

CANON OF  
LUNAR  
ECLIPSES  
1500 B.C.—A.D. 3000

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# Chapter 4

## The Canon

### 4.1 Explanation of the Canon

The Canon is presented as a table. Each lunar eclipse is described on one line of the table, with 18 columns of data as follows:

**Column 1** is the serial number of the lunar eclipse in this Canon.

**Column 2** is the date of the eclipse, up to 1582 October 4 according to the Julian calendar, and after that according to the Gregorian calendar. Before the Christian era, the years are designated in the astronomical system, i.e., the year 0 corresponds to 1 B.C., and the year  $-1$  corresponds to 2 B.C., etc. An asterisk (\*) following the date indicates that the eclipse carries over to the following day.

**Column 3** is the Julian Day Number (Julian Date at  $12^{\text{h}}$ ) corresponding to the calendar date in Column 2.

**Column 4** is the magnitude of the eclipse, defined as the fraction of the lunar *diameter* (not area) covered by shadow at maximum eclipse. If the number is in parentheses, the eclipse is penumbral, otherwise it is umbral. If the value is less than unity, the eclipse is partial. If it is greater than or equal to unity, the eclipse is total.

**Columns 5–11** give the Universal Times of the main phenomena. Column 8 is the Universal Time of the maximum eclipse. Columns 5 and 11 give the Universal Times of the beginning and end of the penumbral phase, or the entire eclipse. If it is an umbral eclipse, columns 6 and 10 give the Universal Times of the beginning and end of the partial phase. If it is a total umbral eclipse, columns 7 and 9 give the Universal Times of beginning and end of totality.

**Columns 12 and 13** give the position angles of the first and last contacts of the penumbral or umbral phase. That is, for a penumbral eclipse, at the times  $T_1$  and  $T_6$ ; for an umbral eclipse, at the times  $T_2$  and  $T_5$ . These angles are measured counterclockwise to the east from the north point (not the vertex) of the lunar disk.

**Columns 14 and 15** give the longitude and latitude of the sublunar point on the Earth's surface at the time  $T_1$ , for a penumbral eclipse, or  $T_2$ , for an umbral eclipse. Longitude is measured  $180^\circ$  east or west of Greenwich, positive to the east. This point is to be used with the horizon locating chart (Cf. Appendix) to find the region of visibility of the eclipse.

**Columns 16 and 17** are similar to columns 14 and 15, except that it is for the time  $T_6$ , for a penumbral eclipse, or  $T_5$ , for an umbral eclipse.

**Column 18** is the number of the Saros series to which the eclipse belongs. A small letter "b" after the number indicates that the eclipse is the first penumbral one of the Saros series, and an "e" indicates that it is the last. A capital letter "B" indicates that it is the first umbral eclipse of the Saros series, and an "E" indicates that it is the last. This number is the remainder of Brown's lunation number divided by 223.

No.	Date	JD	Mag.	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>m</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	P <sub>0</sub>	P <sub>e</sub>	λ <sub>b</sub>	φ <sub>b</sub>	λ <sub>e</sub>	φ <sub>e</sub>	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	
1751	- 773 Dec 26	1439079	(0.658)	3 01	—	—	4 57	—	—	6 53	32	314	- 45	+ 23	-101	+ 23	117
1752	- 772 Jun 20*	1439256	0.112	20 58	22 36	—	23 14	—	23 52	1 31	170	210	+ 19	- 22	+ 1	- 23	123 E
1753	- 772 Dec 14	1439433	0.959	9 33	10 40	—	12 16	—	13 52	14 58	49	287	-161	+ 22	+153	+ 23	129
1754	- 771 Jun 10	1439611	1.464	3 40	4 49	5 55	6 43	7 30	8 36	9 45	116	272	- 75	- 22	-130	- 22	135
1755	- 771 Dec 3*	1439787	1.503	23 07	0 04	1 03	1 48	2 32	3 31	4 29	85	242	- 4	+ 21	- 53	+ 22	141
1756	- 770 May 30	1439965	0.785	5 11	6 31	—	8 08	—	9 45	11 04	74	323	-101	- 21	-148	- 21	147
1757	- 770 Nov 23	1440142	0.287	15 11	16 30	—	17 26	—	18 23	19 42	128	192	+109	+ 20	+ 82	+ 20	153
1758	- 769 Apr 19	1440289	(0.291)	20 42	—	—	21 59	—	—	23 16	182	234	+ 49	- 7	+ 12	- 7	158
1759	- 769 May 19	1440319	(0.506)	8 17	—	—	10 00	—	—	11 43	56	347	-128	- 18	-178	- 19	159
1760	- 769 Oct 14	1440467	(0.619)	14 23	—	—	16 13	—	—	18 03	9	293	+142	+ 4	+ 88	+ 5	164
1761	- 768 Apr 8	1440644	0.764	7 06	8 11	—	9 38	—	11 06	12 11	155	263	-122	- 3	-165	- 4	170
1762	- 768 Oct 2	1440821	0.742	16 16	17 38	—	19 12	—	20 47	22 08	24	277	+ 94	0	+ 48	+ 1	176
1763	- 767 Mar 28*	1440998	1.646	23 17	0 11	1 08	1 56	2 44	3 41	4 36	112	307	- 2	0	- 53	- 1	182
1764	- 767 Sep 21	1441175	1.610	15 25	16 37	17 43	18 34	19 25	20 30	21 42	67	234	+109	- 4	+ 52	- 3	188
1765	- 766 Mar 18	1441353	0.286	16 05	17 24	—	18 21	—	19 19	20 38	61	357	+101	+ 4	+ 73	+ 3	194
1766	- 766 Sep 10*	1441529	0.346	19 22	20 49	—	21 55	—	23 00	0 27	116	187	+ 47	- 8	+ 15	- 7	200
1767	- 765 Feb 6	1441678	(0.824)	14 20	—	—	16 28	—	—	18 35	157	246	+149	+ 19	+ 87	+ 18	205
1768	- 765 Aug 1*	1441854	(0.795)	21 53	—	—	23 45	—	—	1 37	26	298	+ 32	- 22	- 22	- 21	211
1769	- 765 Aug 31	1441884	(0.173)	7 46	—	—	8 43	—	—	9 39	134	174	-117	- 11	-145	- 10	212
1770	- 764 Jan 26	1442032	0.978	14 29	15 47	—	17 32	—	19 17	20 35	135	260	+127	+ 21	+ 76	+ 21	217
1771	- 764 Jul 21	1442209	1.137	14 04	15 01	16 12	16 39	17 06	18 17	19 14	52	279	+134	- 23	+ 87	- 22	223
1772	- 763 Jan 14	1442386	1.369	14 24	15 36	16 44	17 28	18 12	19 21	20 32	89	298	+128	+ 23	+ 74	+ 22	6
1773	- 763 Jul 11	1442564	1.252	4 52	5 54	7 02	7 38	8 14	9 21	10 23	99	241	- 90	- 23	-140	- 23	12
1774	- 762 Jan 3*	1442740	0.145	20 51	22 29	—	23 12	—	23 55	1 32	31	346	+ 24	+ 23	+ 4	+ 23	18
1775	- 762 Jun 30	1442918	(0.800)	14 28	—	—	16 34	—	—	18 39	131	218	+141	- 23	+ 80	- 23	24
1776	- 762 Nov 24*	1443065	(0.784)	23 03	—	—	0 54	—	—	2 45	128	215	+ 11	+ 20	- 42	+ 21	29
1777	- 762 Dec 24	1443095	(0.038)	11 17	—	—	11 43	—	—	12 10	13	354	-169	+ 22	+179	+ 22	30
1778	- 761 May 21	1443243	0.173	1 23	3 08	—	3 58	—	4 48	6 33	35	345	- 50	- 19	- 74	- 19	35
1779	- 761 Nov 14	1443420	0.965	13 41	14 43	—	16 17	—	17 51	18 53	107	229	+135	+ 17	+ 90	+ 17	41
1780	- 760 May 9	1443597	1.643	4 14	5 19	6 22	7 13	8 04	9 07	10 12	97	289	- 83	- 15	-138	- 15	47
1781	- 760 Nov 3	1443775	1.483	0 55	2 00	3 03	3 49	4 35	5 39	6 44	64	267	- 34	+ 13	- 87	+ 13	53
1782	- 759 Apr 28	1443951	0.676	15 00	16 07	—	17 31	—	18 55	20 03	145	246	+117	- 11	+ 76	- 11	59
1783	- 759 Oct 23	1444129	0.124	5 41	7 32	—	8 14	—	8 56	10 47	5	322	-116	+ 8	-136	+ 8	65
1784	- 758 Mar 20	1444277	(0.723)	0 21	—	—	2 07	—	—	3 54	60	336	- 4	+ 3	- 55	+ 2	70
1785	- 758 Apr 18	1444306	(0.371)	8 02	—	—	9 21	—	—	10 40	168	227	-121	- 6	-159	- 7	71
1786	- 758 Sep 12	1444453	(0.386)	12 17	—	—	13 49	—	—	15 22	133	193	+174	- 6	+130	- 6	76
1787	- 757 Mar 9	1444631	1.006	15 00	16 03	17 34	17 40	17 46	19 16	20 19	79	315	+122	+ 7	+ 75	+ 7	82
1788	- 757 Sep 1	1444807	0.730	16 38	17 50	—	19 19	—	20 48	22 00	112	217	+ 92	- 11	+ 49	- 11	88
1789	- 756 Feb 27	1444986	1.337	0 38	1 46	2 54	3 35	4 17	5 25	6 33	121	269	- 23	+ 12	- 76	+ 11	94
1790	- 756 Aug 21	1445162	1.633	5 17	6 14	7 12	8 00	8 48	9 46	10 43	69	265	- 94	- 15	-145	- 15	100
1791	- 755 Feb 15	1445340	(1.047)	3 44	—	—	6 10	—	—	8 35	143	243	- 52	+ 16	-123	+ 16	106
1792	- 755 Aug 10*	1445516	0.353	22 12	23 26	—	0 28	—	1 30	2 43	25	314	+ 9	- 19	- 21	- 19	112
1793	- 754 Jan 5	1445664	(0.643)	11 14	—	—	13 08	—	—	15 03	37	319	-167	+ 22	+138	+ 22	117
1794	- 754 Jul 2	1445842	(0.990)	4 16	—	—	6 26	—	—	8 36	136	234	- 66	- 23	-129	- 23	123
1795	- 754 Dec 25	1446018	0.956	18 14	19 20	—	20 56	—	22 31	23 37	54	292	+ 70	+ 23	+ 24	+ 23	129
1796	- 753 Jun 21	1446196	1.307	10 20	11 30	12 41	13 22	14 03	15 13	16 23	117	263	-175	- 23	+131	- 23	135
1797	- 753 Dec 15	1446373	1.507	8 04	9 01	10 00	10 44	11 29	12 28	13 25	90	247	-137	+ 23	+174	+ 24	141
1798	- 752 Jun 9	1446550	0.948	11 32	12 48	—	14 32	—	16 16	17 32	76	313	+165	- 22	+115	- 23	147
1799	- 752 Dec 4	1446728	0.285	0 08	1 27	—	2 24	—	3 20	4 39	132	196	- 24	+ 22	- 51	+ 23	153
1800	- 751 Apr 30	1446875	(0.161)	4 02	—	—	5 00	—	—	5 57	187	225	- 61	- 11	- 89	- 11	158
1801	- 751 May 29	1446904	(0.663)	14 44	—	—	16 40	—	—	18 36	58	339	+135	- 21	+ 79	- 22	159
1802	- 751 Oct 24*	1447052	(0.599)	22 44	—	—	0 34	—	—	2 23	10	295	+ 16	+ 8	- 37	+ 9	164
1803	- 750 Apr 19	1447229	0.646	14 40	15 47	—	17 09	—	18 30	19 37	159	257	+123	- 7	+ 83	- 8	170
1804	- 750 Oct 14	1447407	0.705	0 09	1 32	—	3 05	—	4 38	6 00	23	279	- 26	+ 4	- 71	+ 5	176
1805	- 749 Apr 9	1447584	1.761	7 02	7 56	8 53	9 42	10 31	11 28	12 22	115	303	-119	- 4	-170	- 5	182
1806	- 749 Oct 2*	1447760	1.656	23 11	0 23	1 28	2 20	3 12	4 17	5 29	65	235	- 8	0	- 65	+ 1	188
1807	- 748 Mar 28*	1447938	0.386	23 45	1 00	—	2 06	—	3 12	4 27	67	352	- 14	- 1	- 46	- 1	194
1808	- 748 Sep 21	1448115	0.402	3 20	4 44	—	5 55	—	7 05	8 29	112	189	- 73	- 3	-107	- 3	200
1809	- 747 Feb 16*	1448263	(0.752)	22 05	—	—	0 08	—	—	2 12	163	247	+ 33	+ 16	- 27	+ 15	205
1810	- 747 Aug 12	1448440	(0.708)	5 56	—	—	7 43	—	—	9 29	20	297	- 89	- 19	-140	- 18	211
1811	- 747 Sep 10	1448469	(0.239)	15 50	—	—	16 56	—	—	18 03	128	176	+121	- 7	+ 89	- 6	212
1812	- 746 Feb 5*	1448617	0.921	22 04	23 23	—	1 06	—	2 48	4 07	141	262	+ 13	+ 19	- 37	+ 18	217
1813	- 746 Aug 1*	1448794	1.030	21 55	22 54	0 16	0 29	0 42	2 04	3 03	45	279	+ 16	- 21	- 29	- 20	223
1814	- 745 Jan 25*	1448971	1.414	22 19	23 29	0 37	1 22	2 08	3 15	4 26	95	301	+ 11	+ 21	- 44	+ 20	6
1815	- 745 Jul 22	1449149	1.366	12 16	13 17	14 21	15 03	15 45	16 49	17 51	91	240	+160	- 22	+109	- 22	12
1816	- 744 Jan 15	1449326	0.176	5 1													

No.	Date	JD	Mag.	$T_1$	$T_2$	$T_3$	$T_m$	$T_4$	$T_5$	$T_6$	$P_b$	$P_e$	$\lambda_b$	$\phi_b$	$\lambda_e$	$\phi_e$	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	
1821	- 743 Nov 24*	1450005	0.963	22 34	23 37	—	1 11	—	2 45	3 48	111	233	+ 2	+ 20	- 43	+ 20	41
1822	- 742 May 20	1450182	1.496	11 07	12 12	13 16	14 04	14 51	15 56	17 01	89	291	+174	- 18	+120	- 18	47
1823	- 742 Nov 14	1450360	1.483	9 27	10 32	11 36	12 22	13 08	14 12	15 17	67	270	-162	+ 16	+145	+ 17	53
1824	- 741 May 9*	1450536	0.816	22 17	23 21	—	0 51	—	2 21	3 26	137	249	+ 7	- 14	- 36	- 15	59
1825	- 741 Nov 3	1450714	0.133	13 47	15 38	—	16 22	—	17 05	18 56	8	324	+123	+ 12	+101	+ 12	65
1826	- 740 Mar 30	1450862	(0.619)	8 19	—	—	9 58	—	—	11 38	57	340	-124	- 2	-172	- 2	70
1827	- 740 Apr 28	1450891	(0.494)	15 27	—	—	16 57	—	—	18 27	161	230	+127	- 10	+ 83	- 11	71
1828	- 740 Sep 22	1451038	(0.340)	20 06	—	—	21 33	—	—	23 00	134	190	+ 56	- 2	+ 14	- 2	76
1829	- 740 Oct 22	1451068	(0.017)	15 12	—	—	15 32	—	—	15 53	350	337	+130	+ 7	+120	+ 8	77 b
1830	- 739 Mar 19*	1451216	0.908	22 47	23 52	—	1 25	—	2 59	4 04	77	319	+ 4	+ 3	- 41	+ 3	82
1831	- 739 Sep 12	1451393	0.675	0 40	1 53	—	3 19	—	4 45	5 58	112	213	- 29	- 7	- 71	- 7	88
1832	- 738 Mar 9	1451571	1.426	8 05	9 12	10 18	11 03	11 49	12 55	14 02	120	274	-135	+ 8	+171	+ 7	94
1833	- 738 Sep 1	1451747	1.703	13 27	14 24	15 21	16 10	16 59	17 57	18 53	69	260	+143	- 12	+ 92	- 11	100
1834	- 737 Feb 26	1451925	0.019	10 58	13 10	—	13 27	—	13 44	15 57	187	204	+167	+ 12	+159	+ 12	106 B
1835	- 737 Aug 22	1452102	0.431	6 14	7 25	—	8 33	—	9 40	10 51	26	307	-111	- 16	-144	- 16	112
1836	- 736 Jan 16	1452249	(0.618)	19 23	—	—	21 15	—	—	23 07	41	325	+ 72	+ 21	+ 18	+ 21	117
1837	- 736 Jul 12	1452427	(0.859)	11 36	—	—	13 39	—	—	15 42	135	226	-175	- 22	+125	- 22	123
1838	- 736 Aug 10*	1452456	(0.053)	23 14	—	—	23 46	—	—	0 18	1	338	+ 12	- 20	- 3	- 19	124 b
1839	- 735 Jan 5	1452604	0.947	2 51	3 57	—	5 32	—	7 07	8 13	59	297	+ 58	+ 23	-104	+ 23	129
1840	- 735 Jul 1	1452781	1.155	17 01	18 13	19 31	20 02	20 32	21 50	23 02	117	254	+ 85	- 23	+ 33	- 24	135
1841	- 735 Dec 25	1452958	1.516	16 58	17 55	18 54	19 39	20 24	21 23	22 19	94	252	+ 91	+ 24	+ 41	+ 24	141
1842	- 734 Jun 20*	1453135	1.108	17 55	19 09	20 32	20 58	21 25	22 47	0 01	77	303	+ 70	- 24	+ 18	- 24	147
1843	- 734 Dec 15	1453313	0.285	9 03	10 23	—	11 19	—	12 16	13 35	137	201	-157	+ 24	+176	+ 24	153
1844	- 733 May 11	1453460	(0.030)	11 35	—	—	12 00	—	—	12 25	195	212	-175	- 14	+173	- 14	158 e
1845	- 733 Jun 9*	1453489	(0.819)	21 17	—	—	23 23	—	—	1 30	58	330	+ 37	- 23	- 24	- 24	159
1846	- 733 Nov 5	1453638	(0.585)	7 09	—	—	8 57	—	—	10 46	12	298	-110	+ 12	-163	+ 13	164
1847	- 732 Apr 29*	1453814	0.521	22 12	23 22	—	0 36	—	1 51	3 01	163	250	+ 8	- 11	- 28	- 12	170
1848	- 732 Oct 24	1453992	0.679	8 07	9 31	—	11 03	—	12 35	13 59	24	281	-146	+ 9	+169	+ 9	176
1849	- 731 Apr 19	1454169	1.885	14 43	15 37	16 33	17 23	18 13	19 09	20 03	118	298	+125	- 8	+ 73	- 9	182
1850	- 731 Oct 13	1454346	1.689	7 05	8 17	9 22	10 14	11 06	12 11	13 22	65	237	-127	+ 5	+176	+ 6	188
1851	- 730 Apr 9	1454524	0.497	7 18	8 30	—	9 43	—	10 57	12 08	72	346	-128	- 5	-163	- 6	194
1852	- 730 Oct 2	1454700	0.445	11 29	12 51	—	14 04	—	15 17	16 39	110	191	+165	+ 1	+129	+ 2	200
1853	- 729 Feb 28	1454849	(0.666)	5 41	—	—	7 38	—	—	9 35	167	246	- 81	+ 12	-138	+ 11	205
1854	- 729 Mar 29	1454878	(0.028)	20 43	—	—	21 07	—	—	21 32	37	21	+ 50	- 2	+ 38	- 2	206 b
1855	- 729 Aug 23	1455025	(0.633)	14 06	—	—	15 48	—	—	17 29	14	297	+148	- 16	+100	- 15	211
1856	- 729 Sep 22	1455055	(0.292)	0 06	—	—	1 19	—	—	2 31	125	177	- 4	- 3	- 39	- 2	212
1857	- 728 Feb 17	1455203	0.850	5 31	6 50	—	8 30	—	10 10	11 30	147	262	- 98	+ 15	-147	+ 15	217
1858	- 728 Aug 12	1455380	0.933	5 53	6 53	—	8 25	—	9 57	10 58	38	278	-103	- 18	-148	- 18	223
1859	- 727 Feb 5	1455557	1.471	6 04	7 14	8 20	9 07	9 54	11 00	12 10	100	303	-105	+ 18	-160	+ 18	6
1860	- 727 Aug 1*	1455734	1.470	19 46	20 47	21 49	22 35	23 21	0 23	1 24	84	239	+ 48	- 20	- 4	- 20	12
1861	- 726 Jan 25	1455911	0.217	13 34	15 04	—	15 56	—	16 48	18 18	46	350	+137	+ 20	+112	+ 20	18
1862	- 726 Jul 22	1456089	(1.059)	4 01	—	—	6 23	—	—	8 44	115	216	- 62	- 22	-130	- 21	24
1863	- 726 Dec 16	1456236	(0.781)	17 01	—	—	18 51	—	—	20 42	137	224	+103	+ 24	+ 51	+ 24	29
1864	- 725 Jan 15	1456266	(0.076)	4 37	—	—	5 14	—	—	5 51	26	360	- 67	+ 21	- 84	+ 21	30
1865	- 725 Jun 11	1456413	(0.945)	14 32	—	—	16 50	—	—	19 09	50	315	+139	- 23	+ 72	- 24	35
1866	- 725 Dec 6	1456591	0.960	7 29	8 32	—	10 06	—	11 40	12 43	115	237	-130	+ 22	-175	+ 22	41
1867	- 724 May 30	1456767	1.349	17 58	19 04	20 11	20 53	21 36	22 43	23 48	81	292	+ 71	- 21	+ 18	- 21	47
1868	- 724 Nov 24	1456945	1.480	18 02	19 08	20 11	20 58	21 44	22 48	23 54	71	273	+ 70	+ 19	+ 17	+ 20	53
1869	- 723 May 20	1457122	0.959	5 33	6 35	—	8 10	—	9 44	10 47	129	251	-102	- 17	-147	- 18	59
1870	- 723 Nov 13*	1457299	0.137	21 57	23 48	—	0 32	—	1 17	3 07	11	326	0	+ 16	- 22	+ 16	65
1871	- 722 Apr 10	1457447	(0.506)	16 12	—	—	17 43	—	—	19 15	52	343	+116	- 6	+ 72	- 7	70
1872	- 722 May 9*	1457476	(0.622)	22 50	—	—	0 30	—	—	2 10	155	232	+ 15	- 14	- 33	- 14	71
1873	- 722 Oct 4	1457624	(0.306)	4 03	—	—	5 26	—	—	6 49	135	188	- 64	+ 2	-104	+ 3	76
1874	- 722 Nov 2*	1457653	(0.035)	23 06	—	—	23 35	—	—	0 05	354	337	+ 11	+ 11	- 4	+ 12	77
1875	- 721 Mar 31	1457802	0.798	6 27	7 34	—	9 04	—	10 34	11 40	73	323	-113	- 1	-156	- 2	82
1876	- 721 Sep 23	1457978	0.632	8 51	10 05	—	11 28	—	12 51	14 05	113	211	-153	- 3	+167	- 2	88
1877	- 720 Mar 19	1458156	1.529	15 23	16 30	17 34	18 23	19 12	20 16	21 23	118	278	+114	+ 4	+ 60	+ 3	94
1878	- 720 Sep 11*	1458332	1.760	21 47	22 43	23 40	0 30	1 19	2 16	3 12	69	257	+ 18	- 8	- 33	- 7	100
1879	- 719 Mar 8	1458510	0.116	18 01	19 53	—	20 35	—	21 16	23 09	176	218	+ 65	+ 8	+ 45	+ 8	106
1880	- 719 Sep 1	1458687	0.497	14 25	15 34	—	16 46	—	17 58	19 07	27	302	+126	- 12	+ 92	- 12	112
1881	- 718 Jan 27	1458835	(0.583)	3 27	—	—	5 15	—	—	7 04	44	330	- 49	+ 19	-101	+ 19	117
1882	- 718 Jul 23	1459012	(0.738)	19 01	—	—	20 57	—	—	22 53	134	218	+ 74	- 21	+ 18	- 21	123
1883	- 718 Aug 22	1459042	(0.129)	6 47	—	—	7 37	—	—	8 27	4	329	-101	- 16	-125	- 16	124
1884	- 717 Jan 16	1459189	0.929	11 23	12 29	—	14 03	—	15 37	16 43	63	303	+175	+ 22	+130	+ 22	129
1885	- 717 Jul 12*	1459366	1.009	23 48	1 02	2 39	2 46	2 54	4 31	5 45	117	244	- 17	- 23	- 67	- 23	135
1886	- 716 Jan 6	1459544	1.533	1 48	2 45	3 43	4 29	5 14	6 13	7 09	99	258	- 40	+ 24	- 90	+ 24	141
1887	- 716 Jul 1	1459721	1.262	0 23	1 36	2 50	3 29	4 08	5 21	6 34	77	293	- 26	- 24	- 80	- 24	147
1888	- 716 Dec 25	1459898	0.289	17 55	19 14	—	20 11	—	21 08	22 28	141	206	+ 72	+ 25	+ 45	+ 25	153
1889	- 715 Jun 20	1460075	(0.971)	3 56	—	—	6 11	—	—	8 26	58	322	- 62	- 24	-127	- 25	159
1890	- 715 Nov 15	1460223	(0.576)	15 35	—	—	17 23	—	—	19 11	14	301	+123	+ 16	+ 71	+ 16	164

