

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:

***** 2016 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 -1.1 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 2016, 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 11 | 4 30 | Dec 18 | 9 15 | Dec 25 | 5 12 | Jan 01 | 23 32 |
| Jan 09 | 19 31 | Jan 16 | 17 27 | Jan 23 | 19 46 | Jan 31 | 21 29 |
| Feb 08 | 8 40 | Feb 15 | 1 48 | Feb 22 | 12 21 | Mar 01 | 17 13 |
| Mar 08 | 19 56 | Mar 15 | 12 04 | Mar 23 | 7 02 | Mar 31 | 10 19 |
| Apr 07 | 6 25 | Apr 13 | 23 01 | Apr 22 | 0 25 | Apr 29 | 22 30 |
| May 06 | 14 31 | May 13 | 12 03 | May 21 | 16 17 | May 29 | 7 14 |
| Jun 04 | 22 02 | Jun 12 | 3 11 | Jun 20 | 6 05 | Jun 27 | 13 21 |
| Jul 04 | 6 03 | Jul 11 | 19 53 | Jul 19 | 18 00 | Jul 26 | 18 03 |
| Aug 02 | 15 47 | Aug 10 | 13 22 | Aug 18 | 4 30 | Aug 24 | 22 44 |
| Sep 01 | 4 05 | Sep 09 | 6 51 | Sep 16 | 14 08 | Sep 23 | 4 59 |
| Sep 30 | 19 13 | Oct 08 | 23 35 | Oct 15 | 23 25 | Oct 22 | 14 16 |
| Oct 30 | 12 40 | Nov 07 | 13 53 | Nov 14 | 7 54 | Nov 21 | 2 35 |
| Nov 29 | 6 20 | Dec 07 | 3 04 | Dec 13 | 18 07 | Dec 20 | 19 57 |
| Dec 29 | 0 54 | Jan 05 | 13 48 | Jan 12 | 5 35 | Jan 19 | 16 14 |

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.

***** 2016 JANUARY *****

| Date (eve/morn) | LMST midn | Sun: ----- | | | | LST twilight: | | Moon: ----- | | | | Twilight | | Twi-Twi hours |
|-----------------------|--------------|------------|---------|---------|------|---------------|-------|-------------|-------|--------|---------|----------|------|------------------|
| | | set | twi.end | twi.beg | rise | eve | morn | rise | set | %illum | RA | Dec | | |
| Fri Jan 01/Sat Jan 02 | 6 11 | 17 31 | 19 02 | 6 13 | 7 44 | 1 13 | 12 25 | 0 44 | ..... | 49 | 12 47.4 | - 3 43 | 11.2 | |
| Sat Jan 02/Sun Jan 03 | 6 15 | 17 32 | 19 03 | 6 13 | 7 44 | 1 18 | 12 29 | 1 38 | ..... | 40 | 13 32.6 | - 7 17 | 11.2 | |
| Sun Jan 03/Mon Jan 04 | 6 19 | 17 33 | 19 04 | 6 13 | 7 44 | 1 22 | 12 33 | 2 32 | ..... | 31 | 14 18.6 | -10 36 | 11.2 | |
| Mon Jan 04/Tue Jan 05 | 6 23 | 17 34 | 19 05 | 6 13 | 7 45 | 1 27 | 12 38 | 3 27 | ..... | 22 | 15 06.0 | -13 31 | 11.1 | |
| Tue Jan 05/Wed Jan 06 | 6 27 | 17 34 | 19 05 | 6 14 | 7 45 | 1 32 | 12 42 | 4 23 | ..... | 15 | 15 55.3 | -15 56 | 11.1 | |
| Wed Jan 06/Thu Jan 07 | 6 31 | 17 35 | 19 06 | 6 14 | 7 45 | 1 36 | 12 46 | 5 19 | ..... | 9 | 16 46.6 | -17 40 | 11.1 | |
| Thu Jan 07/Fri Jan 08 | 6 35 | 17 36 | 19 07 | 6 14 | 7 45 | 1 41 | 12 50 | 6 14 | 15 52 | 4 | 17 39.8 | -18 35 | 11.1 | |
| Fri Jan 08/Sat Jan 09 | 6 39 | 17 37 | 19 08 | 6 14 | 7 45 | 1 46 | 12 54 | 7 06 | 16 44 | 1 | 18 34.7 | -18 34 | 11.1 | |
| Sat Jan 09/Sun Jan 10 | 6 43 | 17 38 | 19 09 | 6 14 | 7 44 | 1 50 | 12 58 | 7 56 | 17 41 | 0 | 19 30.5 | -17 34 | 11.1 | |
| Sun Jan 10/Mon Jan 11 | 6 47 | 17 39 | 19 09 | 6 14 | 7 44 | 1 55 | 13 02 | ..... | 18 42 | 2 | 20 26.5 | -15 34 | 11.1 | |
| Mon Jan 11/Tue Jan 12 | 6 51 | 17 40 | 19 10 | 6 14 | 7 44 | 2 00 | 13 05 | ..... | 19 46 | 6 | 21 22.1 | -12 41 | 11.1 | |
| Tue Jan 12/Wed Jan 13 | 6 55 | 17 41 | 19 11 | 6 14 | 7 44 | 2 05 | 13 09 | ..... | 20 51 | 12 | 22 17.0 | - 9 03 | 11.0 | |
| Wed Jan 13/Thu Jan 14 | 6 59 | 17 42 | 19 12 | 6 14 | 7 44 | 2 10 | 13 13 | ..... | 21 57 | 20 | 23 11.2 | - 4 55 | 11.0 | |
| Thu Jan 14/Fri Jan 15 | 7 02 | 17 43 | 19 13 | 6 14 | 7 44 | 2 14 | 13 17 | ..... | 23 03 | 30 | 0 05.0 | - 0 31 | 11.0 | |
| Fri Jan 15/Sat Jan 16 | 7 06 | 17 44 | 19 14 | 6 13 | 7 43 | 2 19 | 13 21 | ..... | 0 08 | 41 | 0 58.8 | 3 55 | 11.0 | |
| Sat Jan 16/Sun Jan 17 | 7 10 | 17 45 | 19 14 | 6 13 | 7 43 | 2 24 | 13 25 | ..... | 1 14 | 52 | 1 53.2 | 8 06 | 11.0 | |
| Sun Jan 17/Mon Jan 18 | 7 14 | 17 46 | 19 15 | 6 13 | 7 43 | 2 29 | 13 28 | ..... | 2 19 | 64 | 2 48.6 | 11 49 | 11.0 | |
| Mon Jan 18/Tue Jan 19 | 7 18 | 17 47 | 19 16 | 6 13 | 7 42 | 2 34 | 13 32 | ..... | 3 23 | 74 | 3 45.2 | 14 49 | 10.9 | |
| Tue Jan 19/Wed Jan 20 | 7 22 | 17 48 | 19 17 | 6 13 | 7 42 | 2 38 | 13 36 | ..... | 4 24 | 83 | 4 42.7 | 16 54 | 10.9 | |
| Wed Jan 20/Thu Jan 21 | 7 26 | 17 49 | 19 18 | 6 12 | 7 41 | 2 43 | 13 39 | ..... | 5 23 | 91 | 5 40.7 | 17 57 | 10.9 | |
| Thu Jan 21/Fri Jan 22 | 7 30 | 17 50 | 19 19 | 6 12 | 7 41 | 2 48 | 13 43 | ..... | 6 16 | 96 | 6 38.4 | 17 55 | 10.9 | |
| Fri Jan 22/Sat Jan 23 | 7 34 | 17 51 | 19 20 | 6 12 | 7 40 | 2 53 | 13 47 | ..... | 7 05 | 99 | 7 34.9 | 16 51 | 10.9 | |
| Sat Jan 23/Sun Jan 24 | 7 38 | 17 52 | 19 21 | 6 11 | 7 40 | 2 58 | 13 50 | ..... | 7 49 | 100 | 8 29.5 | 14 51 | 10.8 | |
| Sun Jan 24/Mon Jan 25 | 7 42 | 17 53 | 19 21 | 6 11 | 7 39 | 3 03 | 13 54 | ..... | 18 50 | 98 | 9 21.8 | 12 07 | 10.8 | |
| Mon Jan 25/Tue Jan 26 | 7 46 | 17 54 | 19 22 | 6 10 | 7 39 | 3 07 | 13 57 | ..... | 19 48 | 95 | 10 11.9 | 8 52 | 10.8 | |
| Tue Jan 26/Wed Jan 27 | 7 50 | 17 55 | 19 23 | 6 10 | 7 38 | 3 12 | 14 01 | ..... | 20 44 | 90 | 11 00.0 | 5 16 | 10.8 | |
| Wed Jan 27/Thu Jan 28 | 7 54 | 17 56 | 19 24 | 6 09 | 7 37 | 3 17 | 14 04 | ..... | 21 40 | 83 | 11 46.5 | - 1 31 | 10.8 | |
| Thu Jan 28/Fri Jan 29 | 7 58 | 17 57 | 19 25 | 6 09 | 7 37 | 3 22 | 14 07 | ..... | 22 34 | 75 | 12 32.2 | - 2 16 | 10.7 | |
| Fri Jan 29/Sat Jan 30 | 8 02 | 17 58 | 19 26 | 6 08 | 7 36 | 3 27 | 14 11 | ..... | 23 28 | 67 | 13 17.5 | - 5 55 | 10.7 | |
| Sat Jan 30/Sun Jan 31 | 8 06 | 17 59 | 19 27 | 6 08 | 7 35 | 3 32 | 14 14 | ..... | 0 21 | 58 | 14 03.2 | - 9 20 | 10.7 | |
| Sun Jan 31/Mon Feb 01 | 8 10 | 18 00 | 19 28 | 6 07 | 7 35 | 3 36 | 14 18 | ..... | 1 15 | 48 | 14 49.9 | -12 24 | 10.7 | |

