***** 2007 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 2007, 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 20	7 01	Dec 27	7 49	Jan 03	6 58	Jan 11	5 46
Jan 18	21 01	Jan 25	16 03	Feb 01	22 46	Feb 10	2 52
Feb 17	9 15	Feb 24	0 57	Mar 03	16 18	Mar 11	20 56
Mar 18	19 44	Mar 25	11 18	Apr 02	10 16	Apr 10	11 05
Apr 17	4 38	Apr 23	23 37	May 02	3 11	May 09	21 28
May 16	12 29	May 23	14 03	May 31	18 05	Jun 08	4 44
Jun 14	20 15	Jun 22	6 15	Jun 30	6 50	Jul 07	9 55
Jul 14	5 05	Jul 21	23 29	Jul 29	17 50	Aug 05	14 22
Aug 12	16 04	Aug 20	16 55	Aug 28	3 37	Sep 03	19 35
Sep 11	5 45	Sep 19	9 49	Sep 26	12 47	Oct 03	3 08
Oct 10	22 02	Oct 19	1 35	Oct 25	21 53	Nov 01	14 20
Nov 09	16 04	Nov 17	15 34	Nov 24	7 31	Dec 01	5 45
Dec 09	10 41	Dec 17	3 18	Dec 23	18 17	Dec 31	0 51
Jan 08	4 38	Jan 15	12 46	Jan 22	6 35	Jan 29	22 03

***** 2007 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) (2007 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Mon Jan 01/Tue Jan 02	4102.8	6 19 46	17 38	19 00	6 00	7 22	1 19	12 21	.....	6 59	98	5 38.1	28 17
Tue Jan 02/Wed Jan 03	4103.8	6 23 42	17 39	19 01	6 00	7 22	1 24	12 25	16 36	7 55	100	6 40.5	27 47
Wed Jan 03/Thu Jan 04	4104.8	6 27 39	17 40	19 02	6 01	7 22	1 28	12 29	17 40	.....	99	7 40.2	25 37
Thu Jan 04/Fri Jan 05	4105.8	6 31 36	17 40	19 02	6 01	7 23	1 33	12 33	18 45	.....	97	8 35.8	22 06
Fri Jan 05/Sat Jan 06	4106.8	6 35 32	17 41	19 03	6 01	7 23	1 38	12 37	19 48	.....	92	9 27.1	17 35
Sat Jan 06/Sun Jan 07	4107.8	6 39 29	17 42	19 04	6 01	7 23	1 42	12 42	20 48	.....	86	10 14.5	12 25
Sun Jan 07/Mon Jan 08	4108.8	6 43 25	17 43	19 04	6 01	7 23	1 47	12 46	21 45	.....	78	10 59.0	6 53
Mon Jan 08/Tue Jan 09	4109.8	6 47 22	17 44	19 05	6 01	7 23	1 52	12 50	22 40	.....	70	11 41.6	1 12
Tue Jan 09/Wed Jan 10	4110.8	6 51 18	17 44	19 06	6 01	7 23	1 56	12 54	23 34	.....	61	12 23.5	- 4 28
Wed Jan 10/Thu Jan 11	4111.8	6 55 15	17 45	19 07	6 01	7 23	2 01	12 58	0 28	.....	51	13 05.8	- 9 56
Thu Jan 11/Fri Jan 12	4112.8	6 59 11	17 46	19 07	6 01	7 23	2 06	13 02	1 24	.....	42	13 49.5	-15 05
Fri Jan 12/Sat Jan 13	4113.8	7 03 08	17 47	19 08	6 01	7 23	2 11	13 06	2 21	.....	33	14 35.7	-19 43
Sat Jan 13/Sun Jan 14	4114.8	7 07 05	17 48	19 09	6 01	7 22	2 15	13 09	3 21	.....	24	15 25.1	-23 38
Sun Jan 14/Mon Jan 15	4115.8	7 11 01	17 49	19 10	6 01	7 22	2 20	13 13	4 23	.....	16	16 18.2	-26 34
Mon Jan 15/Tue Jan 16	4116.8	7 14 58	17 50	19 11	6 01	7 22	2 25	13 17	5 24	.....	10	17 14.9	-28 14
Tue Jan 16/Wed Jan 17	4117.8	7 18 54	17 51	19 11	6 01	7 22	2 29	13 21	6 22	.....	4	18 14.1	-28 24
Wed Jan 17/Thu Jan 18	4118.8	7 22 51	17 51	19 12	6 01	7 22	2 34	13 25	7 15	16 22	1	19 14.2	-26 56
Thu Jan 18/Fri Jan 19	4119.8	7 26 47	17 52	19 13	6 01	7 21	2 39	13 29	8 01	17 30	0	20 13.3	-23 50
Fri Jan 19/Sat Jan 20	4120.8	7 30 44	17 53	19 14	6 01	7 21	2 44	13 32	.....	18 40	2	21 10.2	-19 20
Sat Jan 20/Sun Jan 21	4121.8	7 34 40	17 54	19 14	6 00	7 21	2 48	13 36	.....	19 50	6	22 04.4	-13 42
Sun Jan 21/Mon Jan 22	4122.8	7 38 37	17 55	19 15	6 00	7 20	2 53	13 40	.....	20 59	12	22 56.4	- 7 19
Mon Jan 22/Tue Jan 23	4123.8	7 42 34	17 56	19 16	6 00	7 20	2 58	13 44	.....	22 06	21	23 47.0	- 0 33
Tue Jan 23/Wed Jan 24	4124.8	7 46 30	17 57	19 17	6 00	7 20	3 03	13 47	.....	23 13	31	0 37.4	6 13
Wed Jan 24/Thu Jan 25	4125.8	7 50 27	17 58	19 18	5 59	7 19	3 07	13 51	.....	0 20	42	1 28.8	12 39
Thu Jan 25/Fri Jan 26	4126.8	7 54 23	17 59	19 18	5 59	7 19	3 12	13 54	.....	1 29	53	2 22.3	18 23
Fri Jan 26/Sat Jan 27	4127.8	7 58 20	18 00	19 19	5 59	7 18	3 17	13 58	.....	2 38	64	3 18.7	23 05
Sat Jan 27/Sun Jan 28	4128.8	8 02 16	18 01	19 20	5 58	7 18	3 22	14 01	.....	3 46	74	4 17.8	26 25
Sun Jan 28/Mon Jan 29	4129.8	8 06 13	18 01	19 21	5 58	7 17	3 26	14 05	.....	4 50	83	5 18.9	28 09
Mon Jan 29/Tue Jan 30	4130.8	8 10 09	18 02	19 22	5 57	7 16	3 31	14 08	.....	5 47	91	6 20.2	28 10
Tue Jan 30/Wed Jan 31	4131.8	8 14 06	18 03	19 22	5 57	7 16	3 36	14 12	.....	6 36	96	7 19.8	26 31
Wed Jan 31/Thu Feb 01	4132.8	8 18 03	18 04	19 23	5 56	7 15	3 40	14 15	16 31	7 17	99	8 16.1	23 26

***** 2007 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) (2007 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Thu Feb 01/Fri Feb 02	4133.8	8 21 59	18 05	19 24	5 56	7 15	3 45	14 19	17 35	7 52	100	9 08.5	19 13
Fri Feb 02/Sat Feb 03	4134.8	8 25 56	18 06	19 25	5 55	7 14	3 50	14 22	18 36	.....	99	9 57.2	14 13
Sat Feb 03/Sun Feb 04	4135.8	8 29 52	18 07	19 26	5 55	7 13	3 55	14 26	19 34	.....	96	10 42.8	8 43
Sun Feb 04/Mon Feb 05	4136.8	8 33 49	18 08	19 26	5 54	7 13	3 59	14 29	20 30	.....	91	11 26.3	3 00
Mon Feb 05/Tue Feb 06	4137.8	8 37 45	18 09	19 27	5 53	7 12	4 04	14 32	21 24	.....	85	12 08.8	- 2 46
Tue Feb 06/Wed Feb 07	4138.8	8 41 42	18 10	19 28	5 53	7 11	4 09	14 35	22 18	.....	77	12 51.1	- 8 22
Wed Feb 07/Thu Feb 08	4139.8	8 45 38	18 10	19 29	5 52	7 10	4 14	14 39	23 13	.....	69	13 34.4	-13 40
Thu Feb 08/Fri Feb 09	4140.8	8 49 35	18 11	19 29	5 51	7 09	4 18	14 42	0 09	.....	60	14 19.5	-18 29
Fri Feb 09/Sat Feb 10	4141.8	8 53 32	18 12	19 30	5 51	7 09	4 23	14 45	1 08	.....	50	15 07.4	-22 39
