

Nighttime astronomical calendar program. Select a site: *SELECT SITE* - Enter single-character code: n .. new site (enter all parameters). x .. exit without change (current: Kitt Peak) k .. Kitt Peak s .. Shattuck Observatory c .. Cambridge, MA - Harvard Coll. Obs. h .. Mt. Hopkins, AZ (MMT, FLWO) p .. Palomar Observatory t .. Tololo (Cerro Tololo Interamerican Obs.) r .. Roque de los Muchachos, La Palma, Canary Is. b .. Black Moshannon Obs., Penn State U. d .. Dominion Astrophysical Obs., Victoria, BC m .. Mauna Kea, Hawaii l .. Lick Observatory Any other char .. OTHER (You'll be prompted for params.) Your answer -j The site you've selected is: Kitt Peak. Type 0 for ordinary text, 1 for TeX-style output with one month per page, or 2 for TeX-style output with two months per page: You'll have to edit the TeX output ... look for 'CUT HERE'

This program takes a while to run and produces wide and voluminous output. You probably want to run it in background. See source code or documentation for details of what program will expect. To exit now, give a negative year at the next prompt. Year to print, negative to abort:

***** 2025 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 18.0 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 NAOA 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 hemishpheres. 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

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[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 2025, 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 30 15 28	Jan 06 16 58	Jan 13 15 28	Jan 21 13 32
Jan 29 5 37	Feb 05 1 04	Feb 12 6 54	Feb 20 10 35
Feb 27 17 47	Mar 06 9 34	Mar 13 23 56	Mar 22 4 32
Mar 29 4 00	Apr 04 19 17	Apr 12 17 24	Apr 20 18 38
Apr 27 12 33	May 04 6 53	May 12 9 58	May 20 5 01
May 26 20 04	Jun 02 20 42	Jun 11 0 46	Jun 18 12 21
Jun 25 3 34	Jul 02 12 30	Jul 10 13 39	Jul 17 17 40
Jul 24 12 12	Aug 01 5 41	Aug 09 0 57	Aug 15 22 14
Aug 22 23 07	Aug 30 23 26	Sep 07 11 11	Sep 14 3 35
Sep 21 12 55	Sep 29 16 55	Oct 06 20 49	Oct 13 11 15
Oct 21 5 26	Oct 29 9 22	Nov 05 6 20	Nov 11 22 30
Nov 19 23 48	Nov 27 24 00	Dec 04 16 15	Dec 11 13 53
Dec 19 18 44	Dec 27 12 11	Jan 03 3 04	Jan 10 8 49

***** 2025 JANUARY *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.

Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	----- Sun: ----- set twi.end twi.beg rise				LST twilight: eve morn		----- Moon: ----- rise set %illum RA Dec				
Wed Jan 01/Thu Jan 02	677.8	6 22 17	17 39	19 01	6 00	7 22	1 22	12 23	.....	19 35	6	20 57.9	-21 15
Thu Jan 02/Fri Jan 03	678.8	6 26 14	17 39	19 01	6 00	7 22	1 27	12 28	.....	20 42	12	21 51.2	-16 13
Fri Jan 03/Sat Jan 04	679.8	6 30 11	17 40	19 02	6 01	7 22	1 31	12 32	.....	21 48	21	22 42.4	-10 19
Sat Jan 04/Sun Jan 05	680.8	6 34 07	17 41	19 03	6 01	7 23	1 36	12 36	.....	22 54	30	23 32.1	- 3 53
Sun Jan 05/Mon Jan 06	681.8	6 38 04	17 42	19 03	6 01	7 23	1 41	12 40	.....	23 59	41	0 21.5	2 48
Mon Jan 06/Tue Jan 07	682.8	6 42 00	17 42	19 04	6 01	7 23	1 45	12 44	.....	1 05	53	1 11.8	9 23
Tue Jan 07/Wed Jan 08	683.8	6 45 57	17 43	19 05	6 01	7 23	1 50	12 48	.....	2 13	64	2 04.3	15 33
Wed Jan 08/Thu Jan 09	684.8	6 49 53	17 44	19 06	6 01	7 23	1 55	12 52	.....	3 23	74	3 00.0	20 54
Thu Jan 09/Fri Jan 10	685.8	6 53 50	17 45	19 06	6 01	7 23	1 59	12 56	.....	4 34	84	3 59.5	25 03
Fri Jan 10/Sat Jan 11	686.8	6 57 46	17 46	19 07	6 01	7 23	2 04	13 00	.....	5 42	91	5 02.0	27 38
Sat Jan 11/Sun Jan 12	687.8	7 01 43	17 47	19 08	6 01	7 23	2 09	13 04	.....	6 45	96	6 05.9	28 24
Sun Jan 12/Mon Jan 13	688.8	7 05 40	17 48	19 09	6 01	7 22	2 14	13 08	16 23	7 39	99	7 08.8	27 19
Mon Jan 13/Tue Jan 14	689.8	7 09 36	17 48	19 09	6 01	7 22	2 18	13 12	17 29	.....	100	8 08.5	24 35
Tue Jan 14/Wed Jan 15	690.8	7 13 33	17 49	19 10	6 01	7 22	2 23	13 16	18 36	.....	98	9 03.8	20 33
Wed Jan 15/Thu Jan 16	691.8	7 17 29	17 50	19 11	6 01	7 22	2 28	13 20	19 39	.....	94	9 54.6	15 38
Thu Jan 16/Fri Jan 17	692.8	7 21 26	17 51	19 12	6 01	7 22	2 32	13 23	20 39	.....	88	10 41.7	10 09
Fri Jan 17/Sat Jan 18	693.8	7 25 22	17 52	19 13	6 01	7 21	2 37	13 27	21 36	.....	81	11 26.1	4 24
Sat Jan 18/Sun Jan 19	694.8	7 29 19	17 53	19 13	6 01	7 21	2 42	13 31	22 31	.....	73	12 08.8	- 1 23
Sun Jan 19/Mon Jan 20	695.8	7 33 15	17 54	19 14	6 01	7 21	2 47	13 35	23 26	.....	64	12 51.1	- 7 02
Mon Jan 20/Tue Jan 21	696.8	7 37 12	17 55	19 15	6 00	7 20	2 51	13 38	0 20	.....	55	13 33.9	-12 24
Tue Jan 21/Wed Jan 22	697.8	7 41 09	17 56	19 16	6 00	7 20	2 56	13 42	1 16	.....	45	14 18.4	-17 20
Wed Jan 22/Thu Jan 23	698.8	7 45 05	17 56	19 16	6 00	7 20	3 01	13 46	2 14	.....	36	15 05.4	-21 38
Thu Jan 23/Fri Jan 24	699.8	7 49 02	17 57	19 17	5 59	7 19	3 06	13 49	3 14	.....	27	15 55.5	-25 06
Fri Jan 24/Sat Jan 25	700.8	7 52 58	17 58	19 18	5 59	7 19	3 10	13 53	4 14	.....	19	16 49.0	-27 31
Sat Jan 25/Sun Jan 26	701.8	7 56 55	17 59	19 19	5 59	7 18	3 15	13 57	5 13	.....	12	17 45.6	-28 36
Sun Jan 26/Mon Jan 27	702.8	8 00 51	18 00	19 20	5 58	7 18	3 20	14 00	6 08	.....	6	18 43.9	-28 11
Mon Jan 27/Tue Jan 28	703.8	8 04 48	18 01	19 20	5 58	7 17	3 24	14 04	6 57	16 10	2	19 42.5	-26 11
Tue Jan 28/Wed Jan 29	704.8	8 08 44	18 02	19 21	5 57	7 17	3 29	14 07	7 40	17 18	0	20 39.9	-22 40
Wed Jan 29/Thu Jan 30	705.8	8 12 41	18 03	19 22	5 57	7 16	3 34	14 11	.....	18 27	1	21 35.0	-17 51
Thu Jan 30/Fri Jan 31	706.8	8 16 38	18 04	19 23	5 57	7 15	3 39	14 14	.....	19 36	4	22 27.9	-12 00
Fri Jan 31/Sat Feb 01	707.8	8 20 34	18 05	19 24	5 56	7 15	3 43	14 18	.....	20 43	9	23 19.0	- 5 30

