 11	5 01	6 23	20 21	6 12	6 16	17 27	0	12 58.7	- 5 44	9.8
Sat Oct 14/Sun Oct 15	1 15	17 48	19 10	5 02	6 24	20 24	6 17	7 15	17 53	0	13 42.8	-11 19	9.9
Sun Oct 15/Mon Oct 16	1 19	17 47	19 09	5 02	6 24	20 26	6 22	.....	18 21	2	14 29.3	-16 34	9.9
Mon Oct 16/Tue Oct 17	1 23	17 46	19 07	5 03	6 25	20 29	6 26	.....	18 53	6	15 18.9	-21 14	9.9
Tue Oct 17/Wed Oct 18	1 26	17 44	19 06	5 04	6 26	20 32	6 31	.....	19 31	12	16 12.3	-25 00	10.0
Wed Oct 18/Thu Oct 19	1 30	17 43	19 05	5 04	6 27	20 35	6 36	.....	20 16	20	17 09.5	-27 33	10.0
Thu Oct 19/Fri Oct 20	1 34	17 42	19 04	5 05	6 27	20 38	6 40	.....	21 10	29	18 09.6	-28 37	10.0
Fri Oct 20/Sat Oct 21	1 38	17 41	19 03	5 06	6 28	20 41	6 45	.....	22 13	40	19 11.1	-28 01	10.0
Sat Oct 21/Sun Oct 22	1 42	17 40	19 02	5 06	6 29	20 44	6 50	.....	23 21	51	20 12.3	-25 42	10.1
Sun Oct 22/Mon Oct 23	1 46	17 39	19 01	5 07	6 30	20 46	6 54	.....	0 32	62	21 11.6	-21 47	10.1
Mon Oct 23/Tue Oct 24	1 50	17 38	19 00	5 08	6 30	20 49	6 59	.....	1 43	73	22 08.3	-16 33	10.1
Tue Oct 24/Wed Oct 25	1 54	17 37	18 59	5 09	6 31	20 52	7 04	.....	2 53	83	23 02.6	-10 19	10.2
Wed Oct 25/Thu Oct 26	1 58	17 36	18 58	5 09	6 32	20 55	7 08	.....	4 02	91	23 55.3	- 3 30	10.2
Thu Oct 26/Fri Oct 27	2 02	17 35	18 57	5 10	6 33	20 58	7 13	16 28	5 10	97	0 47.5	3 31	10.2
Fri Oct 27/Sat Oct 28	2 06	17 34	18 56	5 11	6 34	21 01	7 18	16 59	6 19	100	1 40.2	10 17	10.2
Sat Oct 28/Sun Oct 29	2 10	17 33	18 55	5 12	6 35	21 04	7 22	17 31	7 28	100	2 34.4	16 24	10.3
Sun Oct 29/Mon Oct 30	2 14	17 32	18 55	5 12	6 35	21 08	7 27	18 08	.....	97	3 30.5	21 30	10.3
Mon Oct 30/Tue Oct 31	2 18	17 31	18 54	5 13	6 36	21 11	7 32	18 49	.....	92	4 28.4	25 14	10.3
Tue Oct 31/Wed Nov 01	2 22	17 30	18 53	5 14	6 37	21 14	7 36	19 36	.....	86	5 27.4	27 26	10.3

Calendar for VATT, west longitude (h.m.s) = 7 19 34, latitude (d.m) = 32 42.1
 Rise/set times in Mountain time (7 hr W), uncorrected for elevation, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2023 NOVEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Wed Nov 01/Thu Nov 02	2 26	17 29	18 52	5 14	6 38	21 17	7 41	20 29	.....	78	6 26.0	28 02	10.4
Thu Nov 02/Fri Nov 03	2 30	17 28	18 51	5 15	6 39	21 20	7 46	21 26	.....	69	7 22.6	27 07	10.4
Fri Nov 03/Sat Nov 04	2 34	17 27	18 51	5 16	6 40	21 23	7 50	22 25	.....	59	8 16.3	24 53	10.4
Sat Nov 04/Sun Nov 05	2 37	17 26	18 50	5 17	6 41	21 26	7 55	23 25	.....	50	9 06.6	21 34	10.4
Sun Nov 05/Mon Nov 06	2 41	17 25	18 49	5 17	6 41	21 30	8 00	0 23	.....	40	9 53.7	17 25	10.5
Mon Nov 06/Tue Nov 07	2 45	17 25	18 49	5 18	6 42	21 33	8 04	1 19	.....	31	10 38.4	12 37	10.5
