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:

```
          ***** 2029 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 2029, 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 15	19 07	Dec 23	14 45	Dec 31	9 50	Jan 07	6 28
Jan 14	10 26	Jan 22	12 24	Jan 29	23 05	Feb 05	14 54
Feb 13	3 33	Feb 21	8 12	Feb 28	10 11	Mar 07	0 53
Mar 14	21 21	Mar 23	0 35	Mar 29	19 28	Apr 05	12 53
Apr 13	14 42	Apr 21	12 51	Apr 28	3 38	May 05	2 49
May 13	6 44	May 20	21 17	May 27	11 38	Jun 03	18 20
Jun 11	20 52	Jun 19	2 55	Jun 25	20 23	Jul 03	11 00
Jul 11	8 52	Jul 18	7 16	Jul 25	6 37	Aug 02	4 19
Aug 09	18 57	Aug 16	11 57	Aug 23	18 52	Aug 31	21 36
Sep 08	3 45	Sep 14	18 31	Sep 22	9 30	Sep 30	13 59
Oct 07	12 15	Oct 14	4 10	Oct 22	2 29	Oct 30	4 33
Nov 05	21 25	Nov 12	17 36	Nov 20	21 05	Nov 28	16 49
Dec 05	7 53	Dec 12	10 50	Dec 20	15 48	Dec 28	2 50
Jan 03	19 51	Jan 11	7 07	Jan 19	8 56	Jan 26	11 15

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 Jan 01/Tue Jan 02	2138.8	6 22 25	17 39	19 01	6 00	7 22	1 22	12 24	18 51	.....	97	8 19.5	17 40
Tue Jan 02/Wed Jan 03	2139.8	6 26 21	17 39	19 01	6 00	7 22	1 27	12 28	19 59	.....	91	9 15.3	12 44
Wed Jan 03/Thu Jan 04	2140.8	6 30 18	17 40	19 02	6 01	7 22	1 32	12 32	21 06	.....	84	10 09.1	7 04
Thu Jan 04/Fri Jan 05	2141.8	6 34 15	17 41	19 03	6 01	7 23	1 36	12 36	22 12	.....	74	11 01.5	1 02
Fri Jan 05/Sat Jan 06	2142.8	6 38 11	17 42	19 03	6 01	7 23	1 41	12 40	23 17	.....	64	11 53.3	- 5 02
Sat Jan 06/Sun Jan 07	2143.8	6 42 08	17 43	19 04	6 01	7 23	1 45	12 44	0 23	.....	52	12 45.6	-10 48
Sun Jan 07/Mon Jan 08	2144.8	6 46 04	17 43	19 05	6 01	7 23	1 50	12 48	1 30	.....	41	13 39.3	-15 57
Mon Jan 08/Tue Jan 09	2145.8	6 50 01	17 44	19 06	6 01	7 23	1 55	12 52	2 36	.....	30	14 34.8	-20 12
Tue Jan 09/Wed Jan 10	2146.8	6 53 57	17 45	19 06	6 01	7 23	2 00	12 56	3 42	.....	21	15 32.3	-23 17
Wed Jan 10/Thu Jan 11	2147.8	6 57 54	17 46	19 07	6 01	7 23	2 04	13 00	4 45	.....	13	16 31.1	-25 01
Thu Jan 11/Fri Jan 12	2148.8	7 01 50	17 47	19 08	6 01	7 23	2 09	13 04	5 43	.....	6	17 30.1	-25 17
Fri Jan 12/Sat Jan 13	2149.8	7 05 47	17 48	19 09	6 01	7 22	2 14	13 08	6 34	16 02	2	18 27.7	-24 09
Sat Jan 13/Sun Jan 14	2150.8	7 09 44	17 48	19 09	6 01	7 22	2 18	13 12	7 18	17 03	0	19 22.8	-21 45
Sun Jan 14/Mon Jan 15	2151.8	7 13 40	17 49	19 10	6 01	7 22	2 23	13 16	7 57	18 05	0	20 14.9	-18 19
Mon Jan 15/Tue Jan 16	2152.8	7 17 37	17 50	19 11	6 01	7 22	2 28	13 20	.....	19 05	2	21 03.8	-14 09
Tue Jan 16/Wed Jan 17	2153.8	7 21 33	17 51	19 12	6 01	7 22	2 33	13 24	.....	20 03	6	21 50.1	- 9 29
Wed Jan 17/Thu Jan 18	2154.8	7 25 30	17 52	19 13	6 01	7 21	2 37	13 27	.....	20 58	12	22 34.4	- 4 32
Thu Jan 18/Fri Jan 19	2155.8	7 29 26	17 53	19 13	6 01	7 21	2 42	13 31	.....	21 53	19	23 17.6	0 31
Fri Jan 19/Sat Jan 20	2156.8	7 33 23	17 54	19 14	6 01	7 21	2 47	13 35	.....	22 47	26	0 00.5	5 29
Sat Jan 20/Sun Jan 21	2157.8	7 37 19	17 55	19 15	6 00	7 20	2 51	13 39	.....	23 41	35	0 44.0	10 15
Sun Jan 21/Mon Jan 22	2158.8	7 41 16	17 56	19 16	6 00	7 20	2 56	13 42	.....	0 36	44	1 29.0	14 40
Mon Jan 22/Tue Jan 23	2159.8	7 45 13	17 56	19 16	6 00	7 20	3 01	13 46	.....	1 32	54	2 16.3	18 33
Tue Jan 23/Wed Jan 24	2160.8	7 49 09	17 57	19 17	5 59	7 19	3 06	13 50	.....	2 30	63	3 06.6	21 42
Wed Jan 24/Thu Jan 25	2161.8	7 53 06	17 58	19 18	5 59	7 19	3 10	13 53	.....	3 28	73	4 00.1	23 55
Thu Jan 25/Fri Jan 26	2162.8	7 57 02	17 59	19 19	5 59	7 18	3 15	13 57	.....	4 25	81	4 56.7	24 56
Fri Jan 26/Sat Jan 27	2163.8	8 00 59	18 00	19 20	5 58	7 18	3 20	14 00	.....	5 19	89	5 55.5	24 35
Sat Jan 27/Sun Jan 28	2164.8	8 04 55	18 01	19 20	5 58	7 17	3 25	14 04	.....	6 09	95	6 55.2	22 44
Sun Jan 28/Mon Jan 29	2165.8	8 08 52	18 02	19 21	5 57	7 17	3 29	14 07	16 30	6 53	99	7 54.5	19 24
Mon Jan 29/Tue Jan 30	2166.8	8 12 48	18 03	19 22	5 57	7 16	3 34	14 11	17 39	7 34	100	8 52.5	14 48
Tue Jan 30/Wed Jan 31	2167.8	8 16 45	18 04	19 23	5 56	7 15	3 39	14 14	18 48	.....	98	9 48.7	9 14
Wed Jan 31/Thu Feb 01	2168.8	8 20 42	18 05	19 24	5 56	7 15	3 44	14 18	19 57	.....	94	10 43.5	3 05

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 Feb 01/Fri Feb 02	2169.8	8 24 38	18 06	19 24	5 55	7 14	3 48	14 21	21 05	.....	87	11 37.4	- 3 14
Fri Feb 02/Sat Feb 03	2170.8	8 28 35	18 07	19 25	5 55	7 13	3 53	14 24	22 13	.....	78	12 31.4	- 9 19
Sat Feb 03/Sun Feb 04	2171.8	8 32 31	18 07	19 26	5 54	7 13	3 58	14 28	23 21	.....	67	13 26.3	-14 48
Sun Feb 04/Mon Feb 05	2172.8	8 36 28	18 08	19 27	5 54	7 12	4 03	14 31	0 29	.....	56	14 22.5	-19 22
Mon Feb 05/Tue Feb 06	2173.8	8 40 24	18 09	19 28	5 53	7 11	4 07	14 34	1 35	.....	45	15 20.1	-22 46
Tue Feb 06/Wed Feb 07	2174.8	8 44 21	18 10	19 28	5 52	7 10	4 12	14 38	2 39	.....	34	16 18.7	-24 47
Wed Feb 07/Thu Feb 08	2175.8	8 48 17	18 11	19 29	5 52	7 10	4 17	14 41	3 38	.....	25	17 17.2	-25 23
