

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:

***** 2015 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 -0.1 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 2015, 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 21	19 36	Dec 28	12 33	Jan 04	22 54	Jan 13	3 49
Jan 20	7 15	Jan 26	22 50	Feb 03	17 10	Feb 11	21 52
Feb 18	17 49	Feb 25	11 15	Mar 05	12 07	Mar 13	12 49
Mar 20	4 39	Mar 27	2 44	Apr 04	7 07	Apr 11	22 45
Apr 18	13 59	Apr 25	18 57	May 03	22 45	May 11	5 37
May 17	23 16	May 25	12 21	Jun 02	11 22	Jun 09	10 43
Jun 16	9 08	Jun 24	6 04	Jul 01	21 22	Jul 08	15 26
Jul 15	20 26	Jul 23	23 05	Jul 31	5 46	Aug 06	21 06
Aug 14	9 55	Aug 22	14 32	Aug 29	13 38	Sep 05	4 57
Sep 13	1 43	Sep 21	4 00	Sep 27	21 52	Oct 04	16 08
Oct 12	19 07	Oct 20	15 32	Oct 27	7 06	Nov 03	6 26
Nov 11	11 48	Nov 19	0 28	Nov 25	16 45	Dec 03	1 42
Dec 11	4 30	Dec 18	9 15	Dec 25	5 12	Jan 01	23 32

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.

***** 2015 JANUARY *****

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	
Thu Jan 01/Fri Jan 02	6 12	17 31	19 03	6 13	7 44	1 14	12 26	.....	5 15	91	4 21.9	17 16	11.2
Fri Jan 02/Sat Jan 03	6 16	17 32	19 03	6 13	7 44	1 19	12 30	15 50	6 10	96	5 16.5	18 15	11.2
Sat Jan 03/Sun Jan 04	6 20	17 33	19 04	6 13	7 44	1 23	12 34	16 40	7 00	99	6 10.7	18 15	11.2
Sun Jan 04/Mon Jan 05	6 24	17 34	19 05	6 14	7 45	1 28	12 39	17 33	7 45	100	7 03.7	17 20	11.1
Mon Jan 05/Tue Jan 06	6 28	17 35	19 06	6 14	7 45	1 33	12 43	18 27	8 27	99	7 55.2	15 34	11.1
Tue Jan 06/Wed Jan 07	6 32	17 35	19 06	6 14	7 45	1 37	12 47	19 22	.....	96	8 44.8	13 07	11.1
Wed Jan 07/Thu Jan 08	6 36	17 36	19 07	6 14	7 45	1 42	12 51	20 16	.....	91	9 32.8	10 07	11.1
Thu Jan 08/Fri Jan 09	6 40	17 37	19 08	6 14	7 45	1 47	12 55	21 10	.....	85	10 19.2	6 43	11.1
Fri Jan 09/Sat Jan 10	6 44	17 38	19 09	6 14	7 44	1 52	12 59	22 04	.....	78	11 04.7	3 05	11.1
Sat Jan 10/Sun Jan 11	6 48	17 39	19 10	6 14	7 44	1 56	13 03	22 58	.....	69	11 49.8	- 0 41	11.1
Sun Jan 11/Mon Jan 12	6 52	17 40	19 10	6 14	7 44	2 01	13 06	23 52	.....	60	12 35.1	- 4 28	11.1
Mon Jan 12/Tue Jan 13	6 56	17 41	19 11	6 14	7 44	2 06	13 10	0 47	.....	51	13 21.4	- 8 06	11.0
Tue Jan 13/Wed Jan 14	6 59	17 42	19 12	6 14	7 44	2 11	13 14	1 44	.....	41	14 09.3	-11 29	11.0
Wed Jan 14/Thu Jan 15	7 03	17 43	19 13	6 14	7 43	2 16	13 18	2 42	.....	31	14 59.5	-14 26	11.0
Thu Jan 15/Fri Jan 16	7 07	17 44	19 14	6 13	7 43	2 20	13 22	3 41	.....	22	15 52.3	-16 47	11.0
Fri Jan 16/Sat Jan 17	7 11	17 45	19 15	6 13	7 43	2 25	13 26	4 41	.....	14	16 48.0	-18 20	11.0
Sat Jan 17/Sun Jan 18	7 15	17 46	19 15	6 13	7 42	2 30	13 29	5 40	.....	7	17 46.1	-18 53	11.0
Sun Jan 18/Mon Jan 19	7 19	17 47	19 16	6 13	7 42	2 35	13 33	6 36	16 12	3	18 45.9	-18 17	10.9
Mon Jan 19/Tue Jan 20	7 23	17 48	19 17	6 12	7 42	2 40	13 37	7 28	17 16	0	19 46.4	-16 31	10.9
Tue Jan 20/Wed Jan 21	7 27	17 49	19 18	6 12	7 41	2 44	13 40	8 16	18 25	1	20 46.3	-13 40	10.9
Wed Jan 21/Thu Jan 22	7 31	17 50	19 19	6 12	7 41	2 49	13 44	.....	19 35	4	21 45.1	- 9 56	10.9
Thu Jan 22/Fri Jan 23	7 35	17 51	19 20	6 11	7 40	2 54	13 47	.....	20 45	10	22 42.3	- 5 36	10.9
Fri Jan 23/Sat Jan 24	7 39	17 52	19 21	6 11	7 40	2 59	13 51	.....	21 54	18	23 38.1	- 1 01	10.8
Sat Jan 24/Sun Jan 25	7 43	17 53	19 22	6 11	7 39	3 04	13 54	.....	23 02	28	0 32.8	3 32	10.8
Sun Jan 25/Mon Jan 26	7 47	17 54	19 23	6 10	7 39	3 09	13 58	.....	0 07	39	1 26.8	7 46	10.8
Mon Jan 26/Tue Jan 27	7 51	17 55	19 23	6 10	7 38	3 13	14 01	.....	1 11	50	2 20.6	11 28	10.8
Tue Jan 27/Wed Jan 28	7 55	17 56	19 24	6 09	7 37	3 18	14 05	.....	2 12	60	3 14.5	14 28	10.7
Wed Jan 28/Thu Jan 29	7 59	17 57	19 25	6 09	7 37	3 23	14 08	.....	3 10	71	4 08.4	16 38	10.7
Thu Jan 29/Fri Jan 30	8 03	17 58	19 26	6 08	7 36	3 28	14 12	.....	4 05	79	5 02.3	17 52	10.7
Fri Jan 30/Sat Jan 31	8 07	17 59	19 27	6 07	7 35	3 33	14 15	.....	4 56	87	5 55.8	18 11	10.7
Sat Jan 31/Sun Feb 01	8 10	18 00	19 28	6 07	7 34	3 38	14 18	.....	5 43	93	6 48.4	17 34	10.6