***** 2025 FEBRUARY *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8
 Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given
 in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.
 Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	----- Sun: -----				LST twilight:		----- Moon: -----				
			set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Sat Feb 01/Sun Feb 02	708.8	8 24 31	18 06	19 24	5 55	7 14	3 48	14 21	.....	21 50	17	0 09.2	1 18
Sun Feb 02/Mon Feb 03	709.8	8 28 27	18 07	19 25	5 55	7 13	3 53	14 24	.....	22 57	27	0 59.8	8 02
Mon Feb 03/Tue Feb 04	710.8	8 32 24	18 07	19 26	5 54	7 13	3 58	14 28	.....	0 05	37	1 51.9	14 21
Tue Feb 04/Wed Feb 05	711.8	8 36 20	18 08	19 27	5 54	7 12	4 02	14 31	.....	1 15	49	2 46.5	19 53
Wed Feb 05/Thu Feb 06	712.8	8 40 17	18 09	19 28	5 53	7 11	4 07	14 34	.....	2 25	60	3 44.2	24 16
Thu Feb 06/Fri Feb 07	713.8	8 44 13	18 10	19 28	5 52	7 10	4 12	14 38	.....	3 33	71	4 44.7	27 12
Fri Feb 07/Sat Feb 08	714.8	8 48 10	18 11	19 29	5 52	7 10	4 17	14 41	.....	4 37	80	5 46.9	28 25
Sat Feb 08/Sun Feb 09	715.8	8 52 07	18 12	19 30	5 51	7 09	4 21	14 44	.....	5 32	88	6 48.8	27 52
Sun Feb 09/Mon Feb 10	716.8	8 56 03	18 13	19 31	5 50	7 08	4 26	14 47	.....	6 19	94	7 48.3	25 39
Mon Feb 10/Tue Feb 11	717.8	9 00 00	18 14	19 31	5 49	7 07	4 31	14 50	16 21	6 58	98	8 44.2	22 03
Tue Feb 11/Wed Feb 12	718.8	9 03 56	18 14	19 32	5 49	7 06	4 35	14 54	17 25	7 31	100	9 36.1	17 25
Wed Feb 12/Thu Feb 13	719.8	9 07 53	18 15	19 33	5 48	7 05	4 40	14 57	18 26	.....	99	10 24.3	12 05
Thu Feb 13/Fri Feb 14	720.8	9 11 49	18 16	19 34	5 47	7 04	4 45	15 00	19 25	.....	97	11 09.7	6 21
Fri Feb 14/Sat Feb 15	721.8	9 15 46	18 17	19 35	5 46	7 03	4 50	15 03	20 21	.....	93	11 53.2	0 28
Sat Feb 15/Sun Feb 16	722.8	9 19 42	18 18	19 35	5 45	7 03	4 54	15 06	21 16	.....	87	12 35.9	- 5 20
Sun Feb 16/Mon Feb 17	723.8	9 23 39	18 19	19 36	5 44	7 02	4 59	15 09	22 10	.....	80	13 18.8	-10 53
Mon Feb 17/Tue Feb 18	724.8	9 27 36	18 20	19 37	5 43	7 01	5 04	15 12	23 06	.....	72	14 02.9	-16 01
Tue Feb 18/Wed Feb 19	725.8	9 31 32	18 20	19 38	5 42	7 00	5 08	15 15	0 02	.....	63	14 49.0	-20 34
Wed Feb 19/Thu Feb 20	726.8	9 35 29	18 21	19 38	5 42	6 58	5 13	15 18	1 01	.....	53	15 37.8	-24 19
Thu Feb 20/Fri Feb 21	727.8	9 39 25	18 22	19 39	5 41	6 57	5 18	15 21	2 00	.....	44	16 29.8	-27 05
Fri Feb 21/Sat Feb 22	728.8	9 43 22	18 23	19 40	5 40	6 56	5 22	15 24	2 59	.....	34	17 24.7	-28 38
Sat Feb 22/Sun Feb 23	729.8	9 47 18	18 24	19 41	5 39	6 55	5 27	15 27	3 55	.....	25	18 21.9	-28 47
Sun Feb 23/Mon Feb 24	730.8	9 51 15	18 24	19 41	5 37	6 54	5 32	15 30	4 46	.....	17	19 20.0	-27 22
Mon Feb 24/Tue Feb 25	731.8	9 55 11	18 25	19 42	5 36	6 53	5 36	15 33	5 31	.....	10	20 17.6	-24 26
Tue Feb 25/Wed Feb 26	732.8	9 59 08	18 26	19 43	5 35	6 52	5 41	15 35	6 11	.....	4	21 13.6	-20 03
Wed Feb 26/Thu Feb 27	733.8	10 03 05	18 27	19 43	5 34	6 51	5 46	15 38	6 47	17 14	1	22 07.8	-14 30
Thu Feb 27/Fri Feb 28	734.8	10 07 01	18 28	19 44	5 33	6 50	5 51	15 41	7 19	18 23	0	23 00.3	- 8 04
Fri Feb 28/Sat Mar 01	735.8	10 10 58	18 28	19 45	5 32	6 49	5 55	15 44	.....	19 32	2	23 51.9	- 1 09

***** 2025 MARCH *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8
 Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given
 in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.
 Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	----- Sun: ----- set twi.end twi.beg rise				LST twilight: eve morn		----- Moon: ----- rise set %illum RA Dec				
Sat Mar 01/Sun Mar 02	736.8	10 14 54	18 29	19 46	5 31	6 47	6 00	15 47	.....	20 42	7	0 43.7	5 52
Sun Mar 02/Mon Mar 03	737.8	10 18 51	18 30	19 46	5 30	6 46	6 05	15 50	.....	21 52	14	1 36.6	12 33
Mon Mar 03/Tue Mar 04	738.8	10 22 47	18 31	19 47	5 29	6 45	6 09	15 52	.....	23 03	23	2 31.8	18 29
Tue Mar 04/Wed Mar 05	739.8	10 26 44	18 31	19 48	5 27	6 44	6 14	15 55	.....	0 16	34	3 29.7	23 17
Wed Mar 05/Thu Mar 06	740.8	10 30 40	18 32	19 49	5 26	6 43	6 19	15 58	.....	1 26	45	4 30.1	26 37
Thu Mar 06/Fri Mar 07	741.8	10 34 37	18 33	19 49	5 25	6 41	6 23	16 01	.....	2 32	56	5 32.0	28 15
Fri Mar 07/Sat Mar 08	742.8	10 38 34	18 34	19 50	5 24	6 40	6 28	16 03	.....	3 29	67	6 33.6	28 07
Sat Mar 08/Sun Mar 09	743.8	10 42 30	18 34	19 51	5 23	6 39	6 33	16 06	.....	4 18	76	7 33.0	26 19
Sun Mar 09/Mon Mar 10	744.8	10 46 27	18 35	19 52	5 21	6 38	6 37	16 09	.....	4 59	85	8 28.9	23 06
Mon Mar 10/Tue Mar 11	745.8	10 50 23	18 36	19 52	5 20	6 37	6 42	16 11	.....	5 33	91	9 21.0	18 46
Tue Mar 11/Wed Mar 12	746.8	10 54 20	18 36	19 53	5 19	6 35	6 47	16 14	.....	6 03	96	10 09.5	13 40
Wed Mar 12/Thu Mar 13	747.8	10 58 16	18 37	19 54	5 17	6 34	6 51	16 17	17 16	6 29	99	10 55.1	8 04
Thu Mar 13/Fri Mar 14	748.8	11 02 13	18 38	19 55	5 16	6 33	6 56	16 19	18 12	6 54	100	11 38.9	2 14
Fri Mar 14/Sat Mar 15	749.8	11 06 09	18 39	19 55	5 15	6 32	7 01	16 22	19 08	7 18	99	12 21.8	- 3 38
Sat Mar 15/Sun Mar 16	750.8	11 10 06	18 39	19 56	5 14	6 30	7 05	16 25	20 02	.....	96	13 04.7	- 9 19
Sun Mar 16/Mon Mar 17	751.8	11 14 03	18 40	19 57	5 12	6 29	7 10	16 27	20 57	.....	92	13 48.5	-14 39
Mon Mar 17/Tue Mar 18	752.8	11 17 59	18 41	19 58	5 11	6 28	7 15	16 30	21 53	.....	86	14 34.2	-19 26
Tue Mar 18/Wed Mar 19	753.8	11 21 56	18 41	19 58	5 10	6 26	7 20	16 32	22 51	.....	78	15 22.2	-23 28
Wed Mar 19/Thu Mar 20	754.8	11 25 52	18 42	19 59	5 08	6 25	7 24	16 35	23 50	.....	70	16 13.1	-26 33
Thu Mar 20/Fri Mar 21	755.8	11 29 49	18 43	20 00	5 07	6 24	7 29	16 37	0 48	.....	61	17 06.7	-28 30
Fri Mar 21/Sat Mar 22	756.8	11 33 45	18 43	20 01	5 05	6 23	7 34	16 40	1 44	.....	51	18 02.4	-29 06
Sat Mar 22/Sun Mar 23	757.8	11 37 42	18 44	20 01	5 04	6 21	7 38	16 43	2 36	.....	41	18 59.3	-28 15
Sun Mar 23/Mon Mar 24	758.8	11 41 38	18 45	20 02	5 03	6 20	7 43	16 45	3 23	.....	31	19 56.0	-25 55
Mon Mar 24/Tue Mar 25	759.8	11 45 35	18 46	20 03	5 01	6 19	7 48	16 48	4 04	.....	22	20 51.7	-22 09
Tue Mar 25/Wed Mar 26	760.8	11 49 32	18 46	20 04	5 00	6 17	7 53	16 50	4 41	.....	13	21 45.7	-17 07
Wed Mar 26/Thu Mar 27	761.8	11 53 28	18 47	20 05	4 59	6 16	7 57	16 53	5 14	.....	7	22 38.3	-11 04
Thu Mar 27/Fri Mar 28	762.8	11 57 25	18 48	20 05	4 57	6 15	8 02	16 55	5 46	17 08	2	23 30.2	- 4 19
Fri Mar 28/Sat Mar 29	763.8	12 01 21	18 48	20 06	4 56	6 14	8 07	16 58	6 17	18 17	0	0 22.3	2 47
Sat Mar 29/Sun Mar 30	764.8	12 05 18	18 49	20 07	4 54	6 12	8 12	17 00	6 51	19 29	1	1 15.6	9 46
Sun Mar 30/Mon Mar 31	765.8	12 09 14	18 50	20 08	4 53	6 11	8 16	17 03	.....	20 42	5	2 11.3	16 13
Mon Mar 31/Tue Apr 01	766.8	12 13 11	18 50	20 09	4 52	6 10	8 21	17 06	.....	21 57	11	3 09.9	21 37

