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 –¿ 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:

```
          ***** 2015 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 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 hemishpheres.  Rise/set times are slightly incaccurate and
rather confusing at circumpolar latitudes, where the concept of a 'night' is blurry.

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


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

MOON PHASES FOR 2015, at 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 21	18 36	Dec 28	11 33	Jan 04	21 54	Jan 13	2 49
Jan 20	6 15	Jan 26	21 50	Feb 03	16 10	Feb 11	20 52
Feb 18	16 49	Feb 25	10 15	Mar 05	11 07	Mar 13	10 49
Mar 20	2 39	Mar 27	0 44	Apr 04	5 07	Apr 11	20 45
Apr 18	11 59	Apr 25	16 57	May 03	20 45	May 11	3 37
May 17	21 16	May 25	10 21	Jun 02	9 22	Jun 09	8 43
Jun 16	7 08	Jun 24	4 04	Jul 01	19 22	Jul 08	13 26
Jul 15	18 26	Jul 23	21 05	Jul 31	3 46	Aug 06	19 06
Aug 14	7 55	Aug 22	12 32	Aug 29	11 38	Sep 05	2 57
Sep 12	23 43	Sep 21	2 00	Sep 27	19 52	Oct 04	14 08
Oct 12	17 07	Oct 20	13 32	Oct 27	5 06	Nov 03	5 26
Nov 11	10 48	Nov 18	23 28	Nov 25	15 45	Dec 03	0 42
Dec 11	3 30	Dec 18	8 15	Dec 25	4 12	Jan 01	22 32

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Thu Jan 01/Fri Jan 02	7024.8	6 20 01	17 38	19 00	6 00	7 22	1 19	12 21	.....	5 07	91	4 24.0	17 23
Fri Jan 02/Sat Jan 03	7025.8	6 23 57	17 39	19 01	6 00	7 22	1 24	12 25	15 46	6 01	96	5 18.6	18 20
Sat Jan 03/Sun Jan 04	7026.8	6 27 54	17 40	19 02	6 01	7 22	1 29	12 29	16 37	6 51	99	6 12.8	18 18
Sun Jan 04/Mon Jan 05	7027.8	6 31 50	17 40	19 02	6 01	7 23	1 33	12 34	17 30	7 37	100	7 05.8	17 20
Mon Jan 05/Tue Jan 06	7028.8	6 35 47	17 41	19 03	6 01	7 23	1 38	12 38	18 23	8 19	99	7 57.2	15 32
Tue Jan 06/Wed Jan 07	7029.8	6 39 43	17 42	19 04	6 01	7 23	1 43	12 42	19 17	.....	96	8 46.9	13 03
Wed Jan 07/Thu Jan 08	7030.8	6 43 40	17 43	19 04	6 01	7 23	1 47	12 46	20 10	.....	91	9 34.7	10 02
Thu Jan 08/Fri Jan 09	7031.8	6 47 37	17 44	19 05	6 01	7 23	1 52	12 50	21 03	.....	85	10 21.2	6 38
Fri Jan 09/Sat Jan 10	7032.8	6 51 33	17 45	19 06	6 01	7 23	1 57	12 54	21 55	.....	77	11 06.7	2 58
Sat Jan 10/Sun Jan 11	7033.8	6 55 30	17 45	19 07	6 01	7 23	2 01	12 58	22 47	.....	69	11 51.8	- 0 48
Sun Jan 11/Mon Jan 12	7034.8	6 59 26	17 46	19 07	6 01	7 23	2 06	13 02	23 40	.....	60	12 37.2	- 4 34
Mon Jan 12/Tue Jan 13	7035.8	7 03 23	17 47	19 08	6 01	7 23	2 11	13 06	0 33	.....	50	13 23.5	- 8 12
Tue Jan 13/Wed Jan 14	7036.8	7 07 19	17 48	19 09	6 01	7 22	2 16	13 10	1 28	.....	41	14 11.5	-11 34
Wed Jan 14/Thu Jan 15	7037.8	7 11 16	17 49	19 10	6 01	7 22	2 20	13 14	2 25	.....	31	15 01.8	-14 30
Thu Jan 15/Fri Jan 16	7038.8	7 15 12	17 50	19 11	6 01	7 22	2 25	13 17	3 23	.....	22	15 54.8	-16 49
Fri Jan 16/Sat Jan 17	7039.8	7 19 09	17 51	19 11	6 01	7 22	2 30	13 21	4 22	.....	14	16 50.5	-18 19
Sat Jan 17/Sun Jan 18	7040.8	7 23 06	17 51	19 12	6 01	7 22	2 34	13 25	5 21	.....	7	17 48.7	-18 49
Sun Jan 18/Mon Jan 19	7041.8	7 27 02	17 52	19 13	6 01	7 21	2 39	13 29	6 18	16 19	2	18 48.6	-18 11
Mon Jan 19/Tue Jan 20	7042.8	7 30 59	17 53	19 14	6 01	7 21	2 44	13 33	7 11	17 23	0	19 49.0	-16 21
Tue Jan 20/Wed Jan 21	7043.8	7 34 55	17 54	19 14	6 00	7 21	2 49	13 36	8 00	18 30	1	20 48.9	-13 28
Wed Jan 21/Thu Jan 22	7044.8	7 38 52	17 55	19 15	6 00	7 20	2 53	13 40	.....	19 39	4	21 47.5	- 9 42
Thu Jan 22/Fri Jan 23	7045.8	7 42 48	17 56	19 16	6 00	7 20	2 58	13 44	.....	20 47	10	22 44.7	- 5 22
Fri Jan 23/Sat Jan 24	7046.8	7 46 45	17 57	19 17	6 00	7 19	3 03	13 47	.....	21 54	19	23 40.3	- 0 46
Sat Jan 24/Sun Jan 25	7047.8	7 50 41	17 58	19 18	5 59	7 19	3 08	13 51	.....	22 59	28	0 34.9	3 46
Sun Jan 25/Mon Jan 26	7048.8	7 54 38	17 59	19 18	5 59	7 19	3 12	13 55	.....	0 03	39	1 28.9	7 59
Mon Jan 26/Tue Jan 27	7049.8	7 58 35	18 00	19 19	5 59	7 18	3 17	13 58	.....	1 05	50	2 22.7	11 39
Tue Jan 27/Wed Jan 28	7050.8	8 02 31	18 01	19 20	5 58	7 18	3 22	14 02	.....	2 05	61	3 16.5	14 37
Wed Jan 28/Thu Jan 29	7051.8	8 06 28	18 01	19 21	5 58	7 17	3 27	14 05	.....	3 02	71	4 10.5	16 45
Thu Jan 29/Fri Jan 30	7052.8	8 10 24	18 02	19 22	5 57	7 16	3 31	14 09	.....	3 57	80	5 04.4	17 57
Fri Jan 30/Sat Jan 31	7053.8	8 14 21	18 03	19 22	5 57	7 16	3 36	14 12	.....	4 47	87	5 57.8	18 14
Sat Jan 31/Sun Feb 01	7054.8	8 18 17	18 04	19 23	5 56	7 15	3 41	14 16	.....	5 34	93	6 50.4	17 35

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Sun Feb 01/Mon Feb 02	7055.8	8 22 14	18 05	19 24	5 56	7 15	3 45	14 19	16 17	6 17	97	7 41.8	16 05
Mon Feb 02/Tue Feb 03	7056.8	8 26 10	18 06	19 25	5 55	7 14	3 50	14 22	17 10	6 57	99	8 31.7	13 52
Tue Feb 03/Wed Feb 04	7057.8	8 30 07	18 07	19 26	5 55	7 13	3 55	14 26	18 04	7 33	100	9 20.1	11 02
Wed Feb 04/Thu Feb 05	7058.8	8 34 04	18 08	19 26	5 54	7 12	4 00	14 29	18 56	.....	98	10 07.2	7 46
