

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 DCT *****

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 DCT

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 DCT, west longitude (h.m.s) = 7 25 41, latitude (d.m) = 34 44.7
 Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, 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 21	17 30	18 56	6 03 7 29	1 16 12 25	.....	3 54 81	3 06.5	18 03	11.1
Mon Jan 02/Tue Jan 03	6 25	17 30	18 56	6 03 7 29	1 21 12 29	.....	4 56 88	3 56.9	22 05	11.1
Tue Jan 03/Wed Jan 04	6 29	17 31	18 57	6 04 7 30	1 25 12 33	.....	5 56 93	4 49.2	25 04	11.1
Wed Jan 04/Thu Jan 05	6 33	17 32	18 58	6 04 7 30	1 30 12 38	.....	6 53 97	5 43.1	26 49	11.1
Thu Jan 05/Fri Jan 06	6 37	17 33	18 59	6 04 7 30	1 35 12 42	16 17	7 44 99	6 37.6	27 17	11.1
Fri Jan 06/Sat Jan 07	6 41	17 34	18 59	6 04 7 30	1 39 12 46	17 10	..... 100	7 31.5	26 25	11.1
Sat Jan 07/Sun Jan 08	6 45	17 34	19 00	6 04 7 30	1 44 12 50	18 07	..... 98	8 23.9	24 19	11.1
Sun Jan 08/Mon Jan 09	6 49	17 35	19 01	6 04 7 30	1 49 12 54	19 05	..... 95	9 14.0	21 09	11.1
Mon Jan 09/Tue Jan 10	6 53	17 36	19 02	6 04 7 30	1 53 12 58	20 04	..... 90	10 01.8	17 06	11.0
Tue Jan 10/Wed Jan 11	6 56	17 37	19 03	6 04 7 30	1 58 13 02	21 02	..... 83	10 47.5	12 21	11.0
Wed Jan 11/Thu Jan 12	7 00	17 38	19 03	6 04 7 29	2 03 13 06	22 00	..... 76	11 31.8	7 06	11.0
Thu Jan 12/Fri Jan 13	7 04	17 39	19 04	6 04 7 29	2 08 13 09	22 57	..... 67	12 15.5	1 31	11.0
Fri Jan 13/Sat Jan 14	7 08	17 40	19 05	6 04 7 29	2 12 13 13	23 56	..... 57	12 59.9	- 4 14	11.0
Sat Jan 14/Sun Jan 15	7 12	17 41	19 06	6 04 7 29	2 17 13 17	0 56	..... 47	13 45.9	- 9 57	11.0
Sun Jan 15/Mon Jan 16	7 16	17 42	19 07	6 04 7 29	2 22 13 21	2 00	..... 37	14 34.7	-15 24	11.0
Mon Jan 16/Tue Jan 17	7 20	17 43	19 07	6 04 7 28	2 27 13 25	3 09	..... 27	15 27.7	-20 17	10.9
Tue Jan 17/Wed Jan 18	7 24	17 44	19 08	6 03 7 28	2 32 13 28	4 20	..... 17	16 25.5	-24 14	10.9
Wed Jan 18/Thu Jan 19	7 28	17 45	19 09	6 03 7 28	2 36 13 32	5 32	..... 10	17 28.1	-26 48	10.9
Thu Jan 19/Fri Jan 20	7 32	17 46	19 10	6 03 7 27	2 41 13 36	6 40	..... 4	18 34.3	-27 35	10.9
Fri Jan 20/Sat Jan 21	7 36	17 47	19 11	6 03 7 27	2 46 13 40	7 40	16 26	1 19 41.3	-26 24	10.9
Sat Jan 21/Sun Jan 22	7 40	17 48	19 12	6 02 7 26	2 51 13 43	.....	17 42	0 20 46.3	-23 18	10.8
Sun Jan 22/Mon Jan 23	7 44	17 49	19 13	6 02 7 26	2 56 13 47	.....	19 00	3 21 47.5	-18 38	10.8
Mon Jan 23/Tue Jan 24	7 48	17 50	19 13	6 02 7 25	3 00 13 50	.....	20 15	9 22 44.3	-12 55	10.8
Tue Jan 24/Wed Jan 25	7 52	17 51	19 14	6 01 7 25	3 05 13 54	.....	21 27	16 23 37.2	- 6 36	10.8
Wed Jan 25/Thu Jan 26	7 56	17 52	19 15	6 01 7 24	3 10 13 57	.....	22 35	25 0 27.4	- 0 09	10.8
Thu Jan 26/Fri Jan 27	8 00	17 53	19 16	6 00 7 24	3 15 14 01	.....	23 40	35 1 16.0	6 06	10.7
Fri Jan 27/Sat Jan 28	8 03	17 54	19 17	6 00 7 23	3 20 14 04	.....	0 44	46 2 04.3	11 55	10.7
Sat Jan 28/Sun Jan 29	8 07	17 55	19 18	5 59 7 22	3 24 14 08	.....	1 47	56 2 53.1	17 03	10.7
Sun Jan 29/Mon Jan 30	8 11	17 56	19 19	5 59 7 22	3 29 14 11	.....	2 49	66 3 43.3	21 19	10.7
Mon Jan 30/Tue Jan 31	8 15	17 57	19 20	5 58 7 21	3 34 14 15	.....	3 50	75 4 35.1	24 32	10.6
Tue Jan 31/Wed Feb 01	8 19	17 58	19 20	5 58 7 20	3 39 14 18	.....	4 48	83 5 28.4	26 35	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 23	17 59	19 21	5 57 7 20	3 44 14 21	.....	5 41 89	6 22.5	27 21	10.6
Thu Feb 02/Fri Feb 03	8 27	18 00	19 22	5 56 7 19	3 49 14 25	.....	6 28 94	7 16.4	26 48	10.6
Fri Feb 03/Sat Feb 04	8 31	18 01	19 23	5 56 7 18	3 53 14 28	16 00	7 09 98	8 09.2	25 00	10.5
Sat Feb 04/Sun Feb 05	8 35	18 02	19 24	5 55 7 17	3 58 14 31	16 59	7 45 100	9 00.0	22 03	10.5
Sun Feb 05/Mon Feb 06	8 39	18 03	19 25	5 54 7 16	4 03 14 34	17 58	..... 100	9 48.6	18 09	10.5
Mon Feb 06/Tue Feb 07	8 43	18 04	19 26	5 54 7 16	4 08 14 37	18 56	..... 98	10 35.0	13 30	10.5
Tue Feb 07/Wed Feb 08	8 47	18 05	19 26	5 53 7 15	4 13 14 41	19 54	..... 89	11 19.9	8 17	10.4
Wed Feb 08/Thu Feb 09	8 51	18 05	19 27	5 52 7 14	4 17 14 44	20 52	..... 89	12 03.9	2 42	10.4
Thu Feb 09/Fri Feb 10	8 55	18 06	19 28	5 51 7 13	4 22 14 47	21 49	..... 81	12 47.9	- 3 03	10.4
Fri Feb 10/Sat Feb 11	8 59	18 07	19 29	5 50 7 12	4 27 14 50	22 49	..... 73	13 33.1	- 8 47	10.4
Sat Feb 11/Sun Feb 12	9 03	18 08	19 30	5 49 7 11	4 32 14 53	23 50	..... 64	14 20.4	-14 16	10.3
Sun Feb 12/Mon Feb 13	9 07	18 09	19 31	5 49 7 10	4 37 14 56	0 55	..... 53	15 11.0	-19 14	10.3
Mon Feb 13/Tue Feb 14	9 11	18 10	19 32	5 48 7 09	4 41 14 59	2 03	..... 43	16 05.7	-23 24	10.3
Tue Feb 14/Wed Feb 15	9 14	18 11	19 33	5 47 7 08	4 46 15 02	3 12	..... 32	17 05.0	-26 22	10.2
Wed Feb 15/Thu Feb 16	9 18	18 12	19 33	5 46 7 07	4 51 15 05	4 20	..... 22	18 08.2	-27 47	10.2
Thu Feb 16/Fri Feb 17	9 22	18 13	19 34	5 45 7 06	4 56 15 08	5 22	..... 13	19 13.5	-27 21	10.2
Fri Feb 17/Sat Feb 18	9 26	18 14	19 35	5 44 7 05	5 01 15 11	6 16	..... 6	20 18.4	-25 02	10.1
Sat Feb 18/Sun Feb 19	9 30	18 15	19 36	5 43 7 03	5 05 15 14	7 00	16 29	2 21 20.7	-20 59	10.1
Sun Feb 19/Mon Feb 20	9 34	18 16	19 37	5 42 7 02	5 10 15 17	7 38	17 46	0 22 19.4	-15 36	10.1
Mon Feb 20/Tue Feb 21	9 38	18 17	19 38	5 41 7 01	5 15 15 20	.....	19 01	2 23 14.5	- 9 23	10.0
Tue Feb 21/Wed Feb 22	9 42	18 18	19 39	5 39 7 00	5 20 15 22	.....	20 12	6 0 06.6	- 2 46	10.0
Wed Feb 22/Thu Feb 23	9 46	18 19	19 39	5 38 6 59	5 25 15 25	.....	21 21	12 0 56.9	3 49	10.0
Thu Feb 23/Fri Feb 24	9 50	18 20	19 40	5 37 6 58	5 29 15 28	.....	22 28	20 1 46.5	10 01	9.9
Fri Feb 24/Sat Feb 25	9 54	18 21	19 41	5 36 6 56	5 34 15 31	.....	23 34	29 2 36.4	15 33	9.9
Sat Feb 25/Sun Feb 26	9 58	18 21	19 42	5 35 6 55	5 39 15 34	.....	0 39	39 3 27.1	20 14	9.9
Sun Feb 26/Mon Feb 27	10 02	18 22	19 43	5 34 6 54	5 44 15 36	.....	1 42	49 4 19.3	23 51	9.8
Mon Feb 27/Tue Feb 28	10 06	18 23	19 44	5 33 6 53	5 49 15 39	.....	2 42	59 5 12.7	26 15	9.8
Tue Feb 28/Wed Mar 01	10 10	18 24	19 44	5 31 6 52	5 53 15 42	.....	3 37	68 6 06.8	27 23	9.8