Sat Feb 10/Sun Feb 11	4142.8	8 57 28	18 13	19 31	5 50	7 08	4 28	14 48	2 08	.....	41	15 58.7	-25 54
Sun Feb 11/Mon Feb 12	4143.8	9 01 25	18 14	19 32	5 49	7 07	4 32	14 52	3 08	.....	31	16 53.4	-28 01
Mon Feb 12/Tue Feb 13	4144.8	9 05 21	18 15	19 33	5 48	7 06	4 37	14 55	4 07	.....	22	17 51.1	-28 45
Tue Feb 13/Wed Feb 14	4145.8	9 09 18	18 16	19 33	5 48	7 05	4 42	14 58	5 02	.....	14	18 50.4	-27 55
Wed Feb 14/Thu Feb 15	4146.8	9 13 14	18 17	19 34	5 47	7 04	4 47	15 01	5 50	.....	7	19 49.8	-25 26
Thu Feb 15/Fri Feb 16	4147.8	9 17 11	18 17	19 35	5 46	7 03	4 51	15 04	6 33	16 16	3	20 47.9	-21 25
Fri Feb 16/Sat Feb 17	4148.8	9 21 07	18 18	19 36	5 45	7 02	4 56	15 07	7 10	17 28	0	21 43.8	-16 05
Sat Feb 17/Sun Feb 18	4149.8	9 25 04	18 19	19 36	5 44	7 01	5 01	15 10	7 44	18 39	1	22 37.5	- 9 48
Sun Feb 18/Mon Feb 19	4150.8	9 29 01	18 20	19 37	5 43	7 00	5 05	15 13	.....	19 49	4	23 29.8	- 2 55
Mon Feb 19/Tue Feb 20	4151.8	9 32 57	18 21	19 38	5 42	6 59	5 10	15 16	.....	20 58	9	0 21.7	4 06
Tue Feb 20/Wed Feb 21	4152.8	9 36 54	18 22	19 39	5 41	6 58	5 15	15 19	.....	22 08	17	1 14.1	10 52
Wed Feb 21/Thu Feb 22	4153.8	9 40 50	18 22	19 39	5 40	6 57	5 19	15 22	.....	23 18	27	2 08.2	16 58
Thu Feb 22/Fri Feb 23	4154.8	9 44 47	18 23	19 40	5 39	6 56	5 24	15 25	.....	0 29	38	3 04.6	22 02
Fri Feb 23/Sat Feb 24	4155.8	9 48 43	18 24	19 41	5 38	6 55	5 29	15 28	.....	1 39	49	4 03.5	25 45
Sat Feb 24/Sun Feb 25	4156.8	9 52 40	18 25	19 42	5 37	6 54	5 34	15 31	.....	2 45	60	5 04.1	27 52
Sun Feb 25/Mon Feb 26	4157.8	9 56 36	18 26	19 42	5 36	6 53	5 38	15 34	.....	3 44	70	6 04.9	28 17
Mon Feb 26/Tue Feb 27	4158.8	10 00 33	18 26	19 43	5 35	6 52	5 43	15 36	.....	4 35	79	7 04.2	27 03
Tue Feb 27/Wed Feb 28	4159.8	10 04 30	18 27	19 44	5 34	6 50	5 48	15 39	.....	5 17	87	8 00.5	24 21
Wed Feb 28/Thu Mar 01	4160.8	10 08 26	18 28	19 45	5 33	6 49	5 52	15 42	.....	5 53	93	8 53.1	20 29

***** 2007 MARCH *****

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 24, latitude (d.m) = 31 57.8
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Thu Mar 01/Fri Mar 02	4161.8	10 12 23	18 29	19 45	5 32	6 48	5 57	15 45	16 27	6 23	97	9 42.2	15 44
Fri Mar 02/Sat Mar 03	4162.8	10 16 19	18 29	19 46	5 31	6 47	6 02	15 48	17 25	6 51	100	10 28.3	10 23
Sat Mar 03/Sun Mar 04	4163.8	10 20 16	18 30	19 47	5 29	6 46	6 06	15 51	18 22	7 16	100	11 12.2	4 43
Sun Mar 04/Mon Mar 05	4164.8	10 24 12	18 31	19 47	5 28	6 45	6 11	15 53	19 17	.....	98	11 54.9	- 1 05
Mon Mar 05/Tue Mar 06	4165.8	10 28 09	18 32	19 48	5 27	6 43	6 16	15 56	20 11	.....	95	12 37.4	- 6 48
Tue Mar 06/Wed Mar 07	4166.8	10 32 05	18 32	19 49	5 26	6 42	6 20	15 59	21 05	.....	90	13 20.5	-12 15
Wed Mar 07/Thu Mar 08	4167.8	10 36 02	18 33	19 50	5 25	6 41	6 25	16 02	22 01	.....	84	14 05.1	-17 16
Thu Mar 08/Fri Mar 09	4168.8	10 39 59	18 34	19 50	5 23	6 40	6 30	16 04	22 58	.....	76	14 52.1	-21 38
Fri Mar 09/Sat Mar 10	4169.8	10 43 55	18 35	19 51	5 22	6 39	6 34	16 07	23 57	.....	67	15 42.1	-25 11
Sat Mar 10/Sun Mar 11	4170.8	10 47 52	18 35	19 52	5 21	6 37	6 39	16 10	0 56	.....	58	16 35.1	-27 40
Sun Mar 11/Mon Mar 12	4171.8	10 51 48	18 36	19 53	5 20	6 36	6 44	16 12	1 54	.....	48	17 31.0	-28 52
Mon Mar 12/Tue Mar 13	4172.8	10 55 45	18 37	19 53	5 18	6 35	6 48	16 15	2 49	.....	38	18 28.7	-28 36
Tue Mar 13/Wed Mar 14	4173.8	10 59 41	18 37	19 54	5 17	6 34	6 53	16 18	3 39	.....	28	19 27.0	-26 46
Wed Mar 14/Thu Mar 15	4174.8	11 03 38	18 38	19 55	5 16	6 32	6 58	16 20	4 24	.....	19	20 24.5	-23 25
Thu Mar 15/Fri Mar 16	4175.8	11 07 34	18 39	19 56	5 14	6 31	7 03	16 23	5 03	.....	11	21 20.5	-18 40
Fri Mar 16/Sat Mar 17	4176.8	11 11 31	18 40	19 56	5 13	6 30	7 07	16 25	5 38	.....	5	22 14.7	-12 47
Sat Mar 17/Sun Mar 18	4177.8	11 15 28	18 40	19 57	5 12	6 29	7 12	16 28	6 11	17 23	1	23 07.7	- 6 06
Sun Mar 18/Mon Mar 19	4178.8	11 19 24	18 41	19 58	5 10	6 27	7 17	16 31	6 43	18 34	0	0 00.3	1 00
Mon Mar 19/Tue Mar 20	4179.8	11 23 21	18 42	19 59	5 09	6 26	7 21	16 33	7 16	19 45	2	0 53.5	8 05
Tue Mar 20/Wed Mar 21	4180.8	11 27 17	18 42	19 59	5 08	6 25	7 26	16 36	.....	20 58	7	1 48.4	14 39
Wed Mar 21/Thu Mar 22	4181.8	11 31 14	18 43	20 00	5 06	6 23	7 31	16 38	.....	22 11	14	2 45.7	20 18
Thu Mar 22/Fri Mar 23	4182.8	11 35 10	18 44	20 01	5 05	6 22	7 35	16 41	.....	23 25	23	3 45.5	24 35
Fri Mar 23/Sat Mar 24	4183.8	11 39 07	18 44	20 02	5 04	6 21	7 40	16 44	.....	0 35	33	4 47.2	27 15
Sat Mar 24/Sun Mar 25	4184.8	11 43 03	18 45	20 02	5 02	6 20	7 45	16 46	.....	1 38	44	5 49.1	28 09
Sun Mar 25/Mon Mar 26	4185.8	11 47 00	18 46	20 03	5 01	6 18	7 50	16 49	.....	2 32	55	6 49.4	27 19
Mon Mar 26/Tue Mar 27	4186.8	11 50 57	18 46	20 04	4 59	6 17	7 54	16 51	.....	3 17	65	7 46.5	24 58
Tue Mar 27/Wed Mar 28	4187.8	11 54 53	18 47	20 05	4 58	6 16	7 59	16 54	.....	3 55	75	8 39.8	21 23
Wed Mar 28/Thu Mar 29	4188.8	11 58 50	18 48	20 06	4 57	6 14	8 04	16 56	.....	4 27	83	9 29.3	16 52
Thu Mar 29/Fri Mar 30	4189.8	12 02 46	18 48	20 06	4 55	6 13	8 09	16 59	.....	4 55	90	10 15.6	11 44
Fri Mar 30/Sat Mar 31	4190.8	12 06 43	18 49	20 07	4 54	6 12	8 13	17 01	.....	5 20	95	10 59.7	6 11
Sat Mar 31/Sun Apr 01	4191.8	12 10 39	18 50	20 08	4 52	6 11	8 18	17 04	17 11	5 44	98	11 42.4	0 26

