

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:

***** 2017 Night-time Astronomical Calendar for Kitt Peak *****

By John Thorstensen, Dartmouth College

This calendar is designed to provide information useful for the planning of nighttime observations. The format should minimize confusion; each line gives the phenomena for a single (local!) night, and each line is labeled with both evening and morning (local) day and date. Note that all times given are LOCAL CIVIL (zone) times.

The rise/set times printed are the times at which the center of the object is 50 arcminutes below the geometrical horizon. At the given twilight, the center of the sun is 0.0 degrees below the geometrical horizon.

The moon positions (and rise/set times) are generated by an implementation of the Low-Precision formulae in the Astronomical Almanac. The Almanac states that the error seldom exceeds 0.3 degrees. Topocentric corrections are included. Comparisons with tables for Kitt Peak in the NOAO Newsletter indicate that the rise-set times are good to +/- 2 min or so. The moon's RA, Dec, and illuminated fraction are given for local midnight, regardless of whether the moon is actually up at that time. Note that the moonrise and moonset times are not printed if they occur near mid-day.

The LST at evening and morning twilight are tabulated. This gives an accurate idea of the range of RA's accessible during the night.

The JD is given (severely rounded off) for local midnight. Again, this avoids any ambiguity.

Some credits: The sidereal time and Julian date routines were originally coded in PL/I by Steve Maker of Dartmouth College. The algorithms originated in the old American Ephemeris. The routine to convert JD back to calendar date is adapted from Numerical Recipes in C, by Press et al.

CAUTIONS: I believe that the program which generates these tables is reasonably accurate. However, it has not been exhaustively tested, so you should be sure to run 'sanity checks' on the results. Also, in view of the approximations used, the results should not be used when high precision is needed. Extension to dates far from the present (1990) should be done with great caution. The code has not been tested for the eastern or southern hemispheres. Rise/set times are slightly inaccurate and rather confusing at circumpolar latitudes, where the concept of a 'night' is blurry.

The daylight savings time conventions (if used) are quite specific (to U. S., post-1986) and subject to change. I know that the code has many infelicities; if you should find actual errors, please notify
John.Thorstensen@dartmouth.edu

[This output comes from a (hopefully) portable, completely self-contained program in the c language. It is available from the author and may be used freely for scientific or educational purposes. If you use it for profit, please contact the author to arrange a (modest!) fee.
Source code is copyright John Thorstensen, 1990.]

MOON PHASES FOR 2017, at Kitt Peak

Times and dates are given in local time, zone = 7 hr West.
They are generally better than +/- 2 minutes.

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

NEW	1ST	FULL	LAST
Dec 28 23 54	Jan 05 12 48	Jan 12 4 35	Jan 19 15 14
Jan 27 17 08	Feb 03 21 20	Feb 10 17 34	Feb 18 12 35
Feb 26 8 00	Mar 05 4 34	Mar 12 7 55	Mar 20 9 01
Mar 27 19 59	Apr 03 11 41	Apr 10 23 09	Apr 19 3 00
Apr 26 5 18	May 02 19 48	May 10 14 44	May 18 17 36
May 25 12 46	Jun 01 5 43	Jun 09 6 11	Jun 17 4 35
Jun 23 19 33	Jun 30 17 52	Jul 08 21 09	Jul 16 12 28
Jul 23 2 47	Jul 30 8 24	Aug 07 11 13	Aug 14 18 17
Aug 21 11 32	Aug 29 1 14	Sep 06 0 05	Sep 12 23 27
Sep 19 22 31	Sep 27 19 55	Oct 05 11 42	Oct 12 5 27
Oct 19 12 13	Oct 27 15 23	Nov 03 22 24	Nov 10 13 38
Nov 18 4 43	Nov 26 10 03	Dec 03 8 49	Dec 10 0 53
Dec 17 23 31	Dec 26 2 20	Jan 01 19 25	Jan 08 15 27

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
 Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2017 JANUARY *****

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours	
Sun Jan 01/Mon Jan 02	6 22	17 37	19 01	6 00 7 23	1 22 12 23	.....	21 07	15	21 58.8	-11 54	11.0
Mon Jan 02/Tue Jan 03	6 26	17 38	19 01	6 00 7 24	1 26 12 27	.....	22 05	23	22 49.6	- 8 17	11.0
Tue Jan 03/Wed Jan 04	6 30	17 39	19 02	6 01 7 24	1 31 12 32	.....	23 05	33	23 40.4	- 4 13	11.0
Wed Jan 04/Thu Jan 05	6 34	17 40	19 03	6 01 7 24	1 36 12 36	.....	0 06	43	0 31.8	0 09	11.0
Thu Jan 05/Fri Jan 06	6 38	17 40	19 03	6 01 7 24	1 40 12 40	.....	1 08	54	1 24.5	4 36	11.0
Fri Jan 06/Sat Jan 07	6 42	17 41	19 04	6 01 7 24	1 45 12 44	.....	2 12	66	2 19.1	8 53	10.9
Sat Jan 07/Sun Jan 08	6 46	17 42	19 05	6 01 7 24	1 50 12 48	.....	3 18	76	3 16.1	12 44	10.9
Sun Jan 08/Mon Jan 09	6 50	17 43	19 06	6 01 7 24	1 54 12 52	.....	4 24	86	4 15.8	15 50	10.9
Mon Jan 09/Tue Jan 10	6 54	17 44	19 06	6 01 7 24	1 59 12 56	.....	5 30	93	5 17.6	17 53	10.9
Tue Jan 10/Wed Jan 11	6 57	17 45	19 07	6 01 7 24	2 04 13 00	16 13	6 32	98	6 20.7	18 42	10.9
Wed Jan 11/Thu Jan 12	7 01	17 45	19 08	6 01 7 24	2 09 13 04	17 14	7 29	100	7 23.4	18 11	10.9
Thu Jan 12/Fri Jan 13	7 05	17 46	19 09	6 01 7 24	2 13 13 08	18 17	.....	99	8 24.3	16 27	10.9
Fri Jan 13/Sat Jan 14	7 09	17 47	19 09	6 01 7 24	2 18 13 12	19 21	.....	96	9 22.4	13 43	10.9
Sat Jan 14/Sun Jan 15	7 13	17 48	19 10	6 01 7 23	2 23 13 16	20 23	.....	90	10 17.2	10 17	10.9
Sun Jan 15/Mon Jan 16	7 17	17 49	19 11	6 01 7 23	2 27 13 19	21 23	.....	83	11 08.9	6 24	10.8
Mon Jan 16/Tue Jan 17	7 21	17 50	19 12	6 01 7 23	2 32 13 23	22 20	.....	74	11 58.1	2 21	10.8
Tue Jan 17/Wed Jan 18	7 25	17 51	19 13	6 01 7 23	2 37 13 27	23 16	.....	65	12 45.5	- 1 42	10.8
Wed Jan 18/Thu Jan 19	7 29	17 52	19 13	6 01 7 22	2 42 13 31	0 10	.....	55	13 31.8	- 5 35	10.8
Thu Jan 19/Fri Jan 20	7 33	17 53	19 14	6 01 7 22	2 46 13 35	1 03	.....	46	14 17.8	- 9 10	10.8
Fri Jan 20/Sat Jan 21	7 37	17 53	19 15	6 00 7 22	2 51 13 38	1 55	.....	37	15 04.0	-12 21	10.8
Sat Jan 21/Sun Jan 22	7 41	17 54	19 16	6 00 7 21	2 56 13 42	2 48	.....	28	15 51.0	-15 03	10.7
Sun Jan 22/Mon Jan 23	7 45	17 55	19 17	6 00 7 21	3 01 13 46	3 40	.....	20	16 39.1	-17 08	10.7
Mon Jan 23/Tue Jan 24	7 49	17 56	19 17	6 00 7 21	3 05 13 49	4 31	.....	13	17 28.5	-18 31	10.7
Tue Jan 24/Wed Jan 25	7 53	17 57	19 18	5 59 7 20	3 10 13 53	5 22	.....	7	18 19.1	-19 06	10.7
Wed Jan 25/Thu Jan 26	7 57	17 58	19 19	5 59 7 20	3 15 13 56	6 11	16 12	3	19 10.6	-18 50	10.7
Thu Jan 26/Fri Jan 27	8 01	17 59	19 20	5 58 7 19	3 19 14 00	6 57	17 05	1	20 02.6	-17 40	10.6
Fri Jan 27/Sat Jan 28	8 04	18 00	19 21	5 58 7 19	3 24 14 04	7 41	18 01	0	20 54.7	-15 38	10.6
Sat Jan 28/Sun Jan 29	8 08	18 01	19 21	5 58 7 18	3 29 14 07	.....	18 59	2	21 46.6	-12 48	10.6
Sun Jan 29/Mon Jan 30	8 12	18 02	19 22	5 57 7 17	3 34 14 10	.....	19 58	5	22 38.1	- 9 18	10.6
Mon Jan 30/Tue Jan 31	8 16	18 03	19 23	5 57 7 17	3 38 14 14	.....	20 59	11	23 29.4	- 5 17	10.6
Tue Jan 31/Wed Feb 01	8 20	18 04	19 24	5 56 7 16	3 43 14 17	.....	22 00	19	0 20.9	- 0 58	10.5