Thu Feb 08/Fri Feb 09	2176.8	8 52 14	18 12	19 30	5 51	7 09	4 21	14 44	4 30	.....	16	18 14.4	-24 35
Fri Feb 09/Sat Feb 10	2177.8	8 56 11	18 13	19 31	5 50	7 08	4 26	14 47	5 16	.....	9	19 09.4	-22 31
Sat Feb 10/Sun Feb 11	2178.8	9 00 07	18 14	19 31	5 49	7 07	4 31	14 50	5 55	.....	4	20 01.5	-19 24
Sun Feb 11/Mon Feb 12	2179.8	9 04 04	18 14	19 32	5 49	7 06	4 36	14 54	6 30	16 55	1	20 50.7	-15 29
Mon Feb 12/Tue Feb 13	2180.8	9 08 00	18 15	19 33	5 48	7 05	4 40	14 57	7 01	17 53	0	21 37.4	-10 59
Tue Feb 13/Wed Feb 14	2181.8	9 11 57	18 16	19 34	5 47	7 04	4 45	15 00	7 30	18 49	1	22 22.0	- 6 09
Wed Feb 14/Thu Feb 15	2182.8	9 15 53	18 17	19 35	5 46	7 03	4 50	15 03	.....	19 44	3	23 05.3	- 1 09
Thu Feb 15/Fri Feb 16	2183.8	9 19 50	18 18	19 35	5 45	7 02	4 54	15 06	.....	20 38	7	23 48.2	3 50
Fri Feb 16/Sat Feb 17	2184.8	9 23 46	18 19	19 36	5 44	7 01	4 59	15 09	.....	21 32	13	0 31.3	8 39
Sat Feb 17/Sun Feb 18	2185.8	9 27 43	18 20	19 37	5 43	7 00	5 04	15 12	.....	22 26	20	1 15.5	13 08
Sun Feb 18/Mon Feb 19	2186.8	9 31 39	18 20	19 38	5 42	6 59	5 08	15 15	.....	23 22	28	2 01.4	17 07
Mon Feb 19/Tue Feb 20	2187.8	9 35 36	18 21	19 38	5 41	6 58	5 13	15 18	.....	0 18	36	2 49.7	20 28
Tue Feb 20/Wed Feb 21	2188.8	9 39 33	18 22	19 39	5 41	6 57	5 18	15 21	.....	1 15	46	3 40.8	22 58
Wed Feb 21/Thu Feb 22	2189.8	9 43 29	18 23	19 40	5 40	6 56	5 23	15 24	.....	2 11	56	4 34.7	24 25
Thu Feb 22/Fri Feb 23	2190.8	9 47 26	18 24	19 41	5 38	6 55	5 27	15 27	.....	3 05	66	5 30.9	24 38
Fri Feb 23/Sat Feb 24	2191.8	9 51 22	18 24	19 41	5 37	6 54	5 32	15 30	.....	3 56	75	6 28.7	23 28
Sat Feb 24/Sun Feb 25	2192.8	9 55 19	18 25	19 42	5 36	6 53	5 37	15 33	.....	4 42	84	7 27.0	20 53
Sun Feb 25/Mon Feb 26	2193.8	9 59 15	18 26	19 43	5 35	6 52	5 41	15 36	.....	5 25	92	8 24.9	16 56
Mon Feb 26/Tue Feb 27	2194.8	10 03 12	18 27	19 44	5 34	6 51	5 46	15 38	16 23	6 03	97	9 21.9	11 50
Tue Feb 27/Wed Feb 28	2195.8	10 07 08	18 28	19 44	5 33	6 50	5 51	15 41	17 33	6 40	100	10 18.0	5 52
Wed Feb 28/Thu Mar 01	2196.8	10 11 05	18 28	19 45	5 32	6 49	5 55	15 44	18 43	7 16	99	11 13.6	- 0 32

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 Mar 01/Fri Mar 02	2197.8	10 15 02	18 29	19 46	5 31	6 47	6 00	15 47	19 53	.....	96	12 09.5	- 6 57
Fri Mar 02/Sat Mar 03	2198.8	10 18 58	18 30	19 46	5 30	6 46	6 05	15 50	21 04	.....	90	13 06.3	-12 54
Sat Mar 03/Sun Mar 04	2199.8	10 22 55	18 31	19 47	5 29	6 45	6 09	15 52	22 15	.....	81	14 04.4	-18 00
Sun Mar 04/Mon Mar 05	2200.8	10 26 51	18 31	19 48	5 27	6 44	6 14	15 55	23 24	.....	71	15 03.9	-21 54
Mon Mar 05/Tue Mar 06	2201.8	10 30 48	18 32	19 49	5 26	6 43	6 19	15 58	0 31	.....	61	16 04.2	-24 22
Tue Mar 06/Wed Mar 07	2202.8	10 34 44	18 33	19 49	5 25	6 41	6 23	16 01	1 32	.....	50	17 04.2	-25 19
Wed Mar 07/Thu Mar 08	2203.8	10 38 41	18 34	19 50	5 24	6 40	6 28	16 03	2 27	.....	39	18 02.5	-24 49
Thu Mar 08/Fri Mar 09	2204.8	10 42 37	18 34	19 51	5 23	6 39	6 33	16 06	3 15	.....	29	18 58.2	-23 01
Fri Mar 09/Sat Mar 10	2205.8	10 46 34	18 35	19 52	5 21	6 38	6 38	16 09	3 56	.....	21	19 50.9	-20 08
Sat Mar 10/Sun Mar 11	2206.8	10 50 31	18 36	19 52	5 20	6 36	6 42	16 11	4 32	.....	13	20 40.3	-16 25
Sun Mar 11/Mon Mar 12	2207.8	10 54 27	18 36	19 53	5 19	6 35	6 47	16 14	5 03	.....	8	21 27.1	-12 07
Mon Mar 12/Tue Mar 13	2208.8	10 58 24	18 37	19 54	5 17	6 34	6 52	16 17	5 33	16 43	3	22 11.8	- 7 25
Tue Mar 13/Wed Mar 14	2209.8	11 02 20	18 38	19 55	5 16	6 33	6 56	16 19	6 00	17 38	1	22 55.2	- 2 31
Wed Mar 14/Thu Mar 15	2210.8	11 06 17	18 39	19 55	5 15	6 31	7 01	16 22	6 28	18 32	0	23 37.9	2 26
Thu Mar 15/Fri Mar 16	2211.8	11 10 13	18 39	19 56	5 14	6 30	7 06	16 25	6 56	19 26	1	0 20.9	7 14
Fri Mar 16/Sat Mar 17	2212.8	11 14 10	18 40	19 57	5 12	6 29	7 10	16 27	.....	20 20	4	1 04.7	11 46
Sat Mar 17/Sun Mar 18	2213.8	11 18 06	18 41	19 58	5 11	6 28	7 15	16 30	.....	21 15	8	1 49.9	15 51
Sun Mar 18/Mon Mar 19	2214.8	11 22 03	18 41	19 58	5 10	6 26	7 20	16 32	.....	22 10	14	2 37.2	19 19
Mon Mar 19/Tue Mar 20	2215.8	11 26 00	18 42	19 59	5 08	6 25	7 24	16 35	.....	23 07	21	3 26.8	22 00
Tue Mar 20/Wed Mar 21	2216.8	11 29 56	18 43	20 00	5 07	6 24	7 29	16 38	.....	0 02	30	4 18.8	23 43
Wed Mar 21/Thu Mar 22	2217.8	11 33 53	18 43	20 01	5 05	6 23	7 34	16 40	.....	0 56	39	5 12.8	24 18
Thu Mar 22/Fri Mar 23	2218.8	11 37 49	18 44	20 01	5 04	6 21	7 39	16 43	.....	1 47	49	6 08.2	23 38
Fri Mar 23/Sat Mar 24	2219.8	11 41 46	18 45	20 02	5 03	6 20	7 43	16 45	.....	2 33	60	7 04.2	21 40
Sat Mar 24/Sun Mar 25	2220.8	11 45 42	18 46	20 03	5 01	6 19	7 48	16 48	.....	3 16	70	8 00.2	18 24
Sun Mar 25/Mon Mar 26	2221.8	11 49 39	18 46	20 04	5 00	6 17	7 53	16 50	.....	3 55	80	8 55.8	13 57
Mon Mar 26/Tue Mar 27	2222.8	11 53 35	18 47	20 05	4 59	6 16	7 57	16 53	.....	4 32	88	9 50.9	8 32
