

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:

\*\*\*\*\* 2021 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 2021, 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 14	9 19	Dec 21	16 43	Dec 29	20 30	Jan 06	2 39
Jan 12	22 03	Jan 20	14 04	Jan 28	12 19	Feb 04	10 39
Feb 11	12 08	Feb 19	11 49	Feb 27	1 20	Mar 05	18 32
Mar 13	3 24	Mar 21	7 42	Mar 28	11 50	Apr 04	3 04
Apr 11	19 33	Apr 20	0 00	Apr 26	20 33	May 03	12 52
May 11	12 02	May 19	12 13	May 26	4 15	Jun 02	0 26
Jun 10	3 54	Jun 17	20 55	Jun 24	11 40	Jul 01	14 13
Jul 09	18 18	Jul 17	3 12	Jul 23	19 37	Jul 31	6 18
Aug 08	6 51	Aug 15	8 21	Aug 22	5 02	Aug 30	0 15
Sep 06	17 52	Sep 13	13 41	Sep 20	16 55	Sep 28	18 58
Oct 06	4 06	Oct 12	20 28	Oct 20	7 58	Oct 28	13 07
Nov 04	14 15	Nov 11	5 48	Nov 19	2 00	Nov 27	5 30
Dec 04	0 45	Dec 10	18 38	Dec 18	21 38	Dec 26	19 26
Jan 02	11 36	Jan 09	11 13	Jan 17	16 51	Jan 25	6 43

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.

\*\*\*\*\* 2021 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	
Fri Jan 01/Sat Jan 02	6 29	17 25	18 53	5 54 7 22	1 21 12 24	20 05	.....	89	9 37.4	18 52	11.0
Sat Jan 02/Sun Jan 03	6 33	17 26	18 53	5 55 7 22	1 26 12 28	21 09	.....	81	10 31.2	14 35	11.0
Sun Jan 03/Mon Jan 04	6 37	17 26	18 54	5 55 7 22	1 30 12 33	22 13	.....	72	11 23.3	9 30	11.0
Mon Jan 04/Tue Jan 05	6 41	17 27	18 55	5 55 7 23	1 35 12 37	23 18	.....	62	12 14.3	3 54	11.0
Tue Jan 05/Wed Jan 06	6 45	17 28	18 56	5 55 7 23	1 40 12 41	0 22	.....	50	13 05.0	- 1 58	11.0
Wed Jan 06/Thu Jan 07	6 49	17 29	18 56	5 55 7 23	1 44 12 45	1 28	.....	39	13 56.4	- 7 46	11.0
Thu Jan 07/Fri Jan 08	6 53	17 30	18 57	5 55 7 23	1 49 12 49	2 35	.....	28	14 49.6	-13 14	11.0
Fri Jan 08/Sat Jan 09	6 57	17 31	18 58	5 55 7 23	1 54 12 53	3 44	.....	19	15 45.3	-18 00	11.0
Sat Jan 09/Sun Jan 10	7 01	17 31	18 59	5 55 7 23	1 58 12 57	4 54	.....	11	16 43.7	-21 44	10.9
Sun Jan 10/Mon Jan 11	7 04	17 32	18 59	5 55 7 22	2 03 13 01	6 02	.....	5	17 44.4	-24 08	10.9
Mon Jan 11/Tue Jan 12	7 08	17 33	19 00	5 55 7 22	2 08 13 05	7 04	16 08	1	18 46.1	-25 00	10.9
Tue Jan 12/Wed Jan 13	7 12	17 34	19 01	5 55 7 22	2 12 13 09	8 00	17 10	0	19 46.9	-24 18	10.9
Wed Jan 13/Thu Jan 14	7 16	17 35	19 02	5 55 7 22	2 17 13 13	.....	18 15	1	20 45.3	-22 11	10.9
Thu Jan 14/Fri Jan 15	7 20	17 36	19 02	5 55 7 22	2 22 13 17	.....	19 19	5	21 40.2	-18 54	10.9
Fri Jan 15/Sat Jan 16	7 24	17 37	19 03	5 55 7 22	2 27 13 20	.....	20 22	11	22 31.5	-14 47	10.9
Sat Jan 16/Sun Jan 17	7 28	17 38	19 04	5 55 7 21	2 31 13 24	.....	21 22	18	23 19.5	-10 07	10.9
Sun Jan 17/Mon Jan 18	7 32	17 39	19 05	5 55 7 21	2 36 13 28	.....	22 20	26	0 05.0	- 5 09	10.8
Mon Jan 18/Tue Jan 19	7 36	17 40	19 06	5 55 7 21	2 41 13 32	.....	23 15	34	0 49.0	- 0 05	10.8
Tue Jan 19/Wed Jan 20	7 40	17 40	19 06	5 55 7 20	2 46 13 35	.....	0 09	44	1 32.5	4 55	10.8
Wed Jan 20/Thu Jan 21	7 44	17 41	19 07	5 54 7 20	2 50 13 39	.....	1 04	53	2 16.3	9 42	10.8
Thu Jan 21/Fri Jan 22	7 48	17 42	19 08	5 54 7 20	2 55 13 43	.....	1 59	62	3 01.4	14 08	10.8
Fri Jan 22/Sat Jan 23	7 52	17 43	19 09	5 54 7 19	3 00 13 46	.....	2 55	71	3 48.6	18 02	10.7
Sat Jan 23/Sun Jan 24	7 56	17 44	19 10	5 53 7 19	3 05 13 50	.....	3 52	80	4 38.4	21 14	10.7
Sun Jan 24/Mon Jan 25	8 00	17 45	19 11	5 53 7 18	3 09 13 54	.....	4 50	87	5 31.2	23 31	10.7
Mon Jan 25/Tue Jan 26	8 04	17 46	19 11	5 53 7 18	3 14 13 57	.....	5 46	93	6 26.6	24 39	10.7
Tue Jan 26/Wed Jan 27	8 08	17 47	19 12	5 52 7 17	3 19 14 01	15 50	6 38	97	7 23.9	24 29	10.7
Wed Jan 27/Thu Jan 28	8 12	17 48	19 13	5 52 7 17	3 24 14 04	16 49	7 27	100	8 21.7	22 55	10.6
Thu Jan 28/Fri Jan 29	8 15	17 49	19 14	5 51 7 16	3 28 14 08	17 53	8 10	100	9 19.0	19 59	10.6
Fri Jan 29/Sat Jan 30	8 19	17 50	19 15	5 51 7 15	3 33 14 11	18 58	.....	97	10 14.7	15 53	10.6
Sat Jan 30/Sun Jan 31	8 23	17 51	19 15	5 50 7 15	3 38 14 15	20 04	.....	92	11 08.7	10 50	10.6
Sun Jan 31/Mon Feb 01	8 27	17 52	19 16	5 50 7 14	3 43 14 18	21 10	.....	85	12 01.2	5 10	10.6

