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:

```
          ***** 2011 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 2011, 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 05	10 37	Dec 13	6 59	Dec 21	1 15	Dec 27	21 20
Jan 04	2 05	Jan 12	4 33	Jan 19	14 23	Jan 26	5 59
Feb 02	19 33	Feb 11	0 20	Feb 18	1 37	Feb 24	16 28
Mar 04	13 48	Mar 12	16 46	Mar 19	11 11	Mar 26	5 08
Apr 03	7 34	Apr 11	5 06	Apr 17	19 44	Apr 24	19 47
May 02	23 51	May 10	13 33	May 17	4 08	May 24	11 52
Jun 01	14 03	Jun 08	19 10	Jun 15	13 13	Jun 23	4 49
Jul 01	1 54	Jul 07	23 30	Jul 14	23 39	Jul 22	22 04
Jul 30	11 40	Aug 06	4 09	Aug 13	11 58	Aug 21	14 57
Aug 28	20 04	Sep 04	10 40	Sep 12	2 27	Sep 20	6 40
Sep 27	4 09	Oct 03	20 16	Oct 11	19 07	Oct 19	20 32
Oct 26	12 57	Nov 02	9 39	Nov 10	13 18	Nov 18	8 10
Nov 24	23 11	Dec 02	2 53	Dec 10	7 38	Dec 17	17 49
Dec 24	11 08	Dec 31	23 16	Jan 09	0 32	Jan 16	2 09

***** 2011 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) (2011 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 Jan 01/Sun Jan 02	5563.8	6 19 53	17 38	19 00	6 00	7 22	1 19	12 21	5 55	.....	5	17 01.9	-24 22
Sun Jan 02/Mon Jan 03	5564.8	6 23 50	17 39	19 01	6 00	7 22	1 24	12 25	6 48	16 17	1	17 58.8	-23 52
Mon Jan 03/Tue Jan 04	5565.8	6 27 46	17 40	19 02	6 01	7 22	1 29	12 29	7 34	17 17	0	18 53.8	-22 07
Tue Jan 04/Wed Jan 05	5566.8	6 31 43	17 40	19 02	6 01	7 23	1 33	12 33	8 14	18 16	1	19 46.1	-19 19
Wed Jan 05/Thu Jan 06	5567.8	6 35 40	17 41	19 03	6 01	7 23	1 38	12 38	.....	19 15	4	20 35.6	-15 42
Thu Jan 06/Fri Jan 07	5568.8	6 39 36	17 42	19 04	6 01	7 23	1 43	12 42	.....	20 12	8	21 22.4	-11 31
Fri Jan 07/Sat Jan 08	5569.8	6 43 33	17 43	19 04	6 01	7 23	1 47	12 46	.....	21 08	14	22 07.2	- 6 56
Sat Jan 08/Sun Jan 09	5570.8	6 47 29	17 44	19 05	6 01	7 23	1 52	12 50	.....	22 02	21	22 50.6	- 2 10
Sun Jan 09/Mon Jan 10	5571.8	6 51 26	17 44	19 06	6 01	7 23	1 57	12 54	.....	22 55	29	23 33.6	2 39
Mon Jan 10/Tue Jan 11	5572.8	6 55 22	17 45	19 07	6 01	7 23	2 01	12 58	.....	23 48	38	0 16.9	7 23
Tue Jan 11/Wed Jan 12	5573.8	6 59 19	17 46	19 07	6 01	7 23	2 06	13 02	.....	0 43	47	1 01.6	11 52
Wed Jan 12/Thu Jan 13	5574.8	7 03 15	17 47	19 08	6 01	7 23	2 11	13 06	.....	1 39	57	1 48.4	15 57
Thu Jan 13/Fri Jan 14	5575.8	7 07 12	17 48	19 09	6 01	7 22	2 15	13 10	.....	2 37	67	2 38.1	19 27
Fri Jan 14/Sat Jan 15	5576.8	7 11 09	17 49	19 10	6 01	7 22	2 20	13 13	.....	3 36	76	3 31.2	22 07
Sat Jan 15/Sun Jan 16	5577.8	7 15 05	17 50	19 11	6 01	7 22	2 25	13 17	.....	4 35	84	4 27.8	23 42
Sun Jan 16/Mon Jan 17	5578.8	7 19 02	17 51	19 11	6 01	7 22	2 30	13 21	.....	5 32	91	5 27.1	23 58
Mon Jan 17/Tue Jan 18	5579.8	7 22 58	17 51	19 12	6 01	7 22	2 34	13 25	.....	6 25	97	6 28.1	22 44
Tue Jan 18/Wed Jan 19	5580.8	7 26 55	17 52	19 13	6 01	7 21	2 39	13 29	16 45	7 13	99	7 29.0	20 00
Wed Jan 19/Thu Jan 20	5581.8	7 30 51	17 53	19 14	6 01	7 21	2 44	13 33	17 54	7 56	100	8 28.7	15 55
Thu Jan 20/Fri Jan 21	5582.8	7 34 48	17 54	19 14	6 00	7 21	2 48	13 36	19 04	.....	97	9 26.4	10 47
Fri Jan 21/Sat Jan 22	5583.8	7 38 44	17 55	19 15	6 00	7 20	2 53	13 40	20 14	.....	91	10 22.2	4 58
Sat Jan 22/Sun Jan 23	5584.8	7 42 41	17 56	19 16	6 00	7 20	2 58	13 44	21 22	.....	84	11 16.6	- 1 06
Sun Jan 23/Mon Jan 24	5585.8	7 46 38	17 57	19 17	6 00	7 20	3 03	13 47	22 29	.....	74	12 10.4	- 7 02
Mon Jan 24/Tue Jan 25	5586.8	7 50 34	17 58	19 18	5 59	7 19	3 07	13 51	23 36	.....	63	13 04.4	-12 28
Tue Jan 25/Wed Jan 26	5587.8	7 54 31	17 59	19 18	5 59	7 19	3 12	13 54	0 42	.....	52	13 59.3	-17 08
Wed Jan 26/Thu Jan 27	5588.8	7 58 27	18 00	19 19	5 59	7 18	3 17	13 58	1 47	.....	41	14 55.2	-20 46
Thu Jan 27/Fri Jan 28	5589.8	8 02 24	18 01	19 20	5 58	7 18	3 22	14 02	2 50	.....	31	15 52.0	-23 12
Fri Jan 28/Sat Jan 29	5590.8	8 06 20	18 01	19 21	5 58	7 17	3 26	14 05	3 49	.....	21	16 49.1	-24 19
Sat Jan 29/Sun Jan 30	5591.8	8 10 17	18 02	19 22	5 57	7 16	3 31	14 09	4 43	.....	14	17 45.5	-24 08
Sun Jan 30/Mon Jan 31	5592.8	8 14 13	18 03	19 22	5 57	7 16	3 36	14 12	5 30	.....	7	18 40.2	-22 43
Mon Jan 31/Tue Feb 01	5593.8	8 18 10	18 04	19 23	5 56	7 15	3 41	14 15	6 12	16 07	3	19 32.6	-20 13

***** 2011 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) (2011 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 Feb 01/Wed Feb 02	5594.8	8 22 07	18 05	19 24	5 56	7 15	3 45	14 19	6 48	17 06	1	20 22.3	-16 52
Wed Feb 02/Thu Feb 03	5595.8	8 26 03	18 06	19 25	5 55	7 14	3 50	14 22	7 21	18 03	0	21 09.6	-12 52
Thu Feb 03/Fri Feb 04	5596.8	8 30 00	18 07	19 26	5 55	7 13	3 55	14 26	7 51	18 59	1	21 54.7	- 8 25
Fri Feb 04/Sat Feb 05	5597.8	8 33 56	18 08	19 26	5 54	7 12	4 00	14 29	.....	19 53	4	22 38.4	- 3 43
Sat Feb 05/Sun Feb 06	5598.8	8 37 53	18 09	19 27	5 53	7 12	4 04	14 32	.....	20 47	9	23 21.4	1 04
Sun Feb 06/Mon Feb 07	5599.8	8 41 49	18 10	19 28	5 53	7 11	4 09	14 36	.....	21 40	15	0 04.4	5 47