***** 2016 FEBRUARY *****

| Date (eve/morn) | LMST midn | Sun: ----- | | | | LST twilight: | | Moon: ----- | | | | Twilight | | Twi-Twi hours |
|-----------------------|--------------|------------|---------|---------|------|---------------|-------|-------------|-------|--------|---------|----------|------|------------------|
| | | set | twi.end | twi.beg | rise | eve | morn | rise | set | %illum | RA | Dec | | |
| Mon Feb 01/Tue Feb 02 | 8 13 | 18 01 | 19 29 | 6 06 | 7 34 | 3 41 | 14 21 | ..... | 2 10 | 39 | 15 38.1 | -14 59 | 10.6 | |
| Tue Feb 02/Wed Feb 03 | 8 17 | 18 02 | 19 30 | 6 06 | 7 33 | 3 46 | 14 24 | ..... | 3 05 | 30 | 16 28.0 | -16 59 | 10.6 | |
| Wed Feb 03/Thu Feb 04 | 8 21 | 18 03 | 19 30 | 6 05 | 7 32 | 3 51 | 14 27 | ..... | 3 59 | 21 | 17 20.0 | -18 14 | 10.6 | |
| Thu Feb 04/Fri Feb 05 | 8 25 | 18 04 | 19 31 | 6 04 | 7 31 | 3 56 | 14 31 | ..... | 4 53 | 13 | 18 13.9 | -18 37 | 10.5 | |
| Fri Feb 05/Sat Feb 06 | 8 29 | 18 05 | 19 32 | 6 04 | 7 30 | 4 01 | 14 34 | ..... | 5 45 | 7 | 19 09.2 | -18 02 | 10.5 | |
| Sat Feb 06/Sun Feb 07 | 8 33 | 18 06 | 19 33 | 6 03 | 7 30 | 4 06 | 14 37 | ..... | 6 33 | 3 | 20 05.6 | -16 27 | 10.5 | |
| Sun Feb 07/Mon Feb 08 | 8 37 | 18 07 | 19 34 | 6 02 | 7 29 | 4 10 | 14 40 | ..... | 7 19 | 0 | 21 02.1 | -13 53 | 10.5 | |
| Mon Feb 08/Tue Feb 09 | 8 41 | 18 08 | 19 35 | 6 01 | 7 28 | 4 15 | 14 43 | ..... | 8 02 | 1 | 21 58.5 | -10 28 | 10.4 | |
| Tue Feb 09/Wed Feb 10 | 8 45 | 18 09 | 19 36 | 6 00 | 7 27 | 4 20 | 14 46 | ..... | 19 42 | 3 | 22 54.4 | - 6 25 | 10.4 | |
| Wed Feb 10/Thu Feb 11 | 8 49 | 18 10 | 19 37 | 5 59 | 7 26 | 4 25 | 14 49 | ..... | 20 50 | 9 | 23 49.8 | - 1 59 | 10.4 | |
| Thu Feb 11/Fri Feb 12 | 8 53 | 18 11 | 19 38 | 5 59 | 7 25 | 4 30 | 14 52 | ..... | 21 58 | 17 | 0 44.9 | 2 33 | 10.3 | |
| Fri Feb 12/Sat Feb 13 | 8 57 | 18 12 | 19 39 | 5 58 | 7 24 | 4 35 | 14 55 | ..... | 23 05 | 26 | 1 40.2 | 6 53 | 10.3 | |
| Sat Feb 13/Sun Feb 14 | 9 01 | 18 13 | 19 39 | 5 57 | 7 23 | 4 39 | 14 58 | ..... | 0 11 | 37 | 2 35.8 | 10 46 | 10.3 | |
| Sun Feb 14/Mon Feb 15 | 9 05 | 18 14 | 19 40 | 5 56 | 7 21 | 4 44 | 15 01 | ..... | 1 16 | 48 | 3 32.1 | 13 57 | 10.3 | |
| Mon Feb 15/Tue Feb 16 | 9 09 | 18 15 | 19 41 | 5 55 | 7 20 | 4 49 | 15 04 | ..... | 2 18 | 60 | 4 28.9 | 16 16 | 10.2 | |
| Tue Feb 16/Wed Feb 17 | 9 13 | 18 16 | 19 42 | 5 54 | 7 19 | 4 54 | 15 07 | ..... | 3 17 | 70 | 5 25.8 | 17 35 | 10.2 | |
| Wed Feb 17/Thu Feb 18 | 9 17 | 18 17 | 19 43 | 5 53 | 7 18 | 4 59 | 15 10 | ..... | 4 11 | 80 | 6 22.5 | 17 52 | 10.2 | |
| Thu Feb 18/Fri Feb 19 | 9 20 | 18 18 | 19 44 | 5 52 | 7 17 | 5 04 | 15 13 | ..... | 5 01 | 87 | 7 18.1 | 17 08 | 10.1 | |
| Fri Feb 19/Sat Feb 20 | 9 24 | 18 19 | 19 45 | 5 50 | 7 16 | 5 09 | 15 16 | ..... | 5 45 | 94 | 8 12.3 | 15 28 | 10.1 | |
| Sat Feb 20/Sun Feb 21 | 9 28 | 18 20 | 19 46 | 5 49 | 7 15 | 5 13 | 15 19 | ..... | 6 26 | 98 | 9 04.5 | 13 01 | 10.1 | |
| Sun Feb 21/Mon Feb 22 | 9 32 | 18 21 | 19 47 | 5 48 | 7 13 | 5 18 | 15 21 | ..... | 7 02 | 100 | 9 54.9 | 9 59 | 10.0 | |
| Mon Feb 22/Tue Feb 23 | 9 36 | 18 22 | 19 48 | 5 47 | 7 12 | 5 23 | 15 24 | ..... | 7 37 | 100 | 10 43.5 | 6 31 | 10.0 | |
| Tue Feb 23/Wed Feb 24 | 9 40 | 18 23 | 19 48 | 5 46 | 7 11 | 5 28 | 15 27 | ..... | 19 30 | 98 | 11 30.7 | 2 48 | 10.0 | |
| Wed Feb 24/Thu Feb 25 | 9 44 | 18 24 | 19 49 | 5 45 | 7 10 | 5 33 | 15 30 | ..... | 20 25 | 94 | 12 16.9 | - 0 59 | 9.9 | |
| Thu Feb 25/Fri Feb 26 | 9 48 | 18 25 | 19 50 | 5 44 | 7 08 | 5 38 | 15 33 | ..... | 21 19 | 89 | 13 02.6 | - 4 42 | 9.9 | |
| Fri Feb 26/Sat Feb 27 | 9 52 | 18 26 | 19 51 | 5 42 | 7 07 | 5 42 | 15 35 | ..... | 22 13 | 82 | 13 48.5 | - 8 13 | 9.9 | |
| Sat Feb 27/Sun Feb 28 | 9 56 | 18 27 | 19 52 | 5 41 | 7 06 | 5 47 | 15 38 | ..... | 23 06 | 74 | 14 34.9 | -11 25 | 9.8 | |
| Sun Feb 28/Mon Feb 29 | 10 00 | 18 28 | 19 53 | 5 40 | 7 05 | 5 52 | 15 41 | ..... | 0 00 | 66 | 15 22.3 | -14 10 | 9.8 | |
| Mon Feb 29/Tue Mar 01 | 10 04 | 18 29 | 19 54 | 5 39 | 7 03 | 5 57 | 15 43 | ..... | 0 54 | 56 | 16 11.2 | -16 21 | 9.7 | |

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.

***** 2016 MARCH *****

| 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 Mar 01/Wed Mar 02 | 10 08 | 18 30 | 19 55 | 5 37 | 7 02 | 6 02 | 15 46 | 1 47 | ..... | 47 | 17 01.7 | -17 52 | 9.7 |
| Wed Mar 02/Thu Mar 03 | 10 12 | 18 31 | 19 56 | 5 36 | 7 01 | 6 07 | 15 49 | 2 40 | ..... | 37 | 17 53.9 | -18 34 | 9.7 |
| Thu Mar 03/Fri Mar 04 | 10 16 | 18 32 | 19 56 | 5 35 | 6 59 | 6 11 | 15 51 | 3 31 | ..... | 27 | 18 47.7 | -18 23 | 9.6 |
| Fri Mar 04/Sat Mar 05 | 10 20 | 18 32 | 19 57 | 5 33 | 6 58 | 6 16 | 15 54 | 4 21 | ..... | 18 | 19 42.8 | -17 14 | 9.6 |
| Sat Mar 05/Sun Mar 06 | 10 24 | 18 33 | 19 58 | 5 32 | 6 57 | 6 21 | 15 56 | 5 08 | ..... | 11 | 20 38.7 | -15 06 | 9.6 |
| Sun Mar 06/Mon Mar 07 | 10 27 | 18 34 | 19 59 | 5 31 | 6 55 | 6 26 | 15 59 | 5 52 | ..... | 5 | 21 35.0 | -12 04 | 9.5 |
| Mon Mar 07/Tue Mar 08 | 10 31 | 18 35 | 20 00 | 5 29 | 6 54 | 6 31 | 16 01 | 6 35 | 17 18 | 1 | 22 31.4 | - 8 15 | 9.5 |
| Tue Mar 08/Wed Mar 09 | 10 35 | 18 36 | 20 01 | 5 28 | 6 52 | 6 36 | 16 04 | 7 16 | 18 27 | 0 | 23 27.9 | - 3 53 | 9.4 |
| Wed Mar 09/Thu Mar 10 | 10 39 | 18 37 | 20 02 | 5 26 | 6 51 | 6 40 | 16 07 | ..... | 19 37 | 2 | 0 24.4 | 0 44 | 9.4 |
| Thu Mar 10/Fri Mar 11 | 10 43 | 18 38 | 20 03 | 5 25 | 6 50 | 6 45 | 16 09 | ..... | 20 47 | 7 | 1 21.2 | 5 17 | 9.4 |
| Fri Mar 11/Sat Mar 12 | 10 47 | 18 39 | 20 04 | 5 23 | 6 48 | 6 50 | 16 12 | ..... | 21 57 | 14 | 2 18.4 | 9 27 | 9.3 |
| Sat Mar 12/Sun Mar 13* | 10 51 | 18 39 | 20 05 | 6 22 | 7 47 | 6 55 | 16 14 | ..... | 23 05 | 23 | 3 16.1 | 12 58 | 9.3 |
| Sun Mar 13/Mon Mar 14 | 9 55 | 19 40 | 21 05 | 6 21 | 7 45 | 7 00 | 16 17 | ..... | 1 10 | 33 | 4 11.5 | 15 33 | 9.3 |
| Mon Mar 14/Tue Mar 15 | 9 59 | 19 41 | 21 06 | 6 19 | 7 44 | 7 05 | 16 19 | ..... | 2 11 | 44 | 5 09.5 | 17 13 | 9.2 |
| Tue Mar 15/Wed Mar 16 | 10 03 | 19 42 | 21 07 | 6 18 | 7 43 | 7 10 | 16 21 | ..... | 3 08 | 55 | 6 06.7 | 17 48 | 9.2 |
| Wed Mar 16/Thu Mar 17 | 10 07 | 19 43 | 21 08 | 6 16 | 7 41 | 7 14 | 16 24 | ..... | 3 59 | 65 | 7 02.7 | 17 21 | 9.1 |
| Thu Mar 17/Fri Mar 18 | 10 11 | 19 44 | 21 09 | 6 15 | 7 40 | 7 19 | 16 26 | ..... | 4 44 | 75 | 7 56.9 | 15 57 | 9.1 |
| Fri Mar 18/Sat Mar 19 | 10 15 | 19 45 | 21 10 | 6 13 | 7 38 | 7 24 | 16 29 | ..... | 5 26 | 83 | 8 49.2 | 13 45 | 9.1 |
| Sat Mar 19/Sun Mar 20 | 10 19 | 19 45 | 21 11 | 6 12 | 7 37 | 7 29 | 16 31 | ..... | 6 03 | 90 | 9 39.5 | 10 55 | 9.0 |
| Sun Mar 20/Mon Mar 21 | 10 23 | 19 46 | 21 12 | 6 10 | 7 35 | 7 34 | 16 34 | 17 28 | 6 38 | 95 | 10 28.1 | 7 36 | 9.0 |
| Mon Mar 21/Tue Mar 22 | 10 26 | 19 47 | 21 13 | 6 08 | 7 34 | 7 39 | 16 36 | 18 23 | 7 10 | 99 | 11 15.3 | 3 59 | 8.9 |
| Tue Mar 22/Wed Mar 23 | 10 30 | 19 48 | 21 14 | 6 07 | 7 33 | 7 44 | 16 38 | 19 18 | ..... | 100 | 12 01.6 | 0 14 | 8.9 |
| Wed Mar 23/Thu Mar 24 | 10 34 | 19 49 | 21 15 | 6 05 | 7 31 | 7 49 | 16 41 | 20 12 | ..... | 99 | 12 47.4 | - 3 32 | 8.8 |
| Thu Mar 24/Fri Mar 25 | 10 38 | 19 50 | 21 16 | 6 04 | 7 30 | 7 54 | 16 43 | 21 06 | ..... | 97 | 13 33.3 | - 7 08 | 8.8 |
| Fri Mar 25/Sat Mar 26 | 10 42 | 19 50 | 21 17 | 6 02 | 7 28 | 7 58 | 16 45 | 22 00 | ..... | 93 | 14 19.6 | -10 28 | 8.8 |
| Sat Mar 26/Sun Mar 27 | 10 46 | 19 51 | 21 18 | 6 01 | 7 27 | 8 03 | 16 48 | 22 53 | ..... | 88 | 15 06.7 | -13 23 | 8.7 |
| Sun Mar 27/Mon Mar 28 | 10 50 | 19 52 | 21 19 | 5 59 | 7 25 | 8 08 | 16 50 | 23 47 | ..... | 81 | 15 55.0 | -15 46 | 8.7 |
| Mon Mar 28/Tue Mar 29 | 10 54 | 19 53 | 21 20 | 5 57 | 7 24 | 8 13 | 16 53 | 0 40 | ..... | 73 | 16 44.5 | -17 30 | 8.6 |
| Tue Mar 29/Wed Mar 30 | 10 58 | 19 54 | 21 21 | 5 56 | 7 23 | 8 18 | 16 55 | 1 32 | ..... | 64 | 17 35.5 | -18 29 | 8.6 |
| Wed Mar 30/Thu Mar 31 | 11 02 | 19 55 | 21 22 | 5 54 | 7 21 | 8 23 | 16 57 | 2 23 | ..... | 54 | 18 27.7 | -18 38 | 8.5 |
| Thu Mar 31/Fri Apr 01 | 11 06 | 19 55 | 21 23 | 5 53 | 7 20 | 8 28 | 17 00 | 3 12 | ..... | 44 | 19 21.0 | -17 53 | 8.5 |