\*\*\*\*\* 2021 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	
Mon Feb 01/Tue Feb 02	8 31	17 53	19 17	5 49 7 13	3 47 14 21	22 15	.....	76	12 52.8	- 0 47	10.5
Tue Feb 02/Wed Feb 03	8 35	17 54	19 18	5 49 7 13	3 52 14 25	23 21	.....	65	13 44.6	- 6 43	10.5
Wed Feb 03/Thu Feb 04	8 39	17 55	19 19	5 48 7 12	3 57 14 28	0 28	.....	54	14 37.4	-12 17	10.5
Thu Feb 04/Fri Feb 05	8 43	17 56	19 19	5 47 7 11	4 02 14 31	1 35	.....	43	15 32.0	-17 11	10.5
Fri Feb 05/Sat Feb 06	8 47	17 56	19 20	5 47 7 10	4 06 14 35	2 43	.....	32	16 28.9	-21 07	10.4
Sat Feb 06/Sun Feb 07	8 51	17 57	19 21	5 46 7 09	4 11 14 38	3 50	.....	22	17 27.8	-23 48	10.4
Sun Feb 07/Mon Feb 08	8 55	17 58	19 22	5 45 7 09	4 16 14 41	4 53	.....	14	18 28.0	-25 03	10.4
Mon Feb 08/Tue Feb 09	8 59	17 59	19 23	5 44 7 08	4 21 14 44	5 50	.....	7	19 27.9	-24 47	10.4
Tue Feb 09/Wed Feb 10	9 03	18 00	19 23	5 44 7 07	4 25 14 47	6 39	15 59	3	20 26.1	-23 06	10.3
Wed Feb 10/Thu Feb 11	9 07	18 01	19 24	5 43 7 06	4 30 14 51	7 22	17 03	0	21 21.5	-20 10	10.3
Thu Feb 11/Fri Feb 12	9 11	18 02	19 25	5 42 7 05	4 35 14 54	7 58	18 06	0	22 13.7	-16 18	10.3
Fri Feb 12/Sat Feb 13	9 15	18 03	19 26	5 41 7 04	4 40 14 57	.....	19 08	3	23 02.7	-11 46	10.3
Sat Feb 13/Sun Feb 14	9 19	18 04	19 27	5 40 7 03	4 44 15 00	.....	20 06	6	23 49.1	- 6 50	10.2
Sun Feb 14/Mon Feb 15	9 22	18 05	19 27	5 40 7 02	4 49 15 03	.....	21 03	12	0 33.7	- 1 44	10.2
Mon Feb 15/Tue Feb 16	9 26	18 05	19 28	5 39 7 01	4 54 15 06	.....	21 59	19	1 17.4	3 21	10.2
Tue Feb 16/Wed Feb 17	9 30	18 06	19 29	5 38 7 00	4 59 15 09	.....	22 53	27	2 01.0	8 15	10.1
Wed Feb 17/Thu Feb 18	9 34	18 07	19 30	5 37 6 59	5 03 15 12	.....	23 48	35	2 45.5	12 49	10.1
Thu Feb 18/Fri Feb 19	9 38	18 08	19 31	5 36 6 58	5 08 15 15	.....	0 44	45	3 31.5	16 53	10.1
Fri Feb 19/Sat Feb 20	9 42	18 09	19 31	5 35 6 57	5 13 15 18	.....	1 40	54	4 19.7	20 19	10.1
Sat Feb 20/Sun Feb 21	9 46	18 10	19 32	5 34 6 56	5 18 15 21	.....	2 37	64	5 10.6	22 54	10.0
Sun Feb 21/Mon Feb 22	9 50	18 11	19 33	5 33 6 55	5 22 15 24	.....	3 33	73	6 04.2	24 27	10.0
Mon Feb 22/Tue Feb 23	9 54	18 11	19 34	5 32 6 54	5 27 15 27	.....	4 27	81	7 00.1	24 47	10.0
Tue Feb 23/Wed Feb 24	9 58	18 12	19 34	5 31 6 53	5 32 15 30	.....	5 17	89	7 57.4	23 46	9.9
Wed Feb 24/Thu Feb 25	10 02	18 13	19 35	5 30 6 52	5 36 15 32	.....	6 03	95	8 55.0	21 21	9.9
Thu Feb 25/Fri Feb 26	10 06	18 14	19 36	5 29 6 50	5 41 15 35	16 40	6 44	98	9 51.9	17 36	9.9
Fri Feb 26/Sat Feb 27	10 10	18 15	19 37	5 27 6 49	5 46 15 38	17 47	7 22	100	10 47.5	12 45	9.8
Sat Feb 27/Sun Feb 28	10 14	18 16	19 37	5 26 6 48	5 51 15 41	18 55	.....	99	11 41.9	7 05	9.8
Sun Feb 28/Mon Mar 01	10 18	18 16	19 38	5 25 6 47	5 55 15 44	20 02	.....	94	12 35.4	0 56	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.

\*\*\*\*\* 2021 MARCH \*\*\*\*\*

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
Mon Mar 01/Tue Mar 02	10 22	18 17	19 39	5 24 6 46	6 00 15 46	21 10	.....	88	13 28.9 - 5 18	9.7
Tue Mar 02/Wed Mar 03	10 26	18 18	19 40	5 23 6 44	6 05 15 49	22 18	.....	79	14 23.0 -11 13	9.7
Wed Mar 03/Thu Mar 04	10 29	18 19	19 41	5 22 6 43	6 09 15 52	23 27	.....	69	15 18.6 -16 28	9.7
Thu Mar 04/Fri Mar 05	10 33	18 20	19 41	5 20 6 42	6 14 15 55	0 36	.....	58	16 16.0 -20 44	9.7
Fri Mar 05/Sat Mar 06	10 37	18 20	19 42	5 19 6 41	6 19 15 57	1 44	.....	47	17 15.1 -23 43	9.6
Sat Mar 06/Sun Mar 07	10 41	18 21	19 43	5 18 6 40	6 23 16 00	2 47	.....	36	18 15.1 -25 15	9.6
Sun Mar 07/Mon Mar 08	10 45	18 22	19 44	5 17 6 38	6 28 16 03	3 45	.....	26	19 14.7 -25 17	9.6
Mon Mar 08/Tue Mar 09	10 49	18 23	19 44	5 15 6 37	6 33 16 05	4 36	.....	17	20 12.6 -23 53	9.5
Tue Mar 09/Wed Mar 10	10 53	18 23	19 45	5 14 6 36	6 38 16 08	5 20	.....	10	21 07.8 -21 14	9.5
Wed Mar 10/Thu Mar 11	10 57	18 24	19 46	5 13 6 35	6 42 16 11	5 57	.....	5	21 59.9 -17 36	9.4
Thu Mar 11/Fri Mar 12	11 01	18 25	19 47	5 11 6 33	6 47 16 13	6 31	16 56	2	22 49.0 -13 14	9.4
Fri Mar 12/Sat Mar 13	11 05	18 26	19 47	5 10 6 32	6 52 16 16	7 00	17 56	0	23 35.6 - 8 23	9.4
Sat Mar 13/Sun Mar 14	11 09	18 26	19 48	5 09 6 31	6 56 16 19	7 28	18 53	1	0 20.3 - 3 17	9.3
Sun Mar 14/Mon Mar 15	11 13	18 27	19 49	5 08 6 29	7 01 16 21	.....	19 49	3	1 04.0 1 51	9.3
Mon Mar 15/Tue Mar 16	11 17	18 28	19 50	5 06 6 28	7 06 16 24	.....	20 44	7	1 47.5 6 51	9.3
Tue Mar 16/Wed Mar 17	11 21	18 29	19 51	5 05 6 27	7 11 16 26	.....	21 39	13	2 31.5 11 33	9.2
Wed Mar 17/Thu Mar 18	11 25	18 29	19 51	5 03 6 25	7 15 16 29	.....	22 35	20	3 16.7 15 48	9.2
Thu Mar 18/Fri Mar 19	11 29	18 30	19 52	5 02 6 24	7 20 16 32	.....	23 31	28	4 03.8 19 26	9.2
Fri Mar 19/Sat Mar 20	11 33	18 31	19 53	5 01 6 23	7 25 16 34	.....	0 27	37	4 53.2 22 17	9.1
Sat Mar 20/Sun Mar 21	11 37	18 31	19 54	4 59 6 22	7 30 16 37	.....	1 23	46	5 44.9 24 11	9.1
Sun Mar 21/Mon Mar 22	11 40	18 32	19 55	4 58 6 20	7 34 16 39	.....	2 17	56	6 38.8 24 56	9.1
Mon Mar 22/Tue Mar 23	11 44	18 33	19 55	4 56 6 19	7 39 16 42	.....	3 07	66	7 34.3 24 26	9.0
Tue Mar 23/Wed Mar 24	11 48	18 34	19 56	4 55 6 18	7 44 16 44	.....	3 54	75	8 30.6 22 36	9.0
Wed Mar 24/Thu Mar 25	11 52	18 34	19 57	4 54 6 16	7 49 16 47	.....	4 37	84	9 26.8 19 26	8.9
Thu Mar 25/Fri Mar 26	11 56	18 35	19 58	4 52 6 15	7 53 16 49	.....	5 15	91	10 22.3 15 02	8.9
Fri Mar 26/Sat Mar 27	12 00	18 36	19 59	4 51 6 14	7 58 16 52	.....	5 51	97	11 17.1 9 38	8.9
Sat Mar 27/Sun Mar 28	12 04	18 36	19 59	4 49 6 12	8 03 16 54	17 40	6 26	100	12 11.5 3 31	8.8
Sun Mar 28/Mon Mar 29	12 08	18 37	20 00	4 48 6 11	8 08 16 57	18 50	7 00	99	13 06.0 - 2 56	8.8
Mon Mar 29/Tue Mar 30	12 12	18 38	20 01	4 47 6 10	8 12 16 59	20 00	.....	96	14 01.5 - 9 17	8.8
Tue Mar 30/Wed Mar 31	12 16	18 39	20 02	4 45 6 08	8 17 17 02	21 11	.....	91	14 58.6 -15 05	8.7
Wed Mar 31/Thu Apr 01	12 20	18 39	20 03	4 44 6 07	8 22 17 04	22 23	.....	82	15 57.8 -19 56	8.7