***** 2007 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.

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Sun Apr 01/Mon Apr 02	4192.8	12 14 36	18 51	20 09	4 51	6 09	8 23	17 06	18 05	6 09	100	12 24.8	- 5 18
Mon Apr 02/Tue Apr 03	4193.8	12 18 32	18 51	20 10	4 50	6 08	8 28	17 09	18 59	6 34	100	13 07.7	-10 50
Tue Apr 03/Wed Apr 04	4194.8	12 22 29	18 52	20 11	4 48	6 07	8 32	17 11	19 54	7 02	98	13 52.0	-16 01
Wed Apr 04/Thu Apr 05	4195.8	12 26 26	18 53	20 11	4 47	6 05	8 37	17 14	20 51	.....	94	14 38.6	-20 36
Thu Apr 05/Fri Apr 06	4196.8	12 30 22	18 53	20 12	4 45	6 04	8 42	17 17	21 49	.....	88	15 27.9	-24 24
Fri Apr 06/Sat Apr 07	4197.8	12 34 19	18 54	20 13	4 44	6 03	8 47	17 19	22 48	.....	81	16 20.1	-27 11
Sat Apr 07/Sun Apr 08	4198.8	12 38 15	18 55	20 14	4 43	6 02	8 52	17 22	23 46	.....	73	17 15.0	-28 45
Sun Apr 08/Mon Apr 09	4199.8	12 42 12	18 55	20 15	4 41	6 01	8 56	17 24	0 41	.....	64	18 11.6	-28 54
Mon Apr 09/Tue Apr 10	4200.8	12 46 08	18 56	20 16	4 40	5 59	9 01	17 27	1 32	.....	54	19 08.8	-27 35
Tue Apr 10/Wed Apr 11	4201.8	12 50 05	18 57	20 16	4 38	5 58	9 06	17 29	2 17	.....	44	20 05.3	-24 47
Wed Apr 11/Thu Apr 12	4202.8	12 54 01	18 57	20 17	4 37	5 57	9 11	17 32	2 57	.....	33	21 00.4	-20 38
Thu Apr 12/Fri Apr 13	4203.8	12 57 58	18 58	20 18	4 36	5 56	9 16	17 34	3 33	.....	23	21 53.8	-15 19
Fri Apr 13/Sat Apr 14	4204.8	13 01 55	18 59	20 19	4 34	5 54	9 20	17 37	4 05	.....	14	22 46.0	- 9 04
Sat Apr 14/Sun Apr 15	4205.8	13 05 51	18 59	20 20	4 33	5 53	9 25	17 39	4 37	.....	7	23 37.7	- 2 14
Sun Apr 15/Mon Apr 16	4206.8	13 09 48	19 00	20 21	4 31	5 52	9 30	17 42	5 09	17 18	2	0 30.2	4 50
Mon Apr 16/Tue Apr 17	4207.8	13 13 44	19 01	20 22	4 30	5 51	9 35	17 44	5 44	18 30	0	1 24.5	11 40
Tue Apr 17/Wed Apr 18	4208.8	13 17 41	19 02	20 23	4 29	5 50	9 40	17 47	6 23	19 44	1	2 21.4	17 49
Wed Apr 18/Thu Apr 19	4209.8	13 21 37	19 02	20 24	4 27	5 49	9 45	17 50	.....	21 00	5	3 21.6	22 47
Thu Apr 19/Fri Apr 20	4210.8	13 25 34	19 03	20 25	4 26	5 48	9 50	17 52	.....	22 15	11	4 24.3	26 10
Fri Apr 20/Sat Apr 21	4211.8	13 29 30	19 04	20 26	4 24	5 46	9 55	17 55	.....	23 24	19	5 28.0	27 43
Sat Apr 21/Sun Apr 22	4212.8	13 33 27	19 04	20 27	4 23	5 45	9 59	17 57	.....	0 24	29	6 30.6	27 25
Sun Apr 22/Mon Apr 23	4213.8	13 37 24	19 05	20 27	4 22	5 44	10 04	18 00	.....	1 14	39	7 29.9	25 28
Mon Apr 23/Tue Apr 24	4214.8	13 41 20	19 06	20 28	4 20	5 43	10 09	18 03	.....	1 55	50	8 25.1	22 10
Tue Apr 24/Wed Apr 25	4215.8	13 45 17	19 06	20 29	4 19	5 42	10 14	18 05	.....	2 29	60	9 15.9	17 52
Wed Apr 25/Thu Apr 26	4216.8	13 49 13	19 07	20 30	4 18	5 41	10 19	18 08	.....	2 58	69	10 03.1	12 52
Thu Apr 26/Fri Apr 27	4217.8	13 53 10	19 08	20 31	4 17	5 40	10 24	18 10	.....	3 24	78	10 47.6	7 27
Fri Apr 27/Sat Apr 28	4218.8	13 57 06	19 09	20 32	4 15	5 39	10 29	18 13	.....	3 49	85	11 30.4	1 48
Sat Apr 28/Sun Apr 29	4219.8	14 01 03	19 09	20 33	4 14	5 38	10 34	18 16	.....	4 13	91	12 12.6	- 3 54
Sun Apr 29/Mon Apr 30	4220.8	14 04 59	19 10	20 34	4 13	5 37	10 39	18 18	.....	4 38	96	12 55.2	- 9 29
Mon Apr 30/Tue May 01	4221.8	14 08 56	19 11	20 35	4 12	5 36	10 44	18 21	17 48	5 05	99	13 39.1	-14 45

***** 2007 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) (2007 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Tue May 01/Wed May 02	4222.8	14 12 53	19 11	20 36	4 10	5 35	10 49	18 24	18 45	5 35	100	14 25.3	-19 30
Wed May 02/Thu May 03	4223.8	14 16 49	19 12	20 37	4 09	5 34	10 54	18 27	19 43	6 10	99	15 14.1	-23 32
Thu May 03/Fri May 04	4224.8	14 20 46	19 13	20 38	4 08	5 33	10 58	18 29	20 42	.....	96	16 06.1	-26 37
Fri May 04/Sat May 05	4225.8	14 24 42	19 14	20 39	4 07	5 32	11 03	18 32	21 40	.....	92	17 00.7	-28 29
Sat May 05/Sun May 06	4226.8	14 28 39	19 14	20 40	4 06	5 31	11 08	18 35	22 36	.....	86	17 57.3	-28 59
Sun May 06/Mon May 07	4227.8	14 32 35	19 15	20 41	4 04	5 31	11 13	18 38	23 28	.....	78	18 54.4	-28 02
Mon May 07/Tue May 08	4228.8	14 36 32	19 16	20 42	4 03	5 30	11 18	18 40	0 14	.....	69	19 50.7	-25 36
Tue May 08/Wed May 09	4229.8	14 40 28	19 17	20 43	4 02	5 29	11 23	18 43	0 55	.....	59	20 45.3	-21 51
Wed May 09/Thu May 10	4230.8	14 44 25	19 17	20 44	4 01	5 28	11 28	18 46	1 31	.....	48	21 37.9	-16 57
Thu May 10/Fri May 11	4231.8	14 48 22	19 18	20 45	4 00	5 27	11 33	18 49	2 03	.....	37	22 29.0	-11 09
Fri May 11/Sat May 12	4232.8	14 52 18	19 19	20 46	3 59	5 27	11 38	18 52	2 34	.....	27	23 19.4	- 4 41
Sat May 12/Sun May 13	4233.8	14 56 15	19 19	20 47	3 58	5 26	11 43	18 55	3 05	.....	17	0 10.1	2 06
Sun May 13/Mon May 14	4234.8	15 00 11	19 20	20 48	3 57	5 25	11 48	18 58	3 38	.....	9	1 02.3	8 53
Mon May 14/Tue May 15	4235.8	15 04 08	19 21	20 49	3 56	5 24	11 53	19 01	4 14	.....	4	1 57.3	15 14
Tue May 15/Wed May 16	4236.8	15 08 04	19 22	20 50	3 55	5 24	11 58	19 04	4 56	18 32	1	2 55.8	20 40