***** 2025 APRIL *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.

Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	----- Sun: -----				LST twilight:		----- Moon: -----				
			set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Tue Apr 01/Wed Apr 02	767.8	12 17 07	18 51	20 09	4 50	6 08	8 26	17 08	.....	23 11	20	4 11.3	25 34
Wed Apr 02/Thu Apr 03	768.8	12 21 04	18 52	20 10	4 49	6 07	8 31	17 11	.....	0 21	30	5 14.5	27 46
Thu Apr 03/Fri Apr 04	769.8	12 25 01	18 52	20 11	4 47	6 06	8 35	17 13	.....	1 24	41	6 17.5	28 07
Fri Apr 04/Sat Apr 05	770.8	12 28 57	18 53	20 12	4 46	6 05	8 40	17 16	.....	2 16	51	7 18.2	26 42
Sat Apr 05/Sun Apr 06	771.8	12 32 54	18 54	20 13	4 44	6 03	8 45	17 18	.....	3 00	62	8 15.2	23 49
Sun Apr 06/Mon Apr 07	772.8	12 36 50	18 54	20 14	4 43	6 02	8 50	17 21	.....	3 36	72	9 08.0	19 46
Mon Apr 07/Tue Apr 08	773.8	12 40 47	18 55	20 14	4 42	6 01	8 55	17 23	.....	4 06	80	9 56.9	14 52
Tue Apr 08/Wed Apr 09	774.8	12 44 43	18 56	20 15	4 40	6 00	8 59	17 26	.....	4 33	88	10 42.7	9 27
Wed Apr 09/Thu Apr 10	775.8	12 48 40	18 56	20 16	4 39	5 59	9 04	17 28	.....	4 58	93	11 26.5	3 43
Thu Apr 10/Fri Apr 11	776.8	12 52 36	18 57	20 17	4 37	5 57	9 09	17 31	17 02	5 23	97	12 09.2	- 2 07
Fri Apr 11/Sat Apr 12	777.8	12 56 33	18 58	20 18	4 36	5 56	9 14	17 33	17 56	5 47	100	12 51.9	- 7 50
Sat Apr 12/Sun Apr 13	778.8	13 00 30	18 59	20 19	4 35	5 55	9 19	17 36	18 51	6 13	100	13 35.4	-13 17
Sun Apr 13/Mon Apr 14	779.8	13 04 26	18 59	20 20	4 33	5 54	9 24	17 38	19 47	6 42	98	14 20.6	-18 15
Mon Apr 14/Tue Apr 15	780.8	13 08 23	19 00	20 21	4 32	5 53	9 28	17 41	20 44	.....	95	15 08.2	-22 31
Tue Apr 15/Wed Apr 16	781.8	13 12 19	19 01	20 22	4 30	5 51	9 33	17 44	21 42	.....	90	15 58.5	-25 54
Wed Apr 16/Thu Apr 17	782.8	13 16 16	19 01	20 22	4 29	5 50	9 38	17 46	22 40	.....	84	16 51.5	-28 11
Thu Apr 17/Fri Apr 18	783.8	13 20 12	19 02	20 23	4 28	5 49	9 43	17 49	23 37	.....	76	17 46.6	-29 10
Fri Apr 18/Sat Apr 19	784.8	13 24 09	19 03	20 24	4 26	5 48	9 48	17 51	0 29	.....	67	18 42.7	-28 44
Sat Apr 19/Sun Apr 20	785.8	13 28 05	19 03	20 25	4 25	5 47	9 53	17 54	1 17	.....	57	19 38.7	-26 52
Sun Apr 20/Mon Apr 21	786.8	13 32 02	19 04	20 26	4 24	5 46	9 58	17 56	1 59	.....	47	20 33.5	-23 37
Mon Apr 21/Tue Apr 22	787.8	13 35 59	19 05	20 27	4 22	5 45	10 03	17 59	2 36	.....	37	21 26.8	-19 07
Tue Apr 22/Wed Apr 23	788.8	13 39 55	19 06	20 28	4 21	5 44	10 07	18 02	3 10	.....	26	22 18.5	-13 35
Wed Apr 23/Thu Apr 24	789.8	13 43 52	19 06	20 29	4 20	5 42	10 12	18 04	3 41	.....	17	23 09.3	- 7 14
Thu Apr 24/Fri Apr 25	790.8	13 47 48	19 07	20 30	4 18	5 41	10 17	18 07	4 12	.....	9	0 00.2	- 0 23
Fri Apr 25/Sat Apr 26	791.8	13 51 45	19 08	20 31	4 17	5 40	10 22	18 09	4 44	.....	4	0 52.4	6 37
Sat Apr 26/Sun Apr 27	792.8	13 55 41	19 08	20 32	4 16	5 39	10 27	18 12	5 19	18 14	0	1 47.0	13 19
Sun Apr 27/Mon Apr 28	793.8	13 59 38	19 09	20 33	4 14	5 38	10 32	18 15	6 00	19 29	0	2 44.9	19 15
Mon Apr 28/Tue Apr 29	794.8	14 03 34	19 10	20 34	4 13	5 37	10 37	18 17	.....	20 46	3	3 46.5	23 55
Tue Apr 29/Wed Apr 30	795.8	14 07 31	19 11	20 35	4 12	5 36	10 42	18 20	.....	22 01	9	4 50.8	26 52
Wed Apr 30/Thu May 01	796.8	14 11 28	19 11	20 36	4 11	5 35	10 47	18 23	.....	23 09	17	5 55.8	27 54