***** 2015 FEBRUARY *****

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 Feb 01/Mon Feb 02	8 14	18 01	19 29	6 06	7 34	3 42	14 22	16 21	6 25	97	7 39.8	16 06	10.6
Mon Feb 02/Tue Feb 03	8 18	18 02	19 30	6 06	7 33	3 47	14 25	17 15	7 04	99	8 29.8	13 55	10.6
Tue Feb 03/Wed Feb 04	8 22	18 03	19 31	6 05	7 32	3 52	14 28	18 09	7 39	100	9 18.2	11 07	10.6
Wed Feb 04/Thu Feb 05	8 26	18 04	19 32	6 04	7 31	3 57	14 31	19 03	8 12	98	10 05.3	7 51	10.5
Thu Feb 05/Fri Feb 06	8 30	18 05	19 32	6 03	7 30	4 02	14 35	19 57	.....	95	10 51.3	4 18	10.5
Fri Feb 06/Sat Feb 07	8 34	18 06	19 33	6 03	7 29	4 07	14 38	20 51	.....	90	11 36.7	0 34	10.5
Sat Feb 07/Sun Feb 08	8 38	18 07	19 34	6 02	7 28	4 12	14 41	21 45	.....	84	12 22.0	- 3 12	10.5
Sun Feb 08/Mon Feb 09	8 42	18 09	19 35	6 01	7 27	4 16	14 44	22 39	.....	76	13 07.9	- 6 52	10.4
Mon Feb 09/Tue Feb 10	8 46	18 10	19 36	6 00	7 26	4 21	14 47	23 34	.....	68	13 54.8	-10 18	10.4
Tue Feb 10/Wed Feb 11	8 50	18 11	19 37	5 59	7 25	4 26	14 50	0 30	.....	58	14 43.4	-13 22	10.4
Wed Feb 11/Thu Feb 12	8 54	18 12	19 38	5 58	7 24	4 31	14 53	1 27	.....	48	15 34.2	-15 54	10.3
Thu Feb 12/Fri Feb 13	8 58	18 13	19 39	5 57	7 23	4 36	14 56	2 25	.....	38	16 27.4	-17 43	10.3
Fri Feb 13/Sat Feb 14	9 02	18 14	19 40	5 56	7 22	4 41	14 59	3 22	.....	28	17 23.1	-18 40	10.3
Sat Feb 14/Sun Feb 15	9 06	18 15	19 41	5 55	7 21	4 46	15 02	4 18	.....	19	18 20.9	-18 36	10.2
Sun Feb 15/Mon Feb 16	9 10	18 16	19 41	5 54	7 20	4 50	15 05	5 12	.....	11	19 20.1	-17 24	10.2
Mon Feb 16/Tue Feb 17	9 14	18 17	19 42	5 53	7 19	4 55	15 08	6 02	15 59	5	20 19.8	-15 05	10.2
Tue Feb 17/Wed Feb 18	9 17	18 18	19 43	5 52	7 18	5 00	15 11	6 49	17 08	1	21 19.3	-11 46	10.2
Wed Feb 18/Thu Feb 19	9 21	18 19	19 44	5 51	7 17	5 05	15 14	7 32	18 20	0	22 18.1	- 7 40	10.1
Thu Feb 19/Fri Feb 20	9 25	18 20	19 45	5 50	7 16	5 10	15 17	.....	19 31	2	23 15.7	- 3 06	10.1
Fri Feb 20/Sat Feb 21	9 29	18 21	19 46	5 49	7 14	5 15	15 19	.....	20 42	7	0 12.5	1 36	10.1
Sat Feb 21/Sun Feb 22	9 33	18 21	19 47	5 48	7 13	5 19	15 22	.....	21 51	15	1 08.5	6 05	10.0
Sun Feb 22/Mon Feb 23	9 37	18 22	19 48	5 47	7 12	5 24	15 25	.....	22 58	24	2 04.0	10 05	10.0
Mon Feb 23/Tue Feb 24	9 41	18 23	19 49	5 46	7 11	5 29	15 28	.....	0 02	34	2 59.2	13 23	10.0
Tue Feb 24/Wed Feb 25	9 45	18 24	19 49	5 44	7 09	5 34	15 30	.....	1 03	44	3 54.1	15 50	9.9
Wed Feb 25/Thu Feb 26	9 49	18 25	19 50	5 43	7 08	5 39	15 33	.....	2 00	55	4 48.5	17 21	9.9
Thu Feb 26/Fri Feb 27	9 53	18 26	19 51	5 42	7 07	5 44	15 36	.....	2 53	65	5 42.2	17 56	9.8
Fri Feb 27/Sat Feb 28	9 57	18 27	19 52	5 41	7 06	5 48	15 39	.....	3 41	74	6 34.8	17 34	9.8
Sat Feb 28/Sun Mar 01	10 01	18 28	19 53	5 39	7 04	5 53	15 41	.....	4 24	82	7 26.2	16 22	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.

***** 2015 MARCH *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				RA	Dec	Twi-Twi hours
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum				
Sun Mar 01/Mon Mar 02	10 05	18 29	19 54	5 38	7 03	5 58	15 44	.....	5 04	89	8 16.1	14 25	9.7
Mon Mar 02/Tue Mar 03	10 09	18 30	19 55	5 37	7 02	6 03	15 47	.....	5 40	94	9 04.6	11 49	9.7
Tue Mar 03/Wed Mar 04	10 13	18 31	19 56	5 36	7 00	6 08	15 49	16 58	6 14	98	9 51.9	8 43	9.7	
Wed Mar 04/Thu Mar 05	10 17	18 32	19 57	5 34	6 59	6 13	15 52	17 52	6 46	100	10 38.2	5 16	9.6	
Thu Mar 05/Fri Mar 06	10 21	18 33	19 58	5 33	6 58	6 17	15 54	18 46	7 17	100	11 23.9	1 35	9.6	
Fri Mar 06/Sat Mar 07	10 25	18 34	19 58	5 32	6 56	6 22	15 57	19 39	.....	98	12 09.5	- 2 11	9.6
Sat Mar 07/Sun Mar 08*	10 28	18 34	19 59	6 30	7 55	6 27	16 00	20 33	.....	94	12 55.5	- 5 54	9.5
Sun Mar 08/Mon Mar 09	9 32	19 35	21 00	6 29	7 54	6 32	16 02	22 28	.....	89	13 40.8	- 9 14	9.5
Mon Mar 09/Tue Mar 10	9 36	19 36	21 01	6 27	7 52	6 37	16 05	23 23	.....	82	14 28.8	-12 24	9.4
Tue Mar 10/Wed Mar 11	9 40	19 37	21 02	6 26	7 51	6 42	16 07	0 19	.....	74	15 18.4	-15 04	9.4
Wed Mar 11/Thu Mar 12	9 44	19 38	21 03	6 25	7 49	6 46	16 10	1 16	.....	65	16 10.0	-17 06	9.4
Thu Mar 12/Fri Mar 13	9 48	19 39	21 04	6 23	7 48	6 51	16 12	2 12	.....	55	17 03.5	-18 20	9.3
Fri Mar 13/Sat Mar 14	9 52	19 40	21 05	6 22	7 47	6 56	16 15	3 07	.....	44	17 58.9	-18 39	9.3
Sat Mar 14/Sun Mar 15	9 56	19 41	21 06	6 20	7 45	7 01	16 17	3 59	.....	34	18 55.7	-17 57	9.2
Sun Mar 15/Mon Mar 16	10 00	19 41	21 07	6 19	7 44	7 06	16 20	4 49	.....	24	19 53.3	-16 11	9.2
Mon Mar 16/Tue Mar 17	10 04	19 42	21 07	6 17	7 42	7 11	16 22	5 36	.....	15	20 51.4	-13 24	9.2
Tue Mar 17/Wed Mar 18	10 08	19 43	21 08	6 16	7 41	7 16	16 24	6 20	16 54	7	21 49.3	- 9 46	9.1	
Wed Mar 18/Thu Mar 19	10 12	19 44	21 09	6 14	7 39	7 21	16 27	7 03	18 04	2	22 46.9	- 5 28	9.1	
Thu Mar 19/Fri Mar 20	10 16	19 45	21 10	6 13	7 38	7 25	16 29	.....	19 15	0	23 44.1	- 0 50	9.0
Fri Mar 20/Sat Mar 21	10 20	19 46	21 11	6 11	7 37	7 30	16 32	.....	20 26	1	0 41.2	3 50	9.0
Sat Mar 21/Sun Mar 22	10 23	19 47	21 12	6 10	7 35	7 35	16 34	.....	21 35	5	1 38.2	8 10	9.0
Sun Mar 22/Mon Mar 23	10 27	19 47	21 13	6 08	7 34	7 40	16 37	.....	22 43	11	2 35.1	11 54	8.9
Mon Mar 23/Tue Mar 24	10 31	19 48	21 14	6 07	7 32	7 45	16 39	.....	23 48	19	3 31.9	14 48	8.9
Tue Mar 24/Wed Mar 25	10 35	19 49	21 15	6 05	7 31	7 50	16 41	.....	0 49	28	4 28.2	16 45	8.8
Wed Mar 25/Thu Mar 26	10 39	19 50	21 16	6 03	7 29	7 55	16 44	.....	1 45	38	5 23.6	17 41	8.8
Thu Mar 26/Fri Mar 27	10 43	19 51	21 17	6 02	7 28	8 00	16 46	.....	2 36	48	6 17.6	17 39	8.7
Fri Mar 27/Sat Mar 28	10 47	19 52	21 18	6 00	7 27	8 05	16 48	.....	3 22	58	7 10.0	16 43	8.7
Sat Mar 28/Sun Mar 29	10 51	19 52	21 19	5 59	7 25	8 09	16 51	.....	4 03	68	8 00.6	14 59	8.7
Sun Mar 29/Mon Mar 30	10 55	19 53	21 20	5 57	7 24	8 14	16 53	.....	4 41	77	8 49.6	12 35	8.6
Mon Mar 30/Tue Mar 31	10 59	19 54	21 21	5 56	7 22	8 19	16 55	.....	5 15	84	9 37.1	9 39	8.6
Tue Mar 31/Wed Apr 01	11 03	19 55	21 22	5 54	7 21	8 24	16 58	.....	5 48	90	10 23.6	6 19	8.5