***** 2017 FEBRUARY *****

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours	
Wed Feb 01/Thu Feb 02	8 24	18 04	19 24	5 56 7 15	3 48 14 21	.....	23 02	29	1 12.9	3 27	10.5
Thu Feb 02/Fri Feb 03	8 28	18 05	19 25	5 55 7 15	3 53 14 24	.....	0 05	39	2 06.1	7 44	10.5
Fri Feb 03/Sat Feb 04	8 32	18 06	19 26	5 54 7 14	3 57 14 27	.....	1 09	50	3 01.1	11 37	10.5
Sat Feb 04/Sun Feb 05	8 36	18 07	19 27	5 54 7 13	4 02 14 31	.....	2 13	62	3 58.1	14 51	10.4
Sun Feb 05/Mon Feb 06	8 40	18 08	19 28	5 53 7 13	4 07 14 34	.....	3 17	73	4 57.1	17 12	10.4
Mon Feb 06/Tue Feb 07	8 44	18 09	19 28	5 52 7 12	4 12 14 37	.....	4 18	82	5 57.5	18 26	10.4
Tue Feb 07/Wed Feb 08	8 48	18 10	19 29	5 52 7 11	4 16 14 41	.....	5 16	90	6 58.5	18 27	10.4
Wed Feb 08/Thu Feb 09	8 52	18 11	19 30	5 51 7 10	4 21 14 44	.....	6 09	96	7 58.8	17 16	10.4
Thu Feb 09/Fri Feb 10	8 56	18 12	19 31	5 50 7 09	4 26 14 47	17 02	6 56	99	8 57.3	14 59	10.3
Fri Feb 10/Sat Feb 11	9 00	18 12	19 31	5 50 7 08	4 30 14 50	18 04	7 40	100	9 53.4	11 51	10.3
Sat Feb 11/Sun Feb 12	9 04	18 13	19 32	5 49 7 08	4 35 14 53	19 06	.....	98	10 46.8	8 07	10.3
Sun Feb 12/Mon Feb 13	9 08	18 14	19 33	5 48 7 07	4 40 14 56	20 05	.....	94	11 37.8	4 04	10.2
Mon Feb 13/Tue Feb 14	9 12	18 15	19 34	5 47 7 06	4 45 15 00	21 02	.....	88	12 26.8	- 0 04	10.2
Tue Feb 14/Wed Feb 15	9 15	18 16	19 35	5 46 7 05	4 49 15 03	21 58	.....	81	13 14.5	- 4 07	10.2
Wed Feb 15/Thu Feb 16	9 19	18 17	19 35	5 45 7 04	4 54 15 06	22 52	.....	72	14 01.5	- 7 54	10.2
Thu Feb 16/Fri Feb 17	9 23	18 18	19 36	5 44 7 03	4 59 15 09	23 46	.....	64	14 48.3	-11 17	10.1
Fri Feb 17/Sat Feb 18	9 27	18 18	19 37	5 44 7 02	5 03 15 12	0 38	.....	54	15 35.5	-14 12	10.1
Sat Feb 18/Sun Feb 19	9 31	18 19	19 38	5 43 7 01	5 08 15 15	1 30	.....	45	16 23.4	-16 31	10.1
Sun Feb 19/Mon Feb 20	9 35	18 20	19 38	5 42 7 00	5 13 15 18	2 22	.....	36	17 12.3	-18 09	10.1
Mon Feb 20/Tue Feb 21	9 39	18 21	19 39	5 41 6 59	5 17 15 21	3 13	.....	27	18 02.4	-19 01	10.0
Tue Feb 21/Wed Feb 22	9 43	18 22	19 40	5 40 6 58	5 22 15 24	4 02	.....	19	18 53.4	-19 03	10.0
Wed Feb 22/Thu Feb 23	9 47	18 22	19 41	5 39 6 57	5 27 15 27	4 49	.....	12	19 45.2	-18 11	10.0
Thu Feb 23/Fri Feb 24	9 51	18 23	19 41	5 38 6 56	5 32 15 29	5 34	.....	6	20 37.4	-16 27	9.9
Fri Feb 24/Sat Feb 25	9 55	18 24	19 42	5 37 6 54	5 36 15 32	6 17	16 46	2	21 29.8	-13 52	9.9
Sat Feb 25/Sun Feb 26	9 59	18 25	19 43	5 36 6 53	5 41 15 35	6 58	17 46	0	22 22.1	-10 31	9.9
Sun Feb 26/Mon Feb 27	10 03	18 26	19 44	5 34 6 52	5 46 15 38	7 38	18 47	1	23 14.4	- 6 35	9.8
Mon Feb 27/Tue Feb 28	10 07	18 26	19 44	5 33 6 51	5 50 15 41	.....	19 50	3	0 06.9	- 2 15	9.8
Tue Feb 28/Wed Mar 01	10 11	18 27	19 45	5 32 6 50	5 55 15 44	.....	20 53	9	0 59.8	2 14	9.8