No.	Date	JD	Mag.	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>m</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	P <sub>b</sub>	P <sub>e</sub>	λ <sub>b</sub>	φ <sub>b</sub>	λ <sub>e</sub>	φ <sub>e</sub>	Saros
				h m	h m	h m	h m	h m	h m	h m							
1891	- 714 May 11	1460400	0.392	5 42	6 56	—	8 01	—	9 07	10 21	166	241	-106	- 15	-138	- 15	170
1892	- 714 Nov 4	1460577	0.660	16 11	17 36	—	19 07	—	20 38	22 02	25	284	+ 93	+ 13	+ 49	+ 13	176
1893	- 713 Apr 30*	1460754	1.772	22 19	23 13	0 09	0 59	1 48	2 45	3 39	120	293	+ 10	- 12	- 41	- 13	182
1894	- 713 Oct 24	1460931	1.713	15 08	16 20	17 24	18 16	19 08	20 13	21 25	66	239	+112	+ 9	+ 55	+ 10	188
1895	- 712 Apr 19	1461109	0.616	14 44	15 53	—	17 13	—	18 34	19 42	76	340	+120	- 9	+ 82	- 10	194
1896	- 712 Oct 12*	1461285	0.477	19 47	21 08	—	22 23	—	23 38	0 59	109	193	+40	+ 5	+ 3	+ 6	200
1897	- 711 Mar 10	1461434	(0.565)	13 08	—	—	14 57	—	—	16 46	172	245	+166	+ 8	+113	+ 7	205
1898	- 711 Apr 9	1461464	(0.138)	3 23	—	—	4 17	—	—	5 12	47	11	- 51	- 6	- 78	- 6	206
1899	- 711 Sep 2*	1461610	(0.570)	22 25	—	—	0 02	—	—	1 39	10	296	+ 24	- 12	- 23	- 11	211
1900	- 711 Oct 2	1461640	(0.333)	8 33	—	—	9 50	—	—	11 07	123	179	-131	+ 2	-169	+ 2	212
1901	- 710 Feb 27	1461788	0.765	12 48	14 09	—	15 46	—	17 22	18 43	152	262	+152	+ 12	+105	+ 11	217
1902	- 710 Aug 23	1461965	0.847	13 57	15 00	—	16 29	—	17 58	19 00	32	279	+135	- 15	+ 92	- 15	223
1903	- 709 Feb 16	1462142	1.541	13 43	14 52	15 57	16 46	17 35	18 40	19 49	105	304	+141	+ 15	+ 86	+ 14	6
1904	- 709 Aug 13	1462320	1.564	3 21	4 23	5 24	6 12	7 00	8 01	9 03	77	239	- 66	- 18	-119	- 17	12
1905	- 708 Feb 5*	1462496	0.270	21 46	23 12	—	0 09	—	1 06	2 32	53	350	+ 16	+ 17	- 12	+ 17	18
1906	- 708 Aug 1	1462674	0.099	10 56	12 47	—	13 24	—	14 02	15 52	143	180	+168	- 19	+150	- 19	24 B
1907	- 708 Dec 27	1462822	(0.772)	1 56	—	—	3 46	—	—	5 36	142	228	- 29	+ 25	- 82	+ 25	29
1908	- 707 Jan 25	1462851	(0.108)	13 06	—	—	13 50	—	—	14 35	33	2	+167	+ 19	+146	+ 19	30
1909	- 707 Jun 21*	1462998	(0.794)	21 13	—	—	23 21	—	—	1 30	41	315	+ 39	- 25	- 23	- 25	35
1910	- 707 Dec 16	1463176	0.955	16 19	17 23	—	18 57	—	20 30	21 34	120	241	+ 98	+ 24	+ 53	+ 24	41
1911	- 706 Jun 11	1463353	1.204	0 56	2 02	3 14	3 48	4 22	5 34	6 40	72	293	- 33	- 23	- 85	- 23	47
1912	- 706 Dec 6	1463531	1.478	2 34	3 40	4 44	5 31	6 17	7 21	8 27	75	277	- 57	+ 22	-111	+ 22	53
1913	- 705 May 31	1463707	1.103	12 50	13 50	15 05	15 29	15 53	17 08	18 08	121	252	+149	- 20	+102	- 20	59
1914	- 705 Nov 25	1463885	0.139	6 09	7 59	—	8 44	—	9 29	11 20	15	329	-122	+ 19	-144	+ 19	65
1915	- 704 Apr 21	1464033	(0.384)	0 01	—	—	1 22	—	—	2 43	47	347	- 2	- 10	- 41	- 11	70
1916	- 704 May 20	1464062	(0.754)	6 13	—	—	8 01	—	—	9 49	147	233	- 96	- 17	-148	- 17	71
1917	- 704 Oct 14	1464209	(0.285)	12 09	—	—	13 29	—	—	14 48	137	188	+174	+ 7	+136	+ 7	76
1918	- 704 Nov 13	1464239	(0.047)	7 09	—	—	7 43	—	—	8 17	358	338	-110	+ 15	-127	+ 15	77
1919	- 703 Apr 10	1464387	0.677	13 58	15 08	—	16 32	—	17 57	19 06	68	327	+133	- 5	+ 92	- 6	82
1920	- 703 Oct 3	1464563	0.603	17 12	18 26	—	19 47	—	21 09	22 23	114	209	+ 81	+ 2	+ 41	+ 2	88
1921	- 702 Mar 30*	1464741	1.644	22 31	23 38	0 41	1 32	2 23	3 27	4 33	114	282	+ 6	- 1	- 49	- 1	94
1922	- 702 Sep 23	1464918	1.804	6 15	7 11	8 08	8 57	9 47	10 44	11 40	70	254	-110	- 3	-161	- 3	100
1923	- 701 Mar 20	1465096	0.227	0 54	2 36	—	3 33	—	4 30	6 12	169	227	- 36	+ 4	- 64	+ 4	106
1924	- 701 Sep 12*	1465272	0.551	22 44	23 52	—	1 07	—	2 22	3 30	28	298	+ 1	- 8	- 35	- 8	112
1925	- 700 Feb 7	1465420	(0.536)	11 25	—	—	13 09	—	—	14 53	46	335	-168	+ 17	+142	+ 16	117
1926	- 700 Mar 8	1465450	(0.033)	3 37	—	—	4 04	—	—	4 32	188	206	- 50	+ 9	- 64	+ 9	118 b
1927	- 700 Aug 3	1465598	(0.626)	2 31	—	—	4 20	—	—	6 09	134	211	- 38	- 19	- 91	- 19	123
1928	- 700 Sep 1	1465627	(0.193)	14 34	—	—	15 35	—	—	16 36	5	323	+141	- 13	+112	- 12	124
1929	- 699 Jan 26*	1465774	0.900	19 50	20 56	—	22 29	—	0 02	1 07	66	308	+ 49	+ 20	+ 5	+ 20	129
1930	- 699 Jul 23	1465952	0.873	6 39	7 56	—	9 36	—	11 16	12 32	118	235	-120	- 22	-168	- 21	135
1931	- 698 Jan 16	1466129	1.558	10 33	11 29	12 27	13 13	13 59	14 57	15 53	103	263	-170	+ 23	+140	+ 22	141
1932	- 698 Jul 12	1466306	1.408	6 58	8 10	9 19	10 05	10 51	12 00	13 12	78	284	-124	- 24	-179	- 24	147
1933	- 697 Jan 6	1466484	0.300	2 42	4 01	—	4 59	—	5 57	7 16	146	211	- 59	+ 24	- 86	+ 24	153
1934	- 697 Jul 1	1466660	0.065	10 42	12 33	—	13 03	—	13 34	15 25	21	350	+170	- 25	+156	- 25	159 B
1935	- 697 Nov 27	1466809	(0.569)	0 02	—	—	1 50	—	—	3 38	18	305	- 3	+ 19	- 55	+ 19	164
1936	- 696 May 21	1466985	0.260	13 13	14 32	—	15 27	—	16 21	17 40	170	231	+140	- 18	+113	- 18	170
1937	- 696 Nov 15	1467163	0.648	0 18	1 43	—	3 14	—	4 44	6 09	27	287	- 29	+ 16	- 73	+ 17	176
1938	- 695 May 11	1467340	1.637	5 52	6 46	7 44	8 32	9 20	10 17	11 11	122	286	-104	- 15	-155	- 16	182
1939	- 695 Nov 3*	1467516	1.728	23 16	0 28	1 32	2 24	3 16	4 21	5 32	67	242	- 11	+ 13	- 67	+ 14	188
1940	- 694 Apr 30*	1467694	0.743	22 05	23 11	—	0 38	—	2 05	3 11	79	333	+ 10	- 13	- 32	- 13	194
1941	- 694 Oct 24	1467871	0.498	4 13	5 32	—	6 48	—	8 05	9 24	109	196	- 87	+ 10	-124	+ 10	200
1942	- 693 Mar 21	1468019	(0.452)	20 27	—	—	22 06	—	—	23 45	177	242	+ 56	+ 4	+ 8	+ 3	205
1943	- 693 Apr 20	1468049	(0.260)	10 07	—	—	11 21	—	—	12 35	52	3	- 153	- 10	+171	- 10	206
1944	- 693 Sep 14	1468196	(0.519)	6 52	—	—	8 25	—	—	9 57	7	297	-104	- 8	-148	- 7	211
1945	- 693 Oct 13	1468225	(0.363)	17 09	—	—	18 29	—	—	19 50	122	180	+ 99	+ 6	+ 60	+ 7	212
1946	- 692 Mar 9*	1468373	0.666	19 56	21 19	—	22 51	—	0 22	1 45	158	259	+ 43	+ 8	- 1	+ 7	217
1947	- 692 Sep 2*	1468550	0.774	22 10	23 14	—	0 40	—	2 06	3 10	27	279	+ 11	- 12	- 30	- 11	223
1948	- 691 Feb 26*	1468727	1.625	21 13	22 21	23 24	0 15	1 06	2 10	3 18	110	303	+ 28	+ 11	- 27	+ 11	6
1949	- 691 Aug 23	1468905	1.647	11 05	12 06	13 07	13 57	14 46	15 47	16 49	72	239	+178	- 15	+125	- 14	12
1950	- 690 Feb 16	1469082	0.336	5 48	7 10	—	8 13	—	9 16	10 37	59	350	-104	+ 14	-134	+ 14	18
1951	- 690 Aug 12	1469259	0.200	18 00	19 41	—	20 33	—	21 26	23 07	131	185	+ 65	- 17	+ 39	- 17	24
1952	- 689 Jan 7	1469407	(0.756)	10 48	—	—	12 37	—	—	14 26	148	233	-160	+ 25	+148	+ 24	29
1953	- 689 Feb 5	1469436	(0.152)	21 28	—	—	22 20	—	—	23 12	40	3	+ 42	+ 17	+ 17	+ 16	30
1954	- 689 Jul 3	1469584	(0.650)	3 58	—	—	5 56	—	—	7 54	32	314	- 61	- 25	-118	- 25	35
1955	- 689 Dec 28	1469762	0.945	1 07	2 11	—	3 45	—	5 19	6 23	125	246	- 33	+ 24	- 77	+ 24	41
1956	- 688 Jun 21	1469938	1.063	7 56	9 03	10 25	10 45	11 05	12 27	13 34	63	293	-138	- 24	+173	- 24	47
1957	- 688 Dec 16	1470116	1.480	11 05	12 11	13 16	14 02	14 49	15 53	16 59	80	282	+176	+ 23	+123	+ 23	53
1958	- 687 Jun 10*	1470292	1.244	20 09	21 08	22 15	22 50	23 25	0 32	1 30	112	253	+ 40	- 22	- 9	- 22	59
1959	- 687 Dec 5	1470470	0.142	14 20	16 10	—	16 56	—	17 41	19 31	19	333	+116	+ 21	+ 94	+ 21	65
1960	- 686 May 2	1470618	(0.256)	7 50	—	—	8 57	—	—	10 03	39	350	-120	- 14	-152	- 14	70

No.	Date	JD	Mag.	$T_1$	$T_2$	$T_3$	$T_m$	$T_4$	$T_5$	$T_6$	$P_b$	$P_e$	$\lambda_b$	$\phi_b$	$\lambda_e$	$\phi_e$	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	
1961	- 686 May 31	1470647	(0.888)	13 36	—	—	15 32	—	—	17 27	140	233	+153	- 19	+ 97	- 20	71
1962	- 686 Oct 25	1470794	(0.273)	20 19	—	—	21 37	—	—	22 55	139	189	+ 51	+ 11	+ 14	+ 12	76
1963	- 686 Nov 24	1470824	(0.056)	15 16	—	—	15 53	—	—	16 30	3	341	+129	+ 18	+111	+ 18	77
1964	- 685 Apr 21*	1470972	0.546	21 25	22 37	—	23 55	—	1 13	2 26	61	331	+ 19	- 10	- 18	- 10	82
1965	- 685 Oct 15	1471149	0.584	1 40	2 54	—	4 15	—	5 35	6 49	116	209	- 47	+ 6	- 86	+ 7	88
1966	- 684 Apr 10	1471327	1.772	5 30	6 37	7 40	8 33	9 25	10 28	11 35	110	285	-100	- 5	-156	- 5	94
1967	- 684 Oct 3	1471503	1.837	14 51	15 47	16 43	17 33	18 23	19 19	20 16	71	253	+121	+ 1	+ 69	+ 2	100
1968	- 683 Mar 30	1471681	0.351	7 39	9 13	—	10 23	—	11 33	13 07	162	234	-137	0	-171	0	106
1969	- 683 Sep 23	1471858	0.592	7 11	8 19	—	9 36	—	10 53	12 00	29	295	-126	- 4	-164	- 3	112
1970	- 682 Feb 17	1472005	(0.477)	19 16	—	—	20 54	—	—	22 33	47	340	+ 75	+ 13	+ 27	+ 13	117
1971	- 682 Mar 19	1472035	(0.138)	10 16	—	—	11 13	—	—	12 09	180	216	-151	+ 5	-179	+ 5	118
1972	- 682 Aug 14	1472183	(0.527)	10 08	—	—	11 50	—	—	13 31	134	204	-153	- 16	+159	- 16	123
1973	- 682 Sep 12*	1472212	(0.245)	22 32	—	—	23 41	—	—	0 50	6	319	+ 21	- 9	- 12	- 8	124
1974	- 681 Feb 7	1472360	0.860	4 10	5 16	—	6 47	—	8 18	9 24	68	313	- 75	+ 17	-119	+ 17	129
1975	- 681 Aug 3	1472537	0.747	13 37	14 57	—	16 31	—	18 06	19 25	119	226	+136	- 19	+ 90	- 19	135
1976	- 680 Jan 27*	1472714	1.593	19 10	20 06	21 04	21 50	22 37	23 35	0 31	106	268	+ 62	+ 21	+ 12	+ 20	141
1977	- 680 Jul 22	1472891	1.544	13 41	14 52	15 59	16 49	17 39	18 45	19 57	78	275	+136	- 22	+ 80	- 22	147
1978	- 679 Jan 16	1473069	0.319	11 21	12 40	—	13 39	—	14 39	15 57	149	217	+173	+ 23	+144	+ 23	153
1979	- 679 Jul 11	1473245	0.205	17 35	19 11	—	20 03	—	20 55	22 31	28	334	+ 72	- 24	+ 46	- 24	159
1980	- 679 Dec 7	1473394	(0.561)	8 28	—	—	10 15	—	—	12 03	22	309	-129	+ 21	+179	+ 21	164
1981	- 678 Jun 1*	1473570	0.128	20 44	22 13	—	22 52	—	23 30	0 59	176	218	+ 25	- 20	+ 6	- 20	170 E
1982	- 678 Nov 26	1473748	0.638	8 26	9 52	—	11 22	—	12 51	14 17	31	291	-151	+ 19	+166	+ 20	176
1983	- 677 May 22	1473925	1.499	13 23	14 18	15 17	16 02	16 47	17 46	18 41	123	279	+142	- 18	+ 92	- 19	182
1984	- 677 Nov 15	1474102	1.738	7 30	8 42	9 46	10 38	11 30	12 34	13 45	70	245	-134	+ 17	+170	+ 17	188
1985	- 676 May 11	1474280	0.875	5 20	6 24	—	7 57	—	9 29	10 34	81	326	- 99	- 16	-144	- 17	194
1986	- 676 Nov 3	1474456	0.513	12 46	14 04	—	15 21	—	16 38	17 57	111	198	+145	+ 14	+108	+ 14	200
1987	- 675 Apr 1	1474605	(0.326)	3 40	—	—	5 05	—	—	6 31	182	237	- 54	0	- 95	- 1	205
1988	- 675 Apr 30	1474634	(0.390)	16 46	—	—	18 16	—	—	19 46	56	356	+106	- 13	+ 62	- 14	206
1989	- 675 Sep 24	1474781	(0.479)	15 26	—	—	16 56	—	—	18 25	4	297	+127	- 4	+ 84	- 3	211
1990	- 675 Oct 24	1474811	(0.384)	1 53	—	—	3 15	—	—	4 37	123	183	- 32	+ 10	- 72	+ 11	212
1991	- 674 Mar 21	1474959	0.553	2 57	4 23	—	5 47	—	7 12	8 38	164	255	- 63	+ 4	-105	+ 3	217
1992	- 674 Sep 14	1475136	0.712	6 30	7 35	—	8 59	—	10 23	11 28	23	280	-115	- 7	-155	- 7	223
1993	- 673 Mar 10	1475313	1.723	4 37	5 44	6 47	7 39	8 31	9 34	10 41	115	302	- 83	+ 8	-139	+ 7	6
1994	- 673 Sep 3*	1475490	1.716	18 54	19 56	20 57	21 47	22 38	23 38	0 41	67	239	+ 60	- 11	+ 6	- 10	12
1995	- 672 Feb 27	1475667	0.415	13 44	15 02	—	16 11	—	17 20	18 38	66	348	+138	+ 11	+105	+ 10	18
1996	- 672 Aug 23	1475845	0.288	1 12	2 47	—	3 49	—	4 52	6 27	122	188	- 42	- 14	- 72	- 13	24
1997	- 671 Jan 17	1475992	(0.730)	19 33	—	—	21 21	—	—	23 08	153	237	+ 70	+ 23	+ 18	+ 23	29
1998	- 671 Feb 16	1476022	(0.207)	5 41	—	—	6 41	—	—	7 41	46	2	- 82	+ 14	-111	+ 13	30
1999	- 671 Jul 13	1476169	(0.515)	10 52	—	—	12 38	—	—	14 24	23	314	-164	- 25	+145	- 24	35
2000	- 671 Aug 12	1476199	(0.038)	3 47	—	—	4 17	—	—	4 48	149	167	- 57	- 16	- 72	- 16	36 b
2001	- 670 Jan 7	1476347	0.927	9 49	10 54	—	12 27	—	14 00	15 05	131	250	-162	+ 24	+154	+ 24	41
2002	- 670 Jul 2	1476523	0.929	15 03	16 11	—	17 49	—	19 27	20 35	53	293	+115	- 24	+ 68	- 24	47
2003	- 670 Dec 27*	1476701	1.487	19 29	20 36	21 41	22 27	23 14	0 18	1 25	85	287	+ 51	+ 24	- 2	+ 24	53
2004	- 669 Jun 22	1476878	1.382	3 33	4 31	5 33	6 15	6 56	7 59	8 56	103	252	- 70	- 23	-120	- 23	59
2005	- 669 Dec 16*	1477055	0.149	22 28	0 18	—	1 04	—	1 51	3 41	24	337	- 5	+ 22	- 27	+ 22	65
2006	- 668 May 12	1477203	(0.124)	15 39	—	—	16 26	—	—	17 13	29	355	+123	- 18	+100	- 18	70 e
2007	- 668 Jun 10*	1477232	0.063	21 00	22 35	—	23 02	—	23 29	1 05	167	197	+ 19	- 21	+ 6	- 22	71 B
2008	- 668 Nov 5	1477380	(0.268)	4 36	—	—	5 53	—	—	7 10	141	191	- 73	+ 15	-110	+ 15	76
2009	- 668 Dec 4*	1477409	(0.064)	23 24	—	—	0 03	—	—	0 43	8	344	+ 7	+ 20	- 12	+ 20	77
2010	- 667 May 2	1477558	0.408	4 44	6 02	—	7 11	—	8 20	9 38	53	336	- 93	- 14	-126	- 14	82
2011	- 667 Oct 25	1477734	0.575	10 15	11 29	—	12 49	—	14 08	15 23	118	210	-176	+ 10	+146	+ 11	88
2012	- 666 Apr 21	1477912	1.770	12 22	13 29	14 32	15 25	16 17	17 20	18 27	104	288	+156	- 9	+100	- 10	94
2013	- 666 Oct 14*	1478088	1.859	23 34	0 30	1 27	2 16	3 06	4 03	4 59	72	253	- 11	+ 6	- 62	+ 6	100
2014	- 665 Apr 10	1478266	0.487	14 16	15 44	—	17 04	—	18 25	19 53	155	240	+124	- 4	+ 85	- 5	106
2015	- 665 Oct 4	1478443	0.621	15 46	16 53	—	18 12	—	19 31	20 38	30	294	+104	+ 1	+ 66	+ 1	112
2016	- 664 Feb 29	1478591	(0.405)	3 01	—	—	4 32	—	—	6 03	47	345	- 42	+ 10	- 86	+ 9	117
2017	- 664 Mar 29	1478620	(0.256)	16 58	—	—	18 13	—	—	19 29	174	222	+107	+ 1	+ 70	0	118
2018	- 664 Aug 24	1478768	(0.439)	17 52	—	—	19 26	—	—	21 00	134	198	+ 91	- 13	+ 46	- 12	123
2019	- 664 Sep 23	1478798	(0.285)	6 40	—	—	7 54	—	—	9 09	7	316	-101	- 4	-137	- 4	124
2020	- 663 Feb 17	1478945	0.808	12 23	13 29	—	14 58	—	16 27	17 33	69	318	+162	+ 14	+119	+ 13	129
2021	- 663 Aug 13*	1479122	0.634	20 42	22 05	—	23 34	—	1 03	2 25	120	218	+ 29	- 17	- 14	- 16	135
2022	- 662 Feb 7	1479300	1.640	3 41	4 36	5 34	6 21	7 09	8 06	9 01	108	273	- 65	+ 18	-116	+ 17	141
2023	- 662 Aug 2*	1479476	1.668	20 32	21 43	22 48	23 40	0 32	1 37	2 48	78	267	+ 34	- 20	- 23	- 20	147
2024	- 661 Jan 27*	1479654	0.349	19 54	21 11	—	22 13	—	23 16	0 33	152	223	+ 46	+ 21	+ 16	+ 21	153
2025	- 661 Jul 23	1479831	0.336	0 38	2 05	—	3 11	—	4 16	5 43	32	321	- 32	- 23	- 63	- 23	159
2026	- 661 Dec 18	1479979	(0.549)	16 51	—	—	18 38	—	—	20 25	26	314	+107	+ 22	+ 55	+ 22	164
2027	- 660 Jun 12	1480156	(0.966)	4 17	—	—	6 18	—	—	8 20	144	241	- 67	- 21	-125	- 22	170
2028	- 660 Jul 11	1480185	(0.096)	13 19	—	—	14 02	—	—	14 44	15	346	+160	- 25	+139	- 25	171 b
2029	- 660 Dec 6	1480333	0.629	16 34	18 00	—	19 29	—	20 58	22 24	35	296	+ 88	+ 21	+ 45	+ 22	176
2030	- 659 Jun 1*	1480510	1.360	20 55	21 50	22 52	23 32	0 12	1 14	2 10	123	271	+ 29	- 20	- 20	- 21	182

