***** 2005 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

MOON PHASES FOR 2005, 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 11	18 29	Dec 18	9 41	Dec 26	8 07	Jan 03	10 47
Jan 10	5 04	Jan 16	23 58	Jan 25	3 33	Feb 02	0 28
Feb 08	15 30	Feb 15	17 16	Feb 23	21 55	Mar 03	10 38
Mar 10	2 13	Mar 17	12 19	Mar 25	14 01	Apr 01	17 52
Apr 08	13 35	Apr 16	7 39	Apr 24	3 09	Apr 30	23 26
May 08	1 49	May 16	1 59	May 23	13 21	May 30	4 49
Jun 06	14 58	Jun 14	18 25	Jun 21	21 16	Jun 28	11 25
Jul 06	5 05	Jul 14	8 22	Jul 21	4 03	Jul 27	20 21
Aug 04	20 06	Aug 12	19 40	Aug 19	10 55	Aug 26	8 20
Sep 03	11 46	Sep 11	4 38	Sep 17	19 02	Sep 24	23 42
Oct 03	3 28	Oct 10	12 02	Oct 17	5 14	Oct 24	18 18
Nov 01	18 24	Nov 08	18 58	Nov 15	17 57	Nov 23	15 13
Dec 01	8 00	Dec 08	2 37	Dec 15	9 16	Dec 23	12 38
Dec 30	20 12	Jan 06	11 57	Jan 14	2 48	Jan 22	8 15

***** 2005 JANUARY *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
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 500 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)	JDmid	LMSTmidn	---------- Sun: ---------				LST twilight:		------------- Moon: --------------				
(2005 at start)	(-2450000)		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Sat Jan 01/Sun Jan 02	3372.8	6 21 36	17 37	19 01	6 00	7 23	1 21	12 23	23 09	.....	64	11 49.8	4 01
Sun Jan 02/Mon Jan 03	3373.8	6 25 33	17 38	19 01	6 00	7 24	1 26	12 27	0 07	.....	54	12 34.4	- 1 53
Mon Jan 03/Tue Jan 04	3374.8	6 29 30	17 39	19 02	6 01	7 24	1 31	12 31	1 06	.....	43	13 20.5	- 7 52
Tue Jan 04/Wed Jan 05	3375.8	6 33 26	17 40	19 03	6 01	7 24	1 35	12 35	2 09	.....	33	14 09.2	-13 40
Wed Jan 05/Thu Jan 06	3376.8	6 37 23	17 40	19 03	6 01	7 24	1 40	12 39	3 16	.....	23	15 01.9	-19 01
Thu Jan 06/Fri Jan 07	3377.8	6 41 19	17 41	19 04	6 01	7 24	1 45	12 44	4 28	.....	14	15 59.5	-23 29
Fri Jan 07/Sat Jan 08	3378.8	6 45 16	17 42	19 05	6 01	7 24	1 49	12 48	5 41	.....	7	17 02.2	-26 37
Sat Jan 08/Sun Jan 09	3379.8	6 49 12	17 43	19 06	6 01	7 24	1 54	12 52	6 52	15 43	2	18 08.8	-27 59
Sun Jan 09/Mon Jan 10	3380.8	6 53 09	17 44	19 06	6 01	7 24	1 59	12 56	7 55	16 51	0	19 16.6	-27 17
Mon Jan 10/Tue Jan 11	3381.8	6 57 05	17 45	19 07	6 02	7 24	2 03	13 00	.....	18 06	1	20 22.6	-24 37
Tue Jan 11/Wed Jan 12	3382.8	7 01 02	17 45	19 08	6 02	7 24	2 08	13 04	.....	19 22	5	21 24.5	-20 16
Wed Jan 12/Thu Jan 13	3383.8	7 04 59	17 46	19 09	6 02	7 24	2 13	13 07	.....	20 35	11	22 21.5	-14 46
Thu Jan 13/Fri Jan 14	3384.8	7 08 55	17 47	19 09	6 01	7 24	2 18	13 11	.....	21 44	19	23 14.2	- 8 37
Fri Jan 14/Sat Jan 15	3385.8	7 12 52	17 48	19 10	6 01	7 23	2 22	13 15	.....	22 49	29	0 03.7	- 2 14
Sat Jan 15/Sun Jan 16	3386.8	7 16 48	17 49	19 11	6 01	7 23	2 27	13 19	.....	23 52	39	0 51.3	4 04
Sun Jan 16/Mon Jan 17	3387.8	7 20 45	17 50	19 12	6 01	7 23	2 32	13 23	.....	0 52	49	1 38.1	10 01
Mon Jan 17/Tue Jan 18	3388.8	7 24 41	17 51	19 13	6 01	7 23	2 36	13 27	.....	1 52	59	2 25.4	15 23
Tue Jan 18/Wed Jan 19	3389.8	7 28 38	17 52	19 13	6 01	7 22	2 41	13 30	.....	2 52	69	3 13.9	20 01
Wed Jan 19/Thu Jan 20	3390.8	7 32 34	17 52	19 14	6 01	7 22	2 46	13 34	.....	3 51	77	4 04.3	23 43
Thu Jan 20/Fri Jan 21	3391.8	7 36 31	17 53	19 15	6 00	7 22	2 51	13 38	.....	4 49	85	4 56.5	26 20
Fri Jan 21/Sat Jan 22	3392.8	7 40 28	17 54	19 16	6 00	7 21	2 55	13 42	.....	5 44	91	5 50.2	27 42
Sat Jan 22/Sun Jan 23	3393.8	7 44 24	17 55	19 16	6 00	7 21	3 00	13 45	.....	6 34	96	6 44.4	27 45
Sun Jan 23/Mon Jan 24	3394.8	7 48 21	17 56	19 17	6 00	7 21	3 05	13 49	16 16	7 19	99	7 38.0	26 29
Mon Jan 24/Tue Jan 25	3395.8	7 52 17	17 57	19 18	5 59	7 20	3 10	13 53	17 13	7 58	100	8 30.1	23 59
Tue Jan 25/Wed Jan 26	3396.8	7 56 14	17 58	19 19	5 59	7 20	3 14	13 56	18 11	.....	99	9 20.0	20 24
Wed Jan 26/Thu Jan 27	3397.8	8 00 10	17 59	19 20	5 59	7 19	3 19	14 00	19 10	.....	97	10 07.7	15 57
Thu Jan 27/Fri Jan 28	3398.8	8 04 07	18 00	19 20	5 58	7 19	3 24	14 03	20 07	.....	92	10 53.5	10 50
Fri Jan 28/Sat Jan 29	3399.8	8 08 03	18 01	19 21	5 58	7 18	3 29	14 07	21 04	.....	86	11 38.1	5 14
Sat Jan 29/Sun Jan 30	3400.8	8 12 00	18 02	19 22	5 57	7 17	3 33	14 10	22 01	.....	79	12 22.5	- 0 38
Sun Jan 30/Mon Jan 31	3401.8	8 15 57	18 03	19 23	5 57	7 17	3 38	14 14	22 58	.....	70	13 07.6	- 6 35
Mon Jan 31/Tue Feb 01	3402.8	8 19 53	18 03	19 24	5 56	7 16	3 43	14 17	23 59	.....	60	13 54.7	-12 23