***** 2025 MAY *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.

Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	----- Sun: -----				LST twilight:		----- Moon: -----				
			set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Thu May 01/Fri May 02	797.8	14 15 24	19 12	20 37	4 10	5 34	10 52	18 26	.....	0 08	26	6 59.1	27 01
Fri May 02/Sat May 03	798.8	14 19 21	19 13	20 38	4 08	5 34	10 57	18 28	.....	0 57	36	7 58.5	24 29
Sat May 03/Sun May 04	799.8	14 23 17	19 13	20 39	4 07	5 33	11 02	18 31	.....	1 36	46	8 53.4	20 41
Sun May 04/Mon May 05	800.8	14 27 14	19 14	20 40	4 06	5 32	11 07	18 34	.....	2 09	57	9 43.7	15 58
Mon May 05/Tue May 06	801.8	14 31 10	19 15	20 41	4 05	5 31	11 12	18 37	.....	2 37	67	10 30.4	10 39
Tue May 06/Wed May 07	802.8	14 35 07	19 16	20 42	4 04	5 30	11 16	18 39	.....	3 03	75	11 14.6	5 00
Wed May 07/Thu May 08	803.8	14 39 03	19 16	20 43	4 03	5 29	11 21	18 42	.....	3 27	83	11 57.3	- 0 46
Thu May 08/Fri May 09	804.8	14 43 00	19 17	20 44	4 01	5 28	11 26	18 45	.....	3 52	90	12 39.7	- 6 29
Fri May 09/Sat May 10	805.8	14 46 57	19 18	20 45	4 00	5 28	11 31	18 48	.....	4 17	95	13 22.8	-11 58
Sat May 10/Sun May 11	806.8	14 50 53	19 18	20 46	3 59	5 27	11 36	18 51	17 41	4 45	98	14 07.5	-17 03
Sun May 11/Mon May 12	807.8	14 54 50	19 19	20 47	3 58	5 26	11 41	18 54	18 37	5 17	100	14 54.5	-21 31
Mon May 12/Tue May 13	808.8	14 58 46	19 20	20 48	3 57	5 25	11 46	18 57	19 36	5 53	99	15 44.4	-25 09
Tue May 13/Wed May 14	809.8	15 02 43	19 21	20 49	3 56	5 25	11 51	19 00	20 34	.....	97	16 37.1	-27 44
Wed May 14/Thu May 15	810.8	15 06 39	19 21	20 50	3 55	5 24	11 56	19 03	21 31	.....	93	17 32.1	-29 03
Thu May 15/Fri May 16	811.8	15 10 36	19 22	20 51	3 54	5 23	12 01	19 06	22 25	.....	88	18 28.4	-28 58
Fri May 16/Sat May 17	812.8	15 14 32	19 23	20 52	3 53	5 23	12 06	19 09	23 14	.....	81	19 24.5	-27 26
Sat May 17/Sun May 18	813.8	15 18 29	19 23	20 53	3 53	5 22	12 11	19 12	23 57	.....	72	20 19.4	-24 32
Sun May 18/Mon May 19	814.8	15 22 26	19 24	20 54	3 52	5 21	12 16	19 15	0 35	.....	62	21 12.3	-20 24
Mon May 19/Tue May 20	815.8	15 26 22	19 25	20 55	3 51	5 21	12 21	19 18	1 09	.....	52	22 03.3	-15 14
Tue May 20/Wed May 21	816.8	15 30 19	19 25	20 56	3 50	5 20	12 26	19 21	1 40	.....	41	22 53.1	- 9 17
Wed May 21/Thu May 22	817.8	15 34 15	19 26	20 57	3 49	5 20	12 30	19 24	2 10	.....	30	23 42.5	- 2 46
Thu May 22/Fri May 23	818.8	15 38 12	19 27	20 58	3 49	5 19	12 35	19 27	2 40	.....	20	0 32.7	4 00
Fri May 23/Sat May 24	819.8	15 42 08	19 27	20 58	3 48	5 19	12 40	19 31	3 13	.....	12	1 25.0	10 40
Sat May 24/Sun May 25	820.8	15 46 05	19 28	20 59	3 47	5 18	12 45	19 34	3 50	.....	5	2 20.6	16 50
Sun May 25/Mon May 26	821.8	15 50 01	19 29	21 00	3 46	5 18	12 50	19 37	4 33	18 17	1	3 20.2	21 59
Mon May 26/Tue May 27	822.8	15 53 58	19 29	21 01	3 46	5 18	12 55	19 40	5 25	19 34	0	4 23.5	25 39
Tue May 27/Wed May 28	823.8	15 57 55	19 30	21 02	3 45	5 17	12 59	19 44	6 26	20 47	2	5 29.2	27 28
Wed May 28/Thu May 29	824.8	16 01 51	19 31	21 03	3 45	5 17	13 04	19 47	.....	21 52	7	6 34.5	27 18
Thu May 29/Fri May 30	825.8	16 05 48	19 31	21 04	3 44	5 17	13 09	19 50	.....	22 47	13	7 36.8	25 17
Fri May 30/Sat May 31	826.8	16 09 44	19 32	21 04	3 44	5 16	13 14	19 54	.....	23 31	22	8 34.6	21 48
Sat May 31/Sun Jun 01	827.8	16 13 41	19 32	21 05	3 43	5 16	13 18	19 57	.....	0 08	31	9 27.4	17 14

***** 2025 JUNE *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8
 Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given
 in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.
 Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	----- Sun: ----- set twi.end twi.beg rise				LST twilight: eve morn		----- Moon: ----- rise set %illum RA Dec				
Sun Jun 01/Mon Jun 02	828.8	16 17 37	19 33	21 06	3 43	5 16	13 23	20 01	.....	0 38	41	10 15.9	12 00
Mon Jun 02/Tue Jun 03	829.8	16 21 34	19 33	21 07	3 42	5 16	13 28	20 04	.....	1 05	51	11 01.2	6 23
Tue Jun 03/Wed Jun 04	830.8	16 25 30	19 34	21 08	3 42	5 15	13 33	20 08	.....	1 30	61	11 44.5	0 37
Wed Jun 04/Thu Jun 05	831.8	16 29 27	19 35	21 08	3 42	5 15	13 37	20 12	.....	1 55	70	12 27.0	- 5 07
Thu Jun 05/Fri Jun 06	832.8	16 33 24	19 35	21 09	3 41	5 15	13 42	20 15	.....	2 20	78	13 09.8	-10 39
Fri Jun 06/Sat Jun 07	833.8	16 37 20	19 36	21 10	3 41	5 15	13 46	20 19	.....	2 47	85	13 53.8	-15 49
Sat Jun 07/Sun Jun 08	834.8	16 41 17	19 36	21 10	3 41	5 15	13 51	20 23	.....	3 18	91	14 40.1	-20 26
Sun Jun 08/Mon Jun 09	835.8	16 45 13	19 36	21 11	3 41	5 15	13 56	20 26	.....	3 53	96	15 29.2	-24 19
Mon Jun 09/Tue Jun 10	836.8	16 49 10	19 37	21 11	3 40	5 15	14 00	20 30	18 27	4 33	99	16 21.4	-27 11
Tue Jun 10/Wed Jun 11	837.8	16 53 06	19 37	21 12	3 40	5 15	14 05	20 34	19 25	5 21	100	17 16.4	-28 51
Wed Jun 11/Thu Jun 12	838.8	16 57 03	19 38	21 12	3 40	5 15	14 09	20 38	20 21	6 15	99	18 13.1	-29 07
Thu Jun 12/Fri Jun 13	839.8	17 00 59	19 38	21 13	3 40	5 15	14 13	20 42	21 12	.....	96	19 10.0	-27 55
Fri Jun 13/Sat Jun 14	840.8	17 04 56	19 39	21 13	3 40	5 15	14 18	20 46	21 57	.....	91	20 05.9	-25 17
Sat Jun 14/Sun Jun 15	841.8	17 08 53	19 39	21 14	3 40	5 15	14 22	20 49	22 36	.....	84	20 59.6	-21 22
Sun Jun 15/Mon Jun 16	842.8	17 12 49	19 39	21 14	3 40	5 15	14 27	20 53	23 11	.....	76	21 51.1	-16 24
Mon Jun 16/Tue Jun 17	843.8	17 16 46	19 40	21 15	3 40	5 15	14 31	20 57	23 42	.....	66	22 40.8	-10 37
Tue Jun 17/Wed Jun 18	844.8	17 20 42	19 40	21 15	3 40	5 15	14 35	21 02	0 11	.....	55	23 29.5	- 4 18
Wed Jun 18/Thu Jun 19	845.8	17 24 39	19 40	21 15	3 40	5 15	14 39	21 06	0 40	.....	44	0 18.3	2 17
Thu Jun 19/Fri Jun 20	846.8	17 28 35	19 40	21 15	3 41	5 16	14 44	21 10	1 11	.....	33	1 08.6	8 50
Fri Jun 20/Sat Jun 21	847.8	17 32 32	19 41	21 16	3 41	5 16	14 48	21 14	1 45	.....	23	2 01.6	15 00
Sat Jun 21/Sun Jun 22	848.8	17 36 28	19 41	21 16	3 41	5 16	14 52	21 18	2 24	.....	14	2 58.4	20 22
Sun Jun 22/Mon Jun 23	849.8	17 40 25	19 41	21 16	3 41	5 16	14 56	21 22	3 11	.....	7	3 59.2	24 29
Mon Jun 23/Tue Jun 24	850.8	17 44 22	19 41	21 16	3 42	5 17	15 00	21 27	4 07	18 24	2	5 03.3	26 57
Tue Jun 24/Wed Jun 25	851.8	17 48 18	19 41	21 16	3 42	5 17	15 04	21 31	5 11	19 33	0	6 08.7	27 30
Wed Jun 25/Thu Jun 26	852.8	17 52 15	19 41	21 16	3 42	5 17	15 08	21 35	6 21	20 33	1	7 12.5	26 08
Thu Jun 26/Fri Jun 27	853.8	17 56 11	19 41	21 16	3 43	5 18	15 12	21 40	.....	21 22	5	8 12.6	23 06
Fri Jun 27/Sat Jun 28	854.8	18 00 08	19 42	21 16	3 43	5 18	15 16	21 44	.....	22 03	10	9 07.9	18 49
Sat Jun 28/Sun Jun 29	855.8	18 04 04	19 42	21 16	3 44	5 18	15 20	21 48	.....	22 36	17	9 58.6	13 41
Sun Jun 29/Mon Jun 30	856.8	18 08 01	19 42	21 16	3 44	5 19	15 24	21 53	.....	23 05	26	10 45.6	8 04
Mon Jun 30/Tue Jul 01	857.8	18 11 57	19 42	21 16	3 45	5 19	15 28	21 57	.....	23 32	35	11 30.0	2 15