***** 2016 APRIL *****

| 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 Apr 01/Sat Apr 02 | 11 10 | 19 56 | 21 24 | 5 51 | 7 18 | 8 33 | 17 02 | 3 58 | ..... | 33 | 20 15.1 | -16 12 | 8.5 |
| Sat Apr 02/Sun Apr 03 | 11 14 | 19 57 | 21 25 | 5 50 | 7 17 | 8 38 | 17 04 | 4 42 | ..... | 24 | 21 09.7 | -13 36 | 8.4 |
| Sun Apr 03/Mon Apr 04 | 11 18 | 19 58 | 21 26 | 5 48 | 7 16 | 8 43 | 17 07 | 5 25 | ..... | 15 | 22 04.8 | -10 12 | 8.4 |
| Mon Apr 04/Tue Apr 05 | 11 22 | 19 59 | 21 27 | 5 46 | 7 14 | 8 48 | 17 09 | 6 06 | 17 02 | 8 | 23 00.4 | - 6 08 | 8.3 |
| Tue Apr 05/Wed Apr 06 | 11 26 | 20 00 | 21 28 | 5 45 | 7 13 | 8 53 | 17 11 | 6 47 | 18 11 | 3 | 23 56.6 | - 1 37 | 8.3 |
| Wed Apr 06/Thu Apr 07 | 11 30 | 20 00 | 21 29 | 5 43 | 7 11 | 8 58 | 17 14 | ..... | 19 22 | 0 | 0 53.5 | 3 03 | 8.2 |
| Thu Apr 07/Fri Apr 08 | 11 33 | 20 01 | 21 30 | 5 42 | 7 10 | 9 03 | 17 16 | ..... | 20 33 | 1 | 1 51.5 | 7 32 | 8.2 |
| Fri Apr 08/Sat Apr 09 | 11 37 | 20 02 | 21 31 | 5 40 | 7 09 | 9 08 | 17 18 | ..... | 21 44 | 4 | 2 50.4 | 11 29 | 8.2 |
| Sat Apr 09/Sun Apr 10 | 11 41 | 20 03 | 21 32 | 5 38 | 7 07 | 9 13 | 17 21 | ..... | 22 53 | 11 | 3 50.1 | 14 38 | 8.1 |
| Sun Apr 10/Mon Apr 11 | 11 45 | 20 04 | 21 33 | 5 37 | 7 06 | 9 18 | 17 23 | ..... | 23 59 | 19 | 4 49.9 | 16 44 | 8.1 |
| Mon Apr 11/Tue Apr 12 | 11 49 | 20 05 | 21 34 | 5 35 | 7 05 | 9 23 | 17 25 | ..... | 1 00 | 29 | 5 49.1 | 17 42 | 8.0 |
| Tue Apr 12/Wed Apr 13 | 11 53 | 20 05 | 21 35 | 5 34 | 7 03 | 9 28 | 17 28 | ..... | 1 54 | 39 | 6 46.8 | 17 33 | 8.0 |
| Wed Apr 13/Thu Apr 14 | 11 57 | 20 06 | 21 36 | 5 32 | 7 02 | 9 33 | 17 30 | ..... | 2 43 | 50 | 7 42.4 | 16 24 | 7.9 |
| Thu Apr 14/Fri Apr 15 | 12 01 | 20 07 | 21 37 | 5 30 | 7 01 | 9 38 | 17 32 | ..... | 3 26 | 60 | 8 35.6 | 14 23 | 7.9 |
| Fri Apr 15/Sat Apr 16 | 12 05 | 20 08 | 21 38 | 5 29 | 6 59 | 9 43 | 17 35 | ..... | 4 05 | 70 | 9 26.5 | 11 41 | 7.8 |
| Sat Apr 16/Sun Apr 17 | 12 09 | 20 09 | 21 40 | 5 27 | 6 58 | 9 48 | 17 37 | ..... | 4 40 | 79 | 10 15.4 | 8 29 | 7.8 |
| Sun Apr 17/Mon Apr 18 | 12 13 | 20 10 | 21 41 | 5 26 | 6 57 | 9 53 | 17 39 | ..... | 5 13 | 86 | 11 02.6 | 4 56 | 7.7 |
| Mon Apr 18/Tue Apr 19 | 12 17 | 20 10 | 21 42 | 5 24 | 6 55 | 9 58 | 17 42 | 17 13 | 5 44 | 92 | 11 48.8 | 1 12 | 7.7 |
| Tue Apr 19/Wed Apr 20 | 12 21 | 20 11 | 21 43 | 5 23 | 6 54 | 10 03 | 17 44 | 18 07 | 6 15 | 96 | 12 34.5 | - 2 35 | 7.7 |
| Wed Apr 20/Thu Apr 21 | 12 25 | 20 12 | 21 44 | 5 21 | 6 53 | 10 08 | 17 47 | 19 01 | 6 47 | 99 | 13 20.3 | - 6 16 | 7.6 |
| Thu Apr 21/Fri Apr 22 | 12 29 | 20 13 | 21 45 | 5 19 | 6 52 | 10 14 | 17 49 | 19 55 | ..... | 100 | 14 06.5 | - 9 43 | 7.6 |
| Fri Apr 22/Sat Apr 23 | 12 33 | 20 14 | 21 46 | 5 18 | 6 50 | 10 19 | 17 51 | 20 48 | ..... | 99 | 14 53.6 | -12 48 | 7.5 |
| Sat Apr 23/Sun Apr 24 | 12 37 | 20 15 | 21 48 | 5 16 | 6 49 | 10 24 | 17 54 | 21 42 | ..... | 96 | 15 41.9 | -15 23 | 7.5 |
| Sun Apr 24/Mon Apr 25 | 12 41 | 20 15 | 21 49 | 5 15 | 6 48 | 10 29 | 17 56 | 22 36 | ..... | 92 | 16 31.5 | -17 20 | 7.4 |
| Mon Apr 25/Tue Apr 26 | 12 44 | 20 16 | 21 50 | 5 13 | 6 47 | 10 34 | 17 59 | 23 28 | ..... | 85 | 17 22.3 | -18 33 | 7.4 |
| Tue Apr 26/Wed Apr 27 | 12 48 | 20 17 | 21 51 | 5 12 | 6 46 | 10 39 | 18 01 | 0 19 | ..... | 78 | 18 14.2 | -18 56 | 7.3 |
| Wed Apr 27/Thu Apr 28 | 12 52 | 20 18 | 21 52 | 5 10 | 6 45 | 10 44 | 18 04 | 1 08 | ..... | 69 | 19 06.8 | -18 26 | 7.3 |
| Thu Apr 28/Fri Apr 29 | 12 56 | 20 19 | 21 53 | 5 09 | 6 44 | 10 49 | 18 06 | 1 54 | ..... | 59 | 19 59.9 | -17 02 | 7.3 |
| Fri Apr 29/Sat Apr 30 | 13 00 | 20 20 | 21 55 | 5 08 | 6 42 | 10 54 | 18 09 | 2 38 | ..... | 49 | 20 53.2 | -14 45 | 7.2 |
| Sat Apr 30/Sun May 01 | 13 04 | 20 21 | 21 56 | 5 06 | 6 41 | 11 00 | 18 11 | 3 19 | ..... | 38 | 21 46.7 | -11 40 | 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.