Tue Nov 07/Wed Nov 08	2 49	17 24	18 48	5 19	6 43	21 36	8 09	2 15	.....	23	11 21.4	7 21	10.5
Wed Nov 08/Thu Nov 09	2 53	17 23	18 47	5 20	6 44	21 40	8 14	3 10	.....	16	12 03.6	1 47	10.5
Thu Nov 09/Fri Nov 10	2 57	17 22	18 47	5 21	6 45	21 43	8 19	4 06	.....	9	12 46.1	- 3 55	10.6
Fri Nov 10/Sat Nov 11	3 01	17 22	18 46	5 21	6 46	21 46	8 23	5 04	15 55	4	13 29.9	- 9 34	10.6
Sat Nov 11/Sun Nov 12	3 05	17 21	18 46	5 22	6 47	21 50	8 28	6 05	16 22	1	14 16.0	-14 59	10.6
Sun Nov 12/Mon Nov 13	3 09	17 20	18 45	5 23	6 48	21 53	8 33	7 08	16 53	0	15 05.3	-19 53	10.6
Mon Nov 13/Tue Nov 14	3 13	17 20	18 45	5 24	6 49	21 57	8 37	.....	17 29	1	15 58.5	-23 57	10.7
Tue Nov 14/Wed Nov 15	3 17	17 19	18 44	5 24	6 49	22 00	8 42	.....	18 13	4	16 55.6	-26 52	10.7
Wed Nov 15/Thu Nov 16	3 21	17 18	18 44	5 25	6 50	22 04	8 47	.....	19 05	9	17 55.9	-28 19	10.7
Thu Nov 16/Fri Nov 17	3 25	17 18	18 43	5 26	6 51	22 07	8 52	.....	20 06	17	18 57.7	-28 04	10.7
Fri Nov 17/Sat Nov 18	3 29	17 17	18 43	5 27	6 52	22 11	8 56	.....	21 13	26	19 59.0	-26 06	10.7
Sat Nov 18/Sun Nov 19	3 33	17 17	18 42	5 27	6 53	22 14	9 01	.....	22 23	36	20 58.1	-22 34	10.7
Sun Nov 19/Mon Nov 20	3 37	17 16	18 42	5 28	6 54	22 18	9 06	.....	23 33	47	21 54.2	-17 42	10.8
Mon Nov 20/Tue Nov 21	3 41	17 16	18 42	5 29	6 55	22 22	9 10	.....	0 42	59	22 47.6	-11 52	10.8
Tue Nov 21/Wed Nov 22	3 44	17 16	18 42	5 30	6 56	22 25	9 15	.....	1 49	70	23 38.9	- 5 25	10.8
Wed Nov 22/Thu Nov 23	3 48	17 15	18 41	5 31	6 57	22 29	9 20	.....	2 55	80	0 29.4	1 19	10.8
Thu Nov 23/Fri Nov 24	3 52	17 15	18 41	5 31	6 58	22 33	9 25	.....	4 02	88	1 20.1	7 59	10.8
Fri Nov 24/Sat Nov 25	3 56	17 15	18 41	5 32	6 58	22 36	9 29	.....	5 09	95	2 12.3	14 13	10.9
Sat Nov 25/Sun Nov 26	4 00	17 14	18 41	5 33	6 59	22 40	9 34	16 02	6 17	98	3 06.7	19 39	10.9
Sun Nov 26/Mon Nov 27	4 04	17 14	18 41	5 34	7 00	22 44	9 39	16 41	7 25	100	4 03.5	23 56	10.9
Mon Nov 27/Tue Nov 28	4 08	17 14	18 41	5 34	7 01	22 48	9 43	17 25	.....	99	5 02.4	26 46	10.9
Tue Nov 28/Wed Nov 29	4 12	17 14	18 40	5 35	7 02	22 52	9 48	18 16	.....	96	6 01.9	28 01	10.9
Wed Nov 29/Thu Nov 30	4 16	17 14	18 40	5 36	7 03	22 56	9 53	19 12	.....	91	7 00.4	27 40	10.9
Thu Nov 30/Fri Dec 01	4 20	17 13	18 40	5 37	7 04	22 59	9 58	20 12	.....	84	7 56.3	25 52	10.9

***** 2023 DECEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Fri Dec 01/Sat Dec 02	4 24	17 13	18 40	5 37	7 05	23 03	10 02	21 12	.....	76	8 48.8	22 51	10.9
Sat Dec 02/Sun Dec 03	4 28	17 13	18 40	5 38	7 05	23 07	10 07	22 11	.....	67	9 37.6	18 54	11.0
Sun Dec 03/Mon Dec 04	4 32	17 13	18 40	5 39	7 06	23 11	10 12	23 08	.....	58	10 23.5	14 15	11.0