Wed May 16/Thu May 17	4237.8	15 12 01	19 22	20 51	3 54	5 23	12 03	19 07	5 45	19 48	0	3 57.8	24 44
Thu May 17/Fri May 18	4238.8	15 15 57	19 23	20 52	3 53	5 22	12 08	19 10	.....	21 01	3	5 02.1	27 02
Fri May 18/Sat May 19	4239.8	15 19 54	19 24	20 53	3 52	5 22	12 13	19 13	.....	22 07	8	6 06.5	27 26
Sat May 19/Sun May 20	4240.8	15 23 51	19 24	20 54	3 51	5 21	12 17	19 16	.....	23 03	16	7 08.5	26 01
Sun May 20/Mon May 21	4241.8	15 27 47	19 25	20 55	3 51	5 21	12 22	19 19	.....	23 50	24	8 06.4	23 04
Mon May 21/Tue May 22	4242.8	15 31 44	19 26	20 56	3 50	5 20	12 27	19 22	.....	0 27	34	8 59.6	18 59
Tue May 22/Wed May 23	4243.8	15 35 40	19 26	20 57	3 49	5 20	12 32	19 25	.....	0 59	44	9 48.5	14 07
Wed May 23/Thu May 24	4244.8	15 39 37	19 27	20 58	3 48	5 19	12 37	19 28	.....	1 27	54	10 34.1	8 46
Thu May 24/Fri May 25	4245.8	15 43 33	19 28	20 59	3 48	5 19	12 42	19 32	.....	1 52	63	11 17.5	3 09
Fri May 25/Sat May 26	4246.8	15 47 30	19 28	21 00	3 47	5 18	12 47	19 35	.....	2 16	72	11 59.8	- 2 31
Sat May 26/Sun May 27	4247.8	15 51 26	19 29	21 01	3 46	5 18	12 52	19 38	.....	2 41	80	12 42.1	- 8 06
Sun May 27/Mon May 28	4248.8	15 55 23	19 30	21 01	3 46	5 17	12 56	19 42	.....	3 07	87	13 25.5	-13 26
Mon May 28/Tue May 29	4249.8	15 59 20	19 30	21 02	3 45	5 17	13 01	19 45	.....	3 36	93	14 10.9	-18 19
Tue May 29/Wed May 30	4250.8	16 03 16	19 31	21 03	3 44	5 17	13 06	19 48	17 35	4 09	97	14 59.2	-22 34
Wed May 30/Thu May 31	4251.8	16 07 13	19 31	21 04	3 44	5 16	13 11	19 52	18 34	4 48	99	15 50.6	-25 55
Thu May 31/Fri Jun 01	4252.8	16 11 09	19 32	21 05	3 43	5 16	13 15	19 55	19 33	5 34	100	16 45.1	-28 08

***** 2007 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) (2007 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Fri Jun 01/Sat Jun 02	4253.8	16 15 06	19 33	21 06	3 43	5 16	13 20	19 59	20 31	6 27	98	17 42.0	-28 59
Sat Jun 02/Sun Jun 03	4254.8	16 19 02	19 33	21 06	3 42	5 16	13 25	20 02	21 25	.....	95	18 39.8	-28 22
Sun Jun 03/Mon Jun 04	4255.8	16 22 59	19 34	21 07	3 42	5 15	13 30	20 06	22 13	.....	89	19 37.0	-26 14
Mon Jun 04/Tue Jun 05	4256.8	16 26 55	19 34	21 08	3 42	5 15	13 34	20 09	22 55	.....	82	20 32.3	-22 44
Tue Jun 05/Wed Jun 06	4257.8	16 30 52	19 35	21 08	3 41	5 15	13 39	20 13	23 32	.....	73	21 25.4	-18 04
Wed Jun 06/Thu Jun 07	4258.8	16 34 49	19 35	21 09	3 41	5 15	13 43	20 16	0 05	.....	63	22 16.4	-12 29
Thu Jun 07/Fri Jun 08	4259.8	16 38 45	19 36	21 10	3 41	5 15	13 48	20 20	0 35	.....	52	23 06.1	- 6 16
Fri Jun 08/Sat Jun 09	4260.8	16 42 42	19 36	21 10	3 41	5 15	13 53	20 24	1 05	.....	40	23 55.5	0 19
Sat Jun 09/Sun Jun 10	4261.8	16 46 38	19 37	21 11	3 40	5 15	13 57	20 28	1 36	.....	30	0 45.9	6 56
Sun Jun 10/Mon Jun 11	4262.8	16 50 35	19 37	21 12	3 40	5 15	14 02	20 31	2 09	.....	20	1 38.4	13 16
Mon Jun 11/Tue Jun 12	4263.8	16 54 31	19 37	21 12	3 40	5 15	14 06	20 35	2 47	.....	11	2 34.3	18 53
Tue Jun 12/Wed Jun 13	4264.8	16 58 28	19 38	21 13	3 40	5 15	14 11	20 39	3 32	.....	5	3 33.9	23 21
Wed Jun 13/Thu Jun 14	4265.8	17 02 24	19 38	21 13	3 40	5 15	14 15	20 43	4 25	18 38	1	4 36.8	26 16
Thu Jun 14/Fri Jun 15	4266.8	17 06 21	19 39	21 13	3 40	5 15	14 19	20 47	5 26	19 47	0	5 41.1	27 21
Fri Jun 15/Sat Jun 16	4267.8	17 10 18	19 39	21 14	3 40	5 15	14 24	20 51	.....	20 49	2	6 44.5	26 34
Sat Jun 16/Sun Jun 17	4268.8	17 14 14	19 39	21 14	3 40	5 15	14 28	20 55	.....	21 40	6	7 44.5	24 07
Sun Jun 17/Mon Jun 18	4269.8	17 18 11	19 40	21 15	3 40	5 15	14 32	20 59	.....	22 22	12	8 40.2	20 20
Mon Jun 18/Tue Jun 19	4270.8	17 22 07	19 40	21 15	3 40	5 15	14 37	21 03	.....	22 57	20	9 31.3	15 37
Tue Jun 19/Wed Jun 20	4271.8	17 26 04	19 40	21 15	3 40	5 15	14 41	21 07	.....	23 27	28	10 18.5	10 19
Wed Jun 20/Thu Jun 21	4272.8	17 30 00	19 40	21 16	3 41	5 16	14 45	21 11	.....	23 53	37	11 03.0	4 43
Thu Jun 21/Fri Jun 22	4273.8	17 33 57	19 41	21 16	3 41	5 16	14 49	21 15	.....	0 18	47	11 45.8	- 0 59
Fri Jun 22/Sat Jun 23	4274.8	17 37 53	19 41	21 16	3 41	5 16	14 53	21 20	.....	0 43	57	12 28.1	- 6 36
Sat Jun 23/Sun Jun 24	4275.8	17 41 50	19 41	21 16	3 41	5 16	14 57	21 24	.....	1 09	66	13 11.0	-12 00
Sun Jun 24/Mon Jun 25	4276.8	17 45 47	19 41	21 16	3 42	5 17	15 02	21 28	.....	1 36	75	13 55.6	-17 00
Mon Jun 25/Tue Jun 26	4277.8	17 49 43	19 41	21 16	3 42	5 17	15 06	21 32	.....	2 08	82	14 42.7	-21 26
Tue Jun 26/Wed Jun 27	4278.8	17 53 40	19 41	21 16	3 42	5 17	15 10	21 37	.....	2 45	89	15 33.0	-25 03
Wed Jun 27/Thu Jun 28	4279.8	17 57 36	19 41	21 16	3 43	5 18	15 13	21 41	.....	3 28	94	16 26.7	-27 38
Thu Jun 28/Fri Jun 29	4280.8	18 01 33	19 42	21 16	3 43	5 18	15 17	21 45	18 22	4 19	98	17 23.4	-28 55
Fri Jun 29/Sat Jun 30	4281.8	18 05 29	19 42	21 16	3 44	5 18	15 21	21 50	19 18	5 16	100	18 21.7	-28 43
Sat Jun 30/Sun Jul 01	4282.8	18 09 26	19 42	21 16	3 44	5 19	15 25	21 54	20 09	6 19	99	19 20.2	-26 58