Calendar for DCT, west longitude (h.m.s) = 7 25 41, latitude (d.m) = 34 44.7
 Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, 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: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Wed Mar 01/Thu Mar 02	10 14	18 25	19 45	5 30	6 50	5 58	15 45	.....	4 26	76	7 00.9	27 10	9.7
Thu Mar 02/Fri Mar 03	10 18	18 26	19 46	5 29	6 49	6 03	15 47	.....	5 09	84	7 53.9	25 41	9.7
Fri Mar 03/Sat Mar 04	10 21	18 27	19 47	5 28	6 48	6 08	15 50	.....	5 46	90	8 45.1	23 02	9.7
Sat Mar 04/Sun Mar 05	10 25	18 28	19 48	5 26	6 46	6 13	15 53	.....	6 18	95	9 34.3	19 21	9.6
Sun Mar 05/Mon Mar 06	10 29	18 28	19 49	5 25	6 45	6 17	15 55	16 49	6 46	98	10 21.4	14 49	9.6
Mon Mar 06/Tue Mar 07	10 33	18 29	19 50	5 24	6 44	6 22	15 58	17 47	7 12	100	11 06.9	9 40	9.6
Tue Mar 07/Wed Mar 08	10 37	18 30	19 50	5 22	6 42	6 27	16 00	18 45	.....	99	11 51.5	4 03	9.5
Wed Mar 08/Thu Mar 09	10 41	18 31	19 51	5 21	6 41	6 32	16 03	19 44	.....	97	12 36.0	- 1 47	9.5
Thu Mar 09/Fri Mar 10	10 45	18 32	19 52	5 20	6 40	6 37	16 06	20 43	.....	92	13 21.2	- 7 39	9.5
Fri Mar 10/Sat Mar 11	10 49	18 33	19 53	5 18	6 38	6 41	16 08	21 44	.....	86	14 08.3	-13 18	9.4
Sat Mar 11/Sun Mar 12	10 53	18 33	19 54	5 17	6 37	6 46	16 11	22 48	.....	78	14 58.2	-18 28	9.4
Sun Mar 12/Mon Mar 13	10 57	18 34	19 55	5 15	6 36	6 51	16 13	23 54	.....	69	15 51.8	-22 51	9.3
Mon Mar 13/Tue Mar 14	11 01	18 35	19 56	5 14	6 34	6 56	16 16	1 02	.....	58	16 49.2	-26 06	9.3
Tue Mar 14/Wed Mar 15	11 05	18 36	19 56	5 13	6 33	7 01	16 18	2 09	.....	47	17 50.3	-27 55	9.3
Wed Mar 15/Thu Mar 16	11 09	18 37	19 57	5 11	6 32	7 05	16 21	3 11	.....	36	18 53.5	-28 01	9.2
Thu Mar 16/Fri Mar 17	11 13	18 38	19 58	5 10	6 30	7 10	16 23	4 06	.....	25	19 56.8	-26 19	9.2
Fri Mar 17/Sat Mar 18	11 17	18 38	19 59	5 08	6 29	7 15	16 26	4 53	.....	16	20 58.4	-22 55	9.2
Sat Mar 18/Sun Mar 19	11 21	18 39	20 00	5 07	6 27	7 20	16 28	5 32	.....	8	21 56.9	-18 05	9.1
Sun Mar 19/Mon Mar 20	11 25	18 40	20 01	5 05	6 26	7 25	16 31	6 06	.....	3	22 52.3	-12 12	9.1
Mon Mar 20/Tue Mar 21	11 28	18 41	20 02	5 04	6 25	7 30	16 33	6 37	17 47	0	23 44.9	- 5 43	9.0
Tue Mar 21/Wed Mar 22	11 32	18 42	20 03	5 02	6 23	7 34	16 36	7 06	18 57	0	0 35.8	0 58	9.0
Wed Mar 22/Thu Mar 23	11 36	18 42	20 03	5 01	6 22	7 39	16 38	.....	20 06	3	1 26.0	7 27	9.0
Thu Mar 23/Fri Mar 24	11 40	18 43	20 04	4 59	6 20	7 44	16 40	.....	21 14	8	2 16.3	13 25	8.9
Fri Mar 24/Sat Mar 25	11 44	18 44	20 05	4 58	6 19	7 49	16 43	.....	22 21	15	3 07.6	18 35	8.9
Sat Mar 25/Sun Mar 26	11 48	18 45	20 06	4 56	6 18	7 54	16 45	.....	23 27	23	4 00.3	22 42	8.8
Sun Mar 26/Mon Mar 27	11 52	18 46	20 07	4 55	6 16	7 59	16 48	.....	0 30	32	4 54.2	25 36	8.8
Mon Mar 27/Tue Mar 28	11 56	18 46	20 08	4 53	6 15	8 03	16 50	.....	1 29	41	5 48.9	27 11	8.8
Tue Mar 28/Wed Mar 29	12 00	18 47	20 09	4 52	6 13	8 08	16 53	.....	2 21	51	6 43.5	27 24	8.7
Wed Mar 29/Thu Mar 30	12 04	18 48	20 10	4 50	6 12	8 13	16 55	.....	3 07	61	7 37.1	26 18	8.7
Thu Mar 30/Fri Mar 31	12 08	18 49	20 11	4 49	6 11	8 18	16 57	.....	3 46	70	8 28.9	23 59	8.6
Fri Mar 31/Sat Apr 01	12 12	18 50	20 12	4 47	6 09	8 23	17 00	.....	4 19	78	9 18.5	20 36	8.6