***** 2016 MAY *****

| 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 May 01/Mon May 02 | 13 08 | 20 21 | 21 57 | 5 05 | 6 40 | 11 05 | 18 14 | 3 59 | ..... | 28 | 22 40.4 | - 7 54 | 7.1 |
| Mon May 02/Tue May 03 | 13 12 | 20 22 | 21 58 | 5 03 | 6 39 | 11 10 | 18 16 | 4 38 | ..... | 18 | 23 34.7 | - 3 37 | 7.1 |
| Tue May 03/Wed May 04 | 13 16 | 20 23 | 21 59 | 5 02 | 6 38 | 11 15 | 18 19 | 5 18 | ..... | 10 | 0 30.0 | 0 57 | 7.0 |
| Wed May 04/Thu May 05 | 13 20 | 20 24 | 22 01 | 5 01 | 6 37 | 11 20 | 18 21 | 6 00 | 18 07 | 4 | 1 26.5 | 5 31 | 7.0 |
| Thu May 05/Fri May 06 | 13 24 | 20 25 | 22 02 | 4 59 | 6 36 | 11 25 | 18 24 | ..... | 19 18 | 1 | 2 24.6 | 9 45 | 7.0 |
| Fri May 06/Sat May 07 | 13 28 | 20 26 | 22 03 | 4 58 | 6 35 | 11 31 | 18 26 | ..... | 20 29 | 0 | 3 24.3 | 13 20 | 6.9 |
| Sat May 07/Sun May 08 | 13 32 | 20 26 | 22 04 | 4 57 | 6 34 | 11 36 | 18 29 | ..... | 21 38 | 3 | 4 25.0 | 15 58 | 6.9 |
| Sun May 08/Mon May 09 | 13 36 | 20 27 | 22 05 | 4 55 | 6 33 | 11 41 | 18 32 | ..... | 22 44 | 8 | 5 25.8 | 17 28 | 6.8 |
| Mon May 09/Tue May 10 | 13 40 | 20 28 | 22 07 | 4 54 | 6 33 | 11 46 | 18 34 | ..... | 23 43 | 16 | 6 25.7 | 17 47 | 6.8 |
| Tue May 10/Wed May 11 | 13 44 | 20 29 | 22 08 | 4 53 | 6 32 | 11 51 | 18 37 | ..... | 0 36 | 24 | 7 23.6 | 16 58 | 6.7 |
| Wed May 11/Thu May 12 | 13 48 | 20 30 | 22 09 | 4 51 | 6 31 | 11 56 | 18 40 | ..... | 1 23 | 34 | 8 19.0 | 15 11 | 6.7 |
| Thu May 12/Fri May 13 | 13 51 | 20 30 | 22 10 | 4 50 | 6 30 | 12 01 | 18 43 | ..... | 2 04 | 44 | 9 11.6 | 12 38 | 6.7 |
| Fri May 13/Sat May 14 | 13 55 | 20 31 | 22 11 | 4 49 | 6 29 | 12 07 | 18 45 | ..... | 2 41 | 55 | 10 01.6 | 9 31 | 6.6 |
| Sat May 14/Sun May 15 | 13 59 | 20 32 | 22 13 | 4 48 | 6 28 | 12 12 | 18 48 | ..... | 3 15 | 64 | 10 49.5 | 6 01 | 6.6 |
| Sun May 15/Mon May 16 | 14 03 | 20 33 | 22 14 | 4 47 | 6 28 | 12 17 | 18 51 | ..... | 3 47 | 73 | 11 36.0 | 2 18 | 6.6 |
| Mon May 16/Tue May 17 | 14 07 | 20 34 | 22 15 | 4 46 | 6 27 | 12 22 | 18 54 | ..... | 4 18 | 81 | 12 21.7 | - 1 30 | 6.5 |
| Tue May 17/Wed May 18 | 14 11 | 20 34 | 22 16 | 4 45 | 6 26 | 12 27 | 18 57 | ..... | 4 49 | 88 | 13 07.2 | - 5 15 | 6.5 |
| Wed May 18/Thu May 19 | 14 15 | 20 35 | 22 17 | 4 44 | 6 26 | 12 32 | 19 00 | 17 49 | 5 21 | 94 | 13 53.2 | - 8 49 | 6.4 |
| Thu May 19/Fri May 20 | 14 19 | 20 36 | 22 18 | 4 43 | 6 25 | 12 37 | 19 02 | 18 43 | 5 55 | 97 | 14 40.1 | -12 03 | 6.4 |
| Fri May 20/Sat May 21 | 14 23 | 20 37 | 22 19 | 4 42 | 6 24 | 12 42 | 19 05 | 19 37 | ..... | 99 | 15 28.3 | -14 51 | 6.4 |
| Sat May 21/Sun May 22 | 14 27 | 20 38 | 22 21 | 4 41 | 6 24 | 12 47 | 19 08 | 20 31 | ..... | 100 | 16 17.9 | -17 03 | 6.3 |
| Sun May 22/Mon May 23 | 14 31 | 20 38 | 22 22 | 4 40 | 6 23 | 12 52 | 19 11 | 21 25 | ..... | 98 | 17 09.0 | -18 32 | 6.3 |
| Mon May 23/Tue May 24 | 14 35 | 20 39 | 22 23 | 4 39 | 6 23 | 12 57 | 19 14 | 22 17 | ..... | 94 | 18 01.3 | -19 10 | 6.3 |
| Tue May 24/Wed May 25 | 14 39 | 20 40 | 22 24 | 4 38 | 6 22 | 13 02 | 19 18 | 23 07 | ..... | 89 | 18 54.3 | -18 55 | 6.2 |
| Wed May 25/Thu May 26 | 14 43 | 20 41 | 22 25 | 4 37 | 6 22 | 13 07 | 19 21 | 23 54 | ..... | 82 | 19 47.6 | -17 45 | 6.2 |
| Thu May 26/Fri May 27 | 14 47 | 20 41 | 22 26 | 4 36 | 6 21 | 13 12 | 19 24 | 0 38 | ..... | 73 | 20 40.8 | -15 41 | 6.2 |
| Fri May 27/Sat May 28 | 14 51 | 20 42 | 22 27 | 4 36 | 6 21 | 13 17 | 19 27 | 1 19 | ..... | 64 | 21 33.8 | -12 49 | 6.1 |
| Sat May 28/Sun May 29 | 14 55 | 20 43 | 22 28 | 4 35 | 6 20 | 13 22 | 19 30 | 1 58 | ..... | 53 | 22 26.5 | - 9 16 | 6.1 |
| Sun May 29/Mon May 30 | 14 59 | 20 43 | 22 29 | 4 34 | 6 20 | 13 27 | 19 33 | 2 36 | ..... | 42 | 23 19.2 | - 5 12 | 6.1 |
| Mon May 30/Tue May 31 | 15 02 | 20 44 | 22 30 | 4 34 | 6 19 | 13 32 | 19 37 | 3 14 | ..... | 31 | 0 12.5 | - 0 48 | 6.1 |
| Tue May 31/Wed Jun 01 | 15 06 | 20 45 | 22 31 | 4 33 | 6 19 | 13 37 | 19 40 | 3 53 | ..... | 21 | 1 06.8 | 3 42 | 6.0 |

***** 2016 JUNE *****

| 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 Jun 01/Thu Jun 02 | 15 10 | 20 45 | 22 32 | 4 32 | 6 19 | 13 42 | 19 43 | 4 35 | ..... | 12 | 2 02.7 | 8 01 | 6.0 |
| Thu Jun 02/Fri Jun 03 | 15 14 | 20 46 | 22 33 | 4 32 | 6 19 | 13 47 | 19 47 | 5 20 | 18 06 | 6 | 3 00.4 | 11 51 | 6.0 |
| Fri Jun 03/Sat Jun 04 | 15 18 | 20 46 | 22 33 | 4 31 | 6 18 | 13 51 | 19 50 | 6 09 | 19 15 | 2 | 3 59.9 | 14 55 | 6.0 |
| Sat Jun 04/Sun Jun 05 | 15 22 | 20 47 | 22 34 | 4 31 | 6 18 | 13 56 | 19 54 | ..... | 20 23 | 0 | 5 00.5 | 16 57 | 5.9 |
| Sun Jun 05/Mon Jun 06 | 15 26 | 20 48 | 22 35 | 4 30 | 6 18 | 14 01 | 19 57 | ..... | 21 26 | 2 | 6 01.2 | 17 49 | 5.9 |
| Mon Jun 06/Tue Jun 07 | 15 30 | 20 48 | 22 36 | 4 30 | 6 18 | 14 06 | 20 01 | ..... | 22 24 | 6 | 7 00.8 | 17 29 | 5.9 |
| Tue Jun 07/Wed Jun 08 | 15 34 | 20 49 | 22 36 | 4 30 | 6 18 | 14 10 | 20 04 | ..... | 23 15 | 12 | 7 58.3 | 16 04 | 5.9 |
| Wed Jun 08/Thu Jun 09 | 15 38 | 20 49 | 22 37 | 4 29 | 6 18 | 14 15 | 20 08 | ..... | 0 00 | 20 | 8 53.0 | 13 46 | 5.9 |
| Thu Jun 09/Fri Jun 10 | 15 42 | 20 50 | 22 38 | 4 29 | 6 17 | 14 19 | 20 12 | ..... | 0 40 | 29 | 9 44.9 | 10 47 | 5.9 |
| Fri Jun 10/Sat Jun 11 | 15 46 | 20 50 | 22 38 | 4 29 | 6 17 | 14 24 | 20 16 | ..... | 1 16 | 39 | 10 34.3 | 7 21 | 5.8 |
| Sat Jun 11/Sun Jun 12 | 15 50 | 20 50 | 22 39 | 4 29 | 6 17 | 14 29 | 20 19 | ..... | 1 49 | 48 | 11 21.7 | 3 39 | 5.8 |
| Sun Jun 12/Mon Jun 13 | 15 54 | 20 51 | 22 40 | 4 29 | 6 17 | 14 33 | 20 23 | ..... | 2 20 | 58 | 12 07.8 | - 0 11 | 5.8 |
| Mon Jun 13/Tue Jun 14 | 15 58 | 20 51 | 22 40 | 4 29 | 6 17 | 14 38 | 20 27 | ..... | 2 51 | 67 | 12 53.4 | - 3 59 | 5.8 |
| Tue Jun 14/Wed Jun 15 | 16 02 | 20 52 | 22 41 | 4 29 | 6 18 | 14 42 | 20 31 | ..... | 3 23 | 76 | 13 39.0 | - 7 38 | 5.8 |
| Wed Jun 15/Thu Jun 16 | 16 06 | 20 52 | 22 41 | 4 29 | 6 18 | 14 46 | 20 35 | ..... | 3 56 | 84 | 14 25.5 | -11 02 | 5.8 |
| Thu Jun 16/Fri Jun 17 | 16 09 | 20 52 | 22 41 | 4 29 | 6 18 | 14 51 | 20 39 | ..... | 4 31 | 90 | 15 13.1 | -14 01 | 5.8 |
| Fri Jun 17/Sat Jun 18 | 16 13 | 20 53 | 22 42 | 4 29 | 6 18 | 14 55 | 20 43 | 18 24 | 5 10 | 95 | 16 02.4 | -16 28 | 5.8 |
| Sat Jun 18/Sun Jun 19 | 16 17 | 20 53 | 22 42 | 4 29 | 6 18 | 14 59 | 20 47 | 19 18 | 5 53 | 98 | 16 53.4 | -18 14 | 5.8 |
| Sun Jun 19/Mon Jun 20 | 16 21 | 20 53 | 22 42 | 4 29 | 6 18 | 15 03 | 20 51 | 20 12 | ..... | 100 | 17 46.0 | -19 12 | 5.8 |
| Mon Jun 20/Tue Jun 21 | 16 25 | 20 53 | 22 43 | 4 29 | 6 18 | 15 08 | 20 55 | 21 03 | ..... | 99 | 18 39.6 | -19 15 | 5.8 |
| Tue Jun 21/Wed Jun 22 | 16 29 | 20 54 | 22 43 | 4 30 | 6 19 | 15 12 | 20 59 | 21 52 | ..... | 97 | 19 33.9 | -18 21 | 5.8 |
| Wed Jun 22/Thu Jun 23 | 16 33 | 20 54 | 22 43 | 4 30 | 6 19 | 15 16 | 21 04 | 22 38 | ..... | 92 | 20 28.1 | -16 31 | 5.8 |
| Thu Jun 23/Fri Jun 24 | 16 37 | 20 54 | 22 43 | 4 30 | 6 19 | 15 20 | 21 08 | 23 20 | ..... | 85 | 21 21.9 | -13 49 | 5.8 |
| Fri Jun 24/Sat Jun 25 | 16 41 | 20 54 | 22 43 | 4 31 | 6 20 | 15 24 | 21 12 | 0 00 | ..... | 77 | 22 15.1 | -10 24 | 5.8 |
| Sat Jun 25/Sun Jun 26 | 16 45 | 20 54 | 22 43 | 4 31 | 6 20 | 15 28 | 21 17 | 0 38 | ..... | 67 | 23 07.8 | - 6 27 | 5.8 |
| Sun Jun 26/Mon Jun 27 | 16 49 | 20 54 | 22 43 | 4 31 | 6 20 | 15 32 | 21 21 | 1 16 | ..... | 56 | 0 00.4 | - 2 08 | 5.8 |
| Mon Jun 27/Tue Jun 28 | 16 53 | 20 54 | 22 43 | 4 32 | 6 21 | 15 36 | 21 25 | 1 53 | ..... | 45 | 0 53.4 | 2 17 | 5.8 |
| Tue Jun 28/Wed Jun 29 | 16 57 | 20 54 | 22 43 | 4 32 | 6 21 | 15 39 | 21 30 | 2 32 | ..... | 33 | 1 47.5 | 6 36 | 5.8 |
| Wed Jun 29/Thu Jun 30 | 17 01 | 20 54 | 22 43 | 4 33 | 6 21 | 15 43 | 21 34 | 3 14 | ..... | 23 | 2 43.0 | 10 33 | 5.8 |
| Thu Jun 30/Fri Jul 01 | 17 05 | 20 54 | 22 42 | 4 34 | 6 22 | 15 47 | 21 39 | 4 00 | ..... | 14 | 3 40.2 | 13 50 | 5.9 |

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.