Thu Feb 05/Fri Feb 06	7059.8	8 38 00	18 09	19 27	5 53	7 12	4 04	14 32	19 49	.....	95	10 53.2	4 12
Fri Feb 06/Sat Feb 07	7060.8	8 41 57	18 10	19 28	5 53	7 11	4 09	14 36	20 41	.....	90	11 38.6	0 27
Sat Feb 07/Sun Feb 08	7061.8	8 45 53	18 10	19 29	5 52	7 10	4 14	14 39	21 33	.....	84	12 24.0	- 3 19
Sun Feb 08/Mon Feb 09	7062.8	8 49 50	18 11	19 29	5 51	7 09	4 19	14 42	22 26	.....	76	13 09.9	- 6 59
Mon Feb 09/Tue Feb 10	7063.8	8 53 46	18 12	19 30	5 51	7 08	4 23	14 45	23 19	.....	67	13 56.9	-10 24
Tue Feb 10/Wed Feb 11	7064.8	8 57 43	18 13	19 31	5 50	7 08	4 28	14 49	0 14	.....	58	14 45.6	-13 26
Wed Feb 11/Thu Feb 12	7065.8	9 01 39	18 14	19 32	5 49	7 07	4 33	14 52	1 10	.....	48	15 36.5	-15 56
Thu Feb 12/Fri Feb 13	7066.8	9 05 36	18 15	19 33	5 48	7 06	4 37	14 55	2 07	.....	38	16 29.9	-17 44
Fri Feb 13/Sat Feb 14	7067.8	9 09 33	18 16	19 33	5 47	7 05	4 42	14 58	3 04	.....	28	17 25.6	-18 38
Sat Feb 14/Sun Feb 15	7068.8	9 13 29	18 17	19 34	5 47	7 04	4 47	15 01	4 00	.....	18	18 23.5	-18 31
Sun Feb 15/Mon Feb 16	7069.8	9 17 26	18 17	19 35	5 46	7 03	4 52	15 04	4 54	.....	10	19 22.7	-17 16
Mon Feb 16/Tue Feb 17	7070.8	9 21 22	18 18	19 36	5 45	7 02	4 56	15 07	5 45	.....	4	20 22.5	-14 54
Tue Feb 17/Wed Feb 18	7071.8	9 25 19	18 19	19 36	5 44	7 01	5 01	15 10	6 34	17 13	1	21 21.9	-11 32
Wed Feb 18/Thu Feb 19	7072.8	9 29 15	18 20	19 37	5 43	7 00	5 06	15 13	7 19	18 23	0	22 20.5	- 7 25
Thu Feb 19/Fri Feb 20	7073.8	9 33 12	18 21	19 38	5 42	6 59	5 10	15 16	.....	19 32	2	23 18.1	- 2 51
Fri Feb 20/Sat Feb 21	7074.8	9 37 08	18 22	19 39	5 41	6 58	5 15	15 19	.....	20 41	8	0 14.8	1 50
Sat Feb 21/Sun Feb 22	7075.8	9 41 05	18 22	19 39	5 40	6 57	5 20	15 22	.....	21 48	15	1 10.7	6 18
Sun Feb 22/Mon Feb 23	7076.8	9 45 02	18 23	19 40	5 39	6 56	5 24	15 25	.....	22 53	24	2 06.2	10 17
Mon Feb 23/Tue Feb 24	7077.8	9 48 58	18 24	19 41	5 38	6 55	5 29	15 28	.....	23 56	34	3 01.3	13 33
Tue Feb 24/Wed Feb 25	7078.8	9 52 55	18 25	19 42	5 37	6 54	5 34	15 31	.....	0 55	45	3 56.2	15 58
Wed Feb 25/Thu Feb 26	7079.8	9 56 51	18 26	19 42	5 36	6 53	5 38	15 34	.....	1 52	55	4 50.6	17 27
Thu Feb 26/Fri Feb 27	7080.8	10 00 48	18 26	19 43	5 35	6 52	5 43	15 37	.....	2 44	65	5 44.2	17 59
Fri Feb 27/Sat Feb 28	7081.8	10 04 44	18 27	19 44	5 34	6 50	5 48	15 39	.....	3 32	74	6 36.8	17 35
Sat Feb 28/Sun Mar 01	7082.8	10 08 41	18 28	19 45	5 33	6 49	5 53	15 42	.....	4 16	83	7 28.1	16 21

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Sun Mar 01/Mon Mar 02	7083.8	10 12 37	18 29	19 45	5 32	6 48	5 57	15 45	.....	4 57	89	8 18.0	14 22
Mon Mar 02/Tue Mar 03	7084.8	10 16 34	18 29	19 46	5 30	6 47	6 02	15 48	.....	5 34	94	9 06.5	11 45
Tue Mar 03/Wed Mar 04	7085.8	10 20 31	18 30	19 47	5 29	6 46	6 07	15 51	16 52	6 09	98	9 53.7	8 38
Wed Mar 04/Thu Mar 05	7086.8	10 24 27	18 31	19 47	5 28	6 45	6 11	15 53	17 44	6 43	100	10 40.0	5 10
Thu Mar 05/Fri Mar 06	7087.8	10 28 24	18 32	19 48	5 27	6 43	6 16	15 56	18 36	7 15	100	11 25.7	1 29
Fri Mar 06/Sat Mar 07	7088.8	10 32 20	18 32	19 49	5 26	6 42	6 21	15 59	19 28	.....	98	12 11.4	- 2 17
Sat Mar 07/Sun Mar 08	7089.8	10 36 17	18 33	19 50	5 24	6 41	6 25	16 02	20 21	.....	94	12 57.4	- 6 00
Sun Mar 08/Mon Mar 09	7090.8	10 40 13	18 34	19 50	5 23	6 40	6 30	16 04	21 14	.....	89	13 44.3	- 9 30
Mon Mar 09/Tue Mar 10	7091.8	10 44 10	18 35	19 51	5 22	6 38	6 35	16 07	22 08	.....	82	14 32.6	-12 39
Tue Mar 10/Wed Mar 11	7092.8	10 48 06	18 35	19 52	5 21	6 37	6 39	16 10	23 03	.....	74	15 22.6	-15 17
Wed Mar 11/Thu Mar 12	7093.8	10 52 03	18 36	19 53	5 20	6 36	6 44	16 12	23 58	.....	64	16 14.5	-17 15
Thu Mar 12/Fri Mar 13	7094.8	10 56 00	18 37	19 53	5 18	6 35	6 49	16 15	0 53	.....	54	17 08.4	-18 25
Fri Mar 13/Sat Mar 14	7095.8	10 59 56	18 37	19 54	5 17	6 34	6 53	16 18	1 48	.....	43	18 04.1	-18 39
Sat Mar 14/Sun Mar 15	7096.8	11 03 53	18 38	19 55	5 16	6 32	6 58	16 20	2 41	.....	33	19 01.2	-17 50
Sun Mar 15/Mon Mar 16	7097.8	11 07 49	18 39	19 56	5 14	6 31	7 03	16 23	3 32	.....	23	19 59.0	-15 58
Mon Mar 16/Tue Mar 17	7098.8	11 11 46	18 40	19 56	5 13	6 30	7 07	16 26	4 20	.....	14	20 57.2	-13 06
Tue Mar 17/Wed Mar 18	7099.8	11 15 42	18 40	19 57	5 12	6 28	7 12	16 28	5 06	.....	7	21 55.1	- 9 22
Wed Mar 18/Thu Mar 19	7100.8	11 19 39	18 41	19 58	5 10	6 27	7 17	16 31	5 51	17 06	2	22 52.6	- 5 02
Thu Mar 19/Fri Mar 20	7101.8	11 23 35	18 42	19 59	5 09	6 26	7 22	16 33	6 34	18 15	0	23 49.8	- 0 23
Fri Mar 20/Sat Mar 21	7102.8	11 27 32	18 42	19 59	5 08	6 25	7 26	16 36	7 17	19 24	1	0 46.7	4 15
Sat Mar 21/Sun Mar 22	7103.8	11 31 29	18 43	20 00	5 06	6 23	7 31	16 39	.....	20 32	5	1 43.6	8 32
Sun Mar 22/Mon Mar 23	7104.8	11 35 25	18 44	20 01	5 05	6 22	7 36	16 41	.....	21 38	11	2 40.3	12 11
Mon Mar 23/Tue Mar 24	7105.8	11 39 22	18 44	20 02	5 04	6 21	7 40	16 44	.....	22 41	19	3 36.9	15 00
Tue Mar 24/Wed Mar 25	7106.8	11 43 18	18 45	20 03	5 02	6 19	7 45	16 46	.....	23 41	29	4 32.9	16 51