***** 2005 FEBRUARY *****

Calendar for Kitt Peak, west longitude (h.m.s) =   7 26 28, latitude (d.m) = 31 57.2
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 500 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)	JDmid	LMSTmidn	---------- Sun: ---------				LST twilight:		------------- Moon: --------------				
(2005 at start)	(-2450000)		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Tue Feb 01/Wed Feb 02	3403.8	8 23 50	18 04	19 24	5 56	7 16	3 47	14 20	1 02	.....	49	14 44.9	-17 45
Wed Feb 02/Thu Feb 03	3404.8	8 27 46	18 05	19 25	5 55	7 15	3 52	14 24	2 09	.....	39	15 39.3	-22 24
Thu Feb 03/Fri Feb 04	3405.8	8 31 43	18 06	19 26	5 54	7 14	3 57	14 27	3 19	.....	28	16 38.4	-25 55
Fri Feb 04/Sat Feb 05	3406.8	8 35 39	18 07	19 27	5 54	7 13	4 02	14 30	4 29	.....	18	17 41.9	-27 54
Sat Feb 05/Sun Feb 06	3407.8	8 39 36	18 08	19 28	5 53	7 13	4 06	14 34	5 35	.....	10	18 47.9	-28 01
Sun Feb 06/Mon Feb 07	3408.8	8 43 32	18 09	19 28	5 53	7 12	4 11	14 37	6 32	.....	4	19 53.9	-26 08
Mon Feb 07/Tue Feb 08	3409.8	8 47 29	18 10	19 29	5 52	7 11	4 16	14 40	7 20	16 52	1	20 57.3	-22 27
Tue Feb 08/Wed Feb 09	3410.8	8 51 26	18 11	19 30	5 51	7 10	4 21	14 44	.....	18 08	0	21 56.7	-17 19
Wed Feb 09/Thu Feb 10	3411.8	8 55 22	18 12	19 31	5 50	7 09	4 25	14 47	.....	19 20	3	22 51.9	-11 15
Thu Feb 10/Fri Feb 11	3412.8	8 59 19	18 12	19 31	5 50	7 09	4 30	14 50	.....	20 29	8	23 43.6	- 4 44
Fri Feb 11/Sat Feb 12	3413.8	9 03 15	18 13	19 32	5 49	7 08	4 35	14 53	.....	21 35	14	0 33.0	1 50
Sat Feb 12/Sun Feb 13	3414.8	9 07 12	18 14	19 33	5 48	7 07	4 39	14 56	.....	22 38	23	1 21.2	8 07
Sun Feb 13/Mon Feb 14	3415.8	9 11 08	18 15	19 34	5 47	7 06	4 44	14 59	.....	23 40	32	2 09.4	13 51
Mon Feb 14/Tue Feb 15	3416.8	9 15 05	18 16	19 35	5 46	7 05	4 49	15 02	.....	0 42	42	2 58.4	18 50
Tue Feb 15/Wed Feb 16	3417.8	9 19 01	18 17	19 35	5 45	7 04	4 54	15 05	.....	1 43	52	3 48.8	22 53
Wed Feb 16/Thu Feb 17	3418.8	9 22 58	18 18	19 36	5 45	7 03	4 58	15 08	.....	2 42	62	4 40.9	25 50
Thu Feb 17/Fri Feb 18	3419.8	9 26 55	18 18	19 37	5 44	7 02	5 03	15 12	.....	3 39	71	5 34.3	27 32
Fri Feb 18/Sat Feb 19	3420.8	9 30 51	18 19	19 38	5 43	7 01	5 08	15 15	.....	4 31	79	6 28.3	27 57
Sat Feb 19/Sun Feb 20	3421.8	9 34 48	18 20	19 38	5 42	7 00	5 12	15 18	.....	5 17	86	7 22.1	27 01
Sun Feb 20/Mon Feb 21	3422.8	9 38 44	18 21	19 39	5 41	6 59	5 17	15 20	.....	5 57	92	8 14.6	24 50
Mon Feb 21/Tue Feb 22	3423.8	9 42 41	18 22	19 40	5 40	6 58	5 22	15 23	.....	6 33	96	9 05.2	21 31
Tue Feb 22/Wed Feb 23	3424.8	9 46 37	18 22	19 41	5 39	6 57	5 26	15 26	17 02	7 04	99	9 53.7	17 14
Wed Feb 23/Thu Feb 24	3425.8	9 50 34	18 23	19 41	5 38	6 56	5 31	15 29	18 00	7 32	100	10 40.3	12 11
Thu Feb 24/Fri Feb 25	3426.8	9 54 30	18 24	19 42	5 37	6 55	5 36	15 32	18 58	.....	99	11 25.7	6 35
Fri Feb 25/Sat Feb 26	3427.8	9 58 27	18 25	19 43	5 36	6 53	5 40	15 35	19 55	.....	96	12 10.6	0 39
Sat Feb 26/Sun Feb 27	3428.8	10 02 24	18 26	19 43	5 35	6 52	5 45	15 38	20 53	.....	90	12 55.9	- 5 24
Sun Feb 27/Mon Feb 28	3429.8	10 06 20	18 26	19 44	5 33	6 51	5 50	15 41	21 53	.....	83	13 42.8	-11 20
Mon Feb 28/Tue Mar 01	3430.8	10 10 17	18 27	19 45	5 32	6 50	5 55	15 44	22 55	.....	75	14 32.2	-16 52

***** 2005 MARCH *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
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 500 m above surroundings, in standard time all year.
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Date (eve/morn)	JDmid	LMSTmidn	Sun:				LST twilight:		Moon:				
(2005 at start)	(-2450000)		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Tue Mar 01/Wed Mar 02	3431.8	10 14 13	18 28	19 46	5 31	6 49	5 59	15 46	0 00	.....	65	15 25.2	-21 42
Wed Mar 02/Thu Mar 03	3432.8	10 18 10	18 29	19 46	5 30	6 48	6 04	15 49	1 08	.....	54	16 22.3	-25 29
Thu Mar 03/Fri Mar 04	3433.8	10 22 06	18 29	19 47	5 29	6 46	6 09	15 52	2 16	.....	43	17 23.3	-27 51
Fri Mar 04/Sat Mar 05	3434.8	10 26 03	18 30	19 48	5 28	6 45	6 13	15 55	3 21	.....	32	18 27.1	-28 30
Sat Mar 05/Sun Mar 06	3435.8	10 29 59	18 31	19 49	5 26	6 44	6 18	15 57	4 20	.....	22	19 31.4	-27 17
Sun Mar 06/Mon Mar 07	3436.8	10 33 56	18 32	19 49	5 25	6 43	6 23	16 00	5 10	.....	13	20 34.1	-24 16
Mon Mar 07/Tue Mar 08	3437.8	10 37 53	18 32	19 50	5 24	6 42	6 27	16 03	5 52	.....	6	21 33.6	-19 42
Tue Mar 08/Wed Mar 09	3438.8	10 41 49	18 33	19 51	5 23	6 40	6 32	16 06	6 29	16 55	2	22 29.5	-14 01
Wed Mar 09/Thu Mar 10	3439.8	10 45 46	18 34	19 52	5 22	6 39	6 37	16 08	7 01	18 05	0	23 22.1	- 7 38
Thu Mar 10/Fri Mar 11	3440.8	10 49 42	18 35	19 52	5 20	6 38	6 41	16 11	7 32	19 13	1	0 12.4	- 0 59
Fri Mar 11/Sat Mar 12	3441.8	10 53 39	18 35	19 53	5 19	6 37	6 46	16 14	.....	20 18	5	1 01.5	5 34
Sat Mar 12/Sun Mar 13	3442.8	10 57 35	18 36	19 54	5 18	6 35	6 51	16 16	.....	21 22	10	1 50.3	11 41
Sun Mar 13/Mon Mar 14	3443.8	11 01 32	18 37	19 55	5 16	6 34	6 55	16 19	.....	22 26	17	2 39.8	17 06
Mon Mar 14/Tue Mar 15	3444.8	11 05 28	18 37	19 55	5 15	6 33	7 00	16 21	.....	23 29	26	3 30.6	21 36
Tue Mar 15/Wed Mar 16	3445.8	11 09 25	18 38	19 56	5 14	6 32	7 05	16 24	.....	0 31	35	4 22.9	25 00
Wed Mar 16/Thu Mar 17	3446.8	11 13 22	18 39	19 57	5 13	6 30	7 09	16 27	.....	1 30	44	5 16.5	27 09
Thu Mar 17/Fri Mar 18	3447.8	11 17 18	18 40	19 58	5 11	6 29	7 14	16 29	.....	2 24	54	6 10.7	27 59
Fri Mar 18/Sat Mar 19	3448.8	11 21 15	18 40	19 58	5 10	6 28	7 19	16 32	.....	3 13	63	7 04.7	27 28
Sat Mar 19/Sun Mar 20	3449.8	11 25 11	18 41	19 59	5 08	6 27	7 24	16 35	.....	3 55	72	7 57.5	25 40
Sun Mar 20/Mon Mar 21	3450.8	11 29 08	18 42	20 00	5 07	6 25	7 28	16 37	.....	4 33	80	8 48.5	22 42
Mon Mar 21/Tue Mar 22	3451.8	11 33 04	18 42	20 01	5 06	6 24	7 33	16 40	.....	5 05	88	9 37.5	18 42
Tue Mar 22/Wed Mar 23	3452.8	11 37 01	18 43	20 01	5 04	6 23	7 38	16 42	.....	5 34	93	10 24.6	13 52
Wed Mar 23/Thu Mar 24	3453.8	11 40 57	18 44	20 02	5 03	6 21	7 42	16 45	16 48	6 02	97	11 10.5	8 22
Thu Mar 24/Fri Mar 25	3454.8	11 44 54	18 44	20 03	5 02	6 20	7 47	16 47	17 46	6 28	100	11 55.9	2 25
Fri Mar 25/Sat Mar 26	3455.8	11 48 51	18 45	20 04	5 00	6 19	7 52	16 50	18 45	6 55	100	12 41.7	- 3 45
Sat Mar 26/Sun Mar 27	3456.8	11 52 47	18 46	20 04	4 59	6 18	7 57	16 52	19 45	.....	98	13 28.9	- 9 54
Sun Mar 27/Mon Mar 28	3457.8	11 56 44	18 46	20 05	4 57	6 16	8 01	16 55	20 47	.....	93	14 18.6	-15 43
Mon Mar 28/Tue Mar 29	3458.8	12 00 40	18 47	20 06	4 56	6 15	8 06	16 58	21 53	.....	87	15 11.6	-20 52
Tue Mar 29/Wed Mar 30	3459.8	12 04 37	18 48	20 07	4 55	6 14	8 11	17 00	23 01	.....	78	16 08.5	-25 00
Wed Mar 30/Thu Mar 31	3460.8	12 08 33	18 48	20 08	4 53	6 12	8 16	17 03	0 09	.....	69	17 09.1	-27 45
Thu Mar 31/Fri Apr 01	3461.8	12 12 30	18 49	20 08	4 52	6 11	8 20	17 05	1 15	.....	58	18 12.3	-28 48