\*\*\*\*\* 2021 APRIL \*\*\*\*\*

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
Thu Apr 01/Fri Apr 02	12 24	18 40	20 04	4 42 6 06	8 27 17 07	23 34	.....	73	16 58.7 -23 27	8.6
Fri Apr 02/Sat Apr 03	12 28	18 41	20 05	4 41 6 05	8 32 17 09	0 41	.....	62	18 00.5 -25 26	8.6
Sat Apr 03/Sun Apr 04	12 32	18 41	20 05	4 39 6 03	8 36 17 12	1 42	.....	51	19 01.8 -25 48	8.6
Sun Apr 04/Mon Apr 05	12 36	18 42	20 06	4 38 6 02	8 41 17 14	2 35	.....	40	20 01.0 -24 40	8.5
Mon Apr 05/Tue Apr 06	12 40	18 43	20 07	4 36 6 01	8 46 17 17	3 21	.....	30	20 57.0 -22 13	8.5
Tue Apr 06/Wed Apr 07	12 44	18 43	20 08	4 35 5 59	8 51 17 19	4 00	.....	21	21 49.6 -18 44	8.4
Wed Apr 07/Thu Apr 08	12 47	18 44	20 09	4 33 5 58	8 56 17 22	4 33	.....	14	22 38.8 -14 30	8.4
Thu Apr 08/Fri Apr 09	12 51	18 45	20 10	4 32 5 57	9 01 17 24	5 04	.....	8	23 25.3 - 9 45	8.4
Fri Apr 09/Sat Apr 10	12 55	18 46	20 11	4 31 5 56	9 05 17 27	5 31	.....	3	0 09.9 - 4 42	8.3
Sat Apr 10/Sun Apr 11	12 59	18 46	20 12	4 29 5 54	9 10 17 29	5 58	17 42	1	0 53.3 0 26	8.3
Sun Apr 11/Mon Apr 12	13 03	18 47	20 13	4 28 5 53	9 15 17 32	6 26	18 37	0	1 36.5 5 30	8.3
Mon Apr 12/Tue Apr 13	13 07	18 48	20 14	4 26 5 52	9 20 17 34	6 54	19 32	1	2 20.0 10 19	8.2
Tue Apr 13/Wed Apr 14	13 11	18 48	20 14	4 25 5 51	9 25 17 37	.....	20 27	4	3 04.7 14 44	8.2
Wed Apr 14/Thu Apr 15	13 15	18 49	20 15	4 23 5 50	9 30 17 39	.....	21 23	9	3 51.0 18 34	8.1
Thu Apr 15/Fri Apr 16	13 19	18 50	20 16	4 22 5 48	9 35 17 42	.....	22 20	15	4 39.4 21 39	8.1
Fri Apr 16/Sat Apr 17	13 23	18 51	20 17	4 21 5 47	9 40 17 44	.....	23 16	22	5 30.0 23 49	8.1
Sat Apr 17/Sun Apr 18	13 27	18 51	20 18	4 19 5 46	9 45 17 47	.....	0 10	30	6 22.4 24 55	8.0
Sun Apr 18/Mon Apr 19	13 31	18 52	20 19	4 18 5 45	9 49 17 49	.....	1 01	39	7 16.3 24 49	8.0
Mon Apr 19/Tue Apr 20	13 35	18 53	20 20	4 16 5 44	9 54 17 52	.....	1 48	49	8 10.8 23 28	7.9
Tue Apr 20/Wed Apr 21	13 39	18 53	20 21	4 15 5 43	9 59 17 54	.....	2 31	60	9 05.4 20 51	7.9
Wed Apr 21/Thu Apr 22	13 43	18 54	20 22	4 14 5 42	10 04 17 57	.....	3 10	70	9 59.4 17 01	7.9
Thu Apr 22/Fri Apr 23	13 47	18 55	20 23	4 12 5 40	10 09 18 00	.....	3 46	80	10 52.9 12 07	7.8
Fri Apr 23/Sat Apr 24	13 51	18 56	20 24	4 11 5 39	10 14 18 02	.....	4 20	88	11 46.1 6 22	7.8
Sat Apr 24/Sun Apr 25	13 55	18 56	20 25	4 10 5 38	10 19 18 05	.....	4 54	95	12 39.8 0 03	7.7
Sun Apr 25/Mon Apr 26	13 58	18 57	20 26	4 08 5 37	10 24 18 07	17 34	5 29	99	13 34.7 - 6 28	7.7
Mon Apr 26/Tue Apr 27	14 02	18 58	20 27	4 07 5 36	10 29 18 10	18 46	6 06	100	14 31.7 -12 43	7.7
Tue Apr 27/Wed Apr 28	14 06	18 59	20 28	4 06 5 35	10 34 18 13	20 00	.....	98	15 31.4 -18 14	7.6
Wed Apr 28/Thu Apr 29	14 10	18 59	20 29	4 04 5 34	10 39 18 15	21 14	.....	93	16 33.9 -22 32	7.6
Thu Apr 29/Fri Apr 30	14 14	19 00	20 30	4 03 5 33	10 44 18 18	22 26	.....	85	17 38.2 -25 15	7.5
Fri Apr 30/Sat May 01	14 18	19 01	20 31	4 02 5 32	10 49 18 21	23 32	.....	76	18 42.5 -26 13	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.