Wed Mar 25/Thu Mar 26	7107.8	11 47 15	18 46	20 03	5 01	6 18	7 50	16 49	.....	0 37	39	5 27.9	17 42
Thu Mar 26/Fri Mar 27	7108.8	11 51 11	18 46	20 04	4 59	6 17	7 55	16 51	.....	1 28	49	6 21.6	17 35
Fri Mar 27/Sat Mar 28	7109.8	11 55 08	18 47	20 05	4 58	6 16	7 59	16 54	.....	2 14	59	7 13.7	16 35
Sat Mar 28/Sun Mar 29	7110.8	11 59 04	18 48	20 06	4 57	6 14	8 04	16 56	.....	2 56	68	8 04.1	14 49
Sun Mar 29/Mon Mar 30	7111.8	12 03 01	18 49	20 06	4 55	6 13	8 09	16 59	.....	3 34	77	8 52.8	12 23
Mon Mar 30/Tue Mar 31	7112.8	12 06 58	18 49	20 07	4 54	6 12	8 14	17 02	.....	4 10	85	9 40.2	9 25
Tue Mar 31/Wed Apr 01	7113.8	12 10 54	18 50	20 08	4 52	6 10	8 18	17 04	.....	4 44	91	10 26.5	6 04

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Wed Apr 01/Thu Apr 02	7114.8	12 14 51	18 51	20 09	4 51	6 09	8 23	17 07	.....	5 17	96	11 12.3	2 26
Thu Apr 02/Fri Apr 03	7115.8	12 18 47	18 51	20 10	4 50	6 08	8 28	17 09	17 23	5 49	99	11 58.0	- 1 19
Fri Apr 03/Sat Apr 04	7116.8	12 22 44	18 52	20 11	4 48	6 07	8 33	17 12	18 16	6 23	100	12 44.2	- 5 04
Sat Apr 04/Sun Apr 05	7117.8	12 26 40	18 53	20 11	4 47	6 05	8 37	17 14	19 09	6 58	99	13 31.2	- 8 40
Sun Apr 05/Mon Apr 06	7118.8	12 30 37	18 53	20 12	4 45	6 04	8 42	17 17	20 03	.....	97	14 19.6	-11 58
Mon Apr 06/Tue Apr 07	7119.8	12 34 33	18 54	20 13	4 44	6 03	8 47	17 19	20 58	.....	92	15 09.7	-14 46
Tue Apr 07/Wed Apr 08	7120.8	12 38 30	18 55	20 14	4 42	6 02	8 52	17 22	21 54	.....	86	16 01.5	-16 57
Wed Apr 08/Thu Apr 09	7121.8	12 42 27	18 55	20 15	4 41	6 00	8 57	17 24	22 49	.....	78	16 55.0	-18 19
Thu Apr 09/Fri Apr 10	7122.8	12 46 23	18 56	20 16	4 40	5 59	9 01	17 27	23 43	.....	69	17 50.0	-18 47
Fri Apr 10/Sat Apr 11	7123.8	12 50 20	18 57	20 17	4 38	5 58	9 06	17 29	0 35	.....	59	18 45.9	-18 16
Sat Apr 11/Sun Apr 12	7124.8	12 54 16	18 57	20 17	4 37	5 57	9 11	17 32	1 25	.....	48	19 42.4	-16 44
Sun Apr 12/Mon Apr 13	7125.8	12 58 13	18 58	20 18	4 35	5 56	9 16	17 34	2 13	.....	37	20 38.9	-14 13
Mon Apr 13/Tue Apr 14	7126.8	13 02 09	18 59	20 19	4 34	5 54	9 21	17 37	2 58	.....	26	21 35.1	-10 52
Tue Apr 14/Wed Apr 15	7127.8	13 06 06	18 59	20 20	4 33	5 53	9 26	17 39	3 42	.....	17	22 31.1	- 6 50
Wed Apr 15/Thu Apr 16	7128.8	13 10 02	19 00	20 21	4 31	5 52	9 30	17 42	4 24	.....	9	23 27.0	- 2 23
Thu Apr 16/Fri Apr 17	7129.8	13 13 59	19 01	20 22	4 30	5 51	9 35	17 45	5 06	.....	3	0 23.0	2 13
Fri Apr 17/Sat Apr 18	7130.8	13 17 56	19 02	20 23	4 28	5 50	9 40	17 47	5 50	18 08	0	1 19.4	6 39
Sat Apr 18/Sun Apr 19	7131.8	13 21 52	19 02	20 24	4 27	5 49	9 45	17 50	6 35	19 15	0	2 16.2	10 37
Sun Apr 19/Mon Apr 20	7132.8	13 25 49	19 03	20 25	4 26	5 47	9 50	17 52	.....	20 21	3	3 13.5	13 50
Mon Apr 20/Tue Apr 21	7133.8	13 29 45	19 04	20 26	4 24	5 46	9 55	17 55	.....	21 24	8	4 10.7	16 08
Tue Apr 21/Wed Apr 22	7134.8	13 33 42	19 04	20 27	4 23	5 45	10 00	17 57	.....	22 24	15	5 07.4	17 25
Wed Apr 22/Thu Apr 23	7135.8	13 37 38	19 05	20 28	4 22	5 44	10 05	18 00	.....	23 19	24	6 02.8	17 40
Thu Apr 23/Fri Apr 24	7136.8	13 41 35	19 06	20 28	4 20	5 43	10 10	18 03	.....	0 08	33	6 56.5	16 57
Fri Apr 24/Sat Apr 25	7137.8	13 45 31	19 07	20 29	4 19	5 42	10 14	18 05	.....	0 53	43	7 48.1	15 24
Sat Apr 25/Sun Apr 26	7138.8	13 49 28	19 07	20 30	4 18	5 41	10 19	18 08	.....	1 33	52	8 37.8	13 08
Sun Apr 26/Mon Apr 27	7139.8	13 53 25	19 08	20 31	4 16	5 40	10 24	18 11	.....	2 10	62	9 25.7	10 19
Mon Apr 27/Tue Apr 28	7140.8	13 57 21	19 09	20 32	4 15	5 39	10 29	18 13	.....	2 44	71	10 12.2	7 05
Tue Apr 28/Wed Apr 29	7141.8	14 01 18	19 09	20 33	4 14	5 38	10 34	18 16	.....	3 17	79	10 58.0	3 32
Wed Apr 29/Thu Apr 30	7142.8	14 05 14	19 10	20 34	4 13	5 37	10 39	18 19	.....	3 50	86	11 43.5	- 0 12
Thu Apr 30/Fri May 01	7143.8	14 09 11	19 11	20 35	4 11	5 36	10 44	18 21	.....	4 23	92	12 29.4	- 3 59

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Fri May 01/Sat May 02	7144.8	14 13 07	19 12	20 36	4 10	5 35	10 49	18 24	.....	4 57	97	13 16.3	- 7 40
Sat May 02/Sun May 03	7145.8	14 17 04	19 12	20 37	4 09	5 34	10 54	18 27	17 57	5 34	99	14 04.5	-11 07
Sun May 03/Mon May 04	7146.8	14 21 00	19 13	20 38	4 08	5 33	10 59	18 29	18 52	6 13	100	14 54.6	-14 08
Mon May 04/Tue May 05	7147.8	14 24 57	19 14	20 39	4 07	5 32	11 04	18 32	19 48	.....	99	15 46.7	-16 34
Tue May 05/Wed May 06	7148.8	14 28 54	19 14	20 40	4 05	5 31	11 09	18 35	20 44	.....	95	16 40.7	-18 13
Wed May 06/Thu May 07	7149.8	14 32 50	19 15	20 41	4 04	5 30	11 14	18 38	21 39	.....	89	17 36.3	-18 58
Thu May 07/Fri May 08	7150.8	14 36 47	19 16	20 42	4 03	5 30	11 19	18 41	22 33	.....	82	18 32.7	-18 42
Fri May 08/Sat May 09	7151.8	14 40 43	19 17	20 43	4 02	5 29	11 24	18 43	23 24	.....	73	19 29.4	-17 23
Sat May 09/Sun May 10	7152.8	14 44 40	19 17	20 44	4 01	5 28	11 28	18 46	0 11	.....	62	20 25.7	-15 07
Sun May 10/Mon May 11	7153.8	14 48 36	19 18	20 45	4 00	5 27	11 33	18 49	0 56	.....	51	21 21.4	-11 59