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
 Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2017 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	
Wed Mar 01/Thu Mar 02	10 15	18 28	19 46	5 31	6 49	6 00	15 47	.....	21 57	16	1 53.5	6 38	9.8
Thu Mar 02/Fri Mar 03	10 19	18 29	19 46	5 30	6 48	6 04	15 49	.....	23 02	25	2 48.5	10 41	9.7
Fri Mar 03/Sat Mar 04	10 22	18 29	19 47	5 29	6 46	6 09	15 52	.....	0 07	36	3 45.1	14 05	9.7
Sat Mar 04/Sun Mar 05	10 26	18 30	19 48	5 28	6 45	6 14	15 55	.....	1 10	47	4 43.1	16 38	9.7
Sun Mar 05/Mon Mar 06	10 30	18 31	19 49	5 26	6 44	6 18	15 58	.....	2 12	59	5 42.1	18 08	9.6
Mon Mar 06/Tue Mar 07	10 34	18 32	19 49	5 25	6 43	6 23	16 00	.....	3 09	69	6 41.5	18 29	9.6
Tue Mar 07/Wed Mar 08	10 38	18 32	19 50	5 24	6 42	6 28	16 03	.....	4 02	79	7 40.4	17 39	9.6
Wed Mar 08/Thu Mar 09	10 42	18 33	19 51	5 23	6 40	6 32	16 06	.....	4 51	88	8 37.9	15 46	9.5
Thu Mar 09/Fri Mar 10	10 46	18 34	19 52	5 21	6 39	6 37	16 08	.....	5 35	94	9 33.4	12 58	9.5
Fri Mar 10/Sat Mar 11	10 50	18 35	19 52	5 20	6 38	6 42	16 11	16 52	6 15	98	10 26.8	9 29	9.5
Sat Mar 11/Sun Mar 12	10 54	18 35	19 53	5 19	6 37	6 46	16 14	17 52	6 52	100	11 18.2	5 34	9.4
Sun Mar 12/Mon Mar 13	10 58	18 36	19 54	5 18	6 35	6 51	16 16	18 49	7 27	99	12 07.8	1 26	9.4
Mon Mar 13/Tue Mar 14	11 02	18 37	19 55	5 16	6 34	6 56	16 19	19 46	.....	97	12 56.2	- 2 42	9.4
Tue Mar 14/Wed Mar 15	11 06	18 37	19 55	5 15	6 33	7 01	16 22	20 41	.....	92	13 43.9	- 6 39	9.3
Wed Mar 15/Thu Mar 16	11 10	18 38	19 56	5 14	6 32	7 05	16 24	21 35	.....	87	14 31.3	-10 15	9.3
Thu Mar 16/Fri Mar 17	11 14	18 39	19 57	5 12	6 30	7 10	16 27	22 29	.....	79	15 18.8	-13 23	9.3
Fri Mar 17/Sat Mar 18	11 18	18 40	19 58	5 11	6 29	7 15	16 30	23 21	.....	71	16 06.9	-15 57	9.2
Sat Mar 18/Sun Mar 19	11 22	18 40	19 58	5 10	6 28	7 19	16 32	0 13	.....	62	16 55.8	-17 50	9.2
Sun Mar 19/Mon Mar 20	11 26	18 41	19 59	5 08	6 26	7 24	16 35	1 04	.....	53	17 45.4	-18 59	9.2
Mon Mar 20/Tue Mar 21	11 29	18 42	20 00	5 07	6 25	7 29	16 37	1 53	.....	43	18 35.9	-19 18	9.1
Tue Mar 21/Wed Mar 22	11 33	18 42	20 01	5 06	6 24	7 33	16 40	2 40	.....	34	19 27.0	-18 45	9.1
Wed Mar 22/Thu Mar 23	11 37	18 43	20 01	5 04	6 23	7 38	16 42	3 26	.....	25	20 18.6	-17 20	9.0
Thu Mar 23/Fri Mar 24	11 41	18 44	20 02	5 03	6 21	7 43	16 45	4 09	.....	17	21 10.5	-15 04	9.0
Fri Mar 24/Sat Mar 25	11 45	18 44	20 03	5 02	6 20	7 48	16 48	4 51	.....	10	22 02.6	-12 00	9.0
Sat Mar 25/Sun Mar 26	11 49	18 45	20 04	5 00	6 19	7 52	16 50	5 31	.....	4	22 54.9	- 8 15	8.9
Sun Mar 26/Mon Mar 27	11 53	18 46	20 05	4 59	6 17	7 57	16 53	6 11	17 32	1	23 47.7	- 3 59	8.9
Mon Mar 27/Tue Mar 28	11 57	18 46	20 05	4 57	6 16	8 02	16 55	6 51	18 36	0	0 41.2	0 34	8.9
Tue Mar 28/Wed Mar 29	12 01	18 47	20 06	4 56	6 15	8 07	16 58	.....	19 42	2	1 35.8	5 09	8.8
Wed Mar 29/Thu Mar 30	12 05	18 48	20 07	4 55	6 14	8 11	17 00	.....	20 48	6	2 31.8	9 28	8.8
Thu Mar 30/Fri Mar 31	12 09	18 48	20 08	4 53	6 12	8 16	17 03	.....	21 56	13	3 29.3	13 12	8.8
Fri Mar 31/Sat Apr 01	12 13	18 49	20 09	4 52	6 11	8 21	17 05	.....	23 02	22	4 28.2	16 04	8.7

***** 2017 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	
Sat Apr 01/Sun Apr 02	12 17	18 50	20 09	4 50	6 10	8 26	17 08	.....	0 06	33	5 27.9	17 52	8.7
Sun Apr 02/Mon Apr 03	12 21	18 51	20 10	4 49	6 09	8 30	17 10	.....	1 05	44	6 27.7	18 30	8.6
Mon Apr 03/Tue Apr 04	12 25	18 51	20 11	4 47	6 07	8 35	17 13	.....	2 00	55	7 26.6	17 57	8.6
Tue Apr 04/Wed Apr 05	12 29	18 52	20 12	4 46	6 06	8 40	17 15	.....	2 50	66	8 23.8	16 19	8.6
Wed Apr 05/Thu Apr 06	12 33	18 53	20 13	4 45	6 05	8 45	17 18	.....	3 34	76	9 18.9	13 45	8.5
Thu Apr 06/Fri Apr 07	12 37	18 53	20 14	4 43	6 04	8 49	17 21	.....	4 14	84	10 11.8	10 29	8.5
Fri Apr 07/Sat Apr 08	12 40	18 54	20 14	4 42	6 02	8 54	17 23	.....	4 51	91	11 02.7	6 43	8.5
Sat Apr 08/Sun Apr 09	12 44	18 55	20 15	4 40	6 01	8 59	17 26	.....	5 27	96	11 51.9	2 40	8.4
Sun Apr 09/Mon Apr 10	12 48	18 55	20 16	4 39	6 00	9 04	17 28	17 37	6 01	99	12 40.1	- 1 28	8.4
Mon Apr 10/Tue Apr 11	12 52	18 56	20 17	4 38	5 59	9 09	17 31	18 32	6 35	100	13 27.6	- 5 30	8.3
Tue Apr 11/Wed Apr 12	12 56	18 57	20 18	4 36	5 57	9 14	17 33	19 27	.....	99	14 15.1	- 9 16	8.3
Wed Apr 12/Thu Apr 13	13 00	18 57	20 19	4 35	5 56	9 18	17 36	20 20	.....	96	15 02.7	-12 37	8.3
Thu Apr 13/Fri Apr 14	13 04	18 58	20 20	4 33	5 55	9 23	17 38	21 14	.....	91	15 50.9	-15 26	8.2
Fri Apr 14/Sat Apr 15	13 08	18 59	20 21	4 32	5 54	9 28	17 41	22 06	.....	85	16 39.9	-17 35	8.2
Sat Apr 15/Sun Apr 16	13 12	18 59	20 22	4 31	5 53	9 33	17 43	22 57	.....	78	17 29.5	-18 59	8.2
Sun Apr 16/Mon Apr 17	13 16	19 00	20 22	4 29	5 52	9 38	17 46	23 47	.....	69	18 19.7	-19 35	8.1
Mon Apr 17/Tue Apr 18	13 20	19 01	20 23	4 28	5 50	9 43	17 48	0 34	.....	60	19 10.4	-19 20	8.1
Tue Apr 18/Wed Apr 19	13 24	19 02	20 24	4 27	5 49	9 48	17 51	1 20	.....	51	20 01.4	-18 13	8.0
Wed Apr 19/Thu Apr 20	13 28	19 02	20 25	4 25	5 48	9 52	17 54	2 03	.....	41	20 52.4	-16 15	8.0
Thu Apr 20/Fri Apr 21	13 32	19 03	20 26	4 24	5 47	9 57	17 56	2 44	.....	31	21 43.6	-13 29	8.0
Fri Apr 21/Sat Apr 22	13 36	19 04	20 27	4 22	5 46	10 02	17 59	3 24	.....	22	22 34.9	-10 01	7.9
Sat Apr 22/Sun Apr 23	13 40	19 04	20 28	4 21	5 45	10 07	18 01	4 03	.....	14	23 26.8	- 5 57	7.9
Sun Apr 23/Mon Apr 24	13 44	19 05	20 29	4 20	5 44	10 12	18 04	4 42	.....	7	0 19.6	- 1 29	7.8
Mon Apr 24/Tue Apr 25	13 47	19 06	20 30	4 19	5 43	10 17	18 07	5 23	17 20	2	1 13.7	3 11	7.8
Tue Apr 25/Wed Apr 26	13 51	19 06	20 31	4 17	5 42	10 22	18 09	6 06	18 27	0	2 09.6	7 44	7.8
Wed Apr 26/Thu Apr 27	13 55	19 07	20 32	4 16	5 41	10 27	18 12	.....	19 36	1	3 07.6	11 50	7.7
Thu Apr 27/Fri Apr 28	13 59	19 08	20 33	4 15	5 40	10 32	18 15	.....	20 45	5	4 07.5	15 10	7.7
Fri Apr 28/Sat Apr 29	14 03	19 09	20 34	4 13	5 39	10 37	18 17	.....	21 52	11	5 08.7	17 27	7.7
Sat Apr 29/Sun Apr 30	14 07	19 09	20 35	4 12	5 38	10 42	18 20	.....	22 56	20	6 10.3	18 31	7.6
Sun Apr 30/Mon May 01	14 11	19 10	20 36	4 11	5 37	10 46	18 23	.....	23 55	30	7 11.0	18 18	7.6