\*\*\*\*\* 2021 MAY \*\*\*\*\*

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
Sat May 01/Sun May 02	14 22	19 02	20 32	4 00 5 31	10 54 18 23	0 31	.....	66	19 44.8 -25 29	7.5
Sun May 02/Mon May 03	14 26	19 02	20 33	3 59 5 30	10 59 18 26	1 20	.....	55	20 43.6 -23 17	7.4
Mon May 03/Tue May 04	14 30	19 03	20 34	3 58 5 29	11 04 18 29	2 01	.....	45	21 38.2 -19 56	7.4
Tue May 04/Wed May 05	14 34	19 04	20 35	3 57 5 28	11 09 18 31	2 37	.....	35	22 28.8 -15 46	7.4
Wed May 05/Thu May 06	14 38	19 04	20 36	3 56 5 28	11 14 18 34	3 08	.....	25	23 16.1 -11 03	7.3
Thu May 06/Fri May 07	14 42	19 05	20 37	3 54 5 27	11 19 18 37	3 36	.....	17	0 00.9 - 6 01	7.3
Fri May 07/Sat May 08	14 46	19 06	20 38	3 53 5 26	11 24 18 40	4 03	.....	11	0 44.3 - 0 52	7.2
Sat May 08/Sun May 09	14 50	19 07	20 40	3 52 5 25	11 29 18 43	4 29	.....	6	1 27.2 4 14	7.2
Sun May 09/Mon May 10	14 54	19 07	20 41	3 51 5 24	11 34 18 45	4 57	17 27	2	2 10.3 9 07	7.2
Mon May 10/Tue May 11	14 58	19 08	20 42	3 50 5 23	11 39 18 48	5 26	18 22	0	2 54.5 13 39	7.1
Tue May 11/Wed May 12	15 02	19 09	20 43	3 49 5 23	11 44 18 51	5 59	19 17	0	3 40.3 17 39	7.1
Wed May 12/Thu May 13	15 05	19 10	20 44	3 48 5 22	11 49 18 54	6 35	20 14	2	4 28.1 20 56	7.1
Thu May 13/Fri May 14	15 09	19 10	20 45	3 47 5 21	11 54 18 57	.....	21 10	5	5 18.0 23 21	7.0
Fri May 14/Sat May 15	15 13	19 11	20 46	3 46 5 21	11 59 19 00	.....	22 05	10	6 09.8 24 43	7.0
Sat May 15/Sun May 16	15 17	19 12	20 47	3 45 5 20	12 04 19 03	.....	22 57	17	7 02.9 24 56	7.0
Sun May 16/Mon May 17	15 21	19 12	20 48	3 44 5 19	12 08 19 06	.....	23 45	25	7 56.4 23 56	6.9
Mon May 17/Tue May 18	15 25	19 13	20 49	3 43 5 19	12 13 19 09	.....	0 29	34	8 49.8 21 42	6.9
Tue May 18/Wed May 19	15 29	19 14	20 50	3 42 5 18	12 18 19 12	.....	1 08	44	9 42.4 18 20	6.9
Wed May 19/Thu May 20	15 33	19 14	20 51	3 41 5 17	12 23 19 15	.....	1 44	55	10 34.2 13 55	6.8
Thu May 20/Fri May 21	15 37	19 15	20 52	3 40 5 17	12 28 19 18	.....	2 17	66	11 25.5 8 38	6.8
Fri May 21/Sat May 22	15 41	19 16	20 53	3 40 5 16	12 33 19 21	.....	2 50	76	12 17.0 2 42	6.8
Sat May 22/Sun May 23	15 45	19 17	20 54	3 39 5 16	12 38 19 24	.....	3 23	85	13 09.5 - 3 36	6.8
Sun May 23/Mon May 24	15 49	19 17	20 55	3 38 5 15	12 43 19 27	.....	3 58	93	14 04.2 - 9 55	6.7
Mon May 24/Tue May 25	15 53	19 18	20 56	3 37 5 15	12 48 19 31	17 32	4 37	98	15 02.1 -15 50	6.7
Tue May 25/Wed May 26	15 57	19 18	20 56	3 37 5 15	12 53 19 34	18 46	5 22	100	16 03.5 -20 48	6.7
Wed May 26/Thu May 27	16 01	19 19	20 57	3 36 5 14	12 58 19 37	20 01	6 14	99	17 08.2 -24 23	6.6
Thu May 27/Fri May 28	16 05	19 20	20 58	3 35 5 14	13 02 19 41	21 12	.....	95	18 14.7 -26 12	6.6
Fri May 28/Sat May 29	16 09	19 20	20 59	3 35 5 13	13 07 19 44	22 17	.....	88	19 20.4 -26 10	6.6
Sat May 29/Sun May 30	16 13	19 21	21 00	3 34 5 13	13 12 19 47	23 12	.....	80	20 23.1 -24 26	6.6
Sun May 30/Mon May 31	16 16	19 22	21 01	3 34 5 13	13 17 19 51	23 58	.....	70	21 21.3 -21 19	6.5
Mon May 31/Tue Jun 01	16 20	19 22	21 02	3 33 5 13	13 21 19 54	0 37	.....	60	22 14.8 -17 13	6.5

\*\*\*\*\* 2021 JUNE \*\*\*\*\*

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
Tue Jun 01/Wed Jun 02	16 24	19 23	21 02	3 33 5 12	13 26 19 58	1 10	.....	50	23 04.2 -12 30	6.5
Wed Jun 02/Thu Jun 03	16 28	19 23	21 03	3 32 5 12	13 31 20 01	1 40	.....	40	23 50.4 - 7 25	6.5
Thu Jun 03/Fri Jun 04	16 32	19 24	21 04	3 32 5 12	13 36 20 05	2 07	.....	30	0 34.6 - 2 13	6.5
Fri Jun 04/Sat Jun 05	16 36	19 24	21 05	3 31 5 12	13 40 20 08	2 33	.....	22	1 17.7 2 57	6.4
Sat Jun 05/Sun Jun 06	16 40	19 25	21 05	3 31 5 12	13 45 20 12	3 00	.....	15	2 00.8 7 55	6.4
Sun Jun 06/Mon Jun 07	16 44	19 25	21 06	3 31 5 11	13 50 20 15	3 29	.....	9	2 44.6 12 33	6.4
Mon Jun 07/Tue Jun 08	16 48	19 26	21 07	3 31 5 11	13 54 20 19	4 00	.....	4	3 30.0 16 41	6.4
Tue Jun 08/Wed Jun 09	16 52	19 26	21 07	3 30 5 11	13 59 20 23	4 36	18 08	1	4 17.3 20 10	6.4
Wed Jun 09/Thu Jun 10	16 56	19 27	21 08	3 30 5 11	14 03 20 27	5 16	19 05	0	5 06.8 22 47	6.4
Thu Jun 10/Fri Jun 11	17 00	19 27	21 08	3 30 5 11	14 08 20 30	6 01	20 00	1	5 58.3 24 25	6.4
Fri Jun 11/Sat Jun 12	17 04	19 28	21 09	3 30 5 11	14 12 20 34	.....	20 54	3	6 51.3 24 54	6.3
Sat Jun 12/Sun Jun 13	17 08	19 28	21 09	3 30 5 11	14 17 20 38	.....	21 44	7	7 44.8 24 10	6.3
Sun Jun 13/Mon Jun 14	17 12	19 28	21 10	3 30 5 11	14 21 20 42	.....	22 29	13	8 37.9 22 13	6.3
Mon Jun 14/Tue Jun 15	17 16	19 29	21 10	3 30 5 11	14 25 20 46	.....	23 09	21	9 30.1 19 07	6.3
Tue Jun 15/Wed Jun 16	17 20	19 29	21 11	3 30 5 11	14 30 20 50	.....	23 45	30	10 21.1 15 01	6.3
Wed Jun 16/Thu Jun 17	17 23	19 29	21 11	3 30 5 12	14 34 20 54	.....	0 18	40	11 11.1 10 05	6.3
Thu Jun 17/Fri Jun 18	17 27	19 30	21 11	3 30 5 12	14 38 20 58	.....	0 50	51	12 00.8 4 31	6.3
Fri Jun 18/Sat Jun 19	17 31	19 30	21 12	3 30 5 12	14 43 21 02	.....	1 21	62	12 51.0 - 1 29	6.3
Sat Jun 19/Sun Jun 20	17 35	19 30	21 12	3 30 5 12	14 47 21 06	.....	1 54	73	13 42.7 - 7 36	6.3
Sun Jun 20/Mon Jun 21	17 39	19 30	21 12	3 30 5 12	14 51 21 10	.....	2 30	83	14 37.3 -13 31	6.3
Mon Jun 21/Tue Jun 22	17 43	19 31	21 12	3 31 5 13	14 55 21 15	.....	3 11	91	15 35.5 -18 48	6.3
Tue Jun 22/Wed Jun 23	17 47	19 31	21 13	3 31 5 13	14 59 21 19	17 35	3 58	97	16 37.7 -23 00	6.3
Wed Jun 23/Thu Jun 24	17 51	19 31	21 13	3 31 5 13	15 03 21 23	18 48	4 54	100	17 43.3 -25 39	6.3
Thu Jun 24/Fri Jun 25	17 55	19 31	21 13	3 32 5 13	15 07 21 27	19 56	5 57	100	18 50.1 -26 29	6.3
Fri Jun 25/Sat Jun 26	17 59	19 31	21 13	3 32 5 14	15 11 21 32	20 57	.....	97	19 55.6 -25 27	6.3
Sat Jun 26/Sun Jun 27	18 03	19 31	21 13	3 32 5 14	15 15 21 36	21 49	.....	91	20 57.5 -22 48	6.3
Sun Jun 27/Mon Jun 28	18 07	19 31	21 13	3 33 5 14	15 19 21 40	22 32	.....	84	21 54.6 -18 55	6.3
Mon Jun 28/Tue Jun 29	18 11	19 31	21 13	3 33 5 15	15 23 21 45	23 09	.....	75	22 47.1 -14 14	6.3
Tue Jun 29/Wed Jun 30	18 15	19 31	21 13	3 34 5 15	15 27 21 49	23 40	.....	65	23 35.8 - 9 05	6.4
Wed Jun 30/Thu Jul 01	18 19	19 31	21 13	3 34 5 16	15 31 21 54	0 09	.....	55	0 21.6 - 3 46	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.

