

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:

***** 2022 Night-time Astronomical Calendar for Cheddar Ranch *****

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. DAYLIGHT SAVINGS time is used using conventions for the USA; for 2007+, 2nd Sunday in March to first Sunday in November.

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 2022, at Cheddar Ranch

Times and dates are given in local time, zone = 6 hr West.
 They are generally better than +- 2 minutes.
 Daylight savings time used.

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

NEW		1ST		FULL		LAST	
Dec 04	1 45	Dec 10	19 38	Dec 18	22 38	Dec 26	20 26
Jan 02	12 36	Jan 09	12 13	Jan 17	17 51	Jan 25	7 43
Jan 31	23 49	Feb 08	7 52	Feb 16	11 00	Feb 23	16 35
Mar 02	11 38	Mar 10	4 46	Mar 18	2 21	Mar 25	0 39
Apr 01	1 28	Apr 09	1 48	Apr 16	13 58	Apr 23	6 58
Apr 30	15 31	May 08	19 22	May 15	23 16	May 22	13 45
May 30	6 32	Jun 07	9 49	Jun 14	6 53	Jun 20	22 12
Jun 28	21 53	Jul 06	21 15	Jul 13	13 38	Jul 20	9 19
Jul 28	12 55	Aug 05	6 08	Aug 11	20 36	Aug 18	23 37
Aug 27	3 17	Sep 03	13 09	Sep 10	4 59	Sep 17	16 52
Sep 25	16 54	Oct 02	19 15	Oct 09	15 55	Oct 17	12 16
Oct 25	5 48	Nov 01	1 39	Nov 08	5 03	Nov 16	7 29
Nov 23	16 57	Nov 30	8 39	Dec 07	22 10	Dec 16	2 59
Dec 23	4 18	Dec 29	19 23	Jan 06	17 10	Jan 14	20 13

Calendar for Cheddar Ranch, west longitude (h.m.s) = 6 34 04, latitude (d.m) = 35 46.0
 Rise/set times in Central time (6 hr W), uncorrected for elevation, DAYLIGHT time used, * shows clock reset.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2022 JANUARY *****

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 Jan 01/Sun Jan 02	6 13	17 32	19 03	6 13	7 44	1 15	12 27	7 52	16 23	0	18 19.5	-26 22	11.2
Sun Jan 02/Mon Jan 03	6 17	17 32	19 04	6 13	7 44	1 20	12 32	.....	17 29	0	19 26.0	-26 02	11.2
Mon Jan 03/Tue Jan 04	6 21	17 33	19 04	6 13	7 44	1 25	12 36	.....	18 41	3	20 30.3	-23 52	11.2
Tue Jan 04/Wed Jan 05	6 25	17 34	19 05	6 14	7 45	1 29	12 40	.....	19 55	9	21 30.5	-20 13	11.1
Wed Jan 05/Thu Jan 06	6 29	17 35	19 06	6 14	7 45	1 34	12 44	.....	21 06	16	22 26.0	-15 30	11.1
Thu Jan 06/Fri Jan 07	6 33	17 36	19 07	6 14	7 45	1 39	12 48	.....	22 14	25	23 17.2	-10 10	11.1
Fri Jan 07/Sat Jan 08	6 37	17 37	19 07	6 14	7 45	1 44	12 52	.....	23 17	34	0 05.2	- 4 31	11.1
Sat Jan 08/Sun Jan 09	6 41	17 37	19 08	6 14	7 44	1 48	12 56	.....	0 18	44	0 51.1	1 08	11.1
Sun Jan 09/Mon Jan 10	6 45	17 38	19 09	6 14	7 44	1 53	13 00	.....	1 17	54	1 36.1	6 36	11.1
Mon Jan 10/Tue Jan 11	6 49	17 39	19 10	6 14	7 44	1 58	13 04	.....	2 16	64	2 21.1	11 42	11.1
Tue Jan 11/Wed Jan 12	6 53	17 40	19 11	6 14	7 44	2 03	13 08	.....	3 14	73	3 07.2	16 18	11.1
Wed Jan 12/Thu Jan 13	6 57	17 41	19 11	6 14	7 44	2 07	13 11	.....	4 12	81	3 54.9	20 12	11.0
Thu Jan 13/Fri Jan 14	7 01	17 42	19 12	6 14	7 44	2 12	13 15	.....	5 10	88	4 44.7	23 15	11.0
Fri Jan 14/Sat Jan 15	7 05	17 43	19 13	6 13	7 43	2 17	13 19	.....	6 06	93	5 36.6	25 17	11.0
Sat Jan 15/Sun Jan 16	7 09	17 44	19 14	6 13	7 43	2 22	13 23	15 43	6 59	97	6 30.0	26 08	11.0
Sun Jan 16/Mon Jan 17	7 13	17 45	19 15	6 13	7 43	2 27	13 27	16 34	7 47	99	7 24.2	25 44	11.0
Mon Jan 17/Tue Jan 18	7 16	17 46	19 16	6 13	7 42	2 31	13 30	17 30	.....	100	8 18.0	24 04	11.0
Tue Jan 18/Wed Jan 19	7 20	17 47	19 17	6 13	7 42	2 36	13 34	18 30	.....	98	9 10.5	21 13	10.9
Wed Jan 19/Thu Jan 20	7 24	17 48	19 17	6 12	7 42	2 41	13 38	19 31	.....	95	10 01.3	17 20	10.9
Thu Jan 20/Fri Jan 21	7 28	17 49	19 18	6 12	7 41	2 46	13 41	20 33	.....	89	10 50.4	12 37	10.9
Fri Jan 21/Sat Jan 22	7 32	17 50	19 19	6 12	7 41	2 51	13 45	21 35	.....	82	11 38.2	7 16	10.9
Sat Jan 22/Sun Jan 23	7 36	17 51	19 20	6 11	7 40	2 55	13 48	22 38	.....	73	12 25.5	1 32	10.9
Sun Jan 23/Mon Jan 24	7 40	17 52	19 21	6 11	7 40	3 00	13 52	23 41	.....	63	13 13.3	- 4 22	10.8
Mon Jan 24/Tue Jan 25	7 44	17 53	19 22	6 10	7 39	3 05	13 56	0 46	.....	53	14 02.7	-10 11	10.8
Tue Jan 25/Wed Jan 26	7 48	17 54	19 23	6 10	7 38	3 10	13 59	1 55	.....	42	14 54.7	-15 37	10.8
Wed Jan 26/Thu Jan 27	7 52	17 55	19 24	6 10	7 38	3 15	14 02	3 06	.....	31	15 50.4	-20 20	10.8
Thu Jan 27/Fri Jan 28	7 56	17 56	19 25	6 09	7 37	3 20	14 06	4 19	.....	21	16 50.1	-23 57	10.7
Fri Jan 28/Sat Jan 29	8 00	17 57	19 25	6 08	7 36	3 25	14 09	5 30	.....	12	17 53.3	-26 05	10.7
Sat Jan 29/Sun Jan 30	8 04	17 58	19 26	6 08	7 36	3 29	14 13	6 34	.....	6	18 58.4	-26 28	10.7
Sun Jan 30/Mon Jan 31	8 08	17 59	19 27	6 07	7 35	3 34	14 16	7 30	16 14	2	20 03.0	-25 01	10.7
Mon Jan 31/Tue Feb 01	8 12	18 01	19 28	6 07	7 34	3 39	14 19	8 16	17 27	0	21 04.8	-21 56	10.6