***** 2005 APRIL *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
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 500 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)	JDmid	LMSTmidn	---------- Sun: ---------				LST twilight:		------------- Moon: --------------				
(2005 at start)	(-2450000)		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Fri Apr 01/Sat Apr 02	3462.8	12 16 26	18 50	20 09	4 50	6 10	8 25	17 08	2 14	.....	46	19 16.0	-28 02
Sat Apr 02/Sun Apr 03	3463.8	12 20 23	18 50	20 10	4 49	6 09	8 30	17 10	3 06	.....	35	20 18.1	-25 29
Sun Apr 03/Mon Apr 04	3464.8	12 24 20	18 51	20 11	4 48	6 07	8 35	17 13	3 49	.....	25	21 17.1	-21 24
Mon Apr 04/Tue Apr 05	3465.8	12 28 16	18 52	20 12	4 46	6 06	8 39	17 15	4 27	.....	16	22 12.5	-16 08
Tue Apr 05/Wed Apr 06	3466.8	12 32 13	18 52	20 13	4 45	6 05	8 44	17 18	4 59	.....	8	23 04.7	-10 04
Wed Apr 06/Thu Apr 07	3467.8	12 36 09	18 53	20 13	4 43	6 04	8 49	17 20	5 30	.....	3	23 54.6	- 3 35
Thu Apr 07/Fri Apr 08	3468.8	12 40 06	18 54	20 14	4 42	6 02	8 54	17 23	5 59	17 59	0	0 43.3	2 58
Fri Apr 08/Sat Apr 09	3469.8	12 44 02	18 55	20 15	4 41	6 01	8 59	17 25	6 29	19 04	0	1 31.8	9 15
Sat Apr 09/Sun Apr 10	3470.8	12 47 59	18 55	20 16	4 39	6 00	9 03	17 28	7 00	20 08	2	2 21.0	14 59
Sun Apr 10/Mon Apr 11	3471.8	12 51 55	18 56	20 17	4 38	5 59	9 08	17 30	.....	21 12	6	3 11.6	19 54
Mon Apr 11/Tue Apr 12	3472.8	12 55 52	18 57	20 18	4 36	5 58	9 13	17 33	.....	22 15	12	4 03.8	23 47
Tue Apr 12/Wed Apr 13	3473.8	12 59 49	18 57	20 19	4 35	5 56	9 18	17 35	.....	23 17	20	4 57.5	26 25
Wed Apr 13/Thu Apr 14	3474.8	13 03 45	18 58	20 20	4 34	5 55	9 23	17 38	.....	0 14	28	5 52.0	27 44
Thu Apr 14/Fri Apr 15	3475.8	13 07 42	18 59	20 21	4 32	5 54	9 28	17 41	.....	1 06	37	6 46.3	27 41
Fri Apr 15/Sat Apr 16	3476.8	13 11 38	18 59	20 21	4 31	5 53	9 32	17 43	.....	1 51	46	7 39.5	26 19
Sat Apr 16/Sun Apr 17	3477.8	13 15 35	19 00	20 22	4 29	5 52	9 37	17 46	.....	2 30	56	8 30.9	23 44
Sun Apr 17/Mon Apr 18	3478.8	13 19 31	19 01	20 23	4 28	5 50	9 42	17 48	.....	3 04	65	9 20.1	20 06
Mon Apr 18/Tue Apr 19	3479.8	13 23 28	19 01	20 24	4 27	5 49	9 47	17 51	.....	3 35	74	10 07.4	15 35
Tue Apr 19/Wed Apr 20	3480.8	13 27 24	19 02	20 25	4 25	5 48	9 52	17 53	.....	4 02	82	10 53.3	10 20
Wed Apr 20/Thu Apr 21	3481.8	13 31 21	19 03	20 26	4 24	5 47	9 57	17 56	.....	4 29	89	11 38.5	4 33
Thu Apr 21/Fri Apr 22	3482.8	13 35 18	19 04	20 27	4 23	5 46	10 02	17 59	.....	4 55	95	12 24.1	- 1 35
Fri Apr 22/Sat Apr 23	3483.8	13 39 14	19 04	20 28	4 21	5 45	10 07	18 01	17 32	5 23	99	13 11.0	- 7 49
Sat Apr 23/Sun Apr 24	3484.8	13 43 11	19 05	20 29	4 20	5 44	10 12	18 04	18 34	5 54	100	14 00.5	-13 54
Sun Apr 24/Mon Apr 25	3485.8	13 47 07	19 06	20 30	4 19	5 43	10 16	18 06	19 40	6 29	99	14 53.5	-19 27
Mon Apr 25/Tue Apr 26	3486.8	13 51 04	19 06	20 31	4 17	5 42	10 21	18 09	20 48	.....	95	15 50.7	-24 04
Tue Apr 26/Wed Apr 27	3487.8	13 55 00	19 07	20 32	4 16	5 41	10 26	18 12	21 59	.....	89	16 52.1	-27 20
Wed Apr 27/Thu Apr 28	3488.8	13 58 57	19 08	20 33	4 15	5 40	10 31	18 14	23 07	.....	81	17 56.5	-28 53
Thu Apr 28/Fri Apr 29	3489.8	14 02 53	19 09	20 34	4 13	5 39	10 36	18 17	0 10	.....	71	19 01.5	-28 33
Fri Apr 29/Sat Apr 30	3490.8	14 06 50	19 09	20 35	4 12	5 38	10 41	18 20	1 04	.....	61	20 04.8	-26 21
Sat Apr 30/Sun May 01	3491.8	14 10 47	19 10	20 36	4 11	5 37	10 46	18 22	1 49	.....	49	21 04.6	-22 34