No.	Date	JD	Mag.	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>m</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	P <sub>β</sub>	P <sub>γ</sub>	λ <sub>β</sub>	φ <sub>β</sub>	λ <sub>ε</sub>	φ <sub>ε</sub>	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	°	°	
2031	- 659 Nov 25	1480687	1.745	15 45	16 56	18 00	18 52	19 44	20 48	21 59	73	249	+103	+ 20	+ 47	+ 20	188
2032	- 658 May 22	1480865	1.012	12 33	13 36	15 05	15 13	15 22	16 51	17 53	83	318	+153	- 19	+106	- 20	194
2033	- 658 Nov 14*	1481041	0.522	21 22	22 40	—	23 58	—	1 15	2 33	113	202	+ 16	+ 17	- 21	+ 18	200
2034	- 657 Apr 12	1481190	(0.190)	10 50	—	—	11 56	—	—	13 02	188	229	-162	- 4	+166	- 5	205
2035	- 657 May 11*	1481219	(0.528)	23 23	—	—	1 07	—	—	2 50	59	348	+ 6	- 17	- 44	- 17	206
2036	- 657 Oct 6	1481367	(0.450)	0 07	—	—	1 34	—	—	3 01	3	298	- 4	+ 1	- 46	+ 1	211
2037	- 657 Nov 4	1481396	(0.398)	10 43	—	—	12 06	—	—	13 29	124	185	-165	+ 14	+155	+ 15	212
2038	- 656 Mar 31	1481544	0.429	9 49	11 20	—	12 36	—	13 52	15 22	169	250	-169	- 1	+154	- 1	217
2039	- 656 Sep 24	1481721	0.663	14 57	16 04	—	17 26	—	18 47	19 54	20	281	+117	+ 3	+ 78	- 2	223
2040	- 655 Mar 20	1481898	1.832	11 52	12 58	14 01	14 53	15 45	16 48	17 54	119	300	+167	+ 3	+112	+ 2	6
2041	- 655 Sep 14	1482076	1.774	2 52	3 55	4 56	5 47	6 38	7 38	8 41	64	239	- 60	- 7	-114	- 6	12
2042	- 654 Mar 9*	1482252	0.506	21 32	22 46	—	0 01	—	1 16	2 29	72	345	+ 21	+ 7	- 15	+ 6	18
2043	- 654 Sep 3	1482430	0.365	8 32	10 04	—	11 14	—	12 23	13 55	116	190	-152	- 10	+174	- 10	24
2044	- 653 Jan 29	1482578	(0.693)	4 13	—	—	5 58	—	—	7 43	158	240	- 60	+ 21	-110	+ 21	29
2045	- 653 Feb 27	1482607	(0.273)	13 46	—	—	14 55	—	—	16 04	52	1	+156	+ 10	+123	+ 9	30
2046	- 653 Jul 24	1482754	(0.391)	17 54	—	—	19 27	—	—	21 00	15	315	+ 91	- 23	+ 46	- 23	35
2047	- 653 Aug 23	1482784	(0.139)	10 25	—	—	11 23	—	—	12 21	138	173	-157	- 13	+175	- 13	36
2048	- 652 Jan 18	1482932	0.900	18 26	19 31	—	21 03	—	22 36	23 41	136	254	+ 70	+ 23	+ 26	+ 22	41
2049	- 652 Jul 12*	1483108	0.803	22 16	23 26	—	0 59	—	2 31	3 41	44	293	+ 8	- 24	- 37	- 24	47
2050	- 651 Jan 7	1483287	1.503	3 49	4 56	6 01	6 48	7 35	8 39	9 47	90	291	- 73	+ 23	-126	+ 23	53
2051	- 651 Jul 2	1483463	1.514	11 02	11 58	12 58	13 44	14 30	15 30	16 26	95	252	+179	- 24	+128	- 23	59
2052	- 651 Dec 27	1483641	0.162	6 31	8 20	—	9 09	—	9 57	11 46	30	341	-124	+ 23	-148	+ 23	65
2053	- 650 Jun 22	1483818	0.193	4 27	5 49	—	6 35	—	7 22	8 44	152	204	- 89	- 23	-112	- 23	71
2054	- 650 Nov 16	1483965	(0.269)	12 56	—	—	14 13	—	—	15 30	144	194	+162	+ 19	+125	+ 19	76
2055	- 650 Dec 16	1483995	(0.075)	7 31	—	—	8 14	—	—	8 56	13	348	-113	+ 22	-134	+ 22	77
2056	- 649 May 13	1484143	0.263	12 00	13 25	—	14 22	—	15 19	16 44	43	341	+156	- 17	+129	- 17	82
2057	- 649 Nov 5*	1484319	0.574	18 56	20 10	—	21 29	—	22 49	0 03	120	212	+ 54	+ 14	+ 15	+ 15	88
2058	- 648 May 1*	1484497	1.623	19 08	20 15	21 19	22 11	23 02	0 06	1 14	98	291	+ 54	- 13	- 2	- 13	94
2059	- 648 Oct 25	1484674	1.872	8 24	9 20	10 16	11 06	11 55	12 52	13 48	74	254	-144	+ 10	+165	+ 10	100
2060	- 647 Apr 20*	1484851	0.632	20 47	22 10	—	23 40	—	1 09	2 32	147	246	+ 27	- 8	- 17	- 9	106
2061	- 647 Oct 15	1485029	0.640	0 28	1 34	—	2 54	—	4 14	5 21	31	294	- 27	+ 5	- 65	+ 6	112
2062	- 646 Mar 11	1485176	(0.322)	10 42	—	—	12 03	—	—	13 25	45	350	-158	+ 5	+163	+ 5	117
2063	- 646 Apr 9*	1485205	(0.384)	23 38	—	—	1 10	—	—	2 41	168	227	+ 6	- 4	- 38	- 4	118
2064	- 646 Sep 5	1485354	(0.364)	1 43	—	—	3 09	—	—	4 36	135	193	- 27	- 9	- 69	- 8	123
2065	- 646 Oct 4	1485383	(0.314)	14 56	—	—	16 13	—	—	17 31	9	315	+134	0	+ 96	+ 1	124
2066	- 645 Feb 28*	1485530	0.743	20 29	21 35	—	23 01	—	0 27	1 34	69	323	+ 40	+ 10	- 2	+ 10	129
2067	- 645 Aug 25	1485708	0.534	3 56	5 22	—	6 45	—	8 08	9 34	121	211	- 81	- 13	-121	- 13	135
2068	- 644 Feb 18	1485885	1.698	12 03	12 58	13 54	14 43	15 32	16 28	17 23	109	278	+169	+ 14	+119	+ 14	141
2069	- 644 Aug 13	1486062	1.779	3 33	4 43	5 48	6 41	7 34	8 39	9 49	78	260	- 71	- 17	-128	- 17	147
2070	- 643 Feb 7	1486240	0.390	4 16	5 32	—	6 38	—	7 43	8 59	153	229	- 79	+ 18	-110	+ 18	153
2071	- 643 Aug 2	1486416	0.454	7 51	9 13	—	10 27	—	11 42	13 03	34	311	-138	- 21	-174	- 21	159
2072	- 643 Dec 29	1486565	(0.532)	1 09	—	—	2 55	—	—	4 40	30	320	- 17	+ 23	- 68	+ 23	164
2073	- 642 Jan 27	1486594	(0.012)	17 53	—	—	18 09	—	—	18 25	183	193	+ 96	+ 22	+ 89	+ 22	165 b
2074	- 642 Jun 23	1486741	(0.838)	11 54	—	—	13 48	—	—	15 42	143	233	+179	- 22	+124	- 23	170
2075	- 642 Jul 22	1486770	(0.216)	20 33	—	—	21 37	—	—	22 40	19	334	+ 51	- 23	+ 21	- 23	171
2076	- 642 Dec 18	1486919	0.618	0 40	2 06	—	3 35	—	5 04	6 30	39	301	- 32	+ 23	- 75	+ 23	176
2077	- 641 Jun 13	1487096	1.222	4 25	5 22	6 28	7 01	7 35	8 41	9 38	124	262	- 83	- 22	-131	- 23	182
2078	- 641 Dec 7	1487273	1.752	0 03	1 13	2 17	3 09	4 01	5 05	6 16	77	253	- 21	+ 22	- 77	+ 22	188
2079	- 640 Jun 1*	1487450	1.150	19 43	20 45	21 58	22 26	22 55	0 08	1 09	84	310	+ 46	- 21	- 3	- 22	194
2080	- 640 Nov 25	1487627	0.529	6 03	7 20	—	8 38	—	9 55	11 13	117	205	-113	+ 20	-151	+ 21	200
2081	- 639 Apr 22	1487775	(0.045)	18 06	—	—	18 38	—	—	19 11	197	217	+ 88	- 8	+ 73	- 9	205 e
2082	- 639 May 22	1487805	(0.672)	5 56	—	—	7 52	—	—	9 48	60	341	- 93	- 20	-149	- 20	206
2083	- 639 Oct 16	1487952	(0.430)	8 55	—	—	10 20	—	—	11 44	3	300	-136	+ 5	-177	+ 6	211
2084	- 639 Nov 14	1487981	(0.406)	19 37	—	—	21 01	—	—	22 24	127	188	+ 62	+ 18	+ 21	+ 19	212
2085	- 638 Apr 11	1488129	0.295	16 37	18 14	—	19 18	—	20 22	21 59	176	242	+ 87	- 5	+ 56	- 5	217
2086	- 638 Oct 5*	1488306	0.625	23 30	0 38	—	1 58	—	3 18	4 26	19	282	- 12	+ 1	- 50	+ 2	223
2087	- 637 Mar 31*	1488483	1.735	19 03	20 09	21 11	22 03	22 55	23 58	1 04	123	296	+ 58	- 1	+ 3	- 2	6
2088	- 637 Sep 25	1488661	1.818	10 56	12 00	13 01	13 52	14 43	15 44	16 47	61	240	+178	- 2	+124	- 1	12
2089	- 636 Mar 20	1488838	0.609	5 14	6 24	—	7 45	—	9 05	10 16	77	342	- 94	+ 3	-133	+ 2	18
2090	- 636 Sep 13	1489015	0.428	16 01	17 30	—	18 46	—	20 01	21 30	111	191	+ 96	- 6	+ 60	- 5	24
2091	- 635 Feb 8	1489163	(0.644)	12 45	—	—	14 27	—	—	16 09	163	242	+173	+ 18	+124	+ 18	29
2092	- 635 Mar 9*	1489192	(0.352)	21 43	—	—	23 01	—	—	0 18	57	360	+ 36	+ 6	- 1	+ 5	30
2093	- 635 Aug 4	1489340	(0.279)	1 07	—	—	2 26	—	—	3 46	6	315	- 16	- 21	- 55	- 21	35
2094	- 635 Sep 2	1489369	(0.226)	17 26	—	—	18 39	—	—	19 52	130	176	+ 98	- 10	+ 62	- 9	36
2095	- 634 Jan 29	1489518	0.862	2 52	3 58	—	5 30	—	7 01	8 07	142	257	- 56	+ 21	-100	+ 20	41
2096	- 634 Jul 24	1489694	0.686	5 38	6 51	—	8 17	—	9 44	10 57	35	294	-103	- 23	-145	- 22	47
2097	- 633 Jan 18	1489872	1.530	12 00	13 08	14 12	15 00	15 48	16 52	17 59	96	295	+166	+ 22	+112	+ 22	53
2098	- 633 Jul 13*	1490048	1.638	18 36	19 32	20 30	21 18	22 07	23 05	0 01	86	251	+ 66	- 23	+ 15	- 23	59
2099	- 632 Jan 7	1490226	0.184	14 29	16 16	—	17 07	—	17 59	19 45	37	344	+118	+ 23	+ 93	+ 22	65
2100	- 632 Jul 2	1490403	0.318	11 58	13 13	—	14 11	—	15 10	16 25	140	207	+160	- 23	+132	- 23	71



No.	Date	JD	Mag.	$T_1$	$T_2$	$T_3$	$T_m$	$T_4$	$T_5$	$T_6$	$P_b$	$P_e$	$\lambda_b$	$\phi_b$	$\lambda_e$	$\phi_e$	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	
2101	- 632 Nov 26	1490550	(0.271)	21 19	—	—	22 36	—	—	23 53	148	198	+ 37	+ 22	0	+ 22	76
2102	- 632 Dec 26	1490580	(0.090)	15 33	—	—	16 20	—	—	17 06	20	351	+127	+ 22	+105	+ 22	77
2103	- 631 May 23	1490728	0.114	19 12	20 51	—	21 29	—	22 07	23 45	29	349	+ 45	- 20	+ 26	- 20	82 E
2104	- 631 Nov 16	1490905	0.577	3 41	4 54	—	6 13	—	7 33	8 46	123	216	- 77	+ 18	-115	+ 18	88
2105	- 630 May 13	1491083	1.468	1 48	2 57	4 03	4 51	5 38	6 45	7 53	90	293	- 47	- 16	-102	- 17	94
2106	- 630 Nov 5	1491259	1.874	17 18	18 14	19 10	20 00	20 49	21 46	22 42	76	256	+ 82	+ 14	+ 32	+ 14	100
2107	- 629 May 2	1491437	0.786	3 13	4 32	—	6 09	—	7 47	9 06	139	250	- 70	- 12	-117	- 13	106
2108	- 629 Oct 26	1491614	0.650	9 16	10 22	—	11 43	—	13 03	14 10	33	295	-159	+ 9	+162	+ 10	112
2109	- 628 Mar 21	1491761	(0.228)	18 18	—	—	19 27	—	—	20 36	41	355	+ 87	+ 1	+ 54	+ 1	117
2110	- 628 Apr 20	1491791	(0.521)	6 15	—	—	7 59	—	—	9 44	162	231	- 95	- 8	-145	- 8	118
2111	- 628 Sep 15	1491939	(0.303)	9 41	—	—	11 00	—	—	12 20	136	189	-147	- 5	+175	- 4	123
2112	- 628 Oct 14*	1491968	(0.332)	23 20	—	—	0 40	—	—	2 00	10	315	+ 7	+ 5	- 31	+ 5	124
2113	- 627 Mar 11	1492116	0.666	4 28	5 35	—	6 58	—	8 20	9 27	67	328	- 81	+ 6	-121	+ 6	129
2114	- 627 Sep 4	1492293	0.448	11 17	12 47	—	14 04	—	15 21	16 51	123	205	+168	- 9	+130	- 9	135
2115	- 626 Feb 28*	1492470	1.770	20 17	21 12	22 08	22 58	23 47	0 43	1 38	109	282	+ 45	+ 11	- 6	+ 10	141
2116	- 626 Aug 24	1492647	1.770	10 43	11 54	12 59	13 51	14 44	15 49	17 00	78	255	-179	- 14	+124	- 14	147
2117	- 625 Feb 18	1492825	0.443	12 31	13 45	—	14 54	—	16 04	17 18	154	234	+158	+ 15	+125	+ 15	153
2118	- 625 Aug 13	1493001	0.560	15 14	16 32	—	17 53	—	19 14	20 32	35	303	+112	- 18	+ 73	- 18	159
2119	- 624 Jan 9	1493150	(0.506)	9 22	—	—	11 06	—	—	12 50	34	326	-139	+ 22	+171	+ 22	164
2120	- 624 Feb 8	1493180	(0.049)	1 40	—	—	2 12	—	—	2 45	181	202	- 20	+ 19	- 36	+ 19	165
2121	- 624 Jul 3	1493326	(0.717)	19 35	—	—	21 22	—	—	23 09	142	225	+ 65	- 22	+ 13	- 23	170
2122	- 624 Aug 2	1493356	(0.326)	4 03	—	—	5 19	—	—	6 36	20	325	- 61	- 21	- 97	- 21	171
2123	- 624 Dec 28	1493504	0.601	8 41	10 08	—	11 36	—	13 03	14 30	43	307	-151	+ 23	+166	+ 23	176
2124	- 623 Jun 23	1493681	1.086	11 59	12 57	14 11	14 33	14 55	16 09	17 07	123	253	+164	- 23	+117	- 23	182
2125	- 623 Dec 17	1493858	1.762	8 18	9 28	10 32	11 24	12 16	13 19	14 30	82	258	-143	+ 23	+161	+ 24	188
2126	- 622 Jun 13	1494036	1.287	2 53	3 54	5 01	5 39	6 17	7 24	8 25	84	301	- 62	- 23	-112	- 23	194
2127	- 622 Dec 6	1494212	0.535	14 43	15 59	—	17 17	—	18 35	19 52	121	210	+118	+ 23	+ 81	+ 23	200
2128	- 621 Jun 2	1494390	(0.819)	12 29	—	—	14 35	—	—	16 42	61	333	+169	- 22	+108	- 22	206
2129	- 621 Oct 27	1494537	(0.418)	17 47	—	—	19 11	—	—	20 34	5	302	+ 90	+ 9	+ 50	+ 10	211
2130	- 621 Nov 26	1494567	(0.411)	4 33	—	—	5 57	—	—	7 21	130	192	- 72	+ 21	-112	+ 22	212
2131	- 620 Apr 21*	1494714	0.152	23 19	1 06	—	1 53	—	2 40	4 27	184	231	- 17	- 9	- 40	- 9	217
2132	- 620 Oct 16	1494892	0.597	8 10	9 19	—	10 38	—	11 56	13 06	19	284	-143	+ 6	+179	+ 7	223
2133	- 619 Apr 11	1495069	1.610	2 08	3 13	4 16	5 06	5 57	7 00	8 05	126	291	- 49	- 5	-104	- 6	6
2134	- 619 Oct 5*	1495246	1.838	19 08	20 13	21 13	22 05	22 56	23 57	1 01	60	241	+ 54	+ 2	0	+ 3	12
2135	- 618 Mar 31	1495423	0.723	12 48	13 55	—	15 21	—	16 47	17 54	81	337	+152	- 2	+110	- 2	18
2136	- 618 Sep 24*	1495600	0.479	23 39	1 07	—	2 26	—	3 45	5 13	108	193	- 19	- 2	- 57	- 1	24
2137	- 617 Feb 19*	1495748	(0.583)	21 11	—	—	22 49	—	—	0 26	168	242	+ 46	+ 15	- 1	+ 14	29
2138	- 617 Mar 21	1495778	(0.442)	5 33	—	—	6 59	—	—	8 25	61	357	- 82	+ 2	-124	+ 1	30
2139	- 617 Aug 15	1495925	(0.181)	8 29	—	—	9 33	—	—	10 38	358	317	-126	- 18	-158	- 18	35
2140	- 617 Sep 14	1495955	(0.301)	0 40	—	—	2 04	—	—	3 28	125	178	- 12	- 6	- 53	- 5	36
2141	- 616 Feb 9	1496103	0.811	11 12	12 19	—	13 49	—	15 19	16 25	147	258	+179	+ 18	+136	+ 17	41
2142	- 616 Aug 3	1496279	0.582	13 09	14 23	—	15 44	—	17 05	18 20	27	294	+145	- 20	+105	- 20	47
2143	- 615 Jan 28*	1496457	1.569	20 02	21 10	22 13	23 03	23 52	0 56	2 03	101	298	+ 46	+ 20	- 9	+ 19	53
2144	- 615 Jul 24	1496634	1.753	2 17	3 13	4 10	4 59	5 49	6 46	7 42	78	250	- 49	- 22	-100	- 21	59
2145	- 614 Jan 17*	1496811	0.217	22 19	0 03	—	0 59	—	1 55	3 38	43	347	+ 2	+ 21	- 25	+ 21	65
2146	- 614 Jul 13*	1496988	0.437	19 33	20 43	—	21 51	—	22 59	0 09	129	208	+ 48	- 22	+ 16	- 22	71
2147	- 614 Dec 8	1497136	(0.274)	5 42	—	—	6 59	—	—	8 16	152	202	- 87	+ 24	-125	+ 24	76
2148	- 613 Jan 6*	1497165	(0.113)	23 31	—	—	0 23	—	—	1 15	26	354	+ 9	+ 22	- 16	+ 22	77
2149	- 613 Jun 4	1497314	(0.982)	2 24	—	—	4 34	—	—	6 43	54	316	- 39	- 22	-102	- 23	82
2150	- 613 Jul 3	1497343	(0.013)	13 24	—	—	13 40	—	—	13 56	168	179	+158	- 22	+150	- 22	83 b
2151	- 613 Nov 27	1497490	0.582	12 28	13 41	—	15 00	—	16 19	17 32	126	220	+152	+ 21	+114	+ 21	88
2152	- 612 May 23	1497668	1.309	8 25	9 35	10 46	11 27	12 08	13 19	14 28	82	295	-147	- 19	+159	- 20	94
2153	- 612 Nov 16	1497845	1.871	2 15	3 11	4 07	4 57	5 46	6 43	7 39	79	259	- 52	+ 17	-102	+ 18	100
2154	- 611 May 12	1498022	0.945	9 36	10 53	—	12 36	—	14 20	15 36	131	253	-166	- 16	+144	- 16	106
2155	- 611 Nov 5	1498199	0.654	18 06	19 13	—	20 34	—	21 55	23 02	36	297	+ 68	+ 13	+ 29	+ 14	112
2156	- 610 Apr 2	1498347	(0.124)	1 54	—	—	2 45	—	—	3 36	35	1	- 28	- 3	- 53	- 4	117
2157	- 610 May 1	1498376	(0.666)	12 52	—	—	14 47	—	—	16 43	155	234	+165	- 11	+109	- 12	118
2158	- 610 Sep 26	1498524	(0.254)	17 45	—	—	18 58	—	—	20 12	138	186	+ 91	0	+ 56	0	123
2159	- 610 Oct 26	1498554	(0.341)	7 49	—	—	9 10	—	—	10 32	12	316	-120	+ 9	-160	+ 9	124
2160	- 609 Mar 22	1498701	0.577	12 20	13 29	—	14 46	—	16 04	17 13	64	332	+159	+ 2	+122	+ 1	129
2161	- 609 Sep 15*	1498878	0.376	18 47	20 21	—	21 32	—	22 44	0 17	125	200	+ 54	- 5	+ 19	- 5	135
2162	- 608 Mar 11	1499056	1.853	4 23	5 17	6 13	7 03	7 53	8 49	9 43	108	286	- 77	+ 7	-128	+ 6	141
2163	- 608 Sep 3*	1499232	1.686	18 05	19 16	20 21	21 13	22 05	23 10	0 21	78	250	+ 70	- 10	+ 13	- 10	147
2164	- 607 Feb 28*	1499410	0.509	20 34	21 46	—	23 00	—	0 14	1 26	153	239	+ 37	+ 11	+ 2	+ 11	153
2165	- 607 Aug 23*	1499586	0.652	22 48	0 03	—	1 29	—	2 55	4 10	36	297	- 1	- 15	- 42	- 14	159
2166	- 606 Jan 19	1499735	(0.470)	17 28	—	—	19 09	—	—	20 49	37	332	+101	+ 20	+ 52	+ 20	164
2167	- 606 Feb 18	1499765	(0.099)	9 19	—	—	10 05	—	—	10 51	179	209	-135	+ 15	-158	+ 15	165
2168	- 606 Jul 15	1499912	(0.603)	3 22	—	—	5 01	—	—	6 40	141	217	- 52	- 22	- 99	- 22	170
2169	- 606 Aug 13	1499941	(0.424)	11 44	—	—	13 10	—	—	14 36	20	317	-176	- 19	+143	- 18	171
2170	- 605 Jan 8	1500089	0.577	16 38	18 05	—	19 32	—	20 58	22 25	47	313	+ 91	+ 23	+ 49	+ 23	176