***** 2022 FEBRUARY *****

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
Tue Feb 01/Wed Feb 02	8 16	18 02	19 29	6 06	7 33	3 44	14 23	.....	18 41	2	22 02.6	-17 33	10.6
Wed Feb 02/Thu Feb 03	8 20	18 03	19 30	6 05	7 33	3 49	14 26	.....	19 52	5	22 56.2	-12 19	10.6
Thu Feb 03/Fri Feb 04	8 23	18 04	19 31	6 05	7 32	3 54	14 29	.....	20 59	11	23 46.3	- 6 37	10.6
Fri Feb 04/Sat Feb 05	8 27	18 05	19 32	6 04	7 31	3 59	14 32	.....	22 03	19	0 33.9	- 0 47	10.5
Sat Feb 05/Sun Feb 06	8 31	18 06	19 33	6 03	7 30	4 03	14 35	.....	23 05	27	1 20.0	4 54	10.5
Sun Feb 06/Mon Feb 07	8 35	18 07	19 34	6 02	7 29	4 08	14 39	.....	0 05	37	2 05.6	10 14	10.5
Mon Feb 07/Tue Feb 08	8 39	18 08	19 35	6 02	7 28	4 13	14 42	.....	1 04	46	2 51.7	15 04	10.4
Tue Feb 08/Wed Feb 09	8 43	18 09	19 35	6 01	7 27	4 18	14 45	.....	2 03	56	3 39.1	19 13	10.4
Wed Feb 09/Thu Feb 10	8 47	18 10	19 36	6 00	7 26	4 23	14 48	.....	3 02	65	4 28.3	22 33	10.4
Thu Feb 10/Fri Feb 11	8 51	18 11	19 37	5 59	7 25	4 28	14 51	.....	3 59	74	5 19.5	24 53	10.4
Fri Feb 11/Sat Feb 12	8 55	18 12	19 38	5 58	7 24	4 32	14 54	.....	4 53	82	6 12.3	26 05	10.3
Sat Feb 12/Sun Feb 13	8 59	18 13	19 39	5 57	7 23	4 37	14 57	.....	5 43	88	7 06.2	26 04	10.3
Sun Feb 13/Mon Feb 14	9 03	18 14	19 40	5 56	7 22	4 42	15 00	.....	6 27	94	8 00.3	24 45	10.3
Mon Feb 14/Tue Feb 15	9 07	18 15	19 41	5 55	7 21	4 47	15 03	16 20	7 06	98	8 53.6	22 13	10.2
Tue Feb 15/Wed Feb 16	9 11	18 16	19 42	5 54	7 20	4 52	15 06	17 21	7 41	100	9 45.5	18 32	10.2
Wed Feb 16/Thu Feb 17	9 15	18 17	19 43	5 53	7 19	4 57	15 09	18 24	.....	99	10 35.8	13 55	10.2
Thu Feb 17/Fri Feb 18	9 19	18 18	19 44	5 52	7 18	5 01	15 12	19 27	.....	97	11 24.8	8 35	10.1
Fri Feb 18/Sat Feb 19	9 23	18 19	19 44	5 51	7 16	5 06	15 15	20 31	.....	93	12 13.0	2 47	10.1
Sat Feb 19/Sun Feb 20	9 27	18 20	19 45	5 50	7 15	5 11	15 17	21 34	.....	86	13 01.4	- 3 15	10.1
Sun Feb 20/Mon Feb 21	9 31	18 21	19 46	5 49	7 14	5 16	15 20	22 40	.....	78	13 50.8	- 9 12	10.0
Mon Feb 21/Tue Feb 22	9 34	18 22	19 47	5 48	7 13	5 21	15 23	23 47	.....	68	14 42.3	-14 47	10.0
Tue Feb 22/Wed Feb 23	9 38	18 23	19 48	5 46	7 12	5 26	15 26	0 56	.....	57	15 36.7	-19 40	10.0
Wed Feb 23/Thu Feb 24	9 42	18 24	19 49	5 45	7 10	5 31	15 29	2 07	.....	46	16 34.6	-23 31	9.9
Thu Feb 24/Fri Feb 25	9 46	18 25	19 50	5 44	7 09	5 35	15 31	3 17	.....	35	17 35.7	-25 59	9.9
Fri Feb 25/Sat Feb 26	9 50	18 26	19 51	5 43	7 08	5 40	15 34	4 22	.....	24	18 38.8	-26 50	9.9
Sat Feb 26/Sun Feb 27	9 54	18 27	19 52	5 42	7 07	5 45	15 37	5 19	.....	15	19 42.0	-25 55	9.8
Sun Feb 27/Mon Feb 28	9 58	18 27	19 52	5 40	7 05	5 50	15 39	6 08	.....	8	20 43.3	-23 23	9.8
Mon Feb 28/Tue Mar 01	10 02	18 28	19 53	5 39	7 04	5 55	15 42	6 48	16 18	3	21 41.3	-19 27	9.8

