UNITED STATES NAVAL OBSERVATORY

CIRCULAR NO. 169

U. S. Naval Observatory, Washington, D. C. 20390 November 4, 1986

PHASES OF THE MOON 2000 – 2049

by

Richard E. Schmidt

PHASES OF THE MOON 2000 - 2049

This Circular provides the times of the phases of the moon, expressed in Terrestrial Dynamical Time (TDT), for the years 2000 - 2049. The basis for this Circular is the same as that for the Astronomical Almanac, namely the Jet Propulsion Laboratory ephemeris designated DE200/LE200.

The phases New Moon, First Quarter, Full Moon, and Last Quarter are defined to occur when the excess of the apparent celestial longitude of the Moon over that of the Sun is 0°, 90°, 180°, and 270°, respectively. In practice the phases are computed by third-order Besselian inverse interpolation of daily values of the excess of longitude.

The common understanding of the times of New, First Quarter, Full, and Last Quarter as applying to the times of apparent minimum illumination, 50% illumination (waxing), maximum illumination, and 50% illumination (waning), respectively, only loosely corresponds to the precise definition of the phases as given above. In particular, the times at which the Moon reaches these particular illumination levels, as viewed from a specific location on the surface of the Earth, may differ from the times tabulated in this Circular by an hour or more.

The argument TDT can be considered to be the extension of Ephemeris Time (ET), used prior to 1984. The difference between TDT and Universal Time (UT1, also known as Greenwich Mean Time) was (TDT-UT1) = 55.1 seconds for 1986.5. Due to irregularities in the rotation of the Earth, it is impossible to predict values of (TDT-UT1) into the 21st century, but those values are unlikely to fall outside of the range 0 to 2 minutes, and probably will be approximately 1 minute at the year 2000.

The lunations in this Circular are numbered in continuation of the series of E.W. Brown, of which No. 1 commenced on 1923 January 16 (Mon. Not. Roy. Astr. Soc., 93, 603, 1933).

The Modified Julian Dates (MJD) given for each phase are the Julian dates minus 2440000.5.

Phases of the Moon for other dates are available in these Circulars:

No. 112 PHASES OF THE MOON 1800-1959

No. 119 PHASES OF THE MOON 1960-2003

available from the Nautical Almanac Office, United States Naval Observatory Washington, DC 20390-5100.

	New Moon		First Quarter		Full Moon		Last Quarter	
Lunation	MJD	m d h m	MJD	d h m	MJD	m d h m	MJD	d h
2000								
953	51549.7602	Jan 6 18:15	51557.5661	Jan 14 13:35	51564.1955	Jan 21 04:42	51571.3318	Jan 28 07:58
954	51579.5447	Feb 5 13:04	51586.9739	Feb 12 23:22	51593.6860	Feb 19 16:28	51601.1629	Feb 27 03:55
955	51609.2207	Mar 6 05:18	51616.2916	Mar 13 07:00	51623.1982	Mar 20 04:45	51631.0151	Mar 28 00:22
956	51638.7590	Apr 4 18:13	51645.5635	Apr 11 13:31	51652.7379	Apr 18 17:43	51660.8133	Apr 26 19:31
957	51668.1758	May 4 04:13	51674.8344	May 10 20:02	51682.3163	May 18 07:36	51690.4973	May 26 11:56
958	51697.5104	Jun 2 12:15	51704.1460	Jun 9 03:30	51711.9362	Jun 16 22:28	51720.0424	Jun 25 01:01
959	51726.8062	Jul 1 19:21	51733.5374	Jul 8 12:54	51741.5808	Jul 16 13:56	51749.4605	Jul 24 11:03
960	51756.1015	Jul 31 02:26	51763.0436	Aug 7 01:03	51771.2178	Aug 15 05:14	51778.7859	Aug 22 18:52
961	51785.4308	Aug 29 10:20	51792.6864	Sep 5 16:28	51800.8180	Sep 13 19:38	51808.0621	Sep 21 01:29
962	51814.8292	Sep 27 19:54	51822.4585	Oct 5 11:00	51830.3708	Oct 13 08:54	51837.3334	Oct 20 08:00
963	51844.3327	Oct 27 07:59	51852.3110	Nov 4 07:28	51859.8859	Nov 11 21:16	51866.6427	Nov 18 15:26
964	51873.9669	Nov 25 23:12	51882.1642	Dec 4 03:56	51889.3777	Dec 11 09:04	51896.0294	Dec 18 00:42
965	51903.7241	Dec 25 17:23						
2001								
			51911.9393	Jan 2 22:33	51918.8510	Jan 9 20:25	51925.5248	Jan 16 12:36
966	51933.5471	Jan 24 13:08	51941.5857	Feb 1 14:03	51948.3005	Feb 8 07:13	51955.1421	Feb 15 03:25
967	51963.3487	Feb 23 08:22	51971.0863	Mar 3 02:04	51977.7251	Mar 9 17:24	51984.8654	Mar 16 20:46
968	51993.0570	Mar 25 01:22	52000.4516	Apr 1 10:50	52007.1410	Apr 8 03:23	52014.6473	Apr 15 15:32
969	52022.6435	Apr 23 15:27	52029.7143	Apr 30 17:09	52036.5789	May 7 13:54	52044.4248	May 15 10:12
970	52052.1160	May 23 02:47	52058.9238	May 29 22:10	52066.0697	Jun 6 01:40	52074.1454	Jun 14 03:29
971	52081.4991	Jun 21 11:59	52088.1393	Jun 28 03:21	52095.6284	Jul 5 15:05	52103.7821	Jul 13 18:46
972	52110.8232	Jul 20 19:45	52117.4231	Jul 27 10:09	52125.2478	Aug 4 05:57	52133.3293	Aug 12 07:54
973	52140.1225	Aug 19 02:56	52146.8305	Aug 25 19:56	52154.9056	Sep 2 21:44	52162.7921	Sep 10 19:01
974	52169.4364	Sep 17 10:28	52176.3972	Sep 24 09:32	52184.5763	Oct 2 13:50	52192.1810	Oct 10 04:21
975	52198.8086	Oct 16 19:24	52206.1246	Oct 24 02:59	52214.2376	Nov 1 05:42	52221.5155	Nov 8 12:22
976	52228.2786	Nov 15 06:41	52235.9735	Nov 22 23:22	52243.8681	Nov 30 20:50	52250.8283	Dec 7 19:53
977	52257.8670	Dec 14 20:48	52265.8733	Dec 22 20:57	52273.4455	Dec 30 10:42		
2002								
							52280.1638	Jan 6 03:56
978	52287.5623	Jan 13 13:30	52295.7414	Jan 21 17:48	52302.9525	Jan 28 22:52	52309.5654	Feb 4 13:34
979	52317.3208	Feb 12 07:42	52325.5019	Feb 20 12:03	52332.3873	Feb 27 09:18	52339.0595	Mar 6 01:26
980	52347.0858	Mar 14 02:04	52355.1037	Mar 22 02:29	52361.7680	Mar 28 18:26	52368.6459	Apr 4 15:30
981	52376.8071	Apr 12 19:22	52384.5343	Apr 20 12:49	52391.1257	Apr 27 03:01	52398.3035	May 4 07:17
982	52406.4487	May 12 10:46	52413.8216	May 19 19:43	52420.4947	May 26 11:52	52428.0043	Jun 3 00:06
983	52435.9914	Jun 10 23:48	52443.0211	Jun 18 00:30	52449.9052	Jun 24 21:43	52457.7225	Jul 2 17:20
984	52465.4354	Jul 10 10:27	52472.2001	Jul 17 04:48	52479.3806	Jul 24 09:08	52487.4327	Aug 1 10:23
985	52494.8029	Aug 8 19:16	52501.4260	Aug 15 10:13	52508.9377	Aug 22 22:30	52517.1058	Aug 31 02:32
986	52524.1329	Sep 7 03:11	52530.7563	Sep 13 18:09	52538.5836	Sep 21 14:00	52546.7110	Sep 29 17:04
987	52553.4713	Oct 6 11:19	52560.2320	Oct 13 05:34	52568.3063	Oct 21 07:21	52576.2283	Oct 29 05:29
988	52582.8580	Nov 4 20:36	52589.8703	Nov 11 20:53	52598.0658	Nov 20 01:35	52605.6579	Nov 27 15:47
989	52612.3163	Dec 4 07:35	52619.6595	Dec 11 15:50	52627.7995	Dec 19 19:11	52635.0223	Dec 27 00:32

PHASES OF THE MOON, TDT

Lunation	New Moon MJD	m d h m	First Quarter MJD	m d h m	Full Moon MJD	m d h m	Last Quarter MJD	d h m
2003								
990	52641.8499	Jan 2 20:24	52649.5527	Jan 10 13:16	52657.4505	Jan 18 10:49	52664.3571	Jan 25 08:34
991	52671.4510	Feb 1 10:49	52679.4668	Feb 9 11:12	52686.9946	Feb 16 23:52	52693.6993	Feb 23 16:47
992	52701.1084	Mar 3 02:36	52709.3030	Mar 11 07:16	52716.4414	Mar 18 10:36	52723.0779	Mar 25 01:52
993	52730.8054	Apr 1 19:20	52738.9870	Apr 9 23:41	52745.8172	Apr 16 19:37	52752.5135	Apr 23 12:19
994	52760.5110	May 1 12:16	52768.4960	May 9 11:54	52775.1507	May 16 03:37	52782.0221	May 23 00:32
995	52790.1812	May 31 04:21	52797.8533	Jun 7 20:29	52804.4702	Jun 14 11:17	52811.6153	Jun 21 14:46
996	52819.7776	Jun 29 18:40	52827.1065	Jul 7 02:33	52833.8073	Jul 13 19:22	52841.2933	Jul 21 07:02
997	52849.2873	Jul 29 06:54	52856.3116	Aug 5 07:29	52863.2009	Aug 12 04:49	52871.0342	Aug 20 00:49
998	52878.7273	Aug 27 17:27	52885.5244	Sep 3 12:35	52892.6926	Sep 10 16:37	52900.7944	Sep 18 19:04
999	52908.1321	Sep 26 03:10	52914.7989	Oct 2 19:10	52922.3115	Oct 10 07:29	52930.5224	Oct 18 12:32
1000	52937.5357	Oct 25 12:51	52944.1845	Nov 1 04:26	52952.0517	Nov 9 01:14	52960.1777	Nov 17 04:16
1001	52966.9583	Nov 23 23:00	52973.7202	Nov 30 17:17	52981.8596	Dec 8 20:38	52989.7383	Dec 16 17:43
1002	52996.4056	Dec 23 09:44	53003.4197	Dec 30 10:04				
					53011.6536	Jan 7 15:41	53019.1991	Jan 15 04:47
1003	53025.8792	Jan 21 21:06	53033.2530	Jan 29 06:04	53041.3666	Feb 6 08:48	53048.5699	Feb 13 13:41
1004	53055.3881	Feb 20 09:19	53063.1424	Feb 28 03:25	53070.9690	Mar 6 23:15	53077.8762	Mar 13 21:02
1005	53084.9461	Mar 20 22:42	53092.9923	Mar 28 23:49	53100.4610	Apr 5 11:04	53107.1577	Apr 12 03:47
1006	53114.5571	Apr 19 13:22	53122.7316	Apr 27 17:34	53129.8573	May 4 20:34	53136.4620	May 11 11:05
1007	53144.2035	May 19 04:53	53152.3320	May 27 07:58	53159.1810	Jun 3 04:21	53165.8357	Jun 9 20:03
1008	53173.8527	Jun 17 20:28	53181.7979	Jun 25 19:09	53188.4653	Jul 2 11:10	53195.3157	Jul 9 07:35
1009	53203.4756	Jul 17 11:25	53211.1515	Jul 25 03:38	53217.7544	Jul 31 18:06	53224.9183	Aug 7 22:02
1010	53233.0590	Aug 16 01:25	53240.4256	Aug 23 10:13	53247.0996	Aug 30 02:23	53254.6331	Sep 6 15:12
1011	53262.6042	Sep 14 14:30	53269.6629	Sep 21 15:55	53276.5489	Sep 28 13:10	53284.4256	Oct 6 10:13
1012	53292.1176	Oct 14 02:49	53298.9165	Oct 20 22:00	53306.1309	Oct 28 03:08	53314.2462	Nov 5 05:54
1013	53321.6029	Nov 12 14:28	53328.2441	Nov 19 05:51	53335.8391	Nov 26 20:08	53344.0374	Dec 5 00:54
1014	53351.0626	Dec 12 01:30	53357.6950	Dec 18 16:41	53365.6301	Dec 26 15:07		
2005								
							53373.7408	Jan 3 17:47
1015	53380.5027	Jan 10 12:04	53387.2907	Jan 17 06:59	53395.4399	Jan 25 10:33	53403.3110	Feb 2 07:28
1016	53409.9369	Feb 8 22:29	53417.0119	Feb 16 00:17	53425.2047	Feb 24 04:55	53432.7344	Mar 3 17:37
1017	53439.3830	Mar 10 09:12	53446.8056	Mar 17 19:20	53454.8747	Mar 25 21:00	53462.0357	Apr 2 00:51
1018	53468.8563	Apr 8 20:33	53476.6101	Apr 16 14:39	53484.4219	Apr 24 10:07	53491.2676	May 1 06:25
1019	53498.3656	May 8 08:47	53506.3734	May 16 08:58	53513.8467	May 23 20:19	53520.4920	May 30 11:48
1020	53527.9140	Jun 6 21:56	53536.0579	Jun 15 01:23	53543.1770	Jun 22 04:15	53549.7671	Jun 28 18:25
1021	53557.5025	Jul 6 12:04	53565.6395	Jul 14 15:21	53572.4592	Jul 21 11:01	53579.1389	Jul 28 03:20
1022	53587.1291	Aug 5 03:06	53595.1108	Aug 13 02:40	53601.7459	Aug 19 17:54	53608.6383	Aug 26 15:19
1023	53616.7823	Sep 3 18:46	53624.4845	Sep 11 11:38	53631.0846	Sep 18 02:02	53638.2791	Sep 25 06:42
1024	53646.4368	Oct 3 10:29	53653.7930	Oct 10 19:02	53660.5103	Oct 17 12:15	53668.0540	Oct 25 01:18
1025	53676.0595	Nov 2 01:26	53683.0820	Nov 9 01:58	53690.0407	Nov 16 00:59	53697.9252	Nov 23 22:12
1026	53705.6263	Dec 1 15:02	53712.4010	Dec 8 09:37	53719.6782	Dec 15 16:17	53727.8175	Dec 23 19:37
1027	53735.1339	Dec 31 03:13						