***** 2025 JULY *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.

Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	----- Sun: -----				LST twilight:		----- Moon: -----				
			set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Tue Jul 01/Wed Jul 02	858.8	18 15 54	19 42	21 16	3 45	5 20	15 31	22 02	.....	23 57	45	12 13.0	- 3 33
Wed Jul 02/Thu Jul 03	859.8	18 19 51	19 41	21 16	3 46	5 20	15 35	22 06	.....	0 22	54	12 55.7	- 9 10
Thu Jul 03/Fri Jul 04	860.8	18 23 47	19 41	21 16	3 46	5 20	15 39	22 11	.....	0 48	63	13 39.3	-14 27
Fri Jul 04/Sat Jul 05	861.8	18 27 44	19 41	21 15	3 47	5 21	15 43	22 15	.....	1 17	72	14 24.7	-19 14
Sat Jul 05/Sun Jul 06	862.8	18 31 40	19 41	21 15	3 48	5 21	15 46	22 20	.....	1 51	80	15 12.8	-23 19
Sun Jul 06/Mon Jul 07	863.8	18 35 37	19 41	21 15	3 48	5 22	15 50	22 25	.....	2 29	87	16 03.9	-26 30
Mon Jul 07/Tue Jul 08	864.8	18 39 33	19 41	21 14	3 49	5 22	15 53	22 29	.....	3 15	93	16 58.2	-28 32
Tue Jul 08/Wed Jul 09	865.8	18 43 30	19 41	21 14	3 50	5 23	15 57	22 34	18 13	4 07	97	17 54.7	-29 13
Wed Jul 09/Thu Jul 10	866.8	18 47 26	19 40	21 13	3 50	5 23	16 00	22 38	19 06	5 06	99	18 52.3	-28 26
Thu Jul 10/Fri Jul 11	867.8	18 51 23	19 40	21 13	3 51	5 24	16 04	22 43	19 54	6 09	100	19 49.4	-26 08
Fri Jul 11/Sat Jul 12	868.8	18 55 20	19 40	21 12	3 52	5 25	16 07	22 48	20 36	.....	98	20 44.7	-22 28
Sat Jul 12/Sun Jul 13	869.8	18 59 16	19 39	21 12	3 53	5 25	16 11	22 53	21 12	.....	93	21 37.7	-17 38
Sun Jul 13/Mon Jul 14	870.8	19 03 13	19 39	21 11	3 54	5 26	16 14	22 57	21 44	.....	87	22 28.5	-11 54
Mon Jul 14/Tue Jul 15	871.8	19 07 09	19 39	21 11	3 54	5 26	16 17	23 02	22 14	.....	79	23 17.8	- 5 36
Tue Jul 15/Wed Jul 16	872.8	19 11 06	19 38	21 10	3 55	5 27	16 21	23 07	22 43	.....	69	0 06.8	1 00
Wed Jul 16/Thu Jul 17	873.8	19 15 02	19 38	21 09	3 56	5 28	16 24	23 12	23 13	.....	58	0 56.4	7 35
Thu Jul 17/Fri Jul 18	874.8	19 18 59	19 37	21 09	3 57	5 28	16 27	23 17	23 45	.....	46	1 48.1	13 48
Fri Jul 18/Sat Jul 19	875.8	19 22 55	19 37	21 08	3 58	5 29	16 30	23 21	0 21	.....	35	2 42.9	19 17
Sat Jul 19/Sun Jul 20	876.8	19 26 52	19 36	21 07	3 59	5 29	16 34	23 26	1 03	.....	25	3 41.3	23 40
Sun Jul 20/Mon Jul 21	877.8	19 30 49	19 36	21 06	4 00	5 30	16 37	23 31	1 54	.....	15	4 43.2	26 33
Mon Jul 21/Tue Jul 22	878.8	19 34 45	19 35	21 06	4 00	5 31	16 40	23 36	2 54	.....	8	5 47.0	27 39
Tue Jul 22/Wed Jul 23	879.8	19 38 42	19 35	21 05	4 01	5 31	16 43	23 41	4 01	18 19	3	6 50.5	26 53
Wed Jul 23/Thu Jul 24	880.8	19 42 38	19 34	21 04	4 02	5 32	16 46	23 46	5 10	19 12	0	7 51.3	24 23
Thu Jul 24/Fri Jul 25	881.8	19 46 35	19 34	21 03	4 03	5 33	16 49	23 50	6 19	19 56	0	8 48.1	20 29
Fri Jul 25/Sat Jul 26	882.8	19 50 31	19 33	21 02	4 04	5 33	16 52	23 55	.....	20 33	3	9 40.4	15 34
Sat Jul 26/Sun Jul 27	883.8	19 54 28	19 32	21 01	4 05	5 34	16 55	0 00	.....	21 04	7	10 28.9	10 02
Sun Jul 27/Mon Jul 28	884.8	19 58 24	19 32	21 00	4 06	5 35	16 58	0 05	.....	21 32	13	11 14.4	4 12
Mon Jul 28/Tue Jul 29	885.8	20 02 21	19 31	20 59	4 07	5 35	17 01	0 10	.....	21 57	20	11 58.1	- 1 42
Tue Jul 29/Wed Jul 30	886.8	20 06 18	19 30	20 58	4 08	5 36	17 04	0 15	.....	22 23	29	12 41.0	- 7 26
Wed Jul 30/Thu Jul 31	887.8	20 10 14	19 29	20 57	4 09	5 37	17 07	0 20	.....	22 49	38	13 24.4	-12 52
Thu Jul 31/Fri Aug 01	888.8	20 14 11	19 29	20 56	4 10	5 37	17 10	0 25	.....	23 17	47	14 09.1	-17 50