Calendar for Cheddar Ranch, west longitude (h.m.s) = 6 34 04, latitude (d.m) = 35 46.0
 Rise/set times in Central time (6 hr W), uncorrected for elevation, DAYLIGHT time used, * shows clock reset.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2022 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
Tue Mar 01/Wed Mar 02	10 06	18 29	19 54	5 38	7 03	6 00	15 45	7 22	17 30	1	22 35.7	-14 30	9.7
Wed Mar 02/Thu Mar 03	10 10	18 30	19 55	5 37	7 01	6 04	15 47	.....	18 38	0	23 26.8	- 8 54	9.7
Thu Mar 03/Fri Mar 04	10 14	18 31	19 56	5 35	7 00	6 09	15 50	.....	19 44	3	0 15.3	- 3 02	9.7
Fri Mar 04/Sat Mar 05	10 18	18 32	19 57	5 34	6 59	6 14	15 53	.....	20 48	7	1 02.2	2 50	9.6
Sat Mar 05/Sun Mar 06	10 22	18 33	19 58	5 33	6 57	6 19	15 55	.....	21 49	13	1 48.4	8 25	9.6
Sun Mar 06/Mon Mar 07	10 26	18 34	19 59	5 31	6 56	6 24	15 58	.....	22 50	21	2 34.8	13 33	9.5
Mon Mar 07/Tue Mar 08	10 30	18 35	20 00	5 30	6 54	6 29	16 00	.....	23 51	29	3 22.2	18 01	9.5
Tue Mar 08/Wed Mar 09	10 34	18 36	20 00	5 28	6 53	6 33	16 03	.....	0 51	38	4 11.1	21 40	9.5
Wed Mar 09/Thu Mar 10	10 38	18 36	20 01	5 27	6 52	6 38	16 05	.....	1 49	47	5 01.6	24 22	9.4
Thu Mar 10/Fri Mar 11	10 41	18 37	20 02	5 26	6 50	6 43	16 08	.....	2 44	57	5 53.8	25 57	9.4
Fri Mar 11/Sat Mar 12	10 45	18 38	20 03	5 24	6 49	6 48	16 10	.....	3 36	66	6 47.1	26 20	9.3
Sat Mar 12/Sun Mar 13*	10 49	18 39	20 04	5 23	7 48	6 53	16 13	.....	5 22	75	7 40.8	25 27	9.3
Sun Mar 13/Mon Mar 14	9 53	19 40	21 05	6 21	7 46	6 58	16 15	.....	6 03	83	8 32.6	23 28	9.3
Mon Mar 14/Tue Mar 15	9 57	19 41	21 06	6 20	7 45	7 03	16 18	.....	6 39	90	9 25.0	20 12	9.2
Tue Mar 15/Wed Mar 16	10 01	19 42	21 07	6 18	7 43	7 07	16 20	17 10	7 12	95	10 16.0	15 52	9.2
Wed Mar 16/Thu Mar 17	10 05	19 43	21 08	6 17	7 42	7 12	16 23	18 13	.....	99	11 05.8	10 41	9.2
Thu Mar 17/Fri Mar 18	10 09	19 43	21 09	6 15	7 40	7 17	16 25	19 18	.....	100	11 55.0	4 53	9.1
Fri Mar 18/Sat Mar 19	10 13	19 44	21 10	6 14	7 39	7 22	16 28	20 23	.....	99	12 44.2	- 1 17	9.1
Sat Mar 19/Sun Mar 20	10 17	19 45	21 11	6 12	7 38	7 27	16 30	21 29	.....	95	13 34.3	- 7 29	9.0
Sun Mar 20/Mon Mar 21	10 21	19 46	21 11	6 11	7 36	7 32	16 32	22 37	.....	89	14 26.2	-13 24	9.0
Mon Mar 21/Tue Mar 22	10 25	19 47	21 12	6 09	7 35	7 37	16 35	23 48	.....	81	15 20.9	-18 40	8.9
Tue Mar 22/Wed Mar 23	10 29	19 48	21 13	6 08	7 33	7 42	16 37	0 59	.....	72	16 18.7	-22 54	8.9
Wed Mar 23/Thu Mar 24	10 33	19 48	21 14	6 06	7 32	7 46	16 40	2 10	.....	61	17 19.4	-25 48	8.9
Thu Mar 24/Fri Mar 25	10 37	19 49	21 15	6 05	7 30	7 51	16 42	3 16	.....	50	18 22.0	-27 04	8.8
Fri Mar 25/Sat Mar 26	10 40	19 50	21 16	6 03	7 29	7 56	16 44	4 15	.....	38	19 24.6	-26 37	8.8
Sat Mar 26/Sun Mar 27	10 44	19 51	21 17	6 01	7 28	8 01	16 47	5 05	.....	28	20 25.4	-24 32	8.7
Sun Mar 27/Mon Mar 28	10 48	19 52	21 18	6 00	7 26	8 06	16 49	5 47	.....	19	21 23.2	-21 02	8.7
Mon Mar 28/Tue Mar 29	10 52	19 53	21 19	5 58	7 25	8 11	16 51	6 22	.....	11	22 17.4	-16 28	8.7
Tue Mar 29/Wed Mar 30	10 56	19 53	21 20	5 57	7 23	8 16	16 54	6 53	17 23	5	23 08.4	-11 08	8.6
Wed Mar 30/Thu Mar 31	11 00	19 54	21 21	5 55	7 22	8 21	16 56	.....	18 29	2	23 56.8	- 5 23	8.6
Thu Mar 31/Fri Apr 01	11 04	19 55	21 22	5 53	7 20	8 26	16 59	.....	19 32	0	0 43.7	0 30	8.5

***** 2022 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
Fri Apr 01/Sat Apr 02	11 08	19 56	21 23	5 52	7 19	8 31	17 01	.....	20 34	1	1 29.8	6 15	8.5
Sat Apr 02/Sun Apr 03	11 12	19 57	21 24	5 50	7 18	8 36	17 03	.....	21 36	4	2 16.1	11 37	8.4
Sun Apr 03/Mon Apr 04	11 16	19 58	21 25	5 49	7 16	8 41	17 06	.....	22 37	8	3 03.2	16 26	8.4
Mon Apr 04/Tue Apr 05	11 20	19 58	21 26	5 47	7 15	8 46	17 08	.....	23 38	15	3 51.8	20 28	8.3
Tue Apr 05/Wed Apr 06	11 24	19 59	21 27	5 45	7 13	8 51	17 10	.....	0 38	22	4 42.0	23 35	8.3
Wed Apr 06/Thu Apr 07	11 28	20 00	21 28	5 44	7 12	8 56	17 13	.....	1 35	30	5 33.7	25 37	8.3
Thu Apr 07/Fri Apr 08	11 32	20 01	21 29	5 42	7 11	9 01	17 15	.....	2 28	39	6 26.6	26 29	8.2
Fri Apr 08/Sat Apr 09	11 36	20 02	21 30	5 41	7 09	9 06	17 17	.....	3 17	49	7 19.9	26 05	8.2
Sat Apr 09/Sun Apr 10	11 40	20 03	21 31	5 39	7 08	9 11	17 20	.....	3 59	58	8 12.8	24 27	8.1
Sun Apr 10/Mon Apr 11	11 44	20 03	21 32	5 37	7 06	9 16	17 22	.....	4 37	68	9 04.9	21 37	8.1
Mon Apr 11/Tue Apr 12	11 47	20 04	21 34	5 36	7 05	9 21	17 24	.....	5 10	77	9 55.7	17 43	8.0
Tue Apr 12/Wed Apr 13	11 51	20 05	21 35	5 34	7 04	9 26	17 27	.....	5 40	85	10 45.4	12 52	8.0
Wed Apr 13/Thu Apr 14	11 55	20 06	21 36	5 33	7 02	9 31	17 29	.....	6 08	92	11 34.5	7 16	7.9
Thu Apr 14/Fri Apr 15	11 59	20 07	21 37	5 31	7 01	9 36	17 31	18 04	6 36	97	12 23.7	1 09	7.9
Fri Apr 15/Sat Apr 16	12 03	20 08	21 38	5 30	7 00	9 41	17 34	19 11	.....	100	13 14.0	- 5 12	7.9
Sat Apr 16/Sun Apr 17	12 07	20 08	21 39	5 28	6 59	9 46	17 36	20 19	.....	100	14 06.3	-11 27	7.8
Sun Apr 17/Mon Apr 18	12 11	20 09	21 40	5 26	6 57	9 51	17 38	21 31	.....	97	15 01.6	-17 12	7.8
Mon Apr 18/Tue Apr 19	12 15	20 10	21 41	5 25	6 56	9 56	17 41	22 45	.....	92	16 00.4	-22 01	7.7
Tue Apr 19/Wed Apr 20	12 19	20 11	21 42	5 23	6 55	10 01	17 43	23 59	.....	84	17 02.5	-25 28	7.7
Wed Apr 20/Thu Apr 21	12 23	20 12	21 44	5 22	6 53	10 06	17 46	1 09	.....	75	18 06.7	-27 13	7.6
Thu Apr 21/Fri Apr 22	12 27	20 13	21 45	5 20	6 52	10 11	17 48	2 12	.....	64	19 11.0	-27 11	7.6
Fri Apr 22/Sat Apr 23	12 31	20 13	21 46	5 19	6 51	10 16	17 50	3 05	.....	53	20 13.2	-25 24	7.5
Sat Apr 23/Sun Apr 24	12 35	20 14	21 47	5 17	6 50	10 21	17 53	3 48	.....	42	21 11.9	-22 09	7.5
Sun Apr 24/Mon Apr 25	12 39	20 15	21 48	5 16	6 49	10 27	17 55	4 25	.....	31	22 06.5	-17 46	7.5
Mon Apr 25/Tue Apr 26	12 43	20 16	21 49	5 14	6 47	10 32	17 58	4 56	.....	22	22 57.4	-12 37	7.4
Tue Apr 26/Wed Apr 27	12 47	20 17	21 51	5 13	6 46	10 37	18 00	5 24	.....	14	23 45.6	- 7 01	7.4
Wed Apr 27/Thu Apr 28	12 51	20 18	21 52	5 11	6 45	10 42	18 03	5 50	17 22	7	0 31.8	- 1 13	7.3
Thu Apr 28/Fri Apr 29	12 55	20 18	21 53	5 10	6 44	10 47	18 05	6 15	18 24	3	1 17.2	4 31	7.3
Fri Apr 29/Sat Apr 30	12 58	20 19	21 54	5 08	6 43	10 52	18 07	.....	19 25	1	2 02.7	9 58	7.2
Sat Apr 30/Sun May 01	13 02	20 20	21 55	5 07	6 42	10 57	18 10	.....	20 25	0	2 49.1	14 56	7.2