\*\*\*\*\* 2021 JULY \*\*\*\*\*

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
Thu Jul 01/Fri Jul 02		18 23	19 31	21 12	3 35	5 16	15 35	21 58	0 36	.....	46	1 05.8	1 32	6.4
Fri Jul 02/Sat Jul 03		18 27	19 31	21 12	3 36	5 16	15 38	22 03	1 03	.....	36	1 49.4	6 39	6.4
Sat Jul 03/Sun Jul 04		18 30	19 31	21 12	3 36	5 17	15 42	22 07	1 31	.....	27	2 33.3	11 25	6.4
Sun Jul 04/Mon Jul 05		18 34	19 31	21 12	3 37	5 17	15 46	22 12	2 01	.....	19	3 18.5	15 43	6.4
Mon Jul 05/Tue Jul 06		18 38	19 31	21 11	3 37	5 18	15 49	22 16	2 35	.....	12	4 05.4	19 22	6.4
Tue Jul 06/Wed Jul 07		18 42	19 31	21 11	3 38	5 18	15 53	22 21	3 13	.....	7	4 54.5	22 13	6.5
Wed Jul 07/Thu Jul 08		18 46	19 31	21 11	3 39	5 19	15 56	22 26	3 57	17 54	3	5 45.7	24 05	6.5
Thu Jul 08/Fri Jul 09		18 50	19 30	21 10	3 40	5 19	16 00	22 30	4 47	18 48	1	6 38.7	24 50	6.5
Fri Jul 09/Sat Jul 10		18 54	19 30	21 10	3 40	5 20	16 03	22 35	5 42	19 40	0	7 32.5	24 22	6.5
Sat Jul 10/Sun Jul 11		18 58	19 30	21 09	3 41	5 20	16 07	22 40	.....	20 27	2	8 26.1	22 40	6.5
Sun Jul 11/Mon Jul 12		19 02	19 30	21 09	3 42	5 21	16 10	22 45	.....	21 09	5	9 18.9	19 47	6.6
Mon Jul 12/Tue Jul 13		19 06	19 29	21 08	3 43	5 22	16 14	22 49	.....	21 47	11	10 10.2	15 52	6.6
Tue Jul 13/Wed Jul 14		19 10	19 29	21 08	3 44	5 22	16 17	22 54	.....	22 21	18	11 00.2	11 06	6.6
Wed Jul 14/Thu Jul 15		19 14	19 29	21 07	3 44	5 23	16 20	22 59	.....	22 53	27	11 49.3	5 42	6.6
Thu Jul 15/Fri Jul 16		19 18	19 28	21 06	3 45	5 23	16 24	23 04	.....	23 23	37	12 38.3	- 0 06	6.6
Fri Jul 16/Sat Jul 17		19 22	19 28	21 06	3 46	5 24	16 27	23 09	.....	23 55	48	13 28.2	- 6 04	6.7
Sat Jul 17/Sun Jul 18		19 26	19 27	21 05	3 47	5 25	16 30	23 13	.....	0 28	59	14 20.1	-11 52	6.7
Sun Jul 18/Mon Jul 19		19 30	19 27	21 04	3 48	5 25	16 33	23 18	.....	1 05	70	15 15.0	-17 12	6.7
Mon Jul 19/Tue Jul 20		19 34	19 26	21 03	3 49	5 26	16 36	23 23	.....	1 49	81	16 13.8	-21 40	6.8
Tue Jul 20/Wed Jul 21		19 38	19 26	21 03	3 50	5 27	16 40	23 28	.....	2 39	89	17 16.3	-24 50	6.8
Wed Jul 21/Thu Jul 22		19 41	19 25	21 02	3 51	5 27	16 43	23 33	17 37	3 38	95	18 21.4	-26 22	6.8
Thu Jul 22/Fri Jul 23		19 45	19 25	21 01	3 52	5 28	16 46	23 38	18 41	4 43	99	19 26.9	-26 06	6.8
Fri Jul 23/Sat Jul 24		19 49	19 24	21 00	3 53	5 28	16 49	23 43	19 36	5 52	100	20 30.5	-24 06	6.9
Sat Jul 24/Sun Jul 25		19 53	19 23	20 59	3 54	5 29	16 52	23 47	20 24	.....	98	21 30.2	-20 39	6.9
Sun Jul 25/Mon Jul 26		19 57	19 23	20 58	3 55	5 30	16 55	23 52	21 04	.....	94	22 25.5	-16 10	6.9
Mon Jul 26/Tue Jul 27		20 01	19 22	20 57	3 55	5 30	16 58	23 57	21 38	.....	87	23 16.7	-11 01	7.0
Tue Jul 27/Wed Jul 28		20 05	19 21	20 56	3 56	5 31	17 01	0 02	22 08	.....	80	0 04.7	- 5 35	7.0
Wed Jul 28/Thu Jul 29		20 09	19 21	20 55	3 57	5 32	17 04	0 07	22 36	.....	71	0 50.4	- 0 06	7.0
Thu Jul 29/Fri Jul 30		20 13	19 20	20 54	3 58	5 32	17 06	0 12	23 04	.....	62	1 35.0	5 12	7.1
Fri Jul 30/Sat Jul 31		20 17	19 19	20 53	3 59	5 33	17 09	0 17	23 32	.....	52	2 19.5	10 11	7.1
Sat Jul 31/Sun Aug 01		20 21	19 18	20 52	4 00	5 34	17 12	0 22	0 01	.....	42	3 04.8	14 41	7.1