***** 2007 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) (2007 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Sun Jul 01/Mon Jul 02	4283.8	18 13 22	19 42	21 16	3 45	5 19	15 29	21 59	20 54	.....	97	20 17.1	-23 44
Mon Jul 02/Tue Jul 03	4284.8	18 17 19	19 41	21 16	3 45	5 20	15 33	22 03	21 33	.....	92	21 11.8	-19 14
Tue Jul 03/Wed Jul 04	4285.8	18 21 16	19 41	21 16	3 46	5 20	15 36	22 08	22 07	.....	85	22 04.1	-13 44
Wed Jul 04/Thu Jul 05	4286.8	18 25 12	19 41	21 15	3 47	5 21	15 40	22 12	22 38	.....	76	22 54.4	- 7 33
Thu Jul 05/Fri Jul 06	4287.8	18 29 09	19 41	21 15	3 47	5 21	15 44	22 17	23 08	.....	65	23 43.9	- 0 59
Fri Jul 06/Sat Jul 07	4288.8	18 33 05	19 41	21 15	3 48	5 22	15 47	22 22	23 38	.....	54	0 33.7	5 38
Sat Jul 07/Sun Jul 08	4289.8	18 37 02	19 41	21 14	3 48	5 22	15 51	22 26	0 09	.....	43	1 25.0	11 58
Sun Jul 08/Mon Jul 09	4290.8	18 40 58	19 41	21 14	3 49	5 23	15 55	22 31	0 44	.....	32	2 18.9	17 40
Mon Jul 09/Tue Jul 10	4291.8	18 44 55	19 40	21 14	3 50	5 23	15 58	22 35	1 25	.....	21	3 16.3	22 22
Tue Jul 10/Wed Jul 11	4292.8	18 48 51	19 40	21 13	3 51	5 24	16 02	22 40	2 14	.....	13	4 16.9	25 40
Wed Jul 11/Thu Jul 12	4293.8	18 52 48	19 40	21 13	3 51	5 24	16 05	22 45	3 11	17 31	6	5 19.7	27 17
Thu Jul 12/Fri Jul 13	4294.8	18 56 45	19 40	21 12	3 52	5 25	16 08	22 50	4 15	18 34	2	6 22.6	27 05
Fri Jul 13/Sat Jul 14	4295.8	19 00 41	19 39	21 12	3 53	5 25	16 12	22 54	5 22	19 29	0	7 23.4	25 09
Sat Jul 14/Sun Jul 15	4296.8	19 04 38	19 39	21 11	3 54	5 26	16 15	22 59	6 30	20 15	1	8 20.5	21 46
Sun Jul 15/Mon Jul 16	4297.8	19 08 34	19 39	21 10	3 55	5 26	16 19	23 04	.....	20 53	4	9 13.2	17 18
Mon Jul 16/Tue Jul 17	4298.8	19 12 31	19 38	21 10	3 55	5 27	16 22	23 09	.....	21 25	9	10 01.9	12 08
Tue Jul 17/Wed Jul 18	4299.8	19 16 27	19 38	21 09	3 56	5 28	16 25	23 13	.....	21 53	15	10 47.5	6 32
Wed Jul 18/Thu Jul 19	4300.8	19 20 24	19 37	21 08	3 57	5 28	16 28	23 18	.....	22 19	23	11 31.1	0 48
Thu Jul 19/Fri Jul 20	4301.8	19 24 20	19 37	21 08	3 58	5 29	16 32	23 23	.....	22 44	31	12 13.6	- 4 54
Fri Jul 20/Sat Jul 21	4302.8	19 28 17	19 36	21 07	3 59	5 30	16 35	23 28	.....	23 09	40	12 56.3	-10 23
Sat Jul 21/Sun Jul 22	4303.8	19 32 14	19 36	21 06	4 00	5 30	16 38	23 33	.....	23 36	50	13 40.1	-15 31
Sun Jul 22/Mon Jul 23	4304.8	19 36 10	19 35	21 05	4 01	5 31	16 41	23 38	.....	0 06	59	14 25.9	-20 07
Mon Jul 23/Tue Jul 24	4305.8	19 40 07	19 35	21 04	4 02	5 31	16 44	23 42	.....	0 41	68	15 14.6	-24 00
Tue Jul 24/Wed Jul 25	4306.8	19 44 03	19 34	21 04	4 03	5 32	16 47	23 47	.....	1 21	77	16 06.7	-26 55
Wed Jul 25/Thu Jul 26	4307.8	19 48 00	19 33	21 03	4 03	5 33	16 50	23 52	.....	2 08	85	17 02.1	-28 40
Thu Jul 26/Fri Jul 27	4308.8	19 51 56	19 33	21 02	4 04	5 33	16 53	23 57	.....	3 03	91	17 59.8	-28 59
Fri Jul 27/Sat Jul 28	4309.8	19 55 53	19 32	21 01	4 05	5 34	16 56	0 02	18 01	4 05	96	18 58.7	-27 46
Sat Jul 28/Sun Jul 29	4310.8	19 59 49	19 31	21 00	4 06	5 35	16 59	0 07	18 49	5 10	99	19 56.9	-24 59
Sun Jul 29/Mon Jul 30	4311.8	20 03 46	19 31	20 59	4 07	5 35	17 02	0 12	19 30	6 17	100	20 53.4	-20 47
Mon Jul 30/Tue Jul 31	4312.8	20 07 43	19 30	20 58	4 08	5 36	17 05	0 17	20 07	.....	98	21 47.6	-15 25
Tue Jul 31/Wed Aug 01	4313.8	20 11 39	19 29	20 57	4 09	5 37	17 08	0 21	20 40	.....	94	22 39.8	- 9 13

***** 2007 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) (2007 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 Aug 01/Thu Aug 02	4314.8	20 15 36	19 28	20 56	4 10	5 37	17 11	0 26	21 10	.....	87	23 30.6	- 2 33
Thu Aug 02/Fri Aug 03	4315.8	20 19 32	19 27	20 55	4 11	5 38	17 14	0 31	21 40	.....	78	0 21.3	4 15
Fri Aug 03/Sat Aug 04	4316.8	20 23 29	19 27	20 53	4 12	5 39	17 16	0 36	22 11	.....	68	1 12.9	10 48
Sat Aug 04/Sun Aug 05	4317.8	20 27 25	19 26	20 52	4 13	5 39	17 19	0 41	22 45	.....	56	2 06.6	16 43
Sun Aug 05/Mon Aug 06	4318.8	20 31 22	19 25	20 51	4 14	5 40	17 22	0 46	23 24	.....	45	3 03.0	21 40
Mon Aug 06/Tue Aug 07	4319.8	20 35 18	19 24	20 50	4 15	5 41	17 25	0 51	0 09	.....	34	4 02.4	25 16
Tue Aug 07/Wed Aug 08	4320.8	20 39 15	19 23	20 49	4 16	5 41	17 27	0 56	1 02	.....	23	5 04.0	27 15
Wed Aug 08/Thu Aug 09	4321.8	20 43 12	19 22	20 48	4 17	5 42	17 30	1 01	2 03	.....	15	6 06.0	27 30
Thu Aug 09/Fri Aug 10	4322.8	20 47 08	19 21	20 46	4 18	5 43	17 33	1 06	3 08	17 22	8	7 06.5	26 01
Fri Aug 10/Sat Aug 11	4323.8	20 51 05	19 20	20 45	4 19	5 43	17 36	1 10	4 15	18 10	3	8 03.8	23 03
Sat Aug 11/Sun Aug 12	4324.8	20 55 01	19 19	20 44	4 20	5 44	17 38	1 15	5 20	18 50	0	8 57.1	18 54
Sun Aug 12/Mon Aug 13	4325.8	20 58 58	19 18	20 43	4 20	5 45	17 41	1 20	6 22	19 24	0	9 46.7	13 55
Mon Aug 13/Tue Aug 14	4326.8	21 02 54	19 17	20 41	4 21	5 45	17 44	1 25	.....	19 54	2	10 33.0	8 26
Tue Aug 14/Wed Aug 15	4327.8	21 06 51	19 16	20 40	4 22	5 46	17 46	1 30	.....	20 20	5	11 17.1	2 42
Wed Aug 15/Thu Aug 16	4328.8	21 10 47	19 15	20 39	4 23	5 47	17 49	1 35	.....	20 46	11	11 59.9	- 3 03