Calendar for Cheddar Ranch, west longitude (h.m.s) = 6 34 04, latitude (d.m) = 35 46.0
 Rise/set times in Central time (6 hr W), uncorrected for elevation, DAYLIGHT time used, * shows clock reset.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2022 MAY *****

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
Sun May 01/Mon May 02	13 06	20 21 21 56 5 05 6 41	11 02 18 12	..... 21 26 2 3 36.9 19 14	7.1
Mon May 02/Tue May 03	13 10	20 22 21 58 5 04 6 40	11 08 18 15	..... 22 27 5 4 26.4 22 39	7.1
Tue May 03/Wed May 04	13 14	20 23 21 59 5 03 6 39	11 13 18 18	..... 23 25 10 5 17.5 25 02	7.1
Wed May 04/Thu May 05	13 18	20 24 22 00 5 01 6 38	11 18 18 20	..... 0 21 16 6 09.9 26 16	7.0
Thu May 05/Fri May 06	13 22	20 24 22 01 5 00 6 37	11 23 18 23	..... 1 11 24 7 02.8 26 17	7.0
Fri May 06/Sat May 07	13 26	20 25 22 02 4 58 6 36	11 28 18 25	..... 1 56 32 7 55.3 25 04	6.9
Sat May 07/Sun May 08	13 30	20 26 22 04 4 57 6 35	11 33 18 28	..... 2 35 42 8 46.9 22 40	6.9
Sun May 08/Mon May 09	13 34	20 27 22 05 4 56 6 34	11 39 18 31	..... 3 09 51 9 37.0 19 12	6.8
Mon May 09/Tue May 10	13 38	20 28 22 06 4 55 6 33	11 44 18 33	..... 3 39 61 10 26.0 14 47	6.8
Tue May 10/Wed May 11	13 42	20 29 22 07 4 53 6 32	11 49 18 36	..... 4 07 71 11 14.1 9 34	6.8
Wed May 11/Thu May 12	13 46	20 29 22 08 4 52 6 31	11 54 18 39	..... 4 35 80 12 02.2 3 44	6.7
Thu May 12/Fri May 13	13 50	20 30 22 10 4 51 6 30	11 59 18 41	..... 5 02 88 12 51.2 - 2 29	6.7
Fri May 13/Sat May 14	13 54	20 31 22 11 4 50 6 30	12 04 18 44	17 57 5 31 95 13 42.3 - 8 50	6.6
Sat May 14/Sun May 15	13 58	20 32 22 12 4 48 6 29	12 09 18 47	19 07 6 04 99 14 36.6 -14 55	6.6
Sun May 15/Mon May 16	14 02	20 33 22 13 4 47 6 28	12 14 18 50	20 21 100 15 34.9 -20 18	6.6
Mon May 16/Tue May 17	14 05	20 33 22 14 4 46 6 27	12 20 18 52	21 37 98 16 37.5 -24 29	6.5
Tue May 17/Wed May 18	14 09	20 34 22 16 4 45 6 27	12 25 18 55	22 52 94 17 43.5 -27 00	6.5
Wed May 18/Thu May 19	14 13	20 35 22 17 4 44 6 26	12 30 18 58	0 01 86 18 50.6 -27 36	6.5
Thu May 19/Fri May 20	14 17	20 36 22 18 4 43 6 25	12 35 19 01	1 00 77 19 56.1 -26 16	6.4
Fri May 20/Sat May 21	14 21	20 36 22 19 4 42 6 25	12 40 19 04	1 48 67 20 57.8 -23 16	6.4
Sat May 21/Sun May 22	14 25	20 37 22 20 4 41 6 24	12 45 19 07	2 27 56 21 54.8 -19 01	6.3
Sun May 22/Mon May 23	14 29	20 38 22 21 4 40 6 23	12 50 19 10	3 00 45 22 47.2 -13 55	6.3
Mon May 23/Tue May 24	14 33	20 39 22 22 4 39 6 23	12 55 19 13	3 28 34 23 36.1 - 8 21	6.3
Tue May 24/Wed May 25	14 37	20 39 22 23 4 38 6 22	13 00 19 16	3 54 25 0 22.6 - 2 35	6.2
Wed May 25/Thu May 26	14 41	20 40 22 24 4 38 6 22	13 05 19 19	4 20 17 1 07.7 3 09	6.2
Thu May 26/Fri May 27	14 45	20 41 22 25 4 37 6 21	13 10 19 22	4 46 10 1 52.6 8 38	6.2
Fri May 27/Sat May 28	14 49	20 42 22 27 4 36 6 21	13 15 19 26	5 13 18 18 5 2 38.2 13 40	6.2
Sat May 28/Sun May 29	14 53	20 42 22 28 4 35 6 20	13 20 19 29	5 44 19 18 2 3 25.1 18 06	6.1
Sun May 29/Mon May 30	14 57	20 43 22 28 4 34 6 20	13 25 19 32	6 19 20 18 0 4 13.7 21 43	6.1
Mon May 30/Tue May 31	15 01	20 44 22 29 4 34 6 20	13 30 19 35	..... 21 17 0 5 04.2 24 22	6.1
Tue May 31/Wed Jun 01	15 05	20 44 22 30 4 33 6 19	13 35 19 39	..... 22 14 3 5 56.0 25 54	6.0