***** 2015 APRIL *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				RA	Dec	Twi-Twi hours
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum				
Wed Apr 01/Thu Apr 02	11 07	19 56	21 23	5 52	7 19	8 29	17 00	17 40	6 19	95	11 09.4	2 42	8.5	
Thu Apr 02/Fri Apr 03	11 11	19 56	21 24	5 51	7 18	8 34	17 02	18 34	6 51	99	11 55.1	- 1 03	8.4	
Fri Apr 03/Sat Apr 04	11 15	19 57	21 25	5 49	7 17	8 39	17 05	19 28	.....	100	12 41.2	- 4 48	8.4
Sat Apr 04/Sun Apr 05	11 19	19 58	21 26	5 48	7 15	8 44	17 07	20 23	.....	99	13 28.1	- 8 25	8.4
Sun Apr 05/Mon Apr 06	11 23	19 59	21 27	5 46	7 14	8 49	17 10	21 18	.....	97	14 16.2	-11 43	8.3
Mon Apr 06/Tue Apr 07	11 27	20 00	21 28	5 44	7 12	8 54	17 12	22 15	.....	93	15 06.0	-14 34	8.3
Tue Apr 07/Wed Apr 08	11 31	20 01	21 29	5 43	7 11	8 59	17 14	23 11	.....	87	15 57.5	-16 47	8.2
Wed Apr 08/Thu Apr 09	11 34	20 01	21 30	5 41	7 10	9 04	17 17	0 07	.....	79	16 50.6	-18 13	8.2
Thu Apr 09/Fri Apr 10	11 38	20 02	21 31	5 40	7 08	9 09	17 19	1 01	.....	70	17 45.3	-18 46	8.1
Fri Apr 10/Sat Apr 11	11 42	20 03	21 32	5 38	7 07	9 14	17 21	1 54	.....	60	18 41.0	-18 20	8.1
Sat Apr 11/Sun Apr 12	11 46	20 04	21 33	5 36	7 06	9 19	17 24	2 43	.....	49	19 37.2	-16 53	8.1
Sun Apr 12/Mon Apr 13	11 50	20 05	21 34	5 35	7 04	9 24	17 26	3 29	.....	38	20 33.5	-14 28	8.0
Mon Apr 13/Tue Apr 14	11 54	20 06	21 35	5 33	7 03	9 29	17 28	4 13	.....	27	21 29.7	-11 12	8.0
Tue Apr 14/Wed Apr 15	11 58	20 06	21 36	5 32	7 02	9 34	17 31	4 55	.....	18	22 25.6	- 7 14	7.9
Wed Apr 15/Thu Apr 16	12 02	20 07	21 38	5 30	7 00	9 39	17 33	5 35	.....	9	23 21.4	- 2 49	7.9
Thu Apr 16/Fri Apr 17	12 06	20 08	21 39	5 28	6 59	9 44	17 35	6 16	18 01	4	0 17.3	1 47	7.8	
Fri Apr 17/Sat Apr 18	12 10	20 09	21 40	5 27	6 58	9 49	17 38	.....	19 11	1	1 13.7	6 15	7.8
Sat Apr 18/Sun Apr 19	12 14	20 10	21 41	5 25	6 56	9 54	17 40	.....	20 20	0	2 10.6	10 16	7.7
Sun Apr 19/Mon Apr 20	12 18	20 11	21 42	5 24	6 55	9 59	17 42	.....	21 27	3	3 08.0	13 35	7.7
Mon Apr 20/Tue Apr 21	12 22	20 11	21 43	5 22	6 54	10 05	17 45	.....	22 32	8	4 05.4	15 59	7.6
Tue Apr 21/Wed Apr 22	12 26	20 12	21 44	5 21	6 53	10 10	17 47	.....	23 32	14	5 02.3	17 22	7.6
Wed Apr 22/Thu Apr 23	12 30	20 13	21 45	5 19	6 51	10 15	17 50	.....	0 27	23	5 58.1	17 42	7.6
Thu Apr 23/Fri Apr 24	12 34	20 14	21 47	5 18	6 50	10 20	17 52	.....	1 16	32	6 52.2	17 04	7.5
Fri Apr 24/Sat Apr 25	12 38	20 15	21 48	5 16	6 49	10 25	17 54	.....	2 00	42	7 44.2	15 34	7.5
Sat Apr 25/Sun Apr 26	12 41	20 16	21 49	5 15	6 48	10 30	17 57	.....	2 40	52	8 34.2	13 21	7.4
Sun Apr 26/Mon Apr 27	12 45	20 17	21 50	5 13	6 47	10 35	17 59	.....	3 16	61	9 22.3	10 34	7.4
Mon Apr 27/Tue Apr 28	12 49	20 17	21 51	5 12	6 46	10 40	18 02	.....	3 49	70	10 09.1	7 20	7.3
Tue Apr 28/Wed Apr 29	12 53	20 18	21 53	5 10	6 44	10 45	18 04	.....	4 21	79	10 55.0	3 47	7.3
Wed Apr 29/Thu Apr 30	12 57	20 19	21 54	5 09	6 43	10 51	18 07	.....	4 52	86	11 40.6	0 04	7.2
Thu Apr 30/Fri May 01	13 01	20 20	21 55	5 07	6 42	10 56	18 09	17 21	5 23	92	12 26.5	- 3 43	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.