Tue Mar 27/Wed Mar 28	2223.8	11 57 32	18 48	20 05	4 57	6 15	8 02	16 55	.....	5 08	95	10 46.1	2 25
Wed Mar 28/Thu Mar 29	2224.8	12 01 29	18 48	20 06	4 56	6 14	8 07	16 58	17 27	5 44	99	11 41.8	- 3 59
Thu Mar 29/Fri Mar 30	2225.8	12 05 25	18 49	20 07	4 54	6 12	8 12	17 01	18 38	6 23	100	12 39.0	-10 15
Fri Mar 30/Sat Mar 31	2226.8	12 09 22	18 50	20 08	4 53	6 11	8 16	17 03	19 50	7 05	97	13 38.1	-15 53
Sat Mar 31/Sun Apr 01	2227.8	12 13 18	18 50	20 09	4 51	6 10	8 21	17 06	21 03	.....	92	14 39.3	-20 27

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 Apr 01/Mon Apr 02	2228.8	12 17 15	18 51	20 09	4 50	6 08	8 26	17 08	22 14	.....	85	15 41.9	-23 35
Mon Apr 02/Tue Apr 03	2229.8	12 21 11	18 52	20 10	4 49	6 07	8 31	17 11	23 20	.....	76	16 44.6	-25 06
Tue Apr 03/Wed Apr 04	2230.8	12 25 08	18 52	20 11	4 47	6 06	8 36	17 13	0 19	.....	65	17 45.8	-25 01
Wed Apr 04/Thu Apr 05	2231.8	12 29 04	18 53	20 12	4 46	6 05	8 40	17 16	1 11	.....	55	18 44.1	-23 30
Thu Apr 05/Fri Apr 06	2232.8	12 33 01	18 54	20 13	4 44	6 03	8 45	17 18	1 55	.....	45	19 38.6	-20 49
Fri Apr 06/Sat Apr 07	2233.8	12 36 58	18 54	20 14	4 43	6 02	8 50	17 21	2 33	.....	35	20 29.5	-17 14
Sat Apr 07/Sun Apr 08	2234.8	12 40 54	18 55	20 14	4 42	6 01	8 55	17 23	3 06	.....	26	21 17.2	-13 02
Sun Apr 08/Mon Apr 09	2235.8	12 44 51	18 56	20 15	4 40	6 00	9 00	17 26	3 36	.....	18	22 02.3	- 8 26
Mon Apr 09/Tue Apr 10	2236.8	12 48 47	18 56	20 16	4 39	5 58	9 04	17 28	4 04	.....	11	22 45.9	- 3 37
Tue Apr 10/Wed Apr 11	2237.8	12 52 44	18 57	20 17	4 37	5 57	9 09	17 31	4 31	.....	6	23 28.6	1 17
Wed Apr 11/Thu Apr 12	2238.8	12 56 40	18 58	20 18	4 36	5 56	9 14	17 33	4 59	17 21	2	0 11.4	6 04
Thu Apr 12/Fri Apr 13	2239.8	13 00 37	18 59	20 19	4 35	5 55	9 19	17 36	5 28	18 15	1	0 55.0	10 38
Fri Apr 13/Sat Apr 14	2240.8	13 04 33	18 59	20 20	4 33	5 54	9 24	17 38	6 00	19 09	0	1 39.9	14 47
Sat Apr 14/Sun Apr 15	2241.8	13 08 30	19 00	20 21	4 32	5 52	9 29	17 41	6 35	20 05	2	2 26.8	18 21
Sun Apr 15/Mon Apr 16	2242.8	13 12 27	19 01	20 22	4 30	5 51	9 33	17 44	.....	21 01	5	3 15.8	21 11
Mon Apr 16/Tue Apr 17	2243.8	13 16 23	19 01	20 22	4 29	5 50	9 38	17 46	.....	21 57	10	4 07.0	23 05
Tue Apr 17/Wed Apr 18	2244.8	13 20 20	19 02	20 23	4 28	5 49	9 43	17 49	.....	22 51	16	4 59.9	23 54
Wed Apr 18/Thu Apr 19	2245.8	13 24 16	19 03	20 24	4 26	5 48	9 48	17 51	.....	23 42	24	5 54.1	23 32
Thu Apr 19/Fri Apr 20	2246.8	13 28 13	19 03	20 25	4 25	5 47	9 53	17 54	.....	0 29	34	6 48.6	21 56
Fri Apr 20/Sat Apr 21	2247.8	13 32 09	19 04	20 26	4 24	5 46	9 58	17 56	.....	1 12	44	7 42.8	19 08
Sat Apr 21/Sun Apr 22	2248.8	13 36 06	19 05	20 27	4 22	5 45	10 03	17 59	.....	1 51	54	8 36.4	15 13
Sun Apr 22/Mon Apr 23	2249.8	13 40 02	19 06	20 28	4 21	5 43	10 08	18 02	.....	2 27	65	9 29.5	10 21
Mon Apr 23/Tue Apr 24	2250.8	13 43 59	19 06	20 29	4 20	5 42	10 13	18 04	.....	3 02	76	10 22.5	4 44
Tue Apr 24/Wed Apr 25	2251.8	13 47 56	19 07	20 30	4 18	5 41	10 17	18 07	.....	3 37	85	11 16.2	- 1 21
Wed Apr 25/Thu Apr 26	2252.8	13 51 52	19 08	20 31	4 17	5 40	10 22	18 10	.....	4 14	93	12 11.4	- 7 33
Thu Apr 26/Fri Apr 27	2253.8	13 55 49	19 08	20 32	4 16	5 39	10 27	18 12	17 24	4 53	98	13 08.9	-13 25
Fri Apr 27/Sat Apr 28	2254.8	13 59 45	19 09	20 33	4 14	5 38	10 32	18 15	18 36	5 38	100	14 09.3	-18 30
Sat Apr 28/Sun Apr 29	2255.8	14 03 42	19 10	20 34	4 13	5 37	10 37	18 18	19 49	6 28	99	15 12.4	-22 21
Sun Apr 29/Mon Apr 30	2256.8	14 07 38	19 11	20 35	4 12	5 36	10 42	18 20	20 59	.....	95	16 17.0	-24 37
Mon Apr 30/Tue May 01	2257.8	14 11 35	19 11	20 36	4 11	5 35	10 47	18 23	22 04	.....	88	17 21.1	-25 11

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 May 01/Wed May 02	2258.8	14 15 31	19 12	20 37	4 09	5 34	10 52	18 26	23 01	.....	80	18 22.9	-24 08
Wed May 02/Thu May 03	2259.8	14 19 28	19 13	20 38	4 08	5 33	10 57	18 28	23 49	.....	71	19 20.8	-21 43
Thu May 03/Fri May 04	2260.8	14 23 25	19 13	20 39	4 07	5 33	11 02	18 31	0 30	.....	61	20 14.5	-18 17
Fri May 04/Sat May 05	2261.8	14 27 21	19 14	20 40	4 06	5 32	11 07	18 34	1 06	.....	51	21 04.3	-14 08
Sat May 05/Sun May 06	2262.8	14 31 18	19 15	20 41	4 05	5 31	11 12	18 37	1 37	.....	41	21 50.9	- 9 33
Sun May 06/Mon May 07	2263.8	14 35 14	19 16	20 42	4 04	5 30	11 17	18 40	2 06	.....	32	22 35.3	- 4 43
Mon May 07/Tue May 08	2264.8	14 39 11	19 16	20 43	4 03	5 29	11 22	18 42	2 34	.....	23	23 18.5	0 10
Tue May 08/Wed May 09	2265.8	14 43 07	19 17	20 44	4 01	5 28	11 27	18 45	3 02	.....	16	0 01.4	4 59
Wed May 09/Thu May 10	2266.8	14 47 04	19 18	20 45	4 00	5 28	11 31	18 48	3 30	.....	10	0 44.8	9 35
Thu May 10/Fri May 11	2267.8	14 51 00	19 18	20 46	3 59	5 27	11 36	18 51	4 01	.....	5	1 29.5	13 48
Fri May 11/Sat May 12	2268.8	14 54 57	19 19	20 47	3 58	5 26	11 41	18 54	4 35	17 59	2	2 16.0	17 30
Sat May 12/Sun May 13	2269.8	14 58 54	19 20	20 48	3 57	5 25	11 46	18 57	5 14	18 55	0	3 04.7	20 29