***** 2016 JULY *****

| Date (eve/morn) | | LMST | ----- Sun: ----- | | | | LST twilight: | | ----- Moon: ----- | | | | Twi-Twi | |
|-----------------------|--|-------|------------------|---------|---------|------|---------------|-------|-------------------|-------|--------|---------|---------|-------|
| | | midn | set | twi.end | twi.beg | rise | eve | morn | rise | set | %illum | RA | Dec | hours |
| Fri Jul 01/Sat Jul 02 | | 17 09 | 20 54 | 22 42 | 4 34 | 6 22 | 15 51 | 21 44 | 4 50 | 18 05 | 7 | 4 39.0 | 16 15 | 5.9 |
| Sat Jul 02/Sun Jul 03 | | 17 13 | 20 54 | 22 42 | 4 35 | 6 23 | 15 54 | 21 48 | 5 45 | 19 09 | 2 | 5 38.6 | 17 35 | 5.9 |
| Sun Jul 03/Mon Jul 04 | | 17 16 | 20 54 | 22 42 | 4 36 | 6 23 | 15 58 | 21 53 | ..... | 20 09 | 0 | 6 38.1 | 17 45 | 5.9 |
| Mon Jul 04/Tue Jul 05 | | 17 20 | 20 54 | 22 41 | 4 36 | 6 24 | 16 01 | 21 58 | ..... | 21 03 | 1 | 7 36.3 | 16 47 | 5.9 |
| Tue Jul 05/Wed Jul 06 | | 17 24 | 20 53 | 22 41 | 4 37 | 6 24 | 16 05 | 22 02 | ..... | 21 52 | 4 | 8 32.4 | 14 50 | 5.9 |
| Wed Jul 06/Thu Jul 07 | | 17 28 | 20 53 | 22 40 | 4 38 | 6 25 | 16 08 | 22 07 | ..... | 22 35 | 9 | 9 25.9 | 12 06 | 6.0 |
| Thu Jul 07/Fri Jul 08 | | 17 32 | 20 53 | 22 40 | 4 39 | 6 26 | 16 12 | 22 12 | ..... | 23 13 | 16 | 10 16.8 | 8 48 | 6.0 |
| Fri Jul 08/Sat Jul 09 | | 17 36 | 20 53 | 22 39 | 4 40 | 6 26 | 16 15 | 22 16 | ..... | 23 48 | 24 | 11 05.5 | 5 09 | 6.0 |
| Sat Jul 09/Sun Jul 10 | | 17 40 | 20 52 | 22 39 | 4 40 | 6 27 | 16 19 | 22 21 | ..... | 0 21 | 32 | 11 52.4 | 1 19 | 6.0 |
| Sun Jul 10/Mon Jul 11 | | 17 44 | 20 52 | 22 38 | 4 41 | 6 27 | 16 22 | 22 26 | ..... | 0 52 | 42 | 12 38.4 | - 2 32 | 6.1 |
| Mon Jul 11/Tue Jul 12 | | 17 48 | 20 52 | 22 38 | 4 42 | 6 28 | 16 25 | 22 31 | ..... | 1 24 | 51 | 13 24.0 | - 6 15 | 6.1 |
| Tue Jul 12/Wed Jul 13 | | 17 52 | 20 51 | 22 37 | 4 43 | 6 29 | 16 29 | 22 36 | ..... | 1 56 | 61 | 14 10.0 | - 9 45 | 6.1 |
| Wed Jul 13/Thu Jul 14 | | 17 56 | 20 51 | 22 36 | 4 44 | 6 29 | 16 32 | 22 41 | ..... | 2 30 | 70 | 14 56.9 | -12 54 | 6.1 |
| Thu Jul 14/Fri Jul 15 | | 18 00 | 20 50 | 22 35 | 4 45 | 6 30 | 16 35 | 22 46 | ..... | 3 07 | 78 | 15 45.3 | -15 34 | 6.2 |
| Fri Jul 15/Sat Jul 16 | | 18 04 | 20 50 | 22 35 | 4 46 | 6 31 | 16 38 | 22 51 | ..... | 3 48 | 86 | 16 35.5 | -17 37 | 6.2 |
| Sat Jul 16/Sun Jul 17 | | 18 08 | 20 50 | 22 34 | 4 47 | 6 31 | 16 41 | 22 56 | 18 03 | 4 34 | 92 | 17 27.5 | -18 55 | 6.2 |
| Sun Jul 17/Mon Jul 18 | | 18 12 | 20 49 | 22 33 | 4 48 | 6 32 | 16 44 | 23 01 | 18 55 | 5 24 | 97 | 18 21.2 | -19 20 | 6.3 |
| Mon Jul 18/Tue Jul 19 | | 18 16 | 20 48 | 22 32 | 4 49 | 6 33 | 16 47 | 23 06 | 19 46 | 6 19 | 99 | 19 16.0 | -18 48 | 6.3 |
| Tue Jul 19/Wed Jul 20 | | 18 20 | 20 48 | 22 31 | 4 50 | 6 33 | 16 50 | 23 11 | 20 34 | ..... | 100 | 20 11.3 | -17 16 | 6.3 |
| Wed Jul 20/Thu Jul 21 | | 18 24 | 20 47 | 22 30 | 4 51 | 6 34 | 16 53 | 23 16 | 21 19 | ..... | 98 | 21 06.5 | -14 49 | 6.4 |
| Thu Jul 21/Fri Jul 22 | | 18 27 | 20 47 | 22 29 | 4 52 | 6 35 | 16 56 | 23 21 | 22 00 | ..... | 94 | 22 01.2 | -11 32 | 6.4 |
| Fri Jul 22/Sat Jul 23 | | 18 31 | 20 46 | 22 28 | 4 53 | 6 36 | 16 59 | 23 26 | 22 40 | ..... | 88 | 22 55.2 | - 7 38 | 6.4 |
| Sat Jul 23/Sun Jul 24 | | 18 35 | 20 45 | 22 27 | 4 55 | 6 36 | 17 02 | 23 31 | 23 18 | ..... | 79 | 23 48.7 | - 3 20 | 6.5 |
| Sun Jul 24/Mon Jul 25 | | 18 39 | 20 45 | 22 26 | 4 56 | 6 37 | 17 05 | 23 36 | 23 55 | ..... | 69 | 0 42.2 | 1 08 | 6.5 |
| Mon Jul 25/Tue Jul 26 | | 18 43 | 20 44 | 22 25 | 4 57 | 6 38 | 17 08 | 23 41 | 0 34 | ..... | 58 | 1 36.0 | 5 30 | 6.5 |
| Tue Jul 26/Wed Jul 27 | | 18 47 | 20 43 | 22 24 | 4 58 | 6 39 | 17 11 | 23 46 | 1 14 | ..... | 47 | 2 30.7 | 9 31 | 6.6 |
| Wed Jul 27/Thu Jul 28 | | 18 51 | 20 42 | 22 22 | 4 59 | 6 39 | 17 13 | 23 51 | 1 57 | ..... | 35 | 3 26.6 | 12 57 | 6.6 |
| Thu Jul 28/Fri Jul 29 | | 18 55 | 20 41 | 22 21 | 5 00 | 6 40 | 17 16 | 23 56 | 2 44 | ..... | 25 | 4 23.7 | 15 34 | 6.6 |
| Fri Jul 29/Sat Jul 30 | | 18 59 | 20 41 | 22 20 | 5 01 | 6 41 | 17 19 | 0 01 | 3 36 | ..... | 16 | 5 21.7 | 17 12 | 6.7 |
| Sat Jul 30/Sun Jul 31 | | 19 03 | 20 40 | 22 19 | 5 02 | 6 42 | 17 21 | 0 06 | 4 32 | 17 57 | 9 | 6 19.9 | 17 45 | 6.7 |
| Sun Jul 31/Mon Aug 01 | | 19 07 | 20 39 | 22 18 | 5 04 | 6 42 | 17 24 | 0 11 | 5 31 | 18 53 | 3 | 7 17.5 | 17 12 | 6.8 |