Mon May 11/Tue May 12	7154.8	14 52 33	19 19	20 46	3 59	5 26	11 38	18 52	1 39	.....	40	22 16.3	- 8 11
Tue May 12/Wed May 13	7155.8	14 56 29	19 19	20 47	3 58	5 26	11 43	18 55	2 20	.....	29	23 10.7	- 3 55
Wed May 13/Thu May 14	7156.8	15 00 26	19 20	20 48	3 57	5 25	11 48	18 58	3 01	.....	19	0 05.1	0 34
Thu May 14/Fri May 15	7157.8	15 04 23	19 21	20 49	3 56	5 24	11 53	19 01	3 42	.....	11	0 59.8	5 00
Fri May 15/Sat May 16	7158.8	15 08 19	19 22	20 50	3 55	5 24	11 58	19 04	4 25	.....	5	1 55.2	9 06
Sat May 16/Sun May 17	7159.8	15 12 16	19 22	20 51	3 54	5 23	12 03	19 07	5 11	18 01	1	2 51.5	12 37
Sun May 17/Mon May 18	7160.8	15 16 12	19 23	20 52	3 53	5 22	12 08	19 10	5 59	19 06	0	3 48.4	15 19
Mon May 18/Tue May 19	7161.8	15 20 09	19 24	20 53	3 52	5 22	12 13	19 13	.....	20 07	2	4 45.4	17 02
Tue May 19/Wed May 20	7162.8	15 24 05	19 24	20 54	3 51	5 21	12 18	19 16	.....	21 05	6	5 41.8	17 42
Wed May 20/Thu May 21	7163.8	15 28 02	19 25	20 55	3 51	5 21	12 23	19 19	.....	21 58	11	6 36.9	17 22
Thu May 21/Fri May 22	7164.8	15 31 58	19 26	20 56	3 50	5 20	12 28	19 22	.....	22 46	19	7 30.0	16 06
Fri May 22/Sat May 23	7165.8	15 35 55	19 26	20 57	3 49	5 20	12 32	19 25	.....	23 29	27	8 21.0	14 04
Sat May 23/Sun May 24	7166.8	15 39 52	19 27	20 58	3 48	5 19	12 37	19 29	.....	0 08	36	9 09.9	11 24
Sun May 24/Mon May 25	7167.8	15 43 48	19 28	20 59	3 47	5 19	12 42	19 32	.....	0 44	45	9 57.1	8 17
Mon May 25/Tue May 26	7168.8	15 47 45	19 28	21 00	3 47	5 18	12 47	19 35	.....	1 17	55	10 43.1	4 49
Tue May 26/Wed May 27	7169.8	15 51 41	19 29	21 01	3 46	5 18	12 52	19 38	.....	1 50	64	11 28.4	1 08
Wed May 27/Thu May 28	7170.8	15 55 38	19 30	21 01	3 46	5 17	12 57	19 42	.....	2 23	73	12 13.8	- 2 38
Thu May 28/Fri May 29	7171.8	15 59 34	19 30	21 02	3 45	5 17	13 01	19 45	.....	2 56	81	12 59.9	- 6 22
Fri May 29/Sat May 30	7172.8	16 03 31	19 31	21 03	3 44	5 17	13 06	19 49	.....	3 32	88	13 47.4	- 9 56
Sat May 30/Sun May 31	7173.8	16 07 27	19 31	21 04	3 44	5 16	13 11	19 52	.....	4 10	94	14 36.9	-13 10
Sun May 31/Mon Jun 01	7174.8	16 11 24	19 32	21 05	3 43	5 16	13 16	19 55	17 38	4 52	98	15 28.6	-15 53

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	%illum	Moon: RA	Moon: Dec
Mon Jun 01/Tue Jun 02	7175.8	16 15 21	19 33	21 06	3 43	5 16	13 20	19 59	18 35	5 38	100	16 22.6	-17 53
Tue Jun 02/Wed Jun 03	7176.8	16 19 17	19 33	21 06	3 42	5 16	13 25	20 02	19 32	6 29	99	17 18.8	-18 59
Wed Jun 03/Thu Jun 04	7177.8	16 23 14	19 34	21 07	3 42	5 15	13 30	20 06	20 27	.....	97	18 16.3	-19 04
Thu Jun 04/Fri Jun 05	7178.8	16 27 10	19 34	21 08	3 42	5 15	13 34	20 09	21 20	.....	92	19 14.4	-18 04
Fri Jun 05/Sat Jun 06	7179.8	16 31 07	19 35	21 08	3 41	5 15	13 39	20 13	22 10	.....	84	20 12.1	-16 00
Sat Jun 06/Sun Jun 07	7180.8	16 35 03	19 35	21 09	3 41	5 15	13 44	20 17	22 56	.....	75	21 08.9	-13 02
Sun Jun 07/Mon Jun 08	7181.8	16 39 00	19 36	21 10	3 41	5 15	13 48	20 20	23 40	.....	65	22 04.4	- 9 20
Mon Jun 08/Tue Jun 09	7182.8	16 42 56	19 36	21 10	3 41	5 15	13 53	20 24	0 21	.....	54	22 58.9	- 5 09
Tue Jun 09/Wed Jun 10	7183.8	16 46 53	19 37	21 11	3 40	5 15	13 57	20 28	1 01	.....	42	23 52.7	- 0 43
Wed Jun 10/Thu Jun 11	7184.8	16 50 50	19 37	21 12	3 40	5 15	14 02	20 32	1 41	.....	31	0 46.4	3 42
Thu Jun 11/Fri Jun 12	7185.8	16 54 46	19 38	21 12	3 40	5 15	14 06	20 35	2 22	.....	21	1 40.4	7 51
Fri Jun 12/Sat Jun 13	7186.8	16 58 43	19 38	21 13	3 40	5 15	14 11	20 39	3 05	.....	13	2 35.1	11 31
Sat Jun 13/Sun Jun 14	7187.8	17 02 39	19 38	21 13	3 40	5 15	14 15	20 43	3 51	.....	6	3 30.6	14 28
Sun Jun 14/Mon Jun 15	7188.8	17 06 36	19 39	21 14	3 40	5 15	14 20	20 47	4 40	17 54	2	4 26.6	16 31
Mon Jun 15/Tue Jun 16	7189.8	17 10 32	19 39	21 14	3 40	5 15	14 24	20 51	5 32	18 53	0	5 22.7	17 35
Tue Jun 16/Wed Jun 17	7190.8	17 14 29	19 39	21 14	3 40	5 15	14 28	20 55	6 27	19 48	1	6 18.0	17 38
Wed Jun 17/Thu Jun 18	7191.8	17 18 25	19 40	21 15	3 40	5 15	14 33	20 59	.....	20 38	3	7 11.9	16 44
Thu Jun 18/Fri Jun 19	7192.8	17 22 22	19 40	21 15	3 40	5 15	14 37	21 03	.....	21 24	8	8 03.9	14 58
Fri Jun 19/Sat Jun 20	7193.8	17 26 19	19 40	21 15	3 40	5 16	14 41	21 07	.....	22 05	14	8 53.8	12 31
Sat Jun 20/Sun Jun 21	7194.8	17 30 15	19 40	21 16	3 41	5 16	14 45	21 11	.....	22 42	21	9 41.8	9 33
Sun Jun 21/Mon Jun 22	7195.8	17 34 12	19 41	21 16	3 41	5 16	14 50	21 16	.....	23 17	30	10 28.2	6 11
Mon Jun 22/Tue Jun 23	7196.8	17 38 08	19 41	21 16	3 41	5 16	14 54	21 20	.....	23 50	39	11 13.6	2 35
Tue Jun 23/Wed Jun 24	7197.8	17 42 05	19 41	21 16	3 41	5 16	14 58	21 24	.....	0 23	48	11 58.6	- 1 09
Wed Jun 24/Thu Jun 25	7198.8	17 46 01	19 41	21 16	3 42	5 17	15 02	21 28	.....	0 55	57	12 43.9	- 4 53
Thu Jun 25/Fri Jun 26	7199.8	17 49 58	19 41	21 16	3 42	5 17	15 06	21 33	.....	1 29	67	13 30.2	- 8 30
Fri Jun 26/Sat Jun 27	7200.8	17 53 54	19 41	21 16	3 42	5 17	15 10	21 37	.....	2 06	76	14 18.2	-11 51