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
 Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2017 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	
Mon May 01/Tue May 02	14 15	19 11	20 37	4 10	5 36	10 51	18 25	.....	0 48	40	8 09.7	16 55	7.5
Tue May 02/Wed May 03	14 19	19 11	20 38	4 08	5 35	10 56	18 28	.....	1 34	51	9 05.9	14 32	7.5
Wed May 03/Thu May 04	14 23	19 12	20 39	4 07	5 34	11 01	18 31	.....	2 16	62	9 59.3	11 24	7.5
Thu May 04/Fri May 05	14 27	19 13	20 40	4 06	5 33	11 06	18 34	.....	2 54	72	10 50.3	7 44	7.4
Fri May 05/Sat May 06	14 31	19 14	20 41	4 05	5 32	11 11	18 36	.....	3 29	81	11 39.4	3 45	7.4
Sat May 06/Sun May 07	14 35	19 14	20 42	4 04	5 31	11 16	18 39	.....	4 03	88	12 27.1	- 0 22	7.4
Sun May 07/Mon May 08	14 39	19 15	20 43	4 03	5 31	11 21	18 42	.....	4 36	94	13 14.2	- 4 26	7.3
Mon May 08/Tue May 09	14 43	19 16	20 44	4 02	5 30	11 26	18 45	.....	5 10	98	14 01.1	- 8 18	7.3
Tue May 09/Wed May 10	14 47	19 16	20 45	4 01	5 29	11 31	18 48	18 15	5 45	100	14 48.4	-11 49	7.3
Wed May 10/Thu May 11	14 51	19 17	20 46	3 59	5 28	11 36	18 51	19 08	6 22	100	15 36.3	-14 50	7.2
Thu May 11/Fri May 12	14 55	19 18	20 47	3 58	5 27	11 41	18 54	20 01	.....	98	16 25.2	-17 15	7.2
Fri May 12/Sat May 13	14 58	19 19	20 48	3 57	5 27	11 46	18 57	20 52	.....	95	17 14.8	-18 55	7.2
Sat May 13/Sun May 14	15 02	19 19	20 49	3 56	5 26	11 51	19 00	21 43	.....	90	18 05.2	-19 48	7.1
Sun May 14/Mon May 15	15 06	19 20	20 50	3 55	5 25	11 56	19 02	22 31	.....	83	18 56.0	-19 49	7.1
Mon May 15/Tue May 16	15 10	19 21	20 51	3 55	5 25	12 01	19 05	23 17	.....	75	19 46.8	-18 58	7.1
Tue May 16/Wed May 17	15 14	19 21	20 52	3 54	5 24	12 06	19 08	0 00	.....	67	20 37.5	-17 16	7.0
Wed May 17/Thu May 18	15 18	19 22	20 53	3 53	5 23	12 10	19 12	0 41	.....	57	21 28.0	-14 46	7.0
Thu May 18/Fri May 19	15 22	19 23	20 54	3 52	5 23	12 15	19 15	1 20	.....	47	22 18.3	-11 34	7.0
Fri May 19/Sat May 20	15 26	19 23	20 55	3 51	5 22	12 20	19 18	1 58	.....	36	23 08.8	- 7 45	6.9
Sat May 20/Sun May 21	15 30	19 24	20 56	3 50	5 22	12 25	19 21	2 36	.....	26	23 59.9	- 3 29	6.9
Sun May 21/Mon May 22	15 34	19 25	20 57	3 49	5 21	12 30	19 24	3 15	.....	17	0 52.3	1 05	6.9
Mon May 22/Tue May 23	15 38	19 25	20 58	3 49	5 21	12 35	19 27	3 55	.....	9	1 46.5	5 41	6.9
Tue May 23/Wed May 24	15 42	19 26	20 58	3 48	5 20	12 40	19 30	4 39	.....	4	2 43.1	10 02	6.8
Wed May 24/Thu May 25	15 46	19 27	20 59	3 47	5 20	12 45	19 34	5 28	18 21	1	3 42.3	13 48	6.8
Thu May 25/Fri May 26	15 50	19 27	21 00	3 47	5 19	12 49	19 37	6 21	19 30	1	4 43.7	16 39	6.8
Fri May 26/Sat May 27	15 54	19 28	21 01	3 46	5 19	12 54	19 40	.....	20 38	3	5 46.5	18 17	6.7
Sat May 27/Sun May 28	15 58	19 29	21 02	3 45	5 19	12 59	19 44	.....	21 42	9	6 49.3	18 36	6.7
Sun May 28/Mon May 29	16 02	19 29	21 03	3 45	5 18	13 04	19 47	.....	22 39	17	7 50.6	17 37	6.7
Mon May 29/Tue May 30	16 05	19 30	21 04	3 44	5 18	13 09	19 50	.....	23 30	26	8 49.3	15 30	6.7
Tue May 30/Wed May 31	16 09	19 30	21 04	3 44	5 18	13 13	19 54	.....	0 15	36	9 44.8	12 30	6.7
Wed May 31/Thu Jun 01	16 13	19 31	21 05	3 43	5 17	13 18	19 57	.....	0 55	47	10 37.2	8 54	6.6

***** 2017 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	
Thu Jun 01/Fri Jun 02	16 17	19 32	21 06	3 43	5 17	13 23	20 01	.....	1 32	57	11 27.1	4 56	6.6
Fri Jun 02/Sat Jun 03	16 21	19 32	21 07	3 42	5 17	13 28	20 04	.....	2 06	67	12 15.2	0 49	6.6
Sat Jun 03/Sun Jun 04	16 25	19 33	21 07	3 42	5 17	13 32	20 08	.....	2 39	76	13 02.2	- 3 18	6.6
Sun Jun 04/Mon Jun 05	16 29	19 33	21 08	3 42	5 17	13 37	20 11	.....	3 12	84	13 48.7	- 7 15	6.6
Mon Jun 05/Tue Jun 06	16 33	19 34	21 09	3 41	5 16	13 41	20 15	.....	3 46	90	14 35.5	-10 53	6.5
Tue Jun 06/Wed Jun 07	16 37	19 34	21 10	3 41	5 16	13 46	20 19	.....	4 22	95	15 22.9	-14 05	6.5
Wed Jun 07/Thu Jun 08	16 41	19 35	21 10	3 41	5 16	13 51	20 22	17 56	5 01	98	16 11.4	-16 43	6.5
Thu Jun 08/Fri Jun 09	16 45	19 35	21 11	3 41	5 16	13 55	20 26	18 48	5 42	100	17 00.8	-18 39	6.5
Fri Jun 09/Sat Jun 10	16 49	19 36	21 11	3 40	5 16	14 00	20 30	19 39	6 27	99	17 51.3	-19 48	6.5
Sat Jun 10/Sun Jun 11	16 53	19 36	21 12	3 40	5 16	14 04	20 34	20 29	.....	97	18 42.3	-20 06	6.5
Sun Jun 11/Mon Jun 12	16 57	19 36	21 12	3 40	5 16	14 09	20 38	21 16	.....	93	19 33.5	-19 31	6.5
Mon Jun 12/Tue Jun 13	17 01	19 37	21 13	3 40	5 16	14 13	20 41	22 00	.....	87	20 24.5	-18 03	6.5
Tue Jun 13/Wed Jun 14	17 05	19 37	21 13	3 40	5 16	14 18	20 45	22 41	.....	80	21 15.1	-15 47	6.4
Wed Jun 14/Thu Jun 15	17 09	19 38	21 14	3 40	5 16	14 22	20 49	23 21	.....	72	22 05.2	-12 47	6.4
Thu Jun 15/Fri Jun 16	17 13	19 38	21 14	3 40	5 16	14 26	20 53	23 58	.....	62	22 55.0	- 9 10	6.4
Fri Jun 16/Sat Jun 17	17 16	19 38	21 15	3 40	5 17	14 31	20 57	0 35	.....	52	23 44.9	- 5 05	6.4
Sat Jun 17/Sun Jun 18	17 20	19 39	21 15	3 40	5 17	14 35	21 01	1 11	.....	41	0 35.5	- 0 41	6.4
Sun Jun 18/Mon Jun 19	17 24	19 39	21 15	3 40	5 17	14 39	21 05	1 50	.....	30	1 27.5	3 50	6.4
Mon Jun 19/Tue Jun 20	17 28	19 39	21 15	3 41	5 17	14 43	21 10	2 30	.....	20	2 21.7	8 14	6.4
Tue Jun 20/Wed Jun 21	17 32	19 39	21 16	3 41	5 17	14 47	21 14	3 15	.....	12	3 18.5	12 14	6.4
Wed Jun 21/Thu Jun 22	17 36	19 39	21 16	3 41	5 17	14 52	21 18	4 05	.....	5	4 18.0	15 29	6.4
Thu Jun 22/Fri Jun 23	17 40	19 40	21 16	3 41	5 18	14 56	21 22	5 00	18 15	1	5 20.0	17 42	6.4
Fri Jun 23/Sat Jun 24	17 44	19 40	21 16	3 42	5 18	15 00	21 26	6 01	19 21	0	6 23.2	18 38	6.4
Sat Jun 24/Sun Jun 25	17 48	19 40	21 16	3 42	5 18	15 04	21 31	.....	20 23	2	7 26.1	18 13	6.4
Sun Jun 25/Mon Jun 26	17 52	19 40	21 16	3 42	5 19	15 08	21 35	.....	21 19	7	8 27.1	16 32	6.4
Mon Jun 26/Tue Jun 27	17 56	19 40	21 16	3 43	5 19	15 12	21 39	.....	22 08	14	9 25.2	13 48	6.4
Tue Jun 27/Wed Jun 28	18 00	19 40	21 16	3 43	5 19	15 16	21 44	.....	22 52	22	10 20.1	10 19	6.4
Wed Jun 28/Thu Jun 29	18 04	19 40	21 16	3 44	5 20	15 20	21 48	.....	23 31	32	11 12.0	6 22	6.5
Thu Jun 29/Fri Jun 30	18 08	19 40	21 16	3 44	5 20	15 23	21 52	.....	0 07	42	12 01.4	2 12	6.5
Fri Jun 30/Sat Jul 01	18 12	19 40	21 16	3 45	5 20	15 27	21 57	.....	0 41	52	12 49.2	- 1 59	6.5