\*\*\*\*\* 2021 AUGUST \*\*\*\*\*

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
Sun Aug 01/Mon Aug 02		20 25	19 17	20 51	4 01	5 35	17 15	0 27	0 33	.....	33	3 51.5	18 34	7.2
Mon Aug 02/Tue Aug 03		20 29	19 17	20 49	4 02	5 35	17 18	0 32	1 10	.....	25	4 40.2	21 40	7.2
Tue Aug 03/Wed Aug 04		20 33	19 16	20 48	4 03	5 36	17 21	0 37	1 52	.....	17	5 31.0	23 49	7.3
Wed Aug 04/Thu Aug 05		20 37	19 15	20 47	4 04	5 37	17 23	0 42	2 39	.....	10	6 23.6	24 52	7.3
Thu Aug 05/Fri Aug 06		20 41	19 14	20 46	4 05	5 37	17 26	0 47	3 33	17 33	5	7 17.5	24 42	7.3
Fri Aug 06/Sat Aug 07		20 45	19 13	20 45	4 06	5 38	17 29	0 52	4 31	18 22	2	8 11.7	23 17	7.4
Sat Aug 07/Sun Aug 08		20 48	19 12	20 43	4 07	5 39	17 31	0 56	5 33	19 07	0	9 05.3	20 38	7.4
Sun Aug 08/Mon Aug 09		20 52	19 11	20 42	4 08	5 39	17 34	1 01	6 36	19 46	1	9 57.6	16 53	7.4
Mon Aug 09/Tue Aug 10		20 56	19 10	20 41	4 09	5 40	17 37	1 06	.....	20 22	3	10 48.4	12 13	7.5
Tue Aug 10/Wed Aug 11		21 00	19 09	20 40	4 10	5 41	17 39	1 11	.....	20 55	8	11 38.2	6 51	7.5
Wed Aug 11/Thu Aug 12		21 04	19 08	20 38	4 11	5 41	17 42	1 16	.....	21 26	15	12 27.4	1 04	7.5
Thu Aug 12/Fri Aug 13		21 08	19 07	20 37	4 12	5 42	17 45	1 21	.....	21 57	24	13 17.0	- 4 54	7.6
Fri Aug 13/Sat Aug 14		21 12	19 06	20 36	4 13	5 43	17 47	1 26	.....	22 30	34	14 07.9	-10 43	7.6
Sat Aug 14/Sun Aug 15		21 16	19 05	20 34	4 14	5 43	17 50	1 31	.....	23 05	45	15 01.2	-16 06	7.7
Sun Aug 15/Mon Aug 16		21 20	19 04	20 33	4 15	5 44	17 53	1 36	.....	23 45	57	15 57.6	-20 42	7.7
Mon Aug 16/Tue Aug 17		21 24	19 03	20 32	4 16	5 45	17 55	1 41	.....	0 32	68	16 57.3	-24 08	7.7
Tue Aug 17/Wed Aug 18		21 28	19 02	20 30	4 17	5 45	17 58	1 46	.....	1 26	78	17 59.8	-26 07	7.8
Wed Aug 18/Thu Aug 19		21 32	19 01	20 29	4 18	5 46	18 00	1 50	.....	2 28	87	19 03.6	-26 25	7.8
Thu Aug 19/Fri Aug 20		21 36	19 00	20 28	4 19	5 47	18 03	1 55	17 26	3 34	94	20 06.5	-25 01	7.9
Fri Aug 20/Sat Aug 21		21 40	18 58	20 26	4 20	5 47	18 05	2 00	18 16	4 41	98	21 06.7	-22 06	7.9
Sat Aug 21/Sun Aug 22		21 44	18 57	20 25	4 21	5 48	18 08	2 05	18 58	5 48	100	22 03.2	-17 58	7.9
Sun Aug 22/Mon Aug 23		21 48	18 56	20 23	4 22	5 49	18 10	2 10	19 34	6 52	99	22 56.0	-13 00	8.0
Mon Aug 23/Tue Aug 24		21 52	18 55	20 22	4 22	5 49	18 13	2 15	20 06	.....	96	23 45.4	- 7 34	8.0
Tue Aug 24/Wed Aug 25		21 56	18 54	20 20	4 23	5 50	18 15	2 20	20 35	.....	91	0 32.5	- 1 58	8.0
Wed Aug 25/Thu Aug 26		21 59	18 52	20 19	4 24	5 51	18 18	2 24	21 03	.....	85	1 18.2	3 33	8.1
Thu Aug 26/Fri Aug 27		22 03	18 51	20 17	4 25	5 51	18 20	2 29	21 31	.....	77	2 03.4	8 47	8.1
Fri Aug 27/Sat Aug 28		22 07	18 50	20 16	4 26	5 52	18 23	2 34	22 00	.....	68	2 49.0	13 33	8.2
Sat Aug 28/Sun Aug 29		22 11	18 49	20 15	4 27	5 53	18 25	2 39	22 31	.....	59	3 35.7	17 43	8.2
Sun Aug 29/Mon Aug 30		22 15	18 48	20 13	4 28	5 53	18 28	2 44	23 06	.....	49	4 24.1	21 06	8.2
Mon Aug 30/Tue Aug 31		22 19	18 46	20 12	4 29	5 54	18 30	2 48	23 45	.....	40	5 14.4	23 34	8.3
Tue Aug 31/Wed Sep 01		22 23	18 45	20 10	4 29	5 55	18 33	2 53	0 30	.....	31	6 06.6	24 58	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.

\*\*\*\*\* 2021 SEPTEMBER \*\*\*\*\*

Date (eve/morn)		LMST midn	Sun: -----				LST twilight:		Moon: -----				Twi-Twi hours	
			set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Wed Sep 01/Thu Sep 02		22 27	18 44	20 09	4 30	5 55	18 35	2 58	1 21	.....	22	7 00.1	25 10	8.4
Thu Sep 02/Fri Sep 03		22 31	18 42	20 07	4 31	5 56	18 38	3 03	2 18	.....	15	7 54.3	24 08	8.4
Fri Sep 03/Sat Sep 04		22 35	18 41	20 06	4 32	5 56	18 40	3 08	3 19	17 01	8	8 48.2	21 49	8.4
Sat Sep 04/Sun Sep 05		22 39	18 40	20 04	4 33	5 57	18 42	3 12	4 22	17 42	4	9 41.2	18 21	8.5
Sun Sep 05/Mon Sep 06		22 43	18 39	20 03	4 33	5 58	18 45	3 17	5 26	18 20	1	10 33.0	13 50	8.5
Mon Sep 06/Tue Sep 07		22 47	18 37	20 01	4 34	5 58	18 47	3 22	6 31	18 54	0	11 23.7	8 32	8.6
Tue Sep 07/Wed Sep 08		22 51	18 36	20 00	4 35	5 59	18 50	3 27	.....	19 26	2	12 13.8	2 41	8.6
Wed Sep 08/Thu Sep 09		22 55	18 35	19 58	4 36	6 00	18 52	3 31	.....	19 58	6	13 04.1	- 3 25	8.6
Thu Sep 09/Fri Sep 10		22 59	18 33	19 57	4 37	6 00	18 55	3 36	.....	20 30	13	13 55.4	- 9 26	8.7
Fri Sep 10/Sat Sep 11		23 03	18 32	19 55	4 37	6 01	18 57	3 41	.....	21 05	22	14 48.7	-15 02	8.7
Sat Sep 11/Sun Sep 12		23 06	18 31	19 54	4 38	6 02	19 00	3 45	.....	21 44	32	15 44.6	-19 52	8.7
Sun Sep 12/Mon Sep 13		23 10	18 29	19 52	4 39	6 02	19 02	3 50	.....	22 29	43	16 43.4	-23 35	8.8
Mon Sep 13/Tue Sep 14		23 14	18 28	19 51	4 40	6 03	19 05	3 55	.....	23 21	54	17 44.6	-25 53	8.8
Tue Sep 14/Wed Sep 15		23 18	18 27	19 49	4 41	6 03	19 07	4 00	.....	0 19	65	18 47.0	-26 35	8.9
Wed Sep 15/Thu Sep 16		23 22	18 25	19 48	4 41	6 04	19 10	4 04	.....	1 23	76	19 48.8	-25 37	8.9
Thu Sep 16/Fri Sep 17		23 26	18 24	19 46	4 42	6 05	19 12	4 09	.....	2 29	84	20 48.4	-23 08	8.9
Fri Sep 17/Sat Sep 18		23 30	18 22	19 45	4 43	6 05	19 14	4 14	16 56	3 35	91	21 44.7	-19 24	9.0
Sat Sep 18/Sun Sep 19		23 34	18 21	19 44	4 43	6 06	19 17	4 18	17 33	4 39	96	22 37.6	-14 43	9.0
Sun Sep 19/Mon Sep 20		23 38	18 20	19 42	4 44	6 07	19 19	4 23	18 06	5 40	99	23 27.5	- 9 26	9.0
Mon Sep 20/Tue Sep 21		23 42	18 18	19 41	4 45	6 07	19 22	4 28	18 35	6 39	100	0 15.0	- 3 50	9.1
Tue Sep 21/Wed Sep 22		23 46	18 17	19 39	4 46	6 08	19 24	4 32	19 03	.....	98	1 01.1	1 48	9.1
Wed Sep 22/Thu Sep 23		23 50	18 16	19 38	4 46	6 09	19 27	4 37	19 31	.....	95	1 46.6	7 14	9.1
Thu Sep 23/Fri Sep 24		23 54	18 14	19 36	4 47	6 09	19 29	4 42	19 59	.....	89	2 32.4	12 16	9.2
Fri Sep 24/Sat Sep 25		23 58	18 13	19 35	4 48	6 10	19 32	4 46	20 29	.....	83	3 19.1	16 43	9.2
Sat Sep 25/Sun Sep 26		0 02	18 12	19 34	4 49	6 11	19 35	4 51	21 03	.....	75	4 07.3	20 26	9.2
Sun Sep 26/Mon Sep 27		0 06	18 10	19 32	4 49	6 11	19 37	4 56	21 40	.....	66	4 57.3	23 15	9.3
Mon Sep 27/Tue Sep 28		0 10	18 09	19 31	4 50	6 12	19 40	5 00	22 22	.....	57	5 49.0	25 01	9.3
Tue Sep 28/Wed Sep 29		0 13	18 08	19 29	4 51	6 13	19 42	5 05	23 11	.....	47	6 42.0	25 38	9.4
Wed Sep 29/Thu Sep 30		0 17	18 06	19 28	4 51	6 13	19 45	5 10	0 04	.....	38	7 35.7	25 00	9.4
Thu Sep 30/Fri Oct 01		0 21	18 05	19 27	4 52	6 14	19 47	5 14	1 02	.....	28	8 29.3	23 07	9.4