Mon Feb 07/Tue Feb 08	5600.8	8 45 46	18 10	19 29	5 52	7 10	4 14	14 39	.....	22 34	22	0 48.2	10 18
Tue Feb 08/Wed Feb 09	5601.8	8 49 42	18 11	19 29	5 51	7 09	4 18	14 42	.....	23 28	30	1 33.5	14 27
Wed Feb 09/Thu Feb 10	5602.8	8 53 39	18 12	19 30	5 51	7 09	4 23	14 45	.....	0 25	39	2 21.1	18 05
Thu Feb 10/Fri Feb 11	5603.8	8 57 36	18 13	19 31	5 50	7 08	4 28	14 48	.....	1 22	49	3 11.6	20 59
Fri Feb 11/Sat Feb 12	5604.8	9 01 32	18 14	19 32	5 49	7 07	4 33	14 52	.....	2 19	59	4 05.1	22 57
Sat Feb 12/Sun Feb 13	5605.8	9 05 29	18 15	19 33	5 48	7 06	4 37	14 55	.....	3 16	69	5 01.6	23 47
Sun Feb 13/Mon Feb 14	5606.8	9 09 25	18 16	19 33	5 48	7 05	4 42	14 58	.....	4 10	79	6 00.3	23 15
Mon Feb 14/Tue Feb 15	5607.8	9 13 22	18 17	19 34	5 47	7 04	4 47	15 01	.....	5 00	87	7 00.1	21 17
Tue Feb 15/Wed Feb 16	5608.8	9 17 18	18 17	19 35	5 46	7 03	4 51	15 04	.....	5 45	94	7 59.9	17 53
Wed Feb 16/Thu Feb 17	5609.8	9 21 15	18 18	19 36	5 45	7 02	4 56	15 07	16 39	6 27	98	8 58.8	13 13
Thu Feb 17/Fri Feb 18	5610.8	9 25 11	18 19	19 36	5 44	7 01	5 01	15 10	17 50	7 06	100	9 56.5	7 38
Fri Feb 18/Sat Feb 19	5611.8	9 29 08	18 20	19 37	5 43	7 00	5 06	15 13	19 00	7 43	98	10 53.1	1 30
Sat Feb 19/Sun Feb 20	5612.8	9 33 05	18 21	19 38	5 42	6 59	5 10	15 16	20 10	.....	94	11 49.2	- 4 44
Sun Feb 20/Mon Feb 21	5613.8	9 37 01	18 22	19 39	5 41	6 58	5 15	15 19	21 20	.....	87	12 45.5	-10 36
Mon Feb 21/Tue Feb 22	5614.8	9 40 58	18 22	19 39	5 40	6 57	5 20	15 22	22 29	.....	78	13 42.4	-15 45
Tue Feb 22/Wed Feb 23	5615.8	9 44 54	18 23	19 40	5 39	6 56	5 24	15 25	23 37	.....	67	14 40.1	-19 50
Wed Feb 23/Thu Feb 24	5616.8	9 48 51	18 24	19 41	5 38	6 55	5 29	15 28	0 42	.....	57	15 38.4	-22 39
Thu Feb 24/Fri Feb 25	5617.8	9 52 47	18 25	19 42	5 37	6 54	5 34	15 31	1 44	.....	46	16 36.7	-24 07
Fri Feb 25/Sat Feb 26	5618.8	9 56 44	18 26	19 42	5 36	6 53	5 38	15 34	2 39	.....	36	17 33.8	-24 13
Sat Feb 26/Sun Feb 27	5619.8	10 00 40	18 26	19 43	5 35	6 52	5 43	15 37	3 28	.....	26	18 29.1	-23 04
Sun Feb 27/Mon Feb 28	5620.8	10 04 37	18 27	19 44	5 34	6 50	5 48	15 39	4 12	.....	18	19 21.8	-20 49
Mon Feb 28/Tue Mar 01	5621.8	10 08 34	18 28	19 45	5 33	6 49	5 52	15 42	4 49	.....	11	20 11.7	-17 42

***** 2011 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) (2011 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
Tue Mar 01/Wed Mar 02	5622.8	10 12 30	18 29	19 45	5 32	6 48	5 57	15 45	5 23	.....	6	20 59.1	-13 54
Wed Mar 02/Thu Mar 03	5623.8	10 16 27	18 29	19 46	5 30	6 47	6 02	15 48	5 54	16 53	2	21 44.4	- 9 37
Thu Mar 03/Fri Mar 04	5624.8	10 20 23	18 30	19 47	5 29	6 46	6 06	15 51	6 23	17 47	0	22 28.2	- 5 01
Fri Mar 04/Sat Mar 05	5625.8	10 24 20	18 31	19 47	5 28	6 45	6 11	15 53	6 51	18 41	0	23 11.2	- 0 18
Sat Mar 05/Sun Mar 06	5626.8	10 28 16	18 32	19 48	5 27	6 43	6 16	15 56	7 19	19 34	2	23 54.1	4 24
Sun Mar 06/Mon Mar 07	5627.8	10 32 13	18 32	19 49	5 26	6 42	6 20	15 59	.....	20 28	5	0 37.6	8 56
Mon Mar 07/Tue Mar 08	5628.8	10 36 09	18 33	19 50	5 25	6 41	6 25	16 02	.....	21 22	10	1 22.3	13 08
Tue Mar 08/Wed Mar 09	5629.8	10 40 06	18 34	19 50	5 23	6 40	6 30	16 04	.....	22 17	16	2 08.8	16 51
Wed Mar 09/Thu Mar 10	5630.8	10 44 03	18 35	19 51	5 22	6 39	6 35	16 07	.....	23 13	24	2 57.6	19 54
Thu Mar 10/Fri Mar 11	5631.8	10 47 59	18 35	19 52	5 21	6 37	6 39	16 10	.....	0 10	33	3 49.0	22 05
Fri Mar 11/Sat Mar 12	5632.8	10 51 56	18 36	19 53	5 20	6 36	6 44	16 12	.....	1 05	42	4 42.9	23 15
Sat Mar 12/Sun Mar 13	5633.8	10 55 52	18 37	19 53	5 18	6 35	6 49	16 15	.....	1 58	52	5 38.8	23 13
Sun Mar 13/Mon Mar 14	5634.8	10 59 49	18 37	19 54	5 17	6 34	6 53	16 18	.....	2 48	63	6 36.0	21 52
Mon Mar 14/Tue Mar 15	5635.8	11 03 45	18 38	19 55	5 16	6 32	6 58	16 20	.....	3 34	73	7 33.7	19 11
Tue Mar 15/Wed Mar 16	5636.8	11 07 42	18 39	19 56	5 14	6 31	7 03	16 23	.....	4 17	83	8 31.2	15 14
Wed Mar 16/Thu Mar 17	5637.8	11 11 38	18 40	19 56	5 13	6 30	7 07	16 26	.....	4 56	91	9 28.2	10 12
Thu Mar 17/Fri Mar 18	5638.8	11 15 35	18 40	19 57	5 12	6 28	7 12	16 28	.....	5 34	96	10 24.8	4 23
Fri Mar 18/Sat Mar 19	5639.8	11 19 31	18 41	19 58	5 10	6 27	7 17	16 31	17 44	6 12	99	11 21.5	- 1 49
Sat Mar 19/Sun Mar 20	5640.8	11 23 28	18 42	19 59	5 09	6 26	7 21	16 33	18 55	6 51	99	12 18.7	- 7 58
Sun Mar 20/Mon Mar 21	5641.8	11 27 25	18 42	19 59	5 08	6 25	7 26	16 36	20 06	.....	96	13 17.1	-13 36
Mon Mar 21/Tue Mar 22	5642.8	11 31 21	18 43	20 00	5 06	6 23	7 31	16 39	21 17	.....	90	14 16.8	-18 17
Tue Mar 22/Wed Mar 23	5643.8	11 35 18	18 44	20 01	5 05	6 22	7 36	16 41	22 26	.....	82	15 17.5	-21 43
Wed Mar 23/Thu Mar 24	5644.8	11 39 14	18 44	20 02	5 04	6 21	7 40	16 44	23 32	.....	72	16 18.3	-23 42
Thu Mar 24/Fri Mar 25	5645.8	11 43 11	18 45	20 02	5 02	6 19	7 45	16 46	0 32	.....	62	17 17.9	-24 13
Fri Mar 25/Sat Mar 26	5646.8	11 47 07	18 46	20 03	5 01	6 18	7 50	16 49	1 24	.....	52	18 15.3	-23 22
Sat Mar 26/Sun Mar 27	5647.8	11 51 04	18 46	20 04	4 59	6 17	7 54	16 51	2 10	.....	41	19 09.7	-21 20
