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:

```
          ***** 2014 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 2014, 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 02	17 22	Dec 09	8 13	Dec 17	2 29	Dec 25	6 50
Jan 01	4 15	Jan 07	20 40	Jan 15	21 54	Jan 23	22 21
Jan 30	14 41	Feb 06	12 23	Feb 14	16 55	Feb 22	10 17
Mar 01	1 03	Mar 08	6 27	Mar 16	10 11	Mar 23	18 48
Mar 30	11 48	Apr 07	1 32	Apr 15	0 45	Apr 22	0 53
Apr 28	23 18	May 06	20 17	May 14	12 19	May 21	6 01
May 28	11 43	Jun 05	13 41	Jun 12	21 14	Jun 19	11 40
Jun 27	1 11	Jul 05	5 01	Jul 12	4 27	Jul 18	19 10
Jul 26	15 43	Aug 03	17 51	Aug 10	11 11	Aug 17	5 27
Aug 25	7 13	Sep 02	4 12	Sep 08	18 39	Sep 15	19 06
Sep 23	23 14	Oct 01	12 33	Oct 08	3 51	Oct 15	12 13
Oct 23	14 56	Oct 30	19 49	Nov 06	15 23	Nov 14	8 18
Nov 22	5 32	Nov 29	3 07	Dec 06	5 27	Dec 14	5 54
Dec 21	18 36	Dec 28	11 33	Jan 04	21 54	Jan 13	2 49

***** 2014 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) (2014 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 Jan 01/Thu Jan 02	6659.8	6 20 58	17 38	19 00	6 00	7 22	1 21	12 22	8 13	18 23	1	19 37.1	-16 47
Thu Jan 02/Fri Jan 03	6660.8	6 24 55	17 39	19 01	6 00	7 22	1 25	12 26	.....	19 33	5	20 37.8	-13 32
Fri Jan 03/Sat Jan 04	6661.8	6 28 51	17 40	19 02	6 01	7 22	1 30	12 30	.....	20 42	11	21 35.8	- 9 29
Sat Jan 04/Sun Jan 05	6662.8	6 32 48	17 41	19 03	6 01	7 23	1 34	12 35	.....	21 48	20	22 31.3	- 4 58
Sun Jan 05/Mon Jan 06	6663.8	6 36 44	17 41	19 03	6 01	7 23	1 39	12 39	.....	22 52	30	23 24.5	- 0 18
Mon Jan 06/Tue Jan 07	6664.8	6 40 41	17 42	19 04	6 01	7 23	1 44	12 43	.....	23 54	40	0 16.2	4 14
Tue Jan 07/Wed Jan 08	6665.8	6 44 37	17 43	19 05	6 01	7 23	1 48	12 47	.....	0 54	51	1 07.0	8 25
Wed Jan 08/Thu Jan 09	6666.8	6 48 34	17 44	19 05	6 01	7 23	1 53	12 51	.....	1 52	61	1 57.6	12 05
Thu Jan 09/Fri Jan 10	6667.8	6 52 30	17 45	19 06	6 01	7 23	1 58	12 55	.....	2 49	71	2 48.2	15 06
Fri Jan 10/Sat Jan 11	6668.8	6 56 27	17 46	19 07	6 01	7 23	2 03	12 59	.....	3 44	79	3 39.2	17 21
Sat Jan 11/Sun Jan 12	6669.8	7 00 24	17 46	19 08	6 01	7 23	2 07	13 03	.....	4 36	86	4 30.5	18 46
Sun Jan 12/Mon Jan 13	6670.8	7 04 20	17 47	19 08	6 01	7 22	2 12	13 07	.....	5 25	92	5 21.9	19 17
Mon Jan 13/Tue Jan 14	6671.8	7 08 17	17 48	19 09	6 01	7 22	2 17	13 11	15 55	6 11	97	6 13.0	18 54
Tue Jan 14/Wed Jan 15	6672.8	7 12 13	17 49	19 10	6 01	7 22	2 21	13 15	16 45	6 54	99	7 03.4	17 40
Wed Jan 15/Thu Jan 16	6673.8	7 16 10	17 50	19 11	6 01	7 22	2 26	13 18	17 37	7 33	100	7 52.8	15 38
Thu Jan 16/Fri Jan 17	6674.8	7 20 06	17 51	19 12	6 01	7 22	2 31	13 22	18 30	8 10	99	8 41.1	12 56
Fri Jan 17/Sat Jan 18	6675.8	7 24 03	17 52	19 12	6 01	7 21	2 36	13 26	19 23	.....	96	9 28.3	9 40
Sat Jan 18/Sun Jan 19	6676.8	7 27 59	17 53	19 13	6 01	7 21	2 40	13 30	20 16	.....	91	10 14.8	6 00
Sun Jan 19/Mon Jan 20	6677.8	7 31 56	17 53	19 14	6 01	7 21	2 45	13 34	21 10	.....	85	11 00.9	2 03
Mon Jan 20/Tue Jan 21	6678.8	7 35 53	17 54	19 15	6 00	7 21	2 50	13 37	22 04	.....	77	11 47.3	- 2 02
Tue Jan 21/Wed Jan 22	6679.8	7 39 49	17 55	19 15	6 00	7 20	2 54	13 41	22 59	.....	69	12 34.6	- 6 06
Wed Jan 22/Thu Jan 23	6680.8	7 43 46	17 56	19 16	6 00	7 20	2 59	13 45	23 56	.....	59	13 23.5	- 9 58
Thu Jan 23/Fri Jan 24	6681.8	7 47 42	17 57	19 17	6 00	7 19	3 04	13 48	0 55	.....	48	14 14.6	-13 29
Fri Jan 24/Sat Jan 25	6682.8	7 51 39	17 58	19 18	5 59	7 19	3 09	13 52	1 56	.....	38	15 08.6	-16 25
Sat Jan 25/Sun Jan 26	6683.8	7 55 35	17 59	19 19	5 59	7 18	3 13	13 55	2 57	.....	28	16 05.5	-18 31
Sun Jan 26/Mon Jan 27	6684.8	7 59 32	18 00	19 19	5 59	7 18	3 18	13 59	3 59	.....	18	17 05.2	-19 35
Mon Jan 27/Tue Jan 28	6685.8	8 03 28	18 01	19 20	5 58	7 17	3 23	14 03	4 59	.....	10	18 06.8	-19 24
Tue Jan 28/Wed Jan 29	6686.8	8 07 25	18 02	19 21	5 58	7 17	3 28	14 06	5 56	15 57	4	19 09.1	-17 55
Wed Jan 29/Thu Jan 30	6687.8	8 11 22	18 03	19 22	5 57	7 16	3 32	14 10	6 47	17 06	1	20 10.7	-15 13
Thu Jan 30/Fri Jan 31	6688.8	8 15 18	18 04	19 23	5 57	7 16	3 37	14 13	7 35	18 16	0	21 10.6	-11 31
Fri Jan 31/Sat Feb 01	6689.8	8 19 15	18 04	19 23	5 56	7 15	3 42	14 16	.....	19 25	3	22 08.3	- 7 08

***** 2014 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) (2014 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
Sat Feb 01/Sun Feb 02	6690.8	8 23 11	18 05	19 24	5 56	7 14	3 47	14 20	.....	20 33	8	23 03.9	- 2 25
Sun Feb 02/Mon Feb 03	6691.8	8 27 08	18 06	19 25	5 55	7 14	3 51	14 23	.....	21 38	15	23 57.8	2 18
Mon Feb 03/Tue Feb 04	6692.8	8 31 04	18 07	19 26	5 55	7 13	3 56	14 27	.....	22 41	24	0 50.4	6 44
Tue Feb 04/Wed Feb 05	6693.8	8 35 01	18 08	19 27	5 54	7 12	4 01	14 30	.....	23 42	34	1 42.2	10 40
Wed Feb 05/Thu Feb 06	6694.8	8 38 57	18 09	19 27	5 53	7 12	4 06	14 33	.....	0 41	44	2 33.7	13 57
Thu Feb 06/Fri Feb 07	6695.8	8 42 54	18 10	19 28	5 53	7 11	4 10	14 36	.....	1 37	54	3 25.1	16 28