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

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 Apr 01/Sun Apr 02	12 16	18 50	20 13	4 46	6 08	8 28	17 02	.....	4 49	86	10 06.0	16 20	8.5
Sun Apr 02/Mon Apr 03	12 20	18 51	20 14	4 44	6 07	8 33	17 05	.....	5 15	92	10 51.9	11 20	8.5
Mon Apr 03/Tue Apr 04	12 24	18 52	20 15	4 43	6 05	8 38	17 07	.....	5 40	96	11 36.8	5 48	8.5
Tue Apr 04/Wed Apr 05	12 28	18 53	20 16	4 41	6 04	8 43	17 09	17 34	6 04	99	12 21.5	- 0 04	8.4
Wed Apr 05/Thu Apr 06	12 32	18 53	20 17	4 39	6 02	8 48	17 12	18 34	6 30	100	13 07.0	- 6 03	8.4
Thu Apr 06/Fri Apr 07	12 36	18 54	20 18	4 38	6 01	8 52	17 14	19 35	6 57	99	13 54.3	-11 55	8.3
Fri Apr 07/Sat Apr 08	12 39	18 55	20 19	4 36	6 00	8 57	17 17	20 39	.....	95	14 44.3	-17 23	8.3
Sat Apr 08/Sun Apr 09	12 43	18 56	20 20	4 35	5 58	9 02	17 19	21 46	.....	89	15 37.8	-22 06	8.3
Sun Apr 09/Mon Apr 10	12 47	18 57	20 21	4 33	5 57	9 07	17 21	22 54	.....	82	16 35.2	-25 44	8.2
Mon Apr 10/Tue Apr 11	12 51	18 57	20 22	4 32	5 56	9 12	17 24	0 02	.....	72	17 36.1	-27 56	8.2
Tue Apr 11/Wed Apr 12	12 55	18 58	20 23	4 30	5 54	9 17	17 26	1 06	.....	62	18 39.0	-28 27	8.1
Wed Apr 12/Thu Apr 13	12 59	18 59	20 24	4 29	5 53	9 22	17 29	2 02	.....	50	19 41.9	-27 10	8.1
Thu Apr 13/Fri Apr 14	13 03	19 00	20 25	4 27	5 52	9 27	17 31	2 50	.....	39	20 42.9	-24 13	8.0
Fri Apr 14/Sat Apr 15	13 07	19 01	20 26	4 26	5 51	9 32	17 33	3 30	.....	28	21 40.9	-19 49	8.0
Sat Apr 15/Sun Apr 16	13 11	19 01	20 27	4 24	5 49	9 37	17 36	4 05	.....	19	22 35.6	-14 20	8.0
Sun Apr 16/Mon Apr 17	13 15	19 02	20 28	4 22	5 48	9 42	17 38	4 36	.....	11	23 27.6	- 8 09	7.9
Mon Apr 17/Tue Apr 18	13 19	19 03	20 29	4 21	5 47	9 47	17 41	5 04	.....	5	0 17.9	- 1 37	7.9
Tue Apr 18/Wed Apr 19	13 23	19 04	20 30	4 19	5 46	9 52	17 43	5 33	17 46	1	1 07.3	4 53	7.8
Wed Apr 19/Thu Apr 20	13 27	19 05	20 31	4 18	5 44	9 57	17 45	6 02	18 53	0	1 57.1	11 03	7.8
Thu Apr 20/Fri Apr 21	13 31	19 05	20 32	4 16	5 43	10 02	17 48	6 34	20 01	1	2 47.9	16 34	7.7
Fri Apr 21/Sat Apr 22	13 35	19 06	20 33	4 15	5 42	10 07	17 50	.....	21 08	5	3 40.3	21 09	7.7
Sat Apr 22/Sun Apr 23	13 39	19 07	20 34	4 14	5 41	10 12	17 53	.....	22 13	10	4 34.3	24 34	7.7
Sun Apr 23/Mon Apr 24	13 43	19 08	20 35	4 12	5 40	10 17	17 55	.....	23 16	17	5 29.3	26 40	7.6
Mon Apr 24/Tue Apr 25	13 46	19 09	20 36	4 11	5 38	10 22	17 58	.....	0 12	26	6 24.6	27 23	7.6
Tue Apr 25/Wed Apr 26	13 50	19 09	20 38	4 09	5 37	10 27	18 00	.....	1 01	34	7 19.0	26 43	7.5
Wed Apr 26/Thu Apr 27	13 54	19 10	20 39	4 08	5 36	10 33	18 03	.....	1 43	44	8 11.5	24 48	7.5
Thu Apr 27/Fri Apr 28	13 58	19 11	20 40	4 06	5 35	10 38	18 05	.....	2 19	53	9 01.7	21 46	7.4
Fri Apr 28/Sat Apr 29	14 02	19 12	20 41	4 05	5 34	10 43	18 08	.....	2 49	63	9 49.5	17 48	7.4
Sat Apr 29/Sun Apr 30	14 06	19 13	20 42	4 03	5 33	10 48	18 10	.....	3 17	72	10 35.5	13 04	7.4
Sun Apr 30/Mon May 01	14 10	19 14	20 43	4 02	5 32	10 53	18 13	.....	3 42	80	11 20.3	7 45	7.3

Calendar for DCT, west longitude (h.m.s) = 7 25 41, latitude (d.m) = 34 44.7
 Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, 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	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours
Mon May 01/Tue May 02	14 14	19 14	20 44	4 01 5 31	10 58 18 15	.....	4 06	87	12 04.7 2 00	7.3
Tue May 02/Wed May 03	14 18	19 15	20 46	3 59 5 30	11 03 18 18	.....	4 31	93	12 49.7 - 3 58	7.2
Wed May 03/Thu May 04	14 22	19 16	20 47	3 58 5 29	11 08 18 21	.....	4 58	98	13 36.5 - 9 58	7.2
Thu May 04/Fri May 05	14 26	19 17	20 48	3 57 5 28	11 13 18 23	.....	5 28	100	14 26.1 -15 42	7.1
Fri May 05/Sat May 06	14 30	19 18	20 49	3 55 5 27	11 18 18 26	.....	6 03	100	15 19.5 -20 49	7.1
Sat May 06/Sun May 07	14 34	19 18	20 50	3 54 5 26	11 23 18 29	.....	.....	97	16 17.1 -24 56	7.1
Sun May 07/Mon May 08	14 38	19 19	20 51	3 53 5 25	11 28 18 31	.....	.....	92	17 18.8 -27 39	7.0
Mon May 08/Tue May 09	14 42	19 20	20 52	3 52 5 24	11 34 18 34	.....	.....	84	18 22.9 -28 39	7.0
Tue May 09/Wed May 10	14 46	19 21	20 54	3 50 5 23	11 39 18 37	.....	.....	75	19 27.4 -27 47	6.9
Wed May 10/Thu May 11	14 50	19 22	20 55	3 49 5 22	11 44 18 39	.....	.....	64	20 29.7 -25 09	6.9
Thu May 11/Fri May 12	14 54	19 22	20 56	3 48 5 21	11 49 18 42	.....	.....	53	21 28.6 -21 02	6.9
Fri May 12/Sat May 13	14 57	19 23	20 57	3 47 5 21	11 54 18 45	.....	.....	42	22 23.7 -15 48	6.8
Sat May 13/Sun May 14	15 01	19 24	20 58	3 46 5 20	11 59 18 48	.....	.....	31	23 15.5 - 9 49	6.8
Sun May 14/Mon May 15	15 05	19 25	20 59	3 45 5 19	12 04 18 51	.....	.....	21	0 05.1 - 3 28	6.8
Mon May 15/Tue May 16	15 09	19 26	21 00	3 43 5 18	12 09 18 53	.....	.....	13	0 53.6 2 57	6.7
Tue May 16/Wed May 17	15 13	19 26	21 01	3 42 5 17	12 14 18 56	.....	.....	6	1 42.2 9 07	6.7
Wed May 17/Thu May 18	15 17	19 27	21 03	3 41 5 17	12 19 18 59	.....	.....	2	2 31.7 14 46	6.6
Thu May 18/Fri May 19	15 21	19 28	21 04	3 40 5 16	12 24 19 02	.....	.....	0	3 22.9 19 36	6.6
Fri May 19/Sat May 20	15 25	19 29	21 05	3 39 5 15	12 29 19 05	.....	.....	0	4 16.1 23 24	6.6
Sat May 20/Sun May 21	15 29	19 29	21 06	3 38 5 15	12 34 19 08	.....	.....	3	5 10.7 25 56	6.5
Sun May 21/Mon May 22	15 33	19 30	21 07	3 38 5 14	12 39 19 11	.....	.....	7	6 06.1 27 07	6.5
Mon May 22/Tue May 23	15 37	19 31	21 08	3 37 5 14	12 44 19 14	.....	.....	13	7 01.0 26 54	6.5
Tue May 23/Wed May 24	15 41	19 32	21 09	3 36 5 13	12 49 19 17	.....	.....	20	7 54.2 25 22	6.4
Wed May 24/Thu May 25	15 45	19 32	21 10	3 35 5 13	12 54 19 20	.....	.....	28	8 45.1 22 41	6.4
Thu May 25/Fri May 26	15 49	19 33	21 11	3 34 5 12	12 59 19 23	.....	.....	37	9 33.4 19 01	6.4
Fri May 26/Sat May 27	15 53	19 34	21 12	3 33 5 12	13 04 19 27	.....	.....	46	10 19.5 14 35	6.4
Sat May 27/Sun May 28	15 57	19 34	21 13	3 33 5 11	13 09 19 30	.....	.....	56	11 03.9 9 32	6.3
Sun May 28/Mon May 29	16 01	19 35	21 14	3 32 5 11	13 14 19 33	.....	.....	65	11 47.7 4 01	6.3
Mon May 29/Tue May 30	16 04	19 36	21 15	3 31 5 10	13 19 19 36	.....	.....	74	12 31.7 - 1 48	6.3
Tue May 30/Wed May 31	16 08	19 36	21 16	3 31 5 10	13 24 19 40	.....	.....	83	13 17.1 - 7 44	6.2
Wed May 31/Thu Jun 01	16 12	19 37	21 17	3 30 5 10	13 29 19 43	.....	.....	90	14 05.2 -13 33	6.2