***** 2022 JUNE *****

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
Wed Jun 01/Thu Jun 02	15 09	20 45 22 31 4 33 6 19	13 40 19 42	..... 23 06 6 6 48.5 26 14	6.0
Thu Jun 02/Fri Jun 03	15 12	20 46 22 32 4 32 6 19	13 44 19 45	..... 23 53 12 7 40.9 25 21	6.0
Fri Jun 03/Sat Jun 04	15 16	20 46 22 33 4 32 6 18	13 49 19 49	..... 0 34 19 8 32.2 23 18	6.0
Sat Jun 04/Sun Jun 05	15 20	20 47 22 34 4 31 6 18	13 54 19 52	..... 1 09 27 9 22.0 20 10	6.0
Sun Jun 05/Mon Jun 06	15 24	20 47 22 35 4 31 6 18	13 59 19 56	..... 1 40 36 10 10.2 16 07	5.9
Mon Jun 06/Tue Jun 07	15 28	20 48 22 35 4 30 6 18	14 03 19 59	..... 2 08 45 10 57.3 11 16	5.9
Tue Jun 07/Wed Jun 08	15 32	20 48 22 36 4 30 6 18	14 08 20 03	..... 2 35 56 11 43.9 5 48	5.9
Wed Jun 08/Thu Jun 09	15 36	20 49 22 37 4 30 6 18	14 13 20 06	..... 3 01 66 12 31.0 - 0 08	5.9
Thu Jun 09/Fri Jun 10	15 40	20 49 22 38 4 29 6 18	14 17 20 10	..... 3 28 76 13 19.7 - 6 17	5.9
Fri Jun 10/Sat Jun 11	15 44	20 50 22 38 4 29 6 17	14 22 20 14	..... 3 59 85 14 11.3 -12 23	5.8
Sat Jun 11/Sun Jun 12	15 48	20 50 22 39 4 29 6 17	14 27 20 18	17 54 4 34 92 15 06.9 -18 04	5.8
Sun Jun 12/Mon Jun 13	15 52	20 51 22 39 4 29 6 17	14 31 20 21	19 09 5 17 98 16 07.5 -22 51	5.8
Mon Jun 13/Tue Jun 14	15 56	20 51 22 40 4 29 6 17	14 36 20 25	20 26 6 09 100 17 12.9 -26 13	5.8
Tue Jun 14/Wed Jun 15	16 00	20 51 22 40 4 29 6 18	14 40 20 29	21 40 99 18 21.4 -27 42	5.8
Wed Jun 15/Thu Jun 16	16 04	20 52 22 41 4 29 6 18	14 44 20 33	22 45 95 19 30.1 -27 07	5.8
Thu Jun 16/Fri Jun 17	16 08	20 52 22 41 4 29 6 18	14 49 20 37	23 40 89 20 35.9 -24 36	5.8
Fri Jun 17/Sat Jun 18	16 12	20 52 22 42 4 29 6 18	14 53 20 41	0 24 80 21 36.9 -20 34	5.8
Sat Jun 18/Sun Jun 19	16 16	20 53 22 42 4 29 6 18	14 57 20 45	1 00 70 22 32.0 -15 29	5.8
Sun Jun 19/Mon Jun 20	16 20	20 53 22 42 4 29 6 18	15 02 20 49	1 31 60 23 24.0 - 9 50	5.8
Mon Jun 20/Tue Jun 21	16 23	20 53 22 42 4 29 6 18	15 06 20 53	1 58 49 0 12.0 - 3 56	5.8
Tue Jun 21/Wed Jun 22	16 27	20 53 22 43 4 29 6 19	15 10 20 58	2 24 39 0 58.0 1 54	5.8
Wed Jun 22/Thu Jun 23	16 31	20 54 22 43 4 30 6 19	15 14 21 02	2 50 29 1 43.2 7 29	5.8
Thu Jun 23/Fri Jun 24	16 35	20 54 22 43 4 30 6 19	15 18 21 06	3 17 20 2 28.6 12 38	5.8
Fri Jun 24/Sat Jun 25	16 39	20 54 22 43 4 30 6 19	15 22 21 10	3 46 13 3 15.1 17 10	5.8
Sat Jun 25/Sun Jun 26	16 43	20 54 22 43 4 31 6 20	15 26 21 15	4 19 18 12 7 4 03.1 20 57	5.8
Sun Jun 26/Mon Jun 27	16 47	20 54 22 43 4 31 6 20	15 30 21 19	4 57 19 11 3 4 52.8 23 47	5.8
Mon Jun 27/Tue Jun 28	16 51	20 54 22 43 4 32 6 20	15 34 21 24	5 41 20 08 1 5 44.1 25 33	5.8
Tue Jun 28/Wed Jun 29	16 55	20 54 22 43 4 32 6 21	15 38 21 28	..... 21 02 0 6 36.4 26 08	5.8
Wed Jun 29/Thu Jun 30	16 59	20 54 22 43 4 33 6 21	15 41 21 32	..... 21 50 1 7 28.6 25 31	5.8
Thu Jun 30/Fri Jul 01	17 03	20 54 22 43 4 33 6 22	15 45 21 37	..... 22 33 4 8 20.0 23 42	5.8