Fri Feb 07/Sat Feb 08	6696.8	8 46 51	18 11	19 29	5 52	7 10	4 15	14 40	.....	2 31	64	4 16.5	18 09
Sat Feb 08/Sun Feb 09	6697.8	8 50 47	18 12	19 30	5 51	7 09	4 20	14 43	.....	3 21	73	5 07.8	18 57
Sun Feb 09/Mon Feb 10	6698.8	8 54 44	18 12	19 30	5 50	7 08	4 24	14 46	.....	4 08	81	5 58.7	18 51
Mon Feb 10/Tue Feb 11	6699.8	8 58 40	18 13	19 31	5 50	7 07	4 29	14 49	.....	4 52	88	6 49.0	17 54
Tue Feb 11/Wed Feb 12	6700.8	9 02 37	18 14	19 32	5 49	7 07	4 34	14 52	.....	5 33	93	7 38.5	16 09
Wed Feb 12/Thu Feb 13	6701.8	9 06 33	18 15	19 33	5 48	7 06	4 39	14 56	16 25	6 10	97	8 27.1	13 40
Thu Feb 13/Fri Feb 14	6702.8	9 10 30	18 16	19 34	5 47	7 05	4 43	14 59	17 18	6 46	99	9 14.9	10 36
Fri Feb 14/Sat Feb 15	6703.8	9 14 26	18 17	19 34	5 46	7 04	4 48	15 02	18 11	7 20	100	10 02.0	7 03
Sat Feb 15/Sun Feb 16	6704.8	9 18 23	18 18	19 35	5 46	7 03	4 53	15 05	19 05	.....	98	10 48.7	3 10
Sun Feb 16/Mon Feb 17	6705.8	9 22 20	18 18	19 36	5 45	7 02	4 57	15 08	20 00	.....	95	11 35.5	- 0 54
Mon Feb 17/Tue Feb 18	6706.8	9 26 16	18 19	19 37	5 44	7 01	5 02	15 11	20 55	.....	90	12 23.0	- 4 59
Tue Feb 18/Wed Feb 19	6707.8	9 30 13	18 20	19 37	5 43	7 00	5 07	15 14	21 51	.....	83	13 11.6	- 8 55
Wed Feb 19/Thu Feb 20	6708.8	9 34 09	18 21	19 38	5 42	6 59	5 11	15 17	22 48	.....	74	14 02.0	-12 31
Thu Feb 20/Fri Feb 21	6709.8	9 38 06	18 22	19 39	5 41	6 58	5 16	15 20	23 47	.....	64	14 54.5	-15 34
Fri Feb 21/Sat Feb 22	6710.8	9 42 02	18 23	19 40	5 40	6 57	5 21	15 23	0 47	.....	54	15 49.5	-17 52
Sat Feb 22/Sun Feb 23	6711.8	9 45 59	18 23	19 40	5 39	6 56	5 26	15 26	1 47	.....	43	16 46.8	-19 14
Sun Feb 23/Mon Feb 24	6712.8	9 49 55	18 24	19 41	5 38	6 55	5 30	15 29	2 45	.....	32	17 45.9	-19 30
Mon Feb 24/Tue Feb 25	6713.8	9 53 52	18 25	19 42	5 37	6 54	5 35	15 32	3 41	.....	22	18 46.0	-18 33
Tue Feb 25/Wed Feb 26	6714.8	9 57 49	18 26	19 43	5 36	6 52	5 40	15 34	4 33	.....	13	19 46.2	-16 25
Wed Feb 26/Thu Feb 27	6715.8	10 01 45	18 27	19 43	5 35	6 51	5 44	15 37	5 22	.....	6	20 45.5	-13 13
Thu Feb 27/Fri Feb 28	6716.8	10 05 42	18 27	19 44	5 34	6 50	5 49	15 40	6 07	17 00	2	21 43.5	- 9 12
Fri Feb 28/Sat Mar 01	6717.8	10 09 38	18 28	19 45	5 32	6 49	5 54	15 43	6 49	18 08	0	22 39.9	- 4 40

***** 2014 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) (2014 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
Sat Mar 01/Sun Mar 02	6718.8	10 13 35	18 29	19 45	5 31	6 48	5 58	15 46	7 30	19 15	1	23 35.0	0 04
Sun Mar 02/Mon Mar 03	6719.8	10 17 31	18 30	19 46	5 30	6 47	6 03	15 49	.....	20 21	5	0 29.0	4 40
Mon Mar 03/Tue Mar 04	6720.8	10 21 28	18 30	19 47	5 29	6 45	6 08	15 51	.....	21 25	11	1 22.2	8 53
Tue Mar 04/Wed Mar 05	6721.8	10 25 24	18 31	19 48	5 28	6 44	6 12	15 54	.....	22 26	19	2 15.1	12 30
Wed Mar 05/Thu Mar 06	6722.8	10 29 21	18 32	19 48	5 27	6 43	6 17	15 57	.....	23 25	27	3 07.6	15 21
Thu Mar 06/Fri Mar 07	6723.8	10 33 18	18 33	19 49	5 25	6 42	6 22	16 00	.....	0 21	37	3 59.9	17 21
Fri Mar 07/Sat Mar 08	6724.8	10 37 14	18 33	19 50	5 24	6 41	6 26	16 02	.....	1 14	47	4 51.7	18 27
Sat Mar 08/Sun Mar 09	6725.8	10 41 11	18 34	19 51	5 23	6 39	6 31	16 05	.....	2 03	56	5 43.0	18 39
Sun Mar 09/Mon Mar 10	6726.8	10 45 07	18 35	19 51	5 22	6 38	6 36	16 08	.....	2 48	66	6 33.5	17 59
Mon Mar 10/Tue Mar 11	6727.8	10 49 04	18 36	19 52	5 20	6 37	6 40	16 10	.....	3 30	74	7 23.1	16 30
Tue Mar 11/Wed Mar 12	6728.8	10 53 00	18 36	19 53	5 19	6 36	6 45	16 13	.....	4 09	82	8 11.8	14 17
Wed Mar 12/Thu Mar 13	6729.8	10 56 57	18 37	19 54	5 18	6 34	6 50	16 16	.....	4 45	89	8 59.7	11 25
Thu Mar 13/Fri Mar 14	6730.8	11 00 53	18 38	19 54	5 17	6 33	6 55	16 18	.....	5 20	94	9 47.0	8 03
Fri Mar 14/Sat Mar 15	6731.8	11 04 50	18 38	19 55	5 15	6 32	6 59	16 21	16 58	5 54	98	10 34.0	4 16
Sat Mar 15/Sun Mar 16	6732.8	11 08 47	18 39	19 56	5 14	6 31	7 04	16 24	17 53	6 27	100	11 21.3	0 14
Sun Mar 16/Mon Mar 17	6733.8	11 12 43	18 40	19 57	5 13	6 29	7 09	16 26	18 48	7 01	100	12 09.2	- 3 53
Mon Mar 17/Tue Mar 18	6734.8	11 16 40	18 40	19 57	5 11	6 28	7 13	16 29	19 45	.....	97	12 58.3	- 7 54
Tue Mar 18/Wed Mar 19	6735.8	11 20 36	18 41	19 58	5 10	6 27	7 18	16 31	20 43	.....	93	13 49.1	-11 38
Wed Mar 19/Thu Mar 20	6736.8	11 24 33	18 42	19 59	5 09	6 26	7 23	16 34	21 42	.....	87	14 41.8	-14 52
Thu Mar 20/Fri Mar 21	6737.8	11 28 29	18 43	20 00	5 07	6 24	7 27	16 37	22 41	.....	78	15 36.6	-17 22
Fri Mar 21/Sat Mar 22	6738.8	11 32 26	18 43	20 00	5 06	6 23	7 32	16 39	23 41	.....	69	16 33.4	-18 58
Sat Mar 22/Sun Mar 23	6739.8	11 36 22	18 44	20 01	5 05	6 22	7 37	16 42	0 39	.....	58	17 31.5	-19 29
Sun Mar 23/Mon Mar 24	6740.8	11 40 19	18 45	20 02	5 03	6 20	7 42	16 44	1 34	.....	47	18 30.4	-18 52
Mon Mar 24/Tue Mar 25	6741.8	11 44 16	18 45	20 03	5 02	6 19	7 46	16 47	2 26	.....	36	19 29.1	-17 07
Tue Mar 25/Wed Mar 26	6742.8	11 48 12	18 46	20 03	5 00	6 18	7 51	16 49	3 14	.....	25	20 27.0	-14 20
Wed Mar 26/Thu Mar 27	6743.8	11 52 09	18 47	20 04	4 59	6 17	7 56	16 52	3 59	.....	16	21 23.8	-10 42