	New Moon		First Quarter		Full Moon		Last Quarter	
Lunation	MJD	m d h m	MJD	m d h m	MJD	m d h m	MJD	m
			53741.7900	Jan 6 18:58	53749.4092	Jan 14 09:49	53757.6353	Jan 22 15:15
1028	53764.5942	Jan 29 14:16	53771.2708	Feb 5 06:30	53779.1981	Feb 13 04:45	53787.3040	Feb 21 07:18
1029	53794.0221	Feb 28 00:32	53800.8451	Mar 6 20:17	53808.9837	Mar 14 23:37	53816.7997	Mar 22 19:12
1030	53823.4280	Mar 29 10:16	53830.5012	Apr 5 12:02	53838.6953	Apr 13 16:41	53846.1455	Apr 21 03:30
1031	53852.8229	Apr 27 19:45	53860.2181	May 5 05:14	53868.2862	May 13 06:52	53875.3900	May 20 09:22
1032	53882.2269	May 27 05:27	53889.9631	Jun 3 23:07	53897.7529	Jun 11 18:04	53904.5898	Jun 18 14:09
1033	53911.6711	Jun 25 16:06	53919.6929	Jul 3 16:38	53927.1270	Jul 11 03:03	53933.8011	Jul 17 19:14
1034	53941.1889	Jul 25 04:32	53949.3659	Aug 2 08:47	53956.4549	Aug 9 10:55	53963.0777	Aug 16 01:52
1035	53970.7992	Aug 23 19:11	53978.9567	Aug 31 22:58	53985.7799	Sep 7 18:43	53992.4698	Sep 14 11:16
1036	54000.4904	Sep 22 11:46	54008.4617	Sep 30 11:05	54015.1347	Oct 7 03:14	54022.0185	Oct 14 00:27
1037	54030.2188	Oct 22 05:15	54037.8934	Oct 29 21:26	54044.5412	Nov 5 12:59	54051.7406	Nov 12 17:46
1038	54059.9299	Nov 20 22:19	54067.2709	Nov 28 06:30	54074.0180	Dec 5 00:26	54081.6061	Dec 12 14:33
1039	54089.5846	Dec 20 14:02	54096.6173	Dec 27 14:49				
2007								
					54103.5823	Jan 3 13:59	54111.5317	Jan 11 12:46
1040	54119.1679	Jan 19 04:02	54125.9601	Jan 25 23:03	54133.2406	Feb 2 05:46	54141.4112	Feb 10 09:52
1041	54148.6773	Feb 17 16:15	54155.3312	Feb 24 07:57	54162.9710	Mar 3 23:18	54171.1633	Mar 12 03:55
1042	54178.1136	Mar 19 02:44	54184.7620	Mar 25 18:17	54192.7195	Apr 2 17:16	54200.7537	Apr 10 18:05
1043	54207.4841	Apr 17 11:37	54214.2754	Apr 24 06:37	54222.4239	May 2 10:10	54230.1862	May 10 04:28
1044	54236.8113	May 16 19:28	54243.8775	May 23 21:04	54252.0450	Jun 1 01:05	54259.4887	Jun 8 11:44
1045	54266.1349	Jun 15 03:14	54273.5530	Jun 22 13:16	54281.5762	Jun 30 13:50	54288.7046	Jul 7 16:55
1046	54295.5034	Jul 14 12:05	54303.2710	Jul 22 06:30	54311.0339	Jul 30 00:49	54317.8894	Aug 5 21:21
1047	54324.9608	Aug 12 23:04	54332.9967	Aug 20 23:55	54340.4418	Aug 28 10:36	54347.1066	Sep 4 02:33
1048	54354.5315	Sep 11 12:45	54362.7007	Sep 19 16:49	54369.8237	Sep 26 19:46	54376.4215	Oct 3 10:07
1049	54384.2095	Oct 11 05:02	54392.3570	Oct 19 08:34	54399.2032	Oct 26 04:53	54405.8884	Nov 1 21:19
1050	54413.9612	Nov 9 23:04	54421.9400	Nov 17 22:34	54428.6048	Nov 24 14:31	54435.5314	Dec 1 12:45
1051	54443.7371	Dec 9 17:41	54451.4295	Dec 17 10:19	54458.0533	Dec 24 01:17	54465.3277	Dec 31 07:52
2008								
1052	54473.4849	Jan 8 11:38	54480.8241	Jan 15 19:47	54487.5666	Jan 22 13:36	54495.2111	Jan 30 05:04
1053	54503.1567	Feb 7 03:46	54510.1490	Feb 14 03:35	54517.1470	Feb 21 03:32	54525.0968	Feb 29 02:19
1054	54532.7189	Mar 7 17:15	54539.4491	Mar 14 10:47	54546.7785	Mar 21 18:41	54554.9086	Mar 29 21:48
1055	54562.1641	Apr 6 03:56	54568.7728	Apr 12 18:33	54576.4350	Apr 20 10:26	54584.5925	Apr 28 14:13
1056	54591.5134	May 5 12:19	54598.1584	May 12 03:48	54606.0920	May 20 02:12	54614.1234	May 28 02:58
1057	54620.8081	Jun 3 19:24	54627.6283	Jun 10 15:05	54635.7303	Jun 18 17:32	54643.5075	Jun 26 12:11
1058	54650.0970	Jul 3 02:20	54657.1916	Jul 10 04:36	54665.3334	Jul 18 08:00	54672.7796	Jul 25 18:43
1059	54679.4262	Aug 1 10:14	54686.8481	Aug 8 20:21	54694.8872	Aug 16 21:18	54701.9935	Aug 23 23:51
1060	54708.8327	Aug 30 19:59	54716.5869	Sep 7 14:05	54724.3850	Sep 15 09:14	54731.2121	Sep 22 05:05
1061	54738.3426	Sep 29 08:13	54746.3787	Oct 7 09:05	54753.8358	Oct 14 20:03	54760.4971	Oct 21 11:56
1062	54767.9687	Oct 28 23:15	54776.1698	Nov 6 04:04	54783.2628	Nov 13 06:18	54789.8971	Nov 19 21:32
1063	54797.7053	Nov 27 16:56	54805.8935	Dec 5 21:27	54812.6932	Dec 12 16:38	54819.4377	Dec 19 10:30
1064	54827.5163	Dec 27 12:23						

PHASES OF THE MOON, TDT

	New Moon		First Quarter		Full Moon		Last Quarter	
Lunation	MJD	m d h m	MJD	m d h m	MJD	m d h m	MJD	m d h
			54835.4981	Jan 4 11:57	54842.1444	Jan 11 03:28	54849.1158	Jan 18 02:47
1065	54857.3308	Jan 26 07:56	54864.9682	Feb 2 23:14	54871.6183	Feb 9 14:50	54878.9016	Feb 16 21:38
1066	54887.0668	Feb 25 01:36	54894.3242	Mar 4 07:47	54901.1103	Mar 11 02:39	54908.7420	Mar 18 17:48
1067	54916.6715	Mar 26 16:07	54923.6075	Apr 2 14:35	54930.6229	Apr 9 14:57	54938.5677	Apr 17 13:37
1068	54946.1414	Apr 25 03:24	54952.8648	May 1 20:45	54960.1684	May 9 04:03	54968.3105	May 17 07:27
1069	54975.5084	May 24 12:12	54982.1412	May 31 03:23	54989.7589	Jun 7 18:13	54997.9276	Jun 15 22:16
1070	55004.8167	Jun 22 19:36	55011.4788	Jun 29 11:30	55019.3906	Jul 7 09:23	55027.4126	Jul 15 09:54
1071	55034.1081	Jul 22 02:36	55040.9173	Jul 28 22:01	55049.0389	Aug 6 00:56	55056.7891	Aug 13 18:56
1072	55063.4185	Aug 20 10:03	55070.4883	Aug 27 11:43	55078.6692	Sep 4 16:04	55086.0950	Sep 12 02:17
1073	55092.7815	Sep 18 18:45	55100.2019	Sep 26 04:51	55108.2578	Oct 4 06:11	55115.3729	Oct 11 08:57
1074	55122.2321	Oct 18 05:34	55130.0301	Oct 26 00:43	55137.8021	Nov 2 19:15	55144.6645	Nov 9 15:57
1075	55151.8020	Nov 16 19:15	55159.9030	Nov 24 21:40	55167.3136	Dec 2 07:32	55174.0100	Dec 9 00:14
1076	55181.5022	Dec 16 12:03	55189.7340	Dec 24 17:37	55196.8013	Dec 31 19:14		
							55203.4449	Jan 7 10:41
1077	55211.3003	Jan 15 07:12	55219.4545	Jan 23 10:54	55226.2630	Jan 30 06:19	55232.9927	Feb 5 23:50
1078	55241.1197	Feb 14 02:52	55249.0302	Feb 22 00:43	55255.6937	Feb 28 16:39	55262.6548	Mar 7 15:43
1079	55270.8765	Mar 15 21:02	55278.4591	Mar 23 11:01	55285.1018	Mar 30 02:27	55292.4013	Apr 6 09:38
1080	55300.5208	Apr 14 12:30	55307.7645	Apr 21 18:21	55314.5136	Apr 28 12:20	55322.1778	May 6 04:16
1081	55330.0455	May 14 01:05	55336.9887	May 20 23:44	55343.9642	May 27 23:08	55351.9265	Jun 4 22:14
1082	55359.4692	Jun 12 11:16	55366.1879	Jun 19 04:31	55373.4802	Jun 26 11:31	55381.6085	Jul 4 14:36
1083	55388.8205	Jul 11 19:42	55395.4248	Jul 18 10:12	55403.0678	Jul 26 01:38	55411.2081	Aug 3 05:00
1084	55418.1314	Aug 10 03:09	55424.7605	Aug 16 18:15	55432.7123	Aug 24 17:06	55440.7242	Sep 1 17:23
1085	55447.4381	Sep 8 10:31	55454.2437	Sep 15 05:51	55462.3877	Sep 23 09:18	55470.1619	Oct 1 03:53
1086	55476.7817	Oct 7 18:46	55483.8948	Oct 14 21:28	55492.0678	Oct 23 01:38	55499.5326	Oct 30 12:47
1087	55506.2034	Nov 6 04:53	55513.6942	Nov 13 16:40	55521.7281	Nov 21 17:28	55528.8594	Nov 28 20:38
1088	55535.7339	Dec 5 17:37	55543.5832	Dec 13 14:00	55551.3434	Dec 21 08:15	55558.1802	Dec 28 04:20
1089	55565.3776	Jan 4 09:04	55573.4809	Jan 12 11:33	55580.8906	Jan 19 21:22	55587.5405	Jan 26 12:58
1090	55595.1054	Feb 3 02:32	55603.3051	Feb 11 07:19	55610.3588	Feb 18 08:37	55616.9774	Feb 24 23:27
1091	55624.8659	Mar 4 20:47	55632.9903	Mar 12 23:46	55639.7577	Mar 19 18:11	55646.5059	Mar 26 12:08
1092	55654.6065	Apr 3 14:33	55662.5045	Apr 11 12:06	55669.1147	Apr 18 02:45	55676.1166	Apr 25 02:48
1093	55684.2860	May 3 06:52	55691.8569	May 10 20:34	55698.4652	May 17 11:10	55705.7870	May 24 18:53
1094	55713.8776	Jun 1 21:04	55721.0914	Jun 9 02:12	55727.8435	Jun 15 20:15	55735.4926	Jun 23 11:49
1095	55743.3715	Jul 1 08:55	55750.2712	Jul 8 06:30	55757.2783	Jul 15 06:41	55765.2104	Jul 23 05:03
1096	55772.7784	Jul 30 18:41	55779.4649	Aug 6 11:09	55786.7907	Aug 13 18:59	55794.9136	Aug 21 21:56
1097	55802.1286	Aug 29 03:05	55808.7364	Sep 4 17:40	55816.3943	Sep 12 09:28	55824.5692	Sep 20 13:40
1098	55831.4651	Sep 27 11:10	55838.1363	Oct 4 03:16	55846.0881	Oct 12 02:07	55854.1468	Oct 20 03:31
1099	55860.8312	Oct 26 19:57	55867.6939	Nov 2 16:39	55875.8453	Nov 10 20:17	55883.6320	Nov 18 15:10
1100	55890.2575	Nov 25 06:11	55897.4120	Dec 2 09:53	55905.6094	Dec 10 14:37	55913.0339	Dec 18 00:49
1101	55919.7552	Dec 24 18:08						