Sun Mar 27/Mon Mar 28	5648.8	11 55 00	18 47	20 05	4 58	6 16	7 59	16 54	2 50	.....	32	20 00.8	-18 23
Mon Mar 28/Tue Mar 29	5649.8	11 58 57	18 48	20 06	4 57	6 14	8 04	16 56	3 25	.....	23	20 49.0	-14 44
Tue Mar 29/Wed Mar 30	5650.8	12 02 54	18 49	20 06	4 55	6 13	8 09	16 59	3 56	.....	16	21 34.7	-10 34
Wed Mar 30/Thu Mar 31	5651.8	12 06 50	18 49	20 07	4 54	6 12	8 13	17 01	4 26	.....	10	22 18.8	- 6 05
Thu Mar 31/Fri Apr 01	5652.8	12 10 47	18 50	20 08	4 52	6 11	8 18	17 04	4 54	.....	5	23 01.9	- 1 26

***** 2011 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) (2011 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 Apr 01/Sat Apr 02	5653.8	12 14 43	18 51	20 09	4 51	6 09	8 23	17 07	5 22	17 29	2	23 44.7	3 14
Sat Apr 02/Sun Apr 03	5654.8	12 18 40	18 51	20 10	4 50	6 08	8 28	17 09	5 51	18 23	0	0 28.0	7 46
Sun Apr 03/Mon Apr 04	5655.8	12 22 36	18 52	20 11	4 48	6 07	8 33	17 12	6 22	19 17	1	1 12.5	12 01
Mon Apr 04/Tue Apr 05	5656.8	12 26 33	18 53	20 11	4 47	6 05	8 37	17 14	6 56	20 12	3	1 58.6	15 49
Tue Apr 05/Wed Apr 06	5657.8	12 30 29	18 53	20 12	4 45	6 04	8 42	17 17	.....	21 08	6	2 46.8	18 58
Wed Apr 06/Thu Apr 07	5658.8	12 34 26	18 54	20 13	4 44	6 03	8 47	17 19	.....	22 04	12	3 37.3	21 20
Thu Apr 07/Fri Apr 08	5659.8	12 38 23	18 55	20 14	4 42	6 02	8 52	17 22	.....	22 59	19	4 30.0	22 42
Fri Apr 08/Sat Apr 09	5660.8	12 42 19	18 55	20 15	4 41	6 00	8 56	17 24	.....	23 53	27	5 24.3	22 57
Sat Apr 09/Sun Apr 10	5661.8	12 46 16	18 56	20 16	4 40	5 59	9 01	17 27	.....	0 43	37	6 19.7	21 59
Sun Apr 10/Mon Apr 11	5662.8	12 50 12	18 57	20 17	4 38	5 58	9 06	17 29	.....	1 29	47	7 15.3	19 46
Mon Apr 11/Tue Apr 12	5663.8	12 54 09	18 57	20 17	4 37	5 57	9 11	17 32	.....	2 11	58	8 10.6	16 23
Tue Apr 12/Wed Apr 13	5664.8	12 58 05	18 58	20 18	4 35	5 56	9 16	17 34	.....	2 50	69	9 05.5	11 56
Wed Apr 13/Thu Apr 14	5665.8	13 02 02	18 59	20 19	4 34	5 54	9 21	17 37	.....	3 27	79	10 00.2	6 39
Thu Apr 14/Fri Apr 15	5666.8	13 05 58	18 59	20 20	4 33	5 53	9 25	17 39	.....	4 04	88	10 55.0	0 48
Fri Apr 15/Sat Apr 16	5667.8	13 09 55	19 00	20 21	4 31	5 52	9 30	17 42	.....	4 41	95	11 50.8	- 5 15
Sat Apr 16/Sun Apr 17	5668.8	13 13 52	19 01	20 22	4 30	5 51	9 35	17 44	17 39	5 21	99	12 48.2	-11 05
Sun Apr 17/Mon Apr 18	5669.8	13 17 48	19 02	20 23	4 29	5 50	9 40	17 47	18 51	6 05	100	13 47.7	-16 15
Mon Apr 18/Tue Apr 19	5670.8	13 21 45	19 02	20 24	4 27	5 49	9 45	17 50	20 02	6 53	98	14 49.2	-20 20
Tue Apr 19/Wed Apr 20	5671.8	13 25 41	19 03	20 25	4 26	5 47	9 50	17 52	21 12	.....	93	15 51.9	-23 00
Wed Apr 20/Thu Apr 21	5672.8	13 29 38	19 04	20 26	4 24	5 46	9 55	17 55	22 16	.....	86	16 54.4	-24 08
Thu Apr 21/Fri Apr 22	5673.8	13 33 34	19 04	20 27	4 23	5 45	10 00	17 57	23 14	.....	77	17 54.9	-23 44
Fri Apr 22/Sat Apr 23	5674.8	13 37 31	19 05	20 28	4 22	5 44	10 04	18 00	0 04	.....	68	18 52.3	-22 01
Sat Apr 23/Sun Apr 24	5675.8	13 41 27	19 06	20 28	4 20	5 43	10 09	18 03	0 47	.....	58	19 46.0	-19 14
Sun Apr 24/Mon Apr 25	5676.8	13 45 24	19 07	20 29	4 19	5 42	10 14	18 05	1 24	.....	48	20 36.1	-15 41
Mon Apr 25/Tue Apr 26	5677.8	13 49 21	19 07	20 30	4 18	5 41	10 19	18 08	1 58	.....	38	21 23.2	-11 35
Tue Apr 26/Wed Apr 27	5678.8	13 53 17	19 08	20 31	4 17	5 40	10 24	18 11	2 28	.....	29	22 08.1	- 7 08
Wed Apr 27/Thu Apr 28	5679.8	13 57 14	19 09	20 32	4 15	5 39	10 29	18 13	2 56	.....	21	22 51.6	- 2 31
Thu Apr 28/Fri Apr 29	5680.8	14 01 10	19 09	20 33	4 14	5 38	10 34	18 16	3 25	.....	14	23 34.6	2 08
Fri Apr 29/Sat Apr 30	5681.8	14 05 07	19 10	20 34	4 13	5 37	10 39	18 19	3 54	.....	8	0 17.8	6 41
Sat Apr 30/Sun May 01	5682.8	14 09 03	19 11	20 35	4 11	5 36	10 44	18 21	4 24	.....	4	1 02.1	10 59

***** 2011 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) (2011 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 May 01/Mon May 02	5683.8	14 13 00	19 12	20 36	4 10	5 35	10 49	18 24	4 57	18 06	1	1 47.9	14 52
Mon May 02/Tue May 03	5684.8	14 16 56	19 12	20 37	4 09	5 34	10 54	18 27	5 34	19 02	0	2 35.9	18 10
Tue May 03/Wed May 04	5685.8	14 20 53	19 13	20 38	4 08	5 33	10 59	18 29	6 16	19 58	1	3 26.2	20 41
Wed May 04/Thu May 05	5686.8	14 24 50	19 14	20 39	4 07	5 32	11 04	18 32	.....	20 54	4	4 18.6	22 16
Thu May 05/Fri May 06	5687.8	14 28 46	19 14	20 40	4 05	5 31	11 09	18 35	.....	21 49	8	5 12.6	22 44
Fri May 06/Sat May 07	5688.8	14 32 43	19 15	20 41	4 04	5 31	11 13	18 38	.....	22 40	15	6 07.5	22 01
Sat May 07/Sun May 08	5689.8	14 36 39	19 16	20 42	4 03	5 30	11 18	18 41	.....	23 27	23	7 02.5	20 05
Sun May 08/Mon May 09	5690.8	14 40 36	19 17	20 43	4 02	5 29	11 23	18 43	.....	0 10	33	7 56.8	17 01
Mon May 09/Tue May 10	5691.8	14 44 32	19 17	20 44	4 01	5 28	11 28	18 46	.....	0 49	43	8 50.3	12 57
Tue May 10/Wed May 11	5692.8	14 48 29	19 18	20 45	4 00	5 27	11 33	18 49	.....	1 25	54	9 43.1	8 04
Wed May 11/Thu May 12	5693.8	14 52 25	19 19	20 46	3 59	5 26	11 38	18 52	.....	2 01	66	10 35.8	2 36