Thu Mar 27/Fri Mar 28	6744.8	11 56 05	18 47	20 05	4 58	6 15	8 01	16 55	4 41	.....	8	22 19.3	- 6 27
Fri Mar 28/Sat Mar 29	6745.8	12 00 02	18 48	20 06	4 56	6 14	8 05	16 57	5 21	16 55	3	23 13.8	- 1 53
Sat Mar 29/Sun Mar 30	6746.8	12 03 58	18 49	20 07	4 55	6 13	8 10	17 00	6 01	18 00	0	0 07.5	2 43
Sun Mar 30/Mon Mar 31	6747.8	12 07 55	18 49	20 07	4 53	6 11	8 15	17 02	6 42	19 04	0	1 00.9	7 04
Mon Mar 31/Tue Apr 01	6748.8	12 11 51	18 50	20 08	4 52	6 10	8 20	17 05	.....	20 08	3	1 54.1	10 56

***** 2014 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) (2014 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 Apr 01/Wed Apr 02	6749.8	12 15 48	18 51	20 09	4 51	6 09	8 24	17 07	.....	21 09	7	2 47.4	14 07
Wed Apr 02/Thu Apr 03	6750.8	12 19 45	18 51	20 10	4 49	6 08	8 29	17 10	.....	22 08	14	3 40.5	16 28
Thu Apr 03/Fri Apr 04	6751.8	12 23 41	18 52	20 11	4 48	6 06	8 34	17 12	.....	23 03	21	4 33.3	17 55
Fri Apr 04/Sat Apr 05	6752.8	12 27 38	18 53	20 12	4 46	6 05	8 39	17 15	.....	23 55	30	5 25.4	18 26
Sat Apr 05/Sun Apr 06	6753.8	12 31 34	18 53	20 12	4 45	6 04	8 43	17 17	.....	0 42	39	6 16.5	18 03
Sun Apr 06/Mon Apr 07	6754.8	12 35 31	18 54	20 13	4 44	6 03	8 48	17 20	.....	1 26	49	7 06.6	16 51
Mon Apr 07/Tue Apr 08	6755.8	12 39 27	18 55	20 14	4 42	6 01	8 53	17 22	.....	2 06	58	7 55.4	14 53
Tue Apr 08/Wed Apr 09	6756.8	12 43 24	18 56	20 15	4 41	6 00	8 58	17 25	.....	2 43	67	8 43.3	12 15
Wed Apr 09/Thu Apr 10	6757.8	12 47 20	18 56	20 16	4 39	5 59	9 03	17 27	.....	3 18	76	9 30.4	9 05
Thu Apr 10/Fri Apr 11	6758.8	12 51 17	18 57	20 17	4 38	5 58	9 07	17 30	.....	3 52	84	10 17.2	5 28
Fri Apr 11/Sat Apr 12	6759.8	12 55 14	18 58	20 18	4 36	5 56	9 12	17 32	.....	4 26	90	11 04.2	1 32
Sat Apr 12/Sun Apr 13	6760.8	12 59 10	18 58	20 19	4 35	5 55	9 17	17 35	.....	5 00	96	11 52.0	- 2 34
Sun Apr 13/Mon Apr 14	6761.8	13 03 07	18 59	20 19	4 34	5 54	9 22	17 38	17 35	5 35	99	12 41.1	- 6 40
Mon Apr 14/Tue Apr 15	6762.8	13 07 03	19 00	20 20	4 32	5 53	9 27	17 40	18 33	6 14	100	13 32.1	-10 34
Tue Apr 15/Wed Apr 16	6763.8	13 11 00	19 00	20 21	4 31	5 52	9 32	17 43	19 32	6 55	99	14 25.3	-14 03
Wed Apr 16/Thu Apr 17	6764.8	13 14 56	19 01	20 22	4 30	5 51	9 36	17 45	20 33	.....	95	15 20.8	-16 50
Thu Apr 17/Fri Apr 18	6765.8	13 18 53	19 02	20 23	4 28	5 49	9 41	17 48	21 34	.....	89	16 18.4	-18 44
Fri Apr 18/Sat Apr 19	6766.8	13 22 49	19 02	20 24	4 27	5 48	9 46	17 50	22 34	.....	82	17 17.5	-19 33
Sat Apr 19/Sun Apr 20	6767.8	13 26 46	19 03	20 25	4 25	5 47	9 51	17 53	23 30	.....	72	18 17.0	-19 11
Sun Apr 20/Mon Apr 21	6768.8	13 30 43	19 04	20 26	4 24	5 46	9 56	17 56	0 23	.....	61	19 16.1	-17 40
Mon Apr 21/Tue Apr 22	6769.8	13 34 39	19 05	20 27	4 23	5 45	10 01	17 58	1 12	.....	50	20 14.0	-15 07
Tue Apr 22/Wed Apr 23	6770.8	13 38 36	19 05	20 28	4 21	5 44	10 06	18 01	1 57	.....	38	21 10.2	-11 43
Wed Apr 23/Thu Apr 24	6771.8	13 42 32	19 06	20 29	4 20	5 43	10 11	18 03	2 38	.....	28	22 04.9	- 7 41
Thu Apr 24/Fri Apr 25	6772.8	13 46 29	19 07	20 30	4 19	5 42	10 16	18 06	3 18	.....	18	22 58.3	- 3 18
Fri Apr 25/Sat Apr 26	6773.8	13 50 25	19 07	20 31	4 17	5 41	10 21	18 09	3 57	.....	10	23 51.0	1 13
Sat Apr 26/Sun Apr 27	6774.8	13 54 22	19 08	20 32	4 16	5 40	10 25	18 11	4 36	.....	5	0 43.3	5 35
Sun Apr 27/Mon Apr 28	6775.8	13 58 18	19 09	20 33	4 15	5 39	10 30	18 14	5 16	17 52	1	1 35.8	9 34
Mon Apr 28/Tue Apr 29	6776.8	14 02 15	19 10	20 34	4 14	5 38	10 35	18 17	5 58	18 53	0	2 28.5	12 58
Tue Apr 29/Wed Apr 30	6777.8	14 06 12	19 10	20 35	4 12	5 37	10 40	18 19	6 42	19 53	1	3 21.5	15 37
Wed Apr 30/Thu May 01	6778.8	14 10 08	19 11	20 36	4 11	5 36	10 45	18 22	.....	20 50	4	4 14.5	17 24

***** 2014 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) (2014 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 May 01/Fri May 02	6779.8	14 14 05	19 12	20 37	4 10	5 35	10 50	18 25	.....	21 44	9	5 07.2	18 15
Fri May 02/Sat May 03	6780.8	14 18 01	19 12	20 38	4 09	5 34	10 55	18 27	.....	22 34	16	5 59.0	18 11
Sat May 03/Sun May 04	6781.8	14 21 58	19 13	20 39	4 08	5 33	11 00	18 30	.....	23 20	24	6 49.6	17 15
Sun May 04/Mon May 05	6782.8	14 25 54	19 14	20 40	4 06	5 32	11 05	18 33	.....	0 02	32	7 39.0	15 32
Mon May 05/Tue May 06	6783.8	14 29 51	19 15	20 41	4 05	5 31	11 10	18 36	.....	0 40	41	8 27.0	13 09
Tue May 06/Wed May 07	6784.8	14 33 47	19 15	20 42	4 04	5 30	11 15	18 38	.....	1 16	51	9 13.9	10 11
Wed May 07/Thu May 08	6785.8	14 37 44	19 16	20 43	4 03	5 29	11 20	18 41	.....	1 50	60	10 00.2	6 45
Thu May 08/Fri May 09	6786.8	14 41 41	19 17	20 44	4 02	5 29	11 25	18 44	.....	2 23	70	10 46.5	2 58
Fri May 09/Sat May 10	6787.8	14 45 37	19 17	20 45	4 01	5 28	11 30	18 47	.....	2 57	78	11 33.4	- 1 03
Sat May 10/Sun May 11	6788.8	14 49 34	19 18	20 46	4 00	5 27	11 35	18 50	.....	3 31	86	12 21.5	- 5 09
Sun May 11/Mon May 12	6789.8	14 53 30	19 19	20 47	3 59	5 26	11 40	18 53	.....	4 08	93	13 11.5	- 9 09