Sun May 13/Mon May 14	2270.8	15 02 50	19 21	20 49	3 56	5 25	11 51	19 00	5 58	19 51	0	3 55.6	22 34
Mon May 14/Tue May 15	2271.8	15 06 47	19 21	20 50	3 55	5 24	11 56	19 03	.....	20 46	3	4 48.4	23 37
Tue May 15/Wed May 16	2272.8	15 10 43	19 22	20 51	3 54	5 23	12 01	19 06	.....	21 39	7	5 42.4	23 28
Wed May 16/Thu May 17	2273.8	15 14 40	19 23	20 52	3 53	5 23	12 06	19 09	.....	22 27	13	6 36.7	22 07
Thu May 17/Fri May 18	2274.8	15 18 36	19 23	20 53	3 53	5 22	12 11	19 12	.....	23 11	20	7 30.5	19 35
Fri May 18/Sat May 19	2275.8	15 22 33	19 24	20 54	3 52	5 21	12 16	19 15	.....	23 51	29	8 23.3	15 59
Sat May 19/Sun May 20	2276.8	15 26 29	19 25	20 55	3 51	5 21	12 21	19 18	.....	0 27	40	9 15.1	11 27
Sun May 20/Mon May 21	2277.8	15 30 26	19 25	20 56	3 50	5 20	12 26	19 21	.....	1 01	51	10 06.4	6 12
Mon May 21/Tue May 22	2278.8	15 34 23	19 26	20 57	3 49	5 20	12 31	19 24	.....	1 35	62	10 57.8	0 28
Tue May 22/Wed May 23	2279.8	15 38 19	19 27	20 58	3 49	5 19	12 35	19 27	.....	2 09	73	11 50.3	- 5 28
Wed May 23/Thu May 24	2280.8	15 42 16	19 27	20 59	3 48	5 19	12 40	19 31	.....	2 46	83	12 44.8	-11 16
Thu May 24/Fri May 25	2281.8	15 46 12	19 28	20 59	3 47	5 18	12 45	19 34	.....	3 27	91	13 42.4	-16 33
Fri May 25/Sat May 26	2282.8	15 50 09	19 29	21 00	3 46	5 18	12 50	19 37	.....	4 14	97	14 43.2	-20 53
Sat May 26/Sun May 27	2283.8	15 54 05	19 29	21 01	3 46	5 18	12 55	19 41	18 35	5 07	100	15 46.8	-23 50
Sun May 27/Mon May 28	2284.8	15 58 02	19 30	21 02	3 45	5 17	13 00	19 44	19 43	6 07	100	16 51.7	-25 10
Mon May 28/Tue May 29	2285.8	16 01 58	19 31	21 03	3 45	5 17	13 04	19 47	20 45	.....	97	17 55.7	-24 47
Tue May 29/Wed May 30	2286.8	16 05 55	19 31	21 04	3 44	5 17	13 09	19 51	21 38	.....	91	18 56.8	-22 51
Wed May 30/Thu May 31	2287.8	16 09 52	19 32	21 05	3 44	5 16	13 14	19 54	22 24	.....	84	19 53.8	-19 41
Thu May 31/Fri Jun 01	2288.8	16 13 48	19 32	21 05	3 43	5 16	13 19	19 58	23 03	.....	76	20 46.6	-15 38

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 Jun 01/Sat Jun 02	2289.8	16 17 45	19 33	21 06	3 43	5 16	13 23	20 01	23 37	.....	67	21 35.6	-11 02
Sat Jun 02/Sun Jun 03	2290.8	16 21 41	19 33	21 07	3 42	5 16	13 28	20 05	0 07	.....	57	22 21.7	- 6 09
Sun Jun 03/Mon Jun 04	2291.8	16 25 38	19 34	21 08	3 42	5 15	13 33	20 08	0 36	.....	47	23 06.0	- 1 10
Mon Jun 04/Tue Jun 05	2292.8	16 29 34	19 35	21 08	3 42	5 15	13 37	20 12	1 03	.....	38	23 49.4	3 44
Tue Jun 05/Wed Jun 06	2293.8	16 33 31	19 35	21 09	3 41	5 15	13 42	20 15	1 32	.....	29	0 32.9	8 26
Wed Jun 06/Thu Jun 07	2294.8	16 37 27	19 36	21 10	3 41	5 15	13 47	20 19	2 02	.....	21	1 17.4	12 46
Thu Jun 07/Fri Jun 08	2295.8	16 41 24	19 36	21 10	3 41	5 15	13 51	20 23	2 35	.....	14	2 03.6	16 37
Fri Jun 08/Sat Jun 09	2296.8	16 45 21	19 37	21 11	3 41	5 15	13 56	20 26	3 12	.....	8	2 51.8	19 47
Sat Jun 09/Sun Jun 10	2297.8	16 49 17	19 37	21 11	3 40	5 15	14 00	20 30	3 54	17 44	3	3 42.4	22 06
Sun Jun 10/Mon Jun 11	2298.8	16 53 14	19 37	21 12	3 40	5 15	14 05	20 34	4 41	18 40	1	4 35.2	23 25
Mon Jun 11/Tue Jun 12	2299.8	16 57 10	19 38	21 12	3 40	5 15	14 09	20 38	5 35	19 34	0	5 29.4	23 33
Tue Jun 12/Wed Jun 13	2300.8	17 01 07	19 38	21 13	3 40	5 15	14 14	20 42	.....	20 24	1	6 24.2	22 28
Wed Jun 13/Thu Jun 14	2301.8	17 05 03	19 39	21 13	3 40	5 15	14 18	20 46	.....	21 10	5	7 18.5	20 09
Thu Jun 14/Fri Jun 15	2302.8	17 09 00	19 39	21 14	3 40	5 15	14 22	20 50	.....	21 51	10	8 11.9	16 44
Fri Jun 15/Sat Jun 16	2303.8	17 12 56	19 39	21 14	3 40	5 15	14 27	20 54	.....	22 29	18	9 03.9	12 23
Sat Jun 16/Sun Jun 17	2304.8	17 16 53	19 40	21 15	3 40	5 15	14 31	20 58	.....	23 03	27	9 54.8	7 19
Sun Jun 17/Mon Jun 18	2305.8	17 20 50	19 40	21 15	3 40	5 15	14 35	21 02	.....	23 37	37	10 45.3	1 45
Mon Jun 18/Tue Jun 19	2306.8	17 24 46	19 40	21 15	3 40	5 15	14 40	21 06	.....	0 10	48	11 36.2	- 4 00
Tue Jun 19/Wed Jun 20	2307.8	17 28 43	19 40	21 15	3 41	5 16	14 44	21 10	.....	0 45	60	12 28.5	- 9 42
Wed Jun 20/Thu Jun 21	2308.8	17 32 39	19 41	21 16	3 41	5 16	14 48	21 14	.....	1 23	71	13 23.2	-14 59
Thu Jun 21/Fri Jun 22	2309.8	17 36 36	19 41	21 16	3 41	5 16	14 52	21 18	.....	2 06	81	14 20.8	-19 31
Fri Jun 22/Sat Jun 23	2310.8	17 40 32	19 41	21 16	3 41	5 16	14 56	21 22	.....	2 55	89	15 21.6	-22 54
Sat Jun 23/Sun Jun 24	2311.8	17 44 29	19 41	21 16	3 42	5 17	15 00	21 27	.....	3 50	95	16 24.7	-24 50
Sun Jun 24/Mon Jun 25	2312.8	17 48 25	19 41	21 16	3 42	5 17	15 04	21 31	18 28	4 51	99	17 28.5	-25 09
Mon Jun 25/Tue Jun 26	2313.8	17 52 22	19 41	21 16	3 42	5 17	15 08	21 35	19 25	5 56	100	18 30.8	-23 51
Tue Jun 26/Wed Jun 27	2314.8	17 56 19	19 41	21 16	3 43	5 18	15 12	21 40	20 15	.....	98	19 29.9	-21 09
Wed Jun 27/Thu Jun 28	2315.8	18 00 15	19 42	21 16	3 43	5 18	15 16	21 44	20 57	.....	94	20 25.2	-17 22