Mon Dec 04/Tue Dec 05	4 36	17 13	18 41	5 40	7 07	23 15	10 16	0 04	.....	49	11 07.0	9 06	11.0
Tue Dec 05/Wed Dec 06	4 40	17 13	18 41	5 40	7 08	23 19	10 21	0 59	.....	39	11 49.4	3 38	11.0
Wed Dec 06/Thu Dec 07	4 44	17 13	18 41	5 41	7 09	23 24	10 25	1 54	.....	30	12 31.5	- 2 00	11.0
Thu Dec 07/Fri Dec 08	4 48	17 13	18 41	5 42	7 09	23 28	10 30	2 50	.....	22	13 14.6	- 7 39	11.0
Fri Dec 08/Sat Dec 09	4 52	17 13	18 41	5 42	7 10	23 32	10 35	3 49	.....	14	13 59.7	-13 08	11.0
Sat Dec 09/Sun Dec 10	4 55	17 14	18 41	5 43	7 11	23 36	10 39	4 52	.....	8	14 47.9	-18 13	11.0
Sun Dec 10/Mon Dec 11	4 59	17 14	18 42	5 44	7 12	23 40	10 44	5 57	.....	3	15 40.0	-22 37	11.0
Mon Dec 11/Tue Dec 12	5 03	17 14	18 42	5 44	7 12	23 44	10 49	7 05	16 05	1	16 36.6	-25 57	11.0
Tue Dec 12/Wed Dec 13	5 07	17 14	18 42	5 45	7 13	23 49	10 53	8 12	16 54	0	17 37.0	-27 53	11.0
Wed Dec 13/Thu Dec 14	5 11	17 14	18 42	5 46	7 14	23 53	10 58	.....	17 54	2	18 39.9	-28 08	11.1
Thu Dec 14/Fri Dec 15	5 15	17 15	18 43	5 46	7 14	23 57	11 02	.....	19 01	7	19 42.8	-26 34	11.1
Fri Dec 15/Sat Dec 16	5 19	17 15	18 43	5 47	7 15	0 01	11 07	.....	20 12	14	20 43.7	-23 19	11.1
Sat Dec 16/Sun Dec 17	5 23	17 15	18 44	5 47	7 15	0 06	11 11	.....	21 24	22	21 41.3	-18 39	11.1
Sun Dec 17/Mon Dec 18	5 27	17 16	18 44	5 48	7 16	0 10	11 16	.....	22 34	33	22 35.5	-12 58	11.1
Mon Dec 18/Tue Dec 19	5 31	17 16	18 44	5 48	7 17	0 14	11 20	.....	23 42	44	23 26.9	- 6 39	11.1
Tue Dec 19/Wed Dec 20	5 35	17 17	18 45	5 49	7 17	0 19	11 25	.....	0 48	55	0 16.8	- 0 03	11.1
Wed Dec 20/Thu Dec 21	5 39	17 17	18 45	5 49	7 18	0 23	11 29	.....	1 53	66	1 06.3	6 30	11.1
Thu Dec 21/Fri Dec 22	5 43	17 18	18 46	5 50	7 18	0 28	11 34	.....	2 58	76	1 56.7	12 42	11.1
Fri Dec 22/Sat Dec 23	5 47	17 18	18 46	5 50	7 19	0 32	11 38	.....	4 04	85	2 49.0	18 13	11.1
Sat Dec 23/Sun Dec 24	5 51	17 19	18 47	5 51	7 19	0 37	11 43	.....	5 11	92	3 43.7	22 45	11.1
Sun Dec 24/Mon Dec 25	5 55	17 19	18 47	5 51	7 20	0 41	11 47	.....	6 16	97	4 40.9	26 00	11.1
Mon Dec 25/Tue Dec 26	5 59	17 20	18 48	5 52	7 20	0 46	11 51	16 06	7 17	99	5 39.7	27 46	11.1
Tue Dec 26/Wed Dec 27	6 02	17 20	18 49	5 52	7 20	0 50	11 56	17 00	8 12	100	6 38.5	27 57	11.1
Wed Dec 27/Thu Dec 28	6 06	17 21	18 49	5 53	7 21	0 55	12 00	17 58	.....	98	7 35.6	26 37	11.1
Thu Dec 28/Fri Dec 29	6 10	17 22	18 50	5 53	7 21	0 59	12 04	18 59	.....	95	8 29.7	23 58	11.1
Fri Dec 29/Sat Dec 30	6 14	17 22	18 50	5 53	7 21	1 04	12 09	19 59	.....	89	9 20.3	20 15	11.0
Sat Dec 30/Sun Dec 31	6 18	17 23	18 51	5 54	7 22	1 08	12 13	20 57	.....	83	10 07.5	15 45	11.0
Sun Dec 31/Mon Jan 01	6 22	17 24	18 52	5 54	7 22	1 13	12 17	21 54	.....	75	10 52.1	10 42	11.0