***** 2025 AUGUST *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.

Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	Sun: -----				LST twilight:		Moon: -----				
			set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Fri Aug 01/Sat Aug 02	889.8	20 18 07	19 28	20 55	4 11	5 38	17 13	0 30	.....	23 48	57	14 55.9	-22 08
Sat Aug 02/Sun Aug 03	890.8	20 22 04	19 27	20 54	4 12	5 39	17 15	0 34	.....	0 24	66	15 45.6	-25 36
Sun Aug 03/Mon Aug 04	891.8	20 26 00	19 26	20 53	4 13	5 39	17 18	0 39	.....	1 07	75	16 38.4	-28 01
Mon Aug 04/Tue Aug 05	892.8	20 29 57	19 25	20 52	4 14	5 40	17 21	0 44	.....	1 56	83	17 33.9	-29 11
Tue Aug 05/Wed Aug 06	893.8	20 33 53	19 24	20 50	4 15	5 41	17 24	0 49	.....	2 53	90	18 31.1	-28 54
Wed Aug 06/Thu Aug 07	894.8	20 37 50	19 23	20 49	4 16	5 41	17 27	0 54	17 47	3 55	95	19 28.7	-27 06
Thu Aug 07/Fri Aug 08	895.8	20 41 47	19 23	20 48	4 16	5 42	17 29	0 59	18 32	5 00	99	20 25.2	-23 51
Fri Aug 08/Sat Aug 09	896.8	20 45 43	19 22	20 47	4 17	5 43	17 32	1 04	19 11	6 05	100	21 19.8	-19 16
Sat Aug 09/Sun Aug 10	897.8	20 49 40	19 21	20 46	4 18	5 43	17 35	1 09	19 45	.....	99	22 12.3	-13 40
Sun Aug 10/Mon Aug 11	898.8	20 53 36	19 20	20 44	4 19	5 44	17 37	1 14	20 16	.....	95	23 03.2	- 7 19
Mon Aug 11/Tue Aug 12	899.8	20 57 33	19 19	20 43	4 20	5 45	17 40	1 18	20 46	.....	89	23 53.3	- 0 34
Tue Aug 12/Wed Aug 13	900.8	21 01 29	19 18	20 42	4 21	5 45	17 43	1 23	21 16	.....	81	0 43.8	6 13
Wed Aug 13/Thu Aug 14	901.8	21 05 26	19 17	20 40	4 22	5 46	17 45	1 28	21 47	.....	71	1 35.7	12 40
Thu Aug 14/Fri Aug 15	902.8	21 09 22	19 16	20 39	4 23	5 47	17 48	1 33	22 21	.....	60	2 30.2	18 25
Fri Aug 15/Sat Aug 16	903.8	21 13 19	19 15	20 38	4 24	5 47	17 51	1 38	23 02	.....	49	3 27.8	23 05
Sat Aug 16/Sun Aug 17	904.8	21 17 16	19 13	20 36	4 25	5 48	17 53	1 43	23 49	.....	37	4 28.5	26 18
Sun Aug 17/Mon Aug 18	905.8	21 21 12	19 12	20 35	4 26	5 49	17 56	1 48	0 45	.....	27	5 31.2	27 48
Mon Aug 18/Tue Aug 19	906.8	21 25 09	19 11	20 34	4 27	5 49	17 58	1 52	1 48	.....	17	6 33.9	27 29
Tue Aug 19/Wed Aug 20	907.8	21 29 05	19 10	20 32	4 27	5 50	18 01	1 57	2 55	.....	10	7 34.5	25 27
Wed Aug 20/Thu Aug 21	908.8	21 33 02	19 09	20 31	4 28	5 50	18 04	2 02	4 03	17 52	4	8 31.5	21 57
Thu Aug 21/Fri Aug 22	909.8	21 36 58	19 08	20 30	4 29	5 51	18 06	2 07	5 09	18 31	1	9 24.4	17 20
Fri Aug 22/Sat Aug 23	910.8	21 40 55	19 07	20 28	4 30	5 52	18 09	2 12	6 12	19 03	0	10 13.5	11 59
Sat Aug 23/Sun Aug 24	911.8	21 44 51	19 06	20 27	4 31	5 52	18 11	2 17	.....	19 32	1	10 59.6	6 13
Sun Aug 24/Mon Aug 25	912.8	21 48 48	19 04	20 25	4 32	5 53	18 14	2 21	.....	19 58	4	11 43.8	0 18
Mon Aug 25/Tue Aug 26	913.8	21 52 45	19 03	20 24	4 33	5 54	18 16	2 26	.....	20 24	9	12 26.9	- 5 32
Tue Aug 26/Wed Aug 27	914.8	21 56 41	19 02	20 23	4 34	5 54	18 19	2 31	.....	20 49	15	13 10.1	-11 07
Wed Aug 27/Thu Aug 28	915.8	22 00 38	19 01	20 21	4 34	5 55	18 21	2 36	.....	21 17	23	13 54.2	-16 15
Thu Aug 28/Fri Aug 29	916.8	22 04 34	18 59	20 20	4 35	5 56	18 24	2 41	.....	21 47	31	14 40.1	-20 46
Fri Aug 29/Sat Aug 30	917.8	22 08 31	18 58	20 18	4 36	5 56	18 26	2 45	.....	22 21	40	15 28.5	-24 30
Sat Aug 30/Sun Aug 31	918.8	22 12 27	18 57	20 17	4 37	5 57	18 29	2 50	.....	23 00	50	16 19.6	-27 16
Sun Aug 31/Mon Sep 01	919.8	22 16 24	18 56	20 15	4 38	5 57	18 31	2 55	.....	23 46	59	17 13.3	-28 52

***** 2025 SEPTEMBER *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.

Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	----- Sun: -----				LST twilight:		----- Moon: -----				
			set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Mon Sep 01/Tue Sep 02	920.8	22 20 20	18 55	20 14	4 38	5 58	18 34	3 00	.....	0 39	69	18 09.1	-29 07
Tue Sep 02/Wed Sep 03	921.8	22 24 17	18 53	20 13	4 39	5 59	18 36	3 04	.....	1 38	77	19 05.8	-27 55
Wed Sep 03/Thu Sep 04	922.8	22 28 14	18 52	20 11	4 40	5 59	18 39	3 09	.....	2 41	86	20 02.2	-25 15
Thu Sep 04/Fri Sep 05	923.8	22 32 10	18 51	20 10	4 41	6 00	18 41	3 14	17 05	3 47	92	20 57.3	-21 11
Fri Sep 05/Sat Sep 06	924.8	22 36 07	18 49	20 08	4 42	6 01	18 44	3 19	17 42	4 53	97	21 50.9	-15 56
Sat Sep 06/Sun Sep 07	925.8	22 40 03	18 48	20 07	4 42	6 01	18 46	3 23	18 15	6 00	100	22 43.0	- 9 44
Sun Sep 07/Mon Sep 08	926.8	22 44 00	18 47	20 05	4 43	6 02	18 49	3 28	18 45	7 07	100	23 34.4	- 2 56
Mon Sep 08/Tue Sep 09	927.8	22 47 56	18 45	20 04	4 44	6 02	18 51	3 33	19 16	.....	97	0 26.1	4 06
Tue Sep 09/Wed Sep 10	928.8	22 51 53	18 44	20 02	4 45	6 03	18 54	3 37	19 47	.....	91	1 19.2	10 55
Wed Sep 10/Thu Sep 11	929.8	22 55 49	18 43	20 01	4 45	6 04	18 56	3 42	20 21	.....	83	2 14.6	17 07
Thu Sep 11/Fri Sep 12	930.8	22 59 46	18 42	20 00	4 46	6 04	18 59	3 47	21 00	.....	73	3 13.0	22 15
Fri Sep 12/Sat Sep 13	931.8	23 03 43	18 40	19 58	4 47	6 05	19 01	3 51	21 46	.....	62	4 14.4	25 55
Sat Sep 13/Sun Sep 14	932.8	23 07 39	18 39	19 57	4 48	6 05	19 04	3 56	22 40	.....	51	5 17.5	27 50
Sun Sep 14/Mon Sep 15	933.8	23 11 36	18 38	19 55	4 48	6 06	19 06	4 01	23 41	.....	40	6 20.6	27 55
Mon Sep 15/Tue Sep 16	934.8	23 15 32	18 36	19 54	4 49	6 07	19 09	4 05	0 47	.....	29	7 21.5	26 14
Tue Sep 16/Wed Sep 17	935.8	23 19 29	18 35	19 52	4 50	6 07	19 11	4 10	1 54	.....	20	8 18.8	23 04
Wed Sep 17/Thu Sep 18	936.8	23 23 25	18 34	19 51	4 50	6 08	19 14	4 15	2 59	.....	12	9 11.9	18 44
Thu Sep 18/Fri Sep 19	937.8	23 27 22	18 32	19 50	4 51	6 08	19 16	4 19	4 02	17 05	6	10 01.2	13 37
Fri Sep 19/Sat Sep 20	938.8	23 31 18	18 31	19 48	4 52	6 09	19 19	4 24	5 02	17 34	2	10 47.5	8 00
Sat Sep 20/Sun Sep 21	939.8	23 35 15	18 30	19 47	4 53	6 10	19 21	4 29	5 59	18 01	0	11 31.6	2 09
Sun Sep 21/Mon Sep 22	940.8	23 39 12	18 28	19 45	4 53	6 10	19 24	4 33	6 56	18 26	0	12 14.7	- 3 42
Mon Sep 22/Tue Sep 23	941.8	23 43 08	18 27	19 44	4 54	6 11	19 26	4 38	.....	18 52	2	12 57.6	- 9 21
Tue Sep 23/Wed Sep 24	942.8	23 47 05	18 26	19 43	4 55	6 12	19 29	4 43	.....	19 18	6	13 41.3	-14 37
Wed Sep 24/Thu Sep 25	943.8	23 51 01	18 24	19 41	4 55	6 12	19 31	4 47	.....	19 47	11	14 26.5	-19 20
Thu Sep 25/Fri Sep 26	944.8	23 54 58	18 23	19 40	4 56	6 13	19 34	4 52	.....	20 19	17	15 13.8	-23 18
Fri Sep 26/Sat Sep 27	945.8	23 58 54	18 22	19 38	4 57	6 13	19 37	4 56	.....	20 56	25	16 03.6	-26 21
Sat Sep 27/Sun Sep 28	946.8	0 02 51	18 20	19 37	4 57	6 14	19 39	5 01	.....	21 39	33	16 55.7	-28 18
Sun Sep 28/Mon Sep 29	947.8	0 06 47	18 19	19 36	4 58	6 15	19 42	5 06	.....	22 29	43	17 49.8	-29 00
Mon Sep 29/Tue Sep 30	948.8	0 10 44	18 18	19 34	4 59	6 15	19 44	5 10	.....	23 24	52	18 44.9	-28 20
Tue Sep 30/Wed Oct 01	949.8	0 14 41	18 17	19 33	4 59	6 16	19 47	5 15	.....	0 25	62	19 40.0	-26 15