Thu Jun 28/Fri Jun 29	2316.8	18 04 12	19 42	21 16	3 44	5 18	15 20	21 48	21 34	.....	88	21 16.6	-12 52
Fri Jun 29/Sat Jun 30	2317.8	18 08 08	19 42	21 16	3 44	5 19	15 24	21 53	22 06	.....	81	22 04.8	- 7 57
Sat Jun 30/Sun Jul 01	2318.8	18 12 05	19 42	21 16	3 45	5 19	15 28	21 57	22 36	.....	73	22 50.6	- 2 53

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 Jul 01/Mon Jul 02	2319.8	18 16 01	19 42	21 16	3 45	5 20	15 31	22 02	23 04	.....	63	23 35.0	2 10
Mon Jul 02/Tue Jul 03	2320.8	18 19 58	19 41	21 16	3 46	5 20	15 35	22 06	23 32	.....	54	0 19.1	7 00
Tue Jul 03/Wed Jul 04	2321.8	18 23 54	19 41	21 15	3 46	5 20	15 39	22 11	0 02	.....	44	1 03.6	11 31
Wed Jul 04/Thu Jul 05	2322.8	18 27 51	19 41	21 15	3 47	5 21	15 43	22 15	0 33	.....	35	1 49.3	15 32
Thu Jul 05/Fri Jul 06	2323.8	18 31 48	19 41	21 15	3 48	5 21	15 46	22 20	1 08	.....	26	2 37.0	18 56
Fri Jul 06/Sat Jul 07	2324.8	18 35 44	19 41	21 15	3 48	5 22	15 50	22 25	1 48	.....	18	3 26.9	21 32
Sat Jul 07/Sun Jul 08	2325.8	18 39 41	19 41	21 14	3 49	5 22	15 53	22 29	2 34	.....	11	4 19.1	23 10
Sun Jul 08/Mon Jul 09	2326.8	18 43 37	19 41	21 14	3 50	5 23	15 57	22 34	3 25	.....	6	5 13.2	23 40
Mon Jul 09/Tue Jul 10	2327.8	18 47 34	19 40	21 13	3 50	5 24	16 00	22 39	4 22	18 17	2	6 08.3	22 56
Tue Jul 10/Wed Jul 11	2328.8	18 51 30	19 40	21 13	3 51	5 24	16 04	22 43	5 24	19 05	0	7 03.5	20 57
Wed Jul 11/Thu Jul 12	2329.8	18 55 27	19 40	21 12	3 52	5 25	16 07	22 48	6 27	19 49	1	7 57.9	17 47
Thu Jul 12/Fri Jul 13	2330.8	18 59 23	19 39	21 12	3 53	5 25	16 11	22 53	.....	20 28	3	8 51.1	13 36
Fri Jul 13/Sat Jul 14	2331.8	19 03 20	19 39	21 11	3 54	5 26	16 14	22 58	.....	21 05	8	9 43.0	8 37
Sat Jul 14/Sun Jul 15	2332.8	19 07 17	19 39	21 11	3 54	5 26	16 17	23 02	.....	21 39	15	10 34.1	3 06
Sun Jul 15/Mon Jul 16	2333.8	19 11 13	19 38	21 10	3 55	5 27	16 21	23 07	.....	22 13	24	11 25.0	- 2 39
Mon Jul 16/Tue Jul 17	2334.8	19 15 10	19 38	21 09	3 56	5 28	16 24	23 12	.....	22 47	35	12 16.7	- 8 21
Tue Jul 17/Wed Jul 18	2335.8	19 19 06	19 37	21 09	3 57	5 28	16 27	23 17	.....	23 24	46	13 10.1	-13 41
Wed Jul 18/Thu Jul 19	2336.8	19 23 03	19 37	21 08	3 58	5 29	16 31	23 22	.....	0 04	58	14 05.8	-18 20
Thu Jul 19/Fri Jul 20	2337.8	19 26 59	19 36	21 07	3 59	5 29	16 34	23 26	.....	0 50	69	15 04.1	-21 58
Fri Jul 20/Sat Jul 21	2338.8	19 30 56	19 36	21 06	4 00	5 30	16 37	23 31	.....	1 41	79	16 04.9	-24 18
Sat Jul 21/Sun Jul 22	2339.8	19 34 52	19 35	21 06	4 00	5 31	16 40	23 36	.....	2 39	87	17 06.8	-25 08
Sun Jul 22/Mon Jul 23	2340.8	19 38 49	19 35	21 05	4 01	5 31	16 43	23 41	.....	3 41	94	18 08.3	-24 25
Mon Jul 23/Tue Jul 24	2341.8	19 42 46	19 34	21 04	4 02	5 32	16 46	23 46	18 07	4 45	98	19 07.7	-22 15
Tue Jul 24/Wed Jul 25	2342.8	19 46 42	19 34	21 03	4 03	5 33	16 49	23 51	18 51	5 49	100	20 04.0	-18 54
Wed Jul 25/Thu Jul 26	2343.8	19 50 39	19 33	21 02	4 04	5 33	16 52	23 55	19 30	.....	99	20 56.8	-14 40
Thu Jul 26/Fri Jul 27	2344.8	19 54 35	19 32	21 01	4 05	5 34	16 55	0 00	20 04	.....	97	21 46.4	- 9 52
Fri Jul 27/Sat Jul 28	2345.8	19 58 32	19 32	21 00	4 06	5 35	16 58	0 05	20 35	.....	92	22 33.6	- 4 47
Sat Jul 28/Sun Jul 29	2346.8	20 02 28	19 31	20 59	4 07	5 35	17 01	0 10	21 05	.....	86	23 19.1	0 21
Sun Jul 29/Mon Jul 30	2347.8	20 06 25	19 30	20 58	4 08	5 36	17 04	0 15	21 33	.....	78	0 03.8	5 20
Mon Jul 30/Tue Jul 31	2348.8	20 10 21	19 29	20 57	4 09	5 37	17 07	0 20	22 02	.....	70	0 48.6	10 02
Tue Jul 31/Wed Aug 01	2349.8	20 14 18	19 29	20 56	4 10	5 37	17 10	0 25	22 33	.....	61	1 34.2	14 16

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 Aug 01/Thu Aug 02	2350.8	20 18 15	19 28	20 55	4 11	5 38	17 13	0 30	23 06	.....	51	2 21.3	17 54
Thu Aug 02/Fri Aug 03	2351.8	20 22 11	19 27	20 54	4 12	5 39	17 15	0 35	23 44	.....	42	3 10.4	20 46
Fri Aug 03/Sat Aug 04	2352.8	20 26 08	19 26	20 53	4 13	5 39	17 18	0 40	0 26	.....	32	4 01.6	22 44
Sat Aug 04/Sun Aug 05	2353.8	20 30 04	19 25	20 52	4 14	5 40	17 21	0 44	1 14	.....	24	4 54.8	23 39
Sun Aug 05/Mon Aug 06	2354.8	20 34 01	19 24	20 50	4 15	5 41	17 24	0 49	2 09	.....	16	5 49.4	23 21
Mon Aug 06/Tue Aug 07	2355.8	20 37 57	19 23	20 49	4 16	5 41	17 27	0 54	3 08	.....	9	6 44.6	21 49
Tue Aug 07/Wed Aug 08	2356.8	20 41 54	19 23	20 48	4 16	5 42	17 29	0 59	4 11	17 42	4	7 39.7	19 03
Wed Aug 08/Thu Aug 09	2357.8	20 45 50	19 22	20 47	4 17	5 43	17 32	1 04	5 17	18 24	1	8 33.9	15 10
Thu Aug 09/Fri Aug 10	2358.8	20 49 47	19 21	20 46	4 18	5 43	17 35	1 09	6 23	19 02	0	9 27.1	10 22
Fri Aug 10/Sat Aug 11	2359.8	20 53 44	19 20	20 44	4 19	5 44	17 37	1 14	.....	19 38	2	10 19.4	4 55
Sat Aug 11/Sun Aug 12	2360.8	20 57 40	19 19	20 43	4 20	5 45	17 40	1 19	.....	20 13	7	11 11.5	- 0 54
Sun Aug 12/Mon Aug 13	2361.8	21 01 37	19 18	20 42	4 21	5 45	17 43	1 24	.....	20 48	13	12 03.9	- 6 44
Mon Aug 13/Tue Aug 14	2362.8	21 05 33	19 17	20 40	4 22	5 46	17 45	1 28	.....	21 25	22	12 57.6	-12 14