No.	Date	JD	Mag.	T <sub>1</sub> h m	T <sub>2</sub> h m	T <sub>3</sub> h m	T <sub>m</sub> h m	T <sub>4</sub> h m	T <sub>5</sub> h m	T <sub>6</sub> h m	P <sub>b</sub> °	P <sub>f</sub> °	λ <sub>b</sub> °	φ <sub>b</sub> °	λ <sub>e</sub> °	φ <sub>e</sub> °	Saros
2171	- 605 Jul 4*	1500266	0.955	19 34	20 34	—	22 07	—	23 40	0 39	123	244	+ 50	- 23	+ 5	- 23	182
2172	- 605 Dec 28	1500443	1.778	16 32	17 42	18 45	19 37	20 29	21 33	22 42	86	263	+ 95	+ 24	+ 39	+ 24	188
2173	- 604 Jun 23	1500621	1.422	10 03	11 04	12 07	12 51	13 35	14 39	15 39	84	292	-168	- 24	+140	- 24	194
2174	- 604 Dec 16*	1500797	0.545	23 23	0 39	—	1 57	—	3 15	4 31	125	215	- 11	+ 24	- 48	+ 24	200
2175	- 603 Jun 12	1500975	(0.966)	19 02	—	—	21 18	—	—	23 33	61	324	+ 71	- 24	+ 6	- 24	206
2176	- 603 Nov 7	1501123	(0.411)	2 43	—	—	4 06	—	—	5 29	7	305	- 44	+ 13	- 84	+ 14	211
2177	- 603 Dec 6	1501152	(0.415)	13 29	—	—	14 54	—	—	16 18	134	197	+155	+ 23	+115	+ 24	212
2178	- 602 May 3	1501300	0.003	5 59	8 18	—	8 26	—	8 33	10 52	202	209	-126	- 13	-129	- 13	217 E
2179	- 602 Oct 27	1501477	0.578	16 54	18 04	—	19 22	—	20 40	21 50	19	287	+ 86	+ 10	+ 48	+ 11	223
2180	- 601 Apr 22	1501654	1.478	9 10	10 15	11 20	12 07	12 54	13 59	15 04	129	286	-155	- 9	+151	- 10	6
2181	- 601 Oct 17	1501832	1.809	3 26	4 31	5 32	6 23	7 14	8 15	9 20	60	242	- 71	+ 6	-126	+ 7	12
2182	- 600 Apr 10*	1502008	0.846	20 18	21 23	—	22 54	—	0 25	1 29	85	332	+ 39	- 6	- 5	- 7	18
2183	- 600 Oct 5	1502186	0.517	7 26	8 53	—	10 14	—	11 36	13 03	106	195	-136	+ 3	-176	+ 3	24
2184	- 599 Mar 2	1502334	(0.509)	5 29	—	—	7 01	—	—	8 32	173	242	- 78	+ 11	-123	+ 10	29
2185	- 599 Mar 31	1502363	(0.543)	13 16	—	—	14 50	—	—	16 24	65	353	+161	- 2	+116	- 3	30
2186	- 599 Aug 25	1502510	(0.097)	16 05	—	—	16 52	—	—	17 40	349	320	+120	- 15	+ 97	- 14	35
2187	- 599 Sep 24	1502540	(0.361)	8 08	—	—	9 40	—	—	11 11	122	179	-125	- 1	-169	- 1	36
2188	- 598 Feb 19*	1502688	0.747	19 22	20 30	—	21 57	—	23 25	0 33	152	259	+ 57	+ 14	+ 14	+ 14	41
2189	- 598 Aug 14*	1502864	0.490	20 48	22 05	—	23 20	—	0 36	1 52	20	295	+ 29	- 18	- 7	- 17	47
2190	- 597 Feb 9	1503043	1.622	3 55	5 02	6 06	6 56	7 46	8 50	9 57	106	299	- 72	+ 17	-127	+ 16	53
2191	- 597 Aug 4	1503219	1.858	10 05	11 01	11 58	12 48	13 38	14 35	15 31	71	250	-166	- 20	+143	- 19	59
2192	- 596 Jan 29	1503397	0.263	6 00	7 40	—	8 41	—	9 42	11 23	50	348	-111	+ 19	-141	+ 19	65
2193	- 596 Jul 24	1503574	0.546	3 15	4 22	—	5 36	—	6 51	7 58	120	209	- 66	- 21	-102	- 21	71
2194	- 596 Dec 18	1503721	(0.273)	14 04	—	—	15 21	—	—	16 38	157	207	+149	+ 25	+112	+ 25	76
2195	- 595 Jan 17	1503751	(0.146)	7 20	—	—	8 19	—	—	9 17	33	357	-107	+ 21	-136	+ 21	77
2196	- 595 Jun 14	1503899	(0.836)	9 35	—	—	11 37	—	—	13 39	45	316	-147	- 24	+155	- 24	82
2197	- 595 Jul 13	1503928	(0.126)	20 16	—	—	21 06	—	—	21 55	152	186	+ 55	- 22	+ 31	- 22	83
2198	- 595 Dec 7*	1504075	0.588	21 15	22 27	—	23 46	—	1 06	2 18	130	224	+ 21	+ 23	- 17	+ 23	88
2199	- 594 Jun 3	1504253	1.149	15 01	16 12	17 30	18 01	18 31	19 49	21 01	73	297	+114	- 22	+ 62	- 22	94
2200	- 594 Nov 27	1504430	1.871	11 15	12 11	13 07	13 56	14 46	15 42	16 38	83	263	+174	+ 20	+124	+ 20	100
2201	- 593 May 23	1504607	1.108	15 57	17 11	18 33	19 00	19 26	20 48	22 03	122	255	+ 99	- 19	+ 47	- 19	106
2202	- 593 Nov 17	1504785	0.653	3 01	4 08	—	5 29	—	6 50	7 57	39	300	- 66	+ 17	-104	+ 17	112
2203	- 592 Apr 12	1504932	(0.012)	9 41	—	—	9 58	—	—	10 14	23	12	-146	- 8	-153	- 8	117 e
2204	- 592 May 11	1504961	(0.816)	19 27	—	—	21 33	—	—	23 38	148	236	+ 66	- 15	+ 5	- 15	118
2205	- 592 Oct 7	1505110	(0.216)	1 55	—	—	3 03	—	—	4 12	140	184	- 32	+ 4	- 65	+ 5	123
2206	- 592 Nov 5	1505139	(0.343)	16 23	—	—	17 45	—	—	19 07	14	318	+111	+ 13	+ 71	+ 13	124
2207	- 591 Apr 1*	1505286	0.478	20 06	21 18	—	22 29	—	23 41	0 52	60	336	+ 41	- 3	+ 7	- 3	129
2208	- 591 Sep 26	1505464	0.318	2 25	4 02	—	5 08	—	6 15	7 52	128	196	- 63	- 1	- 95	- 1	135
2209	- 590 Mar 22	1505641	1.830	12 22	13 16	14 12	15 02	15 52	16 48	17 42	106	290	+162	+ 2	+111	+ 2	141
2210	- 590 Sep 15	1505818	1.617	1 36	2 47	3 52	4 43	5 34	6 39	7 51	79	246	- 43	- 6	-100	- 5	147
2211	- 589 Mar 12	1505996	0.588	4 30	5 39	—	6 58	—	8 17	9 27	151	244	- 82	+ 7	-120	+ 7	153
2212	- 589 Sep 4	1506172	0.729	6 33	7 46	—	9 16	—	10 45	11 58	37	291	-117	- 11	-160	- 10	159
2213	- 588 Jan 31	1506321	(0.421)	1 27	—	—	3 03	—	—	4 39	40	337	- 18	+ 18	- 65	+ 18	164
2214	- 588 Feb 29	1506350	(0.163)	16 49	—	—	17 48	—	—	18 47	177	216	+112	+ 12	+ 83	+ 11	165
2215	- 588 Jul 25	1506497	(0.498)	11 15	—	—	12 46	—	—	14 17	140	209	-169	- 20	+147	- 20	170
2216	- 588 Aug 23	1506526	(0.511)	19 36	—	—	21 10	—	—	22 44	21	311	+ 66	- 15	+ 21	- 15	171
2217	- 587 Jan 19	1506675	0.543	0 28	1 56	—	3 20	—	4 44	6 12	50	319	- 26	+ 21	- 67	+ 21	176
2218	- 587 Jul 15	1506852	0.831	3 15	4 17	—	5 45	—	7 14	8 16	123	235	- 65	- 22	-108	- 22	182
2219	- 586 Jan 8	1507029	1.801	0 39	1 49	2 52	3 44	4 36	5 39	6 49	90	269	- 26	+ 23	- 81	+ 23	188
2220	- 586 Jul 4	1507206	1.552	17 17	18 18	19 19	20 07	20 55	21 56	22 57	84	283	+ 84	- 24	+ 31	- 24	194
2221	- 586 Dec 28	1507383	0.559	8 00	9 15	—	10 34	—	11 52	13 07	129	221	-138	+ 24	-176	+ 25	200
2222	- 585 Jun 24	1507561	0.046	1 36	3 34	—	4 00	—	4 26	6 24	21	355	- 55	- 25	- 68	- 25	206 B
2223	- 585 Nov 18	1507708	(0.409)	11 41	—	—	13 04	—	—	14 27	10	308	-178	+ 16	+142	+ 17	211
2224	- 585 Dec 17*	1507737	(0.421)	22 24	—	—	23 49	—	—	1 14	139	202	+ 23	+ 25	- 18	+ 25	212
2225	- 584 May 13	1507885	(0.935)	12 36	—	—	14 54	—	—	17 12	156	250	+168	- 15	+102	- 16	217
2226	- 584 Nov 7	1508063	0.566	1 43	2 53	—	4 11	—	5 28	6 39	21	290	- 47	+ 14	- 84	+ 14	223
2227	- 583 May 2	1508239	1.339	16 08	17 14	18 21	19 03	19 45	20 52	21 57	132	279	+ 99	- 13	+ 47	- 14	6
2228	- 583 Oct 27	1508417	1.790	11 49	12 54	13 55	14 47	15 38	16 39	17 45	62	245	+163	+ 11	+108	+ 11	12
2229	- 582 Apr 22	1508594	0.976	3 44	4 46	—	6 21	—	7 56	8 59	89	326	- 73	- 10	-119	- 11	18
2230	- 582 Oct 16	1508771	0.546	15 19	16 45	—	18 09	—	19 33	20 59	106	197	+105	+ 7	+ 65	+ 8	24
2231	- 581 Mar 13	1508919	(0.423)	13 41	—	—	15 05	—	—	16 29	177	240	+158	+ 7	+117	+ 6	29
2232	- 581 Apr 11*	1508948	(0.654)	20 53	—	—	22 35	—	—	0 17	68	349	+ 46	- 6	- 4	- 7	30
2233	- 581 Sep 5*	1509095	(0.028)	23 55	—	—	0 21	—	—	0 46	341	325	+ 2	- 11	- 11	- 11	35 e
2234	- 581 Oct 5	1509125	(0.409)	15 48	—	—	17 24	—	—	19 01	120	181	+120	+ 3	+ 73	+ 4	36
2235	- 580 Mar 2	1509274	0.669	3 23	4 33	—	5 57	—	7 21	8 31	157	258	- 65	+ 10	-105	+ 10	41
2236	- 580 Aug 25	1509450	0.411	4 37	5 57	—	7 06	—	8 16	9 35	13	296	- 89	- 14	-123	- 14	47
2237	- 579 Feb 19	1509628	1.690	11 37	12 45	13 47	14 39	15 30	16 33	17 41	111	300	+173	+ 14	+117	+ 13	53
2238	- 579 Aug 14	1509804	1.816	18 02	18 58	19 54	20 44	21 34	22 31	23 27	65	249	+ 75	- 17	+ 24	- 16	59
2239	- 578 Feb 8	1509982	0.323	13 31	15 08	—	16 15	—	17 22	18 58	57	348	+137	+ 16	+104	+ 16	65
2240	- 578 Aug 4	1510159	0.647	11 02	12 07	—	13 27	—	14 47	15 52	112	209	+178	- 19	+139	- 19	71

No.	Date	JD	Mag.	$T_1$	$T_2$	$T_3$	$T_m$	$T_4$	$T_5$	$T_6$	$P_b$	$P_e$	$\lambda_b$	$\phi_b$	$\lambda_e$	$\phi_e$	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	
2241	- 578 Dec 29*	1510306	(0.266)	22 25	—	—	23 41	—	—	0 57	162	211	+ 25	+ 25	- 12	+ 25	76
2242	- 577 Jan 28	1510336	(0.189)	15 03	—	—	16 09	—	—	17 15	40	358	+138	+ 19	+106	+ 18	77
2243	- 577 Jun 25	1510484	(0.693)	16 47	—	—	18 41	—	—	20 34	37	316	+106	- 25	+ 52	- 25	82
2244	- 577 Jul 25	1510514	(0.233)	3 28	—	—	4 34	—	—	5 41	141	188	- 53	- 20	- 85	- 20	83
2245	- 577 Dec 19	1510661	0.590	6 01	7 13	—	8 32	—	9 52	11 04	135	229	-109	+ 24	-147	+ 24	88
2246	- 576 Jun 13*	1510838	0.988	21 37	22 51	—	0 34	—	2 18	3 32	63	298	+ 15	- 23	- 35	- 23	94
2247	- 576 Dec 7*	1511015	1.871	20 13	21 09	22 05	22 54	23 44	0 40	1 36	88	267	+ 41	+ 22	- 10	+ 22	100
2248	- 575 Jun 2*	1511192	1.272	22 19	23 32	0 45	1 24	2 04	3 17	4 30	113	257	+ 4	- 21	- 50	- 21	106
2249	- 575 Nov 27	1511370	0.649	11 56	13 03	—	14 24	—	15 45	16 53	42	304	+161	+ 20	+123	+ 20	112
2250	- 574 May 23	1511547	(0.969)	2 04	—	—	4 19	—	—	6 33	141	237	- 34	- 18	- 99	- 18	118
2251	- 574 Oct 18	1511695	(0.188)	10 10	—	—	11 14	—	—	12 18	142	184	-156	+ 9	+173	+ 9	123
2252	- 574 Nov 17	1511725	(0.340)	0 59	—	—	2 21	—	—	3 43	17	321	- 18	+ 16	- 58	+ 17	124
2253	- 573 Apr 13	1511872	0.369	3 48	5 03	—	6 07	—	7 11	8 25	54	341	- 76	- 7	-107	- 7	129
2254	- 573 Oct 7	1512049	0.274	10 11	11 51	—	12 53	—	13 56	15 35	130	194	+179	+ 4	+149	+ 4	135
2255	- 572 Apr 1*	1512226	1.727	20 12	21 06	22 03	22 52	23 41	0 38	1 32	103	293	+ 44	- 2	- 7	- 3	141
2256	- 572 Sep 25	1512403	1.563	9 18	10 29	11 35	12 25	13 15	14 20	15 32	80	244	-160	- 2	+144	- 1	147
2257	- 571 Mar 22	1512581	0.679	12 14	13 22	—	14 46	—	16 09	17 17	148	249	+161	+ 3	+121	+ 2	153
2258	- 571 Sep 14	1512757	0.793	14 29	15 41	—	17 12	—	18 44	19 56	38	287	+124	- 7	+ 79	- 6	159
2259	- 570 Feb 10	1512906	(0.360)	9 17	—	—	10 46	—	—	12 15	41	343	-136	+ 15	-179	+ 15	164
2260	- 570 Mar 12	1512936	(0.241)	0 08	—	—	1 19	—	—	2 31	174	221	+ 1	+ 8	- 33	+ 7	165
2261	- 570 Aug 5	1513082	(0.404)	19 16	—	—	20 38	—	—	22 00	140	202	+ 71	- 18	+ 31	- 18	170
2262	- 570 Sep 4	1513112	(0.584)	3 40	—	—	5 19	—	—	6 58	21	307	- 56	- 11	-103	- 11	171
2263	- 569 Jan 30	1513260	0.497	8 10	9 40	—	11 01	—	12 22	13 51	52	325	-141	+ 19	+180	+ 19	176
2264	- 569 Jul 26	1513437	0.715	10 59	12 04	—	13 27	—	14 51	15 55	123	226	+179	- 21	+138	- 21	182
2265	- 568 Jan 19	1513614	1.821	8 43	9 52	10 55	11 47	12 39	13 42	14 51	94	274	-145	+ 22	+159	+ 22	188
2266	- 568 Jul 15	1513792	1.676	0 33	1 33	2 34	3 24	4 14	5 14	6 15	83	275	- 24	- 23	- 78	- 23	194
2267	- 567 Jan 7	1513968	0.581	16 33	17 47	—	19 07	—	20 27	21 40	133	226	+ 95	+ 24	+ 57	+ 24	200
2268	- 567 Jul 4	1514146	0.184	8 12	9 53	—	10 44	—	11 34	13 15	29	338	-149	- 25	-174	- 25	206
2269	- 567 Nov 28	1514293	(0.407)	20 41	—	—	22 03	—	—	23 26	14	312	+ 48	+ 19	+ 8	+ 20	211
2270	- 567 Dec 28	1514323	(0.431)	7 16	—	—	8 42	—	—	10 07	143	207	-109	+ 25	-150	+ 25	212
2271	- 566 May 24	1514470	(0.778)	19 15	—	—	21 22	—	—	23 30	157	242	+ 69	- 18	+ 7	- 19	217
2272	- 566 Nov 18	1514648	0.559	10 32	11 44	—	13 01	—	14 18	15 29	24	293	-179	+ 17	+144	+ 18	223
2273	- 565 May 13*	1514824	1.197	23 07	0 13	1 25	1 59	2 32	3 45	4 51	134	272	- 6	- 16	- 57	- 17	6
2274	- 565 Nov 7*	1515002	1.778	20 15	21 21	22 22	23 13	0 05	1 06	2 12	64	247	+ 36	+ 14	- 19	+ 15	12
2275	- 564 May 2	1515179	1.113	11 06	12 06	13 21	13 45	14 10	15 24	16 24	91	320	+176	- 13	+128	- 14	18
2276	- 564 Oct 26*	1515356	0.565	23 18	0 44	—	2 09	—	3 34	5 01	107	200	- 15	+ 11	- 56	+ 12	24
2277	- 563 Mar 23*	1515504	(0.325)	21 46	—	—	23 01	—	—	0 16	182	237	+ 36	+ 3	0	+ 2	29
2278	- 563 Apr 22	1515534	(0.773)	4 25	—	—	6 15	—	—	8 04	70	344	- 68	- 10	-121	- 11	30
2279	- 563 Oct 15*	1515710	(0.446)	23 36	—	—	1 17	—	—	2 57	119	184	+ 2	+ 7	- 47	+ 8	36
2280	- 562 Mar 13	1515859	0.578	11 14	12 26	—	13 46	—	15 05	16 18	162	255	+176	+ 6	+138	+ 6	41
2281	- 562 Sep 5	1516035	0.345	12 36	13 58	—	15 02	—	16 06	17 28	8	297	+150	- 10	+119	- 10	47
2282	- 561 Mar 2*	1516213	1.772	19 08	20 16	21 19	22 11	23 03	0 06	1 13	116	300	+ 59	+ 10	+ 3	+ 9	53
2283	- 561 Aug 26	1516390	1.734	2 07	3 03	4 00	4 49	5 38	6 35	7 31	60	249	- 46	- 14	- 97	- 13	59
2284	- 560 Feb 19*	1516567	0.397	20 51	22 24	—	23 38	—	0 51	2 24	64	347	+ 28	+ 13	- 8	+ 13	65
2285	- 560 Aug 14	1516744	0.736	18 58	20 01	—	21 25	—	22 50	23 53	105	209	+ 59	- 16	+ 19	- 16	71
2286	- 559 Jan 9	1516892	(0.251)	6 42	—	—	7 55	—	—	9 08	167	215	- 98	+ 25	-133	+ 24	76
2287	- 559 Feb 7*	1516921	(0.245)	22 35	—	—	23 50	—	—	1 04	46	359	+ 95	+ 16	- 11	+ 15	77
2288	- 559 Jul 6	1517070	(0.555)	0 03	—	—	1 46	—	—	3 29	28	316	- 2	- 25	- 52	- 25	82
2289	- 559 Aug 4	1517099	(0.332)	10 50	—	—	12 09	—	—	13 28	133	188	-163	- 18	+159	- 18	83
2290	- 559 Dec 29	1517246	0.587	14 45	15 56	—	17 15	—	18 34	19 46	140	234	+122	+ 24	+ 84	+ 24	88
2291	- 558 Jun 25	1517424	0.831	4 13	5 30	—	7 08	—	8 46	10 03	53	299	- 84	- 24	-132	- 24	94
2292	- 558 Dec 19	1517601	1.868	5 11	6 06	7 02	7 52	8 41	9 37	10 33	92	272	- 92	+ 24	-143	+ 23	100
2293	- 557 Jun 14	1517778	1.434	4 43	5 54	7 02	7 49	8 36	9 45	10 56	103	258	- 91	- 23	-147	- 23	106
2294	- 557 Dec 8*	1517955	0.646	20 51	21 59	—	23 20	—	0 40	1 48	47	308	+ 28	+ 22	- 10	+ 22	112
2295	- 556 Jun 2	1518132	0.074	8 43	10 33	—	11 05	—	11 37	13 26	169	201	-160	- 20	-176	- 20	118 B
2296	- 556 Oct 28	1518280	(0.169)	18 28	—	—	19 30	—	—	20 31	145	184	+ 79	+ 13	+ 49	+ 13	123
2297	- 556 Nov 27	1518310	(0.334)	9 37	—	—	10 59	—	—	12 21	21	325	-147	+ 19	+174	+ 19	124
2298	- 555 Apr 23	1518457	0.253	11 27	12 47	—	13 40	—	14 34	15 54	46	346	+167	- 11	+141	- 11	129
2299	- 555 Oct 17	1518634	0.241	18 03	19 46	—	20 44	—	21 43	23 25	133	193	+ 60	+ 8	+ 32	+ 8	135
2300	- 554 Apr 13	1518812	1.613	3 58	4 52	5 50	6 37	7 25	8 22	9 17	99	296	- 74	- 6	-124	- 7	141
2301	- 554 Oct 6	1518988	1.522	17 09	18 21	19 27	20 15	21 04	22 10	23 22	82	243	+ 82	+ 3	+ 26	+ 3	147
2302	- 553 Apr 2*	1519166	0.781	19 51	20 57	—	22 26	—	23 54	1 00	144	252	+ 46	- 2	+ 4	- 2	153
2303	- 553 Sep 25*	1519342	0.842	22 35	23 45	—	1 19	—	2 53	4 03	39	285	+ 2	- 2	- 44	- 2	159
2304	- 552 Feb 21	1519491	(0.285)	16 59	—	—	18 19	—	—	19 40	40	349	+109	+ 12	+ 70	+ 11	164
2305	- 552 Mar 22	1519521	(0.332)	7 18	—	—	8 41	—	—	10 04	171	226	-107	+ 3	-148	+ 3	165
2306	- 552 Aug 16	1519668	(0.321)	3 24	—	—	4 38	—	—	5 52	140	195	- 51	- 15	- 87	- 15	170
2307	- 552 Sep 14	1519697	(0.645)	11 53	—	—	13 37	—	—	15 21	22	303	-180	- 7	+131	- 7	171
2308	- 551 Feb 9	1519845	0.439	15 43	17 15	—	18 32	—	19 48	21 20	52	331	+105	+ 16	+ 68	+ 16	176
2309	- 551 Aug 5	1520022	0.609	18 51	19 58	—	21 17	—	22 35	23 42	124	218	+ 60	- 18	+ 23	- 18	182
2310	- 550 Jan 29	1520199	1.783	16 40	17 48	18 50	19 42	20 34	21 37	22 45	97	280	+ 97	+ 20	+ 41	+ 19	188