***** 2025 OCTOBER *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.

Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	----- Sun: ----- set twi.end twi.beg rise				LST twilight: eve morn		----- Moon: ----- rise set %illum RA Dec				
Wed Oct 01/Thu Oct 02	950.8	0 18 37	18 15	19 32	5 00	6 17	19 50	5 20	.....	1 28	72	20 34.3	-22 50
Thu Oct 02/Fri Oct 03	951.8	0 22 34	18 14	19 30	5 01	6 17	19 52	5 24	.....	2 33	81	21 27.4	-18 09
Fri Oct 03/Sat Oct 04	952.8	0 26 30	18 13	19 29	5 01	6 18	19 55	5 29	.....	3 38	89	22 19.3	-12 26
Sat Oct 04/Sun Oct 05	953.8	0 30 27	18 11	19 28	5 02	6 19	19 58	5 33	16 42	4 45	95	23 10.7	- 5 54
Sun Oct 05/Mon Oct 06	954.8	0 34 23	18 10	19 27	5 03	6 19	20 00	5 38	17 12	5 52	99	0 02.6	1 07
Mon Oct 06/Tue Oct 07	955.8	0 38 20	18 09	19 25	5 03	6 20	20 03	5 43	17 44	7 03	100	0 55.9	8 12
Tue Oct 07/Wed Oct 08	956.8	0 42 16	18 08	19 24	5 04	6 21	20 06	5 47	18 17	.....	98	1 51.9	14 54
Wed Oct 08/Thu Oct 09	957.8	0 46 13	18 06	19 23	5 05	6 21	20 08	5 52	18 55	.....	93	2 51.3	20 40
Thu Oct 09/Fri Oct 10	958.8	0 50 10	18 05	19 22	5 05	6 22	20 11	5 56	19 40	.....	86	3 54.1	25 02
Fri Oct 10/Sat Oct 11	959.8	0 54 06	18 04	19 21	5 06	6 23	20 14	6 01	20 32	.....	76	4 59.4	27 35
Sat Oct 11/Sun Oct 12	960.8	0 58 03	18 03	19 19	5 07	6 23	20 17	6 06	21 33	.....	66	6 04.7	28 10
Sun Oct 12/Mon Oct 13	961.8	1 01 59	18 02	19 18	5 07	6 24	20 19	6 10	22 39	.....	54	7 07.8	26 51
Mon Oct 13/Tue Oct 14	962.8	1 05 56	18 00	19 17	5 08	6 25	20 22	6 15	23 46	.....	43	8 06.8	23 57
Tue Oct 14/Wed Oct 15	963.8	1 09 52	17 59	19 16	5 09	6 26	20 25	6 19	0 52	.....	33	9 01.2	19 50
Wed Oct 15/Thu Oct 16	964.8	1 13 49	17 58	19 15	5 09	6 26	20 28	6 24	1 55	.....	24	9 51.1	14 52
Thu Oct 16/Fri Oct 17	965.8	1 17 45	17 57	19 14	5 10	6 27	20 31	6 29	2 55	.....	16	10 37.7	9 23
Fri Oct 17/Sat Oct 18	966.8	1 21 42	17 56	19 13	5 11	6 28	20 34	6 33	3 53	.....	9	11 21.8	3 37
Sat Oct 18/Sun Oct 19	967.8	1 25 39	17 55	19 12	5 11	6 28	20 36	6 38	4 49	16 30	4	12 04.7	- 2 10
Sun Oct 19/Mon Oct 20	968.8	1 29 35	17 54	19 11	5 12	6 29	20 39	6 43	5 44	16 55	1	12 47.3	- 7 49
Mon Oct 20/Tue Oct 21	969.8	1 33 32	17 53	19 10	5 13	6 30	20 42	6 47	6 40	17 21	0	13 30.5	-13 09
Tue Oct 21/Wed Oct 22	970.8	1 37 28	17 51	19 09	5 14	6 31	20 45	6 52	7 37	17 49	1	14 15.1	-17 59
Wed Oct 22/Thu Oct 23	971.8	1 41 25	17 50	19 08	5 14	6 31	20 48	6 57	.....	18 20	3	15 01.7	-22 07
Thu Oct 23/Fri Oct 24	972.8	1 45 21	17 49	19 07	5 15	6 32	20 51	7 01	.....	18 56	7	15 50.6	-25 24
Fri Oct 24/Sat Oct 25	973.8	1 49 18	17 48	19 06	5 16	6 33	20 54	7 06	.....	19 36	12	16 41.8	-27 37
Sat Oct 25/Sun Oct 26	974.8	1 53 14	17 47	19 05	5 16	6 34	20 57	7 10	.....	20 23	19	17 34.8	-28 38
Sun Oct 26/Mon Oct 27	975.8	1 57 11	17 46	19 04	5 17	6 35	21 00	7 15	.....	21 16	27	18 28.7	-28 21
Mon Oct 27/Tue Oct 28	976.8	2 01 08	17 45	19 03	5 18	6 35	21 03	7 20	.....	22 13	36	19 22.5	-26 44
Tue Oct 28/Wed Oct 29	977.8	2 05 04	17 45	19 02	5 18	6 36	21 06	7 24	.....	23 14	45	20 15.5	-23 50
Wed Oct 29/Thu Oct 30	978.8	2 09 01	17 44	19 01	5 19	6 37	21 09	7 29	.....	0 16	55	21 07.2	-19 44
Thu Oct 30/Fri Oct 31	979.8	2 12 57	17 43	19 00	5 20	6 38	21 13	7 34	.....	1 19	66	21 57.7	-14 36
Fri Oct 31/Sat Nov 01	980.8	2 16 54	17 42	19 00	5 21	6 39	21 16	7 38	.....	2 23	76	22 47.5	- 8 35

***** 2025 NOVEMBER *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8
 Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given
 in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.
 Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	Sun: -----				LST twilight:		Moon: -----				
			set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Sat Nov 01/Sun Nov 02	981.8	2 20 50	17 41	18 59	5 21	6 39	21 19	7 43	.....	3 29	85	23 37.8	- 1 57
Sun Nov 02/Mon Nov 03	982.8	2 24 47	17 40	18 58	5 22	6 40	21 22	7 48	.....	4 36	92	0 29.4	5 00
Mon Nov 03/Tue Nov 04	983.8	2 28 43	17 39	18 57	5 23	6 41	21 25	7 52	16 10	5 48	97	1 23.9	11 53
Tue Nov 04/Wed Nov 05	984.8	2 32 40	17 38	18 57	5 23	6 42	21 29	7 57	16 46	7 03	100	2 22.3	18 11
Wed Nov 05/Thu Nov 06	985.8	2 36 37	17 38	18 56	5 24	6 43	21 32	8 02	17 28	.....	99	3 25.1	23 20
Thu Nov 06/Fri Nov 07	986.8	2 40 33	17 37	18 55	5 25	6 44	21 35	8 06	18 18	.....	95	4 31.7	26 47
Fri Nov 07/Sat Nov 08	987.8	2 44 30	17 36	18 55	5 26	6 44	21 39	8 11	19 18	.....	88	5 40.1	28 11
Sat Nov 08/Sun Nov 09	988.8	2 48 26	17 36	18 54	5 26	6 45	21 42	8 16	20 24	.....	80	6 46.9	27 28
Sun Nov 09/Mon Nov 10	989.8	2 52 23	17 35	18 54	5 27	6 46	21 45	8 20	21 34	.....	70	7 49.7	24 55
Mon Nov 10/Tue Nov 11	990.8	2 56 19	17 34	18 53	5 28	6 47	21 49	8 25	22 43	.....	59	8 47.2	20 58
Tue Nov 11/Wed Nov 12	991.8	3 00 16	17 34	18 53	5 29	6 48	21 52	8 30	23 48	.....	49	9 39.4	16 04
Wed Nov 12/Thu Nov 13	992.8	3 04 12	17 33	18 52	5 29	6 49	21 56	8 35	0 50	.....	38	10 27.4	10 36
Thu Nov 13/Fri Nov 14	993.8	3 08 09	17 32	18 52	5 30	6 50	21 59	8 39	1 48	.....	29	11 12.4	4 51
Fri Nov 14/Sat Nov 15	994.8	3 12 05	17 32	18 51	5 31	6 51	22 03	8 44	2 44	.....	20	11 55.5	- 0 56
Sat Nov 15/Sun Nov 16	995.8	3 16 02	17 31	18 51	5 32	6 51	22 06	8 49	3 39	.....	13	12 38.0	- 6 35
Sun Nov 16/Mon Nov 17	996.8	3 19 59	17 31	18 51	5 32	6 52	22 10	8 53	4 35	.....	8	13 20.9	-11 57
Mon Nov 17/Tue Nov 18	997.8	3 23 55	17 30	18 50	5 33	6 53	22 13	8 58	5 31	15 52	4	14 05.0	-16 51
Tue Nov 18/Wed Nov 19	998.8	3 27 52	17 30	18 50	5 34	6 54	22 17	9 03	6 28	16 22	1	14 51.1	-21 07
Wed Nov 19/Thu Nov 20	999.8	3 31 48	17 29	18 50	5 35	6 55	22 21	9 07	7 26	16 56	0	15 39.5	-24 33
Thu Nov 20/Fri Nov 21	1000.8	3 35 45	17 29	18 49	5 35	6 56	22 24	9 12	.....	17 35	1	16 30.2	-26 59
Fri Nov 21/Sat Nov 22	1001.8	3 39 41	17 29	18 49	5 36	6 57	22 28	9 17	.....	18 20	4	17 22.7	-28 15
Sat Nov 22/Sun Nov 23	1002.8	3 43 38	17 28	18 49	5 37	6 58	22 32	9 22	.....	19 11	8	18 16.2	-28 14
Sun Nov 23/Mon Nov 24	1003.8	3 47 34	17 28	18 49	5 38	6 58	22 35	9 26	.....	20 07	14	19 09.6	-26 55
Mon Nov 24/Tue Nov 25	1004.8	3 51 31	17 28	18 49	5 38	6 59	22 39	9 31	.....	21 07	21	20 01.9	-24 20
Tue Nov 25/Wed Nov 26	1005.8	3 55 28	17 28	18 48	5 39	7 00	22 43	9 36	.....	22 07	29	20 52.7	-20 37
Wed Nov 26/Thu Nov 27	1006.8	3 59 24	17 27	18 48	5 40	7 01	22 47	9 40	.....	23 08	39	21 41.9	-15 54
Thu Nov 27/Fri Nov 28	1007.8	4 03 21	17 27	18 48	5 41	7 02	22 51	9 45	.....	0 10	49	22 30.1	-10 22
Fri Nov 28/Sat Nov 29	1008.8	4 07 17	17 27	18 48	5 41	7 03	22 55	9 50	.....	1 12	60	23 18.1	- 4 12
Sat Nov 29/Sun Nov 30	1009.8	4 11 14	17 27	18 48	5 42	7 03	22 59	9 54	.....	2 16	71	0 07.0	2 22
Sun Nov 30/Mon Dec 01	1010.8	4 15 10	17 27	18 48	5 43	7 04	23 02	9 59	.....	3 23	80	0 58.2	9 03