***** 2023 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
Thu Jun 01/Fri Jun 02	16 16	19 38	21 18	3 29 5 09	13 33 19 46	.....	3 58	96	14 57.0 -18 57	6.2
Fri Jun 02/Sat Jun 03	16 20	19 38	21 18	3 29 5 09	13 38 19 50	.....	4 37	99	15 53.5 -23 33	6.2
Sat Jun 03/Sun Jun 04	16 24	19 39	21 19	3 28 5 09	13 43 19 53	.....	5 26	100	16 54.9 -26 54	6.2
Sun Jun 04/Mon Jun 05	16 28	19 39	21 20	3 28 5 09	13 48 19 57	.....	6 24	98	18 00.1 -28 35	6.1
Mon Jun 05/Tue Jun 06	16 32	19 40	21 21	3 28 5 08	13 52 20 00	.....	.....	93	19 06.8 -28 19	6.1
Tue Jun 06/Wed Jun 07	16 36	19 41	21 22	3 27 5 08	13 57 20 04	.....	.....	86	20 12.0 -26 06	6.1
Wed Jun 07/Thu Jun 08	16 40	19 41	21 22	3 27 5 08	14 02 20 07	.....	.....	77	21 13.7 -22 13	6.1
Thu Jun 08/Fri Jun 09	16 44	19 42	21 23	3 27 5 08	14 06 20 11	.....	.....	67	22 11.0 -17 05	6.1
Fri Jun 09/Sat Jun 10	16 48	19 42	21 24	3 26 5 08	14 11 20 15	.....	.....	55	23 04.3 -11 09	6.0
Sat Jun 10/Sun Jun 11	16 52	19 43	21 24	3 26 5 08	14 16 20 19	.....	.....	44	23 54.6 - 4 49	6.0
Sun Jun 11/Mon Jun 12	16 56	19 43	21 25	3 26 5 08	14 20 20 22	.....	.....	33	0 43.1 1 36	6.0
Mon Jun 12/Tue Jun 13	17 00	19 43	21 25	3 26 5 08	14 25 20 26	.....	.....	24	1 31.2 7 46	6.0
Tue Jun 13/Wed Jun 14	17 04	19 44	21 26	3 26 5 08	14 29 20 30	.....	.....	15	2 19.8 13 28	6.0
Wed Jun 14/Thu Jun 15	17 08	19 44	21 26	3 26 5 08	14 34 20 34	.....	.....	8	3 09.9 18 26	6.0
Thu Jun 15/Fri Jun 16	17 11	19 45	21 27	3 26 5 08	14 38 20 38	.....	.....	4	4 01.8 22 26	6.0
Fri Jun 16/Sat Jun 17	17 15	19 45	21 27	3 26 5 08	14 42 20 42	.....	.....	1	4 55.5 25 16	6.0
Sat Jun 17/Sun Jun 18	17 19	19 45	21 28	3 26 5 08	14 47 20 46	.....	.....	0	5 50.4 26 48	6.0
Sun Jun 18/Mon Jun 19	17 23	19 45	21 28	3 26 5 08	14 51 20 50	.....	.....	1	6 45.2 26 56	6.0
Mon Jun 19/Tue Jun 20	17 27	19 46	21 28	3 26 5 09	14 55 20 54	.....	.....	4	7 38.8 25 46	6.0
Tue Jun 20/Wed Jun 21	17 31	19 46	21 28	3 26 5 09	14 59 20 58	.....	.....	9	8 30.2 23 23	6.0
Wed Jun 21/Thu Jun 22	17 35	19 46	21 29	3 27 5 09	15 03 21 02	.....	.....	15	9 19.0 19 59	6.0
Thu Jun 22/Fri Jun 23	17 39	19 46	21 29	3 27 5 09	15 08 21 06	.....	.....	22	10 05.3 15 47	6.0
Fri Jun 23/Sat Jun 24	17 43	19 47	21 29	3 27 5 10	15 12 21 11	.....	.....	31	10 49.7 10 57	6.0
Sat Jun 24/Sun Jun 25	17 47	19 47	21 29	3 27 5 10	15 16 21 15	.....	.....	40	11 32.8 5 39	6.0
Sun Jun 25/Mon Jun 26	17 51	19 47	21 29	3 28 5 10	15 20 21 19	.....	.....	49	12 15.7 0 03	6.0
Mon Jun 26/Tue Jun 27	17 55	19 47	21 29	3 28 5 11	15 24 21 24	.....	.....	59	12 59.5 - 5 43	6.0
Tue Jun 27/Wed Jun 28	17 59	19 47	21 29	3 29 5 11	15 28 21 28	.....	.....	69	13 45.3 -11 28	6.0
Wed Jun 28/Thu Jun 29	18 03	19 47	21 29	3 29 5 11	15 31 21 33	.....	.....	78	14 34.4 -16 56	6.0
Thu Jun 29/Fri Jun 30	18 07	19 47	21 29	3 30 5 12	15 35 21 37	.....	.....	86	15 28.1 -21 50	6.0
Fri Jun 30/Sat Jul 01	18 11	19 47	21 29	3 30 5 12	15 39 21 41	.....	.....	93	16 27.0 -25 43	6.0