No.	Date	JD	Mag.	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>m</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	P <sub>b</sub>	P <sub>e</sub>	λ <sub>b</sub>	φ <sub>b</sub>	λ <sub>e</sub>	φ <sub>e</sub>	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	
2311	- 550 Jul 26	1520377	1.791	7 53	8 55	9 54	10 46	11 37	12 37	13 38	83	267	-134	- 21	+172	- 21	194
2312	- 549 Jan 19	1520554	0.612	1 00	2 13	—	3 34	—	4 55	6 08	136	232	+ 30	+ 22	- 69	+ 22	200
2313	- 549 Jul 15	1520731	0.316	14 54	16 26	—	17 32	—	18 37	20 09	33	325	+113	- 24	+ 81	- 24	206
2314	- 549 Dec 10	1520879	(0.404)	5 40	—	—	7 03	—	—	8 25	18	316	- 86	+ 21	-126	+ 21	211
2315	- 548 Jan 8	1520908	(0.446)	16 03	—	—	17 29	—	—	18 56	148	212	+121	+ 25	+ 80	+ 25	212
2316	- 548 Jun 4	1521056	(0.623)	1 54	—	—	3 50	—	—	5 45	157	234	- 31	- 20	- 87	- 21	217
2317	- 548 Jul 3	1521085	(0.005)	18 22	—	—	18 34	—	—	18 45	7	360	+ 84	- 25	+ 78	- 25	218 b
2318	- 548 Nov 28*	1521233	0.553	19 23	20 35	—	21 52	—	23 09	0 21	28	297	+ 49	+ 20	+ 12	+ 20	223
2319	- 547 May 24	1521410	1.053	6 05	7 12	8 36	8 54	9 12	10 36	11 43	135	264	-111	- 19	-160	- 19	6
2320	- 547 Nov 18	1521588	1.772	4 42	5 49	6 51	7 42	8 33	9 35	10 41	67	251	- 91	+ 18	-146	+ 19	12
2321	- 546 May 13	1521764	1.254	18 27	19 26	20 32	21 08	21 43	22 50	23 48	93	312	+ 66	- 17	+ 16	- 17	18
2322	- 546 Nov 7	1521942	0.577	7 22	8 49	—	10 14	—	11 40	13 07	108	202	-136	+ 15	-178	+ 16	24
2323	- 545 Apr 4	1522090	(0.217)	5 48	—	—	6 49	—	—	7 51	187	231	- 86	- 1	-115	- 2	29
2324	- 545 May 3	1522119	(0.899)	11 53	—	—	13 50	—	—	15 46	72	338	+179	- 14	+123	- 15	30
2325	- 545 Oct 27	1522296	(0.472)	7 34	—	—	9 17	—	—	11 00	120	186	-118	+ 12	-168	+ 12	36
2326	- 544 Mar 23	1522444	0.473	18 56	20 12	—	21 25	—	22 39	23 55	168	251	+ 59	+ 2	+ 23	+ 1	41
2327	- 544 Sep 15*	1522620	0.293	20 44	22 09	—	23 08	—	0 08	1 32	4	299	+ 27	- 6	- 2	- 6	47
2328	- 543 Mar 13	1522799	1.802	2 29	3 36	4 39	5 32	6 24	7 27	8 35	120	298	- 52	+ 6	-108	+ 5	53
2329	- 543 Sep 5	1522975	1.665	10 21	11 16	12 14	13 02	13 50	14 48	15 44	56	249	-170	- 10	+139	- 9	59
2330	- 542 Mar 2	1523153	0.486	4 03	5 32	—	6 53	—	8 13	9 42	70	345	- 80	+ 9	-119	+ 9	65
2331	- 542 Aug 26	1523330	0.813	3 00	4 02	—	5 30	—	6 57	7 59	99	210	- 61	- 13	-103	- 12	71
2332	- 541 Jan 20	1523477	(0.227)	14 56	—	—	16 05	—	—	17 15	173	219	+140	+ 23	+106	+ 23	76
2333	- 541 Feb 19	1523507	(0.314)	6 01	—	—	7 24	—	—	8 48	52	358	- 87	+ 13	-127	+ 12	77
2334	- 541 Jul 17	1523655	(0.424)	7 23	—	—	8 55	—	—	10 26	19	316	-111	- 24	-155	- 24	82
2335	- 541 Aug 15	1523684	(0.420)	18 21	—	—	19 50	—	—	21 18	126	188	+ 84	- 16	+ 41	- 15	83
2336	- 540 Jan 9*	1523831	0.577	23 24	0 35	—	1 53	—	3 12	4 23	145	238	- 7	+ 24	- 44	+ 24	88
2337	- 540 Jul 5	1524009	0.678	10 53	12 14	—	13 45	—	15 17	16 37	43	301	+175	- 24	+131	- 24	94
2338	- 540 Dec 29	1524186	1.860	14 04	14 59	15 55	16 45	17 34	18 30	19 26	98	277	+136	+ 24	+ 85	+ 24	100
2339	- 539 Jun 24	1524363	1.592	11 12	12 22	13 28	14 19	15 10	16 16	17 27	94	259	+172	- 24	+116	- 24	106
2340	- 539 Dec 19	1524541	0.646	5 42	6 50	—	8 11	—	9 32	10 40	51	313	-103	+ 23	-142	+ 23	112
2341	- 538 Jun 13	1524717	0.229	15 27	17 00	—	17 55	—	18 50	20 23	152	210	+103	- 22	+ 76	- 22	118
2342	- 538 Nov 9	1524866	(0.156)	2 50	—	—	3 49	—	—	4 48	148	186	- 46	+ 17	- 75	+ 17	123
2343	- 538 Dec 8	1524895	(0.328)	18 13	—	—	19 35	—	—	20 56	25	330	+ 85	+ 21	+ 46	+ 21	124
2344	- 537 May 4	1525042	0.130	19 01	20 30	—	21 09	—	21 48	23 17	35	353	+ 50	- 15	+ 32	- 15	129
2345	- 537 Oct 29	1525220	0.218	2 02	3 47	—	4 43	—	5 39	7 23	136	193	- 60	+ 12	- 87	+ 12	135
2346	- 536 Apr 23	1525397	1.490	11 37	12 32	13 31	14 15	15 00	15 59	16 54	94	298	+170	- 10	+120	- 11	141
2347	- 536 Oct 17	1525574	1.494	1 10	2 21	3 27	4 15	5 03	6 10	7 21	83	243	- 39	+ 7	- 94	+ 8	147
2348	- 535 Apr 13	1525752	0.894	3 19	4 23	—	5 56	—	7 30	8 34	139	256	- 66	- 6	-111	- 6	153
2349	- 535 Oct 6	1525928	0.880	6 51	8 01	—	9 35	—	11 10	12 20	40	284	-123	+ 2	-169	+ 3	159
2350	- 534 Mar 4	1526077	(0.196)	0 35	—	—	1 42	—	—	2 49	38	355	- 6	+ 8	- 38	+ 7	164
2351	- 534 Apr 2	1526106	(0.437)	14 18	—	—	15 53	—	—	17 28	166	230	+147	- 1	+100	- 2	165
2352	- 534 Aug 27	1526253	(0.249)	11 40	—	—	12 46	—	—	13 51	141	189	-176	- 11	+153	- 11	170
2353	- 534 Sep 25	1526282	(0.693)	20 17	—	—	22 04	—	—	23 50	22	301	+ 54	- 3	+ 2	- 2	171
2354	- 533 Feb 20*	1526430	0.368	23 10	0 44	—	1 55	—	3 06	4 40	52	337	- 7	+ 12	- 42	+ 12	176
2355	- 533 Aug 17	1526608	0.514	2 48	3 58	—	5 12	—	6 25	7 35	124	211	- 60	- 15	- 95	- 15	182
2356	- 532 Feb 10	1526785	1.732	0 29	1 37	2 40	3 31	4 23	5 26	6 33	98	285	- 21	+ 17	- 76	+ 16	188
2357	- 532 Aug 5	1526962	1.820	15 19	16 21	17 21	18 12	19 04	20 04	21 06	82	260	+115	- 19	+ 61	- 19	194
2358	- 531 Jan 29	1527139	0.654	9 22	10 33	—	11 56	—	13 19	14 30	139	238	-154	+ 20	+166	+ 20	200
2359	- 531 Jul 25*	1527316	0.439	21 41	23 08	—	0 24	—	1 39	3 07	35	314	+ 13	- 22	- 24	- 22	206
2360	- 531 Dec 20	1527464	(0.398)	14 37	—	—	15 59	—	—	17 21	22	321	+141	+ 22	+101	+ 22	211
2361	- 530 Jan 19	1527494	(0.470)	0 43	—	—	2 12	—	—	3 40	151	218	- 8	+ 23	- 50	+ 23	212
2362	- 530 Jun 15	1527641	(0.471)	8 40	—	—	10 21	—	—	12 03	158	224	-132	- 22	+179	- 22	217
2363	- 530 Jul 15	1527671	(0.148)	0 10	—	—	1 09	—	—	2 09	17	341	- 3	- 24	- 32	- 24	218
2364	- 530 Dec 10	1527819	0.548	4 13	5 26	—	6 42	—	7 59	9 11	32	302	- 83	+ 22	-120	+ 22	223
2365	- 529 Jun 4	1527995	0.909	13 06	14 14	—	15 51	—	17 28	18 36	136	255	+144	- 21	+ 97	- 21	6
2366	- 529 Nov 29	1528173	1.767	13 11	14 18	15 20	16 11	17 02	18 04	19 11	70	255	+143	+ 21	+ 88	+ 21	12
2367	- 528 May 24	1528350	1.396	1 49	2 46	3 48	4 30	5 12	6 14	7 11	94	305	- 45	- 19	- 95	- 20	18
2368	- 528 Nov 17	1528527	0.585	15 29	16 55	—	18 21	—	19 48	21 14	111	206	+103	+ 18	+ 61	+ 19	24
2369	- 527 Apr 14	1528675	(0.099)	13 48	—	—	14 30	—	—	15 13	193	223	+153	- 6	+133	- 6	29 e
2370	- 527 May 13	1528704	0.071	19 19	20 53	—	21 22	—	21 51	23 25	38	7	+ 44	- 18	+ 30	- 18	30 B
2371	- 527 Nov 6	1528881	(0.491)	15 38	—	—	17 23	—	—	19 07	122	189	+121	+ 15	+ 70	+ 16	36
2372	- 526 Apr 4	1529030	0.357	2 31	3 51	—	4 56	—	6 01	7 22	173	245	- 57	- 2	- 88	- 3	41
2373	- 526 Sep 27	1529206	0.253	5 01	6 28	—	7 23	—	8 19	9 45	1	300	- 98	- 2	-125	- 1	47
2374	- 525 Mar 24	1529384	1.691	9 40	10 47	11 51	12 43	13 35	14 38	15 46	124	295	-160	+ 2	+143	+ 1	53
2375	- 525 Sep 16*	1529560	1.609	18 44	19 39	20 37	21 25	22 12	23 10	0 06	53	249	+ 64	- 6	+ 13	- 5	59
2376	- 524 Mar 12	1529738	0.590	11 03	12 28	—	13 55	—	15 23	16 48	76	341	+175	+ 5	+133	+ 5	65
2377	- 524 Sep 5	1529915	0.878	11 11	12 13	—	13 43	—	15 13	16 15	95	210	+176	- 9	+132	- 8	71
2378	- 523 Jan 30*	1530062	(0.192)	23 04	—	—	0 08	—	—	1 12	179	221	+ 18	+ 21	- 12	+ 20	76
2379	- 523 Mar 1	1530092	(0.397)	13 17	—	—	14 49	—	—	16 22	58	357	+164	+ 9	+119	+ 8	77
2380	- 523 Jul 27	1530240	(0.302)	14 49	—	—	16 07	—	—	17 26	9	317	+138	- 22	+100	- 22	82

No.	Date	JD	Mag.	$T_1$ h m	$T_2$ h m	$T_3$ h m	$T_m$ h m	$T_4$ h m	$T_5$ h m	$T_6$ h m	$P_b$ °	$P_e$ °	$\lambda_b$ °	$\phi_b$ °	$\lambda_e$ °	$\phi_e$ °	Saros
2381	- 523 Aug 26	1530270	(0.498)	2 01	—	—	3 37	—	—	5 13	120	189	- 31	- 12	- 78	- 11	83
2382	- 522 Jan 20	1530417	0.557	7 58	9 09	—	10 26	—	11 43	12 55	151	242	-134	+ 22	-171	+ 22	88
2383	- 522 Jul 16	1530594	0.533	17 38	19 03	—	20 26	—	21 49	23 14	32	302	+ 74	- 23	+ 34	- 23	94
2384	- 521 Jan 9*	1530771	1.845	22 53	23 49	0 45	1 34	2 24	3 20	4 15	103	281	+ 5	+ 23	- 46	+ 23	100
2385	- 521 Jul 5	1530948	1.743	17 44	18 54	19 58	20 52	21 45	22 49	23 59	84	259	+ 75	- 24	+ 18	- 23	106
2386	- 521 Dec 30	1531126	0.652	14 30	15 39	—	17 00	—	18 21	19 30	57	318	+126	+ 23	+ 87	+ 23	112
2387	- 520 Jun 23*	1531302	0.379	22 16	23 40	—	0 49	—	1 58	3 22	139	214	+ 3	- 23	- 30	- 23	118
2388	- 520 Nov 19	1531451	(0.147)	11 12	—	—	12 10	—	—	13 07	152	189	-171	+ 20	+161	+ 20	123
2389	- 520 Dec 19	1531481	(0.326)	2 46	—	—	4 07	—	—	5 29	30	335	- 42	+ 22	- 81	+ 22	124
2390	- 519 May 15	1531628	0.003	2 36	4 31	—	4 37	—	4 44	6 39	15	8	- 70	- 18	- 73	- 18	129 E
2391	- 519 Jun 13	1531657	(0.112)	11 16	—	—	12 02	—	—	12 48	165	197	-171	- 21	+167	- 21	130 b
2392	- 519 Nov 8	1531805	0.202	10 05	11 51	—	12 45	—	13 39	15 25	140	195	+179	+ 16	+153	+ 16	135
2393	- 518 May 4*	1531982	1.361	19 12	20 08	21 10	21 50	22 30	23 32	0 28	87	300	+ 55	- 14	+ 6	- 15	141
2394	- 518 Oct 28	1532159	1.476	9 16	10 27	11 34	12 21	13 09	14 15	15 26	86	244	-161	+ 11	+144	+ 12	147
2395	- 517 Apr 24	1532337	1.016	10 41	11 44	13 11	13 21	13 31	14 59	16 02	133	259	-177	- 10	+136	- 10	153
2396	- 517 Oct 17	1532513	0.906	15 15	16 24	—	18 00	—	19 35	20 44	42	284	+111	+ 7	+ 65	+ 7	159
2397	- 516 Mar 14	1532662	(0.094)	8 07	—	—	8 54	—	—	9 41	32	3	-119	+ 4	-142	+ 3	164 e
2398	- 516 Apr 12*	1532691	(0.553)	21 09	—	—	22 55	—	—	0 41	161	233	+ 42	- 5	- 9	- 6	165
2399	- 516 Sep 6	1532838	(0.190)	20 04	—	—	21 02	—	—	21 59	142	184	+ 58	- 7	+ 30	- 7	170
2400	- 516 Oct 6	1532868	(0.729)	4 49	—	—	6 38	—	—	8 27	24	300	- 75	+ 2	-128	+ 2	171
2401	- 515 Mar 3	1533016	0.283	6 26	8 04	—	9 08	—	10 11	11 49	49	344	-118	+ 8	-149	+ 8	176
2402	- 515 Aug 27	1533193	0.431	10 52	12 05	—	13 14	—	14 22	15 35	126	205	+178	- 12	+145	- 11	182
2403	- 514 Feb 20	1533370	1.669	8 11	9 18	10 20	11 12	12 03	13 06	14 12	99	290	-136	+ 13	+169	+ 13	188
2404	- 514 Aug 16*	1533547	1.720	22 51	23 54	0 55	1 46	2 37	3 37	4 40	82	254	+ 1	- 16	- 53	- 16	194
2405	- 513 Feb 9	1533724	0.707	17 35	18 44	—	20 10	—	21 35	22 44	140	243	+ 83	+ 17	+ 42	+ 17	200
2406	- 513 Aug 6	1533902	0.552	4 34	5 58	—	7 22	—	8 45	10 09	37	305	- 89	- 20	-130	- 19	206
2407	- 513 Dec 31*	1534049	(0.387)	23 31	—	—	0 52	—	—	2 13	27	327	+ 8	+ 22	- 31	+ 22	211
2408	- 512 Jan 30	1534079	(0.504)	9 16	—	—	10 47	—	—	12 18	154	223	-135	+ 21	-179	+ 21	212
2409	- 512 Jun 25	1534226	(0.325)	15 30	—	—	16 56	—	—	18 21	159	214	+126	- 22	+ 85	- 23	217
2410	- 512 Jul 25	1534256	(0.281)	6 31	—	—	7 52	—	—	9 13	20	329	- 98	- 23	-137	- 23	218
2411	- 512 Dec 20	1534404	0.539	13 00	14 13	—	15 29	—	16 46	17 59	37	307	+147	+ 23	+110	+ 23	223
2412	- 511 Jun 14*	1534580	0.768	20 09	21 20	—	22 51	—	0 21	1 32	137	246	+ 38	- 22	- 6	- 23	6
2413	- 511 Dec 9*	1534758	1.763	21 38	22 45	23 48	0 39	1 30	2 32	3 40	75	259	+ 17	+ 22	- 38	+ 23	12
2414	- 510 Jun 4	1534935	1.538	9 10	10 07	11 06	11 52	12 39	13 38	14 35	95	296	-155	- 22	+154	- 22	18
2415	- 510 Nov 28*	1535112	0.591	23 37	1 04	—	2 30	—	3 57	5 24	115	210	- 19	+ 21	- 61	+ 22	24
2416	- 509 May 25	1535290	0.206	2 43	4 04	—	4 52	—	5 40	7 01	46	352	- 64	- 20	- 87	- 21	30
2417	- 509 Nov 17*	1535466	(0.504)	23 47	—	—	1 33	—	—	3 19	125	193	- 1	+ 19	- 52	+ 19	36
2418	- 508 Apr 14	1535615	0.229	9 57	11 25	—	12 18	—	13 12	14 40	180	237	-171	- 6	+163	- 7	41
2419	- 508 Oct 7	1535791	0.226	13 27	14 55	—	15 48	—	16 40	18 08	359	302	+134	+ 3	+109	+ 3	47
2420	- 507 Apr 3	1535969	1.568	16 42	17 50	18 55	19 45	20 35	21 40	22 48	128	291	+ 93	- 3	+ 37	- 3	53
2421	- 507 Sep 27	1536146	1.564	3 14	4 10	5 08	5 54	6 41	7 39	8 35	51	250	- 65	- 1	-115	0	59
2422	- 506 Mar 23	1536323	0.707	17 57	19 18	—	20 52	—	22 25	23 47	82	337	+ 72	+ 1	+ 26	0	65
2423	- 506 Sep 16*	1536500	0.930	19 29	20 31	—	22 03	—	23 35	0 36	91	211	+ 50	- 5	+ 6	- 4	71
2424	- 505 Feb 11	1536648	(0.145)	7 09	—	—	8 05	—	—	9 00	185	221	-103	+ 18	-129	+ 17	76
2425	- 505 Mar 12	1536677	(0.493)	20 26	—	—	22 08	—	—	23 50	63	355	+ 55	+ 5	+ 6	+ 4	77
2426	- 505 Aug 7*	1536825	(0.190)	22 22	—	—	23 26	—	—	0 29	0	318	+ 25	- 20	- 6	- 20	82
2427	- 505 Sep 6	1536855	(0.564)	9 50	—	—	11 32	—	—	13 14	116	189	-149	- 8	+162	- 8	83
2428	- 504 Jan 31	1537002	0.526	16 26	17 38	—	18 53	—	20 08	21 19	156	244	+100	+ 20	+ 64	+ 19	88
2429	- 504 Jul 27	1537180	0.398	0 29	2 00	—	3 13	—	4 27	5 57	21	304	- 30	- 22	- 65	- 21	94
2430	- 503 Jan 20	1537357	1.820	7 35	8 30	9 27	10 16	11 05	12 02	12 57	108	285	-125	+ 22	-176	+ 21	100
2431	- 503 Jul 16	1537534	1.770	0 24	1 35	2 39	3 32	4 25	5 30	6 40	75	259	- 25	- 23	- 81	- 23	106
2432	- 502 Jan 9*	1537711	0.665	23 12	0 20	—	1 43	—	3 05	4 13	62	322	- 3	+ 22	- 43	+ 22	112
2433	- 502 Jul 5	1537888	0.524	5 11	6 29	—	7 48	—	9 07	10 25	128	216	- 99	- 23	-137	- 23	118
2434	- 502 Nov 30	1538036	(0.139)	19 35	—	—	20 31	—	—	21 27	157	192	+ 64	+ 22	+ 37	+ 23	123
2435	- 502 Dec 30	1538066	(0.328)	11 14	—	—	12 36	—	—	13 58	35	340	-168	+ 22	+153	+ 22	124
2436	- 501 May 26	1538213	(0.840)	10 09	—	—	12 04	—	—	13 58	53	323	-156	- 21	+149	- 21	129
2437	- 501 Jun 24	1538242	(0.249)	18 16	—	—	19 23	—	—	20 31	152	201	+ 84	- 22	+ 52	- 22	130
2438	- 501 Nov 19	1538390	0.192	18 11	19 58	—	20 50	—	21 43	23 30	144	197	+ 57	+ 19	+ 32	+ 19	135
2439	- 500 May 15	1538568	1.226	2 44	3 40	4 47	5 20	5 53	7 00	7 56	80	302	- 58	- 17	-106	- 18	141
2440	- 500 Nov 7	1538744	1.466	17 29	18 40	19 47	20 34	21 21	22 27	23 39	88	246	+ 76	+ 15	+ 21	+ 16	147
2441	- 499 May 4	1538922	1.146	17 56	18 58	20 11	20 39	21 08	22 21	23 22	126	261	+ 73	- 14	+ 24	- 14	153
2442	- 499 Oct 27*	1539098	0.923	23 47	0 55	—	2 31	—	4 06	5 15	45	285	- 18	+ 11	- 64	+ 11	159
2443	- 498 Apr 24	1539277	(0.681)	3 54	—	—	5 50	—	—	7 47	156	236	- 60	- 9	-116	- 10	165
2444	- 498 Sep 18	1539424	(0.142)	4 36	—	—	5 26	—	—	6 16	144	180	- 71	- 3	- 95	- 3	170
2445	- 498 Oct 17	1539453	(0.755)	13 30	—	—	15 20	—	—	17 11	25	300	+154	+ 6	+101	+ 7	171
2446	- 497 Mar 14	1539601	0.186	13 35	15 20	—	16 12	—	17 04	18 49	44	352	+132	+ 4	+107	+ 4	176
2447	- 497 Sep 7	1539778	0.360	19 03	20 20	—	21 23	—	22 26	23 42	127	199	+ 54	- 8	+ 24	- 8	182
2448	- 496 Mar 2	1539955	1.593	15 46	16 52	17 56	18 45	19 35	20 39	21 45	99	294	+110	+ 9	+ 55	+ 9	188
2449	- 496 Aug 27	1540133	1.632	6 30	7 34	8 36	9 25	10 15	11 17	12 20	82	248	-114	- 13	-168	- 12	194
2450	- 495 Feb 20	1540310	0.773	1 42	2 49	—	4 17	—	5 45	6 52	140	249	- 38	+ 14	- 81	+ 13	200

No.	Date	JD	Mag.	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>m</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	P <sub>b</sub>	P <sub>e</sub>	λ <sub>b</sub>	φ <sub>b</sub>	λ <sub>e</sub>	φ <sub>e</sub>	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	°	
2451	- 495 Aug 16	1540487	0.654	11 36	12 58	—	14 27	—	15 57	17 18	38	298	+166	- 17	+122	- 16	206
2452	- 494 Jan 11	1540635	(0.367)	8 21	—	—	9 40	—	—	10 59	31	332	-123	+ 21	-161	+ 21	211
2453	- 494 Feb 9	1540664	(0.548)	17 41	—	—	19 16	—	—	20 51	156	228	+ 99	+ 18	+ 53	+ 17	212
2454	- 494 Jul 6*	1540811	(0.188)	22 30	—	—	23 36	—	—	0 41	161	203	+ 22	- 22	- 10	- 22	217
2455	- 494 Aug 5	1540841	(0.405)	13 05	—	—	14 42	—	—	16 18	22	321	+164	- 20	+117	- 20	218
2456	- 494 Dec 31*	1540989	0.526	21 43	22 56	—	0 12	—	1 28	2 42	41	313	+ 17	+ 23	- 19	+ 23	223
2457	- 493 Jun 26	1541166	0.633	3 18	4 31	—	5 55	—	7 19	8 32	138	236	- 70	- 23	-110	- 23	6
2458	- 493 Dec 21	1541344	1.755	6 02	7 09	8 12	9 03	9 55	10 57	12 04	79	264	-108	+ 23	-163	+ 24	12
2459	- 492 Jun 14	1541520	1.678	16 35	17 30	18 28	19 17	20 06	21 04	22 00	95	288	+ 95	- 23	+ 44	- 23	18
2460	- 492 Dec 9	1541698	0.599	7 44	9 10	—	10 38	—	12 05	13 31	119	215	-139	+ 23	+178	+ 23	24
2461	- 491 Jun 4	1541875	0.340	10 08	11 22	—	12 22	—	13 23	14 37	50	341	-173	- 22	+158	- 23	30
2462	- 491 Nov 28	1542052	(0.514)	7 58	—	—	9 45	—	—	11 31	128	197	-123	+ 22	-174	+ 22	36
2463	- 490 Apr 25	1542200	0.093	17 18	18 59	—	19 34	—	20 09	21 50	189	225	+ 75	- 10	+ 58	- 10	41 E
2464	- 490 Oct 18*	1542376	0.209	22 01	23 30	—	0 20	—	1 10	2 39	359	305	+ 5	+ 7	- 20	+ 7	47
2465	- 489 Apr 14*	1542554	1.432	23 34	0 44	1 51	2 37	3 23	4 31	5 40	131	286	- 12	- 7	- 67	- 8	53
2466	- 489 Oct 8	1542731	1.531	11 52	12 49	13 47	14 33	15 18	16 17	17 13	50	252	+165	+ 3	+115	+ 4	59
2467	- 488 Apr 3	1542909	0.837	0 40	1 58	—	3 38	—	5 17	6 36	87	332	- 29	- 3	- 78	- 4	65
2468	- 488 Sep 27	1543086	0.971	3 57	4 58	—	6 31	—	8 04	9 06	89	212	- 77	- 1	-122	- 0	71
2469	- 487 Feb 21	1543233	(0.086)	15 10	—	—	15 52	—	—	16 35	192	220	+137	+ 14	+117	+ 14	76
2470	- 487 Mar 23	1543263	(0.601)	3 27	—	—	5 18	—	—	7 09	67	352	- 51	+ 1	-105	- 0	77
2471	- 487 Aug 18	1543411	(0.090)	6 06	—	—	6 50	—	—	7 35	350	322	- 91	- 17	-112	- 17	82
2472	- 487 Sep 16	1543440	(0.617)	17 47	—	—	19 34	—	—	21 21	113	189	+ 91	- 4	+ 39	- 3	83
2473	- 486 Feb 11	1543588	0.484	0 48	2 01	—	3 13	—	4 25	5 37	161	246	- 26	+ 17	- 61	+ 16	88
2474	- 486 Aug 7	1543765	0.273	7 26	9 04	—	10 06	—	11 08	12 45	11	307	-135	- 19	-165	- 19	94
2475	- 485 Jan 31	1543942	1.785	16 12	17 07	18 04	18 53	19 42	20 38	21 34	113	287	+107	+ 19	+ 56	+ 19	100
2476	- 485 Jul 27	1544119	1.637	7 12	8 22	9 27	10 19	11 11	12 16	13 26	67	259	-126	- 21	+178	- 21	106
2477	- 484 Jan 21	1544297	0.687	7 48	8 56	—	10 19	—	11 43	12 50	67	326	-131	+ 21	-171	+ 20	112
2478	- 484 Jul 15	1544473	0.659	12 14	13 28	—	14 55	—	16 21	17 35	117	217	+157	- 22	+115	- 22	118
2479	- 484 Dec 11	1544622	(0.130)	3 56	—	—	4 51	—	—	5 45	162	196	- 60	+ 24	- 87	+ 24	123
2480	- 483 Jan 9	1544651	(0.339)	19 34	—	—	20 58	—	—	22 21	40	344	+ 68	+ 22	+ 28	+ 21	124
2481	- 483 Jun 5	1544798	(0.709)	17 45	—	—	19 31	—	—	21 18	45	323	+ 91	- 23	+ 40	- 23	129
2482	- 483 Jul 5	1544828	(0.382)	1 28	—	—	2 50	—	—	4 12	142	202	- 24	- 22	- 63	- 22	130
2483	- 483 Nov 30	1544976	0.184	2 17	4 05	—	4 57	—	5 48	7 36	148	201	- 64	+ 22	- 89	+ 22	135
2484	- 482 May 26	1545153	1.088	10 15	11 13	12 27	12 49	13 11	14 26	15 24	72	303	-171	- 20	+142	- 21	141
2485	- 482 Nov 19	1545330	1.461	1 47	2 57	4 04	4 51	5 38	6 44	7 55	92	249	- 48	+ 18	-103	+ 19	147
2486	- 481 May 16	1545508	1.281	1 07	2 08	3 15	3 53	4 31	5 37	6 39	119	262	- 35	- 17	- 85	- 17	153
2487	- 481 Nov 8	1545684	0.933	8 24	9 32	—	11 07	—	12 43	13 51	47	287	-147	+ 15	+167	+ 15	159
2488	- 480 May 4	1545862	(0.817)	10 33	—	—	12 39	—	—	14 46	150	238	-160	- 13	+138	- 13	165
2489	- 480 Sep 28	1546009	(0.106)	13 15	—	—	13 58	—	—	14 42	146	177	+159	+ 1	+138	+ 2	170
2490	- 480 Oct 27*	1546038	(0.771)	22 17	—	—	0 08	—	—	1 59	28	302	+ 22	+ 10	- 31	+ 11	171
2491	- 479 Mar 24*	1546186	0.076	20 36	22 34	—	23 08	—	23 41	1 39	35	2	+ 23	- 0	+ 7	- 0	176 E
2492	- 479 Sep 18	1546364	0.301	3 22	4 42	—	5 40	—	6 39	7 59	129	195	- 72	- 4	-100	- 3	182
2493	- 478 Mar 13*	1546540	1.504	23 13	0 19	1 23	2 11	2 59	4 03	5 09	97	298	- 3	+ 5	- 57	+ 4	188
2494	- 478 Sep 7	1546718	1.556	14 17	15 22	16 24	17 13	18 01	19 04	20 08	82	244	+128	- 9	+ 75	- 8	194
2495	- 477 Mar 3	1546895	0.851	9 40	10 45	—	12 16	—	13 48	14 53	139	253	-158	+ 10	+158	+ 9	200
2496	- 477 Aug 27*	1547072	0.743	18 47	20 07	—	21 41	—	23 15	0 35	39	292	+ 58	- 13	+ 12	- 13	206
2497	- 476 Jan 22	1547220	(0.338)	17 06	—	—	18 22	—	—	19 38	34	338	+107	+ 20	+ 70	+ 20	211
2498	- 476 Feb 21	1547250	(0.604)	1 57	—	—	3 36	—	—	5 15	157	233	- 25	+ 14	- 73	+ 14	212
2499	- 476 Jul 17	1547397	(0.060)	5 45	—	—	6 23	—	—	7 00	166	189	- 87	- 21	-105	- 21	217 e
2500	- 476 Aug 15	1547426	(0.516)	19 54	—	—	21 41	—	—	23 28	22	313	+ 62	- 17	+ 10	- 17	218
2501	- 475 Jan 11	1547575	0.504	6 20	7 34	—	8 49	—	10 04	11 18	45	318	-111	+ 22	-147	+ 22	223
2502	- 475 Jul 6	1547751	0.504	10 33	11 49	—	13 05	—	14 21	15 38	139	225	-178	- 23	+145	- 23	6
2503	- 475 Dec 31	1547929	1.741	14 20	15 28	16 31	17 22	18 14	19 16	20 24	84	269	+129	+ 24	+ 74	+ 24	12
2504	- 474 Jun 26	1548106	1.813	0 03	0 58	1 55	2 45	3 35	4 32	5 27	95	279	- 17	- 24	- 68	- 24	18
2505	- 474 Dec 20	1548283	0.610	15 50	17 16	—	18 44	—	20 12	21 38	123	220	+101	+ 24	+ 58	+ 24	24
2506	- 473 Jun 15	1548460	0.474	17 33	18 42	—	19 52	—	21 02	22 11	53	330	+ 77	- 24	+ 43	- 24	30
2507	- 473 Dec 9	1548637	(0.523)	16 11	—	—	17 58	—	—	19 45	132	202	+115	+ 24	+ 63	+ 24	36
2508	- 472 May 6	1548786	(0.970)	0 33	—	—	2 43	—	—	4 52	156	253	- 11	- 13	- 73	- 14	41
2509	- 472 Jun 4	1548815	(0.030)	11 23	—	—	11 47	—	—	12 11	23	7	-173	- 23	+175	- 23	42 b
2510	- 472 Oct 29	1548962	0.201	6 40	8 09	—	8 59	—	9 48	11 17	1	307	-125	+ 11	-149	+ 11	47
2511	- 471 Apr 25	1549140	1.287	6 21	7 31	8 43	9 23	10 03	11 14	12 24	134	279	-114	- 10	-168	- 11	53
2512	- 471 Oct 18*	1549316	1.508	20 37	21 33	22 32	23 17	0 02	1 01	1 57	51	253	+ 33	+ 7	- 17	+ 8	59
2513	- 470 Apr 14	1549494	0.979	7 18	8 34	—	10 19	—	12 04	13 20	91	326	-129	- 7	+180	- 8	65
2514	- 470 Oct 8	1549671	0.999	12 30	13 31	—	15 05	—	16 40	17 41	89	213	+154	+ 4	+108	+ 5	71
2515	- 469 Mar 4	1549818	(0.015)	23 16	—	—	23 34	—	—	23 52	202	213	+ 15	+ 10	+ 7	+ 10	76 e
2516	- 469 Apr 3	1549848	(0.722)	10 23	—	—	12 23	—	—	14 23	70	348	-156	- 3	+146	- 4	77
2517	- 469 Aug 29	1549996	(0.002)	14 15	—	—	14 22	—	—	14 29	336	331	+147	- 13	+144	- 13	82 e
2518	- 469 Sep 28	1550026	(0.659)	1 53	—	—	3 43	—	—	5 33	111	190	- 31	- 0	- 85	+ 1	83
2519	- 468 Feb 22	1550173	0.429	9 02	10 15	—	11 24	—	12 32	13 46	167	246	-150	+ 13	+177	+ 13	88
2520	- 468 Aug 17	1550350	0.161	14 31	16 19	—	17 07	—	17 56	19 43	0	312	+116	- 16	+ 93	- 16	94