Calendar for Cheddar Ranch, west longitude (h.m.s) = 6 34 04, latitude (d.m) = 35 46.0
 Rise/set times in Central time (6 hr W), uncorrected for elevation, DAYLIGHT time used, * shows clock reset.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2022 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
Fri Jul 01/Sat Jul 02	17 07	20 54 22 42 4 34 6 22	15 49 21 42	..... 23 10 8 9 09.9 20 49	5.9
Sat Jul 02/Sun Jul 03	17 11	20 54 22 42 4 35 6 23	15 53 21 46	..... 23 42 14 9 58.0 17 00	5.9
Sun Jul 03/Mon Jul 04	17 15	20 54 22 42 4 35 6 23	15 56 21 51	..... 0 11 22 10 44.6 12 24	5.9
Mon Jul 04/Tue Jul 05	17 19	20 54 22 41 4 36 6 24	16 00 21 55	..... 0 37 31 11 30.3 7 11	5.9
Tue Jul 05/Wed Jul 06	17 23	20 54 22 41 4 37 6 24	16 03 22 00	..... 1 03 40 12 15.9 1 31	5.9
Wed Jul 06/Thu Jul 07	17 27	20 53 22 41 4 38 6 25	16 07 22 05	..... 1 29 51 13 02.5 - 4 23	5.9
Thu Jul 07/Fri Jul 08	17 30	20 53 22 40 4 38 6 25	16 10 22 10	..... 1 57 62 13 51.2 -10 20	6.0
Fri Jul 08/Sat Jul 09	17 34	20 53 22 40 4 39 6 26	16 14 22 14	..... 2 28 72 14 43.3 -16 01	6.0
Sat Jul 09/Sun Jul 10	17 38	20 53 22 39 4 40 6 26	16 17 22 19	..... 3 06 82 15 40.1 -21 04	6.0
Sun Jul 10/Mon Jul 11	17 42	20 52 22 38 4 41 6 27	16 21 22 24	17 59 3 52 90 16 42.1 -25 01	6.0
Mon Jul 11/Tue Jul 12	17 46	20 52 22 38 4 42 6 28	16 24 22 29	19 14 4 49 96 17 48.8 -27 21	6.1
Tue Jul 12/Wed Jul 13	17 50	20 52 22 37 4 43 6 28	16 27 22 34	20 24 5 57 99 18 57.9 -27 42	6.1
Wed Jul 13/Thu Jul 14	17 54	20 51 22 36 4 44 6 29	16 30 22 39	21 25 99 20 06.3 -25 59	6.1
Thu Jul 14/Fri Jul 15	17 58	20 51 22 36 4 45 6 30	16 34 22 43	22 15 97 21 11.1 -22 26	6.1
Fri Jul 15/Sat Jul 16	18 02	20 50 22 35 4 46 6 30	16 37 22 48	22 56 91 22 10.9 -17 33	6.2
Sat Jul 16/Sun Jul 17	18 06	20 50 22 34 4 47 6 31	16 40 22 53	23 30 83 23 05.7 -11 50	6.2
Sun Jul 17/Mon Jul 18	18 10	20 49 22 33 4 48 6 32	16 43 22 58	23 59 74 23 56.6 - 5 44	6.2
Mon Jul 18/Tue Jul 19	18 14	20 49 22 32 4 49 6 32	16 46 23 03	0 26 64 0 44.6 0 21	6.3
Tue Jul 19/Wed Jul 20	18 18	20 48 22 31 4 50 6 33	16 49 23 08	0 52 54 1 31.2 6 11	6.3
Wed Jul 20/Thu Jul 21	18 22	20 48 22 30 4 51 6 34	16 52 23 13	1 19 43 2 17.4 11 34	6.3
Thu Jul 21/Fri Jul 22	18 26	20 47 22 30 4 52 6 34	16 55 23 18	1 48 34 3 04.2 16 19	6.4
Fri Jul 22/Sat Jul 23	18 30	20 46 22 29 4 53 6 35	16 58 23 23	2 20 25 3 52.1 20 17	6.4
Sat Jul 23/Sun Jul 24	18 34	20 46 22 27 4 54 6 36	17 01 23 28	2 57 17 4 41.7 23 20	6.4
Sun Jul 24/Mon Jul 25	18 38	20 45 22 26 4 55 6 37	17 04 23 33	3 39 18 03 11 5 32.7 25 19	6.5
Mon Jul 25/Tue Jul 26	18 41	20 44 22 25 4 56 6 37	17 06 23 39	4 27 18 58 6 6 24.7 26 08	6.5
Tue Jul 26/Wed Jul 27	18 45	20 43 22 24 4 57 6 38	17 09 23 44	5 20 19 48 2 7 17.0 25 44	6.6
Wed Jul 27/Thu Jul 28	18 49	20 43 22 23 4 59 6 39	17 12 23 49	6 17 20 32 0 8 08.6 24 09	6.6
Thu Jul 28/Fri Jul 29	18 53	20 42 22 22 5 00 6 40	17 15 23 54	..... 21 11 0 8 58.8 21 27	6.6
Fri Jul 29/Sat Jul 30	18 57	20 41 22 21 5 01 6 40	17 18 23 59	..... 21 45 2 9 47.3 17 47	6.7
Sat Jul 30/Sun Jul 31	19 01	20 40 22 19 5 02 6 41	17 20 0 04	..... 22 14 6 10 34.2 13 19	6.7
Sun Jul 31/Mon Aug 01	19 05	20 39 22 18 5 03 6 42	17 23 0 09	..... 22 41 11 11 19.8 8 13	6.7