Calendar for DCT, west longitude (h.m.s) = 7 25 41, latitude (d.m) = 34 44.7
Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, 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: ----- set twi.end twi.beg rise	LST twilight: eve morn	----- Moon: ----- rise set %illum RA Dec	Twi-Twi hours
Sat Jul 01/Sun Jul 02	18 15	19 47 21 29 3 31 5 13	15 43 21 46	18 22 4 06 98 17 31.0 -28 08	6.0
Sun Jul 02/Mon Jul 03	18 19	19 47 21 28 3 31 5 13	15 46 21 51	19 30 5 11 100 18 38.4 -28 41	6.1
Mon Jul 03/Tue Jul 04	18 22	19 47 21 28 3 32 5 13	15 50 21 55	20 32 6 24 99 19 46.2 -27 11	6.1
Tue Jul 04/Wed Jul 05	18 26	19 47 21 28 3 33 5 14	15 54 22 00	21 23 95 20 51.4 -23 45	6.1
Wed Jul 05/Thu Jul 06	18 30	19 46 21 27 3 34 5 14	15 57 22 04	22 06 88 21 52.4 -18 48	6.1
Thu Jul 06/Fri Jul 07	18 34	19 46 21 27 3 34 5 15	16 01 22 09	22 41 79 22 48.8 -12 49	6.1
Fri Jul 07/Sat Jul 08	18 38	19 46 21 27 3 35 5 16	16 04 22 14	23 12 69 23 41.4 - 6 20	6.1
Sat Jul 08/Sun Jul 09	18 42	19 46 21 26 3 36 5 16	16 08 22 19	23 41 58 0 31.5 0 16	6.2
Sun Jul 09/Mon Jul 10	18 46	19 46 21 26 3 37 5 17	16 11 22 23	0 08 47 1 20.4 6 38	6.2
Mon Jul 10/Tue Jul 11	18 50	19 45 21 25 3 37 5 17	16 15 22 28	0 37 37 2 09.3 12 30	6.2
Tue Jul 11/Wed Jul 12	18 54	19 45 21 25 3 38 5 18	16 18 22 33	1 08 27 2 59.2 17 37	6.2
Wed Jul 12/Thu Jul 13	18 58	19 45 21 24 3 39 5 18	16 21 22 38	1 43 18 3 50.5 21 48	6.3
Thu Jul 13/Fri Jul 14	19 02	19 44 21 23 3 40 5 19	16 25 22 43	2 23 11 4 43.5 24 51	6.3
Fri Jul 14/Sat Jul 15	19 06	19 44 21 23 3 41 5 20	16 28 22 47	3 09 17 44 6 5 37.8 26 37	6.3
Sat Jul 15/Sun Jul 16	19 10	19 43 21 22 3 42 5 20	16 31 22 52	4 01 18 40 2 6 32.2 27 02	6.3
Sun Jul 16/Mon Jul 17	19 14	19 43 21 21 3 43 5 21	16 34 22 57	4 58 19 30 0 7 25.8 26 08	6.4
Mon Jul 17/Tue Jul 18	19 18	19 42 21 20 3 44 5 22	16 37 23 02	5 57 20 13 0 8 17.6 24 00	6.4
Tue Jul 18/Wed Jul 19	19 22	19 42 21 19 3 45 5 22	16 41 23 07	..... 20 49 2 9 06.8 20 49	6.4
Wed Jul 19/Thu Jul 20	19 26	19 41 21 19 3 46 5 23	16 44 23 12	..... 21 20 6 9 53.5 16 47	6.5
Thu Jul 20/Fri Jul 21	19 29	19 41 21 18 3 47 5 24	16 47 23 17	..... 21 48 11 10 37.9 12 06	6.5
Fri Jul 21/Sat Jul 22	19 33	19 40 21 17 3 48 5 24	16 50 23 22	..... 22 12 17 11 20.9 6 56	6.5
Sat Jul 22/Sun Jul 23	19 37	19 39 21 16 3 49 5 25	16 53 23 27	..... 22 36 25 12 03.1 1 28	6.6
Sun Jul 23/Mon Jul 24	19 41	19 39 21 15 3 50 5 26	16 56 23 32	..... 22 59 34 12 45.6 - 4 10	6.6
Mon Jul 24/Tue Jul 25	19 45	19 38 21 14 3 51 5 27	16 59 23 37	..... 23 24 43 13 29.6 - 9 47	6.6
Tue Jul 25/Wed Jul 26	19 49	19 37 21 13 3 52 5 27	17 01 23 42	..... 23 51 53 14 16.1 -15 13	6.7
Wed Jul 26/Thu Jul 27	19 53	19 37 21 12 3 53 5 28	17 04 23 47	..... 0 23 64 15 06.4 -20 12	6.7
Thu Jul 27/Fri Jul 28	19 57	19 36 21 11 3 54 5 29	17 07 23 52	..... 1 01 74 16 01.6 -24 23	6.7
Fri Jul 28/Sat Jul 29	20 01	19 35 21 09 3 55 5 30	17 10 23 57	..... 1 49 83 17 02.0 -27 23	6.8
Sat Jul 29/Sun Jul 30	20 05	19 34 21 08 3 56 5 30	17 13 0 02	..... 2 48 91 18 07.1 -28 45	6.8
Sun Jul 30/Mon Jul 31	20 09	19 34 21 07 3 57 5 31	17 16 0 07	18 13 3 58 96 19 14.7 -28 08	6.8
Mon Jul 31/Tue Aug 01	20 13	19 33 21 06 3 59 5 32	17 18 0 12	19 10 5 14 99 20 21.8 -25 29	6.9

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

Date (eve/morn)	LMST midn	----- Sun: ----- set twi.end twi.beg rise	LST twilight: eve morn	----- Moon: ----- rise set %illum RA Dec	Twi-Twi hours
Tue Aug 01/Wed Aug 02	20 17	19 32 21 05 4 00 5 33	17 21 0 17	19 57 99 21 25.9 -21 01	6.9
Wed Aug 02/Thu Aug 03	20 21	19 31 21 04 4 01 5 33	17 24 0 22	20 37 96 22 25.7 -15 12	7.0
Thu Aug 03/Fri Aug 04	20 25	19 30 21 02 4 02 5 34	17 26 0 27	21 11 90 23 21.6 - 8 36	7.0
Fri Aug 04/Sat Aug 05	20 29	19 29 21 01 4 03 5 35	17 29 0 32	21 41 82 0 14.4 - 1 42	7.0
Sat Aug 05/Sun Aug 06	20 33	19 28 21 00 4 04 5 36	17 32 0 37	22 09 72 1 05.4 5 02	7.1
Sun Aug 06/Mon Aug 07	20 37	19 27 20 58 4 05 5 36	17 34 0 42	22 38 62 1 55.9 11 17	7.1
Mon Aug 07/Tue Aug 08	20 40	19 26 20 57 4 06 5 37	17 37 0 47	23 09 51 2 46.7 16 45	7.2
Tue Aug 08/Wed Aug 09	20 44	19 25 20 56 4 07 5 38	17 40 0 52	23 43 41 3 38.6 21 15	7.2
Wed Aug 09/Thu Aug 10	20 48	19 24 20 54 4 08 5 39	17 42 0 57	0 21 31 4 31.9 24 34	7.2
Thu Aug 10/Fri Aug 11	20 52	19 23 20 53 4 09 5 39	17 45 1 02	1 06 22 5 26.2 26 36	7.3
Fri Aug 11/Sat Aug 12	20 56	19 22 20 52 4 10 5 40	17 47 1 07	1 56 15 6 20.8 27 16	7.3
Sat Aug 12/Sun Aug 13	21 00	19 21 20 50 4 12 5 41	17 50 1 12	2 52 17 28 8 7 14.6 26 36	7.4
Sun Aug 13/Mon Aug 14	21 04	19 20 20 49 4 13 5 42	17 52 1 17	3 50 18 13 4 8 06.5 24 41	7.4
Mon Aug 14/Tue Aug 15	21 08	19 19 20 47 4 14 5 42	17 55 1 22	4 49 18 51 1 8 56.2 21 41	7.4
Tue Aug 15/Wed Aug 16	21 12	19 17 20 46 4 15 5 43	17 57 1 27	5 48 19 23 0 9 43.2 17 47	7.5
Wed Aug 16/Thu Aug 17	21 16	19 16 20 44 4 16 5 44	18 00 1 32	..... 19 51 1 10 28.0 13 12	7.5
Thu Aug 17/Fri Aug 18	21 20	19 15 20 43 4 17 5 45	18 02 1 37	..... 20 17 3 11 11.1 8 06	7.6
Fri Aug 18/Sat Aug 19	21 24	19 14 20 41 4 18 5 45	18 05 1 42	..... 20 40 7 11 53.2 2 41	7.6
Sat Aug 19/Sun Aug 20	21 28	19 13 20 40 4 19 5 46	18 07 1 47	..... 21 03 13 12 35.2 - 2 54	7.7
Sun Aug 20/Mon Aug 21	21 32	19 11 20 38 4 20 5 47	18 10 1 52	..... 21 27 20 13 18.1 - 8 30	7.7
Mon Aug 21/Tue Aug 22	21 36	19 10 20 37 4 21 5 48	18 12 1 57	..... 21 53 28 14 03.0 -13 54	7.7
Tue Aug 22/Wed Aug 23	21 40	19 09 20 35 4 22 5 48	18 14 2 02	..... 22 22 38 14 50.8 -18 54	7.8
Wed Aug 23/Thu Aug 24	21 44	19 08 20 34 4 23 5 49	18 17 2 07	..... 22 57 48 15 42.7 -23 14	7.8
Thu Aug 24/Fri Aug 25	21 47	19 06 20 32 4 24 5 50	18 19 2 12	..... 23 39 59 16 39.4 -26 34	7.9
Fri Aug 25/Sat Aug 26	21 51	19 05 20 31 4 25 5 51	18 22 2 17	..... 0 31 69 17 40.7 -28 29	7.9
Sat Aug 26/Sun Aug 27	21 55	19 04 20 29 4 26 5 51	18 24 2 22	..... 1 34 79 18 45.4 -28 41	7.9
Sun Aug 27/Mon Aug 28	21 59	19 02 20 28 4 27 5 52	18 26 2 27	..... 2 46 88 19 51.3 -26 55	8.0
Mon Aug 28/Tue Aug 29	22 03	19 01 20 26 4 28 5 53	18 29 2 32	17 46 4 03 95 20 55.9 -23 16	8.0
Tue Aug 29/Wed Aug 30	22 07	19 00 20 24 4 29 5 54	18 31 2 37	18 29 5 20 99 21 57.5 -17 59	8.1
Wed Aug 30/Thu Aug 31	22 11	18 58 20 23 4 30 5 54	18 33 2 42	19 05 6 35 100 22 55.6 -11 35	8.1
Thu Aug 31/Fri Sep 01	22 15	18 57 20 21 4 31 5 55	18 36 2 47	19 37 98 23 50.7 - 4 34	8.2