Thu May 12/Fri May 13	5694.8	14 56 22	19 19	20 47	3 58	5 26	11 43	18 55	.....	2 36	76	11 29.0	- 3 10
Fri May 13/Sat May 14	5695.8	15 00 19	19 20	20 48	3 57	5 25	11 48	18 58	.....	3 14	86	12 23.8	- 8 54
Sat May 14/Sun May 15	5696.8	15 04 15	19 21	20 49	3 56	5 24	11 53	19 01	.....	3 54	93	13 20.9	-14 13
Sun May 15/Mon May 16	5697.8	15 08 12	19 22	20 50	3 55	5 24	11 58	19 04	17 38	4 39	98	14 20.6	-18 44
Mon May 16/Tue May 17	5698.8	15 12 08	19 22	20 51	3 54	5 23	12 03	19 07	18 48	5 30	100	15 22.6	-22 01
Tue May 17/Wed May 18	5699.8	15 16 05	19 23	20 52	3 53	5 22	12 08	19 10	19 55	6 26	99	16 25.9	-23 51
Wed May 18/Thu May 19	5700.8	15 20 01	19 24	20 53	3 52	5 22	12 13	19 13	20 58	.....	95	17 28.6	-24 05
Thu May 19/Fri May 20	5701.8	15 23 58	19 24	20 54	3 51	5 21	12 18	19 16	21 53	.....	90	18 28.9	-22 51
Fri May 20/Sat May 21	5702.8	15 27 54	19 25	20 55	3 51	5 21	12 23	19 19	22 40	.....	82	19 25.7	-20 22
Sat May 21/Sun May 22	5703.8	15 31 51	19 26	20 56	3 50	5 20	12 27	19 22	23 21	.....	73	20 18.7	-16 58
Sun May 22/Mon May 23	5704.8	15 35 48	19 26	20 57	3 49	5 20	12 32	19 25	23 56	.....	64	21 08.0	-12 55
Mon May 23/Tue May 24	5705.8	15 39 44	19 27	20 58	3 48	5 19	12 37	19 29	0 28	.....	54	21 54.5	- 8 28
Tue May 24/Wed May 25	5706.8	15 43 41	19 28	20 59	3 48	5 19	12 42	19 32	0 58	.....	45	22 39.0	- 3 49
Wed May 25/Thu May 26	5707.8	15 47 37	19 28	21 00	3 47	5 18	12 47	19 35	1 26	.....	35	23 22.5	0 53
Thu May 26/Fri May 27	5708.8	15 51 34	19 29	21 01	3 46	5 18	12 52	19 38	1 55	.....	27	0 05.9	5 30
Fri May 27/Sat May 28	5709.8	15 55 30	19 30	21 01	3 46	5 17	12 56	19 42	2 25	.....	19	0 50.0	9 52
Sat May 28/Sun May 29	5710.8	15 59 27	19 30	21 02	3 45	5 17	13 01	19 45	2 57	.....	12	1 35.5	13 52
Sun May 29/Mon May 30	5711.8	16 03 23	19 31	21 03	3 44	5 17	13 06	19 48	3 32	.....	7	2 23.1	17 20
Mon May 30/Tue May 31	5712.8	16 07 20	19 31	21 04	3 44	5 16	13 11	19 52	4 13	17 50	3	3 13.0	20 04
Tue May 31/Wed Jun 01	5713.8	16 11 17	19 32	21 05	3 43	5 16	13 16	19 55	4 59	18 47	0	4 05.3	21 53

***** 2011 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) (2011 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 Jun 01/Thu Jun 02	5714.8	16 15 13	19 33	21 06	3 43	5 16	13 20	19 59	5 50	19 43	0	4 59.5	22 38
Thu Jun 02/Fri Jun 03	5715.8	16 19 10	19 33	21 06	3 42	5 16	13 25	20 02	.....	20 36	2	5 54.8	22 10
Fri Jun 03/Sat Jun 04	5716.8	16 23 06	19 34	21 07	3 42	5 15	13 30	20 06	.....	21 25	6	6 50.3	20 29
Sat Jun 04/Sun Jun 05	5717.8	16 27 03	19 34	21 08	3 42	5 15	13 34	20 09	.....	22 09	12	7 45.0	17 38
Sun Jun 05/Mon Jun 06	5718.8	16 30 59	19 35	21 08	3 41	5 15	13 39	20 13	.....	22 50	20	8 38.6	13 47
Mon Jun 06/Tue Jun 07	5719.8	16 34 56	19 35	21 09	3 41	5 15	13 44	20 17	.....	23 27	30	9 31.1	9 06
Tue Jun 07/Wed Jun 08	5720.8	16 38 52	19 36	21 10	3 41	5 15	13 48	20 20	.....	0 02	40	10 22.8	3 51
Wed Jun 08/Thu Jun 09	5721.8	16 42 49	19 36	21 10	3 41	5 15	13 53	20 24	.....	0 37	52	11 14.5	- 1 43
Thu Jun 09/Fri Jun 10	5722.8	16 46 46	19 37	21 11	3 40	5 15	13 57	20 28	.....	1 12	63	12 07.1	- 7 19
Fri Jun 10/Sat Jun 11	5723.8	16 50 42	19 37	21 12	3 40	5 15	14 02	20 32	.....	1 50	74	13 01.5	-12 37
Sat Jun 11/Sun Jun 12	5724.8	16 54 39	19 37	21 12	3 40	5 15	14 06	20 35	.....	2 32	84	13 58.4	-17 16
Sun Jun 12/Mon Jun 13	5725.8	16 58 35	19 38	21 13	3 40	5 15	14 11	20 39	.....	3 19	91	14 57.9	-20 57
Mon Jun 13/Tue Jun 14	5726.8	17 02 32	19 38	21 13	3 40	5 15	14 15	20 43	17 37	4 12	97	15 59.5	-23 19
Tue Jun 14/Wed Jun 15	5727.8	17 06 28	19 39	21 14	3 40	5 15	14 20	20 47	18 41	5 10	100	17 01.9	-24 12
Wed Jun 15/Thu Jun 16	5728.8	17 10 25	19 39	21 14	3 40	5 15	14 24	20 51	19 39	6 11	100	18 03.3	-23 34
Thu Jun 16/Fri Jun 17	5729.8	17 14 21	19 39	21 14	3 40	5 15	14 28	20 55	20 30	.....	97	19 02.2	-21 34
Fri Jun 17/Sat Jun 18	5730.8	17 18 18	19 40	21 15	3 40	5 15	14 33	20 59	21 14	.....	93	19 57.6	-18 27
Sat Jun 18/Sun Jun 19	5731.8	17 22 15	19 40	21 15	3 40	5 15	14 37	21 03	21 53	.....	86	20 49.3	-14 32
Sun Jun 19/Mon Jun 20	5732.8	17 26 11	19 40	21 15	3 40	5 16	14 41	21 07	22 27	.....	79	21 37.8	-10 07
Mon Jun 20/Tue Jun 21	5733.8	17 30 08	19 40	21 16	3 41	5 16	14 45	21 11	22 58	.....	70	22 23.8	- 5 25
Tue Jun 21/Wed Jun 22	5734.8	17 34 04	19 41	21 16	3 41	5 16	14 49	21 16	23 27	.....	61	23 08.3	- 0 39
Wed Jun 22/Thu Jun 23	5735.8	17 38 01	19 41	21 16	3 41	5 16	14 53	21 20	23 55	.....	51	23 52.2	4 04
Thu Jun 23/Fri Jun 24	5736.8	17 41 57	19 41	21 16	3 41	5 16	14 58	21 24	0 25	.....	42	0 36.2	8 33
Fri Jun 24/Sat Jun 25	5737.8	17 45 54	19 41	21 16	3 42	5 17	15 02	21 28	0 56	.....	33	1 21.4	12 42
Sat Jun 25/Sun Jun 26	5738.8	17 49 50	19 41	21 16	3 42	5 17	15 06	21 33	1 30	.....	24	2 08.3	16 21
Sun Jun 26/Mon Jun 27	5739.8	17 53 47	19 41	21 16	3 42	5 17	15 10	21 37	2 08	.....	16	2 57.4	19 19
Mon Jun 27/Tue Jun 28	5740.8	17 57 44	19 41	21 16	3 43	5 18	15 14	21 41	2 51	.....	10	3 49.1	21 27