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
 Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2017 JULY *****

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 Jul 01/Sun Jul 02	18 16	19 40	21 16	3 45 5 21	15 31 22 01	.....	1 14	62	13 36.0 - 6 01	6.5
Sun Jul 02/Mon Jul 03	18 20	19 40	21 16	3 46 5 21	15 35 22 06	.....	1 48	71	14 22.7 - 9 47	6.5
Mon Jul 03/Tue Jul 04	18 23	19 40	21 16	3 46 5 22	15 39 22 10	.....	2 23	79	15 09.7 -13 08	6.5
Tue Jul 04/Wed Jul 05	18 27	19 40	21 15	3 47 5 22	15 42 22 15	.....	3 01	87	15 57.6 -15 57	6.5
Wed Jul 05/Thu Jul 06	18 31	19 40	21 15	3 48 5 23	15 46 22 20	.....	3 41	92	16 46.6 -18 08	6.5
Thu Jul 06/Fri Jul 07	18 35	19 40	21 15	3 48 5 23	15 49 22 24	17 35	4 24	97	17 36.7 -19 33	6.6
Fri Jul 07/Sat Jul 08	18 39	19 40	21 14	3 49 5 24	15 53 22 29	18 25	5 11	99	18 27.8 -20 08	6.6
Sat Jul 08/Sun Jul 09	18 43	19 39	21 14	3 50 5 24	15 57 22 34	19 13	6 01	100	19 19.4 -19 50	6.6
Sun Jul 09/Mon Jul 10	18 47	19 39	21 13	3 50 5 25	16 00 22 38	19 59	.....	99	20 11.0 -18 38	6.6
Mon Jul 10/Tue Jul 11	18 51	19 39	21 13	3 51 5 25	16 04 22 43	20 42	.....	96	21 02.3 -16 34	6.6
Tue Jul 11/Wed Jul 12	18 55	19 39	21 12	3 52 5 26	16 07 22 48	21 22	.....	91	21 53.0 -13 45	6.7
Wed Jul 12/Thu Jul 13	18 59	19 38	21 12	3 53 5 26	16 10 22 52	22 00	.....	84	22 43.1 -10 16	6.7
Thu Jul 13/Fri Jul 14	19 03	19 38	21 11	3 54 5 27	16 14 22 57	22 37	.....	76	23 32.9 - 6 18	6.7
Fri Jul 14/Sat Jul 15	19 07	19 37	21 11	3 54 5 28	16 17 23 02	23 13	.....	66	0 22.9 - 1 59	6.7
Sat Jul 15/Sun Jul 16	19 11	19 37	21 10	3 55 5 28	16 20 23 07	23 49	.....	55	1 13.7 2 27	6.8
Sun Jul 16/Mon Jul 17	19 15	19 37	21 09	3 56 5 29	16 24 23 11	0 27	.....	44	2 05.9 6 50	6.8
Mon Jul 17/Tue Jul 18	19 19	19 36	21 09	3 57 5 29	16 27 23 16	1 09	.....	33	3 00.3 10 53	6.8
Tue Jul 18/Wed Jul 19	19 23	19 36	21 08	3 58 5 30	16 30 23 21	1 54	.....	23	3 57.3 14 21	6.8
Wed Jul 19/Thu Jul 20	19 27	19 35	21 07	3 59 5 31	16 33 23 26	2 46	.....	14	4 56.9 16 56	6.9
Thu Jul 20/Fri Jul 21	19 30	19 35	21 06	4 00 5 31	16 36 23 31	3 43	.....	6	5 58.4 18 23	6.9
Fri Jul 21/Sat Jul 22	19 34	19 34	21 06	4 00 5 32	16 40 23 36	4 45	18 05	2	7 00.8 18 33	6.9
Sat Jul 22/Sun Jul 23	19 38	19 34	21 05	4 01 5 33	16 43 23 40	5 50	19 03	0	8 02.4 17 24	6.9
Sun Jul 23/Mon Jul 24	19 42	19 33	21 04	4 02 5 33	16 46 23 45	.....	19 56	1	9 02.1 15 05	7.0
Mon Jul 24/Tue Jul 25	19 46	19 32	21 03	4 03 5 34	16 49 23 50	.....	20 43	5	9 59.0 11 51	7.0
Tue Jul 25/Wed Jul 26	19 50	19 32	21 02	4 04 5 35	16 52 23 55	.....	21 25	11	10 53.0 8 01	7.0
Wed Jul 26/Thu Jul 27	19 54	19 31	21 01	4 05 5 35	16 55 24 00	.....	22 04	18	11 44.2 3 50	7.1
Thu Jul 27/Fri Jul 28	19 58	19 30	21 00	4 06 5 36	16 58 0 05	.....	22 39	27	12 33.4 - 0 26	7.1
Fri Jul 28/Sat Jul 29	20 02	19 30	20 59	4 07 5 37	17 01 0 10	.....	23 14	36	13 21.1 - 4 35	7.1
Sat Jul 29/Sun Jul 30	20 06	19 29	20 58	4 08 5 37	17 04 0 15	.....	23 48	46	14 08.3 - 8 30	7.2
Sun Jul 30/Mon Jul 31	20 10	19 28	20 57	4 09 5 38	17 07 0 19	.....	0 23	56	14 55.3 -12 00	7.2
Mon Jul 31/Tue Aug 01	20 14	19 27	20 56	4 10 5 38	17 09 0 24	.....	1 00	65	15 42.9 -15 01	7.2