Sat Jun 27/Sun Jun 28	7201.8	17 57 51	19 41	21 16	3 43	5 18	15 14	21 41	.....	2 45	84	15 08.5	-14 47
Sun Jun 28/Mon Jun 29	7202.8	18 01 48	19 42	21 16	3 43	5 18	15 18	21 46	.....	3 30	91	16 01.3	-17 07
Mon Jun 29/Tue Jun 30	7203.8	18 05 44	19 42	21 16	3 44	5 18	15 22	21 50	.....	4 19	96	16 56.8	-18 39
Tue Jun 30/Wed Jul 01	7204.8	18 09 41	19 42	21 16	3 44	5 19	15 25	21 55	18 16	5 13	99	17 54.5	-19 12

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	%illum	Moon: RA	Moon: Dec
Wed Jul 01/Thu Jul 02	7205.8	18 13 37	19 42	21 16	3 45	5 19	15 29	21 59	19 11	6 12	100	18 53.6	-18 38
Thu Jul 02/Fri Jul 03	7206.8	18 17 34	19 42	21 16	3 45	5 20	15 33	22 04	20 04	.....	98	19 53.1	-16 57
Fri Jul 03/Sat Jul 04	7207.8	18 21 30	19 41	21 16	3 46	5 20	15 37	22 08	20 53	.....	93	20 52.0	-14 12
Sat Jul 04/Sun Jul 05	7208.8	18 25 27	19 41	21 15	3 47	5 21	15 40	22 13	21 39	.....	87	21 49.7	-10 37
Sun Jul 05/Mon Jul 06	7209.8	18 29 23	19 41	21 15	3 47	5 21	15 44	22 17	22 22	.....	78	22 45.9	- 6 27
Mon Jul 06/Tue Jul 07	7210.8	18 33 20	19 41	21 15	3 48	5 22	15 48	22 22	23 03	.....	67	23 40.9	- 1 59
Tue Jul 07/Wed Jul 08	7211.8	18 37 17	19 41	21 14	3 49	5 22	15 51	22 26	23 43	.....	56	0 35.1	2 31
Wed Jul 08/Thu Jul 09	7212.8	18 41 13	19 41	21 14	3 49	5 23	15 55	22 31	0 23	.....	44	1 29.1	6 47
Thu Jul 09/Fri Jul 10	7213.8	18 45 10	19 40	21 14	3 50	5 23	15 58	22 36	1 05	.....	34	2 23.2	10 34
Fri Jul 10/Sat Jul 11	7214.8	18 49 06	19 40	21 13	3 51	5 24	16 02	22 40	1 49	.....	24	3 17.8	13 41
Sat Jul 11/Sun Jul 12	7215.8	18 53 03	19 40	21 13	3 51	5 24	16 05	22 45	2 35	.....	15	4 12.8	15 59
Sun Jul 12/Mon Jul 13	7216.8	18 56 59	19 40	21 12	3 52	5 25	16 09	22 50	3 25	.....	8	5 07.9	17 20
Mon Jul 13/Tue Jul 14	7217.8	19 00 56	19 39	21 12	3 53	5 25	16 12	22 55	4 18	17 40	4	6 02.6	17 42
Tue Jul 14/Wed Jul 15	7218.8	19 04 52	19 39	21 11	3 54	5 26	16 15	22 59	5 12	18 31	1	6 56.4	17 07
Wed Jul 15/Thu Jul 16	7219.8	19 08 49	19 39	21 10	3 55	5 27	16 19	23 04	6 07	19 18	0	7 48.6	15 40
Thu Jul 16/Fri Jul 17	7220.8	19 12 46	19 38	21 10	3 56	5 27	16 22	23 09	.....	20 01	2	8 39.0	13 28
Fri Jul 17/Sat Jul 18	7221.8	19 16 42	19 38	21 09	3 56	5 28	16 25	23 14	.....	20 40	5	9 27.5	10 40
Sat Jul 18/Sun Jul 19	7222.8	19 20 39	19 37	21 08	3 57	5 28	16 29	23 19	.....	21 16	10	10 14.4	7 27
Sun Jul 19/Mon Jul 20	7223.8	19 24 35	19 37	21 08	3 58	5 29	16 32	23 23	.....	21 50	16	11 00.0	3 56
Mon Jul 20/Tue Jul 21	7224.8	19 28 32	19 36	21 07	3 59	5 30	16 35	23 28	.....	22 23	24	11 44.9	0 16
Tue Jul 21/Wed Jul 22	7225.8	19 32 28	19 36	21 06	4 00	5 30	16 38	23 33	.....	22 55	32	12 29.6	- 3 26
Wed Jul 22/Thu Jul 23	7226.8	19 36 25	19 35	21 05	4 01	5 31	16 41	23 38	.....	23 29	41	13 14.9	- 7 03
Thu Jul 23/Fri Jul 24	7227.8	19 40 21	19 35	21 04	4 02	5 32	16 44	23 43	.....	0 03	51	14 01.4	-10 27
Fri Jul 24/Sat Jul 25	7228.8	19 44 18	19 34	21 03	4 03	5 32	16 47	23 48	.....	0 41	60	14 49.7	-13 30
Sat Jul 25/Sun Jul 26	7229.8	19 48 15	19 33	21 03	4 04	5 33	16 50	23 52	.....	1 22	70	15 40.4	-16 04
Sun Jul 26/Mon Jul 27	7230.8	19 52 11	19 33	21 02	4 04	5 33	16 53	23 57	.....	2 08	79	16 33.8	-17 56
Mon Jul 27/Tue Jul 28	7231.8	19 56 08	19 32	21 01	4 05	5 34	16 56	0 02	.....	2 59	87	17 29.9	-18 56
Tue Jul 28/Wed Jul 29	7232.8	20 00 04	19 31	21 00	4 06	5 35	16 59	0 07	.....	3 56	94	18 28.2	-18 55
Wed Jul 29/Thu Jul 30	7233.8	20 04 01	19 31	20 59	4 07	5 35	17 02	0 12	17 51	4 57	98	19 27.9	-17 45
Thu Jul 30/Fri Jul 31	7234.8	20 07 57	19 30	20 58	4 08	5 36	17 05	0 17	18 43	6 02	100	20 28.1	-15 27
Fri Jul 31/Sat Aug 01	7235.8	20 11 54	19 29	20 57	4 09	5 37	17 08	0 22	19 32	.....	99	21 27.8	-12 08

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	%illum	Moon: RA	Moon: Dec
Sat Aug 01/Sun Aug 02	7236.8	20 15 50	19 28	20 56	4 10	5 37	17 11	0 27	20 17	.....	95	22 26.5	- 8 04
Sun Aug 02/Mon Aug 03	7237.8	20 19 47	19 27	20 54	4 11	5 38	17 14	0 32	21 00	.....	88	23 23.9	- 3 32
Mon Aug 03/Tue Aug 04	7238.8	20 23 44	19 27	20 53	4 12	5 39	17 17	0 36	21 42	.....	80	0 20.2	1 07
Tue Aug 04/Wed Aug 05	7239.8	20 27 40	19 26	20 52	4 13	5 39	17 19	0 41	22 23	.....	69	1 15.9	5 35
Wed Aug 05/Thu Aug 06	7240.8	20 31 37	19 25	20 51	4 14	5 40	17 22	0 46	23 05	.....	58	2 11.1	9 35
Thu Aug 06/Fri Aug 07	7241.8	20 35 33	19 24	20 50	4 15	5 41	17 25	0 51	23 49	.....	47	3 06.3	12 55
Fri Aug 07/Sat Aug 08	7242.8	20 39 30	19 23	20 49	4 16	5 42	17 28	0 56	0 34	.....	36	4 01.4	15 26
Sat Aug 08/Sun Aug 09	7243.8	20 43 26	19 22	20 47	4 17	5 42	17 30	1 01	1 23	.....	26	4 56.3	17 01
Sun Aug 09/Mon Aug 10	7244.8	20 47 23	19 21	20 46	4 18	5 43	17 33	1 06	2 14	.....	18	5 50.7	17 38
Mon Aug 10/Tue Aug 11	7245.8	20 51 19	19 20	20 45	4 19	5 44	17 36	1 11	3 07	.....	11	6 44.1	17 18
Tue Aug 11/Wed Aug 12	7246.8	20 55 16	19 19	20 44	4 20	5 44	17 38	1 16	4 01	.....	5	7 36.1	16 06