***** 2005 MAY *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
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 500 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)	JDmid	LMSTmidn	---------- Sun:	---------			LST twilight:		------------- Moon:		--------------		
(2005 at start)	(-2450000)		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Sun May 01/Mon May 02	3492.8	14 14 43	19 11	20 37	4 10	5 36	10 51	18 25	2 28	.....	38	22 00.3	-17 34
Mon May 02/Tue May 03	3493.8	14 18 40	19 11	20 38	4 09	5 35	10 56	18 28	3 01	.....	27	22 52.4	-11 44
Tue May 03/Wed May 04	3494.8	14 22 36	19 12	20 39	4 07	5 34	11 01	18 31	3 31	.....	18	23 41.9	- 5 27
Wed May 04/Thu May 05	3495.8	14 26 33	19 13	20 40	4 06	5 33	11 06	18 33	4 00	.....	10	0 29.8	0 58
Thu May 05/Fri May 06	3496.8	14 30 29	19 14	20 41	4 05	5 32	11 11	18 36	4 29	.....	5	1 17.3	7 15
Fri May 06/Sat May 07	3497.8	14 34 26	19 14	20 42	4 04	5 31	11 16	18 39	4 59	17 53	1	2 05.4	13 05
Sat May 07/Sun May 08	3498.8	14 38 22	19 15	20 43	4 03	5 31	11 21	18 42	5 32	18 57	0	2 55.0	18 13
Sun May 08/Mon May 09	3499.8	14 42 19	19 16	20 44	4 02	5 30	11 26	18 45	6 10	20 00	1	3 46.4	22 26
Mon May 09/Tue May 10	3500.8	14 46 16	19 16	20 45	4 01	5 29	11 31	18 48	.....	21 03	4	4 39.5	25 29
Tue May 10/Wed May 11	3501.8	14 50 12	19 17	20 46	4 00	5 28	11 35	18 50	.....	22 02	8	5 33.9	27 15
Wed May 11/Thu May 12	3502.8	14 54 09	19 18	20 47	3 59	5 27	11 40	18 53	.....	22 57	15	6 28.5	27 38
Thu May 12/Fri May 13	3503.8	14 58 05	19 19	20 48	3 58	5 27	11 45	18 56	.....	23 45	22	7 22.1	26 41
Fri May 13/Sat May 14	3504.8	15 02 02	19 19	20 49	3 57	5 26	11 50	18 59	.....	0 27	30	8 13.9	24 29
Sat May 14/Sun May 15	3505.8	15 05 58	19 20	20 50	3 56	5 25	11 55	19 02	.....	1 03	39	9 03.4	21 13
Sun May 15/Mon May 16	3506.8	15 09 55	19 21	20 51	3 55	5 25	12 00	19 05	.....	1 34	49	9 50.6	17 02
Mon May 16/Tue May 17	3507.8	15 13 51	19 21	20 52	3 54	5 24	12 05	19 08	.....	2 03	58	10 36.2	12 07
Tue May 17/Wed May 18	3508.8	15 17 48	19 22	20 53	3 53	5 23	12 10	19 11	.....	2 29	68	11 20.8	6 37
Wed May 18/Thu May 19	3509.8	15 21 45	19 23	20 54	3 52	5 23	12 15	19 14	.....	2 55	77	12 05.4	0 42
Thu May 19/Fri May 20	3510.8	15 25 41	19 23	20 55	3 51	5 22	12 20	19 17	.....	3 22	85	12 51.1	- 5 26
Fri May 20/Sat May 21	3511.8	15 29 38	19 24	20 56	3 50	5 22	12 25	19 21	.....	3 51	92	13 39.2	-11 35
Sat May 21/Sun May 22	3512.8	15 33 34	19 25	20 56	3 49	5 21	12 30	19 24	.....	4 24	97	14 30.8	-17 24
Sun May 22/Mon May 23	3513.8	15 37 31	19 25	20 57	3 49	5 21	12 34	19 27	18 29	5 04	100	15 27.1	-22 29
Mon May 23/Tue May 24	3514.8	15 41 27	19 26	20 58	3 48	5 20	12 39	19 30	19 40	5 52	100	16 28.3	-26 24
Tue May 24/Wed May 25	3515.8	15 45 24	19 27	20 59	3 47	5 20	12 44	19 33	20 52	.....	97	17 33.7	-28 39
Wed May 25/Thu May 26	3516.8	15 49 20	19 27	21 00	3 47	5 19	12 49	19 37	21 59	.....	91	18 41.0	-28 55
Thu May 26/Fri May 27	3517.8	15 53 17	19 28	21 01	3 46	5 19	12 54	19 40	22 58	.....	83	19 47.2	-27 11
Fri May 27/Sat May 28	3518.8	15 57 14	19 29	21 02	3 45	5 19	12 59	19 43	23 48	.....	74	20 49.9	-23 40
Sat May 28/Sun May 29	3519.8	16 01 10	19 29	21 03	3 45	5 18	13 03	19 47	0 29	.....	63	21 47.9	-18 49
Sun May 29/Mon May 30	3520.8	16 05 07	19 30	21 04	3 44	5 18	13 08	19 50	1 04	.....	52	22 41.4	-13 03
Mon May 30/Tue May 31	3521.8	16 09 03	19 30	21 04	3 44	5 18	13 13	19 53	1 34	.....	41	23 31.6	- 6 48
Tue May 31/Wed Jun 01	3522.8	16 13 00	19 31	21 05	3 43	5 17	13 18	19 57	2 03	.....	30	0 19.5	- 0 25

***** 2005 JUNE *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
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 500 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) (2005 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	3523.8	16 16 56	19 32	21 06	3 43	5 17	13 22	20 00	2 31	.....	21	1 06.6	5 50
Thu Jun 02/Fri Jun 03	3524.8	16 20 53	19 32	21 07	3 42	5 17	13 27	20 04	3 00	.....	13	1 53.9	11 42
Fri Jun 03/Sat Jun 04	3525.8	16 24 49	19 33	21 07	3 42	5 17	13 32	20 07	3 32	.....	7	2 42.4	16 56
Sat Jun 04/Sun Jun 05	3526.8	16 28 46	19 33	21 08	3 42	5 17	13 36	20 11	4 08	17 49	3	3 32.7	21 19
Sun Jun 05/Mon Jun 06	3527.8	16 32 43	19 34	21 09	3 41	5 16	13 41	20 15	4 48	18 52	0	4 24.9	24 38
Mon Jun 06/Tue Jun 07	3528.8	16 36 39	19 34	21 09	3 41	5 16	13 46	20 18	5 34	19 52	0	5 18.6	26 43
Tue Jun 07/Wed Jun 08	3529.8	16 40 36	19 35	21 10	3 41	5 16	13 50	20 22	6 26	20 49	2	6 12.9	27 28
Wed Jun 08/Thu Jun 09	3530.8	16 44 32	19 35	21 11	3 41	5 16	13 55	20 26	.....	21 39	5	7 06.7	26 52
Thu Jun 09/Fri Jun 10	3531.8	16 48 29	19 36	21 11	3 40	5 16	13 59	20 29	.....	22 23	10	7 58.8	25 01
Fri Jun 10/Sat Jun 11	3532.8	16 52 25	19 36	21 12	3 40	5 16	14 04	20 33	.....	23 01	17	8 48.7	22 02
Sat Jun 11/Sun Jun 12	3533.8	16 56 22	19 36	21 12	3 40	5 16	14 08	20 37	.....	23 34	24	9 36.1	18 08
Sun Jun 12/Mon Jun 13	3534.8	17 00 18	19 37	21 13	3 40	5 16	14 13	20 41	.....	0 03	33	10 21.5	13 30
Mon Jun 13/Tue Jun 14	3535.8	17 04 15	19 37	21 13	3 40	5 16	14 17	20 45	.....	0 30	42	11 05.4	8 16
Tue Jun 14/Wed Jun 15	3536.8	17 08 12	19 38	21 14	3 40	5 16	14 21	20 49	.....	0 55	52	11 48.9	2 37
Wed Jun 15/Thu Jun 16	3537.8	17 12 08	19 38	21 14	3 40	5 16	14 26	20 53	.....	1 21	62	12 33.0	- 3 19
Thu Jun 16/Fri Jun 17	3538.8	17 16 05	19 38	21 14	3 40	5 16	14 30	20 57	.....	1 49	72	13 18.9	- 9 19
Fri Jun 17/Sat Jun 18	3539.8	17 20 01	19 38	21 15	3 40	5 17	14 34	21 01	.....	2 19	81	14 07.9	-15 10
Sat Jun 18/Sun Jun 19	3540.8	17 23 58	19 39	21 15	3 40	5 17	14 39	21 05	.....	2 55	89	15 01.3	-20 31
Sun Jun 19/Mon Jun 20	3541.8	17 27 54	19 39	21 15	3 41	5 17	14 43	21 09	.....	3 39	95	16 00.1	-24 57
Mon Jun 20/Tue Jun 21	3542.8	17 31 51	19 39	21 16	3 41	5 17	14 47	21 13	18 29	4 32	99	17 04.3	-27 58
Tue Jun 21/Wed Jun 22	3543.8	17 35 47	19 39	21 16	3 41	5 17	14 51	21 17	19 39	5 36	100	18 12.3	-29 05
Wed Jun 22/Thu Jun 23	3544.8	17 39 44	19 40	21 16	3 41	5 18	14 55	21 22	20 44	.....	98	19 21.2	-28 05
Thu Jun 23/Fri Jun 24	3545.8	17 43 41	19 40	21 16	3 42	5 18	14 59	21 26	21 39	.....	93	20 27.6	-25 04
Fri Jun 24/Sat Jun 25	3546.8	17 47 37	19 40	21 16	3 42	5 18	15 03	21 30	22 25	.....	86	21 29.4	-20 25
Sat Jun 25/Sun Jun 26	3547.8	17 51 34	19 40	21 16	3 42	5 19	15 07	21 34	23 03	.....	76	22 26.2	-14 39
Sun Jun 26/Mon Jun 27	3548.8	17 55 30	19 40	21 16	3 43	5 19	15 11	21 39	23 36	.....	66	23 18.8	- 8 18
Mon Jun 27/Tue Jun 28	3549.8	17 59 27	19 40	21 16	3 43	5 19	15 15	21 43	0 06	.....	55	0 08.3	- 1 45
Tue Jun 28/Wed Jun 29	3550.8	18 03 23	19 40	21 16	3 44	5 20	15 19	21 48	0 35	.....	44	0 56.3	4 40
Wed Jun 29/Thu Jun 30	3551.8	18 07 20	19 40	21 16	3 44	5 20	15 23	21 52	1 03	.....	33	1 43.8	10 40
Thu Jun 30/Fri Jul 01	3552.8	18 11 16	19 40	21 16	3 45	5 20	15 27	21 56	1 34	.....	24	2 32.1	16 02