Mon May 12/Tue May 13	6790.8	14 57 27	19 20	20 48	3 58	5 26	11 44	18 56	.....	4 49	97	14 04.1	-12 51
Tue May 13/Wed May 14	6791.8	15 01 23	19 20	20 49	3 57	5 25	11 49	18 59	18 19	5 33	100	14 59.5	-15 59
Wed May 14/Thu May 15	6792.8	15 05 20	19 21	20 50	3 56	5 24	11 54	19 02	19 21	6 23	100	15 57.6	-18 18
Thu May 15/Fri May 16	6793.8	15 09 16	19 22	20 51	3 55	5 24	11 59	19 05	20 23	.....	97	16 57.9	-19 33
Fri May 16/Sat May 17	6794.8	15 13 13	19 22	20 52	3 54	5 23	12 04	19 08	21 23	.....	92	17 59.3	-19 34
Sat May 17/Sun May 18	6795.8	15 17 10	19 23	20 52	3 53	5 22	12 09	19 11	22 19	.....	84	19 00.5	-18 21
Sun May 18/Mon May 19	6796.8	15 21 06	19 24	20 53	3 52	5 22	12 14	19 14	23 10	.....	74	20 00.2	-16 00
Mon May 19/Tue May 20	6797.8	15 25 03	19 25	20 54	3 51	5 21	12 19	19 17	23 56	.....	64	20 57.9	-12 43
Tue May 20/Wed May 21	6798.8	15 28 59	19 25	20 55	3 50	5 21	12 24	19 20	0 39	.....	52	21 53.4	- 8 46
Wed May 21/Thu May 22	6799.8	15 32 56	19 26	20 56	3 50	5 20	12 29	19 23	1 19	.....	41	22 47.1	- 4 25
Thu May 22/Fri May 23	6800.8	15 36 52	19 27	20 57	3 49	5 19	12 34	19 26	1 57	.....	30	23 39.4	0 03
Fri May 23/Sat May 24	6801.8	15 40 49	19 27	20 58	3 48	5 19	12 38	19 29	2 35	.....	21	0 30.9	4 26
Sat May 24/Sun May 25	6802.8	15 44 45	19 28	20 59	3 47	5 19	12 43	19 33	3 14	.....	13	1 22.4	8 29
Sun May 25/Mon May 26	6803.8	15 48 42	19 28	21 00	3 47	5 18	12 48	19 36	3 54	.....	7	2 14.1	12 01
Mon May 26/Tue May 27	6804.8	15 52 39	19 29	21 01	3 46	5 18	12 53	19 39	4 37	17 42	2	3 06.2	14 52
Tue May 27/Wed May 28	6805.8	15 56 35	19 30	21 02	3 45	5 17	12 58	19 43	5 22	18 40	0	3 58.6	16 55
Wed May 28/Thu May 29	6806.8	16 00 32	19 30	21 03	3 45	5 17	13 03	19 46	6 10	19 35	0	4 51.0	18 04
Thu May 29/Fri May 30	6807.8	16 04 28	19 31	21 03	3 44	5 17	13 07	19 49	.....	20 27	2	5 43.0	18 19
Fri May 30/Sat May 31	6808.8	16 08 25	19 32	21 04	3 44	5 16	13 12	19 53	.....	21 15	6	6 34.0	17 40
Sat May 31/Sun Jun 01	6809.8	16 12 21	19 32	21 05	3 43	5 16	13 17	19 56	.....	21 58	12	7 23.7	16 12

***** 2014 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) (2014 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 Jun 01/Mon Jun 02	6810.8	16 16 18	19 33	21 06	3 43	5 16	13 22	20 00	.....	22 38	18	8 12.1	14 02
Mon Jun 02/Tue Jun 03	6811.8	16 20 14	19 33	21 07	3 42	5 16	13 26	20 03	.....	23 15	26	8 59.1	11 15
Tue Jun 03/Wed Jun 04	6812.8	16 24 11	19 34	21 07	3 42	5 15	13 31	20 07	.....	23 49	35	9 45.2	8 00
Wed Jun 04/Thu Jun 05	6813.8	16 28 08	19 34	21 08	3 42	5 15	13 36	20 10	.....	0 23	44	10 30.8	4 23
Thu Jun 05/Fri Jun 06	6814.8	16 32 04	19 35	21 09	3 41	5 15	13 40	20 14	.....	0 55	54	11 16.5	0 31
Fri Jun 06/Sat Jun 07	6815.8	16 36 01	19 35	21 09	3 41	5 15	13 45	20 18	.....	1 29	63	12 03.1	- 3 30
Sat Jun 07/Sun Jun 08	6816.8	16 39 57	19 36	21 10	3 41	5 15	13 49	20 21	.....	2 04	73	12 51.3	- 7 30
Sun Jun 08/Mon Jun 09	6817.8	16 43 54	19 36	21 11	3 41	5 15	13 54	20 25	.....	2 42	82	13 41.8	-11 18
Mon Jun 09/Tue Jun 10	6818.8	16 47 50	19 37	21 11	3 40	5 15	13 59	20 29	.....	3 24	89	14 35.3	-14 42
Tue Jun 10/Wed Jun 11	6819.8	16 51 47	19 37	21 12	3 40	5 15	14 03	20 33	.....	4 11	95	15 32.2	-17 26
Wed Jun 11/Thu Jun 12	6820.8	16 55 43	19 38	21 12	3 40	5 15	14 07	20 36	18 06	5 04	99	16 32.2	-19 13
Thu Jun 12/Fri Jun 13	6821.8	16 59 40	19 38	21 13	3 40	5 15	14 12	20 40	19 08	6 03	100	17 34.4	-19 49
Fri Jun 13/Sat Jun 14	6822.8	17 03 36	19 38	21 13	3 40	5 15	14 16	20 44	20 07	.....	98	18 37.6	-19 06
Sat Jun 14/Sun Jun 15	6823.8	17 07 33	19 39	21 14	3 40	5 15	14 21	20 48	21 02	.....	93	19 40.1	-17 06
Sun Jun 15/Mon Jun 16	6824.8	17 11 30	19 39	21 14	3 40	5 15	14 25	20 52	21 53	.....	86	20 40.7	-14 00
Mon Jun 16/Tue Jun 17	6825.8	17 15 26	19 39	21 14	3 40	5 15	14 29	20 56	22 38	.....	77	21 38.8	-10 06
Tue Jun 17/Wed Jun 18	6826.8	17 19 23	19 40	21 15	3 40	5 15	14 34	21 00	23 20	.....	66	22 34.5	- 5 43
Wed Jun 18/Thu Jun 19	6827.8	17 23 19	19 40	21 15	3 40	5 15	14 38	21 04	23 59	.....	55	23 28.1	- 1 09
Thu Jun 19/Fri Jun 20	6828.8	17 27 16	19 40	21 15	3 40	5 16	14 42	21 08	0 37	.....	44	0 20.4	3 19
Fri Jun 20/Sat Jun 21	6829.8	17 31 12	19 40	21 16	3 41	5 16	14 46	21 12	1 15	.....	33	1 11.9	7 29
Sat Jun 21/Sun Jun 22	6830.8	17 35 09	19 41	21 16	3 41	5 16	14 51	21 17	1 55	.....	24	2 03.3	11 09
Sun Jun 22/Mon Jun 23	6831.8	17 39 05	19 41	21 16	3 41	5 16	14 55	21 21	2 36	.....	16	2 54.7	14 11
Mon Jun 23/Tue Jun 24	6832.8	17 43 02	19 41	21 16	3 41	5 17	14 59	21 25	3 19	.....	9	3 46.5	16 26
Tue Jun 24/Wed Jun 25	6833.8	17 46 59	19 41	21 16	3 42	5 17	15 03	21 29	4 05	.....	4	4 38.3	17 50
Wed Jun 25/Thu Jun 26	6834.8	17 50 55	19 41	21 16	3 42	5 17	15 07	21 34	4 54	18 21	1	5 29.9	18 20
Thu Jun 26/Fri Jun 27	6835.8	17 54 52	19 41	21 16	3 43	5 17	15 11	21 38	5 45	19 10	0	6 20.8	17 57
Fri Jun 27/Sat Jun 28	6836.8	17 58 48	19 41	21 16	3 43	5 18	15 15	21 42	.....	19 55	1	7 10.7	16 45