Wed Aug 12/Thu Aug 13	7247.8	20 59 13	19 18	20 42	4 21	5 45	17 41	1 20	4 55	17 59	2	8 26.5	14 07
Thu Aug 13/Fri Aug 14	7248.8	21 03 09	19 17	20 41	4 22	5 45	17 44	1 25	5 50	18 39	0	9 15.2	11 32
Fri Aug 14/Sat Aug 15	7249.8	21 07 06	19 16	20 40	4 22	5 46	17 46	1 30	6 43	19 16	1	10 02.3	8 28
Sat Aug 15/Sun Aug 16	7250.8	21 11 02	19 15	20 39	4 23	5 47	17 49	1 35	.....	19 51	3	10 48.1	5 03
Sun Aug 16/Mon Aug 17	7251.8	21 14 59	19 14	20 37	4 24	5 47	17 52	1 40	.....	20 24	6	11 33.0	1 28
Mon Aug 17/Tue Aug 18	7252.8	21 18 55	19 13	20 36	4 25	5 48	17 54	1 45	.....	20 57	12	12 17.5	- 2 12
Tue Aug 18/Wed Aug 19	7253.8	21 22 52	19 12	20 35	4 26	5 49	17 57	1 50	.....	21 29	18	13 02.3	- 5 48
Wed Aug 19/Thu Aug 20	7254.8	21 26 48	19 11	20 33	4 27	5 49	17 59	1 54	.....	22 03	26	13 47.7	- 9 13
Thu Aug 20/Fri Aug 21	7255.8	21 30 45	19 10	20 32	4 28	5 50	18 02	1 59	.....	22 39	35	14 34.5	-12 19
Fri Aug 21/Sat Aug 22	7256.8	21 34 42	19 08	20 30	4 29	5 51	18 05	2 04	.....	23 18	44	15 23.2	-15 00
Sat Aug 22/Sun Aug 23	7257.8	21 38 38	19 07	20 29	4 30	5 51	18 07	2 09	.....	0 00	54	16 14.1	-17 05
Sun Aug 23/Mon Aug 24	7258.8	21 42 35	19 06	20 28	4 30	5 52	18 10	2 14	.....	0 48	64	17 07.5	-18 24
Mon Aug 24/Tue Aug 25	7259.8	21 46 31	19 05	20 26	4 31	5 53	18 12	2 19	.....	1 40	74	18 03.4	-18 50
Tue Aug 25/Wed Aug 26	7260.8	21 50 28	19 04	20 25	4 32	5 53	18 15	2 23	.....	2 38	83	19 01.2	-18 12
Wed Aug 26/Thu Aug 27	7261.8	21 54 24	19 03	20 23	4 33	5 54	18 17	2 28	.....	3 41	91	20 00.4	-16 28
Thu Aug 27/Fri Aug 28	7262.8	21 58 21	19 01	20 22	4 34	5 55	18 20	2 33	17 19	4 46	97	21 00.2	-13 40
Fri Aug 28/Sat Aug 29	7263.8	22 02 17	19 00	20 21	4 35	5 55	18 22	2 38	18 06	5 54	100	21 59.9	- 9 55
Sat Aug 29/Sun Aug 30	7264.8	22 06 14	18 59	20 19	4 36	5 56	18 25	2 43	18 51	.....	100	22 59.1	- 5 30
Sun Aug 30/Mon Aug 31	7265.8	22 10 11	18 58	20 18	4 36	5 56	18 27	2 47	19 35	.....	96	23 57.7	- 0 46
Mon Aug 31/Tue Sep 01	7266.8	22 14 07	18 56	20 16	4 37	5 57	18 30	2 52	20 18	.....	91	0 55.7	3 57

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	twi.end	twi.beg	rise	LST twilight: eve	morn	Moon: rise	set	%illum	RA	Dec
Tue Sep 01/Wed Sep 02	7267.8	22 18 04	18 55	20 15	4 38	5 58	18 32	2 57	21 01	.....	82	1 53.2	8 18
Wed Sep 02/Thu Sep 03	7268.8	22 22 00	18 54	20 13	4 39	5 58	18 35	3 02	21 46	.....	72	2 50.5	11 59
Thu Sep 03/Fri Sep 04	7269.8	22 25 57	18 53	20 12	4 40	5 59	18 37	3 06	22 32	.....	62	3 47.4	14 49
Fri Sep 04/Sat Sep 05	7270.8	22 29 53	18 51	20 11	4 40	6 00	18 40	3 11	23 20	.....	51	4 43.6	16 41
Sat Sep 05/Sun Sep 06	7271.8	22 33 50	18 50	20 09	4 41	6 00	18 42	3 16	0 11	.....	40	5 39.0	17 32
Sun Sep 06/Mon Sep 07	7272.8	22 37 46	18 49	20 08	4 42	6 01	18 45	3 20	1 03	.....	30	6 33.0	17 25
Mon Sep 07/Tue Sep 08	7273.8	22 41 43	18 48	20 06	4 43	6 01	18 47	3 25	1 57	.....	21	7 25.3	16 25
Tue Sep 08/Wed Sep 09	7274.8	22 45 40	18 46	20 05	4 43	6 02	18 50	3 30	2 51	.....	14	8 15.9	14 38
Wed Sep 09/Thu Sep 10	7275.8	22 49 36	18 45	20 03	4 44	6 03	18 52	3 35	3 45	.....	8	9 04.6	12 12
Thu Sep 10/Fri Sep 11	7276.8	22 53 33	18 44	20 02	4 45	6 03	18 55	3 39	4 38	17 17	4	9 51.8	9 16
Fri Sep 11/Sat Sep 12	7277.8	22 57 29	18 42	20 00	4 46	6 04	18 57	3 44	5 31	17 52	1	10 37.7	5 57
Sat Sep 12/Sun Sep 13	7278.8	23 01 26	18 41	19 59	4 46	6 04	19 00	3 49	6 23	18 26	0	11 22.6	2 26
Sun Sep 13/Mon Sep 14	7279.8	23 05 22	18 40	19 57	4 47	6 05	19 02	3 53	.....	18 58	1	12 07.1	- 1 12
Mon Sep 14/Tue Sep 15	7280.8	23 09 19	18 38	19 56	4 48	6 06	19 05	3 58	.....	19 31	4	12 51.7	- 4 48
Tue Sep 15/Wed Sep 16	7281.8	23 13 15	18 37	19 55	4 49	6 06	19 07	4 03	.....	20 04	8	13 36.8	- 8 15
Wed Sep 16/Thu Sep 17	7282.8	23 17 12	18 36	19 53	4 49	6 07	19 10	4 07	.....	20 39	14	14 22.8	-11 24
Thu Sep 17/Fri Sep 18	7283.8	23 21 09	18 34	19 52	4 50	6 08	19 12	4 12	.....	21 17	21	15 10.3	-14 09
Fri Sep 18/Sat Sep 19	7284.8	23 25 05	18 33	19 50	4 51	6 08	19 15	4 17	.....	21 57	29	15 59.5	-16 22
Sat Sep 19/Sun Sep 20	7285.8	23 29 02	18 32	19 49	4 51	6 09	19 17	4 21	.....	22 42	38	16 50.8	-17 53
Sun Sep 20/Mon Sep 21	7286.8	23 32 58	18 30	19 47	4 52	6 09	19 20	4 26	.....	23 31	48	17 44.1	-18 36
Mon Sep 21/Tue Sep 22	7287.8	23 36 55	18 29	19 46	4 53	6 10	19 22	4 31	.....	0 24	59	18 39.2	-18 23
Tue Sep 22/Wed Sep 23	7288.8	23 40 51	18 28	19 45	4 54	6 11	19 25	4 35	.....	1 23	69	19 35.8	-17 08
Wed Sep 23/Thu Sep 24	7289.8	23 44 48	18 26	19 43	4 54	6 11	19 27	4 40	.....	2 25	79	20 33.5	-14 52
Thu Sep 24/Fri Sep 25	7290.8	23 48 44	18 25	19 42	4 55	6 12	19 30	4 45	.....	3 30	88	21 31.8	-11 37
Fri Sep 25/Sat Sep 26	7291.8	23 52 41	18 24	19 41	4 56	6 12	19 33	4 49	16 39	4 38	95	22 30.5	- 7 34
Sat Sep 26/Sun Sep 27	7292.8	23 56 38	18 22	19 39	4 56	6 13	19 35	4 54	17 24	5 47	99	23 29.2	- 2 58
Sun Sep 27/Mon Sep 28	7293.8	0 00 34	18 21	19 38	4 57	6 14	19 38	4 58	18 07	6 56	100	0 28.2	1 51