Calendar for DCT, west longitude (h.m.s) = 7 25 41, latitude (d.m) = 34 44.7
 Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, 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: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Fri Sep 01/Sat Sep 02	22 19	18 56	20 20	4 32	5 56	18 38	2 52	20 07	.....	93	0 43.9	2 32	8.2
Sat Sep 02/Sun Sep 03	22 23	18 54	20 18	4 33	5 56	18 40	2 56	20 37	.....	85	1 36.3	9 17	8.2
Sun Sep 03/Mon Sep 04	22 27	18 53	20 17	4 34	5 57	18 43	3 01	21 07	.....	76	2 28.8	15 18	8.3
Mon Sep 04/Tue Sep 05	22 31	18 52	20 15	4 35	5 58	18 45	3 06	21 41	.....	66	3 22.3	20 19	8.3
Tue Sep 05/Wed Sep 06	22 35	18 50	20 13	4 35	5 59	18 48	3 11	22 19	.....	56	4 16.9	24 07	8.4
Wed Sep 06/Thu Sep 07	22 39	18 49	20 12	4 36	5 59	18 50	3 16	23 02	.....	46	5 12.3	26 32	8.4
Thu Sep 07/Fri Sep 08	22 43	18 47	20 10	4 37	6 00	18 52	3 21	23 51	.....	36	6 07.9	27 33	8.5
Fri Sep 08/Sat Sep 09	22 47	18 46	20 09	4 38	6 01	18 55	3 26	0 45	.....	27	7 02.5	27 09	8.5
Sat Sep 09/Sun Sep 10	22 51	18 45	20 07	4 39	6 01	18 57	3 30	1 43	.....	19	7 55.2	25 28	8.5
Sun Sep 10/Mon Sep 11	22 55	18 43	20 05	4 40	6 02	18 59	3 35	2 42	16 52	12	8 45.5	22 40	8.6
Mon Sep 11/Tue Sep 12	22 58	18 42	20 04	4 41	6 03	19 02	3 40	3 41	17 26	7	9 33.1	18 55	8.6
Tue Sep 12/Wed Sep 13	23 02	18 40	20 02	4 42	6 04	19 04	3 45	4 40	17 55	3	10 18.3	14 26	8.7
Wed Sep 13/Thu Sep 14	23 06	18 39	20 01	4 43	6 04	19 06	3 50	5 37	18 21	1	11 01.8	9 24	8.7
Thu Sep 14/Fri Sep 15	23 10	18 38	19 59	4 43	6 05	19 09	3 54	6 33	18 45	0	11 44.1	3 59	8.7
Fri Sep 15/Sat Sep 16	23 14	18 36	19 58	4 44	6 06	19 11	3 59	.....	19 08	1	12 26.1	- 1 37	8.8
Sat Sep 16/Sun Sep 17	23 18	18 35	19 56	4 45	6 07	19 14	4 04	.....	19 32	4	13 08.8	- 7 15	8.8
Sun Sep 17/Mon Sep 18	23 22	18 33	19 55	4 46	6 07	19 16	4 09	.....	19 57	9	13 53.0	-12 44	8.9
Mon Sep 18/Tue Sep 19	23 26	18 32	19 53	4 47	6 08	19 18	4 14	.....	20 24	16	14 39.7	-17 49	8.9
Tue Sep 19/Wed Sep 20	23 30	18 30	19 51	4 48	6 09	19 21	4 18	.....	20 57	24	15 29.9	-22 17	8.9
Wed Sep 20/Thu Sep 21	23 34	18 29	19 50	4 48	6 09	19 23	4 23	.....	21 36	33	16 24.1	-25 49	9.0
Thu Sep 21/Fri Sep 22	23 38	18 27	19 48	4 49	6 10	19 26	4 28	.....	22 23	44	17 22.5	-28 05	9.0
Fri Sep 22/Sat Sep 23	23 42	18 26	19 47	4 50	6 11	19 28	4 33	.....	23 20	55	18 24.1	-28 48	9.1
Sat Sep 23/Sun Sep 24	23 46	18 25	19 45	4 51	6 12	19 30	4 37	.....	0 26	66	19 27.3	-27 45	9.1
Sun Sep 24/Mon Sep 25	23 50	18 23	19 44	4 52	6 12	19 33	4 42	.....	1 39	76	20 30.2	-24 53	9.1
Mon Sep 25/Tue Sep 26	23 54	18 22	19 42	4 52	6 13	19 35	4 47	.....	2 54	86	21 31.0	-20 21	9.2
Tue Sep 26/Wed Sep 27	23 58	18 20	19 41	4 53	6 14	19 38	4 52	16 59	4 09	93	22 29.1	-14 31	9.2
Wed Sep 27/Thu Sep 28	0 02	18 19	19 39	4 54	6 15	19 40	4 56	17 33	5 22	98	23 24.6	- 7 47	9.2
Thu Sep 28/Fri Sep 29	0 05	18 18	19 38	4 55	6 15	19 43	5 01	18 03	6 34	100	0 18.5	- 0 38	9.3
Fri Sep 29/Sat Sep 30	0 09	18 16	19 36	4 56	6 16	19 45	5 06	18 33	.....	99	1 11.7	6 26	9.3
Sat Sep 30/Sun Oct 01	0 13	18 15	19 35	4 56	6 17	19 48	5 11	19 03	.....	95	2 05.2	13 00	9.4