Sat Jun 28/Sun Jun 29	6837.8	18 02 45	19 42	21 16	3 43	5 18	15 19	21 47	.....	20 37	4	7 59.3	14 48
Sun Jun 29/Mon Jun 30	6838.8	18 06 41	19 42	21 16	3 44	5 19	15 22	21 51	.....	21 15	8	8 46.6	12 13
Mon Jun 30/Tue Jul 01	6839.8	18 10 38	19 42	21 16	3 44	5 19	15 26	21 56	.....	21 50	14	9 32.7	9 08

***** 2014 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) (2014 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 Jul 01/Wed Jul 02	6840.8	18 14 34	19 42	21 16	3 45	5 19	15 30	22 00	.....	22 24	21	10 18.0	5 39
Wed Jul 02/Thu Jul 03	6841.8	18 18 31	19 41	21 16	3 46	5 20	15 34	22 05	.....	22 56	29	11 03.0	1 55
Thu Jul 03/Fri Jul 04	6842.8	18 22 28	19 41	21 16	3 46	5 20	15 38	22 09	.....	23 29	38	11 48.3	- 1 59
Fri Jul 04/Sat Jul 05	6843.8	18 26 24	19 41	21 15	3 47	5 21	15 41	22 14	.....	0 02	47	12 34.8	- 5 54
Sat Jul 05/Sun Jul 06	6844.8	18 30 21	19 41	21 15	3 47	5 21	15 45	22 18	.....	0 38	58	13 23.0	- 9 42
Sun Jul 06/Mon Jul 07	6845.8	18 34 17	19 41	21 15	3 48	5 22	15 49	22 23	.....	1 17	68	14 13.8	-13 12
Mon Jul 07/Tue Jul 08	6846.8	18 38 14	19 41	21 14	3 49	5 22	15 52	22 28	.....	2 00	77	15 07.8	-16 12
Tue Jul 08/Wed Jul 09	6847.8	18 42 10	19 41	21 14	3 49	5 23	15 56	22 32	.....	2 49	86	16 05.2	-18 25
Wed Jul 09/Thu Jul 10	6848.8	18 46 07	19 40	21 14	3 50	5 23	15 59	22 37	.....	3 45	93	17 05.8	-19 37
Thu Jul 10/Fri Jul 11	6849.8	18 50 03	19 40	21 13	3 51	5 24	16 03	22 42	17 50	4 47	98	18 08.7	-19 34
Fri Jul 11/Sat Jul 12	6850.8	18 54 00	19 40	21 13	3 52	5 24	16 06	22 46	18 48	5 53	100	19 12.5	-18 10
Sat Jul 12/Sun Jul 13	6851.8	18 57 57	19 40	21 12	3 52	5 25	16 10	22 51	19 42	.....	99	20 15.5	-15 31
Sun Jul 13/Mon Jul 14	6852.8	19 01 53	19 39	21 11	3 53	5 26	16 13	22 56	20 31	.....	95	21 16.7	-11 50
Mon Jul 14/Tue Jul 15	6853.8	19 05 50	19 39	21 11	3 54	5 26	16 16	23 01	21 16	.....	88	22 15.5	- 7 28
Tue Jul 15/Wed Jul 16	6854.8	19 09 46	19 38	21 10	3 55	5 27	16 20	23 05	21 58	.....	79	23 11.9	- 2 47
Wed Jul 16/Thu Jul 17	6855.8	19 13 43	19 38	21 10	3 56	5 27	16 23	23 10	22 38	.....	69	0 06.4	1 54
Thu Jul 17/Fri Jul 18	6856.8	19 17 39	19 38	21 09	3 57	5 28	16 26	23 15	23 17	.....	58	0 59.6	6 17
Fri Jul 18/Sat Jul 19	6857.8	19 21 36	19 37	21 08	3 57	5 29	16 29	23 20	23 56	.....	47	1 52.0	10 11
Sat Jul 19/Sun Jul 20	6858.8	19 25 32	19 37	21 07	3 58	5 29	16 33	23 25	0 37	.....	37	2 44.0	13 25
Sun Jul 20/Mon Jul 21	6859.8	19 29 29	19 36	21 07	3 59	5 30	16 36	23 29	1 19	.....	27	3 35.9	15 52
Mon Jul 21/Tue Jul 22	6860.8	19 33 26	19 36	21 06	4 00	5 30	16 39	23 34	2 04	.....	19	4 27.6	17 29
Tue Jul 22/Wed Jul 23	6861.8	19 37 22	19 35	21 05	4 01	5 31	16 42	23 39	2 52	.....	12	5 19.0	18 13
Wed Jul 23/Thu Jul 24	6862.8	19 41 19	19 34	21 04	4 02	5 32	16 45	23 44	3 41	.....	6	6 09.8	18 05
Thu Jul 24/Fri Jul 25	6863.8	19 45 15	19 34	21 03	4 03	5 32	16 48	23 49	4 33	17 54	3	6 59.7	17 06
Fri Jul 25/Sat Jul 26	6864.8	19 49 12	19 33	21 02	4 04	5 33	16 51	23 54	5 25	18 36	1	7 48.4	15 22
Sat Jul 26/Sun Jul 27	6865.8	19 53 08	19 32	21 01	4 05	5 34	16 54	23 59	6 17	19 15	0	8 35.9	12 58
Sun Jul 27/Mon Jul 28	6866.8	19 57 05	19 32	21 00	4 06	5 34	16 57	0 03	.....	19 52	2	9 22.2	10 03
Mon Jul 28/Tue Jul 29	6867.8	20 01 01	19 31	20 59	4 07	5 35	17 00	0 08	.....	20 26	5	10 07.5	6 42
Tue Jul 29/Wed Jul 30	6868.8	20 04 58	19 30	20 58	4 08	5 36	17 03	0 13	.....	20 59	10	10 52.4	3 04
Wed Jul 30/Thu Jul 31	6869.8	20 08 55	19 30	20 57	4 08	5 36	17 06	0 18	.....	21 31	16	11 37.2	- 0 44
Thu Jul 31/Fri Aug 01	6870.8	20 12 51	19 29	20 56	4 09	5 37	17 09	0 23	.....	22 04	24	12 22.6	- 4 35

***** 2014 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) (2014 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 Aug 01/Sat Aug 02	6871.8	20 16 48	19 28	20 55	4 10	5 38	17 12	0 28	.....	22 38	32	13 09.3	- 8 20
Sat Aug 02/Sun Aug 03	6872.8	20 20 44	19 27	20 54	4 11	5 38	17 14	0 33	.....	23 14	42	13 57.8	-11 50
Sun Aug 03/Mon Aug 04	6873.8	20 24 41	19 26	20 53	4 12	5 39	17 17	0 38	.....	23 55	52	14 49.0	-14 55
Mon Aug 04/Tue Aug 05	6874.8	20 28 37	19 26	20 52	4 13	5 40	17 20	0 43	.....	0 40	63	15 43.1	-17 23
Tue Aug 05/Wed Aug 06	6875.8	20 32 34	19 25	20 51	4 14	5 40	17 23	0 47	.....	1 30	73	16 40.4	-18 59
Wed Aug 06/Thu Aug 07	6876.8	20 36 30	19 24	20 50	4 15	5 41	17 26	0 52	.....	2 27	83	17 40.6	-19 31
Thu Aug 07/Fri Aug 08	6877.8	20 40 27	19 23	20 48	4 16	5 42	17 28	0 57	.....	3 30	91	18 42.8	-18 48
Fri Aug 08/Sat Aug 09	6878.8	20 44 24	19 22	20 47	4 17	5 42	17 31	1 02	17 26	4 37	96	19 45.7	-16 48
Sat Aug 09/Sun Aug 10	6879.8	20 48 20	19 21	20 46	4 18	5 43	17 34	1 07	18 18	5 47	100	20 48.1	-13 38
Sun Aug 10/Mon Aug 11	6880.8	20 52 17	19 20	20 45	4 19	5 44	17 36	1 12	19 05	.....	99	21 49.1	- 9 32
Mon Aug 11/Tue Aug 12	6881.8	20 56 13	19 19	20 43	4 20	5 44	17 39	1 17	19 50	.....	96	22 48.1	- 4 52