***** 2005 JULY *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
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 500 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)	JDmid	LMSTmidn	---------- Sun:	---------			LST twilight:		------------- Moon:	--------------			
(2005 at start)	(-2450000)		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Fri Jul 01/Sat Jul 02	3553.8	18 15 13	19 40	21 16	3 45	5 21	15 31	22 01	2 08	.....	16	3 21.7	20 34
Sat Jul 02/Sun Jul 03	3554.8	18 19 10	19 40	21 16	3 46	5 21	15 34	22 05	2 46	.....	9	4 13.2	24 04
Sun Jul 03/Mon Jul 04	3555.8	18 23 06	19 40	21 16	3 46	5 22	15 38	22 10	3 30	17 45	5	5 06.2	26 23
Mon Jul 04/Tue Jul 05	3556.8	18 27 03	19 40	21 15	3 47	5 22	15 42	22 15	4 20	18 43	1	6 00.1	27 23
Tue Jul 05/Wed Jul 06	3557.8	18 30 59	19 40	21 15	3 48	5 23	15 46	22 19	5 14	19 35	0	6 53.8	27 04
Wed Jul 06/Thu Jul 07	3558.8	18 34 56	19 40	21 15	3 48	5 23	15 49	22 24	6 12	20 21	1	7 46.2	25 28
Thu Jul 07/Fri Jul 08	3559.8	18 38 52	19 40	21 14	3 49	5 24	15 53	22 28	.....	21 01	3	8 36.4	22 44
Fri Jul 08/Sat Jul 09	3560.8	18 42 49	19 39	21 14	3 50	5 24	15 56	22 33	.....	21 35	7	9 24.1	19 02
Sat Jul 09/Sun Jul 10	3561.8	18 46 45	19 39	21 13	3 50	5 25	16 00	22 38	.....	22 05	12	10 09.5	14 34
Sun Jul 10/Mon Jul 11	3562.8	18 50 42	19 39	21 13	3 51	5 25	16 03	22 42	.....	22 32	19	10 53.3	9 31
Mon Jul 11/Tue Jul 12	3563.8	18 54 39	19 39	21 12	3 52	5 26	16 07	22 47	.....	22 58	27	11 36.0	4 03
Tue Jul 12/Wed Jul 13	3564.8	18 58 35	19 38	21 12	3 53	5 26	16 10	22 52	.....	23 23	36	12 18.9	- 1 42
Wed Jul 13/Thu Jul 14	3565.8	19 02 32	19 38	21 11	3 53	5 27	16 13	22 57	.....	23 49	46	13 02.8	- 7 32
Thu Jul 14/Fri Jul 15	3566.8	19 06 28	19 37	21 11	3 54	5 28	16 17	23 01	.....	0 17	56	13 49.2	-13 16
Fri Jul 15/Sat Jul 16	3567.8	19 10 25	19 37	21 10	3 55	5 28	16 20	23 06	.....	0 49	67	14 39.2	-18 40
Sat Jul 16/Sun Jul 17	3568.8	19 14 21	19 37	21 09	3 56	5 29	16 23	23 11	.....	1 28	76	15 34.2	-23 22
Sun Jul 17/Mon Jul 18	3569.8	19 18 18	19 36	21 09	3 57	5 29	16 27	23 16	.....	2 15	85	16 34.7	-26 56
Mon Jul 18/Tue Jul 19	3570.8	19 22 14	19 36	21 08	3 58	5 30	16 30	23 21	.....	3 13	93	17 40.4	-28 53
Tue Jul 19/Wed Jul 20	3571.8	19 26 11	19 35	21 07	3 59	5 31	16 33	23 25	18 24	4 22	98	18 49.0	-28 50
Wed Jul 20/Thu Jul 21	3572.8	19 30 08	19 35	21 07	3 59	5 31	16 36	23 30	19 24	5 37	100	19 57.5	-26 38
Thu Jul 21/Fri Jul 22	3573.8	19 34 04	19 34	21 06	4 00	5 32	16 39	23 35	20 15	.....	99	21 02.8	-22 30
Fri Jul 22/Sat Jul 23	3574.8	19 38 01	19 34	21 05	4 01	5 32	16 42	23 40	20 58	.....	95	22 03.5	-16 56
Sat Jul 23/Sun Jul 24	3575.8	19 41 57	19 33	21 04	4 02	5 33	16 45	23 45	21 34	.....	88	22 59.5	-10 29
Sun Jul 24/Mon Jul 25	3576.8	19 45 54	19 32	21 03	4 03	5 34	16 49	23 50	22 06	.....	79	23 51.9	- 3 40
Mon Jul 25/Tue Jul 26	3577.8	19 49 50	19 32	21 02	4 04	5 34	16 52	23 55	22 36	.....	69	0 41.9	3 04
Tue Jul 26/Wed Jul 27	3578.8	19 53 47	19 31	21 01	4 05	5 35	16 55	23 59	23 05	.....	59	1 31.0	9 24
Wed Jul 27/Thu Jul 28	3579.8	19 57 43	19 30	21 00	4 06	5 36	16 58	0 04	23 36	.....	48	2 20.2	15 05
Thu Jul 28/Fri Jul 29	3580.8	20 01 40	19 30	20 59	4 07	5 36	17 00	0 09	0 09	.....	38	3 10.3	19 54
Fri Jul 29/Sat Jul 30	3581.8	20 05 37	19 29	20 58	4 08	5 37	17 03	0 14	0 46	.....	28	4 01.9	23 39
Sat Jul 30/Sun Jul 31	3582.8	20 09 33	19 28	20 57	4 09	5 38	17 06	0 19	1 28	.....	20	4 54.9	26 12
Sun Jul 31/Mon Aug 01	3583.8	20 13 30	19 27	20 56	4 10	5 38	17 09	0 24	2 16	.....	13	5 48.7	27 27