Tue Jun 28/Wed Jun 29	5741.8	18 01 40	19 42	21 16	3 43	5 18	15 18	21 46	3 41	17 33	5	4 43.0	22 32
Wed Jun 29/Thu Jun 30	5742.8	18 05 37	19 42	21 16	3 44	5 18	15 21	21 50	4 37	18 27	1	5 38.5	22 26
Thu Jun 30/Fri Jul 01	5743.8	18 09 33	19 42	21 16	3 44	5 19	15 25	21 54	5 37	19 19	0	6 34.7	21 06

***** 2011 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) (2011 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 Jul 01/Sat Jul 02	5744.8	18 13 30	19 42	21 16	3 45	5 19	15 29	21 59	.....	20 06	1	7 30.6	18 31
Sat Jul 02/Sun Jul 03	5745.8	18 17 26	19 41	21 16	3 45	5 20	15 33	22 03	.....	20 49	4	8 25.4	14 51
Sun Jul 03/Mon Jul 04	5746.8	18 21 23	19 41	21 16	3 46	5 20	15 37	22 08	.....	21 28	10	9 18.9	10 17
Mon Jul 04/Tue Jul 05	5747.8	18 25 19	19 41	21 15	3 47	5 21	15 40	22 12	.....	22 04	18	10 11.3	5 06
Tue Jul 05/Wed Jul 06	5748.8	18 29 16	19 41	21 15	3 47	5 21	15 44	22 17	.....	22 39	28	11 03.1	- 0 25
Wed Jul 06/Thu Jul 07	5749.8	18 33 13	19 41	21 15	3 48	5 22	15 48	22 22	.....	23 14	38	11 55.2	- 6 00
Thu Jul 07/Fri Jul 08	5750.8	18 37 09	19 41	21 14	3 49	5 22	15 51	22 26	.....	23 51	50	12 48.3	-11 18
Fri Jul 08/Sat Jul 09	5751.8	18 41 06	19 41	21 14	3 49	5 23	15 55	22 31	.....	0 31	61	13 43.3	-16 03
Sat Jul 09/Sun Jul 10	5752.8	18 45 02	19 40	21 14	3 50	5 23	15 58	22 36	.....	1 15	72	14 40.5	-19 56
Sun Jul 10/Mon Jul 11	5753.8	18 48 59	19 40	21 13	3 51	5 24	16 02	22 40	.....	2 04	82	15 39.8	-22 39
Mon Jul 11/Tue Jul 12	5754.8	18 52 55	19 40	21 13	3 51	5 24	16 05	22 45	.....	2 58	90	16 40.5	-24 01
Tue Jul 12/Wed Jul 13	5755.8	18 56 52	19 40	21 12	3 52	5 25	16 09	22 50	.....	3 57	95	17 41.1	-23 55
Wed Jul 13/Thu Jul 14	5756.8	19 00 48	19 39	21 12	3 53	5 25	16 12	22 54	18 21	4 59	99	18 40.1	-22 26
Thu Jul 14/Fri Jul 15	5757.8	19 04 45	19 39	21 11	3 54	5 26	16 15	22 59	19 08	6 01	100	19 36.5	-19 45
Fri Jul 15/Sat Jul 16	5758.8	19 08 42	19 39	21 10	3 55	5 27	16 19	23 04	19 49	.....	99	20 29.7	-16 08
Sat Jul 16/Sun Jul 17	5759.8	19 12 38	19 38	21 10	3 55	5 27	16 22	23 09	20 25	.....	96	21 19.7	-11 51
Sun Jul 17/Mon Jul 18	5760.8	19 16 35	19 38	21 09	3 56	5 28	16 25	23 14	20 57	.....	90	22 07.1	- 7 12
Mon Jul 18/Tue Jul 19	5761.8	19 20 31	19 37	21 08	3 57	5 28	16 28	23 18	21 27	.....	84	22 52.7	- 2 22
Tue Jul 19/Wed Jul 20	5762.8	19 24 28	19 37	21 08	3 58	5 29	16 32	23 23	21 56	.....	76	23 37.2	2 26
Wed Jul 20/Thu Jul 21	5763.8	19 28 24	19 36	21 07	3 59	5 30	16 35	23 28	22 25	.....	67	0 21.6	7 03
Thu Jul 21/Fri Jul 22	5764.8	19 32 21	19 36	21 06	4 00	5 30	16 38	23 33	22 55	.....	58	1 06.5	11 21
Fri Jul 22/Sat Jul 23	5765.8	19 36 17	19 35	21 05	4 01	5 31	16 41	23 38	23 28	.....	49	1 52.8	15 10
Sat Jul 23/Sun Jul 24	5766.8	19 40 14	19 35	21 04	4 02	5 32	16 44	23 43	0 04	.....	39	2 41.0	18 23
Sun Jul 24/Mon Jul 25	5767.8	19 44 11	19 34	21 04	4 03	5 32	16 47	23 47	0 44	.....	30	3 31.5	20 49
Mon Jul 25/Tue Jul 26	5768.8	19 48 07	19 33	21 03	4 04	5 33	16 50	23 52	1 31	.....	21	4 24.4	22 16
Tue Jul 26/Wed Jul 27	5769.8	19 52 04	19 33	21 02	4 04	5 33	16 53	23 57	2 23	.....	14	5 19.2	22 37
Wed Jul 27/Thu Jul 28	5770.8	19 56 00	19 32	21 01	4 05	5 34	16 56	0 02	3 22	.....	7	6 15.3	21 44
Thu Jul 28/Fri Jul 29	5771.8	19 59 57	19 31	21 00	4 06	5 35	16 59	0 07	4 25	17 57	3	7 11.7	19 35
Fri Jul 29/Sat Jul 30	5772.8	20 03 53	19 31	20 59	4 07	5 35	17 02	0 12	5 30	18 43	0	8 07.6	16 15
Sat Jul 30/Sun Jul 31	5773.8	20 07 50	19 30	20 58	4 08	5 36	17 05	0 17	.....	19 24	1	9 02.5	11 55
Sun Jul 31/Mon Aug 01	5774.8	20 11 46	19 29	20 57	4 09	5 37	17 08	0 22	.....	20 03	3	9 56.3	6 49

***** 2011 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) (2011 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 Aug 01/Tue Aug 02	5775.8	20 15 43	19 28	20 56	4 10	5 37	17 11	0 27	.....	20 39	9	10 49.4	1 15
Tue Aug 02/Wed Aug 03	5776.8	20 19 40	19 27	20 54	4 11	5 38	17 14	0 31	.....	21 15	16	11 42.4	- 4 25
Wed Aug 03/Thu Aug 04	5777.8	20 23 36	19 27	20 53	4 12	5 39	17 16	0 36	.....	21 52	26	12 36.0	- 9 53
Thu Aug 04/Fri Aug 05	5778.8	20 27 33	19 26	20 52	4 13	5 39	17 19	0 41	.....	22 31	36	13 30.8	-14 48
Fri Aug 05/Sat Aug 06	5779.8	20 31 29	19 25	20 51	4 14	5 40	17 22	0 46	.....	23 14	47	14 27.3	-18 53
Sat Aug 06/Sun Aug 07	5780.8	20 35 26	19 24	20 50	4 15	5 41	17 25	0 51	.....	0 01	59	15 25.5	-21 52
Sun Aug 07/Mon Aug 08	5781.8	20 39 22	19 23	20 49	4 16	5 41	17 28	0 56	.....	0 54	69	16 24.9	-23 34
Mon Aug 08/Tue Aug 09	5782.8	20 43 19	19 22	20 48	4 17	5 42	17 30	1 01	.....	1 50	79	17 24.3	-23 53
Tue Aug 09/Wed Aug 10	5783.8	20 47 15	19 21	20 46	4 18	5 43	17 33	1 06	.....	2 50	87	18 22.6	-22 50
Wed Aug 10/Thu Aug 11	5784.8	20 51 12	19 20	20 45	4 19	5 43	17 36	1 11	.....	3 51	93	19 18.8	-20 34
Thu Aug 11/Fri Aug 12	5785.8	20 55 09	19 19	20 44	4 20	5 44	17 38	1 15	17 46	4 51	98	20 12.2	-17 19
Fri Aug 12/Sat Aug 13	5786.8	20 59 05	19 18	20 43	4 21	5 45	17 41	1 20	18 24	5 49	100	21 02.8	-13 18