PHASES OF THE MOON, TDT

Lunation	New Moon MJD	d h m	First Quarter MJD	m d h m	Full Moon MJD	m d h m	Last Quarter MJD	d h
			55927.2609	Jan 1 06:16	55935.3133	Jan 9 07:31	55942.3813	Jan 16 09:09
1102	55949.3197	Jan 23 07:40	55957.1741	Jan 31 04:11	55964.9131	Feb 7 21:55	55971.7118	Feb 14 17:05
1103	55978.9414	Feb 21 22:36	55987.0574	Mar 1 01:23	55994.4031	Mar 8 09:41	56001.0599	Mar 15 01:26
1104	56008.6099	Mar 22 14:38	56016.8207	Mar 30 19:42	56023.8054	Apr 6 19:20	56030.4519	Apr 13 10:51
1105	56038.3052	Apr 21 07:20	56046.4157	Apr 29 09:59	56053.1501	May 6 03:36	56059.9082	May 12 21:48
1106	56067.9918	May 20 23:48	56075.8452	May 28 20:17	56082.4672	Jun 4 11:13	56089.4462	Jun 11 10:42
1107	56097.6272	Jun 19 15:03	56105.1468	Jun 27 03:31	56111.7868	Jul 3 18:53	56119.0757	Jul 11 01:49
1108	56127.1841	Jul 19 04:25	56134.3731	Jul 26 08:57	56141.1449	Aug 2 03:29	56148.7890	Aug 9 18:56
1109	56156.6635	Aug 17 15:55	56163.5796	Aug 24 13:55	56170.5828	Aug 31 13:59	56178.5529	Sep 8 13:16
1110	56186.0915	Sep 16 02:12	56192.8208	Sep 22 19:42	56200.1387	Sep 30 03:20	56208.3155	Oct 8 07:34
1111	56215.5025	Oct 15 12:04	56222.1480	Oct 22 03:33	56229.8268	Oct 29 19:51	56238.0255	Nov 7 00:37
1112	56244.9230	Nov 13 22:09	56251.6060	Nov 20 14:33	56259.6160	Nov 28 14:47	56267.6476	Dec 6 15:33
1113	56274.3630	Dec 13 08:43	56281.2223	Dec 20 05:20	56289.4321	Dec 28 10:22		
							56297.1659	Jan 5 03:59
1114	56303.8227	Jan 11 19:45	56310.9904	Jan 18 23:46	56319.1941	Jan 27 04:39	56326.5815	Feb 3 13:57
1115	56333.3064	Feb 10 07:21	56340.8554	Feb 17 20:32	56348.8522	Feb 25 20:27	56355.9124	Mar 4 21:54
1116	56362.8279	Mar 11 19:52	56370.7276	Mar 19 17:28	56378.3947	Mar 27 09:28	56385.1928	Apr 3 04:38
1117	56392.4003	Apr 10 09:36	56400.5222	Apr 18 12:32	56407.8321	Apr 25 19:58	56414.4690	May 2 11:15
1118	56422.0205	May 10 00:30	56430.1914	May 18 04:36	56437.1847	May 25 04:26	56443.7912	May 31 18:59
1119	56451.6649	Jun 8 15:57	56459.7255	Jun 16 17:25	56466.4815	Jun 23 11:33	56473.2046	Jun 30 04:55
1120	56481.3024	Jul 8 07:15	56489.1385	Jul 16 03:19	56495.7616	Jul 22 18:17	56502.7392	Jul 29 17:44
	56510.9110	Aug 6 21:52	56518.4563	Aug 14 10:57	56525.0734	Aug 21 01:46	56532.4000	Aug 28 09:36
1122	56540.4842	Sep 5 11:37	56547.7149	Sep 12 17:09	56554.4681	Sep 19 11:14	56562.1643	Sep 27 03:57
1123	56570.0247	Oct 5 00:36	56576.9607	Oct 11 23:03	56583.9853	Oct 18 23:39	56591.9872	Oct 26 23:42
1124	56599.5354	Nov 3 12:51	56606.2488	Nov 10 05:58	56613.6367	Nov 17 15:17	56621.8117	Nov 25 19:29
1125	56629.0163	Dec 3 00:23	56635.6340	Dec 9 15:13	56643.3953	Dec 17 09:29	56651.5755	Dec 25 13:49
2014								
1126	56658.4689	Jan 1 11:15	56665.1531	Jan 8 03:40	56673.2037	Jan 16 04:53	56681.2223	Jan 24 05:20
1127	56687.9025	Jan 30 21:40	56694.8078	Feb 6 19:23	56702.9959	Feb 14 23:54	56710.7197	Feb 22 17:16
1128	56717.3339	Mar 1 08:01	56724.5610	Mar 8 13:28	56732.7149	Mar 16 17:09	56740.0744	Mar 24 01:47
1129	56746.7818	Mar 30 18:46	56754.3554	Apr 7 08:32	56762.3218	Apr 15 07:43	56769.3283	Apr 22 07:53
1130	56776.2608	Apr 29 06:15	56784.1361	May 7 03:16	56791.8035	May 14 19:17	56798.5419	May 21 13:00
1131	56805.7787	May 28 18:41	56813.8610	Jun 5 20:40	56821.1754	Jun 13 04:13	56827.7777	Jun 19 18:40
1132	56835.3400	Jun 27 08:10	56843.4999	Jul 5 12:00	56850.4764	Jul 12 11:26	56857.0899	Jul 19 02:09
1133	56864.9464	Jul 26 22:43	56873.0353	Aug 4 00:51	56879.7573	Aug 10 18:10	56886.5187	Aug 17 12:27
1134	56894.5930	Aug 25 14:14	56902.4668	Sep 2 11:12	56909.0690	Sep 9 01:39	56916.0875	Sep 16 02:06
1135	56924.2603	Sep 24 06:15	56931.8150	Oct 1 19:34	56938.4526	Oct 8 10:52	56945.8008	Oct 15 19:13
1136	56953.9151	Oct 23 21:58	56961.1176	Oct 31 02:49	56967.9333	Nov 6 22:24	56975.6365	Nov 14 15:17
1137	56983.5231	Nov 22 12:33	56990.4218	Nov 29 10:07	56997.5194	Dec 6 12:28	57005.5362	Dec 14 12:52
1138	57013.0673	Dec 22 01:37	57019.7726	Dec 28 18:33				

	New Moon		First Quarter		Full Moon		Quarter	
Lunation	MJD	m d h m	MJD	m d h m	MJD	m d h m	MJD	m d h m
					57027.2044	Jan 5 04:54	57035.4080	Jan 13 09:48
1139	57042.5519	Jan 20 13:15	57049.2011	Jan 27 04:50	57056.9653	Feb 3 23:10	57065.1604	Feb 12 03:51
1140	57071.9919	Feb 18 23:48	57078.7189	Feb 25 17:15	57086.7545	Mar 5 18:07	57094.7424	Mar 13 17:49
1141	57101.4009	Mar 20 09:37	57108.3220	Mar 27 07:44	57116.5046	Apr 4 12:07	57124.1566	Apr 12 03:46
1142	57130.7903	Apr 18 18:58	57137.9974	Apr 25 23:56	57146.1550	May 4 03:43	57153.4425	May 11 10:37
1143	57160.1767	May 18 04:14	57167.7222	May 25 17:20	57175.6806	Jun 2 16:20	57182.6548	Jun 9 15:43
1144	57189.5879	Jun 16 14:07	57197.4609	Jun 24 11:04	57205.0977	Jul 2 02:21	57211.8508	Jul 8 20:25
1145	57219.0594	Jul 16 01:25	57227.1702	Jul 24 04:05	57234.4472	Jul 31 10:44	57241.0860	Aug 7 02:04
1146	57248.6212	Aug 14 14:55	57256.8140	Aug 22 19:32	57263.7752	Aug 29 18:36	57270.4133	Sep 5 09:55
1147	57278.2794	Sep 13 06:42	57286.3751	Sep 21 09:00	57293.1192	Sep 28 02:52	57299.8800	Oct 4 21:07
1148	57308.0048	Oct 13 00:07	57315.8559	Oct 20 20:32	57322.5044	Oct 27 12:06	57329.5174	Nov 3 12:25
1149	57337.7418	Nov 11 17:48	57345.2698	Nov 19 06:28	57351.9482	Nov 25 22:45	57359.3205	Dec 3 07:41
1150	57367.4378	Dec 11 10:30	57374.6357	Dec 18 15:15	57381.4671	Dec 25 11:13		
2016								
							57389.2303	Jan 2 05:32
1151	57397.0636	Jan 10 01:32	57403.9774	Jan 16 23:27	57411.0742	Jan 24 01:47	57419.1451	Feb 1 03:29
1152	57426.6111	Feb 8 14:40	57433.3247	Feb 15 07:48	57440.7646	Feb 22 18:21	57448.9665	Mar 1 23:12
1153	57456.0803	Mar 9 01:56	57462.7112	Mar 15 17:04	57470.5014	Mar 23 12:02	57478.6375	Mar 31 15:18
1154	57485.4755	Apr 7 11:25	57492.1670	Apr 14 04:00	57500.2255	Apr 22 05:25	57508.1457	Apr 30 03:30
1155	57514.8129	May 6 19:31	57521.7106	May 13 17:03	57529.8858	May 21 21:16	57537.5091	May 29 12:13
1156	57544.1255	Jun 5 03:01	57551.3409	Jun 12 08:11	57559.4607	Jun 20 11:03	57566.7637	Jun 27 18:20
1157	57573.4599	Jul 4 11:02	57581.0368	Jul 12 00:53	57588.9567	Jul 19 22:58	57595.9589	Jul 26 23:01
1158	57602.8651	Aug 2 20:46	57610.7653	Aug 10 18:22	57618.3942	Aug 18 09:28	57625.1542	Aug 25 03:42
1159	57632.3780	Sep 1 09:04	57640.4931	Sep 9 11:50	57647.7960	Sep 16 19:06	57654.4148	Sep 23 09:57
1160	57662.0087	Oct 1 00:13	57670.1904	Oct 9 04:34	57677.1835	Oct 16 04:24	57683.8020	Oct 22 19:15
1161	57691.7356	Oct 30 17:39	57699.8279	Nov 7 19:52	57706.5786	Nov 14 13:53	57713.3572	Nov 21 08:34
1162	57721.5134	Nov 29 12:19	57729.3778	Dec 7 09:04	57736.0046	Dec 14 00:07	57743.0812	Dec 21 01:57
1163	57751.2877	Dec 29 06:54						
2017								
			57758.8251	Jan 5 19:48	57765.4828	Jan 12 11:35	57772.9268	Jan 19 22:15
1164	57781.0057	Jan 28 00:08	57788.1806	Feb 4 04:20	57795.0236	Feb 11 00:34	57802.8155	Feb 18 19:34
1165	57810.6246	Feb 26 14:59	57817.4816	Mar 5 11:34	57824.6215	Mar 12 14:55	57832.6662	Mar 20 15:59
1166	57840.1238	Mar 28 02:58	57846.7782	Apr 3 18:41	57854.2564	Apr 11 06:09	57862.4152	Apr 19 09:58
1167	57869.5120	Apr 26 12:17	57876.1167	May 3 02:48	57883.9053	May 10 21:44	57892.0236	May 19 00:34
1168	57898.8233	May 25 19:46	57905.5301	Jun 1 12:43	57913.5491	Jun 9 13:11	57921.4818	Jun 17 11:34
1169	57928.1055	Jun 24 02:32	57935.0363	Jul 1 00:52	57943.1720	Jul 9 04:08	57950.8103	Jul 16 19:27
1170	57957.4075	Jul 23 09:47	57964.6418	Jul 30 15:24	57972.7582	Aug 7 18:12	57980.0529	Aug 15 01:16
1171	57986.7718	Aug 21 18:31	57994.3432	Aug 29 08:14	58002.2944	Sep 6 07:04	58009.2682	Sep 13 06:26
1172	58016.2299	Sep 20 05:31	58024.1213	Sep 28 02:55	58031.7786	Oct 5 18:41	58038.5185	Oct 12 12:27
1173	58045.8008	Oct 19 19:13	58053.9328	Oct 27 22:23	58061.2250	Nov 4 05:24	58067.8594	Nov 10 20:38
1174	58075.4884	Nov 18 11:43	58083.7112	Nov 26 17:04	58090.6584	Dec 3 15:48	58097.3281	Dec 10 07:53
1175	58105.2719	Dec 18 06:32	58113.3897	Dec 26 09:21				