Thu Aug 16/Fri Aug 17	4329.8	21 14 44	19 14	20 37	4 24	5 47	17 52	1 40	.....	21 11	17	12 42.4	- 8 38
Fri Aug 17/Sat Aug 18	4330.8	21 18 41	19 13	20 36	4 25	5 48	17 54	1 44	.....	21 37	25	13 25.6	-13 53
Sat Aug 18/Sun Aug 19	4331.8	21 22 37	19 12	20 35	4 26	5 49	17 57	1 49	.....	22 05	34	14 10.4	-18 39
Sun Aug 19/Mon Aug 20	4332.8	21 26 34	19 11	20 33	4 27	5 49	17 59	1 54	.....	22 38	43	14 57.6	-22 45
Mon Aug 20/Tue Aug 21	4333.8	21 30 30	19 10	20 32	4 28	5 50	18 02	1 59	.....	23 15	52	15 47.8	-25 59
Tue Aug 21/Wed Aug 22	4334.8	21 34 27	19 09	20 31	4 29	5 51	18 04	2 04	.....	23 59	62	16 41.1	-28 08
Wed Aug 22/Thu Aug 23	4335.8	21 38 23	19 07	20 29	4 30	5 51	18 07	2 09	.....	0 50	71	17 37.1	-28 59
Thu Aug 23/Fri Aug 24	4336.8	21 42 20	19 06	20 28	4 30	5 52	18 10	2 13	.....	1 48	80	18 34.8	-28 23
Fri Aug 24/Sat Aug 25	4337.8	21 46 16	19 05	20 26	4 31	5 53	18 12	2 18	.....	2 51	88	19 32.9	-26 14
Sat Aug 25/Sun Aug 26	4338.8	21 50 13	19 04	20 25	4 32	5 53	18 15	2 23	17 24	3 58	94	20 30.0	-22 35
Sun Aug 26/Mon Aug 27	4339.8	21 54 10	19 03	20 24	4 33	5 54	18 17	2 28	18 03	5 06	98	21 25.5	-17 37
Mon Aug 27/Tue Aug 28	4340.8	21 58 06	19 01	20 22	4 34	5 54	18 20	2 33	18 37	6 14	100	22 19.3	-11 36
Tue Aug 28/Wed Aug 29	4341.8	22 02 03	19 00	20 21	4 35	5 55	18 22	2 37	19 10	.....	99	23 11.8	- 4 53
Wed Aug 29/Thu Aug 30	4342.8	22 05 59	18 59	20 19	4 35	5 56	18 25	2 42	19 41	.....	95	0 04.0	2 09
Thu Aug 30/Fri Aug 31	4343.8	22 09 56	18 58	20 18	4 36	5 56	18 27	2 47	20 12	.....	89	0 56.9	9 03
Fri Aug 31/Sat Sep 01	4344.8	22 13 52	18 57	20 16	4 37	5 57	18 30	2 52	20 46	.....	80	1 51.6	15 23

***** 2007 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) (2007 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Sat Sep 01/Sun Sep 02	4345.8	22 17 49	18 55	20 15	4 38	5 58	18 32	2 57	21 23	.....	70	2 48.9	20 46
Sun Sep 02/Mon Sep 03	4346.8	22 21 45	18 54	20 14	4 39	5 58	18 35	3 01	22 07	.....	59	3 48.8	24 47
Mon Sep 03/Tue Sep 04	4347.8	22 25 42	18 53	20 12	4 40	5 59	18 37	3 06	22 58	.....	47	4 50.6	27 10
Tue Sep 04/Wed Sep 05	4348.8	22 29 39	18 51	20 11	4 40	5 59	18 40	3 11	23 56	.....	36	5 52.8	27 47
Wed Sep 05/Thu Sep 06	4349.8	22 33 35	18 50	20 09	4 41	6 00	18 42	3 15	1 00	.....	26	6 53.5	26 40
Thu Sep 06/Fri Sep 07	4350.8	22 37 32	18 49	20 08	4 42	6 01	18 45	3 20	2 05	.....	17	7 50.9	24 02
Fri Sep 07/Sat Sep 08	4351.8	22 41 28	18 48	20 06	4 43	6 01	18 47	3 25	3 10	.....	10	8 44.6	20 11
Sat Sep 08/Sun Sep 09	4352.8	22 45 25	18 46	20 05	4 43	6 02	18 50	3 30	4 12	17 25	5	9 34.3	15 26
Sun Sep 09/Mon Sep 10	4353.8	22 49 21	18 45	20 03	4 44	6 03	18 52	3 34	5 12	17 55	1	10 20.9	10 07
Mon Sep 10/Tue Sep 11	4354.8	22 53 18	18 44	20 02	4 45	6 03	18 55	3 39	6 09	18 23	0	11 05.1	4 29
Tue Sep 11/Wed Sep 12	4355.8	22 57 14	18 42	20 00	4 46	6 04	18 57	3 44	7 05	18 48	1	11 48.0	- 1 16
Wed Sep 12/Thu Sep 13	4356.8	23 01 11	18 41	19 59	4 46	6 04	19 00	3 48	.....	19 13	3	12 30.3	- 6 53
Thu Sep 13/Fri Sep 14	4357.8	23 05 08	18 40	19 58	4 47	6 05	19 02	3 53	.....	19 39	7	13 13.2	-12 15
Fri Sep 14/Sat Sep 15	4358.8	23 09 04	18 38	19 56	4 48	6 06	19 05	3 58	.....	20 07	13	13 57.3	-17 09
Sat Sep 15/Sun Sep 16	4359.8	23 13 01	18 37	19 55	4 49	6 06	19 07	4 02	.....	20 37	19	14 43.4	-21 26
Sun Sep 16/Mon Sep 17	4360.8	23 16 57	18 36	19 53	4 49	6 07	19 10	4 07	.....	21 12	27	15 32.1	-24 54
Mon Sep 17/Tue Sep 18	4361.8	23 20 54	18 34	19 52	4 50	6 07	19 12	4 12	.....	21 53	36	16 23.5	-27 22
Tue Sep 18/Wed Sep 19	4362.8	23 24 50	18 33	19 50	4 51	6 08	19 15	4 16	.....	22 40	45	17 17.4	-28 39
Wed Sep 19/Thu Sep 20	4363.8	23 28 47	18 32	19 49	4 51	6 09	19 17	4 21	.....	23 34	55	18 13.2	-28 35
Thu Sep 20/Fri Sep 21	4364.8	23 32 43	18 30	19 48	4 52	6 09	19 20	4 26	.....	0 34	65	19 09.7	-27 04
Fri Sep 21/Sat Sep 22	4365.8	23 36 40	18 29	19 46	4 53	6 10	19 22	4 30	.....	1 38	75	20 05.8	-24 06
Sat Sep 22/Sun Sep 23	4366.8	23 40 37	18 28	19 45	4 54	6 11	19 25	4 35	.....	2 44	83	21 00.9	-19 46
Sun Sep 23/Mon Sep 24	4367.8	23 44 33	18 27	19 43	4 54	6 11	19 27	4 40	.....	3 51	91	21 54.7	-14 15
Mon Sep 24/Tue Sep 25	4368.8	23 48 30	18 25	19 42	4 55	6 12	19 30	4 44	17 05	4 59	97	22 47.7	- 7 50
Tue Sep 25/Wed Sep 26	4369.8	23 52 26	18 24	19 41	4 56	6 12	19 32	4 49	17 37	6 08	100	23 40.4	- 0 50
Wed Sep 26/Thu Sep 27	4370.8	23 56 23	18 23	19 39	4 56	6 13	19 35	4 53	18 09	7 18	100	0 34.1	6 19
Thu Sep 27/Fri Sep 28	4371.8	0 00 19	18 21	19 38	4 57	6 14	19 38	4 58	18 42	.....	97	1 29.7	13 08
Fri Sep 28/Sat Sep 29	4372.8	0 04 16	18 20	19 37	4 58	6 14	19 40	5 03	19 19	.....	91	2 28.2	19 07
Sat Sep 29/Sun Sep 30	4373.8	0 08 12	18 19	19 35	4 58	6 15	19 43	5 07	20 02	.....	83	3 29.6	23 48
Sun Sep 30/Mon Oct 01	4374.8	0 12 09	18 17	19 34	4 59	6 16	19 45	5 12	20 52	.....	73	4 33.3	26 47