Tue Aug 14/Wed Aug 15	2363.8	21 09 30	19 16	20 39	4 23	5 47	17 48	1 33	.....	22 05	33	13 53.1	-17 06
Wed Aug 15/Thu Aug 16	2364.8	21 13 26	19 14	20 38	4 24	5 47	17 51	1 38	.....	22 49	44	14 50.8	-20 59
Thu Aug 16/Fri Aug 17	2365.8	21 17 23	19 13	20 36	4 25	5 48	17 53	1 43	.....	23 38	55	15 50.4	-23 37
Fri Aug 17/Sat Aug 18	2366.8	21 21 19	19 12	20 35	4 26	5 49	17 56	1 48	.....	0 34	66	16 51.1	-24 49
Sat Aug 18/Sun Aug 19	2367.8	21 25 16	19 11	20 34	4 27	5 49	17 58	1 53	.....	1 33	76	17 51.5	-24 31
Sun Aug 19/Mon Aug 20	2368.8	21 29 13	19 10	20 32	4 28	5 50	18 01	1 57	.....	2 35	85	18 50.2	-22 49
Mon Aug 20/Tue Aug 21	2369.8	21 33 09	19 09	20 31	4 28	5 51	18 04	2 02	.....	3 38	92	19 46.3	-19 54
Tue Aug 21/Wed Aug 22	2370.8	21 37 06	19 08	20 30	4 29	5 51	18 06	2 07	17 28	4 39	96	20 39.3	-16 01
Wed Aug 22/Thu Aug 23	2371.8	21 41 02	19 07	20 28	4 30	5 52	18 09	2 12	18 04	5 39	99	21 29.4	-11 28
Thu Aug 23/Fri Aug 24	2372.8	21 44 59	19 05	20 27	4 31	5 52	18 11	2 17	18 36	6 36	100	22 17.2	- 6 31
Fri Aug 24/Sat Aug 25	2373.8	21 48 55	19 04	20 25	4 32	5 53	18 14	2 22	19 06	.....	98	23 03.2	- 1 25
Sat Aug 25/Sun Aug 26	2374.8	21 52 52	19 03	20 24	4 33	5 54	18 16	2 26	19 34	.....	95	23 48.4	3 39
Sun Aug 26/Mon Aug 27	2375.8	21 56 48	19 02	20 23	4 34	5 54	18 19	2 31	20 03	.....	90	0 33.5	8 28
Mon Aug 27/Tue Aug 28	2376.8	22 00 45	19 01	20 21	4 34	5 55	18 21	2 36	20 33	.....	83	1 19.1	12 53
Tue Aug 28/Wed Aug 29	2377.8	22 04 42	18 59	20 20	4 35	5 56	18 24	2 41	21 06	.....	76	2 05.9	16 44
Wed Aug 29/Thu Aug 30	2378.8	22 08 38	18 58	20 18	4 36	5 56	18 26	2 45	21 41	.....	67	2 54.3	19 52
Thu Aug 30/Fri Aug 31	2379.8	22 12 35	18 57	20 17	4 37	5 57	18 29	2 50	22 21	.....	58	3 44.7	22 08
Fri Aug 31/Sat Sep 01	2380.8	22 16 31	18 56	20 15	4 38	5 57	18 31	2 55	23 06	.....	48	4 36.8	23 24

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 Sep 01/Sun Sep 02	2381.8	22 20 28	18 54	20 14	4 39	5 58	18 34	3 00	23 57	.....	39	5 30.3	23 32
Sun Sep 02/Mon Sep 03	2382.8	22 24 24	18 53	20 13	4 39	5 59	18 36	3 04	0 53	.....	29	6 24.7	22 29
Mon Sep 03/Tue Sep 04	2383.8	22 28 21	18 52	20 11	4 40	5 59	18 39	3 09	1 54	.....	20	7 19.2	20 13
Tue Sep 04/Wed Sep 05	2384.8	22 32 17	18 51	20 10	4 41	6 00	18 41	3 14	2 57	.....	12	8 13.3	16 49
Wed Sep 05/Thu Sep 06	2385.8	22 36 14	18 49	20 08	4 42	6 01	18 44	3 19	4 03	16 56	6	9 06.9	12 23
Thu Sep 06/Fri Sep 07	2386.8	22 40 11	18 48	20 07	4 42	6 01	18 46	3 23	5 09	17 33	2	9 59.8	7 10
Fri Sep 07/Sat Sep 08	2387.8	22 44 07	18 47	20 05	4 43	6 02	18 49	3 28	6 17	18 09	0	10 52.7	1 25
Sat Sep 08/Sun Sep 09	2388.8	22 48 04	18 45	20 04	4 44	6 02	18 51	3 33	.....	18 45	1	11 46.1	- 4 31
Sun Sep 09/Mon Sep 10	2389.8	22 52 00	18 44	20 02	4 45	6 03	18 54	3 37	.....	19 22	5	12 40.7	-10 16
Mon Sep 10/Tue Sep 11	2390.8	22 55 57	18 43	20 01	4 45	6 04	18 56	3 42	.....	20 02	11	13 37.1	-15 27
Tue Sep 11/Wed Sep 12	2391.8	22 59 53	18 42	19 59	4 46	6 04	18 59	3 47	.....	20 46	20	14 35.5	-19 42
Wed Sep 12/Thu Sep 13	2392.8	23 03 50	18 40	19 58	4 47	6 05	19 01	3 52	.....	21 35	30	15 35.7	-22 43
Thu Sep 13/Fri Sep 14	2393.8	23 07 46	18 39	19 57	4 48	6 05	19 04	3 56	.....	22 29	41	16 36.8	-24 17
Fri Sep 14/Sat Sep 15	2394.8	23 11 43	18 38	19 55	4 48	6 06	19 06	4 01	.....	23 28	52	17 37.4	-24 21
Sat Sep 15/Sun Sep 16	2395.8	23 15 40	18 36	19 54	4 49	6 07	19 09	4 06	.....	0 30	63	18 36.2	-22 59
Sun Sep 16/Mon Sep 17	2396.8	23 19 36	18 35	19 52	4 50	6 07	19 11	4 10	.....	1 32	73	19 32.2	-20 24
Mon Sep 17/Tue Sep 18	2397.8	23 23 33	18 34	19 51	4 51	6 08	19 14	4 15	.....	2 33	81	20 25.2	-16 50
Tue Sep 18/Wed Sep 19	2398.8	23 27 29	18 32	19 49	4 51	6 09	19 16	4 20	.....	3 32	89	21 15.3	-12 34
Wed Sep 19/Thu Sep 20	2399.8	23 31 26	18 31	19 48	4 52	6 09	19 19	4 24	.....	4 29	94	22 03.0	- 7 49
Thu Sep 20/Fri Sep 21	2400.8	23 35 22	18 30	19 47	4 53	6 10	19 21	4 29	17 08	5 25	98	22 49.1	- 2 50
Fri Sep 21/Sat Sep 22	2401.8	23 39 19	18 28	19 45	4 53	6 10	19 24	4 33	17 37	6 20	100	23 34.2	2 11
Sat Sep 22/Sun Sep 23	2402.8	23 43 15	18 27	19 44	4 54	6 11	19 26	4 38	18 06	7 14	100	0 19.3	7 03
Sun Sep 23/Mon Sep 24	2403.8	23 47 12	18 26	19 42	4 55	6 12	19 29	4 43	18 35	.....	97	1 04.8	11 34
Mon Sep 24/Tue Sep 25	2404.8	23 51 09	18 24	19 41	4 55	6 12	19 32	4 47	19 07	.....	94	1 51.4	15 35
Tue Sep 25/Wed Sep 26	2405.8	23 55 05	18 23	19 40	4 56	6 13	19 34	4 52	19 41	.....	88	2 39.6	18 56
Wed Sep 26/Thu Sep 27	2406.8	23 59 02	18 22	19 38	4 57	6 13	19 37	4 57	20 19	.....	82	3 29.4	21 28
Thu Sep 27/Fri Sep 28	2407.8	0 02 58	18 20	19 37	4 57	6 14	19 39	5 01	21 02	.....	74	4 20.8	23 01
Fri Sep 28/Sat Sep 29	2408.8	0 06 55	18 19	19 36	4 58	6 15	19 42	5 06	21 50	.....	65	5 13.5	23 31
Sat Sep 29/Sun Sep 30	2409.8	0 10 51	18 18	19 34	4 59	6 15	19 44	5 10	22 43	.....	55	6 06.8	22 51