No.	Date	JD	Mag.	$T_1$	$T_2$	$T_3$	$T_m$	$T_4$	$T_5$	$T_6$	$P_b$	$P_e$	$\lambda_b$	$\phi_b$	$\lambda_e$	$\phi_e$	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	
2521	- 467 Feb 11	1550528	1.738	0 40	1 35	2 32	3 20	4 09	5 06	6 01	118	289	- 20	+ 16	- 71	+ 15	100
2522	- 467 Aug 6	1550704	1.515	14 09	15 20	16 26	17 15	18 04	19 11	20 21	59	259	+130	- 19	+ 74	- 18	106
2523	- 466 Jan 31	1550882	0.721	16 14	17 22	—	18 47	—	20 12	21 19	72	328	+103	+ 19	+ 62	+ 18	112
2524	- 466 Jul 26*	1551058	0.785	19 26	20 37	—	22 09	—	23 41	0 52	108	218	+ 50	- 21	+ 6	- 20	118
2525	- 466 Dec 22	1551207	(0.116)	12 15	—	—	13 07	—	—	13 59	168	200	+176	+ 25	+152	+ 25	123
2526	- 465 Jan 21	1551237	(0.359)	3 46	—	—	5 12	—	—	6 38	45	348	- 54	+ 20	- 95	+ 20	124
2527	- 465 Jun 17	1551384	(0.580)	1 22	—	—	3 00	—	—	4 37	37	322	- 23	- 25	- 70	- 25	129
2528	- 465 Jul 16	1551413	(0.507)	8 49	—	—	10 22	—	—	11 56	133	202	-133	- 22	-178	- 21	130
2529	- 465 Dec 11	1551561	0.176	10 24	12 12	—	13 03	—	13 54	15 42	154	204	+176	+ 24	+151	+ 24	135
2530	- 464 Jun 5	1551738	0.949	17 44	18 44	—	20 17	—	21 49	22 49	64	303	+ 76	- 22	+ 32	- 23	141
2531	- 464 Nov 29	1551915	1.459	10 06	11 17	12 23	13 10	13 56	15 02	16 13	96	253	-172	+ 21	+133	+ 21	147
2532	- 463 May 26	1552093	1.420	8 14	9 15	10 19	11 03	11 47	12 50	13 51	111	263	-142	- 20	+166	- 20	153
2533	- 463 Nov 18	1552269	0.938	17 06	18 13	—	19 49	—	21 25	22 32	51	290	+ 83	+ 18	+ 37	+ 18	159
2534	- 462 May 15	1552447	(0.961)	17 06	—	—	19 22	—	—	21 38	143	239	+101	- 16	+ 35	- 17	165
2535	- 462 Oct 9	1552594	(0.080)	22 00	—	—	22 38	—	—	23 16	148	176	+ 27	+ 6	+ 9	+ 6	170
2536	- 462 Nov 8	1552624	(0.781)	7 10	—	—	9 01	—	—	10 52	30	304	-111	+ 14	-165	+ 14	171
2537	- 461 Apr 5	1552772	(1.047)	3 32	—	—	5 57	—	—	8 21	68	328	- 53	- 4	-124	- 5	176
2538	- 461 Sep 29	1552949	0.254	11 48	13 11	—	14 05	—	14 59	16 22	132	192	+160	+ 1	+134	+ 1	182
2539	- 460 Mar 24	1553126	1.404	6 34	7 40	8 46	9 30	10 15	11 21	12 27	94	302	-114	+ 1	-167	0	188
2540	- 460 Sep 17*	1553303	1.494	22 11	23 16	0 20	1 07	1 54	2 58	4 03	83	241	+ 9	- 4	- 45	- 4	194
2541	- 459 Mar 13	1553480	0.941	17 32	18 35	—	20 10	—	21 44	22 47	137	258	+ 84	+ 6	+ 38	+ 5	200
2542	- 459 Sep 7	1553658	0.819	2 05	3 24	—	5 02	—	6 40	7 59	40	287	- 52	- 9	- 99	- 9	206
2543	- 458 Feb 2	1553806	(0.298)	1 45	—	—	2 56	—	—	4 08	36	343	- 23	+ 17	- 57	+ 17	211
2544	- 458 Mar 3	1553835	(0.671)	10 06	—	—	11 49	—	—	13 32	157	237	-148	+ 10	+162	+ 10	212
2545	- 458 Aug 27	1554012	(0.614)	2 55	—	—	4 50	—	—	6 46	23	307	- 44	- 14	-100	- 13	218
2546	- 457 Jan 22	1554160	0.474	14 50	16 06	—	17 19	—	18 32	19 48	48	324	+122	+ 20	+ 87	+ 20	223
2547	- 457 Jul 17	1554336	0.384	17 54	19 14	—	20 22	—	21 30	22 50	140	215	+ 71	- 22	+ 38	- 22	6
2548	- 456 Jan 11*	1554514	1.720	22 33	23 41	0 44	1 35	2 26	3 29	4 37	88	275	+ 7	+ 23	- 48	+ 23	12
2549	- 456 Jul 6	1554691	1.833	7 36	8 31	9 28	10 18	11 08	12 05	13 00	94	271	-129	- 23	+179	- 24	18
2550	- 456 Dec 30*	1554868	0.627	23 49	1 14	—	2 43	—	4 12	5 38	127	226	- 18	+ 24	- 61	+ 24	24
2551	- 455 Jun 26	1555046	0.603	1 02	2 07	—	3 25	—	4 43	5 48	54	320	- 34	- 24	- 71	- 25	30
2552	- 455 Dec 20	1555223	(0.535)	0 22	—	—	2 10	—	—	3 57	136	207	- 6	+ 25	- 58	+ 25	36
2553	- 454 May 17	1555371	(0.823)	7 45	—	—	9 47	—	—	11 48	157	246	-119	- 16	-178	- 17	41
2554	- 454 Jun 15	1555400	(0.157)	18 08	—	—	19 02	—	—	19 57	30	352	+ 86	- 25	+ 59	- 25	42
2555	- 454 Nov 9	1555547	0.199	15 25	16 54	—	17 43	—	18 31	20 00	3	310	+103	+ 15	+ 80	+ 15	47
2556	- 453 May 6	1555725	1.134	13 01	14 13	15 32	16 01	16 30	17 49	19 01	137	272	+145	- 14	+ 92	- 15	53
2557	- 453 Oct 30	1555902	1.494	5 28	6 25	7 24	8 08	8 53	9 52	10 48	52	256	-100	+ 11	-150	+ 12	59
2558	- 452 Apr 24	1556079	1.129	13 48	15 02	16 23	16 51	17 20	18 41	19 55	94	319	+133	- 11	+ 80	- 12	65
2559	- 452 Oct 18*	1556256	1.019	21 10	22 12	23 37	23 47	23 57	1 22	2 23	89	215	+ 23	+ 8	- 23	+ 9	71
2560	- 451 Apr 13	1556433	(0.852)	17 14	—	—	19 22	—	—	21 30	73	343	+100	- 7	+ 38	- 8	77
2561	- 451 Oct 8	1556611	(0.690)	10 06	—	—	11 59	—	—	13 51	111	191	-155	+ 4	+150	+ 5	83
2562	- 450 Mar 4	1556758	0.361	17 10	18 26	—	19 29	—	20 32	21 48	172	244	+ 87	+ 9	+ 57	+ 9	88
2563	- 450 Aug 28*	1556935	0.062	21 44	23 45	—	0 16	—	0 47	2 48	349	319	+ 4	- 13	- 11	- 13	94 E
2564	- 449 Feb 22	1557113	1.678	9 01	9 56	10 53	11 41	12 29	13 26	14 21	123	290	-146	+ 13	+164	+ 12	100
2565	- 449 Aug 17*	1557289	1.407	21 15	22 26	23 35	0 20	1 06	2 14	3 25	53	259	+ 23	- 16	- 32	- 15	106
2566	- 448 Feb 12	1557468	0.766	0 33	1 39	—	3 07	—	4 34	5 41	78	330	- 21	+ 15	- 63	+ 15	112
2567	- 448 Aug 6	1557644	0.899	2 47	3 56	—	5 33	—	7 09	8 18	100	218	- 59	- 18	-106	- 18	118
2568	- 447 Jan 1	1557792	(0.095)	20 30	—	—	21 17	—	—	22 05	174	203	+ 54	+ 25	+ 32	+ 25	123
2569	- 447 Jan 31	1557822	(0.390)	11 47	—	—	13 17	—	—	14 46	50	350	-174	+ 18	+143	+ 17	124
2570	- 447 Jun 27	1557969	(0.455)	9 05	—	—	10 32	—	—	11 59	28	322	-138	- 25	-180	- 25	129
2571	- 447 Jul 26	1557998	(0.624)	16 20	—	—	18 02	—	—	19 44	125	202	+114	- 20	+ 65	- 20	130
2572	- 447 Dec 21	1558146	0.165	18 28	20 18	—	21 07	—	21 56	23 45	159	208	+ 56	+ 25	+ 32	+ 24	135
2573	- 446 Jun 17	1558324	0.810	1 15	2 17	—	3 45	—	5 12	6 14	54	304	- 37	- 24	- 79	- 24	141
2574	- 446 Dec 10*	1558500	1.458	18 26	19 37	20 43	21 29	22 16	23 22	0 32	100	257	+ 64	+ 23	+ 10	+ 23	147
2575	- 445 Jun 6	1558678	1.560	15 21	16 21	17 23	18 11	18 59	20 00	21 01	103	264	+112	- 22	+ 59	- 22	153
2576	- 445 Nov 30	1558855	0.942	1 49	2 56	—	4 32	—	6 07	7 14	55	294	- 47	+ 20	- 93	+ 21	159
2577	- 444 May 25*	1559032	0.044	23 38	1 36	—	2 02	—	2 27	4 26	175	200	- 26	- 19	- 39	- 19	165 B
2578	- 444 Oct 20	1559180	(0.062)	6 51	—	—	7 24	—	—	7 57	151	175	-106	+ 10	-122	+ 10	170
2579	- 444 Nov 18	1559209	(0.786)	16 05	—	—	17 57	—	—	19 48	34	307	+115	+ 17	+ 62	+ 18	171
2580	- 443 Apr 15	1559357	(0.913)	10 23	—	—	12 39	—	—	14 56	64	330	-157	- 8	+137	- 9	176
2581	- 443 Oct 9*	1559534	0.218	20 20	21 45	—	22 36	—	23 27	0 52	134	190	+ 31	+ 5	+ 6	+ 6	182
2582	- 442 Apr 4	1559711	1.292	13 49	14 55	16 04	16 44	17 23	18 32	19 38	90	305	+136	- 4	+ 84	- 4	188
2583	- 442 Sep 29	1559889	1.445	6 13	7 19	8 24	9 09	9 55	11 00	12 06	84	240	-112	0	-166	+ 1	194
2584	- 441 Mar 25	1560066	1.043	1 16	2 18	3 39	3 55	4 10	5 32	6 33	134	262	- 33	+ 1	- 80	+ 1	200
2585	- 441 Sep 18	1560243	0.881	9 34	10 52	—	12 33	—	14 13	15 31	41	283	-165	- 5	+147	- 4	206
2586	- 440 Feb 13	1560391	(0.247)	10 17	—	—	11 23	—	—	12 28	37	349	-151	+ 14	+178	+ 14	211
2587	- 440 Mar 13	1560420	(0.751)	18 05	—	—	19 53	—	—	21 42	155	240	+ 91	+ 6	+ 39	+ 6	212
2588	- 440 Sep 6	1560597	(0.699)	10 08	—	—	12 10	—	—	14 13	24	303	-153	- 10	+148	- 9	218
2589	- 439 Feb 1*	1560745	0.431	23 12	0 30	—	1 40	—	2 50	4 08	50	330	- 4	+ 18	- 38	+ 17	223
2590	- 439 Jul 28	1560922	0.274	1 24	2 49	—	3 47	—	4 45	6 10	142	205	- 42	- 20	- 70	- 20	6



No.	Date	JD	Mag.	$T_1$	$T_2$	$T_3$	$T_m$	$T_4$	$T_5$	$T_6$	$P_b$	$P_e$	$\lambda_b$	$\phi_b$	$\lambda_e$	$\phi_e$	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	
2591	- 438 Jan 22	1561100	1.687	6 38	7 46	8 49	9 41	10 32	11 35	12 43	91	280	-114	+ 21	-169	+ 21	12
2592	- 438 Jul 17	1561276	1.712	15 14	16 09	17 06	17 55	18 45	19 42	20 37	93	262	+117	- 22	+ 66	- 22	18
2593	- 437 Jan 11	1561454	0.654	7 44	9 09	—	10 40	—	12 10	13 35	131	232	-135	+ 23	-179	+ 23	24
2594	- 437 Jul 7	1561631	0.727	8 33	9 36	—	10 59	—	12 23	13 26	54	310	-145	- 24	+175	- 24	30
2595	- 437 Dec 31	1561808	(0.552)	8 30	—	—	10 19	—	—	12 08	141	212	-127	+ 25	-180	+ 25	36
2596	- 436 May 27	1561956	(0.673)	14 55	—	—	16 47	—	—	18 39	158	238	+134	- 19	+ 80	- 20	41
2597	- 436 Jun 26	1561986	(0.283)	1 05	—	—	2 18	—	—	3 31	32	341	- 18	- 25	- 53	- 25	42
2598	- 436 Nov 20	1562133	0.202	0 13	1 41	—	2 30	—	3 19	4 48	7	313	- 28	+ 18	- 52	+ 18	47
2599	- 435 May 16*	1562310	0.974	19 38	20 53	—	22 36	—	0 20	1 34	140	264	+ 44	+ 17	- 6	- 18	53
2600	- 435 Nov 9	1562487	1.486	14 23	15 19	16 18	17 02	17 47	18 46	19 42	54	258	+126	+ 15	+ 77	+ 16	59
2601	- 434 May 5*	1562664	1.286	20 17	21 30	22 42	23 23	0 03	1 15	2 28	97	312	+ 35	- 14	- 20	- 15	65
2602	- 434 Oct 30	1562842	1.029	5 55	6 57	8 20	8 33	8 45	10 08	11 10	91	217	-108	+ 12	-155	+ 13	71
2603	- 433 Apr 25	1563019	(0.991)	0 02	—	—	2 17	—	—	4 33	76	338	- 3	- 11	- 68	- 12	77
2604	- 433 Oct 19	1563196	(0.710)	18 26	—	—	20 20	—	—	22 15	111	193	+ 79	+ 9	+ 24	+ 10	83
2605	- 432 Mar 15	1563344	0.281	1 10	2 30	—	3 26	—	4 22	5 42	177	241	- 35	+ 5	- 62	+ 5	88
2606	- 432 Sep 8	1563521	(1.090)	5 07	—	—	7 35	—	—	10 03	23	281	- 78	- 9	-150	- 8	94
2607	- 431 Mar 4	1563698	1.605	17 13	18 08	19 05	19 52	20 40	21 37	22 32	127	289	+ 91	+ 9	+ 41	+ 8	100
2608	- 431 Aug 28	1563875	1.313	4 33	5 45	6 55	7 37	8 18	9 29	10 40	47	260	- 87	- 13	-141	- 12	106
2609	- 430 Feb 22	1564053	0.825	8 41	9 47	—	11 17	—	12 47	13 53	82	330	-143	+ 12	+173	+ 11	112
2610	- 430 Aug 17	1564229	0.999	10 19	11 26	—	13 06	—	14 45	15 52	94	219	-172	- 16	+140	- 15	118
2611	- 429 Jan 13	1564378	(0.065)	4 43	—	—	5 22	—	—	6 01	181	206	- 68	+ 24	- 87	+ 24	123
2612	- 429 Feb 11	1564407	(0.435)	19 37	—	—	21 12	—	—	22 47	55	352	+ 69	+ 15	+ 83	+ 14	124
2613	- 429 Jul 8	1564554	(0.337)	16 52	—	—	18 08	—	—	19 24	19	322	+106	- 25	+ 70	- 25	129
2614	- 429 Aug 7	1564584	(0.731)	0 00	—	—	1 49	—	—	3 38	118	201	- 1	- 18	- 53	- 17	130
2615	- 428 Jan 2	1564732	0.148	2 29	4 20	—	5 06	—	5 53	7 44	165	212	- 63	+ 24	- 86	+ 24	135
2616	- 428 Jun 27	1564909	0.675	8 47	9 52	—	11 14	—	12 36	13 41	45	305	-150	- 25	+171	- 24	141
2617	- 428 Dec 21	1565086	1.453	2 46	3 56	5 02	5 48	6 34	7 40	8 50	105	262	- 59	+ 24	-114	+ 24	147
2618	- 427 Jun 16*	1565263	1.700	22 26	23 27	0 27	1 18	2 08	3 09	4 09	94	264	+ 6	- 23	- 48	- 23	153
2619	- 427 Dec 10	1565440	0.947	10 34	11 40	—	13 16	—	14 51	15 58	60	298	-177	+ 22	+137	+ 22	159
2620	- 426 Jun 6	1565618	0.193	6 07	7 47	—	8 39	—	9 30	11 10	157	210	-119	- 21	-144	- 21	165
2621	- 426 Oct 31	1565765	(0.052)	15 45	—	—	16 16	—	—	16 47	154	176	+120	+ 14	+105	+ 14	170
2622	- 426 Nov 30	1565795	(0.788)	1 03	—	—	2 55	—	—	4 47	38	311	- 19	+ 20	- 72	+ 20	171
2623	- 425 Apr 26	1565942	(0.771)	17 10	—	—	19 17	—	—	21 24	58	333	+100	- 12	+ 39	- 13	176
2624	- 425 Oct 21	1566120	0.192	4 57	6 25	—	7 13	—	8 01	9 29	137	190	-100	+ 10	-123	+ 10	182
2625	- 424 Apr 14*	1566296	1.172	21 01	22 07	23 21	23 53	0 24	1 38	2 44	85	308	+ 27	- 8	- 24	- 8	188
2626	- 424 Oct 9	1566474	1.407	14 20	15 27	16 33	17 17	18 02	19 07	20 15	86	239	+125	+ 5	+ 72	+ 5	194
2627	- 423 Apr 4	1566651	1.155	8 55	9 55	11 06	11 35	12 04	13 15	14 15	131	265	-149	- 3	+163	- 4	200
2628	- 423 Sep 28	1566828	0.931	17 10	18 28	—	20 11	—	21 53	23 11	43	281	+ 81	- 1	+ 31	0	206
2629	- 422 Feb 23	1566976	(0.183)	18 44	—	—	19 41	—	—	20 38	36	355	+ 82	+ 10	+ 55	+ 10	211
2630	- 422 Mar 25	1567006	(0.841)	1 57	—	—	3 51	—	—	5 44	153	243	- 28	+ 2	- 83	+ 1	212
2631	- 422 Sep 17	1567182	(0.769)	17 32	—	—	19 39	—	—	21 47	25	300	+ 96	- 6	+ 34	- 5	218
2632	- 421 Feb 13	1567331	0.377	7 26	8 46	—	9 52	—	10 59	12 19	50	336	-128	+ 15	-160	+ 14	223
2633	- 421 Aug 8	1567507	0.176	9 02	10 34	—	11 21	—	12 08	13 39	145	195	-158	- 17	+179	- 17	6
2634	- 420 Feb 2	1567685	1.643	14 32	15 41	16 45	17 35	18 26	19 30	20 39	94	285	+128	+ 18	+ 73	+ 18	12
2635	- 420 Jul 27*	1567861	1.600	22 59	23 55	0 53	1 40	2 28	3 26	4 21	92	255	+ 1	- 21	- 50	- 20	18
2636	- 419 Jan 21	1568039	0.691	15 30	16 54	—	18 27	—	19 59	21 23	134	237	+110	+ 22	+ 65	+ 21	24
2637	- 419 Jul 17	1568216	0.844	16 09	17 10	—	18 39	—	20 08	21 09	54	301	+102	- 23	+ 59	- 23	30
2638	- 418 Jan 10	1568393	(0.576)	16 32	—	—	18 23	—	—	20 14	145	218	+114	+ 24	+ 61	+ 24	36
2639	- 418 Jun 7*	1568541	(0.523)	22 04	—	—	23 45	—	—	1 26	159	229	+ 26	- 21	- 22	- 21	41
2640	- 418 Jul 7	1568571	(0.404)	8 10	—	—	9 36	—	—	11 03	32	331	-124	- 25	-165	- 25	42
2641	- 418 Dec 1	1568718	0.206	9 03	10 31	—	11 20	—	12 10	13 37	11	317	-160	+ 20	+177	+ 21	47
2642	- 417 May 28	1568896	0.812	2 11	3 28	—	5 06	—	6 43	8 01	142	254	- 55	- 20	-102	- 20	53
2643	- 417 Nov 20*	1569072	1.482	23 21	0 18	1 17	2 01	2 45	3 44	4 40	58	262	- 8	+ 18	- 58	+ 19	59
2644	- 416 May 16	1569250	1.448	2 42	3 54	5 01	5 49	6 37	7 45	8 56	100	304	- 61	- 18	-117	- 18	65
2645	- 416 Nov 9	1569427	1.033	14 45	15 47	17 09	17 22	17 36	18 58	20 00	93	220	+119	+ 16	+ 73	+ 17	71
2646	- 415 May 5	1569604	0.087	6 47	8 35	—	9 10	—	9 44	11 32	42	7	-131	- 15	-148	- 16	77 B
2647	- 415 Oct 30	1569782	(0.721)	2 51	—	—	4 47	—	—	6 43	113	195	- 47	+ 13	-104	+ 14	83
2648	- 414 Mar 26	1569929	0.190	9 06	10 30	—	11 17	—	12 04	13 28	183	235	-156	+ 1	-178	+ 1	88
2649	- 414 Sep 19	1570106	(1.024)	12 38	—	—	15 02	—	—	17 27	20	281	+169	- 5	+ 99	- 4	94
2650	- 413 Mar 16	1570284	1.520	1 17	2 13	3 11	3 57	4 42	5 41	6 36	130	288	- 31	+ 5	- 81	+ 4	100
2651	- 413 Sep 8	1570460	1.233	12 01	13 13	14 27	15 03	15 40	16 54	18 06	43	261	+161	- 9	+107	- 8	106
2652	- 412 Mar 4	1570638	0.897	16 40	17 45	—	19 18	—	20 51	21 55	87	329	+ 97	+ 8	+ 52	+ 7	112
2653	- 412 Aug 27	1570814	1.087	18 01	19 08	20 27	20 49	21 12	22 31	23 37	88	219	+ 72	- 12	+ 23	- 11	118
2654	- 411 Jan 23	1570963	(0.025)	12 54	—	—	13 19	—	—	13 43	190	205	+171	+ 22	+159	+ 22	123 e
2655	- 411 Feb 22	1570993	(0.493)	3 17	—	—	4 58	—	—	6 38	60	352	- 46	+ 11	- 95	+ 11	124
2656	- 411 Jul 19	1571140	(0.226)	0 47	—	—	1 49	—	—	2 52	9	323	- 12	- 24	- 42	- 24	129
2657	- 411 Aug 17	1571169	(0.827)	7 49	—	—	9 44	—	—	11 39	112	201	-118	- 15	-174	- 14	130
2658	- 410 Jan 12	1571317	0.123	10 25	12 18	—	13 01	—	13 43	15 37	172	215	+178	+ 23	+158	+ 23	135
2659	- 410 Jul 8	1571494	0.544	16 23	17 31	—	18 47	—	20 02	21 10	35	305	+ 96	- 24	+ 60	- 24	141
2660	- 409 Jan 1	1571671	1.443	11 02	12 12	13 18	14 04	14 49	15 56	17 05	111	266	+178	+ 24	+124	+ 24	147