***** 2007 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) (2007 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Mon Oct 01/Tue Oct 02	4375.8	0 16 06	18 16	19 33	5 00	6 16	19 48	5 17	21 49	.....	62	5 37.5	27 53
Tue Oct 02/Wed Oct 03	4376.8	0 20 02	18 15	19 31	5 00	6 17	19 51	5 21	22 52	.....	51	6 40.0	27 09
Wed Oct 03/Thu Oct 04	4377.8	0 23 59	18 13	19 30	5 01	6 18	19 53	5 26	23 58	.....	40	7 39.0	24 48
Thu Oct 04/Fri Oct 05	4378.8	0 27 55	18 12	19 29	5 02	6 18	19 56	5 30	1 03	.....	30	8 33.7	21 11
Fri Oct 05/Sat Oct 06	4379.8	0 31 52	18 11	19 27	5 02	6 19	19 59	5 35	2 06	.....	21	9 24.1	16 37
Sat Oct 06/Sun Oct 07	4380.8	0 35 48	18 10	19 26	5 03	6 20	20 01	5 40	3 06	.....	13	10 11.0	11 27
Sun Oct 07/Mon Oct 08	4381.8	0 39 45	18 08	19 25	5 04	6 20	20 04	5 44	4 03	16 26	8	10 55.3	5 55
Mon Oct 08/Tue Oct 09	4382.8	0 43 41	18 07	19 24	5 04	6 21	20 07	5 49	4 59	16 52	3	11 38.1	0 15
Tue Oct 09/Wed Oct 10	4383.8	0 47 38	18 06	19 22	5 05	6 22	20 09	5 53	5 53	17 17	1	12 20.3	- 5 22
Wed Oct 10/Thu Oct 11	4384.8	0 51 35	18 05	19 21	5 06	6 22	20 12	5 58	6 49	17 43	0	13 02.7	-10 45
Thu Oct 11/Fri Oct 12	4385.8	0 55 31	18 04	19 20	5 06	6 23	20 15	6 03	.....	18 09	1	13 46.4	-15 45
Fri Oct 12/Sat Oct 13	4386.8	0 59 28	18 02	19 19	5 07	6 24	20 18	6 07	.....	18 39	4	14 31.8	-20 10
Sat Oct 13/Sun Oct 14	4387.8	1 03 24	18 01	19 18	5 08	6 24	20 20	6 12	.....	19 12	8	15 19.6	-23 50
Sun Oct 14/Mon Oct 15	4388.8	1 07 21	18 00	19 17	5 08	6 25	20 23	6 17	.....	19 51	14	16 09.9	-26 32
Mon Oct 15/Tue Oct 16	4389.8	1 11 17	17 59	19 16	5 09	6 26	20 26	6 21	.....	20 35	21	17 02.4	-28 07
Tue Oct 16/Wed Oct 17	4390.8	1 15 14	17 58	19 14	5 10	6 27	20 29	6 26	.....	21 26	30	17 56.6	-28 25
Wed Oct 17/Thu Oct 18	4391.8	1 19 10	17 57	19 13	5 10	6 27	20 32	6 30	.....	22 23	39	18 51.4	-27 23
Thu Oct 18/Fri Oct 19	4392.8	1 23 07	17 55	19 12	5 11	6 28	20 35	6 35	.....	23 23	49	19 45.9	-24 58
Fri Oct 19/Sat Oct 20	4393.8	1 27 04	17 54	19 11	5 12	6 29	20 37	6 40	.....	0 27	59	20 39.5	-21 16
Sat Oct 20/Sun Oct 21	4394.8	1 31 00	17 53	19 10	5 12	6 29	20 40	6 44	.....	1 31	69	21 31.9	-16 23
Sun Oct 21/Mon Oct 22	4395.8	1 34 57	17 52	19 09	5 13	6 30	20 43	6 49	.....	2 37	79	22 23.5	-10 32
Mon Oct 22/Tue Oct 23	4396.8	1 38 53	17 51	19 08	5 14	6 31	20 46	6 54	.....	3 43	88	23 15.0	- 3 56
Tue Oct 23/Wed Oct 24	4397.8	1 42 50	17 50	19 07	5 14	6 32	20 49	6 58	.....	4 52	94	0 07.5	3 04
Wed Oct 24/Thu Oct 25	4398.8	1 46 46	17 49	19 06	5 15	6 33	20 52	7 03	16 36	6 04	99	1 02.2	10 04
Thu Oct 25/Fri Oct 26	4399.8	1 50 43	17 48	19 05	5 16	6 33	20 55	7 07	17 11	7 19	100	2 00.1	16 34
Fri Oct 26/Sat Oct 27	4400.8	1 54 39	17 47	19 04	5 17	6 34	20 58	7 12	17 52	.....	98	3 01.9	21 59
Sat Oct 27/Sun Oct 28	4401.8	1 58 36	17 46	19 04	5 17	6 35	21 01	7 17	18 40	.....	93	4 07.1	25 49
Sun Oct 28/Mon Oct 29	4402.8	2 02 33	17 45	19 03	5 18	6 36	21 04	7 21	19 36	.....	86	5 14.1	27 42
Mon Oct 29/Tue Oct 30	4403.8	2 06 29	17 44	19 02	5 19	6 36	21 07	7 26	20 40	.....	76	6 20.0	27 33
Tue Oct 30/Wed Oct 31	4404.8	2 10 26	17 43	19 01	5 19	6 37	21 11	7 31	21 47	.....	66	7 22.5	25 35
Wed Oct 31/Thu Nov 01	4405.8	2 14 22	17 42	19 00	5 20	6 38	21 14	7 35	22 54	.....	56	8 20.0	22 10

***** 2007 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) (2007 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Thu Nov 01/Fri Nov 02	4406.8	2 18 19	17 41	18 59	5 21	6 39	21 17	7 40	23 59	.....	45	9 12.5	17 43
Fri Nov 02/Sat Nov 03	4407.8	2 22 15	17 41	18 59	5 22	6 40	21 20	7 45	1 00	.....	35	10 00.8	12 37
Sat Nov 03/Sun Nov 04	4408.8	2 26 12	17 40	18 58	5 22	6 41	21 23	7 49	1 58	.....	26	10 45.9	7 08
Sun Nov 04/Mon Nov 05	4409.8	2 30 08	17 39	18 57	5 23	6 41	21 27	7 54	2 54	.....	18	11 29.0	1 30
Mon Nov 05/Tue Nov 06	4410.8	2 34 05	17 38	18 57	5 24	6 42	21 30	7 59	3 49	.....	11	12 11.1	- 4 06
Tue Nov 06/Wed Nov 07	4411.8	2 38 02	17 37	18 56	5 24	6 43	21 33	8 03	4 43	.....	6	12 53.4	- 9 30
Wed Nov 07/Thu Nov 08	4412.8	2 41 58	17 37	18 55	5 25	6 44	21 36	8 08	5 39	16 13	3	13 36.6	-14 33
Thu Nov 08/Fri Nov 09	4413.8	2 45 55	17 36	18 55	5 26	6 45	21 40	8 13	6 35	16 41	1	14 21.6	-19 04
Fri Nov 09/Sat Nov 10	4414.8	2 49 51	17 35	18 54	5 27	6 46	21 43	8 17	7 33	17 14	0	15 08.8	-22 52
Sat Nov 10/Sun Nov 11	4415.8	2 53 48	17 35	18 54	5 27	6 47	21 47	8 22	.....	17 51	2	15 58.5	-25 46
Sun Nov 11/Mon Nov 12	4416.8	2 57 44	17 34	18 53	5 28	6 47	21 50	8 27	.....	18 33	5	16 50.5	-27 34
Mon Nov 12/Tue Nov 13	4417.8	3 01 41	17 33	18 53	5 29	6 48	21 53	8 32	.....	19 22	10	17 44.0	-28 09
Tue Nov 13/Wed Nov 14	4418.8	3 05 37	17 33	18 52	5 30	6 49	21 57	8 36	.....	20 17	16	18 38.1	-27 24
Wed Nov 14/Thu Nov 15	4419.8	3 09 34	17 32	18 52	5 30	6 50	22 00	8 41	.....	21 16	24	19 31.8	-25 21
Thu Nov 15/Fri Nov 16	4420.8	3 13 31	17 32	18 51	5 31	6 51	22 04	8 46	.....	22 17	33	20 24.2	-22 03