***** 2022 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
Mon Aug 01/Tue Aug 02	19 09	20 38 22 17 5 04 6 43	17 26 0 14	..... 23 07 18 12 04.8 2 41	6.8
Tue Aug 02/Wed Aug 03	19 13	20 37 22 16 5 05 6 44	17 28 0 19	..... 23 32 26 12 50.2 - 3 06	6.8
Wed Aug 03/Thu Aug 04	19 17	20 36 22 14 5 07 6 44	17 31 0 24	..... 23 58 36 13 37.1 - 8 56	6.9
Thu Aug 04/Fri Aug 05	19 21	20 35 22 13 5 08 6 45	17 33 0 29	..... 0 28 47 14 26.7 -14 33	6.9
Fri Aug 05/Sat Aug 06	19 25	20 34 22 12 5 09 6 46	17 36 0 34	..... 1 01 58 15 20.0 -19 40	7.0
Sat Aug 06/Sun Aug 07	19 29	20 33 22 10 5 10 6 47	17 39 0 40	..... 1 42 69 16 18.1 -23 53	7.0
Sun Aug 07/Mon Aug 08	19 33	20 32 22 09 5 11 6 47	17 41 0 45	..... 2 33 79 17 21.0 -26 46	7.0
Mon Aug 08/Tue Aug 09	19 37	20 31 22 07 5 12 6 48	17 44 0 50	18 03 3 34 88 18 27.6 -27 54	7.1
Tue Aug 09/Wed Aug 10	19 41	20 30 22 06 5 13 6 49	17 46 0 55	19 07 4 45 95 19 35.4 -27 04	7.1
Wed Aug 10/Thu Aug 11	19 45	20 29 22 04 5 15 6 50	17 49 1 00	20 02 6 01 99 20 41.6 -24 16	7.2
Thu Aug 11/Fri Aug 12	19 48	20 28 22 03 5 16 6 51	17 51 1 05	..... 20 47 100 21 43.9 -19 52	7.2
Fri Aug 12/Sat Aug 13	19 52	20 27 22 02 5 17 6 51	17 54 1 10	21 24 98 22 41.7 -14 19	7.3
Sat Aug 13/Sun Aug 14	19 56	20 26 22 00 5 18 6 52	17 56 1 15	21 56 93 23 35.4 - 8 09	7.3
Sun Aug 14/Mon Aug 15	20 00	20 25 21 59 5 19 6 53	17 59 1 20	22 25 87 0 25.9 - 1 47	7.3
Mon Aug 15/Tue Aug 16	20 04	20 23 21 57 5 20 6 54	18 01 1 25	22 52 78 1 14.4 4 24	7.4
Tue Aug 16/Wed Aug 17	20 08	20 22 21 56 5 21 6 55	18 03 1 30	23 19 69 2 02.1 10 08	7.4
Wed Aug 17/Thu Aug 18	20 12	20 21 21 54 5 22 6 55	18 06 1 35	23 48 59 2 49.9 15 15	7.5
Thu Aug 18/Fri Aug 19	20 16	20 20 21 52 5 23 6 56	18 08 1 40	0 19 49 3 38.6 19 33	7.5
Fri Aug 19/Sat Aug 20	20 20	20 19 21 51 5 25 6 57	18 11 1 45	0 54 40 4 28.5 22 54	7.6
Sat Aug 20/Sun Aug 21	20 24	20 17 21 49 5 26 6 58	18 13 1 51	1 35 31 5 19.7 25 10	7.6
Sun Aug 21/Mon Aug 22	20 28	20 16 21 48 5 27 6 58	18 15 1 56	2 21 22 6 11.8 26 15	7.7
Mon Aug 22/Tue Aug 23	20 32	20 15 21 46 5 28 6 59	18 18 2 01	3 13 17 44 15 7 04.3 26 07	7.7
Tue Aug 23/Wed Aug 24	20 36	20 13 21 45 5 29 7 00	18 20 2 06	4 09 18 31 9 7 56.2 24 47	7.7
Wed Aug 24/Thu Aug 25	20 40	20 12 21 43 5 30 7 01	18 22 2 11	5 09 19 11 4 8 46.9 22 18	7.8
Thu Aug 25/Fri Aug 26	20 44	20 11 21 41 5 31 7 02	18 25 2 16	6 09 19 46 1 9 35.9 18 48	7.8
Fri Aug 26/Sat Aug 27	20 48	20 09 21 40 5 32 7 02	18 27 2 21	..... 20 17 0 10 23.3 14 26	7.9
Sat Aug 27/Sun Aug 28	20 52	20 08 21 38 5 33 7 03	18 29 2 26	..... 20 45 1 11 09.3 9 24	7.9
Sun Aug 28/Mon Aug 29	20 55	20 07 21 37 5 34 7 04	18 32 2 30	..... 21 11 4 11 54.6 3 53	8.0
Mon Aug 29/Tue Aug 30	20 59	20 05 21 35 5 35 7 05	18 34 2 35	..... 21 36 8 12 40.0 - 1 55	8.0
Tue Aug 30/Wed Aug 31	21 03	20 04 21 33 5 36 7 05	18 36 2 40	..... 22 02 15 13 26.4 - 7 47	8.0
Wed Aug 31/Thu Sep 01	21 07	20 03 21 32 5 37 7 06	18 39 2 45	..... 22 30 23 14 14.8 -13 27	8.1

Calendar for Cheddar Ranch, west longitude (h.m.s) = 6 34 04, latitude (d.m) = 35 46.0
 Rise/set times in Central time (6 hr W), uncorrected for elevation, DAYLIGHT time used, * shows clock reset.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2022 NOVEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----					LST twilight:		----- Moon: -----				RA	Dec	Twilight hours
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum					
Tue Nov 01/Wed Nov 02	1 12	18 38	20 05	6 31	7 57	21 16	7 44	.....	1 39	60	21 41.8	-19 49	10.4	
Wed Nov 02/Thu Nov 03	1 16	18 37	20 04	6 32	7 58	21 19	7 48	15 54	2 49	71	22 36.2	-14 34	10.5		
Thu Nov 03/Fri Nov 04	1 20	18 37	20 03	6 32	7 59	21 22	7 53	16 24	3 56	80	23 27.5	- 8 39	10.5		
Fri Nov 04/Sat Nov 05	1 24	18 36	20 02	6 33	8 00	21 25	7 58	16 52	5 01	88	0 16.7	- 2 24	10.5		
Sat Nov 05/Sun Nov 06*	1 28	18 35	20 02	5 34	7 01	21 29	8 03	17 19	5 05	94	1 04.9	3 52	10.5		
Sun Nov 06/Mon Nov 07	2 32	17 34	19 01	5 35	7 02	21 32	8 08	16 45	6 09	98	1 54.4	10 06	10.6		
Mon Nov 07/Tue Nov 08	2 36	17 33	19 00	5 36	7 03	21 35	8 12	17 13	7 13	100	2 43.7	15 31	10.6		
Tue Nov 08/Wed Nov 09	2 40	17 32	18 59	5 37	7 04	21 38	8 17	17 44	.....	99	3 34.4	20 08	10.6	
Wed Nov 09/Thu Nov 10	2 43	17 31	18 59	5 38	7 05	21 41	8 22	18 19	.....	97	4 26.9	23 43	10.6	
Thu Nov 10/Fri Nov 11	2 47	17 30	18 58	5 38	7 06	21 45	8 27	18 59	.....	92	5 20.8	26 06	10.7	
Fri Nov 11/Sat Nov 12	2 51	17 30	18 57	5 39	7 07	21 48	8 32	19 46	.....	86	6 15.3	27 10	10.7	
Sat Nov 12/Sun Nov 13	2 55	17 29	18 57	5 40	7 08	21 51	8 36	20 37	.....	79	7 09.4	26 54	10.7	
Sun Nov 13/Mon Nov 14	2 59	17 28	18 56	5 41	7 09	21 55	8 41	21 33	.....	71	8 02.1	25 23	10.7	
Mon Nov 14/Tue Nov 15	3 03	17 27	18 56	5 42	7 10	21 58	8 46	22 32	.....	62	8 52.9	22 44	10.8	
Tue Nov 15/Wed Nov 16	3 07	17 27	18 55	5 43	7 11	22 02	8 51	23 31	.....	52	9 41.5	19 06	10.8	
Wed Nov 16/Thu Nov 17	3 11	17 26	18 55	5 44	7 12	22 05	8 56	0 31	.....	43	10 28.2	14 39	10.8	
Thu Nov 17/Fri Nov 18	3 15	17 26	18 54	5 44	7 13	22 08	9 00	1 30	.....	33	11 13.7	9 33	10.8	
Fri Nov 18/Sat Nov 19	3 19	17 25	18 54	5 45	7 14	22 12	9 05	2 31	.....	24	11 58.7	3 57	10.9	
Sat Nov 19/Sun Nov 20	3 23	17 25	18 53	5 46	7 15	22 16	9 10	3 33	.....	16	12 44.3	- 1 57	10.9	
Sun Nov 20/Mon Nov 21	3 27	17 24	18 53	5 47	7 16	22 19	9 15	4 38	.....	9	13 31.6	- 7 58	10.9	
Mon Nov 21/Tue Nov 22	3 31	17 24	18 53	5 48	7 17	22 23	9 19	5 46	16 00	4	14 21.7	-13 48	10.9		
Tue Nov 22/Wed Nov 23	3 35	17 23	18 52	5 49	7 18	22 26	9 24	6 59	16 32	1	15 15.6	-19 07	10.9		
Wed Nov 23/Thu Nov 24	3 39	17 23	18 52	5 49	7 19	22 30	9 29	8 13	17 11	0	16 14.0	-23 29	11.0		
Thu Nov 24/Fri Nov 25	3 43	17 22	18 52	5 50	7 20	22 34	9 34	.....	17 58	2	17 16.5	-26 28	11.0	
Fri Nov 25/Sat Nov 26	3 47	17 22	18 52	5 51	7 21	22 37	9 39	.....	18 56	7	18 21.8	-27 41	11.0	
Sat Nov 26/Sun Nov 27	3 50	17 22	18 52	5 52	7 22	22 41	9 43	.....	20 03	14	19 27.4	-27 00	11.0	
Sun Nov 27/Mon Nov 28	3 54	17 21	18 51	5 53	7 23	22 45	9 48	.....	21 15	24	20 30.7	-24 30	11.0	
Mon Nov 28/Tue Nov 29	3 58	17 21	18 51	5 54	7 24	22 49	9 53	.....	22 29	34	21 30.1	-20 30	11.0	
Tue Nov 29/Wed Nov 30	4 02	17 21	18 51	5 54	7 25	22 53	9 58	.....	23 40	45	22 25.2	-15 25	11.1	
Wed Nov 30/Thu Dec 01	4 06	17 21	18 51	5 55	7 26	22 56	10 02	.....	0 49	56	23 16.7	- 9 39	11.1	