***** 2005 AUGUST *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
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 500 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)	JDmid	LMSTmidn	Sun:				LST twilight:		Moon:				
(2005 at start)	(-2450000)		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Mon Aug 01/Tue Aug 02	3584.8	20 17 26	19 27	20 55	4 11	5 39	17 12	0 29	3 09	17 32	7	6 42.4	27 22
Tue Aug 02/Wed Aug 03	3585.8	20 21 23	19 26	20 54	4 12	5 40	17 15	0 34	4 05	18 20	3	7 35.0	26 00
Wed Aug 03/Thu Aug 04	3586.8	20 25 19	19 25	20 53	4 13	5 40	17 18	0 39	5 03	19 01	1	8 25.5	23 28
Thu Aug 04/Fri Aug 05	3587.8	20 29 16	19 24	20 52	4 14	5 41	17 20	0 43	6 01	19 37	0	9 13.7	19 55
Fri Aug 05/Sat Aug 06	3588.8	20 33 12	19 23	20 51	4 14	5 42	17 23	0 48	.....	20 08	1	9 59.5	15 35
Sat Aug 06/Sun Aug 07	3589.8	20 37 09	19 22	20 49	4 15	5 42	17 26	0 53	.....	20 36	4	10 43.4	10 38
Sun Aug 07/Mon Aug 08	3590.8	20 41 06	19 21	20 48	4 16	5 43	17 29	0 58	.....	21 01	9	11 26.1	5 14
Mon Aug 08/Tue Aug 09	3591.8	20 45 02	19 21	20 47	4 17	5 44	17 31	1 03	.....	21 26	15	12 08.4	- 0 25
Tue Aug 09/Wed Aug 10	3592.8	20 48 59	19 20	20 46	4 18	5 44	17 34	1 08	.....	21 51	22	12 51.3	- 6 11
Wed Aug 10/Thu Aug 11	3593.8	20 52 55	19 19	20 45	4 19	5 45	17 37	1 13	.....	22 18	31	13 35.9	-11 51
Thu Aug 11/Fri Aug 12	3594.8	20 56 52	19 18	20 43	4 20	5 46	17 40	1 18	.....	22 48	41	14 23.4	-17 13
Fri Aug 12/Sat Aug 13	3595.8	21 00 48	19 17	20 42	4 21	5 46	17 42	1 23	.....	23 23	51	15 15.0	-22 01
Sat Aug 13/Sun Aug 14	3596.8	21 04 45	19 16	20 41	4 22	5 47	17 45	1 27	.....	0 05	62	16 11.5	-25 52
Sun Aug 14/Mon Aug 15	3597.8	21 08 41	19 15	20 39	4 23	5 48	17 48	1 32	.....	0 56	73	17 13.1	-28 23
Mon Aug 15/Tue Aug 16	3598.8	21 12 38	19 14	20 38	4 24	5 48	17 50	1 37	.....	1 58	82	18 18.8	-29 09
Tue Aug 16/Wed Aug 17	3599.8	21 16 35	19 12	20 37	4 25	5 49	17 53	1 42	.....	3 09	91	19 26.1	-27 53
Wed Aug 17/Thu Aug 18	3600.8	21 20 31	19 11	20 35	4 26	5 50	17 55	1 47	18 01	4 25	96	20 32.2	-24 36
Thu Aug 18/Fri Aug 19	3601.8	21 24 28	19 10	20 34	4 27	5 50	17 58	1 52	18 48	5 41	99	21 35.0	-19 36
Fri Aug 19/Sat Aug 20	3602.8	21 28 24	19 09	20 33	4 27	5 51	18 01	1 57	19 27	.....	99	22 33.8	-13 22
Sat Aug 20/Sun Aug 21	3603.8	21 32 21	19 08	20 31	4 28	5 52	18 03	2 01	20 02	.....	96	23 28.9	- 6 28
Sun Aug 21/Mon Aug 22	3604.8	21 36 17	19 07	20 30	4 29	5 52	18 06	2 06	20 33	.....	91	0 21.4	0 37
Mon Aug 22/Tue Aug 23	3605.8	21 40 14	19 06	20 29	4 30	5 53	18 08	2 11	21 03	.....	83	1 12.5	7 25
Tue Aug 23/Wed Aug 24	3606.8	21 44 10	19 05	20 27	4 31	5 54	18 11	2 16	21 34	.....	73	2 03.3	13 35
Wed Aug 24/Thu Aug 25	3607.8	21 48 07	19 03	20 26	4 32	5 54	18 13	2 21	22 07	.....	63	2 54.9	18 52
Thu Aug 25/Fri Aug 26	3608.8	21 52 04	19 02	20 24	4 33	5 55	18 16	2 25	22 44	.....	53	3 47.5	23 03
Fri Aug 26/Sat Aug 27	3609.8	21 56 00	19 01	20 23	4 33	5 55	18 18	2 30	23 25	.....	43	4 41.4	25 59
Sat Aug 27/Sun Aug 28	3610.8	21 59 57	19 00	20 21	4 34	5 56	18 21	2 35	0 12	.....	33	5 35.9	27 34
Sun Aug 28/Mon Aug 29	3611.8	22 03 53	18 59	20 20	4 35	5 57	18 23	2 40	1 03	.....	25	6 30.2	27 46
Mon Aug 29/Tue Aug 30	3612.8	22 07 50	18 57	20 19	4 36	5 57	18 26	2 45	1 59	.....	17	7 23.4	26 39
Tue Aug 30/Wed Aug 31	3613.8	22 11 46	18 56	20 17	4 37	5 58	18 28	2 49	2 57	17 01	10	8 14.5	24 20
Wed Aug 31/Thu Sep 01	3614.8	22 15 43	18 55	20 16	4 38	5 59	18 31	2 54	3 55	17 39	5	9 03.3	20 58

***** 2005 SEPTEMBER *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
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 500 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)	JDmid	LMSTmidn	---------- Sun: ---------				LST twilight:		------------- Moon: --------------				
(2005 at start)	(-2450000)		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Thu Sep 01/Fri Sep 02	3615.8	22 19 39	18 54	20 14	4 38	5 59	18 33	2 59	4 52	18 11	2	9 49.6	16 45
Fri Sep 02/Sat Sep 03	3616.8	22 23 36	18 52	20 13	4 39	6 00	18 36	3 04	5 49	18 39	0	10 33.9	11 52
Sat Sep 03/Sun Sep 04	3617.8	22 27 33	18 51	20 11	4 40	6 00	18 38	3 08	6 44	19 06	0	11 16.9	6 31
Sun Sep 04/Mon Sep 05	3618.8	22 31 29	18 50	20 10	4 41	6 01	18 41	3 13	.....	19 31	2	11 59.3	0 52
Mon Sep 05/Tue Sep 06	3619.8	22 35 26	18 48	20 09	4 42	6 02	18 43	3 18	.....	19 56	6	12 42.0	- 4 55
Tue Sep 06/Wed Sep 07	3620.8	22 39 22	18 47	20 07	4 42	6 02	18 46	3 22	.....	20 22	11	13 26.0	-10 37
Wed Sep 07/Thu Sep 08	3621.8	22 43 19	18 46	20 06	4 43	6 03	18 48	3 27	.....	20 50	18	14 12.3	-16 03
Thu Sep 08/Fri Sep 09	3622.8	22 47 15	18 45	20 04	4 44	6 03	18 51	3 32	.....	21 23	27	15 02.0	-20 55
Fri Sep 09/Sat Sep 10	3623.8	22 51 12	18 43	20 03	4 45	6 04	18 53	3 37	.....	22 02	37	15 55.9	-24 58
Sat Sep 10/Sun Sep 11	3624.8	22 55 08	18 42	20 01	4 45	6 05	18 56	3 41	.....	22 48	47	16 54.2	-27 48
Sun Sep 11/Mon Sep 12	3625.8	22 59 05	18 41	20 00	4 46	6 05	18 58	3 46	.....	23 44	58	17 56.5	-29 05
Mon Sep 12/Tue Sep 13	3626.8	23 03 02	18 39	19 58	4 47	6 06	19 01	3 51	.....	0 50	69	19 01.0	-28 33
Tue Sep 13/Wed Sep 14	3627.8	23 06 58	18 38	19 57	4 48	6 07	19 03	3 55	.....	2 01	80	20 05.4	-26 06
Wed Sep 14/Thu Sep 15	3628.8	23 10 55	18 37	19 55	4 48	6 07	19 06	4 00	.....	3 15	88	21 07.8	-21 53
Thu Sep 15/Fri Sep 16	3629.8	23 14 51	18 35	19 54	4 49	6 08	19 08	4 05	17 20	4 29	95	22 06.9	-16 14
Fri Sep 16/Sat Sep 17	3630.8	23 18 48	18 34	19 53	4 50	6 08	19 11	4 09	17 56	5 40	99	23 03.0	- 9 36
Sat Sep 17/Sun Sep 18	3631.8	23 22 44	18 33	19 51	4 50	6 09	19 13	4 14	18 29	6 50	100	23 56.6	- 2 30
Sun Sep 18/Mon Sep 19	3632.8	23 26 41	18 31	19 50	4 51	6 10	19 16	4 19	19 00	.....	98	0 48.9	4 36
Mon Sep 19/Tue Sep 20	3633.8	23 30 37	18 30	19 48	4 52	6 10	19 18	4 23	19 31	.....	93	1 41.0	11 16
Tue Sep 20/Wed Sep 21	3634.8	23 34 34	18 29	19 47	4 53	6 11	19 21	4 28	20 03	.....	86	2 33.8	17 08
Wed Sep 21/Thu Sep 22	3635.8	23 38 31	18 27	19 46	4 53	6 11	19 23	4 33	20 39	.....	78	3 27.7	21 56
Thu Sep 22/Fri Sep 23	3636.8	23 42 27	18 26	19 44	4 54	6 12	19 26	4 37	21 19	.....	69	4 23.0	25 26
Fri Sep 23/Sat Sep 24	3637.8	23 46 24	18 25	19 43	4 55	6 13	19 28	4 42	22 05	.....	59	5 18.9	27 30
Sat Sep 24/Sun Sep 25	3638.8	23 50 20	18 23	19 41	4 55	6 13	19 31	4 46	22 55	.....	49	6 14.7	28 08
Sun Sep 25/Mon Sep 26	3639.8	23 54 17	18 22	19 40	4 56	6 14	19 34	4 51	23 50	.....	40	7 09.1	27 21
Mon Sep 26/Tue Sep 27	3640.8	23 58 13	18 21	19 39	4 57	6 15	19 36	4 56	0 48	.....	31	8 01.4	25 18
Tue Sep 27/Wed Sep 28	3641.8	0 02 10	18 20	19 37	4 57	6 15	19 39	5 00	1 46	.....	22	8 51.1	22 10
Wed Sep 28/Thu Sep 29	3642.8	0 06 06	18 18	19 36	4 58	6 16	19 41	5 05	2 44	.....	15	9 38.1	18 07
Thu Sep 29/Fri Sep 30	3643.8	0 10 03	18 17	19 35	4 59	6 16	19 44	5 10	3 41	16 42	9	10 23.0	13 22
Fri Sep 30/Sat Oct 01	3644.8	0 14 00	18 16	19 33	4 59	6 17	19 47	5 14	4 37	17 09	4	11 06.4	8 05