***** 2016 AUGUST *****

| Date (eve/morn) | | LMST | ----- Sun: ----- | | | | LST twilight: | | ----- Moon: ----- | | | | Twi-Twi | |
|-----------------------|--|-------|------------------|---------|---------|------|---------------|------|-------------------|-------|--------|---------|---------|-------|
| | | midn | set | twi.end | twi.beg | rise | eve | morn | rise | set | %illum | RA | Dec | hours |
| Mon Aug 01/Tue Aug 02 | | 19 11 | 20 38 | 22 16 | 5 05 | 6 43 | 17 27 | 0 16 | 6 31 | 19 44 | 1 | 8 13.6 | 15 37 | 6.8 |
| Tue Aug 02/Wed Aug 03 | | 19 15 | 20 37 | 22 15 | 5 06 | 6 44 | 17 29 | 0 21 | ..... | 20 29 | 0 | 9 07.6 | 13 11 | 6.8 |
| Wed Aug 03/Thu Aug 04 | | 19 19 | 20 36 | 22 14 | 5 07 | 6 45 | 17 32 | 0 27 | ..... | 21 09 | 2 | 9 59.3 | 10 06 | 6.9 |
| Thu Aug 04/Fri Aug 05 | | 19 23 | 20 35 | 22 12 | 5 08 | 6 45 | 17 35 | 0 32 | ..... | 21 46 | 6 | 10 48.8 | 6 34 | 6.9 |
| Fri Aug 05/Sat Aug 06 | | 19 27 | 20 34 | 22 11 | 5 09 | 6 46 | 17 37 | 0 37 | ..... | 22 19 | 11 | 11 36.5 | 2 48 | 7.0 |
| Sat Aug 06/Sun Aug 07 | | 19 31 | 20 33 | 22 10 | 5 10 | 6 47 | 17 40 | 0 42 | ..... | 22 52 | 18 | 12 22.9 | - 1 03 | 7.0 |
| Sun Aug 07/Mon Aug 08 | | 19 34 | 20 32 | 22 08 | 5 12 | 6 48 | 17 42 | 0 47 | ..... | 23 23 | 26 | 13 08.7 | - 4 50 | 7.1 |
| Mon Aug 08/Tue Aug 09 | | 19 38 | 20 31 | 22 07 | 5 13 | 6 49 | 17 45 | 0 52 | ..... | 23 56 | 35 | 13 54.4 | - 8 25 | 7.1 |
| Tue Aug 09/Wed Aug 10 | | 19 42 | 20 30 | 22 05 | 5 14 | 6 49 | 17 47 | 0 57 | ..... | 0 29 | 44 | 14 40.7 | -11 41 | 7.1 |
| Wed Aug 10/Thu Aug 11 | | 19 46 | 20 29 | 22 04 | 5 15 | 6 50 | 17 50 | 1 02 | ..... | 1 05 | 54 | 15 28.1 | -14 31 | 7.2 |
| Thu Aug 11/Fri Aug 12 | | 19 50 | 20 28 | 22 02 | 5 16 | 6 51 | 17 52 | 1 07 | ..... | 1 43 | 63 | 16 17.0 | -16 47 | 7.2 |
| Fri Aug 12/Sat Aug 13 | | 19 54 | 20 26 | 22 01 | 5 17 | 6 52 | 17 55 | 1 12 | ..... | 2 26 | 72 | 17 07.7 | -18 22 | 7.3 |
| Sat Aug 13/Sun Aug 14 | | 19 58 | 20 25 | 21 59 | 5 18 | 6 53 | 17 57 | 1 17 | ..... | 3 14 | 81 | 18 00.2 | -19 09 | 7.3 |
| Sun Aug 14/Mon Aug 15 | | 20 02 | 20 24 | 21 58 | 5 20 | 6 53 | 18 00 | 1 23 | 17 36 | 4 07 | 88 | 18 54.3 | -19 02 | 7.4 |
| Mon Aug 15/Tue Aug 16 | | 20 06 | 20 23 | 21 56 | 5 21 | 6 54 | 18 02 | 1 28 | 18 25 | 5 04 | 94 | 19 49.6 | -17 55 | 7.4 |
| Tue Aug 16/Wed Aug 17 | | 20 10 | 20 22 | 21 55 | 5 22 | 6 55 | 18 04 | 1 33 | 19 12 | 6 05 | 98 | 20 45.4 | -15 49 | 7.4 |
| Wed Aug 17/Thu Aug 18 | | 20 14 | 20 20 | 21 53 | 5 23 | 6 56 | 18 07 | 1 38 | 19 55 | ..... | 100 | 21 41.4 | -12 49 | 7.5 |
| Thu Aug 18/Fri Aug 19 | | 20 18 | 20 19 | 21 52 | 5 24 | 6 56 | 18 09 | 1 43 | 20 37 | ..... | 99 | 22 37.0 | - 9 03 | 7.5 |
| Fri Aug 19/Sat Aug 20 | | 20 22 | 20 18 | 21 50 | 5 25 | 6 57 | 18 12 | 1 48 | 21 17 | ..... | 96 | 23 32.3 | - 4 44 | 7.6 |
| Sat Aug 20/Sun Aug 21 | | 20 26 | 20 17 | 21 49 | 5 26 | 6 58 | 18 14 | 1 53 | 21 55 | ..... | 90 | 0 27.4 | - 0 11 | 7.6 |
| Sun Aug 21/Mon Aug 22 | | 20 30 | 20 15 | 21 47 | 5 27 | 6 59 | 18 16 | 1 58 | 22 34 | ..... | 81 | 1 22.6 | 4 22 | 7.7 |
| Mon Aug 22/Tue Aug 23 | | 20 34 | 20 14 | 21 45 | 5 28 | 7 00 | 18 19 | 2 03 | 23 14 | ..... | 71 | 2 18.3 | 8 35 | 7.7 |
| Tue Aug 23/Wed Aug 24 | | 20 38 | 20 13 | 21 44 | 5 29 | 7 00 | 18 21 | 2 08 | 23 57 | ..... | 60 | 3 14.6 | 12 13 | 7.8 |
| Wed Aug 24/Thu Aug 25 | | 20 42 | 20 12 | 21 42 | 5 30 | 7 01 | 18 23 | 2 13 | 0 43 | ..... | 49 | 4 11.7 | 15 03 | 7.8 |
| Thu Aug 25/Fri Aug 26 | | 20 45 | 20 10 | 21 41 | 5 31 | 7 02 | 18 26 | 2 18 | 1 32 | ..... | 38 | 5 09.2 | 16 54 | 7.8 |
| Fri Aug 26/Sat Aug 27 | | 20 49 | 20 09 | 21 39 | 5 32 | 7 03 | 18 28 | 2 23 | 2 26 | ..... | 27 | 6 06.8 | 17 42 | 7.9 |
| Sat Aug 27/Sun Aug 28 | | 20 53 | 20 08 | 21 37 | 5 34 | 7 03 | 18 30 | 2 28 | 3 23 | ..... | 18 | 7 03.6 | 17 25 | 7.9 |
| Sun Aug 28/Mon Aug 29 | | 20 57 | 20 06 | 21 36 | 5 35 | 7 04 | 18 33 | 2 33 | 4 21 | 17 39 | 11 | 7 59.0 | 16 08 | 8.0 |
| Mon Aug 29/Tue Aug 30 | | 21 01 | 20 05 | 21 34 | 5 36 | 7 05 | 18 35 | 2 38 | 5 21 | 18 25 | 5 | 8 52.7 | 13 59 | 8.0 |
| Tue Aug 30/Wed Aug 31 | | 21 05 | 20 03 | 21 33 | 5 37 | 7 06 | 18 37 | 2 43 | 6 21 | 19 06 | 1 | 9 44.3 | 11 07 | 8.1 |
| Wed Aug 31/Thu Sep 01 | | 21 09 | 20 02 | 21 31 | 5 38 | 7 06 | 18 40 | 2 48 | ..... | 19 44 | 0 | 10 33.9 | 7 45 | 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.

***** 2016 SEPTEMBER *****

| 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 Sep 01/Fri Sep 02 | 21 13 | 20 01 | 21 29 5 39 7 07 | 18 42 2 53 | 20 18 | 1 11 21.8 4 04 | 8.2 |
| Fri Sep 02/Sat Sep 03 | 21 17 | 19 59 | 21 28 5 40 7 08 | 18 44 2 57 | 20 51 | 3 12 08.4 0 15 | 8.2 |
| Sat Sep 03/Sun Sep 04 | 21 21 | 19 58 | 21 26 5 40 7 09 | 18 47 3 02 | 21 23 | 8 12 54.3 - 3 33 | 8.2 |
| Sun Sep 04/Mon Sep 05 | 21 25 | 19 56 | 21 24 5 41 7 10 | 18 49 3 07 | 21 55 | 13 13 39.9 - 7 12 | 8.3 |
| Mon Sep 05/Tue Sep 06 | 21 29 | 19 55 | 21 23 5 42 7 10 | 18 51 3 12 | 22 28 | 20 14 25.8 -10 34 | 8.3 |
| Tue Sep 06/Wed Sep 07 | 21 33 | 19 53 | 21 21 5 43 7 11 | 18 53 3 17 | 23 02 | 28 15 12.4 -13 31 | 8.4 |
| Wed Sep 07/Thu Sep 08 | 21 37 | 19 52 | 21 19 5 44 7 12 | 18 56 3 22 | 23 40 | 37 16 00.2 -15 58 | 8.4 |
| Thu Sep 08/Fri Sep 09 | 21 41 | 19 51 | 21 18 5 45 7 13 | 18 58 3 27 | 0 20 | 47 16 49.4 -17 47 | 8.5 |
| Fri Sep 09/Sat Sep 10 | 21 45 | 19 49 | 21 16 5 46 7 13 | 19 00 3 32 | 1 05 | 56 17 40.2 -18 51 | 8.5 |
| Sat Sep 10/Sun Sep 11 | 21 49 | 19 48 | 21 15 5 47 7 14 | 19 03 3 37 | 1 54 | 66 18 32.7 -19 05 | 8.5 |
| Sun Sep 11/Mon Sep 12 | 21 52 | 19 46 | 21 13 5 48 7 15 | 19 05 3 41 | 2 49 | 75 19 26.5 -18 24 | 8.6 |
| Mon Sep 12/Tue Sep 13 | 21 56 | 19 45 | 21 11 5 49 7 16 | 19 07 3 46 | 3 47 | 84 20 21.3 -16 45 | 8.6 |
| Tue Sep 13/Wed Sep 14 | 22 00 | 19 43 | 21 10 5 50 7 16 | 19 10 3 51 | 4 49 | 91 21 16.9 -14 08 | 8.7 |
| Wed Sep 14/Thu Sep 15 | 22 04 | 19 42 | 21 08 5 51 7 17 | 19 12 3 56 | 5 54 | 97 22 12.8 -10 41 | 8.7 |
| Thu Sep 15/Fri Sep 16 | 22 08 | 19 40 | 21 06 5 52 7 18 | 19 14 4 01 | 7 01 | 100 23 09.0 - 6 31 | 8.8 |
| Fri Sep 16/Sat Sep 17 | 22 12 | 19 39 | 21 05 5 53 7 19 | 19 17 4 06 | 19 50 | 100 0 05.5 - 1 55 | 8.8 |
| Sat Sep 17/Sun Sep 18 | 22 16 | 19 37 | 21 03 5 53 7 19 | 19 19 4 11 | 20 30 | 97 1 02.4 2 48 | 8.8 |
| Sun Sep 18/Mon Sep 19 | 22 20 | 19 36 | 21 02 5 54 7 20 | 19 21 4 15 | 21 10 | 91 1 59.9 7 20 | 8.9 |
| Mon Sep 19/Tue Sep 20 | 22 24 | 19 34 | 21 00 5 55 7 21 | 19 24 4 20 | 21 53 | 83 2 58.2 11 19 | 8.9 |
| Tue Sep 20/Wed Sep 21 | 22 28 | 19 33 | 20 58 5 56 7 22 | 19 26 4 25 | 22 39 | 74 3 57.0 14 30 | 9.0 |
| Wed Sep 21/Thu Sep 22 | 22 32 | 19 32 | 20 57 5 57 7 22 | 19 28 4 30 | 23 29 | 63 4 55.9 16 40 | 9.0 |
| Thu Sep 22/Fri Sep 23 | 22 36 | 19 30 | 20 55 5 58 7 23 | 19 31 4 35 | 0 22 | 52 5 54.5 17 43 | 9.0 |
| Fri Sep 23/Sat Sep 24 | 22 40 | 19 29 | 20 54 5 59 7 24 | 19 33 4 39 | 1 18 | 41 6 52.0 17 40 | 9.1 |
| Sat Sep 24/Sun Sep 25 | 22 44 | 19 27 | 20 52 5 59 7 25 | 19 35 4 44 | 2 16 | 30 7 47.7 16 35 | 9.1 |
| Sun Sep 25/Mon Sep 26 | 22 48 | 19 26 | 20 51 6 00 7 26 | 19 38 4 49 | 3 15 | 21 8 41.3 14 37 | 9.2 |
| Mon Sep 26/Tue Sep 27 | 22 52 | 19 24 | 20 49 6 01 7 26 | 19 40 4 54 | 4 13 | 17 06 13 9 32.8 11 56 | 9.2 |
| Tue Sep 27/Wed Sep 28 | 22 56 | 19 23 | 20 48 6 02 7 27 | 19 43 4 59 | 5 11 | 17 44 7 10 22.1 8 42 | 9.2 |
| Wed Sep 28/Thu Sep 29 | 23 00 | 19 21 | 20 46 6 03 7 28 | 19 45 5 03 | 6 08 | 18 19 3 11 09.8 5 07 | 9.3 |
| Thu Sep 29/Fri Sep 30 | 23 03 | 19 20 | 20 45 6 04 7 29 | 19 48 5 08 | 7 04 | 18 52 1 11 56.3 1 21 | 9.3 |
| Fri Sep 30/Sat Oct 01 | 23 07 | 19 18 | 20 43 6 05 7 29 | 19 50 5 13 | 19 24 | 0 12 41.9 - 2 28 | 9.4 |