Mon Sep 28/Tue Sep 29	7294.8	0 04 31	18 20	19 36	4 58	6 14	19 40	5 03	18 51	.....	98	1 27.4	6 30
Tue Sep 29/Wed Sep 30	7295.8	0 08 27	18 19	19 35	4 58	6 15	19 43	5 08	19 36	.....	93	2 26.8	10 38
Wed Sep 30/Thu Oct 01	7296.8	0 12 24	18 17	19 34	4 59	6 16	19 45	5 12	20 23	.....	85	3 26.1	13 57

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	%illum	Moon: RA	Moon: Dec
Thu Oct 01/Fri Oct 02	7297.8	0 16 20	18 16	19 32	5 00	6 16	19 48	5 17	21 13	.....	76	4 24.9	16 15
Fri Oct 02/Sat Oct 03	7298.8	0 20 17	18 15	19 31	5 00	6 17	19 51	5 21	22 04	.....	66	5 22.6	17 28
Sat Oct 03/Sun Oct 04	7299.8	0 24 13	18 13	19 30	5 01	6 18	19 53	5 26	22 58	.....	55	6 18.7	17 38
Sun Oct 04/Mon Oct 05	7300.8	0 28 10	18 12	19 29	5 02	6 18	19 56	5 31	23 52	.....	45	7 12.7	16 50
Mon Oct 05/Tue Oct 06	7301.8	0 32 07	18 11	19 27	5 02	6 19	19 59	5 35	0 46	.....	35	8 04.5	15 12
Tue Oct 06/Wed Oct 07	7302.8	0 36 03	18 10	19 26	5 03	6 20	20 01	5 40	1 40	.....	26	8 54.0	12 53
Wed Oct 07/Thu Oct 08	7303.8	0 40 00	18 08	19 25	5 04	6 20	20 04	5 45	2 34	.....	18	9 41.6	10 03
Thu Oct 08/Fri Oct 09	7304.8	0 43 56	18 07	19 24	5 04	6 21	20 07	5 49	3 27	.....	11	10 27.7	6 49
Fri Oct 09/Sat Oct 10	7305.8	0 47 53	18 06	19 22	5 05	6 22	20 10	5 54	4 19	16 27	6	11 12.8	3 20
Sat Oct 10/Sun Oct 11	7306.8	0 51 49	18 05	19 21	5 06	6 22	20 12	5 58	5 11	17 00	2	11 57.3	- 0 17
Sun Oct 11/Mon Oct 12	7307.8	0 55 46	18 03	19 20	5 06	6 23	20 15	6 03	6 03	17 33	0	12 41.8	- 3 54
Mon Oct 12/Tue Oct 13	7308.8	0 59 42	18 02	19 19	5 07	6 24	20 18	6 08	6 55	18 06	0	13 26.7	- 7 24
Tue Oct 13/Wed Oct 14	7309.8	1 03 39	18 01	19 18	5 08	6 24	20 21	6 12	.....	18 40	2	14 12.6	-10 39
Wed Oct 14/Thu Oct 15	7310.8	1 07 36	18 00	19 17	5 08	6 25	20 23	6 17	.....	19 17	5	14 59.7	-13 31
Thu Oct 15/Fri Oct 16	7311.8	1 11 32	17 59	19 15	5 09	6 26	20 26	6 21	.....	19 56	10	15 48.4	-15 51
Fri Oct 16/Sat Oct 17	7312.8	1 15 29	17 58	19 14	5 10	6 27	20 29	6 26	.....	20 39	16	16 38.7	-17 32
Sat Oct 17/Sun Oct 18	7313.8	1 19 25	17 57	19 13	5 10	6 27	20 32	6 31	.....	21 26	24	17 30.7	-18 26
Sun Oct 18/Mon Oct 19	7314.8	1 23 22	17 55	19 12	5 11	6 28	20 35	6 35	.....	22 18	33	18 24.0	-18 28
Mon Oct 19/Tue Oct 20	7315.8	1 27 18	17 54	19 11	5 12	6 29	20 38	6 40	.....	23 13	43	19 18.5	-17 34
Tue Oct 20/Wed Oct 21	7316.8	1 31 15	17 53	19 10	5 12	6 30	20 41	6 45	.....	0 11	54	20 13.8	-15 41
Wed Oct 21/Thu Oct 22	7317.8	1 35 11	17 52	19 09	5 13	6 30	20 43	6 49	.....	1 13	65	21 09.6	-12 54
Thu Oct 22/Fri Oct 23	7318.8	1 39 08	17 51	19 08	5 14	6 31	20 46	6 54	.....	2 17	75	22 05.8	- 9 16
Fri Oct 23/Sat Oct 24	7319.8	1 43 05	17 50	19 07	5 15	6 32	20 49	6 58	.....	3 23	85	23 02.5	- 5 00
Sat Oct 24/Sun Oct 25	7320.8	1 47 01	17 49	19 06	5 15	6 33	20 52	7 03	.....	4 31	93	23 59.9	- 0 21
Sun Oct 25/Mon Oct 26	7321.8	1 50 58	17 48	19 05	5 16	6 33	20 55	7 08	16 39	5 39	98	0 58.1	4 23
Mon Oct 26/Tue Oct 27	7322.8	1 54 54	17 47	19 04	5 17	6 34	20 58	7 12	17 23	6 48	100	1 57.5	8 50
Tue Oct 27/Wed Oct 28	7323.8	1 58 51	17 46	19 03	5 17	6 35	21 02	7 17	18 10	.....	99	2 57.7	12 39
Wed Oct 28/Thu Oct 29	7324.8	2 02 47	17 45	19 03	5 18	6 36	21 05	7 22	18 59	.....	95	3 58.4	15 31
Thu Oct 29/Fri Oct 30	7325.8	2 06 44	17 44	19 02	5 19	6 37	21 08	7 26	19 51	.....	89	4 58.7	17 17
Fri Oct 30/Sat Oct 31	7326.8	2 10 40	17 43	19 01	5 19	6 37	21 11	7 31	20 45	.....	81	5 57.8	17 54
Sat Oct 31/Sun Nov 01	7327.8	2 14 37	17 42	19 00	5 20	6 38	21 14	7 36	21 41	.....	71	6 54.6	17 25

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Sun Nov 01/Mon Nov 02	7328.8	2 18 34	17 41	18 59	5 21	6 39	21 17	7 40	22 37	.....	61	7 48.9	16 00
Mon Nov 02/Tue Nov 03	7329.8	2 22 30	17 41	18 59	5 22	6 40	21 20	7 45	23 33	.....	51	8 40.4	13 48
Tue Nov 03/Wed Nov 04	7330.8	2 26 27	17 40	18 58	5 22	6 41	21 24	7 50	0 27	.....	42	9 29.4	11 02
Wed Nov 04/Thu Nov 05	7331.8	2 30 23	17 39	18 57	5 23	6 41	21 27	7 54	1 21	.....	32	10 16.4	7 51
Thu Nov 05/Fri Nov 06	7332.8	2 34 20	17 38	18 57	5 24	6 42	21 30	7 59	2 13	.....	24	11 01.9	4 23
Fri Nov 06/Sat Nov 07	7333.8	2 38 16	17 37	18 56	5 25	6 43	21 33	8 04	3 05	.....	16	11 46.6	0 46
Sat Nov 07/Sun Nov 08	7334.8	2 42 13	17 37	18 55	5 25	6 44	21 37	8 08	3 57	.....	10	12 31.1	- 2 54
Sun Nov 08/Mon Nov 09	7335.8	2 46 09	17 36	18 55	5 26	6 45	21 40	8 13	4 50	16 07	5	13 16.0	- 6 28
Mon Nov 09/Tue Nov 10	7336.8	2 50 06	17 35	18 54	5 27	6 46	21 43	8 18	5 43	16 41	2	14 01.7	- 9 49
Tue Nov 10/Wed Nov 11	7337.8	2 54 03	17 35	18 54	5 27	6 47	21 47	8 22	6 37	17 17	0	14 48.7	-12 50
Wed Nov 11/Thu Nov 12	7338.8	2 57 59	17 34	18 53	5 28	6 47	21 50	8 27	7 31	17 56	0	15 37.3	-15 21
Thu Nov 12/Fri Nov 13	7339.8	3 01 56	17 33	18 52	5 29	6 48	21 54	8 32	.....	18 38	2	16 27.6	-17 13
Fri Nov 13/Sat Nov 14	7340.8	3 05 52	17 33	18 52	5 30	6 49	21 57	8 37	.....	19 24	6	17 19.5	-18 20
Sat Nov 14/Sun Nov 15	7341.8	3 09 49	17 32	18 52	5 30	6 50	22 01	8 41	.....	20 14	12	18 12.6	-18 35