No.	Date	JD	Mag.	$T_1$	$T_2$	$T_3$	$T_m$	$T_4$	$T_5$	$T_6$	$P_b$	$P_e$	$\lambda_b$	$\phi_b$	$\lambda_e$	$\phi_e$	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	
2661	- 409 Jun 28	1571849	1.837	5 33	6 34	7 34	8 26	9 17	10 17	11 18	85	264	-100	- 24	-154	- 24	153
2662	- 409 Dec 21*	1572025	0.955	19 17	20 23	—	21 58	—	23 34	0 40	65	303	+ 54	+ 23	+ 8	+ 23	159
2663	- 408 Jun 16	1572203	0.341	12 38	14 08	—	15 16	—	16 24	17 54	144	215	+146	- 23	+113	- 23	165
2664	- 408 Nov 11	1572351	(0.047)	0 42	—	—	1 11	—	—	1 40	158	178	- 14	+ 18	- 28	+ 18	170
2665	- 408 Dec 10	1572380	(0.791)	10 00	—	—	11 52	—	—	13 43	42	315	-152	+ 22	+155	+ 22	171
2666	- 407 May 6*	1572527	(0.624)	23 55	—	—	1 51	—	—	3 46	51	335	- 2	- 16	- 57	- 16	176
2667	- 407 Jun 5	1572557	(0.013)	16 07	—	—	16 25	—	—	16 43	178	189	+116	- 21	+108	- 21	177 b
2668	- 407 Oct 31	1572705	0.175	13 40	15 10	—	15 56	—	16 41	18 11	140	191	+129	+ 14	+107	+ 14	182
2669	- 406 Apr 26	1572882	1.044	4 08	5 15	6 40	6 57	7 13	8 38	9 45	79	311	- 81	- 12	-130	- 12	188
2670	- 406 Oct 20*	1573059	1.380	22 34	23 42	0 49	1 32	2 15	3 22	4 30	88	239	+ 1	+ 9	- 53	+ 9	194
2671	- 405 Apr 15	1573236	1.276	16 28	17 27	18 32	19 09	19 46	20 51	21 50	126	268	+ 97	- 7	+ 48	- 8	200
2672	- 405 Oct 10	1573414	0.968	0 56	2 14	—	3 58	—	5 42	7 00	45	280	- 37	+ 4	- 87	+ 4	206
2673	- 404 Mar 6	1573562	(0.107)	3 06	—	—	3 50	—	—	4 34	33	1	- 44	+ 6	- 65	+ 6	211
2674	- 404 Apr 4	1573591	(0.943)	9 41	—	—	11 40	—	—	13 39	150	246	-145	- 2	+158	- 3	212
2675	- 404 Sep 28	1573768	(0.826)	1 08	—	—	3 19	—	—	5 31	26	298	- 19	- 1	- 83	- 1	218
2676	- 403 Feb 23	1573916	0.309	15 30	16 54	—	17 55	—	18 56	20 19	49	342	+110	+ 11	+ 81	+ 11	223
2677	- 403 Aug 18	1574092	0.091	16 49	18 29	—	19 03	—	19 37	21 18	149	185	+ 83	- 14	+ 66	- 14	6
2678	- 402 Feb 12*	1574270	1.586	22 19	23 28	0 32	1 22	2 12	3 16	4 25	95	290	+ 12	+ 15	- 44	+ 15	12
2679	- 402 Aug 8	1574447	1.499	6 52	7 47	8 47	9 32	10 17	11 16	12 11	92	248	-117	- 18	-167	- 18	18
2680	- 401 Feb 1*	1574624	0.741	23 10	0 32	—	2 07	—	3 42	5 05	136	243	- 4	+ 19	- 50	+ 19	24
2681	- 401 Jul 28*	1574801	0.952	23 50	0 50	—	2 23	—	3 55	4 55	54	293	- 13	- 21	- 57	- 21	30
2682	- 400 Jan 22	1574979	(0.610)	0 29	—	—	2 22	—	—	4 15	148	223	- 4	+ 22	- 59	+ 22	36
2683	- 400 Jun 18	1575127	(0.375)	5 16	—	—	6 43	—	—	8 10	160	219	- 81	- 22	-123	- 22	41
2684	- 400 Jul 17	1575156	(0.520)	15 20	—	—	16 58	—	—	18 35	32	322	+129	- 24	+ 82	- 24	42
2685	- 400 Dec 11	1575303	0.210	17 52	19 19	—	20 09	—	20 59	22 26	16	321	+ 69	+ 22	+ 45	+ 22	47
2686	- 399 Jun 7	1575481	0.649	8 46	10 07	—	11 36	—	13 06	14 27	144	244	-154	- 22	+162	- 22	53
2687	- 399 Dec 1	1575658	1.480	8 20	9 16	10 15	10 59	11 43	12 42	13 39	62	266	-142	+ 21	+169	+ 22	59
2688	- 398 May 27	1575835	1.612	9 08	10 18	11 24	12 16	13 07	14 13	15 23	101	295	-158	- 20	+146	- 21	65
2689	- 398 Nov 20*	1576012	1.033	23 36	0 38	2 01	2 14	2 28	3 50	4 52	96	223	- 13	+ 19	- 59	+ 20	71
2690	- 397 May 16	1576189	0.242	13 33	15 05	—	16 01	—	16 57	18 29	51	352	+131	- 18	+104	- 19	77
2691	- 397 Nov 10	1576367	(0.726)	11 20	—	—	13 17	—	—	15 14	115	198	-175	+ 17	+129	+ 18	83
2692	- 396 Apr 5	1576514	0.088	16 54	18 28	—	19 01	—	19 33	21 07	191	226	+ 84	- 3	+ 68	- 4	88 E
2693	- 396 Sep 29*	1576691	(0.971)	20 17	—	—	22 39	—	—	1 01	19	283	+ 54	- 1	- 16	+ 1	94
2694	- 395 Mar 26	1576869	1.423	9 14	10 10	11 10	11 53	12 35	13 36	14 31	134	285	-151	+ 1	+159	- 1	100
2695	- 395 Sep 18*	1577045	1.168	19 39	20 52	22 08	22 40	23 12	0 28	1 41	40	262	+ 46	- 4	- 7	- 4	106
2696	- 394 Mar 16	1577224	0.982	0 29	1 33	—	3 09	—	4 45	5 49	91	327	- 21	+ 4	- 68	+ 3	112
2697	- 394 Sep 8	1577400	1.161	1 55	3 00	4 13	4 43	5 13	6 26	7 31	84	220	- 46	- 8	- 96	- 7	118
2698	- 393 Mar 5	1577578	(0.566)	10 44	—	—	12 32	—	—	14 19	64	352	-159	+ 7	+149	+ 7	124
2699	- 393 Jul 30	1577725	(0.123)	8 50	—	—	9 37	—	—	10 23	359	325	-132	- 22	-154	- 22	129
2700	- 393 Aug 28	1577754	(0.910)	15 49	—	—	17 49	—	—	19 48	107	201	+121	- 11	+ 64	- 10	130
2701	- 392 Jan 23	1577902	0.087	18 14	20 11	—	20 48	—	21 24	23 22	180	216	+ 61	+ 22	+ 44	+ 21	135
2702	- 392 Jul 19	1578080	0.420	0 03	1 15	—	2 23	—	3 31	4 43	25	307	- 19	- 23	- 51	- 23	141
2703	- 391 Jan 11*	1578256	1.425	19 14	20 23	21 29	22 15	23 00	0 06	1 15	116	271	+ 56	+ 23	+ 3	+ 23	147
2704	- 391 Jul 8	1578434	1.752	12 42	13 43	14 44	15 35	16 26	17 27	18 28	77	263	+153	- 24	+ 99	- 23	153
2705	- 390 Jan 1	1578611	0.969	3 58	5 03	—	6 39	—	8 15	9 20	70	307	- 75	+ 23	-121	+ 23	159
2706	- 390 Jun 27*	1578788	0.487	19 09	20 34	—	21 53	—	23 12	0 37	132	217	+ 50	- 23	+ 12	- 23	165
2707	- 390 Nov 22	1578936	(0.044)	9 41	—	—	10 09	—	—	10 38	161	182	-148	+ 21	-162	+ 21	170
2708	- 390 Dec 21	1578965	(0.796)	18 57	—	—	20 48	—	—	22 40	47	320	+ 75	+ 23	+ 22	+ 22	171
2709	- 389 May 18	1579113	(0.474)	6 41	—	—	8 23	—	—	10 05	43	337	-103	- 19	-153	- 20	176
2710	- 389 Jun 16	1579142	(0.170)	21 46	—	—	22 49	—	—	23 53	160	199	+ 32	- 22	+ 1	- 22	177
2711	- 389 Nov 11*	1579290	0.163	22 25	23 57	—	0 41	—	1 25	2 57	144	192	- 3	+ 17	- 24	+ 18	182
2712	- 388 May 6	1579467	0.910	11 14	12 22	—	13 59	—	15 36	16 44	72	314	+172	- 15	+125	- 16	188
2713	- 388 Oct 31	1579645	1.362	6 53	8 01	9 08	9 51	10 34	11 41	12 49	91	241	-124	+ 13	-178	+ 13	194
2714	- 387 Apr 25*	1579821	1.404	23 59	0 56	1 58	2 40	3 23	4 25	5 22	120	270	- 16	- 11	- 66	- 12	200
2715	- 387 Oct 20	1579999	0.995	8 48	10 05	—	11 50	—	13 35	14 53	47	280	-155	+ 8	+154	+ 9	206
2716	- 386 Mar 17	1580147	(0.019)	11 33	—	—	11 51	—	—	12 10	25	12	-171	+ 2	+180	+ 2	211 e
2717	- 386 Apr 15	1580176	0.091	17 21	18 53	—	19 25	—	19 58	21 29	179	215	+ 77	- 7	+ 61	- 7	212 B
2718	- 386 Oct 9	1580353	(0.870)	8 54	—	—	11 08	—	—	13 22	28	297	-137	+ 3	+158	+ 4	218
2719	- 385 Mar 6*	1580501	0.228	23 26	0 54	—	1 47	—	2 41	4 09	46	348	- 11	+ 7	- 36	+ 7	223
2720	- 385 Aug 30	1580678	0.018	0 46	2 41	—	2 56	—	3 11	5 06	157	173	- 40	- 10	- 48	- 10	6 E
2721	- 384 Feb 24	1580856	1.514	5 54	7 03	8 08	8 57	9 46	10 51	12 00	95	295	-102	+ 12	-158	+ 11	12
2722	- 384 Aug 18	1581032	1.409	14 53	15 49	16 50	17 32	18 14	19 15	20 11	92	242	+122	- 15	+ 73	- 14	18
2723	- 383 Feb 12	1581210	0.805	6 38	7 59	—	9 37	—	11 15	12 36	137	249	-116	+ 16	-163	+ 16	24
2724	- 383 Aug 8	1581387	1.050	7 39	8 39	9 58	10 14	10 31	11 50	12 49	54	286	-130	- 19	-176	- 18	30
2725	- 382 Feb 1	1581564	(0.654)	8 18	—	—	10 14	—	—	12 10	150	229	-121	+ 20	-177	+ 19	36
2726	- 382 Jun 29	1581712	(0.231)	12 31	—	—	13 41	—	—	14 50	162	208	+171	- 22	+138	- 22	41
2727	- 382 Jul 28*	1581741	(0.629)	22 36	—	—	0 23	—	—	2 10	32	315	+ 21	- 22	- 31	- 22	42
2728	- 382 Dec 23	1581889	0.211	2 41	4 08	—	4 58	—	5 47	7 14	21	326	- 62	+ 23	- 85	+ 23	47
2729	- 381 Jun 18	1582066	0.487	15 19	16 45	—	18 05	—	19 25	20 52	147	233	+107	- 23	+ 68	- 23	53
2730	- 381 Dec 12	1582243	1.478	17 19	18 15	19 14	19 58	20 42	21 41	22 38	66	271	+ 85	+ 23	+ 35	+ 23	59

No.	Date	JD	Mag.	$T_1$	$T_2$	$T_3$	$T_m$	$T_4$	$T_5$	$T_6$	$P_b$	$P_e$	$\lambda_b$	$\phi_b$	$\lambda_e$	$\phi_e$	Saros
				h m	h m	h m	h m	h m	h m	h m							
2731	- 380 Jun 6	1582420	1.776	15 34	16 44	17 48	18 42	19 35	20 39	21 49	103	286	+106	- 22	+ 49	- 22	65
2732	- 380 Dec 1	1582598	1.031	8 29	9 31	10 54	11 07	11 21	12 43	13 46	101	227	-146	+ 22	+168	+ 22	71
2733	- 379 May 26*	1582774	0.398	20 19	21 42	—	22 53	—	0 03	1 26	56	340	+ 32	- 21	- 3	- 21	77
2734	- 379 Nov 20	1582952	(0.726)	19 52	—	—	21 49	—	—	23 47	119	202	+ 58	+ 20	+ 1	+ 21	83
2735	- 378 Apr 17	1583100	(0.948)	0 40	—	—	2 40	—	—	4 41	160	256	- 11	- 7	- 69	- 8	88
2736	- 378 May 16	1583129	(0.124)	9 28	—	—	10 16	—	—	11 04	38	5	-145	- 19	-168	- 19	89 b
2737	- 378 Oct 11	1583277	(0.930)	4 04	—	—	6 24	—	—	8 43	18	284	- 64	+ 4	-132	+ 5	94
2738	- 377 Apr 6	1583454	1.314	17 04	18 00	19 03	19 41	20 19	21 22	22 19	137	281	+ 90	- 4	+ 41	- 5	100
2739	- 377 Sep 30	1583631	1.118	3 27	4 40	6 00	6 27	6 54	8 14	9 27	38	263	- 72	0	-124	+ 1	106
2740	- 376 Mar 26	1583809	1.079	8 09	9 12	10 30	10 51	11 13	12 31	13 34	94	324	-137	0	+175	- 1	112
2741	- 376 Sep 18	1583985	1.221	9 57	11 02	12 12	12 46	13 20	14 30	15 35	81	221	-168	- 4	+142	- 3	118
2742	- 375 Mar 15	1584163	(0.653)	18 02	—	—	19 56	—	—	21 51	68	350	+ 91	+ 3	+ 35	+ 2	124
2743	- 375 Aug 9	1584310	(0.031)	17 07	—	—	17 31	—	—	17 54	347	330	+104	- 19	+ 93	- 19	129 e
2744	- 375 Sep 7*	1584339	(0.981)	23 59	—	—	2 01	—	—	4 04	103	201	- 2	- 8	- 61	- 6	130
2745	- 374 Feb 3	1584488	0.040	1 56	4 03	—	4 27	—	4 52	6 59	189	214	- 56	+ 19	- 68	+ 19	135 E
2746	- 374 Jul 30	1584665	0.304	7 47	9 05	—	10 04	—	11 02	12 20	15	309	-136	- 21	-164	- 21	141
2747	- 373 Jan 23	1584842	1.397	3 21	4 29	5 36	6 20	7 04	8 11	9 19	121	274	- 64	+ 21	-118	+ 21	147
2748	- 373 Jul 19*	1585019	1.621	19 55	20 57	21 59	22 48	23 38	0 40	1 42	68	263	+ 45	- 23	- 9	- 22	153
2749	- 372 Jan 12	1585196	0.992	12 33	13 37	—	15 13	—	16 50	17 54	75	311	+158	+ 22	+112	+ 22	159
2750	- 372 Jul 8	1585374	0.629	1 44	3 05	—	4 33	—	6 02	7 23	121	219	- 47	- 23	- 90	- 23	165
2751	- 372 Dec 2	1585521	(0.042)	18 40	—	—	19 08	—	—	19 36	166	185	+ 78	+ 23	+ 65	+ 23	170
2752	- 371 Jan 1	1585551	(0.806)	3 48	—	—	5 40	—	—	7 33	53	325	- 57	+ 23	-110	+ 22	171
2753	- 371 May 28	1585698	(0.324)	13 29	—	—	14 55	—	—	16 20	34	339	+155	- 22	+114	- 22	176
2754	- 371 Jun 27	1585728	(0.325)	3 51	—	—	5 17	—	—	6 44	147	202	- 59	- 23	-101	- 22	177
2755	- 371 Nov 22	1585876	0.156	7 12	8 45	—	9 28	—	10 12	11 44	148	195	-134	+ 20	-155	+ 21	182
2756	- 370 May 17	1586052	0.773	18 19	19 29	—	21 00	—	22 31	23 41	64	316	+ 65	- 19	+ 21	- 19	188
2757	- 370 Nov 11	1586230	1.351	15 15	16 24	17 32	18 14	18 56	20 04	21 13	94	243	+110	+ 17	+ 57	+ 17	194
2758	- 369 May 7	1586407	1.538	7 25	8 21	9 21	10 07	10 53	11 53	12 49	113	272	-128	- 15	-179	- 15	200
2759	- 369 Oct 31	1586584	1.014	16 46	18 04	19 40	19 50	20 00	21 36	22 53	50	282	+ 85	+ 12	+ 34	+ 13	206
2760	- 368 Apr 26	1586762	0.212	0 54	2 15	—	3 04	—	3 52	5 13	168	223	- 35	- 11	- 58	- 11	212
2761	- 368 Oct 19	1586938	(0.902)	16 50	—	—	19 06	—	—	21 21	30	297	+104	+ 7	+ 38	+ 8	218
2762	- 367 Mar 17	1587087	0.133	7 12	8 49	—	9 30	—	10 11	11 48	40	356	-130	+ 3	-150	+ 2	223
2763	- 367 Sep 9	1587263	(0.977)	8 52	—	—	10 59	—	—	13 06	114	211	-135	- 7	+164	- 6	6
2764	- 366 Mar 6	1587441	1.428	13 20	14 30	15 37	16 23	17 09	18 16	19 26	94	300	+145	+ 8	+ 90	+ 7	12
2765	- 366 Aug 29*	1587617	1.331	23 01	23 58	1 00	1 39	2 18	3 21	4 17	92	238	0	- 11	- 49	- 11	18
2766	- 365 Feb 23	1587795	0.882	13 59	15 18	—	16 59	—	18 40	19 59	136	254	+134	+ 12	+ 85	+ 12	24
2767	- 365 Aug 19	1587972	1.136	15 35	16 33	17 45	18 11	18 38	19 49	20 48	53	280	+111	- 15	+ 64	- 15	30
2768	- 364 Feb 12	1588149	(0.711)	15 58	—	—	17 59	—	—	19 59	152	234	+124	+ 17	+ 66	+ 16	36
2769	- 364 Jul 9	1588297	(0.092)	19 57	—	—	20 41	—	—	21 26	166	195	+ 60	- 22	+ 39	- 22	41 e
2770	- 364 Aug 8	1588327	(0.728)	6 00	—	—	7 54	—	—	9 49	31	308	- 90	- 19	-145	- 19	42
2771	- 363 Jan 2	1588474	0.206	11 27	12 53	—	13 42	—	14 31	15 58	25	331	+168	+ 23	+145	+ 23	47
2772	- 363 Jun 28*	1588651	0.329	21 56	23 30	—	0 37	—	1 45	3 18	150	220	+ 6	- 23	- 26	- 23	53
2773	- 363 Dec 23	1588829	1.473	2 15	3 11	4 10	4 54	5 38	6 37	7 34	71	276	- 48	+ 23	- 97	+ 24	59
2774	- 362 Jun 17*	1589005	1.726	22 04	23 14	0 18	1 11	2 04	3 09	4 18	103	277	+ 9	- 23	- 48	- 24	65
2775	- 362 Dec 12	1589183	1.030	17 20	18 23	19 46	19 59	20 12	21 35	22 38	105	232	+ 83	+ 23	+ 37	+ 24	71
2776	- 361 Jun 7	1589360	0.553	3 08	4 25	—	5 46	—	7 06	8 23	60	329	- 69	- 23	-108	- 23	77
2777	- 361 Dec 2	1589538	(0.723)	4 23	—	—	6 21	—	—	8 19	123	206	- 69	+ 22	-126	+ 23	83
2778	- 360 Apr 27	1589685	(0.826)	8 21	—	—	10 15	—	—	12 08	161	251	-127	- 11	+178	- 12	88
2779	- 360 May 26	1589714	(0.264)	16 26	—	—	17 35	—	—	18 45	43	353	+110	- 21	+ 77	- 22	89
2780	- 360 Oct 21	1589862	(0.901)	11 58	—	—	14 15	—	—	16 33	19	286	+177	+ 8	+110	+ 9	94
2781	- 359 Apr 17	1590040	1.196	0 47	1 44	2 52	3 23	3 55	5 02	5 59	139	276	- 27	- 8	- 75	- 9	100
2782	- 359 Oct 10	1590216	1.080	11 25	12 38	14 01	14 24	14 46	16 09	17 23	37	265	+168	+ 4	+116	+ 5	106
2783	- 358 Apr 6	1590394	1.188	15 40	16 42	17 52	18 24	18 56	20 07	21 09	98	320	+109	- 4	+ 60	- 5	112
2784	- 358 Sep 29	1590570	1.268	18 11	19 15	20 22	20 59	21 37	22 44	23 48	79	222	+ 69	0	+ 18	+ 1	118
2785	- 357 Mar 27	1590749	(0.755)	1 07	—	—	3 09	—	—	5 12	72	347	- 16	- 1	- 76	- 2	124
2786	- 357 Sep 19	1590925	0.051	8 18	9 59	—	10 23	—	10 48	12 29	138	164	-151	- 3	-163	- 3	130 B
2787	- 356 Feb 14	1591073	(1.092)	9 30	—	—	11 57	—	—	14 25	153	256	-139	+ 16	+150	+ 15	135
2788	- 356 Aug 9	1591250	0.198	15 38	17 03	—	17 51	—	18 39	20 04	5	312	+105	- 19	+ 82	- 18	141
2789	- 355 Feb 2	1591427	1.358	11 22	12 30	13 37	14 20	15 02	16 10	17 18	127	276	+176	+ 19	+123	+ 18	147
2790	- 355 Jul 30	1591605	1.498	3 11	4 14	5 18	6 05	6 52	7 55	8 59	60	263	- 64	- 21	-117	- 20	153
2791	- 354 Jan 22*	1591781	1.024	21 04	22 07	23 32	23 44	23 56	1 21	2 25	81	314	+ 31	+ 20	- 16	+ 20	159
2792	- 354 Jul 19	1591959	0.764	8 23	9 42	—	11 17	—	12 52	14 11	111	220	-146	- 22	+168	- 21	165
2793	- 354 Dec 14	1592107	(0.038)	3 40	—	—	4 06	—	—	4 32	171	190	- 56	+ 25	- 68	+ 25	170
2794	- 353 Jan 12	1592136	(0.823)	12 36	—	—	14 29	—	—	16 22	58	329	+173	+ 22	+119	+ 21	171
2795	- 353 Jun 8	1592283	(0.176)	20 24	—	—	21 27	—	—	22 31	22	342	+ 52	- 24	+ 21	- 24	176
2796	- 353 Jul 8	1592313	(0.474)	10 06	—	—	11 49	—	—	13 32	137	203	-153	- 22	+157	- 22	177
2797	- 353 Dec 3	1592461	0.150	15 59	17 33	—	18 16	—	18 58	20 32	153	199	+ 95	+ 23	+ 74	+ 23	182
2798	- 352 May 28	1592638	0.635	1 26	2 38	—	4 02	—	5 26	6 39	55	318	- 42	- 21	- 83	- 21	188
2799	- 352 Nov 21*	1592815	1.343	23 38	0 47	1 55	2 37	3 19	4 27	5 37	97	247	- 15	+ 20	- 68	+ 20	194
2800	- 351 May 17	1592992	1.675	14 51	15 47	16 44	17 33	18 22	19 20	20 16	106	273	+120	- 18	+ 69	- 18	200