***** 2022 DECEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----					LST twilight:		----- Moon: -----				RA	Dec	Twilight hours
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum					
Thu Dec 01/Fri Dec 02	4 10	17 20	18 51	5 56	7 27	23 00	10 07	.....	1 54	67	0 05.6	- 3 32	11.1	
Fri Dec 02/Sat Dec 03	4 14	17 20	18 51	5 57	7 27	23 04	10 12	.....	2 57	77	0 53.1	2 38	11.1	
Sat Dec 03/Sun Dec 04	4 18	17 20	18 51	5 57	7 28	23 08	10 17	.....	4 00	85	1 40.4	8 35	11.1	
Sun Dec 04/Mon Dec 05	4 22	17 20	18 51	5 58	7 29	23 12	10 21	.....	5 03	92	2 28.4	14 04	11.1	
Mon Dec 05/Tue Dec 06	4 26	17 20	18 51	5 59	7 30	23 16	10 26	15 45	6 06	96	3 17.9	18 52	11.1		
Tue Dec 06/Wed Dec 07	4 30	17 20	18 51	6 00	7 31	23 20	10 31	16 18	7 08	99	4 09.3	22 45	11.1		
Wed Dec 07/Thu Dec 08	4 34	17 20	18 51	6 00	7 32	23 24	10 35	16 56	8 08	100	5 02.6	25 31	11.2		
Thu Dec 08/Fri Dec 09	4 38	17 20	18 52	6 01	7 32	23 28	10 40	17 40	.....	99	5 57.1	27 01	11.2	
Fri Dec 09/Sat Dec 10	4 42	17 20	18 52	6 02	7 33	23 33	10 45	18 29	.....	96	6 51.7	27 10	11.2	
Sat Dec 10/Sun Dec 11	4 46	17 21	18 52	6 03	7 34	23 37	10 49	19 24	.....	91	7 45.3	26 01	11.2	
Sun Dec 11/Mon Dec 12	4 50	17 21	18 52	6 03	7 35	23 41	10 54	20 22	.....	85	8 36.9	23 41	11.2	
Mon Dec 12/Tue Dec 13	4 54	17 21	18 52	6 04	7 35	23 45	10 58	21 21	.....	78	9 26.2	20 20	11.2	
Tue Dec 13/Wed Dec 14	4 58	17 21	18 53	6 05	7 36	23 49	11 03	22 20	.....	69	10 13.3	16 08	11.2	
Wed Dec 14/Thu Dec 15	5 01	17 21	18 53	6 05	7 37	23 54	11 08	23 18	.....	60	10 58.6	11 16	11.2	
Thu Dec 15/Fri Dec 16	5 05	17 22	18 53	6 06	7 37	23 58	11 12	0 17	.....	50	11 43.0	5 54	11.2	
Fri Dec 16/Sat Dec 17	5 09	17 22	18 54	6 06	7 38	0 02	11 17	1 17	.....	41	12 27.4	0 12	11.2	
Sat Dec 17/Sun Dec 18	5 13	17 22	18 54	6 07	7 39	0 07	11 21	2 18	.....	31	13 12.9	- 5 40	11.2	
Sun Dec 18/Mon Dec 19	5 17	17 23	18 55	6 07	7 39	0 11	11 26	3 23	.....	21	14 00.8	-11 28	11.2	
Mon Dec 19/Tue Dec 20	5 21	17 23	18 55	6 08	7 40	0 15	11 30	4 32	.....	13	14 52.3	-16 57	11.2	
Tue Dec 20/Wed Dec 21	5 25	17 24	18 56	6 09	7 40	0 20	11 35	5 45	.....	7	15 48.3	-21 42	11.2	
Wed Dec 21/Thu Dec 22	5 29	17 24	18 56	6 09	7 41	0 24	11 39	7 00	15 43	2	16 49.3	-25 18	11.2		
Thu Dec 22/Fri Dec 23	5 33	17 25	18 57	6 09	7 41	0 29	11 43	8 13	16 36	0	17 54.5	-27 18	11.2		
Fri Dec 23/Sat Dec 24	5 37	17 25	18 57	6 10	7 42	0 33	11 48	.....	17 40	1	19 01.7	-27 21	11.2	
Sat Dec 24/Sun Dec 25	5 41	17 26	18 58	6 10	7 42	0 38	11 52	.....	18 54	5	20 07.9	-25 25	11.2	
Sun Dec 25/Mon Dec 26	5 45	17 26	18 58	6 11	7 42	0 42	11 57	.....	20 10	11	21 10.6	-21 46	11.2	
Mon Dec 26/Tue Dec 27	5 49	17 27	18 59	6 11	7 43	0 47	12 01	.....	21 26	20	22 08.7	-16 49	11.2	
Tue Dec 27/Wed Dec 28	5 53	17 28	18 59	6 12	7 43	0 51	12 05	.....	22 38	30	23 02.5	-11 03	11.2	
Wed Dec 28/Thu Dec 29	5 57	17 28	19 00	6 12	7 43	0 56	12 10	.....	23 46	40	23 52.9	- 4 53	11.2	
Thu Dec 29/Fri Dec 30	6 01	17 29	19 01	6 12	7 44	1 00	12 14	.....	0 51	51	0 41.1	1 21	11.2	
Fri Dec 30/Sat Dec 31	6 05	17 30	19 01	6 12	7 44	1 05	12 18	.....	1 54	62	1 28.4	7 22	11.2	
Sat Dec 31/Sun Jan 01	6 08	17 31	19 02	6 13	7 44	1 10	12 22	.....	2 56	72	2 15.9	12 56	11.2	