***** 2015 MAY *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Fri May 01/Sat May 02	13 05	20 21	21 56	5 06	6 41	11 01	18 12	18 15	5 56	96	13 13.2	- 7 25	7.2
Sat May 02/Sun May 03	13 09	20 22	21 57	5 04	6 40	11 06	18 14	19 11	6 31	99	14 01.4	-10 53	7.1
Sun May 03/Mon May 04	13 13	20 22	21 58	5 03	6 39	11 11	18 17	20 08	.....	100	14 51.3	-13 56	7.1
Mon May 04/Tue May 05	13 17	20 23	22 00	5 02	6 38	11 16	18 19	21 05	.....	99	15 43.1	-16 24	7.0
Tue May 05/Wed May 06	13 21	20 24	22 01	5 00	6 37	11 21	18 22	22 02	.....	95	16 36.8	-18 07	7.0
Wed May 06/Thu May 07	13 25	20 25	22 02	4 59	6 36	11 27	18 24	22 58	.....	90	17 32.1	-18 55	6.9
Thu May 07/Fri May 08	13 29	20 26	22 03	4 58	6 35	11 32	18 27	23 51	.....	82	18 28.2	-18 44	6.9
Fri May 08/Sat May 09	13 33	20 27	22 05	4 56	6 34	11 37	18 30	0 42	.....	73	19 24.7	-17 31	6.9
Sat May 09/Sun May 10	13 37	20 27	22 06	4 55	6 33	11 42	18 32	1 28	.....	63	20 20.8	-15 20	6.8
Sun May 10/Mon May 11	13 41	20 28	22 07	4 54	6 32	11 47	18 35	2 12	.....	52	21 16.3	-12 17	6.8
Mon May 11/Tue May 12	13 45	20 29	22 08	4 52	6 31	11 52	18 38	2 53	.....	41	22 11.1	- 8 32	6.7
Tue May 12/Wed May 13	13 48	20 30	22 09	4 51	6 31	11 58	18 40	3 32	.....	30	23 05.5	- 4 19	6.7
Wed May 13/Thu May 14	13 52	20 31	22 11	4 50	6 30	12 03	18 43	4 11	.....	20	23 59.7	0 09	6.7
Thu May 14/Fri May 15	13 56	20 32	22 12	4 49	6 29	12 08	18 46	4 51	.....	12	0 54.3	4 35	6.6
Fri May 15/Sat May 16	14 00	20 32	22 13	4 48	6 28	12 13	18 49	5 32	18 00	5	1 49.6	8 44	6.6
Sat May 16/Sun May 17	14 04	20 33	22 14	4 47	6 27	12 18	18 52	6 16	19 07	1	2 45.8	12 19	6.5
Sun May 17/Mon May 18	14 08	20 34	22 15	4 45	6 27	12 23	18 54	.....	20 13	0	3 42.7	15 06	6.5
Mon May 18/Tue May 19	14 12	20 35	22 16	4 44	6 26	12 28	18 57	.....	21 15	1	4 39.9	16 55	6.5
Tue May 19/Wed May 20	14 16	20 35	22 18	4 43	6 25	12 33	19 00	.....	22 14	5	5 36.5	17 41	6.4
Wed May 20/Thu May 21	14 20	20 36	22 19	4 42	6 25	12 38	19 03	.....	23 07	11	6 31.9	17 26	6.4
Thu May 21/Fri May 22	14 24	20 37	22 20	4 41	6 24	12 43	19 06	.....	23 54	18	7 25.5	16 15	6.4
Fri May 22/Sat May 23	14 28	20 38	22 21	4 40	6 24	12 49	19 09	.....	0 36	26	8 16.8	14 16	6.3
Sat May 23/Sun May 24	14 32	20 39	22 22	4 39	6 23	12 54	19 12	.....	1 14	35	9 06.1	11 39	6.3
Sun May 24/Mon May 25	14 36	20 39	22 23	4 39	6 22	12 59	19 15	.....	1 49	45	9 53.5	8 32	6.3
Mon May 25/Tue May 26	14 40	20 40	22 24	4 38	6 22	13 04	19 18	.....	2 21	54	10 39.7	5 05	6.2
Tue May 26/Wed May 27	14 44	20 41	22 25	4 37	6 21	13 09	19 21	.....	2 53	64	11 25.2	1 24	6.2
Wed May 27/Thu May 28	14 48	20 41	22 26	4 36	6 21	13 14	19 25	.....	3 24	73	12 10.7	- 2 23	6.2
Thu May 28/Fri May 29	14 52	20 42	22 27	4 35	6 21	13 19	19 28	.....	3 55	81	12 56.8	- 6 08	6.1
Fri May 29/Sat May 30	14 56	20 43	22 28	4 35	6 20	13 23	19 31	.....	4 29	88	13 44.3	- 9 43	6.1
Sat May 30/Sun May 31	14 59	20 43	22 29	4 34	6 20	13 28	19 34	17 57	5 06	94	14 33.6	-12 58	6.1
Sun May 31/Mon Jun 01	15 03	20 44	22 30	4 33	6 19	13 33	19 38	18 55	5 46	98	15 25.1	-15 43	6.1

***** 2015 JUNE *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Mon Jun 01/Tue Jun 02	15 07	20 45	22 31	4 33	6 19	13 38	19 41	19 53	.....	100	16 19.0	-17 46	6.0
Tue Jun 02/Wed Jun 03	15 11	20 45	22 32	4 32	6 19	13 43	19 44	20 50	.....	100	17 14.9	-18 57	6.0
Wed Jun 03/Thu Jun 04	15 15	20 46	22 33	4 32	6 19	13 48	19 48	21 46	.....	97	18 12.2	-19 06	6.0
Thu Jun 04/Fri Jun 05	15 19	20 47	22 34	4 31	6 18	13 53	19 51	22 39	.....	92	19 10.1	-18 10	6.0
Fri Jun 05/Sat Jun 06	15 23	20 47	22 34	4 31	6 18	13 57	19 55	23 28	.....	85	20 07.7	-16 12	5.9
Sat Jun 06/Sun Jun 07	15 27	20 48	22 35	4 30	6 18	14 02	19 58	0 13	.....	76	21 04.3	-13 18	5.9
Sun Jun 07/Mon Jun 08	15 31	20 48	22 36	4 30	6 18	14 07	20 02	0 54	.....	66	21 59.7	- 9 41	5.9
Mon Jun 08/Tue Jun 09	15 35	20 49	22 37	4 30	6 18	14 11	20 05	1 34	.....	55	22 54.1	- 5 33	5.9
Tue Jun 09/Wed Jun 10	15 39	20 49	22 37	4 29	6 18	14 16	20 09	2 12	.....	43	23 47.7	- 1 09	5.9
Wed Jun 10/Thu Jun 11	15 43	20 50	22 38	4 29	6 17	14 21	20 13	2 50	.....	32	0 41.2	3 16	5.9
Thu Jun 11/Fri Jun 12	15 47	20 50	22 39	4 29	6 17	14 25	20 16	3 29	.....	22	1 35.0	7 27	5.8
Fri Jun 12/Sat Jun 13	15 51	20 51	22 39	4 29	6 17	14 30	20 20	4 11	.....	14	2 29.5	11 10	5.8
Sat Jun 13/Sun Jun 14	15 55	20 51	22 40	4 29	6 17	14 34	20 24	4 55	17 58	7	3 24.9	14 11	5.8
Sun Jun 14/Mon Jun 15	15 59	20 51	22 40	4 29	6 17	14 39	20 28	5 44	19 01	3	4 20.9	16 21	5.8
Mon Jun 15/Tue Jun 16	16 03	20 52	22 41	4 29	6 18	14 43	20 32	.....	20 01	0	5 17.1	17 31	5.8
Tue Jun 16/Wed Jun 17	16 06	20 52	22 41	4 29	6 18	14 47	20 36	.....	20 56	1	6 12.6	17 40	5.8
Wed Jun 17/Thu Jun 18	16 10	20 52	22 41	4 29	6 18	14 52	20 40	.....	21 46	3	7 06.8	16 50	5.8
Thu Jun 18/Fri Jun 19	16 14	20 53	22 42	4 29	6 18	14 56	20 44	.....	22 31	7	7 59.1	15 09	5.8
Fri Jun 19/Sat Jun 20	16 18	20 53	22 42	4 29	6 18	15 00	20 48	.....	23 12	13	8 49.4	12 45	5.8
Sat Jun 20/Sun Jun 21	16 22	20 53	22 42	4 29	6 18	15 04	20 52	.....	23 48	21	9 37.7	9 48	5.8
Sun Jun 21/Mon Jun 22	16 26	20 53	22 43	4 29	6 19	15 09	20 56	.....	0 21	29	10 24.4	6 27	5.8
Mon Jun 22/Tue Jun 23	16 30	20 54	22 43	4 30	6 19	15 13	21 00	.....	0 53	38	11 10.0	2 51	5.8
Tue Jun 23/Wed Jun 24	16 34	20 54	22 43	4 30	6 19	15 17	21 05	.....	1 24	47	11 55.2	- 0 53	5.8
Wed Jun 24/Thu Jun 25	16 38	20 54	22 43	4 30	6 19	15 21	21 09	.....	1 55	57	12 40.6	- 4 38	5.8
Thu Jun 25/Fri Jun 26	16 42	20 54	22 43	4 31	6 20	15 25	21 13	.....	2 28	66	13 26.9	- 8 17	5.8
Fri Jun 26/Sat Jun 27	16 46	20 54	22 43	4 31	6 20	15 29	21 18	.....	3 03	75	14 14.9	-11 40	5.8
Sat Jun 27/Sun Jun 28	16 50	20 54	22 43	4 32	6 20	15 33	21 22	.....	3 41	83	15 05.0	-14 39	5.8
Sun Jun 28/Mon Jun 29	16 54	20 54	22 43	4 32	6 21	15 37	21 27	17 39	4 24	90	15 57.8	-17 01	5.8
Mon Jun 29/Tue Jun 30	16 58	20 54	22 43	4 33	6 21	15 40	21 31	18 37	5 12	96	16 53.1	-18 37	5.8
Tue Jun 30/Wed Jul 01	17 02	20 54	22 43	4 33	6 22	15 44	21 36	19 35	6 06	99	17 50.6	-19 14	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.