***** 2025 DECEMBER *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in Mountain time (7 hr W), for 900 m above surroundings, in standard time all year.

Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2025 at start)	JDmid (-2460000)	LMSTmidn	----- Sun: ----- set twi.end twi.beg rise				LST twilight: eve morn		----- Moon: ----- rise set %illum			RA	Dec
Mon Dec 01/Tue Dec 02	1011.8	4 19 07	17 27	18 48	5 44	7 05	23 06	10 04	.....	4 34	89	1 53.2	15 28
Tue Dec 02/Wed Dec 03	1012.8	4 23 03	17 27	18 48	5 44	7 06	23 10	10 08	.....	5 49	95	2 52.9	21 06
Wed Dec 03/Thu Dec 04	1013.8	4 27 00	17 27	18 48	5 45	7 07	23 14	10 13	16 01	7 06	99	3 57.8	25 23
Thu Dec 04/Fri Dec 05	1014.8	4 30 57	17 27	18 48	5 46	7 07	23 19	10 18	16 56	8 20	100	5 06.5	27 47
Fri Dec 05/Sat Dec 06	1015.8	4 34 53	17 27	18 49	5 46	7 08	23 23	10 22	18 01	.....	97	6 16.1	28 00
Sat Dec 06/Sun Dec 07	1016.8	4 38 50	17 27	18 49	5 47	7 09	23 27	10 27	19 12	.....	92	7 23.2	26 06
Sun Dec 07/Mon Dec 08	1017.8	4 42 46	17 27	18 49	5 48	7 10	23 31	10 32	20 24	.....	84	8 25.3	22 30
Mon Dec 08/Tue Dec 09	1018.8	4 46 43	17 27	18 49	5 48	7 10	23 35	10 36	21 34	.....	75	9 21.5	17 41
Tue Dec 09/Wed Dec 10	1019.8	4 50 39	17 27	18 49	5 49	7 11	23 39	10 41	22 39	.....	65	10 12.6	12 09
Wed Dec 10/Thu Dec 11	1020.8	4 54 36	17 28	18 50	5 50	7 12	23 43	10 45	23 40	.....	55	10 59.7	6 18
Thu Dec 11/Fri Dec 12	1021.8	4 58 32	17 28	18 50	5 50	7 13	23 48	10 50	0 38	.....	45	11 44.3	0 23
Fri Dec 12/Sat Dec 13	1022.8	5 02 29	17 28	18 50	5 51	7 13	23 52	10 54	1 34	.....	35	12 27.5	- 5 24
Sat Dec 13/Sun Dec 14	1023.8	5 06 26	17 28	18 51	5 52	7 14	23 56	10 59	2 29	.....	27	13 10.6	-10 52
Sun Dec 14/Mon Dec 15	1024.8	5 10 22	17 29	18 51	5 52	7 15	0 00	11 04	3 25	.....	19	13 54.6	-15 52
Mon Dec 15/Tue Dec 16	1025.8	5 14 19	17 29	18 51	5 53	7 15	0 05	11 08	4 22	.....	12	14 40.2	-20 16
Tue Dec 16/Wed Dec 17	1026.8	5 18 15	17 29	18 52	5 53	7 16	0 09	11 13	5 19	.....	7	15 28.1	-23 52
Wed Dec 17/Thu Dec 18	1027.8	5 22 12	17 30	18 52	5 54	7 16	0 13	11 17	6 17	.....	3	16 18.4	-26 30
Thu Dec 18/Fri Dec 19	1028.8	5 26 08	17 30	18 53	5 54	7 17	0 18	11 22	7 12	16 17	1	17 10.7	-27 59
Fri Dec 19/Sat Dec 20	1029.8	5 30 05	17 31	18 53	5 55	7 17	0 22	11 26	8 04	17 07	0	18 04.3	-28 13
Sat Dec 20/Sun Dec 21	1030.8	5 34 01	17 31	18 53	5 56	7 18	0 27	11 31	.....	18 02	1	18 58.0	-27 08
Sun Dec 21/Mon Dec 22	1031.8	5 37 58	17 32	18 54	5 56	7 18	0 31	11 35	.....	19 01	5	19 50.7	-24 46
Mon Dec 22/Tue Dec 23	1032.8	5 41 55	17 32	18 54	5 56	7 19	0 36	11 39	.....	20 02	9	20 41.7	-21 15
Tue Dec 23/Wed Dec 24	1033.8	5 45 51	17 33	18 55	5 57	7 19	0 40	11 44	.....	21 02	16	21 30.8	-16 45
Wed Dec 24/Thu Dec 25	1034.8	5 49 48	17 33	18 56	5 57	7 20	0 45	11 48	.....	22 03	24	22 18.3	-11 27
Thu Dec 25/Fri Dec 26	1035.8	5 53 44	17 34	18 56	5 58	7 20	0 49	11 53	.....	23 04	33	23 05.1	- 5 33
Fri Dec 26/Sat Dec 27	1036.8	5 57 41	17 34	18 57	5 58	7 20	0 54	11 57	.....	0 05	44	23 52.1	0 43
Sat Dec 27/Sun Dec 28	1037.8	6 01 37	17 35	18 57	5 59	7 21	0 58	12 01	.....	1 08	55	0 40.5	7 08
Sun Dec 28/Mon Dec 29	1038.8	6 05 34	17 36	18 58	5 59	7 21	1 03	12 05	.....	2 15	66	1 31.8	13 23
Mon Dec 29/Tue Dec 30	1039.8	6 09 30	17 36	18 59	5 59	7 21	1 07	12 10	.....	3 26	76	2 27.3	19 06
Tue Dec 30/Wed Dec 31	1040.8	6 13 27	17 37	18 59	6 00	7 22	1 12	12 14	.....	4 40	86	3 27.8	23 49
Wed Dec 31/Thu Jan 01	1041.8	6 17 24	17 38	19 00	6 00	7 22	1 16	12 18	.....	5 54	93	4 33.3	26 59