No.	Date	JD	Mag.	$T_1$	$T_2$	$T_3$	$T_m$	$T_4$	$T_5$	$T_6$	$P_b$	$P_e$	$\lambda_b$	$\phi_b$	$\lambda_e$	$\phi_e$	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	
2801	- 351 Nov 11	1593170	1.026	0 49	2 07	3 40	3 53	4 06	5 39	6 57	53	284	- 36	+ 16	- 87	+ 16	206
2802	- 350 May 7	1593347	0.339	8 24	9 38	—	10 38	—	11 39	12 53	158	228	-146	- 14	-176	- 15	212
2803	- 350 Oct 31	1593524	(0.924)	0 53	—	—	3 09	—	—	5 26	32	299	- 17	+ 12	- 83	+ 12	218
2804	- 349 Mar 28	1593672	0.025	14 49	16 45	—	17 03	—	17 21	19 16	28	9	+110	- 2	+101	- 2	223 E
2805	- 349 Sep 20	1593848	(0.931)	17 07	—	—	19 11	—	—	21 15	115	209	+101	- 2	+ 41	- 2	6
2806	- 348 Mar 16*	1594026	1.327	20 33	21 44	22 54	23 36	0 18	1 28	2 38	92	304	+ 36	+ 3	- 18	+ 3	12
2807	- 348 Sep 9	1594203	1.266	7 19	8 16	9 20	9 56	10 32	11 36	12 33	92	234	-125	- 7	-174	- 7	18
2808	- 347 Mar 5*	1594380	0.974	21 08	22 26	—	0 10	—	1 55	3 12	135	259	+ 27	+ 8	- 24	+ 8	24
2809	- 347 Aug 29*	1594557	1.210	23 38	0 36	1 44	2 16	2 48	3 56	4 54	54	275	- 10	- 12	- 58	- 11	30
2810	- 346 Feb 22*	1594734	(0.781)	23 31	—	—	1 35	—	—	3 40	152	238	+ 11	+ 13	- 49	+ 12	36
2811	- 346 Aug 19	1594912	(0.817)	13 31	—	—	15 32	—	—	17 32	31	302	+157	- 16	+ 99	- 15	42
2812	- 345 Jan 13*	1595059	0.194	20 09	21 35	—	22 23	—	23 10	0 37	29	336	+ 39	+ 21	+ 16	+ 21	47
2813	- 345 Jul 10	1595237	0.177	4 36	6 20	—	7 11	—	8 02	9 46	155	206	- 96	- 22	-120	- 22	53
2814	- 344 Jan 3	1595414	1.463	11 08	12 04	13 04	13 47	14 31	15 30	16 26	75	281	+180	+ 23	+131	+ 23	59
2815	- 344 Jun 28	1595591	1.571	4 38	5 48	6 53	7 44	8 34	9 40	10 50	104	267	- 89	- 24	-145	- 24	65
2816	- 344 Dec 23	1595769	1.032	2 08	3 11	4 34	4 47	5 01	6 24	7 27	110	237	- 48	+ 24	- 94	+ 24	71
2817	- 343 Jun 17	1595945	0.706	10 01	11 13	—	12 42	—	14 11	15 24	62	318	-171	- 24	+147	- 24	77
2818	- 343 Dec 12	1596123	(0.722)	12 54	—	—	14 52	—	—	16 50	128	210	+165	+ 24	+108	+ 24	83
2819	- 342 May 8	1596270	(0.699)	16 01	—	—	17 46	—	—	19 32	163	244	+118	- 14	+ 67	- 15	88
2820	- 342 Jun 6*	1596299	(0.405)	23 31	—	—	0 55	—	—	2 20	45	343	+ 4	- 23	- 36	- 24	89
2821	- 342 Nov 1*	1596447	(0.880)	19 57	—	—	22 14	—	—	0 30	20	289	+ 57	+ 12	- 9	+ 13	94
2822	- 341 Apr 28	1596625	1.069	8 25	9 24	10 40	11 00	11 19	12 36	13 34	142	270	-143	- 12	+171	- 12	100
2823	- 341 Oct 21*	1596801	1.055	19 30	20 44	22 10	22 28	22 47	0 13	1 27	37	267	+ 45	+ 9	- 5	+ 9	106
2824	- 340 Apr 16*	1596979	1.308	23 03	0 04	1 10	1 50	2 29	3 35	4 36	100	315	- 2	- 8	- 53	- 9	112
2825	- 340 Oct 10	1597156	1.303	2 32	3 36	4 42	5 21	6 00	7 06	8 10	78	224	- 57	+ 5	-108	+ 6	118
2826	- 339 Apr 6	1597334	(0.869)	8 05	—	—	10 15	—	—	12 25	74	343	-122	- 5	+175	- 6	124
2827	- 339 Sep 29	1597510	0.096	16 45	18 19	—	18 52	—	19 26	21 00	132	169	+ 83	+ 1	+ 66	+ 2	130
2828	- 338 Feb 24	1597658	(1.014)	16 57	—	—	19 20	—	—	21 43	158	256	+109	+ 12	+ 40	+ 11	135
2829	- 338 Aug 20*	1597835	0.103	23 35	1 09	—	1 44	—	2 20	3 54	354	316	- 17	- 15	- 34	- 15	141
2830	- 337 Feb 13*	1598012	1.307	19 14	20 22	21 31	22 11	22 51	0 00	1 07	131	278	+ 58	+ 15	+ 6	+ 15	147
2831	- 337 Aug 10	1598190	1.385	10 34	11 39	12 44	13 28	14 11	15 17	16 22	53	263	-175	- 18	+133	- 17	153
2832	- 336 Feb 3	1598367	1.067	5 26	6 29	7 48	8 07	8 26	9 45	10 48	86	317	- 94	+ 18	-141	+ 17	159
2833	- 336 Jul 29	1598544	0.890	15 10	16 26	—	18 07	—	19 48	21 04	102	221	+113	- 20	+ 64	- 19	165
2834	- 336 Dec 24	1598692	(0.030)	12 37	—	—	13 01	—	—	13 24	177	193	+172	+ 25	+160	+ 25	170
2835	- 335 Jan 22*	1598721	(0.848)	21 15	—	—	23 10	—	—	1 04	63	332	+ 44	+ 20	- 11	+ 19	171
2836	- 335 Jun 19	1598869	(0.032)	3 36	—	—	4 04	—	—	4 31	7	350	- 56	- 25	- 69	- 25	176 e
2837	- 335 Jul 18	1598898	(0.617)	16 32	—	—	18 28	—	—	20 24	128	204	+111	- 21	+ 55	- 21	177
2838	- 335 Dec 14	1599047	0.143	0 45	2 20	—	3 02	—	3 44	5 18	158	203	- 36	+ 24	- 56	+ 24	182
2839	- 334 Jun 8	1599223	0.498	8 33	9 49	—	11 05	—	12 21	13 37	45	320	-150	- 23	+174	- 23	188
2840	- 334 Dec 3	1599401	1.338	8 02	9 12	10 20	11 02	11 44	12 52	14 02	102	251	-141	+ 22	+166	+ 22	194
2841	- 333 May 28*	1599577	1.815	22 16	23 11	0 08	0 58	1 48	2 45	3 40	99	274	+ 9	- 21	- 42	- 21	200
2842	- 333 Nov 22	1599755	1.034	8 55	10 13	11 44	11 59	12 15	13 46	15 04	57	287	-157	+ 19	+152	+ 19	206
2843	- 332 May 17	1599932	0.470	15 50	16 59	—	18 09	—	19 19	20 28	149	231	+103	- 17	+ 69	- 18	212
2844	- 332 Nov 10	1600109	(0.939)	9 02	—	—	11 20	—	—	13 37	35	301	-140	+ 15	+154	+ 16	218
2845	- 331 Apr 7*	1600257	(0.934)	22 19	—	—	0 27	—	—	2 35	65	330	+ 24	- 6	- 37	- 7	223
2846	- 331 May 7	1600287	(0.028)	9 36	—	—	9 59	—	—	10 22	185	201	-145	- 14	-157	- 14	1 b
2847	- 331 Oct 1	1600434	(0.898)	1 30	—	—	3 32	—	—	5 34	115	208	- 26	+ 2	- 85	+ 3	6
2848	- 330 Mar 28	1600612	1.213	3 40	4 51	6 06	6 41	7 16	8 31	9 42	88	308	- 72	- 1	-125	- 2	12
2849	- 330 Sep 20	1600788	1.214	15 44	16 42	17 48	18 20	18 53	19 59	20 57	93	231	+107	- 3	+ 60	- 2	18
2850	- 329 Mar 17	1600966	1.080	4 10	5 25	6 50	7 13	7 36	9 01	10 17	132	264	- 79	+ 4	-132	+ 3	24
2851	- 329 Sep 10	1601143	1.271	7 48	8 47	9 52	10 28	11 04	12 09	13 07	54	272	-133	- 8	+178	- 7	30
2852	- 328 Mar 5	1601320	(0.863)	6 55	—	—	9 04	—	—	11 14	152	242	-101	+ 9	-164	+ 8	36
2853	- 328 Aug 29*	1601497	(0.894)	21 10	—	—	23 15	—	—	1 21	31	298	+ 42	- 12	- 19	- 12	42
2854	- 327 Jan 24	1601645	0.172	4 44	6 12	—	6 57	—	7 42	9 10	32	342	- 89	+ 19	-111	+ 19	47
2855	- 327 Jul 20	1601822	0.035	11 22	13 28	—	13 51	—	14 14	16 20	165	187	+158	- 21	+147	- 21	53 E
2856	- 326 Jan 13*	1601999	1.445	19 55	20 52	21 52	22 35	23 18	0 17	1 14	79	286	+ 49	+ 22	0	+ 22	59
2857	- 326 Jul 9	1602176	1.423	11 17	12 27	13 35	14 22	15 08	16 16	17 26	104	258	+172	- 23	+117	- 23	65
2858	- 325 Jan 3	1602354	1.040	10 52	11 55	13 17	13 32	13 47	15 09	16 12	115	242	-178	+ 24	+136	+ 24	71
2859	- 325 Jun 28	1602530	0.853	16 59	18 08	—	19 43	—	21 18	22 27	63	308	+ 86	- 24	+ 41	- 24	77
2860	- 325 Dec 23*	1602708	(0.723)	21 20	—	—	23 18	—	—	1 17	132	215	+ 40	+ 25	- 18	+ 25	83
2861	- 324 May 18*	1602855	(0.569)	23 39	—	—	1 15	—	—	2 52	164	237	+ 3	- 17	- 44	- 18	88
2862	- 324 Jun 17	1602885	(0.545)	6 42	—	—	8 18	—	—	9 54	46	334	-103	- 24	-149	- 25	89
2863	- 324 Nov 12	1603033	(0.866)	4 00	—	—	6 16	—	—	8 32	23	292	- 64	+ 16	-130	+ 16	94
2864	- 323 May 8	1603210	0.936	15 59	16 59	—	18 31	—	20 04	21 04	144	263	+103	- 15	+ 59	- 16	100
2865	- 323 Nov 1	1603387	1.039	3 43	4 56	6 24	6 40	6 56	8 24	9 37	39	270	- 78	+ 13	-128	+ 13	106
2866	- 322 Apr 28	1603565	1.436	6 19	7 20	8 23	9 07	9 52	10 55	11 56	103	309	-112	- 12	-164	- 13	112
2867	- 322 Oct 21	1603741	1.327	11 03	12 06	13 12	13 51	14 31	15 37	16 40	79	226	+175	+ 9	+124	+ 10	118
2868	- 321 Apr 17	1603919	(0.995)	14 51	—	—	17 09	—	—	19 27	77	339	+136	- 9	+ 69	- 10	124
2869	- 321 Oct 11	1604096	0.130	1 22	2 52	—	3 31	—	4 09	5 39	130	173	- 46	+ 6	+ 65	+ 6	130
2870	- 320 Mar 7	1604244	(0.924)	0 16	—	—	2 33	—	—	4 51	162	255	- 1	+ 8	- 68	+ 7	135

No.	Date	JD	Mag.	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>m</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	P <sub>b</sub>	P <sub>e</sub>	λ <sub>b</sub>	φ <sub>b</sub>	λ <sub>e</sub>	φ <sub>e</sub>	Saros
				h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	°	°	°	
2871	- 320 Aug 31	1604421	0.019	7 38	9 29	—	9 45	—	10 00	11 51	341	325	-142	- 11	-149	- 11	141 E
2872	- 319 Feb 24	1604598	1.243	3 01	4 08	5 19	5 56	6 32	7 43	8 50	136	278	- 59	+ 12	-111	+ 11	147
2873	- 319 Aug 20	1604775	1.283	18 03	19 09	20 18	20 56	21 35	22 44	23 50	47	263	+ 73	- 15	+ 21	- 14	153
2874	- 318 Feb 13	1604952	1.122	13 44	14 45	15 59	16 24	16 50	18 03	19 05	91	318	+142	+ 15	+ 94	+ 14	159
2875	- 318 Aug 9*	1605129	1.006	22 02	23 17	0 56	1 02	1 09	2 47	4 03	95	221	+ 11	- 17	- 40	- 17	165
2876	- 317 Jan 4	1605277	(0.015)	21 35	—	—	21 52	—	—	22 09	184	196	+ 39	+ 25	+ 31	+ 25	170 e
2877	- 317 Feb 3	1605307	(0.884)	5 49	—	—	7 45	—	—	9 41	68	335	- 84	+ 17	-140	+ 16	171
2878	- 317 Jul 29*	1605483	(0.750)	23 08	—	—	1 15	—	—	3 21	120	204	+ 12	- 20	- 49	- 19	177
2879	- 317 Dec 25	1605632	0.132	9 27	11 03	—	11 44	—	12 25	14 01	164	207	-165	+ 25	+175	+ 25	182
2880	- 316 Jun 18	1605808	0.363	15 46	17 06	—	18 12	—	19 18	20 38	34	322	+102	- 24	+ 70	- 24	188
2881	- 316 Dec 13	1605986	1.331	16 23	17 34	18 42	19 24	20 05	21 14	22 25	107	255	+ 95	+ 23	+ 42	+ 23	194
2882	- 315 Jun 8	1606163	1.825	5 42	6 37	7 34	8 24	9 15	10 11	11 06	90	274	-102	- 22	-153	- 23	200
2883	- 315 Dec 2	1606340	1.041	17 01	18 19	19 49	20 06	20 22	21 52	23 10	61	291	+ 83	+ 21	+ 31	+ 21	206
2884	- 314 May 28*	1606517	0.604	23 16	0 21	—	1 39	—	2 57	4 02	139	233	- 8	- 20	- 45	- 20	212
2885	- 314 Nov 21	1606694	(0.949)	17 16	—	—	19 34	—	—	21 51	39	304	+ 98	+ 18	+ 31	+ 19	218
2886	- 313 Apr 19	1606843	(0.805)	5 41	—	—	7 42	—	—	9 43	60	333	- 87	- 10	-145	- 11	223
2887	- 313 May 18	1606872	(0.151)	16 21	—	—	17 15	—	—	18 09	171	209	+112	- 17	+ 87	- 17	1
2888	- 313 Oct 12	1607019	(0.875)	10 01	—	—	12 01	—	—	14 02	117	208	-154	+ 6	+148	+ 7	6
2889	- 312 Apr 7	1607197	1.086	10 35	11 48	13 12	13 35	13 59	15 22	16 35	83	311	-177	- 5	+131	- 6	12
2890	- 312 Oct 1	1607374	1.173	0 17	1 15	2 23	2 53	3 22	4 31	5 29	94	230	- 22	+ 2	- 69	+ 2	18
2891	- 311 Mar 27	1607551	1.200	11 02	12 16	13 32	14 07	14 42	15 58	17 12	128	268	+177	0	+123	- 1	24
2892	- 311 Sep 20	1607728	1.320	16 07	17 05	18 09	18 48	19 26	20 30	21 28	55	269	+102	- 3	+ 52	- 3	30
2893	- 310 Mar 16	1607905	(0.959)	14 11	—	—	16 26	—	—	18 40	150	246	+149	+ 5	+ 84	+ 4	36
2894	- 310 Sep 10	1608083	(0.959)	4 57	—	—	7 06	—	—	9 16	31	295	- 75	- 8	-138	- 8	42
2895	- 309 Feb 4	1608230	0.140	13 14	14 44	—	15 25	—	16 05	17 36	33	348	+143	+ 17	+123	+ 17	47
2896	- 309 Jul 31	1608407	(1.000)	18 13	—	—	20 36	—	—	22 58	123	221	+ 86	- 19	+ 17	- 19	53
2897	- 308 Jan 25	1608585	1.418	4 36	5 33	6 33	7 15	7 57	8 58	9 54	83	291	- 80	+ 20	-129	+ 20	59
2898	- 308 Jul 19*	1608761	1.285	18 03	19 15	20 26	21 06	21 46	22 58	0 09	104	249	+ 71	- 22	+ 17	- 22	65
2899	- 307 Jan 13*	1608939	1.056	19 29	20 33	21 53	22 10	22 28	23 48	0 51	119	247	+ 54	+ 23	+ 7	+ 23	71
2900	- 307 Jul 9	1609116	0.993	0 03	1 10	—	2 49	—	4 29	5 36	63	299	- 19	- 24	- 66	- 24	77
2901	- 306 Jan 3	1609294	(0.730)	5 42	—	—	7 41	—	—	9 40	137	220	- 84	+ 25	-142	+ 25	83
2902	- 306 May 30	1609441	(0.438)	7 18	—	—	8 43	—	—	10 09	165	229	-112	- 19	-153	- 20	88
2903	- 306 Jun 28	1609470	(0.680)	13 58	—	—	15 44	—	—	17 30	45	325	+149	- 25	+ 98	- 25	89
2904	- 306 Nov 23	1609618	(0.856)	12 07	—	—	14 22	—	—	16 37	26	296	+175	+ 19	+110	+ 19	94
2905	- 305 May 19*	1609795	0.798	23 30	0 32	—	1 59	—	3 27	4 29	146	255	- 11	- 18	- 53	- 19	100
2906	- 305 Nov 12	1609972	1.030	12 00	13 14	14 43	14 57	15 11	16 40	17 54	41	273	+158	+ 16	+108	+ 17	106
2907	- 304 May 8	1610150	1.572	13 30	14 31	15 32	16 20	17 09	18 10	19 11	104	303	+140	- 16	+ 87	- 16	112
2908	- 304 Oct 31*	1610326	1.343	19 39	20 41	21 46	22 27	23 07	0 12	1 15	81	228	+ 45	+ 13	- 5	+ 14	118
2909	- 303 Apr 27*	1610504	0.062	21 33	23 28	—	23 58	—	0 28	1 23	41	11	+ 6	- 13	- 8	- 13	124 B
2910	- 303 Oct 21	1610681	0.154	10 05	11 32	—	12 14	—	12 56	14 24	129	176	-177	+ 10	+163	+ 11	130
2911	- 302 Mar 18	1610829	(0.820)	7 27	—	—	9 38	—	—	11 48	165	253	-110	+ 4	-173	+ 3	135
2912	- 302 Sep 11	1611006	(0.952)	15 49	—	—	17 52	—	—	19 56	19	283	+122	- 8	+ 62	- 7	141
2913	- 301 Mar 7	1611183	1.166	10 39	11 47	13 01	13 32	14 02	15 17	16 24	140	277	-174	+ 8	+135	+ 7	147
2914	- 301 Sep 1	1611361	1.193	1 39	2 47	4 00	4 33	5 06	6 19	7 26	42	264	- 42	- 11	- 94	- 10	153
2915	- 300 Feb 24*	1611537	1.190	21 51	22 51	0 01	0 32	1 03	2 13	3 13	95	318	+ 20	+ 11	- 28	+ 10	159
2916	- 300 Aug 20	1611715	1.110	5 03	6 18	7 40	8 06	8 33	9 54	11 09	88	222	- 95	- 14	-147	- 14	165
2917	- 299 Feb 13	1611892	(0.931)	14 13	—	—	16 12	—	—	18 10	72	337	+150	+ 14	+ 93	+ 13	171
2918	- 299 Aug 9	1612069	(0.873)	5 54	—	—	8 09	—	—	10 23	113	204	- 89	- 17	-154	- 16	177
2919	- 298 Jan 4	1612217	0.115	18 05	19 44	—	20 22	—	21 00	22 38	170	211	+ 66	+ 24	+ 48	+ 24	182
2920	- 298 Jun 29*	1612393	0.233	23 02	0 29	—	1 22	—	2 16	3 43	22	324	- 8	- 25	- 34	- 25	188
2921	- 298 Dec 25	1612572	1.320	0 41	1 52	3 01	3 43	4 24	5 33	6 44	112	260	- 28	+ 24	- 81	+ 24	194
2922	- 297 Jun 19	1612748	1.690	13 10	14 05	15 02	15 51	16 40	17 37	18 32	82	274	+146	- 24	+ 96	- 24	200
2923	- 297 Dec 14	1612926	1.050	1 07	2 25	3 54	4 12	4 30	5 59	7 17	66	296	- 38	+ 23	- 89	+ 23	206
2924	- 296 Jun 8	1613103	0.737	6 40	7 43	—	9 07	—	10 32	11 34	130	234	-118	- 22	-159	- 22	212
2925	- 296 Dec 2	1613280	(0.957)	1 32	—	—	3 50	—	—	6 07	44	308	- 26	+ 21	- 92	+ 21	218
2926	- 295 Apr 29	1613428	(0.668)	12 59	—	—	14 50	—	—	16 42	54	335	+163	- 14	+109	- 14	223
2927	- 295 May 28*	1613457	(0.279)	23 16	—	—	0 28	—	—	1 41	161	212	+ 9	- 19	- 26	- 20	1
2928	- 295 Oct 22	1613604	(0.862)	18 39	—	—	20 38	—	—	22 37	118	209	+ 76	+ 11	+ 18	+ 11	6
2929	- 294 Apr 18	1613782	0.948	17 25	18 40	—	20 22	—	22 05	23 20	77	315	+ 79	- 9	+ 29	- 10	12
2930	- 294 Oct 12	1613959	1.143	8 57	9 55	11 05	11 32	11 59	13 10	14 08	96	230	-153	+ 6	+161	+ 7	18
2931	- 293 Apr 7	1614136	1.331	17 48	19 00	20 11	20 54	21 36	22 47	23 59	123	272	+ 75	- 5	+ 20	- 5	24
2932	- 293 Oct 2	1614314	1.357	0 32	1 31	2 34	3 14	3 54	4 57	5 56	56	268	- 26	+ 1	- 75	+ 2	30
2933	- 292 Mar 26*	1614490	0.007	21 21	23 30	—	23 40	—	23 50	2 00	193	203	+ 9	0	+ 5	0	36 B
2934	- 292 Sep 20	1614668	(1.012)	12 51	—	—	15 05	—	—	17 18	31	293	+165	- 4	+101	- 3	42
2935	- 291 Feb 14*	1614815	0.096	21 37	23 12	—	23 45	—	0 19	1 54	32	355	+ 16	+ 13	0	+ 13	47
2936	- 291 Aug 11	1614993	(0.884)	1 12	—	—	3 28	—	—	5 44	123	215	- 19	- 16	- 84	- 16	53
2937	- 290 Feb 4	1615170	1.380	13 11	14 07	15 09	15 49	16 30	17 31	18 28	85	296	+152	+ 17	+103	+ 17	59
2938	- 290 Jul 31	1615347	1.157	0 58	2 11	3 28	3 59	4 30	5 48	7 00	104	241	- 33	- 20	- 85	- 19	65
2939	- 289 Jan 25	1615525	1.081	3 59	5 02	6 20	6 41	7 02	8 20	9 23	122	252	- 72	+ 21	-120	+ 20	71
2940	- 289 Jul 20	1615701	1.124	7 15	8 20	9 36	10 03	10 30	11 46	12 51	63	290	-126	- 22	-175	- 22	77