***** 2015 JULY *****

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 Jul 01/Thu Jul 02	17 06	20 54	22 42	4 34	6 22	15 48	21 40	20 30	.....	100	18 49.6	-18 45	5.9
Thu Jul 02/Fri Jul 03	17 10	20 54	22 42	4 34	6 22	15 52	21 45	21 22	.....	98	19 49.0	-17 08	5.9
Fri Jul 03/Sat Jul 04	17 14	20 54	22 42	4 35	6 23	15 55	21 49	22 10	.....	94	20 47.7	-14 28	5.9
Sat Jul 04/Sun Jul 05	17 17	20 54	22 42	4 36	6 23	15 59	21 54	22 54	.....	87	21 45.3	-10 57	5.9
Sun Jul 05/Mon Jul 06	17 21	20 54	22 41	4 36	6 24	16 02	21 59	23 35	.....	78	22 41.4	- 6 50	5.9
Mon Jul 06/Tue Jul 07	17 25	20 53	22 41	4 37	6 25	16 06	22 03	0 14	.....	68	23 36.3	- 2 24	5.9
Tue Jul 07/Wed Jul 08	17 29	20 53	22 40	4 38	6 25	16 09	22 08	0 52	.....	57	0 30.4	2 05	6.0
Wed Jul 08/Thu Jul 09	17 33	20 53	22 40	4 39	6 26	16 13	22 13	1 31	.....	46	1 24.1	6 22	6.0
Thu Jul 09/Fri Jul 10	17 37	20 53	22 39	4 40	6 26	16 16	22 18	2 11	.....	35	2 18.1	10 11	6.0
Fri Jul 10/Sat Jul 11	17 41	20 52	22 39	4 41	6 27	16 20	22 22	2 54	.....	25	3 12.4	13 22	6.0
Sat Jul 11/Sun Jul 12	17 45	20 52	22 38	4 41	6 27	16 23	22 27	3 39	.....	16	4 07.3	15 45	6.1
Sun Jul 12/Mon Jul 13	17 49	20 52	22 37	4 42	6 28	16 26	22 32	4 29	17 52	9	5 02.3	17 12	6.1
Mon Jul 13/Tue Jul 14	17 53	20 51	22 37	4 43	6 29	16 29	22 37	5 21	18 48	4	5 57.1	17 40	6.1
Tue Jul 14/Wed Jul 15	17 57	20 51	22 36	4 44	6 29	16 33	22 42	6 15	19 40	1	6 51.0	17 10	6.1
Wed Jul 15/Thu Jul 16	18 01	20 50	22 35	4 45	6 30	16 36	22 47	.....	20 26	0	7 43.4	15 47	6.2
Thu Jul 16/Fri Jul 17	18 05	20 50	22 34	4 46	6 31	16 39	22 52	.....	21 08	1	8 34.1	13 39	6.2
Fri Jul 17/Sat Jul 18	18 09	20 49	22 34	4 47	6 31	16 42	22 57	.....	21 47	5	9 22.9	10 54	6.2
Sat Jul 18/Sun Jul 19	18 13	20 49	22 33	4 48	6 32	16 45	23 02	.....	22 21	9	10 10.1	7 42	6.3
Sun Jul 19/Mon Jul 20	18 17	20 48	22 32	4 49	6 33	16 48	23 07	.....	22 54	16	10 55.9	4 12	6.3
Mon Jul 20/Tue Jul 21	18 21	20 48	22 31	4 50	6 34	16 51	23 12	.....	23 25	23	11 41.0	0 32	6.3
Tue Jul 21/Wed Jul 22	18 24	20 47	22 30	4 51	6 34	16 54	23 17	.....	23 56	31	12 25.9	- 3 11	6.4
Wed Jul 22/Thu Jul 23	18 28	20 46	22 29	4 53	6 35	16 57	23 22	.....	0 28	40	13 11.3	- 6 49	6.4
Thu Jul 23/Fri Jul 24	18 32	20 46	22 28	4 54	6 36	17 00	23 27	.....	1 01	50	13 57.8	-10 16	6.4
Fri Jul 24/Sat Jul 25	18 36	20 45	22 27	4 55	6 36	17 03	23 32	.....	1 37	60	14 46.1	-13 22	6.5
Sat Jul 25/Sun Jul 26	18 40	20 44	22 26	4 56	6 37	17 06	23 37	.....	2 17	69	15 36.8	-15 58	6.5
Sun Jul 26/Mon Jul 27	18 44	20 44	22 24	4 57	6 38	17 08	23 42	.....	3 01	78	16 30.1	-17 54	6.5
Mon Jul 27/Tue Jul 28	18 48	20 43	22 23	4 58	6 39	17 11	23 47	.....	3 52	87	17 26.0	-18 58	6.6
Tue Jul 28/Wed Jul 29	18 52	20 42	22 22	4 59	6 39	17 14	23 52	18 16	4 48	93	18 24.3	-19 01	6.6
Wed Jul 29/Thu Jul 30	18 56	20 41	22 21	5 00	6 40	17 17	23 57	19 09	5 50	98	19 23.9	-17 56	6.7
Thu Jul 30/Fri Jul 31	19 00	20 40	22 20	5 02	6 41	17 19	0 02	20 00	.....	100	20 24.1	-15 42	6.7
Fri Jul 31/Sat Aug 01	19 04	20 39	22 19	5 03	6 42	17 22	0 07	20 47	.....	99	21 23.7	-12 28	6.7