PHASES OF THE MOON, TDT

	New Moon		First Quarter		Full Moon		Last Quarter	
Lunation	MJD	m d h m	MJD	m d h m	MJD	m d h m	MJD	m d h m
					58120.1009	Jan 2 02:25	58126.9350	Jan 8 22:26
1176	58135.0961	Jan 17 02:18	58142.9316	Jan 24 22:22	58149.5611	Jan 31 13:28	58156.6633	Feb 7 15:55
1177	58164.8794	Feb 15 21:06	58172.3405	Feb 23 08:10	58179.0365	Mar 2 00:52	58186.4729	Mar 9 11:21
1178	58194.5505	Mar 17 13:13	58201.6502	Mar 24 15:36	58208.5264	Mar 31 12:38	58216.3046	Apr 8 07:19
1179	58224.0821	Apr 16 01:58	58230.9075	Apr 22 21:47	58238.0412	Apr 30 00:59	58246.0901	May 8 02:10
1180	58253.4923	May 15 11:49	58260.1599	May 22 03:50	58267.5977	May 29 14:21	58275.7728	Jun 6 18:33
1181	58282.8225	Jun 13 19:44	58289.4528	Jun 20 10:52	58297.2043	Jun 28 04:54	58305.3277	Jul 6 07:52
1182	58312.1174	Jul 13 02:49	58318.8288	Jul 19 19:53	58326.8483	Jul 27 20:21	58334.7633	Aug 4 18:19
1183	58341.4159	Aug 11 09:59	58348.3262	Aug 18 07:50	58356.4981	Aug 26 11:57	58364.1101	Sep 3 02:39
1184	58370.7518	Sep 9 18:03	58377.9695	Sep 16 23:16	58386.1205	Sep 25 02:54	58393.4073	Oct 2 09:47
1185	58400.1584	Oct 9 03:48	58407.7520	Oct 16 18:03	58415.6988	Oct 24 16:46	58422.6955	Oct 31 16:41
1186	58429.6689	Nov 7 16:03	58437.6218	Nov 15 14:55	58445.2363	Nov 23 05:40	58452.0139	Nov 30 00:20
1187	58459.3066	Dec 7 07:22	58467.4933	Dec 15 11:50	58474.7428	Dec 22 17:50	58481.3997	Dec 29 09:36
2019								
1188	58489.0620	Jan 6 01:29	58497.2824	Jan 14 06:47	58504.2203	Jan 21 05:17	58510.8830	Jan 27 21:12
1189	58518.8783	Feb 4 21:05	58526.9357	Feb 12 22:27	58533.6630	Feb 19 15:55	58540.4784	Feb 26 11:29
1190	58548.6702	Mar 6 16:05	58556.4362	Mar 14 10:28	58563.0723	Mar 21 01:44	58570.1742	Mar 28 04:11
1191	58578.3692	Apr 5 08:52	58585.7965	Apr 12 19:07	58592.4676	Apr 19 11:13	58599.9302	Apr 26 22:19
1192	58607.9491	May 4 22:47	58615.0510	May 12 01:13	58621.8837	May 18 21:13	58629.6908	May 26 16:35
1193	58637.4188	Jun 3 10:03	58644.2503	Jun 10 06:00	58651.3554	Jun 17 08:32	58659.4080	Jun 25 09:48
1194	58666.8037	Jul 2 19:17	58673.4556	Jul 9 10:56	58680.9023	Jul 16 21:39	58689.0550	Jul 25 01:19
1195	58696.1341	Aug 1 03:13	58702.7307	Aug 7 17:32	58710.5211	Aug 15 12:30	58718.6231	Aug 23 14:57
1196	58725.4432	Aug 30 10:38	58732.1331	Sep 6 03:12	58740.1902	Sep 14 04:34	58748.1125	Sep 22 02:42
1197	58754.7691	Sep 28 18:28	58761.7002	Oct 5 16:48	58769.8813	Oct 13 21:09	58777.5281	Oct 21 12:40
1198	58784.1525	Oct 28 03:40	58791.4335	Nov 4 10:24	58799.5664	Nov 12 13:36	58806.8834	Nov 19 21:12
1199	58813.6297	Nov 26 15:07	58821.2912	Dec 4 06:59	58829.2176	Dec 12 05:13	58836.2071	Dec 19 04:58
1200	58843.2183	Dec 26 05:14						
2020								
			58851.1990	Jan 3 04:47	58858.8072	Jan 10 19:22	58865.5414	Jan 17 13:00
1201	58872.9050	Jan 24 21:43	58881.0714	Feb 2 01:43	58888.3155	Feb 9 07:34	58894.9294	Feb 15 22:18
1202	58902.6480	Feb 23 15:33	58910.8323	Mar 2 19:59	58917.7423	Mar 9 17:49	58924.3996	Mar 16 09:35
1203	58932.3954	Mar 24 09:29	58940.4322	Apr 1 10:22	58947.1085	Apr 8 02:36	58953.9565	Apr 14 22:57
1204	58962.1021	Apr 23 02:27	58969.8608	Apr 30 20:39	58976.4489	May 7 10:46	58983.5860	May 14 14:04
1205	58991.7361	May 22 17:40	58999.1466	May 30 03:31	59005.8011	Jun 5 19:14	59013.2673	Jun 13 06:25
1206	59021.2796	Jun 21 06:43	59028.3450	Jun 28 08:17	59035.1983	Jul 5 04:46	59042.9793	Jul 12 23:30
1207	59050.7320	Jul 20 17:34	59057.5234	Jul 27 12:34	59064.6666	Aug 3 16:00	59072.6986	Aug 11 16:46
1208	59080.1131	Aug 19 02:43	59086.7492	Aug 25 17:59	59094.2245	Sep 2 05:23	59102.3937	Sep 10 09:27
1209	59109.4593	Sep 17 11:01	59116.0806	Sep 24 01:56	59123.8795	Oct 1 21:06	59132.0282	Oct 10 00:41
1210	59138.8140	Oct 16 19:32	59145.5584	Oct 23 13:24	59153.6183	Oct 31 14:50	59161.5745	Nov 8 13:47
	59168.2142	Nov 15 05:08	59175.1987	Nov 22 04:46	59183.3964	Nov 30 09:31	59191.0262	Dec 8 00:38
	59197.6790	Dec 14 16:18	59204.9878	Dec 21 23:42	59213.1454	Dec 30 03:29		

PHASES OF THE MOON, TDT

Lunation	New Moon MJD	d h m	First Quarter MJD	d h m	Full Moon MJD	m d h m	Last Quarter MJD	m d h m
2021								
							59220.4017	Jan 6 09:38
1213	59227.2093	Jan 13 05:01	59234.8769	Jan 20 21:03	59242.8037	Jan 28 19:17	59249.7349	Feb 4 17:38
1214	59256.7964	Feb 11 19:07	59264.7837	Feb 19 18:48	59272.3461	Feb 27 08:18	59279.0635	Mar 6 01:31
1215	59286.4322	Mar 13 10:22	59294.6122	Mar 21 14:42	59301.7842	Mar 28 18:49	59308.4192	Apr 4 10:04
1216	59316.1056	Apr 12 02:32	59324.2917	Apr 20 07:00	59331.1477	Apr 27 03:33	59337.8273	May 3 19:51
1217	59345.7923	May 11 19:01	59353.8012	May 19 19:14	59360.4688	May 26 11:15	59367.3094	Jun 2 07:26
1218	59375.4540	Jun 10 10:54	59383.1635	Jun 18 03:55	59389.7784	Jun 24 18:41	59396.8832	Jul 1 21:12
1219	59405.0540	Jul 10 01:18	59412.4249	Jul 17 10:12	59419.1098	Jul 24 02:38	59426.5536	Jul 31 13:17
1220	59434.5773	Aug 8 13:51	59441.6394	Aug 15 15:21	59448.5022	Aug 22 12:03	59456.3016	Aug 30 07:14
1221	59464.0368	Sep 7 00:53	59470.8615	Sep 13 20:41	59477.9971	Sep 20 23:56	59486.0821	Sep 29 01:58
1222	59493.4629	Oct 6 11:07	59500.1433	Oct 13 03:26	59507.6235	Oct 20 14:58	59515.8377	Oct 28 20:06
1223	59522.8859	Nov 4 21:16	59529.5328	Nov 11 12:47	59537.3740	Nov 19 08:59	59545.5200	Nov 27 12:29
1224	59552.3223	Dec 4 07:44	59559.0672	Dec 11 01:37	59567.1921	Dec 19 04:37	59575.1006	Dec 27 02:25
2022								
1225	59581.7741	Jan 2 18:35	59588.7587	Jan 9 18:12	59596.9928	Jan 17 23:50	59604.5709	Jan 25 13:42
1226	59611.2411	Feb 1 05:47	59618.5773	Feb 8 13:51	59626.7067	Feb 16 16:58	59633.9400	Feb 23 22:34
1227	59640.7333	Mar 2 17:36	59648.4490	Mar 10 10:47	59656.3047	Mar 18 07:19	59663.2350	Mar 25 05:38
1228	59670.2678	Apr 1 06:26	59678.2839	Apr 9 06:49	59685.7890	Apr 16 18:56	59692.4983	Apr 23 11:58
1229	59699.8537	Apr 30 20:29	59708.0157	May 9 00:23	59715.1773	May 16 04:15	59721.7808	May 22 18:44
1230	59729.4802	May 30 11:31	59737.6178	Jun 7 14:50	59744.4950	Jun 14 11:53	59751.1334	Jun 21 03:12
1231	59759.1204	Jun 29 02:53	59767.0940	Jul 7 02:15	59773.7769	Jul 13 18:39	59780.5971	Jul 20 14:20
1232	59788.7474	Jul 28 17:56	59796.4637	Aug 5 11:08	59803.0673	Aug 12 01:37	59810.1925	Aug 19 04:37
1233	59818.3460	Aug 27 08:18	59825.7561	Sep 3 18:09	59832.4169	Sep 10 10:00	59839.9119	Sep 17 21:53
1234	59847.9137	Sep 25 21:56	59855.0106	Oct 3 00:15	59861.8723	Oct 9 20:56	59869.7196	Oct 17 17:16
1235	59877.4513	Oct 25 10:50	59884.2766	Nov 1 06:38	59891.4606	Nov 8 11:03	59899.5613	Nov 16 13:28
1236	59906.9572	Nov 23 22:58	59913.6096	Nov 30 14:38	59921.1731	Dec 8 04:09	59929.3731	Dec 16 08:57
1237	59936.4291	Dec 23 10:18	59943.0567	Dec 30 01:22				
					59950.9646	Jan 6 23:09	59959.0913	Jan 15 02:11
1238	59965.8711	Jan 21 20:54	59972.6389	Jan 28 15:20	59980.7706	Feb 5 18:30	59988.6679	Feb 13 16:02
1239	59995.2966	Feb 20 07:07	60002.3380	Feb 27 08:07	60010.5288	Mar 7 12:42	60018.0899	Mar 15 02:09
1240	60024.7253	Mar 21 17:24	60032.1066	Mar 29 02:34	60040.1914	Apr 6 04:36	60047.3837	Apr 13 09:13
1241	60054.1762	Apr 20 04:14	60061.8897	Apr 27 21:21	60069.7327	May 5 17:35	60076.6038	May 12 14:29
1242	60083.6628	May 19 15:54	60091.6413	May 27 15:23	60099.1548	Jun 4 03:43	60105.8143	Jun 10 19:33
1243	60113.1933	Jun 18 04:38	60121.3270	Jun 26 07:51	60128.4860	Jul 3 11:40	60135.0757	Jul 10 01:49
1244	60142.7729	Jul 17 18:33	60150.9222	Jul 25 22:08	60157.7728	Aug 1 18:33	60164.4372	Aug 8 10:30
1245	60172.4023	Aug 16 09:39	60180.4155	Aug 24 09:58	60187.0672	Aug 31 01:37	60193.9321	Sep 6 22:22
1246	60202.0701	Sep 15 01:41	60209.8145	Sep 22 19:33	60216.4158	Sep 29 09:59	60223.5756	Oct 6 13:49
1247	60231.7474	Oct 14 17:56	60239.1462	Oct 22 03:31	60245.8508	Oct 28 20:25	60253.3597	Nov 5 08:38
1248	60261.3948	Nov 13 09:28	60268.4521	Nov 20 10:51	60275.3871	Nov 27 09:17	60283.2434	Dec 5 05:50
1249	60290.9814	Dec 12 23:33	60297.7781	Dec 19 18:40	60305.0239	Dec 27 00:34		