***** 2017 AUGUST *****

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours
Tue Aug 01/Wed Aug 02	20 18	19 27	20 55	4 11 5 39	17 12 0 29	.....	1 39	74	16 31.4 -17 25	7.3
Wed Aug 02/Thu Aug 03	20 22	19 26	20 54	4 12 5 40	17 15 0 34	.....	2 21	82	17 21.0 -19 05	7.3
Thu Aug 03/Fri Aug 04	20 26	19 25	20 53	4 13 5 40	17 18 0 39	.....	3 07	89	18 11.6 -19 58	7.3
Fri Aug 04/Sat Aug 05	20 30	19 24	20 52	4 14 5 41	17 21 0 44	.....	3 56	94	19 03.1 -19 58	7.4
Sat Aug 05/Sun Aug 06	20 34	19 23	20 50	4 15 5 42	17 24 0 49	17 55	4 48	98	19 55.0 -19 03	7.4
Sun Aug 06/Mon Aug 07	20 38	19 22	20 49	4 16 5 42	17 26 0 54	18 40	5 42	100	20 46.9 -17 15	7.4
Mon Aug 07/Tue Aug 08	20 41	19 21	20 48	4 16 5 43	17 29 0 59	19 21	6 39	100	21 38.5 -14 37	7.5
Tue Aug 08/Wed Aug 09	20 45	19 20	20 47	4 17 5 44	17 32 1 04	20 01	.....	98	22 29.6 -11 16	7.5
Wed Aug 09/Thu Aug 10	20 49	19 20	20 46	4 18 5 44	17 34 1 08	20 38	.....	93	23 20.3 - 7 22	7.5
Thu Aug 10/Fri Aug 11	20 53	19 19	20 44	4 19 5 45	17 37 1 13	21 15	.....	87	0 10.8 - 3 04	7.6
Fri Aug 11/Sat Aug 12	20 57	19 18	20 43	4 20 5 46	17 40 1 18	21 51	.....	79	1 01.8 1 24	7.6
Sat Aug 12/Sun Aug 13	21 01	19 17	20 42	4 21 5 46	17 42 1 23	22 28	.....	69	1 53.7 5 49	7.7
Sun Aug 13/Mon Aug 14	21 05	19 16	20 41	4 22 5 47	17 45 1 28	23 08	.....	58	2 47.1 9 57	7.7
Mon Aug 14/Tue Aug 15	21 09	19 14	20 39	4 23 5 48	17 48 1 33	23 51	.....	47	3 42.5 13 32	7.7
Tue Aug 15/Wed Aug 16	21 13	19 13	20 38	4 24 5 48	17 50 1 38	0 39	.....	35	4 40.1 16 20	7.8
Wed Aug 16/Thu Aug 17	21 17	19 12	20 37	4 25 5 49	17 53 1 42	1 31	.....	25	5 39.5 18 06	7.8
Thu Aug 17/Fri Aug 18	21 21	19 11	20 35	4 26 5 50	17 56 1 47	2 29	.....	15	6 40.1 18 41	7.8
Fri Aug 18/Sat Aug 19	21 25	19 10	20 34	4 27 5 50	17 58 1 52	3 32	.....	8	7 40.8 18 00	7.9
Sat Aug 19/Sun Aug 20	21 29	19 09	20 33	4 28 5 51	18 01 1 57	4 36	17 44	3	8 40.2 16 08	7.9
Sun Aug 20/Mon Aug 21	21 33	19 08	20 31	4 28 5 52	18 03 2 02	5 41	18 33	0	9 37.6 13 15	8.0
Mon Aug 21/Tue Aug 22	21 37	19 07	20 30	4 29 5 52	18 06 2 07	6 45	19 17	0	10 32.5 9 38	8.0
Tue Aug 22/Wed Aug 23	21 41	19 06	20 28	4 30 5 53	18 08 2 11	.....	19 58	3	11 25.0 5 32	8.0
Wed Aug 23/Thu Aug 24	21 45	19 04	20 27	4 31 5 54	18 11 2 16	.....	20 35	8	12 15.3 1 15	8.1
Thu Aug 24/Fri Aug 25	21 48	19 03	20 26	4 32 5 54	18 14 2 21	.....	21 11	14	13 04.1 - 3 02	8.1
Fri Aug 25/Sat Aug 26	21 52	19 02	20 24	4 33 5 55	18 16 2 26	.....	21 45	22	13 52.0 - 7 05	8.1
Sat Aug 26/Sun Aug 27	21 56	19 01	20 23	4 34 5 56	18 19 2 31	.....	22 21	30	14 39.5 -10 47	8.2
Sun Aug 27/Mon Aug 28	22 00	19 00	20 21	4 34 5 56	18 21 2 35	.....	22 57	39	15 27.1 -14 00	8.2
Mon Aug 28/Tue Aug 29	22 04	18 58	20 20	4 35 5 57	18 24 2 40	.....	23 35	49	16 15.3 -16 37	8.3
Tue Aug 29/Wed Aug 30	22 08	18 57	20 18	4 36 5 57	18 26 2 45	.....	0 16	58	17 04.4 -18 32	8.3
Wed Aug 30/Thu Aug 31	22 12	18 56	20 17	4 37 5 58	18 29 2 50	.....	1 00	68	17 54.3 -19 41	8.3
Thu Aug 31/Fri Sep 01	22 16	18 55	20 16	4 38 5 59	18 31 2 55	.....	1 48	76	18 45.2 -19 59	8.4

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
 Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2017 SEPTEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Fri Sep 01/Sat Sep 02	22 20	18 53	20 14	4 38	5 59	18 34	2 59	.....	2 39	84	19 36.7	-19 24	8.4
Sat Sep 02/Sun Sep 03	22 24	18 52	20 13	4 39	6 00	18 36	3 04	.....	3 32	90	20 28.5	-17 54	8.4
Sun Sep 03/Mon Sep 04	22 28	18 51	20 11	4 40	6 00	18 39	3 09	17 17	4 29	96	21 20.4	-15 33	8.5
Mon Sep 04/Tue Sep 05	22 32	18 50	20 10	4 41	6 01	18 41	3 13	17 58	5 26	99	22 12.1	-12 24	8.5
Tue Sep 05/Wed Sep 06	22 36	18 48	20 08	4 42	6 02	18 44	3 18	18 36	6 26	100	23 03.7	- 8 36	8.6
Wed Sep 06/Thu Sep 07	22 40	18 47	20 07	4 42	6 02	18 46	3 23	19 14	.....	99	23 55.3	- 4 18	8.6
Thu Sep 07/Fri Sep 08	22 44	18 46	20 05	4 43	6 03	18 49	3 28	19 51	.....	95	0 47.2	0 15	8.6
Fri Sep 08/Sat Sep 09	22 48	18 44	20 04	4 44	6 04	18 51	3 32	20 29	.....	89	1 40.0	4 49	8.7
Sat Sep 09/Sun Sep 10	22 52	18 43	20 03	4 45	6 04	18 53	3 37	21 08	.....	81	2 34.0	9 08	8.7
Sun Sep 10/Mon Sep 11	22 56	18 42	20 01	4 45	6 05	18 56	3 42	21 50	.....	71	3 29.6	12 56	8.7
Mon Sep 11/Tue Sep 12	22 59	18 41	20 00	4 46	6 05	18 58	3 46	22 36	.....	60	4 26.9	15 57	8.8
Tue Sep 12/Wed Sep 13	23 03	18 39	19 58	4 47	6 06	19 01	3 51	23 27	.....	49	5 25.7	17 58	8.8
Wed Sep 13/Thu Sep 14	23 07	18 38	19 57	4 48	6 07	19 03	3 56	0 22	.....	38	6 25.4	18 49	8.8
Thu Sep 14/Fri Sep 15	23 11	18 37	19 55	4 48	6 07	19 06	4 00	1 21	.....	27	7 25.0	18 27	8.9
Fri Sep 15/Sat Sep 16	23 15	18 35	19 54	4 49	6 08	19 08	4 05	2 23	.....	18	8 23.5	16 55	8.9
Sat Sep 16/Sun Sep 17	23 19	18 34	19 52	4 50	6 08	19 11	4 10	3 27	.....	10	9 20.3	14 22	9.0
Sun Sep 17/Mon Sep 18	23 23	18 33	19 51	4 51	6 09	19 13	4 14	4 30	17 12	4	10 15.0	11 00	9.0
Mon Sep 18/Tue Sep 19	23 27	18 31	19 50	4 51	6 10	19 16	4 19	5 32	17 53	1	11 07.4	7 04	9.0
Tue Sep 19/Wed Sep 20	23 31	18 30	19 48	4 52	6 10	19 19	4 24	6 32	18 30	0	11 58.0	2 50	9.1
Wed Sep 20/Thu Sep 21	23 35	18 29	19 47	4 53	6 11	19 21	4 28	.....	19 07	1	12 47.1	- 1 29	9.1
Thu Sep 21/Fri Sep 22	23 39	18 27	19 45	4 53	6 12	19 24	4 33	.....	19 42	5	13 35.3	- 5 40	9.1
Fri Sep 22/Sat Sep 23	23 43	18 26	19 44	4 54	6 12	19 26	4 38	.....	20 17	10	14 23.1	- 9 32	9.2
Sat Sep 23/Sun Sep 24	23 47	18 25	19 43	4 55	6 13	19 29	4 42	.....	20 53	16	15 10.9	-12 57	9.2
Sun Sep 24/Mon Sep 25	23 51	18 23	19 41	4 55	6 13	19 31	4 47	.....	21 31	24	15 59.0	-15 48	9.2
Mon Sep 25/Tue Sep 26	23 55	18 22	19 40	4 56	6 14	19 34	4 52	.....	22 11	32	16 47.8	-17 59	9.3
Tue Sep 26/Wed Sep 27	23 59	18 21	19 39	4 57	6 15	19 36	4 56	.....	22 54	42	17 37.2	-19 24	9.3
Wed Sep 27/Thu Sep 28	0 03	18 19	19 37	4 57	6 15	19 39	5 01	.....	23 40	51	18 27.3	-19 59	9.3
Thu Sep 28/Fri Sep 29	0 06	18 18	19 36	4 58	6 16	19 42	5 05	.....	0 29	60	19 18.0	-19 43	9.4
Fri Sep 29/Sat Sep 30	0 10	18 17	19 35	4 59	6 17	19 44	5 10	.....	1 21	70	20 09.0	-18 34	9.4
Sat Sep 30/Sun Oct 01	0 14	18 16	19 33	4 59	6 17	19 47	5 15	.....	2 15	78	21 00.2	-16 32	9.4