***** 2015 AUGUST *****

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	
Sat Aug 01/Sun Aug 02	19 08	20 39	22 17	5 04	6 43	17 25	0 13	21 31	.....	95	22 22.3	- 8 27	6.8
Sun Aug 02/Mon Aug 03	19 12	20 38	22 16	5 05	6 43	17 27	0 18	22 13	.....	89	23 19.6	- 3 58	6.8
Mon Aug 03/Tue Aug 04	19 16	20 37	22 15	5 06	6 44	17 30	0 23	22 52	.....	81	0 15.8	0 40	6.9
Tue Aug 04/Wed Aug 05	19 20	20 36	22 13	5 07	6 45	17 33	0 28	23 32	.....	70	1 11.3	5 08	6.9
Wed Aug 05/Thu Aug 06	19 24	20 35	22 12	5 08	6 46	17 35	0 33	0 12	.....	59	2 06.3	9 11	6.9
Thu Aug 06/Fri Aug 07	19 28	20 34	22 11	5 10	6 46	17 38	0 38	0 54	.....	48	3 01.3	12 34	7.0
Fri Aug 07/Sat Aug 08	19 32	20 33	22 09	5 11	6 47	17 40	0 43	1 39	.....	37	3 56.2	15 09	7.0
Sat Aug 08/Sun Aug 09	19 35	20 32	22 08	5 12	6 48	17 43	0 48	2 26	.....	27	4 51.0	16 50	7.1
Sun Aug 09/Mon Aug 10	19 39	20 31	22 06	5 13	6 49	17 45	0 53	3 17	.....	19	5 45.3	17 32	7.1
Mon Aug 10/Tue Aug 11	19 43	20 30	22 05	5 14	6 50	17 48	0 58	4 10	17 35	11	6 38.8	17 18	7.2
Tue Aug 11/Wed Aug 12	19 47	20 28	22 03	5 15	6 50	17 50	1 03	5 05	18 23	6	7 30.9	16 10	7.2
Wed Aug 12/Thu Aug 13	19 51	20 27	22 02	5 16	6 51	17 53	1 09	6 00	19 07	2	8 21.5	14 16	7.2
Thu Aug 13/Fri Aug 14	19 55	20 26	22 01	5 18	6 52	17 55	1 14	.....	19 46	0	9 10.3	11 44	7.3
Fri Aug 14/Sat Aug 15	19 59	20 25	21 59	5 19	6 53	17 58	1 19	.....	20 22	0	9 57.6	8 42	7.3
Sat Aug 15/Sun Aug 16	20 03	20 24	21 58	5 20	6 54	18 00	1 24	.....	20 55	2	10 43.6	5 19	7.4
Sun Aug 16/Mon Aug 17	20 07	20 23	21 56	5 21	6 54	18 03	1 29	.....	21 27	6	11 28.7	1 43	7.4
Mon Aug 17/Tue Aug 18	20 11	20 21	21 54	5 22	6 55	18 05	1 34	.....	21 58	11	12 13.4	- 1 57	7.5
Tue Aug 18/Wed Aug 19	20 15	20 20	21 53	5 23	6 56	18 07	1 39	.....	22 29	18	12 58.2	- 5 34	7.5
Wed Aug 19/Thu Aug 20	20 19	20 19	21 51	5 24	6 57	18 10	1 44	.....	23 01	25	13 43.8	- 9 01	7.5
Thu Aug 20/Fri Aug 21	20 23	20 18	21 50	5 25	6 57	18 12	1 49	.....	23 36	34	14 30.6	-12 11	7.6
Fri Aug 21/Sat Aug 22	20 27	20 16	21 48	5 26	6 58	18 15	1 54	.....	0 13	44	15 19.3	-14 54	7.6
Sat Aug 22/Sun Aug 23	20 31	20 15	21 47	5 27	6 59	18 17	1 59	.....	0 54	53	16 10.2	-17 02	7.7
Sun Aug 23/Mon Aug 24	20 35	20 14	21 45	5 29	7 00	18 19	2 04	.....	1 41	64	17 03.6	-18 26	7.7
Mon Aug 24/Tue Aug 25	20 39	20 13	21 43	5 30	7 01	18 22	2 09	.....	2 33	74	17 59.4	-18 56	7.8
Tue Aug 25/Wed Aug 26	20 42	20 11	21 42	5 31	7 01	18 24	2 14	.....	3 31	83	18 57.2	-18 23	7.8
Wed Aug 26/Thu Aug 27	20 46	20 10	21 40	5 32	7 02	18 26	2 19	17 47	4 34	90	19 56.5	-16 44	7.9
Thu Aug 27/Fri Aug 28	20 50	20 09	21 39	5 33	7 03	18 29	2 24	18 35	5 41	96	20 56.3	-13 59	7.9
Fri Aug 28/Sat Aug 29	20 54	20 07	21 37	5 34	7 04	18 31	2 29	19 21	6 51	99	21 56.0	-10 18	7.9
Sat Aug 29/Sun Aug 30	20 58	20 06	21 35	5 35	7 04	18 33	2 34	20 05	.....	100	22 55.1	- 5 56	8.0
Sun Aug 30/Mon Aug 31	21 02	20 04	21 34	5 36	7 05	18 36	2 39	20 46	.....	97	23 53.6	- 1 13	8.0
Mon Aug 31/Tue Sep 01	21 06	20 03	21 32	5 37	7 06	18 38	2 44	21 28	.....	91	0 51.4	3 30	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.

***** 2015 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	
Tue Sep 01/Wed Sep 02	21 10	20 02	21 30	5 38	7 07	18 40	2 49	22 09	.....	83	1 48.8	7 52	8.1
Wed Sep 02/Thu Sep 03	21 14	20 00	21 29	5 39	7 07	18 42	2 54	22 52	.....	73	2 45.9	11 36	8.2
Thu Sep 03/Fri Sep 04	21 18	19 59	21 27	5 40	7 08	18 45	2 59	23 37	.....	63	3 42.5	14 30	8.2
Fri Sep 04/Sat Sep 05	21 22	19 57	21 26	5 41	7 09	18 47	3 04	0 24	.....	52	4 38.6	16 27	8.3
Sat Sep 05/Sun Sep 06	21 26	19 56	21 24	5 42	7 10	18 49	3 08	1 14	.....	41	5 33.9	17 24	8.3
Sun Sep 06/Mon Sep 07	21 30	19 55	21 22	5 43	7 10	18 52	3 13	2 07	.....	31	6 27.8	17 22	8.3
Mon Sep 07/Tue Sep 08	21 34	19 53	21 21	5 44	7 11	18 54	3 18	3 01	.....	22	7 20.2	16 27	8.4
Tue Sep 08/Wed Sep 09	21 38	19 52	21 19	5 45	7 12	18 56	3 23	3 55	17 06	15	8 10.9	14 44	8.4
Wed Sep 09/Thu Sep 10	21 42	19 50	21 17	5 45	7 13	18 59	3 28	4 50	17 46	8	8 59.7	12 22	8.5
Thu Sep 10/Fri Sep 11	21 46	19 49	21 16	5 46	7 13	19 01	3 33	5 45	18 23	4	9 47.0	9 28	8.5
Fri Sep 11/Sat Sep 12	21 49	19 47	21 14	5 47	7 14	19 03	3 38	6 39	18 57	1	10 33.0	6 12	8.6
Sat Sep 12/Sun Sep 13	21 53	19 46	21 13	5 48	7 15	19 06	3 43	.....	19 29	0	11 18.1	2 41	8.6
Sun Sep 13/Mon Sep 14	21 57	19 44	21 11	5 49	7 16	19 08	3 48	.....	20 00	1	12 02.7	- 0 57	8.6
Mon Sep 14/Tue Sep 15	22 01	19 43	21 09	5 50	7 17	19 10	3 52	.....	20 31	3	12 47.3	- 4 34	8.7
Tue Sep 15/Wed Sep 16	22 05	19 41	21 08	5 51	7 17	19 12	3 57	.....	21 03	7	13 32.4	- 8 02	8.7
Wed Sep 16/Thu Sep 17	22 09	19 40	21 06	5 52	7 18	19 15	4 02	.....	21 37	13	14 18.5	-11 15	8.8
Thu Sep 17/Fri Sep 18	22 13	19 39	21 04	5 53	7 19	19 17	4 07	.....	22 13	20	15 06.0	-14 03	8.8
Fri Sep 18/Sat Sep 19	22 17	19 37	21 03	5 54	7 20	19 19	4 12	.....	22 52	28	15 55.3	-16 19	8.8
Sat Sep 19/Sun Sep 20	22 21	19 36	21 01	5 55	7 20	19 22	4 17	.....	23 35	38	16 46.5	-17 55	8.9
Sun Sep 20/Mon Sep 21	22 25	19 34	21 00	5 55	7 21	19 24	4 21	.....	0 24	48	17 39.9	-18 42	8.9
Mon Sep 21/Tue Sep 22	22 29	19 33	20 58	5 56	7 22	19 27	4 26	.....	1 17	58	18 35.0	-18 33	9.0
Tue Sep 22/Wed Sep 23	22 33	19 31	20 57	5 57	7 23	19 29	4 31	.....	2 16	69	19 31.8	-17 23	9.0
Wed Sep 23/Thu Sep 24	22 37	19 30	20 55	5 58	7 23	19 31	4 36	.....	3 20	79	20 29.5	-15 11	9.1
Thu Sep 24/Fri Sep 25	22 41	19 28	20 53	5 59	7 24	19 34	4 41	17 10	4 26	88	21 27.9	-12 00	9.1
Fri Sep 25/Sat Sep 26	22 45	19 27	20 52	6 00	7 25	19 36	4 45	17 54	5 36	94	22 26.6	- 7 59	9.1
Sat Sep 26/Sun Sep 27	22 49	19 25	20 50	6 01	7 26	19 38	4 50	18 36	6 46	99	23 25.3	- 3 25	9.2
Sun Sep 27/Mon Sep 28	22 53	19 24	20 49	6 01	7 27	19 41	4 55	19 18	.....	100	0 24.2	1 24	9.2
Mon Sep 28/Tue Sep 29	22 57	19 22	20 47	6 02	7 27	19 43	5 00	20 00	.....	98	1 23.3	6 04	9.2
Tue Sep 29/Wed Sep 30	23 00	19 21	20 46	6 03	7 28	19 46	5 05	20 43	.....	93	2 22.5	10 14	9.3
Wed Sep 30/Thu Oct 01	23 04	19 19	20 44	6 04	7 29	19 48	5 09	21 29	.....	86	3 21.6	13 36	9.3