***** 2005 OCTOBER *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
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 500 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)	JDmid	LMSTmidn	---------- Sun: ---------				LST twilight:		------------- Moon: --------------				
(2005 at start)	(-2450000)		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Sat Oct 01/Sun Oct 02	3645.8	0 17 56	18 14	19 32	5 00	6 18	19 49	5 19	5 33	17 35	1	11 49.1	2 26
Sun Oct 02/Mon Oct 03	3646.8	0 21 53	18 13	19 31	5 01	6 18	19 52	5 23	6 29	18 00	0	12 31.9	- 3 23
Mon Oct 03/Tue Oct 04	3647.8	0 25 49	18 12	19 29	5 01	6 19	19 54	5 28	7 28	18 25	1	13 15.9	- 9 11
Tue Oct 04/Wed Oct 05	3648.8	0 29 46	18 11	19 28	5 02	6 20	19 57	5 33	.....	18 53	3	14 02.0	-14 45
Wed Oct 05/Thu Oct 06	3649.8	0 33 42	18 09	19 27	5 03	6 20	20 00	5 37	.....	19 25	8	14 51.1	-19 48
Thu Oct 06/Fri Oct 07	3650.8	0 37 39	18 08	19 26	5 03	6 21	20 03	5 42	.....	20 02	15	15 44.1	-24 03
Fri Oct 07/Sat Oct 08	3651.8	0 41 35	18 07	19 24	5 04	6 22	20 05	5 46	.....	20 46	23	16 41.1	-27 09
Sat Oct 08/Sun Oct 09	3652.8	0 45 32	18 06	19 23	5 05	6 22	20 08	5 51	.....	21 38	33	17 41.5	-28 48
Sun Oct 09/Mon Oct 10	3653.8	0 49 29	18 04	19 22	5 05	6 23	20 11	5 56	.....	22 40	44	18 44.1	-28 43
Mon Oct 10/Tue Oct 11	3654.8	0 53 25	18 03	19 21	5 06	6 24	20 13	6 00	.....	23 48	55	19 46.7	-26 51
Tue Oct 11/Wed Oct 12	3655.8	0 57 22	18 02	19 20	5 07	6 25	20 16	6 05	.....	0 59	66	20 47.5	-23 17
Wed Oct 12/Thu Oct 13	3656.8	1 01 18	18 01	19 18	5 07	6 25	20 19	6 10	.....	2 10	77	21 45.5	-18 16
Thu Oct 13/Fri Oct 14	3657.8	1 05 15	18 00	19 17	5 08	6 26	20 22	6 14	.....	3 20	86	22 40.6	-12 10
Fri Oct 14/Sat Oct 15	3658.8	1 09 11	17 58	19 16	5 09	6 27	20 25	6 19	16 26	4 28	93	23 33.6	- 5 24
Sat Oct 15/Sun Oct 16	3659.8	1 13 08	17 57	19 15	5 09	6 27	20 27	6 23	16 56	5 36	98	0 25.4	1 38
Sun Oct 16/Mon Oct 17	3660.8	1 17 04	17 56	19 14	5 10	6 28	20 30	6 28	17 27	6 43	100	1 17.1	8 30
Mon Oct 17/Tue Oct 18	3661.8	1 21 01	17 55	19 13	5 11	6 29	20 33	6 33	17 58	.....	99	2 09.7	14 48
Tue Oct 18/Wed Oct 19	3662.8	1 24 58	17 54	19 12	5 11	6 30	20 36	6 37	18 33	.....	96	3 03.9	20 10
Wed Oct 19/Thu Oct 20	3663.8	1 28 54	17 53	19 11	5 12	6 30	20 39	6 42	19 11	.....	90	3 59.9	24 19
Thu Oct 20/Fri Oct 21	3664.8	1 32 51	17 52	19 10	5 13	6 31	20 42	6 47	19 55	.....	83	4 57.1	27 03
Fri Oct 21/Sat Oct 22	3665.8	1 36 47	17 51	19 09	5 14	6 32	20 45	6 51	20 45	.....	75	5 54.5	28 14
Sat Oct 22/Sun Oct 23	3666.8	1 40 44	17 50	19 08	5 14	6 33	20 48	6 56	21 39	.....	66	6 50.9	27 55
Sun Oct 23/Mon Oct 24	3667.8	1 44 40	17 48	19 07	5 15	6 33	20 51	7 00	22 37	.....	57	7 44.9	26 14
Mon Oct 24/Tue Oct 25	3668.8	1 48 37	17 47	19 06	5 16	6 34	20 54	7 05	23 36	.....	47	8 36.0	23 23
Tue Oct 25/Wed Oct 26	3669.8	1 52 33	17 46	19 05	5 16	6 35	20 57	7 10	0 34	.....	38	9 24.2	19 35
Wed Oct 26/Thu Oct 27	3670.8	1 56 30	17 45	19 04	5 17	6 36	21 00	7 14	1 31	.....	29	10 09.8	15 00
Thu Oct 27/Fri Oct 28	3671.8	2 00 27	17 44	19 03	5 18	6 37	21 03	7 19	2 27	.....	21	10 53.6	9 52
Fri Oct 28/Sat Oct 29	3672.8	2 04 23	17 44	19 02	5 18	6 37	21 06	7 24	3 23	.....	13	11 36.4	4 18
Sat Oct 29/Sun Oct 30	3673.8	2 08 20	17 43	19 01	5 19	6 38	21 09	7 28	4 19	.....	8	12 19.2	- 1 29
Sun Oct 30/Mon Oct 31	3674.8	2 12 16	17 42	19 01	5 20	6 39	21 12	7 33	5 17	16 27	3	13 03.1	- 7 21
Mon Oct 31/Tue Nov 01	3675.8	2 16 13	17 41	19 00	5 21	6 40	21 15	7 38	6 17	16 54	1	13 48.9	-13 03