***** 2017 OCTOBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Sun Oct 01/Mon Oct 02	0 18	18 14	19 32	5 00	6 18	19 49	5 19	.....	3 12	86	21 51.5	-13 41	9.5
Mon Oct 02/Tue Oct 03	0 22	18 13	19 31	5 01	6 19	19 52	5 24	16 32	4 11	92	22 43.0	-10 07	9.5
Tue Oct 03/Wed Oct 04	0 26	18 12	19 29	5 01	6 19	19 55	5 28	17 10	5 11	97	23 34.8	- 5 56	9.5
Wed Oct 04/Thu Oct 05	0 30	18 10	19 28	5 02	6 20	19 57	5 33	17 47	6 13	100	0 27.3	- 1 22	9.6
Thu Oct 05/Fri Oct 06	0 34	18 09	19 27	5 03	6 20	20 00	5 38	18 25	7 17	99	1 20.8	3 22	9.6
Fri Oct 06/Sat Oct 07	0 38	18 08	19 26	5 03	6 21	20 03	5 42	19 05	.....	97	2 15.9	7 58	9.6
Sat Oct 07/Sun Oct 08	0 42	18 07	19 24	5 04	6 22	20 05	5 47	19 47	.....	91	3 12.7	12 07	9.7
Sun Oct 08/Mon Oct 09	0 46	18 05	19 23	5 05	6 23	20 08	5 52	20 32	.....	84	4 11.3	15 30	9.7
Mon Oct 09/Tue Oct 10	0 50	18 04	19 22	5 05	6 23	20 11	5 56	21 22	.....	74	5 11.4	17 52	9.7
Tue Oct 10/Wed Oct 11	0 54	18 03	19 21	5 06	6 24	20 14	6 01	22 17	.....	63	6 12.0	19 02	9.8
Wed Oct 11/Thu Oct 12	0 58	18 02	19 19	5 07	6 25	20 16	6 05	23 15	.....	52	7 12.2	18 56	9.8
Thu Oct 12/Fri Oct 13	1 02	18 01	19 18	5 07	6 25	20 19	6 10	0 17	.....	41	8 11.1	17 38	9.8
Fri Oct 13/Sat Oct 14	1 06	17 59	19 17	5 08	6 26	20 22	6 15	1 19	.....	30	9 07.8	15 18	9.8
Sat Oct 14/Sun Oct 15	1 10	17 58	19 16	5 09	6 27	20 25	6 19	2 21	.....	20	10 02.2	12 07	9.9
Sun Oct 15/Mon Oct 16	1 14	17 57	19 15	5 09	6 27	20 28	6 24	3 22	.....	13	10 54.2	8 20	9.9
Mon Oct 16/Tue Oct 17	1 17	17 56	19 14	5 10	6 28	20 31	6 28	4 21	16 29	6	11 44.3	4 12	9.9
Tue Oct 17/Wed Oct 18	1 21	17 55	19 13	5 11	6 29	20 33	6 33	5 19	17 05	2	12 33.1	- 0 06	10.0
Wed Oct 18/Thu Oct 19	1 25	17 54	19 12	5 12	6 30	20 36	6 38	6 17	17 40	0	13 20.9	- 4 20	10.0
Thu Oct 19/Fri Oct 20	1 29	17 53	19 11	5 12	6 30	20 39	6 42	7 13	18 14	0	14 08.4	- 8 20	10.0
Fri Oct 20/Sat Oct 21	1 33	17 52	19 10	5 13	6 31	20 42	6 47	.....	18 50	2	14 56.0	-11 56	10.1
Sat Oct 21/Sun Oct 22	1 37	17 50	19 09	5 14	6 32	20 45	6 52	.....	19 27	6	15 43.9	-15 01	10.1
Sun Oct 22/Mon Oct 23	1 41	17 49	19 08	5 14	6 33	20 48	6 56	.....	20 06	11	16 32.5	-17 26	10.1
Mon Oct 23/Tue Oct 24	1 45	17 48	19 07	5 15	6 33	20 51	7 01	.....	20 48	18	17 21.6	-19 07	10.1
Tue Oct 24/Wed Oct 25	1 49	17 47	19 06	5 16	6 34	20 54	7 05	.....	21 33	25	18 11.2	-19 59	10.2
Wed Oct 25/Thu Oct 26	1 53	17 46	19 05	5 16	6 35	20 57	7 10	.....	22 20	34	19 01.2	-20 00	10.2
Thu Oct 26/Fri Oct 27	1 57	17 45	19 04	5 17	6 36	21 00	7 15	.....	23 10	43	19 51.4	-19 10	10.2
Fri Oct 27/Sat Oct 28	2 01	17 44	19 03	5 18	6 37	21 03	7 19	.....	0 03	53	20 41.5	-17 28	10.2
Sat Oct 28/Sun Oct 29	2 05	17 43	19 02	5 18	6 37	21 06	7 24	.....	0 58	62	21 31.6	-14 58	10.3
Sun Oct 29/Mon Oct 30	2 09	17 43	19 01	5 19	6 38	21 09	7 29	.....	1 55	72	22 21.8	-11 43	10.3
Mon Oct 30/Tue Oct 31	2 13	17 42	19 01	5 20	6 39	21 12	7 33	.....	2 54	81	23 12.5	- 7 49	10.3
Tue Oct 31/Wed Nov 01	2 17	17 41	19 00	5 21	6 40	21 16	7 38	.....	3 54	89	0 03.9	- 3 24	10.3