***** 2015 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	
Thu Oct 01/Fri Oct 02	23 08	19 18	20 43	6 05	7 30	19 51	5 14	22 17	.....	77	4 20.2	15 59	9.4
Fri Oct 02/Sat Oct 03	23 12	19 17	20 41	6 06	7 30	19 53	5 19	23 08	.....	67	5 17.9	17 17	9.4
Sat Oct 03/Sun Oct 04	23 16	19 15	20 40	6 06	7 31	19 56	5 24	0 01	.....	56	6 13.9	17 32	9.4
Sun Oct 04/Mon Oct 05	23 20	19 14	20 38	6 07	7 32	19 58	5 28	0 55	.....	46	7 07.9	16 49	9.5
Mon Oct 05/Tue Oct 06	23 24	19 12	20 37	6 08	7 33	20 01	5 33	1 50	.....	36	7 59.6	15 16	9.5
Tue Oct 06/Wed Oct 07	23 28	19 11	20 36	6 09	7 34	20 03	5 38	2 45	.....	27	8 49.2	13 01	9.6
Wed Oct 07/Thu Oct 08	23 32	19 10	20 34	6 10	7 35	20 06	5 43	3 40	16 24	19	9 36.9	10 14	9.6
Thu Oct 08/Fri Oct 09	23 36	19 08	20 33	6 11	7 35	20 08	5 47	4 34	16 59	12	10 23.1	7 02	9.6
Fri Oct 09/Sat Oct 10	23 40	19 07	20 31	6 11	7 36	20 11	5 52	5 28	17 31	7	11 08.2	3 34	9.7
Sat Oct 10/Sun Oct 11	23 44	19 05	20 30	6 12	7 37	20 13	5 57	6 22	18 02	3	11 52.7	- 0 02	9.7
Sun Oct 11/Mon Oct 12	23 48	19 04	20 29	6 13	7 38	20 16	6 02	7 15	18 34	1	12 37.2	- 3 40	9.7
Mon Oct 12/Tue Oct 13	23 52	19 03	20 27	6 14	7 39	20 19	6 07	.....	19 05	0	13 22.1	- 7 11	9.8
Tue Oct 13/Wed Oct 14	23 56	19 01	20 26	6 15	7 40	20 21	6 11	.....	19 38	1	14 08.0	-10 28	9.8
Wed Oct 14/Thu Oct 15	24 00	19 00	20 25	6 15	7 40	20 24	6 16	.....	20 13	4	14 55.1	-13 22	9.8
Thu Oct 15/Fri Oct 16	0 04	18 59	20 24	6 16	7 41	20 27	6 21	.....	20 52	9	15 43.8	-15 46	9.9
Fri Oct 16/Sat Oct 17	0 07	18 57	20 22	6 17	7 42	20 29	6 26	.....	21 33	15	16 34.1	-17 32	9.9
Sat Oct 17/Sun Oct 18	0 11	18 56	20 21	6 18	7 43	20 32	6 30	.....	22 20	23	17 26.1	-18 31	9.9
Sun Oct 18/Mon Oct 19	0 15	18 55	20 20	6 19	7 44	20 35	6 35	.....	23 11	32	18 19.5	-18 38	10.0
Mon Oct 19/Tue Oct 20	0 19	18 54	20 19	6 20	7 45	20 37	6 40	.....	0 06	42	19 14.1	-17 48	10.0
Tue Oct 20/Wed Oct 21	0 23	18 52	20 18	6 20	7 46	20 40	6 45	.....	1 06	53	20 09.6	-16 00	10.0
Wed Oct 21/Thu Oct 22	0 27	18 51	20 16	6 21	7 47	20 43	6 49	.....	2 09	64	21 05.5	-13 15	10.1
Thu Oct 22/Fri Oct 23	0 31	18 50	20 15	6 22	7 48	20 46	6 54	.....	3 14	75	22 01.9	- 9 41	10.1
Fri Oct 23/Sat Oct 24	0 35	18 49	20 14	6 23	7 49	20 49	6 59	16 27	4 22	84	22 58.7	- 5 27	10.1
Sat Oct 24/Sun Oct 25	0 39	18 48	20 13	6 24	7 49	20 51	7 04	17 08	5 31	92	23 56.0	- 0 48	10.2
Sun Oct 25/Mon Oct 26	0 43	18 46	20 12	6 25	7 50	20 54	7 09	17 49	6 42	97	0 54.3	3 56	10.2
Mon Oct 26/Tue Oct 27	0 47	18 45	20 11	6 25	7 51	20 57	7 13	18 31	7 53	100	1 53.5	8 25	10.2
Tue Oct 27/Wed Oct 28	0 51	18 44	20 10	6 26	7 52	21 00	7 18	19 16	.....	99	2 53.6	12 16	10.3
Wed Oct 28/Thu Oct 29	0 55	18 43	20 09	6 27	7 53	21 03	7 23	20 03	.....	95	3 54.1	15 13	10.3
Thu Oct 29/Fri Oct 30	0 59	18 42	20 08	6 28	7 54	21 06	7 28	20 54	.....	89	4 54.3	17 04	10.3
Fri Oct 30/Sat Oct 31	1 03	18 41	20 07	6 29	7 55	21 09	7 32	21 48	.....	81	5 53.2	17 46	10.4
Sat Oct 31/Sun Nov 01*	1 07	18 40	20 06	5 30	6 56	21 12	7 37	22 44	.....	72	6 50.1	17 22	10.4

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.