Sat Aug 13/Sun Aug 14	5787.8	21 03 02	19 17	20 41	4 21	5 45	17 44	1 25	18 57	.....	100	21 51.0	- 8 48
Sun Aug 14/Mon Aug 15	5788.8	21 06 58	19 16	20 40	4 22	5 46	17 46	1 30	19 28	.....	98	22 37.2	- 4 02
Mon Aug 15/Tue Aug 16	5789.8	21 10 55	19 15	20 39	4 23	5 47	17 49	1 35	19 58	.....	94	23 22.3	0 47
Tue Aug 16/Wed Aug 17	5790.8	21 14 51	19 14	20 37	4 24	5 47	17 52	1 40	20 27	.....	88	0 07.0	5 30
Wed Aug 17/Thu Aug 18	5791.8	21 18 48	19 13	20 36	4 25	5 48	17 54	1 45	20 56	.....	82	0 51.9	9 55
Thu Aug 18/Fri Aug 19	5792.8	21 22 44	19 12	20 35	4 26	5 49	17 57	1 49	21 28	.....	74	1 37.9	13 55
Fri Aug 19/Sat Aug 20	5793.8	21 26 41	19 11	20 33	4 27	5 49	17 59	1 54	22 02	.....	65	2 25.3	17 20
Sat Aug 20/Sun Aug 21	5794.8	21 30 38	19 10	20 32	4 28	5 50	18 02	1 59	22 40	.....	55	3 14.8	20 01
Sun Aug 21/Mon Aug 22	5795.8	21 34 34	19 09	20 31	4 29	5 51	18 05	2 04	23 23	.....	46	4 06.3	21 49
Mon Aug 22/Tue Aug 23	5796.8	21 38 31	19 07	20 29	4 30	5 51	18 07	2 09	0 12	.....	36	4 59.8	22 34
Tue Aug 23/Wed Aug 24	5797.8	21 42 27	19 06	20 28	4 30	5 52	18 10	2 14	1 07	.....	27	5 54.7	22 10
Wed Aug 24/Thu Aug 25	5798.8	21 46 24	19 05	20 26	4 31	5 53	18 12	2 18	2 06	.....	18	6 50.4	20 32
Thu Aug 25/Fri Aug 26	5799.8	21 50 20	19 04	20 25	4 32	5 53	18 15	2 23	3 10	.....	10	7 46.2	17 42
Fri Aug 26/Sat Aug 27	5800.8	21 54 17	19 03	20 24	4 33	5 54	18 17	2 28	4 17	17 16	5	8 41.6	13 46
Sat Aug 27/Sun Aug 28	5801.8	21 58 13	19 01	20 22	4 34	5 55	18 20	2 33	5 24	17 56	1	9 36.3	8 56
Sun Aug 28/Mon Aug 29	5802.8	22 02 10	19 00	20 21	4 35	5 55	18 22	2 38	6 33	18 34	0	10 30.5	3 29
Mon Aug 29/Tue Aug 30	5803.8	22 06 07	18 59	20 19	4 36	5 56	18 25	2 42	.....	19 12	2	11 24.7	- 2 16
Tue Aug 30/Wed Aug 31	5804.8	22 10 03	18 58	20 18	4 36	5 56	18 27	2 47	.....	19 50	7	12 19.4	- 7 56
Wed Aug 31/Thu Sep 01	5805.8	22 14 00	18 57	20 16	4 37	5 57	18 30	2 52	.....	20 29	14	13 15.3	-13 09

***** 2011 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) (2011 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 Sep 01/Fri Sep 02	5806.8	22 17 56	18 55	20 15	4 38	5 58	18 32	2 57	.....	21 12	23	14 12.6	-17 34
Fri Sep 02/Sat Sep 03	5807.8	22 21 53	18 54	20 13	4 39	5 58	18 35	3 01	.....	21 59	33	15 11.3	-20 53
Sat Sep 03/Sun Sep 04	5808.8	22 25 49	18 53	20 12	4 40	5 59	18 37	3 06	.....	22 51	44	16 10.9	-22 55
Sun Sep 04/Mon Sep 05	5809.8	22 29 46	18 51	20 11	4 40	6 00	18 40	3 11	.....	23 46	55	17 10.3	-23 34
Mon Sep 05/Tue Sep 06	5810.8	22 33 42	18 50	20 09	4 41	6 00	18 42	3 16	.....	0 45	66	18 08.5	-22 52
Tue Sep 06/Wed Sep 07	5811.8	22 37 39	18 49	20 08	4 42	6 01	18 45	3 20	.....	1 45	76	19 04.5	-20 57
Wed Sep 07/Thu Sep 08	5812.8	22 41 36	18 48	20 06	4 43	6 01	18 47	3 25	.....	2 44	84	19 57.9	-18 00
Thu Sep 08/Fri Sep 09	5813.8	22 45 32	18 46	20 05	4 43	6 02	18 50	3 30	.....	3 43	91	20 48.5	-14 17
Fri Sep 09/Sat Sep 10	5814.8	22 49 29	18 45	20 03	4 44	6 03	18 52	3 34	16 58	4 39	96	21 36.7	-10 00
Sat Sep 10/Sun Sep 11	5815.8	22 53 25	18 44	20 02	4 45	6 03	18 55	3 39	17 30	5 35	99	22 23.2	- 5 22
Sun Sep 11/Mon Sep 12	5816.8	22 57 22	18 42	20 00	4 46	6 04	18 57	3 44	18 00	6 29	100	23 08.4	- 0 37
Mon Sep 12/Tue Sep 13	5817.8	23 01 18	18 41	19 59	4 46	6 04	19 00	3 49	18 29	.....	99	23 53.2	4 06
Tue Sep 13/Wed Sep 14	5818.8	23 05 15	18 40	19 58	4 47	6 05	19 02	3 53	18 59	.....	97	0 38.2	8 36
Wed Sep 14/Thu Sep 15	5819.8	23 09 11	18 38	19 56	4 48	6 06	19 05	3 58	19 30	.....	92	1 24.0	12 44
Thu Sep 15/Fri Sep 16	5820.8	23 13 08	18 37	19 55	4 49	6 06	19 07	4 03	20 03	.....	87	2 11.1	16 19
Fri Sep 16/Sat Sep 17	5821.8	23 17 05	18 36	19 53	4 49	6 07	19 10	4 07	20 39	.....	79	2 59.9	19 13
Sat Sep 17/Sun Sep 18	5822.8	23 21 01	18 34	19 52	4 50	6 07	19 12	4 12	21 20	.....	71	3 50.6	21 16
Sun Sep 18/Mon Sep 19	5823.8	23 24 58	18 33	19 50	4 51	6 08	19 15	4 17	22 06	.....	62	4 42.9	22 20
Mon Sep 19/Tue Sep 20	5824.8	23 28 54	18 32	19 49	4 51	6 09	19 17	4 21	22 57	.....	52	5 36.5	22 19
Tue Sep 20/Wed Sep 21	5825.8	23 32 51	18 30	19 48	4 52	6 09	19 20	4 26	23 53	.....	42	6 30.9	21 09
Wed Sep 21/Thu Sep 22	5826.8	23 36 47	18 29	19 46	4 53	6 10	19 22	4 30	0 53	.....	32	7 25.5	18 49
Thu Sep 22/Fri Sep 23	5827.8	23 40 44	18 28	19 45	4 54	6 11	19 25	4 35	1 56	.....	22	8 19.9	15 24
Fri Sep 23/Sat Sep 24	5828.8	23 44 40	18 26	19 43	4 54	6 11	19 27	4 40	3 02	.....	14	9 14.0	11 01
Sat Sep 24/Sun Sep 25	5829.8	23 48 37	18 25	19 42	4 55	6 12	19 30	4 44	4 09	.....	7	10 08.0	5 53
Sun Sep 25/Mon Sep 26	5830.8	23 52 34	18 24	19 41	4 56	6 12	19 32	4 49	5 18	17 04	2	11 02.2	0 16
Mon Sep 26/Tue Sep 27	5831.8	23 56 30	18 23	19 39	4 56	6 13	19 35	4 54	6 28	17 42	0	11 57.2	- 5 28
Tue Sep 27/Wed Sep 28	5832.8	0 00 27	18 21	19 38	4 57	6 14	19 38	4 58	.....	18 22	1	12 53.7	-10 57
Wed Sep 28/Thu Sep 29	5833.8	0 04 23	18 20	19 37	4 58	6 14	19 40	5 03	.....	19 04	5	13 51.9	-15 46