Tue Aug 12/Wed Aug 13	6882.8	21 00 10	19 18	20 42	4 21	5 45	17 42	1 22	20 32	.....	90	23 45.4	- 0 02
Wed Aug 13/Thu Aug 14	6883.8	21 04 06	19 17	20 41	4 22	5 46	17 44	1 27	21 13	.....	82	0 41.2	4 38
Thu Aug 14/Fri Aug 15	6884.8	21 08 03	19 16	20 40	4 23	5 46	17 47	1 31	21 54	.....	73	1 35.8	8 51
Fri Aug 15/Sat Aug 16	6885.8	21 11 59	19 15	20 38	4 24	5 47	17 50	1 36	22 35	.....	62	2 29.6	12 24
Sat Aug 16/Sun Aug 17	6886.8	21 15 56	19 14	20 37	4 24	5 48	17 52	1 41	23 18	.....	52	3 22.9	15 10
Sun Aug 17/Mon Aug 18	6887.8	21 19 53	19 13	20 36	4 25	5 48	17 55	1 46	0 03	.....	42	4 15.6	17 02
Mon Aug 18/Tue Aug 19	6888.8	21 23 49	19 12	20 34	4 26	5 49	17 57	1 51	0 50	.....	32	5 07.7	18 01
Tue Aug 19/Wed Aug 20	6889.8	21 27 46	19 10	20 33	4 27	5 50	18 00	1 56	1 39	.....	23	5 58.9	18 05
Wed Aug 20/Thu Aug 21	6890.8	21 31 42	19 09	20 32	4 28	5 50	18 03	2 00	2 29	.....	16	6 49.0	17 19
Thu Aug 21/Fri Aug 22	6891.8	21 35 39	19 08	20 30	4 29	5 51	18 05	2 05	3 21	.....	9	7 37.9	15 47
Fri Aug 22/Sat Aug 23	6892.8	21 39 35	19 07	20 29	4 30	5 52	18 08	2 10	4 13	17 15	5	8 25.6	13 35
Sat Aug 23/Sun Aug 24	6893.8	21 43 32	19 06	20 27	4 31	5 52	18 10	2 15	5 06	17 53	2	9 12.2	10 48
Sun Aug 24/Mon Aug 25	6894.8	21 47 28	19 05	20 26	4 32	5 53	18 13	2 20	5 58	18 28	0	9 57.8	7 35
Mon Aug 25/Tue Aug 26	6895.8	21 51 25	19 04	20 25	4 32	5 53	18 15	2 25	6 51	19 01	1	10 42.8	4 02
Tue Aug 26/Wed Aug 27	6896.8	21 55 22	19 02	20 23	4 33	5 54	18 18	2 29	.....	19 34	3	11 27.7	0 18
Wed Aug 27/Thu Aug 28	6897.8	21 59 18	19 01	20 22	4 34	5 55	18 20	2 34	.....	20 07	6	12 12.9	- 3 31
Thu Aug 28/Fri Aug 29	6898.8	22 03 15	19 00	20 20	4 35	5 55	18 23	2 39	.....	20 40	12	12 59.0	- 7 14
Fri Aug 29/Sat Aug 30	6899.8	22 07 11	18 59	20 19	4 36	5 56	18 25	2 44	.....	21 16	19	13 46.5	-10 45
Sat Aug 30/Sun Aug 31	6900.8	22 11 08	18 57	20 17	4 37	5 57	18 28	2 48	.....	21 54	27	14 36.0	-13 53
Sun Aug 31/Mon Sep 01	6901.8	22 15 04	18 56	20 16	4 37	5 57	18 30	2 53	.....	22 36	37	15 27.9	-16 27

***** 2014 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) (2014 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
Mon Sep 01/Tue Sep 02	6902.8	22 19 01	18 55	20 15	4 38	5 58	18 33	2 58	.....	23 24	47	16 22.4	-18 16
Tue Sep 02/Wed Sep 03	6903.8	22 22 57	18 54	20 13	4 39	5 58	18 35	3 03	.....	0 16	58	17 19.4	-19 09
Wed Sep 03/Thu Sep 04	6904.8	22 26 54	18 52	20 12	4 40	5 59	18 38	3 07	.....	1 14	69	18 18.5	-18 57
Thu Sep 04/Fri Sep 05	6905.8	22 30 51	18 51	20 10	4 41	6 00	18 40	3 12	.....	2 17	79	19 19.0	-17 33
Fri Sep 05/Sat Sep 06	6906.8	22 34 47	18 50	20 09	4 41	6 00	18 43	3 17	.....	3 23	88	20 19.9	-14 59
Sat Sep 06/Sun Sep 07	6907.8	22 38 44	18 49	20 07	4 42	6 01	18 45	3 22	.....	4 32	95	21 20.4	-11 24
Sun Sep 07/Mon Sep 08	6908.8	22 42 40	18 47	20 06	4 43	6 02	18 48	3 26	17 39	5 41	99	22 20.0	- 7 03
Mon Sep 08/Tue Sep 09	6909.8	22 46 37	18 46	20 04	4 44	6 02	18 50	3 31	18 22	6 49	100	23 18.5	- 2 16
Tue Sep 09/Wed Sep 10	6910.8	22 50 33	18 45	20 03	4 44	6 03	18 53	3 36	19 04	.....	98	0 16.0	2 34
Wed Sep 10/Thu Sep 11	6911.8	22 54 30	18 43	20 01	4 45	6 03	18 55	3 40	19 46	.....	93	1 12.7	7 06
Thu Sep 11/Fri Sep 12	6912.8	22 58 26	18 42	20 00	4 46	6 04	18 58	3 45	20 29	.....	86	2 08.7	11 03
Fri Sep 12/Sat Sep 13	6913.8	23 02 23	18 41	19 59	4 47	6 05	19 00	3 50	21 12	.....	77	3 04.1	14 12
Sat Sep 13/Sun Sep 14	6914.8	23 06 20	18 39	19 57	4 47	6 05	19 03	3 54	21 58	.....	67	3 58.8	16 27
Sun Sep 14/Mon Sep 15	6915.8	23 10 16	18 38	19 56	4 48	6 06	19 05	3 59	22 45	.....	57	4 52.5	17 44
Mon Sep 15/Tue Sep 16	6916.8	23 14 13	18 37	19 54	4 49	6 06	19 08	4 04	23 34	.....	47	5 45.1	18 05
Tue Sep 16/Wed Sep 17	6917.8	23 18 09	18 35	19 53	4 50	6 07	19 10	4 08	0 24	.....	38	6 36.3	17 33
Wed Sep 17/Thu Sep 18	6918.8	23 22 06	18 34	19 51	4 50	6 08	19 13	4 13	1 16	.....	29	7 26.0	16 12
Thu Sep 18/Fri Sep 19	6919.8	23 26 02	18 33	19 50	4 51	6 08	19 15	4 18	2 08	.....	21	8 14.2	14 10
Fri Sep 19/Sat Sep 20	6920.8	23 29 59	18 31	19 49	4 52	6 09	19 18	4 22	3 00	.....	14	9 01.2	11 32
Sat Sep 20/Sun Sep 21	6921.8	23 33 55	18 30	19 47	4 52	6 10	19 20	4 27	3 53	.....	8	9 47.1	8 26
Sun Sep 21/Mon Sep 22	6922.8	23 37 52	18 29	19 46	4 53	6 10	19 23	4 32	4 46	17 02	4	10 32.3	4 58
Mon Sep 22/Tue Sep 23	6923.8	23 41 49	18 27	19 44	4 54	6 11	19 25	4 36	5 39	17 35	1	11 17.4	1 16
Tue Sep 23/Wed Sep 24	6924.8	23 45 45	18 26	19 43	4 54	6 11	19 28	4 41	6 32	18 08	0	12 02.8	- 2 31
Wed Sep 24/Thu Sep 25	6925.8	23 49 42	18 25	19 42	4 55	6 12	19 31	4 46	.....	18 42	1	12 48.9	- 6 17
Thu Sep 25/Fri Sep 26	6926.8	23 53 38	18 23	19 40	4 56	6 13	19 33	4 50	.....	19 17	4	13 36.4	- 9 51
Fri Sep 26/Sat Sep 27	6927.8	23 57 35	18 22	19 39	4 56	6 13	19 36	4 55	.....	19 55	9	14 25.5	-13 03
Sat Sep 27/Sun Sep 28	6928.8	0 01 31	18 21	19 37	4 57	6 14	19 38	4 59	.....	20 36	15	15 16.6	-15 44
Sun Sep 28/Mon Sep 29	6929.8	0 05 28	18 20	19 36	4 58	6 15	19 41	5 04	.....	21 22	23	16 09.9	-17 42