Fri Nov 16/Sat Nov 17	4421.8	3 17 27	17 31	18 51	5 32	6 52	22 07	8 50	.....	23 19	42	21 15.2	-17 39
Sat Nov 17/Sun Nov 18	4422.8	3 21 24	17 31	18 50	5 33	6 53	22 11	8 55	.....	0 22	53	22 05.0	-12 19
Sun Nov 18/Mon Nov 19	4423.8	3 25 20	17 30	18 50	5 33	6 54	22 15	9 00	.....	1 25	64	22 54.3	- 6 14
Mon Nov 19/Tue Nov 20	4424.8	3 29 17	17 30	18 50	5 34	6 54	22 18	9 04	.....	2 30	74	23 44.3	0 21
Tue Nov 20/Wed Nov 21	4425.8	3 33 13	17 29	18 49	5 35	6 55	22 22	9 09	.....	3 38	84	0 36.1	7 08
Wed Nov 21/Thu Nov 22	4426.8	3 37 10	17 29	18 49	5 36	6 56	22 26	9 14	.....	4 49	92	1 31.1	13 42
Thu Nov 22/Fri Nov 23	4427.8	3 41 06	17 29	18 49	5 37	6 57	22 29	9 19	.....	6 05	97	2 30.3	19 36
Fri Nov 23/Sat Nov 24	4428.8	3 45 03	17 28	18 49	5 37	6 58	22 33	9 23	16 24	7 21	100	3 34.2	24 13
Sat Nov 24/Sun Nov 25	4429.8	3 49 00	17 28	18 49	5 38	6 59	22 37	9 28	17 17	.....	99	4 41.8	27 04
Sun Nov 25/Mon Nov 26	4430.8	3 52 56	17 28	18 48	5 39	7 00	22 41	9 33	18 19	.....	95	5 50.4	27 49
Mon Nov 26/Tue Nov 27	4431.8	3 56 53	17 28	18 48	5 40	7 00	22 44	9 37	19 27	.....	89	6 56.9	26 30
Tue Nov 27/Wed Nov 28	4432.8	4 00 49	17 27	18 48	5 40	7 01	22 48	9 42	20 37	.....	81	7 58.8	23 28
Wed Nov 28/Thu Nov 29	4433.8	4 04 46	17 27	18 48	5 41	7 02	22 52	9 47	21 46	.....	72	8 55.2	19 09
Thu Nov 29/Fri Nov 30	4434.8	4 08 42	17 27	18 48	5 42	7 03	22 56	9 51	22 50	.....	62	9 46.4	14 03
Fri Nov 30/Sat Dec 01	4435.8	4 12 39	17 27	18 48	5 42	7 04	23 00	9 56	23 51	.....	52	10 33.5	8 30

***** 2007 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) (2007 at start)	JDmid (-2450000)	LMSTmidn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	Moon: %illum	Moon: RA	Moon: Dec
Sat Dec 01/Sun Dec 02	4436.8	4 16 35	17 27	18 48	5 43	7 05	23 04	10 01	0 48	.....	42	11 17.9	2 47
Sun Dec 02/Mon Dec 03	4437.8	4 20 32	17 27	18 48	5 44	7 05	23 08	10 05	1 43	.....	32	12 00.8	- 2 53
Mon Dec 03/Tue Dec 04	4438.8	4 24 29	17 27	18 48	5 45	7 06	23 12	10 10	2 38	.....	24	12 43.2	- 8 21
Tue Dec 04/Wed Dec 05	4439.8	4 28 25	17 27	18 48	5 45	7 07	23 16	10 15	3 33	.....	16	13 26.3	-13 29
Wed Dec 05/Thu Dec 06	4440.8	4 32 22	17 27	18 48	5 46	7 08	23 20	10 19	4 29	.....	10	14 10.9	-18 06
Thu Dec 06/Fri Dec 07	4441.8	4 36 18	17 27	18 49	5 47	7 09	23 24	10 24	5 26	.....	5	14 57.7	-22 03
Fri Dec 07/Sat Dec 08	4442.8	4 40 15	17 27	18 49	5 47	7 09	23 28	10 29	6 24	15 50	2	15 47.0	-25 08
Sat Dec 08/Sun Dec 09	4443.8	4 44 11	17 27	18 49	5 48	7 10	23 32	10 33	7 20	16 31	0	16 38.7	-27 09
Sun Dec 09/Mon Dec 10	4444.8	4 48 08	17 27	18 49	5 49	7 11	23 37	10 38	8 14	17 19	0	17 32.2	-27 58
Mon Dec 10/Tue Dec 11	4445.8	4 52 04	17 27	18 49	5 49	7 11	23 41	10 42	.....	18 12	2	18 26.5	-27 28
Tue Dec 11/Wed Dec 12	4446.8	4 56 01	17 28	18 50	5 50	7 12	23 45	10 47	.....	19 10	6	19 20.3	-25 38
Wed Dec 12/Thu Dec 13	4447.8	4 59 57	17 28	18 50	5 51	7 13	23 49	10 52	.....	20 11	11	20 12.8	-22 34
Thu Dec 13/Fri Dec 14	4448.8	5 03 54	17 28	18 50	5 51	7 14	23 53	10 56	.....	21 13	19	21 03.5	-18 25
Fri Dec 14/Sat Dec 15	4449.8	5 07 51	17 28	18 51	5 52	7 14	23 58	11 01	.....	22 15	27	21 52.6	-13 21
Sat Dec 15/Sun Dec 16	4450.8	5 11 47	17 29	18 51	5 53	7 15	0 02	11 05	.....	23 16	37	22 40.7	- 7 36
Sun Dec 16/Mon Dec 17	4451.8	5 15 44	17 29	18 51	5 53	7 15	0 06	11 10	.....	0 19	48	23 28.6	- 1 22
Mon Dec 17/Tue Dec 18	4452.8	5 19 40	17 30	18 52	5 54	7 16	0 11	11 14	.....	1 23	59	0 17.7	5 06
Tue Dec 18/Wed Dec 19	4453.8	5 23 37	17 30	18 52	5 54	7 17	0 15	11 19	.....	2 30	70	1 09.2	11 30
Wed Dec 19/Thu Dec 20	4454.8	5 27 33	17 30	18 53	5 55	7 17	0 19	11 23	.....	3 40	80	2 04.4	17 26
Thu Dec 20/Fri Dec 21	4455.8	5 31 30	17 31	18 53	5 55	7 18	0 24	11 28	.....	4 54	89	3 04.3	22 28
Fri Dec 21/Sat Dec 22	4456.8	5 35 26	17 31	18 54	5 56	7 18	0 28	11 32	.....	6 09	95	4 08.9	26 03
Sat Dec 22/Sun Dec 23	4457.8	5 39 23	17 32	18 54	5 56	7 19	0 33	11 37	15 56	7 19	99	5 16.7	27 45
Sun Dec 23/Mon Dec 24	4458.8	5 43 20	17 32	18 55	5 57	7 19	0 37	11 41	17 02	8 20	100	6 24.8	27 21
Mon Dec 24/Tue Dec 25	4459.8	5 47 16	17 33	18 55	5 57	7 19	0 42	11 45	18 12	.....	98	7 30.1	24 59
Tue Dec 25/Wed Dec 26	4460.8	5 51 13	17 33	18 56	5 58	7 20	0 46	11 50	19 24	.....	93	8 30.5	21 03
Wed Dec 26/Thu Dec 27	4461.8	5 55 09	17 34	18 56	5 58	7 20	0 51	11 54	20 32	.....	86	9 25.5	16 03
Thu Dec 27/Fri Dec 28	4462.8	5 59 06	17 35	18 57	5 58	7 21	0 55	11 58	21 36	.....	78	10 15.7	10 25
Fri Dec 28/Sat Dec 29	4463.8	6 03 02	17 35	18 58	5 59	7 21	1 00	12 03	22 36	.....	69	11 02.4	4 33
Sat Dec 29/Sun Dec 30	4464.8	6 06 59	17 36	18 58	5 59	7 21	1 04	12 07	23 34	.....	59	11 46.9	- 1 19
Sun Dec 30/Mon Dec 31	4465.8	6 10 55	17 37	18 59	5 59	7 22	1 09	12 11	0 30	.....	50	12 30.3	- 6 59
Mon Dec 31/Tue Jan 01	4466.8	6 14 52	17 37	18 59	6 00	7 22	1 13	12 16	1 25	.....	40	13 13.8	-12 17