***** 2015 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	
Sun Nov 01/Mon Nov 02	2 11	17 39	19 05	5 30	6 57	21 15	7 42	22 41	.....	62	7 46.5	16 01	10.4
Mon Nov 02/Tue Nov 03	2 15	17 38	19 04	5 31	6 58	21 18	7 47	23 37	.....	52	8 38.1	13 51	10.4
Tue Nov 03/Wed Nov 04	2 19	17 37	19 03	5 32	6 59	21 21	7 52	0 33	.....	42	9 27.3	11 07	10.5
Wed Nov 04/Thu Nov 05	2 23	17 36	19 03	5 33	7 00	21 24	7 56	1 28	.....	33	10 14.3	7 56	10.5
Thu Nov 05/Fri Nov 06	2 26	17 35	19 02	5 34	7 01	21 28	8 01	2 22	.....	24	10 59.9	4 29	10.5
Fri Nov 06/Sat Nov 07	2 30	17 34	19 01	5 35	7 02	21 31	8 06	3 16	.....	17	11 44.6	0 52	10.6
Sat Nov 07/Sun Nov 08	2 34	17 33	19 00	5 36	7 03	21 34	8 11	4 09	.....	10	12 29.1	- 2 48	10.6
Sun Nov 08/Mon Nov 09	2 38	17 32	19 00	5 36	7 04	21 37	8 16	5 03	16 07	5	13 14.0	- 6 22	10.6
Mon Nov 09/Tue Nov 10	2 42	17 31	18 59	5 37	7 05	21 40	8 20	5 57	16 39	2	13 59.7	- 9 44	10.6
Tue Nov 10/Wed Nov 11	2 46	17 31	18 58	5 38	7 06	21 44	8 25	6 53	17 14	0	14 46.6	-12 46	10.7
Wed Nov 11/Thu Nov 12	2 50	17 30	18 58	5 39	7 07	21 47	8 30	7 48	17 51	0	15 35.2	-15 18	10.7
Thu Nov 12/Fri Nov 13	2 54	17 29	18 57	5 40	7 08	21 50	8 35	.....	18 32	2	16 25.5	-17 13	10.7
Fri Nov 13/Sat Nov 14	2 58	17 28	18 56	5 41	7 09	21 54	8 40	.....	19 17	6	17 17.3	-18 22	10.7
Sat Nov 14/Sun Nov 15	3 02	17 28	18 56	5 42	7 10	21 57	8 44	.....	20 07	12	18 10.4	-18 40	10.8
Sun Nov 15/Mon Nov 16	3 06	17 27	18 55	5 42	7 11	22 00	8 49	.....	21 01	19	19 04.3	-18 01	10.8
Mon Nov 16/Tue Nov 17	3 10	17 26	18 55	5 43	7 12	22 04	8 54	.....	21 59	28	19 58.6	-16 27	10.8
Tue Nov 17/Wed Nov 18	3 14	17 26	18 54	5 44	7 13	22 07	8 59	.....	23 00	38	20 53.0	-13 58	10.8
Wed Nov 18/Thu Nov 19	3 18	17 25	18 54	5 45	7 14	22 11	9 04	.....	0 03	49	21 47.3	-10 42	10.8
Thu Nov 19/Fri Nov 20	3 22	17 25	18 54	5 46	7 15	22 14	9 08	.....	1 07	60	22 41.6	- 6 47	10.9
Fri Nov 20/Sat Nov 21	3 26	17 24	18 53	5 47	7 16	22 18	9 13	.....	2 13	71	23 36.4	- 2 24	10.9
Sat Nov 21/Sun Nov 22	3 30	17 24	18 53	5 48	7 17	22 22	9 18	.....	3 21	81	0 31.9	2 11	10.9
Sun Nov 22/Mon Nov 23	3 34	17 23	18 53	5 48	7 18	22 25	9 23	.....	4 29	90	1 28.8	6 42	10.9
Mon Nov 23/Tue Nov 24	3 37	17 23	18 52	5 49	7 19	22 29	9 28	16 05	5 38	96	2 27.1	10 49	10.9
Tue Nov 24/Wed Nov 25	3 41	17 22	18 52	5 50	7 20	22 33	9 32	16 50	6 46	99	3 27.0	14 12	11.0
Wed Nov 25/Thu Nov 26	3 45	17 22	18 52	5 51	7 21	22 36	9 37	17 39	7 52	100	4 27.7	16 37	11.0
Thu Nov 26/Fri Nov 27	3 49	17 22	18 52	5 52	7 22	22 40	9 42	18 32	.....	97	5 28.3	17 52	11.0
Fri Nov 27/Sat Nov 28	3 53	17 21	18 51	5 52	7 23	22 44	9 47	19 28	.....	93	6 27.7	17 57	11.0
Sat Nov 28/Sun Nov 29	3 57	17 21	18 51	5 53	7 24	22 48	9 51	20 26	.....	86	7 24.9	16 56	11.0
Sun Nov 29/Mon Nov 30	4 01	17 21	18 51	5 54	7 24	22 51	9 56	21 24	.....	78	8 19.3	15 01	11.0
Mon Nov 30/Tue Dec 01	4 05	17 21	18 51	5 55	7 25	22 55	10 01	22 22	.....	69	9 10.8	12 24	11.1

***** 2015 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	
Tue Dec 01/Wed Dec 02	4 09	17 21	18 51	5 56	7 26	22 59	10 06	23 18	.....	59	9 59.7	9 17	11.1
Wed Dec 02/Thu Dec 03	4 13	17 20	18 51	5 56	7 27	23 03	10 10	0 13	.....	50	10 46.6	5 50	11.1
Thu Dec 03/Fri Dec 04	4 17	17 20	18 51	5 57	7 28	23 07	10 15	1 07	.....	40	11 32.0	2 11	11.1
Fri Dec 04/Sat Dec 05	4 21	17 20	18 51	5 58	7 29	23 11	10 20	2 01	.....	32	12 16.8	- 1 31	11.1
Sat Dec 05/Sun Dec 06	4 25	17 20	18 51	5 59	7 30	23 15	10 25	2 55	.....	23	13 01.5	- 5 09	11.1
Sun Dec 06/Mon Dec 07	4 29	17 20	18 51	6 00	7 31	23 19	10 29	3 49	.....	16	13 46.9	- 8 38	11.1
Mon Dec 07/Tue Dec 08	4 33	17 20	18 51	6 00	7 31	23 23	10 34	4 44	.....	10	14 33.5	-11 49	11.1
Tue Dec 08/Wed Dec 09	4 37	17 20	18 51	6 01	7 32	23 27	10 39	5 39	15 49	5	15 21.7	-14 34	11.2
Wed Dec 09/Thu Dec 10	4 41	17 20	18 52	6 02	7 33	23 31	10 43	6 35	16 28	2	16 11.8	-16 43	11.2
Thu Dec 10/Fri Dec 11	4 44	17 21	18 52	6 02	7 34	23 36	10 48	7 30	17 12	0	17 03.8	-18 09	11.2
Fri Dec 11/Sat Dec 12	4 48	17 21	18 52	6 03	7 34	23 40	10 52	8 24	18 01	1	17 57.3	-18 43	11.2
Sat Dec 12/Sun Dec 13	4 52	17 21	18 52	6 04	7 35	23 44	10 57	.....	18 55	4	18 51.8	-18 21	11.2
Sun Dec 13/Mon Dec 14	4 56	17 21	18 53	6 04	7 36	23 48	11 02	.....	19 52	8	19 46.7	-17 00	11.2
Mon Dec 14/Tue Dec 15	5 00	17 21	18 53	6 05	7 37	23 52	11 06	.....	20 53	15	20 41.5	-14 44	11.2
Tue Dec 15/Wed Dec 16	5 04	17 22	18 53	6 06	7 37	23 57	11 11	.....	21 56	24	21 35.7	-11 39	11.2
Wed Dec 16/Thu Dec 17	5 08	17 22	18 54	6 06	7 38	0 01	11 15	.....	23 00	34	22 29.5	- 7 55	11.2
Thu Dec 17/Fri Dec 18	5 12	17 22	18 54	6 07	7 38	0 05	11 20	.....	0 04	45	23 22.9	- 3 43	11.2
Fri Dec 18/Sat Dec 19	5 16	17 23	18 54	6 07	7 39	0 10	11 24	.....	1 10	56	0 16.6	0 44	11.2
Sat Dec 19/Sun Dec 20	5 20	17 23	18 55	6 08	7 40	0 14	11 29	.....	2 15	67	1 11.0	5 09	11.2
Sun Dec 20/Mon Dec 21	5 24	17 24	18 55	6 08	7 40	0 18	11 33	.....	3 22	78	2 06.6	9 19	11.2
Mon Dec 21/Tue Dec 22	5 28	17 24	18 56	6 09	7 41	0 23	11 38	.....	4 28	87	3 03.8	12 56	11.2
Tue Dec 22/Wed Dec 23	5 32	17 25	18 56	6 09	7 41	0 27	11 42	15 28	5 33	93	4 02.5	15 44	11.2
Wed Dec 23/Thu Dec 24	5 36	17 25	18 57	6 10	7 42	0 32	11 47	16 18	6 36	98	5 02.1	17 31	11.2
Thu Dec 24/Fri Dec 25	5 40	17 26	18 57	6 10	7 42	0 36	11 51	17 12	7 34	100	6 01.7	18 09	11.2
Fri Dec 25/Sat Dec 26	5 44	17 26	18 58	6 11	7 42	0 41	11 55	18 08	8 26	99	7 00.2	17 40	11.2
Sat Dec 26/Sun Dec 27	5 48	17 27	18 59	6 11	7 43	0 45	12 00	19 07	.....	96	7 56.6	16 08	11.2
Sun Dec 27/Mon Dec 28	5 52	17 28	18 59	6 11	7 43	0 50	12 04	20 06	.....	91	8 50.4	13 47	11.2
Mon Dec 28/Tue Dec 29	5 55	17 28	19 00	6 12	7 43	0 54	12 08	21 04	.....	84	9 41.5	10 48	11.2
Tue Dec 29/Wed Dec 30	5 59	17 29	19 00	6 12	7 44	0 59	12 13	22 01	.....	76	10 30.1	7 23	11.2
Wed Dec 30/Thu Dec 31	6 03	17 30	19 01	6 12	7 44	1 04	12 17	22 56	.....	68	11 16.9	3 44	11.2
Thu Dec 31/Fri Jan 01	6 07	17 30	19 02	6 13	7 44	1 08	12 21	23 51	.....	58	12 02.4	- 0 00	11.2