***** 2023 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	
Sun Oct 01/Mon Oct 02	0 17	18 13	19 34	4 57	6 18	19 50	5 15	19 36	.....	89	2 59.8	18 39	9.4
Mon Oct 02/Tue Oct 03	0 21	18 12	19 32	4 58	6 18	19 53	5 20	20 13	.....	81	3 55.8	23 07	9.4
Tue Oct 03/Wed Oct 04	0 25	18 11	19 31	4 59	6 19	19 55	5 25	20 55	.....	72	4 53.0	26 09	9.5
Wed Oct 04/Thu Oct 05	0 29	18 09	19 29	5 00	6 20	19 58	5 29	21 43	.....	62	5 50.3	27 40	9.5
Thu Oct 05/Fri Oct 06	0 33	18 08	19 28	5 00	6 21	20 00	5 34	22 36	.....	52	6 46.8	27 41	9.5
Fri Oct 06/Sat Oct 07	0 37	18 06	19 27	5 01	6 21	20 03	5 39	23 34	.....	42	7 41.1	26 19	9.6
Sat Oct 07/Sun Oct 08	0 41	18 05	19 25	5 02	6 22	20 05	5 44	0 33	.....	33	8 32.7	23 45	9.6
Sun Oct 08/Mon Oct 09	0 45	18 04	19 24	5 03	6 23	20 08	5 48	1 33	.....	25	9 21.3	20 12	9.6
Mon Oct 09/Tue Oct 10	0 49	18 02	19 23	5 03	6 24	20 11	5 53	2 31	.....	17	10 07.2	15 52	9.7
Tue Oct 10/Wed Oct 11	0 53	18 01	19 21	5 04	6 25	20 13	5 58	3 29	16 25	11	10 51.1	10 55	9.7
Wed Oct 11/Thu Oct 12	0 57	18 00	19 20	5 05	6 25	20 16	6 03	4 26	16 49	5	11 33.8	5 33	9.8
Thu Oct 12/Fri Oct 13	1 01	17 58	19 19	5 06	6 26	20 19	6 07	5 23	17 13	2	12 15.9	- 0 04	9.8
Fri Oct 13/Sat Oct 14	1 05	17 57	19 17	5 07	6 27	20 21	6 12	6 20	17 36	0	12 58.6	- 5 46	9.8
Sat Oct 14/Sun Oct 15	1 09	17 56	19 16	5 07	6 28	20 24	6 17	7 20	18 00	0	13 42.7	-11 21	9.9
Sun Oct 15/Mon Oct 16	1 12	17 55	19 15	5 08	6 29	20 27	6 21	.....	18 28	2	14 29.2	-16 36	9.9
Mon Oct 16/Tue Oct 17	1 16	17 53	19 14	5 09	6 29	20 29	6 26	.....	18 59	6	15 18.9	-21 16	9.9
Tue Oct 17/Wed Oct 18	1 20	17 52	19 13	5 10	6 30	20 32	6 31	.....	19 36	12	16 12.3	-25 02	10.0
Wed Oct 18/Thu Oct 19	1 24	17 51	19 11	5 10	6 31	20 35	6 36	.....	20 20	20	17 09.5	-27 35	10.0
Thu Oct 19/Fri Oct 20	1 28	17 50	19 10	5 11	6 32	20 38	6 40	.....	21 14	29	18 09.6	-28 40	10.0
Fri Oct 20/Sat Oct 21	1 32	17 48	19 09	5 12	6 33	20 41	6 45	.....	22 16	40	19 11.2	-28 03	10.0
Sat Oct 21/Sun Oct 22	1 36	17 47	19 08	5 13	6 34	20 43	6 50	.....	23 25	51	20 12.4	-25 44	10.1
Sun Oct 22/Mon Oct 23	1 40	17 46	19 07	5 14	6 35	20 46	6 55	.....	0 37	62	21 11.7	-21 49	10.1
Mon Oct 23/Tue Oct 24	1 44	17 45	19 06	5 14	6 35	20 49	6 59	.....	1 50	73	22 08.4	-16 34	10.1
Tue Oct 24/Wed Oct 25	1 48	17 44	19 05	5 15	6 36	20 52	7 04	.....	3 01	83	23 02.7	-10 21	10.2
Wed Oct 25/Thu Oct 26	1 52	17 43	19 04	5 16	6 37	20 55	7 09	.....	4 11	91	23 55.4	- 3 32	10.2
Thu Oct 26/Fri Oct 27	1 56	17 42	19 03	5 17	6 38	20 58	7 14	16 30	5 21	97	0 47.6	3 29	10.2
Fri Oct 27/Sat Oct 28	2 00	17 41	19 02	5 18	6 39	21 01	7 18	16 59	6 32	100	1 40.3	10 15	10.3
Sat Oct 28/Sun Oct 29	2 04	17 40	19 01	5 18	6 40	21 04	7 23	17 31	7 43	100	2 34.4	16 22	10.3
Sun Oct 29/Mon Oct 30	2 08	17 39	19 00	5 19	6 41	21 07	7 28	18 05	.....	97	3 30.5	21 28	10.3
Mon Oct 30/Tue Oct 31	2 12	17 37	18 59	5 20	6 42	21 10	7 33	18 45	.....	92	4 28.5	25 12	10.4
Tue Oct 31/Wed Nov 01	2 16	17 36	18 58	5 21	6 43	21 13	7 37	19 32	.....	86	5 27.4	27 24	10.4

Calendar for DCT, west longitude (h.m.s) = 7 25 41, latitude (d.m) = 34 44.7
 Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, 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: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Wed Nov 01/Thu Nov 02	2 20	17 36	18 57	5 22	6 44	21 16	7 42	20 24	.....	78	6 25.9	28 00	10.4
Thu Nov 02/Fri Nov 03	2 23	17 35	18 56	5 22	6 44	21 19	7 47	21 21	.....	69	7 22.6	27 05	10.4
Fri Nov 03/Sat Nov 04	2 27	17 34	18 56	5 23	6 45	21 22	7 52	22 21	.....	59	8 16.2	24 51	10.5
Sat Nov 04/Sun Nov 05	2 31	17 33	18 55	5 24	6 46	21 25	7 56	23 22	.....	50	9 06.5	21 32	10.5
Sun Nov 05/Mon Nov 06	2 35	17 32	18 54	5 25	6 47	21 28	8 01	0 21	.....	40	9 53.7	17 23	10.5
Mon Nov 06/Tue Nov 07	2 39	17 31	18 53	5 26	6 48	21 32	8 06	1 19	.....	31	10 38.3	12 35	10.5
Tue Nov 07/Wed Nov 08	2 43	17 30	18 53	5 27	6 49	21 35	8 11	2 16	.....	23	11 21.2	7 19	10.6
Wed Nov 08/Thu Nov 09	2 47	17 29	18 52	5 27	6 50	21 38	8 15	3 12	.....	16	12 03.5	1 46	10.6
Thu Nov 09/Fri Nov 10	2 51	17 29	18 51	5 28	6 51	21 41	8 20	4 10	.....	9	12 46.0	- 3 56	10.6
Fri Nov 10/Sat Nov 11	2 55	17 28	18 51	5 29	6 52	21 45	8 25	5 09	16 03	4	13 29.8	- 9 36	10.6
Sat Nov 11/Sun Nov 12	2 59	17 27	18 50	5 30	6 53	21 48	8 30	6 11	16 29	1	14 15.9	-15 01	10.7
Sun Nov 12/Mon Nov 13	3 03	17 26	18 49	5 31	6 54	21 51	8 34	7 16	16 59	0	15 05.3	-19 55	10.7
Mon Nov 13/Tue Nov 14	3 07	17 26	18 49	5 32	6 55	21 55	8 39	.....	17 34	1	15 58.5	-24 00	10.7
Tue Nov 14/Wed Nov 15	3 11	17 25	18 48	5 32	6 56	21 58	8 44	.....	18 17	4	16 55.6	-26 55	10.7
Wed Nov 15/Thu Nov 16	3 15	17 24	18 48	5 33	6 57	22 02	8 49	.....	19 09	9	17 55.9	-28 21	10.8
Thu Nov 16/Fri Nov 17	3 19	17 24	18 47	5 34	6 58	22 05	8 54	.....	20 09	17	18 57.7	-28 07	10.8
Fri Nov 17/Sat Nov 18	3 23	17 23	18 47	5 35	6 59	22 09	8 58	.....	21 17	26	19 59.0	-26 09	10.8
Sat Nov 18/Sun Nov 19	3 27	17 23	18 47	5 36	7 00	22 12	9 03	.....	22 28	36	20 58.1	-22 36	10.8
Sun Nov 19/Mon Nov 20	3 30	17 22	18 46	5 36	7 01	22 16	9 08	.....	23 40	47	21 54.3	-17 44	10.8
Mon Nov 20/Tue Nov 21	3 34	17 22	18 46	5 37	7 02	22 19	9 13	.....	0 50	59	22 47.7	-11 54	10.9
Tue Nov 21/Wed Nov 22	3 38	17 21	18 46	5 38	7 02	22 23	9 17	.....	1 58	70	23 39.0	- 5 27	10.9
Wed Nov 22/Thu Nov 23	3 42	17 21	18 45	5 39	7 03	22 27	9 22	.....	3 06	80	0 29.5	1 18	10.9
Thu Nov 23/Fri Nov 24	3 46	17 20	18 45	5 40	7 04	22 30	9 27	.....	4 14	88	1 20.3	7 58	10.9
Fri Nov 24/Sat Nov 25	3 50	17 20	18 45	5 41	7 05	22 34	9 32	.....	5 23	95	2 12.4	14 11	10.9
Sat Nov 25/Sun Nov 26	3 54	17 20	18 45	5 41	7 06	22 38	9 36	16 01	6 33	98	3 06.8	19 37	10.9
Sun Nov 26/Mon Nov 27	3 58	17 20	18 44	5 42	7 07	22 42	9 41	16 38	7 42	100	4 03.6	23 54	11.0
Mon Nov 27/Tue Nov 28	4 02	17 19	18 44	5 43	7 08	22 45	9 46	17 21	.....	99	5 02.5	26 44	11.0
Tue Nov 28/Wed Nov 29	4 06	17 19	18 44	5 44	7 09	22 49	9 51	18 11	.....	96	6 02.0	27 59	11.0
Wed Nov 29/Thu Nov 30	4 10	17 19	18 44	5 45	7 10	22 53	9 55	19 07	.....	91	7 00.4	27 38	11.0
Thu Nov 30/Fri Dec 01	4 14	17 19	18 44	5 45	7 11	22 57	10 00	20 07	.....	84	7 56.3	25 49	11.0