	New Moon		First Quarter		Full Moon		Last Quarter	
Lunation	MJD	m d h m	MJD	m d h m	MJD	m d h m	MJD	d h m
							60313.1469	Jan 4 03:32
1250	60320.4990	Jan 11 11:59	60327.1623	Jan 18 03:54	60334.7467	Jan 25 17:55	60342.9716	Feb 2 23:19
1251	60349.9586	Feb 9 23:00	60356.6265	Feb 16 15:02	60364.5220	Feb 24 12:32	60372.6421	Mar 3 15:25
1252	60379.3761	Mar 10 09:02	60386.1749	Mar 17 04:12	60394.2927	Mar 25 07:01	60402.1360	Apr 2 03:16
1253	60408.7653	Apr 8 18:22	60415.8016	Apr 15 19:14	60423.9931	Apr 23 23:50	60431.4781	May 1 11:28
1254	60438.1410	May 8 03:23	60445.4925	May 15 11:49	60453.5793	May 23 13:54	60460.7179	May 30 17:14
1255	60467.5270	Jun 6 12:39	60475.2220	Jun 14 05:20	60483.0479	Jun 22 01:09	60489.9129	Jun 28 21:55
1256	60496.9573	Jul 5 22:59	60504.9514	Jul 13 22:50	60512.4294	Jul 21 10:18	60519.1199	Jul 28 02:53
1257	60526.4682	Aug 4 11:14	60534.6388	Aug 12 15:20	60541.7687	Aug 19 18:27	60548.3938	Aug 26 09:27
1258	60556.0811	Sep 3 01:57	60564.2547	Sep 11 06:07	60571.1081	Sep 18 02:36	60577.7855	Sep 24 18:51
1259	60585.7850	Oct 2 18:50	60593.7891	Oct 10 18:56	60600.4775	Oct 17 11:28	60607.3363	Oct 24 08:04
1260	60615.5335	Nov 1 12:48	60623.2476	Nov 9 05:57	60629.8956	Nov 15 21:30	60637.0619	Nov 23 01:29
1261	60645.2656	Dec 1 06:23	60652.6443	Dec 8 15:28	60659.3770	Dec 15 09:03	60666.9301	Dec 22 22:19
1262	60674.9361	Dec 30 22:28						

2025

			60681.9982	Jan 6 23:57	60688.9362	Jan 13 22:28	60696.8555	Jan 21 20:32
1263	60704.5258	Jan 29 12:37	60711.3356	Feb 5 08:03	60718.5796	Feb 12 13:55	60726.7317	Feb 20 17:34
1264	60734.0319	Feb 28 00:46	60740.6895	Mar 6 16:33	60748.2888	Mar 14 06:56	60756.4796	Mar 22 11:31
1265	60763.4576	Mar 29 10:59	60770.0943	Apr 5 02:16	60778.0162	Apr 13 00:23	60786.0672	Apr 21 01:37
1266	60792.8141	Apr 27 19:32	60799.5785	May 4 13:53	60807.7063	May 12 16:57	60815.4999	May 20 12:00
1267	60822.1274	May 27 03:04	60829.1543	Jun 3 03:42	60837.3229	Jun 11 07:45	60844.8057	Jun 18 19:20
1268	60851.4395	Jun 25 10:33	60858.8134	Jul 2 19:31	60866.8597	Jul 10 20:38	60874.0269	Jul 18 00:39
1269	60880.8003	Jul 24 19:12	60888.5295	Aug 1 12:42	60896.3307	Aug 9 07:56	60903.2176	Aug 16 05:13
1270	60910.2554	Aug 23 06:08	60918.2683	Aug 31 06:26	60925.7569	Sep 7 18:10	60932.4404	Sep 14 10:34
1271	60939.8301	Sep 21 19:55	60947.9965	Sep 29 23:55	60955.1588	Oct 7 03:49	60961.7597	Oct 13 18:14
1272	60969.5183	Oct 21 12:26	60977.6819	Oct 29 16:22	60984.5558	Nov 5 13:20	60991.2287	Nov 12 05:29
1273	60999.2836	Nov 20 06:48	61007.2916	Nov 28 07:00	61013.9689	Dec 4 23:15	61020.8700	Dec 11 20:53
1274	61029.0726	Dec 20 01:44	61036.7993	Dec 27 19:11				

2026

					61043.4195	Jan 3 10:04	61050.6594	Jan 10 15:50
1275	61058.8286	Jan 18 19:53	61066.2003	Jan 26 04:48	61072.9239	Feb 1 22:10	61080.5307	Feb 9 12:44
1276	61088.5016	Feb 17 12:02	61095.5200	Feb 24 12:29	61102.4855	Mar 3 11:39	61110.4025	Mar 11 09:40
1277	61118.0588	Mar 19 01:25	61124.8048	Mar 25 19:19	61132.0924	Apr 2 02:13	61140.2033	Apr 10 04:53
1278	61147.4950	Apr 17 11:53	61154.1062	Apr 24 02:33	61161.7252	May 1 17:24	61169.8831	May 9 21:12
1279	61176.8348	May 16 20:02	61183.4668	May 23 11:12	61191.3655	May 31 08:46	61199.4178	Jun 8 10:02
1280	61206.1218	Jun 15 02:55	61212.9143	Jun 21 21:57	61220.9985	Jun 29 23:58	61228.8126	Jul 7 19:30
1281	61235.4061	Jul 14 09:45	61242.4630	Jul 21 11:07	61250.6089	Jul 29 14:37	61258.0990	Aug 6 02:23
1282	61264.7347	Aug 12 17:38	61272.1163	Aug 20 02:47	61280.1803	Aug 28 04:20	61287.3280	Sep 4 07:52
1283	61294.1446	Sep 11 03:28	61301.8645	Sep 18 20:45	61309.7015	Sep 26 16:50	61316.5599	Oct 3 13:26
1284	61323.6606	Oct 10 15:51	61331.6763	Oct 18 16:14	61339.1756	Oct 26 04:13	61345.8539	Nov 1 20:30
1285	61353.2939	Nov 9 07:03	61361.4923	Nov 17 11:49	61368.6213	Nov 24 14:55	61375.2568	Dec 1 06:10
1286	61383.0368	Dec 9 00:53	61391.2387	Dec 17 05:44	61398.0621	Dec 24 01:29	61404.7921	Dec 30 19:01

PHASES OF THE MOON, TDT

Lunation	New Moon MJD	m d h m	First Quarter MJD	m d h m	Full Moon MJD	m d h m	Last Quarter MJD	m d h m
2027								
1287	61412.8511	Jan 7 20:26	61420.8581	Jan 15 20:36	61427.5129	Jan 22 12:19	61434.4560	Jan 29 10:57
1288	61442.6648	Feb 6 15:57	61450.3330	Feb 14 08:00	61456.9756	Feb 20 23:25	61464.2206	Feb 28 05:18
1289	61472.3962	Mar 8 09:31	61479.6850	Mar 15 16:26	61486.4479	Mar 22 10:45	61494.0383	Mar 30 00:55
1290	61501.9946	Apr 6 23:52	61508.9568	Apr 13 22:58	61515.9363	Apr 20 22:28	61523.8465	Apr 28 20:19
1291	61531.4581	May 6 11:00	61538.1980	May 13 04:45	61545.4585	May 20 11:00	61553.5827	May 28 13:59
1292	61560.8205	Jun 4 19:41	61567.4565	Jun 11 10:57	61575.0316	Jun 19 00:46	61583.2052	Jun 27 04:55
1293	61590.1272	Jul 4 03:03	61596.7779	Jul 10 18:40	61604.6570	Jul 18 15:46	61612.7056	Jul 26 16:56
1294	61619.4211	Aug 2 10:06	61626.2051	Aug 9 04:55	61634.3124	Aug 17 07:30	61642.1031	Aug 25 02:28
1295	61648.7377	Aug 31 17:42	61655.7726	Sep 7 18:32	61663.9616	Sep 15 23:05	61671.4317	Sep 23 10:22
1296	61678.1092	Sep 30 02:37	61685.4921	Oct 7 11:49	61693.5751	Oct 15 13:48	61700.7294	Oct 22 17:30
1297	61707.5679	Oct 29 13:38	61715.3341	Nov 6 08:01	61723.1438	Nov 14 03:27	61730.0343	Nov 21 00:49
1298	61737.1428	Nov 28 03:26	61745.2245	Dec 6 05:23	61752.6735	Dec 13 16:10	61759.3834	Dec 20 09:12
1299	61766.8427	Dec 27 20:13						
			61775.0705	Jan 5 01:42	61782.1696	Jan 12 04:04	61788.8105	Jan 18 19:27
1300	61796.6345	Jan 26 15:14	61804.7997	Feb 3 19:12	61811.6284	Feb 10 15:05	61818.3397	Feb 17 08:09
1301	61826.4434	Feb 25 10:39	61834.3774	Mar 4 09:04	61841.0467	Mar 11 01:07	61847.9750	Mar 17 23:24
1302	61856.1892	Mar 26 04:32	61863.8032	Apr 2 19:17	61870.4360	Apr 9 10:28	61877.6931	Apr 16 16:38
1303	61885.8250	Apr 24 19:48	61893.1020	May 2 02:27	61899.8265	May 8 19:50	61907.4474	May 16 10:44
1304	61915.3454	May 24 08:17	61922.3179	May 31 07:38	61929.2569	Jun 7 06:10	61937.1865	Jun 15 04:29
1305	61944.7699	Jun 22 18:29	61951.5082	Jun 29 12:12	61958.7583	Jul 6 18:12	61966.8734	Jul 14 20:58
1306	61974.1270	Jul 22 03:03	61980.7370	Jul 28 17:41	61988.3409	Aug 5 08:11	61996.4906	Aug 13 11:46
1307	62003.4479	Aug 20 10:45	62010.0674	Aug 27 01:37	62017.9922	Sep 3 23:49	62026.0326	Sep 12 00:47
1308	62032.7673	Sep 18 18:25	62039.5495	Sep 25 13:11	62047.6848	Oct 3 16:26	62055.4986	Oct 11 11:58
1309	62062.1236	Oct 18 02:58	62069.2044	Oct 25 04:54	62077.3878	Nov 2 09:18	62084.8937	Nov 9 21:27
1310	62091.5550	Nov 16 13:19	62099.0110	Nov 24 00:16	62107.0704	Dec 2 01:41	62114.2361	Dec 9 05:40
1311	62121.0885	Dec 16 02:07	62128.9070	Dec 23 21:46	62136.7011	Dec 31 16:50		
2029								
							62143.5608	Jan 7 13:28
1312	62150.7262	Jan 14 17:26	62158.8086	Jan 22 19:24	62166.2533	Jan 30 06:05	62172.9121	Feb 5 21:53
1313	62180.4393	Feb 13 10:33	62188.6327	Feb 21 15:11	62195.7162	Feb 28 17:11	62202.3283	Mar 7 07:53
1314	62210.1808	Mar 15 04:20	62218.3155	Mar 23 07:34	62225.1025	Mar 30 02:28	62231.8283	Apr 5 19:53
1315	62239.9037	Apr 13 21:41	62247.8273	Apr 21 19:51	62254.4431	Apr 28 10:38	62261.4092	May 5 09:49
1316	62269.5717	May 13 13:43	62277.1786	May 21 04:17	62283.7769	May 27 18:39	62291.0555	Jun 4 01:20
1317	62299.1609	Jun 12 03:52	62306.4133	Jun 19 09:55	62313.1413	Jun 26 03:24	62320.7490	Jul 3 17:59
1318	62328.6612	Jul 11 15:52	62335.5941	Jul 18 14:15	62342.5673	Jul 25 13:37	62350.4698	Aug 2 11:17
1319	62358.0812	Aug 10 01:57	62364.7892	Aug 16 18:57	62372.0780	Aug 24 01:52	62380.1904	Sep 1 04:34
1320	62387.4482	Sep 8 10:45	62394.0628	Sep 15 01:30	62401.6878	Sep 22 16:30	62409.8736	Sep 30 20:58
1321	62416.8025	Oct 7 19:16	62423.4653	Oct 14 11:10	62431.3949	Oct 22 09:29	62439.4815	Oct 30 11:33
1322	62446.1842	Nov 6 04:25	62453.0253	Nov 13 00:36	62461.1695	Nov 21 04:04	62468.9923	Nov 28 23:49
1323	62475.6204	Dec 5 14:53	62482.7435	Dec 12 17:51	62490.9498	Dec 20 22:48	62498.4098	Dec 28 09:50