Sun Sep 30/Mon Oct 01	2410.8	0 14 48	18 16	19 33	4 59	6 16	19 47	5 15	23 40	.....	45	7 00.3	21 03

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 Oct 01/Tue Oct 02	2411.8	0 18 44	18 15	19 32	5 00	6 17	19 50	5 20	0 40	.....	35	7 53.5	18 07
Tue Oct 02/Wed Oct 03	2412.8	0 22 41	18 14	19 30	5 01	6 17	19 52	5 24	1 43	.....	25	8 46.1	14 11
Wed Oct 03/Thu Oct 04	2413.8	0 26 38	18 13	19 29	5 01	6 18	19 55	5 29	2 48	.....	16	9 38.4	9 22
Thu Oct 04/Fri Oct 05	2414.8	0 30 34	18 11	19 28	5 02	6 19	19 58	5 34	3 54	.....	9	10 30.8	3 55
Fri Oct 05/Sat Oct 06	2415.8	0 34 31	18 10	19 27	5 03	6 19	20 00	5 38	5 02	16 38	3	11 23.8	- 1 55
Sat Oct 06/Sun Oct 07	2416.8	0 38 27	18 09	19 25	5 03	6 20	20 03	5 43	6 12	17 14	1	12 18.3	- 7 46
Sun Oct 07/Mon Oct 08	2417.8	0 42 24	18 08	19 24	5 04	6 21	20 06	5 47	7 23	17 54	1	13 14.9	-13 16
Mon Oct 08/Tue Oct 09	2418.8	0 46 20	18 06	19 23	5 05	6 21	20 08	5 52	.....	18 37	3	14 13.9	-17 58
Tue Oct 09/Wed Oct 10	2419.8	0 50 17	18 05	19 22	5 05	6 22	20 11	5 57	.....	19 25	9	15 15.3	-21 30
Wed Oct 10/Thu Oct 11	2420.8	0 54 13	18 04	19 20	5 06	6 23	20 14	6 01	.....	20 20	17	16 17.9	-23 34
Thu Oct 11/Fri Oct 12	2421.8	0 58 10	18 03	19 19	5 07	6 23	20 17	6 06	.....	21 19	26	17 20.2	-24 04
Fri Oct 12/Sat Oct 13	2422.8	1 02 07	18 02	19 18	5 07	6 24	20 19	6 10	.....	22 22	37	18 20.7	-23 04
Sat Oct 13/Sun Oct 14	2423.8	1 06 03	18 00	19 17	5 08	6 25	20 22	6 15	.....	23 25	47	19 18.1	-20 46
Sun Oct 14/Mon Oct 15	2424.8	1 10 00	17 59	19 16	5 09	6 26	20 25	6 20	.....	0 27	58	20 12.1	-17 25
Mon Oct 15/Tue Oct 16	2425.8	1 13 56	17 58	19 15	5 09	6 26	20 28	6 24	.....	1 27	68	21 02.7	-13 20
Tue Oct 16/Wed Oct 17	2426.8	1 17 53	17 57	19 14	5 10	6 27	20 31	6 29	.....	2 24	77	21 50.6	- 8 45
Wed Oct 17/Thu Oct 18	2427.8	1 21 49	17 56	19 13	5 11	6 28	20 34	6 33	.....	3 20	85	22 36.6	- 3 54
Thu Oct 18/Fri Oct 19	2428.8	1 25 46	17 55	19 12	5 12	6 28	20 37	6 38	.....	4 15	91	23 21.5	1 02
Fri Oct 19/Sat Oct 20	2429.8	1 29 42	17 54	19 11	5 12	6 29	20 39	6 43	.....	5 09	96	0 06.3	5 52
Sat Oct 20/Sun Oct 21	2430.8	1 33 39	17 53	19 09	5 13	6 30	20 42	6 47	16 38	6 03	99	0 51.5	10 27
Sun Oct 21/Mon Oct 22	2431.8	1 37 36	17 51	19 08	5 14	6 31	20 45	6 52	17 09	6 58	100	1 37.8	14 34
Mon Oct 22/Tue Oct 23	2432.8	1 41 32	17 50	19 08	5 14	6 31	20 48	6 57	17 42	.....	99	2 25.7	18 06
Tue Oct 23/Wed Oct 24	2433.8	1 45 29	17 49	19 07	5 15	6 32	20 51	7 01	18 19	.....	97	3 15.2	20 50
Wed Oct 24/Thu Oct 25	2434.8	1 49 25	17 48	19 06	5 16	6 33	20 54	7 06	19 01	.....	92	4 06.5	22 39
Thu Oct 25/Fri Oct 26	2435.8	1 53 22	17 47	19 05	5 16	6 34	20 57	7 11	19 47	.....	87	4 58.9	23 25
Fri Oct 26/Sat Oct 27	2436.8	1 57 18	17 46	19 04	5 17	6 35	21 00	7 15	20 37	.....	79	5 52.0	23 03
Sat Oct 27/Sun Oct 28	2437.8	2 01 15	17 45	19 03	5 18	6 35	21 03	7 20	21 32	.....	71	6 45.0	21 34
Sun Oct 28/Mon Oct 29	2438.8	2 05 11	17 44	19 02	5 18	6 36	21 06	7 25	22 30	.....	61	7 37.4	19 00
Mon Oct 29/Tue Oct 30	2439.8	2 09 08	17 44	19 01	5 19	6 37	21 10	7 29	23 30	.....	51	8 29.0	15 27
Tue Oct 30/Wed Oct 31	2440.8	2 13 05	17 43	19 00	5 20	6 38	21 13	7 34	0 32	.....	41	9 20.0	11 03
Wed Oct 31/Thu Nov 01	2441.8	2 17 01	17 42	19 00	5 21	6 39	21 16	7 38	1 35	.....	30	10 10.8	5 59

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 Nov 01/Fri Nov 02	2442.8	2 20 58	17 41	18 59	5 21	6 39	21 19	7 43	2 39	.....	20	11 02.2	0 27
Fri Nov 02/Sat Nov 03	2443.8	2 24 54	17 40	18 58	5 22	6 40	21 22	7 48	3 46	.....	12	11 54.9 - 5 17
Sat Nov 03/Sun Nov 04	2444.8	2 28 51	17 39	18 57	5 23	6 41	21 25	7 52	4 56	.....	5	12 49.8 -10 51
Sun Nov 04/Mon Nov 05	2445.8	2 32 47	17 38	18 57	5 23	6 42	21 29	7 57	6 08	16 24	1	13 47.7 -15 53
Mon Nov 05/Tue Nov 06	2446.8	2 36 44	17 38	18 56	5 24	6 43	21 32	8 02	7 21	17 10	0	14 48.6 -19 57
Tue Nov 06/Wed Nov 07	2447.8	2 40 40	17 37	18 55	5 25	6 44	21 35	8 07	.....	18 03	2	15 51.9 -22 40
Wed Nov 07/Thu Nov 08	2448.8	2 44 37	17 36	18 55	5 26	6 44	21 39	8 11	.....	19 02	6	16 56.1 -23 48
Thu Nov 08/Fri Nov 09	2449.8	2 48 34	17 36	18 54	5 26	6 45	21 42	8 16	.....	20 06	13	17 59.2 -23 18
Fri Nov 09/Sat Nov 10	2450.8	2 52 30	17 35	18 54	5 27	6 46	21 45	8 21	.....	21 11	22	18 59.3 -21 20
Sat Nov 10/Sun Nov 11	2451.8	2 56 27	17 34	18 53	5 28	6 47	21 49	8 25	.....	22 16	31	19 55.7 -18 13
Sun Nov 11/Mon Nov 12	2452.8	3 00 23	17 34	18 53	5 29	6 48	21 52	8 30	.....	23 18	42	20 48.2 -14 15
Mon Nov 12/Tue Nov 13	2453.8	3 04 20	17 33	18 52	5 29	6 49	21 56	8 35	.....	0 18	52	21 37.3 - 9 45
Tue Nov 13/Wed Nov 14	2454.8	3 08 16	17 32	18 52	5 30	6 50	21 59	8 39	.....	1 15	62	22 24.0 - 4 56
Wed Nov 14/Thu Nov 15	2455.8	3 12 13	17 32	18 51	5 31	6 51	22 03	8 44	.....	2 10	71	23 09.2 - 0 02
Thu Nov 15/Fri Nov 16	2456.8	3 16 09	17 31	18 51	5 32	6 51	22 06	8 49	.....	3 04	79	23 53.7 4 47