\*\*\*\*\* 2021 OCTOBER \*\*\*\*\*

Date (eve/morn)		LMST midn	Sun: -----				LST twilight:		Moon: -----				Twi-Twi hours	
			set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Fri Oct 01/Sat Oct 02		0 25	18 04	19 25	4 53	6 15	19 50	5 19	2 04	.....	20	9 22.3	20 03	9.5
Sat Oct 02/Sun Oct 03		0 29	18 02	19 24	4 53	6 15	19 53	5 24	3 08	.....	12	10 14.2	15 53	9.5
Sun Oct 03/Mon Oct 04		0 33	18 01	19 23	4 54	6 16	19 55	5 28	4 13	16 50	6	11 05.2	10 48	9.5
Mon Oct 04/Tue Oct 05		0 37	18 00	19 21	4 55	6 17	19 58	5 33	5 18	17 23	2	11 55.8	5 02	9.6
Tue Oct 05/Wed Oct 06		0 41	17 58	19 20	4 56	6 17	20 00	5 37	6 25	17 55	0	12 46.5	- 1 09	9.6
Wed Oct 06/Thu Oct 07		0 45	17 57	19 19	4 56	6 18	20 03	5 42	7 34	18 28	1	13 38.4	- 7 24	9.6
Thu Oct 07/Fri Oct 08		0 49	17 56	19 18	4 57	6 19	20 06	5 47	.....	19 02	5	14 32.1	-13 21	9.7
Fri Oct 08/Sat Oct 09		0 53	17 55	19 16	4 58	6 19	20 09	5 51	.....	19 41	11	15 28.6	-18 37	9.7
Sat Oct 09/Sun Oct 10		0 57	17 53	19 15	4 58	6 20	20 11	5 56	.....	20 25	19	16 27.9	-22 47	9.7
Sun Oct 10/Mon Oct 11		1 01	17 52	19 14	4 59	6 21	20 14	6 01	.....	21 15	29	17 29.7	-25 32	9.8
Mon Oct 11/Tue Oct 12		1 05	17 51	19 13	5 00	6 22	20 17	6 05	.....	22 13	40	18 32.5	-26 37	9.8
Tue Oct 12/Wed Oct 13		1 09	17 50	19 12	5 00	6 22	20 19	6 10	.....	23 15	51	19 34.6	-26 02	9.8
Wed Oct 13/Thu Oct 14		1 13	17 48	19 10	5 01	6 23	20 22	6 15	.....	0 21	62	20 34.4	-23 53	9.8
Thu Oct 14/Fri Oct 15		1 17	17 47	19 09	5 02	6 24	20 25	6 19	.....	1 27	72	21 30.7	-20 27	9.9
Fri Oct 15/Sat Oct 16		1 21	17 46	19 08	5 03	6 25	20 28	6 24	.....	2 30	81	22 23.4	-16 02	9.9
Sat Oct 16/Sun Oct 17		1 24	17 45	19 07	5 03	6 25	20 31	6 29	.....	3 31	89	23 13.1	-10 57	9.9
Sun Oct 17/Mon Oct 18		1 28	17 44	19 06	5 04	6 26	20 33	6 33	16 38	4 30	94	0 00.3	- 5 28	10.0
Mon Oct 18/Tue Oct 19		1 32	17 43	19 05	5 05	6 27	20 36	6 38	17 06	5 28	98	0 46.1	0 08	10.0
Tue Oct 19/Wed Oct 20		1 36	17 41	19 04	5 05	6 28	20 39	6 43	17 33	6 25	100	1 31.3	5 39	10.0
Wed Oct 20/Thu Oct 21		1 40	17 40	19 03	5 06	6 28	20 42	6 47	18 00	7 22	100	2 16.8	10 52	10.1
Thu Oct 21/Fri Oct 22		1 44	17 39	19 02	5 07	6 29	20 45	6 52	18 29	.....	97	3 03.2	15 34	10.1
Fri Oct 22/Sat Oct 23		1 48	17 38	19 01	5 08	6 30	20 48	6 56	19 01	.....	93	3 51.2	19 36	10.1
Sat Oct 23/Sun Oct 24		1 52	17 37	19 00	5 08	6 31	20 51	7 01	19 37	.....	88	4 40.9	22 46	10.1
Sun Oct 24/Mon Oct 25		1 56	17 36	18 59	5 09	6 32	20 54	7 06	20 17	.....	81	5 32.3	24 54	10.2
Mon Oct 25/Tue Oct 26		2 00	17 35	18 58	5 10	6 33	20 57	7 10	21 03	.....	73	6 25.1	25 54	10.2
Tue Oct 26/Wed Oct 27		2 04	17 34	18 57	5 10	6 33	21 00	7 15	21 54	.....	64	7 18.4	25 41	10.2
Wed Oct 27/Thu Oct 28		2 08	17 33	18 56	5 11	6 34	21 03	7 20	22 50	.....	55	8 11.6	24 14	10.3
Thu Oct 28/Fri Oct 29		2 12	17 32	18 55	5 12	6 35	21 06	7 25	23 49	.....	45	9 04.0	21 35	10.3
Fri Oct 29/Sat Oct 30		2 16	17 31	18 54	5 13	6 36	21 09	7 29	0 50	.....	35	9 55.4	17 51	10.3
Sat Oct 30/Sun Oct 31		2 20	17 30	18 53	5 13	6 37	21 12	7 34	1 53	.....	25	10 45.8	13 09	10.3
Sun Oct 31/Mon Nov 01		2 24	17 29	18 53	5 14	6 38	21 15	7 39	2 57	.....	16	11 35.6	7 41	10.4

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.

\*\*\*\*\* 2021 NOVEMBER \*\*\*\*\*

Date (eve/morn)	LMST midn	Sun: -----				LST twilight:		Moon: -----					Twi-Twi hours
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Mon Nov 01/Tue Nov 02	2 28	17 28	18 52	5 15	6 38	21 18	7 43	4 02	.....	9	12 25.6	1 40	10.4
Tue Nov 02/Wed Nov 03	2 31	17 27	18 51	5 16	6 39	21 22	7 48	5 10	16 23	4	13 16.8	- 4 37	10.4
Wed Nov 03/Thu Nov 04	2 35	17 27	18 50	5 16	6 40	21 25	7 53	6 20	16 56	1	14 10.0	-10 50	10.4
Thu Nov 04/Fri Nov 05	2 39	17 26	18 50	5 17	6 41	21 28	7 57	7 34	17 33	0	15 06.3	-16 33	10.5
Fri Nov 05/Sat Nov 06	2 43	17 25	18 49	5 18	6 42	21 31	8 02	.....	18 15	3	16 05.9	-21 20	10.5
Sat Nov 06/Sun Nov 07	2 47	17 24	18 48	5 19	6 43	21 35	8 07	.....	19 04	8	17 08.7	-24 43	10.5
Sun Nov 07/Mon Nov 08	2 51	17 23	18 48	5 19	6 44	21 38	8 11	.....	20 01	16	18 13.3	-26 26	10.5
Mon Nov 08/Tue Nov 09	2 55	17 23	18 47	5 20	6 45	21 41	8 16	.....	21 04	25	19 17.6	-26 20	10.6
Tue Nov 09/Wed Nov 10	2 59	17 22	18 46	5 21	6 45	21 45	8 21	.....	22 11	36	20 19.3	-24 33	10.6
Wed Nov 10/Thu Nov 11	3 03	17 21	18 46	5 22	6 46	21 48	8 26	.....	23 18	47	21 17.2	-21 22	10.6
Thu Nov 11/Fri Nov 12	3 07	17 21	18 45	5 22	6 47	21 51	8 30	.....	0 24	57	22 11.0	-17 08	10.6
Fri Nov 12/Sat Nov 13	3 11	17 20	18 45	5 23	6 48	21 55	8 35	.....	1 26	68	23 01.0	-12 12	10.6
Sat Nov 13/Sun Nov 14	3 15	17 19	18 44	5 24	6 49	21 58	8 40	.....	2 25	77	23 48.3	- 6 50	10.7
Sun Nov 14/Mon Nov 15	3 19	17 19	18 44	5 25	6 50	22 02	8 44	.....	3 22	85	0 33.8	- 1 18	10.7
Mon Nov 15/Tue Nov 16	3 23	17 18	18 43	5 26	6 51	22 05	8 49	.....	4 19	91	1 18.4	4 13	10.7
Tue Nov 16/Wed Nov 17	3 27	17 18	18 43	5 26	6 52	22 09	8 54	16 03	5 15	96	2 03.3	9 29	10.7
Wed Nov 17/Thu Nov 18	3 31	17 17	18 43	5 27	6 53	22 12	8 59	16 32	6 11	99	2 49.0	14 21	10.7
Thu Nov 18/Fri Nov 19	3 35	17 17	18 42	5 28	6 54	22 16	9 03	17 02	7 08	100	3 36.4	18 37	10.8
Fri Nov 19/Sat Nov 20	3 39	17 16	18 42	5 29	6 54	22 20	9 08	17 36	8 05	99	4 25.7	22 04	10.8
Sat Nov 20/Sun Nov 21	3 42	17 16	18 42	5 29	6 55	22 23	9 13	18 15	.....	97	5 16.9	24 33	10.8
Sun Nov 21/Mon Nov 22	3 46	17 15	18 41	5 30	6 56	22 27	9 17	18 59	.....	92	6 09.6	25 55	10.8
Mon Nov 22/Tue Nov 23	3 50	17 15	18 41	5 31	6 57	22 31	9 22	19 48	.....	87	7 03.0	26 03	10.8
Tue Nov 23/Wed Nov 24	3 54	17 15	18 41	5 32	6 58	22 34	9 27	20 42	.....	79	7 56.3	24 58	10.8
Wed Nov 24/Thu Nov 25	3 58	17 15	18 41	5 32	6 59	22 38	9 32	21 39	.....	71	8 48.6	22 41	10.9
Thu Nov 25/Fri Nov 26	4 02	17 14	18 41	5 33	7 00	22 42	9 36	22 38	.....	62	9 39.6	19 18	10.9
Fri Nov 26/Sat Nov 27	4 06	17 14	18 41	5 34	7 01	22 46	9 41	23 39	.....	52	10 29.2	15 00	10.9
Sat Nov 27/Sun Nov 28	4 10	17 14	18 40	5 35	7 02	22 50	9 46	0 40	.....	41	11 17.9	9 54	10.9
Sun Nov 28/Mon Nov 29	4 14	17 14	18 40	5 35	7 02	22 54	9 50	1 42	.....	31	12 06.4	4 13	10.9
Mon Nov 29/Tue Nov 30	4 18	17 13	18 40	5 36	7 03	22 57	9 55	2 47	.....	21	12 55.7	- 1 52	10.9
Tue Nov 30/Wed Dec 01	4 22	17 13	18 40	5 37	7 04	23 01	10 00	3 54	.....	13	13 46.8	- 8 02	10.9