	New Moon		First Quarter		Full Moon		Last Quarter	
Lunation	MJD	m d h m	MJD	m d h m	MJD	m d h m	MJD	m d h m
2030								
1324	62505.1186	Jan 4 02:51	62512.5883	Jan 11 14:07	62520.6635	Jan 19 15:55	62527.7608	Jan 26 18:16
1325	62534.6727	Feb 2 16:09	62542.4935	Feb 10 11:51	62550.2645	Feb 18 06:21	62557.0826	Feb 25 01:59
1326	62564.2749	Mar 4 06:36	62572.3672	Mar 12 08:49	62579.7483	Mar 19 17:58	62586.4115	Mar 26 09:53
1327	62593.9192	Apr 2 22:04	62602.1236	Apr 11 02:58	62609.1397	Apr 18 03:21	62615.7779	Apr 24 18:40
1328	62623.5926	May 2 14:13	62631.7171	May 10 17:13	62638.4724	May 17 11:20	62645.2074	May 24 04:59
1329	62653.2656	Jun 1 06:23	62661.1506	Jun 9 03:37	62667.7793	Jun 15 18:42	62674.7228	Jun 22 17:21
1330	62682.8997	Jun 30 21:36	62690.4604	Jul 8 11:03	62697.0925	Jul 15 02:13	62704.3394	Jul 22 08:09
1331	62712.4667	Jul 30 11:12	62719.6971	Aug 6 16:44	62726.4483	Aug 13 10:46	62734.0532	Aug 21 01:17
1332	62741.9642	Aug 28 23:08	62748.9144	Sep 4 21:57	62755.8882	Sep 11 21:19	62763.8317	Sep 19 19:58
1333	62771.4137	Sep 27 09:56	62778.1648	Oct 4 03:57	62785.4500	Oct 11 10:48	62793.6191	Oct 19 14:51
1334	62800.8459	Oct 26 20:18	62807.4980	Nov 2 11:57	62815.1468	Nov 10 03:31	62823.3566	Nov 18 08:33
1335	62830.2831	Nov 25 06:48	62836.9569	Dec 1 22:58	62844.9456	Dec 9 22:42	62853.0016	Dec 18 00:02
1336	62859.7315	Dec 24 17:33	62866.5676	Dec 31 13:37				
2031								
					62874.7687	Jan 8 18:27	62882.5336	Jan 16 12:48
1337	62889.1890	Jan 23 04:32	62896.3224	Jan 30 07:44	62904.5329	Feb 7 12:47	62911.9521	Feb 14 22:51
1338	62918.6598	Feb 21 15:50	62926.1690	Mar 1 04:03	62934.1880	Mar 9 04:31	62941.2757	Mar 16 06:37
1339	62948.1599	Mar 23 03:50	62956.0232	Mar 31 00:33	62963.7239	Apr 7 17:22	62970.5410	Apr 14 12:59
1340	62977.7071	Apr 21 16:58	62985.8060	Apr 29 19:21	62993.1535	May 7 03:41	62999.7973	May 13 19:08
1341	63007.3044	May 21 07:18	63015.4727	May 29 11:21	63022.4998	Jun 5 12:00	63029.0985	Jun 12 02:22
1342	63036.9346	Jun 19 22:26	63045.0140	Jun 28 00:20	63051.7934	Jul 4 19:02	63058.4938	Jul 11 11:51
1343	63066.5704	Jul 19 13:41	63074.4416	Jul 27 10:36	63081.0741	Aug 3 01:47	63088.0172	Aug 10 00:25
1344	63096.1899	Aug 18 04:33	63103.7784	Aug 25 18:41	63110.3901	Sep 1 09:22	63117.6775	Sep 8 16:16
1345	63125.7833	Sep 16 18:48	63133.0562	Sep 24 01:21	63139.7910	Sep 30 18:59	63147.4523	Oct 8 10:51
1346	63155.3485	Oct 16 08:22	63162.3178	Oct 23 07:38	63169.3152	Oct 30 07:34	63177.2940	Nov 7 07:03
1347	63184.8825	Nov 14 21:11	63191.6153	Nov 21 14:46	63198.9720	Nov 28 23:20	63207.1395	Dec 7 03:21
1348	63214.3798	Dec 14 09:07	63221.0012	Dec 21 00:02	63228.7321	Dec 28 17:34		
2032								
							63236.9204	Jan 5 22:05
1349	63243.8388	Jan 12 20:08	63250.5108	Jan 19 12:16	63258.5372	Jan 27 12:54	63266.5764	Feb 4 13:50
1350	63273.2677	Feb 11 06:25	63280.1459	Feb 18 03:30	63288.3225	Feb 26 07:44	63296.0751	Mar 5 01:48
1351	63302.6846	Mar 11 16:26	63309.8735	Mar 18 20:58	63318.0330	Mar 27 00:47	63325.4245	Apr 3 10:11
1352	63332.1116	Apr 10 02:41	63339.6427	Apr 17 15:26	63347.6325	Apr 25 15:11	63354.6687	May 2 16:03
1353	63361.5673	May 9 13:37	63369.4059	May 17 09:45	63377.1100	May 25 02:38	63383.8697	May 31 20:52
1354	63391.0648	Jun 8 01:33	63399.1257	Jun 16 03:01	63406.4817	Jun 23 11:34	63413.0924	Jun 30 02:13
1355	63420.6130	Jul 7 14:43	63428.7731	Jul 15 18:33	63435.7866	Jul 22 18:53	63442.3935	Jul 29 09:27
1356	63450.2171	Aug 6 05:13	63458.3279	Aug 14 07:52	63465.0750	Aug 21 01:48	63471.8157	Aug 27 19:35
1357	63479.8734	Sep 4 20:58	63487.7850	Sep 12 18:50	63494.3969	Sep 19 09:31	63501.3845	Sep 26 09:14
1358	63509.5608	Oct 4 13:28	63517.1588	Oct 12 03:49	63523.7912	Oct 18 18:59	63531.1042	Oct 26 02:30
1359	63539.2403	Nov 3 05:46	63546.4822	Nov 10 11:34	63553.2801	Nov 17 06:43	63560.9506	Nov 24 22:49
1360	63568.8708	Dec 2 20:54	63575.7984	Dec 9 19:10	63582.8682	Dec 16 20:50	63590.8614	Dec 24 20:40

PHASES OF THE MOON, TDT

Lunation	New Moon MJD	d h m	First Quarter MJD	d h m	Full Moon MJD	m d h m	Last Quarter MJD	m d h m
2033								
1361	63598.4292	Jan 1 10:18	63605.1497	Jan 8 03:36	63612.5474	Jan 15 13:08	63620.7409	Jan 23 17:47
1362	63627.9174	Jan 30 22:01	63634.5663	Feb 6 13:35	63642.2954	Feb 14 07:05	63650.4960	Feb 22 11:54
1363	63657.3505	Mar 1 08:25	63664.0613	Mar 8 01:28	63672.0685	Mar 16 01:39	63680.0770	Mar 24 01:51
1364	63686.7450	Mar 30 17:53	63693.6355	Apr 6 15:15	63701.8045	Apr 14 19:19	63709.4885	Apr 22 11:43
1365	63716.1162	Apr 29 02:47	63723.2823	May 6 06:46	63731.4471	May 14 10:44	63738.7709	May 21 18:30
1366	63745.4846	May 28 11:38	63752.9861	Jun 4 23:40	63760.9725	Jun 12 23:20	63767.9797	Jun 19 23:31
1367	63774.8807	Jun 26 21:08	63782.7176	Jul 4 17:13	63790.3956	Jul 12 09:30	63797.1725	Jul 19 04:08
1368	63804.3429	Jul 26 08:14	63812.4354	Aug 3 10:27	63819.7561	Aug 10 18:09	63826.4057	Aug 17 09:44
1369	63833.9034	Aug 24 21:41	63842.1006	Sep 2 02:25	63849.0984	Sep 9 02:22	63855.7325	Sep 15 17:35
1370	63863.5701	Sep 23 13:41	63871.6902	Oct 1 16:34	63878.4579	Oct 8 10:59	63885.2005	Oct 15 04:49
1371	63893.3122	Oct 23 07:30	63901.1996	Oct 31 04:47	63907.8564	Nov 6 20:33	63914.8403	Nov 13 20:10
1372	63923.0697	Nov 22 01:40	63930.6363	Nov 29 15:16	63937.3079	Dec 6 07:23	63944.6452	Dec 13 15:29
1373	63952.7831	Dec 21 18:48	63960.0148	Dec 29 00:21				
2034								
					63966.8252	Jan 4 19:48	63974.5543	Jan 12 13:18
1374	63982.4185	Jan 20 10:03	63989.3564	Jan 27 08:33	63996.4207	Feb 3 10:06	64004.4654	Feb 11 11:10
1375	64011.9663	Feb 18 23:11	64018.6912	Feb 25 16:35	64026.0912	Mar 5 02:11	64034.2817	Mar 13 06:46
1376	64041.4276	Mar 20 10:16	64048.0553	Mar 27 01:20	64055.8056	Apr 3 19:20	64063.9488	Apr 11 22:46
1377	64070.8105	Apr 18 19:27	64077.4833	Apr 25 11:36	64085.5117	May 3 12:17	64093.4565	May 11 10:57
1378	64100.1346	May 18 03:14	64106.9991	May 24 23:59	64115.1633	Jun 2 03:55	64122.8230	Jun 9 19:45
1379	64129.4355	Jun 16 10:27	64136.6086	Jun 23 14:36	64144.7401	Jul 1 17:46	64152.0835	Jul 9 02:00
1380	64158.7614	Jul 15 18:16	64166.2960	Jul 23 07:06	64174.2470	Jul 31 05:56	64181.2858	Aug 7 06:51
1381	64188.1627	Aug 14 03:54	64196.0309	Aug 22 00:45	64203.7017	Aug 29 16:50	64210.4879	Sep 5 11:43
1382	64217.6771	Sep 12 16:15	64225.7782	Sep 20 18:41	64233.1236	Sep 28 02:58	64239.7541	Oct 4 18:06
1383	64247.3152	Oct 12 07:34	64255.5029	Oct 20 12:04	64262.5303	Oct 27 12:44	64269.1448	Nov 3 03:28
1384	64277.0538	Nov 11 01:17	64285.1685	Nov 19 04:03	64291.9398	Nov 25 22:33	64298.6997	Dec 2 16:48
1385	64306.8442	Dec 10 20:16	64314.7404	Dec 18 17:46	64321.3720	Dec 25 08:56		
2035								
							64328.4182	Jan 1 10:02
1386	64336.6280	Jan 9 15:04	64344.1990	Jan 17 04:47	64350.8457	Jan 23 20:18	64358.2526	Jan 31 06:04
1387	64366.3495	Feb 8 08:23	64373.5543	Feb 15 13:18	64380.3716	Feb 22 08:55	64388.1266	Mar 2 03:02
1388	64395.9657	Mar 9 23:11	64402.8446	Mar 16 20:16	64409.9468	Mar 23 22:43	64417.9638	Mar 31 23:08
1389	64425.4576	Apr 8 10:59	64432.1222	Apr 15 02:56	64439.5569	Apr 22 13:22	64447.7049	Apr 30 16:55
1390	64454.8368	May 7 20:05	64461.4373	May 14 10:30	64469.1854	May 22 04:27	64477.3138	May 30 07:32
1391	64484.1402	Jun 6 03:22	64490.8273	Jun 12 19:51	64498.8185	Jun 20 19:39	64506.7805	Jun 28 18:44
1392	64513.4170	Jul 5 10:01	64520.3154	Jul 12 07:34	64528.4431	Jul 20 10:38	64536.1228	Jul 28 02:57
1393	64542.7174	Aug 3 17:13	64549.9123	Aug 10 21:54	64558.0427	Aug 19 01:01	64565.3814	Aug 26 09:09
1394	64572.0839	Sep 2 02:01	64579.6170	Sep 9 14:48	64587.6005	Sep 17 14:25	64594.6117	Sep 24 14:41
1395	64601.5473	Oct 1 13:08	64609.4101	Oct 9 09:50	64617.1089	Oct 17 02:37	64623.8736	Oct 23 20:58
1396	64631.1250	Oct 31 03:00	64639.2442	Nov 8 05:52	64646.5764	Nov 15 13:50	64653.2205	Nov 22 05:18
1397	64660.8186	Nov 29 19:39	64669.0461	Dec 8 01:06	64676.0239	Dec 15 00:34	64682.6873	Dec 21 16:30
1398	64690.6056	Dec 29 14:32						