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
 Rise/set times in Mountain time (7 hr W), for 500 m above surroundings, in standard time all year.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2017 NOVEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Wed Nov 01/Thu Nov 02	2 21	17 40	18 59	5 21	6 41	21 19	7 43	16 18	4 57	95	0 56.7	1 20	10.4
Thu Nov 02/Fri Nov 03	2 24	17 39	18 58	5 22	6 41	21 22	7 47	16 57	6 02	99	1 51.4	6 07	10.4
Fri Nov 03/Sat Nov 04	2 28	17 38	18 58	5 23	6 42	21 25	7 52	17 38	7 10	100	2 48.5	10 38	10.4
Sat Nov 04/Sun Nov 05	2 32	17 37	18 57	5 24	6 43	21 28	7 57	18 23	.....	98	3 48.2	14 32	10.4
Sun Nov 05/Mon Nov 06	2 36	17 37	18 56	5 24	6 44	21 32	8 01	19 13	.....	93	4 50.0	17 27	10.5
Mon Nov 06/Tue Nov 07	2 40	17 36	18 56	5 25	6 45	21 35	8 06	20 07	.....	86	5 53.0	19 08	10.5
Tue Nov 07/Wed Nov 08	2 44	17 35	18 55	5 26	6 46	21 38	8 11	21 07	.....	77	6 55.8	19 27	10.5
Wed Nov 08/Thu Nov 09	2 48	17 34	18 54	5 26	6 47	21 42	8 15	22 09	.....	67	7 57.1	18 26	10.5
Thu Nov 09/Fri Nov 10	2 52	17 34	18 54	5 27	6 47	21 45	8 20	23 12	.....	55	8 55.7	16 16	10.6
Fri Nov 10/Sat Nov 11	2 56	17 33	18 53	5 28	6 48	21 48	8 25	0 15	.....	44	9 51.3	13 11	10.6
Sat Nov 11/Sun Nov 12	3 00	17 32	18 53	5 29	6 49	21 52	8 30	1 16	.....	34	10 43.9	9 29	10.6
Sun Nov 12/Mon Nov 13	3 04	17 32	18 52	5 29	6 50	21 55	8 34	2 15	.....	24	11 34.1	5 23	10.6
Mon Nov 13/Tue Nov 14	3 08	17 31	18 52	5 30	6 51	21 59	8 39	3 13	.....	16	12 22.6	1 07	10.6
Tue Nov 14/Wed Nov 15	3 12	17 31	18 51	5 31	6 52	22 02	8 44	4 10	.....	10	13 09.9	- 3 09	10.7
Wed Nov 15/Thu Nov 16	3 16	17 30	18 51	5 32	6 53	22 06	8 48	5 06	16 15	5	13 56.8	- 7 13	10.7
Thu Nov 16/Fri Nov 17	3 20	17 30	18 51	5 32	6 54	22 09	8 53	6 01	16 50	1	14 43.8	-10 57	10.7
Fri Nov 17/Sat Nov 18	3 24	17 29	18 50	5 33	6 54	22 13	8 58	6 55	17 25	0	15 31.2	-14 12	10.7
Sat Nov 18/Sun Nov 19	3 28	17 29	18 50	5 34	6 55	22 17	9 02	7 49	18 03	1	16 19.4	-16 51	10.7
Sun Nov 19/Mon Nov 20	3 31	17 28	18 50	5 35	6 56	22 20	9 07	.....	18 44	3	17 08.2	-18 47	10.8
Mon Nov 20/Tue Nov 21	3 35	17 28	18 49	5 35	6 57	22 24	9 12	.....	19 28	7	17 57.7	-19 55	10.8
Tue Nov 21/Wed Nov 22	3 39	17 28	18 49	5 36	6 58	22 28	9 17	.....	20 14	12	18 47.4	-20 12	10.8
Wed Nov 22/Thu Nov 23	3 43	17 27	18 49	5 37	6 59	22 31	9 21	.....	21 03	19	19 37.1	-19 38	10.8
Thu Nov 23/Fri Nov 24	3 47	17 27	18 49	5 38	7 00	22 35	9 26	.....	21 55	27	20 26.6	-18 14	10.8
Fri Nov 24/Sat Nov 25	3 51	17 27	18 49	5 38	7 00	22 39	9 31	.....	22 48	36	21 15.7	-16 01	10.8
Sat Nov 25/Sun Nov 26	3 55	17 26	18 48	5 39	7 01	22 43	9 35	.....	23 43	45	22 04.5	-13 05	10.8
Sun Nov 26/Mon Nov 27	3 59	17 26	18 48	5 40	7 02	22 47	9 40	.....	0 39	55	22 53.4	- 9 31	10.9
Mon Nov 27/Tue Nov 28	4 03	17 26	18 48	5 41	7 03	22 50	9 45	.....	1 37	65	23 42.8	- 5 23	10.9
Tue Nov 28/Wed Nov 29	4 07	17 26	18 48	5 41	7 04	22 54	9 49	.....	2 37	75	0 33.3	- 0 53	10.9
Wed Nov 29/Thu Nov 30	4 11	17 26	18 48	5 42	7 05	22 58	9 54	.....	3 40	84	1 25.7	3 51	10.9
Thu Nov 30/Fri Dec 01	4 15	17 26	18 48	5 43	7 06	23 02	9 59	.....	4 45	92	2 20.7	8 31	10.9

***** 2017 DECEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Fri Dec 01/Sat Dec 02	4 19	17 26	18 48	5 44	7 06	23 06	10 03	16 11	5 53	97	3 18.9	12 49	10.9
Sat Dec 02/Sun Dec 03	4 23	17 26	18 48	5 44	7 07	23 10	10 08	16 58	7 03	100	4 20.3	16 20	10.9
Sun Dec 03/Mon Dec 04	4 27	17 26	18 48	5 45	7 08	23 14	10 13	17 51	8 11	99	5 24.4	18 44	10.9
Mon Dec 04/Tue Dec 05	4 31	17 26	18 49	5 46	7 09	23 18	10 17	18 49	.....	96	6 29.8	19 44	11.0
Tue Dec 05/Wed Dec 06	4 35	17 26	18 49	5 46	7 10	23 22	10 22	19 53	.....	89	7 34.5	19 15	11.0
Wed Dec 06/Thu Dec 07	4 39	17 26	18 49	5 47	7 10	23 26	10 27	20 58	.....	81	8 36.9	17 25	11.0
Thu Dec 07/Fri Dec 08	4 42	17 26	18 49	5 48	7 11	23 31	10 31	22 04	.....	71	9 35.9	14 29	11.0
Fri Dec 08/Sat Dec 09	4 46	17 26	18 49	5 48	7 12	23 35	10 36	23 08	.....	60	10 31.1	10 49	11.0
Sat Dec 09/Sun Dec 10	4 50	17 26	18 49	5 49	7 12	23 39	10 40	0 09	.....	50	11 23.2	6 40	11.0
Sun Dec 10/Mon Dec 11	4 54	17 26	18 50	5 50	7 13	23 43	10 45	1 08	.....	39	12 12.6	2 20	11.0
Mon Dec 11/Tue Dec 12	4 58	17 27	18 50	5 50	7 14	23 47	10 50	2 05	.....	30	13 00.4	- 2 00	11.0
Tue Dec 12/Wed Dec 13	5 02	17 27	18 50	5 51	7 15	23 52	10 54	3 01	.....	21	13 47.3	- 6 09	11.0
Wed Dec 13/Thu Dec 14	5 06	17 27	18 51	5 52	7 15	23 56	10 59	3 56	.....	14	14 33.9	-10 00	11.0
Thu Dec 14/Fri Dec 15	5 10	17 27	18 51	5 52	7 16	0 00	11 03	4 50	.....	8	15 20.8	-13 23	11.0
Fri Dec 15/Sat Dec 16	5 14	17 28	18 51	5 53	7 16	0 04	11 08	5 44	16 03	4	16 08.4	-16 12	11.0
Sat Dec 16/Sun Dec 17	5 18	17 28	18 52	5 53	7 17	0 09	11 12	6 36	16 43	1	16 56.8	-18 21	11.0
Sun Dec 17/Mon Dec 18	5 22	17 29	18 52	5 54	7 18	0 13	11 17	7 27	17 25	0	17 46.0	-19 43	11.0
Mon Dec 18/Tue Dec 19	5 26	17 29	18 53	5 55	7 18	0 18	11 21	8 16	18 10	1	18 35.6	-20 15	11.0
Tue Dec 19/Wed Dec 20	5 30	17 29	18 53	5 55	7 19	0 22	11 26	.....	18 59	3	19 25.3	-19 56	11.0
Wed Dec 20/Thu Dec 21	5 34	17 30	18 54	5 56	7 19	0 26	11 30	.....	19 50	8	20 14.8	-18 45	11.0
Thu Dec 21/Fri Dec 22	5 38	17 30	18 54	5 56	7 20	0 31	11 35	.....	20 42	13	21 03.7	-16 47	11.0
Fri Dec 22/Sat Dec 23	5 42	17 31	18 55	5 57	7 20	0 35	11 39	.....	21 36	20	21 51.9	-14 05	11.0
Sat Dec 23/Sun Dec 24	5 46	17 31	18 55	5 57	7 21	0 40	11 44	.....	22 31	29	22 39.8	-10 45	11.0
Sun Dec 24/Mon Dec 25	5 49	17 32	18 56	5 57	7 21	0 44	11 48	.....	23 27	38	23 27.6	- 6 53	11.0
Mon Dec 25/Tue Dec 26	5 53	17 33	18 56	5 58	7 21	0 49	11 52	.....	0 24	48	0 15.9	- 2 38	11.0
Tue Dec 26/Wed Dec 27	5 57	17 33	18 57	5 58	7 22	0 53	11 57	.....	1 23	59	1 05.5	1 52	11.0
Wed Dec 27/Thu Dec 28	6 01	17 34	18 57	5 59	7 22	0 58	12 01	.....	2 25	69	1 57.2	6 26	11.0
Thu Dec 28/Fri Dec 29	6 05	17 34	18 58	5 59	7 22	1 02	12 05	.....	3 29	79	2 51.8	10 49	11.0
Fri Dec 29/Sat Dec 30	6 09	17 35	18 59	5 59	7 23	1 07	12 09	.....	4 36	88	3 49.9	14 41	11.0
Sat Dec 30/Sun Dec 31	6 13	17 36	18 59	6 00	7 23	1 12	12 14	.....	5 45	95	4 51.8	17 41	11.0
Sun Dec 31/Mon Jan 01	6 17	17 37	19 00	6 00	7 23	1 16	12 18	16 28	6 52	99	5 56.5	19 28	11.0