Thu Sep 29/Fri Sep 30	5834.8	0 08 20	18 19	19 35	4 58	6 15	19 43	5 07	.....	19 51	12	14 51.9	-19 34
Fri Sep 30/Sat Oct 01	5835.8	0 12 16	18 17	19 34	4 59	6 16	19 45	5 12	.....	20 43	20	15 52.9	-22 04

***** 2011 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) (2011 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 Oct 01/Sun Oct 02	5836.8	0 16 13	18 16	19 33	5 00	6 16	19 48	5 17	.....	21 39	30	16 53.8	-23 08
Sun Oct 02/Mon Oct 03	5837.8	0 20 09	18 15	19 31	5 00	6 17	19 51	5 21	.....	22 38	40	17 53.4	-22 46
Mon Oct 03/Tue Oct 04	5838.8	0 24 06	18 13	19 30	5 01	6 18	19 53	5 26	.....	23 39	51	18 50.5	-21 08
Tue Oct 04/Wed Oct 05	5839.8	0 28 03	18 12	19 29	5 02	6 18	19 56	5 31	.....	0 39	61	19 44.6	-18 27
Wed Oct 05/Thu Oct 06	5840.8	0 31 59	18 11	19 27	5 02	6 19	19 59	5 35	.....	1 38	71	20 35.7	-14 56
Thu Oct 06/Fri Oct 07	5841.8	0 35 56	18 10	19 26	5 03	6 20	20 01	5 40	.....	2 35	80	21 24.1	-10 51
Fri Oct 07/Sat Oct 08	5842.8	0 39 52	18 08	19 25	5 04	6 20	20 04	5 44	.....	3 30	87	22 10.5	- 6 23
Sat Oct 08/Sun Oct 09	5843.8	0 43 49	18 07	19 24	5 04	6 21	20 07	5 49	.....	4 24	93	22 55.7	- 1 43
Sun Oct 09/Mon Oct 10	5844.8	0 47 45	18 06	19 22	5 05	6 22	20 09	5 54	16 32	5 17	97	23 40.3	2 57
Mon Oct 10/Tue Oct 11	5845.8	0 51 42	18 05	19 21	5 06	6 22	20 12	5 58	17 01	6 11	99	0 25.1	7 28
Tue Oct 11/Wed Oct 12	5846.8	0 55 38	18 04	19 20	5 06	6 23	20 15	6 03	17 32	7 05	100	1 10.8	11 40
Wed Oct 12/Thu Oct 13	5847.8	0 59 35	18 02	19 19	5 07	6 24	20 18	6 07	18 04	.....	99	1 57.7	15 24
Thu Oct 13/Fri Oct 14	5848.8	1 03 32	18 01	19 18	5 08	6 24	20 20	6 12	18 40	.....	96	2 46.3	18 28
Fri Oct 14/Sat Oct 15	5849.8	1 07 28	18 00	19 17	5 08	6 25	20 23	6 17	19 19	.....	91	3 36.7	20 45
Sat Oct 15/Sun Oct 16	5850.8	1 11 25	17 59	19 15	5 09	6 26	20 26	6 21	20 03	.....	85	4 28.6	22 04
Sun Oct 16/Mon Oct 17	5851.8	1 15 21	17 58	19 14	5 10	6 27	20 29	6 26	20 52	.....	77	5 21.6	22 20
Mon Oct 17/Tue Oct 18	5852.8	1 19 18	17 57	19 13	5 10	6 27	20 32	6 31	21 45	.....	68	6 15.2	21 30
Tue Oct 18/Wed Oct 19	5853.8	1 23 14	17 55	19 12	5 11	6 28	20 35	6 35	22 42	.....	58	7 08.8	19 33
Wed Oct 19/Thu Oct 20	5854.8	1 27 11	17 54	19 11	5 12	6 29	20 38	6 40	23 42	.....	48	8 02.0	16 33
Thu Oct 20/Fri Oct 21	5855.8	1 31 07	17 53	19 10	5 12	6 29	20 40	6 44	0 45	.....	37	8 54.7	12 37
Fri Oct 21/Sat Oct 22	5856.8	1 35 04	17 52	19 09	5 13	6 30	20 43	6 49	1 49	.....	27	9 47.2	7 53
Sat Oct 22/Sun Oct 23	5857.8	1 39 01	17 51	19 08	5 14	6 31	20 46	6 54	2 55	.....	17	10 39.9	2 36
Sun Oct 23/Mon Oct 24	5858.8	1 42 57	17 50	19 07	5 15	6 32	20 49	6 58	4 02	.....	9	11 33.6	- 2 58
Mon Oct 24/Tue Oct 25	5859.8	1 46 54	17 49	19 06	5 15	6 33	20 52	7 03	5 12	16 12	4	12 28.9	- 8 30
Tue Oct 25/Wed Oct 26	5860.8	1 50 50	17 48	19 05	5 16	6 33	20 55	7 08	6 24	16 52	1	13 26.4	-13 37
Wed Oct 26/Thu Oct 27	5861.8	1 54 47	17 47	19 04	5 17	6 34	20 58	7 12	7 35	17 38	0	14 26.3	-17 53
Thu Oct 27/Fri Oct 28	5862.8	1 58 43	17 46	19 03	5 17	6 35	21 01	7 17	.....	18 28	3	15 28.1	-20 58
Fri Oct 28/Sat Oct 29	5863.8	2 02 40	17 45	19 03	5 18	6 36	21 04	7 22	.....	19 24	9	16 30.8	-22 36
Sat Oct 29/Sun Oct 30	5864.8	2 06 36	17 44	19 02	5 19	6 36	21 08	7 26	.....	20 25	16	17 32.7	-22 44
Sun Oct 30/Mon Oct 31	5865.8	2 10 33	17 43	19 01	5 19	6 37	21 11	7 31	.....	21 27	25	18 32.2	-21 28
Mon Oct 31/Tue Nov 01	5866.8	2 14 30	17 42	19 00	5 20	6 38	21 14	7 36	.....	22 29	35	19 28.5	-19 01

***** 2011 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) (2011 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 Nov 01/Wed Nov 02	5867.8	2 18 26	17 41	18 59	5 21	6 39	21 17	7 40	.....	23 30	45	20 21.2	-15 41
Wed Nov 02/Thu Nov 03	5868.8	2 22 23	17 41	18 59	5 22	6 40	21 20	7 45	.....	0 28	55	21 10.7	-11 42
Thu Nov 03/Fri Nov 04	5869.8	2 26 19	17 40	18 58	5 22	6 41	21 23	7 50	.....	1 25	65	21 57.8	- 7 20
Fri Nov 04/Sat Nov 05	5870.8	2 30 16	17 39	18 57	5 23	6 41	21 27	7 54	.....	2 19	74	22 43.1	- 2 45
Sat Nov 05/Sun Nov 06	5871.8	2 34 12	17 38	18 57	5 24	6 42	21 30	7 59	.....	3 13	82	23 27.7	1 53
Sun Nov 06/Mon Nov 07	5872.8	2 38 09	17 37	18 56	5 25	6 43	21 33	8 04	.....	4 06	89	0 12.2	6 24
Mon Nov 07/Tue Nov 08	5873.8	2 42 05	17 37	18 55	5 25	6 44	21 37	8 08	.....	5 00	94	0 57.4	10 40
Tue Nov 08/Wed Nov 09	5874.8	2 46 02	17 36	18 55	5 26	6 45	21 40	8 13	16 06	5 54	98	1 44.0	14 30
Wed Nov 09/Thu Nov 10	5875.8	2 49 59	17 35	18 54	5 27	6 46	21 43	8 18	16 40	6 49	100	2 32.3	17 46
Thu Nov 10/Fri Nov 11	5876.8	2 53 55	17 35	18 54	5 27	6 47	21 47	8 22	17 19	7 43	100	3 22.5	20 15
Fri Nov 11/Sat Nov 12	5877.8	2 57 52	17 34	18 53	5 28	6 47	21 50	8 27	18 02	.....	98	4 14.5	21 50
Sat Nov 12/Sun Nov 13	5878.8	3 01 48	17 33	18 53	5 29	6 48	21 53	8 32	18 49	.....	94	5 07.8	22 22
Sun Nov 13/Mon Nov 14	5879.8	3 05 45	17 33	18 52	5 30	6 49	21 57	8 36	19 41	.....	89	6 01.6	21 47