Lunation	New Moon MJD	m d h m	First Quarter MJD	m d h m	Full Moon MJD	m d h m	Last Quarter MJD	m d h m
			64698.7425	Jan 6 17:49	64705.4704	Jan 13 11:17	64712.2831	Jan 20 06:48
1399	64720.4294	Jan 28 10:18	64728.2931	Feb 5 07:02	64734.9235	Feb 11 22:10	64741.9918	Feb 18 23:48
1400	64750.2087	Feb 27 05:00	64757.7015	Mar 5 16:50	64764.3825	Mar 12 09:11	64771.7777	Mar 19 18:40
1401	64779.8736	Mar 27 20:58	64787.0032	Apr 4 00:05	64793.8499	Apr 10 20:24	64801.5882	Apr 18 14:07
1402	64809.3989	Apr 26 09:34	64816.2469	May 3 05:56	64823.3408	May 10 08:11	64831.3616	May 18 08:41
1403	64838.8043	May 25 19:18	64845.4831	Jun 1 11:36	64852.8772	Jun 8 21:03	64861.0448	Jun 17 01:04
1404	64868.1325	Jun 24 03:11	64874.7600	Jun 30 18:14	64882.4726	Jul 8 11:21	64890.6117	Jul 16 14:41
1405	64897.4293	Jul 23 10:18	64904.1233	Jul 30 02:58	64912.1181	Aug 7 02:50	64920.0674	Aug 15 01:37
1406	64926.7337	Aug 21 17:37	64933.6144	Aug 28 14:45	64941.7825	Sep 5 18:47	64949.4377	Sep 13 10:30
1407	64956.0783	Sep 20 01:53	64963.2595	Sep 27 06:14	64971.4280	Oct 5 10:16	64978.7573	Oct 12 18:11
1408	64985.4940	Oct 19 11:51	64993.0520	Oct 27 01:15	65001.0316	Nov 4 00:45	65008.0624	Nov 11 01:30
1409	65015.0109	Nov 18 00:16	65022.9371	Nov 25 22:29	65030.5900	Dec 3 14:10	65037.3887	Dec 10 09:20
1410	65044.6498	Dec 17 15:36	65052.8235	Dec 25 19:46				
					65060.1087	Jan 2 02:36	65066.7711	Jan 8 18:30
1411	65074.3997	Jan 16 09:36	65082.6225	Jan 24 14:56	65089.5870	Jan 31 14:05	65096.2394	Feb 7 05:45
1412	65104.2051	Feb 15 04:55	65112.2793	Feb 23 06:42	65119.0204	Mar 2 00:29	65125.8100	Mar 8 19:26
1413	65133.9843	Mar 16 23:37	65141.7783	Mar 24 18:41	65148.4131	Mar 31 09:55	65155.4766	Apr 7 11:26
1414	65163.6729	Apr 15 16:09	65171.1338	Apr 23 03:13	65177.7883	Apr 29 18:55	65185.2065	May 7 04:57
1415	65193.2469	May 15 05:56	65200.3818	May 22 09:10	65207.1843	May 29 04:25	65214.9516	Jun 5 22:50
1416	65222.7163	Jun 13 17:11	65229.5740	Jun 20 13:47	65236.6397	Jun 27 15:21	65244.6679	Jul 5 16:02
1417	65252.1062	Jul 13 02:33	65258.7725	Jul 19 18:32	65266.1780	Jul 27 04:16	65274.3280	Aug 4 07:52
1418	65281.4463	Aug 11 10:43	65288.0423	Aug 18 01:01	65295.7990	Aug 25 19:11	65303.9198	Sep 2 22:04
1419	65310.7685	Sep 9 18:27	65317.4426	Sep 16 10:37	65325.4812	Sep 24 11:33	65333.4378	Oct 2 10:30
1420	65340.1082	Oct 9 02:36	65347.0116	Oct 16 00:17	65355.1929	Oct 24 04:38	65362.8804	Oct 31 21:08
1421	65369.5031	Nov 7 12:04	65376.7500	Nov 14 18:00	65384.9003	Nov 22 21:36	65392.2554	Nov 30 06:08
1422	65398.9858	Dec 6 23:40	65406.6134	Dec 14 14:43	65414.5693	Dec 22 13:40	65421.5877	Dec 29 14:06
2038								
1423	65428.5712	Jan 5 13:43	65436.5244	Jan 13 12:35	65444.1674	Jan 21 04:01	65450.9179	Jan 27 22:02
1424	65458.2454	Feb 4 05:53	65466.3965	Feb 12 09:31	65473.6740	Feb 19 16:11	65480.2897	Feb 26 06:57
1425	65487.9696	Mar 5 23:16	65496.1548	Mar 14 03:43	65503.0908	Mar 21 02:11	65509.7342	Mar 27 17:37
1426	65517.6974	Apr 4 16:44	65525.7522	Apr 12 18:03	65532.4425	Apr 19 10:37	65539.2615	Apr 26 06:17
1427	65547.3895	May 4 09:21	65555.1800	May 12 04:19	65561.7672	May 18 18:25	65568.8644	May 25 20:45
1428	65577.0177	Jun 3 00:25	65584.4671	Jun 10 11:13	65591.1054	Jun 17 02:32	65598.5284	Jun 24 12:41
1429	65606.5648	Jul 2 13:33	65613.6679	Jul 9 16:02	65620.4927	Jul 16 11:49	65628.2369	Jul 24 05:41
1430	65636.0288	Aug 1 00:42	65642.8491	Aug 7 20:23	65649.9570	Aug 14 22:58	65657.9676	Aug 22 23:13
1431	65665.4263	Aug 30 10:14	65672.0778	Sep 6 01:52	65679.5178	Sep 13 12:26	65687.6863	Sep 21 16:28
1432	65694.7908	Sep 28 18:59	65701.4122	Oct 5 09:54	65709.1827	Oct 13 04:23	65717.3504	Oct 21 08:25
1433	65724.1626	Oct 28 03:54	65730.8924	Nov 3 21:25	65738.9364	Nov 11 22:28	65746.9245	Nov 19 22:11
1434	65753.5750	Nov 26 13:48	65760.5330	Dec 3 12:47	65768.7303	Dec 11 17:32	65776.3960	Dec 19 09:30
1435	65783.0439	Dec 26 01:03						

PHASES OF THE MOON, TDT

	New Moon		First Quarter		Full Moon		Last Quarter	
Lunation	MJD	m d h m	MJD	m d h m	MJD	d h m	MJD	m d h
			65790.3182	Jan 2 07:38	65798.4908	Jan 10 11:47	65805.7798	Jan 17 18:43
1436	65812.5676	Jan 24 13:37	65820.1989	Feb 1 04:46	65828.1531	Feb 9 03:40	65835.1092	Feb 16 02:37
1437	65842.1380	Feb 23 03:19	65850.0946	Mar 3 02:16	65857.6918	Mar 10 16:36	65864.4228	Mar 17 10:09
1438	65871.7505	Mar 24 18:01	65879.9138	Apr 1 21:56	65887.1208	Apr 9 02:54	65893.7557	Apr 15 18:08
1439	65901.4000	Apr 23 09:36	65909.5893	May 1 14:09	65916.4731	May 8 11:21	65923.1377	May 15 03:18
1440	65931.0689	May 23 01:39	65939.1012	May 31 02:26	65945.7840	Jun 6 18:49	65952.5957	Jun 13 14:18
1441	65960.7240	Jun 21 17:23	65968.4712	Jun 29 11:19	65975.0866	Jul 6 02:05	65982.1524	Jul 13 03:40
1442	65990.3301	Jul 21 07:55	65997.7437	Jul 28 17:51	66004.4152	Aug 4 09:58	66011.8175	Aug 11 19:37
1443	66019.8693	Aug 19 20:52	66026.9706	Aug 26 23:18	66033.8089	Sep 2 19:25	66041.5742	Sep 10 13:47
1444	66049.3502	Sep 18 08:24	66056.2040	Sep 25 04:54	66063.3087	Oct 2 07:25	66071.3755	Oct 10 09:01
1445	66078.7988	Oct 17 19:10	66085.4943	Oct 24 11:52	66092.9427	Oct 31 22:37	66101.1578	Nov 9 03:47
1446	66108.2412	Nov 16 05:47	66114.8875	Nov 22 21:18	66122.7019	Nov 30 16:51	66130.8652	Dec 8 20:46
1447	66137.6897	Dec 15 16:33	66144.4187	Dec 22 10:03	66152.5270	Dec 30 12:39		
							66160.4630	Jan 7 11:07
1448	66167.1434	Jan 14 03:26	66174.0989	Jan 21 02:22	66182.3305	Jan 29 07:56	66189.9400	Feb 5 22:34
1449	66196.6012	Feb 12 14:26	66203.8992	Feb 19 21:35	66212.0422	Feb 28 01:01	66219.3055	Mar 6 07:20
1450	66226.0746	Mar 13 01:47	66233.7502	Mar 20 18:00	66241.6340	Mar 28 15:13	66248.5885	Apr 4 14:07
1451	66255.5844	Apr 11 14:01	66263.5685	Apr 19 13:39	66271.1105	Apr 27 02:39	66277.8340	May 3 20:01
1452	66285.1452	May 11 03:29	66293.2929	May 19 07:02	66300.4918	May 26 11:48	66307.0963	Jun 2 02:19
1453	66314.7530	Jun 9 18:04	66322.8983	Jun 17 21:34	66329.8059	Jun 24 19:20	66336.4299	Jul 1 10:19
1454	66344.3861	Jul 9 09:16	66352.3871	Jul 17 09:17	66359.0881	Jul 24 02:07	66365.8799	Jul 30 21:07
1455	66374.0192	Aug 8 00:28	66381.7758	Aug 15 18:37	66388.3826	Aug 22 09:11	66395.4707	Aug 29 11:18
1456	66403.6354	Sep 6 15:15	66411.0894	Sep 14 02:09	66417.7390	Sep 20 17:44	66425.1963	Sep 28 04:43
1457	66433.2272	Oct 6 05:27	66440.3628	Oct 13 08:42	66447.2022	Oct 20 04:51	66455.0195	Oct 28 00:28
1458	66462.7897	Nov 4 18:57	66469.6421	Nov 11 15:25	66476.7968	Nov 18 19:07	66484.8811	Nov 26 21:09
1459	66492.3155	Dec 4 07:34	66498.9799	Dec 10 23:31	66506.5118	Dec 18 12:17	66514.7109	Dec 26 17:04
2041								
1460	66521.7979	Jan 2 19:09	66528.4216	Jan 9 10:07	66536.3004	Jan 17 07:13	66544.4405	Jan 25 10:34
1461	66551.2390	Feb 1 05:44	66557.9871	Feb 7 23:41	66566.0990	Feb 16 02:23	66574.0208	Feb 24 00:30
1462	66580.6532	Mar 2 15:41	66587.6614	Mar 9 15:52	66595.8475	Mar 17 20:20	66603.4396	Mar 25 10:33
1463	66610.0630	Apr 1 01:31	66617.4026	Apr 8 09:40	66625.5013	Apr 16 12:02	66632.7259	Apr 23 17:25
1464	66639.4914	Apr 30 11:48	66647.1635	May 8 03:55	66655.0372	May 16 00:54	66661.9355	May 22 22:27
1465	66668.9564	May 29 22:57	66676.9041	Jun 6 21:42	66684.4582	Jun 14 11:00	66691.1343	Jun 21 03:13
1466	66698.4709	Jun 28 11:18	66706.5929	Jul 6 14:14	66713.7931	Jul 13 19:02	66720.3850	Jul 20 09:14
1467	66728.0441	Jul 28 01:04	66736.2041	Aug 5 04:54	66743.0874	Aug 12 02:06	66749.7391	Aug 18 17:44
1468	66757.6788	Aug 26 16:17	66765.7222	Sep 3 17:20	66772.3925	Sep 10 09:25	66779.2320	Sep 17 05:34
1469	66787.3629	Sep 25 08:43	66795.1485	Oct 3 03:34	66801.7527	Oct 9 18:04	66808.8795	Oct 16 21:06
1470	66817.0636	Oct 25 01:32	66824.5043	Nov 1 12:06	66831.1977	Nov 8 04:45	66838.6720	Nov 15 16:08
1471	66846.7346	Nov 23 17:38	66853.8264	Nov 30 19:50	66860.7385	Dec 7 17:43	66868.5653	Dec 15 13:34
1472	66876.3385	Dec 23 08:08	66883.1576	Dec 30 03:47				

Lunation	New Moon MJD	m d h m	First Quarter MJD	m d h m	Full Moon MJD	m d h m	Last Quarter MJD	m d h m
					66890.3716	Jan 6 08:55	66898.4761	Jan 14 11:26
1473	66905.8634	Jan 21 20:43	66912.5346	Jan 28 12:50	66920.0827	Feb 5 01:59	66928.3038	Feb 13 07:18
1474	66935.3195	Feb 20 07:40	66941.9796	Feb 26 23:31	66949.8411	Mar 6 20:11	66957.9738	Mar 14 23:22
1475	66964.7252	Mar 21 17:24	66971.5007	Mar 28 12:01	66979.5952	Apr 5 14:17	66987.4655	Apr 13 11:10
1476	66994.0976	Apr 20 02:21	67001.0976	Apr 27 02:21	67009.2846	May 5 06:50	67016.8051	May 12 19:19
1477	67023.4556	May 19 10:56	67030.7635	May 26 18:19	67038.8677	Jun 3 20:49	67046.0427	Jun 11 01:01
1478	67052.8260	Jun 17 19:49	67060.4792	Jun 25 11:30	67068.3407	Jul 3 08:11	67075.2357	Jul 10 05:39
1479	67082.2452	Jul 17 05:53	67090.2103	Jul 25 05:03	67097.7323	Aug 1 17:35	67104.4416	Aug 8 10:36
1480	67111.7518	Aug 15 18:03	67119.9144	Aug 23 21:57	67127.0858	Aug 31 02:04	67133.7154	Sep 6 17:10
1481	67141.3691	Sep 14 08:51	67149.5569	Sep 22 13:22	67156.4413	Sep 29 10:36	67163.1084	Oct 6 02:36
1482	67171.0863	Oct 14 02:04	67179.1211	Oct 22 02:54	67185.8261	Oct 28 19:50	67192.6616	Nov 4 15:53
1483	67200.8539	Nov 12 20:30	67208.6059	Nov 20 14:33	67215.2550	Nov 27 06:07	67222.3889	Dec 4 09:20
1484	67230.6047	Dec 12 14:31	67238.0200	Dec 20 00:29	67244.7389	Dec 26 17:44		
							67252.2565	Jan 3 06:09
1485	67260.2878	Jan 11 06:54	67267.3792	Jan 18 09:06	67274.2902	Jan 25 06:58	67282.1777	Feb 2 04:16
1486	67289.8812	Feb 9 21:09	67296.7093	Feb 16 17:01	67303.9161	Feb 23 21:59	67312.0476	Mar 4 01:09
1487	67319.3823	Mar 11 09:10	67326.0447	Mar 18 01:04	67333.6024	Mar 25 14:28	67341.7899	Apr 2 18:57
1488	67348.7971	Apr 9 19:08	67355.4238	Apr 16 10:10	67363.3085	Apr 24 07:24	67371.3751	May 2 09:00
1489	67378.1406	May 9 03:22	67384.8794	May 15 21:06	67392.9848	May 23 23:38	67400.8097	May 31 19:26
1490	67407.4419	Jun 7 10:36	67414.4306	Jun 14 10:20	67422.5985	Jun 22 14:22	67430.1210	Jun 30 02:54
1491	67436.7446	Jul 6 17:52	67444.0750	Jul 14 01:48	67452.1427	Jul 22 03:25	67459.3499	Jul 29 08:24
1492	67466.1000	Aug 5 02:24	67473.7905	Aug 12 18:58	67481.6290	Aug 20 15:06	67488.5489	Aug 27 13:10
1493	67495.5546	Sep 3 13:19	67503.5432	Sep 11 13:02	67511.0752	Sep 19 01:48	67517.7789	Sep 25 18:42
1494	67525.1343	Oct 3 03:13	67533.2960	Oct 11 07:06	67540.4978	Oct 18 11:57	67547.1033	Oct 25 02:29
1495	67554.8324	Nov 1 19:59	67563.0100	Nov 10 00:14	67569.9123	Nov 16 21:54	67576.5743	Nov 23 13:47
1496	67584.6098	Dec 1 14:38	67592.6449	Dec 9 15:29	67599.3356	Dec 16 08:03	67606.2123	Dec 23 05:06
1497	67614.4092	Dec 31 09:49						
2044								
			67622.1688	Jan 8 04:03	67628.7864	Jan 14 18:52	67635.9918	Jan 21 23:48
1498	67644.1707	Jan 30 04:06	67651.5745	Feb 6 13:47	67658.2799	Feb 13 06:43	67665.8482	Feb 20 20:21
1499	67673.8428	Feb 28 20:14	67680.8878	Mar 6 21:18	67687.8211	Mar 13 19:42	67695.7039	Mar 21 16:54
1500	67703.3938	Mar 29 09:27	67710.1571	Apr 5 03:46	67717.4030	Apr 12 09:40	67725.4929	Apr 20 11:50
1501	67732.8217	Apr 27 19:43	67739.4371	May 4 10:29	67747.0124	May 12 00:18	67755.1689	May 20 04:03
1502	67762.1533	May 27 03:41	67768.7741	Jun 2 18:35	67776.6371	Jun 10 15:17	67784.7091	Jun 18 17:01
1503	67791.4344	Jun 25 10:26	67798.2012	Jul 2 04:50	67806.2662	Jul 10 06:23	67814.1166	Jul 18 02:48
1504	67820.7165	Jul 24 17:12	67827.7372	Jul 31 17:42	67835.8855	Aug 8 21:15	67843.4198	Aug 16 10:04
1505	67850.0467	Aug 23 01:07	67857.3888	Aug 30 09:20	67865.4761	Sep 7 11:26	67872.6659	Sep 14 15:59
1506	67879.4616	Sep 21 11:05	67887.1471	Sep 29 03:32	67895.0217	Oct 7 00:31	67901.9124	Oct 13 21:54
1507	67908.9845	Oct 20 23:38	67916.9784	Oct 28 23:29	67924.5193	Nov 5 12:28	67931.2158	Nov 12 05:11
1508	67938.6243	Nov 19 14:59	67946.8178	Nov 27 19:38	67953.9827	Dec 4 23:35	67960.6205	Dec 11 14:54
1509	67968.3711	Dec 19 08:54	67976.5842	Dec 27 14:01				