\*\*\*\*\* 2021 DECEMBER \*\*\*\*\*

Date (eve/morn)	LMST midn	Sun: -----				LST twilight:		Moon: -----					Twi-Twi hours
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Wed Dec 01/Thu Dec 02	4 26	17 13	18 40	5 38	7 05	23 05	10 04	5 05	.....	6	14 40.9	-13 57	11.0
Thu Dec 02/Fri Dec 03	4 30	17 13	18 40	5 38	7 06	23 09	10 09	6 19	16 03	2	15 38.9	-19 13	11.0
Fri Dec 03/Sat Dec 04	4 34	17 13	18 41	5 39	7 07	23 13	10 14	7 35	16 48	0	16 41.0	-23 18	11.0
Sat Dec 04/Sun Dec 05	4 38	17 13	18 41	5 40	7 07	23 17	10 18	.....	17 42	1	17 46.2	-25 49	11.0
Sun Dec 05/Mon Dec 06	4 42	17 13	18 41	5 41	7 08	23 21	10 23	.....	18 44	6	18 52.6	-26 28	11.0
Mon Dec 06/Tue Dec 07	4 46	17 13	18 41	5 41	7 09	23 26	10 28	.....	19 53	12	19 57.5	-25 15	11.0
Tue Dec 07/Wed Dec 08	4 49	17 13	18 41	5 42	7 10	23 30	10 32	.....	21 03	21	20 58.6	-22 26	11.0
Wed Dec 08/Thu Dec 09	4 53	17 14	18 41	5 43	7 10	23 34	10 37	.....	22 12	31	21 55.2	-18 23	11.0
Thu Dec 09/Fri Dec 10	4 57	17 14	18 42	5 43	7 11	23 38	10 42	.....	23 17	41	22 47.3	-13 31	11.0
Fri Dec 10/Sat Dec 11	5 01	17 14	18 42	5 44	7 12	23 42	10 46	.....	0 18	52	23 35.8	- 8 11	11.0
Sat Dec 11/Sun Dec 12	5 05	17 14	18 42	5 45	7 13	23 46	10 51	.....	1 17	62	0 21.9	- 2 38	11.0
Sun Dec 12/Mon Dec 13	5 09	17 14	18 42	5 45	7 13	23 51	10 55	.....	2 13	71	1 06.6	2 53	11.0
Mon Dec 13/Tue Dec 14	5 13	17 15	18 43	5 46	7 14	23 55	11 00	.....	3 09	79	1 51.0	8 13	11.1
Tue Dec 14/Wed Dec 15	5 17	17 15	18 43	5 46	7 15	23 59	11 04	.....	4 05	87	2 36.1	13 10	11.1
Wed Dec 15/Thu Dec 16	5 21	17 15	18 43	5 47	7 15	0 04	11 09	.....	5 02	93	3 22.7	17 34	11.1
Thu Dec 16/Fri Dec 17	5 25	17 16	18 44	5 48	7 16	0 08	11 14	15 37	5 59	97	4 11.2	21 15	11.1
Fri Dec 17/Sat Dec 18	5 29	17 16	18 44	5 48	7 16	0 12	11 18	16 14	6 56	99	5 01.9	24 01	11.1
Sat Dec 18/Sun Dec 19	5 33	17 16	18 45	5 49	7 17	0 17	11 23	16 56	7 50	100	5 54.4	25 42	11.1
Sun Dec 19/Mon Dec 20	5 37	17 17	18 45	5 49	7 17	0 21	11 27	17 44	.....	99	6 48.1	26 11	11.1
Mon Dec 20/Tue Dec 21	5 41	17 17	18 46	5 50	7 18	0 25	11 31	18 36	.....	96	7 41.9	25 24	11.1
Tue Dec 21/Wed Dec 22	5 45	17 18	18 46	5 50	7 18	0 30	11 36	19 33	.....	91	8 34.9	23 24	11.1
Wed Dec 22/Thu Dec 23	5 49	17 18	18 47	5 51	7 19	0 34	11 40	20 31	.....	85	9 26.4	20 17	11.1
Thu Dec 23/Fri Dec 24	5 53	17 19	18 47	5 51	7 19	0 39	11 45	21 31	.....	77	10 16.1	16 13	11.1
Fri Dec 24/Sat Dec 25	5 57	17 19	18 48	5 52	7 20	0 43	11 49	22 31	.....	68	11 04.4	11 21	11.1
Sat Dec 25/Sun Dec 26	6 00	17 20	18 48	5 52	7 20	0 48	11 53	23 31	.....	58	11 51.9	5 55	11.1
Sun Dec 26/Mon Dec 27	6 04	17 21	18 49	5 52	7 21	0 52	11 58	0 32	.....	47	12 39.6	0 06	11.1
Mon Dec 27/Tue Dec 28	6 08	17 21	18 49	5 53	7 21	0 57	12 02	1 36	.....	36	13 28.4	- 5 53	11.1
Tue Dec 28/Wed Dec 29	6 12	17 22	18 50	5 53	7 21	1 01	12 06	2 42	.....	26	14 19.6	-11 45	11.1
Wed Dec 29/Thu Dec 30	6 16	17 23	18 51	5 53	7 21	1 06	12 11	3 52	.....	17	15 14.4	-17 09	11.0
Thu Dec 30/Fri Dec 31	6 20	17 23	18 51	5 54	7 22	1 11	12 15	5 06	.....	9	16 13.4	-21 40	11.0
Fri Dec 31/Sat Jan 01	6 24	17 24	18 52	5 54	7 22	1 15	12 19	6 19	.....	3	17 16.5	-24 52	11.0