Fri Nov 16/Sat Nov 17	2457.8	3 20 06	17 31	18 51	5 32	6 52	22 10	8 53	.....	3 58	87	0 38.5 9 23
Sat Nov 17/Sun Nov 18	2458.8	3 24 03	17 30	18 50	5 33	6 53	22 13	8 58	.....	4 52	92	1 24.3 13 36
Sun Nov 18/Mon Nov 19	2459.8	3 27 59	17 30	18 50	5 34	6 54	22 17	9 03	.....	5 47	97	2 11.6 17 16
Mon Nov 19/Tue Nov 20	2460.8	3 31 56	17 29	18 50	5 35	6 55	22 21	9 08	16 19	6 42	99	3 00.9 20 13
Tue Nov 20/Wed Nov 21	2461.8	3 35 52	17 29	18 49	5 35	6 56	22 24	9 12	16 59	7 37	100	3 52.0 22 17
Wed Nov 21/Thu Nov 22	2462.8	3 39 49	17 29	18 49	5 36	6 57	22 28	9 17	17 44	.....	99	4 44.6 23 19
Thu Nov 22/Fri Nov 23	2463.8	3 43 45	17 28	18 49	5 37	6 58	22 32	9 22	18 34	.....	96	5 38.0 23 14
Fri Nov 23/Sat Nov 24	2464.8	3 47 42	17 28	18 49	5 38	6 58	22 36	9 26	19 28	.....	91	6 31.4 22 01
Sat Nov 24/Sun Nov 25	2465.8	3 51 38	17 28	18 49	5 38	6 59	22 39	9 31	20 25	.....	84	7 24.1 19 41
Sun Nov 25/Mon Nov 26	2466.8	3 55 35	17 28	18 48	5 39	7 00	22 43	9 36	21 23	.....	76	8 15.8 16 23
Mon Nov 26/Tue Nov 27	2467.8	3 59 32	17 27	18 48	5 40	7 01	22 47	9 40	22 23	.....	67	9 06.3 12 14
Tue Nov 27/Wed Nov 28	2468.8	4 03 28	17 27	18 48	5 41	7 02	22 51	9 45	23 24	.....	57	9 56.1 7 25
Wed Nov 28/Thu Nov 29	2469.8	4 07 25	17 27	18 48	5 41	7 03	22 55	9 50	0 26	.....	46	10 45.8 2 09
Thu Nov 29/Fri Nov 30	2470.8	4 11 21	17 27	18 48	5 42	7 03	22 59	9 54	1 29	.....	35	11 36.4 - 3 21
Fri Nov 30/Sat Dec 01	2471.8	4 15 18	17 27	18 48	5 43	7 04	23 03	9 59	2 35	.....	25	12 28.8 - 8 50

***** 2029 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) (2029 at start)	JDmid (-2460000)	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 Dec 01/Sun Dec 02	2472.8	4 19 14	17 27	18 48	5 44	7 05	23 07	10 04	3 43	.....	15	13 23.9	-13 57
Sun Dec 02/Mon Dec 03	2473.8	4 23 11	17 27	18 48	5 44	7 06	23 11	10 08	4 54	.....	8	14 22.2	-18 20
Mon Dec 03/Tue Dec 04	2474.8	4 27 07	17 27	18 48	5 45	7 07	23 15	10 13	6 05	15 46	3	15 23.8	-21 36
Tue Dec 04/Wed Dec 05	2475.8	4 31 04	17 27	18 48	5 46	7 07	23 19	10 18	7 14	16 41	0	16 27.6	-23 25
Wed Dec 05/Thu Dec 06	2476.8	4 35 01	17 27	18 49	5 46	7 08	23 23	10 22	8 16	17 43	1	17 31.8	-23 36
Thu Dec 06/Fri Dec 07	2477.8	4 38 57	17 27	18 49	5 47	7 09	23 27	10 27	.....	18 49	4	18 34.4	-22 12
Fri Dec 07/Sat Dec 08	2478.8	4 42 54	17 27	18 49	5 48	7 10	23 31	10 32	.....	19 56	9	19 33.7	-19 26
Sat Dec 08/Sun Dec 09	2479.8	4 46 50	17 27	18 49	5 48	7 10	23 35	10 36	.....	21 02	17	20 29.0	-15 39
Sun Dec 09/Mon Dec 10	2480.8	4 50 47	17 27	18 49	5 49	7 11	23 39	10 41	.....	22 05	25	21 20.5	-11 12
Mon Dec 10/Tue Dec 11	2481.8	4 54 43	17 28	18 50	5 50	7 12	23 43	10 45	.....	23 04	35	22 08.9	- 6 23
Tue Dec 11/Wed Dec 12	2482.8	4 58 40	17 28	18 50	5 50	7 13	23 48	10 50	.....	0 01	45	22 55.1	- 1 26
Wed Dec 12/Thu Dec 13	2483.8	5 02 36	17 28	18 50	5 51	7 13	23 52	10 55	.....	0 57	55	23 40.1	3 28
Thu Dec 13/Fri Dec 14	2484.8	5 06 33	17 28	18 51	5 52	7 14	23 56	10 59	.....	1 51	64	0 24.9	8 09
Fri Dec 14/Sat Dec 15	2485.8	5 10 30	17 29	18 51	5 52	7 15	0 01	11 04	.....	2 46	73	1 10.2	12 29
Sat Dec 15/Sun Dec 16	2486.8	5 14 26	17 29	18 51	5 53	7 15	0 05	11 08	.....	3 40	81	1 56.9	16 18
Sun Dec 16/Mon Dec 17	2487.8	5 18 23	17 29	18 52	5 53	7 16	0 09	11 13	.....	4 35	88	2 45.4	19 28
Mon Dec 17/Tue Dec 18	2488.8	5 22 19	17 30	18 52	5 54	7 16	0 14	11 17	.....	5 30	93	3 35.9	21 48
Tue Dec 18/Wed Dec 19	2489.8	5 26 16	17 30	18 53	5 55	7 17	0 18	11 22	15 40	6 23	97	4 28.2	23 09
Wed Dec 19/Thu Dec 20	2490.8	5 30 12	17 31	18 53	5 55	7 17	0 22	11 26	16 28	7 14	100	5 21.9	23 24
Thu Dec 20/Fri Dec 21	2491.8	5 34 09	17 31	18 53	5 56	7 18	0 27	11 31	17 21	8 01	100	6 16.1	22 30
Fri Dec 21/Sat Dec 22	2492.8	5 38 05	17 32	18 54	5 56	7 18	0 31	11 35	18 18	.....	98	7 09.8	20 26
Sat Dec 22/Sun Dec 23	2493.8	5 42 02	17 32	18 54	5 56	7 19	0 36	11 40	19 17	.....	94	8 02.5	17 19
Sun Dec 23/Mon Dec 24	2494.8	5 45 59	17 33	18 55	5 57	7 19	0 40	11 44	20 18	.....	89	8 54.0	13 18
Mon Dec 24/Tue Dec 25	2495.8	5 49 55	17 33	18 56	5 57	7 20	0 45	11 48	21 18	.....	81	9 44.2	8 36
Tue Dec 25/Wed Dec 26	2496.8	5 53 52	17 34	18 56	5 58	7 20	0 49	11 53	22 19	.....	72	10 33.9	3 26
Wed Dec 26/Thu Dec 27	2497.8	5 57 48	17 34	18 57	5 58	7 20	0 54	11 57	23 21	.....	61	11 23.7	- 1 59
Thu Dec 27/Fri Dec 28	2498.8	6 01 45	17 35	18 57	5 59	7 21	0 58	12 01	0 24	.....	50	12 14.5	- 7 23
Fri Dec 28/Sat Dec 29	2499.8	6 05 41	17 36	18 58	5 59	7 21	1 03	12 06	1 29	.....	39	13 07.3	-12 30
Sat Dec 29/Sun Dec 30	2500.8	6 09 38	17 36	18 59	5 59	7 21	1 07	12 10	2 36	.....	28	14 02.8	-17 01
Sun Dec 30/Mon Dec 31	2501.8	6 13 34	17 37	18 59	6 00	7 22	1 12	12 14	3 45	.....	19	15 01.4	-20 36
Mon Dec 31/Tue Jan 01	2502.8	6 17 31	17 38	19 00	6 00	7 22	1 17	12 18	4 53	.....	10	16 02.8	-22 55