PHASES OF THE MOON, TDT

Lunation	New Moon MJD	m d h m	First Quarter MJD	m d h m	Full Moon MJD	m d h m	Last Quarter MJD	m d h m
					67983.4318	Jan 3 10:22	67990.1481	Jan 10 03:33
1510	67998.1852	Jan 18 04:27	68006.2154	Jan 26 05:10	68012.8797	Feb 1 21:07	68019.7948	Feb 8 19:04
1511	68027.9947	Feb 16 23:52	68035.6932	Feb 24 16:38	68042.3291	Mar 3 07:54	68049.5355	Mar 10 12:51
1512	68057.7195	Mar 18 17:16	68065.0400	Mar 26 00:58	68071.7807	Apr 1 18:44	68079.3288	Apr 9 07:54
1513	68087.3110	Apr 17 07:28	68094.3009	Apr 24 07:13	68101.2454	May 1 05:53	68109.1195	May 9 02:52
1514	68116.7693	May 16 18:28	68123.5275	May 23 12:40	68130.7456	May 30 17:54	68138.8503	Jun 7 20:24
1515	68146.1292	Jun 15 03:06	68152.7707	Jun 21 18:30	68160.3035	Jun 29 07:17	68168.4804	Jul 7 11:32
1516	68175.4372	Jul 14 10:30	68182.0788	Jul 21 01:53	68189.9249	Jul 28 22:12	68197.9988	Aug 5 23:58
1517	68204.7364	Aug 12 17:40	68211.4976	Aug 19 11:56	68219.5895	Aug 27 14:09	68227.4199	Sep 4 10:05
1518	68234.0618	Sep 11 01:29	68241.0635	Sep 18 01:31	68249.2588	Sep 26 06:13	68256.7728	Oct 3 18:33
1519	68263.4431	Oct 10 10:38	68270.7893	Oct 17 18:57	68278.8975	Oct 25 21:32	68286.0909	Nov 2 02:11
1520	68292.9098	Nov 8 21:50	68300.6438	Nov 16 15:27	68308.4894	Nov 24 11:45	68315.4081	Dec 1 09:48
1521	68322.4880	Dec 8 11:43	68330.5483	Dec 16 13:10	68338.0351	Dec 24 00:50	68344.7587	Dec 30 18:13
2046								
1522	68352.1842	Jan 7 04:25	68360.4054	Jan 15 09:44	68367.5365	Jan 22 12:53	68374.1755	Jan 29 04:13
1523	68381.9659	Feb 5 23:11	68390.1400	Feb 14 03:22	68396.9899	Feb 20 23:46	68403.6835	Feb 27 16:24
1524	68411.7615	Mar 7 18:17	68419.7181	Mar 15 17:14	68426.3945	Mar 22 09:28	68433.2906	Mar 29 06:59
1525	68441.4950	Apr 6 11:53	68449.1408	Apr 14 03:23	68455.7655	Apr 20 18:22	68462.9803	Apr 27 23:32
1526	68471.1231	May 6 02:57	68478.4348	May 13 10:26	68485.1365	May 20 03:17	68492.7137	May 27 17:08
1527	68500.6414	Jun 4 15:24	68507.6450	Jun 11 15:29	68514.5495	Jun 18 13:11	68522.4452	Jun 26 10:41
1528	68530.0695	Jul 4 01:40	68536.8296	Jul 10 19:55	68544.0391	Jul 18 00:56	68552.1393	Jul 26 03:21
1529	68559.4352	Aug 2 10:27	68566.0534	Aug 9 01:17	68573.6190	Aug 16 14:51	68581.7760	Aug 24 18:37
1530	68588.7685	Aug 31 18:27	68595.3807	Sep 7 09:08	68603.2782	Sep 15 06:41	68611.3451	Sep 23 08:17
1531	68618.1019	Sep 30 02:27	68624.8627	Oct 6 20:42	68632.9878	Oct 14 23:42	68640.8395	Oct 22 20:09
1532	68647.4710	Oct 29 11:18	68654.5207	Nov 5 12:30	68662.7123	Nov 13 17:06	68670.2580	Nov 21 06:12
1533	68676.9107	Nov 27 21:51	68684.3316	Dec 5 07:58	68692.4143	Dec 13 09:57	68699.6140	Dec 20 14:44
1534	68706.4446	Dec 27 10:40						
2047								
			68714.2306	Jan 4 05:32	68722.0573	Jan 12 01:23	68728.9401	Jan 18 22:34
1535	68736.0729	Jan 26 01:45	68744.1321	Feb 3 03:10	68751.6118	Feb 10 14:41	68758.2804	Feb 17 06:44
1536	68765.7688	Feb 24 18:27	68773.9535	Mar 4 22:53	68781.0682	Mar 12 01:38	68787.6750	Mar 18 16:12
1537	68795.4898	Mar 26 11:45	68803.6334	Apr 3 15:12	68810.4420	Apr 10 10:36	68817.1468	Apr 17 03:31
1538	68825.1951	Apr 25 04:41	68833.1441	May 3 03:28	68839.7678	May 9 18:26	68846.6993	May 16 16:47
1539	68854.8533	May 24 20:29	68862.4969	Jun 1 11:56	68869.0876	Jun 8 02:06	68876.3239	Jun 15 07:46
1540	68884.4424	Jun 23 10:37	68891.7348	Jun 30 17:38	68898.4411	Jul 7 10:35	68906.0074	Jul 15 00:11
1541	68913.9518	Jul 22 22:51	68920.9195	Jul 29 22:04	68927.8609	Aug 5 20:40	68935.7329	Aug 13 17:35
1542	68943.3871	Aug 21 09:17	68950.1186	Aug 28 02:51	68957.3718	Sep 4 08:55	68965.4719	Sep 12 11:20
1543	68972.7726	Sep 19 18:33	68979.3960	Sep 26 09:30	68986.9883	Oct 3 23:43	68995.1827	Oct 12 04:23
1544	69002.1452	Oct 19 03:29	69008.8015	Oct 25 19:14	69016.7079	Nov 2 16:59	69024.8198	Nov 10 19:41
1545	69031.5418	Nov 17 13:00	69038.3625	Nov 24 08:42	69046.4974	Dec 2 11:56	69054.3542	Dec 10 08:30
1546	69060.9858	Dec 16 23:39	69068.0779	Dec 24 01:52				

	New Moon		First Quarter		Full Moon		Last Quarter	
Lunation	MJD	m d h m	MJD	m d h m	MJD	m d h m	MJD	m d h m
					69076.2905	Jan 1 06:58	69083.7852	Jan 8 18:51
1547	69090.4817	Jan 15 11:34	69097.9148	Jan 22 21:57	69106.0108	Jan 31 00:15	69113.1374	Feb 7 03:18
1548	69120.0227	Feb 14 00:33	69127.8081	Feb 21 19:24	69135.6106	Feb 29 14:39	69142.4489	Mar 7 10:46
1549	69149.6034	Mar 14 14:29	69157.6700	Mar 22 16:05	69165.0872	Mar 30 02:06	69171.7582	Apr 5 18:12
1550	69179.2229	Apr 13 05:21	69187.4190	Apr 21 10:03	69194.4682	Apr 28 11:14	69201.0997	May 5 02:24
1551	69208.8746	May 12 20:59	69217.0121	May 21 00:17	69223.7906	May 27 18:58	69230.5041	Jun 3 12:06
1552	69238.5355	Jun 11 12:51	69246.4519	Jun 19 10:51	69253.0898	Jun 26 02:09	69259.9993	Jul 2 23:59
1553	69268.1704	Jul 11 04:05	69275.7728	Jul 18 18:33	69282.3994	Jul 25 09:35	69289.6054	Aug 1 14:32
1554	69297.7501	Aug 9 18:00	69305.0230	Aug 17 00:33	69311.7558	Aug 23 18:08	69319.3216	Aug 31 07:43
1555	69327.2679	Sep 8 06:26	69334.2536	Sep 15 06:05	69341.1998	Sep 22 04:48	69349.1158	Sep 30 02:47
1556	69356.7405	Oct 7 17:46	69363.5148	Oct 14 12:21	69370.7682	Oct 21 18:26	69378.9276	Oct 29 22:16
1557	69386.1941	Nov 6 04:40	69392.8542	Nov 12 20:30	69400.4727	Nov 20 11:21	69408.6908	Nov 28 16:35
1558	69415.6468	Dec 5 15:31	69422.3127	Dec 12 07:30	69430.2781	Dec 20 06:40	69438.3560	Dec 28 08:33
2049								
1559	69445.1012	Jan 4 02:26	69451.9146	Jan 10 21:57	69460.1044	Jan 19 02:30	69467.8988	Jan 26 21:34
1560	69474.5535	Feb 2 13:17	69481.6525	Feb 9 15:40	69489.8671	Feb 17 20:49	69497.3177	Feb 25 07:37
1561	69504.0088	Mar 4 00:13	69511.4774	Mar 11 11:27	69519.5170	Mar 19 12:24	69526.6330	Mar 26 15:11
1562	69533.4864	Apr 2 11:40	69541.3116	Apr 10 07:29	69549.0458	Apr 18 01:06	69555.8836	Apr 24 21:12
1563	69563.0085	May 2 00:12	69571.0824	May 10 01:59	69578.4687	May 17 11:15	69585.1217	May 24 02:55
1564	69592.5843	May 31 14:01	69600.7484	Jun 8 17:58	69607.8111	Jun 15 19:28	69614.4045	Jun 22 09:42
1565	69622.2025	Jun 30 04:52	69630.2995	Jul 8 07:11	69637.1048	Jul 15 02:31	69643.7846	Jul 21 18:50
1566	69651.8392	Jul 29 20:08	69659.7451	Aug 6 17:53	69666.3894	Aug 13 09:21	69673.3000	Aug 20 07:12
1567	69681.4721	Aug 28 11:20	69689.1038	Sep 5 02:29	69695.7122	Sep 11 17:06	69702.9618	Sep 18 23:05
1568	69711.0877	Sep 27 02:06	69718.4028	Oct 4 09:40	69725.1212	Oct 11 02:55	69732.7478	Oct 18 17:57
1569	69740.6780	Oct 26 16:16	69747.6808	Nov 2 16:20	69754.6522	Nov 9 15:39	69762.6065	Nov 17 14:33
1570	69770.2340	Nov 25 05:37	69776.9867	Dec 1 23:41	69784.3120	Dec 9 07:29	69792.4693	Dec 17 11:16
1571	69799.5851	Dec 24 14:03	69806.6968	Dec 31 16:43				