***** 2016 OCTOBER *****

| Date (eve/morn) | LMST midn | ----- set | Sun: ----- twi.end twi.beg rise | LST twilight: eve morn | ----- rise | Moon: ----- set %illum RA Dec | Twi-Twi hours |
|-----------------------|--------------|--------------|------------------------------------|---------------------------|---------------|----------------------------------|------------------|
| Sat Oct 01/Sun Oct 02 | 23 11 | 19 17 | 20 42 6 05 7 30 | 19 53 5 18 | 19 55 | 1 13 27.3 - 6 09 | 9.4 |
| Sun Oct 02/Mon Oct 03 | 23 15 | 19 16 | 20 40 6 06 7 31 | 19 55 5 22 | 20 28 | 4 14 12.9 - 9 36 | 9.4 |
| Mon Oct 03/Tue Oct 04 | 23 19 | 19 14 | 20 39 6 07 7 32 | 19 58 5 27 | 21 02 | 9 14 59.0 -12 41 | 9.5 |
| Tue Oct 04/Wed Oct 05 | 23 23 | 19 13 | 20 37 6 08 7 33 | 20 00 5 32 | 21 38 | 15 15 46.1 -15 17 | 9.5 |
| Wed Oct 05/Thu Oct 06 | 23 27 | 19 11 | 20 36 6 09 7 34 | 20 03 5 37 | 22 17 | 22 16 34.4 -17 17 | 9.5 |
| Thu Oct 06/Fri Oct 07 | 23 31 | 19 10 | 20 35 6 10 7 34 | 20 05 5 42 | 22 59 | 31 17 23.9 -18 35 | 9.6 |
| Fri Oct 07/Sat Oct 08 | 23 35 | 19 08 | 20 33 6 10 7 35 | 20 08 5 46 | 23 46 | 40 18 14.7 -19 06 | 9.6 |
| Sat Oct 08/Sun Oct 09 | 23 39 | 19 07 | 20 32 6 11 7 36 | 20 10 5 51 | 0 37 | 50 19 06.6 -18 45 | 9.7 |
| Sun Oct 09/Mon Oct 10 | 23 43 | 19 06 | 20 30 6 12 7 37 | 20 13 5 56 | 1 32 | 60 19 59.6 -17 30 | 9.7 |
| Mon Oct 10/Tue Oct 11 | 23 47 | 19 04 | 20 29 6 13 7 38 | 20 15 6 01 | 2 31 | 70 20 53.3 -15 20 | 9.7 |
| Tue Oct 11/Wed Oct 12 | 23 51 | 19 03 | 20 28 6 14 7 39 | 20 18 6 05 | 16 20 | 3 33 79 21 47.7 -12 17 | 9.8 |
| Wed Oct 12/Thu Oct 13 | 23 55 | 19 02 | 20 26 6 14 7 39 | 20 21 6 10 | 17 01 | 4 38 88 22 42.8 - 8 28 | 9.8 |
| Thu Oct 13/Fri Oct 14 | 23 59 | 19 00 | 20 25 6 15 7 40 | 20 23 6 15 | 17 41 | 5 45 94 23 38.7 - 4 03 | 9.8 |
| Fri Oct 14/Sat Oct 15 | 0 03 | 18 59 | 20 24 6 16 7 41 | 20 26 6 20 | 18 21 | 6 55 98 0 35.6 0 42 | 9.9 |
| Sat Oct 15/Sun Oct 16 | 0 07 | 18 58 | 20 23 6 17 7 42 | 20 29 6 24 | 19 01 | 100 1 33.8 5 28 | 9.9 |
| Sun Oct 16/Mon Oct 17 | 0 10 | 18 56 | 20 21 6 18 7 43 | 20 31 6 29 | 19 44 | 98 2 33.4 9 53 | 9.9 |
| Mon Oct 17/Tue Oct 18 | 0 14 | 18 55 | 20 20 6 19 7 44 | 20 34 6 34 | 20 30 | 93 3 34.2 13 35 | 10.0 |
| Tue Oct 18/Wed Oct 19 | 0 18 | 18 54 | 20 19 6 19 7 45 | 20 37 6 39 | 21 20 | 86 4 35.7 16 16 | 10.0 |
| Wed Oct 19/Thu Oct 20 | 0 22 | 18 53 | 20 18 6 20 7 46 | 20 40 6 44 | 22 13 | 77 5 37.0 17 46 | 10.0 |
| Thu Oct 20/Fri Oct 21 | 0 26 | 18 51 | 20 17 6 21 7 46 | 20 42 6 48 | 23 10 | 67 6 37.0 18 02 | 10.1 |
| Fri Oct 21/Sat Oct 22 | 0 30 | 18 50 | 20 16 6 22 7 47 | 20 45 6 53 | 0 09 | 56 7 34.9 17 11 | 10.1 |
| Sat Oct 22/Sun Oct 23 | 0 34 | 18 49 | 20 14 6 23 7 48 | 20 48 6 58 | 1 09 | 45 8 30.0 15 21 | 10.1 |
| Sun Oct 23/Mon Oct 24 | 0 38 | 18 48 | 20 13 6 24 7 49 | 20 51 7 03 | 2 08 | 35 9 22.4 12 46 | 10.2 |
| Mon Oct 24/Tue Oct 25 | 0 42 | 18 47 | 20 12 6 24 7 50 | 20 54 7 07 | 3 06 | 26 10 12.3 9 37 | 10.2 |
| Tue Oct 25/Wed Oct 26 | 0 46 | 18 45 | 20 11 6 25 7 51 | 20 57 7 12 | 4 03 | 16 21 17 11 00.1 6 05 | 10.2 |
| Wed Oct 26/Thu Oct 27 | 0 50 | 18 44 | 20 10 6 26 7 52 | 20 59 7 17 | 4 59 | 16 54 11 11 46.4 2 21 | 10.3 |
| Thu Oct 27/Fri Oct 28 | 0 54 | 18 43 | 20 09 6 27 7 53 | 21 02 7 22 | 5 54 | 17 26 6 12 31.8 - 1 28 | 10.3 |
| Fri Oct 28/Sat Oct 29 | 0 58 | 18 42 | 20 08 6 28 7 54 | 21 05 7 27 | 6 48 | 17 57 2 13 16.8 - 5 12 | 10.3 |
| Sat Oct 29/Sun Oct 30 | 1 02 | 18 41 | 20 07 6 29 7 55 | 21 08 7 31 | 7 42 | 18 29 0 14 02.0 - 8 44 | 10.4 |
| Sun Oct 30/Mon Oct 31 | 1 06 | 18 40 | 20 06 6 29 7 56 | 21 11 7 36 | 19 02 | 0 14 47.8 -11 56 | 10.4 |
| Mon Oct 31/Tue Nov 01 | 1 10 | 18 39 | 20 05 6 30 7 57 | 21 14 7 41 | 19 37 | 2 15 34.5 -14 41 | 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.