***** 2023 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	
Fri Dec 01/Sat Dec 02	4 18	17 19	18 44	5 46	7 12	23 01	10 05	21 08	.....	76	8 48.7	22 49	11.0
Sat Dec 02/Sun Dec 03	4 22	17 18	18 44	5 47	7 12	23 05	10 10	22 09	.....	67	9 37.6	18 52	11.0
Sun Dec 03/Mon Dec 04	4 26	17 18	18 44	5 48	7 13	23 09	10 14	23 07	.....	58	10 23.4	14 13	11.1
Mon Dec 04/Tue Dec 05	4 30	17 18	18 44	5 48	7 14	23 13	10 19	0 04	.....	49	11 07.0	9 04	11.1
Tue Dec 05/Wed Dec 06	4 34	17 18	18 44	5 49	7 15	23 17	10 24	1 01	.....	39	11 49.3	3 37	11.1
Wed Dec 06/Thu Dec 07	4 38	17 18	18 44	5 50	7 16	23 21	10 28	1 57	.....	30	12 31.4	- 2 02	11.1
Thu Dec 07/Fri Dec 08	4 41	17 18	18 44	5 51	7 17	23 25	10 33	2 55	.....	22	13 14.5	- 7 41	11.1
Fri Dec 08/Sat Dec 09	4 45	17 18	18 45	5 51	7 17	23 29	10 38	3 55	.....	14	13 59.6	-13 10	11.1
Sat Dec 09/Sun Dec 10	4 49	17 19	18 45	5 52	7 18	23 33	10 42	4 58	.....	8	14 47.7	-18 15	11.1
Sun Dec 10/Mon Dec 11	4 53	17 19	18 45	5 53	7 19	23 37	10 47	6 05	.....	3	15 39.9	-22 38	11.1
Mon Dec 11/Tue Dec 12	4 57	17 19	18 45	5 53	7 20	23 42	10 51	7 14	16 09	1	16 36.5	-25 59	11.1
Tue Dec 12/Wed Dec 13	5 01	17 19	18 45	5 54	7 20	23 46	10 56	8 21	16 58	0	17 37.0	-27 56	11.1
Wed Dec 13/Thu Dec 14	5 05	17 19	18 46	5 55	7 21	23 50	11 01	.....	17 57	2	18 39.8	-28 10	11.1
Thu Dec 14/Fri Dec 15	5 09	17 20	18 46	5 55	7 22	23 54	11 05	.....	19 05	7	19 42.8	-26 36	11.2
Fri Dec 15/Sat Dec 16	5 13	17 20	18 46	5 56	7 22	23 59	11 10	.....	20 17	14	20 43.7	-23 21	11.2
Sat Dec 16/Sun Dec 17	5 17	17 20	18 47	5 56	7 23	0 03	11 14	.....	21 30	22	21 41.3	-18 41	11.2
Sun Dec 17/Mon Dec 18	5 21	17 21	18 47	5 57	7 23	0 07	11 19	.....	22 42	33	22 35.5	-13 00	11.2
Mon Dec 18/Tue Dec 19	5 25	17 21	18 48	5 57	7 24	0 12	11 23	.....	23 51	44	23 27.0	- 6 41	11.2
Tue Dec 19/Wed Dec 20	5 29	17 22	18 48	5 58	7 25	0 16	11 28	.....	0 58	55	0 16.9	- 0 05	11.2
Wed Dec 20/Thu Dec 21	5 33	17 22	18 49	5 59	7 25	0 20	11 32	.....	2 05	66	1 06.4	6 28	11.2
Thu Dec 21/Fri Dec 22	5 37	17 22	18 49	5 59	7 26	0 25	11 37	.....	3 12	76	1 56.8	12 40	11.2
Fri Dec 22/Sat Dec 23	5 41	17 23	18 49	6 00	7 26	0 29	11 41	.....	4 19	85	2 49.1	18 11	11.2
Sat Dec 23/Sun Dec 24	5 45	17 23	18 50	6 00	7 27	0 34	11 46	.....	5 27	92	3 43.9	22 43	11.2
Sun Dec 24/Mon Dec 25	5 48	17 24	18 51	6 00	7 27	0 38	11 50	.....	6 34	97	4 41.1	25 58	11.2
Mon Dec 25/Tue Dec 26	5 52	17 25	18 51	6 01	7 27	0 43	11 54	16 02	7 35	99	5 39.8	27 44	11.2
Tue Dec 26/Wed Dec 27	5 56	17 25	18 52	6 01	7 28	0 47	11 59	16 55	8 30	100	6 38.6	27 55	11.2
Wed Dec 27/Thu Dec 28	6 00	17 26	18 52	6 02	7 28	0 52	12 03	17 54	.....	98	7 35.7	26 35	11.2
Thu Dec 28/Fri Dec 29	6 04	17 27	18 53	6 02	7 28	0 56	12 07	18 55	.....	95	8 29.7	23 56	11.2
Fri Dec 29/Sat Dec 30	6 08	17 27	18 54	6 02	7 29	1 01	12 11	19 56	.....	89	9 20.3	20 13	11.1
Sat Dec 30/Sun Dec 31	6 12	17 28	18 54	6 03	7 29	1 06	12 16	20 56	.....	83	10 07.5	15 43	11.1
Sun Dec 31/Mon Jan 01	6 16	17 29	18 55	6 03	7 29	1 10	12 20	21 54	.....	75	10 52.0	10 40	11.1