Sun Nov 15/Mon Nov 16	7342.8	3 13 45	17 32	18 51	5 31	6 51	22 04	8 46	.....	21 08	19	19 06.5	-17 55
Mon Nov 16/Tue Nov 17	7343.8	3 17 42	17 31	18 51	5 32	6 52	22 08	8 51	.....	22 05	28	20 00.7	-16 18
Tue Nov 17/Wed Nov 18	7344.8	3 21 38	17 31	18 50	5 33	6 53	22 11	8 55	.....	23 05	39	20 55.1	-13 47
Wed Nov 18/Thu Nov 19	7345.8	3 25 35	17 30	18 50	5 34	6 54	22 15	9 00	.....	0 06	49	21 49.4	-10 29
Thu Nov 19/Fri Nov 20	7346.8	3 29 32	17 30	18 50	5 34	6 54	22 18	9 05	.....	1 09	61	22 43.7	- 6 33
Fri Nov 20/Sat Nov 21	7347.8	3 33 28	17 29	18 49	5 35	6 55	22 22	9 09	.....	2 13	72	23 38.5	- 2 09
Sat Nov 21/Sun Nov 22	7348.8	3 37 25	17 29	18 49	5 36	6 56	22 26	9 14	.....	3 19	82	0 34.1	2 26
Sun Nov 22/Mon Nov 23	7349.8	3 41 21	17 29	18 49	5 37	6 57	22 29	9 19	.....	4 26	90	1 31.0	6 56
Mon Nov 23/Tue Nov 24	7350.8	3 45 18	17 28	18 49	5 37	6 58	22 33	9 24	15 58	5 33	96	2 29.4	11 02
Tue Nov 24/Wed Nov 25	7351.8	3 49 14	17 28	18 49	5 38	6 59	22 37	9 28	16 45	6 40	99	3 29.3	14 23
Wed Nov 25/Thu Nov 26	7352.8	3 53 11	17 28	18 48	5 39	7 00	22 41	9 33	17 35	7 44	100	4 30.1	16 45
Thu Nov 26/Fri Nov 27	7353.8	3 57 07	17 28	18 48	5 40	7 00	22 45	9 38	18 28	.....	97	5 30.8	17 58
Fri Nov 27/Sat Nov 28	7354.8	4 01 04	17 27	18 48	5 40	7 01	22 48	9 42	19 25	.....	92	6 30.2	17 59
Sat Nov 28/Sun Nov 29	7355.8	4 05 01	17 27	18 48	5 41	7 02	22 52	9 47	20 22	.....	86	7 27.3	16 56
Sun Nov 29/Mon Nov 30	7356.8	4 08 57	17 27	18 48	5 42	7 03	22 56	9 52	21 20	.....	78	8 21.6	14 59
Mon Nov 30/Tue Dec 01	7357.8	4 12 54	17 27	18 48	5 42	7 04	23 00	9 56	22 16	.....	69	9 13.0	12 21

***** 2015 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) (2015 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Tue Dec 01/Wed Dec 02	7358.8	4 16 50	17 27	18 48	5 43	7 05	23 04	10 01	23 11	.....	59	10 01.9	9 12
Wed Dec 02/Thu Dec 03	7359.8	4 20 47	17 27	18 48	5 44	7 05	23 08	10 06	0 05	.....	49	10 48.6	5 44
Thu Dec 03/Fri Dec 04	7360.8	4 24 43	17 27	18 48	5 45	7 06	23 12	10 10	0 58	.....	40	11 34.1	2 05
Fri Dec 04/Sat Dec 05	7361.8	4 28 40	17 27	18 48	5 45	7 07	23 16	10 15	1 50	.....	31	12 18.8	- 1 37
Sat Dec 05/Sun Dec 06	7362.8	4 32 36	17 27	18 48	5 46	7 08	23 20	10 20	2 42	.....	23	13 03.5	- 5 15
Sun Dec 06/Mon Dec 07	7363.8	4 36 33	17 27	18 49	5 47	7 09	23 24	10 24	3 35	.....	16	13 49.0	- 8 43
Mon Dec 07/Tue Dec 08	7364.8	4 40 30	17 27	18 49	5 47	7 09	23 28	10 29	4 28	.....	9	14 35.6	-11 53
Tue Dec 08/Wed Dec 09	7365.8	4 44 26	17 27	18 49	5 48	7 10	23 33	10 33	5 22	15 53	5	15 23.9	-14 37
Wed Dec 09/Thu Dec 10	7366.8	4 48 23	17 27	18 49	5 49	7 11	23 37	10 38	6 17	16 34	1	16 14.1	-16 44
Thu Dec 10/Fri Dec 11	7367.8	4 52 19	17 27	18 49	5 49	7 12	23 41	10 43	7 12	17 19	0	17 06.1	-18 08
Fri Dec 11/Sat Dec 12	7368.8	4 56 16	17 28	18 50	5 50	7 12	23 45	10 47	8 05	18 08	1	17 59.6	-18 40
Sat Dec 12/Sun Dec 13	7369.8	5 00 12	17 28	18 50	5 51	7 13	23 49	10 52	.....	19 02	4	18 54.1	-18 15
Sun Dec 13/Mon Dec 14	7370.8	5 04 09	17 28	18 50	5 51	7 14	23 54	10 56	.....	19 59	9	19 49.0	-16 52
Mon Dec 14/Tue Dec 15	7371.8	5 08 05	17 28	18 51	5 52	7 14	23 58	11 01	.....	20 59	16	20 43.7	-14 34
Tue Dec 15/Wed Dec 16	7372.8	5 12 02	17 29	18 51	5 53	7 15	0 02	11 06	.....	22 00	24	21 37.9	-11 27
Wed Dec 16/Thu Dec 17	7373.8	5 15 59	17 29	18 51	5 53	7 15	0 07	11 10	.....	23 02	34	22 31.6	- 7 41
Thu Dec 17/Fri Dec 18	7374.8	5 19 55	17 30	18 52	5 54	7 16	0 11	11 15	.....	0 05	45	23 25.0	- 3 29
Fri Dec 18/Sat Dec 19	7375.8	5 23 52	17 30	18 52	5 54	7 17	0 15	11 19	.....	1 08	57	0 18.6	0 58
Sat Dec 19/Sun Dec 20	7376.8	5 27 48	17 30	18 53	5 55	7 17	0 20	11 24	.....	2 13	68	1 13.1	5 24
Sun Dec 20/Mon Dec 21	7377.8	5 31 45	17 31	18 53	5 55	7 18	0 24	11 28	.....	3 17	78	2 08.8	9 32
Mon Dec 21/Tue Dec 22	7378.8	5 35 41	17 31	18 54	5 56	7 18	0 29	11 32	.....	4 22	87	3 06.0	13 07
Tue Dec 22/Wed Dec 23	7379.8	5 39 38	17 32	18 54	5 56	7 19	0 33	11 37	.....	5 26	94	4 04.8	15 53
Wed Dec 23/Thu Dec 24	7380.8	5 43 34	17 32	18 55	5 57	7 19	0 37	11 41	16 14	6 28	98	5 04.4	17 37
Thu Dec 24/Fri Dec 25	7381.8	5 47 31	17 33	18 55	5 57	7 19	0 42	11 46	17 09	7 25	100	6 04.0	18 13
Fri Dec 25/Sat Dec 26	7382.8	5 51 28	17 33	18 56	5 58	7 20	0 46	11 50	18 06	8 18	99	7 02.5	17 41
Sat Dec 26/Sun Dec 27	7383.8	5 55 24	17 34	18 56	5 58	7 20	0 51	11 54	19 04	.....	96	7 58.9	16 07
Sun Dec 27/Mon Dec 28	7384.8	5 59 21	17 35	18 57	5 58	7 21	0 55	11 59	20 02	.....	91	8 52.6	13 44
Mon Dec 28/Tue Dec 29	7385.8	6 03 17	17 35	18 58	5 59	7 21	1 00	12 03	20 59	.....	84	9 43.6	10 43
Tue Dec 29/Wed Dec 30	7386.8	6 07 14	17 36	18 58	5 59	7 21	1 05	12 07	21 54	.....	76	10 32.2	7 18
Wed Dec 30/Thu Dec 31	7387.8	6 11 10	17 37	18 59	5 59	7 22	1 09	12 12	22 48	.....	67	11 18.9	3 38
Thu Dec 31/Fri Jan 01	7388.8	6 15 07	17 37	18 59	6 00	7 22	1 14	12 16	23 40	.....	58	12 04.4	- 0 07