***** 2016 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 |
| Tue Nov 01/Wed Nov 02 | 1 14 | 18 38 | 20 05 | 6 31 | 7 58 | 21 17 | 7 46 | ..... | 20 15 | 5 | 16 22.2 | -16 52 | 10.4 |
| Wed Nov 02/Thu Nov 03 | 1 17 | 18 37 | 20 04 | 6 32 | 7 59 | 21 21 | 7 50 | ..... | 20 56 | 10 | 17 11.2 | -18 22 | 10.5 |
| Thu Nov 03/Fri Nov 04 | 1 21 | 18 36 | 20 03 | 6 33 | 8 00 | 21 24 | 7 55 | ..... | 21 41 | 17 | 18 01.1 | -19 06 | 10.5 |
| Fri Nov 04/Sat Nov 05 | 1 25 | 18 35 | 20 02 | 6 34 | 8 01 | 21 27 | 8 00 | ..... | 22 30 | 24 | 18 52.0 | -19 01 | 10.5 |
| Sat Nov 05/Sun Nov 06* | 1 29 | 18 34 | 20 01 | 5 34 | 7 02 | 21 30 | 8 05 | ..... | 23 23 | 33 | 19 43.4 | -18 04 | 10.6 |
| Sun Nov 06/Mon Nov 07 | 2 33 | 17 33 | 19 01 | 5 35 | 7 03 | 21 33 | 8 10 | ..... | 23 19 | 43 | 20 37.4 | -16 05 | 10.6 |
| Mon Nov 07/Tue Nov 08 | 2 37 | 17 32 | 19 00 | 5 36 | 7 04 | 21 36 | 8 14 | ..... | 0 18 | 54 | 21 29.6 | -13 24 | 10.6 |
| Tue Nov 08/Wed Nov 09 | 2 41 | 17 32 | 18 59 | 5 37 | 7 05 | 21 40 | 8 19 | ..... | 1 19 | 64 | 22 22.3 | - 9 58 | 10.6 |
| Wed Nov 09/Thu Nov 10 | 2 45 | 17 31 | 18 58 | 5 38 | 7 06 | 21 43 | 8 24 | ..... | 2 23 | 74 | 23 15.7 | - 5 53 | 10.7 |
| Thu Nov 10/Fri Nov 11 | 2 49 | 17 30 | 18 58 | 5 39 | 7 07 | 21 46 | 8 29 | ..... | 3 30 | 84 | 0 10.4 | - 1 21 | 10.7 |
| Fri Nov 11/Sat Nov 12 | 2 53 | 17 29 | 18 57 | 5 40 | 7 08 | 21 49 | 8 34 | 15 51 | 4 38 | 92 | 1 06.7 | 3 24 | 10.7 |
| Sat Nov 12/Sun Nov 13 | 2 57 | 17 29 | 18 57 | 5 40 | 7 09 | 21 53 | 8 38 | 16 32 | 5 49 | 97 | 2 05.2 | 8 03 | 10.7 |
| Sun Nov 13/Mon Nov 14 | 3 01 | 17 28 | 18 56 | 5 41 | 7 10 | 21 56 | 8 43 | 17 16 | 7 01 | 100 | 3 05.9 | 12 12 | 10.8 |
| Mon Nov 14/Tue Nov 15 | 3 05 | 17 27 | 18 55 | 5 42 | 7 11 | 22 00 | 8 48 | 18 04 | 8 12 | 99 | 4 08.6 | 15 29 | 10.8 |
| Tue Nov 15/Wed Nov 16 | 3 09 | 17 27 | 18 55 | 5 43 | 7 12 | 22 03 | 8 53 | 18 57 | ..... | 95 | 5 12.2 | 17 37 | 10.8 |
| Wed Nov 16/Thu Nov 17 | 3 13 | 17 26 | 18 55 | 5 44 | 7 13 | 22 07 | 8 58 | 19 55 | ..... | 89 | 6 15.6 | 18 26 | 10.8 |
| Thu Nov 17/Fri Nov 18 | 3 17 | 17 25 | 18 54 | 5 45 | 7 14 | 22 10 | 9 02 | 20 55 | ..... | 81 | 7 17.1 | 17 56 | 10.8 |
| Fri Nov 18/Sat Nov 19 | 3 21 | 17 25 | 18 54 | 5 46 | 7 15 | 22 14 | 9 07 | 21 57 | ..... | 71 | 8 15.6 | 16 19 | 10.9 |
| Sat Nov 19/Sun Nov 20 | 3 25 | 17 24 | 18 53 | 5 46 | 7 16 | 22 17 | 9 12 | 22 59 | ..... | 61 | 9 10.9 | 13 49 | 10.9 |
| Sun Nov 20/Mon Nov 21 | 3 29 | 17 24 | 18 53 | 5 47 | 7 17 | 22 21 | 9 17 | 23 59 | ..... | 50 | 10 02.8 | 10 40 | 10.9 |
| Mon Nov 21/Tue Nov 22 | 3 33 | 17 23 | 18 53 | 5 48 | 7 18 | 22 24 | 9 22 | 0 57 | ..... | 40 | 10 52.0 | 7 06 | 10.9 |
| Tue Nov 22/Wed Nov 23 | 3 37 | 17 23 | 18 52 | 5 49 | 7 19 | 22 28 | 9 26 | 1 53 | ..... | 31 | 11 39.1 | 3 19 | 10.9 |
| Wed Nov 23/Thu Nov 24 | 3 40 | 17 22 | 18 52 | 5 50 | 7 20 | 22 32 | 9 31 | 2 49 | ..... | 22 | 12 24.8 | - 0 32 | 11.0 |
| Thu Nov 24/Fri Nov 25 | 3 44 | 17 22 | 18 52 | 5 51 | 7 20 | 22 35 | 9 36 | 3 43 | ..... | 15 | 13 09.8 | - 4 20 | 11.0 |
| Fri Nov 25/Sat Nov 26 | 3 48 | 17 22 | 18 52 | 5 51 | 7 21 | 22 39 | 9 41 | 4 37 | 15 32 | 9 | 13 54.7 | - 7 57 | 11.0 |
| Sat Nov 26/Sun Nov 27 | 3 52 | 17 21 | 18 51 | 5 52 | 7 22 | 22 43 | 9 46 | 5 31 | 16 04 | 5 | 14 40.2 | -11 15 | 11.0 |
| Sun Nov 27/Mon Nov 28 | 3 56 | 17 21 | 18 51 | 5 53 | 7 23 | 22 47 | 9 50 | 6 25 | 16 38 | 2 | 15 26.6 | -14 07 | 11.0 |
| Mon Nov 28/Tue Nov 29 | 4 00 | 17 21 | 18 51 | 5 54 | 7 24 | 22 50 | 9 55 | 7 18 | 17 15 | 0 | 16 14.1 | -16 27 | 11.0 |
| Tue Nov 29/Wed Nov 30 | 4 04 | 17 21 | 18 51 | 5 55 | 7 25 | 22 54 | 10 00 | 8 11 | 17 55 | 1 | 17 02.8 | -18 08 | 11.1 |
| Wed Nov 30/Thu Dec 01 | 4 08 | 17 21 | 18 51 | 5 56 | 7 26 | 22 58 | 10 05 | ..... | 18 39 | 3 | 17 52.6 | -19 03 | 11.1 |

***** 2016 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 |
| Thu Dec 01/Fri Dec 02 | 4 12 | 17 20 | 18 51 | 5 56 | 7 27 | 23 02 | 10 09 | ..... | 19 27 | 7 | 18 43.1 | -19 09 | 11.1 |
| Fri Dec 02/Sat Dec 03 | 4 16 | 17 20 | 18 51 | 5 57 | 7 28 | 23 06 | 10 14 | ..... | 20 18 | 12 | 19 34.2 | -18 23 | 11.1 |
| Sat Dec 03/Sun Dec 04 | 4 20 | 17 20 | 18 51 | 5 58 | 7 29 | 23 10 | 10 19 | ..... | 21 13 | 19 | 20 25.3 | -16 46 | 11.1 |
| Sun Dec 04/Mon Dec 05 | 4 24 | 17 20 | 18 51 | 5 59 | 7 30 | 23 14 | 10 23 | ..... | 22 10 | 28 | 21 16.4 | -14 21 | 11.1 |
| Mon Dec 05/Tue Dec 06 | 4 28 | 17 20 | 18 51 | 5 59 | 7 30 | 23 18 | 10 28 | ..... | 23 09 | 37 | 22 07.5 | -11 12 | 11.1 |
| Tue Dec 06/Wed Dec 07 | 4 32 | 17 20 | 18 51 | 6 00 | 7 31 | 23 22 | 10 33 | ..... | 0 10 | 48 | 22 58.8 | - 7 25 | 11.1 |
| Wed Dec 07/Thu Dec 08 | 4 36 | 17 20 | 18 51 | 6 01 | 7 32 | 23 26 | 10 37 | ..... | 1 13 | 59 | 23 50.8 | - 3 10 | 11.2 |
| Thu Dec 08/Fri Dec 09 | 4 40 | 17 20 | 18 52 | 6 01 | 7 33 | 23 30 | 10 42 | ..... | 2 18 | 70 | 0 44.1 | 1 22 | 11.2 |
| Fri Dec 09/Sat Dec 10 | 4 44 | 17 21 | 18 52 | 6 02 | 7 34 | 23 35 | 10 47 | ..... | 3 25 | 80 | 1 39.3 | 5 57 | 11.2 |
| Sat Dec 10/Sun Dec 11 | 4 47 | 17 21 | 18 52 | 6 03 | 7 34 | 23 39 | 10 51 | ..... | 4 35 | 88 | 2 37.1 | 10 18 | 11.2 |
| Sun Dec 11/Mon Dec 12 | 4 51 | 17 21 | 18 52 | 6 04 | 7 35 | 23 43 | 10 56 | 15 50 | 5 45 | 95 | 3 37.5 | 14 02 | 11.2 |
| Mon Dec 12/Tue Dec 13 | 4 55 | 17 21 | 18 53 | 6 04 | 7 36 | 23 47 | 11 01 | 16 39 | 6 54 | 99 | 4 40.3 | 16 48 | 11.2 |
| Tue Dec 13/Wed Dec 14 | 4 59 | 17 21 | 18 53 | 6 05 | 7 36 | 23 51 | 11 05 | 17 34 | 8 00 | 100 | 5 44.5 | 18 21 | 11.2 |
| Wed Dec 14/Thu Dec 15 | 5 03 | 17 22 | 18 53 | 6 05 | 7 37 | 23 56 | 11 10 | 18 34 | ..... | 97 | 6 48.4 | 18 32 | 11.2 |
| Thu Dec 15/Fri Dec 16 | 5 07 | 17 22 | 18 54 | 6 06 | 7 38 | 24 00 | 11 14 | 19 37 | ..... | 93 | 7 50.3 | 17 25 | 11.2 |
| Fri Dec 16/Sat Dec 17 | 5 11 | 17 22 | 18 54 | 6 07 | 7 38 | 0 04 | 11 19 | 20 41 | ..... | 85 | 8 49.2 | 15 13 | 11.2 |
| Sat Dec 17/Sun Dec 18 | 5 15 | 17 23 | 18 54 | 6 07 | 7 39 | 0 09 | 11 23 | 21 44 | ..... | 77 | 9 44.6 | 12 11 | 11.2 |
| Sun Dec 18/Mon Dec 19 | 5 19 | 17 23 | 18 55 | 6 08 | 7 39 | 0 13 | 11 28 | 22 45 | ..... | 67 | 10 36.5 | 8 37 | 11.2 |
| Mon Dec 19/Tue Dec 20 | 5 23 | 17 24 | 18 55 | 6 08 | 7 40 | 0 17 | 11 32 | 23 44 | ..... | 57 | 11 25.7 | 4 46 | 11.2 |
| Tue Dec 20/Wed Dec 21 | 5 27 | 17 24 | 18 56 | 6 09 | 7 41 | 0 22 | 11 37 | 0 41 | ..... | 48 | 12 12.7 | 0 49 | 11.2 |
| Wed Dec 21/Thu Dec 22 | 5 31 | 17 24 | 18 56 | 6 09 | 7 41 | 0 26 | 11 41 | 1 36 | ..... | 38 | 12 58.5 | - 3 05 | 11.2 |
| Thu Dec 22/Fri Dec 23 | 5 35 | 17 25 | 18 57 | 6 10 | 7 41 | 0 31 | 11 46 | 2 31 | ..... | 29 | 13 43.8 | - 6 49 | 11.2 |
| Fri Dec 23/Sat Dec 24 | 5 39 | 17 26 | 18 57 | 6 10 | 7 42 | 0 35 | 11 50 | 3 25 | ..... | 21 | 14 29.2 | -10 15 | 11.2 |
| Sat Dec 24/Sun Dec 25 | 5 43 | 17 26 | 18 58 | 6 11 | 7 42 | 0 40 | 11 54 | 4 18 | ..... | 14 | 15 15.3 | -13 17 | 11.2 |
| Sun Dec 25/Mon Dec 26 | 5 47 | 17 27 | 18 58 | 6 11 | 7 43 | 0 44 | 11 59 | 5 12 | ..... | 8 | 16 02.4 | -15 49 | 11.2 |
| Mon Dec 26/Tue Dec 27 | 5 51 | 17 27 | 18 59 | 6 11 | 7 43 | 0 49 | 12 03 | 6 05 | 15 53 | 4 | 16 50.9 | -17 42 | 11.2 |
| Tue Dec 27/Wed Dec 28 | 5 55 | 17 28 | 19 00 | 6 12 | 7 43 | 0 53 | 12 07 | 6 57 | 16 36 | 1 | 17 40.6 | -18 52 | 11.2 |
| Wed Dec 28/Thu Dec 29 | 5 58 | 17 29 | 19 00 | 6 12 | 7 44 | 0 58 | 12 11 | 7 46 | 17 22 | 0 | 18 31.4 | -19 13 | 11.2 |
| Thu Dec 29/Fri Dec 30 | 6 02 | 17 29 | 19 01 | 6 12 | 7 44 | 1 03 | 12 16 | 8 33 | 18 13 | 1 | 19 22.7 | -18 42 | 11.2 |
| Fri Dec 30/Sat Dec 31 | 6 06 | 17 30 | 19 02 | 6 13 | 7 44 | 1 07 | 12 20 | ..... | 19 07 | 4 | 20 14.3 | -17 18 | 11.2 |
| Sat Dec 31/Sun Jan 01 | 6 10 | 17 31 | 19 02 | 6 13 | 7 44 | 1 12 | 12 24 | ..... | 20 04 | 8 | 21 05.7 | -15 05 | 11.2 |