***** 2005 NOVEMBER *****

Calendar for Kitt Peak, west longitude (h.m.s) =   7 26 28, latitude (d.m) = 31 57.2
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 500 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)	JDmid	LMSTmidn	Sun:				LST twilight:		Moon:				
(2005 at start)	(-2450000)		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Tue Nov 01/Wed Nov 02	3676.8	2 20 09	17 40	18 59	5 21	6 41	21 18	7 42	7 21	17 25	0	14 37.8	-18 20
Wed Nov 02/Thu Nov 03	3677.8	2 24 06	17 39	18 58	5 22	6 41	21 22	7 47	.....	18 00	2	15 30.6	-22 53
Thu Nov 03/Fri Nov 04	3678.8	2 28 02	17 38	18 58	5 23	6 42	21 25	7 52	.....	18 43	6	16 27.4	-26 20
Fri Nov 04/Sat Nov 05	3679.8	2 31 59	17 37	18 57	5 23	6 43	21 28	7 56	.....	19 34	12	17 27.8	-28 20
Sat Nov 05/Sun Nov 06	3680.8	2 35 56	17 37	18 56	5 24	6 44	21 31	8 01	.....	20 33	20	18 30.3	-28 39
Sun Nov 06/Mon Nov 07	3681.8	2 39 52	17 36	18 56	5 25	6 45	21 35	8 06	.....	21 40	29	19 32.8	-27 10
Mon Nov 07/Tue Nov 08	3682.8	2 43 49	17 35	18 55	5 26	6 46	21 38	8 10	.....	22 50	40	20 33.3	-24 00
Tue Nov 08/Wed Nov 09	3683.8	2 47 45	17 35	18 54	5 26	6 47	21 41	8 15	.....	0 00	52	21 30.7	-19 24
Wed Nov 09/Thu Nov 10	3684.8	2 51 42	17 34	18 54	5 27	6 47	21 45	8 20	.....	1 09	63	22 25.0	-13 44
Thu Nov 10/Fri Nov 11	3685.8	2 55 38	17 33	18 53	5 28	6 48	21 48	8 24	.....	2 16	74	23 16.8	- 7 21
Fri Nov 11/Sat Nov 12	3686.8	2 59 35	17 33	18 53	5 29	6 49	21 52	8 29	.....	3 21	83	0 07.1	- 0 36
Sat Nov 12/Sun Nov 13	3687.8	3 03 31	17 32	18 52	5 29	6 50	21 55	8 34	.....	4 26	91	0 57.2	6 09
Sun Nov 13/Mon Nov 14	3688.8	3 07 28	17 31	18 52	5 30	6 51	21 59	8 39	15 56	5 32	96	1 48.3	12 32
Mon Nov 14/Tue Nov 15	3689.8	3 11 25	17 31	18 51	5 31	6 52	22 02	8 43	16 29	6 39	99	2 41.1	18 13
Tue Nov 15/Wed Nov 16	3690.8	3 15 21	17 30	18 51	5 32	6 53	22 06	8 48	17 05	7 46	100	3 36.1	22 52
Wed Nov 16/Thu Nov 17	3691.8	3 19 18	17 30	18 51	5 32	6 53	22 09	8 53	17 46	.....	98	4 33.3	26 11
Thu Nov 17/Fri Nov 18	3692.8	3 23 14	17 29	18 50	5 33	6 54	22 13	8 57	18 34	.....	94	5 31.5	27 59
Fri Nov 18/Sat Nov 19	3693.8	3 27 11	17 29	18 50	5 34	6 55	22 16	9 02	19 27	.....	88	6 29.4	28 14
Sat Nov 19/Sun Nov 20	3694.8	3 31 07	17 28	18 50	5 35	6 56	22 20	9 07	20 24	.....	81	7 25.3	27 00
Sun Nov 20/Mon Nov 21	3695.8	3 35 04	17 28	18 49	5 35	6 57	22 24	9 11	21 23	.....	73	8 18.3	24 30
Mon Nov 21/Tue Nov 22	3696.8	3 39 00	17 28	18 49	5 36	6 58	22 27	9 16	22 22	.....	64	9 08.0	20 57
Tue Nov 22/Wed Nov 23	3697.8	3 42 57	17 27	18 49	5 37	6 59	22 31	9 21	23 20	.....	55	9 54.7	16 35
Wed Nov 23/Thu Nov 24	3698.8	3 46 54	17 27	18 49	5 38	7 00	22 35	9 26	0 16	.....	46	10 39.1	11 37
Thu Nov 24/Fri Nov 25	3699.8	3 50 50	17 27	18 49	5 38	7 00	22 39	9 30	1 11	.....	36	11 22.0	6 12
Fri Nov 25/Sat Nov 26	3700.8	3 54 47	17 26	18 49	5 39	7 01	22 42	9 35	2 06	.....	28	12 04.5	0 31
Sat Nov 26/Sun Nov 27	3701.8	3 58 43	17 26	18 48	5 40	7 02	22 46	9 40	3 03	.....	19	12 47.6	- 5 18
Sun Nov 27/Mon Nov 28	3702.8	4 02 40	17 26	18 48	5 41	7 03	22 50	9 44	4 02	.....	12	13 32.6	-11 02
Mon Nov 28/Tue Nov 29	3703.8	4 06 36	17 26	18 48	5 41	7 04	22 54	9 49	5 04	.....	6	14 20.5	-16 29
Tue Nov 29/Wed Nov 30	3704.8	4 10 33	17 26	18 48	5 42	7 05	22 58	9 54	6 10	15 56	2	15 12.3	-21 19
Wed Nov 30/Thu Dec 01	3705.8	4 14 29	17 26	18 48	5 43	7 06	23 02	9 58	7 19	16 36	0	16 08.6	-25 12

***** 2005 DECEMBER *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2
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 500 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)	JDmid	LMSTmidn	---------- Sun: ---------				LST twilight:		------------- Moon: --------------				
(2005 at start)	(-2450000)		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec
Thu Dec 01/Fri Dec 02	3706.8	4 18 26	17 26	18 48	5 44	7 06	23 06	10 03	.....	17 24	1	17 09.1	-27 42
Fri Dec 02/Sat Dec 03	3707.8	4 22 23	17 26	18 48	5 44	7 07	23 10	10 08	.....	18 22	4	18 12.6	-28 30
Sat Dec 03/Sun Dec 04	3708.8	4 26 19	17 26	18 48	5 45	7 08	23 14	10 12	.....	19 28	9	19 16.6	-27 27
Sun Dec 04/Mon Dec 05	3709.8	4 30 16	17 26	18 49	5 46	7 09	23 18	10 17	.....	20 40	17	20 18.8	-24 37
Mon Dec 05/Tue Dec 06	3710.8	4 34 12	17 26	18 49	5 46	7 09	23 22	10 22	.....	21 51	26	21 17.6	-20 16
Tue Dec 06/Wed Dec 07	3711.8	4 38 09	17 26	18 49	5 47	7 10	23 26	10 26	.....	23 01	37	22 12.6	-14 47
Wed Dec 07/Thu Dec 08	3712.8	4 42 05	17 26	18 49	5 48	7 11	23 30	10 31	.....	0 09	48	23 04.5	- 8 34
Thu Dec 08/Fri Dec 09	3713.8	4 46 02	17 26	18 49	5 48	7 12	23 34	10 35	.....	1 14	59	23 54.3	- 2 00
Fri Dec 09/Sat Dec 10	3714.8	4 49 58	17 26	18 49	5 49	7 12	23 39	10 40	.....	2 17	70	0 43.3	4 36
Sat Dec 10/Sun Dec 11	3715.8	4 53 55	17 26	18 50	5 50	7 13	23 43	10 45	.....	3 21	79	1 32.7	10 56
Sun Dec 11/Mon Dec 12	3716.8	4 57 52	17 27	18 50	5 50	7 14	23 47	10 49	.....	4 26	88	2 23.6	16 40
Mon Dec 12/Tue Dec 13	3717.8	5 01 48	17 27	18 50	5 51	7 15	23 51	10 54	.....	5 32	94	3 16.8	21 32
Tue Dec 13/Wed Dec 14	3718.8	5 05 45	17 27	18 51	5 52	7 15	23 55	10 58	15 41	6 36	98	4 12.4	25 14
Wed Dec 14/Thu Dec 15	3719.8	5 09 41	17 27	18 51	5 52	7 16	24 00	11 03	16 26	7 38	100	5 09.9	27 32
Thu Dec 15/Fri Dec 16	3720.8	5 13 38	17 28	18 51	5 53	7 16	0 04	11 07	17 16	.....	99	6 07.9	28 19
Fri Dec 16/Sat Dec 17	3721.8	5 17 34	17 28	18 52	5 53	7 17	0 08	11 12	18 12	.....	97	7 04.9	27 34
Sat Dec 17/Sun Dec 18	3722.8	5 21 31	17 29	18 52	5 54	7 18	0 13	11 16	19 11	.....	93	7 59.5	25 26
Sun Dec 18/Mon Dec 19	3723.8	5 25 27	17 29	18 53	5 55	7 18	0 17	11 21	20 11	.....	87	8 50.8	22 10
Mon Dec 19/Tue Dec 20	3724.8	5 29 24	17 29	18 53	5 55	7 19	0 22	11 25	21 09	.....	80	9 38.8	18 00
Tue Dec 20/Wed Dec 21	3725.8	5 33 21	17 30	18 53	5 56	7 19	0 26	11 30	22 06	.....	72	10 24.1	13 10
Wed Dec 21/Thu Dec 22	3726.8	5 37 17	17 30	18 54	5 56	7 20	0 30	11 34	23 01	.....	64	11 07.3	7 53
Thu Dec 22/Fri Dec 23	3727.8	5 41 14	17 31	18 55	5 57	7 20	0 35	11 39	23 55	.....	54	11 49.6	2 18
Fri Dec 23/Sat Dec 24	3728.8	5 45 10	17 31	18 55	5 57	7 21	0 39	11 43	0 50	.....	45	12 32.0	- 3 25
Sat Dec 24/Sun Dec 25	3729.8	5 49 07	17 32	18 56	5 57	7 21	0 44	11 48	1 47	.....	35	13 15.6	- 9 07
Sun Dec 25/Mon Dec 26	3730.8	5 53 03	17 33	18 56	5 58	7 21	0 48	11 52	2 46	.....	26	14 01.7	-14 36
Mon Dec 26/Tue Dec 27	3731.8	5 57 00	17 33	18 57	5 58	7 22	0 53	11 56	3 49	.....	17	14 51.4	-19 37
Tue Dec 27/Wed Dec 28	3732.8	6 00 56	17 34	18 57	5 59	7 22	0 57	12 01	4 56	.....	10	15 45.6	-23 51
Wed Dec 28/Thu Dec 29	3733.8	6 04 53	17 34	18 58	5 59	7 22	1 02	12 05	6 06	.....	5	16 44.6	-26 54
Thu Dec 29/Fri Dec 30	3734.8	6 08 50	17 35	18 59	5 59	7 23	1 07	12 09	7 13	16 04	1	17 47.8	-28 22
Fri Dec 30/Sat Dec 31	3735.8	6 12 46	17 36	18 59	6 00	7 23	1 11	12 13	8 14	17 08	0	18 53.0	-27 57
Sat Dec 31/Sun Jan 01	3736.8	6 16 43	17 36	19 00	6 00	7 23	1 16	12 18	.....	18 20	2	19 57.5	-25 37