Mon Nov 14/Tue Nov 15	5880.8	3 09 41	17 32	18 52	5 30	6 50	22 00	8 41	20 37	.....	82	6 55.3	20 06
Tue Nov 15/Wed Nov 16	5881.8	3 13 38	17 32	18 51	5 31	6 51	22 04	8 46	21 35	.....	73	7 48.3	17 22
Wed Nov 16/Thu Nov 17	5882.8	3 17 34	17 31	18 51	5 32	6 52	22 08	8 50	22 36	.....	63	8 40.4	13 42
Thu Nov 17/Fri Nov 18	5883.8	3 21 31	17 31	18 50	5 33	6 53	22 11	8 55	23 37	.....	53	9 31.8	9 17
Fri Nov 18/Sat Nov 19	5884.8	3 25 28	17 30	18 50	5 34	6 54	22 15	9 00	0 40	.....	42	10 22.9	4 19
Sat Nov 19/Sun Nov 20	5885.8	3 29 24	17 30	18 50	5 34	6 54	22 18	9 05	1 44	.....	31	11 14.5	- 1 01
Sun Nov 20/Mon Nov 21	5886.8	3 33 21	17 29	18 49	5 35	6 55	22 22	9 09	2 50	.....	21	12 07.5	- 6 25
Mon Nov 21/Tue Nov 22	5887.8	3 37 17	17 29	18 49	5 36	6 56	22 26	9 14	3 59	.....	12	13 02.5	-11 34
Tue Nov 22/Wed Nov 23	5888.8	3 41 14	17 29	18 49	5 37	6 57	22 29	9 19	5 09	.....	6	14 00.3	-16 07
Wed Nov 23/Thu Nov 24	5889.8	3 45 10	17 28	18 49	5 37	6 58	22 33	9 23	6 20	16 12	1	15 00.8	-19 41
Thu Nov 24/Fri Nov 25	5890.8	3 49 07	17 28	18 49	5 38	6 59	22 37	9 28	7 28	17 05	0	16 03.3	-21 57
Fri Nov 25/Sat Nov 26	5891.8	3 53 03	17 28	18 48	5 39	7 00	22 41	9 33	.....	18 04	1	17 06.3	-22 44
Sat Nov 26/Sun Nov 27	5892.8	3 57 00	17 28	18 48	5 40	7 00	22 45	9 37	.....	19 07	6	18 08.1	-21 59
Sun Nov 27/Mon Nov 28	5893.8	4 00 57	17 27	18 48	5 40	7 01	22 48	9 42	.....	20 12	12	19 07.0	-19 56
Mon Nov 28/Tue Nov 29	5894.8	4 04 53	17 27	18 48	5 41	7 02	22 52	9 47	.....	21 15	20	20 02.4	-16 48
Tue Nov 29/Wed Nov 30	5895.8	4 08 50	17 27	18 48	5 42	7 03	22 56	9 52	.....	22 17	29	20 54.1	-12 57
Wed Nov 30/Thu Dec 01	5896.8	4 12 46	17 27	18 48	5 42	7 04	23 00	9 56	.....	23 15	38	21 42.7	- 8 36

***** 2011 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) (2011 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 Dec 01/Fri Dec 02	5897.8	4 16 43	17 27	18 48	5 43	7 05	23 04	10 01	.....	0 11	48	22 29.1	- 4 01
Fri Dec 02/Sat Dec 03	5898.8	4 20 39	17 27	18 48	5 44	7 05	23 08	10 06	.....	1 06	58	23 14.1	0 37
Sat Dec 03/Sun Dec 04	5899.8	4 24 36	17 27	18 48	5 45	7 06	23 12	10 10	.....	1 59	67	23 58.5	5 11
Sun Dec 04/Mon Dec 05	5900.8	4 28 32	17 27	18 48	5 45	7 07	23 16	10 15	.....	2 53	76	0 43.4	9 31
Mon Dec 05/Tue Dec 06	5901.8	4 32 29	17 27	18 48	5 46	7 08	23 20	10 19	.....	3 47	83	1 29.3	13 28
Tue Dec 06/Wed Dec 07	5902.8	4 36 26	17 27	18 49	5 47	7 09	23 24	10 24	.....	4 42	90	2 16.9	16 54
Wed Dec 07/Thu Dec 08	5903.8	4 40 22	17 27	18 49	5 47	7 09	23 28	10 29	.....	5 36	95	3 06.6	19 38
Thu Dec 08/Fri Dec 09	5904.8	4 44 19	17 27	18 49	5 48	7 10	23 32	10 33	15 58	6 31	98	3 58.3	21 30
Fri Dec 09/Sat Dec 10	5905.8	4 48 15	17 27	18 49	5 49	7 11	23 37	10 38	16 44	7 23	100	4 51.8	22 22
Sat Dec 10/Sun Dec 11	5906.8	4 52 12	17 27	18 49	5 49	7 11	23 41	10 43	17 36	8 13	100	5 46.3	22 06
Sun Dec 11/Mon Dec 12	5907.8	4 56 08	17 28	18 50	5 50	7 12	23 45	10 47	18 31	.....	97	6 41.0	20 41
Mon Dec 12/Tue Dec 13	5908.8	5 00 05	17 28	18 50	5 51	7 13	23 49	10 52	19 30	.....	92	7 35.0	18 10
Tue Dec 13/Wed Dec 14	5909.8	5 04 01	17 28	18 50	5 51	7 14	23 54	10 56	20 30	.....	86	8 27.9	14 41
Wed Dec 14/Thu Dec 15	5910.8	5 07 58	17 28	18 51	5 52	7 14	23 58	11 01	21 31	.....	78	9 19.7	10 24
Thu Dec 15/Fri Dec 16	5911.8	5 11 55	17 29	18 51	5 53	7 15	0 02	11 05	22 33	.....	68	10 10.7	5 34
Fri Dec 16/Sat Dec 17	5912.8	5 15 51	17 29	18 51	5 53	7 15	0 06	11 10	23 35	.....	57	11 01.4	0 22
Sat Dec 17/Sun Dec 18	5913.8	5 19 48	17 30	18 52	5 54	7 16	0 11	11 14	0 39	.....	46	11 52.8	- 4 56
Sun Dec 18/Mon Dec 19	5914.8	5 23 44	17 30	18 52	5 54	7 17	0 15	11 19	1 44	.....	35	12 45.7	-10 02
Mon Dec 19/Tue Dec 20	5915.8	5 27 41	17 30	18 53	5 55	7 17	0 20	11 23	2 50	.....	25	13 40.8	-14 41
Tue Dec 20/Wed Dec 21	5916.8	5 31 37	17 31	18 53	5 55	7 18	0 24	11 28	3 59	.....	15	14 38.5	-18 31
Wed Dec 21/Thu Dec 22	5917.8	5 35 34	17 31	18 54	5 56	7 18	0 28	11 32	5 06	.....	8	15 38.8	-21 14
Thu Dec 22/Fri Dec 23	5918.8	5 39 30	17 32	18 54	5 56	7 19	0 33	11 37	6 11	15 45	3	16 40.6	-22 35
Fri Dec 23/Sat Dec 24	5919.8	5 43 27	17 32	18 55	5 57	7 19	0 37	11 41	7 11	16 46	0	17 42.5	-22 28
Sat Dec 24/Sun Dec 25	5920.8	5 47 24	17 33	18 55	5 57	7 19	0 42	11 46	8 03	17 50	0	18 42.7	-20 56
Sun Dec 25/Mon Dec 26	5921.8	5 51 20	17 33	18 56	5 58	7 20	0 46	11 50	.....	18 55	3	19 40.1	-18 13
Mon Dec 26/Tue Dec 27	5922.8	5 55 17	17 34	18 56	5 58	7 20	0 51	11 54	.....	19 59	8	20 34.0	-14 34
Tue Dec 27/Wed Dec 28	5923.8	5 59 13	17 35	18 57	5 58	7 21	0 55	11 59	.....	21 00	14	21 24.7	-10 19
Wed Dec 28/Thu Dec 29	5924.8	6 03 10	17 35	18 58	5 59	7 21	1 00	12 03	.....	21 58	22	22 12.6	- 5 44
Thu Dec 29/Fri Dec 30	5925.8	6 07 06	17 36	18 58	5 59	7 21	1 04	12 07	.....	22 55	31	22 58.7	- 1 02
Fri Dec 30/Sat Dec 31	5926.8	6 11 03	17 37	18 59	5 59	7 22	1 09	12 11	.....	23 50	40	23 43.6	3 37
Sat Dec 31/Sun Jan 01	5927.8	6 14 59	17 37	18 59	6 00	7 22	1 14	12 16	.....	0 44	50	0 28.4	8 03