Mon Sep 29/Tue Sep 30	6930.8	0 09 24	18 18	19 35	4 59	6 15	19 43	5 09	.....	22 12	33	17 05.2	-18 48
Tue Sep 30/Wed Oct 01	6931.8	0 13 21	18 17	19 33	4 59	6 16	19 46	5 13	.....	23 06	43	18 02.1	-18 53

***** 2014 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) (2014 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 Oct 01/Thu Oct 02	6932.8	0 17 18	18 16	19 32	5 00	6 16	19 49	5 18	.....	0 06	55	19 00.1	-17 52
Thu Oct 02/Fri Oct 03	6933.8	0 21 14	18 14	19 31	5 01	6 17	19 51	5 23	.....	1 08	66	19 58.6	-15 47
Fri Oct 03/Sat Oct 04	6934.8	0 25 11	18 13	19 30	5 01	6 18	19 54	5 27	.....	2 14	76	20 56.9	-12 41
Sat Oct 04/Sun Oct 05	6935.8	0 29 07	18 12	19 28	5 02	6 18	19 57	5 32	.....	3 20	86	21 54.8	- 8 46
Sun Oct 05/Mon Oct 06	6936.8	0 33 04	18 11	19 27	5 03	6 19	19 59	5 36	.....	4 27	93	22 52.2	- 4 17
Mon Oct 06/Tue Oct 07	6937.8	0 37 00	18 09	19 26	5 03	6 20	20 02	5 41	16 55	5 34	98	23 49.2	0 28
Tue Oct 07/Wed Oct 08	6938.8	0 40 57	18 08	19 25	5 04	6 20	20 05	5 46	17 36	6 40	100	0 46.1	5 09
Wed Oct 08/Thu Oct 09	6939.8	0 44 53	18 07	19 23	5 05	6 21	20 07	5 50	18 19	.....	99	1 42.9	9 24
Thu Oct 09/Fri Oct 10	6940.8	0 48 50	18 06	19 22	5 05	6 22	20 10	5 55	19 02	.....	95	2 39.6	12 59
Fri Oct 10/Sat Oct 11	6941.8	0 52 47	18 04	19 21	5 06	6 22	20 13	5 59	19 48	.....	90	3 36.1	15 42
Sat Oct 11/Sun Oct 12	6942.8	0 56 43	18 03	19 20	5 07	6 23	20 16	6 04	20 35	.....	82	4 31.9	17 24
Sun Oct 12/Mon Oct 13	6943.8	1 00 40	18 02	19 19	5 07	6 24	20 18	6 09	21 25	.....	73	5 26.5	18 07
Mon Oct 13/Tue Oct 14	6944.8	1 04 36	18 01	19 17	5 08	6 25	20 21	6 13	22 16	.....	64	6 19.6	17 52
Tue Oct 14/Wed Oct 15	6945.8	1 08 33	18 00	19 16	5 09	6 25	20 24	6 18	23 08	.....	54	7 10.8	16 45
Wed Oct 15/Thu Oct 16	6946.8	1 12 29	17 59	19 15	5 09	6 26	20 27	6 23	0 01	.....	45	8 00.2	14 53
Thu Oct 16/Fri Oct 17	6947.8	1 16 26	17 57	19 14	5 10	6 27	20 30	6 27	0 53	.....	35	8 48.0	12 24
Fri Oct 17/Sat Oct 18	6948.8	1 20 22	17 56	19 13	5 11	6 27	20 33	6 32	1 46	.....	27	9 34.4	9 25
Sat Oct 18/Sun Oct 19	6949.8	1 24 19	17 55	19 12	5 11	6 28	20 35	6 36	2 38	.....	19	10 19.9	6 02
Sun Oct 19/Mon Oct 20	6950.8	1 28 16	17 54	19 11	5 12	6 29	20 38	6 41	3 31	.....	12	11 05.1	2 24
Mon Oct 20/Tue Oct 21	6951.8	1 32 12	17 53	19 10	5 13	6 30	20 41	6 46	4 25	.....	6	11 50.5	- 1 24
Tue Oct 21/Wed Oct 22	6952.8	1 36 09	17 52	19 09	5 13	6 30	20 44	6 50	5 19	16 42	3	12 36.6	- 5 12
Wed Oct 22/Thu Oct 23	6953.8	1 40 05	17 51	19 08	5 14	6 31	20 47	6 55	6 15	17 17	0	13 24.1	- 8 51
Thu Oct 23/Fri Oct 24	6954.8	1 44 02	17 50	19 07	5 15	6 32	20 50	7 00	7 12	17 54	0	14 13.3	-12 12
Fri Oct 24/Sat Oct 25	6955.8	1 47 58	17 49	19 06	5 15	6 33	20 53	7 04	.....	18 35	2	15 04.6	-15 04
Sat Oct 25/Sun Oct 26	6956.8	1 51 55	17 48	19 05	5 16	6 34	20 56	7 09	.....	19 19	6	15 57.9	-17 14
Sun Oct 26/Mon Oct 27	6957.8	1 55 51	17 47	19 04	5 17	6 34	20 59	7 14	.....	20 08	12	16 53.1	-18 32
Mon Oct 27/Tue Oct 28	6958.8	1 59 48	17 46	19 03	5 17	6 35	21 02	7 18	.....	21 02	20	17 49.7	-18 51
Tue Oct 28/Wed Oct 29	6959.8	2 03 45	17 45	19 02	5 18	6 36	21 05	7 23	.....	22 00	29	18 47.1	-18 06
Wed Oct 29/Thu Oct 30	6960.8	2 07 41	17 44	19 02	5 19	6 37	21 08	7 27	.....	23 01	40	19 44.4	-16 17
Thu Oct 30/Fri Oct 31	6961.8	2 11 38	17 43	19 01	5 20	6 38	21 12	7 32	.....	0 04	51	20 41.3	-13 31
Fri Oct 31/Sat Nov 01	6962.8	2 15 34	17 42	19 00	5 20	6 38	21 15	7 37	.....	1 08	63	21 37.4	- 9 55

***** 2014 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) (2014 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
Sat Nov 01/Sun Nov 02	6963.8	2 19 31	17 41	18 59	5 21	6 39	21 18	7 41	.....	2 13	73	22 32.8	- 5 44
Sun Nov 02/Mon Nov 03	6964.8	2 23 27	17 40	18 58	5 22	6 40	21 21	7 46	.....	3 17	83	23 27.9	- 1 12
Mon Nov 03/Tue Nov 04	6965.8	2 27 24	17 40	18 58	5 23	6 41	21 24	7 51	.....	4 22	91	0 23.0	3 23
Tue Nov 04/Wed Nov 05	6966.8	2 31 20	17 39	18 57	5 23	6 42	21 28	7 55	16 11	5 27	96	1 18.5	7 46
Wed Nov 05/Thu Nov 06	6967.8	2 35 17	17 38	18 56	5 24	6 43	21 31	8 00	16 53	6 30	99	2 14.6	11 38
Thu Nov 06/Fri Nov 07	6968.8	2 39 14	17 37	18 56	5 25	6 43	21 34	8 05	17 37	7 33	100	3 11.1	14 45
Fri Nov 07/Sat Nov 08	6969.8	2 43 10	17 36	18 55	5 25	6 44	21 37	8 10	18 24	.....	98	4 07.8	16 56
Sat Nov 08/Sun Nov 09	6970.8	2 47 07	17 36	18 55	5 26	6 45	21 41	8 14	19 13	.....	93	5 03.9	18 05
Sun Nov 09/Mon Nov 10	6971.8	2 51 03	17 35	18 54	5 27	6 46	21 44	8 19	20 04	.....	87	5 58.8	18 14
Mon Nov 10/Tue Nov 11	6972.8	2 55 00	17 34	18 53	5 28	6 47	21 48	8 24	20 57	.....	80	6 52.0	17 25
Tue Nov 11/Wed Nov 12	6973.8	2 58 56	17 34	18 53	5 28	6 48	21 51	8 28	21 50	.....	71	7 43.1	15 47
Wed Nov 12/Thu Nov 13	6974.8	3 02 53	17 33	18 52	5 29	6 49	21 54	8 33	22 44	.....	62	8 32.2	13 28
Thu Nov 13/Fri Nov 14	6975.8	3 06 49	17 33	18 52	5 30	6 49	21 58	8 38	23 36	.....	52	9 19.5	10 36
Fri Nov 14/Sat Nov 15	6976.8	3 10 46	17 32	18 51	5 31	6 50	22 01	8 42	0 29	.....	43	10 05.5	7 19
Sat Nov 15/Sun Nov 16	6977.8	3 14 43	17 31	18 51	5 31	6 51	22 05	8 47	1 21	.....	34	10 50.8	3 44
Sun Nov 16/Mon Nov 17	6978.8	3 18 39	17 31	18 51	5 32	6 52	22 08	8 52	2 14	.....	25	11 36.0	- 0 01
Mon Nov 17/Tue Nov 18	6979.8	3 22 36	17 31	18 50	5 33	6 53	22 12	8 56	3 08	.....	17	12 21.7	- 3 50
Tue Nov 18/Wed Nov 19	6980.8	3 26 32	17 30	18 50	5 34	6 54	22 16	9 01	4 03	.....	11	13 08.7	- 7 35
Wed Nov 19/Thu Nov 20	6981.8	3 30 29	17 30	18 50	5 34	6 55	22 19	9 06	5 00	15 50	5	13 57.5	-11 05
Thu Nov 20/Fri Nov 21	6982.8	3 34 25	17 29	18 49	5 35	6 56	22 23	9 11	5 59	16 29	2	14 48.5	-14 10
Fri Nov 21/Sat Nov 22	6983.8	3 38 22	17 29	18 49	5 36	6 56	22 27	9 15	6 58	17 13	0	15 41.9	-16 37
Sat Nov 22/Sun Nov 23	6984.8	3 42 18	17 29	18 49	5 37	6 57	22 30	9 20	7 58	18 01	1	16 37.6	-18 15
Sun Nov 23/Mon Nov 24	6985.8	3 46 15	17 28	18 49	5 37	6 58	22 34	9 25	.....	18 54	4	17 35.0	-18 52
Mon Nov 24/Tue Nov 25	6986.8	3 50 12	17 28	18 49	5 38	6 59	22 38	9 29	.....	19 52	9	18 33.3	-18 24
Tue Nov 25/Wed Nov 26	6987.8	3 54 08	17 28	18 48	5 39	7 00	22 42	9 34	.....	20 54	17	19 31.5	-16 50
Wed Nov 26/Thu Nov 27	6988.8	3 58 05	17 27	18 48	5 40	7 01	22 46	9 39	.....	21 57	26	20 28.9	-14 16
Thu Nov 27/Fri Nov 28	6989.8	4 02 01	17 27	18 48	5 40	7 02	22 49	9 43	.....	23 02	36	21 25.0	-10 51
Fri Nov 28/Sat Nov 29	6990.8	4 05 58	17 27	18 48	5 41	7 02	22 53	9 48	.....	0 05	48	22 19.9	- 6 50
Sat Nov 29/Sun Nov 30	6991.8	4 09 54	17 27	18 48	5 42	7 03	22 57	9 53	.....	1 09	59	23 13.8	- 2 28
Sun Nov 30/Mon Dec 01	6992.8	4 13 51	17 27	18 48	5 43	7 04	23 01	9 57	.....	2 12	70	0 07.3	2 02

***** 2014 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) (2014 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
Mon Dec 01/Tue Dec 02	6993.8	4 17 47	17 27	18 48	5 43	7 05	23 05	10 02	.....	3 15	80	1 00.9	6 24
Tue Dec 02/Wed Dec 03	6994.8	4 21 44	17 27	18 48	5 44	7 06	23 09	10 07	.....	4 17	88	1 55.1	10 22
Wed Dec 03/Thu Dec 04	6995.8	4 25 41	17 27	18 48	5 45	7 06	23 13	10 11	.....	5 19	94	2 50.0	13 43
Thu Dec 04/Fri Dec 05	6996.8	4 29 37	17 27	18 48	5 46	7 07	23 17	10 16	16 15	6 18	98	3 45.7	16 16
Fri Dec 05/Sat Dec 06	6997.8	4 33 34	17 27	18 49	5 46	7 08	23 21	10 21	17 03	7 15	100	4 41.6	17 51
Sat Dec 06/Sun Dec 07	6998.8	4 37 30	17 27	18 49	5 47	7 09	23 25	10 25	17 53	8 09	99	5 37.1	18 26
Sun Dec 07/Mon Dec 08	6999.8	4 41 27	17 27	18 49	5 48	7 10	23 29	10 30	18 45	.....	96	6 31.4	18 01
Mon Dec 08/Tue Dec 09	7000.8	4 45 23	17 27	18 49	5 48	7 10	23 34	10 35	19 39	.....	92	7 24.0	16 42
Tue Dec 09/Wed Dec 10	7001.8	4 49 20	17 27	18 49	5 49	7 11	23 38	10 39	20 33	.....	86	8 14.6	14 37
Wed Dec 10/Thu Dec 11	7002.8	4 53 16	17 28	18 50	5 50	7 12	23 42	10 44	21 26	.....	78	9 03.3	11 54
Thu Dec 11/Fri Dec 12	7003.8	4 57 13	17 28	18 50	5 50	7 12	23 46	10 48	22 19	.....	70	9 50.2	8 44
Fri Dec 12/Sat Dec 13	7004.8	5 01 10	17 28	18 50	5 51	7 13	23 50	10 53	23 11	.....	61	10 35.9	5 13
Sat Dec 13/Sun Dec 14	7005.8	5 05 06	17 28	18 50	5 51	7 14	23 55	10 58	0 04	.....	52	11 21.0	1 31
Sun Dec 14/Mon Dec 15	7006.8	5 09 03	17 29	18 51	5 52	7 14	23 59	11 02	0 57	.....	42	12 06.2	- 2 17
Mon Dec 15/Tue Dec 16	7007.8	5 12 59	17 29	18 51	5 53	7 15	0 03	11 07	1 50	.....	33	12 52.2	- 6 04
Tue Dec 16/Wed Dec 17	7008.8	5 16 56	17 29	18 52	5 53	7 16	0 08	11 11	2 46	.....	24	13 39.8	- 9 40
Wed Dec 17/Thu Dec 18	7009.8	5 20 52	17 30	18 52	5 54	7 16	0 12	11 16	3 43	.....	16	14 29.5	-12 56
Thu Dec 18/Fri Dec 19	7010.8	5 24 49	17 30	18 52	5 54	7 17	0 16	11 20	4 42	.....	9	15 21.8	-15 40
Fri Dec 19/Sat Dec 20	7011.8	5 28 45	17 30	18 53	5 55	7 17	0 21	11 25	5 42	15 50	4	16 16.8	-17 41
Sat Dec 20/Sun Dec 21	7012.8	5 32 42	17 31	18 53	5 55	7 18	0 25	11 29	6 41	16 41	1	17 14.3	-18 45
Sun Dec 21/Mon Dec 22	7013.8	5 36 39	17 31	18 54	5 56	7 18	0 30	11 34	7 39	17 38	0	18 13.5	-18 44
Mon Dec 22/Tue Dec 23	7014.8	5 40 35	17 32	18 54	5 56	7 19	0 34	11 38	.....	18 40	2	19 13.3	-17 32
Tue Dec 23/Wed Dec 24	7015.8	5 44 32	17 32	18 55	5 57	7 19	0 39	11 42	.....	19 45	7	20 12.6	-15 14
Wed Dec 24/Thu Dec 25	7016.8	5 48 28	17 33	18 55	5 57	7 20	0 43	11 47	.....	20 51	14	21 10.6	-12 00
Thu Dec 25/Fri Dec 26	7017.8	5 52 25	17 34	18 56	5 58	7 20	0 48	11 51	.....	21 57	22	22 06.9	- 8 03
Fri Dec 26/Sat Dec 27	7018.8	5 56 21	17 34	18 57	5 58	7 20	0 52	11 55	.....	23 02	33	23 01.7	- 3 42
Sat Dec 27/Sun Dec 28	7019.8	6 00 18	17 35	18 57	5 58	7 21	0 57	12 00	.....	0 06	44	23 55.4	0 48
Sun Dec 28/Mon Dec 29	7020.8	6 04 14	17 35	18 58	5 59	7 21	1 01	12 04	.....	1 09	55	0 48.6	5 11
Mon Dec 29/Tue Dec 30	7021.8	6 08 11	17 36	18 58	5 59	7 21	1 06	12 08	.....	2 10	66	1 41.7	9 14
Tue Dec 30/Wed Dec 31	7022.8	6 12 08	17 37	18 59	5 59	7 22	1 10	12 13	.....	3 11	76	2 35.2	12 44
Wed Dec 31/Thu Jan 01	7023.8	6 16 04	17 38	19 00	6 00	7 22	1 15	12 17	.....	4 10	84	3 29.4	15 29